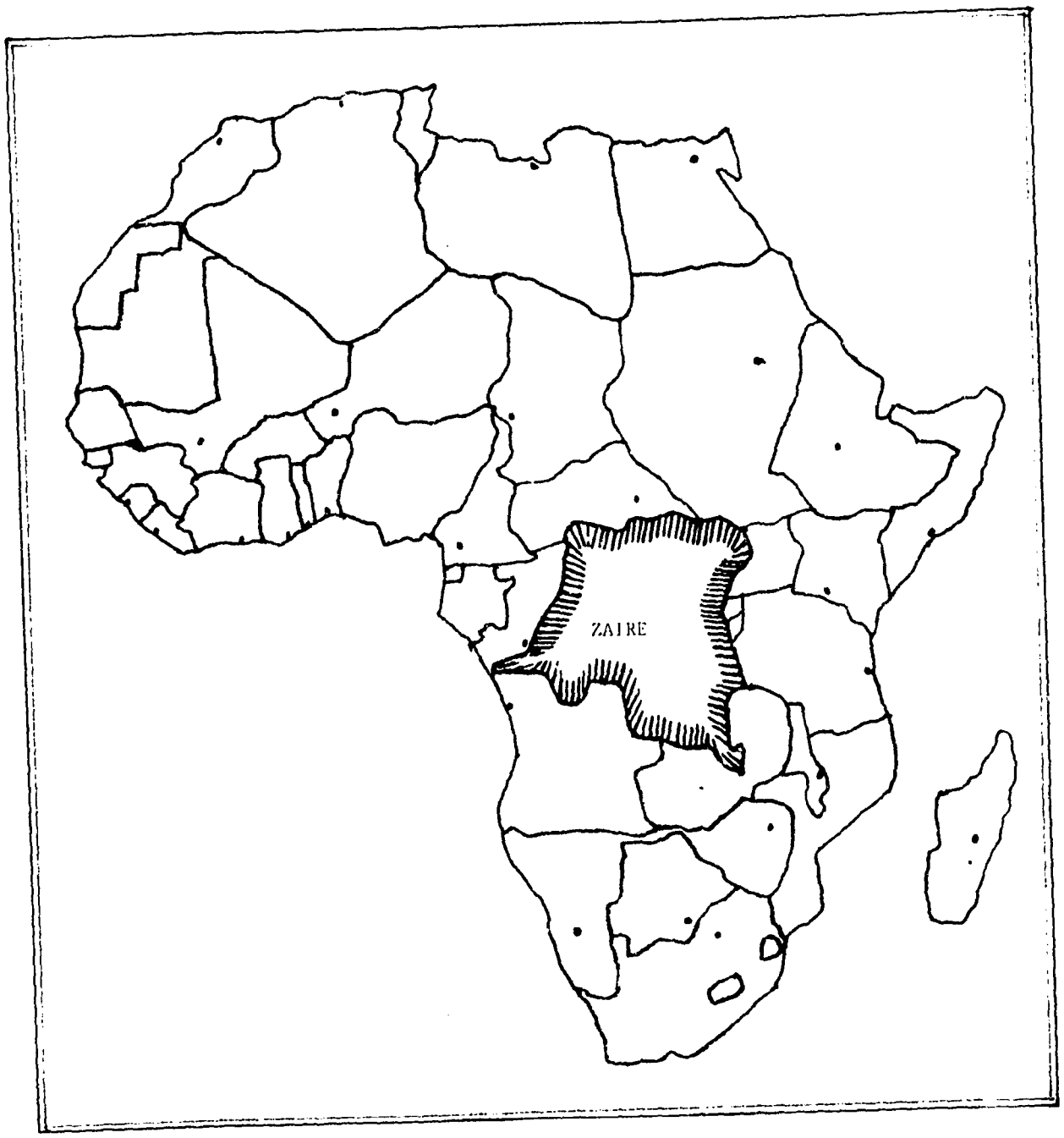
MAP 1

THE REPUBLIC OF ZAIRE AND THE COUNTRIES

OF AFRICA



POPULATION TRENDS IN ZAIRE AND THEIR IMPLICATIONS

1885 - 2005

by

BONGOMA Koni Botoke

A Thesis submitted for the Degree of Doctor of Philosophy
in The Australian National University, Canberra, Australia

This is my own research work

Bonjour

3 - 10 - 1980

Acknowledgements

I am grateful to Professor J.C. Caldwell, Head of the Demography Department at the Australian National University, and His Grace Professor Tshibangu Tshishiku, Rector of the National University of Zaire, for arousing my interest in population studies and for securing my undertaking of this project. However, my research work would never have begun without a grant from the Australian National University, whose various administrative staff often rendered me services beyond their normal duties. For their help during data collection, I thank fellow countryman Nzeza zi Nkanga, Director of the National Statistical Institute, for the supply of valuable documents, and Luc Vossen who kindly arranged for my hospitality in Europe.

I sincerely thank my academic supervisors: Professor J.C. Caldwell, for advice on academic methods; Dr. Gavin Jones, who patiently guided me in formal demographic analysis; and Dr. Helen Ware, whose intimate knowledge of Africa and French helped in appraising the demography of Zaire from a truly African viewpoint. Many thanks to Dr. L. Ruzicka, Dr. S.K. Jain and my colleague K. Balasubramanian, who provided me with useful comments and suggestions. My gratitude also to Joan Leake for typing the final version of this thesis.

I also wish to thank Pat Mooney, Secretary of the Demography Department, and those friends, especially Trees Klijn, Sonia and Phil Brodsky, who extended their most appreciated help and encouragement to my family while in Australia.

Support of a special kind came from my wife, Antoinette, and two sons, Moi and Yao, through their presence and, sometimes, through their absence to enable me to complete this study.

BONGOMA K.B.

ABSTRACT

The study attempted to appraise the demographic transition in Zaire over a period of one hundred and twenty years. Statistical investigations were based on population estimates and reverse projections established for the years 1885-1925, countrywide enumerations and surveys throughout 1925-1970, and projections developed for the period 1970-2005. Politico-economic and socio-cultural factors which were closely related to population changes are pointed out to explain observations and findings. Implications, for the future, of current population trends are also examined with an overview of Zaire's recently stated policy of "Desired Births".

The research work has demonstrated that, during the era of Belgian rule, population changes seem to have been affected less by traditional attitudes on births than by political, social and economic conditions rooted in the old Leopoldian system and exposure to new diseases. It has also indicated that the end-year of World War II appeared to mark the demographic divide in Zaire. Prior to that year, Zaire initially witnessed a certain depopulation until about the mid-1910s, followed by a short non-growth period, before the total population grew at a modestly increasing rate. This expansion tended to reduce considerably during the years of the Second World War, as a result of social disruption and harsh conditions imposed upon the indigenes to contribute to the "war effort". After World War II, really important changes in demographic trends were taking place with increasing and radically innovated measures to promote rapid population growth. Since the mid-fifties, Zaire appeared to be a country emerging towards sustained and rapid population increase and, given the estimated rate of growth, it had entered the era of population explosion by the time of Independence attainment in 1960.

The study investigated particularly the demographic characteristics of the low and high fertility areas. It was found that reasons for lower fertility were very likely more social than pathological, as historically the areas in question appeared to be (i) particularly affected by social disturbances, (ii) a place of convergence of most aborting and sterilizing diseases, (iii) exhibiting unfavourable intermediate variables, and (iv) senders but not receivers of migration. In this regard, the study suggests areas of further and appropriate investigations especially the extent to which lower fertility still persist.

Projected estimates with 1970 as base year to the turn of the century indicate that Zaire shares in common with populations of most developing countries a high rate of growth resulting almost entirely from natural increase, a rising life expectancy at birth and continuous rejuvenation of the age structure especially in the groups of school- and prime working-persons. The study has shown that the 1970 population of Zaire will double in the early 1990s, a development which entails important socioeconomic implications and requires a more rigorous definition of "Desired Births", if the recently stated policy is to mark the end of an era already casting its shadow a long way ahead.

****

CONTENTS

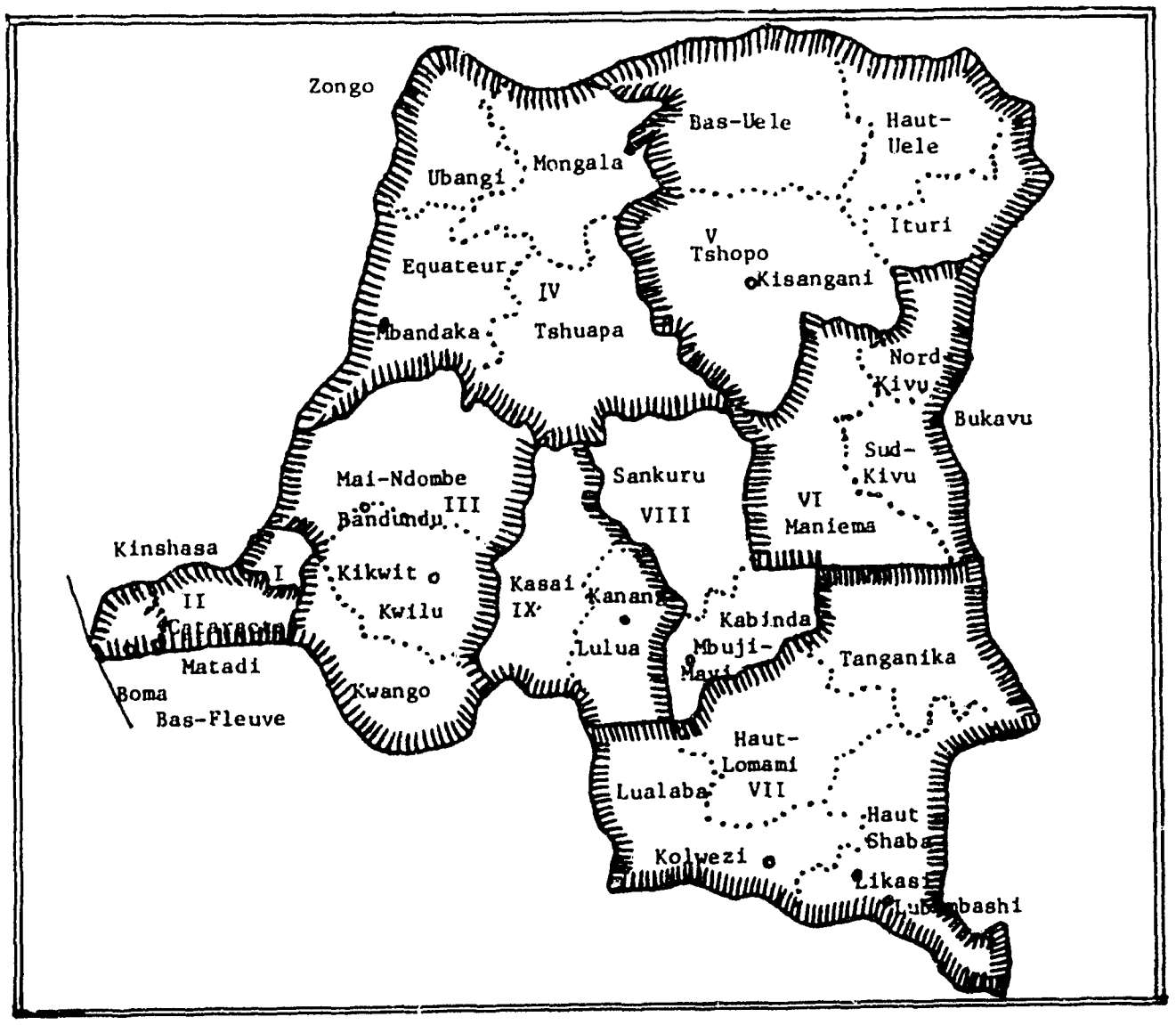
LIST OF TABLES

LIST OF GRAPHS

LIST OF MAPS

MAP 2

ZAIRE'S POLITICO-ADMINISTRATIVE DIVISIONS BY REGIONS, SUBREGIONS AND MAJOR TOWNS. 1980



I KINSHASA REGION

II BAS-ZAIRE REGION

1 Matadi Town
2 Boma Town
3 Bas-Fleuve SR
4 Cataractes SR

III BANDUNDU REGION

1 Bandundu Town
2 Kikwit Town
3 Mai-Ndombe SR
4 Kwilu SR
5 Kwango SR

IV EQUATEUR REGION

1 Mbandaka Town
2 Zongo Town
3 Equateur SR
4 Tshuapa SR
5 Mongala SR
6 Ubangi SR

V HAUT-ZAIRE REGION

1 Kisangani Town
2 Tsopo SR
3 Bas-Uele SR
4 Haut-Uele SR
5 Ituri SR

VI KIVU REGION

1 Bukavu Town
2 Nord-Kivu SR
3 Sud-Kivu SR
4 Maniema SR

VII SHABA REGION

1 Lubumbashi Town
2 Likasi Town
3 Kolwezi Town
4 Tanganika SR
5 Ht-Lomami SR
6 Haut-Shaba SR
7 Lualaba SR

VIII KASAI-ORIENTAL R.

1 Mbuji-Mavi Town
2 Kabinda SR
3 Sankuru SR

IX KASAI-OCCIDENTAL R.

1 Kananga Town
2 Kasai SR
3 Lulua SR

INTRODUCTION

ZAIRE'S POPULATION STUDY AND DATA SOURCES

1. The Population Study of Zaire

   1.1 Assessment of Available Studies
   1.2 Objectives and Scope of the Present Study
   1.3 The Methodological Approach

2. Sources of Demographic Data and their Evaluation

   2.1 Development of Population Data Collection
   2.2 Sources of Demographic Data
   2.3 Evaluation of Demographic Data

INTRODUCTION

ZAIRE'S POPULATION STUDY AND DATA SOURCES

1. The Population Study of Zaire

Because of the long-term perspective of the present research work, it is important to briefly assess, at the outset, those studies previously carried out, generally as one-time operations. Indeed, as shown later, they often tended to indicate an apparently inconsistent picture of the development of Zaire's population, especially with regard to rates of growth and vital events.

1.1 Assessment of Available Studies

In comparison with other countries of the African continent, the study of the population of Zaire is relatively long-established, having started in the early years of this century. The main impetus leading to this study was the controversy over "depopulation" of the indigenes due to King Leopold II's policies to exploit his African possession, as was the status of Zaire, then "Congo Free State", from 1885 to 1908. Some of the population literature relating to this period provides valuable information about demographic developments, but the approach was inevitably partisan and the studies, based on conjectural estimates, often mere guesswork, generally contradictory and inconclusive.

As the State became a Belgian colony, during 1908-1960, attention was directed towards factors contributing to decreased mortality and increased fertility. The amount of population literature increased continuously with improvement over time in the data collection systems: firstly, following the establishment in 1910 of a continuous registration system that provided the basis for annual population enumeration; secondly, with complementary field inquiries conducted annually from 1925 by regional staff of the colonial office for indigenous affairs and labour supply, known as the AIMO;(1) and thirdly, with the creation, in 1953

---

(1) AIMO: Service des affaires indigènes et de la main d'oeuvre; Première Direction, Direction Générale, Gouvernement Central, Léopoldville.

of a Bureau of Demography charged with the primary responsibility of designing and conducting random sample surveys. Population figures so collected were reported in various government papers, especially as appendices in the colonial annual report to the Belgian Legislative Chambers, referred to in this study as Colonial Annual Report.(1) Throughout the period of Belgian rule, a number of demographic studies were carried out, but with regard to two major colonial concerns: on the one hand, the search for a rapid population growth in response to the depopulation trend of the earlier period and, on the other hand, the estimation of current as well as future population size, with particular emphasis on the labour force. Evaluation of the demographic information of this period reveals that the quality of the records was deficient in several aspects, the most noticeable being under-coverage of remote areas and under-registration of vital events. Most population studies of those years were tackled in fields other than demography, notably religion, anthropology, economics and medicine; and they were generally descriptive and lacking in technical analysis. Among the exceptions to this were a series of works by Professor Gourou(2) on the distribution of the rural population and also an attempt by Fabri and Mayer(3) to develop population projections from 1958 to 1991. It was not until recent times, that is the late sixties, that specialized studies have been presented concerning components of growth in the late colonial period. Zaire's age structures, mortality and fertility, based on data from the second half of the fifties, have been extensively studied by Romaniuk(4) in collaboration with a team of demographers at the Princeton Office of Population Research. These studies were undertaken

---

(1) Rapport sur l'administration de la colonie du Congo Belge pendant l'année ..., présenté aux chambres législatives, Bruxelles, Établissement généraux d'imprimerie, 1916 à 1959.

(2) P. Gourou: La population rurale du Congo Belge. Introduction à l'étude de sa répartition géographique; Revue de l'université de Bruxelles, 1954. La densité de la population rurale au Congo Belge; Mémoire de l'Académie Royale des Sciences Coloniales; Tome I, vol. 2, Bruxelles 1955.

(3) M. Fabri et J. Mayer: La population future du Congo; Perspectives démographiques; Centre d'étude des problèmes sociaux et professionnels de la technique; Bruxelles, 1959.

(4) A. Romaniuk: The Demography of the Democratic Republic of Congo; in The Demography of Tropical Africa by Brass, W. et al.; Princeton University Press, 1968. La fécondité des populations congolaises; Mouton & Cie; Paris, 1968.

as a result of the countrywide sample survey of 1955-8, which provided detailed statistics for substantial analysis.

Events which occurred after the proclamation of independence, on 30 June 1960, tended to break down the systems of collecting and maintaining demographic data. Thus, while population statistics and literature abound for the pre-independence period, in contrast, the post-independence years remain almost untouched; partly due to lack of data and partly due to shortage of interested specialists. Hence, for the 1960s, only some rough estimates were developed by the Population Division of the United Nations, assuming a status quo throughout that decade; as is to be expected, most of these estimates lack pertinence and rigour. Following re-establishment of the continuous registration system and the population enumeration of 1970, Boute(1) attempted to appraise the demographic picture of Zaire in that year and to fill the gaps in broad trends of population totals since independence; further, assuming that stable population principles apply, he developed tentative projections to 1980.

1.2 Objectives and Scope of the Present Study

Despite valuable fragments provided by some earlier studies and recent specialized researches on the population of Zaire, there has been no attempt at a comprehensive analysis and assessment of the inferred demographic trends to provide a reliable basis for a population policy in accordance with the country's social and economic prospects. The present research work therefore intends primarily to assemble the whole picture of Zaire population trends during 1885-1970, through analysis of the patterns and changes in mortality, fertility and migration, as well as the socio-economic conditions which affected them. It also discusses the future population of Zaire to the turn of the century on the basis of projections from about 1970. The year 1885 is taken as

---

(1) J. Boute: La physionomie démographique de la République Démocratique du Congo en 1970; Institut National de la Statistique; Kinshasa, 1970. Perspectives démographiques provisoires pour la République du Zaire, 1970-1980, avec la collaboration de l'Institut National de la Statistique, Bureau du Président de la République; Kinshasa, 1972. Zaire: in Population Growth and Socio-Economic Change in West Africa; by Caldwell et al.; A Population Council Book, New York, 1975.

the starting point since it was in this year that population estimates for Zaire were first established, followed by further regional and countrywide estimates against which later trends may be better viewed. This study is of necessity based largely on secondary data sources, but some field work, involving interviews with government officials and academics with experience in Zaire demography, was also carried out. Data sources for this research work include reports of the administrative enumerations from the continuous registration system, the annual population inquiries, national and single-city surveys and other governmental and non-governmental records. These data contain frequent clerical and computational errors in the base statistical tables, in particular for the period before 1960; correction and adjustment of these statistics have thus been time-consuming exercises throughout the research work. Available demographic data and their quality are discussed further in this introduction.

1.3 The Methodological Approach

In order to carry out the present study, efforts were made to obtain most of the base statistics,(1) not only for the country as a whole but also for the various rural and urban areas; but no particular attempts are made to discuss regional trends separately over the period of study, in view of the frequent changes in the size of these administrative divisions.(2) Regional patterns and differentials are therefore considered largely in comparison with those of the country as a whole. This is also the case with the areas of relatively low fertility, which include one-third of the national territory and just over one-fifth of the total population, and overlap the country's administrative divisions.

---

(1) Except for the 1955-58 sample survey, repeated attempts to secure raw statistics of the colonial period have been in vain, as related documents are classified material for several decades, by regulation of the Belgian government. The AIMO archives in Kinshasa also appeared to be unavailable as a result of the chaos in administrative records after independence. Data for the pre-independence period are therefore analysed in their processed form, as provided in the colonial annual reports and other publications.

(2) Changes occurred also concerning the naming of places as indicated in map 2 and appendix A; Ref. Ordinances No. 67/221 of 3 May 1967, 68/018 of 12 January 1968, 68/180 of 11 April 1968, 69/275 of 21 November 1969 and 70/095 of 13 March 1971.

In this regard, the present study attempts to carry out further statistical investigations on differentials in demographic characteristics between the low and high fertility areas compared to the national standards. In particular, attempts are made to assess the reasons for lower fertility. Without doubt, it would require appropriate socio-economic surveys in order to explain past observations and determine the extent to which lower fertility still persist.

Because of considerable changes in procedures and disruptions in the collection of population statistics, it is not attempted to wholly adopt time-series methods which could have been used in reviewing estimates of growth components and factors affecting them for the whole period from 1885 to 1970. Instead, the patterns and trends of population change are examined on a period basis. The main body of this research work is thus divided into four major parts.

Part One reviews the early population estimates, mostly conjectural, from 1885 to 1925 and attempts to derive trends in population totals as well as the implied levels of mortality and fertiltiy. The methodology consists of examining the statistics and the socio-economic conditions of the epoch, seeking indirect evidence from evolution in proportions of broad age-groups and sex ratios, before establishing reverse projections based on adjusted data of the annual enumerations and inquiries of the late twenties and following years.

Part Two carries some time-series analysis of the annual population enumerations and inquiries between 1925 and 1955. Levels of population size and growth rates are examined before proceeding with discussions regarding estimation of death and birth rates and patterns of mortality, fertility and migration. Since demographic data for this period are available only in processed form, the methodological approach used here is concerned essentially to evaluate the internal consistency of the estimates and compare them with those for countries with similar demographic characteristics. Due to lack of appropriate statistics, discussion of migration is limited to major flows and patterns of their trends. Finally, the impact of socio-cultural and economico-political factors which were closely related to population change are pointed out to explain observations and findings.

Part Three is both a re-analysis and an assessment of the 1955-8 survey. Since this survey has already been analyzed in some depth,

those estimated parameters which appear plausible in the light of other evidence are retained.

Part Four attempts to trace the population trends of the post-independence period and to discuss the future population of Zaire to the turn of the century. There is evaluation of population estimates of the immediate post-independence decade, with special reference to the consistency between the result of the 1970 enumeration and that which might be anticipated from the previous 1955-8 survey. New projections of population for the period 1970-2005 are developed and discussed in relation to their dynamism as well as the social and economic implications. Finally, an overview is provided of the origins and prospects of Zaire's recently stated policy of "Desired Births".

2. Sources of Demographic Data and their Evaluation

In this section emphasis is placed largely on the legal dispositions and major developments in the collection of population statistics. More specific assessment of available data is dealt with further in appropriate sections.

2.1 Development of Population Data Collection

From the viewpoint of public administration, attempts to enumerate Zaire's population were initiated by King Leopold's decree of 6 October 1891 on indigenous chiefdoms. This decree formulated the preliminary regulations to administer the Congo Free State's populations and it required establishment of tables which, besides the name of the village and its exact location, were to show the names of notables, the number of huts and the total population in terms of men, women and children(1). For more than a decade, such population enumerations were erratic, but the need to increase the contribution of the indigenes to the State's revenue led to enforcement of regular enumerations of taxable persons, a development which was emphasized by the Governor General's ordinance of 12 May 1905(2). The following year, one Governor General's circular,

---

(1) Bulletin Officiel de l'Etat Indépendent du Congo; 1891, p. 261, Brussels.

(2) Idem., 1905, p. 296-7.

dated 9 March 1906, made all district commissioners responsible for enumerating the largest possible number of taxable persons including women.(1) From then on, political cahiers, reporting population totals for every village, were kept in the headquarters of the chiefdoms for annual transmission to the Governor General. The latter, in turn, allocated one chapter on population totals in his annual report to Brussels at the end of March each year.(2) These official population records are difficult, if not impossible to obtain, like most records of the Congo Free State.(3) It is, however, clear that they were substantially incomplete from a countrywide viewpoint. With the transformation of the Congo Free State into a Belgian Colony, official population records became increasingly accessible.

In 1910, a royal decree prescribed the compulsory registration of all adult males by territorial chiefdoms; information so obtained was recorded on registration books kept in the headquarters of the chiefdom. Available records indicate that such data were effectively reported in the colonial annual report only since 1916. In 1916 and 1919, additional decrees were issued reiterating these provisions but with particular reference to migration; for example, a travel permit was to be obtained from the administrative authorities by any indigene leaving his area of residence for more than 30 days. In 1922, the continuous registration of the whole population and the regular compilation of related statistics were ordered by the Governor General, but specific procedures were left to the discretion of regional Governors. At the same time an important development occurred in the recording system, namely the substitution of individual cards for registration books.(4) In 1925, in view of controversies over the interpretation and quality of statistics from the enumerations, and in order to derive estimates of growth components, it was decided to undertake complementary demographic inquiries involving some field investigations. In 1929, a unified set

---

(1) O. Louwers et G. Touchard: Recueil usuel de la législation du Congo; Tome V (1904-1906), Bruxelles, 1909, p. 603.

(2) Etat Indépendant du Congo, Département de l'Intérieur, Recueil Administratif, Bruxelles, 1907, p. 87 and 106.

(3) See footnote 1, p. 5.

(4) Congo Belge: Recueil Mensuel, Bruxelles, 1922, p. 355-6.

of regulations applicable to all was instituted. Finally, in 1933, the whole system was reviewed, to leave the overall responsibility with the AIMO.(1)

Initially limited to certain areas, the registration of births and deaths was made compulsory, in 1948, for the whole country; but this did not mean they were all collected. Maintaining indigenous registers was the responsibility of tribal authorities, the local chiefs and their secretaries, under the supervision of colonial regional officials. The latter, along with their other duties, were obliged to ensure annual tabulations of population statistics from both the continuous registration system and the inquiries. Colonial authorities recognized population estimates as being a matter of strategic importance in the post-World War II years, especially in connection with long-term labour supply and economic programmes. The AIMO thus developed regional branches throughout the country and retained the immediate responsibility for analysis of these data. In 1953, a Bureau of Demography was created under the AIMO and, eventually, the responsibility of designing and conducting demographic surveys was transferred to that Bureau within the Central Office of Statistics.

Events which occurred in Zaire after Independence caused disruption in the collection of demographic statistics as well as in the maintenance of the existing system. Administrative registers received different treatment as a result of upheavals in several areas. In particular, the rebellious outbursts and the balkanisation of the country into numerous provinces and their subsequent reunification caused movement of the documents in several directions, eventually leading to the loss of many. The demographic survey planned for 1960 was thus abandoned. Consequently, the adjusted data, based on the 1955-8 survey and United Nations model life tables, were used to estimate parameters of the population of Zaire in the sixties and following years. The general recovery of the country since 1965 made it possible once again to tackle the problem of collecting population statistics. In 1968, the government ordered the reconstitution and updating of the continuous registers throughout all the regions. Post-Independence population data were then collected as a result of a nation-wide enumeration in 1970 and some surveys of

---

(1) See footnote, p. 2.

selected cities from the late sixties onwards.

2.2 Sources of Demographic Data

As referred to in the above account, there are four main sources of demographic data for Zaire: the continuous registration system, the population inquiries or demographic surveys, and other governmental and non-governmental population records, see tables 0.1 (p.16) and 0.2 (p. 17).

(i) The Continuous Registration System

At the inception of this system in 1910, the population regulations required the inscription on a State register of each individual, indicating whether male or female, adult or child. From 1922, the record was to be made on an individual card, and the cards, filled in by village and sub-chiefdom, were then kept in the headquarters of each chiefdom or Zone. The card was to show an individual's particulars, such as date of birth or age at specified time, marital status and number of children. The legal female age for marriage, 16 years, was the upper limit for female child age, whilst the legal age for tax payment, 18 years, was the upper limit for male child age.

Additional entries were to be made from time to time. Different cards were used for males and females, and a corner clipped from the cards of children when they reached puberty. The registration card of a person leaving his home temporarily was put into a special file for "absent persons", whereas the card of a permanent emigrant was sent to an office in the place of new residence. Concerning the registration of birth or death, the regulations required the nearest relative or any witness to the event to report it within eight days of its occurrence. Subsequently, personal identification cards were issued to all adult males, on which tax payments, inoculations, periods of employment and changes of residence were recorded. Each adult was held responsible for ensuring his inscription and obtaining an identification card which must be shown on request.

Thus, a quick count of the number of registered persons in four age and sex classes could easily be made even by a barely literate clerk. In this way, total population and vital events evolution could be known at any time of counting. But, as will be pointed out later, the quality

of the records was deficient in several respects, in addition to the fact that for many decades after its establishment the registration system left uncovered substantial populations in remote areas, a situation which necessitated complementary theoretical estimates in order to derive population totals.

(ii) The Administrative Enumerations

Often referred to as administrative censuses or annual censuses, these enumerations were based on periodic overall control and evaluation of the records of the continuous registration system.

For this purpose, regional teams of officials with supporting staff were sent to various villages and sub-chiefdoms in order to interview, in a convenient place, all locally registered persons, to ensure that each person had a duly filled-in registration card and to ascertain that migrations, births and deaths had been recorded according to the regulations. Though decreed in 1910, these enumerations effectively began only in 1916 and resulting statistics are available in several publications, particularly the Colonial Annual Report submitted by the Minister of the Colonies to the Belgian Legislative Chambers.(1) Until 1935 numbers of children were provided without differentiation by sex and until 1947 all population statistics were reported by sub-region or district, but after 1948 they were usually tabulated by zone or territoire, with an indication for both adults and children of sex and type of settlement, i.e. customary and extra-customary centres. The latest population statistics reported in this way refer to 1959, the year preceding independence.

In view of the circumstances of the post-independence period, it was not until 1968 that, under the responsibility of the Ministry for Internal Affairs, a renewal and fundamental renovation of the registration system was ordered. Several working meetings were then organized at national and regional levels, in order to establish and integrate the procedures as well as regulations for agents in charge of the nation-wide population enumeration. This was finally carried out during the first half of 1970 and the results tabulated and published in July of the same year. As shown in table 0.1 (p. 16) this enumeration appeared

---

(1) More detailed statistics were published in the annual reports of the AIMO, but these documents are not available, see footnote 1, p.5.

as a mere count of regional populations by sex and by two broad age-groups of people below or above 18 years.

(iii) The Population Inquiries and Demographic Survey

Population statistics collected under this heading refer to two substantially different sets of data, as can be seen from table 0.1 (p. 16)

The Population Inquiries (1925-53): These were carried out in selected rural areas representing 3 to 6 per cent of the total population of the sub-regions studied. Their results were mainly used for adjusting statistics from the enumerations based on the continuous registration, and for providing various regional parameters such as age-sex groups, birth rates, general fertility rates, fertility of wives in polygamous and non-polygamous households, distribution by marital status, death rates, infant mortality and migration. Like the administrative enumerations, population inquiries were to be conducted each year and their results were published in several government papers, notably the Quarterly Bulletin of Statistics and the Colonial Annual Report to the Belgian Parliament. The areas to be investigated were supposedly representative of larger populations as determined by regional officials. Averages of the ratios and rates obtained were subsequently applied to the larger regional populations and to the country as a whole. As shown in graph 0.1 (p. 15), this system tended to break down during the Second World War period, but was soon restored. The latest of such inquiries was conducted in 1953, after which the system was abandoned for random sample surveys under the direct responsibility of the newly created Bureau of Demography.

The Demographic Sample Survey (1955-58): As correctly pointed out by Lorimer, "The initiation of sampling censuses in Ruanda-Urundi (1952) and in the Congo (1955-57) were major advances ... the radical nature of the innovation in the Congo was not emphasized in the official announcements. The term enquêtes démographiques, previously used for the supplementary investigations carried out in connection with the administrative censuses, was used for the new investigations. However, the differences in procedure are fundamental."(1)

---

(1) F. Lorimer: Demographic Information on Tropical Africa; Boston University Press, Boston, Mass., 1961, p. 133.

These differences were as follows: the transfer of field operations from administrative personnel primarily engaged in other tasks to specially trained teams of investigators; the selection of sample areas strictly by application of the principle of probability theory; the use of sampling ratios of different sizes, about 11 per cent of the population, on the basis of local conditions; and the enforcement of uniform questions, definitions and procedures throughout the whole country.

Begun in April 1955 and ended in February 1958, this investigation is often referred to as the 1955-57 Survey; and the director of the operations in question suggested that the figures should be considered as of mid-1956.(1) The statistical result of this survey, including a statement of methods, was summarized in a General Report issued in 1961 and followed by detailed area reports covering regions (provinces), subregions (districts) and zones (territoires). As already mentioned, the present investigation assesses the previous analysis of this data, carried out by Romaniuk, and goes on to analyse those aspects left uncovered in the earlier study.

(iv) The Socio-Demographic Surveys of Selected Towns

As soon as post-independence circumstances permitted, it was decided to undertake some socio-demographic surveys of the major towns of the country to determine their population size and dynamics of growth components.

Within this framework, the following cities were surveyed: Kinshasa, 1967; Bakavu, 1970; Matadi and Kisangani, 1971; Lubumbashi, 1972; Kolwezi, 1973; Kananga and Mbuji-Mayi, 1974. The task of carrying out these surveys was assigned to the National Institute for Statistics and the Institute for Economic and Social Research,(2) with the assistance of the French Mission for Urbanism. Some of these surveys, such as that of Bukavu, were undertaken with the cooperation of an Italian consulting firm, the Sicai.

The methods used in carrying out these surveys have been unified with regard to aspects such as the training of field investigators, the selection of sample areas, the size of sampling ratios (10 per cent),

---

(1) The correct mid-period, however, is September 1956.

(2) A unit of the Zaire National University.

contents of questionnaires and codification and classification of responses, as can be seen in table 0.2 (p. 17). The tabulated results were to be issued under the auspices of the National Institute for Statistics which includes, within its organization, a rudimentary Department of Demography.(1)

(v) Other Sources

In the colonial period, besides direct government collection of demographic statistics, a number of strong independent agencies, established in some cases with government or royal support, conducted large medical, social, educational and other research operations in selected parts of the country.

The work of FOREAMI (Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes) had a special interest in demography. This agency accepted the responsibility for medical services to a population ranging from 638,560 persons in 1941 to 840,503 in 1956 in the sub-region of Kwango and adjacent areas east of the capital city. Each year its medical staff conducted intensive field investigations to determine changes in population structures and vital rates and, as its primary objective, the incidence of major diseases. Statistical findings were summarized in the annual report of the agency. Somewhat similar investigations were conducted by medical officers in other areas.

The IRSAC (Institut pour la Recherche Scientifique en Afrique Centrale) operated mostly in the eastern part of the country, particularly in the Kivu area. It sponsored various well-designed field investigations and cooperated closely with the government in the development of its official statistics.

The CEMUBAC (Centre d'Etudes Médicales de l'Université de Bruxelles en Afrique Centrale) occasionally carried out investigations in the north and west of the country. The statistical findings in relation to population characteristics were published by the agency in the form of special brochues.

Several other agencies, such as the FULREAC (Fonds de l'Université de Liège pour la Recherche en Afrique Centrale), occasionally promoted investigations on topics directly or indirectly related to demography.

---

(1) To date, most of these survey reports are not yet available.

Graph 0.1

SYSTEMS OF POPULATION DATA COLLECTION AND THEIR DEVELOPMENT; ZAIRE, 1885-1970.-

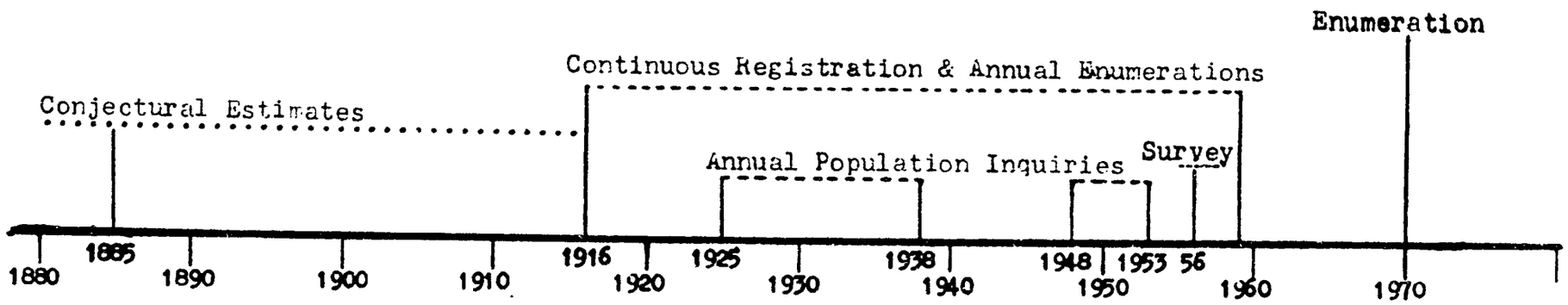


Table 0.1

DATA SOURCES: COUNTRYWIDE POPULATION ENUMERATIONS, INQUIRIES AND SURVEYS: ZAIRE, 1916-1970

DATE	SOURCE	COMMISSIONER	STATISTICS	PUBLICATION
1916-58	ADMIN. ENUMERATIONS -Based on Cont. Reg. Syst. -Annual	-Tribal and local chiefs -Sub.Reg.Officers -Central Office of Statistics	-Rural and Urban Popn. -Adults males and females -Children males & females -(16 years for girls, 18 for boys)	-Government; -Bulletins of Statistics; -Annual Report of the Colony to the Legislative Chambers; Appendices to the Governor General's Report to the Government Council
1925-38 1948-53	POP. INQUIRIES -Sample 3-6% -Annual	-AIMO (Office for indigenous affairs and labour) -Officers from Central Admin. -Central Office of Statistics	-Rural and Urban Popn. -Age-Sex groups -Birth and Death Rates -Fertility and Natality Rates -Marital Status -Migration	Ditto
1955-58	DEMOGRAPHIC SURVEY -Sample 11% = 1,400,000/13,175,000 people	-AIMO (Dept. of Demography) -IRES (University Institute for Economic & Social Research) -Central Office of Statistics	-Rural, Mixed & Urban Population; -Age-Sex group (5 yrs.) -Births & Deaths (+ Previous year) -Marital Status, Educn., Employment, Religion, Ethnic group, Migration	-Government & IRES -Overall Report + Methodology -Regional Reports -Special Report on Fertility -Special Report on Mortality
1970	ADMIN. ENUMERATION -Based on Cont. Reg.Syst.	-Ministry of Interior -District Officers; -INS (National Institute of Statistics)	-Rural and Urban Popn., -Adults males and females -Children males & females (18 yrs. for girls and boys)	-Government - Nat.Inst.Stat. -Overall Report & Methodology -Sex-Age groups and Projections Based on Stable Population Models

Table 0.2

DATA SOURCES: SOCIO-DEMOGRAPHIC SURVEYS OF SELECTED TOWNS: ZAIRE, 1967-1975

DATE	CITY	SOURCE	COMMISSIONER	STATISTICS	PUBLICATION
1967	Kinshasa	SOCIO-DEMOGRAPHIC Sample: 10% Duration: 2-6 months	-INS (National Institute of Statistics) -IRES (Institute for Econ. & Soc. Research) -SOFRED (French Society for Research and Development)	-Age-Sex groups by year; -Birth & Death Rates; -Ethnic groups; -Marital Status; -Migration by years; -Household composition; -Education, Employment, Religion	-Govt. INS & SOFRED -Overall Report and Methodology
1970	Bukavu	Ditto	Ditto	Ditto	Ditto
1970	Matadi	Ditto	Ditto	Ditto	Ditto
1971	Kisangani	Ditto	Ditto	Ditto	Ditto
1972	Lubumbashi	Ditto	Ditto	Ditto	Ditto
1974	Kananga	Ditto	Ditto	Ditto	Ditto
1969	Kinshasa	HOUSEHOLD EXPENDITURE Sample 10% Duration: 2-6 months	-INS (see above) -SICAI (Italian Consultant Services)	-Household composition -Age-Sex groups (5 yrs.) -Employment (types) -Education (cost) -Income Expenditure (Sectors)	-Government -PUZ (Zaire Univ. Press) -Overall Report and Methodology
1971	Bukavu	Ditto	Ditto	Ditto	Ditto
1971	Kisangani	Ditto	Ditto	Ditto	Ditto
1972	Lubumbashi	Ditto	Ditto	Ditto	Ditto
1973	Kolwezi	Ditto	Ditto	Ditto	Ditto

These occasional studies vary widely in scope and precision.

After Independence, more specialized information and statistics on education, employment, public health and levels of income, have been compiled by appropriate government departments or national institutions, including especially the National Institute for Social Security and the Bank of Zaire (the national issuing office). Summaries of their findings usually appear in either annual reports or occasional papers.

2.3 Evaluation of Demographic Data

Detailed consideration of the methods of collection, the reliability and comparability of demographic statistics from all the sources are given further in appropriate sections. Few remarks can thus be made as an overall evaluation of the quality of available data.

The results of official demographic compilations and inquiries under AIMO auspices were generally published in processed documents, mainly for immediate use in colonial policies vis-à-vis the indigenes. These reports included not only serial tabulations of demographic statistics, but also data on other subjects in relation to labour supply and movement. Concerning the quality of available data, it should be noted that successful operation of the continuous registration system and administrative enumerations required a certain degree of awareness on the part of the indigenes and a time-consuming dedication on the part of the administrative officers primarily engaged in other tasks. There were considerable obstacles, i.e. scattered population in rural areas, inadequate means of transport and communication, and a widespread tendency to overlook young children and concentrate on adults for labour supply purposes. It was argued that, to some extent, the early enumerations reflected the activity of the colonial officers more than the actual populations under study. Although administrative enumerations were to be carried out each year, in practice they were effectively conducted over two or three-year periods; nevertheless, enumeration statistics were reported on an annual basis. This has given rise to some totals showing impossible fluctuations in growth rates between certain successive years. Moreover, the child age limit of 18 years for males and 16 years for females, rather than the conventional 15 years for both sexes, makes for obvious difficulties in appraising

fertility levels and other vital rates as well as changes in proportions of children to total population for much of the period of this study.

With regard to the annual population inquiries, the low ratio of the sample, 3 to 6 per cent, and the arbitrary selection of areas to be investigated, certainly pose the problem of representativeness and scientific value of their extrapolation to larger populations. In addition, the lack of control over interviewers, carrying out inquiries in difficult conditions, must have led to certain shortcomings, such as the temptation to complete cards at leisure without actually collecting the data from individuals in remote areas. According to reported statistics, population totals based on these inquiries, despite some defects, showed little divergence from those obtained through administrative enumerations for the late 1920s and early 1950s; consequently, it would seem reasonable to conclude that they fairly approximated to the actual demographic situation in most areas of the country. In contrast, reported vital rates from these inquiries indicate unrealistically low level of births and deaths, even for the traditionally high fertility areas. Since both the enumerations and inquiries were conducted and their results processed by the same organization, there is room for suspicion that population totals from the two sources might have been adjusted in some way before they were officially reported.

The very fact that the 1955-58 sample survey, though technically well-prepared, extended over a three-year period and that statistical results were not processed and adjusted until several years later, could have led to double entries or omissions and other irregularities associated with movement from villages to cities or vice-versa. Indeed, survey reports carry irreconcilable discrepancies for some regional and national totals, which must have resulted from double entries or omissions. Without doubt, survey data also suffered from inaccuracies in response on the part of a population often reticent with representatives of colonial authorities and reluctant to register vital events such as deaths and still-births. If survey estimates of total population do not differ widely from the corresponding figures of the administrative enumerations for the same period, this is only to be expected, as the registration records served as a sampling frame and expansion factor for deriving survey estimates. Thus, not wholly independent from administrative enumerations, the sample survey

naturally entailed limitations on the trustworthiness of these enumerations. This was particularly the case with the region of Shaba where, for some reason, certain areas were not surveyed. It should also be noted that, although the reports of this survey abound in demographic detail, they do not include statistics on infant mortality.

Most observations concerning the quality of demographic statistics for Zaire in the colonial period still stand for data collected in post-independence times. It has been observed that the socio-demographic survey conducted in Kinshasa in 1967 did not include questions and answers on births which had occurred during the 12 months preceding the survey. Also, as a result of upheavals around the time of independence, several major cities were subject to sudden and considerable growth, owing to a massive influx of migrants from rural areas in search of apparently more secure centres; such a development surely calls for particular treatment of rates and ratios in comparing the growth of the cities in those years and after.

Even though each of the demographic sources is in itself open to question, the treatment and evaluation of the data may be greatly improved by using these sources in conjunction. Thus, the demographic data for Zaire, as derived from administrative enumerations and different surveys, and bearing in mind the deficiencies as outlined above, will be used as a framework for analysis and estimation of population trends for the period covered by this study.

PART ONE

THE EARLY POPULATION ESTIMATES FOR ZAIRE, 1885-1925

Introduction

Chapter I : Population Totals and Regional Distribution

Chapter II : Socio-economic Conditions of the Epoch

Chapter III : Depopulation Trends Reconsidered

Conclusion

Introduction

Demographic analysis is based on numerical data about the characteristics of the population under study. Population trends in Zaire can, therefore, be analyzed from the year 1925, after which annual demographic inquiries were carried out to derive data on vital events and so supplement statistics from the annual enumerations initiated in 1916, on the basis of the continuous registration system established in 1910. However, in view of the controversial estimates and the polemical literature concerning Zaire's population size and growth during the years around the turn of the century, the present writer will attempt to appraise the demographic situation of those years and suggest the most plausible estimates for the period before 1925. Such a picture provides an historical perspective against which later trends may be better viewed.(1)

During the years immediately following the creation of the Congo Free State, several estimates of population totals were made by European explorers or geographers and by colonial administrators or missionaries. By 1895, Wauters undertook the initial attempt to comparatively assess the different estimates and sources of the State's population size and geographical distribution.(2) Until well into this century, Zaire's population estimates, based on limited observations by non-technical methods, were generally contradictory and inconclusive as shown in the following pages. The general impression from the literature in question is one of an apparently large

---

(1) As stressed by Carrier and Hobcraft, "Before attempting any detailed analysis for a particular country, it is essential to know something of the history of that nation over the previous fifty years or so. This is vital when using any model that forces the demographic characteristics to take on certain pre-defined patterns." Significantly, such a remark would apply to the analysis of the 1955-58 survey of Zaire which, to date, provides demographic estimates most commonly referred to.

Ref. Carrier, N. and Hobcraft, J.: Demographic Estimation for Developing Societies; Population Investigation Committee, London School of Economics and Political Science, London; 1971; p.1.

(2) Wauters, A.J.: Referendum sur la question de la population de l'Etat Indépendant du Congo; in Le Mouvement géographique (Journal populaire des sciences géographiques), Bruxelles, 1895, p. 91, 17, 110, 126 and 127, and also 1898, p. 103, 104, 105.

indigenous population gradually decreasing in total and birth numbers over time with further colonial occupation of the land. The causes and numerical estimation of depopulation are reconsidered in chapters II and III respectively. It should be noted that a re-evaluation of the information concerning this early period, with demographic variables based on later enumerations and inquiries, would appear to demonstrate that, beyond the question of depopulation which dominated most discussion on Zaire's demography, its population was still in the first stage of the demographic transition characterized by high levels of fertility and mortality.

In tracing Zaire's population trends for the period 1885-1925, our methodological approach will consist of three stages corresponding to the three successive chapters of Part One of this study: first, the review of reported estimates and also the techniques used in their derivation; second, the examination of the socio-economic conditions of the epoch and their impact on the components of growth; third, the appraisal of available indirect statistical evidence and opinions on the question of "depopulation", prior to the establishment of reverse projections on the basis of adjusted data from the annual enumerations and inquiries of the late twenties and subsequent years.

CHAPTER I

THE POPULATION TOTALS AND REGIONAL DISTRIBUTION

1. The Early Estimates of Zaire's Total Population

In his accounts of travels and observations in the Zaire river basin, Stanley estimated the total population of Zaire at 28 million people for a country measuring 1,700,000 square kilometres.(1) These figures did not include later territorial extensions in the south, east and north,(2) as per map 7 (p. 498). Further confusion over Stanley's estimate resulted from the fact that a printing error in the introductory part of his book indicated a figure of 43 million inhabitants as was wrongly estimated in the original work.(3)

During the early years of the period covered in this chapter, there were marked differences in the estimates of total population. According to Wauters, Reclus asserted that a total of 20 million was less than the actual figure, and Söllner suggested a total of 30 million as a definite minimum. Drs. Wagner and Supan, in their work on world population, proposed a total of 17 million, whereas Governor General Wahis, after visiting the upper river, and on the basis of information supplied to him by State agents years after Stanley had explored the remotest regions, affirmed that the population total could be around 40 million.(4) In his studies of King Leopold's policies, Morel referred to the total population of the State as being

---

(1) Stanley, H.M.: Cinq années au Congo, 1879-1885, Institut National de Géographie, Bruxelles, 1886. See also map 6 (p. 497).

(2) Most of the early estimates of total population were derived by assuming, in the first instance, an average known density for the country, for example, 15 people per square kilometre according to Stanley. In this context, the early estimates under-evaluated the population by about 28 per cent.

(3) Stanley, H.M.: Op. cit.; Avant-propos, p. xv. See also Louis, W.R. and Stengers, J.: E.D. Morel's History of the Congo Reform Movement, Oxford, 1968, p. 253.

(4) Wauters, A.J.: in Le Mouvement Géographique, op. cit.

about 20 million inhabitants.(1) Coquilhat, after residing in Zaire's Equateur region, estimated at 12 to 16 million people the total population, assuming that other regions were similarly populated.(2) Lastly, relying largely on Grenfell's notes, Johnston estimated at 15.5 million persons the population total by the turn of the century.(3) Journals and memoirs of explorers and early administrators enthusiastically cite examples of large villages and densely populated areas encountered in the course of their travels throughout the country. Admittedly, all reports recognized that the population was unevenly distributed; besides the densely populated regions, there were also those with widely-separated villages and almost deserted areas. In his tentative appraisal of the various estimates, Wauters concluded that Stanley's figure of 28 million must have been close to the reality, even though he made no critical examination of how this figure was obtained. In any case, this conclusion did not clarify the controversy over the population total and growth in those years.

When the State became a Belgian colony, attempts were made to secure population statistics through annual enumerations on the basis of the continuous registration system. This system did not function satisfactorily for almost a decade, partly because colonial administrators were soon concerned with the developments of World War I, and partly because the early enumerations focussed on male adults for tax payment purposes, hence neglecting most male children as well as females. Nevertheless, from 1916 on, the enumeration results attracted both public and academic attention, not only because they indicated much smaller population totals than expected, but also because they showed considerably low proportions of children in relation to adults,

---

(1) Morel, E.D.: Founder and Secretary General of the Congo Reform Association, based in London, March 1904, Morel was among the greatest critics of the Congo Free State administration with regard to the abominable conditions within the State. He kept up the case against the Sovereign King's administration in several publications, notably the book entitled "Red Rubber", ed. T. Fisher, Unwin, London 1906.

(2) Coquilhat, C.: Sur le Haut Congo; Bruxelles, 1888, p. 471.

(3) Johnston, Harry: George Grenfell and the Congo; two volumes, Hutchinson & Co., London, 1908.

especially females.(1) For illustrative purposes, the results of some of these early enumerations are given below.

Population in Thousands

Year	Male Adults	Female Adults	Children Both Sexes	Total
1916	1,709	1,838	1,599	5,146
1917	1,954	2,039	1,923	5,975
....				
1922	2,347	2,301	2,367	7,015
1923	2,480	2,500	2,746	7,727

It should be emphasized that these figures referred solely to those areas under effective colonial control. However, throughout the early twenties, official reports estimated the total population of Zaire at about 10.5 million persons, including between 3 to 3.5 million persons presumed not covered by enumeration operations.(2) In view of the much higher earlier estimates, the results of these enumerations gave rise to further depopulation controversy, the discussion of which is deferred to later chapters.

2. Regional Distribution and Density

The earliest estimates referred to the regions of Bas-Zaire, Bandundu and Kinshasa. After several reconnaissance trips and complete exploration of the lower-river area, Lieutenant de Bergh, Head of Armed Forces in Boma (1888-1891), estimated the density of Boma

---

(1) Among the analyses of these results were:
- Rutten, A: Notes de démographie Congolaise; in Congo, RGCB, Tome II, p. 260, Bruxelles, 1920.
- Legrand, L.: La dépopulation du Congo Belge et les recensements de 1917; in Congo, RGCB, Tome I, p. 202, Bruxelles, 1921.
- De Wolf: Contributions à l'étude de la démographie Congolaise; in Congo, RGCB, Tome I, p. 761, Bruxelles, 1923.
- Schwetz, J.: Contribution à l'étude de la démographie Congolaise; in Congo, RGCB, Tome I, p. 297, Bruxelles, 1923.

(2) Colonial Annual Report, op. cit., 1916-1924.

district at 15 people per square kilometre and that of Mayumbe at 20. He reported chains of large villages along the Lukula and Lubuzu rivers, listing 110 villages within 450 square kilometres. He also remarked that this area had long suffered from slave-trading, as Boma was an important port for shipping of cargo. The Cataractes area seemed less populated and Captain Avaert estimated its density at 4.5 people per square kilometre, emphasizing that such a figure was less than the actual. According to Governor Costermans, the land between Mbanza-Ngungu and Kinshasa up to the Kwango river was densely populated.(1) According to Thiery, manager of the "Compagnie Belge du Haut Congo", along the main river, north of Kinshasa up to the Equator, few villages possessed large populations apart from Tshumbiri (10,000), Bolobo (30,000) and Lukolela (5,000). Further in the hinterland, however, there appeared to be areas of dense population. In 1892, for example, De Cooman, a colleague of Thiery, estimated at 20,000 the inhabitants of Mai-Ndombe bank, after he had visited four large villages in the lake area: Inongo, Empanza, Ibali and Embali; while Thiery estimated at 40,000 people the river tribes of Lake Tumba.(2)

All reports agreed that the Equateur region was densely populated throughout its hinterland, approximating 20 people per square kilometre. Along the Ubangi river, from Bobangi to Zongo falls, there were a dozen large villages, such as Giri, accounting for some 25,000 people. The land within the curve of the Ubangi and Mongala rivers was also well populated, particularly among the Banza and Bangwandi tribes, west of Dua (white river), as reported by Captain Heymans and one Schagerstroum. After Captain Lothaire had visited the area between the Itimbiri and Mongala rivers, the population of the Mongala basin was estimated by Thiery at 2 million people. The latter also reported nearly 2 million inhabitants of the Ruki basin, extending to Busira, Tshuapa, Salonga and Momboyo rivers. The river basins of the Lulonga up to the Lopori and the Ikelemba showed similar patterns of population settlements. From Mbandaka to Bumba, both banks of the Zaire river seemed populous and showed sizeable densities at Mobeka and Upoto/Lisala. Captain Fievez (District Commissioner for Equateur)

---

(1) Le Mouvement Géographique; op. cit., 1895, p. 92, 98, 104.
(2) Ibid., 1895, p. 176.

and Lieutenant Lemaire reported that villages in the hinterland were much more populous than those on the river banks to which fishermen came to settle. For example, a compound of 1,200 huts was judged to represent from 5,000 to 6,000 fishermen whose home village was situated 10 to 12 kilometres from the shores. From this the total population of the home village was calculated to be about 25,000 people, allowing for women and children. In this way, several reports estimated the population of the Equateur region at 5 to 6 million.(1)

Accounts for the Haut-Zaire region indicate a less dense population in the southeast. Captain Tobback, head of the colonial armed forces in Kisangani from 1887 to 1893, estimated the inhabitants of the river banks from the Lomami-Zaire junction to Kisangani at 28,000; about 20,000 in Kisangani and over 60,000 between Kisangani and Riba-Riba. He quoted Arab slave-traders as reporting immense populations in the countryside. After the expeditions of Stanley and Lieutenant Dhanis from Basoko and Kisangani to the lake in the north-east, it appeared that the areas along these routes were less populated in comparison with villages in the Equateur region. Schweinfurth estimated the number of the Azande tribesmen at 2 million and the Mombutu at one million; figures which implied a density of 97 people per square kilometre. An investigation by Captain Daenen, who travelled throughout the region for more than two years, estimated the population of different ethnic groups as follows: Avungara, 2,000,000; Bandja, 2,000,000; Mombutu, 1,500,000; Babwa, 200,000; Mumbati, 250,000; and Abarambo, 50,000. The total estimate for the Haut-Zaire region was then 6 million people.(2)

The Kivu region, particularly the south, was the most densely populated region of the country according to Captain Tobback, Hinde, Delcommune and Briart. For the Maniema area north of Lukuga, however, reports stressed that Arab raids had decimated a number of villages, and total population appeared far below its level in 1870, when Livingstone first visited this area. Captain Storms, head of colonial forces in Tanganika, estimated the population west of Lake Tanganika at 7 people per square kilometre, despite several villages of about

---

(1) Le Mouvement Géographique; op. cit., 1895, p. 110, 111, 107.
(2) Ibid., 1895, p. 92-93, 126, 127.

28.000 inhabitants within 10 kilometres of the Lomami river basin.(1)

The north east of the regions of Western and Eastern Kasai appeared to be less populated. Major Wissman and Captain Le Marinel reported the impossibility of victualling their caravans north of Kananga. The eastern basin of the upper Kasai river seemed very well populated; particularly in the hinterland plateaux of the Sankuru basin. Major Parminter estimated the people of the Pania-Mutombo locality, near Lusambo, at more than 10,000. Wissman suggested over 90 persons per square kilometre as the density of the population along the Lubilash and Lomami rivers. Le Marinel reported chains of densely populated villages in the southern Kasai, as he crossed the Bambwe, Baloch and Bashilenge lands; he suggested a density of 20 per square kilometre in the west, rising to 32 in the eastern area of the Baluba ethnic group. Wissman suggested an average density of 26 people per square kilometre for the region as a whole.(2)

Exploration of the Shaba region revealed dense population in the north and west, while the south seemed rather sparsely inhabited. Accounts by Briart and Delcommune of travels along the Lukuga, Zaire, Luvua and Luapula basins reported numerous villages each extending over about one kilometre, though rarely with more than 2,500 inhabitants. The area of Haut-Lomami, bordering Zambia, appeared almost deserted, especially between Lake Nzilo and the Lufira river basin. The west of the Shaba region, in the territory of the old Lunda Empire, seemed densely populated. Lieutenant chaux reported numerous villages with large populations and estimated the subjects of Chief Mwata-Yamvo at 30,000 people.(3)

It is obvious from the above accounts that estimates of regional populations during the Congo Free State epoch did not refer to a particular year and were collected through varying procedures; this renders their comparison somewhat inappropriate. Only well after the establishment of the contiuous registration system and the annual population enumerations based upon it, were regional population statistics collected at fairly close intervals of time and through

---

(1) Le Mouvement Géographique; op. cit., 1895, p. 95

(2) Ibid., 1895, p. 105

(3) Ibid., 1895, p. 93, 105.

Table 1.1

ZAIRE'S ENUMERATED[1] POPULATION OF 1917 AND 1922

Province or District	Chiefdoms	1917		1922	
	1917	Pop.	Rank	Pop.	Rank
P. CONGO-KASAI	999	1,320,000		1,949,000	
D. Bas-Congo	240	263,000	9	284,000	13
D. Moyen-Congo	162	103,000	18	136,000	21
D. Kwango	61	44,000	22	365,000	10
D. Kasai	161	460,000	4	726,000	2
D. Sankuru	375	451,000	5	438,000	6
P. EQUATEUR	2,097	1,256,000		1,422,000	
D. Equateur	927	480,000	3	463,000	5
D. Ubangi	81	82,000	19	163,000	18
D. Lulonga	466	220,000	13	241,000	16
D. Bangala	422	335,000	7	402,000	8
D. Lac Leopold II	201	139,000	15	153,000	20
P. ORIENTALE	2,776	3,060,000		2,842,000	
D. Stanleyville	731	253,000	10	353,000	12
D. Ituri	316	315,000	8	494,000	4
D. Bas-Uele	265	440,000	6	422,000	7
D. Haut-Uele	217	654,000	2	671,000	3
D. Aruwimi	367	237,000	12	255,000	15
D. Maniema	530	185,000	14	301,000	14
D. Lowa	275	251,000	11	355,000	11
D. Kivu	75	725,000	1	729,000	1
P. KATANGA	223	366,000		802,000	
D. Haut-Luapula	58	70,000	20	137,000	19
D. Tanganika-Moero	78	122,000	16	174,000	17
D. Lomami	69	121,000	17	379,000	9
D. Lulua	18	53,000	21	112,000	22
ZAIRE	6,095	5,975,000		7,015,000	

[1] Excluding population not covered by the continuous registration system, estimated at about 3.0 to 3.5 million persons by 1922.

Source: Colonial Annual Report, 1917 and 1922.

similar procedures. In those years, Zaire was administratively divided into four provinces with altogether 22 districts, as shown in table 1.1 (p. 30), which gives the enumerated population by province and district for 1917 and 1922. This table is given here for illustrative purposes only, in view of substantial defects in reported statistics, as discussed in the following section.

3. Critical Examination of the Early Estimates

During the Congo Free State period, though the calculation of the number of inhabitants was done by rough estimate, various methods were used in arriving at regional and countrywide population totals. For the Bas-Zaire region, Lieutenant de Bergh wrote that the population of each settlement could easily be appraised by the number of huts; thus, his estimates took as average three persons per 2 huts, assuming that a man with several wives would allocate one hut to each, that each adolescent would have his own hut and that each wife would live with her young children.(1) Briart based his estimates on a similar method for the Kivu region, drawing upon information from villages he had personally visited or received reports from. Other investigators, such as Captain Avaert, calculated their estimates by totalling the assumed average populations in villages of different size, after these had been multiplied by the total number of villages of similar size; e.g. 50 villages of 250 inhabitants, plus 100 villages of 100 inhabitants. Subsequently, density was derived by dividing the total population by the total area,(2) for further comparison with other regions of the country. Another method, used by Captain Daenen to estimate the population in the Haut-Zaire region, was based on the number of soldiers, carriers and oarsmen mobilized or supplied by indigenous chiefs. As expeditions moved by land or by river, these soldiers and auxiliaries were recruited or renewed locally; e.g. at a rate of 300 rowers each day. Regional estimates were subsequently derived by multiplying the number of mobilized people by a certain ratio which allowed for women and children.(3) Another more general method consisted of extrapolating to the whole region the estimated density of

---

(1) De Bergh: Le Mouvement Géographique; op. cit., 1895, p. 98.

(2) Avaert: Ibid., p. 92.

(3) Daenen: Ibid., p. 93

surveyed villages and their surroundings, and assuming that the density of the remaining area was equal, lower or higher, depending on information given by indigenous leaders. In this way, assuming an average density of 200 per square kilometre, and given the surface of 312,500 square kilometres, Fievez estimated the population of the Equateur region at 6 million.(1)

The total population of the country was subsequently obtained by adding regional estimates, adjusted according to information supplied by other contemporary explorers or colonial administrators. In view of the diversity of methods of estimation and the fact that the resulting statistics were more often derived from the records of explorers than from planned investigation, it is fair to conclude that these early estimates cannot necessarily be considered reliable. Firstly, there was neither actual enumeration nor information on the composition of the population in the villages. Estimates at sight for different areas are unlikely to agree with actual population figures or provide any information about the composition of each village. Moreover, even after the confidence of the villagers or their leaders was won, it remains questionable whether they kept and supplied correct information about the numbers of their wives, children and huts, or those of their neighbours. Secondly, based on explorers' and writers' own accounts, information on population could be collected for only parts of the areas along the rivers and caravan routes; hence estimates for remote areas remained outright guesswork. Thirdly, the early estimates of population totals did not refer to one single year; even the years relating to each of the regional components, from which the totals were calculated, were often not stated. Stanley's estimates referred to the period 1877-1885; de Bergh's estimates for Bas-Zaire were made for the years 1888-1891; and Daenen's figures for the Ueles were compiled ten years after Stanley had visited the region of Haut-Zaire; while Briart, Fievez, Lemaire, Thiery and others apparently supplied statistics for several areas without reference to the year.

The likelihood that the early estimates of Zaire's population were the result of unavoidable misreporting and limited coverage is reinforced by the extreme mobility of the indigenes, often including

---

(1) Fievez: Le Mouvement Géographique; op. cit., 1895, p. 176.

women and children. The hardship of the socio-economic conditions of the Congo Free State must have increased this mobility, contributing as it did to wars, evasions, forced migrations and resettlement of chiefdoms.(1) Added to the population mobility were other factors such as fear and distrust of State representatives, since population counts were directly and primarily associated with tax payment in kind or otherwise. In any case, the large discrepancies found in the total population estimates, varying from 11 to 40 million, show how little was known of the country's population; the colonial explorers and administrators were more concerned with the interests of the Europeans than those of the natives. They also indicate the conjectural nature of the population figures then collected.

The situation remained virtually unchanged long after the Congo Free State became a Belgian colony and a continuous registration system of indigenes had been established. For example, the 1917 enumeration indicated a total population of 44,000 persons for the sub-region of Kwango, see table 1.1 (p. 30), whereas, at almost the same time, Schwetz reported 78,000 inhabitants for the zone of Kikwit alone; this was the most populous, yet only one of eleven zones, of the Kwango sub-region.(2) By 1921, the enumerated population for the whole sub-region amounted to 325,000 and the estimated total population was 665,000 persons. This clearly indicates that the early enumerations, as admitted in official reports, understated the population by as much as 50 per cent.

It is important to note that these early estimates have been frequently quoted in official and unofficial publications, almost invariably without qualification as to their limited reliability, and usually to provide a basis for speculations about massive colonial depopulation of the country or a supposed racially determined low fertility of certain populations.(3) Another important note concerns

---

(1) The socio-economic conditions of that period are discussed in Chapter II.

(2) Schwetz, J. Dr.: "Contribution à l'étude de la démographie congolaise" in Congo, 1923, I, p. 301-303. Dr. Schwetz was charged with the direction of the medical team for action against sleeping sickness in the Kwango sub-region from 1917-24. In the face of controversy over depopulation, this medical team, like others throughout the country, undertook population enumeration of their areas.

(3) The question of depopulation is dealt with in Chapter III, while while the problem of low fertility is discussed in Chapter XI.

the time reference of the Congo Free State population totals, as they were estimated in the initial stages of exploration or occupation, extending from about 1880-1895. For convenience of analysis, although the components and totals of the figures did not refer to one particular year, this study will consider them as centred at 1885. To quote from a United Nations manual, "It is frequent practice to r[illegible]n a conjectural estimate over a long series of years without adjustment for possible change in population size, although retention of the figure implies that population is regarded as nearly constant. Such unadjusted estimates have no precise time reference, since they apply over a long period of time."(1)

One final observation is that these early estimates varied from between 1.1 and 4 times the approximate figure of 10 million people arrived at when countrywide enumerations were carried out in the late 1910's and early 1920's.(2) Despite differing speculations and sweeping generalisations, one has to reconcile the apparent evidence that the population of Zaire was greater in 1885 than a quarter of a century later.

Before attempting such a reconciliation, especially in view of the lack of firm statistical evidence, it is most useful to examine, as already stated, the socio-economic conditions which prevailed at that time and the extent to which they might have affected population growth.

---

(1) United Nations: Manual I, Methods of Estimating Total Population for Current Dates; Population Studies, No. 10, New York, 1955.

(2) The reliability of the results of these enumerations is discussed in Chapter IV.

CHAPTER II

THE SOCIO-ECONOMIC CONDITIONS OF THE EPOCH

To the reader with only superficial knowledge of the history of Zaire, many events occurring during the early years of colonization would seem of little significance. In reality, the often simultaneous occurrence of these events produced considerable and widespread devastation of human life and must have had a profound effect on population size, composition and subsequent growth. How is it that such significant events have been ignored? The answer is clearly given by the Belgian General Henry de la Lindi: " ... It is because Leopold II, fearing without doubt foreign competition, preferred to hush them up as far as possible than bestow them glorious but dangerous repercussions. Moreover, the archives of the colony, it is known, were destroyed in 1908, causing in its history a blank which became shameful to our national interests".(1) Whilst it is recognized that the interaction of these events makes any consideration of them under separate sections somewhat artificial, such a breakdown is useful in helping the appraisal of their direct and indirect impact.

1. Colonial Expeditionary Conquests, 1877-1910

Contrary to King Leopold II's claim that the sovereignty of the old kingdoms, empires and chiefdoms now forming the national territory of Zaire was transferred to the International African Association (himself) through more than 450 treaties,(2) in reality, the Belgian Sovereign gradually assumed military control over the entire land, at the same time demonstrating skilful diplomacy with European powers.(3)

---

(1) Général Chevalier Henry de la Lindi: Introductory letter to the book La Force Publique de sa naissance à 1914; Participation des militaires à l'histoire des premières années du Congo. IRCB, S. Sc. Morales et Politiques, Tome XXVII, Bruxelles, 1952.

(2) Stanley, H.M.: Cinq années au Congo; op. cit., p. 12.

(3) Soon after the 1885 Act of Berlin was signed, with recognition of the sovereignty of King Leopold II over the entire Congo Free State land, the contributory powers began to regret that they had handed over a magnificent territory to the control of the Belgian Sovereign. See Johnston, H.: George Grenfell and the Congo; op. cit., p. 453.

In the course of Belgian exploration and conquest of the land, there was ever-increasing use of military force to impose control on occupied areas and their peoples. Most of the agents of the Belgian Committee of the International African Association, and the Committee of Upper River Studies as well as subsequent colonial administrators were soldiers, and as such able to command and use troops whenever necessary. The funds for administration of the Congo Free State were essentially allocated to military salaries and operations, to the extent of 58% in the 1896 budget, while the King's armed forces in 1898 reached a total of about 20,000 men.(1) Everywhere, the exploratory expeditions encountered hostile and suspicious populations who, for more than three centuries, had known only slave traders. Nearly all such contacts gave rise to armed conflict which, more often than not, resulted in defeat with heavy loss of native lives. Whereas the indigenes used arrows and other primitive weapons for defence, the King's troops employed the best armaments of the epoch, including heavy cannons made by Krupp, Nordenfelt or Wahrendorff as well as special machine guns of Maxim-Rotweic type, various rifles and pistols.(2)

In 1877, King Leopold II charged several Belgian expeditions with the creation of stations in the Zaire basin. The first expedition to reach Zaire went from Zanzibar to Lake Tanganika where Lieutenant Storms set up the station of Mpala after defeating hostile natives, the Rogas-Rogas, on the way.(3) Owing to difficult circumstances, expeditions through the east never went beyond the coastal area and the station was handed over to the White Fathers of Cardinal Lavigerie. Almost at the same time, expeditionary troops led by Stanley to the west of the country, disembarked at Banana for an assault on the lower river region. After setting up the station of Vivi on 6 February 1880(4) and conducting several successful battles with the indigenes, particularly at Isangila and Manyanga, the troops reached Kinshasa on 29 November 1881 to engage in further expeditions in the north and the interior.

---

(1) La Force Publique de sa naissance à 1914; op. cit., p. 517.

(2) Ibid., p. 102-104.

(3) Ibid., p. 19.

(4) Vivi before Boma served as capital city which, in 1923, was transferred to Léopoldville, a station created by Stanley at about 8 kilometres from the old city of Kinshasa.

Initially, the King's troops were composed of Belgian officers, mercenaries and so-called "free slaves" from specialized firms which supplied them in hundreds along the west and east coasts of Africa, mostly in Zanzibar.(1) As expeditions proceeded additional soldiers and auxiliary personnel were recruited from defeated populations to meet the increasing organizational needs, i.e. installation of garrisons, building of defence blockhouses, transportation of equipment and general administration of conquered areas, the more so as frequent incidents disturbed the precarious peace. The establishment of stations along the rivers Zaire and Kasai gave rise to further pitched battles, at Kimpoko and Bolobo, and with tribesmen of Bangala, Wagenia, Basonge, Bakutu and Kiokios. On 1 August 1885, one month after the proclamation of the Congo Free State, King Leopold notified the European powers of modifications in the administration of his African possession, reminding them of the declaration of neutrality and describing supposed new boundaries of the State. As no power opposed these new boundaries and the King had established the chain of stations as far as Basoko, Bena Kamba and Lusambo, the expeditions embarked on a complete occupation of the interior and the borders to assert the State's supremacy throughout the territory. The King's troops were by this time considerably reinforced and had been known since 1888 as the "Force Publique".

The conquest of the Ubangi basin gave rise to battles not only against hostile indigenes but also against competitive French expeditions from the left bank of the river; the major clashes took place around Yakoma and Bo, near Zongo, with the Force Publique commanded by Captain Van Gele. The expeditions through the Itimbiri basin for the conquest of the Ueles by Lieutenant Miltz met violent opposition from the indigenes around the junction of the rivers Uele and Bima. The reconnaissance of the Mongala river basin by Lieutenant Baert occasioned numerous battles with tribal groups such as the Basoko, Bakutu, Mabali and Sebi. The Vankerchoven expedition, designed to complete the conquest of the Uele and occupy the northeast of the country up to the

---

(1) When leaving Zanzibar for his first journey across Africa, in 1874, Stanley had a suite of 350 Zanzibarian soldiers who included Krouboys, Senegalese, Haussas, Yorubas, Monrovians, Somalians, Abyssians, Egyptians, Elminas and Zulus.

Nile and Sudan borders, was the most heavily equipped in both number of troops and military materials.(1) On its route, from Bumba to Dufile, it fought several battles, notably at Yambila, Djabir, Bima, Bamokandi, Niangara and Tagole Mani, before it brought under control the territories of the Sultan of Uele and the Chief of Bomu. The effective occupation of the Bomu basin necessitated several expeditions, the most successful of which was led by Lieutenant de la Kethule. The major battles were against the armies of the sultans of Bangaso, Semio, Rafai, Ndoruma and Sasa; further clashes took place at Baraka near the river Mbali and in the regions of Bar-El-Ghazal and Dar Fertit. During this expedition, the Azande people slaughtered the State troops at Mozunga before defeat a couple of years later by Captain Chaltin when the Franco-Belgian conventions of 14 August 1894 finally determined the Ubangi-Bomu borders.(2)

Several expeditions were also necessary for the effective occupation of the southern area between the Kwango and Kasai rivers, as the territorial limits in this region were left undefined by the Belgian-Portugal convention of 14 February 1885.(3) The most determinant of these expeditions was led by Commandant Van De Velde from Matadi through Popokabaka to Kasongo Lunda and further down to Kapenda where the troops engaged in heavy battles against the forces of Chief Mwene Putu and the tribal groups of Bayaka and Lunda. Exploratory conquests in this direction were ended with the Belgian-Portugal convention of 25 May 1891, which defined the common border with Angola up to Zambia and also with the enclave of Cabinda.(4)

The imposition of State control over the region of Shaba, especially in the south east, occasioned battles with competing expeditions of the British South African Company and the German East African Company. Heavy battles also occurred between the State troops and the indigenous armies of King Msiri entrenched in his capital at Bunkeia, Chief Myzembe in the Haut-Lomami area and Sultan Chiwala along the Luapula river south of Lake Bangwelo. In view of the formidable opposition of these armies

---

(1) La Force Publique de sa naissance à 1914; op. cit., p. 125-7.
(2) Ibid., p. 140.
(3) Ibid., p. 155.
(4) Ibid., p. 163.

the troops combined with expeditions of chartered companies, for example, those led by Delcommune on behalf of the "Compagnie Congolaise pour le Commerce et l'Industrie" and also by Captains Stairs and Bia for the "Compagnie du Katanga", until the Anglo-Belgian agreement of 12 May 1894 fixed the present borders from upper Tanganika to Zambia.

In order to bring under control the area east of the Lomami river, the State had to combine Dhanis' troops with those of Descamps in Tanganika as well as raids by Lothaire and Henry around the lakes of the east. This resulted in effective control of the upper-river region. However, when on 9 November 1884 Germany recognized the sovereignty of the International African Association, the territorial limits in Ruzizi river basin were left undefined. Thus, in 1894, Dhanis' troops set out from Uvira for the conquest of the area north of Lake Tanganika; several battles took place at and around Birizi in 1897, until reinforcement and victory by Captain Hecq's troops at Baraka and Kaboge over indigenous armies and German expeditions.

The conquest of Kivu and the north east of the country led to prolonged fighting, notably around Shangungu, Goma, Rutshuru and Kasindi, until the convention of 14 May 1910 between England, Belgium and Germany finalized the colonial limits from Lake Tanganika northwards along the 30th Meridian.

Available records of these expeditions do not provide statistics of loss of life among the indigenes. It is important to note, however, that King Leopold's expeditionary conquests, with particularly heavy wars during 1889-1905, resulted in a marked extension of the State's frontiers, as per map 7 (p. 498). It is also pertinent to recall that during these years, in addition to direct participation in warfare - often in both warring factions - large numbers of indigenes, including women and children, were charged with transportation of heavy military equipment and providing for the troops, from the mouth of the river to the remotest areas of the country.

2. Slavery and Anti-Arab War Campaigns of 1892-6

After the formation of the Congo Free State and until well into this century, slavery was still continuing in large parts of the

the country, although on a much lesser scale since exportation had ceased.(1) Indeed, in 1887, Captain Macar reported Europeans from Angola trading slaves in the region of Kasai where he had settled.(2) In 1888, following a sojurn of one year in the upper river, the Scottish missionary, Arnot, reported continued slave trading not only by Arabs but also by Europeans of Portuguese descent.(3) At the beginning of the 20th century, Schutze wrote that slave traders were still operating in Bengwela and Luanda.(4) In 1903, Lieutenant Scrambone discovered, in upper Kasai, a refuge of slave traders operating for Portuguese firms.(5) Reportedly, because of the laxity of the Portuguese administration, the Congo Free State developed the posts of Dilolo and Katolo.(6) Nuypers, head of the AIMO provicial services, reported caravans of slaves

---

(1) Chronologically, the abolition of slave trading in the West African coast was as follows:
- 1787, foundation in London of an anti-slavery society, which embarked on the suppression of slave trading by all nationalities.
- 1807, the British Parliament abolished slave trading in Africa and attempted to impose the decision on the Portuguese, who, in order to gain support to challenge the French invasions, agreed to gradual abolition.
- 1815, ratification, in Rio de Janeiro, on 8 June, of the Vienna Convention of 2 January, prohibiting slave trading in Portuguese Africa north of the Equator.
- 1835, by a decree of 19 December, Portugal proclaimed cessation of slavery and, a year later, prohibited export of slaves from Africa. However, despite numerous decrees prohibiting it, slave trading continued and in 1839 the British Parliament passed a bill authorizing British cruisers to seize slave ships and by a treaty of 3 July 1842, Portugal agreed to these terms. Thus, during the second half of the 19th century, slave trading declined rapidly, probably due also to economic factors, as the revolution in industry and means of production led to an ever-decreasing demand for labour.
- 1855, prohibition of slavery in Ambriz, Molebe and Cabinda; three years later, requirement by a royal decree to abolish slavery in Angola within 20 years.
- 1875, a decree of 29 April abolished slavery throughout the territories of Portuguese Africa; but this did not mean that slavery ceased immediately; in fact, continued trading in Angola up to south-east Zaire was witnessed, notably by B.L. Cameroon, as reported in: Slavery in Africa, in National Review, Oct-Nov. 1888.

(2) Letter dated 18 December 1887; in Le Mouvement Geographique, op. cit., 1888, p. 85.

(3) Le Mouvement Geographique; as above.

(4)-(6) Cited by Rinchon, P.D. in La traîte et l'esclavage des Congolais par les Européens; histoire de la déportation de 13 million 250,000 noirs en Amérique, J. De Meester et Fils, Wetteren, Belgique, 1929, p. 122-123.

conducted, during 1905-8, by Portuguese from northern Angola and south Kwango, whose sole activity was slave trading.(1) In 1912, a memorandum of the Anti-Slavery Society of London remarked that " ... the supposed work contracts offered to Africans to embark for America were mere bait, whilst over the previous 25 years more than 60,000 slaves had been transported to Sao Tome".(2) As late as 1914, Captain Dalby seized caravans of slave traders not far from Dilolo; and in 1925, a certain Pieters, administrator of Panzi, seized a convoy of 28 slaves en route to Angola.(3) Previously, according to Rinchon, caravans of slaves moved from the interior to the ports of shipment along three major routes: first, from the upper Zaire river via the pool to Luanda; second, from Kasai to Luanda; and, third, from Shaba to Luanda. Numerous secondary routes, tracks and foot paths linked remote villages with the major routes in Equateur, Mai-Ndombe, Kasai and Maniema mostly through the Banfunanga and Bateke middlemen. All reports deplored the sight of villages depopulated by slave traders. For some hundreds of slaves that one hunt yielded, thousands of people were often killed or died from wounds; while others, running away, died of hunger and misery. Slave traders also used assault on isolated families and capture of women and children.

The effects of slave trading made themselves felt from the second half of the 15th century; however, the most important point of this study is to assess the lasting impact after 1885 when external slavery became insignificant. Curtin rightly emphasized that "The demographic consequences of moving any number of people from any society can have meaning only in relation to the size of the society, the time-period concerned, the age and sex composition of the emigrants and of the society from which they depart".(4) Yet, despite increasing efforts to reconstruct and analyze the slave trade experiences, there appear irreconcilable estimates in terms of slave numbers, ranging from 5

---

(1) Cited by Rinchon, P.D.; op. cit.

(2) Masoin, F.: Histoire de l'Etat Indépendant du Congo; Namur, Belgique, 1912-3, Tome II, p. 15.

(3) Cited by Rinchon, P.D.; op. cit.

(4) Curtin, P.D.: The Atlantic Slave Trade: A Census; University of Wisconsin Press, London, 1969, p. 269.

to 25 million, of mortality rates and of such characteristics as broad age-sex groups of the persons involved.(1)

Amongst most quoted estimates for the whole course of the slave trade are those given by Rinchon who, in a pioneering attempt through an "export approach", arrived at the figure of 13¼ million for the number of slaves emigrating from the Congo alone, as shown in appendix B1 (p. 473),(2) but, more recently and through an "import approach", Curtin has suggested as 9½ million the number of those Africans who landed in the Americas as a result of the Atlantic slave trade (see appendix B2, p. 474). Admittedly, Curtin added that "The cost of the slave trade in human life was many times the number of slaves landed in the Americas. For every slave landed alive, other people died in warfare, along the bush paths leading to the coast, awaiting shipment, or in the crowded and unsanitary conditions of the middle passage. Once in the New World, still others died on entering a new disease environment. Most of these losses are not measurable".(3) It may be remarked that with Rinchon's assumed mortality of 20 per cent during ocean crossing - whereas Klein's recent study indicated an overall mortality well below 10 per cent, often approximating 3 per cent(4) - and allowing for a couple of hundred slaves shipped to Europe(5) before the American market became predominant, the resulting estimate would still be greater than 10 million for the Congo alone; whereas most recent studies, notably by Curtin and Klein, suggest a figure of some 3.5 million persons.(6) But Curtin's estimate, also based on published materials, undoubtedly leaves unanswered some important questions such as the absence, in his table, of slaves in British North America before the period 1701-1810 whereas records indicate that African slaves first landed in Jamestown,

---

(1) A summary discussion of these estimates and how they were derived is presented in the first chapter of Curtin's book referred to above under the title The Slave Trade and the Numbers Game: A Review of the Literature.

(2) See appendix D3, map 8 (p. 499) for the area of the then Congo.

(3) Curtin, P.D.: The Atlantic Slave Trade; op. cit., p. 275.

(4) Klein, H.S.: The Middle Passage: Comparative Studies in the Atlantic Slave Trade; Princeton University Press, Princeton, 1978.

(5) Estimates of slave imports into Europe, including Sicily, Portugal, Spain and Italy had been sometimes indicated as high as two hundred thousand people, but Curtin suggests that a total of 50,000 slaves is seemingly a reasonable figure; Curtin, op. cit., p. 18.

(6) Klein, H.S.: The Middle Passage, op. cit., p. 23.

Virginia, in 1620, followed by a continuous flow, through import and breeding, until the early 19th century, when the slave trade declined with the invention of the cotton ginning machine.(1)

In fact, even if a definite number of slaves was available, it would not suffice for assessing the demographic impact on a particular African country until that number was related to the conditions and size of the society which supplied them. In this perspective, a more appropriate exercise has recently been conducted by Caldwell, who estimated the coastal population of Africa, from Cabinda and Luanda, with much of what is now Angola and Zaire, and even parts of Zambia, at about 4 million in the 19th century.(2) As these areas yielded well over a million slaves during that century alone, the estimated loss rate was close to one per cent a year, resulting almost certainly in declining population and depopulation of certain areas, especially in Angola. Since half the slave trading occurred after 1770, Caldwell estimated that by 1880 the number of those successfully transported across the Atlantic plus those who died during capture or subsequent transportation probably numbered around 6 million, of whom 1½ million may have been females. Thus, assuming net reproduction levels of a stationary population for these periods and a small level of natural increase, i.e. 0.3 per cent per annum, the total deficit of about 4 million persons would have implied a deficit of about 15 per cent or at least a generation's growth for the main source area of slaves. If such an estimation is accepted - and with little revision this would seem to be the case - then it is difficult to imagine how, by 1885, Zaire did not witness declining population trends, further increased by the anti-Arab wars, over one third of the territory (as per map 9, p.500) until the eradication in 1896 of the last Arab traders around the gold-mining areas of Ituri.(3)

---

(1) Wilson, H.: History of the Rise and Fall of the Slave Power in America; 2 volumes, Boston, Mass., 1872-77.

(2) Caldwell, J.C.: The Demographic Victory: Population Change 1880-1935, Australian National University, 1976.

(3) It may be noted that the Arab traders, led by Tippu-Tip, son of an Arab father and a Zanzibarian mother, arrived in Maniema around 1870. But during his journey up river in 1883, Stanley noted that they had extended their area of raids to Basoko while 6 years earlier, when he first travelled downstream, they had reached only Nyangwe. However, as can be seen in appendix B1, the number of slaves traded by Arabs would appear insignificant, at least in comparison with that by Europeans.

But, though related to anti-slavery, the anti-Arab war campaigns occurred for three major reasons. First, territorial rivalry: indeed, because of Arab armed occupation of large areas, King Leopold's expeditions could not establish stations and impose control over the whole royal possession as delimited by the General Act of Berlin and further extensions. Thus, despite the agreements on zones of influence, and perhaps even because of them, wars were inevitable if King Leopold's undertaking was to materialize.(1) Second, commercial competition: not only did the Congo Free State authorities impose duties on ivory and slaves exported by the Arabs - an imposition contrary to the clause of free trade agreed at the Berlin conference - but they constantly paved the way for European merchants to settle in areas occupied by the Arabs. Third, anti-slavery movements: in response to the call by Cardinal Lavigerie and others, for several years previously and following themeeting in Brussels in 1889-1890, anti-slavery societies created in Belgium, Paris, Rome, Madrid, Cologne, Austria and Sweden resolved to embark on concrete action along the slave traders' routes at sea and on land.

Well before the great warfare, several incidents occurred between State and Arab forces in different places, whenever either party attempted to move into the other's zone of influence, as in 1890 at Basankusu on the Lulonga, at Ibembo on the Itimbiri, at Malangoye on the Uele, at Mopocho on the Likati, at Lusambo on the Sankuru; in 1891 at Bamokandi on the river; and in 1892 at Mompono on the Maringa and at Mapama on the Lulu. There were few pure Arabs, but their troops included half-castes, supposed freed slaves and bearers from conquered areas. From March 1890, when Tippu-Tip left for Zanzibar and was

---

(1) In view of the Arabs' strength, Stanley and King Leopold's envoys preferred, in the first place, to sign treaties defining zones of influence; but gradually and cunningly, the Arabs were made associate representatives of the King. Thus, Tippu-Tip, the most powerful vassal of the Sultan of Zanzibar was, in 1884, appointed governor of the district of Stanley Falls, centred at Kisangani, on behalf of the Belgian Sovereign, and one European was assigned to him as special representative of the Sovereign. Similar agreements and royal appointments were made with Gongo-Lutete (a Bakusu raised by Arabs) who was based in Nyangwe and operated in the south west of the region; and also with various minor and independent sultans, such as Kibonge in Kirandu, Miserera in Riba-Riba, Munie-Mohara in Nyangwe, Sefu in Kasongo, Bwana Nzigue in Kabambare, Rumaliza in Ujiji and Kilonga-Longa in Ituri.

succeeded at Stanley Falls, by his nephew Rachid, there was no longer a single central authority but a series of more or less independent sultans with personal armies of a few thousand people. Competition amongst these Arab sultans led to their weakness, although, if united they could have constituted an army of about 100,000.(1) Meanwhile, the Force Publique was reinforced by 4,200 mercenaries, thousands of militiamen, and increasing enrolment of indigenes and freed slaves.(2) The anti-Arab campaign then developed into massive conflicts, especially in 1892 and 1896, involving the Zairean population in both warring factions.(3) The first series of battles - known as Dhanis Campaign, with State troops based at Goy-Moyasa - took place at Chige near Ngandu on the Lomami against the Arab Sefu's army in November 1892. Further battles were at Lusumu and Kasongo-Lukila against Munie Pembe's army and at Goy-Kapapa against Munie Mohara; then at Nyangwe on the upper Zaire against Bwana Simba. After reinforcement by troops from Lusambo, the Dhanis column proceeded to occupy Kasongo - a much larger city than Nyangwe, the famous old capital of slavery - under the control of Sultan Said Ben Abedi. After overwhelming defeat throughout the region, native chiefs, namely Dibwe, Bwana Kasongo, Kalemba and their subjects surrendered to State troops.

The next assault on the Arabs sprang from Basoko under Captain Chaltin for the area along the Lomami and Zaire river basins. Subduing the hostile populations on route, the State troops occupied and completely devastated the Arab camp of Tshari (with several thousand dwellings extending over 4 kilometres on the Lomami river) and also the nearby city of Riba-Riba. The most savage battles, however, took place at Stanley Falls (Kisangani) with thousands of deaths on each side, before numerous followers of Sultan Rachid deserted to the triumphant State army.

With reinforcement by Commandant Fivé from Kinshasa, another assault was mounted to eliminate Arabs in the northern area between the rivers Zaire and Lomami. Fivé reported countless corpses carried downstream as he travelled up-river from Basoko to Kisangani. After easy victories at Isangi, Jafora and Jaouwamy, the State troops engaged in heavy fighting at Romee against Chief Kayembo's army and emerged

---

(1)-(3) La Force Publique de sa naissance à 1914; op. cit., p. 125-295.

with two thousand war prisoners with their usual collection of ivory, arms, food and clothes.

A further assault led by Ponthier-Lothaire, was charged with clearing Zaire (Lualaba) basin from Kisangani southwards and relieving State troops at Nyangwe and Kasongo. To this effect, several battles took place successively, at Wanie-Kakula, Kewe, Kirundu, Kima-Kima, Soke-Soke and Utia-Mutongo against joint Arab armies of Rachid, Kibonge and Ugarawa. The successful outcome of these battles added more than eight thousand war prisoners to the State troops back in Kisangani.

During the same period, several battles were conducted by military expeditions of the Belgian Anti-Slavery Society around Lake Tanganika, mostly led by former officers of the King's Force Publique and the African International Association. Quasi-crusaders, Captain Joubert, Lieutenant Hinck, Lieutenant Duvivier and Captain Descamps triumphantly led troops against Sultan Rumaliza's armies at Mpweto, Moliko, Mrumbi, Kalemie (Toka-Toka) and Mtoa before joining State troops at Kasenga for further victorious battles north of the lake.

A further assault was again led by Captain Dhanis against the joint armies of Sultans Rumaliza, Sefu and Said Ben Abedi with about 12,000 troops from Ujiju and Nyangwe. Most of the fierce battles took place east of Kasongo, towards Uvira, particularly at Lubokoie, Lulindi, Ogela, Bena-Bwese, Bena Guya and Kabambare where the Arabs had built a series of strongholds. It was reported that these battles lasted for many months: in spite of heavy losses on both sides, the State troops took more than two thousand prisoners. They then joined with the Anti-Slavery Society troops in pursuit of the remaining Arabs in the north towards Sungula, Kibanga and Uvira.

The final assault on the Arabs was carried out by the Lothaire-Henry expedition, into the region of Ituri where several smaller traders, including Kibonge, Ugawara, Kilonga-Longa and their followers had taken refuge. Villages such as Avakubi, Mawabi, Irumu, Beni, Kilo and Makala were in Arab hands. During a reconnaissance trip to Makala along the Lindi river in order to set up liaison stations, Henry captured Kibonge, the remaining most powerful Arab chief and murderer of Emin Pasha. The Lothaire column then followed and, after several battles and the capture of Charles Stokes (an Englishman supplying

German arms to the Arabs), subdued the rest of the Arabs and firmly established State control over the region.

Unfortunately, none of the reports of these devastating wars recorded either deaths or other consequential damage to the populations. Hinde remarked that the vicissitudes of these wars usually affected most densely populated regions.(1) However, the eviction of the Arabs and their allies did not signify the end of native oppression; the economic exploitation and effective political control of the land by King Leopold were achieved only with further killing and oppression of the indigenes.

3. The Leopoldian System of Economic Exploitation, 1885-1908

In 1885, in order to obtain approval of the parliament for a personal possession overseas, King Leopold affirmed that the State had sufficient resources to meet the considerable expenses of his undertaking. Contrary to the royal statement, serious financial difficulties soon arose: expenditure for salaries of staff in Europe and Africa as well as numerous military and scientific expeditions soon rose from 2,000 million francs in 1885 to 4,000 million in 1890. Though relatively small, these expenditures could not be recouped from public revenues. The monetary system, introduced in 1890, was not in general use by the indigenes until several years later. Consequently, the King embarked on levying tributes in kind of produce for local consumption and for sale in Europe. But, instead of fair trade with the indigenes, the Belgian Sovereign devised a system of economic exploitation and forced labour which enhanced enslavement and destruction of the population. For the purpose of raising and classifying its revenue, King Leopold divided his enterprise into three major parts, as shown in appendix D5, map 10 (p. 501).

Firstly there was the Domaine Prive, later termed Domaine National, where the State exploited by means of direct control. This was intended to provide the sums necessary for the remuneration of the executive staff, the construction of public works and other undertakings required to ensure the working of the administration. A few

---

(1) Hinde, Dr. S.L.: The Fall of the Congo Arabs, London 1896.

persons, notably Wauters, Anton, Morel and Father Vermeersch attempted an instructive comparison of the published figures and estimates of the revenues from this domain and concluded that large surpluses were nowhere accounted for.(1) They also recognized that the criminal oppression of indigenous populations began in this area, as there was no trade with the indigenes and the produce of the land, especially rubber, ivory and copal, was acquired by force, in accordance with circulars conveyed to State officers, further stressing that no private persons could buy such produce in the area. As Stenmans remarked, the officials, who included a large number of Belgian commanding soldiers, were thereby vested with commercial functions scarcely compatible with their duties as civil servants. The regulations relating to this exploitation, all administrative, were most draconian: decrees, by-laws and circulars establishing the mode of extraction, packing, storage and transportation of the produce from the domain; the drawing up of quotas for various products; the setting up of series of responsibilities as a result of which the indigene was ultimately the victim; the frequent infliction of corporal punishment beyond the limits decreed; and the inclusion even of women and children in these measures.(2)

Secondly there was the Concessionaire Area which was rented to companies of financiers, from whom King Leopold had borrowed money, or to personal friends and officials of his court. The sums so generated were eventually accounted for in State revenues as "produit du portefeulle"; ironically, it was suggested that they would more fittingly be entitled "produit du porte-fusil" or proceeds from the rifle.

---

(1) It was, however, charged against King Leopold that out of the debt incurred in 1888, over one million pounds sterling was not spent on the Congo but in Belgium for objects not connected with his African enterprise; and also it was estimated that for the ten-year period following 1895 a personal profit of over five million pounds sterling was made - three million accruing from the domaine de la Couronne and two million from the shared profits in the concessionaires. See Johnston, H. in George Grenfell and the Congo (op. cit.). For an extensive discussion on the matter, see especially Cattier, F. in Etude sur la situation de l'Etat Indépendant du Congo; Larcier, Bruxelles, 1906. See also Wauters, A.J.: Histoire politique du Congo Belge, Fleteren, Bruxelles 1911; Morel, E.D.: Red Rubber, op. cit.; and Vermeersch, R.P.: La Question Congolaise, Bruxelles, 1906.

(2) Stenmans, A.: La reprise du Congo par la Belgique, Bruxelles, 1949.

Stenmans emphasized that numerous commercial agents, having arrived in the Congo to make a fortune rapidly, were abandoned to their own devices. Of doubtful morality, they aimed at only one goal - increased production by whatever means; they did not hesitate to request excessive prestations from the indigenes. Others assigned themselves an official authority which the State never granted them to the point of wearing the uniform of the Force Publique. They exerted a purported power of life and death over the population and indulged in multiple violent actions. The land still being under military occupation, the concessionary companies were authorized to keep up small armed forces.(1) As the concessionaires operated as semi-public bodies, the King appointed the chairman and selected half the members of their committees; he also had the casting vote and the board of directors was appointed subject to his approval. By the turn of the century, the concessionaires or trusts were eight in number;(2) and, although some of them, such as the Comité Spécial du Katanga, were mining-oriented from the start, their abuse of indigenous populations was no less than that of the commercial firms primarily concerned with the export of *gathered produce*. Until the twenties, indeed, mining activities were labour-intensive with workers recruited in various parts within and outside the State.(3)

Thirdly there was the Domaine de la Couronne, initially declared inalienable from the Sovereign and his heirs. This was intended to accrue revenues for exclusive use by the King. Comprising a proportion of the State ten times the size of Belgium, the existence of this royal preserve was systematically denied until its revelation was forced by a parliamentary debate in the Belgian House in July 1903. Cattier and others devoted an instructive volume to an estimate of the revenues derived from this domain as well as their disposal in vast constructions, purchases and subsidies which, as Harold Spender said, looked "as if

---

(1) Stenmans, A: La reprise du Congo par la Belgique; op. cit.

(2) The Anglo-Belgian Indian Rubber or ABIR in Lopori and Maringa, the Anversoise in Mongala, the Kasai in the Kasai river area, the Commercial Congolais in Wamba, the Grands Lacs in Aruwimi, the Comité Spécial du Katanga in Katanga, the Busira in the Busira river area and the Lomami in the Lomami river area.

(3) The question of labour migration is discussed further in Chapter V of this study.

King Leopold aimed at using the proceeds of the Congo for turning Belgium into his private estate".(1) All reports agreed that it was in this royal preserve that there existed the most abominable enslavement and destruction of the population. Everywhere, those indigenes who could not supply the required quantities of products were subjected to atrocious corporal punishment, imprisonment in hostage houses, amputation of hands and genitals, burning of villages and summary executions.

The Leopoldian system of exploitation and destruction of indigenous populations was increased after 1891, when two famous royal decrees and related circulars were promulgated, appropriating the produce of the soil and establishing the recruiting operations with compulsory labour.

The first of these, the decree of 30 July 1891, provided for recruiting operations in addition to purported voluntary enlistments which continued as before. Confidential circulars fixed allotment of bonuses for recruits obtained on the following lines for the staff who secured them: 90 frans for every youth whose stature was at least 1.35 metres; 15 francs per male child drafted to military establishments to be made soldiers in due course, the male child being at least 1.20 metres in height and sufficiently strong to withstand the strains of the road; 130 francs as increased bonus for every married man. The bonus became due only when the men had been handed over to the district headquarters.(2) A further confidential circular determined the sum set aside to reward those individual officers who showed exceptional zeal and devotion for recruitment. The balance of the credit not allotted was distributed among the districts which recruited more than the number of men indicated.(3) The recruits were obtained by armed raids upon villages, differing in no way from those of the old slave traders, and often with greater loss of life.

The second royal decree, on 21 September 1891, appropriated the produce of the soil and urged officials to take the necessary means to secure that produce, especially ivory and rubber. As European

---

(1) In Contemporary Review, July, London 1906.

(2) Belgian Parliamentary Debates, Official Shorthand Report, March 1905 and February-March 1906.

(3) Circular dated October 1891 and signed by the acting Governor General Fuchs to district commissioners.

merchants protested against State regulations forbidding indigenous populations to sell the produce to them, the King dictated that the land and the produce thereof belonged to the State. A further decree claiming all so called "vacant lands" as property of the State also stated that any population interfering with them was to be dealt with as criminal. To stimulate the zeal of officials in this matter, confidential instructions allotted proportionate commercial premiums to those concerned with forest exploitation.(1) Payment of bonuses on revenues collected took various forms, notably a percentage ad valorem of the produce collected; eventually it was made on an annual basis as follows:

- District Commissioner: 6,000 - 10,000 francs
- Captain in the Force Publique: 4,000 - 7,000 francs
- Lieutenant in the Force Publique: 2,000 - 3,000 francs.

The decree was also responsible for a confidential circular of 1892, applying "forced labour" as one of the measures deemed necessary to ensure profitable exploitation. This forced labour circular thus operated illegally for eleven years until September 1903, when continued revelations of atrocities caused the drafting of a forced labour law restricting requisition of indigenes "by force" to a duration of 300 days in a year.(2)

Alarmed by criticism in Europe of his atrocities in Africa, King Leopold appointed, in September 1896, a Commission for the Protection of the Indigenes to report on any acts of violence and advise on measures to be taken.(3) Continued reports of atrocities and many other representations caused the British Parliament to pass a motion

---

(1) Decree of 20 June 1892 signed by the Secretary of State Van and certified correct by Governor General Wahis.

(2) Belgian Parliamentary Debate, Official Shorthand Report, March 1905.

(3) Ruth Slade wrote that "This farcical commission was made up of 3 catholic and 3 protestant missionaries. The chief function of their commission seemed to be to impress the critics of the Congo State ... All the missionaries chosen to sit on the commission came from areas far removed from those where atrocity stories had originated; they were separated from each other in some cases by as much as a thousand miles, and no provision was made for travelling expenses nor for giving them the right to take evidence." Slade, R.: King Léopold's Congo; Oxford University Press, 1962, p. 180.

that the government should confer with the signatory powers of the Berlin Act. In August, a note was circulated to these powers while the British Consul, Roger Casement, at Boma, was to tour the country and report. In reaction to the Casement Report of February 1904, and on the demand of the Foreign Office, King Leopold agreed on an international Commission of Inquiry to investigate conditions in the State.(1) Published in November 1905, after eight months of procrastination, the report of the Commission stated that "everywhere in the State, and nothwithstanding certain appearances to the contrary, indigenes only gather india-rubber under the influence of direct or indirect force." It defined force as "indiscriminate massacre, taking of hostages, imprisonment of women and children, flogging, illegal fines or punishment, etc.".(2) The Commission also reported that the same conditions characterized the river tribes taxed in fish and populations surrounding large centres who were taxed in food. The results of this "taxation", reported the Commission, were depopulation, the abandonment of villages and general misery. Even in the form in which the report received King Leopold's approval, there was sufficient evidence that it would take several years for the populations of the rubber zone and other areas to recover after being crushed and repressed and to show normal patterns of growth. Indeed, the cruelties practiced upon the indigenes, as increased by the decree of 1891, were recorded in one unbroken stream for more than 15 years. In that 15-year period (1890-1905) Morel estimated the decline in the population at a minimum total of 1.5 million; but Casement considered such an estimate far too low and suggested that the last decade had witnessed a decline in the population of about 3 million persons.(3) One other effect of the Leopoldian regime was that it provoked revolts by indigenes in several parts of the country; a situation which led to bloodshed and further repression, as the colonial army strove to maintain its control and

---

(1) The commissioners were: one Belgian, Edmond Janssens; an Italian, Baron Nisco; and a Swiss, Edmond de Schumacher. These three, all lawyers, and 2 Belgian secretaries, visited several parts of the State from October 1904 until February 1905. Some speculation arose concerning the complete objectivity of their report, as they were appointed and paid by the Sovereign King.

(2) Report of the Committee of Inquiry, p. 266.

(3) Morel, E.D.: Red Rubber, op. cit., p. 173.

domination over indigenous populations at any cost.

4. The Revolt and Repression Operations, 1885-1915

As elsewhere in the world, the ruthless and large-scale colonial exploitation of the human and natural resources of Zaire engendered bitterness and a demand for justice among indigenous populations. For more than 30 years after 1885, there was no period when incidents with bloodshed did not occur in some part of the country between indigenes in revolt and repressive colonial forces. Such incidents often developed into organized warfare over large tribal or regional areas, lasting many years and causing substantial loss of life. Probably because the Force Publique was the most advanced and well-organized body, it was within this that most violent revolts started, especially in the regions of Kasai, Haut-Zaire and Bas-Zaire.(1)

The first major revolt, known as the "Luluabourg Revolt, 1895-1908", was also the most difficult to repress and it prohibited any colonial undertaking in the areas between the upper Zaire and Kasai rivers during 12 years of heavy fighting. Because the leaders of this revolt, notably Sergeant Kandolo and Corporals Yamba-Yamba and Kimpuki, were of the same ethnic origin, the event has sometimes been referred to as the revolt of the Batetela. Previously, however, many local traditional chiefs, such as Kalenda of Bena-Nyoka and Kalemba of Mukuaba, had expressed discontent following excessive brutality and harsh sentences on the part of the colonial commanders, notably Captain Pelzer,(2) who was found guilty of causing the revolt to break out. Hence, heavy battles took place along the Lomami river and at various places throughout the region, including Kalala-Kafumba, Kabinda, Ngandu, Kasongo, Dibwe, Bena-Kadwa, Goie-Kabamba, Lake

---

(1) For detailed accounts of the revolts see especially: La Force Publique de sa naissance à 1914, op. cit., p. 349-503; Vandewalle, F.A.: Mutineries au Congo Belge, in Zaire, mai 1947 et octobre 1948, Louvain; Moulaert, G: A propos des mutineries du Congo Belge, in Zaire, décembre 1948, Louvain ; Lejeune-Choquet: Histoire militaire du Congo, éditions Castaigne, Bruxelles, 1906; and, Janssens, E. et Cateaux, A.: Les Belges au Congo, Van Hille Debacken, Societe de geographie, 1908-1912, 3 vols., Anvers.

(2) Van Zandycke, R.F.A.: La révolte de Luluabourg, 1895; in Zaire, septembre-octobre 1950, Louvain.

Kisale, Lubudi and Kazembe. With the final victory of State troops, several thousands of war prisoners were sent north to Lusambo, Lodja and Kabinda, while most inhabitants fled southwards.

The second major revolt, the "Ndirfi Revolt, 1896-1900", started in the Ituri then spread throughout the regions of Haut-Zaire and Kivu. After a heavily equipped expedition for the Nile had set out, the soldiers soon revolted, because of exhausting conditions of travel and harshness on the part of Commissioner Leroy. Apparently, the leaders of this revolt, Sergeant Piani-Kandolo, with Corporals Amondala, Tshamionge, Saliboko and Mulamba, easily convinced the soldiers that the Whites were taking them into a venture inevitably resulting in death for all and that their corpses would soon be added to those along the road of suffering and misery, unless they decided to get rid of the Whites and return to their land.(1) After several successes and reverses by both warring factions around Ndirfi, fighting continued east of Kisangani, up to Dugu in the north and down to Kasongo and Kabambare west of Lake Tanganika.(2) In this way, the whole former Arab zone suffered unbelievably, finally causing King Leopold's dream of extension towards the Nile to crumble. Many indigenous survivors of these battles, both soldiers and civilians, either escaped into the eastern mountains or emigrated to the neighbouring German territory, where they received portions of land for cultivation and permanent residence.

The third major revolt, the"Shinkakasha Revolt, 1900", caused more disruption than actual damage as it developed around Boma, then the seat of government. The reasons for this revolt were similar to those in other regions, with particular hardship and abuses in connection with the building of the Matadi-Kinshasa railway.(3) As

---

(1) It is recorded that dozens of soldiers were dying each day through lack of food and exceptionally cold weather; see especially Leo Lejeune in Le Vieux Congo; les éditions de l'expansion Belge, Bruxelles, 1930.

(2) Particularly at Obi, Tamara, Andemobe, Kilo, Ekwanga, Irumu, Avakubi, Kisenge, Walota, Beni, Mamabi, Lindi, Boko, Piani-Kikunda, Kewara-Ware, Niembo, Shabunda, Gwashe, Shangungu, Uvira, Ngabo, Kaboge, Baraka, Simorane, Sungula and Bwana-Dibwa.

(3) According to Grenfell, out of 2,000 negroes employed on the construction in 1892, about 150 died monthly from illness; cited by Johnston, in George Grenfell and the Congo, op. cit., tome II, p. 487.

previously, the soldiers in revolt gained substantial civilian support in the region. The pursuit of the rebels throughout the Mayumbe and other areas of Bas-Zaire up to the neighbouring French Congo gave rise to heavy battles at Tshoa, Luozi, Manianga and Ganda. Though short in duration, this revolt resulted in severe casualties, as the insurgents had initially gained access to the largest stores of weapons at the capital's fortress.

In the insurgent areas, State troops were on permanent alert and were to consider the local populations as their enemies. Each designated "general protest" was to be repressed by a "military operation", which usually entailed loss of life. There were numerous such operations but, considering only those with casualties amounting to several thousand people, one may cite the following:

(i) Operations in Mongala: 1898-1905. Often referred to as operations against the Budja in the area between the Mongala and Zaire rivers where the agents of the "Société Anversoise pour le Commerce au Congo" carried out economic exploitation under the protection of small garrisons of State troops. Abuses of the indigenes by these agents led to battles at Dundusana, Yambata, Mandika, Yambinga, Yalombo and Ambata until the arrest of several traditional chiefs and leaders of the insurgents such as Eseka, Zengo and Ekwalanga.

(ii) Operations in the Uele: 1895-1910. Apparently, for several years, the armies of the Azande sultans, Renzi, Bafuka, Okwa and Mbio resisted State troops. Subsequently State troops faced battles with the warriors of the indigenous leader Engwetra in 1895, 1900 and 1904 in a place of the same name; with Chief Boyoko and his Mangbetu tribal group at Kibali in 1898; with the Babua people from Libokwa to Bima under the leadership of Chief Zepere during 1900-1906, and with other rulers namely Mopoie, Sasa and Djabir in the north of the Djabir river from 1904-1910.

(iii) Operations in Kasai: 1890-1897. Several years of military confrontation were necessary for the State to impose effective control over this region, as local tribal armies of Bakuba, Bena Kalenga, Kiokio, Basonge, Bashilenge, Bakusu and Baluba under the leadership of traditional chiefs such as Kabamba, Musembe, Katako, Fumba and Kalamba were constantly opposing colonial occupation and abuses by the agents of the "Compagnie du Kasai".

(iv) Operations in Shaba: 1897 1907. On the one hand, many indigenes fought alongside the soldiers in revolt from Kananga as they moved into this region; on the other hand, the local inhabitants were incited to revolt by traditional rulers such as Kafindo in upper Shaba in 1896-7 and Kazembe around Lake Nzilo in 1902 as well as Saidi at Pweto in the north of Lake Moero in 1897, following abuses by agents of the "Compagnie du Katanga" and other embryonic mining companies.

(v) Operations in the East: 1896-1906. Most of the revolts in this region were directed against the abuses of State agents; battles took place at Boyula along the Lindi river in 1897, at Usikwamaleka and at Yalemba near Isangi and also at Beni in north Kivu. Around Lake Kivu indigenes in revolt were led by traditional chiefs Kabare and Ngweshe, to whom the colonial authorities later granted hereditary ownership of land in return for agreed cooperation.

(vi) Operations in Bas-Zaire: 1889-1894. The revolts in this region resulted from abuses by agents of Foreign Trading Stations; as was the case with the Musoronghe tribe in the lower river delta and also with the population throughout the Mayumbe. Further abuses by colonial agents, when recruiting porters and workers for the construction of the Matadi-Kinshasa railway, caused several revolts particularly in the Lukunga and Manianga areas.

(vii) Operations in Kwango: 1895-1906. The death in battle previously of traditional chief Mwene-Mputu gave rise to many revolts by the populations around Popokabaka. Further, abuses by agents of newly established factories, especially the "Comptoir Commercial Congolais", led to revolts by the Bambala tribal group around the river Djamba-Kwilu in 1902 and by the Bayaka people at Soie-Bagata in 1906.

(viii) Operations in Cuvette: 1885-1897. Large areas of this region were eventually reserved for the production of rubber and ivory exclusively for the Belgian Crown and for the Anglo-Belgian India Rubber Company or ABIR. Excessive abuses of indigenes by agents of the Crown and the ABIR constituted the main reason for frequent revolt by the victims. Revolts were also recorded along the Lukenie river north of Dekese, 1897-8, following abuses by agents of the "Compagnie du Lomami". Repeated complaints that the population was being decimated and subsequent investigations ultimately led to the dissolution

of these preserves and companies.(1)

Records of casualties arising from indigenous revolts and colonial repression are not available and without doubt will remain impossible to establish. It can nevertheless be appreciated that such revolts had occurred in almost all parts of the country, though varying in intensity. There is no doubt that the damage incurred by some of the populations concerned must have been largely irretrievable, especially in the near total absence of medical and public health services.

5. Epidemics, Endemics and Health Services, 1891-1925

From available reports and studies, it is still unclear when and how epidemics occurred in Zaire: the same is true of the extent and actual demographic impact of disease in past times. Indeed it remains largely a matter of hypothesis, although it is certain that medical services have been increasingly successful in both prevention and cure. Among epidemics recorded were those of trypanosomiasis or sleeping sickness and various infections such as yellow fever and smallpox. Other common diseases included various kinds of venereal diseases and tuberculosis. Discussion concerning the impact on fertility of these diseases, especially the venereal ones, is deferred to a later chapter.(2) This section is consciously limited to an overview of mortal diseases and the effectiveness of medical services in combatting them.

One authority concluded that trypanosomiasis, influenza and venereal diseases were all brought into tropical Africa almost at the same time, in the late 1880's, by European penetration of the territory.(3) In the West African coast, initial contamination occurred in the river mouth of Zaire and Gabon. In Zaire, travellers from Bas-Zaire carried these diseases up the main river and its affluents, Kasai, Sankuru, Tshuapa, Lomela, etc. into the equatorial zones. On the African coast, these diseases were carried from Zanzibar and Zambezi throughout the regions of Shaba, Maniema and Haut-Zaire; the latter being also contaminated by travellers from southeast Sudan and Nile routes. By 1900,

---

(1) La Force Publique de sa naissance à 1914; op. cit., p. 500.

(2) In Chapter XI.3: On the Causes and Origins of Lower Fertility.

(3) Retel-Laurentin, A.: Infécondité en Afrique Noire; Masson et Cie, Paris, 1974, p. 42-52.

the west, east and north waves joined, affecting severely the riverain populations, especially those of the Mongo tribes, and gradually most communities of the central basin of the country (as shown in appendix D6, map 11, p. 502). Travellers engaged in exploratory expeditions and the movements of the colonial troops and indigenous migrants in search of refuge were primarily responsible for propagating the agents or microbes of the sleeping sickness and venereal diseases as well as various kinds of influenza. While largely accepting this hypothesis, others such as Caldwell are of the view that the truth about African syphilis, for example, is probably more complex than this. The microbe causing it is so similar to yaws that it is difficult to imagine some form of syphilis not having a long history in the continent.(1)

Though generally spread throughout the country, these diseases did not strike all the areas at the same time or with the same degree of intensity. There are no definite estimates of casualties, as most reports initially originated from missionaries who were calling the attention of colonial authorities to the need for medical action in their areas of settlement. Concerning sleeping sickness, the most devastating of all, it was in the region of Bas-Zaire that mortal cases were first observed, around Kisantu, Mpangu, Kinturi, Kimbangu and Luozi where both Catholic and Protestant missionaries estimated depopulation in proportions sometimes reaching 85 per cent of villagers within a period of a dozen years from 1894 to 1905. Dassas-de-Witte further suggested that trypanosomiasis probably existed in an endemic state in the area around Kwamouth, from whence it was brought into other parts of the central basin of Zaire.(2) Actually, this hypothesis was based on the fact that in a report addressed by the General Secretaries to the Sovereign King, published in La Verite sur le Congo, and dated 15 July 1907, it was alleged that several areas of the land were found to be the seat of the sleeping sickness at the time of the foundation of the Congo Free State in 1885. It is, however, difficult to imagine that, during that period, there were no deaths and emigrations from the areas of missionary settlement through other causes such as recruit-

---

(1) Caldwell, J.C., in the Demographic Victory, op. cit.; also Cartwright, F. and Biddis, M.: Diseases and history; London, Rupert Hart-Davis, 1972.

(2) Dassas-de-Witte, C.: Unpublished thesis on La Maladie du sommeil dans l'Etat Indépendant du Congo de 1890 a 1910; Universite Libre de Bruxelles, 1963.

ing operations discussed previously. The most devastated areas were villages along the river north of Kinshasa. In 1900, the Catholic mission of Berghes-Sainte Marie, at the junction of the Zaire and Kwa rivers, reported over 580 deaths in the school population for the preceding four years.(1) Spreading north along the river, the epidemics reached the equatorial region by 1901 and further covered most of the central basin. Between 1900 and 1919, the sleeping sickness was fairly acute on the banks of the Mfimi and Lukenie rivers, especially at Oshwe, and also in areas of the Kwilu and Kwango rivers.(2) In the Kasai river, cases of trypanosomiasis were reported by Le Marinel as early as 1891. In the Shaba region, by 1906, the mountainous south remained unaffected whereas several cases had been noted along the Lufira river.(3) In the Haut-Zaire region, by 1901, cases had been observed along the Uele river, probably brought in from Uganda, and also along the Mbomu river on the northern border of Zaire, reportedly with origin from displacement of Sudanese Mahdists since 1897.(4) It would appear that epidemics of sleeping sickness had reached most parts of Zaire by 1906, after which they fluctuated with a marked peak in 1912.

Meanwhile, medical teams whose functions differed from missionary hospitals were only assigned to report on the impact of sleeping sickness. In this context, after two and a half years' investigation, Dutton and Todd estimated at about 25 per cent the affected population of Lokandu and Nyangwe in Maniema. In 1907-1911, medico-administrative missions were subsequently despatched to Shaba, Haut-Zaire and other areas. The most

---

(1) Denis, L.: Les Jésuites Belges au Kwango, 1893-1943; Museum Lovanium, Bruxelles, 1943.

(2) Cited by Nicolai, H.: in Divisions régionales et répartitions de la population dans le sud-ouest du Congo; CEMUBAC, LXXXIII, Bruxelles, 1968.

(3) Rodhain, J.: Documents pour servir à l'histoire de la maladie du sommeil au Congo Belge. La trypanosomiase au Congo Belge; in IRCB, Bulletin des séances, 1945; T. IVI, 1946; T. XVII, 1948, T. XIX, 1950, Bruxelles.

Writing about neighbouring Zambia, Livingstone reported that not only did slavery depopulate the area but also sleeping sickness and venereal diseases were prevalent; in Narrative of an expedition to the Zambezi and its tributaries and of the discovery of the Lake Shirwa and Nyassa; Murray, London, 1865.

(4) Cited by Retel-Laurentin, A.: op. cit.; see also Clapier, D.: La trypanosomiase sur l'Ubangi; annales de médecine et pharmacie coloniales, numéro exceptionnel, 1920.

important of these missions was probably the Foreami, under Schwetz, in Bas-Zaire and Bandundu. It was not until after reports of further outbreaks of epidemics and the "Congres colonial" of 1920, that the Belgian authorities, sensitized by the depopulation problems, committed substantial means for action against sleeping sickness throughout Zaire.(1) Naturally, the already long identification of the causes of the sickness and the important means provided to combat them made for relatively successful results.(2) But, as repeatedly stressed in reports of the "Congres colonial belge" from 1920 to 1936, the sanitary conditions of the indigenes and public health services remained seriously unsatisfactory.(3)

Another ravaging epidemic was the influenza of 1918-1919, which caused considerable mortality among the populations of the main river and its tributaries, as well as those of the mining areas,particularly in Shaba. According to Hout, this influenza was most severe and reached most of tropical Africa within 15 months, having travelled through the same stages as the sleeping sickness and venereal diseases previously.(4)

Accounts by travellers, missionaries and administrators suggest millions of sickened persons and hundreds of deaths annually.(5)

---

(1) Broden, Ryckman, Legrand et Allard: Rapport sur la conservation et le développement de la population indígène, Congrès Colonial National Belge, 1920; A. Lésigne, Bruxelles, 1921.

(2) Since 1900, the trypanosomiasis agent was identified as well as the role of the tsetse fly in its propagation; the tsetse absorbs that agent through sucking infected blood and transmits the disease when biting another person. Subsequently, medical action to combat this disease was first initiated by the Germans shortly before 1911 in Cameroon, and further in Togo and Tanzania. By 1921, French mobile teams gradually undertook similar action in the then French Equatorial Africa. In the British colonies medical action was first introduced in Nigeria around 1930.

(3) Medical reports indicated 13,000 new cases in 1938; 7,609 cases in 1949 and by 1951 the sickness appeared largely eradicated. See Gillet, J.: in La Trypanosomiase humaine au Congo Belge et au Ruanda Urundi; Bulletin de l'IRCB, 4, 1953 et 1, 1954, Bruxelles.

(4) Hout, Dr.: L'Epidémie d'influence de 1918-1919 dans les colonies françaises; Annales de médicine et de pharmacie coloniales, Paris, 1921.

(5) With regard to side casualties, it is recorded for example that with 18 doctors and 400 assistants, Dr. Jamot overcame sleeping sickness in Cameroon; but the use of untested medicine caused 700 persons to become blind.

Whilst the estimates of victims remain unverifiable, there is no doubt that successive and simultaneous occurrence of epidemics contributed considerably to weaken and reduce the population totals of the areas most affected, especially from the early 1890s throughout the late 1910s. It is also very likely that the populations most affected were those of the river banks in the Zaire central basin, because of the favourable environment for the multiplication of the tsetse fly which transmits trypanosomiasis.(1) With regard to medical action, undoubtedly, with gathering momentum since the beginning of the century, the campaigns against epidemics gained some success; but one should not exaggerate this result. As noted by Caldwell, Europe was not medically well equipped for its African ventures and, very probably, it was tropical diseases more than any other factor which held the invader largely at bay, preventing Africa from becoming another Latin America. Furthermore, the medical revolution was late in turning its attention to tropical diseases.(2) In reality, during the period considered here, colonial medicine was for long a military concern, with services concentrated on saving the soldiers, administrators and missionaries, although some care was also extended to African troops, government workers and mission personnel. Besides, the sanitary measures must have had some impact especially on the few Africans of chief administrative centres. Consequently, the major reduction in African mortality was probably achieved by attacking the periodic peaks in mortality caused by famine and epidemics; some of this reduction may have been merely a compensation for an upturn in certain diseases caused by the European presence.

As with the impact on the population growth of the Leopoldian system, assessment of increased deaths and other casualties due to epidemics must be interpreted with caution, because estimates of deaths and migration were not based on previously enumerated populations. It is not without the required caution that the following chapter attempts to reconsider the depopulation trends of Zaire in the period covered here.

---

(1) Transmission of trypanosomiasis directly from one person to another is rare; and, as the tsetse does not bear altitude, the area of epidemics is thus limited to humid forest zones.

(2) Apart from quinine, and a limited use of arsenical compound against syphilis and yaws, the development of drugs and vaccines to combat tropical diseases really dates from the 1920s. J.C. Caldwell, in The Demographic Victory, op. cit.

CHAPTER III

THE DEPOPULATION TREND RECONSIDERED

To varying degrees, observations and opinions by all persons who investigated population change in Zaire during the years 1885 to 1925 indicate that the total indigenous population was gradually falling. However, more often than not, writers diverge in their statistical and non-statistical estimation of the magnitude and causes of the depopulation phenomenon, except for agreement as to the excessive deaths resulting from the warlike conditions and epidemics which prevailed in the country in those years.(1) The aim of this chapter, therefore, is to evaluate these differing observations and opinions, and also to derive the most probable estimates of population totals and the implied levels of mortality and fertility.

1. Observations and Opinions

In considering the demographic situation of the early period of colonial rule, Romaniuk stated that "The total population of the Congo, estimated at 28 million by Stanley, falls to a dozen million only, based on the enumerations conducted towards 1920. Henceforth, one talks more and more about depopulation and denatality or decline in the number of births; themes which dominated Zaire's demographic literature almost throughout the whole colonial period".(2) Further, he emphasized that slave trading in the east occurred before the occupation of the land by Belgians; that the contact between the Bakongo and Europeans, in the west coast, dated from the 15th century; and that inter-tribal wars led to the death of both people and traditional social institutions. In conclusion, Romaniuk wrote that "The origin of denatality and the mechanisms for its expansion remain obscure; but, contrary to the general belief, it is not issued directly from the colonial context,

---

(1) It is impossible that these estimations, often mere guesswork, should not diverge, as there was no enumeration of the population previously and deaths of this kind could not all be recorded.

(2) Romaniuk, A.: La Fécondité des populations congolaises; op. cit., p. 131.

although this constituted an aggravating circumstance, at least in the early phase of occupation ..."(1)

In reality, contrary to Romaniuk's assertion, the depopulation of Zaire became the concern of many investigators well before the enumerations of the late 1910s and early 1920s. To some extent, the abolitionists of the slave trade were the earliest to express concern about the depopulation problem until the turn of the century, though the human traffic had by then become insignificant. Several writings and reports, already referred to in Chapter II, indicated indisputable depopulation of vast areas through abnormally high death rates; they also indicated considerable disturbance in social and family life, with detrimental effects on birth numbers and population growth. Advocates of the reform of the Congo Free State and the report of the Commission of Inquiry on the conditions under the Leopoldian system also provided clear evidence of depopulation and impoverishment of the country as direct results of that system.(2)

Following the enumerations of the late 1910s, evidence of depopulation was suggested not only by government authorities, but also by church scholars and medical experts carrying out investigations in their areas of settlement. Based on reported statistics of the 1916 and 1917 enumerations, and assuming low life expectancy and low fertility, Le Grand(3) concluded that the country was being depopulated in view of the observed low proportions of children. Using non-statistical arguments in support of his conclusions, he stressed the profound impression of depopulation by emphasizing that "just as in Europe, during the summer days, when thousands of people leave the city for the sea coast or the mountains, figures are not crucial to prove the impression

---

(1) Romaniuk, A.: La Fécondité des populations congolaises; op. cit., p. 136. There is, however, neither demonstration nor mention in Romaniuk's study as to how the colonial occupation aggravated this situation.

(2) The Commission plainly reported that the material contained in their report was not supplied as much by evidence placed before them by European and indigenous witnesses as by the examination of official records.

(3) Le Grand, L.: La dépopulation du Congo et les recensements de 1917, in Congo, RGCB, Tome 1, 1921, p. 202-210.

of emptiness".(1)

To this opinion, Rutten, then Colonial Governor General, argued that population statistics collected during administrative enumerations were of poor quality and that no definite conclusion should be drawn there from. He nevertheless shared the profound impression of depopulation, as several regions he had frequently visited previously appeared much less populated, and he drew the attention of the government to what were for him indisputable causes of depopulation.(2)

The most publicized medical opinions on depopulation were those of Schwetz and his colleagues of the FOREAMI who carried out some field observations in parts of Bas-Zaire and Bandundu. Based on their own local population enumerations, they came to the conclusion that depopulation was an actual fact. Rejecting, from his findings in Kwango district, the usually suggested causes, i.e. epidemics, lowering number of births, high mortality and polygamy, Schwetz stressed that depopulation resulted from "the indigenes' reluctance to European civilisation and its corollaries: carriage, permanent labour, change of diet, brutal resettlement in different areas and manpower recruiting operations". In concluding, he referred to what he termed the "colonial government dilemma: either let the colony stagnate with the natives or cause it to develop with heavy loss of life".(3)

By 1920, the colonial Annual Report still stated that "the impossibility of conducting a complete enumeration of the population and deriving appropriate statistics does not enable appraisal of the general trend with certainty ... but, without doubt, the moral situation of the Black communities affected by social disintegration ... must harm natality ... When the period of social instability and crisis that the

---

(1) It may be remarked that the objective of these enumerations being largely to determine the number of those people liable to taxation and labour supply, it is doubtful that colonial officers, charged with both enumeration operations and collection of taxes, would not endeavour to reach the largest number of people, at least the male adults. This, however, did not mean that enumerations were complete, especially, as regards women and children, owing also to difficulties in reaching remote areas of the land.

(2) Rutten, A.: Notes de démographie Congolaise; in Congo, RGCB, Tome II, 1920; p. 268.

(3) Schwetz, J.: Contribution à l'étude de la démographie congolaise; in Congo, RGCB, Tome II, 1923, p. 322-323; Bruxelles.

Bantu society is undergoing has been replaced by the stability which the government policy is considering ... the future of the Black race could be envisaged with most total confidence". Later, in 1922, the Report stated further that "the problem of the population of the colony is not simply a medical one, it is also social and moral; the population must develop with a number of births normally outweighing the number of deaths ... however, in the artificial resettlements, conditions are not favourable for a healthy family life and, consequently, cause a crisis of birth numbers in these areas".

In the absence of comprehensive observations and definite statistical evidence, differing opinions and controversy over depopulation prevailed several years later, as, for example, in 1936, when on 21 February the Committee for the colonies in the Belgian Senate submitted a report suggesting a steadily declining population. However, it is argued in the present study that, though population total might have continued to decline in certain areas until the middle of the century, on a countrywide basis, the depopulation trends were certainly reversed by the early 1920s with moderate positive balance of births over deaths and negligible flows of in- and out- migration.

2. The Indirect Statistical Evidence

One way of approaching the problem of population trends in Zaire during the pre-statistical period was to examine the socio-economic conditions during that period, as was done in the preceding chapter. Another approach, that of the present section, is to examine retrospective evidence derived from statistics of the enumerations and inquiries conducted after the period in question. The mainstream data to this end will be the measured levels of sex ratios and proportions of children in the total population.

2.1 Measured infertility levels

In assessing the demographic situation of Zaire at the time of colonial conquest, Romaniuk considered reported statistics related to infertility for ever-married women aged 55 years and above during the 1955-8 survey. These women were born before 1900 and, assuming that

TABLE 1.2

Indices of Sterility Levels of Ever-Married Women Aged 55 Years and Above in the Low Fertility Areas of Zaire during the 1955-8 Demographic Survey[1].

Zone or Sub-Region	Total Population	Adult Sex-Ratio	Percentage Children	% Sterile Women 55+
Z. Kindu	65,000	98	25	47
Z. Kabambare	60,000	81	39	42
Z. Lubao	49,000	76	34	42
Z. Kabalo	43,000	79	42	34
Z. Kimbombo	40,000	83	21	34
S.R. Equateur	302,000	89	30	28
S.R. Rshuapa	395,000	93	27	25
S.R. Bas-Uele	468,000	89	24	25
S.R. Haut-Uele	582,000	93	28	28
S.R. Maniema	447,000	94	33	34

Source: Romaniuk, A.: La fécondité des populations congolaises; op.cit. p.148.

[1] See text for discussion on the validity of reported statistics.

they began childbearing at about 15 years of age, the beginning of the reproductive life of the cohorts in question may be situated between 1890 and 1915. Romaniuk stressed the striking infertility differentials between the areas termed "traditionally prolific", such as Kwango, Cataractes, Sud-Kivu and Nord-Kivu, with the proportion of childless women ranging from 4 to 6 per cent, and those termed "traditionally less prolific", notably Equateur, Tshuapa, Bas-Uele, Haut-Uele and Maniema, with the proportion of childless women ranging from 25 to 34 per cent. Areas of high proportions of childless women among the ever-married group were also recorded in the east-central part of the country, especially in the zones of Lubutu and Kindu, 47 per cent; Kabambare, 42 per cent; Lubao, 42 per cent; Kabalo and Kibombo, 42 per cent as per table 1.2 (p. 66). After emphasizing that these regions were previously subject to slave trading, Romaniuk concluded that fertility of these populations was already seriously affected before colonial rule, which effectively controlled the State only from 1900 onwards. (1)

It has already been demonstrated that factors with devastating effects on population growth during the period under consideration here were the military exploratory expeditions, the anti-Arab campaigns for complete occupation of the land, and above all the Leopoldian system of economic exploitation through recruiting operations and forced labour; all of which occurred largely before the year 1900. In addition, whilst it is true that slavery continued in some areas for about two decades after 1885, it is equally true that this activity was, since the second half of the nineteenth century, reduced to a minor scale domestically, as overseas exportation of slaves had long been prohibited and had become impossible by the turn of the century. Moreover, Arab slave raids occurred particularly in the east of Zaire and could hardly account for the higher infertility levels observed in the equatorial basin and northern parts of the country.

With regard to indices of infertility levels derived from the cohorts of women aged 55 years and over at the time of the 1955-8 survey, it cannot be accepted that for all areas reported statistics are reliable and conclusive. First, there is presumption, but no evidence, of age at marriage and marriage duration for the cohorts under con-

---

(1) Romaniuk, A.: La Fécondité des Populations Congolaises; op. cit., p. 135.

sideration. Second, the generally estimated 27 years as approximate life expectancy at birth of the women in question meant that a very small number from the original cohorts survived to the time of the survey. Third, several causes may have led to misreporting of live births, i.e. miscarriage, unstable and interrupted cohabitation owing to the conditions of the epoch and voluntary forgetfulness resulting from long-lasting fear of colonial raids on children. It seems, therefore, fair to conclude that the only suggestive trend shown by examination of the number of children by women aged 55 years and above at the time of the 1955-8 survey is an abnormally high fecundity impairment of the population. The determinants of this fecundity impairment were very probably largely social, although there is also evidence of biological causes.(1)

2.2 The Sex Ratio Evolution

Demographers agree that the sex ratio at birth is fairly constant for most countries of the world at about 105 and that, in the absence of significant migration, this figure reduces steadily with increasing age. It has also been suggested that, on the basis of some observations in the United States, the sex ratio for Black races is slightly lower than the generally observed levels. Finally, it has been remarked that, as a result of major wars, the sex ratio reduces appreciably, due to substantially higher male mortality. This particular effect of major wars on the sex ratio of the generations affected can be seen many decades thereafter. It should be noted, however, that the effect is more pronounced in European style wars than for example in slave raids, where adults and children, males and females, are subjected to the same treatment; a situation which affects the sex ratio very little.

Interpretation of sex ratio evolution in Zaire, as reported from statistics of the enumerations carried out up to the middle of this century, requires some caution in view of one peculiarity in age-sex definition of a child or adult. Indeed, owing to the age reference for defining children during that period, i.e. 0-16 years for girls and 0-18 years for boys, measurements of the sex ratio for adults are underestimated, whilst those for children are overestimated, because

---

(1) This subject is discussed in greater detail in Chapter XI.

of low or high figures in the numerator, as the sex ratio measures the number of males per hundred females. Further, the failure of these enumerations to collect statistics which would show population distribution by single, quintuple or decennial years makes it difficult to appraise the pattern of sex composition in different age groups.

As per table 1.3 (p. 70), the sex composition of the adult population in 1916 shows substantially large deviations in 14 out of 22 districts; recorded sex ratios are below 90 in 11 districts and above 120 in 3 districts. These abnormally high deviations without doubt reflect the impact of the socio-economic conditions which prevailed in the country a couple of decades previously. For the entire country, the adult sex ratio in 1916 is 93, clearly indicating that there were fewer adult males than adult females; very probably as a consequence of abnormally high male mortality. However, in view of the peculiarity in adult age definitions, the actual values of sex ratios must be slightly higher than those recorded in the table.

A closer examination of the table also reveals that from 1916 to 1922, the adult sex ratio improved nearer to 100 in more than 15 districts. Because of insignificant immigration into the country in those years,(1) it is most likely that much of this improvement in sex ratio resulted from the fact that by 1922 a substantial number of children recorded in 1916 had entered the adult age group with better sex composition. It may also reflect a reduction in adult male mortality due to the socio-economic conditions, which improved somewhat after 1908, when the Congo Free State became the Belgian Congo. It should be noted that improvement in data collection was relatively minor, save in area coverage of remote parts.

Unfortunately, the sex composition is not a sufficient index for population growth trend, as it does not refer to the actual number of inhabitants. Nevertheless, it certainly provides clear evidence of change in population structures over time. Thus, in view of the low level of the sex ratio in Zaire during the early enumeration of 1916 and its subsequent improvement by 1922, and assuming that any improve-

---

(1) The only noticeable immigration was that of labourers from Rwanda-Burundi and Southern Africa to work in mines and plantations of Kivu and Shaba regions; the number of such immigrants was in any case limited to a few thousand persons.

TABLE 1.3

Adult Sex Ratio and Proportions of Children
for Zaire in 1916 and 1922
(Based on the Registration System)

Province or Districts*	Adult Sex Ratio 1916	1922	Proportion of Children 1916	1922
Congo-Kasai Province	94	103	33.9	34.7
D. Bas-Congo	124	111	36.8	37.0
D. Moyen-Congo	107	115	32.6	36.0
D. Kwango	157	99	28.3	35.6
D. Kasai	78	115	37.3	33.4
D. Sankuru	90	90	28.2	34.3
Equatoriale Province	84	95	28.5	35.1
D. Equateur	79	98	23.9	32.5
D. Lac Leopold II	85	87	32.0	40.5
D. Lulonga	83	97	28.3	29.0
D. Bangala	94	92	34.6	40.0
D. Ubangi	78	95	25.8	34.5
Orientale Province	99	105	30.7	32.9
D. Stanleyville	108	111	35.8	34.8
D. Aruwimi	100	106	34.0	38.4
D. Bas-Uele	83	93	29.6	31.7
D. Haut-Uele	85	102	31.4	30.6
D. Uturi	157	115	25.6	32.1
D. Maniema	90	99	30.4	29.8
D. Lowa	99	-	31.4	-
D. Kivu	95	110	26.0	36.7
Katanga Province	84	97	32.7	31.9
D. Haut-Luapula	91	102	39.8	40.5
D. Lulua	101	125	33.2	31.1
D. Lomami	79	98	30.7	27.6
D. Tanganika-Moero	79	91	29.3	35.3
Zaire	93	102	31.1	33.7

Source: Rapport annuel sur l'administration du Congo Belge, 1916 et 22.

* The country was then divided into four provinces with the Congo-Kasai covering roughly the present regions of Kinshasa, Bas-Zaire and Bandundu; the Orientale covering the now Haut-Zaire and Kivu region; while Equatoriale and Katanga corresponded more or less to the present Equateur and Shaba regions.

ment in the statistical system would affect both males and females alike, it can be concluded that the observed changing sex ratio for adult population suggests, for the late 1910s and early 1920s, a marked decline in male adult mortality. There is no doubt that this decline in mortality was associated with improving socio-economic conditions.

2.3 Proportions of Children in Population Totals

Interpretation of these statistics generally requires considerable caution because, over time, reported higher or lower proportions of children to total population may result from variations in the level of fertility or mortality as well as from variations in the quality of the registration system; these factors may operate independently or, more often, together. Subsequent increase or decrease in percentage proportions of children may also result from variations in the same factors for aggregate adults. Admittedly, the colonial annual reports qualified the early population enumerations in Zaire as "partial enumerations" in terms of their coverage of area. This obviously constituted one major limitation in the quality of reported data, and guesswork was necessary in order to estimate the country's population totals.(1) Nevertheless, it remains true that even if the territorial coverage was not complete, the age and sex composition of the population actually observed may not be greatly affected and comparison is still valid between years.

As shown in table 1.3, the proportions of children recorded in both 1916 and 1922 seem very low by African standards. For 1916, indeed, only two out of 22 districts have proportions of children above 37 per cent and nine districts have percentages varying between 30 and 37, whilst half the total number of districts show 30 per cent or below. It may be noted that, assuming constant fertility with a Gross Reproduction Rate of 2.8, and declining mortality, with 27.5 years' life expectancy at birth, the proportion of children aged 0-14 years would be 36.37 as estimated in the model life tables.(2) Since Zaire's reported age-

---

(1) Chapter IV, 1.2 and table 2.1, carry discussion and illustration of that guesswork for deriving population totals.

(2) Coale and Demeny Regional Models, North family. See Chapter IX, 2.4, for reasons as to why the North family has been selected in preference to others.

groups are 0-16 years for females and 0-18 years for males, estimates of proportions of children should be much higher, i.e. close to or above 40 per cent. The proportion of children observed for 1916 thus indicates that the birth rate was low or child mortality high and that, to some extent, the figures are underestimated. It should be noted that the underestimation would have a marked effect, and would eventually affect both the numerator (number of children) and the denominator (total population), though the relative effect on the numerator is greater. Further, if it can be supposed that the quality of the enumerations did show some improvement over time, which could be expected, estimated ratios can still be compared on the assumption that the improvement was uniformly distributed throughout the age groups.

Hence, it is significant that by 1922, relative to 1916, the proportion of children had risen in 15 districts, bringing about a 2.6 per cent increase in the countrywide estimate. From table 1.4 (p. 73) the statistical evolution shows quasi-constant percentages of adult males, whilst the proportion of adult females decreased by 2.9 per cent during the same period. Thus, with ever slightly declining fertility,(1) the proportions of children observed in 1922 suggest that birth number had increased without affecting refined measures of fertility, or, more likely, that child mortality had reduced markedly. Such trends probably occurred as a result of increased stability of living conditions among indigenous populations, for whom measures to this end were being increasingly introduced by the central and regional Committees for the Protection of Indigenes. It should be recalled that children, particularly those aged 12 years and above, were not sheltered from the devastations of the years around the turn of the century.

Though not a precise measure of population trends in the very short term, evolution of the proportions of children also seems to support the hypothesis of higher child mortality or abnormally low birth numbers during the period before the 1920s. Justifiably, therefore, from the early years of colonial occupation through to the middle of the present century, the hypothesis of depopulation and fall in birth number dominated the demographic literature of Zaire. The truth concerning this depopulation trend is certainly more complex; whilst population totals continued to decline in some areas until the mid-

---

(1) Evidence of this hypothesis is demonstrated in Chapter IV, 3.1.

TABLE 1.4

Proportion of Adult Males and Females for Zaire in 1916 and 1922

(Based on the Registration System)

	Males		Females		Total	
Province or District	1916	1922	1916	1922	1916	1922
Congo-Kasai Province	32.1	33.5	34.0	31.8	66.1	65.3
D. Bas-Congo	35.0	33.1	28.2	29.9	63.2	63.0
D. Moyen-Congo	34.8	34.2	32.6	29.8	67.4	64.0
D. Kwango	43.8	32.0	27.9	32.4	71.7	64.4
D. Kasai	27.4	35.6	35.[illegible]	31.0	62.7	66.6
D. Sankuru	33.9	31.2	37.[illegible]	34.5	71.8	65.7
Equatoriale Province	32.6	31.6	38.[illegible]	33.3	71.5	64.9
D. Equateur	33.6	33.5	42.[illegible]	34.0	76.1	67.5
D. Lac Leopold II	31.4	27.7	36.5	31.8	68.0	59.5
D. Lulonga	32.5	34.9	39.2	36.1	71.7	71.0
D. Bangala	31.7	28.8	33.7	31.2	65.4	60.0
D. Ubangi	32.6	31.8	41.6	33.7	74.2	65.5
Orientale Province	34.4	34.3	34.9	32.8	69.3	67.1
D. Stanleyville	33.4	34.3	30.8	30.9	64.2	65.2
D. Aruwimi	33.1	31.6	32.9	30.0	66.0	61.6
D. Bas-Uele	32.0	32.9	38.4	35.4	70.4	68.3
D. Haut-Uele	31.6	35.1	37.0	34.3	68.6	69.4
D. Uturi	45.4	36.4	29.0	31.5	74.4	67.9
D. Maniema	33.0	35.0	36.6	35.2	69.6	70.2
D. Lowa	34.1	-	34.5	-	68.6	-
D. Kivu	36.0	33.1	38.0	30.2	74.0	63.3
Katanga Province	30.8	33.6	36.5	34.5	67.3	68.1
D. Haut-Luapula	28.7	30.1	31.5	29.4	60.2	59.5
D. Lulua	33.6	38.3	33.2	30.6	66.8	68.9
D. Lomami	30.5	34.7	38.8	37.7	69.3	72.4
D. Tanganika-Moero	31.3	30.8	39.4	33.9	70.7	64.7
Zaire	33.2	33.5	35.7	32.8	68.9	66.3

Source: Rapport annuel sur l'administration du Congo Belge, 1916 et 1922.

* See footnote in Table 1.3, (p. 70).

century, at a countrywide level this trend was probably reversed by the early 1920s, as discussed in the following section.

3. New Estimations of Trends in Total Population

3.1 The Methods and Assumptions

As mentioned earlier, our methodology for measuring the most probable population trends for the period 1885-1925 will consist of establishing back projected estimates by means of the so-called "mathematical" method,(1) based on variables derived from the adjusted data of the annual enumerations and inquiries after 1925, further adjusted for the assumed effects of the socio-economic conditions which prevailed in the country during that period. A brief explanation is provided showing the justification for the assumptions which have been made and also how the variables have been derived.

Concerning the historical process of Zaire's depopulation, it is certain, as shown by examination of the socio-economic conditions and some indirect statistical evidence, that the early period of colonial occupation precipitated a demographic crisis which led to the depopulation of the country, especially on the river banks of the central depression. The historical process of depopulation was fairly similar in the different regions of the country and is briefly recalled here with the case of the Baboma and Banunu populations of the river and its main affluent (Kwa-Mfimi) north of Kinshasa. Based on direct observation and detailed information by Stanley, it would appear that these areas were more populated previously than during the enumerations of the 1910s and 1920s.(2) Another observer, De Clerq,(3) reported in

---

(1) The distinguishing feature of this method is that calculation is referred only to the figure of total population at a certain date to which is applied an assumed rate of growth as a function of time.

(2) As he made several and relatively long "stops" in the area, Stanley's estimates were fairly detailed. For example, he estimated the population of the main river between Kinshasa and Bolobo at about 60,000 people, a figure which fell to about 10,000 persons by the late 1910s, with about half of this number in Bolobo alone.

(3) Cited by Storme, M. in: Ngakabe, la prétendue reine de Bokoma, d'après H.M. Stanley; ARSOM, 8, Nouvelle Série, 2, 1956, Bruxelles.

1893 that the areas were considerably populated, but, five years later, he noted that not only had the population declined substantially but also numerous villages had disappeared. The depopulation was thus very rapid; and, according to the indigenes, the general cause was "etumba" or war, following the arrival and settlement of the Whites.(1) Initially, it was a commercial disaster. The Baboma and Banunu previously traded products such as ivory acquired in the equatorial basin for clothes and other European products in the markets around Kinshasa. From 1891, a Belgian company(2) was granted the monopoly for this trade. In 1895, the area of Mai-Ndombe (with Baboma, Banunu and other tribes) was made Domain of the Crown; then began taxation in kind, especially ivory and rubber, and also the atrocities upon indigenous populations. In 1893, epidemics of smallpox reached the area from Sankuru, reportedly brought in by Stanley's soldiers and crew, and not much later, from the main river and Kwa, occurred severe epidemics of trypanosomiasis.(3) In the meantime, and regardless of the conditions, numerous indigenes were recruited into the State armed forces or migrated to Kinshasa and nearby. All these developments certainly resulted in a substantial reduction of the population, especially between 1890 and 1900. With slightly differing degree and time, even tribes outside the central depression, such as the Yakas and Lundas, initially lost their trading position before suffering the atrocities of the Leopoldian system and various epidemics. The Leopoldian era was officially ended in 1908, but the conditions of the system persisted several years longer, during which time there were still periodically severe epidemics; thus, it can be presumed that mortality was still abnormally high for most of the 1910s, but had declined markedly by 1920, with increasing implementation of the measures for conservation of indigenous populations.

Secondly, the period of reversal from declining to rising population trends. On 21 February 1936, the Committee for the colonies in the Belgian Senate submitted a report, cited by Trolli,(4) indicating

---

(1) The present author is a native of Bolobo, one of the major towns of the area and which long served as headquarters of the Baptist Missionary Society.

(2) Cited by Nicolai, H.: Divisions régionales et répartition de la population dans le sud-ouest du Congo; op. cit.

(3) Ibid.

(4) Trolli, Dr.: in Essor colonial et maritime, 22 and 29 March 1936, Bruxelles.

a steadily declining population, as shown below.

Year	Enumerated Population	Non-Enumerated Population	Total Population
1912	4,500,000	7,500,000	12,000,000
1922	7,015,000	3,485,000	10,500,000
1933	8,972,000	400,275	9,372,000

Clearly, the most significant trend is provided by the estimates of the non-enumerated population; the derivation of which was left, initially, to the discretion of local enumerators. The present author is, therefore, inclined to agree with Trolli's conclusion that the non-enumerated population, representing only 4.5 per cent of the enumerated population in 1933, shows a proportion that is unrealistically low even for the best of the enumerations of that period. Most significantly, this Senate report suggested that, in 1933, the population was still declining. However, the present analysis of the socio-economic conditions suggests that the end of the decline in total population (when the number of births equalled that of deaths) was surely before 1933, and most probably between 1915 and 1920; i.e. a few years after the Leopoldian system ended and after the peak of epidemics, and a couple of years following the colonial authorities' concern and measures to increase the number of births. Therefore, in calculating estimates of the population prior to 1925, it is assumed here that the reversal from declining to rising trends occurred within the period 1915-1920. Such an assumption seems compatible with subsequent population growth, based on rates of natural increase derived from adjusted data of the annual population inquiries.(1)

Thirdly, the assumptions about the base population figures for the initial date of the reverse projections. It is demonstrated later in this study that population totals reported from the annual administrative enumerations and inquiries conducted between 1925 and 1952 implied impossible fluctuations in annual increase for several successive years and some periods.(2) Previously, in order to derive more plausible data, theoretical estimates were made on the basis of adjustments of

---

(1) See chapter IV, table 2.15 (p. 126) and graph 2.1 (p. 127).

(2) See Chapter IV, sections 2.1 and 2.2.

the statistics from the inquiries.(1) To that effect, the population total for 1952, when enumerations and inquiries first indicated similar figures, had been maintained; hence, the population total for 1925 was calculated with the formula $Pt = Po\ (1+r)^n$, assuming a constant rate of natural increase of 0.77 per cent, the geometric average derived from statistics of the inquiries. Different formulae were used to obtain population totals for the intervening years. Our examination of the demographic situation of Zaire for the period 1925-1955 led to the conclusion that, except for the World War II years, the theoretical estimates so derived appeared fairly plausible. Therefore, in developing back projected estimates for the years 1885-1925, we shall proceed on the assumption that, in 1925, the figures of 9,565,000 persons as total population and 0.53 per cent as rate of growth obtained from adjusted statistics of the inquiries, approximated the actual data; whereas the population of 7.7 million reported from the enumeration was too low and the reported 3.4 per cent growth rate too high.

Fourthly, assumptions concerning the decline in total population. The impossibility of consulting the official records of the Leopoldian period and other relevant documents makes it necessary to estimate the population decline(2) by careful computation of available statistical and non-statistical information. As already mentioned, Casement suggested a decline in total population by nearly 3 million for the decade commencing in 1890; i.e. an excess of deaths over births, in the absence of significant out-migration, at the close of the decade. This estimate may be used for further hypothesis, as Casement had long witnessed the situation and conducted an investigation on the conditions in the country, and also possessed more than 20 years' experience of African affairs, dating back to 1884, when he first travelled to Zaire with Stanley.(3) Though obviously incomplete, information supplied by

---

(1) AIMO: in Bulletin Mensuel des Statistiques du Congo Belge; No. 36, October 1953; p. 265; Bruxelles.

(2) The reason for the declining population was not solely mortality crisis, but also reduced birth numbers owing to disturbances in social and family life; migration outside the country was certainly negligible, since socio-economic conditions soon became similar in most neighbouring countries.

(3) Brian Inglis : Roger Casement; Hodder and Stoughton, London 1973, p. 74.

missionaries and others about villages which had disappeared or proportions of inhabitants who died, would tend to suggest that Casement's estimates were rather conservative. The resulting rate of decline in total population during 1890-1900 would also apply to the period 1900-1905, as, reportedly, the atrocities practised upon indigenes were recorded in one unbroken stream until the creation of the Committee of Inquiry. Admitting continued decrease in total population, the present study suggests a decline by about 0.5 million at the close of the period 1905-1915, since (a) there was some improvement in the conditions following the publication of the Report of the Commission of Inquiry in 1906; (b) the Leopoldian system came to an end in 1908, though battles continued over State boundaries and for the suppression of indigenous revolts; and (c) periodical severe epidemics, such as trypanosomiasis still prevailed, with a peak in 1912, in the face of inadequate mass medicine.

Fifthly, the impact of the First World War. Certainly, as stressed by Guebels[1] and Young,[2] socio-economic developments during World War I, 1914-18, had significant repercussions in Zaire, called upon by occupied metropolitan Belgium to make a war contribution, in particular to support costly military campaigns to help seize German Africa.[3]

---

(1) Guebels, L.: Relation complète des travaux de la Commission Permanente pour la protection des indigènes, 1911-51; Duclot, Gembloux (Belgium), 1952.

(2) Young, C.: Politics in the Congo, Decolonization and Independence; Princeton University Press, 1965.

(3) The Act of Berlin, 1885, imposed neutrality on the conventional Zaire basin. Reportedly, however, in August 1914 the Germans made incursions into Zaire, crossing the eastern frontiers. Subsequently, the Belgian government ordered the colonial troops to take the offensive. (i) In October 1914, a detachment joined the Franco-British troops against German Cameroon until the fall of Yaounde in January 1916. (ii) Two companies went to Rhodesia and aided in driving the Germans out of the British territory, where they initially attacked Abercorn. (iii) A much larger scale offensive followed with forces in the east of Zaire carrying out in conjunction with the British a powerful attack against German East Africa, from August 1916 to November 1918, especially in Lake Victoria, Kigoma, Tabora and Mahenge. Later, the Peace Conference of 1919 rewarded Belgium with a mandate over the former German territories of Rwanda-Urundi, while the Convention of Saint-Germain-en-Laye, in September 1919, overtook the Act of Berlin. The new convention also made more flexible the economic regime previously imposed by the Act of Berlin; it reserved the system of open door for commerce in Zaire's basin exclusively to the signatories and members of the League of Nations adhering to the convention; it also authorized Belgium to fix custom duties in Zaire for ships and merchandise.

Although the army itself was not large, 260,000 porters were required for its logistical support. It was during World War I that the 60-day forced labour provision was instituted by an ordinance-law of 20 February 1917, as was the much-used law of 24 July 1918, giving plenary power to the administration to impose a heavy fine of 200 francs (+/- 6600 francs in post-World War II currency) or a week in prison for any disrespectful word, act or gesture. The 1919 report of the Commission for the Protection of Indigenes stated that "The Congolese population spared neither its blood nor its efforts to contribute to the war effort, whereas the war situation prevented the administration from coming to grips with the problem of epidemic deseases, thus permitting the depopulation of certain areas through the rapid spread of sleeping sickness and other diseases." However, it must be emphasized that, in terms of population growth of the country taken as a whole, only the balance of births and deaths with net migration are to be accounted for. Because migration was certainly insignificant and indications are lacking for numerical appraisal of loss of life resulting from the World War I effort, it may be assumed that the non-growth period for 1915-20 is a reasonable estimation.

3.2 Calculations and Results

Given the considerations and assumptions of the preceding section, the population totals for the years 1885-1925 can now be estimated. Admitting a total population of 9,565,000 in 1925 and assuming a non-growth period during 1915-1920, it can be estimated that total population was probably 9.3 million or 9.4 million during that five-year period. If, at the end of the non-growth period, total population had been 9 million people, the implied average rate of growth would be 1.2 per cent per annum over the next five years from 1920 to 1925; this is obviously not plausible, given the growth rate of about 0.6 per cent per annum during the late 1920s. Raising the total population from 9 million to 9.3 million would imply an annual growth rate of 0.56 per cent whereas a total population of 9.4 million would imply a growth rate of 0.35 per cent, which seems to be more in agreement with the rates of growth in the years after 1925.

Thus, assuming that total population in 1915 (i.e. the beginning of the non-growth period) was 9.4 million, total population in 1905

would depend on the rate of decline. If the rate of decline was 0.1 per cent a year, total population in 1905 was then 9.5 million; if that rate was 0.7 per cent, total population would have been 10.1 million. With the assumed average rate of decline of 0.5 per cent over this ten-year period, total population in 1905 was therefore 9.9 million people.

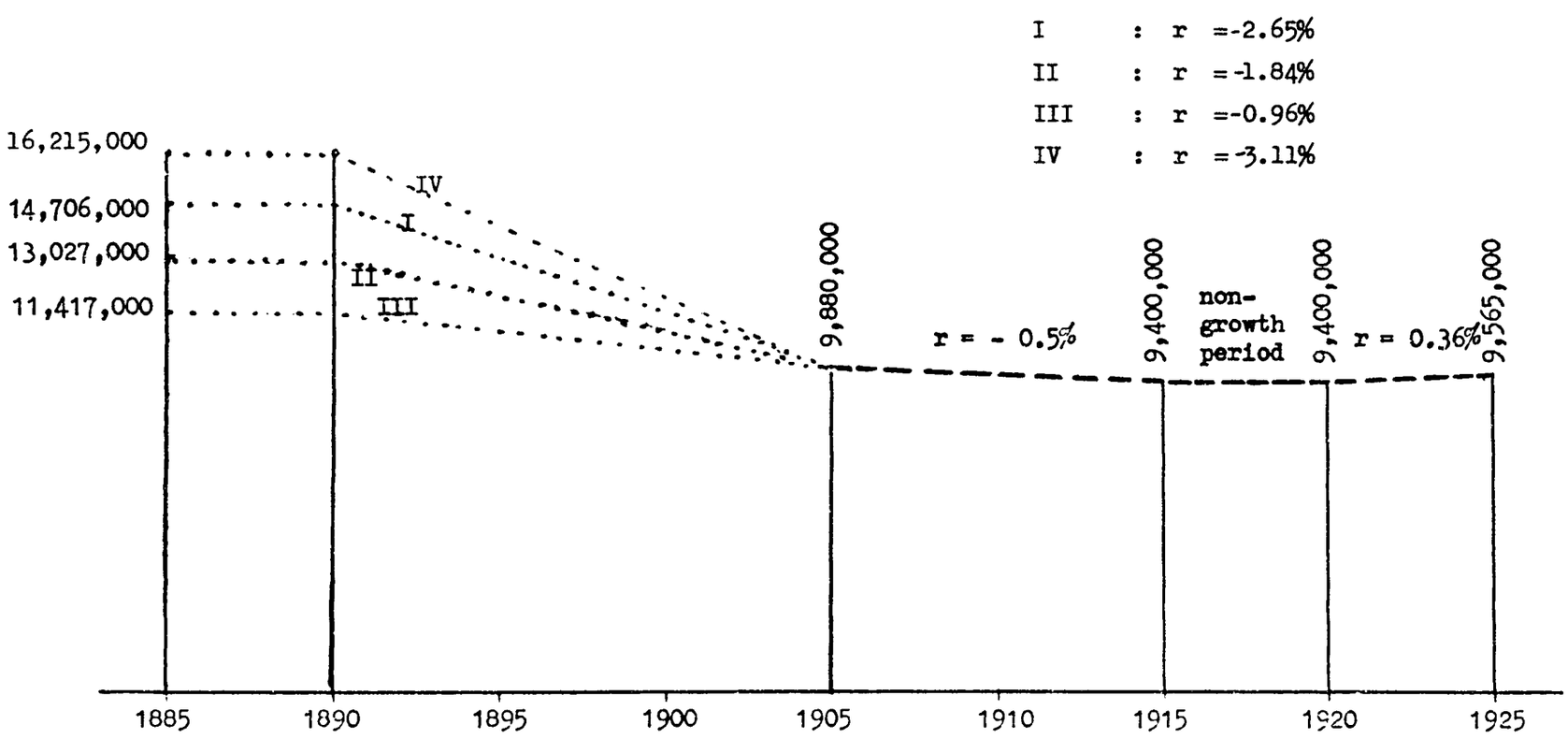
As stated previously, the 15 years between 1890 and 1905 reportedly constituted the period of rapid depopulation. Three hypotheses are thus possible. Firstly, assuming that Casement's figure of 3 million for 1890-1900 was correct and applicable to the years 1900-1905, total population in 1890 was then 14.7 million and the rate of decline 2.65 per cent per annum. Secondly, assuming the base figure was an over-estimation and that total decline was 2 million for the decade of reference, total population in 1890 would be 13 million and the rate of decline 1.84 per cent per annum. Thirdly, reducing further total decline for the decade of reference to 1.0 million only, a figure that Morel considered as definite miminum total population in 1890 would be 11.4 million and the annual rate of decline 0.96 per cent. A fourth possibility, assuming, contrary to the above hypotheses, that the base figure was not an exaggeration and that the total decline was as much as 1.0 million more for the decade of reference, then the population total in 1890 would be 16 million and the rate of decline 3.11 per cent per annum.

For the period 1885-1890, population change may be assumed as almost stationary, based on the fact that deaths resulting from war conditions and epidemics were not yet widespread enough to outweigh births and cause a decline at a countrywide level. The results of population totals so obtained for the whole period 1885-1925 are illustrated in graph 1.1 (p. 81).

Comparing these results with the early estimates referred to in Chapter I, it would appear that the total population of Zaire in 1885 was around 14 million people, i.e. the mid-point of the four hypotheses given above, falling between the estimates made by Vierkandt and Wagner and Supan, and in the mid-range of estimates arrived at by Coquilhat. It is quite certain that the figure of total population could not have been in excess of 20 million as suggested by Reclus, Sollner, Wahis and Stanley; and it is very unlikely that it was as small as 11 million as suggested by Vierkandt.

Graph 1.1

ESTIMATED TRENDS IN TOTAL POPULATION OF ZAIRE FOR 1885-1925



3.3 The Implied Levels of Fertility and Mortality

As with population totals just reviewed, the present estimation of historical rates of birth and death is based on a retrospective view from knowledge of the demographic parameters provided by recent surveys and censuses. In deriving birth and death rates implied by the population totals estimated for Zaire during the period 1885-1925, account has been taken of the following observations.

First, there is apparent evidence, for that period, that birth numbers certainly declined from a previously higher level, following the already mentioned disruption in social and family life. Moreover, analysis of fertility by age based on data from the 1955-8 survey has indicated that this decline in birth number has been reflected in the more refined measures of fertility.(1) Second, as with other countries of tropical Africa, the peopling of Zaire as a whole was sustained almost entirely by natural increase, that is the balance of births and deaths. Related to this point, as Caldwell put it, "a much more plausible hypothesis is that natural causes alone always tended to leave a long-term margin of births over deaths; this margin was, however, normally eliminated by deaths arising from violence other than accidents",(2) the kind of evidence discussed in the preceding chapter. Third, although Zaire comprises sizeable areas exhibiting relatively low fertility, it would be unwise in view of the first observation above to postulate for the years around 1885 historical crude brith rates below the range of 45 to 50 live births per thousand persons, the estimated average for Africa prior to this century.(3)

Because of the largely illustrative purposes of the estimation, there is justification in deriving the implied levels of fertility and mortality for the period 1885-1905 only according to the second hypothesis of the calculation. With birth rates ranging from 45 to 55, if, for convenience of analysis, stationary population can be assumed at the initial date of 1885(4) and constant birth rates after that

---

(1) These measures are shown in Chapter X, section 3.

(2) Caldwell, J.C.: The Demographic Victory; op. cit.

(3) Ibid.

(4) Such an assumption is fairly valid, as most previous investigation suggested for the whole of Africa a peak of half of one per cent as growth rate around 1880, only to decline with the impact of the European forward movement in sub-Saharar. Africa, see Caldwell, above.

year, the variations in death rates implied by estimated growth rates could be as in table 1.5 below.

TABLE 1.5

Range of Fertility and Mortality Levels[a] Implied by New Estimates of Population Totals for Zaire, Assuming Constant Birth Rates in 1885-1925

Period	Assumption I		Assumption II		Assumption III		Growth Rate Per cent
	BR	DR	BR	DR	BR	DR	
1885-1890	45	45	50	50	55	55	0.0
1890-1905	45	63	50	68	55	73	-1.8
1905-1915	45	50	50	55	55	60	-0.5
1915-1920	45	45	50	50	55	55	0.0
1920-1925	45	41	50	46	55	51	0.4

(a) See text for assumptions regarding initial fertility.

From a demographic viewpoint, the impact of growth trends on total numbers for the whole period appears relatively little, except for the years 1890-1905 during which, for birth rates of about 55 per thousand, the corresponding death rates were about 73 per thousand.

It may well be that birth rates declined during that period, whereas the growth rates remained negative; if this was so, then the death rates would have been lower than indicated in the table. For example, if the birth rate was 35 per thousand, with a negative growth rate of 1.8 per cent, the implied death rate would be 53 per thousand persons. Possibilities of birth rates above 55 per thousand would seem limited, whilst, in contrast, those of much lower birth rates are not to be ruled out, because they have been observed in some areas at a later date, for example in the 1955-8 demographic survey.

CONCLUSION OF PART ONE

1. Part one of this study has attempted to establish trends in Zaire's population growth during the period 1885 to 1925. The latter date marks the beginning of systematic collection of population statistics for the entire country, whereas the former date corresponds to the initial formation of the State by the Belgian colonial power. The intervening years witnessed controversial estimates of Zaire's population totals, previously ranging from 11 to 40 million and subsequently falling to about 10 million in the early 1920s. These wide differences reflected not only the conjectural nature of the early estimates, but also an apparent depopulation with colonial occupation and exploitation of the territory. Examination of the socio-economic conditions of that period and reverse population projection from adjusted data of the annual enumerations and inquiries conducted after 1925 have led to several inferences, of which the most important are as follows.

2. The numerical portrayal of the trends indicated that Zaire's total population for 1885 was around 14 million, a figure approximately equal to the estimated total population at independence 75 years later. Very likely, the population was quasi-stationary until 1890, after which it declined considerably at an estimated negative growth rate of about 2½ per cent, yielding a total population of 9.9 million by 1905; with a further decline at an estimated rate of minus 0.5 per cent, the population total fell to 9.4 million by 1915. This decline resulted largely from factors related to the Leopoldian system of complete occupation and economic exploitation of the Congo Free State, a situation which brought mortality crisis and reduced birth numbers, both of which were further aggravated by frequent severe epidemics, especially trypanosomiasis, in the absence of adequate public health services. In all probability, the declining trend for the population as a whole was reversed between 1915 and 1920, by which time the Leopoldian system had long since come to an end and the peak period of epidemics had passed, whilst recommendations of the central and regional committees for the protection of indigenes were everywhere

being implemented with increasing force. The five-year period up to 1920 was presumably a period of non-growth, after which total population increased, not without fluctuations, at an estimated average rate of a third of one per cent per annum in the first half of the twenties.

3. With the assumption of quasi-stationary population for 1885-1890 and constant fertility thereafter to 1925, estimated rates of growth for the whole period implied death rates in the range of 41-73, and birth rates in the range of 45-55 live births, per thousand persons. However, the observed degree of social disruption and family life, especially separation of husband and wives, certainly resulted in a lowering of the birth rate, with differing impact on more refined measures of fertility in the most ravaged areas, i.e. along the rivers of the central depression, in the northeast and south-centre, and especially in the rubber producing areas. For the country taken as a whole, with regional negative as well as positive growth rate lowered birth rates implied lowered death rates subsequently reducing the actual deficit of the growth momentum of the population in the following years.

4. The traditional resettlement of the indigenous populations, already affected by the slave trade of the 16th to 19th centuries, suffered some further shifts during the period 1885-1925, as a result of the movement of the indigenes into safer areas away from certain kinds of European presence and also as a result of colonial reallocation of manpower or resettlement for effective administration of the territory. Although insignificant on the whole, some emigration of indigenes was noted, with populations taking refuge in the neighbouring states of Sudan, Uganda, Rwanda and Burundi, particularly during the anti-Arab campaigns and colonial suppression of the revolts. On the other hand, for largely similar reasons and for the purposes of labour in mines and plantations, there was some immigration into Zaire of Africans from the neighbouring states of Angola, Zambia, Rwanda and Burundi. In comparison with external migration, relatively greater population movements occurred within the country itself throughout the first quarter of the century. The most noticeable of such movements occurred in eastern Zaire towards the mountains, from the Kasai areas south-

wards and, within the different regions, from customary or rural settlement into embryonic extra-customary or urban centres.

5. At the end of this early period, it could be reasonably expected that indigenous populations would further favour large numbers of children, but attempt to evade administrative population enumerations and inquiries which were then usually associated with tax payment in kind through compulsory labour. Elsewhere, recognizing the depopulation trends for most parts of the country, the colonial authorities would eventually enhance measures directed at bringing about greater population growth, partly by encouraging large numbers of births and partly by attacking factors of high mortality. However, no population policy was officially publicized in Zaire throughout the whole colonial era.

PART TWO

CONTINUOUS REGISTRATION, ANNUAL ENUMERATIONS AND INQUIRIES: 1925-55

Introduction

Chapter IV : Growth Trends for the Entire Population

Chapter V : Socio-economic Measures Related to Population Growth Before, During and After the Second World War

Chapter VI : Regional Differentials in Growth Trends

Conclusion

Introduction

Continued controversy over the size, characteristics and growth of the population led the government authorities to reinforce the population regulations, to intensify actions to promote rapid growth and to diversify the sources of statistics.(1) Thus, from 1925 to 1955, annual population inquiries based on samples were to be undertaken, in addition to data collection through the continuous registration system and the annual enumeration based upon it. Moreover, private institutions and individuals, generally sponsored by the government, were encouraged to carry out field investigations of selected villages or larger areas.

The increase in data sources naturally led to considerable proliferation of population estimates and literature, not without some improvement over time. But partisan interpretations of these generally defective data often resulted in further controversy. Altogether, the studies reflected two major colonial concerns: on the one hand, the search for a rapid population growth in reaction to the purportedly continuous depopulation and, on the other hand, the estimation of the present and future size of the available labour force. Further studies undertaken by private organizations, mostly medical, or individuals such as doctors, missionaries, public servants and colonial settlers not only lacked a firm scientific approach, but often aggravated the situation, as their authors were anxious to provide statistical proof of the alarming demographic trends they believed they had observed.

It should be noted that the period 1925-55 witnessed rapid and profound economic transformations in Zaire: the development of large mining and plantation companies, the development of transportation and energy systems, a rush of European settlers introducing new crops and agricultural techniques, and the expansion of manufacturing industries. All these activities required massive migration of labourers, generally in their prime working years, into embryonic or active economic centres,

---

(1) From the mid-twenties on, arguments to support the depopulation trend changed. Previously, attributed to the mortality crisis of the Leopoldian system, depopulation allegedly continued after that system had been brought to an end, due to declining birth numbers in large areas of the country.

resulting in shortages of young adult males in the rural areas. Further, the economic boom in Zaire during and after World War II facilitated implementation of vast innovations in the field of public health, education, employment and urbanization. Thus, within a quarter of a century, the population of Zaire experienced hard and unfamiliar conditions of living (often deleterious to growth) rapidly followed by various socio-economic incentives(1) to encourage high birth rates and increased population growth.

Later discussions detail how the quality of data collected through the various sources is inadequate for a rigorous demographic analysis. For example, until 1955 and even after, several remote areas of the country remained outside administrative control; while for those areas under effective administration, under-registration of births, deaths, migration and other vital events was observed in undetermined but substantial porportions. Besides, population enumerations were everywhere reported solely in terms of four broad groups, i.e. males, females, adults and children; thus making it impossible to evaluate changes in population structure and age composition over time.(2) Given the state of available data, no attempt is made in this study to speculate on hypothetical age-sex distributions and annual levels of components of growth for the period 1925-55. Instead, Chapter IV concentrates on tracing growth trends for the entire country and Chapter V examines the socio-economic factors which may have affected those trends; Chapter VI evaluates differentials between the low and high fertility regions.(3)

In tracing population trends during 1925-55, the methodology will consist of reviewing reported estimates of the annual enumerations and inquiries, and establishing some assumptions about the levels of mortality, fertility and migration implied by comparisons with stable models or other available documentation. Concerning the alleged continued depopulation, available evidence suggests that declining trends certainly persisted for areas such as the Uele and Tshuapa; but for

---

(1) These factors are discussed in Chapter V.

(2) An attempt was made by AIMO to distribute the 1953 population by sex and 5-year age groups according to a hypothetical stationary model, but this would appear to have little practical value.

(3) The regions constitute the largest administrative divisions of the country: Part three of this study, making use of detailed data, examines in greater depth those areas of low and high fertility.

the country as a whole, this decline was already reversed by 1925 as indicated in Chapter III. Although this section deals mainly with the period 1925-55, tabulated data include the years up to 1958 in order to allow some evaluation of the consistency with the results of the 1955-8 demographic survey reviewed in Part three.

CHAPTER IV

GROWTH TRENDS FOR THE ENTIRE POPULATION, 1925-55

1. The Data Sources and their Quality

The systems for the collection of population statistics during 1925-55 are described in the main introduction. In fact the procedures for collecting these statistics and the figures subsequently reported bore serious defects resulting from limitations in the regulations themselves and difficulties in carrying out the actual field operations.

1.1 Data from the Continuous Registration System

Established in 1910 and reinforced in 1933, the population regulations required adult persons to present themselves for registration and parents to register their children and other minor persons under their tutelage. Each indigene had to obtain and carry a permit when travelling for more than 30 days. With regard to births and deaths, the 1933 decrees stipulated that their registration could be made compulsory for certain areas that the regional commissioner might designate. From 1942 onwards, births and deaths were to be reported by the closest relative or the person who witnessed the event within eight days of its occurrence. From the inception of the registration system, individual cards identifying name, age and sex for adults and children were to be kept in the headquarters of the zone of residence and additional entries were to be made from time to time.(1)

In principle, such a system should have supplied important data on population trends, as examination of the cards would, at any time, reflect changes in number of births, deaths and migrants as well as other demographic characteristics by age and sex for the country and its different regions. In reality, it was observed that indigenous populations were reluctant to supply the information required just as

---

(1) Rufast: Instructions pour la mise en application du système de recensement sur fiche (circulaire du 18/9/1922) in Recueil a l'usage des fonctionnaires et agents du service territorial au Congo Belge; p. 249-259; Ministère des Colonies, Bruxelles, 1930.

the administrative personnel were seldom sufficient in numbers and experience to keep the registration cards up to date. The limited number of registration offices, poor means of transport and communications and various other material obstacles added to the practical difficulties in the functioning of the system. In the early 1950s, for example, it was estimated that double entries and other irregularities affected about 40,000 registered persons or 3 per cent each year, owing to the high mobility of labourers who left their traditional area of residence without a permit but subsequently complied with registration regulations in their new place of residence.(1) The most important defects in the registration system were related to underreporting of births and deaths, especially before the year 1948, after which reporting of such events became compulsory for the entire country. Even so, the system left uncovered several remote areas throughout the late fifties, because of practical administrative difficulties. One such difficulty concerned the low number of registration offices, totalling less than 2,000 for the nearly 52,000 villages of Zaire and several large towns with over 50,000 people.

1.2 Data from the Annual Enumerations

In theory, these data were assembled through overall control and evaluation of the continuous registration records in the different zones, and, subsequently, regional figures were combined to provide the total for the entire country. For this purpose, local officials were to visit villages and other settlements under their supervision to ensure that each person had a duly completed card and to ascertain that vital events and migrations had been recorded according to the regulations. Effectively started in 1916, such enumerations were to be conducted each year, at any time, provided that the regional results were sent to the governor general by the first of January.

Despite this time requirement, in practice, population enumerations were conducted only once every two or three years. Data so collected naturally bore the defects and limitations inherent in the functioning of the registration system just reviewed. As already mentioned, statistics were tabulated by sex and broad age groups of adults and children

---

(1) AIMO: La Population Congolaise en 1953; p. 77.

Table 2.1

DERIVATION OF COUNTRYWIDE POPULATION TOTALS IN THE ENUMERATION FOR ZAIRE DURING 1925-1949.

Year	Enumerated Population*			Estimates of Non-Enumerated Populations*	Total* Zaire
	Registered (1)	Non-Registered (2)	Total (1)+(2)	(3)	(1)+(2)+(3)
1925	-	-	7,693	2,307	10,000
1926	-	-	7,955	2,045	10,000
1927	-	-	8,121	1,879	10,000
1928	-	-	8,419	1,581	10,000
1929	-	-	8,674	1,326	10,000
1930	-	-	8,803	782	9,585
1931	-	-	8,881	338	9,419
1932	-	-	8,956	427	9,383
1933	-	-	8,972	400	9,372
1934	7,640	1,642	9,282	-	-
1935	7,680	2,095	9,775	1,225	11,000
1936	8,247	1,800	10,047	953	11,000
1937	8,367	1,850	10,217	-	-
1938	8,522	2,052	10,304	-	-
1939	8,573	1,755	10,328	-	-
1940	8,830	1,524	10,354	-	-
1941	9,073	1,435	10,508	-	-
1942	9,073	1,457	10,530	-	-
1943	9,373	1,113	10,486	-	-
1944	9,321	1,121	10,442	-	-
1945	9,257	1,251	10,508	-	-
1946	-	-	10,667	-	-
1947	7,529	3,232	10,761	-	-
1948	-	-	10,914	-	-
1949	-	-	11,073	-	-

* in '000's

Source: Colonial Annual Report, 1925-1949.

(under 16 years for girls and under 18 years for boys). They also provided some rough indication of migration streams for certain areas in certain years but without reference to the age and sex of the persons concerned or the destination and duration of stay. Greater limitations of the enumeration records were related to the liberty given t' regional commissioners to designate areas of compulsory registration; this naturally gave rise to substantial guess-work in estimating the regional and total populations left uncovered by the registration system. As shown in table 2.1 (p. 93), the population totals of the enumerations comprised three categories of persons: (1) those enumerated through the registration; (2) those enumerated outside the registration system; and (3) those estimated without any enumeration. It has been reported that, from 1938 onwards, about 80 per cent of the entire population was registered, a proportion increasing steadily in the following years. However, by 1955, the proportion of persons not subjected to the registration system approximated 10 per cent for the entire country, and relatively larger percentages were noted for certain regions, especially in Haut-Zaire (table 2.2).

Table 2.2

PERCENTAGE OF POPULATION SUBJECTED TO THE REGISTRATION SYSTEM AND PROPORTIONS OF PERSONS PER REGISTRATION OFFICE BY REGIONS: ZAIRE, 1953-58

Region	% Pop. Subj. Registration 1953	1955	1958	Registration Offices Number	Pers./Off.
1 Kinshasa 2 Bas-Zaire 3 Bandundu	97.6	99.0	100.0	297	10,738
4 Equateur	-	95.0	100.0	220	8,189
5 Haut-Zaire	67.0	79.6	86.3	272	9,098
6 Kivu	87.2	89.6	95.5	332	6,813
7 Shaba	72.0	88.7	93.8	399	4,146
8 Kasai-Oriental 9 Kasai-Occidental	99.9	100.0	100.0	248	8,704
Zaire	-	91.8	96.0	1,768	7,658

Source: Colonial Annual Report; op. cit.

1.3 Data from the Annual Inquiries

Population inquiries for Zaire were ordered from 1925, but they were effectively conducted from 1927 to 1953, with an interruption between 1940 and 1947. They were designed to supplement enumeration records by collecting data on age, sex, marital status, mortality, fertility and migration characteristics. Originally covering all types of population settlements, from 1935 onwards they were restricted to traditional rural areas, thus excluding villages where the indigenous chief of the area resided as well as those villages under the influence of a neighbouring church mission, European enterprise or large commercial centres. The number of inhabitants in the sample varied between a minimum of 300 persons and a maximum of 1,000; the proportion at the regional level varied between 2.5 per cent and 6.0 per cent, yielding an average of 3.6 per cent for the entire country. Sample villages or areas were selected by regional commissioners, on the understanding that they were representative of larger areas. In theory also, the same samples were to be surveyed annually for several years. Inquiries were to be conducted by local administrative personnel, at any time of the year, provided that the reports had reached the office of the governor general before the first day of January of the following year.

As with the registration and enumerations, in practice, statistics collected through population inquiries suffered from considerable defects.(1) The subjective choice of areas to be surveyed and the small size of the samples naturally increased the chance errors of the resulting figures;(2) the more so as the exclusion, after 1938, of the extra-customary centres from the samples left aside those very populations experiencing rapid growth. Besides, not only was there a total lack of checks during and after surveys, but the methods of investigations varied according to areas. Investigation procedures included summoning the indigenes to a convenient place for the count, exclusive interviews of village elders and occasional house-to-house interviews. Contrary to the principle of annual follow-up, certain areas were surveyed only

---

(1) Important criticism of this system was justifiably made by the promoters of it and by various observers; most of the criticism was summarized by Ryckmans, P. in Notes sur la démographie congolaise; IRCB, Bulletin des séances, Bruxelles 1931-2, p. 254-269.

(2) Some samples examined no more than two small villages in a territory approximating the size of Belgium.

once, but their results were repeatedly reported over several years.

Finally, some important remarks are to be made with regard to the treatment of statistics collected from all the above-mentioned sources. The base statistics were all referred to one particular institution: the colonial office for indigenous affairs and labour supply, the AIMO, charged, among other things, with the task of processing and commenting on the collected data for publication in official documents, such as the colonial annual report regularly submitted to the Belgian legislative chambers by the minister for colonial affairs. Available documentation on the population of Zaire for those years includes also, as mentioned earlier, reports and studies by private institutions or individuals on the basis of government statistics or those collected by themselves in limited areas. Besides the limitations and defects of the base statistics, the tabulated series of official documents contain several omissions and errors of a computational or clerical kind. Furthermore, frequent changes in the size and nature of administrative divisions of the country make it impossible to reconstitute data series for most regions over time, especially for the period before World War II. It is therefore without question that appraisal of growth trends for the entire country and particularly for the various regions requires substantial but cautious adjustment of the reported data.

2. Annual Population Increase from Enumerations and Inquiries

Table 2.3 (p. 97) presents figures of the total annual population as reported for the enumerations based on the continuous registration system from 1925 to 1958, and also as estimated on the basis of adjusted data of the inquiries during 1925-1952. As discussed later, both series of annual totals imply very unrealistic rates of growth for several years of that period. Hence, the present study suggests alternative estimates after reviewing the available evidence from trends in the different components of growth.

Table 2.3.

TOTAL POPULATION BASED ON THE ENUMERATIONS AND ADJUSTED INQUIRIES ESTIMATES: ZAIRE, 1925-58

Year	Enumeration Data		Adjusted Inquiry Estimates	
	Total in 1,000	% increase	Total in 1,000	% increase
1925	7,693	-	9,565	-
1926	7,955	.4	9,616	0.5
1927	8,121	.1	9,670	0.6
1928	8,419	.7	9,725	0.6
1929	8,674	.0	9,783	0.6
1930	8,803	.5	9,843	0.6
1931	8,881	.9	9,905	0.6
1932	8,956	.8	9,969	0.6
1933	8,972	.2	10,036	0.7
1934	9,282	.6	10,104	0.7
1935	9,775	5.3	10,176	0.7
1936	10,047	2.8	10,249	0.7
1937	10,217	1.7	10,325	0.7
1938	10,304	0.9	10,403	0.8
1939	10,328	0.2	10,484	0.8
1940	10,354	0.3	10,567	0.8
1941	10,508	1.5	10,653	0.8
1942	10,530	0.2	10,742	0.8
1943	10,486	-0.4	10,834	0.9
1944	10,442	-0.4	10,928	0.9
1945	10,508	0.6	11,025	0.9
1946	10,667	1.5	11,125	0.9
1947	10,761	0.9	11,228	0.9
1948	10,914	1.4	11,333	0.9
1949	11,073	1.5	11,442	1.0
1950	11,332	2.3	11,555	1.0
1951	11,593	2.3	11,670	1.0
1952	11,789	1.7	11,789	1.0
1953	12,026	2.0	-	-
1954	12,317	2.4	-	-
1955	12,563	2.0	-	-
1956	12,844	2.2	-	-
1957	13,175	2.6	-	-
1958	13,540	2.8	-	-

Source: Colonial Annual Report for 1925 to 1958 and from AIMO in Bulletin mensuel des statistiques du Congo Belge; No.36, Oct. 1953.

2.1 Population increase based on the annual enumerations

As can be seen in table 2.3 (p.97) population totals reported for the annual enumerations imply impossible fluctuations in annual increase for several successive years, for example, 0.2 per cent for 1932-4, then 4.6 per cent for 1933-4, followed by a rate as high as 5.3 per cent for 1934-5. Examination of the resulting rates for some periods, i.e. 1925-30 with an annual average of 2.7 per cent, or 1932-8 with a figure of 2.0 per cent, clearly demonstrates the questionable quality of statistics for the years before World War II. The average annual rate of growth implied for the whole period 1925-40 was 1.8 per cent, a figure certainly much too high[1] because of the then prevailing socio-economic conditions, the relatively high mortality and declining fertility[2] and also the insignificant level of immigration. Such a high average annual growth rate reflected gradual improvement in absorption of omissions (especially of children) and in coverage of populations in remote areas of the country in subsequent years. Except for the years 1940-5, the rates of growth implied by population totals for the forties and fifties show less marked fluctuations between successive years and very probably reflected true demographic trends, as the proportion of persons enumerated through the continuous registration system had long passed 80 per cent of the estimated total for the entire country.

2.2 Population increase based on the annual inquiries

Official documents of 1953 indicated that the early enumerations reflected gradual improvement in the registration system more than they portrayed true demographic trends;[3] subsequent attempts were made to establish reverse estimates of population totals based on the annual rates of natural increase from the inquiries during 1925-52. Rates of natural increase obtained for the years in which inquiries were conducted can be seen in table 2.4 (p.101).

---

(1) For Africa taken as a whole, Caldwell estimated at one per cent the growth rate per annum for the period 1920-35: Caldwell, J.C., The Demographic Victory, op. cit.

(2) See later in the present Chapter, 3.1: Levels and trends of fertility.

(3) AIMO: Bulletin Mensuel des Statistiques du Congo Belge; No. 36, octobre 1953; p. 265.

The AIMO document correctly noted that, for the years before World War II, estimated rates of natural increase appear fairly regular, except for the first two terms of the series; while rates for the post-war period tend to suggest more rapid population increase. Hence, using the population total provided by the 1952 enumeration as a base, reverse projections were established by AIMO to obtain estimates of annual population totals back to 1925.(1) These reverse estimates are presented in table 2.3 (p.97).

The theoretical estimates so derived are more plausible than the figures reported from the annual enumerations. In particular, they imply less fluctuation between successive years, at the same time suggesting growth rates closer to those estimates for other countries of tropical Africa for the decades preceding World War II. However, when constructing such smooth estimates, AIMO appears to have chosen to overlook the decrease in growth rate for the war years and underestimated the accelerating increase of the immediately following years. Indeed, evidence discussed later in this chapter shows that mortality had increased in conjunction with a decline in birth numbers during 1940-45, a situation which certainly caused the population total to fall considerably. Further, the AIMO estimates of growth rates at 1.0 per cent for the early fifties are dubious, given the growth rates of 2.0 per cent and over, recorded from enumerations (by then fairly reliable) and demographic surveys of that decade. It is therefore clear that annual population totals, based on the enumerations and the inquiries, required some further adjustment for the earlier and later years of the series. This is the aim of the following section, which first reviews available empirical evidence on fertility, mortality and migration for that period.

---

(1) Total population for 1925 was calculated with the geometric or compound interest method formula, i.e.

$$P_n = P_0(1+r)^n \quad \text{or} \quad P_{1925} = P_{1952}(1.00772)^{27}$$

assuming a constant rate of natural increase of 7.72 per thousand per annum, the geometric average from the inquiries. Population totals for other years were derived with polynomial formula, except for 1940, for which the corresponding figure was estimated as the arithmetical average of the total reported from the enumeration of that year and the total based on a constant rate of increase of 7.72 per thousand per annum from 1925 onwards.

3. Levels and Trends of Components of Growth

Most of what is known with any certainty about the levels and determinants of fertility, mortality and migration for tropical Africa has been learnt during the third quarter of this century. For Zaire, attempts initiated in 1925 to appraise trends of components of growth were limited, by the breaking down of the inquiries during several successive years and also by the lack of firm technical approach in the data collection.

3.1 Fertility

Statistics for measurement of fertility in Zaire prior to the 1955-8 survey referred almost exclusively to the number of live births obtained from interviewing women in the year of the inquiry. However, it is attempted here to appraise fertility trends by examining further those levels implied by the proportions of children from the enumerations and also, retrospectively, the proportions of childless women classified by age as obtained by the 1955-8 survey.

(i) Birth rates reported from the inquiries

Table 2.4 (p.101) presents crude birth rates estimated contemporaneously by the colonial authorities for Zaire as a whole for the years of the inquiries.(1) Except for the years 1927 to 1930 when, reportedly, the inquiries were conducted mostly in prolific areas, birth rates for the period up to 1951 show remarkable stability at around 31 births per thousand persons per annum. From 1952 onwards, birth rates recorded through the inquiries and the continuous registration system rose steadily from 33 in that year to 36 in 1955 and up to 38 in 1958. Despite the low figure recorded for 1954, birth rates observed in the late forties and early fifties seem to support the hypothesis of a rising fertility trend. Fertility levels, on the other hand, appear understated by reported birth rates, as these were undoubtedly affected by under-enumeration; such a conclusion is heavily supported by birth rates hypothetically estimated on the basis of proportions of children in the population indicated by the annual enumerations.

---

(1) For completeness of available documentation, birth rates based on the continuous registration system are also shown in the same table.

Table 2.4

RATES OF BIRTH, DEATH AND NATURAL INCREASE FROM THE INQUIRIES AND THE CONTINUOUS REGISTRATION: ZAIRE, 1927-1958.

Year	Birth Rate ‰	Death Rate ‰	Natural Increase %
	The Annual Inquiries		
1927	41.7	31.6	10.1
1928	37.6	24.8	12.8
1929	38.1	31.9	6.2
1930	34.7	28.8	5.9
1931	31.3	25.5	5.8
1932	30.7	24.2	6.5
1933	31.4	23.3	8.1
1934	31.5	23.6	7.9
1935	30.7	24.2	6.5
1936	31.3	24.0	7.3
1937	32.7	26.2	6.5
1938	-	-	-
1939	31.0	24.4	6.6
....	....	....	....
1948	30.0	22.8	7.2
1949	-	-	-
1950	31.6	23.0	8.6
1951	31.2	22.7	8.5
1952	33.1	21.6	11.5
1953	34.3	21.5	12.8
	The Continuous Registration		
1953	33.8	15.5	18.3
1954	30.0	13.0	17.0
1955	35.8	13.8	22.0
1956	35.4	12.5	22.9
1957	37.6	12.6	25.0
1958	37.9	12.1	25.8

Source: The Colonial Annual Report, 1925 to 1958.

(ii) Birth rates estimated from proportions of children

Table 2.5 (p.103) shows the proportions of children in the population based on the annual enumerations. It should be noted that, in accordance with the population regulations then in force in the country, reported figures comprise persons aged under 16 years for girls and 18 years for boys; given the conventional child age limit of 15 years, reported figures for Zaire clearly overestimate the numbers and proportions of children, while producing the opposite effect for persons of older age.

As previously undertaken by Romaniuk, Zaire's fertility levels and trends can also be estimated on the basis of the proportions of children by means of stable population models.(1) Assuming a life expectancy at birth of 35 years for the period 1948-53, and 30 years for the period 1935-37, birth rates obtained with the stable method amount respectively to 41 and 44 births per thousand persons as shown below.(2)

Period	Observed BR	Model BR (e_o^o)
1935-1937	31	44 (30 years)
1948-1953	32	41 (35 years)

The resulting estimates point to higher birth rates before World War II than just after it. Concerning the actual trends in fertility, interpretation of observed proportions of children is certainly difficult, when recorded figures indicate a rising trend as is the case in table 2.5. Indeed, this increase may result separately or jointly from the increased fertility, declined mortality or improved child registration. Available documentation suggests that registration of children was defective in the early enumerations, but improved substantially from the late thirties. Besides, it is estimated further

---

(1) Romaniuk, A.: La fécondité des population congolaises; op. cit., p. 137.

(2) Based on the North family of the Coale and Demeny models and interpolating for the reported child age. It may be noted that because the model annual gain is 0.5 years in expectation of life wherever this is less than 55 (ref. UN Manual III, on population projections), the assumed life expectancy for 1948-53 seems in agreement with the figure of 38 years observed from the demographic survey of 1955-8; the mortality level assumed for 1935-37 is also in agreement with the average estimate for tropical Africa in that period.

Table 2.5

EVOLUTION OF THE PROPORTIONS OF CHILDREN,* BASED ON THE ANNUAL ENUMERATIONS, ZAIRE, 1937-1958

Year	Rural Population (customary centres)			Urban Population (extra-customary centres)			Overall Population		
	Male children/ All M.	Female children/ All F.	All children/ Tot. pop.	Male children/ All M.	Female children/ All F.	All children/ Tot. pop.	Male children/ All M.	Female children/ All F.	All children/ Tot. pop.
1937	43	38	40	22	30	25	41	37	39
1938	43	38	41	22	30	25	41	38	39
1939	44	39	41	23	31	26	41	39	40
1940	44	39	41	24	31	27	41	38	40
1941	44	39	42	25	32	28	42	38	40
1942	45	40	42	25	33	28	42	39	40
1943	45	40	42	26	34	30	42	39	40
1944	46	40	42	27	35	30	42	39	40
1945	46	40	42	28	36	31	42	39	40
1946	46	40	42	29	36	32	42	39	41
1947	44	40	42	30	36	33	42	39	40
1948	45	38	40	31	37	34	43	40	41
1949	46	39	42	31	38	34	42	39	41
1950	46	39	42	32	39	35	43	39	41
1951	46	39	43	33	40	36	43	39	41
1952	46	40	43	33	41	37	43	40	41
1953	46	40	43	35	42	38	44	40	42
1954	48	40	43	36	43	39	44	41	42
1955	47	40	44	37	44	40	44	41	43
1956	47	41	44	38	45	41	45	42	43
1957	48	41	44	40	46	43	46	42	44
1958	48	41	45	43	48	45	47	43	45

* Aged under 16 years for girls and 18 years for boys.

Source: Colonial Annual Report for 1937 to 1958;
Situation Economique du Congo Belge et du Ruanda-Burundi, 1950-1958.

that mortality decline was certainly slow in the pre-World War II period but it was clearly accelerated in the post-war years. Anyway, according to table 2.5, after averaging 40 per cent for more than a decade, the proportions of children increased markedly, rising from 41 per cent in 1952 to 45 per cent in 1958; i.e. an increase of 4 per cent in six years. It is doubtful that such an increase resulted exclusively from mortality decline; it is also unlikely that it resulted mainly from improvement in the statistical systems. It can therefore be assumed that trends of proportions of children portrayed a true increase in birth numbers, especially in the low fertility regions, great enough to bring about a rise in fertiltiy.(1)

(iii) Proportions of childless women

Trends in fertility levels can also be inferred from the proportions of childless ever-married women, classified by age, as shown in table 2.6 (p.105). According to this table, the proportion of childless women in the low fertility areas increased rapidly for those women aged 45-54 years and whose approximate date of birth was between 1900-1909, in comparison with those women born before 1900. In other words, fertility apparently decreased for the years before World War II. However, tabulated statistics are less indicative for women whose early reproductive period falls in the war years during which low fertility areas exhibited either some increased infertility (Tshuapa, Uele) or some stability (Equateur) or even some decrease in infertility (Maniema). Younger women, aged 20-24 years, in most low fertiltiy areas exhibit infertility rates much lower than those of age groups immediately above. Most of the medium fertility areas showed infertility levels clearly lower for successive younger age groups of women; but the overall picture is affected in some cases, for example for the 20-24 years age group, because of substantial infertility increase recorded in nearly all areas of Kasai-Oriental and Kasai-Occidental regions; i.e. the sub-regions of Kabinda, Sankuru, Kasai and Lulua. With regard to

---

(1) Assuming a Gross Reproduction Rate of 2.8 and 0.5 years per annum as gain in life expectancy at birth, Romaniuk noted that the proportions of children increased much faster than indicated by stable population models; in La fécondité des populations congolaises, op. cit., p. 141. Our investigation showed that the same holds true, even in the assumption of lower gains in life expectancy at birth, i.e. 0.3 years per annum.

Table 2.6

PROPORTIONS OF CHILDLESS EVER MARRIED WOMEN IN THE LOW, MEDIUM AND HIGH FERTILITY AREAS,(1)
(Based on the 1955-58 demographic survey of Zaire)

Age group	15-19	20-24	25-29	30-34	35-44	45-54	55+
Low Fertility Areas	55.9	39.1	39.7	38.9	37.0	31.6	26.3
Medium Fertility Areas	53.0	24.3	19.3	19.6	19.4	17.3	16.0
High Fertility Areas	50.1	13.7	12.6	10.1	11.3	14.1	14.4
Zaire	49.9	24.4	20.9	21.8	22.3	20.5	17.6
Probable beginning of childbearing	1950-1954	1945-1949	1940-1944	1935-1939	1925-1934	1915-1924	Before 1915
Approximate period of birth	1935-1939	1930-1934	1925-1929	1920-1924	1910-1919	1900-1909	Before 1900

(1) Low Fertility Areas:

1. SR Equateur
2. SR Tshuapa
3. SR Tshopo
4. SR Bas-Uele
5. SR Haut-Uele
6. SR Maniema

Medium Fertility Areas:

1. SR Bas-Fleuve
2. SR Mai-Ndombe
3. SR Kwilu
4. SR Mongala
5. SR Ubangi
6. SR Ituri
7. SR Tanganika
8. SR Haut-Lomami
9. SR Lualaba
10. SR Kabinda
11. SR Sankuru
12. SR Kasai
13. SR Lulua

High Fertility Areas:

1. REG. Kinshasa
2. SR Cataractes
3. SR Kwango
4. SR Nord-Kivu
5. SR Sud-Kivu
6. SR Haut-Shaba

the high fertility areas, and with the exception of the region of Kinshasa, infertility levels were rarely above 15 per cent for all ages over 25 years. To the extent that childlessness affected the resulting fertility for the community as a whole, the relative stability of childlessness may imply relatively stable fertility levels. However, as with the other areas mentioned above, the statistical evidence indicates a higher infertility for women of the age group 55 years and over; this irregularity certainly reflected a true demographic trend.(1)

The observed variations in fertility levels of the different areas certainly affected, though not radically, the resulting trends for the country as a whole. One may then agree with Romaniuk's conclusion that "despite some fluctuations, the statistical evidence for Zaire as a whole suggests two distinct fertility trends in the first half of this century: first, a slightly declining trend until the end of World War II and, second, a rising trend commencing in about 1945".(2)

3.2 Mortality

In the early decades of the century, mortality statistics generally referred to round numbers of deaths with also some statement of circumstances which had caused them. Reports abound in examples such as villages or larger areas depleted by several tenths of their population through trypanosomiasis or other diseases, through hard labour on railway constructions or as a result of colonial repression of indigenous revolts.(3) Medical reports often provided detailed statistics of the observations, especially with regard to child mortality, but without evaluating the extent to which observed cases were representative of

---

(1) See discussion on the reasons for lower fertiltiy, Chapter XI, 3.

(2) Romaniuk, A.: La fécondité des populations congolaises; op. cit., p. 150. It may be remarked that such trends would appear in agreement with social, political and economic factors which affected the development of Zaire during the colonial period; because these factors also produced a marked effect on mortality and migration trends, they are discussed separately in the next Chapter.

(3) See particularly: Broden, Ryckman, Legrand and Allard in Rapport sur la conservation et le développement de la population indigène, Congres colonial national belge, 1920; p. 82-119, A. Lesigne, Bruxelles, 1921. Gide, A. in Voyage au Congo: Carnets de route; Gallimard, N.R.F., Paris 1927; (Sur les horreurs du portage à tout prix, p. 75-77, et du régime colonial soumis aux grandes sociétés commerciales européennes, p. 88-96).

the entire regional or national population. Attempts to appraise mortality levels for Zaire during 1925-55 are therefore limited essentially to statistics of the annual inquiries and hypothetical indications based on stable population models; whereas indications of mortality levels so obtained are subject to serious reservations, those of mortality trends are probably somewhat significant.(1)

Available area estimates and those derived from surveys in subsequent periods will also be referred to, in order to test the degree of consistency among various indications of mortality trends.

(i) Death rates reported from the inquiries

As shown in table 2.4 (p.101), except for three years (1927, 1929 and 1930), reported numbers of deaths indicate declining mortality rates with relatively little variation from a level of about 26 deaths per thousand persons in the early 1930s to a level of 22 deaths per thousand persons in the early 1950s. For the post-World War II years, reported rates show a steady mortality decline with apparent acceleration from 1950 onwards. Because most of the inquiries were conducted in strictly traditional rural areas, there is a strong presumption that they are affected by understatement of deaths for infants and very old people, owing to socio-cultural reluctance and other reasons for such omissions, as observed in many African surveys. Indeed, as with fertility measurement previously, hypothetical models(2) based on the proportions of children and the rate of growth indicate much higher death rates than the reported ones for both periods, 1935-37 and 1948-53, as shown below.

Period	Observed DR	Model DR (e_o^o)
1935-1937	25	34 (30 years)
1948-1953	22	28 (35 years)

(1) The more so as procedures for collecting the data remained unchanged over the period considered here; the same applies to methods used for calculating the reported estimates.

(2) North family of the Coale and Demeny models.

An important point, however, concerns the actual trends of mortality changes during the intervening years which include the World War II period. There is some evidence that, during 1940-45, mortality increased considerably in Zaire owing to the socio-economic conditions then imposed upon the indigenes in the contribution to the "War Effort".(1) Mortality increase during that period seems to have mostly affected the adult population; very probably, therefore, the observed changes in death rates between 1935-37 and 1948-53 occurred with a shift in age groups of distinct mortality experience. In other words, the decline in mortality was primarily determined by adult deaths until about 1945, after which the overall death rates were determined largely by a decline in child and infant deaths.(2) Contrary to what was observed with fertility, regional mortality estimates showed less marked differentials.(3) One inference from this is that overall mortality decline resulted more from improved stability in living conditions than from the impact of modern medicine unevenly distributed in the country. Also, because the only mortality measure was the crude death rate, the rapid population upsurge in the post-World War II period meant that the entry of large cohorts of this period had wide implications in actually lowering the death rates. The more so, as within the frame-work of the Ten-Year Plan initiated in 1948, a tight network of medical services was developed to benefit the rural areas.

(ii) Observed infant and child mortality

Knowledge of infant and child conditions of death that prevailed throughout the first half of the century is the weakest aspect of available information on mortality. Measured rates from sporadic area observations have little significance not only because of limited coverage but also in view of the unconventional methods used in esti-mating these rates. Observations made in hospitals or child care

---

(1) Discussion of this "War Effort" is deferred to Chapter V.

(2) The probability for this to have happened is strongly supported by the development of radically new official programmes for child care since the immediate post-World War II years.

(3) As shown in Chapter XI, mortality conditions appear actually more favourable in the low fertility areas; this certainly reflects the impact of infant mortality still relatively high in all the regions.

centres provided death rates generally based on total numbers of children who had been registered in those centres. On the one hand, those infants who died soon after birth often were not registered, though their birth had occurred in hospitals and, on the other hand, child care centres accepted only a limited number of children aged 2-5 years even in those extra-customary areas or labour camps which were relatively well-organized.

The scanty observations in some labour camps nevertheless suggested that mortality was considerably lower among children aged 2-5 years than among infants of the 0-1 age group.(1) More reliable data from surveys by Foreami in the region of Kwango indicated for the year 1938 an infant death rate of about 210 per thousand live births, resulting from area rates varying between a minimum of 154 to a maximum of 353.(2) In some areas in the east of Zaire, for example, Panda, infant death rates of 360 per thousand live births were observed.(3) Remarkably, all observations seem to be in agreement with indications of substantial child mortality decline over time, especially in the years after 1950. Mortality statistics for the period after that year show in all cases infant death rates rarely above 200 per thousand births and often falling below 100 in several urban centres.(4) It should be noted that infant death rates of 353 per thousand births for the years before World War II are unlikely to represent much under-reporting; also reporting should have been improving over time, especially in the 1950s. Thus, despite considerable limitations and defects in reported statistics it is very likely that the actual trends in infant and child mortality were of general decline, with greater impact at infant level. Such a conclusion would appear in agreement with estimates of child and infant mortality from the 1955-58 survey.

---

(1) Drs. Trolli and Van Nitsen: Démographie de la population indigène et la natalité et la mortalité au Congo Belge; Congrès colonial national, Cinquième session, no. 7, 1940; Bruxelles.

(2) Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes (Foreami); annual report, 1948.

(3) Cited by Trolli et al., op. cit.

(4) Colonial annual report: estimates of infant mortality from the inquiries; 1951, 1952, 1953.

(iii) Differential mortality by sex and age

As is to be expected, before the mid-1950s, available statistics hardly permitted appraisal of mortality differentials by sex and age. Available information on mortality by sex and broad age groups based on the inquiries stands as follows:

Death rates per thousand persons by age and sex, 1933-1937
(based on the population inquiries)

	1933		1935		1937	
	Male	Fem.	Male	Fem.	Male	Fem.
Children	24	23	23	23	27	27
Adults	17	14	19	14	20	15
Old ages	144	114	136	98	124	92

Source: Colonial Annual Report for 1933, 1935 and 1937

According to the table, mortality levels showed some increase in 1937 for children and adults while, in the three years referred to, death rates for male and female children were practically identical. These rates were certainly affected by under-enumeration and misreporting of children of both sexes; nevertheless, they faithfully maintain the familiar 'U' shape in the curve of mortality by age at all levels of general mortality. Common patterns of mortality differentials by sex are more clearly revealed by recorded death rates for adults and older persons whose enumeration was considerably less difficult in those years. Death rates for adults and older persons demonstrate a lower number of deaths for females than for male populations. Comparison of mortality rates reported for children from the inquiries with those based on the 1955-8 demographic survey confirms the already known fact that sex differentials in mortality widen as life expectancy grows longer.(1)

Appropriate values of sex differentials for children from the survey were respectively 26 per thousand for boys and 24 for girls when

(1) United Nations: Age and Sex Patterns of Mortality; ST/SOA/Series A/22; New York, 1955.

life expectancy at birth reached a level of 38 years in 1955-8, compared to about 30 years for the mid-1930s.

3.3 Migration

Despite clear regulations concerning population movements,(1) reports of the annual enumerations and inquiries carried no statistics concerning migration. This, naturally, makes inaccessible any direct or indirect methods of migration measurement.(2) It is recorded, however, that internal migration, which has no direct effect on a country's total population size and growth but is intimately related to population distribution within the country, and particularly to the process of urbanization, had seriously affected population concentration in various rural and urban settlements. Besides, "the lack of restriction on movement across boundaries between regions or countries certainly meant that, as in past times, individual or group migration persisted between as well as beyond traditional ethnic communities";(3) this was the case with fishermen along the rivers and some pastoralists of eastern Zaire.

Much of the documented migratory movement, internally and externally, has been equated with labour migration and related almost exclusively to the needs of mines, plantations, transportation systems or other such enterprises of the colonial period. This is true of Zaire where development of large plantations, mining industries and public works required extensive labour from distant regions; while exportation overseas of inland resources required, at least until World War II, porterage along road and rail carriage systems. It may be remarked that, along with other population statistics, data on labour movement of indigenous and non-indigenous populations were to some extent reported in official documents. These statistics were in part related to the

---

(1) A permit was required for those indigenes travelling for more than 30 days outside their traditional area of residence.

(2) The direct methods are those which have recourse to data indicating the movements of the migrants themselves, i.e. those who change residence across migration-defining boudaries, whereas the indirect methods involve estimates inferred from the difference between the observed change in population between two dates and the change due to natural increase. Ref. United Nations: The Determinants and Consequences of Population Trends; Vol. 1, New York, 1973, Chpts. VI, VII.

(3) Caldwell, J.C.: African Rural-Urban Migration: The movement to Ghana's Towns; Australian National University Press, Canberra, 1969.

development of labour camps or extra-customary centres; attempt can thus be made to obtain an idea of migratory movements through their examination.

(i) Internal migration

Major migration movements in the early decades of the century were related to recruitment and resettlement of indigenes for labour and administrative purposes. As these movements were largely organized by employers[1] in the public or private sectors, they primarily affected adult males in the years before World War II, during which time sex ratios in extra-customary centres approximated 300 in the country's capital and were above 150 for adults in other urban centres, as shown in table 2.7 (p.113). In that table, the markedly declining rural sex ratio for adults demonstrates the fundamentally rural-urban nature of internal migration.

In most cases, the type of economic activity or administrative resettlement determined the nature and origin of migration. Administrative centres generally received migrants from neighbouring areas, except for military and police camps which were always composed of personnel from different and distant tribes. Commercial centres and small plantations usually employed workers from neighbouring villages. Large plantations and small mines often recruited labourers originating from relatively distant areas; this was the case with palm oil in Bandundu and Equateur, timber in the coastal and equatorial forests, coffee and tea plantations in Kivu, cotton and rice in the northeast and gold mines in Ituri, which drained numerous workers from the areas of Bas-Uele and Haut-Uele. Large mining exploitations, which were established in less populated parts of the region of Shaba,[2] recruited

---

(1) Until World War II, colonial agents were granted special permits for recruiting labourers around and beyond their area of settlement; permits were granted according to annual quotas and recruiting agents received pecuniary rewards proportionate to the numbers of indigenes obtained.

(2) For example, in 1910 the site of Lubumbashi was still a camp pitched with tents; it is now the second largest city totalling 350,000 persons in 1970. The city was created in the early months of 1910 near Lubumbashi river close to the 'Star Mine'. A concessionnaire, the Comite Spécial du Katanga, was then administering the whole region until 1 September 1910, when political and administrative powers were transferred to the Belgian government, which had just assumed administrative control of the entire country. Ref. L'Urbanisme au Congo; Royaume de Belgique, Ministère des colonies; éd. de Visscher, Bruxelles, 1948.

Table 2.7

EVOLUTION OF THE SEX RATIOS BASED ON THE ANNUAL ENUMERATIONS, ZAIRE, 1937-1958

Year	Rural Sex Ratios (Customary centres)			Urban Sex Ratios (Extra-customary centres)			Overall Sex Ratios		
	Children[1]	Adults[2]	Total	Children[1]	Adults[2]	Total	Children[1]	Adults[2]	Total
1937	108	88	96	109	168	151	108	94	99
1938	107	88	95	110	165	149	107	94	99
1939	107	87	95	108	160	144	107	94	99
1940	106	87	94	108	158	142	106	93	98
1941	107	86	94	107	158	142	107	93	98
1942	106	86	94	106	158	141	106	94	97
1943	106	87	94	107	155	139	106	95	100
1944	106	87	95	106	151	135	106	96	100
1945	107	87	95	101	150	132	106	96	100
1946	106	87	95	106	148	133	106	95	100
1947	106	87	95	107	147	132	107	95	100
1948	107	84	93	106	145	130	107	94	99
1949	107	84	93	107	144	130	107	93	99
1950	107	82	92	106	142	128	107	92	98
1951	107	82	92	106	144	129	107	93	98
1952	107	81	92	106	146	130	107	93	98
1953	107	81	91	106	143	128	107	92	98
1954	107	81	91	106	141	126	107	92	98
1955	107	81	91	105	141	125	106	93	98
1956	107	81	91	105	138	124	106	92	98
1957	107	81	92	105	133	120	106	91	98
1958	107	82	92	105	129	118	107	91	97

1 Aged under 16 years for girls and 18 years for boys; 2 Aged over 16 years for females and 18 years for males.

Source: Colonial annual report for 1937 to 1958; also the Situation économique du Congo Belge et du Rwanda Burundi for 1950-1958.

labourers from distant places such as the Kasai and Kivu regions.

In the late 1930s and throughout the decade 1940-50, movements into extra-customary centres were accelerated by enlargement of their scope: on the one hand, there was an increase in the flow of wives and children accompanying male workers; and, on the other hand, rapid industrialization and urbanization constantly necessitated additional manpower, which was recruited by offering attractive socio-cultural conditions.(1)

Labour statistics for males working for European enterprises, and representing respectively 17, 20, 36 and 31 per cent of adult male population totals in 1927, 1937, 1951 and 1958, were distributed by origin as follows:

Year	Workers within zone of origin %	Workers within region of origin outside the zone %	Workers outside region of origin %
1927	47	28	25
1937	35	34	31
1951	57	28	15
1958	54	32	14

Sources: Colonial Annual Report; op. cit.
Sit. écon. Congo Belge et Rwanda-Burundi; op. cit.

Interpretation of the above figures is rendered difficult by the fact that working within the zone of origin sometimes meant working within an area the size of Belgium. A reasonable guess would be that until World War II, not less than three-quarters of the labourers worked outside their residence of origin whereas after 1945 this proportion probably fell to three-fifths. This means that labour migration affected about 15 per cent of all adult males in the decades preceding World War II and that this proportion increased to about 20 per cent in the immediate post-war years. The proportions of wives who accompanied their husbands working in extra-customary centres rose considerably from about one-fifth in the 1930s, reaching 55 per cent in

(1) For further discussion, see: Denis, J.,S.J.: Le Phénomène urbain en Afrique centrale; op. cit.

1948 and over 63 per cent by 1951. After that period, the proportions of married adults in urban areas approximated universal marriage everywhere, following socio-economic incentives to this effect by all employers.(1)

One major characteristic of migratory movements of the period covered here is therefore the successive flows from traditional rural areas into embryonic modern centres. First, the movement of adult male workers, organized by employers in both the public and private sectors; second, the movement of wives and children accompanying or joining husbands or parents in these centres; and third, the city-wards movements, less age and sex selective, of persons most likely to be motivated by the "pull factor" or socio-cultural reasons.(2)

Another characteristic is the swiftness with which the migration occurred. Table 2.8 (p.116) shows that extra-customary centres grew very rapidly. Most of these centres were created before 1939, after which rural centres were seldom converted into cities.(3) With the exception of 1946, the annual growth rate for cities was within the range of 3-15 per cent, while the natural increase was below 3 per cent. The non-rural population thus almost tripled in 15 years, in 1940-1955, rising from 1 million to 2.9 million.(4) Over this period, notwithstanding some fluctuations, noticeable peaks in urban population increase are apparent for the years 1940-43, 1947-51 and 1953-55. These years roughly coincided with increased economic activity and, almost certainly, the rise in urban population resulted from activated out-migration of the rural population. The table also shows that the highest peak of migration occurred during the years of World War II, a development which probably entailed considerable social disruption in rural areas. In contrast, the period 1957-58, when the economy underwent some depression, indicates some reversal of trends in urban

---

(1) These incentives and their impact are discussed in Chapter V.

(2) This is suggested, for example, by the apparent stabilization and further relative increase in rural percentages of children and adult sex ratios from 1951 onwards.

(3) See particularly Léon de Saint Moulin; in Histoire des villes du Zaire: Notions et perspectives fondamentales; Cultures et Développement, Vol. IV, no. 2, 1974, p. 331-349, Louvain, Belgium.

(4) Population totals for the extra-customary centres seem fairly reliable as most individuals there were subjected to the registration system.

Table 2.8

ANNUAL POPULATION INCREASE IN THE EXTRA-CUSTOMARY CENTRES OF ZAIRE BY SEX AND BROAD AGE GROUPS, 1939-58

Year	Total Extra-custom. Population (1,000)	Percent Annual Increase			
		Total Pop. %	Male Adults %	Female Adults %	All Children %
1939	972	-	-	-	-
1940	1,018	5	3	5	7
1941	1,133	11	10	10	16
1942	1,300	15	14	14	17
1943	1,446	11	9	11	16
1944	1,492	3	1	4	6
1945	1,565	5	3	4	9
1946	1,569	0	-1	1	1
1947	1,677	7	6	6	9
1948	1,901	13	11	13	17
1949	2,028	7	5	6	9
1950	2,162	7	5	6	9
1951	2,343	8	8	6	15
1952	2,425	3	3	2	2
1953	2,587	7	4	6	10
1954	2,708	5	2	3	8
1955	2,850	5	3	4	8
1956	2,937	3	1	2	6
1957	3,048	4	-2	2	9
1958	3,079	1	-3	0	5

Source: * Colonial Annual Report, 1929 to 1958; op.cit.

population growth; as numbers of workers were subsequently laid off, very probably many adult males and females moved back to rural areas, leaving children of school age.

The development in numbers of urban localities would appear in agreement with the predominantly rural-urban migration trends described above. Table 2.9 below indicates that in 1935 there were only eleven localities with a population above 5,000 persons, with the capital city alone totalling more than 20,000 persons. A decade later, in 1946, the number of such cities had nearly doubled. Twelve years later, in 1958, this number had again more than doubled, as there were then about 50 cities with more than 5,000 inhabitants; two-thirds of these cities had a population of at least 10,000 people, and five contained more than 50,000 persons each.

Table 2.9

NUMBER OF CITIES WITH MORE THAN 5,000 INHABITANTS, 1935-1970

Population	No of centres with specified population				
	1935	1946	1951	1958	1970
5-10,000	9	11	11	15	(16
10-20,000	1	4	5	19	(
20-30,000	1	3	2	3	(47
30-40,000	-	-	2	1	(
40-50,000	-	-	1	3	-
50,000 +	-	1	2	5	12
	11	19	23	46	75

Sources: Colonial Annual Report, 1935-1958; op. cit.
Report of the 1970 Enumeration; op. cit.

The proliferation of settlements with more than 5,000 inhabitants in the decade after World War II did not mean that more extra-customary centres had been created, but that populations within these centres had rapidly increased, reaching 23 per cent of the country's total population by 1955, while the corresponding figure was only one per cent

in 1935, i.e. two decades earlier, as shown in table 2.10 below.

Table 2.10

TOTAL AND PERCENT CUSTOMARY AND EXTRA-CUSTOMARY POPULATION
ZAIRE, 1935-58

Year	Extra-customary population		Customary population	
	N(1,000)	%	N(1,000)	%
1935	91	0.9	9,684	99.1
1940	1,018	9.8	9,336	90.2
1945	1,565	14.9	8,943	85.1
1950	2,162	19.1	9,170	80.9
1955	2,850	22.7	9,713	77.3
1958	3,079	22.7	10,461	77.3

Source: Colonial Annual Report, 1935-58; op. cit.

An attempt can now be made to estimate the number of persons involved in internal migration through labour movements. It was noted that, despite fluctuations, migrant labourers were estimated to represent about 15 and 20 per cent of all adult males in the decades before and after World War II respectively.(1) Assuming, for each such male worker, an average of two dependants before the war and three dependants after it, relative to total population of the country, the number of persons involved in migratory movements of this nature would be respectively half a million or 6 per cent, and four-fifths of a million or 9 per cent.

Thus, allowing for migration resulting from other factors than labour purposes, especially between rural and urban centres, it could be reasonably estimated that the proportion of persons affected by internal migration was probably 11 to 14 per cent on average; a figure excluding non-indigenous populations.

(1) A survey conducted in Kinshasa in the mid-1950s revealed that almost one-third of adult males were born outside that city; this, of course, included non-indigenous persons.

(ii) External migration

Available documentation suggests two dominant streams of migrants into Zaire: that of European populations, determined primarily by colonial occupation and economic activities, and that of Africans from neighbouring countries for purposes of labour and other reasons.

(a) Migration of European populations: The records of European migrants were relatively well kept though, as for the indigenes, adjustments of their registers were carried out only every two to three years. Permanent settlement of Europeans was almost non-existent; the basic objectives of their migration being to work in the colonial public service or private enterprises for a limited number of terms of two to three years. Tables 2.11 and 2.12 (p. 120) show the numbers and some characteristics of Europeans present in Zaire during 1925-58.

Relative to total indigenous population, Europeans represented a very small fraction, approaching one per cent only in the second half of the decade before Independence. Their growth rate appears to parallel remarkably that of the indigenous population in the extra-customary centres; this tends to corroborate the fact that the underlying factors in both phenomena were primarily economic and administrative. In both cases, population increase suffered setbacks following the economic crises of the early 1930s and 1956-8, but showed further 'push' during the more active years of the early 1940s and the post World War II decade. Indeed, through much of the period, one-third of Europeans were to be found in the capital, Kinshasa, and another third in the Shaba region where large mining centres existed; the remaining third was distributed amongst other regions, with Equateur retaining about 5 per cent. By far the largest sending country was Belgium, the colonial power, with 65 per cent of the total European population in 1925 and 78 per cent in 1958. The next major sending country was Portugal, with 5 per cent, followed by Italy and Greece with 3 per cent each, Britain and France with 2 per cent each, the Netherlands with one per cent, and others totalling 5 per cent. As with African migration into extra-customary localities, few European migrants were accompanied by their families in the first instance. But in the period after World War II, the proportion of European wives and children rose to an average of 54 per cent; whereas the 46 per cent adult male Europeans comprised 9 per cent government officials, 20 per cent private enterprise, 9

Table 2.11

NUMBER, GROWTH AND RELATIVE PROPORTIONS OF EUROPEAN POPULATION IN ZAIRE, 1925-1958

Year	Total European Population		
	Number	Average annual increase, %	% Relative to total indigenous population
1925	15,240	-	0.2
1930	25,179	9.8	0.3
1935	18,683	-0.6	0.2
1940	29,735	9.1	0.3
1945	33,787	2.6	0.3
1950	59,137	10.9	0.5
1955	97,466	9.8	0.8
1958	112,757	4.8	0.8

Table 2.12

SOME GEOGRAPHIC AND ACTIVITY CHARACTERISTICS OF THE EUROPEAN POPULATION IN ZAIRE, 1945-1958

Sending Countries		Receiving Regions		Economic Activity	
Country	%	Region	%	Activity	%
Belgium	77	Kinshasa)			
Portugal	5	Bas-Zaire)	29	Govt. agents	9
Italy	3	Bandundu)		Private companies	20
Greece	3	Equateur	6	Individual settlers	9
Britain	2	Haut-Zaire	15	Missionaries	8
United States	2	Kivu	12		
France	2	Shaba	30	Wives & children	54
Netherlands	1	Kasai-Oriental)	8	(Non-workers)	
Others	5	Kasai-Occidental)			

per cent colonial settlers and 8 per cent missionaries. It was amongst colonial settlers and missionaries that larger proportions of non-Belgians were found.

(b) Migration of African populations: Intra-continental migration into Zaire before Independence cannot be adequately charted since Africans from neighbouring or distant countries were then treated and reported as indigenous populations.(1) As with internal migration, recorded movements of Africans from outside Zaire were primarily for labour purposes and organized by employers. Available information suggests that, in the main, long-term migrations were more important than seasonal ones and, in both cases, they involved primarily Africans from Angola, Rwanda and Burundi, while small numbers were frequently noted from Congo, Sudan, Uganda, Zambia and the countries of southern Africa. Migrants from the latter were generally unaccompanied males, while those from the former comprised mostly complete families, affected by social and political conditions in addition to economic factors. Table 2.13 (p.122) shows the percentage of African labourers by country of origin, and indicates that during the fifties, for the whole of Zaire, the proportion of migrant labourers was about 13 per cent annually. Despite a slight decline in 1957-8, following the economic crisis and subsequent lay-offs, the relative stability of the proportion of non-national labourers would tend to suggest that they had been residing in Zaire for several years previously. Examination of these long-term labour migrants by region of settlement reveals their concentration in the areas of extensive activities in the mines of Shaba, agriculture in Kivu and commerce in Kinshasa; this can be seen from table 2.14 (p.122). It would appear that, with few exceptions, the mobility of migrants was affected by long distances. This seems particularly applicable to the case of migrants from crowded Rwanda and Burundi, who showed practically no movement beyond neighbouring Kivu, as labourers were usually accompanied by their wives and children.

---

(1) This position changed soon after Independence, with the new nation identifying and enumerating all non-native 'Zaireans' as foreigners. There is little doubt that the new nation lacked the apparatus to impose strict checks at all points on its long land frontiers; a situation which, as always, gives rise to unrecorded migration, especially for seasonal workers in the agricultural sector.

Table 2.13

PERCENTAGE OF AFRICAN LABOURERS BY COUNTRY OF ORIGIN, ZAIRE, 1950-58

Year	Total Labourers		Zaireans	Other Africans %		
	Number	%	%	Rwanda & Burundi	Others	Total
1950	962,000	100	87	8	5	13
1951	1,031,000	100	87	8	5	13
1952	1,078,000	100	87	8	5	13
1953	1,110,000	100	86	9	5	14
1955	1,183,000	100	87	9	4	13
1956	1,198,000	100	87	9	4	13
1957	1,148,000	100	88	8	4	12
1958	1,102,000	100	88	8	4	12

Source: Situation écon. du Congo Belge, op.cit.

Table 2.14

PERCENTAGES OF NON-ZAIREAN AFRICANS AMONG LABOURERS BY REGIONS OF ZAIRE, 1950-1958

Year	1. Kinshasa 2. Bas-Zaire 3. Bandundu		4.Equateur		5.Ht-Zaire		6.Kivu		7.Shaba		8.Kasai-Or. 9.Kasai-Oc.	
	R.B.[1]	O.[2]	R.B.	O.	R.B.	O.	R.B.	O.	R.B.	O.	R.B.	O.
1950	-	-	-	-	-	-	-	-	-	-	-	-
1951	0	13	0	1	0	0	8	0	1	8	0	0
1952	0	13	0	1	0	0	8	0	1	9	0	0
1953	0	13	0	1	0	0	7	0	2	8	0	0
1955	0	11	0	1	0	0	9	0	2	8	0	0
1956	0	10	0	1	0	0	9	0	2	9	0	0
1957	0	9	0	1	0	0	8	0	3	7	0	0
1958	0	10	0	1	0	0	6	0	2	8	0	0

(1) R.B. = Rwanda and Burundi; (2) O = Other African countries.

Source: Situation économique du Congo Belge, op.cit.

Thus, assuming an average of two dependants per labourer, the total migrant population of African origin would be about one-third of a million persons, or 3-4 per cent of the entire population of Zaire. This is probably a conservative estimate as some migrants could have entered the country clandestinely and taken jobs without registering with the employment authorities, especially in rural areas. As elsewhere in tropical Africa, the reality of intra-continental migration is complex and the estimate derived on the basis of registered labourers is certainly too low a figure. Table 2.14 (p.122) indicates that the regions of Equateur, Haut-Zaire and Kasai altogether retained less than one per cent migrant labourers in any one year. Nevertheless, several hundreds of non-nationals were observed, originating from Congo, Central African Republic, Sudan and Uganda, and residing and working in the regions of Equateur and Haut-Zaire, not only along the borders but also scattered throughout the countryside.

4. Reassessment of Growth Trends for 1925-1955

After examination in the preceding sections of the trends in the components of growth, it is now opportune to appraise the degree of consistency, in the annual population totals and the implied rates of growth, between the results of the enumerations and those of the inquiries. This section also attempts to re-estimate the trends in population totals throughout 1925-55, on the basis of documented evidence of reported statistics and socio-economic developments.

4.1 Appraisal of reported and estimated population totals and growth rates

Table 2.15 (p.126) presents quinquennial population totals and average annual rates of growth from the enumerations, the adjusted data of the inquiries and the re-estimates for 1925-55. The formula used to calculate these rates is the geometric or compound interest method. Concerning the population total for 1925, as already mentioned, enumeration reports admitted that substantial populations in remote areas were still uncovered and that their number was estimated at about 2 million; it is thus very probable that the actual figure was better approximated by the estimate derived from the inquiries,

that is 9,565,000 inhabitants.

The next point concerns rates of growth obtained by both enumerations and inquiries for the period 1925-40. Recorded rates from the enumerations of those years undoubtedly reflected more the improvement in the registration system than actual increase in the population. Annual growth rates much above one per cent over several years before World War II appear improbable in view of the decline in fertility and high mortality observed in several areas of the country. On the other hand, the inquiry estimates seem to understate the growth rates after 1935 when, reportedly, immigration of labourers increased and the government took action to protect the indigenes through medical, social and economic measures directed at increasing the growth of the population. It is reasonable to presume that these measures resulted in some further decline in mortality and that the growth rates rose somewhat but remained at levels still nearing one per cent per annum.

Another point concerns the growth rates during the World War II years, 1940-45. Much of the documentary evidence suggests that fertility was still declining while mortality increased substantially during that period for which enumeration statistics indicated annual growth rates mostly negative or approximating non-growth levels.(1) Indeed, as indicated in table 2.1 (p. 93), a review of registration records in 1947 revealed a considerable decline of registered populations. Because population enumerations consisted essentially of checking registration records with negative or positive entries, it is unlikely that the observed decline in total population was due in large part to administrative inefficiency or unrecorded emigration. There is therefore a strong presumption that the decline in registered population resulted from deaths during the early forties, when the indigenes were subjected to forced labour and social conditions similar to those of the Leopoldian epoch. Hence, the most conservative estimate for the quinquennial period 1940-45 would seem nil or almost nil growth rate.

---

(1) See p. 97 ; see also Chapter V, 2: the World War effort and its demographic impact.

Finally, for the period after 1945, growth rates indicated by the enumerations seem fairly reliable. Indeed, apart from the improvement in the registration system, reviewed trends in the components of growth indicated that fertility was then rising while mortality was markedly declining; at the same time, labour statistics showed increased immigration of Africans from neighbouring countries. The combined effects of these factors would appear sufficient evidence to support levels of growth rates indicated by the enumerations of the late fourties and early fifties.

4.2 Numerical re-estimation of trends in rates of growth

Given the preceding considerations on population totals and growth rates by five-year periods, the following trends appear more plausible than those previously suggested by the enumerations and the inquiries for 1925-55.

Because of the declining fertility, the relatively high level of mortality and the insignificance of early migration, an average annual growth rate of half of one per cent - as suggested by the adjusted data of the inquiries - seems a most probable figure for the period 1925-30. With steady decline in mortality, as social disruption due to labour movement was ceasing, and with increasing immigration of labourers accompanied by their dependants, it is very likely that the rate of growth rose steadily by about two-tenths of one per cent in the decade 1930-40, only to decline substantially with the impact of World War II conditions. As largely evidenced by various reports and by the decline in registered population of 1947, the most conservative estimate for the five-year period 1940-45 would be a non-growth state. After that period, some populations of the low fertility areas certainly continued to decrease[1] but, for the country as a whole, rising fertility and further mortality decline, as well as increased immigration, meant an upsurge in total population growth. Because the registration procedures and completeness had by then become fairly reliable, enumeration population totals may be considered to approximate true demographic trends. Hence, assuming that the accelerating rise in proportions of children[2] was

---

(1) It is shown later that most low fertility areas were not receivers but senders of migration.

(2) This can be seen more clearly in graph 2.2 (p.172).

reflected in total population increase, the actual rates of growth for the entire country might have been about 1.4 per cent in 1945-50 and 1.9 per cent in 1950-55. This assumes that omission in estimates of the non-registered populations, amounting to about 5 per cent in 1955, were compensated by some double entries (about 3 per cent) observed in the registration system. The possibility that the actual population of Zaire could have been larger than the figure indicated by the enumerations of the late fifties cannot, however, be excluded. Population totals readjusted on the basis of the above trends are illustrated in graph 2.1 (p. 127).

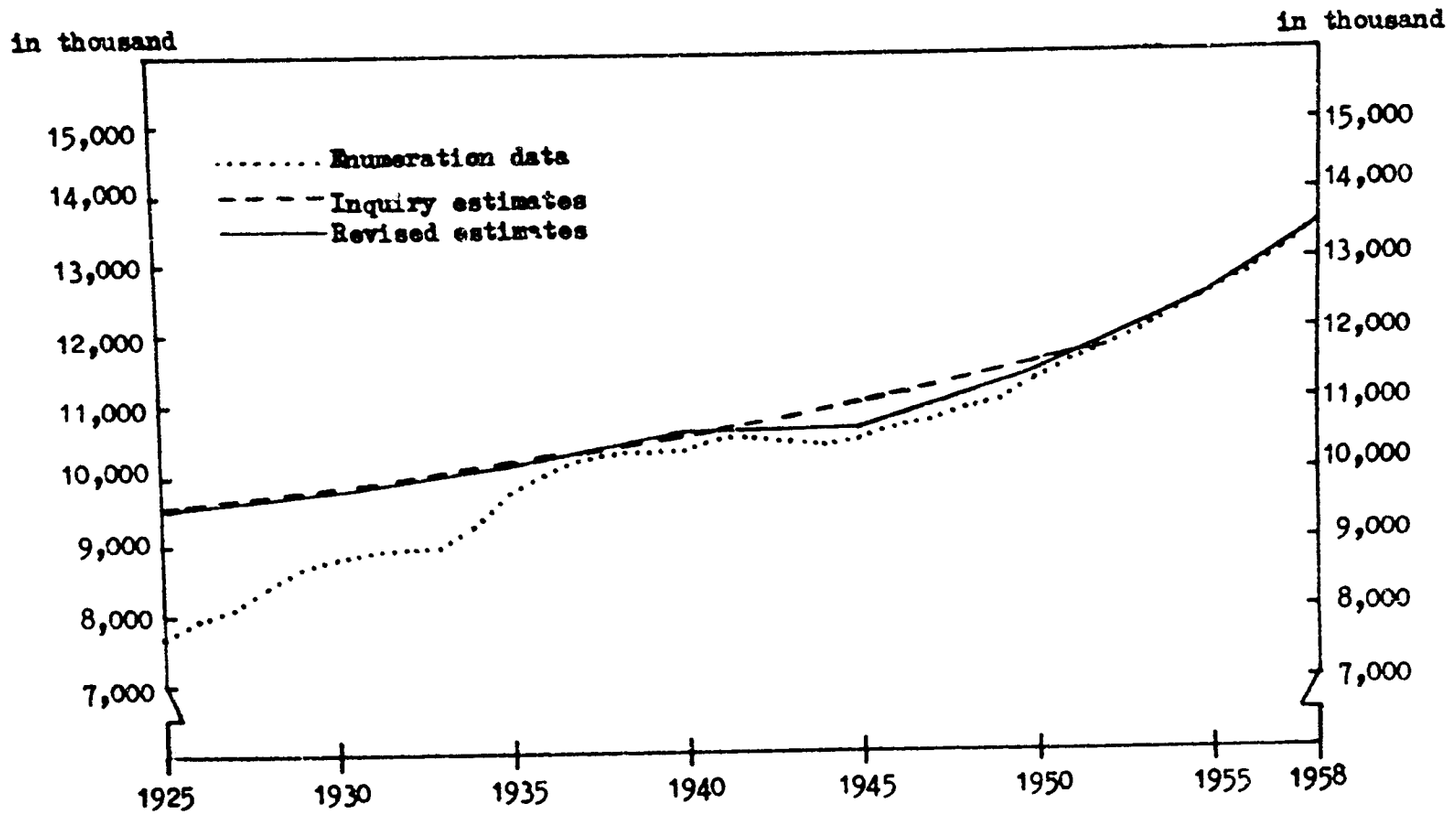
Table 2.15

TOTAL POPULATION AND AVERAGE ANNUAL RATE OF GROWTH BASED ON THE ANNUAL ENUMERATIONS, ADJUSTED INQUIRY DATA AND REVISED ESTIMATES FOR ZAIRE, 1925-1958

Period	Enumeration Data		Inquiry Estimates		Revised Estimates	
	Number (1,000)	r %	Number (1,000)	r %	Number (1,000)	r %
1925	7,693		9,565		9,565	
		2.7		0.6		0.5
1930	8,803		9,843		9,807	
		2.1		0.7		0.7
1935	9,775		10,176		10,156	
		1.2		0.8		0.9
1940	10,354		10,567		10,623	
		0.3		0.8		0.0
1945	10,508		11,025		10,631	
		1.5		0.9		1.4
1950	11,332		11,555		11,424	
		2.1				1.9
1955	12,563		-		12,563	
		2.5				2.5
1958	13,540		-		13,540	

Graph 2.1

TOTAL POPULATION CURVES BASED ON THE ANNUAL ENUMERATIONS, ADJUSTED INQUIRY AND REVISED ESTIMATES FOR ZAIRE 1925-58.



CHAPTER V

SOCIO-ECONOMIC MEASURES RELATED TO POPULATION GROWTH BEFORE, DURING AND AFTER THE SECOND WORLD WAR

The aim of this chapter is to bring out the essence of socio-economic measures and their impact on population growth, to allow evaluation of their consistency with statistical estimates analyzed in the preceding chapter. These measures were, in the main, related to manpower questions, in particular the conditions of migrant workers and the communities supplying them.(1)

1. Manpower and Demographic Questions Before World War II

In the two or three decades before World War II, changes affecting the demographic situation in traditional villages and labour camps or extra-customary settlements were due largely to the migrant labour system, the profound effects of which have been stressed by a number of writers.(2) Most of the workers involved in that system were adult males, and their departure from the villages - leaving behind women and children - gave rise to serious economic and social problems. There was, for example, less protection for families and greater conjugal mobility; not to mention the difficulties experienced by the migrant worker himself, displaced into an unfamiliar environment to undertake a new kind of work, for negligible reward.(3)

The simplest and socially least harmful form of labour migration was that of seasonal workers, who, for a few weeks or months, took employment with other Africans or Europeans to help in cultivation or harvesting. Another form consisted of labourers periodically conscripted by administrative authorities for public works, such as road and port building and other constructions in distant neighbourhoods. A more complex and socially uprooting situation was that of workers recruited for employment in European undertakings for a period of some

---

(1) An interesting approach to the socio-economic history of Zaire is provided by Jewsiewicki, who attempts to assess local indigenous reactions to successive colonial policies, though it lacks insight into the demographic impact. Jewsiewicki, B.: Note sur l'histoire socioeconomique du Congo, 1880-1960; in Etudes d'Histoire Africaine, Vol. 3, 1972, p. 209-241. See also Vellut, J.L.: Guide de l'etudiant en histoire du Zaire, Kinshasa, Editions Mont-Noir, in association with Presses Universitaires du Zaire, 1974.

(2) See especially Read, Margaret: Migrant Labour in Africa and its effects on Tribal Life; in International Labour Review, Vol. XLV, No. 6, June 1942, p. 605-631.

(3) See particularly Perrings, C. in Black Mineworkers in Central Africa; Heinemann Educational Books Ltd., London, 1979.

length, usually three-year terms renewable: this ranged from employment on plantations close to the villages of origin to employment further afield in industries such as mining. De Brie correctly stressed that "There is a social problem of a wider nature than that of the worker himself ..... A group from which too many men are drawn, being deprived of its fittest supporters, will weaken and decline. In a primitive society, the evil will be still greater, because its powers of adjustment are less developed."(1) Justifiably therefore, as Lord Hailey pointed out, the years after World War I, especially the inauguration of the Mandate system in 1919, gave rise to growing international collaboration not without controversy over the African conditions.(2) In the particular case of Zaire, the measures taken by colonial authorities to regulate the migrant labour system and safeguard the communities which supplied migrant labourers were as follows.(3)

1.1 Safeguard of Communities Supplying Migrant Labourers

Two kinds of measures were adopted to this end: on the one hand, a land policy tending to restrict the granting of concessions to Europeans in certain zones and, on the other hand, a quota system limiting the recruiting operations in specified communities.

(i) Restrictions in the granting of concessions to Europeans

In pursuance of recommendations by a Labour Commission sent to Zaire in 1928, the land was divided into six economic zones. First, the saturated zone which consisted of areas where European undertakings had absorbed all the available manpower and where no further concessions could be granted. Second, the zone where concession areas could be granted only for purposes of stock raising. Third, the zone where concessions were confined to forests. Fourth, the zone where only concessions for supplying existing undertakings (subsistence crops) could

---

(1) De Brie, Pierre: Migration of Indigenous Workers in the Belgian Congo; in International Labour Review, Vol.L, No. 11, July-December 1945, p. 335-451.

(2) Lord Hailey: An African Survey: A Study of Problems Arising in Africa South of the Sahara; Oxford University Press, 1938.

(3) Though elaborated by the Committee for the Protection of the Indigenes, these measures were usually taken in pursuance of resolutions adopted by the governing body of the International Labour Organization.

be granted. Fifth, the zone of areas where all the labour that could be recruited was reserved for neighbouring zones. Sixth, the remainder of the country where no restrictions were imposed on the granting of new concessions.

It is not clear, from available documentation, how effective these restrictions were. However, the colonial annual report for 1938, the last to be published before the outbreak of the war, provides some insight into the concession policy in a section entitled "The granting of new concessions in saturated areas". This report suggested evidence of an intention to give up the practice of regarding certain zones as economically saturated, emphasizing that restrictions were intended only as a temporary arrangement to permit adaptation of existing undertakings, since the government considered it quite unreasonable to put an automatic end to new undertakings that might improve the colony's prosperity. It would then appear that, in the colonial context, attempts to prevent exhaustion of available labour supply through restricted granting of concessions were of relatively limited application.

(ii) Limitations in the recruitment of indigenous labour

In pursuance of one decree of 16 March 1922, bearing on the contract of employment, narrower measures were adopted, aimed at stopping the recruitment or employment of indigenous workers beyond certain proportions within certain communities. According to the 1925 recommendations of the Indigenous Labour Commission, the estimated proportion of able-bodied men to total population was 25 per cent, or one adult male to four inhabitants including women and children as well as disabled men. The Commission held that 10 per cent of the able-bodied men within the community could be withdrawn for employment at some distance from their homes, whereas the remaining 15 per cent could be employed locally for various intermittent works. The major problem with such provisions was clearly the determination of the population composition in any given community. Inevitably, in the absence of reliable data, estimation of available manpower became more or less fanciful; gradually, it was related to the results of the population inquiries, particularly for those communities most at risk.(1)

---

(1) In 1930-1, the Commission recognized that estimation of available manpower was distorted in areas where birth rates were low and suggested that new calculations should be based on the sex-ratios, but, apparently, the old system prevailed.

Eventually, recruiting operations were prohibited in the areas where (i) the supply of able-bodied men had been exhausted, (ii) the balance of births and deaths was negative, and (iii) the ratio of children to women became unfavourable, against a figure of 130 children to 100 women which was considered satisfactory.

The 1938 colonial annual report indicated that extensive use was being made of the provisions for limiting recruitment(1) and several areas were closed to recruiting operations, being economically saturated, as was the case with a number of communities of Tshuapa in Equateur, Tshopo and Ueles in Haut-Zaire, and Maniema in Kivu. However, the report showed further that out of a total of 528,527 registered workers, 310,294 - representing well over 10 per cent of the male adult population - were employed in places distant from their homes. The explanation for this excess vis-a-vis the standing provisions was that the restrictions applied to recruiting operations but not to "spontaneous engagements", that is indigenous persons coming of their own accord and without being asked to the workplace or to an employment office for the purpose of taking up work.

A closer statistical examination revealed that the "spontaneous engagements" were considerable: of the total workers, they amounted to 70 per cent in Equateur, 60 per cent in Kivu and as much as 100 per cent in other areas. The colonial authorities argued that spontaneous engagements had less disastrous social effects than compulsory recruitment, because the worker knew the consequences of his action and he was often accompanied by his family. Given the working conditions and wages of those years, one may question how truly spontaneous these engagements were. In any event, the ensuing social disruption still remained serious, as workers found themselves displaced to depend on industry for their subsistence, while the traditicnal social cohesion of the communities was profoundly modified.

Some idea of the extent of this disruption may be gained by looking at the fluctuations in workers totals, which numbered 415,000 in 1928, fell to 292,000 in 1932 and rose again to 529,000 in 1938. Allowing for

---

(1) However, the report claimed that the demographic situation for the country as a whole was improving. Considering as satisfactory a population with 130 children to 100 women, 240 women and children to 180 men, and 106 women to 100 men, it emphasized that by 1938 these ratios were respectively 145, 289 and 106 compared to the 1930 figures of 112, 214 and 100.

the aged and disabled amongst the men who totalled 3,036,000 in the 1938 enumeration, it would appear that over one-fourth of able-bodied men worked for European enterprises; a proportion which increased substantially if men working indirectly for European undertakings were added. It may then be concluded that the protection of the communities which supplied workers, by limiting recruitment of indigenous labour, was brought about only partially, in view of the development of sophisticated forms of employment which had allowed employers to differentiate between compulsory recruitment and spontaneous engagement.

1.2 Measures to Protect the Indigneous Worker

By a decree of 16 March 1922, provision was first made for the protection of workers, in two ways: indirectly, by stating the employer's obligation and, directly, by enumerating the worker's rights. The worker's legal protection was established by his contract of employment.(1)

(i) Indirectly, through employer's obligations

The decree enumerated employer's obligations in relation to the worker's wages, feeding, housing, health and safety, rest days, care in the case of sickness or injury, the free supply of a work book and his repatriation. It also defined the worker's particulars to be supplied to the administrative authorities.

(ii) Directly, through worker's specified rights

In principle, the worker could demand that all the employer's obligations under the decree be met. He could also obtain additional advantages through the contract and he had the right to terminate the contract without notice if his health, safety or morality were endangered. In principle also, he could claim damages if injured through an action of his employer and have the contract cancelled by the courts if the employer seriously failed to carry out his obligations. In the case of recruitment, as opposed to spontaneous engagement, additional obligations bound both the worker and the recruiting agent.

---

(1) Lenoard, Henry: Le contrat du travail au Congo Belge et au Ruanda-Urundi; Ferdinand Larcier, Bruxelles, 1935.

The latter was then required to obtain a labour permit and produce a contract of employment and furnish the worker with a document signed by himself stating the place and date of recruitment, the place of destination, the conditions with regard to wages and hours of work; he must provide the recruited worker with means to reach the place of work and repatriate him on expiry of his contract and, on request, he must notify the authorities of the particulars and conditions of recruited workers. For his part, the worker had to fulfill the conditions agreed to with the recruiting agent.

Obviously, successful protection of indigenous workers under the provisions of the 1922 decree rested on the attitude of recruiting agents and employers, since the workers were usually too illiterate to comprehend the terms of the contract of employment, and were unable to obtain legal aid or defend their case seriously in the absence of workers' unions. Thus, in spite of increased legal provisions, there remained a wealth of anxiety and ignorance about working conditions on the part of workers, and exploitation and abuse on the part of recruiting agents and employers continued. However, it is not impossible that those welcome legal changes gradually brought about an improvement in the physical, economic and social conditions of the populations concerned.

1.3 Stabilization of Workers in their New Settlements

By the late twenties, labour reports still indicated that the loss of manpower through death and other conditions amounted to considerable proportions of the total number recruited. The stabilization of the labour force in its new surroundings became an important concern and the government devised various schemes to that end.(1)

(i) Economic motives for stabilization

According to AIMO's estimates, in the three years 1927-1929, keeping at work a net labour force of 10,000 workers involved the loss - through death, discharge or desertion - of 6,274 men or 63 per cent of those who had previously been selected with care. The loss before

---

(1) Le problème de la main-d'oeuvre au Congo Belge; Rapport de la Commission de la main-d'oeuvre, 1930-1; A. Lesigne, Bruxelles, 1931.

work was actually begun amounted to 27 per cent of the total number recruited. The report indicated that in 1929-30 the AIMO paid 1.5 million travelling days wages, resulting in an appalling waste which could have been largely reduced by a better organization of transport and conditions of work.(1) The report did not give separate estimates of those who died, sickened or simply deserted; however, the demographic impact of the situation was fairly serious in terms of mortality and social disruption, as the persons concerned were presumably in their prime working ages.(2) It was then hoped, as stated in the report, that stabilization would make it possible to bring about a decline in mortality rates, sickness and desertion, and even more a saving in money.

(ii) Social measures of stabilization

It was believed that indigenous communities would suffer less if the withdrawal of members was constant and affected cross-sections of the population, than if particular age groups were successively turned away from their traditional milieu. Also, the displaced fraction of the community would become more stable if it could be settled at the place of employment under adequate living conditions rather than undergoing adjustments in opposite directions. Henceforth, the State not only reinforced those measures previously mentioned for the workers' protection, especially the quotas or numbers of those who could be withdrawn from traditional communities, but it emphasized that the workers were to be accompanied by their family members. In relation to this, the State adopted new measures concerning workers' recruitment, physical fitness, travelling, housing, rationing and medical care. Private companies naturally followed suit: in a direct manner, they offered higher wages and periodic increments for long-term contracts (over three years) and also re-engagement bonuses (higher for married men and heads of family than for single persons); in a more indirect way, they developed various welfare programmes: medical services, schools for children, domestic training for girls, evening classes for

---

(1) The figures quoted here refer to the region of Kasai; but very probably they differed little from those in other areas.

(2) The desertion, in particular, suggests that the wages and other material benefits were not attractive or worthwhile enough to ensure that workers remained.

adults, saving funds and dowry accumulation (to facilitate marriage), correspondence between workers and their relatives left behind, organization of recreations and compensation schemes.(1)

In reality, however, stabilization of indigenous workers did not abolish the evil of breaking up traditional communities; to a certain extent, it clearly perpetuated it, though with lesser effects than in previous periods. As shown by Peemans, at least until 1945, the colonial regime, even though it softened the harsher features, merely continued to use the tools of constraint left by the Leopoldian regime and it took various measures to hamper indigenous economic initiative. For example, by the mid-twenties, in the cotton areas, such as Sankuru and Uele, it took three months' wages to buy a piece of cloth, the price of which exceeded the average annual income of the cotton grower. Around the same period, in the Kasai area, which provided Kuba workers for the construction of the BCK railway, export crops stimulated peasants to grow more and accumulate revenues, but governor-general Henry issued circulars obliging the peasants to return to the cultivation of subsistence crops.(2)

From a strictly demographic viewpoint, however, there is no doubt that given the gathering momentum since the late twenties, the combined action of public and private measures to improve the conditions of the workers and their families gradually led to moderately greater populations until recurrence of the Leopoldian-type conditions of Zaire's contribution to the World War II effort.

---

(1) The much quoted example of social and demographic improvement related to the workers of the Union Minière company, which, during 1926-9, spent nearly 140 million francs on the construction of camps and hospitals alone. By 1939, medical expenses amounted to 5 million francs or 10 per cent of the total cost of indigenous labour. For that year, reportedly, about 99.3 per cent of all workers had signed a contract for three years; 59 per cent had served for more than three years and only 5 per cent of those reaching the end of their contract refused to renew it. It was also claimed that death rates among workers fell from 106 per thousand in 1917 to 51 in 1926, to 16 in 1930 and to 4 in 1939; whereas birth rates rose from 142 per thousand households in 1926 to 163 in 1939. The origin and significance of these figures is demographically unclear; in any case, death rates of 4 per thousand persons in 1939 are dubious estimates for that epoch.

(2) For a detailed account of the situation, see Peemans, J.P.: Capital Accumulation in the Congo under Colonialism, the Role of the State; in Duignan, P. and Cann, L.H. (Eds.), Colonialism in Africa 1870-1960; Vol. IV, The Economics of Colonialism, Cambridge University Press, 1975.

2. The World War II Effort and its Demographic Impact

According to one colonial publication, Zaire's contribution to World War I had been military above all; in contrast, during World War II, its participation was total, satisfying the Allied demands for mineral and agricultural products as well as soldiers and weapons.(1) The Belgian government-in-exile in London was under strong Allied pressure to greatly expand the required production; and the price subsequently paid under the colonial system, especially by the peasant, was very high.(2)

2.1 Zaire's Contribution to the War Effort, 1940-45

Following the German invasion of Belgium, on 10 May 1940, governor-general Ryckmans decreed as early as 18 May the total mobilization of the colony, to be placed at the disposal of the Allies. At that time, the colony's frontiers were not directly threatened, the nearest belligerent being the Italian troops in east-Africa. However, from the onset of mobilization, Zaire's contribution comprized important military, civilian and economic resources.

(i) The military mobilization

Firstly, after a period of intense recruitment and concentration, troops from Zaire crossed the northeast frontiers in February 1941, to attack the Italian centres in Abyssinia (Ethiopia). In cooperation with the British, a battalion and further reinforcement elements travelled a thousand miles across the burning plains of Sudan to win the battles of Asosa, Gambela and Saio, leading to the surrender of all Italian troops south of the Blue Nile.(3)

Secondly, from Matadi, a complete expeditionary corps embarked for Nigeria at the border with Benin (then Dahomey)under Vichy, with

---

(1) Account of the military developments is summarized largely from Belgian Congo, 2 Volumes; edited by Information and Public Relations Office, Ministère des colonies, Bruxelles, 1959. See also footnote 3, p. 78.

(2) Young, Crawford: Politics in the Congo; Decolonization and Independence; Princeton University Press, 1965, p. 223.

(3) Saio was the greatest of these battles. As Saio fell on 3 July 1941, an Italian army of 9 generals, about 400 officers and 2,500 non-commissioned officers and soldiers, and over 3,500 auxiliaries surrendered.

the objective of encircling the French colonies not yet in the Allied camp. However, the landing in north Africa and the winning over of Dakar made unnecessary the intervention of this expeditionary corps which, early in 1943, left Nigeria for the Middle-East.

Thirdly, six thousand soldiers travelled by sea from Nigeria to the Middle-East, while a convoy of more than a thousand vehicles crossed the Sudanese deserts for Khartoum, then Cairo. A couple of brigades remained in the Middle-East for about two years, accomplishing various duties in Egypt and Palestine. Secret plans provided for their particpation in a Balkan campaign, but new developments - the Italian offensive and the landing in Normandy - changed the course of events and Zairean troops were subsequently repatriated without seeing the European battlefields.

Fourthly, during the war, Zairean soldiers also made their appearance even in the Far-East. Under one medical officer, Thomas, a field hospital brought from Zaire cooperated with the Allies on the east-African fronts, at the landing in Madagascar and finally in the Burmese jungle at the peak of the war with Japan.

(ii) The economic mobilization

At the time World War II began, Zaire's highly important minerals and diverse agricultural products had long been exported to European markets. In fact, overall production was increasing steadily, since the country had come through the world-wide depression years of 1929-34 with flying colours and its economic position was growing stronger.

In connection with the war effort, as soon as the members of the Belgian government settled in exile in London, Minister de Vleeschauwer left for the colony to help coordinate all effort. Subsequently, two agreements, one economic and one financial, put the immense wealth of the land at the disposal of the Allies. It was determined that once the colony's own essential requirements had been met, the surplus was to be utilized, as required, by the government-in-exile. The entire colony's gold production and foreign exchange was also ceded to the Bank of England against payment in sterling.

The effort made was, in the words of Mallinson, phenomenal by

any standards.(1) In the first year alone, the colony contributed seven million pounds sterling. In addition, a public campaign launched from Kinshasa raised several hundred thousand pounds, notably for the purchase of planes to be put at the disposal of Belgians fighting with the British Royal Air Force. And, when the Belgian Prime Minister, Pierlot, travelled to the colony in the company of de Vleeschauwer, in 1942, it was estimated that the contribution for the fiscal period 1940-43 would be no less than 28.5 million pounds sterling. Also, and in cooperation with other non-Belgian corporations, several processing industries, such as industrial diamond cutting, were established, drawing constantly and increasingly on Zaire's mines for sale primarily to the United States, and ensuring for Great Britain a steady flow of foreign exchange stock.

Meanwhile, Camille Gutt, as Minister of Finance, also took several important fiscal measures, in particular concerning the exchange rate of the colony's franc. Colonial bonds were also issued and a regular service of foreign loans established to safeguard the financial stability of the Belgian government-in-exile. In this way, the colony was able to make a substantial contribution in all fields to the Allied cause, including outright gifts of several tens of thousands of pounds, to the Spitfire Fund, as well as payment and maintenance of planes, ships and various army equipment used by the Belgians.

The all-out economic war effort was thus supported not only by the colonial authorities in exile, but equally, if not more so, by those actually in the colony. Indeed, as one official publication wrote of the economic and financial mobilization of the colony:(2) "Its entire productive capacity was devoted to the war effort. Gold, tin, cobalt, tungsten, copra, palm oil and rubber were put at the disposal of the Allies. In all sectors of the colony's economic life there was but one aim: to throw into the battle all its wealth, to supply ceaselessly all the factories beyond the seas with furnishing materials, food and amunitions to the combattants, and to make up for all the shortages caused by the loss of those countries of the

---

(1) Mallinson, Vernon: Belgium; Nations of the Modern World; Ernest Benn Ltd., London, 1969, p. 123-9.

(2) Belgian Congo; op. cit., Vol. 1, p. 115.

Far East that had fallen into the hands of the Japanese and from which oil and rubber had previously come." The war years also saw an important beginning of manufacturing industries for the domestic market in attempts to substitute for those imports unobtainable from Belgium and other European countries.

The quantity of exports, which still constitute the essence of Zaire's economy, increased substantially during those years. The value of exports which was two and a quarter billion francs in 1938 rose to ten billion francs in 1948 and to twenty seven billion in 1956, that is a tenfold increase in less than twenty years. The budgetary receipts, less than one billion francs in 1937, rose to twelve billion by the end of the same period. Throughout that period, disbursements were lower than receipts, resulting in a series of accumulated surpluses. At the same time, however, it became apparent that the war effort required from indigenous populations had produced a severe impact on their socio-economic conditions.

(iii) The civilian mobilization

As stressed by Bustin, with Belgium's entry into the war, the Zairean population was subjected to unprecedented and often contradictory pressures.(1) The civilian mobilization, throughout the country, was related to manpower needs newly generated for both military and economic objectives. It was particularly the peasant population which bore the excessive burden of the war effort, as rural communities, through compulsory recruitment and various constraints, were called upon to supply thousands of men - for the armed forces, the police and their auxiliary services; to fill labour requirements in industry; to intensify agricultural production for local consumption, domestic manufacturing and export; and also to carry out public works, especially the building of roads, river ports and offices as well as dwellings for the personnel of the Administration.

The productive capacity of the villages, not yet fully recovered from the intensive recruitments of the preceding decades, was thus to be further undermined. Bustin's study of the Lunda population in the sub-region of lualaba provides some details and typical

---

(1) Bustin, E.: Lunda under Belgian Rule, The Politics of Ethnicity; Harvard University Press, 1975, p. 136.

examples of the situation during the war years. He recorded that during 1940-45, the number of recruits from Lualaba totalled 12,465 able-bodied males of whom 15 per cent were sent outside the Shaba region. Allowing for later repatriation, the net loss by the rural communities was 10,651 or over 10 per cent of the total population of the sub-region; and an even more serious drain on manpower since only healthy young men were recruited.

Such trends were even more pronounced in other areas and the marked decline of rural adult males during the early years of the war soon placed a tremendous burden on all those who remained in the villages. Women increasingly took the place of men in the fields and even children were pressed into service, to the detriment of their already rudimentary schooling, notably for rubber collection or carrying loads of earth along the roads to replace what had been or would be lost - in the form of mud during the rainy season, and dust during the dry season. To compensate for the shortage of rural manpower, the colonial power simply doubled the number of days a peasant was required to devote to his forced labour or compulsory delivery of crops from 60 to 120 days per annum.

Of the many different burdens imposed on the population, the most oppressive and more generalized were the production of cotton and manioc, the resumption of wild rubber collection and the vastly increased road-works. The acreage for cotton cultivation was raised to one and a half acres, but a few over-zealous officials did not hesitate to extend it to two and a half acres; as a result, cotton production in Lualaba rose from 6,307 tons in 1939 to 9,965 tons in 1943. During the same period and in the same manner, the production of manioc rose from 10,961 tons to 18,133 tons. For the individual planter, these increases represented about 90 per cent. In this way, agricultural production rose substantially everywhere, despite a striking decline in the number of farmers.

The most spectacular development, however, was the resumption of wild rubber collection, which had been abandoned after the Congo Free State years, and which many villages had forgotten how to prepare for marketing. As the early phase of war briefly stimulated the European demand, production from Lualaba rose from 2 tons in 1939 to 13.6 tons in 1940, but was abandoned again the next year.

With the fall of south-east Asia and Indonesia to the Japanese, a fresh demand appeared and rubber production from Lualaba rose to an unprecedented level of 418.4 tons in 1943 and further to 429.4 tons in 1944.

Tremendous demand for and oppression of manpower also resulted from the increase in public works, especially road construction and maintenance. The total road network of Lualaba grew from 5,300 miles in 1939 to 6,535 miles in 1944, with only 888 miles being maintained by the government; the rest was the responsibility of the indigenous communities. The government also determined that, in the cotton growing areas, road-works were to be financed from cotton sales; in other words, the labour carried out by villagers on the roads was being financed by the money they should have been earning from their cotton. In those years, indeed, it was not uncommon for villagers to spend a total of two months each year carrying goods to market without remuneration; in addition, the lack of transportation meant that human porterage continued as in times past, often over long distances. Detailed information concerning other areas of Zaire is not available; but there is little doubt that the situation varied little from the one recorded for Lualaba. This is all the more probable since the decreed economic mobilization was applied with rigour throughout the entire country.

2.2 The demographic impact of the World War II effort

It is clear from accounts in the preceding section that Zaire's involvement in World War II was considerable, even though the country was not directly at war. It is also clear that Zaire's greatest contribution to the war effort was obtained only through the harsh and arbitrary mobilization of available economic resources and manpower. It is thus certain that the various pressures exerted on the population during those years had a profound and durable impact on its demography. This situation was overlooked by both Romaniuk and Van de Walle, who have previously carried out important studies of the population of Zaire during the colonial period. Few population statistics were collected during the war years; however, it is not impossible to derive a clear picture of the demographic changes by studying the data available for the years before and after the war.

(i) Effects on social and family life

As already described, the rural population, about 90 per cent of the country's total, suffered more than the urban population from the harsh constraints adopted for the war effort. The results were tremendous social dislocation and population displacement with marked repercussions on family life. Indeed, throughout rural communities, "Production schedules imposed by the Administration left no time for fishing or hunting - the latter being also compressed by the lack of gunpowder - thus eliminating a major source of proteins in the rural diet. Even more important, no time was left for the elaborate array of social obligations centred on births, marriages and deaths, or for community functions such as palavers, litigation, dances, etc. Houses, wells and fences went unrepaired, the quality of village life declined sharply during these years, thus causing further demoralisation and reinforcing, by contrast, the attractiveness of migration."(1) For the entire country, official records indicated that the manpower volume rose from 480,000 workers in 1938 to 850,000 workers in 1945. However, it was estimated that the net loss of young adult males by rural communities, even allowing for later repatriation, amounted to considerable proportions, ranging from between one-fourth and one-third of adult male villagers.

This devastating erosion of traditional communities was witnessed by several observers, such as Monseigneur de Hemptine, who, in a famous letter to the Minister of colonies in December 1943, stated that "In one place, the food situation is becoming aggravated to the point of threatening famine; in another, the villages are disintegrating; elsewhere, there is depopulation, the native populations have been deeply troubled by an ill-conceived war effort and this has been singularly aggravated by the agitation amongst the whites".(2) The colonial administration itself increasingly became aware of the serious disruptions of the social life of the indigenes, as a result of successive reports, notably those of AIMO, which showed in 1944 that "in the bush, medical services had virtually disappeared, schools were more inadequate than ever and goods were scarce".(3)

---

(1) Bustin, E.: Lunda Under Belgian Rule; op. cit., p. 140

(2) Gilbert, O.P.: L'Empire du silence; les éditions du peuple, Bruxelles, 1947, p. 23-29.

(3) Rapport AIMO, 1944; cited by Bustin, E., op. cit.

During these brutalizing years, indigenous populations naturally attempted to express their dissatisfaction through revolts and strikes which were severely suppressed by armed forces. Uncoordinated strikes and unrest were reported to be practically endemic on the Shaba copper-belt in 1941-3, and resulted on occasions in murderous confrontation.(1) Of the several violent incidents which occurred in various parts of Zaire during the last years of the war, only the so-called Luluabourg (Kananga) mutiny of Februrary 1944 was admitted to have had a serious impact. Indeed, this mutiny was soon widely supported by the local population and followed by uprisings in distant areas, notably Likasi and Kamina, and after the movement had been suppressed, the mutineers dispersed into a number of small bands throughout the neighbouring regions.

While the statistical evidence will surely remain impossible to unearth, developments and events which occurred in Zaire during the war effort, to the extent that they caused tremendous social dislocation and population movement, must have abruptly affected the course of vital events and components of population growth.

(ii) Effects on mortality, fertility and migration

Apart from social disruption, the effects of the war effort on mortality and fertility levels were aggravated by lack of medical supplies and services which, as mentioned earlier, had virtually disappeared in most parts of the land.

As can be seen from table 2.4 (p. 101), estimates of birth and death rates, previously derived from the annual population inquiries, are not available since such inquiries were not conducted in those years. However, based on the enumeration data, as given in table 2.3 (p. 97), the implied rates of growth for the entire country during 1940-5 showed marked fluctuations with negative and positive figures in the range minus 0.4 to 1.5 per cent per annum. In contrast, broad age groups reported in table 2.5 (p. 103) indicate that the proportions of children to total population remained constant at 40 per cent throughout that period. As already stated, the reliability of these data is uncertain; nevertheless, they allow some reasonable inferences.

---

(1) For example, at Lubumbashi in December 1941 when, according to official records, 48 persons were shot dead, 74 wounded by bullets and many more injured in the rush to escape. Quoted by Perrings, C.; op. cit., p. 224-231. See also Jewsiewicki, B., Vellut, J.L. and Lema, K. in Documents pour servir a l'histoire sociale du Zaire; greves dans le Bas-Congo (Bas-Zaire) en 1945; in Etudes d'Histoire Africaine, vol. 5, 1973.

A cross examination of the proportions of children with the implied rates of growth would suggest that, assuming negligible migration into and outside the country and constant fertility, mortality had affected the broad age groups in the same proportions; or, more plausibly, the birth rates had declined at the same time as an increase in mortality with greater impact on adult population. Indeed, accounts of disruption in social and family life tend to support the hypothesis of a decline in birth numbers, on the one hand; while, on the other hand, available information tends to suggest a greater adult than child mortality. Relative to this point, it should be noted that column 1 of table 2.1 (p. 93) reveals a substantial decline in registered population between 1945 and 1947 when registers were thoroughly checked. It is very likely that this decline concerned particularly the adult population, which constituted the major emphasis of enumerations conducted in those years and was certainly the most adequately covered by the continuous registration system.

The effects of the war effort on migration, with large-scale displacement of young adult men into industrial and urban centres, clearly resulted in demographic imbalance: the new cities were overwhelmingly populated by young unmarried men, while the rural areas were left with a majority of women. This is in conformity with observed sex ratios, given in table 2.7 (p. 113). It seems very likely that this development resulted in delayed marriages for most of the young men concerned, a situation which probably had a short-term reflection in the lower number of births recorded in the early forties. This impact of migration, in combination with the more generalized social disruption probably resulted in lower birth numbers and would explain the peculiar shortages in the age structures observed for those persons aged 15-19 and 20-24 years during the 1955-8 survey. Also, it is not impossible that in the longer term, the delay in wartime marriages of able-bodied young men contributed to lower fertility rates of rural populations compared to urban ones, as recorded just over a decade later.

(iii) Effects on overall population growth

There is no doubt that the war effort, as it affected the vital rates and age structures, and rural-urban sex distribution, brought about a decline in the rate of population growth. Indeed, as can be

seen from table 2.3 (p. 97), population totals based on the administrative enumerations indicated for the years 1940-45 annual rates that were mostly negative and nearly non-growth rates of increase. For the whole of that period, the implied rate of growth is 0.3 per cent per annum, as shown in table 2.15 (p. 126). However, in view of the decline recorded in the registered population by 1947 as compared to 1945, it is possible that an actual population decrease occurred.

Whilst it is possible too that during this period the administration suffered some slowing down of entries of vital events and migration in the continuous registration system, it is nevertheless unlikely that local officials did not endeavour to reach those populations previously left uncovered. Wartime demand for manpower on all fronts and the active cooperation of traditional indigenous power would have ensured that the remoter populations were reached;(1) a development which would have resulted in an increase in registered population after the war. This of course would not have been the case had the country's whole population previously been registered, a possibility which can be dismissed in view of the procedures then adopted for population enumeration.

Another indication of population trends during World War II is provided by the colonial annual report for 1944, which stated that everywhere the quotas for manpower recruitment had been exhausted and, given the continuous deterioration of the rural demography, restrictions on recruitment, as decreed in 1938, remained in force or had been reinforced. Accordingly, during 1940-44, restrictions were extended to spontaneous job seekers, even for employment locally, in parts of the regions of Bandundu, Equateur, Haut-Zaire and Kivu. There were, as already mentioned, several indications that substantial rural populations had witnessed negative growth rates under the impact of the war effort, but for the country as a whole, according to available data, the hypothesis of non-growth seems most probable for that period.

---

(1) According to Vansina, the collaboration between the traditional power and the Administration was particularly active. For example, the King of Kuba provided workers and various recruits; he collected taxes required by the Administration and he received for his services a salary of 60,000 francs a year, when the ordinary worker's wage was one franc per day.

Vansina, Jan: Les Kuba et l'administration territoriale de 1919 a 1960; Cultures et Developpement, 4, no. 2, p. 275, Louvain, 1972.

5. Factors Related to Rapid Population Increase After World War II

As soon as the war ceased, important measures were implemented to promote welfare programmes for the workers and rapid population growth. It may be well be pointed out that strong socio-political pressures, within and outside the country, together with favourable economic conditions - continued expansion largely aided by mechanization - all militated for a revision of the Belgian colonial policy in terms more acceptable to the indigenes.(1)

From a strict demographic viewpoint, the measures taken were primarily directed towards an increase in fertility;(2) mortality appears to have received far less attention, except during peaks resulting from epidemics or greater than usual hardship in working conditions; and immigration was probably thought to offer little prospect of population increase and to remain incidental even in those areas of labour-intensive activities.

These socio-economic welfare measures have been extensively described by several dedicated propagandists for the Belgian colonial system and its supporters.(3) Thus they are discussed here only briefly in terms of their impact on the rapid population growth observed in Zaire in the post-war period.

---

(1) "Increasingly, the urban elite was frustrated by its lack of status in the colonial system and the multiple psychological wounds of pervasive racial discrimination, whereas the worker and peasant sought an end to the process of being dragged, wrenched and tugged into a modern society. This was not a Luddite revolt against modernity - but the oppressive, ommipresent system had to go." Young, C.: Politics in the Congo; op. cit., p. 231.

Elsewhere, in search of the best guarantee for survival of the colonial regime, officials in the colony as well as in the metropolis increasingly favoured some improvement in the conditions of the indigenes; such ideas were particularly developed in the 6th session of the Congres Colonial National, Senat de Belgique, 4-5 October 1947, Comptes rendus des séances et rapports préparatoires, Brussels, 1948, pp. 123-62, 323-72.

(2) In previous periods, a number of measures had been taken to increase birth numbers: the taxation and granting of premiums to fathers of large families, the special taxation of polygamists for each additional wife, the special treatment of persons suspected of venereal disease and refusal of permits for them to travel, and a reduction in quotas allowing European companies to recruit labourers in areas of reportedly low fertility; but they remained apparently ineffective, probably because of continued social disruption.

(3) See particularly Brausch, G: Belgian Administration in the Congo; Oxford University Press, 1961, p. 4-17; and Romaniuk, A.: La Fécondité des populations congolaises; op. cit., p. 162 onwards.

3.1 Improved Labour Legislation, Institution of Trade Unions and Social Security Organisations

It should be remembered that recruitment of workers, labour movements and hardship in working conditions of the early decades of the century and during World War II constituted the outstanding cause of social disruption, especially the separation of husbands and wives and the delay in marriage for males of prime working age, and contributed also to the spread of diseases causing sterility, premature births and miscarriages. Against this background, from early 1946, important new legislation was set up with regard to indigenous labour organisations.(1)

Accordingly, trade unions for indigenes were authorised and established; indigenous councils within business and local committees of labourers were constituted; arbitration procedures and committees were uniformly instituted throughout the country for the regulation of conflicts between workers and employers, for example, regulations concerning working hours and improvement in working conditions, as well as wage increases, were implemented. The most remarkable innovation was undoubtedly the establishment of a fairly comprehensive social security system, including benefits for workers in the fields of housing subsidies, illness and accident insurances, and above all pension schemes.(2) In this general climate, social services for women were also established, together with public education and information services which allowed the indigenes some freedom of expression and the possibility of limited discussion on the future prospects for their country within the government mass media.(3)

3.2 Social Assistance, Revival of Family Structures and Functions

Alongside measures to improve the labour situation, provisions were also introduced which aimed at harmonizing relations between the world of the workers and that of their wives and children. By the end of the war, in two-thirds of the cases, recruitment of labourers was

---

(1) Decree no. 82 of 17 March 1946.

(2) Later, in a decree of 6 June 1956, a legal system of old-age pensions for indigenes was extended to the private sector, probably for the first time in Africa south of the Sahara.

(3) By 31 December 1946, about 118 clubs for elites were created with more than 5,000 members; 28 newspapers and 31 libraries for indigenes were established in addition to numerous radio and mobile cinema services.

made on a family basis, involving the worker and his dependents, as contrasted to earlier periods during which labourers were resettled in labour camps practically alone.(1)

Social assistance initially limited to urban women (foyers sociaux) was subsequently extended to men (centres éducatifs et sociaux) and to rural communities by 1952.(2) Largely for women, social assistance comprized groups for knitting and dressmaking, those for expectant and young mothers, courses in domestic economy and family management, advice bureaux and day nurseries for children, etc. The number of such centres remained insufficient, about 60 in the later fifties, with 50 of these in urban areas. Rural communities, where traditional ideals of kinship remained unshakable, were to benefit particularly from the Native Welfare Fund (fonds du bien-être indigène) created in 1947 for the most underprivileged rural areas and concerned with medical, educational, economic, agricultural and social welfare. Furthermore, youth organizations were encouraged through sporting and scouting groups; and tribal and cultural associations were enccuraged for adults, particularly in urban centres.(3) Aside from government directives, social activities and family functions received encouragement from missionary and philanthropic organizations.

3.3 Health Campaign and Medical Services

In terms of personnel and services rendered, the medical organizations certainly improved substantially in the post-war years.

---

(1) For example, in the Union Minière camps, while the workers numbered 13,800 in 1925, 8,800 in 1935, 16,400 in 1946 and 20,213 in 1954, the number of women per thousand workers rose steadily amounting respectively to 180, 470, 720 and 819, with the corresponding numbers of children per thousand workers being 60, 360, 1,050 and 1,828.

(2) Historically, the early social centres appeared in Kinshasa, Lubumbashi and Mbandaka successively in 1932, 1934 and 1938, and were designed to help the wives of wage-earners adapt themselves to urban life.

(3) It is interesting to note that such associations ultimately gave rise to embryonic political parties, i.e. the Association of the Bakongo (Abako), the Union of Mongo (Unimongo), the Association of Baluba of Katanga (Balubakat), etc. Women's associations, however, remained somewhat heterogeneous and largely cultural or of the mutual security type. An interesting insight into these women's associations is given by Cohmhaire-Sylvain, S., in Femmes de Kinshasa, hier et aujourd'hui, Mouton, Paris, 1968.

Table 2.16 below shows the increase in medical personnel in relation to total population in five-year periods from 1930 to 1955.

Table 2.16

MEDICAL PERSONNEL AND RATIO OF DOCTORS TO TOTAL POPULATION FOR ZAIRE, 1930-1957

Year	Total Pop.	Europeans	Doctors	Other Med. Personnel		Ratio Doctor/ Total Pop.
				Europeans	Africans	
1930	8,803,000	25,179	164	178	-	54,000
1935	9,775,000	18,683	145	147	289	67,000
1940	10,354,000	29,735	323	596	2,018	32,000
1945	10,508,000	33,787	332	702	2,138	31,000
1950	11,332,000	59,157	464	1,246	3,248	24,000
1955	12,563,000	98,804	614	1,652	4,198	21,000
1957	13,175,000	110,690	686	1,894	5,232	19,000

According to the table, there was on average one doctor for more than 60,000 persons before 1940; this proportion improved by about one half in the mid-forties and improved further by one-third by the mid-fifties. More significantly, the number of both other European and African personnel engaged in medical services increased rapidly during the war years and ereafter steadily each year; relative to total population, their proportions increased from an average of one for 45,000 persons in 1930 to one for 4,000 in 1945 and further to one for 2,000 by the mid-fifties. Apparently, the favourable budgetary situation of the post-war years allowed for the development of a tight network of medical services throughout the country. Under one Van Hoof-Duren project, each of the 135 zones (third largest administrative divisions) was provided with a rural medico-surgical centre, a surgical section, a maternity ward and a pre-natal and infant welfare advice centre. In addition, four principal dispensaries and several centres for secondary treatment were scattered over each zone. Each medico-surgical centre was served by two doctors, one of whom was responsible for visiting dispensaries. Besides these government services, there were many others managed by private, semi-public and university foundations as well as by missionaries

and by industrial or agricultural corporations.

Cases of disease treated by the medical services of the government and the Foreami (Fonds Reine Elisabeth pour l'assistance médicale aux indigènes) rose from 1.2 million in 1944 to 3.5 million in 1957; this excludes numerous medical services provided by other institutions.(1) Each year, mobile medical teams covered rural areas to fight major epidemics and endemic diseases, examining about half the population of the country. In this way, epidemics such as sleeping sickness which had previously devastated large areas were eliminated. However, reports are less positive with regard to those diseases causing sterility and miscarriage. During 1940-58, the number of cases of venereal discharge treated rose from 27,000 to 180,000; a figure which obviously does not allow for evaluation either of the gravity or of the real effects of venereal disease on population trends.

Medical developments as summarized above certainly produced some favourable impact on indigenous health conditions during the post-war years; but, it may well be pointed out that, despite the increase in their number, most doctors were concentrated in localities where Europeans resided, even in the later part of the colonial era. Moreover, in many dispensaries throughout the country drugs were scarce, and treatment services remained inadequate for lack of specialists and equipment, a situation which still exists not only in rural areas but also in urban centres.(2)

3.4 Maternal and Child Care Services

The years after 1945 witnessed increased efforts to prevent infant and child mortality by providing further maternal care and infant protection, especially against infectious diseases in the months immediately following birth. Initiated after the decrees of 1936 instituted the 'Services for the protection of the woman and black child', the early efforts for maternal and child care were directed at establishing maternity centres for prenatal consultation and other centres for

---

(1) It is not indicated whether these figures correspond to the number of individuals treated, in which case they will represent respectively 110 and 268 individuals per thousand.

(2) With regard to rural services under the Van Hoof-Duren plan, it should be stressed that certain zones extended over an area as large as the whole of Belgium, whereas the population, varying between 50,000 and 200,000 persons was generally scattered in communities not easily accessible.

weekly distribution of 'Gouttes de lait' (milk drops) to children.(1) After the war, visits to maternal and child care centres were made compulsory for all residents of labour camps and other extra-customary centres. However, the number of such centres only amounted to about 325 for the whole country; thus making them inaccessible to most children. As correctly pointed out by Romaniuk, the most remarkable improvement in child and maternal care was related to the proportion of births occurring in maternity clinics and hospitals. Indeed, while only a few thousand births occurred in medical centres before 1940, this number had reached 150,000 by 1952 and amounted to 325,000 out of the estimated 600,000 births in 1958, i.e. half the total of births occurred under medical supervision,(2) a development which should have greatly improved the registration of births.

Evaluation of the impact on fertility change and population growth of improvement in maternal and child care is obviously difficult to carry out, especially in the absence of statistics. In effect, child care increases infant survival, hence population growth, and theoretically it will lower fertility as births will be more widely spaced in a breast-feeding society. Available information on some regions would appear difficult to reconcile, as studies refer to different samples, at different times, in different situations. For example, Holemans estimated at 21 per thousand the number of maternal deaths due to post-obstetrical complications in the rural sector of Feshi in the sub-region of Kwango, while the proportion of such deaths was reduced to 4 per thousand mothers in the maternity centres of Lukula in the sub-region of Bas-Fleuve.(3) Despite the problematical comparability of the observations, it seems rather likely that reported medical efforts to fight genital infections and to treat them during ante-natal consultations, and also further maternal care during and after delivery, resulted in decreased infant and maternal mortality as

---

(1) Following the argument that low fertility of certain areas resulted from food deficiencies, periodical distribution of milk to certain children was then organised in order to make up for these deficiencies.

(2) Cited by Romaniuk, in La Fécondité des populations congolaises; op. cit., p. 164.

(3) Holemans, R.: Contribution à la protection maternelle et infantile en milieu rural du Kwango; A.R.S.O.M.; X, Fasc. 1, Bruxelles, 1958. See also, Van Nietsen, R.: Contribution à l'étude de l'enfance noire au Congo Belge; I.R.C.B.: XI, Bruxelles, 1941.

well as increased birth numbers with probably a reflection in fertility rise.

3.5 Family Allowances and Housing Subsidies

Within the framework of welfare improvements, there were also instituted schemes for family allowances and housing subsidies for residents of extra-customary or urban centres. From about 1949, following guidelines established by the High Council for Indigenous Housing, a scheme of fair price houses was developed through direct construction and loans by government agencies, notably the Home Loans Fund (Fonds d'Avance) and the King's Fund (Fonds du Roi) and also the Office for African Cities (Office des Cités Africaines). The latter undertook not only the development of housing facilities but also vast projects of urbanization including house construction, road building and the creation of entirely new cities. Private companies, in several parts of the country, immediately followed suit. No definite figures are available in connection with these housing schemes,(1) but their impact was undeniable, also encouraging as it did the personal efforts of Africans who did not wish to apply for loans.

At about the same time, the government decreed pecuniary family allowances for all workers of the public and private sectors. By 1955, the number of salaried workers was just over one million, i.e. about 8 per cent of the population, most of whom were married and fathers; while about 80 per cent of urban males were estimated to be wage earners.

It was observed that, in order to qualify for the housing loan and/or the family allowance schemes, the amounts of which were proportionate to the size of the family, many workers in urban centres sent for their wives and dependents from the rural areas. Moreover, numerous persons made obvious efforts to take their spouses with them, and those in their prime working years advanced their marriages, a

---

(1) It was estimated that during 1952-58, the Office for African Cities completed more than 32,000 dwellings in the five major towns; at the same time, the government's loan fund advanced about 15 million pounds sterling to help Africans to build about 50,000 houses; whereas from 1948-57, a group of eight companies carried out a project of 80,000 dwellings, investing nearly 14 million pounds sterling. These figures exclude houses built by the government for its own African officials and employees, probably about 20,000 dwellings, and also by hundreds of small employers.

development which increased nuptiality considerably throughout the fifties. For example, in Kinshasa, the proportion of single persons aged over 15 years fell from 44 per cent in 1955 to an almost incredible figure of 27 per cent in 1958. Even though these developments would not directly increase fertility, they certainly laid the ground for it. As also implied by the example of Kinshasa, this exceptional improvement in living conditions of the indigenes affected primarily urban residents and certainly contributed to higher birth numbers in urban centres relative to rural areas.

3.6 Rapid Industrial Urbanization and Migration Processes

Though encompassing the economic and social factors just reviewed, rapid industrial urbanization and the processes of internal migration are also important factors contributing to rapid population growth. Continued favourable economic conditions, due to increased exports of precious crops and minerals since the war years, led to a rapid development of manufacturing industries providing urban populations with varieties of basic modern commodities. Relative to rural areas, living conditions (health, education, diet and housing) amongst urban populations were undoubtedly conducive to the increase of fertility, since the early stages of industrialization cause fertility to rise by breaking most traditional constraints upon it (sexual taboos, length of lactation, etc.) until a level of modernisation is reached which implies negative effects through the use of various means of fertility control.(1)

On the other hand, internal migration in the post-war period was very probably much greater than suggested by either the growth of extra-customary populations or statistics of labour movement. It has been conjectured that the number of persons who made one or several visits to towns but were finally reintegrated into their villages or origin was perhaps equal to that ot those who settled definitely in towns. Denis found that migration of rural populations into urban settlements often occurred by stages: migration into a regional centre in the first instance, then further into a larger capital.(2) Evidence of high

---

(1) See for example, Aries in Histoire des population francaises ... 1948, and Heberle in Social Factors in birth control ... 1941, quoted in The Determinants and Consequences of Population Trends; op. cit., p.91.

(2) Denis, J.: Le Phénomene Urbain en Afrique Centrale; op. cit.

urban to urban migration within certain regions has also been reported.(1) In such an atmosphere of rapid turnover of internal migration, it is very likely that the demonstration effect of the profitability of high fertility in urban areas somewhat influenced rural communities to aim for larger families.(2) Finally, because the flow of wealth in traditional African society runs fundamentally from children to parents, it is also possible that in some cases parents whose children in late school ages or prime working years had migrated into distant centres became anxious to have additional offspring to replace those who had left.

3.7 The Adverse Effects of Sexual Promiscuity, Measured Sex-Ratios and Monetization of the Dowry in Marriage Settlements

It would be insufficient to have discussed the socio-economic factors related to rapid population growth, due primarily to a rise in birth numbers and fertility, without mention of those factors which seem to have produced adverse effects. Romaniuk list three such factors: first, sexual promiscuity; second, the imbalance of sex-ratios; and third, the monetization of the dowry in marriage settlements.(3)

Sexual promiscuity was reportedly aggravated by the colonial substitution of fines and imprisonment for the severe traditional corporal punishment imposed by most communities, and also by the fact that urban centres were primarily populated by single and unaccompanied married males and by "free" women, whose sole means of living came from sexual transactions. There is some evidence of sexual promiscuity for most traditional communties of Zaire,(4) as for most countries of the world. However, evidence is still lacking of considerable proportions of unattached women during the early stages of urbanisation or that sexual promiscuity developed beyond measure to the extent of bringing about reduction in fertility.

---

(1) Lux, A.: Migration, accroissement et urbanisation de la population congolaise de Luluabourg; in Zaire, XII, 7-8, 1958; Louvain.

(2) The concept of "demonstration effect" is an economic one, developed notably by S. Enke, and meaning that some people are inclined to imitate others in what they do or possess.

(3) Romaniuk, A.: La fécondité des populations congolaises; op. cit., p.157.

(4) See notably Hulstaert, G. in Les sanctions coutumières contre l'adultère chez les Nkundo; I.R.C.B.; VII, 1938, Bruxelles.

There is a general agreement that observed deficit of males in rural areas and their excess in urban centres resulted in some fertility impairment in the regions most affected by these phenomena. The factor which determined this pattern was essentially the migration of males of working ages from rural areas into extra-customary centres. This very likely resulted in several cases of prolonged birth spacing, marriage delay and household instability. However, the present study found that trends in adult sex-ratios showed constant improvement, from about mid-1930s onwards, with greater proportions of dependents accompanying migrant labourers. It may also be hypothesized that the deleterious effects of rural sex ratios were largely compensated by the practice of polygamy almost everywhere in the country.

Concerning marriage settlement, it was argued that the substitution of hard cash for transactions in kind gave rise to speculations tending to raise the required sum to high levels. Subsequently, young men with insufficient income were forced to prolong their celibacy or to delay their marriage by first migrating into active urban centres to obtain a job and build up sufficient savings; while young girls thus temporarily abandoned were falling to rich polygamous males. In reality, the effects of monetization of the dowry were considerably less than assumed. The short answer is that data from the survey of the mid-1950s showed relatively young ages at first marriage for both females (16 years) and males (21-23 years), and only 3 per cent of persons remaining single for life, with polygamous households of generally small size, averaging 2.3 wives per polygamous male. It is, however, difficult to imagine how these marriage patterns varied much from previous times.

Considering all socio-economic factors discussed in this chapter for their influence on population growth, there is no doubt that the World War II years constituted a marked divide in Zaire's demography. The greater effects of a much larger number of factors conducive to mortality decline and fertility increase corroborate the statistical indications pointing to considerable changes in the demography of the country after the war; the most remarkable of these changes being the steady increase, if not acceleration, of the rate of population growth. Related is Romaniuk's suggestion that the colonial medical action was probably the most determinant factor in bringing about

demographic change after the end of World War II.(1) This study has shown that the medical action, together with various other post-war socio-economic schemes, benefited essentially a proportion of those indigenes residing in extra-customary or urban centres. As the increase in population growth, resulting in mortality decline and fertility increase, was observed in nearly all parts of the country, less restrictive explanations of this phenomenon are to be found in colonial interpreation and treatment over time of indigenous social organization. The radical post-war betterment of social conditions certainly constituted the primary forces of improved demography not only in urban areas but also in rural parts which suffered more than the former from the previous constraints. It should be noted that, despite the noticeable fertility increase and mortality decrease of the fifties the actual levels of recorded vital rates remained less favourable than those observed in most parts of the African continent.

---

(1) Romaniuk, A.: La fécondite des populations congolaises; op. cit., p. 163.

For his part, Brausch stated that "Medical care, social assistance and education are noteworthy social achievements of the Belgian colonial system in Africa, but the most remarkable of all is undoubtedly its social security system." Brausch, G.: Belgian Administration in the Congo; op. cit., p. 7.

CHAPTER VI

REGIONAL DIFFERENTIALS IN GROWTH TRENDS

Regardless of methods of fertility estimation, the resulting figures show a clear dichotomy of fertility differentials for the various parts of Zaire which substantially shares both the ridge of high fertility and the belt of low fertility of the African continent.(1)

As illustrated in the map below (p. 158), the low fertility areas in Africa form a belt extending, apparently, from the west coast in southern Cameroon, Gabon and Congo through north central and north-eastern Zaire into the eastern portion of the Central African Republic and southwestern Sudan. These areas approximate a rectangle in middle Africa of about 2 million square kilometres where total fertility(2) does not rise above 6.0 and falls in some places to below 4.0, yielding birth rates generally below 40 per thousand. Segments of low fertility are also observed in northern Cameroon, southwestern Chad, northeastern and northern Nigeria, northern Upper Volta into Mali, and parts of Ivory Coast, Guinea-Bissau, Gambia and Senegal, as well as Uganda, Tanzania, Mozambique, Zambia and Angola.

In contrast, a ridge of high fertility is found along the Rift Valley, in East Africa, extending from southeastern Sudan down through parts of Uganda and Kenya; through Rwanda, Burundi, eastern Zaire and parts of Tanzania; and through southern Zaire into Zambia, southern Zimbabwe and the southern province of Mozambique. Strips of high fertility are also found through southern Zaire and in the northern provinces of Angola as well as along the West African coast from Nigeria to the Ivory Coast, with a branch extending up through the western part of Nigeria into parts of Niger and Upper Volta. Populations

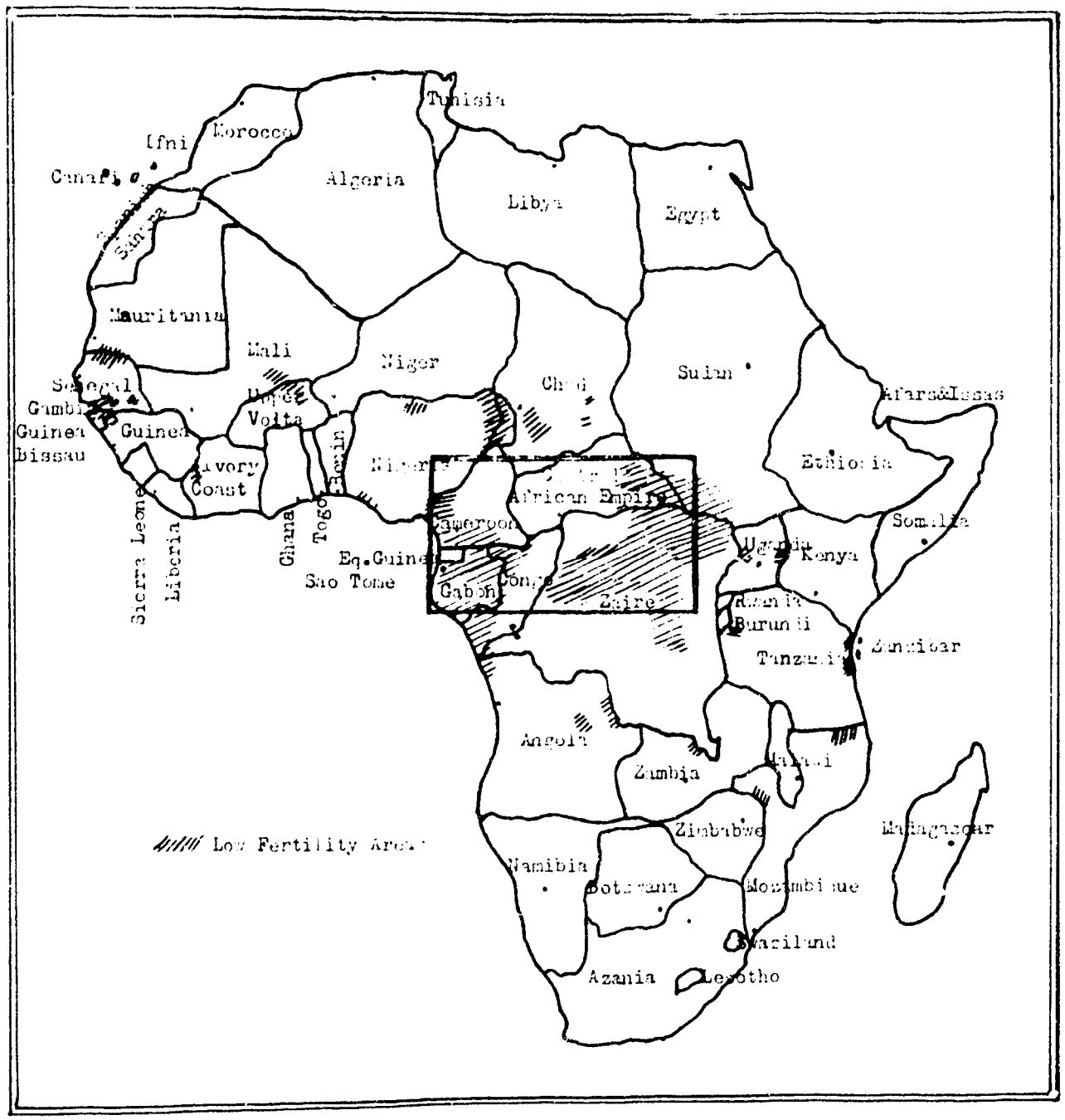
---

(1) Detailed statistics and some comments on this subject are to be found in:- United Nations: The Demographic Yearbook, 1965; Brass, W. et al.: The Demography of Tropical Africa; op. cit., p. 166-7; and Retel-Laurentin, A.: Infecondite en Afrique Noire; op. cit., p. 8-15.

(2) Number of children that would be born during the lifetime of each woman experiencing the given age specific fertility rates.

Map 3

THE LOW FERTILITY BELT OF AFRICA



Source: Adapted from Retel-Laurentin, o.c.

in these strips have shown a total fertility rate of 6.5 or higher.

With particular reference to Zaire, statistical evidence of the fifties indicated that fertility was on the average higher by one half for the regions of high fertility compared to those of low fertility. A detailed examination of the demographic characteristics of the aggregate areas of low and high fertility is carried out later, in Chapter XI. The present chapter is thus limited to appraisal of overall trends in population size and components of growth at the level of regions, which constitute the first and largest administrative divisions of Zaire. For convenience of analysis, examination of these trends will focus on the aggregate regions of low and high fertility.

1. Trends in Population Totals and Rates of Growth

Table 2.17 (p. 160) presents the summary of population totals and rates of growth for aggregate regions of low and high fertility as reported from the annual enumerations during 1933-58. Despite some defects mentioned earlier concerning the statistics of that period, there is clear indication that the population of low fertility regions increased at a slower rate than that of high fertility regions. According to the table, between 1933 and 1958 the overall increase for the former was 13 per cent, and for the latter, 89 per cent. But this marked gap in overall increase was not solely due to differences in fertility levels; it is shown later that internal and external migration added substantially to the natural increase (balance of births and deaths) of the high fertility regions by continuously reducing the growth of the low fertility regions. The reported figures were probably affected by regional variations in coverage of population by the continuous registration system but it may be assumed that this did not alter the observed trends to a considerable extent.(1)

1.1 Regions of low fertility

The regions designated as low fertility ones are Equateur and Haut-Zaire situated in the north of the country, covering about one-third of its total area and extending below the equator into the

---

(1) It can be seen in table 2.2 (p. 94) that the low fertility region of Haut-Zaire was the least effectively covered by the registration system.

Table 2.17

TOTAL POPULATION AND AVERAGE ANNUAL RATE OF GROWTH FOR ENTIRE ZAIRE, THE LOW AND HIGH FERTILITY REGIONS,(1) 1933-1958

(Based on reported annual enumeration data)

	ZAIRE		LOW FERT. REGIONS		HIGH FERT. REGIONS	
Year	Population (1,000)	Growth Rate %	Population (1,000)	Growth Rate %	Population (1,000)	Growth Rate %
1933	8,972		3,757		5,175	
		2.9		0.2		4.7
1935	9,775		3,823		5,952	
		1.2		0.6		1.5
1940	10,354		3,944		6,410	
		0.3		-0.5		0.8
1945	10,508		3,848		6,660	
		1.5		0.4		2.1
1950	11,332		3,917		7,415	
		2.1		0.6		2.8
1955	12,563		4,028		8,535	
		2.5		2.0		2.7
1958	13,540		4,276		9,264	

(1) Based on fertility levels below or above the country's average.

Low fertility regions are: Equateur, Haut-Zaire.

High fertility regions are: Kinshasa, Bas-Zaire, Bandundu, Kivu, Shaba, Kasai-Oriental, Kasai-Occidental.

central basin. The summary rates of growth given in table 2.17 (p. 160) clearly show that their total population increased at a very modest pace until the early 1950s, after which a marked acceleration became apparent. In fact, the aggregated annual rates of growth did not reach one per cent per annum until 1954; before that, they showed markedly fluctuating and even negative rates for several years, especially during the quinquennial period 1940-45 for which the average annual growth rate was minus 0.5 per cent. From about the mid-1950s, the annual growth rate increased rapidly and steadily to yield an average of 2.0 per cent for 1955-58, a figure closer than ever before to that recorded for the high fertility regions. For the last year of the series, i.e. 1958, the rate of growth observed in the low fertility regions was 3.3 per cent, a figure well above that of 2.7 per cent recorded for the high fertility regions.

As can be seen in table 2.18 below, the long-term trends were not uniform between the two low fertility regions. Before 1955, the population grew faster in Equateur than in Haut-Zaire. However, the accelerated population increase in the second half of the 1950s is observed in both regions, which show practically equal rates of growth averaging 2 per cent per annum for the three-year period 1955-8.

Table 2.18

POPULATION TOTALS AND AVERAGE ANNUAL RATE OF GROWTH FOR THE LOW FERTILITY REGIONS, 1935-58*

Period	EQUATEUR REGION		HAUT-ZAIRE REGION	
	N(1,000)	r(%)	N(1,000)	r(%)
1935	1,500		2,323	
		0.9		0.4
1940	1,572		2,372	
		-0.2		-0.7
1945	1,558		2,290	
		0.7		0.1
1950	1,615		2,302	
		1.0		0.2
1955	1,701		2,327	
		1.9		2.1
1958	1,802		2,475	

* Based on reported data of the annual administrative enumerations.

N = number of the population; r = rate of growth.

Table 2.19

AVERAGE ANNUAL RATES OF GROWTH (%) FOR THE SUB-REGIONS OF LOW FERTILITY REGIONS, BASED ON THE ENUMERATIONS, ZAIRE, 1935-58

EQUATEUR REGION

Period	Equateur	Tshuapa	Mongala	Ubangi
1935-40		0.5	2.2	
1940-45		-1.3	0.9	
1945-50		1.1	0.4	
1950-55(a)	1.3	-0.4	1.7	
1955-58(b)	3.7	0.8		3.5

HAUT-ZAIRE REGION

Period	Tshopo	Bas-Uele	Haut-Uele	Ituri
1935-40	0.7	0.0		1.7
1940-45	0.4	-1.9		0.2
1945-50	-1.6	0.2		-0.1
1950-55	0.1	0.1		1.7
1955-58(c)	3.0	1.8	1.0	4.3

(a) Division in 1950 of what was formerly Tshuapa (249,000 km^2) into two sub-regions: Tshuapa (167,000 km^2) and Equateur (82,000 km^2); in 1956, further reduction of Tshuapa to 133,000 km^2, with Equateur increased to 103,000 km^2; the two sub-regions subsequently totalling 236,000 km^2.

(b) Division in 1956 of what was formerly Congo-Ubangi, with 156,000 km^2, into Mongala with 102,000 km^2 and Ubangi with 65,000 km^2.

(c) Division in 1956 of what was formerly Uele with 199,000 km^2 into Bas-Uele with 148,000 km^2 and Haut-Uele with 90,000 km^2; thus totalling 239,000 km^2.

Average annual growth rates for the various sub-regions shown in table 2.19 (p. 162) were somewhat affected by variations in population totals following changes in administrative divisions of the regions. In deriving the tabulated rates, account has been taken of these changes and the figures certainly represent reliable approximations. It can be noted that the different sub-regional patterns corroborate those observed for each of the low fertility regions. As already mentioned, growth rates for the period before World War II largely reflected improvement in statistical procedures of the enumerations. But while rates relative to the decade after the war show small and negative figures, those for the years after 1955 exhibit marked increase everywhere, surely reflecting also some increase in birth numbers since the early 1950s. It would further appear that the increase in birth numbers picked up more rapidly in those areas of Equateur where it was held back previously, probably as a result of intense socio-economic and medical programmes implemented to that effect with greater intensity in the post-war period.(1) This observation seems to be supported by trends in rates of natural increase from the inquiries of the early 1950s, as they approximated or reached two digits per thousand persons in some parts of the low fertility regions.(2)

1.2 Regions of high fertility

As expected, rates of growth for high fertility regions were steadily higher than the country's averages, even during the decline registered for 1940-45, as can be seen in table 2.17 (p. 160). It is notable from that table that the high fertility regions largely exceed the low fertility ones in population numbers, if only because they cover about two-thirds of the country's area.

---

(1) For example, from 1944, tests were conducted for increased fertility of Songo women in the sub-region of Tshuapa, through combined action of administrative, agricultural and medical services, in cooperation with missionaries and other experts. The measures taken included the abolition of labour recruitment and the repatriation of workers who had previously left the area. Colonial Annual Report, 1939-44, p. 31.

(2) This was the case with the sub-regions of Mongala, Ubangi, Equateur, Tshuapa and Ituri. AIMO: La population du Congo en 1953, basée sur l'enquête démographique.

As with the low fertility regions, growth trends in the high fertility regions were not synchronous in the various areas, which were affected differently by the improvement in enumeration procedures, by socio-economic changes and by migration of domestic or external origin. Indeed, the aggregate regions of high fertility included varied sub-regions of markedly high fertility such as Cataractes, Sud-Kivu and Haut-Shaba, those of medium fertility such as Kwilu, Lulua and Kabinda, and also those of low fertility, namely Sankuru and Maniema. Table 2.20 below illustrates this variety in patterns of growth amongst areas within the high fertility regions.

Table 2.20

AVERAGE ANNUAL RATE OF GROWTH (%) FOR SELECTED SUB-REGIONS OF HIGH FERTILITY REGIONS, BASED ON THE ENUMERATIONS, ZAIRE 1935-58

Period	SR Cataractes	SR Nord-Kivu	SR Sankuru	SR Maniema
1935-40	2.1	4.5	1.5	2.6
1940-45	0.9	1.9	-1.0	0.6
1945-50	2.7	2.6	-1.4	0.9
1950-55	2.8	4.4	-0.9	0.0
1955-58	3.1	4.2	1.0	0.8

It is remarkable that, as with the low fertility regions, all recorded rates for the high fertility regions in this table and further in table 2.21 (p. 165) indicate a decline in population growth for the period 1940-45. Also quite remarkable in table 2.20 would seem to be the perturbing impact of migration on regional growth trends. Indeed, although the traditional provider of migrants into neighbouring Kinshasa, the sub-region of Cataractes shows relatively high growth rates, very probably due to further inflow into this area of migrants from neighbouring Angola and Congo. Nord-Kivu is also known frequently to receive massive immigrant streams from neighbouring Rwanda, even outside times of inter-ethnic strife there. Maniema, though an area with the lowest fertility, shows growth rates higher than Sankuru, certainly as a result of the impact of migration. Despite this effect of migration, growth rates are clearly higher in highest fertility

Table 2.21

POPULATION TOTALS AND AVERAGE ANNUAL RATE OF GROWTH FOR THE HIGH FERTILITY REGIONS, ZAIRE, 1933-58.

Year	1. KINSHASA		2. BAS-ZAIRE 3. BANDUNDU		4. KIVU		5. SHABA		6. KASAI-ORIENTAL 7. KASAI-OCCIDENTAL	
	N (1,000)	r %	N (1,000)	r %	N (1,000)	r %	N (1,000)	r %	N (1,000)	r %
1933	28		1,761		789		877		1,720	
		-1.2		2.0		1.27		3.0		3.9
1935	27		1,870		1,161		960		1,934	
		10.8		2.1		2.9		1.8		-0.4
1940	47		2,073		1,343		1,049		1,888	
		13.7		0.6		1.7		1.7		-0.8
1945	96		2,135		1,461		1,142		1,827	
		13.2		2.1		2.2		2.5		1.1
1950	191		2,368		1,628		1,296		1,932	
		11.7		1.9		4.4		2.9		1.2
1955	348*		2,609		2,030		1,457		2,050	
		1.9		2.6		3.6		3.3		1.7
1958	368*		2,821		2,262		1,654		2,159	

* Including populations of the sub-urban areas

areas (Cataractes and Nord-Kivu) than in lowest fertility ones (Sankuru and Maniema). This observation holds true at the level of regions, as shown in table 2.21 (p. 165), notwithstanding some impact of migration for those regions traditionally receivers of migrants, notably Kinshasa, Kivu and Shaba; and also for the regions of Kasai usually senders of migrants.

The most fundamental observation relative to growth trends in the regions is clearly the fact that the rates of growth for the years 1940-45 were everywhere lower than at any period either before or after; the only exception being Kinshasa which continuously received substantial migration. It would seem therefore that Zaire's recorded population decline during World War II years reflected a true demographic trend, resulting from increased mortality or decreased birth numbers, or from the impact of both factors at the same time; evidence for either factor being suggested by available statistics and information on socio-economic developments already discussed. Another important observation concerns growth rates which were everywhere much lower in the second half of the forties than those recorded in the following decade. It may thus be assumed that higher growth rates in the post-war period reflected an increase in birth numbers or a decrease in mortality, as the impact of immigration into the entire country was relatively small. Finally, a comparison of trends in growth rates between the low and high fertility regions indicates that they rose proportionately faster in the former than in the latter; thus, given the relatively small effect of migration into the low fertility regions, it may be inferred that fertility very probably increased at a more rapid rate in the low fertility regions than in the high fertility ones.

2. Fertility

The unreliability of birth rates reported from the administrative population inquiries, as these rates understate actual fertility levels, has been demonstrated previously in relation to fertility levels and trends for the whole country; this observation holds true by the same token for the various regions. However, for convenience of analysis, the order of magnitude suggested by the data from these inquiries will be considered in this section, in order to evaluate regional dif-

ferentials in fertility levels and trends. Further evidence of these differentials will be sought from proportions of children in the population based on the annual population enumerations and also from age-specific proportions of childless ever-married women observed during the 1955-8 demographic survey.

2.1 Reported Birth Rates from the Inquiries

Values of reported birth rates for the different regions of low and high fertility are presented in table 2.22 (p. 168). Despite peculiar fluctuations of these values for successive years, the long-term view so provided seems likely to reflect a significant order of magnitude. Aggregate regions of low fertility show markedly lower birth rates in comparison with high fertility regions for each year of the period concerned, with the exception of 1937, for which the reported figure is 33 in both groups. The reported figure for the low fertility regions in that year was certainly overstated as a result of the over reporting of the birth rate for the region of Equateur which, in 1937, recorded the highest estimate of its series. Except for that particular year, reported estimates show a slight decline in stability for the period before World War II, and further decline during the war before rising steadily throughout late 1940s and early 1950s. Between the two regions of low fertility, estimates were lower for Equateur than Haut-Zaire prior to the war period, after which the reverse was observed. On the whole, aggregate regions of high fertility also appear to show a slight decline for the period prior to World War II. In contrast to the low fertility regions, however, all estimates exhibit much higher levels than previously, once the inquiries resumed in the second half of the 1940s. Amongst the regions of this group, crude birth rates appear generally higher in the regions of Bas-Zaire and Bandundu together, followed by those of Kivu, while the regions of Shaba and Kasai showed moderate birth rates, particularly for the pre-World War II years.

One important observation, when comparing reported birth rates between the aggregate low fertility regions and the high fertility ones, is some narrowing of the range between the overall estimates, especially between 1948 and 1953. The former rose by 4 points while the latter increased by only one point throughout this period. As already pointed

Table 2.22

BIRTH RATES (PER THOUSAND) FOR THE LOW AND HIGH FERTILITY REGIONS, ZAIRE 1933-1953
(Based on reported data of the Annual inquiries)

Year	Low Fertility Regions			High Fertility Regions					
	All Regions	1.Equateur	2.Haut Zaire	All Regions	1.Kinshasa	1.Bas Zaire 2.Bandunda	4.Kivu	5.Shaba	6.Kasai Or. 7.Kasai Occ.
1933	28	23	31	34	(a)	41	23	33	36
1934	29	27	31	35	(a)	39	39	32	29
1935	28	25	31	34	21	37	43	33	29
1936	28	26	31	34	22	43	36	31	29
1937	33	36	30	33	27	38	36	29	33
....	....	....	....	....	....	....	....	....	....
1948	24	29	22	37	(a)	38	43	37	35
1950	25	25	25	34	(a)	38	33	34	29
1952	26	27	25	37	(a)	40	38	34	34
1953	28	30	25	38	38	40	40	34	35

(a) Included in data for Bas-Zaire and Bandundu regions.

out, data from the inquiries and their resulting measures are to be interpreted with serious reservations; nevertheless, they clearly indicate higher birth rates over time for the high fertility regions than for the low fertility ones.

Examination of reported birth rates for the various areas within the different regions reveals even more pronounced variations in fertiltiy levels and trends. Table 2.23 below shows estimates of birth rates for some areas within the low and high fertility regions.

Table 2.23

BIRTH RATES FOR SELECTED SUB-REGIONS OF LOW AND HIGH FERTILITY BASED ON THE POPULATION INQUIRIES IN 1935-53
(PER THOUSAND POPULATION)

	LOW FERTILITY SUB-REGIONS			HIGH FERTILITY SUB-REGIONS		
Year	Equateur/ Tshuapa	Tshopo	Bas-Uele/ Haut-Uele	Nord-Kivu	Haut-Shaba	Kwango
1935	19	33	21	50	40	40
1937	19	27	24	40	34	41
....	..	..	..	..	..	..
1948	22	21	19	52	50	38
1950	18	26	19	43	48	42
1953	23	26	18	44	37	40

According to this table, recorded values showed considerable differences, varying often by more than twofold, for example, between Equateur-Tshuapa and Nord-Kivu. All the reports agree that, subsequent to these observations and the controversy which arose over interpretation of the reasons for such immense differences, the government undertook, with consistently greater intensity, measures to increase fertility in those areas where this was necessary. These measures have been discussed in the preceding chapter and it was considered that, particularly from the end of World War II on, the campaigns for increasing fertility achieved some success.(1) This

(1) Certain measures were also adopted in relation to mortality, but all reports suggest that fertility remained the major concern of most campaigns.

conclusion is apparently supported by birth rates recorded between 1948 and 1953 in nearly all regions of low and high fertility as can be seen from table 2.22 (p. 168).

2.2 Proportions of Children from the Enumerations

Table 2.24 (p. 171) presents comparative percentages of children in the population for the low and high fertility regions during 1935-58. It is clear from the table that on the whole these proportions were constantly smaller in low fertility regions, where they varied from 35 to 38 per cent, than in high fertility regions, where they varied from 41 to 48 per cent. The table also shows that, after being virtually stationary throughout most of the 1940s, percentages of children rose more markedly in the high fertility regions than in the low fertility regions throughout the fifties.

One pertinent observation is that none of the data series on proportions of children seems to show a decline in those proportions for the World War II years; this, however, does not dismiss the hypothesis already discussed of fertility declines before the end of World War II.(1) Interpretation of apparently stationary proportions of children over a short period of time must be undertaken with caution, since it is difficult to determine the relative effects of fertility, mortality and migration. However, migration from abroad or across aggregate regions of low and high fertility is known to have been insignificant throughout that period. Moreover, it is shown further that mortality conditions would appear to have been more favourable in the low fertility regions than in the high fertility ones. It may then be presumed that the relatively greater stability of the proportions of children in the low fertility regions resulted from fewer birth numbers in those regions. As can be seen in graph 2.2 (p. 172), within the regions of low fertility, as with crude birth rates from the inquiries, proportions of children were lower in Haut-Zaire than in Equateur. It is also clear that these proportions rose at a later date in the former than in the latter. Also as noted previously, these regional differentials were primarily affected by levels and trends in two of the four sub-regions of Equateur (namely, Equateur and Tshuapa) and three

---

(1) In Chapter XIII, which discusses the projected population of Zaire to the year 2005, it is shown that the number of births may increase to some extent even when fertility is declining.

Table 2.24

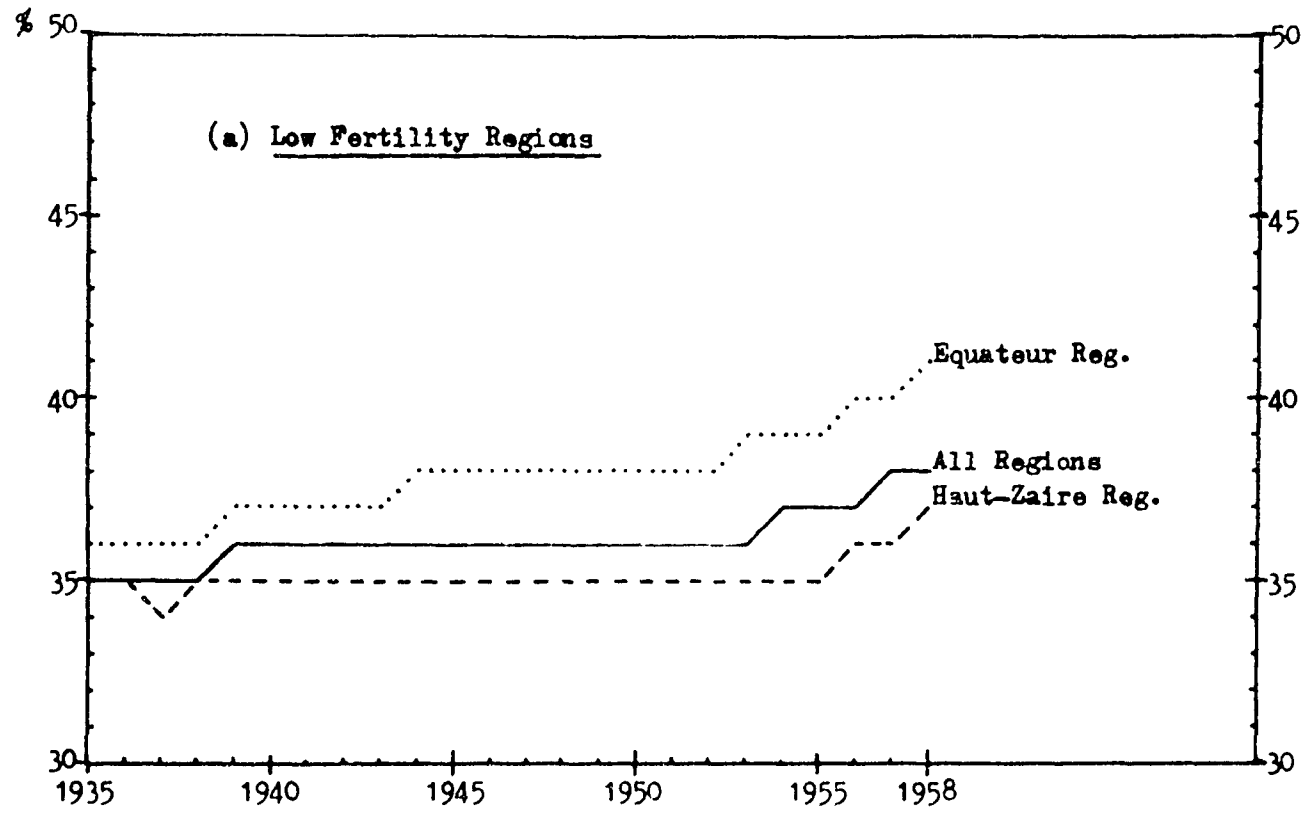
PROPORTIONS OF CHILDREN (%) IN THE LOW AND HIGH FERTILITY REGIONS,[1] 1935-58

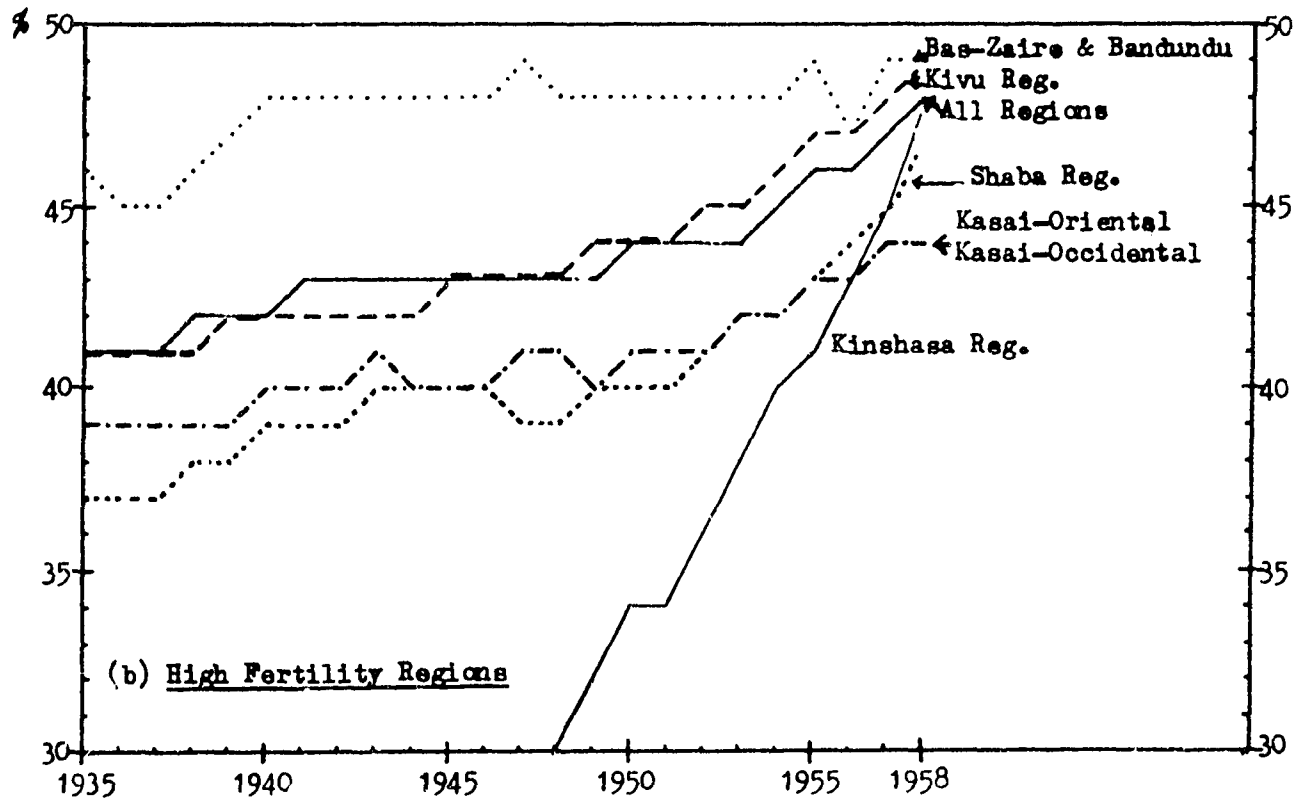
Year	Low Fertility Regions			High Fertility Regions		
	Male Child./ All males	Fem.Child./ All Fem.	All Child./ Total Pop.	Male child./ All males	Fem.Child./ All Fem.	All Child./ Total Pop.
1935	36	34	35	43	38	41
1936	36	34	35	43	39	41
1937	36	34	35	43	39	41
1938	36	35	35	44	39	42
1939	37	35	36	44	40	42
1940	37	35	36	45	40	42
1941	37	35	36	45	41	43
1942	37	35	36	45	41	43
1943	36	35	36	45	41	43
1944	37	35	36	44	41	43
1945	37	36	36	44	41	43
1946	37	36	36	45	41	43
1947	37	35	36	45	41	43
1948	37	35	36	45	41	43
1949	37	35	36	45	41	43
1950	37	35	36	46	41	44
1951	38	35	36	46	42	44
1952	37	35	36	46	42	44
1953	38	35	36	47	42	44
1954	38	35	37	47	43	45
1955	38	36	37	48	44	46
1956	39	36	37	48	44	46
1957	39	36	38	49	44	47
1958	40	37	38	50	45	48

1. Based on the annual enumerations; children aged 16 years for girls and 18 years for boys.

Graph 2.2

PROPORTIONS OF CHILDREN IN THE LOW AND HIGH FERTILITY REGIONS





of the four sub-regions of Haut-Zaire (namely, Tshopo, Bas-Uele and Haut-Uele). Levels and trends in proportions of children for these sub-regions are shown in table 2.25 below. The fertility trends for the aggregate low fertility regions, as implied by proportions of children, may therefore be summarized as follows: a decline before World War II which persisted, though less noticeably, in the post-war period until about 1953 when fertility begain to rise, particularly from 1955 onwards, with most of these regions showing a marked increase in the proportions of children.

Table 2.25

PERCENTAGE OF CHILDREN IN SELECTED SUB-REGIONS OF THE LOW FERTILITY REGIONS, BASED ON THE ENUMERATIONS, 1935-58

	EQUATEUR REGION		HAUT-ZAIRE REGION		
Year	Equateur	Tshuapa	Tshopo	Bas-Uele	Haut-Uele
1935	30		35	30	
1938	30		36	28	
1945	31		36	27	
1950	30	30	35	26	
1955	31	31	35	27	29
1958	35	31	37	28	31

For the aggregate regions of high fertility, reported proportions of children show a slight but steady increase until the early years of the 1940s, after which they remained relatively stationary before rising rapidly from the second half of that decade onwards. The proportions of children rose more rapidly in the region of Kinshasa, which constantly received migration of school age populations from most parts of the country, but primarily from neighbouring Bas-Zaire and Bandundu, both of which, however, show relatively stable levels in the proportions of children. On the average, the other high fertility regions show a steady increase in proportions of children throughout the period including the World War II years; and, as with the low fertility regions, this overall increase shows noticeable acceleration from the early 1950s onwards. Notwithstanding the effects of mortality and

migration on population growth in the high fertility regions, the fertility trend implied by the proportions of children may be summarized as follows: a relatively stationary trend until about 1950, followed by a marked and consistently rapid rise. A comparison of the proportions of children for the aggregate low and high fertility regions shows that between 1935 and 1953, these proportions increased by 3 per cent in the former and by 7 per cent in the latter. Also, the gap between such aggregate regions rose from 6 to 10 points in the same period. Subject to the effects of mortality and migration on these trends, it appears that fertility had increased earlier and more rapidly in the high fertility regions than in the low fertility regions; a development which certainly enhanced the growth momentum of Zaire, in view of the markedly larger populations in the high fertility regions.

2.3 Proportions of childless women

One further evidence of regional differentials in fertility trends may be indirectly obtained from examination of proportions of childless women by age group, as provided by the 1955-8 demographic survey and summarized in table 2.26 (p. 176). For the different regions, the figures relative to age group 15-19 years were certainly affected by variations in age at first marriage, generally lower in the low fertility areas,(1) while the percentages for older women, whose early reproductive ages fell in the first quarter of the century, were generally affected by disruption in family life and by the labour movements of those years. Interpretation of recorded proportions of childless women is rendered difficult by the fact that data exist only from one point in time. However, fertility trends implied by recorded percentages of childless ever married women appear to corroborate the findings based on regional birth rates and proportions of children already examined. Indeed, on the average, infertility levels are markedly greater in the low fertility regions in comparison with the high fertility ones. For women aged 25 to 54 years, the figures are about twofold greater in the low fertility regions where they average 33 per cent, as compared to 16 per cent in the high fertility regions.

Within the aggregate regions of low fertility, at all ages, the proportions of childless women were, as would be expected, higher in

---

(1) See table 3.43, p. 352.

Haut-Zaire compared to Equateur, implying lower fertility for Haut-Zaire as already noted. Examination of figures for the various sub-regions also reveals the highest level of childlessness for Bas-Uele, followed by Haut-Uele and Tshopo in the Haut-Zaire region; while, in the region of Equateur, the sub-regions of Tshuapa and Equateur alternatively showed the largest proportions of childless women. Except for the age group 15-19 years, in most of these areas rising levels of childlessness were observed for women aged above 25 years, but declining levels for younger cohorts of women; this would imply that fertility probably declined until about 1945, after which the negative trend reversed to a positive one.

The regions of high fertility show slightly varying patterns of childlessness for different age cohorts. For women aged above 45 years, levels of childlessness decreased in most regions, particularly in Kinshasa. For younger women, aged 30 to 44 years, except for Kinshasa, proportions of childlessness remained relatively stationary though there was a very slight decline. The picture is not very clear for women of age group 25-29 years and whose reproductive ages begain in 1940-45. A closer examination of childlessness for the various regions shows some predominance of declining trends for Shaba, stationary trends for Kasai and rising trends for Kivu, Bas-Zaire and Bandundu. It is therefore likely that fecundity impairment or infant and child mortality, either separately or in combination, increased somewhat during that period as suggested by the peculiarities in age structures provided by the 1955-8 demographic survey. Such a hypothesis seems to be supported by the levels of childlessness recorded for women aged 20-24 years, though such young women could still give birth in the immediately following years. On the whole, however, the implied fertility trends for the high fertility regions would appear as relatively stationary until the early 1940s, then steadily rising from about the mid-second half of that decade.

3. Mortality

Relative to fertility data, for which regional trends can be perceived from three different sources, the collection of mortality statistics was not tackled with the seriousness it demands.(1) For

---

(1) This observation on the collection of mortality data also applies to statistics collected during the 1955-8 survey, and the situation remains much the same to date.

Table 2.26

PERCENTAGE OF CHILDLESS EVER MARRIED WOMEN IN THE LOW AND HIGH FERTILITY REGIONS[1]

Age-group	Low Fert. Regions		High Fertility Regions					Probable beginning of child-bearing	Approximate period of birth
	1. Equateur	2. Haut-Zaire	1. Kinshasa	2. 3. Bas-Zaire Bandundu	4. Kivy	5. Shaba	6. 7. Kasai-Or Kasai-Occ		
15-19	64	50	49	52	44	45	52	1950-54	1935-39
20-24	34	36	21	16	13	21	26	1945-49	1930-34
25-29	29	38	13	11	11	18	22	1940-44	1925-29
30-34	29	37	16	9	11	21	22	1935-39	1920-24
35-44	30	35	22	9	12	21	21	1925-34	1910-19
45-54	29	30	36	8	11	23	20	1915-24	1900-09
55+	21	24	31	9	15	22	17	before 1915	before 1900

1. Based on the 1955-1958 demographic survey.

the period covered in this chapter, available mortality data stem from one source alone: crude death rates reported from the administrative population inquiries, which do not permit evaluation of age or sex changes in mortality. However, an attempt is made in this section to initiate assessment of regional mortality differentials with the scanty statistical and non-statistical information available.

3.1 Crude death rates reported from the inquiries

Table 2.27 (p. 178) presents death rates for the different regions of low and high fertility as obtained from statistics of the years of inquiries. The general indication from tabulated estimates is that, except for the region of Kinshasa (an entirely urban area and spear-head of the country's modernization), individual and aggregate regions show little variation in mortality levels; this situation appears to contrast with observations or regional fertility levels. A further indication from the table is that mortality was relatively higher for the low fertility regions than for the high fertility ones throughout the period until World War II, after which the reverse seems to have occurred. This tends to indicate that mortality decline was faster in the low fertility regions than in the high fertility ones, and also that social disruption was probably greater in the former than in the latter. More particularly, the table shows that between 1950 and 1953, overall death rates remained stationary in the high fertility regions whilst those for the low fertility regions declined to a level below them, probably as a result of greater effort to improve the socio-demographic conditions of the population in the low fertility areas. The above observations are obviously based on the assumption that reported regional death rates, as they understated actual mortality levels, were affected by similar errors and biases throughout the country. As with fertility previously, it may be assumed that mortality estimates obtained from the inquiries largely portrayed the order of magnitude of variations between individual and aggregate regions.

Within the low fertility regions, recorded death rates were slightly higher in Haut-Zaire than in Equateur prior to World War II after which this trend was reversed, suggesting that mortality decline was faster in the former than in the latter. A comparison of table 2.28 (p. 179) with table 2.23 (p. 169) strongly suggests that before 1953 the areas of relatively lower fertility (Equateur, Tshuapa, Tshopo, Bas-Uele and

Table 2.27

DEATH RATES (PER THOUSAND) FOR THE LOW AND HIGH FERTILITY REGIONS,* ZAIRE 1933-1953

Year	Low Fertility Regions			High Fertility Regions					
	All Regions	1. Equateur	2. Haut-Zaire	All Regions	1. Kinshasa	2. 3. Bas-Zaire Bandundu	4. Kivu	5. Shaba	6. 7. Kasai Or. Kasai Occ.
1933	23	22	23	24	(a)	25	17	18	31
1934	25	22	27	22	(a)	22	28	18	25
1935	25	24	26	24	13	25	26	21	26
1936	25	24	25	24	12	25	26	23	25
1937	26	26	27	26	23	23	30	26	26
....	....	....	....	....	....	....	....	....	....
1948	21	23	20	24	(a)	22	26	22	30
1950	24	23	25	22	(a)	21	24	21	21
1952	22	23	20	22	(a)	23	22	21	22
1953	21	22	20	22	12	21	25	18	23

* Based on reported data of the annual inquiries.

(a) Included in rates for Bas-Zaire and Bandundu regions.

Haut-Uele) recorded negative or stationary rates of natural increase. Only in 1953 did Equateur and Tshopo first record positive rates of natural increase, averaging 8 per thousand persons. Notwithstanding reservations about the quality of the data, this would strongly support the presumption of a previously higher fertility, as observed rates would seem too low to have counterbalanced mortality levels encountered in the country throughout the first half of the century.

Table 2.28

DEATH RATES FOR SELECTED SUB-REGIONS OF LOW AND HIGH FERTILITY, BASED ON THE INQUIRIES DURING 1935-53

	LOW FERTILITY SUB-REGIONS			HIGH FERTILITY SUB-REGIONS		
Year	Equateur/ Tshuapa	Tshopo	Bas-Uele/ Haut-Uele	Nord-Kivu	Haut-Shaba	Kwango
1935	25	33	25	26	22	30
1937	21	32	24	33	38	30
....	..	..	..	..	..	..
1948	22	20	20	27	26	25
1950	22	30	20	27	24	26
1953	23	15	20	25	19	24

Among the regions of high fertility, Kinshasa recorded most favourable mortality conditions, followed by Shaba. Death rates reported for these two regions show a relatively steady decline for the years after World War II, while corresponding figures for other regions show some fluctuations before falling slightly by 1953. This pattern would seem particularly obvious in the case of Kivu region, where highest fertility areas of Zaire were found. As seen in table 2.28 above, during the late 1940s and early 1950s, death rates for the areas of high fertility appear on the average greater than those recorded for the regions of relatively lower fertility.

A final general observation is common to regions of high fertility and those of low fertility in the decade following World War II: an apparent normal association of low fertility with low mortality, and high fertility with high mortality. This, however, did not mean that

Zaire population trends, either on a regional or countrywide basis, had then entered the second phase of the classical theory of the demographic transition, a phase characterised by declining fertility and mortality from previously higher levels.(1) In actuality, while mortality began to decrease from the end of World War II, fertility was still rising probably for several years later as discussed in the chapter relating to the post-independence population of Zaire.

3.2 Factors contributing to lower mortality

Analysis of factors affecting mortality levels and trends is primarily carried out with statistics of death by cause and by age-sex groups, and their changes over time. Such statistics are still lacking for Zaire, even with respect to limited areas such as urban centres. However, it is not meaningless to attempt an appraisal of the major factors which, according to available information, would seem to have contributed to the decline of mortality observed in the post-World War II decade. An important point with regard to mortality estimates for Zaire concerns the relatively small differences between individual and aggregate regions of low and high fertility, in all of which reported mortality rates varied by a much smaller figure than did fertility estimates. Several writers have previously emphasized the effectiveness of colonial medical action in reducing mortality, particularly after World War II and throughout the 1950s.(2) However, it may well be pointed out that Zaire's mortality decline in the post-war period was relatively slow in comparison with other developing countries, and that this decline probably resulted more from socio-economic improvements in general than from medical action in particular.

As already demonstrated, the crude death rate for Zaire as a

---

(1) The various historical approaches of this theory have been summarized in the United Nations publication: The Determinants and Consequences of Population Trends; op. cit.p. 58-60. See also Conde, J.: The Demographic Transition as Applied to Africa; with particular reference to health, education and economic factors, OECD, Development Centre, Paris, 1971 ... and Caldwell, J.C.: Towards a Restatement of Demographic Transition Theory; Australian National University, 1976.

(2) For examples: Romaniuk, A., in La Fécondité des populations Congolaises, op. cit.; Brausch, G., in Belgian Administration in the Congo, op. cit., p. 7; Anstey, R., in King Leopold's Legacy, The Congo under Belgian Rule, Oxford University Press, 1966, p. 167.

whole declined from about 34 per thousand in 1935-1937 to about 28 per thousand in 1948-1953 and then, further to about 26 per thousand in 1955-1958. In spite of reservations concerning the quality of the base data and methods used for deriving death rates for different developing countries, it would appear that mortality decline in Zaire was slower than that estimated for most Asian countries;(1) for example, Shri Lanka, where mortality declined by about 10 points between 1936-1945 and 1950-1952. With regard to Zaire, it was noted that there was on average one doctor for more than 20,000 persons by the mid-1950s, with most doctors concentrated in urban localities where European populations resided; and that in many dispensaries throughout the country drugs were few, making treatment services virtually non-existent where needed. From a demographic viewpoint, that medical facilities were still inadequate by the end of the colonial era is clearly indicated by the fact that the prevailing death rate of about 26 per thousand and the life expectancy at birth of 38 years by 1955-8 demonstrate mortality levels generally found in areas where endemic and infectious diseases, malnutrition and anemia predominate, in addition to poor conditions of living and public hygiene and shortage of medical facilities. It may then justifiably be presumed that the major reduction in mortality resulted largely from eradication of periodical mortality peaks caused by severe epidemics and nutritional disorders, some of which were brought in from outside the country.

There is therefore no question that death rates prevailing in Zaire by the late 1950s left much room for further decline. For example, it was conjectured that Brazil's death rate, estimated at 20 around 1950, was double what it would have been if modern medicine and sanitation measures were applied to the same extent as in developed countries.(2) But, as pointed out by several writers, much improvement beyond the rates observed in most developing countries in those years would be difficult without sizeable economic growth;(3) a hypothesis substantially founded and discussed later on when assessing

---

(1) See, for example, Stolnitz, G.J.: Comparison between some recent mortality trends ... , in Milbank Memorial Fund, 1956. p. 26-34.

(2) Smith, cited in The Determinants and Consequences of Population Trends, Vol. 1, United Nations, op. cit., p. 156.

(3) Stolnitz and also Vallin, quoted in The Determinants and Consequences of Population Trends, as above, p. 157.

the mortality trend for the future population of Zaire.

4. Migration

The evidence documented by several reports is that, as with most countries from time immemorial, migratory movements added to the unevenness of population settlement in the different parts of Zaire. For example, Vansina recorded that old indigenous kingdoms and dynasties of the southern savannah established regular liaisons from the Atlantic coast to the lakes of the Rift Valley and beyond;(1) this undoubtedly produced some impact on population concentration generally found along the axis of these old trails. For the areas of equatorial forest, reports indicate several settlements which developed from former hunting and fishing camps. These examples do not necessarily mean that the influence of the 'distance input' was the major variable of migration differentials between the low and high fertility regions, though it would seem that mere subsistence long predominated in the former while trade was relatively advanced in the latter following contact with European travellers on the coast. For more recent times, Hance stressed that particular note must be made of movements associated with slavery, which included not only the export of slaves to the western world but large-scale transport of slaves to North Africa, and tribal migrations which were undertaken to avoid seizure by others. He also stressed the fact that the colonial era did alter the patterns of migration significantly as a result (a) of the greater significance of economically motivated movements and (b) the much greater importance of individual migration as opposed to group movements, which accounted for the vast bulk of pre-colonial migrations.(2) However, in the absence of adequate migration statistics, regional differentials in migration will be examined here essentially on the basis of labour statistics.

Tables 2.29 (p. 183) and 2.30 (p. 185-6) present the percentages of migrant labourers in the low and high fertility regions by place of origin. It may be presumed that workers in the zone of origin were

---

(1) Vansina, J.: The Kingdoms of the Savanna; The University of Wisconsin Press and IRES - Leopoldville, 1965.

(2) Hance, W.A.: Population, Migration and Urbanization in Africa; Columbia University Press, New York, 1970, p. 128-131.

Table 2.29

AFRICAN WORKERS IN THE LOW FERTILITY REGIONS BY PLACE OF ORIGIN, 1951-1958

Year	Total Workers		Nationals from			Non-Nationals	
	Number (1,000)	% Adult Males	Zone of Origin,%	Region of Origin %	Other Regions %	Ruanda-Burundi	Others
			EQUATEUR REGION				
1951	109	23	65	31	3	0	1
1953	112	23	63	32	4	0	1
1955	127	26	62	34	3	0	1
1957	133	27	64	32	3	0	1
1958	131	25	63	33	3	0	1
			HAUT-ZAIRE REGION				
1951	194	26	67	28	5	0	0
1953	204	27	63	31	5	0	0
1955	211	28	62	32	6	0	0
1957	213	28	62	32	6	0	0
1958	210	27	62	32	6	0	0

Source: Situation economique du Congo Belge et du Ruanda-Urundi en 1951 ... 1958; Ministere des colonies, Bruxelles.

migrants who previously resided in surrounding villages and for convenience of analysis, they will be referred to as short-distance migrants;(1) whilst labourers from outside the zone of work but within the region of origin and those from other regions will respectively be termed medium and long-distance migrants. According to the tables, except for the regions of Kasai, the proportions of workers in relation to total adult male populations were greater by one half in the high fertility as compared to the low fertility regions. This suggests that the absorption capacity for workers in the modern economy was greater in the high fertility regions, a development which doubtless had an impact on both internal and external migration of labourers and their dependents.

4.1 National migration

Examination of tables 2.29 (p. 183) and 2.30 (p. 185-6) shows a slight decline in the proportion of workers from the zone of origin in the later years of the period considered here, i.e. the 1950s, whilst the percentages of labourers from outside the zone generally show some increase or remain fairly stable. This suggests that labour migration during this period was a widespread phenomenon throughout the country, though it had already lost its pioneering characteristics of the early decades of the century. Assuming that half the labourers in the zone of work originated from nearby villages, then the predominant form of migration in Zaire would have occurred within the region of origin and been largely of rural - urban type. The mathematical estimation of regional differentials in proportions of persons migrating within or across the regions of low and high fertility is complicated by the fact that statistics do not indicate the region of origin or destination of migrant labourers. There is some evidence, however, that interregional migration affected individual and aggregate regions of low and high fertility with varying intensity. Indeed, on average, excepting the regions of Kasai, the percentages of medium and long-distance migrant labourers are lower in the low fertility regions (below 40 per cent) than in the high fertility regions (above

---

(1) This presumption may be justified by the fact that most workers were regrouped and recorded in the embryonic urban localities or extra-customary centres.

Table 2.30

AFRICAN WORKERS IN THE HIGH FERTILITY REGIONS BY PLACE OF ORIGIN, 1951-1958

Year	Total Workers		Nationals from			Non-Nationals	
	Number (1,000)	% Adult Males	Zone of Origin,%	Region of Origin,%	Other Regions %	Ruanda-B	Others
KINSHASA, BAS-ZAIRE AND BAHDANDU REGIONS							
1951	296	45	52	30	5	0	13
1953	311	45	47	34	6	0	13
1955	327	45	45	39	6	0	11
1957	306	42	50	36	5	0	9
1958	300	41	50	35	5	0	10
KIVU REGION							
1951	181	38	63	21	8	8	0
1953	200	40	61	25	7	7	0
1955	217	42	59	26	6	9	0
1957	217	40	60	26	6	8	0
1958	205	37	62	26	6	6	0

Table 2.30 (Cont:)

AFRICAN WORKERS IN THE HIGH FERTILITY REGIONS BY PLACE OF ORIGIN, 1951-1958

Year	Total Workers		Nationals from			Non-Nationals	
	Number (1,000)	% Adult Males	Zone of Origin, %	Region of Origin, %	Other Regions %	Ruanda-B	Others
			IS'HABA REGION				
1951	153	40	32	35	24	1	8
1953	178	44	30	33	27	2	8
1955	186	44	31	32	27	2	8
1957	175	40	29	31	30	3	7
1958	161	37	30	31	29	2	8
			KASAI-ORIENTAL AND KASAI-OCCIDENTAL REGIONS				
1951	98	18	70	29	1	0	0
1953	104	20	73	25	2	0	0
1955	114	21	72	26	2	0	0
1957	104	19	75	23	2	0	0
1958	95	17	65	33	2	0	0

Source: Situation économique du Congo ... op.cit.

50 per cent). Because of the relatively larger number of workers in the latter, the resulting total of migrants involved, i.e. workers and their dependents, is necessarily much greater. It appears, then, that long-term rural-urban migration reached substantially higher proportions in the high fertility regions than in the low fertility ones. It is further demonstrated that although high fertility regions certainly received some migrants from the low fertility regions, there remains practically no evidence of reverse movements.(1)

For the low fertility regions, the proportions of persons involved in labour migration seem relatively similar in both Equateur and Haut-Zaire. Based on approximately 50 per cent of estimated male migrant workers and assuming a hypothetical average of two dependents per worker, it would result that about 6 per cent of the population of low fertility regions were affected by migration. Though roughly estimated, this figure would vary little from that obtained through migration estimates from the inquiries in 1950, as shown in table 2.31 below.(2)

Table 2.31

RURAL MIGRATION (%) IN THE SUB-REGIONS OF LOW FERTILITY REGIONS, 1950

Sub-region	Im.	Em.	Bal.	Sub-region	Im.	Em.	Bal.
Equateur	2.7	4.6	-1.9	Tshopo	3.4	2.8	+0.6
Tshuapa	3.4	7.8	-4.4	Bas-Uele / Haut-Uele	1.9	3.3	-1.4
Mongala / Ubangi	4.9	4.4	+0.5	Ituri	2.8	4.3	-1.5

Source: Colonial Annual Report, 1950

(1) It is fairly clear, from examination of Zaire's economic organization and development that most modern activities were generally located in the high fertility regions: public administration, manufacturing and services in Kinshasa and Bas-Zaire, large-scale mining and manufacturing in Shaba, small-scale mining in Kasai and Kivu, little mining in east Haut-Zaire and none in Equateur.

(2) This seems the only year when numbers of immigrants and emigrants were reported in the Colonial Annual Report; moreover, it is not clear whether or not these figures refer to workers alone.

Table 2.31 shows that the areas of low fertility recorded greater emigration than immigration, except for Tshopo which includes Kisangani (the third largest city in the country) and several other urban centres. According to reported statistics for 1950, about 3.7 per cent of the population of the aggregate low fertility regions were affected by internal migration, whilst a balance of about three quarters of one per cent represented the proportion of those persons who migrated into high fertility regions, if it may be assumed that few had left the country directly from the low fertility regions.(1) Though migration statistics have been reported only for one particular year, 1950, it may be presumed that the observed trend was repeated over several years, not without some fluctuations. Thus, if it can be assumed that most migrants were labourers in their prime working ages, often accompanied by equally healthy and probably fertile women, it may be inferred that migration was a significant factor contributing to lower fertility in the low fertility regions, although it is not possible to determine numerically to what extent.

Concerning the high fertility regions, appraisal of population movements on the basis of labour statistics is complex owing to differentials in employment opportunities, for example, between the regions of Shaba and Kasai. Using the same procedures as for the low fertility regions, but with the assumption of three dependents per migrant worker, it would result that a fairly similar proportion of persons, about 6 per cent, were probably affected by migration in these regions. By order of importance and based on regional population, the area most affected was Shaba, followed by Kinshasa, Bas-Zaire and Bandundu, then Kasai. The distribution of these migrants among the sending and receiving regions is clearly complex, but as shown in table 2.32 (p. *189*), it would appear that the areas of relatively low fertility, i.e. Maniema and Sankuru, were precisely those which were usually sending rather than receiving migrants. Some distortions of the picture appear for those areas which traditionally provided migrants for the largest centres of the country, i.e. from Cataractes, Bas-Fleuve and Kwango to Kinshasa; and from Kabinda or Lualaba to Lubumbashi. In contrast to the areas of low fertility, however, most areas of

---

(1) Estimated on the basis of average urban rates of growth and natural increase and the impact of rural migration in these regions.

high fertility were not only senders of internal migrants but also receivers of migrants from outside the country, as shown in the following section.

Table 2.32

RURAL MIGRATION (%) IN THE SUB-REGIONS OF HIGH FERTILITY REGIONS: ZAIRE, 1950

	Im.	Em.	Bal.		Im.	Em.	Bal.
BAS-ZAIRE REG.				SHABA REGION			
SR Cataractes	1.6	4.2	-2.6	SR Tanganika	2.7	2.5	+0.2
SR Bas-Fleuve	4.1	9.9	-5.8	SR Haut-Limami	4.1	4.5	-0.4
				SR Haut-Shaba	7.6	7.0	+0.6
BANDUNDU REG.				SR Lualaba	4.0	8.2	-3.8
SR Mai-Ndombe	2.4	1.9	+0.5				
				KASAI ORIENTAL			
SR Kwango, SR Kwilu	2.3	6.2	-3.9	SR Kabinda	2.5	4.0	-1.5
				SR Sankuru	3.2	4.1	-0.9
KIVU REGION							
SR Nord-Kivu, SR Sud-Kivu	7.5	6.4	+1.1	KASAI OCCIDENTAL			
				SR Kasai, SR Lulua	4.4	1.6	+2.8
SR Maniema	4.1	4.2	-0.1				

Source: Colonial Annual Report, 1950

4.2 International migration

The eventual flows of external migration into the individual and aggregate regions of low and high fertility can be clearly seen from table 2.12 (p. 120) relative to migrants of European origin and tables 2.13 (p. 122) and 2.14 (p. 122) for non-national African labourers. According to these tables, external labour migration was insignificant in the low fertility regions whilst it reached sizeable proportions in the high fertility ones. Indeed, the aggregate low fertility regions received only one fifth of the European population which migrated into the country, with Haut-Zaire receiving 15 per cent and Equateur

receiving only 6 per cent of them. It is also clear from the tables that Haut-Zaire received almost none of the labourers originating from outside Zaire, whilst the proportion of such immigrants hardly reached one per cent of the manpower in Equateur. This did not mean that the low fertility regions could not have absorbed some migration of traditional type; for example, those movements of fellow tribesmen and seasonal workers across borders between Equateur and Congo or the Central African Republic, and also between Haut-Zaire and Sudan or Uganda.

By contrast, the high fertility group received about 80 per cent of the European immigrants and considerable proportions of labour migrants with their dependents from Rwanda and Burundi as well as from other neighbouring countries such as Congo, Angola, Zambia and other parts of southern Africa. Variations in region of settlement of these European or African immigrants were related to economic conditions, with highest concentrations in areas of greatest employment opportunities. Thus, both Kasai-Oriental and Kasai-Occidental appear to have received no African immigration, and recorded the lowest proportion of European immigrants, i.e. 8 per cent; whilst Shaba, with the development of its mining and industrial activities, attracted 30 per cent of the European population, some labour migration from Rwanda and Burundi and about four times more from Zambia and other countries of southern Africa. The region of Kivu, very probably due to geographic conditions, received no labour migration from countries other than Rwanda and Burundi whose migrants came in proportions slightly higher than those of nationals from other regions. Equally for reasons of geographical situation, Kinshasa and its neighbouring regions of Bas-Zaire and Bandundu recorded no labour migration from Rwanda and Burundi; nevertheless, labour migrants from Angola and Congo are reported there in proportions greater than any other area of Zaire.

Examination of tables 2.29 (p. 183) and 2.30 (p. 185-6) also indicate that proportions of labour migrants remained relatively stable in the low fertility regions, whilst showing a slight decline in the high fertility group following the economic recession of 1956-8 and subsequent manpower lay-off by several enterprises.(1)

---

(1) Actually, the economic recession was not particularly severe, but it corresponded with a period when most enterprises were undertaking technological innovations of their equipment which reduced labour requirements.

The relative stability of these proportions would suggest that most migrant labourers concerned had been residing there for several years, having undertaken a rather long-term migration.

To the extent that there was some correspondence between the shift of residence from rural to urban centres or from low to high fertility regions and the general health conditions of the persons involved,(1) migration trends were an important factor in widening regional differentials not only in growth rates but also in fertility levels between the rural and urban centres, as well as among the various regions of relatively low and high fertility.

---

(1) According to regulations, irrespective of age and sex of the person, a certificate of good health was required before permission to travel could be granted.

CONCLUSION OF PART TWO

The early years of the period 1925-1955 saw the reinforcement of population regulations, the deversification of data sources and the initiation of measures to promote rapid population growth through a rise in fertility and a decline in mortality. The scarcity and limitations in scope of statistics from the continuous registration system, the annual enumerations and the inquiries considerably reduce the effectiveness of analysis of demographic trends in Zaire for most of that period. Nevertheless, gradual improvements in the collection and reporting of data from about 1935 allow some conclusions based on well established facts and cautious interpretation of the non-statistical information.

1. The World War II years appeared to mark the demographic divide in Zaire. Before that period, total population saw a slow expansion, from an estimated annual average of 0.5 per cent in 1925-30 to a rate slightly less than 1.0 per cent in 1935-40. This expansion was markedly reduced during the war years, 1940-45, to an annual average increase estimated at 0.3 per cent. After the war, really important changes in demographic trends took place with accelerated population growth at increasing rates averaging 1.5 per cent per annum in the late fourties and 2.5 per cent in the late fifties. The sequence of modest population growth, then quasi non-growth, then accelerating increase, appeared in agreement with the country's socio-economic development during that time; a sequence resulting more from changes in fertility than in mortality and migration.

2. Examination of the socio-economic developments during 1925-55 has indicated that Zaire's demography was closely related to a manpower situation profoundly affected by the conditions of the migrant labour system. Recruitment by colonial undertakings of adult male workers under that system was the cause of serious disruption of socio-economic and family life in indigenous communities, as this was long accompanied by transplantation of workers into unfamiliar milieux whereas their wives and children were left behind in the villages.

Gradually, however, the colonial power introduced measures to protect the communities supplying migrant labourers and the workers themselves and also measures generally related to indigenous welfare, though these bore little fruit due to lack of vigour in their implementation. During the war years, Zaire's population saw increased social disruption as a result of the harsh and arbitrary war effort, including (a) the military mobilization, with conscription of hundreds of thousands of persons for military purposes domestically and for successive objectives beyond the frontiers; (b) the civilian mobilization, extending to women and children, for compulsory engagement in public works and agricultural exports; (c) the economic mobilization, requiring that increased production in all sectors of the country's economic life be put at the disposal of the Allies. Social disruptions were aggravated by the virtual disappearance of essential commodities, medical supplies and treatment services. After the war, really efficient measures relative to labour organization, social security, health campaigns, social services and other welfare programmes were set up to benefit the indigenes; implementation of these radically innovative measures was facilitated by the favourable economic and financial situation that the country experienced as a result of increasing mineral and agricultural exports.

3. Despite some fluctuations and biases in the estimated birth rate, all statistical evidence suggested two clear fertility trends for Zaire as a whole: firstly, a slight declining trend until the end of World War II; secondly, a rising trend during the post-war years, commencing in about 1945. Though based on far less reliable information, the mortality trends seem to have shown a continuous decline; the rate of this decline was reduced during 1940-45, but showed some acceleration in the fifties. Internal and external migrations, largely determined by the labour movements, became more important in the post-war period as greater proportions of wives and children accompanied male workers with, in addition, population movements motivated by socio-cultural conditions associated with the modernising influences of rapid urbanization. External migration appeared numerically negligible for the country taken as a whole, whereas internal migration appeared quite substantial and consisted largely of rural-urban flows, though evidence of high urban to urban movements has also been found.

4. Two regions, Equateur and Haut-Zaire, representing roughly 40 per cent of the national total in 1935 and only 30 per cent by 1955, were designated low fertility regions. The remainder of the country comprized high fertility regions, even though marked fertility differentials existed within these. Before World War II, fertility trends were relatively stable for the aggregated high fertility regions, whilst some decline was apparent in the low fertility groups. After the war, even though the turning point varied from region to region, by 1950, the upward fertility trend was general in all regions of high fertility and in most parts of the low fertility regions. The foundation is lacking to determine with precision when the dichotomy in fertility originated; and the situation is rendered complex by changes in regional fertility levels over time. For example, the region of Shaba exhibited medium fertility before World War II, but later recorded the highest level of fertility measured from the 1955-8 survey data. If the determinants of fertility are largely social, it may then be speculated that the primary reasons for the observed dichotomy were related to conditions before and during colonial penetration of the land, whereas recorded fertility differentials of subsequent periods reflected regional reactions to the socio-economic developments.

5. In contrast to fertility, mortality differentials showed much less pronounced variations for individual and aggregate regions of high or low fertility. Available information suggested that mortality levels were rather lower in the low fertility regions than in those of high fertility. Such an indication would seem in conformity with the normal association of low fertilty with low mortality and high fertility with high mortality. But, it must be emphasized that this pattern of mortality-fertility association occurs only in a country with birth control, evidence of which was not found for Zaire.

6. Many indices, particularly the labour statistics, suggested that migration had produced much greater effects than is generally assumed, with regard to differentials in population structures and growth between individual and aggregate regions of low and high fertility. Whilst sending some migrants into the high fertility regions, the low fertility regions received practically no immigrants from either the

high fertility regions or from outside the country. In contrast, high fertility regions continuously received the bulk of migration from outside Zaire, in addition to that from the low fertility areas. The most common pattern of national migration, the population movements from rural to urban areas within and across regions of differing fertility levels, was to lead to greater fertility in urban centres than in rural areas, a development which was to prevail until such time as living conditions in rural areas were markedly improved.

7. With the availability of fairly reliable statistics from the early thirties on, there seems no doubt that the transition observed since 1945 in the demography of Zaire provided significant indications of population change for a few decades thereafter. The most predominant of these indications appeared the certainty that, even in the total absence of immigration, the population of Zaire was to grow rapidly throughout the sixties and seventies, except for radical alteration in the momentum of fertility rise and mortality decline observed during the immediate post-war period.

PART THREE

THE DEMOGRAPHIC SAMPLE SURVEY OF 1955-8

Introduction

Chapter VII : The Base Data, Population Size and Distribution

Chapter VIII : Socio-economic Characteristics of the Population

Chapter IX : Analysis of the Age-Sex Distribution

Chapter X : The Mortality and Fertility Estimates

Chapter XI : Demographic Characteristics of the Low and High Fertility Areas

Conclusion

Introduction

When dealing with any demographic problem, it is important to evaluate whether the data are accurate and sufficiently complete to provide a significant solution. Since the late fifties, in assessing population dynamics of Zaire, it has been the custom simply to extrapolate linearly the reported or adjusted parameters from the demographic sample survey of 1955-8. Almost invariably, the results of that survey have been regularly quoted without reference to the limitations in quality of estimates, despite substantial defects in the base data as mentioned in the summary report and in the subsequent analysis carried out by Romaniuk who was also primarily responsible for conducting that survey.(1)

In view of the fact that the present research covers demographic trends beyond the survey period, and given also that the survey was a one-off operation, it seemed useful to assess its base data and estimates from previous analysis.(2) Such a review can only enhance the value of the results previously obtained, either by confirming their reliability or providing the basis for eventual corrections. In the framework of the present study, this review will be particularly useful, in testing the degree of consistency between the survey results and those demographic estimates arrived at during the preceding or following periods.

---

(1) The base data from that survey were compiled in a summary report: Tableau général de la démographie congolaise; Enquête démographique par sondage 1955-57: Analyse générale des résultats statistiques; Ministère du Plan et de la Coordination Economique; Kinshasa, 1961.

There were also detailed regional fascicules: no. 1, City of Léopoldville, 1957; no. 2, Suburban Territory of Léopoldville, 1957; nos. 3-4, Districts of Bas-Congo and Cataractes, 1957; no. 5, Districts of Tshuapa, 1958; no. 7, District of Maniema, 1959; fascicule b, Equateur province, 1959; fascicule e, Katanga province, 1960; fascicule f, Kasai province, 1959; no. 11, Districts of Lac Léopold II, Kwilu and Kwango, 1961; no. 12, Districts of Nord and Sud Kivu (no date); fascicule e contd., Katanga, 1961.

For references of the analyses, see footnote 3, p. 2.

(2) In recent decades, a number of methods have been developed for adjusting defective and limited data; this is a laborious and rather disappointing work whose results will never reflect the actual demographic situation or equal those based on data colected and treated adequately.

This study will also expand into those important demographic aspects that previous analyses did not cover, for example, the socio-economic structures of the population and the demographic characteristics of the low and high fertility areas.

As indicated in several reports on methods of population analysis, there are various techniques for appraisal of the quality of the base data and for derivation of demographic estimates; however, only those methods which suit the particular conditions of the country under study will be considered in this work.(1) It may well be pointed out that although the survey review is based on original data as prescribed in the summary report, for obvious reasons, tabulated estimates and the argument followed will often appear in the line of Romaniuk's analysis previously, but adjusted to present divisions with current names throughout the country, except for titles of references. It should be noted that, though officially designated the 1955-1957 demographic survey, it was actually carried out from April 1955 to February 1958 and, consequently, it will be here referred to as the 1955-8 survey.

Finally, it may be remarked that during the period 1955-8, some local studies were done which could have been used as background material, especially in evaluation of the survey results; but, it appears that these studies were based either on registration statistics or on partial reports of the survey in progress.(2) As will be shown later, unless adjusted, such statistics substantially understated Zaire's demographic parameters. For that reason, the present study will concentrate on survey data which were collected in a similar manner throughout the country and thus lent themselves better to similar techniques of adjustment and methods of analysis.

---

(1) Most of these methods are extensively described in the following:

- United Nations, Manual II: Methods of Appraisal of Quality of Data for Population Estimates; ST/SOA/Series A/23.
- United Nations, Manual IV: Methods of Estimating Basic Demographic Measures from Incomplete Data; ST/SOA/Series A/42.
- United Nations: The Concept of Stable Population, Application to the Study of Populations of Countries with Incomplete Demographic Statistics; ST/SOA/Series A/39.
- Brass, W.: Methods for Estimating Fertility and Mortality from Limited and Defective Data; Laboratories for Population Statistics; The University of North Carolina at Chapel Hill; N.C., 1975.

(2) Example, Benoit, J.: La Population africaine à Elisabethville (Lubumbashi) à la fin de 1957; Fulreac-Cepsi, Elisabethville.

CHAPTER VII

THE BASE DATA, POPULATION SIZE AND DISTRIBUTION

1. The Data Collection and Evaluation of their Quality

Relative to previous periods, the 1955-8 demographic sample survey of Zaire incorporated a number of major and radical improvements, including the essential features of modern surveys.(1) This, however, did not mean that the statistics collected did not give rise to some serious defects, as will be shown later, in the measurement of the various population parameters.

1.1 Objectives and Nature of the Survey

The summary report stated that with the implementation of the Ten-Year Development Plan for the fifties and recognition of inadequacies in existing procedures, the need arose for improved quantity and quality in population statistics. Presumably because Zaire then possessed a fairly long-established registration system, the survey was modelled on the so-called Population Growth Estimation (GPE) Survey already conducted in several developing countries.(2) Such surveys enable an estimation of the extent of under-registration and under-enumeration and also permit more accurate estimates of demographic parameters. They involve establishing two 'independent' systems of data collection, the registration system and the survey, which lead to a better estimation of demographic parameters based on adjusted statistics derived from vital events which were missed by one or the other when comparing the two systems.(3) In the particular case of Zaire,

---

(1) These features are mentioned in the introductory part of this study which discusses development in the collection of population statistics for Zaire.

(2) PGE studies had then been conducted for countries such as Pakistan, Thailand, Turkey and Morocco. See Chandrasekaran, C. and Deming, W.E.: On a Method of Estimating Birth and Death Rates and the Extent of Registration; in Journal of the American Statistical Association, Vol. 1, 44, 1949.

(3) For discussion on the assumption of 'independence', see Farhat, Yusuf: PGE, Studies in Methodology; I, Matching of Vital Events; Pakistan Institute of Development Economics Research, Report No. 67, 1968.

the assumption of 'independence' between the registration and the survey systems was largely valid at both regional and national levels.

1.2 The Sample Design, Size and Ratio

The planning of the 1955-8 survey benefited greatly from information previously obtained through the continuous registration system which reportedly covered 90 per cent of the population and provided the sampling frame. It included a list of Zaire's 51,000 villages and urban household dwellings by ward with estimated number of inhabitants, as shown in appendix B3 (p. 475). Each of the third largest administrative divisions, now termed zones, was treated as a universe in the sampling design and the nature of sample units was determined by strict application of the random method. As shown in graph 3.1 (p. 201), the population of each zone or sample universe was initially divided into three primary sampling units: rural, mixed and urban. Again, with villages or comparable clusters as second-stage sampling units, the rural settlements were stratified by (i) tribe and (ii) size; the mixed segments including military and labour camps were stratified by (i) activity and (ii) size; the urban segments, with households or compounds as second-stage sampling units, were stratified by (i) ward and (ii) size. The random sample units within the final strata were therefore the village in the rural segment, the locality in the mixed segment and the ward in the urban segment. Such units obviously constituted fairly small socio-economic entities and, from a demographic viewpoint, would appear susceptible to sufficient precision in overall estimation of population parameters.

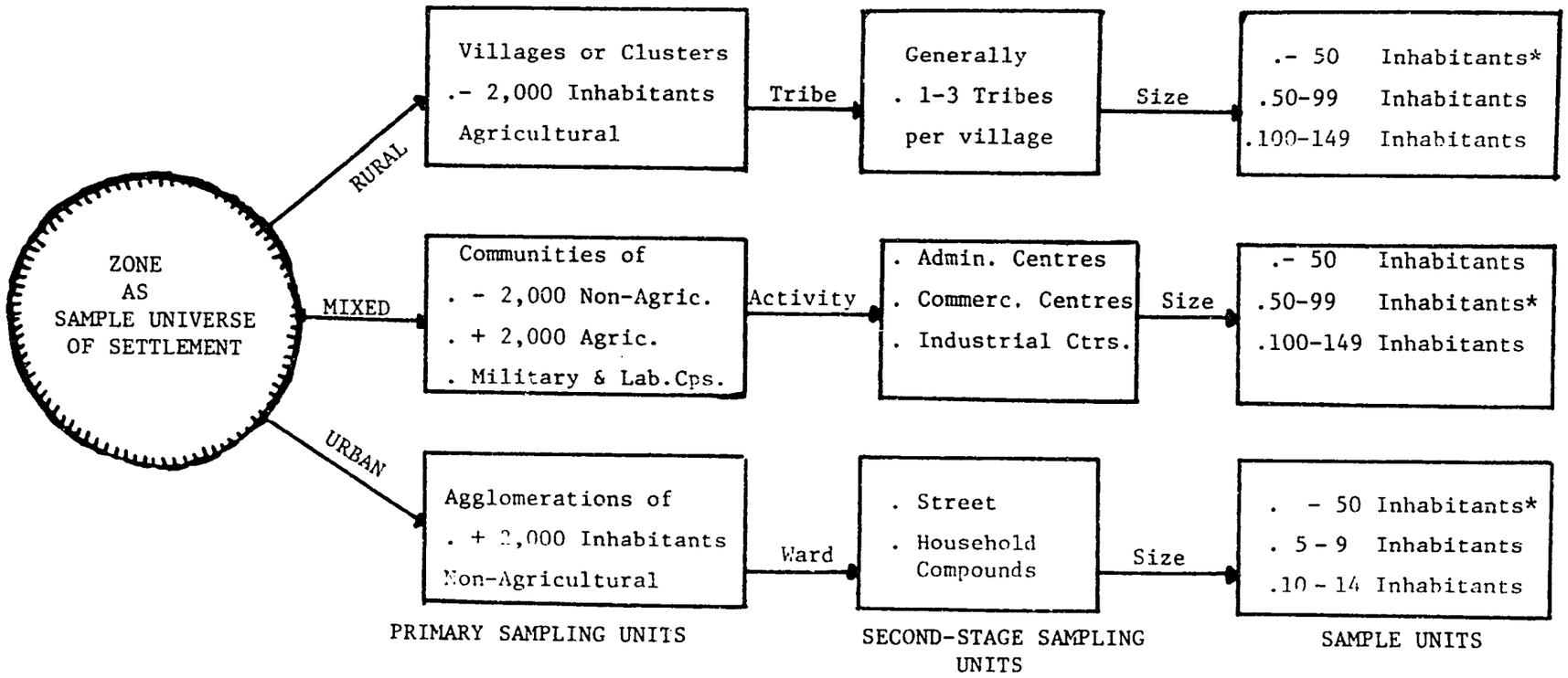
Sampling fractions of 1/10 were adopted for the rural segment and, in view of their greater heterogeneity, higher proportions of 1/7 were used in non-rural centres.(1) To obtain the population total for the urban segment, the expansion factor was the ratio of total number of units in the stratum to the number of comparable units in the sample; for mixed and rural segments the expansion factor was the ratio of number of registered persons in the stratum to number of registered

---

(1) Several urban centres including two military camps totalling about 63,515 people were not sampled or surveyed: Kongolo urban centre and military camp (4,594); Shinkolobwe and Kambove centre (14,517); Nzilo III and Kolwezi surroundings (32,252) and Kamina military base (12,152). Population figures for these centres were provided by the continuous registration system as of 1957.

GRAPH 3.1

STRATIFIED SAMPLING OF THE ZONE
AS SAMPLE UNIVERSE OF SETTLEMENT IN THE 1955-8 SURVEY



persons in the sample prior to the survey. The estimates for strata were summed to give estimates in absolute numbers for the different administrative divisions. The sample size covered, on average, about 11 per cent of estimated total population as follows:

Settlement	Estimated Pop.	Sample	
Rural segment	9,920,714	962,468	9.7%
Mixed segment	1,591,208	220,389	13.9%
Urban segment	1,265,151	1,360,062	10.7%

The summary report suggested a sampling error of 3-6 per cent for total population of each zone or sample universe. Yet, previous analyses of survey data carried no assessment of sampling errors; this is a common methodological defect as any sample may give an inaccurate estimate of the population value, even though the estimator is unbiased.(1)

1.3 The Data Schedules, Enumeration and Treatment

Three separate schedules were used for data recording. The fertility schedule was the main one and included topics such as sex, age, marital status, number of wives, births in course of life (live births and children still alive for each woman over 14 years) and births during the 12 months preceding the survey. The mortality schedule was to record deaths by age and sex during the 12 months prior to the survey. The migration schedule was to record out-migration from villages during the five-year period before the survey.

According to the survey planners, the shortage of qualified interviewers made it necessary to sacrifice the principle of simultaneity but possible to use continuously during a three year-period about 100 selected and trained full-time African interviewers with at least 2 years' post-primary education and good knowledge of French and indigenous lingua-franca of the region, under the supervision of 8 European officers. The enumerators were divided into 3 teams, each

---

(1) Cochran, W.G.: Sampling Techniques; John Wiley and Sons, Inc.; New York, 1953, p. 10. See also, Moser, C.A. and Kalton, G.: Survey Methods in Social Investigation; Heinemann Educational Books Ltd.; London, 1971, p. 65.

working successively through the sample areas within one-third of Zaire (i.e. an area much greater than France), under the leadership of one European and one or two African supervisors.

Information was obtained by formal interview, household after household; the head of the family was interviewed first and then the other persons in order of seniority. Responses were recorded by interviewers themselves and weekly controls of the interviewers were carried out by supervisors to examine particular problems encountered in the course of enumerations. According to the survey report, the only serious opposition encountered was a reluctance in some localities to talk about deaths or to mention names of deceased persons, as was the case in some areas of Ituri; thus, in the main, defects in the data were attributed simply to ignorance, misunderstanding or ordinary errcrs of reporting and recording.

The attainment of a successful survey interview and accurate record is, however, much more than the writers of the report so optimistically suggest.(1) Without doubt, the use of concise pre-coded factual questions and extremely simplified format of the recording schedules appeared convenient to both the enumerator and the respondent. But the chief difficulties with factual questions, simple though they may be, are to ensure that interviewers convey to the respondents precisely what facts are wanted; dubious results certainly occurred, since the so-called lingua-franca are hardly similar in all villages within any one region of Zaire.(2) Personal observations also revealed that, even after winning their confidence, the response of the indigenous chiefs or village elders to colonial government representatives, even if Africans, was often malicious: accurate information requested about fellow villagers was not always supplied nor were sample members easily found for interview purposes. Since no pilot survey was reported, it remains questionable whether the reported unwillingness to give answers about deaths in some areas was due to cultural

---

(1) For discussion on problems of survey interview in practice, see especially: Moser, C.A. and Kalton, G.; op. cit., pp. 270-349.

(2) Besides French as the official language, four national languages, namely Lingala, Kikongo, Tshiluba and Swahili, are widely spoken across the regions, within which dialects prevail in many villages. For an interesting discussion on this subject, see particularly Eyambala Bokumba: Authenticity and the Choice of a National Language: The Case of Zaire; in Presence Africaine, No. 99-100, 3eme et 4eme trimestres, 1976, Paris.

embarrassment engendered by direct questions or to discomfort caused by the length of the interview as the mortality schedule occurred last in order.(1)

Concerning the recording of answers, the survey report claimed accurate performances except for ordinary errors. This view seems too optimistic given the existence of factors likely to cause substantial errors on the part of the enumerators: tiredness from a monotonous job continuing over a period of three years, fatigue from travelling and walking for long distances before reaching the respondent, illegible writing and temptation to fill in the form alone at leisure for unhelpful respondents; the more so as enumerators were often left entirely to their own devices, alone in remote areas of scattered hamlets and dispersed huts. The survey report argued that an African village is in many respects a community without privacy, implying that all members are familiar with others and may supply information about them. But, by the same token, the interviewer is rarely able to confine his entire attention to one task: while recording the answer to one question, he might be asking the next and at the same time be on the alert for misunderstanding or misreporting and "red herrings" of the interview environment. Besides, the use of three separate single schedules was liable to lead to oversight, confusion or loss during interview, transportation and processing by different persons. Indeed, it is shown later that reported population characteristics give rise to inexplicable, marked discrepancies at regional and national levels.

The survey data were obtained, separately, on three classes of persons: (a) residents, present; (b) residents, absent; and (c) visitors. Reports on summary results are given for both de facto (a) and (c) and de jure (a) and (b); but enumeration of characteristics is reported only for de jure population or, in some areas, only for de facto population. Neither the planning nor the results of the survey considered specifically the Pygmy and other forest populations which abound in the northeast and around Lake Tumba.(2)

---

(1) It has often been questioned whether Africans value time during surveys; this is an invalid question, since the response, for any human being, must depend on what the time is being spent on.

(2) Despite some contacts and commercial exchanges with different Bantu villagers on the edges of the forests, the Pygmies' home has remained the forest where they live by hunting and gathering. Reportedly, since independence, they agreed to come out of the forests, but in numbers still undetermined.

Some features of the final stages merit particular consideration, as they constitute essential components of the survey; i.e. editing or checking of the schedules, coding or classification of data into meaningful categories and manageable proportions, tabulation and reporting.(1) The summary report was published in 1961, three years after the survey had been conducted; it included a detailed statement on methods and preliminary analysis. It was preceded by eleven area reports which would have been more manageable if issued by similar administrative divisions. These area reports present substantial series of statistics on demographic and social characteristics: distribution by sex and age classes under 1 year, 1-4 years, 6 quinquennial classes to 34 years, 2 decennial classes to 54 years, 55 years and over; place of birth; residence with duration of sojourn; education and literacy; religion; occupation by sex and age; marital status in detail; births during the previous year by age of mother and by marital status; number of children ever born and number living by age of mother; distribution of women by number of children ever born; and, deaths during the previous year. For the major urban centres, detailed characteristics are given by region of origin and ethnic affiliation. However, the reports do not include data on infant mortality.

Since it was claimed that the continuous registration system had been of high quality for many years previously,(2) one may question why no attempt was made to collect age statistics by single years to 15 years and quinquennial classes for ages above 15 years. The data on age-sex and other characteristics are not tabulated separately for the indigenes and foreign-born Africans; this naturally made it difficult to assess the effect of immigration on population growth and structures and to improve estimates of mortality and fertility by basing them on statistics for the indigenes alone, especially in those regions bordering Angola, Congo, Rwanda, Burundi and Sudan. The data on socio-economic characteristics of the population - except for marital status - appear very scanty and questionable, limiting considerably the extent of their usefulness. For example, education data do not supply school enrolment and attendance by single years of age and they show several inconsistent figures, such as large numbers of children aged 5-9 years

---

(1) United Nations: National Programme of Analysis of Population Census Data as an Aid to Planning and Policy Making; Population Studies, No. 36.

(2) Romaniuk, A.: in The Demography of Tropical Africa; op. cit., p.248.

attending post-primary school (which implies that they had already completed 6 years' primary schooling) and much larger proportions of persons aged 20-24 years and above attending secondary school.(1) Data on economic activity and manpower are limited to two broad categories of agricultural and non-agricultural employees, own-account workers and unemployed males. Such broad tabulations do not allow meaningful evaluation of the levels of economic rates by sector, industrialization and extent of unemployment in the country.

The writers of the survey report pointed out that several other socio-cultural characteristics of the population were enumerated but not tabulated owing to the short time given them to produce this document.(2) They also emphasized that an initial plan for systematic series of check-interviews and complete record of observed errors was not carried through. This omission, naturally, rendered it impossible to trace the causes of discrepancies recorded in regional and national statistics as well as those apparent anomalies observed in population structures. Thus, as Romaniuk stressed, the 1955-8 survey data can be evaluated only on the basis of internal evidence of their consistency or with results obtained from other sources. More important, their analysis, as Romaniuk understood, required the use of those demographic techniques particularly designed for countries lacking reliable data. The materials, methods and results of this previous analysis will now be reviewed by selected topics.

2. The Population Size and Regional Distribution

2.1 Estimation of total population

Based on the 1955-8 sample survey, the total de facto population of Zaire was about 12,781,903 persons, a figure representing the sum of regional estimates, but not adjusted for 2.23% under-enuneration revealed by a sample post-survey check. Romaniuk pointed out that regional estimates, especially for rapidly growing cities, were affected by the timing of the field operation; for example, Kinshasa

---

(1) The Summary Report, p. 191-214, and tables 59-82. These schools are different from night schools generally attended by older people.

(2) Whilst it would certainly have been difficult to include all the data gathered in one document, valuable information might have been available for the assessment, for example, of differences between the low and high fertility areas.

and Lubumbashi were surveyed at an interval of 16 months. However, he assumed that differences in timing did not appreciably affect the overall result and, consequently, made no adjustment of the country's total population so derived. This yielded a density of 5.5 persons per square kilometre for Zaire, with markedly varying regional estimates, as shown in table 3.1 (p. 212). Total de jure population based on survey data was 13,135,000 persons, that is 306,238 or 2.4 per cent above the de facto figure. The survey report indicated that more than 90 per cent of both final estimates referred to persons classified as present residents; the differences, therefore, resulted from the number of visitors included in the de facto figure and of absent residents included in the de jure figure. Apparently the discrepancies were not mainly due to the presence or absence of international migrants, since observed residents present for the whole country were about 50 per cent above the estimated resident visitors; a situation which suggests an under-estimation of the de facto population. However, a comparison of survey estimates with the enumeration result based on registers shows a relatively small discrepancy between the survey de facto and enumeration figures for 1956.

Enumeration	:	12,844,000
Survey de facto	:	12,782,000
Survey de jure	:	13,135,000

It should be noted that the survey estimates were not completely independent of the registration system, as the latter served as the sampling frame; hence, omission of any population settlement in the registers would have caused comparable omission in the sample survey. The more so, as the formula for estimating total population consisted of calculating the ratio between the survey and registration figures for the sample, then multiplying this ratio by the total population of the stratum as given by the registration system. In any case, the survey report noted some differences between survey and enumeration estimates as a result of inevitable sampling errors and time lags between the dates of enumeration and survey, especially for rapidly growing cities and the mobile population of industrial localities. The most extreme discrepancies were observed in the mixed segments where the ratios of enumeration to survey estimates reached 121/100

for Bas-Zaire and Bandundu, 127/100 for Shaba and 60/100 for Kasai, though gross errors may have resulted from one or other of the sets of estimates. In point of fact, population statistics for labour camps and mixed segments of settlement were generally provided by employers who often omitted to include either wives and children of their employees or those workers residing outside the camps. To these defects, administrative enumerations often added errors due to confusion in the definition - varying from one area to another - of the so-called extra-customary population (mixed and urban) often referred to as floating population.

The summary report also stated that a post-survey check of one sample demonstrated that an average of 2.23 per cent of residents present were not covered by the survey. The report gave no indication as to whether such an average resulted from omissions alone or a balance between omissions and double count; neither did it indicate the age and sex groups of the persons concerned. Since the sub-sample was quite large, it suggested an adjustment of total population by 2.23 per cent, which would raise the total estimated de facto population to 13,066,939 persons. No suggestion was made to adjust the de jure total in view of the difficulty of estimating absent residents, such as children in boarding schools, adults in prison, etc.

From the above considerations, it may be concluded that Zaire's de facto population total, as derived from the 1955-8 sample survey, was heavily dependent on the registration system and most probably remained subject to some under-count, despite a consistent orderly progression in the statistical series of the system in the post-World War II period.(1) As noted earlier, the registration of inhabitants in the remotest areas was far from complete, particularly with regard to some primitive tribes of the forest and other areas not under effective administrative control. Thus, if a larger number of people were indeed unregistered, this would imply a much larger total population for Zaire, perhaps in a proportion well above the average 2.23 per cent under-count suggested by the post-enumeration check. It may thus be concluded that the 3-6 per cent margin of error suggested

---

(1) It has been demonstrated that despite the care taken to ensure the quality of data collected by enumeration and registration, more often than not, errors remain in the basic data. For example, a deficiency of 1.7-3.4 per cent was found in the United States census of 1960. Spiegelman, M.: Introduction to Demography; Harvard University Press, 1969; Chapter III.

for the survey results is to be considered in the direction of omission, notwithstanding additional omission resulting from the registration system which served as a frame for the sampling of the survey.

2.2 Regional differentials in size and density

On the basis of the survey results, Zaire's population as of 1956 was 10 per cent urban, 12 per cent mixed and 78 per cent rural; as illustrated in table 3.1 (p. 212). Kinshasa, the capital territory, showed an exceptionally high level of urbanization, both in absolute and relative figures, in comparison with all other regions. Outside Kinshasa, the largest urban population in absolute numbers was found in Shaba with 378,000 urban residents, followed by Haut-Zaire with 157,000 urban residents. In the region of Bas-Zaire, the area of Bas-Fleuve had a substantial urban population (84,000) while Cataractes was largely rural. In relative terms, urban population was also greatest in Shaba (25 per cent) due to the large mining complex associated with a network of industrialized cities, namely, Lubumbashi, Likasi and Kolwezi in the Copperbelt area; nearly half the population of the Haut-Shaba area was urban (47 per cent) while more than half the population of the Lualaba area was non-rural.

Three regions, namely Equateur, Haut-Zaire and Kivu, showed relatively few residents in cities but quite substantial populations in the mixed segment of settlement Industrial farming by colonial settlers and related activities, which demanded intensive labour investment, were particularly important in these areas. Except for the town of Kisangani, the third largest city of the country, the population of Zaire north of the Equator was little urbanized but contained a substantial proportion of mixed segments of settlement.

In the Kasai, the rural population approximated 90 per cent, except in the town of Kananga - then capital city for the two Kasai, with important administrative and commercial activities - and the diamond producing centres of Mbuju-Kayi and Tshikapa. In fact, Kasai-Oriental and Kasai-Occidental, where neither mining complexes nor large-scale agriculture were developed, remained characterized by heavy out-migration towards the industrial and commercial centres of

Shaba and Kinshasa.(1)

From a density viewpoint, only Kinshasa showed an exceptionally high concentration of population: 168 people per square kilometre. Among the reasons for this development, there is the fact that, as the political and administrative capital of the country, Kinshasa hosts most national institutions and foreign missions and, geographically, it stood as the principal commercial centre and important transit port for travellers and shipment of goods by air or river throughout the whole country.(2) All the other regions showed a density of less than 10 persons per square kilometre, except for Bas-Zaire - the smallest in area of all the regions outside Kinshasa - with 14 people per square kilometre, due to the densely populated area of Bas-Fleuve. The lowest regional density was recorded in Shaba - the second largest in area of all the regions - which averaged 3 persons per square kilometre and included two areas - Tanganika and Lualaba - with a density of less than 3 people per square kilometre. However, the density pattern for zones reveals the very unequal distribution of the Zairean population. It may well be pointed out that examination of population totals at the level of the zones, the sample units, showed marked discrepancies between the survey and registration estimates. Half the cases of discrepancy varied by less than 5 per cent, i.e. still within the survey's error margin of 3-6 per cent; nearly 33 per cent of the cases differed by 5-9 per cent, fairly balanced in the negative and positive directions; in 15 per cent of the cases the differences exceeded 10 per cent with more deficiencies (16 cases) than excesses (5 cases) in the survey estimates. Most of these differences resulted from estimates of the mixed segments of settlement, probably due to the high mobility and regional variations

---

(1) For further discussion on urban development in Zaire, see: Denis, J.: Le Phenomene urbain en Afrique Centrale; op. cit., pp. 131-198. See also, De Saint Moulin, L.: Histoire des villes du Zaire; op. cit., pp. 331-349.

(2) De Saint Moulin in Histoire des villes du Zaire, op. cit., provided sufficient evidence that a good number of Zairean cities and their overall networks were deep-rooted in the past and in the natural geography of the country. This contradicts the general belief that Zairean cities were a colonial product or an importation which for a long time remained external to indigenous societies. The truth is that the old commercial networks have been restructured by modern technology and by new political settings of colonial interest which bore no connection with traditional indigenous interests.

in the definition of this 'floating population'. The summary report stated that the nature of these discrepancies could not be ascertained by any pattern in their distribution. In his study, Romaniuk concluded that further analysis could be carried out on the assumption that the population total and distribution, as provided by the survey, were affected only by relatively small errors. Such an assumption would seem valid only for convenience of analysis, since it was observed that half the regional estimates at the level of the zones showed differences greater than the sampling error margin, irrespective of the direction. However, as in most surveys of this nature, statistics concerning vital events and population structure were likely to contain fewer errors and the resulting estimates certainly reflected the demographic trends at the time of the survey.

Table 3.1

ZAIRE TOTAL AND REGIONAL DE FACTO POPULATION

BASED ON THE 1955-8 DEMOGRAPHIC SAMPLE SURVEY

	REGION OR SUB-REGION	TOTAL (1)	RURAL 000	MIXED 000	URBAN 000	RURAL %	MIXED %	URBAN %	AREA, KM^2 (2)	DENSITY (1)/(2)
I.	REGION OF KINSHASA[a.]	318,317	16	-	302	5.1	-	94.9	9,965[a.]	167.5[a.]
II.	REGION OF BAS-ZAIRE	851,263	619	128	104	72.8	15.0	15.2	53,920	15.8
	S.R. Bas-Fleuve	335,192[b]	257	71	84	62.5	17.0	20.5	14,310	23.4
	S.R. Cataractes	516,071[b.c.]	362	57	20	82.4	13.0	4.6	39,610[a.]	13.0
III.	REGION OF BANDUNDU	1,885,570	1,652	163	71	87.6	8.7	3.7	295,658	6.4
	S.R. Mai-Ndombe	271,330	209	33	29	77.1	12.2	10.7	127,243	2.1
	S.R. Kwilu[d.]	1.148,186	996	113	40	86.8	9.8	3.4	78,441	14.6
	S.R. Kwango	466,054[e.]	447	17	2	96.0	3.6	0.4	89,974	5.2
IV.	REGION OF EQUATEUR	1,756,190	1,368	312	76	77.9	17.8	4.3	403,293	4.4
	S.R. Equateur[e.]	302,162	224	45	34	74.0	14.8	11.2	103,903	3.0
	S.R. Tshuapa	395,480	311	80	4	78.7	20.3	1.0	132,957	3.0
	S.R. Mongala	519,488	383	114	22	73.8	22.0	4.2	101,508	5.1
	S.R. Ubangi[f.]	539,060	450	73	16	83.5	13.5	3.0	64,925	8.3
V.	REGION OF HAUT_ZAIRE	2,335,585	1,808	370	157	77.4	15.8	6.8	503,239	4.6
	S.R. Tshopo[g.]	634,948	423	132	81	66.6	20.7	12.7	199,567	3.2
	S.R. Bas-Uele	467,638	380	63	25	81.0	13.6	5.4	148,331	3.2
	S.R. Haute-Uele	581,961	477	64	41	82.0	11.0	7.0	89,683	6.5
	S.R. Ituri	651,038	529	111	11	81.2	17.0	1.8	65,658	9.9
VI.	REGION OF KIVU	2,012,508	1,602	339	72	79.6	16.8	3.6	256,662	7.8
	S.R. Nord-Kivu	734,633	615	102	18	83.7	13.9	2.4	59,563	12.3
	S.R. Sud-Kivu[h.]	831,353	691	109	31	83.2	13.1	3.7	64,849	12.8
	S.R. Maniema	446,522	296	128	23	66.0	28.7	5.3	132,250	3.4

VII.	REGION OF SHABA	1,501,194	975	148	378	65.0	9.8	25.2	496,965	3.0
	S.R. Tanganika	397,038	294	40	63	74.0	10.1	15.9	135,028	2.9
	S.R. Haut-Lomami	341,682[i.]	380	42	30	84.1	9.3	6.6	108,204	3.2
	S.R. Haut-Shaba[j.]	449,558[j.]	156	20	156	47.0	6.0	47.0	132,425	3.4
	S.R. Lualaba[k.]	312,916[i.j.]	146	46	129	45.4	14.4	40.2	121,308	2.7
VIII.	REGION OF KASAI-ORIENTAL	890,507	904	55	32	90.2	6.3	3.5	168,216	5.3
	S.R. Kabinda[1.]	480,379[1.]	430	27	23	89.6	5.6	4.8	63,885	7.5
	S.R. Sankuru	410,128	374	28	9	91.0	6.8	2.2	104,331	3.9
IX.	REGION OF KASAI-OCCIDENTAL	1,230,769	1,086	74	71	88.2	6.0	5.8	156,967	7.8
	S.R. Kasai	492,862	426	45	22	86.4	9.0	4.6	95,631	5.2
	S.R. Lulua[m.]	737,907	660	29	49	89.4	3.9	6.7	61,336	12.0
	All regions:	12,781,903*	9,930	1,589	1,263	77.7	12.4	9.8	2,344,885	5.5
	According to post-survey check 2.23%									
	Total ZAIRE:	13,066,939								

a. The enlargement of Kinshasa, as it extended from 1,900 km^2 in 1956 to 9,965 km^2 in 1968 (Ordinances 68/018 of 12 January and 68/430 of 2 December 1968) included mostly vacant area of the surrounding Kasangulu Zone. However, the density of Kinshasa as of mid-1956 has been calculated on the basis of 1,900 km^2 of area.

b. Total including Boma Town but excluding the population of Matadi Town 55,000 and Songololo Zone (22,000 now parts of the Sub-Region of Cataractes and accounted for as such (Repertoire des superficies...Kinshasa,1/3/1970).

c. Total excluding the population of the Kimvula Zone (3,371 km^2 as per Ordinance 67/221 of 3 May 1967) accounted for in Popokabaka Zone in the Region of Bandundu (Sub-Region of Kwango).

d. Including the Bandundu Town and Kikwit Town.

e. Including the Mbandaka Town; f. including the Zongo Town; g.Including the Kisangani Town; h.Including Bukavu Town

i. Total excluding the population of Sandoa Zone (60,728) and Kapanga Zone (49,559) now parts of the Sub-Region of Lualaba and accounted for as such; j.Total including the population of Kambove Zone (52,897) and Likasi Town (64,937) and also Lubumbashi Town; k.Including Kilwezi Town.

l. Including Mbuji-Mayi Town; but total excluding the population of Kamiji (2,100 km^2) detached from the Zone of Dibaya in the Region of Kasai Occidental, Sub-Region of Lulua and accounted for as such; m.Including Kananga Town.

* This total differs by 4,720 (0.04%) from Romaniuk figure of 12,777,000 (p.255 in the Demography of Tropical Africa by W.Brass et al.) owing to different estimates for the Sub-Region of Kwilu. We adopted the estimates supplied in the summary report as they correspond to population distribution of this area by demographic characteristics such as age-sex.

CHAPTER VIII

THE SOCIO-ECONOMIC CHARACTERISTICS OF THE POPULATION

There are several structural characteristics which provide material for studying the effects of possible variations in the nature of population composition and growth. This section, however, is restricted to examination of nuptiality and marital status, economic activity and school education.

1. Nuptiality and Marital Status

Statistics on this topic were among those collected in detail compared to other survey data; they were also among those studied at length previously.(1) The survey report emphasized that particular efforts were made to reinforce uniform definitions and questions concerning marriage under African conditions.(2) But registration of marriages was not a general practice in Zaire until the mid-fifties; thus, for example, exact age at marriage was known only exceptionally,

---

(1) Van de Walle, E.: Marriage in African Censuses and Inquiries; in Brass et al.; The Demography of Tropical Africa; op. cit., p. 183-238. See also, Romaniuk, A.: La Fécondité des populations congolaises; op. cit., p. 195-226.

(2) Firstly, legitimate marriages (which were recognized by the common-law or traditional customs and involved payment of a bride-wealth) were distinguished from those stable de facto marriages or consensual unions without ceremony, exclusive of all marriages on trial frequently tolerated and even encouraged by many tribes. Another distinction was made between monogamous and polygamous marriages. Since a government decree dated 4 January 1950 prohibited polygamous marriages as from 1 January 1951, only polygamous unions prior to that date were considered as legitimate, while those contracted after the decree were considered as non-existent despite their conformity with local customs. Because the decree did not repress new polygamous unions but simply ignored them, survey enumerators were instructed to record these prohibited marriages as de facto polygamous. Marriages resulting from inheritance of the widow by a relative of the departed husband were reported as inherited marriages only to the extent that there was evidence of effective cohabitation. Finally, divorce and widowhood were reported only if a legitimate marriage had existed previously and, consequently, no account was taken of separation of persons previously married in a de facto manner.

which makes difficult any derivation of nuptiality tables. Moreover, the widespread customary marriage often involved a series of procedures extending over long periods of time, while cohabitation of partners occurred well before the final arrangement for legitimation of the union.(1)

1.1 Proportions marrying

Survey statistics indicate that in Zaire, as elsewhere in Africa, women marry almost universally and they do so at relatively young ages. As can be seen in table 3.2 (p. 216), the female proportion married for ages 15-19 years is 464 per thousand and the proportion married rises to 901 and 969 for age-groups 20-24 and 25-29 respectively. Never-married women over 55 years of ag.. represent 8 per thousand; in fact, this proportion was probably below 5 per thousand, since the system of marriage data collection resulted in under-reporting of de facto polygamous and inherited marriages. The very small proportion of never-married women supports the inference that it mainly comprised those women physically and mentally unfit for marriage. The reverse of the situation is that there is a total absence of voluntary celibacy amongst women, as matrimonial customs and family systems based on clan solidarity favour universal nuptiality and marriage practices other than those found in individualistic societies, such as in Western Europe. In graph 3.2 (p. 217), female proportions by marital status show interesting patterns with increasing age: the number of currently married women rises very sharply before decreasing gradually from age 30 years onwards, whilst the number of divorced and especially that of widows increases substantially and constantly. Subsequently, per thousand ever-married women at age 55 years and above, there are only 306 still-married women whereas the number of divorcees amounts to 57 and that of widows reaches 629. Men, as might be expected, marry at a relatively later age than women, in proportions amounting to only 26 per thousand for ages 15-19 years, but rising sharply to 419 per thousand at ages 20-24 years and constantly increasing to a maximum of 984 per thousand at ages 40-54 years, after which the proportion married decreases, but only slightly. Consequently, at ages above

---

(1) For extensive discussion of African customary marriage see: Philips, A. (Ed.): Survey of African Marriages and Family Life; published for the International African Institute by Oxford University Press, London. 1953, p. 74-114.

Table 3.2
Age-Sex Distribution of Population by Marital Status, Zaire
1955-8 Survey

Age*	All Persons	Proportion per 1,000 Single	Married**	Widowed	Divorced	Ever-Married
		FEMALES				
15-19	470,934	536	453	2	9	464
20-24	542,794	99	860	10	31	901
25-29	603,427	31	912	21	36	969
30-34	692,947	13	908	40	39	987
35-39	489,908	7	883	73	37	993
40-44	400,803	6	828	126	40	994
45-49	311,700	6	740	209	45	994
50-54	222,596	5	583	358	54	995
55+	340,693	8	306	629	57	992
TOTAL	4,075,802	85	758	120	37	915
		MALES				
15-19	402,800	974	25	0	1	26
20-24	437,332	581	403	4	12	419
25-29	527,305	228	731	10	31	772
30-34	499,028	92	847	19	42	908
35-39	413,486	46	890	23	41	954
40-44	372,537	38	894	28	40	962
45-49	331,591	28	898	36	38	972
50-54	290,642	16	903	46	35	984
55+	372,090	33	798	118	51	967
TOTAL	3,646,811	239	700	29	32	761

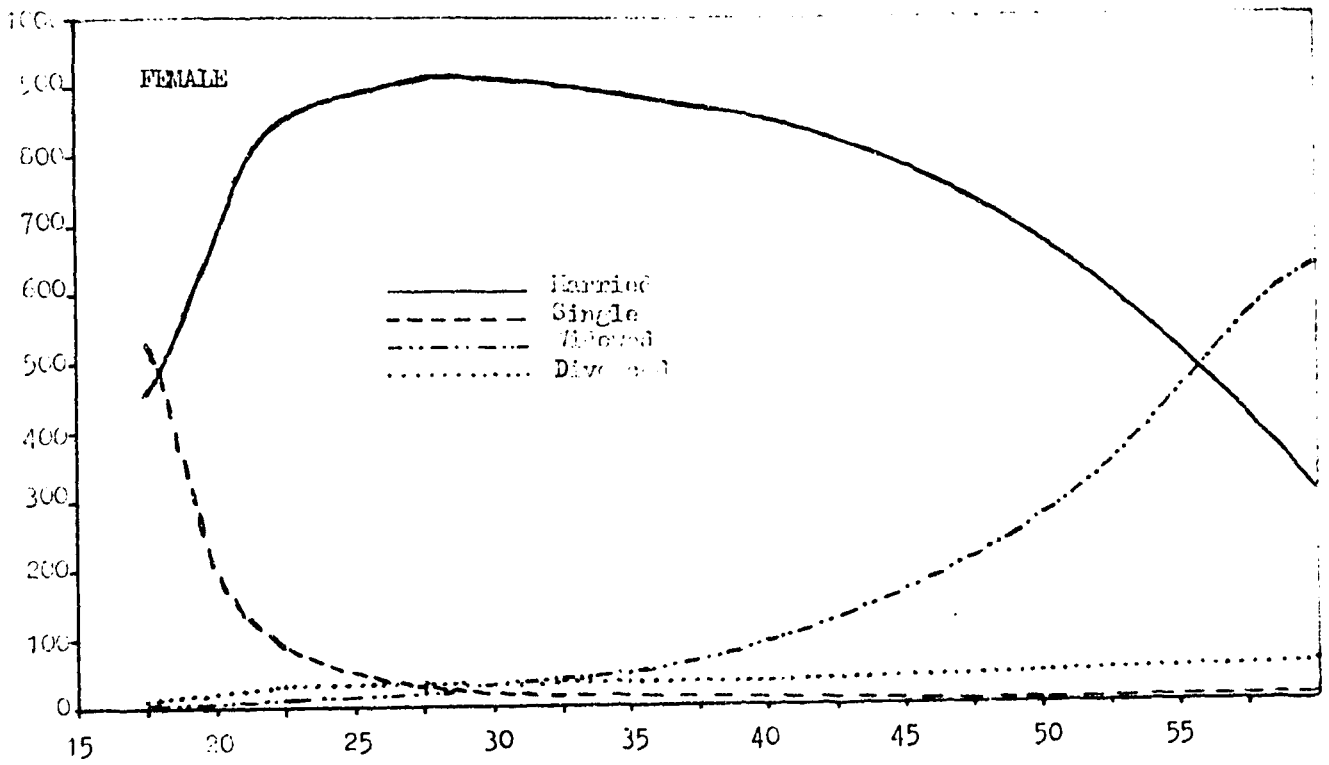
* Data for ten-year age-groups 35-44 and 45-54 reported from the survey have been split into five-year age-groups by use of Newton formula of interpolation by forward differences.

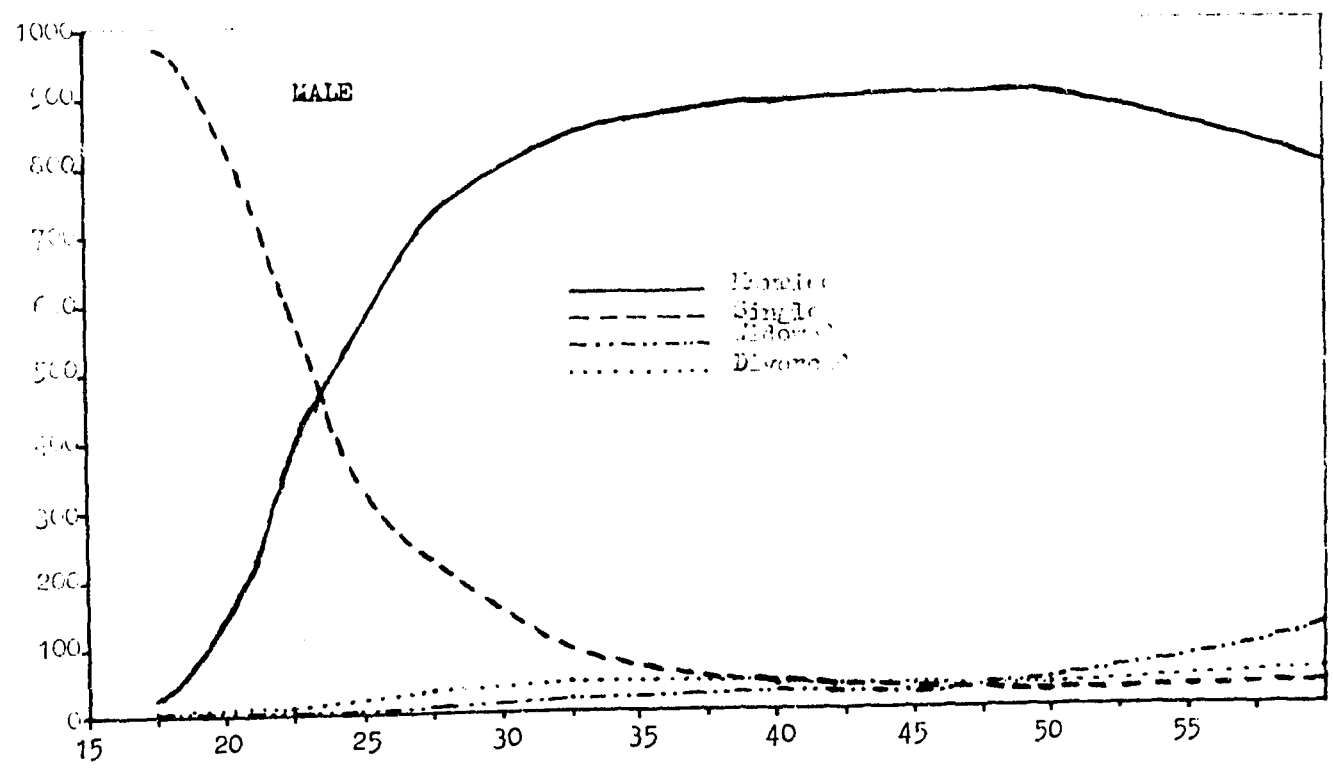
** All types of unions: legitimate, de facto, monogamous and polygamous.

Graph 3.2

AGE-SEX PROPORTIONS OF POPULATION BY MARITAL STATUS

Zaire, 1955-8 Survey





55 years, the number of currently married men remains much higher (798 per thousand) then that of widowers (118 per thousand) and divorced (51 per thousand).

One pertinent observation from estimates of age-sex distribution of Zaire's population aged 55 years and above by marital status is obviously the high proportion of widows against a high proportion of still-married men. It could well be that the high proportion of widows has a lot to do with the relative age of spouses, especially in polygamous marriages, whereas the high proportion of currently-married men may suggest not only higher male than female mobility, but also a tendency for widowers to remarry more than widows. These hypotheses cannot, unfortunately, be tested from available data.

1.2 Mean age at marrying

Since data collected in the survey do not permit direct calculation of marriage rates and mean age at first marriage, indirect methods of measurement became necessary; and Romaniuk justifiably suggested the use both of the Hajnal method(1) and of the Coale and

---

(1) Computation of mean age at marriage by the Hajnal formula is based on the average number of years lived in the single state between ages 15 and 50 years, before the persons studied married. Obviously, this average is equivalent to the average age at marriage. For the calculation, given the figure of those persons who marry by age 50, the number of years lived in the single state between the ages of 15 and 50 by the whole cohort of 100 (including those who did not marry by age 50) is the sum of the proportions single in the 5-year group multiplied by five. The number of years lived by those who did not marry before the age of 50 has to be subtracted. The total is then divided by the number who have married. This method assumes that nuptiality remained stable over time, a quite reasonable assumption but there is no evidence to prove that in the case of Zaire. The formula for calculation is:

$$\bar{x} = \frac{\sum_{a}^{b} nS_x - 50S_{50}}{S_0 - S_{50}}$$

where $\bar{x}$ is the average age at marriage; a = 0 and b = 49; n is the number of years per age group; S_x, S_0, S_{50} are proportions single at ages x, 0 and 50 respectively.

See Hajnal, J.: Age at Marriage and Proportions Marrying; in Population Studies, Vol. VII, 2, November 1953, pp. 111-136.

Demeny method,(1) the results of which are shown in table 3.3 (p. 220).

For females, an average age at marriage of 16.7 years was obtained using the stable population method and of 18.3 years using the Hajnal formula. For males, these figures are 21.5 years and 24.3 years respectively. Appraising these results, Romaniuk stated that the Hajnal formula resulted in overestimation of the mean age whilst the stable population method resulted in an underestimation; he thus concluded that the actual mean age for Zaire was a figure between the two arrived at by the different methods. Indeed, survey data, in principle, referred solely to persons aged 15 years and above; thus, those married before 15 years of age were either not reported or shifted upward to age-group 15-19 years. Such a shift upwards gives rise to an increase in age at marriage whereas the Hajnal formula assumes all persons belwo 15 years of age to be single. On the other hand, according to Romaniuk, the proportion single on which calculations by the stable method were based was underestimated, because enumeration of persons in the single state was less complete than that of married persons;(2) which resulted in underestimation of the mean age at marriage. However, evidence of particular underestimation of single persons is not very convincing and given the proportions single aged 15-19 for females and 20-24 for males, we are inclined to conclude that the figures obtained by the stable population method seem much closer to reality as well as to estimates for other African countries.

---

(1) The Coale and Demeny method refers to the Regional Model Life Tables and Stable Populations; and consists of selecting appropriate population models with stable distribution approximating the population under study. For practical purposes, the mean age at first marriage is obtained graphically, or by linear interpolation, at the age for which the stable population, cumulated from age zero on, is equal to the reported proportion single. As pointed out by Van de Walle, it is reasonable to take into account the fact that some persons never marry and that the age of marriage is therefore not exactly equal to the total number of years spent in celibacy by a cohort moving through life. But the required adjustment is small in Africa where practically everybody marries.

See Van de Walle, E.: The Relation of Marriage to Fertility in African Demographic Inquiries; in Demography, T. II, 1965, pp. 302-308.

(2) The Survey report indicated that in certain areas, at the sight of enumerators, parents sent their young daughters away and were reluctant to provide information about them. But there is no evidence that this occurred to a large extent.

TABLE 3.3

MEAN AGE AT MARRIAGE, ZAIRE 1955-8 SURVEY

REGION & SUB-REGION	Female			Male		
	Prop. Single‰ 15-19yrs.	Hajnal Formula	Stable Pop. Method	Pop. Single‰ 20-25yrs	Hajnal Formula	Stable Pop. Method
I. REGION OF KINSHASA	371	16.8	15.8	764	27.0	19.3
II. REGION OF BAS-ZAIRE	792	20.7	19.0	731	25.4	23.5
S.R.Bas-Fleuve	719	20.0	18.3	673	24.9	22.8
S.R.Cataractes	864	21.4	19.6	788	25.8	24.1
III. REGION OF BANDUNDU	683	19.5	17.7	659	24.7	23.8
S.R.Mai-Ndombe	633	19.4	17.9	591	24.7	23.5
S.R.Kwilu	680	19.7	17.9	671	24.5	24.0
S.R.Kwango	736	19.5	17.3	715	24.8	23.8
IV. REGION OF EQUATEUR	678	19.1	16.3	554	24.2	22.0
S.R.Equateur	649	19.3	16.5	630	25.0	23.4
S.R.Tshuapa	572	18.5	15.8	647	25.3	22.3
S.R.Mongala	695	19.2	16.7	515	23.7	20.4
S.R.Ubangi	733	19.1	16.5	485	23.4	21.8
V. REGION OF HAUT-ZAIRE	518	18.1	16.7	542	24.2	22.2
S.R.Tshopo	298	17.4	15.5	473	23.3	21.0
S.R.Bas-Uele	515	18.2	15.5	526	24.4	23.3
S.R.Haut-Uele	574	18.4	17.4	543	24.3	23.3
S.R.Ituri	751	19.6	18.8	676	25.2	21.0
VI REGION OF KIVU	392	17.2	16.4	466	23.8	20.4
S.R. Nord-Kivu	415	17.	17.4	440	22.6	21.9
S.R.Sud-Kivu	417	17.2	15.4	489	23.3	19.6
S.R.Maniema	222	16.2	14.5	433	22.9	20.5
VII. REGION OF SHABA	364	17.3	15.4	534	23.8	19.7
S.R.Tanganika	418	17.5	15.5	568	24.2	20.5
S.R.Haut-Lomami	397	17.4	14.9	580	24.1	20.2
S.R.Haut-Shaba	323	17.2	16.0	465	23.2	19.4
S.R.Lualaba	269	16.6	15.2	509	23.5	18.7
VIII.REGION OF KASAI ORIENTAL	426	17.5	14.4	576	24.4	20.9
S.R.Kabinda	379	17.1	14.2	561	24.0	21.1
S.R.Sankuru	473	17.8	14.6	591	24.7	20.7
IX. REGION OF KASAI OCCIDENTAL	453	17.6	15.0	651	25.0	21.7
S.R.Kasai	414	17.3	14.4	644	24.7	21.1
S.R. Lulua	491	17.8	15.5	657	25.3	22.3
ZAIRE	536	18.3	16.7	581	24.3	21.5

1.3 Proportions married by type of union

The existing customs, laws and practices concerning marriage often vary considerably from one African society to another. They include, for example, indissoluble marriage born of blood pact, polyandric marriage with non-formal relations, temporary loan marriage against security for the needy husband, and also other unions born of sexual hospitality. But most observers agree that such unions were rare and exceptional and that they reflected sexual mores rather than standing and permanent matrimonial customs;(1) though useful in ethnographic studies, for example, they may be disregarded for the purposes of demographic analysis.

(i) Monogamous and polygamous unions

Monogamy is clearly the dominant type of marital union in Zaire, as can be seen in table 3.4 (p. 222) and graph 3.3 (p. 223). However, the number of individuals who were living in polygamous unions is quite large, involving 310 women per thousand married and about 170 men per thousand married. For both sexes, the proportions of persons under polygamous unions increase constantly with age, except for ages above 55 years, after which they decline slightly. This decline could indicate a higher polygamous male mortality, but it is more likely to be the result of death of the second wife than, as has sometimes been suggested, a result of stress due to the burden of the polygamous husband's obligations. The ratios monogamous to polygamous for age groups 15-19 to 50-54 decline continuously and more sharply for males than females; from 6.8 to 1.2 for females and from 70.4 to 2.4 for males. Indeed, about 450 per thousand women aged 50-54 years are married to polygamous men as against less than 130 per thousand women below 20 years of age. The decline with younger ages of females in polygamous unions certainly reflected changes in the law, and the influences of

---

(1) For a detailed discussion on this subject, see especially the following:
- Radcliffe-Brown, A.R. and Forde, D.: African Systems of Kinship and Marriage; International African Institute, Oxford University Press, 1950.
- Goode, W.J.: Readings on the Family and Society; Prentice Hall, 1964.
- Paulme, D.: Structures sociales et traditionnelles en Afrique Noire, Cahiers d'Etudes Africaines, 1, 1960.
- Ardner, E.: Divorce and Fertility, an African Study; Oxford University Press, 1962.

Table 3.4
AGE-SEX DISTRIBUTION MARRIED POPULATION BY TYPE OF MARRIAGE, ZAIRE 1955-8 SURVEY

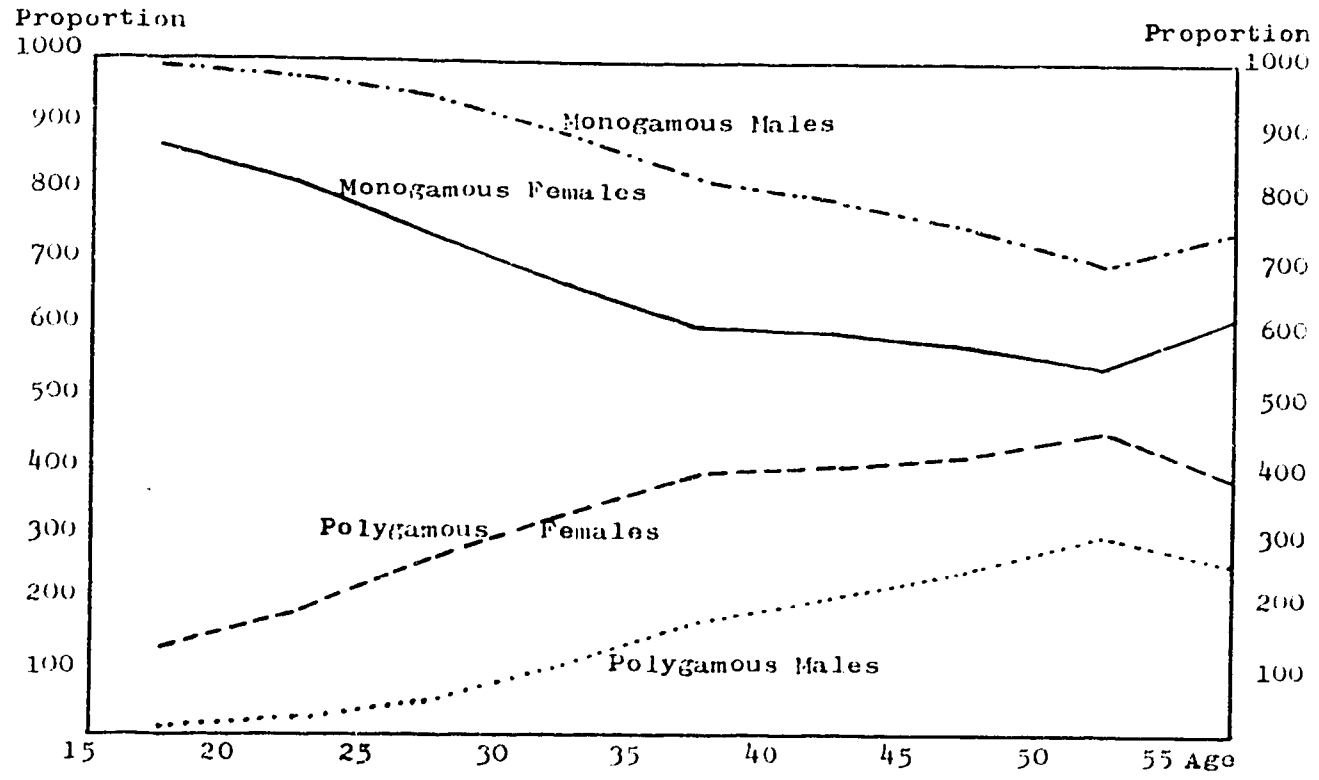
AGE	Proportion per 1,000			Proportion per 1,000		
	Mono-gamous (a)	Poly-gamous (b)	Ratio (a)/(b)	Legit-timate (c)	De Facto (d)	Ratio (c)/(d)
			FEMALES			
15-19	872	128	6.8	815	185	4.4
20-24	820	180	4.6	888	112	7.9
25-29	743	257	2.9	926	74	12.5
30-34	669	331	2.0	939	61	15.4
35-39	608	392	1.6	949	54	17.5
30-33	600	400	1.5	947	53	17.9
45-49	585	415	1.4	949	51	18.6
50-54	547	453	1.2	955	45	21.2
55+	622	378	1.6	961	39	24.6
ALL AGES	690	310	2.2	920	80	11.5
			MALES			
15-19	986	14	70.4	746	254	2.9
20-24	974	26	37.5	801	199	4.0
25-29	947	53	17.9	881	119	7.4
30-34	895	105	8.5	922	78	11.8
35-39	831	169	4.9	938	62	15.1
40-44	797	203	3.9	942	58	16.2
45-49	756	244	3.1	947	53	17.9
50-54	703	297	2.4	954	46	20.7
55+	747	253	3.0	961	39	24.6
ALL AGES	834	166	5.0	919	81	11.3

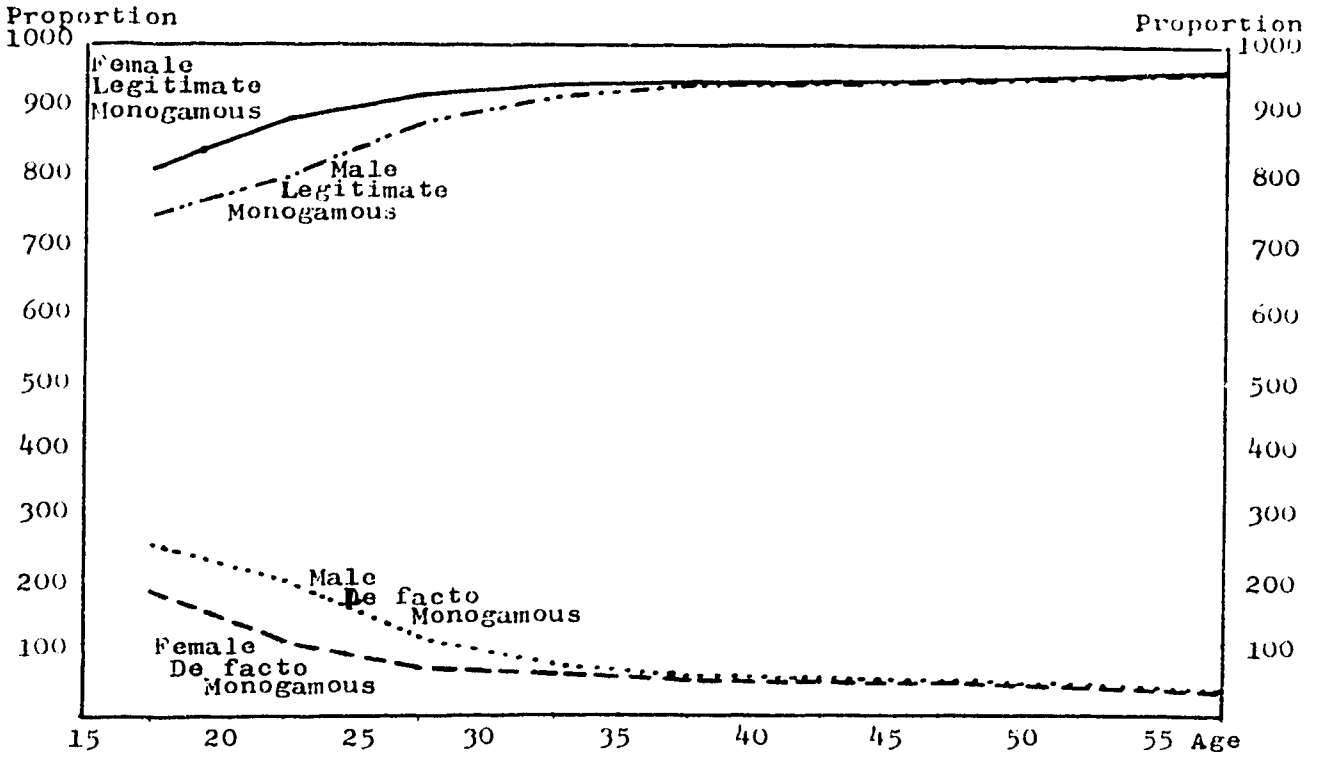
(a) and (b): All legitimate and de facto unions.

(c) and (d): Monogamous unions only.

Graph 3.3

AGE-SEX PROPORTIONS MARRIED BY TYPE OF MARRIAGE, ZAIRE, 1955-8 SURVEY





christianization and westernization. Table 3.4 also shows that per thousand married men, the number of polygamous was less than 15 persons for ages below 20 years and about 300 persons for ages 50-54. A closer examination of the graphical illustration reveals, as for women, a slight decline in increase of polygamous males for ages 35-54, although many men only acquire a second or third wife as they grow older. The continuous increase in proportions of females in polygamous unions with increasing age supports the hypothesis that, although polygamy might be in decline with christianization and westernization, a man could achieve polygamous status only after having acquired some social and economic wealth.

(ii) Legitimate and de facto unions

Survey data indicate that legitimate marriages far out-number de facto marriages, as for both sexes proportions legitimate amount to 920 against 80 de facto per thousand married persons. With increasing age, however, changes in proportions take place in the opposite direction to trends in polygamy: for persons below 20 years of age, proportions of de facto unions amounted to 185 per thousand married females and 254 per thousand married males. Those proportions decline rapidly and stabilize at about 50 per thousand for each sex for ages above 30 years. Concerning this trend in legitimization of marriage, it was believed that payment of bride-wealth was the most crucial factor and that often young men delayed their marriage until they possessed sufficient material wealth to support their wives. But personal observations suggest that the common pattern in most Zairean ethnic groups is that the bride-wealth was provided by a joint effort of the bridegroom's relatives. It may well be then that the delay in legitimization was due rather to cultural and administrative reasons than those pertaining to wealth accumulation. The more so as the largest proportion of reported de facto marriages were unions-on-trial, frequently encouraged for testing the chances of marriage survival. This trial period generally comes to an end with the first birth after which the marital status is regularized. For older ages, de facto marriages often resulted from necessity for social status and recognition; thus, a woman, widowed or divorced, would rather marry a polygamous man than be left to live alone.

1.4 Intensity and extent of polygamy

There are many occasions when polygamy has presented obstacles to understanding nuptiality and marriage in Africa.(1) The most striking of these occasions concerns the universality of most nuptiality and provision of sufficient brides for the widespread practice of polygyny.(2) Until recent times, attempts to understand the required excess of marriageable women over marriageable men for polygamy to materialize gave rise to various hypotheses including purported biological excess of female births peculiar to black races or a sex selective infanticide practised upon male children; and when calling for abolition of polygamy missionaries in particular went so far as to believe that some men would be condemned to celibacy for life. Investigations throughout Africa have rather concluded that there is little evidence of societies which practise selective infanticide of male births; and, remarkably, the Renobile of Kenya, who kill all boys born on a Wednesday or after the eldest boy in the family has been circumcised, practise monogamy. In fact, obstacles to understanding polygamy are chiefly of a rather formal character; they interfere with clear formulation of concepts and measurements but not with the practical side of every day life.(3)

---

(1) See Ware, H.: The Demography of Polygyny; Australian National University, 1975. She specifically shows that such obstacles resulted from differences in terms of Western preconceptions as to the nature of marriages.

(2) Polyandry is very rare in Africa and Murdock (Ethnographic Atlas, Pittsburgh, 1967) suggests that it is non-existent. However, some evidence was found in Zaire (Tew, M.: A Form of Polyandry among the Lele of the Kasai, Africa, 1951, 21, p. 1-12) for the colonial government to legislate against it (Prohibition des Pratiques de Polyandrie, 1947).

(3) Three main theories have attempted to stand as the origin of polygyny:
- The demographic theory states that men have more than one wife where there is a surplus of women; ref.: Spencer, P., The Shambura, London 1965, and Ember, M., Warfare, Sex Ratio and Polygyny, in Ethnology, 1974, 1w, p. 197-206.
- The economic theory argues that in societies where control over labour is a very important element in wealth differentials, and where women's labour is of major importance, powerful men will accumulate wives in order to have greater access to the means of production; ref.: Boserup, E., The Economics of Polygamy, in Woman's Role in Economic Development, London 1970; and also Ames, D., The Economic Base of Wolof Polygyny, in South Western Journal of Anthropology, 1955, 11, p. 391-403.
- A further theory associates the development of polygyny with the existence of prolonged post-natal taboos upon sexual intercourse for women; Whitting, J., Effects of Climate on Certain Cultural Practices, in Exploration in Cultural Anthropology, Ed. Goodenough, W.H., New York, 1964.

In an incisive demographic model of polygyny, Ware has shown that there is no need to posit an imbalance in the sex ratio of the population as a whole to explain polygyny. All that is needed to create a surplus of marriageable women, especially in a rapidly growing population, is a sufficient gap between the average age at first marriage of males and females. The model shows that universal polygyny of men aged forty or above is possible, even where there are equal numbers of men and women, so long as girls marry at puberty and men not until their early twenties. Closer to the actual position in many African societies is the case where the age gap is ten years, which would allow only every second man to have two wives, at any given point in time, but would allow all men to become polygynists by the age of forty if polygyny was reserved for men who had achieved that age, and if no man had more than two wives.(1)

The report of the 1955-8 survey of Zaire stressed that observation errors were inevitable, owing to colonial law and other development in the economics of polygamy especially in urban centres. By law, polygamous husbands throughout the country were liable to taxation on additional wives, a situation which surely caused many of them not to disclose their true marital status if they were to evade such a taxation. Besides, by law still, polygamous husbands were denied employment in public administration and the armed forces and also permanent residence permits in extra-rural centres. This policy thus, historically and legally, obliged urban polygamy to be practised clandestinely.

One fundamental characteristic is the limited magnitude of Zaire's polygamy, despite its countrywide acceptance, since only 31 per cent of married women and 17 per cent of married men were reported in polygamous unions with an average of 2.3 wives per polygamous husband; as shown in table 3.5 (p. 227). Data previously obtained from an inquiry conducted in 1953 also indicated that few polygamous husbands had more than three wives; see appendix B4 (p. 476). However, in view of the legal dispositions and developments just mentioned, it is very likely that the actual number of males and females married under the polygamous system was higher than the survey data suggested.

Though not specifically, its structural limitation to persons of a certain age appears as a second fundamental characteristic of polygamy

---

(1) Ware, H.: The Demography of Polygyny; op. cit.

Table 3.5

Intensity and Extent of Polygamy, Zaire, 1955-8 Survey

REGION & SUB-REGION	Females Married to Polygamous per 1000 Married	Male Polygamous per 1,000 Married	Number of Wives per Polygamous Male	Ratio All Married Females/ Married Males
I. Region of Kinshasa	41	20	1.9	0.9
II. Region of Bas-Zaire	173	93	2.1	1.1
S.R.Bas-Fleuve	150	77	2.1	1.1
S.R.Cataractes	198	112	2.1	1.2
III. Region of Bandundu	334	187	2.3	1.3
S.R.Mai-Mdombe	301	160	2.3	1.2
S.R.Kwilu	309	170	2.7	1.3
S.R.Kwango	413	250	2.3	1.4
IV. Region of Equateur	351	192	2.3	1.2
S.R.Equateur	347	191	2.3	1.2
S.R. Tshuapa	370	203	2.3	1.3
S.R. Mongala	295	154	2.2	1.2
S.R.Ubangi	389	222	2.2	1.3
V. Region of Haut-Zaire	309	167	2.2	1.2
S.R.Tshopo	312	170	2.2	1.2
S.R.Bas-Uele	372	208	2.2	1.3
S.R. Haut-Uele	338	177	2.3	1.2
S.R. Ituri	215	117	2.1	1.1
VI. Region of Kivu	304	160	2.3	1.2
S.R. Nord-Kivu	253	129	2.3	1.2
S.R.Sud-Kivu	316	170	2.3	1.2
S.R.Maniema	346	182	2.3	1.2
VII. Region of Shaba	231	124	2.2	1.2
S.R.Tanganika	320	181	2.2	1.2
S.R. Haut-Lomami	306	171	2.2	1.2
S.R. Haut-Shaba	50	29	2.0	1.0
S.R.Lualaba	160	84	2.2	1.1
VIII Region of Kasai-Oriental	432	247	2.3	1.3
~~S.R.~~ KABINDA	~~443~~	~~255~~	~~2.3~~	~~1.3~~
S.R.Sankuru	422	240	2.3	1.3
IX. Region of Kasai-Occidental	338	185	2.3	1.3
S.R.Kasai	361	202	2.3	1.3
S.R Lulua	321	171	2.4	1.3
ZAIRE	310	166	2.3	1.2

in Zaire. Based on survey data, the average age interval between spouses in monogamous and polygamous unions was as follows: 6.7 years for monogamous spouses, resulting from husband aged 39.0 years and wife aged 32.3 years, whereas the corresponding figure for polygamous spouses was 8.9, resulting from husband aged 45.6 years and wife aged 36.8 years. It may well be noted that widespread polygamy is possible in a growing population, provided that there is substantial age difference between spouses.(1)

In his study of Zaire's population, Romaniuk stated that practices of polygamy were more frequently observed among the patrilineal societies than the matrilineal ones, and that the major reasons for polygamy were the males' desire for many children, sexual satisfaction, material benefits and social prestige. But, as pointed out by Ware, there may well be conditions in which polygyny is a valuable aid to the survival of communities. Indeed, she emphasized, even for wives themselves, in societies with highly segregated sex roles, it is possible that the companionship and aid of other women with similar interests in life, is more valued than sole access to a man who lives segregated in a man's world. Further, she remarked that women themselves often prefer to be one wife amongst many in a prosperous compound than to reign supreme but hungry in a poor hut. Traditionally therefore the roots of polygyny would seem not only demographic and economic but also social and cultural. And, despite the present emphasis on the promotion of the African woman's status, it is very likely that polygamy will remain a not-negligible matrimonial behaviour in the foreseeable future.

1.5 Regional differentials in marriage patterns

For the various regions of Zaire, proportions of ever-married women reflected the universality of marriage for females, except in the regions of Bas-Zaire and Bandundu where estimates below the society's average of 915 per thousand were recorded (see appendix B5, p. 477). Proportions of ever-married men were also everywhere reflecting near-

---

(1) For illustrative purposes, based on estimates of population growth of the medium variant of projection for 1970-2000 (table 4.23 p. 436), with a mean age at marriage of 30 for men and 18 for women, the extent of polygamy would increase from 2.03 to 2.13 during that period for all non-monogamous men aged 40 and over, if polygyny was reserved for men who had achieved that age.

universal nuptiality except in the two regions mentioned above and Kinshasa, affected by the excessively low number of marriageable females (see appendix B6, p. 478). With regard to age at marriage, survey estimates for the different regions did not vary appreciably, except for the region of Bas-Zaire and particularly the area of Cataractes where marriages seemed to occur at a slightly later age, that is 20.5 years for females and 25.0 for males. Comparison of proportions married by type of union indicated substantial variations in figures of females married to polygamous males, i.e. an average of 432 per thousand married women in Kasai-Oriental, while the corresponding figures for Shaba and Kinshasa were respectively 231 and 41 per thousand married women. The near absence of polygamous marriage in Kinshasa and other highly urbanized areas resulted directly from the colonial government policy which, as already stated, instituted legal and housing constraints on polygamous practices; thus, though traditional contributors to economic wealth in rural areas, women became a burden in urban centres where mostly salaried men initially settled. Nevertheless, beyond rural-urban differentials, polygamy was observed to be more widespread among patrilineal tribes - which include four fifths of the country and in which children belong to the father's clan - than in matrilineal and bilineal societies.

Survey estimates of currently married women by type of settlement indicated higher proportions for the mixed and urban centres compared with rural areas, especially in the age-group 15-18 years, as can be seen in table 3.6 below. There is little doubt that these differences

Table 3.6

PER THOUSAND MARRIED FEMALES BY AGE AND TYPE OF SETTLEMENT
ZAIRE 1955-8 SURVEY

Age Group	Rural	Urban	Mixed
15-19	388	660	672
20-24	832	906	939
25-29	899	916	966
30-34	901	903	961
35-44	854	823	926
45-54	675	611	726
55+	300	306	268
All Ages	736	821	883

reflected primarily the rural-urban sex-ratio differentials which favoured relatively greater nuptiality of non-rural women. They also reflected the relatively greater material prosperity of males in economically advanced centres as the bride-wealth required for legitimization of unions came more and more to be expressed in high monetary terms. It may well be noted that in those years single girls were hardly permitted to migrate into towns except to join their husband-to-be and that, even in urban centres, few girls attended school beyond 15 years of age.

2. Economically Active Population

It is only fair to remark that the utility of data on economic activity from the 1955-8 survey was greatly reduced as neither basic concepts nor tabulated statistics complied with requirements for appropriate demographic analysis.(1)

2.1 Basic concepts and reported data(2)

From available information it is evident that both those who planned the survey and those who wrote up the report emphasized the economic features rather than the demographic characteristics of the population concerned. The economically active population was identified in terms of concepts such as the "gainful worker" or "gainfully occupied", and included all persons over 15 years of age, whether or not occupied at the time of the survey, who usually had an occupation from which they earned money or its equivalent within monetary or subsistence economies. During data collection, no differentiation was made between the present and usual occupation, neither were allowances made for seasonal workers, the retired, or those who were in the market for their first job. As stressed by Spiegelman, unless further questions are asked at the enumeration, the gainful

---

(1) It is also true, however, that there were few international standards by 1955. Among works containing extensive discussions in this field were:- United Nations: International Standards to Census Data on the Economically Active Population, Sales No. 51, XIII, 2;- Jaffe, A.J. and Stewart, C.D.: Manpower Resources and Utilization, Principles of Working Force Analysis, New York, 1951.

(2) For detailed discussion on basic concepts and definitions, see:
- Spiegelman, M.: Introduction to Demography; op. cit., chapter 12.
- United Nations: Handbook of Population Census Methods, Vol. 2; Econ. Characteristics of the Population; Sales No. 58, XVII, 6/2.

worker concept does not distinguish the employed from the unemployed.(1) There is no evidence that such further questions were asked during the 1955-8 survey, a situation which led to an extremely low level of recorded unemployment, since most interviewees were probably afraid of eventual colonial reprisals and were inclined to report themselves as self-employed persons. With regard to industry and occupation, the survey data only referred to two broad categories of agricultural and non-agricultural, while, as regards status, two broad groups were established for salaried and own-account workers. Even though such data do not permit extensive analysis, there is nevertheless some significant information concerning the size of the labour force, the dependency ratios, the status and activity rates of the working population.

2.2 Absolute and relative size of the labour force

According to the 1955-8 survey estimates, persons classified as economically active represented 49.5 per cent of Zaire's total population or 6.3 million individuals out of 12.7 million. The proportion of persons above 15 years of age participating in economic activities was 81.5 per cent or 6.3 million individuals out of 7.7 million, as shown in appendix B7, (p. 479). The crude activity rate, which is the percentage of the total population classified in the survey as economically active, and the refined activity rate which relates the labour force total to the population above the specified minimal working age - 15 years in this case - were as follows:

	Male	Female	Both Sexes
Crude Activity Rate :	49.6	49.4	49.5
Refined Activity Rate :	84.0	79.4	81.5

According to the standard definition of labour force, and other things being equal, the above rates seem relatively high and would imply a high level of income for individuals and hence society. The more so, as the minimal limit of age 15 years for a working person certainly excluded a considerable number of children engaged in economic activity such as petty trade.

---

(1) Spiegelman, M.: Introduction to Demography; op. cit., p. 241. However, it should be noted that surveys of this kind are not much good at collecting useful data on unemployment, even if the questions are asked. Besides, except in urban centres, unemployment is not easily discernible or felt by rural populations.

In reality, the economic significance of such apparently high rates of activity is largely illusory, because these rates indicate more the demographic economic potential of the country than the actual intensity of activity. Besides, as in many developing countries, a large amount of participation in economic activity refers to domestic services and production of goods for home consumption and is generally accompanied by considerable chronic under-employment or unemployment.(1) This is especially true for the traditional sector of the economy where rudimentary means of production and lack of incentives constitute obstacles to activity beyond mere subsistence. Neither does the modern sector of the economy escape this under-employment under African conditions, owing to instability of job tenure by numerous workers in factories, plantations and public works. With regard to self-employed persons settled in urban centres as craftsmen or smaller traders, it should be noted that not only do they suffer from similar chronic under-employment but also, more often than not, individuals reported themselves as such simply to disguise their actual situation of joblessness.

For different regions of Zaire, levels in crude and refined activity rates do not differ appreciably in comparison to variations in regional age structure, very probably due to the relatively open definition of the "gainful worker" concept. Nevertheless, regional rates of economic activity to some extent reflected differences related to the dominant industry or traditional social organization of the areas. The highest rates of participation in economic activity were found in Kivu region, amounting to 90 per cent in the areas of Nord-Kivu and Sud-Kivu, as a result of extensive agricultural exploitation and cattle breeding which require young as well as old people's manpower. The lowest rates of economic activity were reported in urban centres, such as Kinshasa, where they averaged only 60 per cent, in spite of advanced socio-cultural modernization and economic development; this is surely due to the fact that the level of participation in economic activity of women in urban centres was low, for example, 4.3 per cent in Kishasa, whereas their employment remained preponderant in

---

(1) For an extensive discussion of Zaire's economy during those years, see: Bezy, F.: Problemes structurals de l'économie congolaise; IRES - Léopoldville and Nauwelaerts - Louvain, 1967.

traditional rural areas.(1)

It can then be concluded that if reported rates of participation in economic activity made Zaire's situation in the later fifties appear rather favourable as regards numerical relationship between labour supply and population, this was largely a reflection of the "usual occupation" concept which was used during the survey and which always exaggerates the actual labour force by counting persons who reported an economic activity whether each such person was economically active or not.

2.3 Dependency ratios

For purposes of analysis, dependency ratios or the number of persons not in the labour force per hundred of the labour force, have been estimated with two different formulae. Firstly, by relating reported non-workers to workers, which gives for Zaire as a whole a ratio of 102 per cent; secondly, by relating the persons of dependent ages, assumed to be under 15 years and 55 years plus, to those of working ages 15-54 years, which yields a ratio for the whole country of 82 per cent,(2) as shown in appendix B8, (p. 480). It may be remarked that the ratio based on the first formula is greater because of the high number of people below 15 years of age, about 40 per cent of the total population, who by definition were excluded from the labour force; whereas the number of persons in the dependent ages 55 years and over represented a very small proportion or 5.6 per cent. In relation to this, had the size of working age-groups been extended to 15-64 years instead of 15-54 years, the relative effect on both the numerator and denominator of the formula would be negligible because of the small number of persons involved.

Regional differentials in ratios obtained from non-workers related to workers show that dependency is higher in the regions of Kinshasa (169), Bas-Zaire (121), Bandundu (120 and Shaba (117) which include areas of most advanced urbanization and modern economy.

---

(1) The low rate of female participation in economic activity in these urban centres was not due to longer schooling or lack of jobs but resulted directly from the colonial policy which historically opposed women's work in commercial or industrial enterprises and in public administration.

(2) This age interval includes most, but not all, people who report an occupation. See Barclay, G.W.: Techniques of Population Analysis; John Wiley & Sons, New York, 1970, p. 262-280.

However, interpretation of these differentials should allow for the fact that wage labour for women was not a common pattern in the country, despite emerging groups of school mistresses, nurses and social workers in urban centres. For this reason, statistics of the economically active population of Zaire in 1955-8 could be misleading, if the activities of males and females were measured in the same terms.

The observed ratios are thus of limited value as a measure of dependency, not only because they do not take the settings of subsistence economy into account but also because they consider as employed those who were substantially affected by chronic disguised underemployment. Nevertheless, they clearly indicated that Zaire's age structure was weighted with a large proportion of children too young to work who are responsible for the main burden of dependency, as in all developing countries of relatively high fertility.

2.4 The working population by status and type of activity

Distribution by status of the total 6,297,925 individuals reported as economically active was as follows:

Status	Number	Per Cent	Sex
Self-employed	5,169,944	82.1	Male + Female
Salaried	1,079,238	17.1	Male only(1)
Unemployed	48,693	0.8	Male only

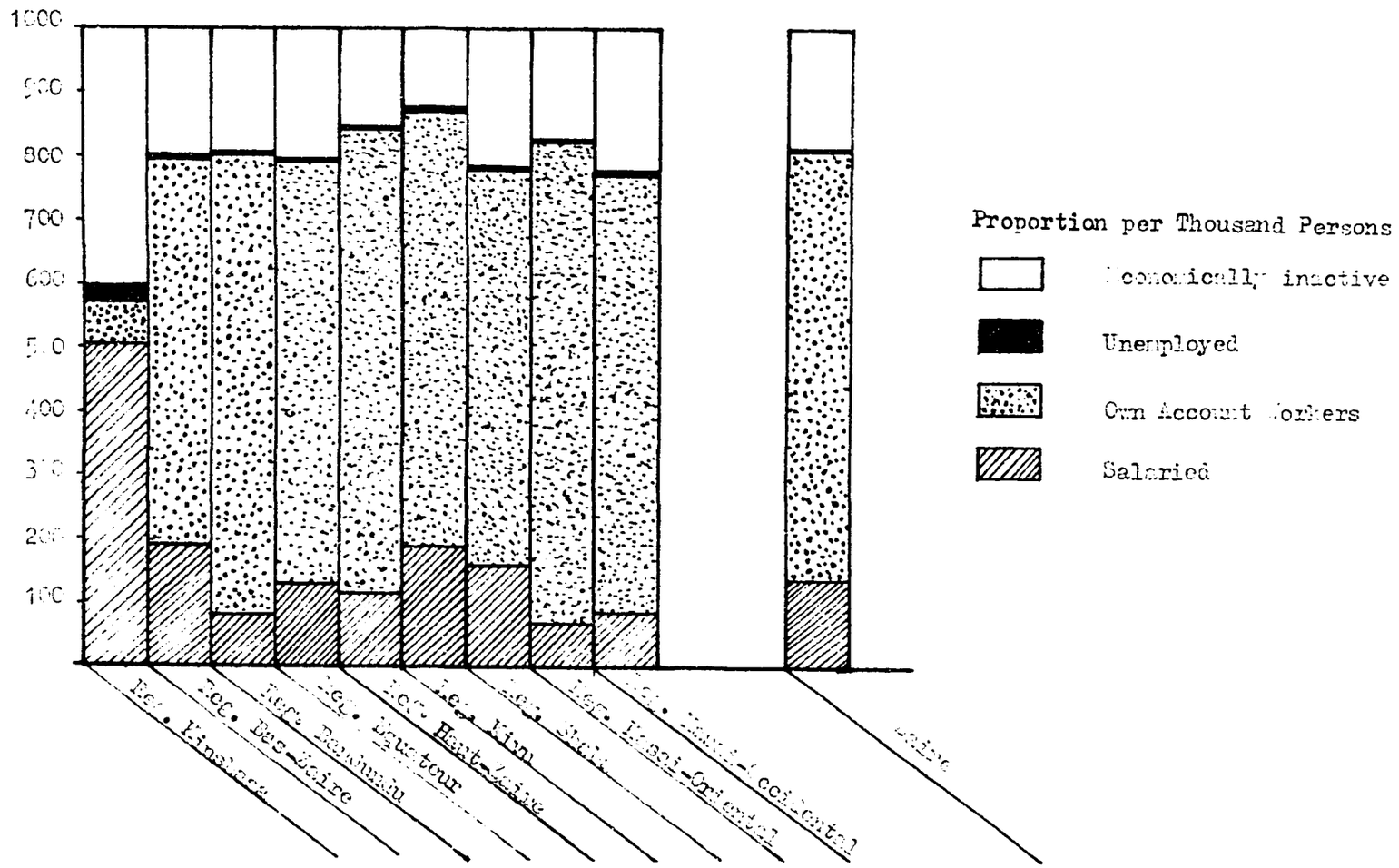
As can also be seen in graph 3.4 (p. 235), the preponderant category of self-employed persons in fact denotes the dual nature of Zaire's economy, which comprised an important traditional subsistence sector and a modern sector. Concerning the types of activity, survey data indicated that the non-agricultural sector included only a minor proportion of own-account workers, 54,502 persons or 0.9 per cent of the total labour force (see appendix B9, p. 481), whereas the so-called self-employed category comprised mostly small farmers labouring for their own subsistence and that of their families. The 0.9 per cent self-employed persons of the non-agricultural sector were found mainly in urban centres as petty traders, craftsmen or smaller

---

(1) Only males were reported as salaried persons, because until then women's employment for wage or salary was on the whole very exceptional in both public and private sectors.

Graph 3.4

THE WORKING POPULATION BY REGION AND TYPE OF ACTIVITY; ZAIRE, 1955-8



industrialists. The quite sizeable category of salaried persons amounting to 17 per cent of the total labour force, were found mostly in urban and mixed areas, due mostly to expanding public administration and semi-public companies engaged in services rather than private enterprises or capital-intensive mining firms. For the whole of Zaire, the ratios agriculture over non-agricultural activities were 2.7 for males alone and 6.7 for both sexes. But the reported 30 per cent salaried men in the agricultural sector were predominantly employed in large plantations of the northeast for cash crops destined to exportation, whilst 62 per cent of the total labour force belonging to agricultural activities was composed of women in the traditional subsistence economy of rural areas. As a consequence, survey data do not reflect the actual importance in the pattern of food production, especially its marketed share, within the country.

2.5 Age-specific activity ratios

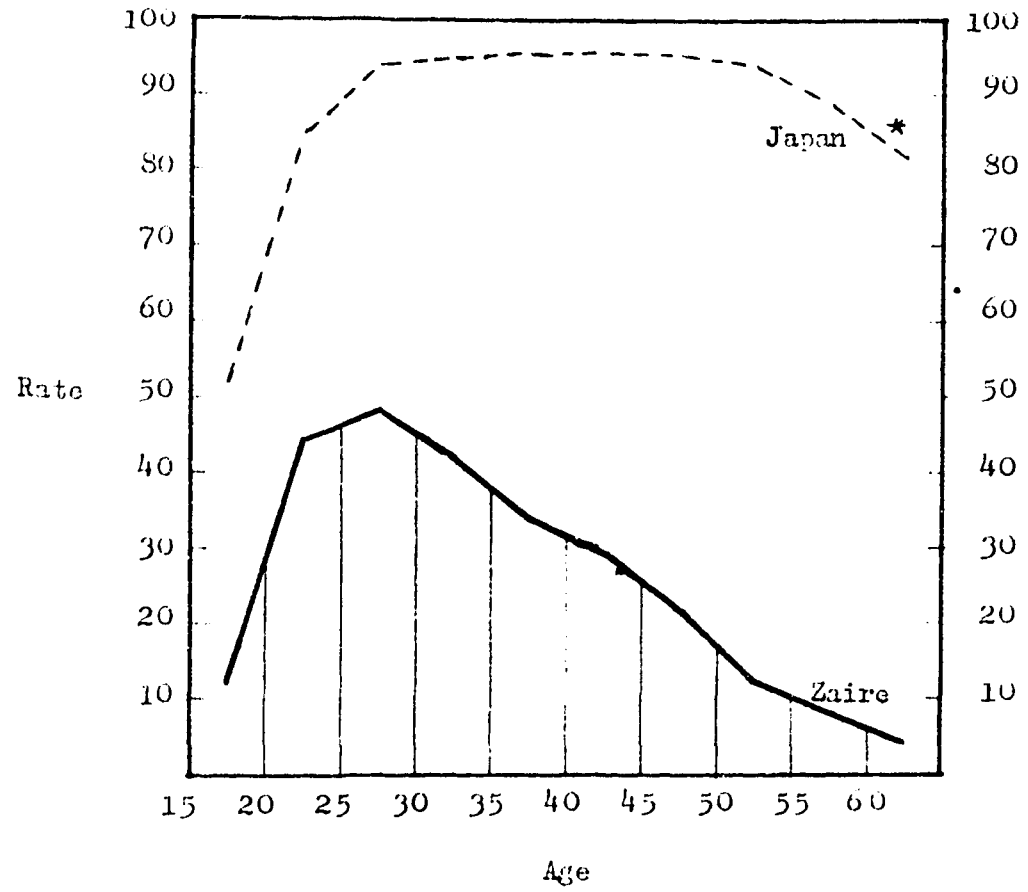
Some idea of the age pattern of participation in modern economic activity may be obtained through examination of activity rates for Zaire's salaried males reported in relation to their age groups during the 1955-8 survey.(1) Age-specific activity rates so estimated are shown below.

Age	Total Males	Salaried	Rates
15-19	402,800	49,984	12.4
20-24	437,332	194,240	44.4
25-29	527,305	251,350	47.7
30-34	499,028	210,855	42.3
35-39	413,486	142,383	34.4
40-44	372,537	106,848	28.7
45-49	331,591	71,314	21.5
50-54	290,642	35,778	12.3
55+	372,090	16,486	4.4

(1) A specific activity rate is calculated by the formula $n = \frac{Pe}{Pt} 100$; where Pe is the number of economically active persons in the specified category of the population and Pt is the total number of persons in the same category. Specific activity rates may be calculated for population categories defined in terms of various characteristics including sex, age, marital status, educational level, regional residence, etc., if relevant statistics are obtained.

Graph 3.5

AGE-SPECIFIC ACTIVITY RATES FOR SALARIED MALES;
Zaire, 1955-8



* Japan's activity rates of the male economically active population for 1955. Ref. United Nations; Methods of Projecting the Economically Active Population; p.11

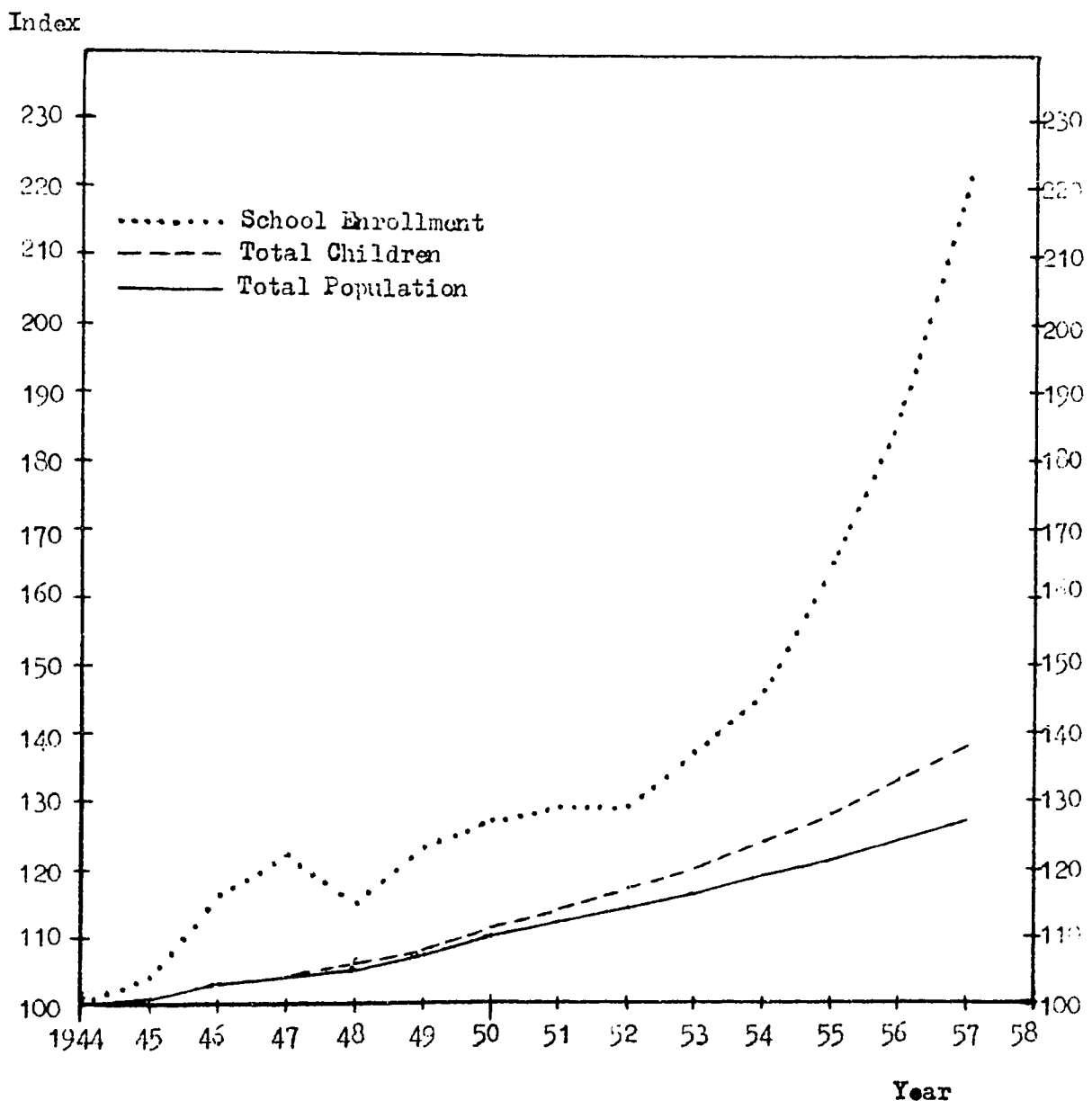
As in all nations of the world, salaried males of Zaire come into the labour force at various ages, mostly before twenty and some between twenty and twenty-five, when nearly all are economically active. For later ages, and as can be seen clearly in graph 3.5 (p. 237), the curve of age-specific activity for Zaire's salaried males shows an interesting variation from the pattern which is found almost universally in the statistics of economically advanced countries, of which a representative example is Japan. Indeed, according to the world pattern, after twenty-five years of age, males remain in the labour force until about fifty five, after which age there is a progressive attrition of the labour force by voluntary or enforced retirement. This assumes that proportions of the cohort of salaried workers at younger ages are known. Though the above assumption calls for serious reservations, in the case of Zaire it appears that the number of salaried workers decreases sharply before age thirty years, indicating very probably instability in job tenure, or the infrequent entry of older generations into the salaried labour force.

3. Educational Characteristics

As with nuptiality and labour force, the 1955-8 survey was the occasion when, for the first time, data on education were collected according to age groups. Previous education statistics referred solely to school attendance, based on reports established at the end of each school year. From 1926, when Zaire's school system was initially organized on a country wide basis, until the early 1950s, education was the exclusive responsibility of missionary societies, mostly Roman Catholic, and school attendance was not compulsory. However, reported pupil numbers prior to the 1955-8 survey indicate two major features: firstly, a higher total of pupils in non-subsidized as compared to official or subsidized schools until 1950, after which the reverse occurred, to an even greater degree after 1953 (see appendix B10,p. 482): secondly, a marked upsurge in school attendance from 1954, as can be seen in graph 3.6 (p. 239) and appendix B11, (p. 483). The reliability of school attendance data from the earlier reports remains difficult to assess. Van der Elst stated that because school reports constituted the basis for grants and subsidies from government, there was a marked tendency to overestimate school

Graph 3.6

INDICES OF INCREASE IN TOTAL POPULATION, CHILDREN AND SCHOOL ENROLLMENT; ZAIRE, 1944-57 (INDEX 1944 = 100)



populations.(1) Further, he observed that numerous rudimentary organizations such as experimental farms and work-shops were reported as schools for many years, even though reading and writing were excluded from the programmes.(2)

Returning to the 1955-8 survey, reported education data were inevitably affected by the multiplicity of school structures and programmes, by the widespread retardation of enrolments and also by the fact that they were not collected by single years as necessary for analytical comparison with school age population, especially at primary level. In common with many recent censuses, however, the survey report provided data with regard to (a) literacy, or ability to read and write simple messages, (b) the level of educational attainment, or years of schooling completed according to the grading system, and (c) the school attendance or population currently in school at various levels.

3.1 Level of literacy and proportions with some schooling

During the survey, persons aged 5 years and above were asked to declare whether they could write and read in any language of their choice and those who did not complete primary school were given a simple test in writing and reading with emphasis on the latter.(3)

---

(1) Van der Elst, G.: Population des écoles du Congo Belge avant l'indépendance; Cemubac, XLVIII; Bruxelles, 1961; p. 7.

(2) The early school programmes emphasized labour rather than formal education. In the first page of the Yellow Brochure of 1929 (Organisation de l'enseignement libre au Congo Belge et au Rwanda-Urundi avec le concours des societés de missions nationales) it was clearly stated that "in these schools, labour should be the pivot of all activities". Hence, all schools possessed farms and work-shops for woodwork, sewing, ironing and cooking; also included was the production of tiles, bricks and pottery. Later, in a similar draft brochure for 1938, it was stressed that "personality formation by religious moral and sustained regular work must, in all schools, have priority over any humanity and scientific studies", allegedly because education was to be functional and limited to notions that the indigenes would find useful in their economic milieu.

(3) Although French had always been the official language of the country, education at primary level was mostly provided in regional vernacular languages, especially in rural areas. Survey data revealed that in Kinshasa, only 19 per cent of men and one per cent of women, i.e. 12 per cent of the total population, could express themselves in French.

Among persons aged 10 years and over, the percentages of those able to read and write as well as of those who received some school education were as follows:

Sex	Per cent Literate Pop. 10 years plus	Per cent with some Schooling Pop. 10 years plus
Male	31	36
Female	4	7
Both sexes	18	21

Recorded percentages demonstrate that school education benefited only a small proportion of the population; especially with respect to females, the proportion of whom able to read and write equalled only one-eighth that of males.(1) For the different regions of Zaire, variations in proportions literate were considerable, as can be seen in appendix B12(p. 484). For all persons aged 10 years and over, the highest literacy rates were recorded in the urban centres of Kinshasa and Lubumbashi where they reached 43 per cent; followed by the region of Bas-Zaire with 30 per cent, within which the area of Bas-Fleuve recorded 34 per cent literate persons.(2) Rates approximating the country's average of 18 per cent were found in Shaba, Kasai Occidental, Kasai Oriental and Bandundu, while the lowest rates were reported for Kivu, with 16 per cent, Haut-Zaire, with 14 per cent, and Equateur, with 13 per cent literate. In all regions, as expected, proportions literate were smaller for females than for males and the relative gap was larger in regions with higher rates.

It may be as well to point out that the small proportion of literates recorded for Zaire by 1955-8 resulted directly from the low number of persons who received school education in those years and whose total was only 3 per cent above the figure of persons able to read and write. As demonstrated by Georis and Agbiano, this certainly reflected the Belgian colonial policy which was characterized by racial segregation, cultural domination and economic objectives oriented

---

(1) The percentage literate of the total population for Zaire was intermediate in comparison with percentages literate in neighbouring countries during the same era; for example, they varied by about 10 per cent below and above those found in Uganda and Angola respectively.

(2) Situated at the mouth of the river, the Bas-Fleuve area included the city of Boma, former capital, where schools were first developed.

towards the needs of the Metropolis and, consequently, educational structures, programmes and methods were not designed to meet the needs for rapid modernization of indigenous populations.(1) In this way, more than three-quarters or 12,408 out of 15,971 schools existing in Zaire on the eve of independence provided only the first 2 years' primary education, that is half the required minimal four years' study deemed by UNESCO to be necessary for the attainment of permanent literacy.

Rural-urban differentials in educational characteristics reveal especially the extremely low level of education amongst women and in rural areas. As can be seen below, half of all persons aged 10 years and over in the urban areas had received some education but in rural areas it was less than one-fifth; and the proportion of males who had received education was twice that of females in the rural areas, whilst it was three times as great in urban centres.

Percent Pop. Ten Years and Over with some Education, Zaire 1955-8

Sex	Rural	Mixed	Urban
Male	30	42	71
Female	16	10	27
Both sexes	19	28	51

Nevertheless, table 3.7 (p. 243), which shows percentage population with some education by age-sex and by type of settlement, indicates that school education was increasing rapidly for younger persons. Variations in recorded percentages between adjacent age groups reveal that the proportion of population with schooling was relatively low for cohorts aged more than 20-24 years, but it increased substantially between age-groups 20-24 and 15-19 years as well as between age-groups 15-19 and 10-14 years. It is also noticeable from the table that the big rise in proportion with schooling at ages 15-19 and 10-14 years was most pronounced in rural and mixed areas. These trends clearly reflected important changes in colonial policies which took place

---

(1) Georis, P. et Agbiano, B.: Evolution de l'enseignement en République Démocratique du Congo depuis l'indépendance; Cemubac, LXXVII, 1966, Bruxelles, p. 59-75.

soon after World War II.(1)

With special reference to the age-group 10-14 years, which contains the highest percentage of persons with education, two major observations could be made: on the one hand, it could be inferred that the proportion literate was about 50 per cent for both sexes, resulting from 70 per cent for boys and 30 per cent for girls, and assuming ratios of persons with education over literate population similar to those observed previously; on the other hand, the marked decrease in percentage of the population with no education resulted from the combined proportions of 27 per cent for boys and 67 per cent for girls. Thus, even though school education and literacy were

Table 3.7

PERCENTAGE POPULATION WITH SOME EDUCATION BY AGE-SEX AND BY TYPE SETTLEMENT: ZAIRE, 1955-8 SURVEY
(Including persons currently in school)

	POPULATION WITH EDUCATION BY SEX			POPULATION WITH EDUCATION BY SETTLEMENT		
Age-Group	Both sexes	Male	Female	Rural	Mixed	Urban
5-9	24.9	33.4	16.7	22.8	29.3	53.5
10-14	55.2	72.7	33.4	53.0	63.0	83.2
15-19	39.4	67.4	14.5	38.6	40.7	63.5
20-24	24.0	46.6	5.7	21.0	28.7	52.6
25-29	20.7	40.5	3.4	17.0	25.2	51.1
30-34	14.0	31.0	1.7	10.1	20.6	42.9
35-44	10.2	20.7	0.9	8.7	17.9	42.5
45-54	5.4	9.8	0.3	5.3	14.0	27.8
55+	1.6	3.0	0.1	2.6	2.5	16.8
10 years +	21.2	36.3	6.9	19.2	28.0	51.0

(1) In 1948, new dispositions created two major types of primary school: the Ordinary primary, lasting 5 years for less talented children particularly in rural areas, and the Selected primary extending over 6 years and applying, in theory, Belgian programmes. In 1956, a Transitory Programme provided for the creation of State schools and requested that missionaries apply the 1936 Belgian programme for Catholic schools, including the use of the French language from the first year primary. Finally, under the Education Act of 1958, all schools in Zaire were to apply, with no restrictions, the current school programmes in Belgium.

increasing rapidly for men, it remained at a much lower percentage and advanced at a much slower pace for females.

3.2 Level of educational attainment

In agreement with UNESCO, that ability to read and write is not an adequate test of the educational level of a population, and in order to arrive at some comparability of broad general findings between countries, education data are tabulated in the following manner:

- First level: elementary school, primary school, or equivalent;
- Second level: middle school, vocational school, teacher training school or equivalent;
- Third level: university, teachers' college, high professional school or equivalent.

Relative to these levels, Zaire's educational system by 1955-8 was as follows: the first level comprised normally 5 or 6 years' primary education, the second level extended over 4 to 6 years' secondary school, while the third level, which was officially inaugurated in 1956, did not produce graduates until a couple of years after the survey under review.(1) Data on third level education are therefore omitted from the statistics tabulated here. It should also be noted that in countries where third level education has been in existence for longer periods, except for the few students pursuing advanced professional study, to all intents and purposes, the educational

---

(1) See footnote page 243 for the differing duration of primary education. For a picture of current structures at all levels, see Chapter XIV, 1.6.

The first post-primary school was created in Boma in 1906, for training colonial adminstrative supporting staff. The 1929 and particularly the 1938 reforms created 4 years' middle schools for business adminstration. The 1948 reform gave birth to 6 years' secondary schools, and from 1952 a few of these schools were asked to prepare for higher studies, even after 1959, when the Act of July 14 proclaimed equivalence of certificates delivered in Belgium and Zaire.

In 1956, however, the first Zairean university graduate was produced by the Catholic University of Louvain, Belgium; prior to this period, several Zaireans had graduated from seminaries in the country and overseas. In the same year, though initiated in 1953, two universities were officially inaugurated: the Catholic Lovanium University in Kinshasa and the Government State University in Lubumbashi; both universities had a student population of 79 persons in 1956. By 1970, there were about 5,000 university graduates and 15,000 students from all tertiary institutions in Zaire.

Table 3.8

PERCENT DISTRIBUTION OF ALL PERSONS WITH SOME SCHOOLING[1] BY AGE-SEX AND LEVEL OF EDUCATIONAL ATTAINMENT, ZAIRE, 1955-8 SURVEY

Age	MALE			FEMALE			BOTH SEXES		
	Less than 1st level[2]	1st level primary[3]	2nd level secondary[4]	Less than 1st level[2]	1st level primary[4]	2nd level secondary[3]	Less than 1st level[2]	1st level primary[3]	2nd level secondary[4]
5 - 9	99.0	1.0	0.0	96.2	3.8	0.0	97.9	2.1	0.0
10 - 14	95.6	4.4	0.0	95.3	4.6	0.1	95.5	4.5	0.0
15 - 19	85.2	14.4	0.4	85.8	12.7	1.5	85.3	14.0	0.7
20 - 24	78.7	19.4	1.9	85.5	12.3	2.2	79.7	18.4	1.9
25 - 29	79.9	17.9	2.2	85.6	12.2	2.2	80.4	17.3	2.3
30 - 34	83.1	14.6	2.3	89.3	9.6	1.1	83.6	14.2	2.2
35 - 44	86.0	11.6	2.4	88.2	10.0	1.8	86.1	11.5	2.4
45 - 54	89.3	8.7	2.0	94.1	4.1	1.8	89.4	8.6	2.0
55+	90.7	7.4	1.9	93.4	6.6	0.0	90.7	7.4	1.9
20 and over	82.3	15.5	2.2	86.6	11.4	2.0	82.7	15.1	2.2

[1] Excluding those persons currently in school and comprising a few hundreds in the third level at the newly created universities of Kinshasa and Lubumbashi.

[2] Persons with some elementary education but who did not complete primary school.

[3] Proportions of persons who completed primary school. Nearly half of these proportions represent those persons who had pursued secondary education level but did not complete it.

[4] Proportions of persons who completed secondary education.

process is completed by the time age 25 years is reached and, thereafter, educational attainment remains fixed for life. For convenience of the present analysis, and very probably for most African countries during the colonial period, age 20 years may be considered as the time from which educational attainment remains fixed.

Table 3.8 (p. 245) shows the age-distribution of all persons reportedly educated; and one striking feature apparent from the table is the very low proportion - for both sexes - of those who actually completed primary school (15.1 per cent) or secondary school (2.2 per cent). Relative to total population aged 20 years and over, these proportions represented respectively 1.9 and 0.3 per cent with corresponding sex ratios of 1,498 and 1,219 males per hundred females, as can be seen in table 3.9 below. Returning to table 3.8, not much less striking is the fact that the majority of persons with some education, about 83 per cent, did not complete primary school. However, the table shows a clear rise in the proportion of persons completing first level education for younger cohorts. For both sexes this proportion rises from about 8 per cent for persons aged 45-54 years to over 18 per cent

Table 3.9

PROPORTIONS OF ALL PERSONS WITH SOME SCHOOLING TO TOTAL POPULATION BY AGE-GROUP AND LEVEL OF EDUCATIONAL ATTAINMENT: ZAIRE, 1955-8 SURVEY
(Excluding those persons still in school)

Age-Group	BOTH SEXES (%)			SEX RATIO		
	Less than 1st level	Primary level	Secondary level	Less than 1st level	Primary level	Secondary level
5-9	0.2	0.0	0.0	174	48	0
10-14	2.6	0.1	0.0	238	224	0
15-19	13.3	2.1	0.1	262	301	63
20-24	18.1	4.2	0.4	587	1,003	552
25-29	16.6	3.6	0.5	968	1,622	1,043
30-34	11.7	2.0	0.3	1,207	1,977	2,609
35-44	8.8	1.2	0.2	2,072	2,587	2,757
45-54	4.8	0.5	0.1	3,633	8,132	4,411
55+	1.5	0.1	0.0	2,842	3,264	21,100
20 years and over	10.5	1.9	0.3	1,045	1,498	1,219

for those aged 20-24 years. A detailed analysis of this improvement reveals that more persons were pursuing post-primary studies, even without completing the whole secondary level, as a result of increased opportunities for females to attend schools for teachers' training and domestic sciences. Nonetheless, for all persons aged 20 years and over, the number of those who completed secondary school was less than 2 per cent. Thus, despite apparent improvement in the development of education in Zaire, it appears that by the mid-fifties the proportion of persons enjoying higher education was not larger than two decades previously.

Table 3.10 below, which shows rural-urban differentials in the distribution of persons aged 20 years and over by level of educational attainment, confirms the pattern found earlier with regard to literacy, i.e. the relative backwardness of rural areas and women. Indeed, the proportions of urban persons who completed primary and secondary education were respectively six and three times larger than those found in rural areas, where 89 per cent of persons with education did not complete the first level, as against only 63 per cent in urban centres.

Table 3.10

RURAL-URBAN PERCENTAGE POPULATION 20 YEARS AND OVER WITH SCHOOLING BY LEVEL OF EDUCATIONAL ATTAINMENT: ZAIRE, 1955-8 SURVEY

		Rural	Mixed	Urban
Male	(Less than 1st level* :	89	79	63
	(First level** :	11	18	33
	(Second level** :	0	3	4
Female	(Less than 1st level* :	93	85	69
	(First level** :	6	13	28
	(Second level** :	1	2	3
Both Sexes	(Less than 1st level* :	89	79	64
	(First level** :	10	18	32
	(Second level** :	1	3	4

* less than completed; ** completed.

The table also indicates that at all levels of educational attainment in rural, mixed and urban segments of settlement, percentages of females with education are less favourable than those of males; that is, higher for less than first level, and lower for completed primary and secondary.

As already mentioned, the low level of educational attainment was a direct result of the Belgian colonial policy which, until the eve of independence, prescribed a purportedly functional but non-promotional education for indigenous populations. However, colonialism was not the only factor contributing to low educational attainment, since in many cases indigenous populations remained subject to traditionalism though eagerly aspiring to European educational standards.

3.3 Level of school attendance

Measurement of level of school attendance for any population, especially for broad international comparison, is generally best carried out through derivation of rates devised by UNESCO to this end.(1) But, given the quality of Zaire's 1955-8 survey data, UNESCO-type rates would appear less satisfactory than the figures on school attendance by age, the more so as no reference can be made to other figures, for earlier or later years, since these are not available by age.

At the time of the survey, it was generally believed that education could be considered universal if, in any given country, the school population reached 60 per cent of children aged 5-14 years.(2) The writers of the survey report then claimed that, for Zaire, this theoretical limit was exceeded as the percentage of boys and girls who attended school would rise from the observed figure of 52.6 (see table 3.11, p. 250) to 63, if one took into account the number of children who had abandoned or completed the primary level before age 15 years. This reasoning is misleading, given the particular context

---

(1) - Rate of attendance at first level: ratio of enrolment at first level to population 5-14 years of age;
- Rate of attendance at second level: ratio of enrolment at second level to population 15-19 years of age;
- Rate of attendance at third level: ratio of enrolment at third level to total population, multiplied by 100,000.

(2) Rapport des Nations Unies sur la Situation Sociale dans le monde, chapitre enseignement; p. 73; New York, 1957.

and anomalies of the educational system in Zaire during that period. Firstly, because school attendance was not compulsory, there was no fixed age for enrolment and, consequently, age at enrolment varied considerably between regions and mostly between types of population settlement. Related to this, is the markedly lower percentage of school attendance for the age-group 5-9 years compared to the age-group immediately above, certainly reflecting the fact that few children were then enrolled at age 6 and, in rural areas particularly, the majority started school only around age 10 years or above. This, in the face of numerous sub-grade schools,was largely responsible for the apparently high estimate of school attendance recorded for the 10-14 years age-group. Secondly, the problem of retardation also meant that many persons reported in the first or second level were in fact more than 5 years above the upper limit of the age group of reference. The survey report suggested that about 15 per cent of children in primary school were over 15 years of age. There is, however, ample evidence to demonstrate that age disparities within different levels were much greater than the survey report reveals. Georis and Agbiano[1] estimated that 64 per cent of total primary school population were in the first two years; and also that the first year primary comprized two and a half times the number of boys and one and a half that of girls in the corresponding age classes. Such disparities indicate considerable retardation, and the practice of repetition of grades, and they mostly demostrate that third year primary could not receive so many children, which was to be expected given the very large number of schools with only two years primary education.

Table 3.12 (p. 250) presents estimates of school attendance by rural and urban population. Tabulated data show that 53 per cent of the children of both sexes aged 5-9 years who lived in urban centres did attend school while the corresponding proportion in rural areas was only 21 per cent. Nearly 78 per cent of all urban children aged 10-14 years were attending school in comparison to 50 per cent in the rural areas. The gap between school attendance in urban and rural areas was less substantial among those aged 15-19 years; a situation whic indicated recent and rapid development of education in urban

---

(1) Georis, P. and Agbiano, B.: Evolution de l'enseignement en République Démocratique du Congo depuis l'indépendance; op. cit., p. 71.

Table 3.11

Percentage of Age-Groups Attending School,
Zaire, 1955-8 Survey

Age-Group	Male	Female	Both Sexes
5 - 9	33.2	16.6	24.7
10 - 14	69.2	31.5	52.6
15 - 19	42.9	6.5	23.3
20 - 24	2.6	0.1	1.2
25+	0.0	0.0	0.0
Average	18.0	6.2	11.9

Table 3.12

Rural-Urban Estimates of School Attendance
by age and sex; Zaire, 1955-8 Survey

Age-Group	Rural		Mixed		Urban	
	Male	Female	Male	Female	Male	Female
5 - 9	29.0	13.0	39.0	18.0	60.0	46.0
10 - 14	67.0	28.0	73.0	37.0	87.0	66.0
15 - 19	44.0	6.0	36.0	8.0	50.0	9.0
20 - 24	3.0	0.1	1.0	0.2	2.0	0.2
25+	0.0	0.0	0.1	0.0	0.5	0.0
Average	18.0	5.0	15.0	7.0	21.0	16.0

Table 3.13

PERCENT POPULATION ATTENDING SCHOOL BY REGION AND AGE-GROUP, ZAIRE, 1955-8 SURVEY

	5 - 9			10 - 14			15 - 19		
	M	F	M+F	M	F	M+F	M	F	M+F
1. Region of Kinshasa	47	34	40	79	58	69	32	10	22
2. Region of Bas-Zaire)									
)	36	18	27	73	39	57	45	12	28
3. Region of Bandundu)									
4. Region of Equateur	23	6	14	61	13	41	46	4	25
5. Region of Haut-Zaire	38	17	27	71	11	54	43	6	21
6. Region of Kivu	29	7	14	59	16	39	32	3	15
7. Region of Shaba	44	29	36	71	38	56	43	7	21
8. Region of Rasai-Oriental)									
)	39	23	31	78	43	63	55	9	32
9. Region of Kasai-Occidental)									

areas. In mixed areas, as is often the case, percentages of school attendance for all age groups were intermediate, but closer to those prevailing in rural areas. By sex, opportunities for school attendance differed greatly in all types of settlement, showing an unfavourable situation for females. However, data related to age-group 10-14 years or females born around 1940-45 support the inference that the proportion of females attending school was rapidly increasing, especially in urban centres where most schools were located; the data also support the inference that there were larger discrepancies in school attendance among females than among males in all parts of the country.

Regional differentials in proportions by sex and age-group of population attending school exhibit patterns fairly similar to those already observed as regards levels of literacy and educational attainment, as can be seen in table 3.13 (p. 251). Recorded percentages of school attendance were highest for the region of Kinshasa, except for the age-group 15-19 years, for which the highest estimates were observed for the region of Kasai. For both sexes and all age groups (5-9, 10-14 and 15-19 years), school attendance was above the country's average in the regions of Bas-Zaire, Bandundu, Kasai-Oriental and Kasai-Occidental. On the whole, the lowest estimates of school attendance were recorded for the regions of Equateur and Kivu where they were particularly unfavourable for female pupils and students.

It may well be pointed out that, more than nuptiality and labour force, educational statistics from the 1955-8 survey were to change profoundly in the period immediately following. On the one hand, the years 1957-9 witnessed considerable efforts to generalize primary education and to extend secondary as well as vocational schools. On the other hand, post-independence events seriously disrupted existing facilities in some areas, particularly in the regions of Bandundu, Haut-Zaire and Kivu. Moreover, since the mid-sixties, various radical measures have been taken, including a "national emergency plan" to fully generalize elementary education, to expand secondary education within reformed structures and programmes, and also to quantitively develop tertiary education. Problems of current educational policies are discussed in the final chapter of this study with other implications of the projected population development.

CHAPTER IX

ANALYSIS OF THE AGE-SEX DISTRIBUTION

The age-sex distribution of Zaire's population from the 1955-8 survey was quite satisfactorily studied by Romaniuk previously.(1) However, it has appeared useful for this study to carry out a critical examination of those previous findings, and in particular to provide from past demographic trends those factors overlooked in explaining the observed peculiarities.

1. The Methodology and Base Data

In analysing the age data from the survey, Romaniuk first remarked that information on ages in Zaire, as elsewhere in Africa, is incomplete and inaccurate; then, assuming that the age distribution was largely determined by previous trends in fertility and mortality similar in level and pattern to those in force at the time of the survey, he compared the reported age distribution with the stable population model and summarized observed deviations and their probable causes. The validity of the assumption of stability, the interpretation of recorded deviations and appraisal of conclusions so derived are discussed later in this chapter, which undertakes the same analysis from a different methodological approach.

1.1 Methodological approach

Even though incompleteness and inaccuracy of information on ages is common in Africa, the nature and extent of these defects certainly vary from one area to another; it is thus important to pin-point them specifically when studying one particular country, as is now the case. In addition, there is a further advantage in inspecting and testing the data accuracy of reported statistics before comparison with any hypothetical model, not only because known facts about the country may provide useful indications of expected genuine structural irregularities

---

(1) Romaniuk, A.: The Demography of the Democratic Republic of Congo; in Brass, W. et al., The Demography of Tropical Africa; op. cit., p. 257-282.

but also because comparison with hypothetical models reveals more the effects of inaccurate reporting than the irregular demographic trends. Thus, this chapter is concerned first with evaluation of the base data and examination of the various tests of data accuracy, before going on to appriase the results both for Zaire as a whole and for its rural-urban components. Differentials in age structures for the low and high fertility areas are discussed in Chapter XI; the correction and adjustment of observed age data are discussed in Chapter XIII, which carries projections with a new base line from mid-1956.

1.2 Evaluation of reported statistics

The survey report stated that exact age[1] was known only for small proportions of the population per sample universe, ranging from 11 per cent for Boende zone in Equateur to 33 per cent for Mbanza-Ngungu zone in Bas-Zaire. For the entire country, exact age was recorded for 90 per cent of children reported under one year of age, for 10-37 per cent of those classified 10-14 years of age, for 2.5-11 per cent of persons aged 15-29 years and for less than 0.5 per cent of persons over 30 years of age.[2] Percentages were much lower for persons in rural areas than urban centres, and also generally much lower for females than for males. In most cases and for nearly all adults, survey enumerators were instructed to estimate individual ages by various criteria, the most common of these being (i) the number of per capita annual taxes paid, as men were liable to this from 18 years of age and their identity booklets were stamped in lieu of receipt, (ii) the approximate age indicated in the identity booklet, especially if this was acquired at a younger age, (iii) the comparison of individuals by age-class, provided the ranks contained one person of known age, (iv) for women, the number of children ever born plus age and intervals between successive births, and (v) the calendar of historical events.

As elsewhere in Africa, these methods certainly resulted in some age mis-statement especially for older persons. Indeed, in a recent

---

(1) Presumably to the month and day.

(2) This reveals how, in practice, the continuous registration system bore deficiencies despite 45 years of existence and purported annual checks. The more so as, based on literacy statistics, the population of Mbanza-Ngungu was among the most advanced in the country.

study of digit preference and avoidance in census age distribution of 31 African countries, it was found that this was the most common of the irregularities in age reporting with a level of the Myers' Index rising to 19.9 among non-Islamic populations.(1) This study revealed the greatest amount of heaping at ages ending in 0, followed by preference for ages ending in 5, before those ending in the digits 2, 4, 6 and 8; consequently, ages ending in 1, 3, 7 or 9 were avoided or underselected. In that study, for all countries neighbouring Zaire, the common pattern of digit preference was similar to the standard finding.

Van de Walle argued that "age was directly reported in classes of five and ten years during the 1955-8 survey of Zaire, so that the heaping effects were largely eliminated - especially for age groups as large as ten years".(2) But an age was to be estimated before a person was placed in an age class, and the heaping at ages 0 and 5 surely remained a serious problem; very likely, therefore, age reporting from the sample survey of Zaire remained sensitive to the quality of enumeration and data collection procedures, and bore distortions similar in patterns of biases found in other censuses or inquiries in Africa. Such a conclusion seems largely justified by the shape of observed population pyramids, as shown in graph 3.7 (p. 258), and by various tests of data accuracy.

2. Analysis of Reported Age-Sex Composition

As already mentioned, the age data of the 1955-8 survey were enumerated by quinquennial groups up to age 34 years and by decennial classes for ages above, with a residual group of 55 years and above. Such a classification imposes limitations (or requires modifications)

---

(1) Nagi, M.H., Stockwell, E.G. and Snavley, C.M.: Digit Preference and Avoidance in the Age Statistics of Some Recent African Censuses; Some Patterns and Correlates; Int. Statis. Rev., Vol. 41, No. 2, 1973; p. 165-174; Longman Group Ltd., Great Britain. See also United Nations Demographic Yearbook, 1962; p. 15; on sources of error and bias in age reporting.

The study by Nagi et al. suggested other irregularities, all more pronounced among women than men, and tending to increase with age: deficiency of infants and very young children, overstatement of seniority among the very oldest ages and also overstatement of certain socially significant ages.

(2) Van de Walle, E.; in The Demography of Tropical Africa; op. cit., p. 36.

for analytical computation of, for example, age and sex ratios. Thus, for purposes of analysis, the decennial age-groups have been split into quinquennial ones by an interpolation formula, the Newton Forward Difference formula, assuming second differences constant or a second degree curve between three cumulative values of populations up to age 34, 44 and 54 years.(1)

2.1 Data inspection and population pyramids

Since Zaire has a high birth rate, one should expect its age structure to show successive age-groups gradually smaller than the preceding ones. As can be seen at a glance in table 3.14 (p. 257) and graph 3.7 (p. 258), the male age pyramid shows a more regular shape than the female one; this reflects, without doubt, an improvement in the estimation of ages for adult males, very probably thanks to the criterion of taxpaying ages, though all did not in fact pay tax. However, both male and female age distributions show extreme irregu-

---

(1) This is illustrated as follows:

Up to and age	Pop.	Δ	Δ^2
X_1 (34)	$f(x_1)$		
X_2 (44)	$f(x_2)$	$f(x_2)-f(x_1)$	$f(x_3)-f(x_2)-f(x_2)-f(x_1)$
X_3 (54)	$f(x_3)$	$f(x_3)-f(x_2)$	

Forward Difference Formula: $f(x_o) = f(x_1)+Z\Delta+\frac{1}{2}Z(Z-1)\Delta^2$

where $Z = \frac{(x_o-x_1)}{(x_2-x_1)}$ and x_o is a value between x_1 and x_3. Thus,

for example, $f(39) = f(x_1)+ \frac{(x_o-34)}{10} (\Delta) + \frac{1}{2} \frac{(x_o-34)}{10} \quad \frac{(x_o-44)}{} (\Delta^2)$

Since the three cumulative age values are on the same curve, the fitting of interpolated data is smooth, assuming tentatively that group totals are statistically correct.

In previous and some later sections, reported data were not split because there are other uses of the raw statistics. For example, if one wishes to find out the proportions married by age, the use of smoothed age data could unduly inflate earlier ages, as in the following case: according to the standard smoothing procedure, one-half of the population of age, say 15-19, would be put in age-group 15-17.5 and subsequently a majority of the married females of age 15-19 would necessarily belong to ages 18-19. The use of smoothing data would, therefore, unduly inflate the number of married females in age-group 15-17.5.

Table 3.1 4

AGE-SEX DISTRIBUTIONS AND SEX-AGE RATIOS FOR TOTAL POPULATION*, ZAIRE, 1955-8 SURVEY

AGE	Males		Females		Both Sexes		Sex-Ratios	Age-Ratios**	
	Numbers	%	Numbers	%	Numbers	%		Males	Females
0-1	256,336	2.0	264,863	2.1	521,199	4.1	96.8	-	-
1-4	794,514	6.3	834,245	6.6	1,628,759	12.9	95.2	-	-
5-9	803,448	6.3	837,896	6.6	1,641,344	12.9	95.9	92.8	102.3
10-14	681,197	5.3	538,478	4.2	1,219,675	9.5	126.5	112.9	82.3
15-19	402,800	3.2	470,934	3.7	873,734	6.9	85.5	72.0	87.1
20-24	437,332	3.4	542,794	4.3	980,126	7.7	80.6	94.0	101.0
25-29	527,305	4.1	603,427	4.7	1,130,732	8.8	87.4	112.6	97.7
30-34	499,028	3.9	692,947	5.4	1,191,975	9.3	72.0	107.4	126.8
35-39	413,486	3.2	489,908	3.8	903,394	7.0	82.1	91.0	89.6
40-44	372,537	3.0	400,803	3.2	773,340	6.2	95.8	104.7	100.0
45-49	331,591	2.6	311,700	2.5	643,291	5.1	106.4	98.3	100.0
50-54	290,642	2.3	222,596	1.7	513,238	4.0	130.6	82.6	68.2
55+	372,090	2.9	340,693	2.7	712,785	5.6	109.2	-	-
TOTAL	6,182,306	48.5	6,551,284	51.5	12,733,590	100.0	94.4		

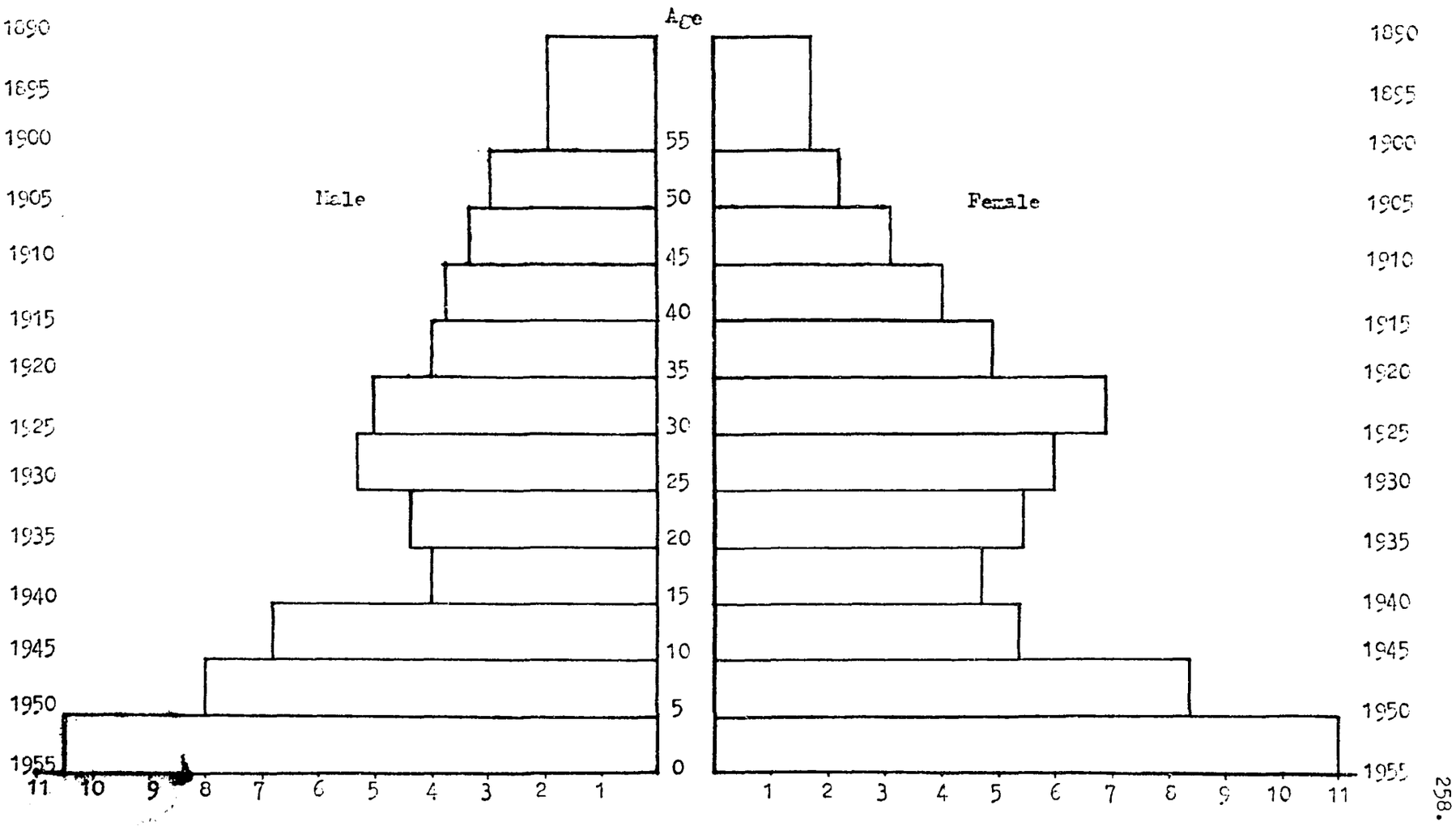
Source: The Summary Report, p.29.

Notes : * Total representing the de facto population but differing (by lowering the recorded figure) from the total reported for reasons not available or clear in the Summary Report.

** Age-groups 0-1 and 1-4 considered together.

Graph 3.7

POPULATION PYRAMIDS FOR ZAIRE, 1955-8, BASED ON THE SAMPLE SURVEY



Population in Hundred Thousands

larities, as fewer persons are reported at age-group 15-19 years than either at 20-24 for both sexes, or 25-29 for females.(1) According to the survey report, this observation received much attention but it could not be established whether it reflected the actual situation or resulted from erroneous age reporting. A possible explanation of these irregularities would be a marked birth deficit especially during the World War II years or increased mortality during those years or, very probably, a combination of both factors. It may be remarked that any marked birth deficit due solely to the World War II conditions would have continued for one or two years after 1945 and affected to some extent also the age-group 5-9 years which shows a fairly good ratio in comparison with age-group 0-4 years. Moreover, a birth deficit as the sole cause of the irregularities would have affected both sexes in the same way and in fairly similar proportions. However, inspection of the age-group 25-29 reveals additional peculiarities: though only partly true in the case of males, females aged 30-34 years outnumber not only those in the age-group 25-29 but also those in age-groups 20-24, 15-19 and 10-14. In the absence of known historical events affecting it, this sudden increase in proportions of females at ages 30-34 years very likely reflected age misreporting and would suggest that age reports for females bore more biases than those for males.

Though no final conclusion can be reached at this stage, it may further be remarked that the female age distribution showed small deficits for ages 10-14 and 15-19 years and a marked excess of women in their early reproductive period particularly between 20 and 34 years, whereas the male age distribution exhibited deficits for ages 15-19 and 20-24 years and a relatively small excess for ages 10-14, notwithstanding the fact that male ages may also have been mis-stated in a different manner for adult ages.(2) Finally, for all ages above 45

---

(1) The same holds true for rural, mixed and urban sex-age pyramids, which are shown in graph 3.10 (p. 277).

(2) It is often argued, for example by Van de Walle, that "the shortage of persons in their teens and a deficit extending to age-group 20-24 years for males as well as, by comparison, an inflation of adult ages constitute a characteristic feature and systematic bias in the recording of ages in tropical Africa". Van de Walle, E.: Some Characteristic Features of Census Age Distribution in Illiterate Populations; American Journal of Sociology; Vol. LXXXI, No. 5, March 1966; p. 549-555. This question is of considerable importance and is discussed later (see p. 269).

years, statistics showed an excess of males over females, in contrast to the general pattern of higher male mortality, especially at older ages. In relation to this, deviations from the world-wide patterns are possible, especially in the case of Zaire where the age group in question was fairly large as it included all persons reportedly aged 45 years and over. This observation is probably the most difficult to explain since available information does not suggest higher mortality of women as compared to men and also given the fact that male migrant labour from abroad was relatively small to produce such an impact on adult and old age persons. However, the observed deviation should not obscure the fact that the overall shape of Zaire population pyramids indicated a young population with high growth potential, the width of the base layer suggesting high birth and fertility rates for the country as a whole.

2.2 Ratios computed from reported statistics

Another approach for examining the accuracy of age statistics is to compute sex ratios for each age group and also age ratios for each separate sex category.(1) In a population not subject to major migratory movements, sex ratios should ordinarily change only very gradually from one age group to another, as they are determined mainly by the sex ratio at birth and sex differences in mortality at various ages; while age ratios should ordinarily deviate very little from 100, except at advanced ages or as a result of major fluctuations in past death rates as, for example, in the case of significant military casualties.(2) Sex and age ratios from reported statistics of the 1955-8 survey are computed in table 3.14 (p. 257) and illustrated in graph 3.8 (p. 261) for Zaire as a whole, and appendices B13 (p. 485) to B15 (p. 487) show the corresponding estimates for rural, mixed and urban populations.

(i) The sex ratio at birth

For Zaire as a whole, the sex ratio at birth was estimated at 97; the estimate was lower for the rural population (95), intermediate for

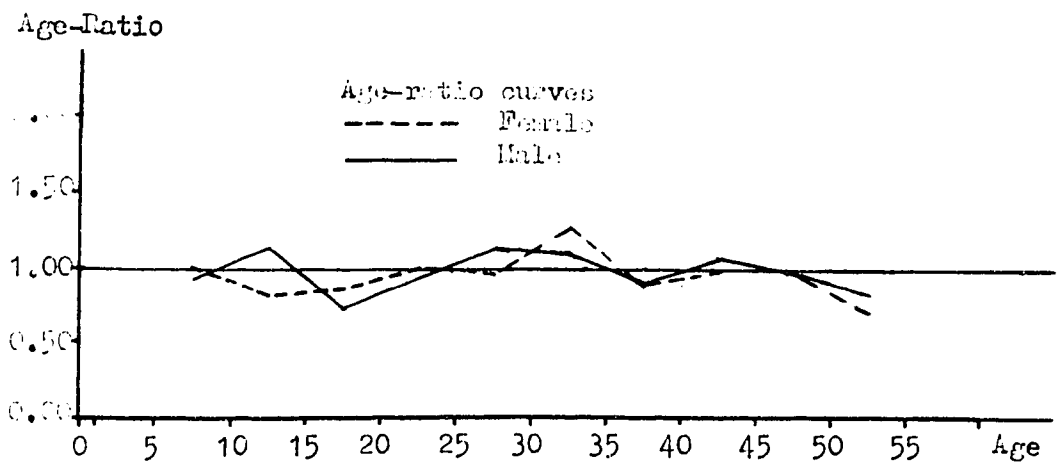
---

(1) The sex ratio being defined as the number of males of a given age per 100 females in the same age group; the age ratio is the number of persons of a given age group per 100 of the mean of numbers of the two adjoining age groups of the same sex.

(2) See United Nations: Manual II; op. cit., p. 39-40.

Graph 3.8

AGE AND SEX RATIOS FOR TOTAL POPULATION; ZAIRE, 1955-8 SURVEY



the mixed population (100) and higher for the urban population (101). Because there is no evidence for Zaire that female children are preferred to male children, suggesting that they would be recorded more completely, it may be inferred that survey data bore infant under-enumeration or mis-reporting affecting more males than females, or again that infant mortality for males was much higher than for females. Sex ratios for ages 0-1, 1-4 and 5-9 years show that in all populations, except the rural one, recorded figures decrease fairly smoothly, demonstrating consistency with low sex ratio at birth. Obviously, this dismisses the significance of a hypothetical early child age mis-reporting with transfer to adjoining ages as suggested by Van de Walle,(1) the more so as exact age for children aged 0-1 years was known for about 90 per cent of reported children. It may also be noted that, though recorded sex ratios do not rise up to or above unity until ages 10-14, as in most African countries, sex ratios based on children ever born were remarkably above unity.

In view of the above considerations, Zaire's low sex ratio at birth is to be explained primarily by under-enumeration of children with greater effect on males, rather than differential mis-reporting of boys as hypothesized by Van de Walle.(2) Very probably, this under-enumeration related to those children who died shortly after birth. Indeed, as shown further, Zaire's reported death rate under one year was only 104 per thousand live births while the estimated infant death rate amounted to 164; it is thus very likely that about 90 per cent of those omitted deaths were children born during the preceding year, and that many were probably first month deaths.(3) It should be remembered that there existed, on average, by 1955-8, one registration office for over 64,000 inhabitants or for an area of approximately 1,230 square kilometres; thus, despite existing regulations, especially

---

(1) Van de Walle, E.: Characteristics of African Demographic Data; in The Demography of Tropical Africa; op. cit., Chapter 2, p. 34.

(2) Ibid., p. 48.

(3) For Zaire the sex ratio of children reported as having died under age one during the year before the survey was 109, a figure below the world pattern of 110-135. Related to this, it is pertinent to remark that in most tribes of Zaire, male children are generally circumcised within a period of one to four weeks after birth and traditional conditions under which this operation is performed are such as to expose the infant to a high risk of tetanus infection with fatal consequences.

in rural areas, it is very probable that deaths in infancy were not necessarily registered or declared afterwards.

Clearly, an adjustment of the sex ratio at birth for these deaths in infancy and the likely hypothesis of omitted births would shift the recorded figure close to the world pattern of 105. While most partial surveys undertaken in Zaire before this mid-century indicated early childhood sex ratios below unity and sex ratios at birth between unity and the average expected figure of 105, more recent surveys showed early childhood sex ratios above unity implying a sex ratio at birth averaging the expected world pattern. For example, in the 1967 survey of Kinshasa, with a population of 865,460 persons (about 5 per cent total population) the sex ratio for age-group 0-4 was 103, clearly implying a sex ratio at birth averaging 105.(1) Such an improvement in the sex ratio at birth must surely have resulted from better enumeration of births and eventually much less infant mortality due to insanitary circumcision, rather than changing biological conditions of Africans who, reportedly, demonstrated sex ratios at birth below the world average in almost all areas where they constituted a majority of the population.(2)

(ii) The general sex ratio

The sex ratios for persons above ten years through old ages show large fluctuations with two peaks approximating 130 at age-groups 10-14 and 50-54 years as well as two marked falls to levels of 81 and 72 respectively at age-groups 20-24 and 30-34 years, as shown in table 3.14 (p. 257). These marked ups-and-downs are incompatible with recorded figures for adjacent classes and certainly reflect to varying degrees the erroneous enumeration and age mis-reporting of the population for these age groups.

Very probably, the excess of reported males at ages 10-14 reflects largely a greater under-enumeration of females than males at these ages, resulting mainly from a shift upwards of females married before age 15 years; there may also be a shift downwards of males above age 15 years to meet requirements for school age enrolment or to avoid answering labour force questions.(3) The excess of males at ages above 45

---

(1) Etude Socio-Demographique de Kinshasa en 1967; Rapport General, p. 30.

(2) Van de Walle, E.: in The Demography of Tropical Africa; op. cit.,p.38.

(3) The effects on fertility measurement of these shifts upwards and downwards are discussed in the next chapter in the section related to fertility analysis.

years may have resulted to some extent from previous sex-selective immigration of male workers from neighbouring countries, as suggested by the sex ratios for these ages in areas bordering Angola, Zambia, Rwanda, Burundi, Uganda and Sudan, especially in areas where large plantations and mining companies were established during the early decades of this century; there may also be some under-enumeration of those old women living on the outskirts of villages. The fall at ages 20-24 is due to under-enumeration of males at these ages who avoided survey enumeration for labour force purposes and in some degree to overestimation of ages of women with more than one child, who were still in fact aged less than 20 years. The excess of reported women at age-group 30-34 is likely again to be an overestimation, in part for the same reasons as in the 20-24 year age-group. The relatively low sex ratio for all ages, that is 94, is then to be explained by the under-recorded sex ratio at birth and quite normal differential in mortality at subsequent ages.

(iii) The age ratios

As expected, the observed age ratios show characteristic fluctuations of age reporting similar to those just discussed with regard to the sex ratios. For males, age ratios are high at age-groups 10-14 and 25-29 years, where they amounted to 113, indicating that excessive numbers of persons were reported in these age-groups by comparison with groups just higher or lower. This is evidenced by the significantly low ratios of 72 and 94 recorded for age-groups 15-19 and 20-24 years respectively. For females, the ratio for age-group 15-19 is 102, despite the fact that rates of mortality in infancy and early childhood are higher than in later childhood, especially under conditions of high mortality as is the case of Zaire. Females of age-groups 10-14 and 15-19 years show substantially low age ratios, indicating deficient numbers of persons reported in these age-groups; while, in contrast, the age-group 30-34 years shows an extremely high ratio of 125, clearly demonstrating an excessive overstatement which tends to compensate earlier understatement.

A comparison of the age ratios obtained for the two sexes is obviously of some significance. The graphical illustration clearly shows that these age ratios are unequal at all ages, indicating different age mis-statement for male and female populations, except that

both series have their low level at age-group 15-19 years with greater deficiency for males than for females as these age ratios amounted respectively to 72 and 87. The reverse situation is recorded at age-group 30-34 years where the male ratio is 107 while the female ratio rises to 127.

2.3 Testing age-accuracy by means of an index

Several methods exist for testing the age-accuracy by means of an index, namely, the Whipple's Index, the Myers' Index, the Bachi's Index and the United Nations Secretariat Method.(1) The first three of these methods, however, require classification of age data by single year of age, as they measure the extent of digit preference and avoidance rather than age-accuracy in a wider sense. The United Nations Secretariat Method, which applies to grouped age data,also has the advantage over the other three in that the resulting index is affected by differential omission of persons in different age-groups and by tendentious age mis-statement as well as by digit preference and avoidance; this method is therefore a more reliable reflection of the general accuracy of age statistics.

As illustrated in table 3.15 (p. 266), the United Nations Secretariat Method is based on differences between sex ratios for successive quinquennial age-groups and deviations of quinquennial age ratios from 100 up to age 70 years. The resulting values of scores are as follows:

Sex Ratio Score	:	16.3
Age Ratio Male Score	:	10.7
Age Ratio Female Score	:	10.5
Joint Score	:	70.1

With regard to the validity of this method as applied to Zaire, it is to be noted that total population of the country was large enough to permit neglecting any effect of chance fluctuations resulting from small populations. However, there remain some weaknesses in this method: the resulting index or joint score is not very exact and should be interpreted as an "order of magnitude" rather than a precise

---

(1) See: Accuracy Tests for Census Age-Distribution Tabulated in 5 and 10 year Groups; in United Nations Population Bulletin, No. 2, October 1952, p. 59-79; and also in United Nations Manual II, op. cit., p. 40-43.

Table 3.15

AGE-ACCURACY INDEX BY UNITED NATIONS SECRETARIAT METHOD FROM STATISTICS OF THE 1955-8 SURVEY OF ZAIRE

Age	Reported Numbers		Analysis of Sex-ratios		Analysis of Male Age-ratios		Analysis of Female Age-ratios	
	Males	Females	Ratios	Successive Differences	Ratios	Deviations from 100	Ratios	Deviations from 100
0-4	1,050,850	1,099,108	95.6	-	-	-	-	-
5-9	803,448	837,896	95.9	+ 0.3	92.8	- 7.2	102.3	+ 2.3
10-14	681,197	538,478	126.5	+30.6	112.9	+12.9	82.3	-17.7
15-19	402,800	470,934	85.5	-41.0	72.0	-28.0	87.1	-12.9
20-24	437,332	542,794	80.6	- 4.9	94.0	- 6.0	101.0	+ 1.0
25-29	527,305	603,427	87.4	+ 6.8	112.6	+12.6	97.7	- 2.3
30-34	499,028	692,947	72.0	-15.4	107.4	+ 7.4	126.8	+26.8
35-39	401,986	489,908	82.1	+10.1	91.0	- 9.0	89.6	-10.4
40-44	384,037	400,803	95.8	+13.7	104.7	+ 4.7	100.0	0.0
45-49	331,587	311,700	106.4	+10.6	98.3	- 1.7	100.0	0.0
50-54	290,646	222,596	130.6	+24.2	82.6	-17.4	68.2	-31.8
55+	372,090	340,693	109.2	-21.4	-	-	-	-
TOTAL (Irrespective of sign):				179.0		106.9		105.2
MEAN (Total divided by 10) :				16.3		10.7		10.5
INDEX (3 x 16.3) + (10.7 + 10.5):					70.1			

measurement; further, exceptions must be allowed for in the case of true irregularities in certain age-groups due to factors such as temporary birth deficits and migration which were actually noted for Zaire before the survey. We will assume that a joint score less than 20 reflects good data, while a joint score over 40 indicates poor data. Thus, the joint score of 70 recorded for statistics of the 1955-8 survey may be interpreted as reflecting relatively poor quality of data.

2.4 Comparison of survey figures with stable models

There are various publications which discuss in detail the concepts and applications of stable and quasi-stable population models; in practice, however, problems arise with regard to criteria to be used for selecting a model in a scientific manner for appropriate comparison.(1) As mentioned earlier, the previous analysis of Zaire's age data, undertaken by Romaniuk, was carried out solely through comparison of reported statistics with population models, assuming, not without reservations, stability of past trends in levels and patterns of fertility and mortality until the time of the survey. In reality, as has been shown in the early part of this study, the degree of disruption of social and family life in most parts of the country around the turn of the century was such that fertility and mortality could not be assumed constant. Further, in the second part of this study, two tendencies were clearly isolated with regard to fertility changes: first, a generally slow decline in birth rates up to the end of World War II, followed by a rising trend in birth rates during the years

---

(1) See especially United Nations: The Concept of a Stable Population; op. cit.

By definition, a stable population is a hypothetical model of population which has experienced constant levels of fertility and mortality for an indefinite period of time in the past. It has been proved that, assuming zero migration, stable populations will show a constant death rate, a constant birth rate, a constant rate of increase and a constant age distribution. Thus, any one of these characteristics can be derived from data on the other two, provided that fertility and mortality have remained constant for a sufficiently long period. Quasi-stable populations, i.e. populations with constant fertility and declining mortality, have been found to show close similarity to stable populations, as the impact of a decline in mortality causes only slight changes in population characteristics. Hence, populations with either constant levels of fertility and mortality or constant fertility and declining mortality can be roughly approximated by stable populations.

after 1945. With regard to mortality change, available information suggests three equally clear tendencies: an exceptionally high mortality level around the turn of the century, followed by a substantial mortality decline up to World War II, after which mortality continued to decline but less sharply than during the preceding period. For the different regions of the country, throughout the above-mentioned periods, levels of both fertility and mortality showed remarkable fluctuations, especially in those areas of low fertility where population decrease was actually recorded owing to higher death rates relative to birth rates.(1) Even though the recorded fertility and mortality trends remain subject to the unverifiable nature of the original data, it is most unlikely that a stable population model, which assumes constant fertility and constant mortality as well as zero migration, would approximate either the reported or the actual demographic situation of Zaire. Thus, in comparing Zaire population figures with a population model, deviations are to be expected not only on the basis of age mis-reporting but also owing to genuine peculiarities in the actual trends of changing mortality and fertility as well as some sex-selective immigration.

The hypothetical stable age distribution for comparison with reported age distribution of Zaire was selected from the Coale and Demeny sets of models and not from those established by the United Nations; this choice was justified by the accepted observation that decline in mortality in African countries has been faster than in Europe in the nineteenth century.(2) Since at least two values are necessary for selecting the appropriate models, bearing in mind that the important differences among these models occur with respect to mortality of populations below age 5 years, the hypothetical population models for Zaire were based on (a) the estimated proportion of children who die within the first five years as the index of mortality level and (b) the observed proportion of children under five years of age.

---

(1) Romaniuk, A.: Infertility in Tropical Africa; in The Population of Tropical Africa by Caldwell and Okonjo; Longmans, London, 1968; p. 215.

(2) Coale, A.J. and Demeny, P.: Regional Model Life Tables and Stable Populations; op. cit.; and United Nations: Manual IV; Part Three, Annexes; Population Studies, No. 42.

It was also found that the North family of tables approximated Zaire data better than the other families, namely West, East and South, though divergencies among these families are relatively narrow, except for old ages, in comparison to divergencies between reported age distributions and all stable distributions.

Comparison of the resulting estimates of stable with reported distributions is shown in table 3.16 (p. 270) and illustrated in graph 3.9 (p. 271), and the nature of divergencies may be summarized as follows. For both males and females, age 25 years seems to be a dividing point in reported data: below this age, there is a deficit of males starting at age 15 years, while the deficit for females starts earlier at age 10 years; above 25 years, there is an excess of males up to age 54 years followed by a deficit after age 55 years, while the excess of females ceases earlier at age 44 years followed by a deficit of females for ages over 45 years. Also notable are the facts that male ages show the largest deficit of all at age-group 15-19 years with the lowest ratio of reported to stable population amounting to 0.63, while female ages show the largest excess at age-group 30-34 with the highest ratio of reported to stable population reaching 1.61. Without doubt, erroneous enumeration of the population and age mis-reporting substantially affected the reported data and an adjustment would improve their shape. But any adjustment will not completely eliminate the observed irregularities, especially since they seem common to many African countries, reflecting not only errors and biases in reporting but also true demographic trends as discussed later in this chapter.

2.5 Comparison of survey data with the so-called African pattern

Some additional idea of the degree of reliability of the age-sex data of Zaire can be gained by comparison with the so-called African pattern of age distribution. Indeed, summing up the errors and biases in demographic statistics from surveys of some African countries in the mid-fifties, an attempt was made, notably by Van de Walle, to derive an African pattern of age-sex distribution, according to which, "for both sexes, age distributions are characterized by an apparent shortage of persons in their teens with the male deficit extending to age-group 20-24 years, while, by comparison, the adult ages are inflated".(1)

---

(1) Van de Walle, E.: Characteristics of African Demographic Data; in The Demography of Tropical Africa; op. cit., p. 13.

Table 3.16

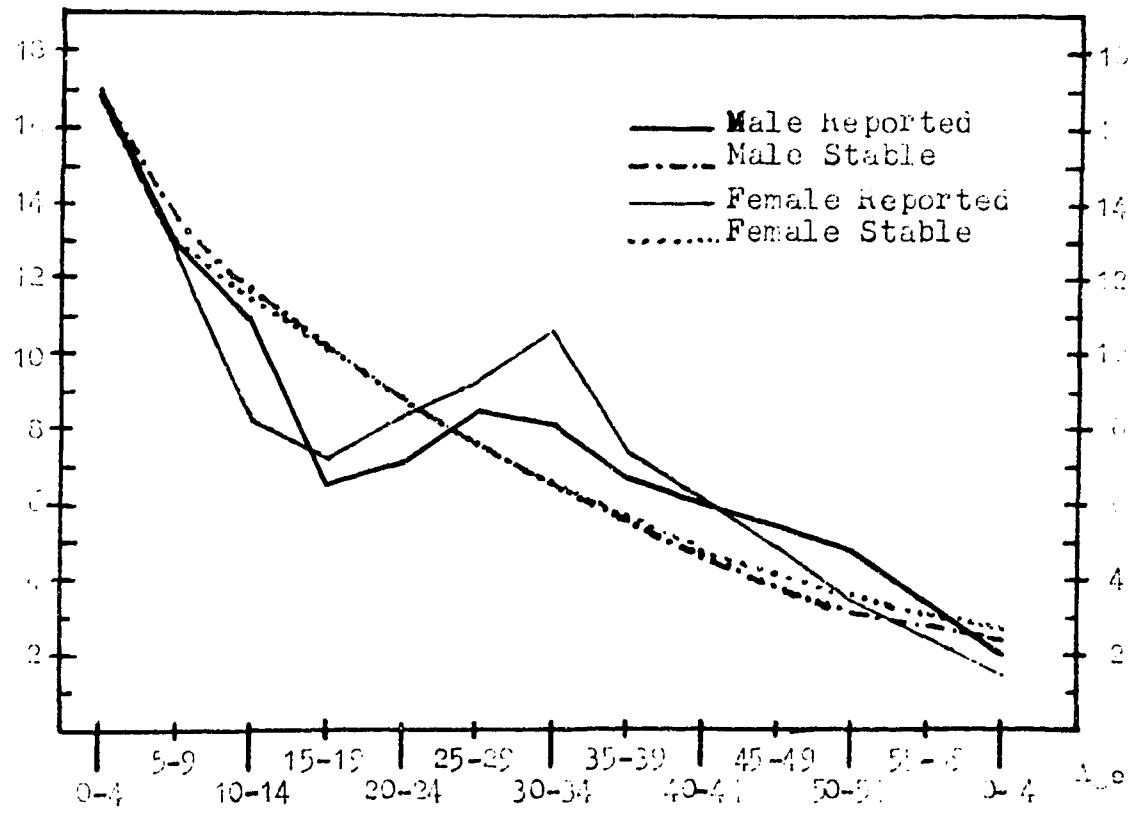
REPORTED AND STABLE[1] SEX-AGE DISTRIBUTIONS FOR ZAIRE AS OF MID-1956
(Based on the 1955- 8 Demographic Survey)

Ages	Males				Females			
	Reported Numbers (1,000)	Reported %	Stable %	Ratio R/S	Reported Numbers (1,000)	Reported %	Stable %	Ratio R/S
0-1	256	4.1	4.1	1.00	265	4.1	4.1	1.00
1-4	795	12.9	12.9	1.00	834	12.7	12.7	1.00
5-9	803	13.0	13.6	.96	838	12.8	12.9	.99
10-14	681	11.0	11.7	.94	538	8.2	11.4	.72
15-19	403	6.5	10.3	.63	471	7.2	10.1	.71
20-24	437	7.1	8.8	.81	543	8.3	8.8	.94
25-29	527	8.5	7.6	1.12	603	9.2	7.6	1.21
30-34	499	8.1	6.5	1.25	693	10.6	6.6	1.61
35-39	413	6.7	5.6	1.19	490	7.4	5.6	1.34
40-44	373	6.0	4.6	1.31	401	6.1	4.7	1.30
45-49	332	5.4	3.9	1.37	312	4.8	4.2	1.14
50-54	291	4.7	3.1	1.52	222	3.4	3.5	.97
55+	372	6.0	7.3	.82	341	5.2	7.8	.67
Zaire[2]	6,182	100.0	100.0	-	6,551	100.0	100.0	-

1. North family.
2. Not reported 2.23%, according to post enumeration survey.

Graph 3.9

REPORTED AND STABLE SEX-AGE DISTRIBUTIONS; ZAIRE, 1955-8 SURVEY



Presuming that no past events would have had the same kind of effect on age distributions collected at different dates in areas so far apart, Van de Walle argued that this pattern results from systematic biases in the recording of ages. Rather contradictorily, however, he concluded that "if information (concerning mortality and fertility) is sufficiently complete and accurate, the model stable population will better describe the actual age distribution than the recorded data".(1) Discussion on the need for and methods of adjustment of Zaire age data is carried out in a later section, whilst the present one focusses on a comparison of reported data with the purported African pattern shown in table 3.17 (p. 273).

In the first instance, it should be noted that the estimates provided in the detailed case studies which led to Van de Walle's conclusions covered only about 26 per cent of the population of tropical Africa with more cursory estimates for an additional 46 per cent.(2) Such a limited coverage evidently raises doubts as to how truly representative the purported African pattern of sex-age distributions actually is. Moreover, though data from the 1955-8 survey of Zaire contributed substantial material for the conclusion reached by Van de Walle, they nonetheless exhibited remarkable exceptions, for example, with regard to the proportion of females in their early teens and also the sex ratios for persons in middle childhood as well as old ages. Further, studies of former French colonies in Africa demonstrated that there were two clearly distinct patterns for ex-French West Africa and for ex-French Equatorial Africa, with marked transitional characteristics for Cameroon and Chad.(3) It was emphasized that, in spite of problematic and systematic errors, there were clear-cut regional patterns especially for male populations. For all countries of ex-French

---

(1) Van de Walle, E.: Characteristics of African Demographic Data; in The Demography of Tropical Africa; op. cit., p. 43-44. See also by the same author: Some Characteristic Features of Census Age Distribution in Illiterate Populations; op. cit.

(2) Lorimer, F.: The Present Situation of Demography in Africa South of the Sahara; in The Demography of Tropical Africa; op. cit., p. 10.

(3) These studies are based on surveys and censuses conducted between 1955 and 1965, especially in 1960-61. West African countries included Mauritania, Senegal, Guinea, Mali, Niger, Ivory Coast, Upper Volta, Togo and Benin; Equatorial countries related to Congo, Central Africa, Gabon, Chad and Cameroon. Ref. Institut National de la Statistique et des Etudes Economiques (INSEE): Afrique Noire, Madagascar, Comores; démographie comparée; Tome II, Paris, 1967; Chpt. IX-X.

Table 3.17

ZAIRE'S AND OTHER AFRICAN PATTERNS OF AGE-DISTRIBUTIONS COMPARED TO STABLE MODELS

Van de Walle African Pattern	Zaire Survey 1955-58	Ex-French West Africa 1955-65	Ex-French Equatorial Africa 1959-64
Male	Male	Male	Male
Overreporting ages 0 to 9 years	Slight underreporting ages below 10 years	Ages 0-9 years larger than models	Relatively fewer persons for ages 0-9 years
Shortage of persons in ages 10-19 years	Deficits below age 25 with marked minim. at 15-19 years	Marked discontinuity at age 10 years	Marked minimum for age-group 15-19 years
Deficit extending to age-group 20-24 years	Excess above 25 to 54 with marked maxim. at 50-54 years	All ages over 10 years approximate proportions in the models	Excess for adult and old ages with a maximum around 40 years
Relative inflation of persons 20-40 years with maxim. at 25-29 years	Deficit for ages 55 years and above	Gradual decrease in number of persons, less marked for ages 10-25 years	
Female	Female	Female	Female
Overreporting ages to 9 years	Slight underreporting ages below 10 years	Ages 0-9 years larger than models	Relatively smaller effective at ages 0-9 years
Shortage of persons in ages 10-19 years	Deficits below age 25 with marked minim. at 10-14 and 15-19 years	Marked discontinuity at age 10 years	Marked shortage at ages 15-19 years
Relative inflation of adult persons with maxim. at 25-29 years	Excess persons above 25 years to 49 with maxim. at 30-34 years	All ages above 10 years approximate proportion in the models but relatively smaller at ages 10-19 yrs.	Maximum effectives at ages around 35 years, i.e. later than in ex-French West Africa
	Deficits at old ages 50 years and over	Maximum effectives at age 25 years then gradual decrease to old ages	

West Africa, a clear discontinuity was found at age 10 years: above this age, number of reported persons approximated the stable distribution; in contrast, figures of persons aged 0-9 years largely exceeded the model, probably as a result of substantial mortality decline during the preceding decade. For all ex-French Equatorial countries, there were marked deficits for age-group 15-19 years, very probably due to a greater impact of the World War II effort,(1) and also excessive numbers recorded around age 40 years; it was also noted that figures of children aged less than 10 years were relatively lower than in ex-French West Africa, despite possible mortality decline during the preceding decade.(2) It is pertinent to note, however, that Zaire age distributions appeared closer to those found in the countries of ex-French Equatorial Africa, with which it shared a number of socio-cultural and demographic characteristics besides including like them part of the low fertility belt of the African continent.

The above considerations, the more so as they concerned only a small proportion of the African population, provide sufficient evidence to support the following conclusion. There is no such thing as a standard African pattern of age distribution, given the genuine peculiarities shown by large regions such as the vast national territory of Zaire, the countries of ex-French Equatorial Africa and those of ex-French West Africa. Data on the remainder of the continent are likely to provide evidence to support rather than dismiss this conclusion. An intimate knowledge of African history throughout the first half of the century indicates important developments which gave rise to conditions of markedly changing mortality and fertility at both regional and national levels. Thus, except for convenience of analysis, there is little justification in substituting stable population models for observed data. Certainly, stable population models may reveal observed irregularities but they do not automatically provide a better approximation of the actual age distributions.

It has to be emphasized, therefore, that the relative weight of age mis-statement and changing demographic trends in the statistics of African populations from surveys carried out in past decades calls for cautious adjustment procedures beyond the set provided by stable

---

(1) Fairly similar to that required from Zaire by the then colonial power.

(2) The relatively small number of children was to be expected, since most Equatorial countries shared Africa's low fertility belt.

population models, even though they can be based on these.

3. Rural-Urban Differentials in Age-Sex Composition

Since age statistics in the 1955-8 survey were originally recorded by identical procedures throughout Zaire, biases in these data, to the extent that they are related to enumeration procedures, can be assumed to be fairly similar in all the regions. Consequently, the scope of our observations in this section is limited to the investigation of variations in regional age distributions by comparison with total national population just reviewed as the standard and also to discovering what these variations seem to reflect. Table 3.18 (p. 276) and graph 3.10 (p. 277) compare age distributions in the rural, mixed and urban populations with that of Zaire as the standard. A glance at these illustrations shows a quite close resemblance in the overall shapes between the age distributions of the rural and standard populations; this is simply because most of the population is rural. In contrast, the mixed and urban populations exhibit rather similarly large divergences from the standard. In order to evaluate the extent of these apparent divergences, use is made of measured age indices, central tendency, broad age groups and ratios of child populations.(1)

3.1 Indices of relative difference and dissimilarity

The formulas for deriving these indices and the resulting figures for the rural, mixed and urban populations of Zaire are shown in table 3.19 (p. 278) and graph 3.11 (p. 279). Clearly, the rural age distributions yield relatively low figures of divergence, i.e. 4.1 as the index of relative difference and 3.6 as the index of dissimilarity. The mixed and urban age distributions, as they diverge substantially from the national standard, have indices above ten, i.e. 14.4 and 12.4 for the mixed communities, 14.2 and 12.3 for the urban centres. To a large extent the levels of mixed and urban indices reflect the similarity of the impact that the pattern of migration had on the origin and development of these segments of population settlement during the preceding decades.

---

(1) For extensive discussion on comparison of age distributions see: Shryock, H.S., Siegel, J.S. and Associates in The Methods and Materials of Demography, United States Department of Commerce, Bureau of the Census, Washington, D.C., 1973, Vol. I, Chpt. 8, p. 231-249.

Table 3.18

RURAL, MIXED AND URBAN POPULATION DISTRIBUTIONS (IN PERCENT) BY AGE AND SEX, ZAIRE, 1955-8 SURVEY

Age-Group	Rural				Mixed				Urban			
	M.	F.	M + F	Sex Ratio	M.	F.	M + F	Sex Ratio	M.	F.	M + F	Sex Ratio
0-1	1.9	2.0	3.9	96	2.4	2.4	4.8	100	2.6	2.6	5.2	101
1-4	5.9	6.3	12.2	95	6.8	7.2	14.0	95	7.7	7.7	15.4	98
5-9	6.4	6.7	13.1	97	5.8	6.3	12.1	92	6.1	6.4	12.5	95
10-14	5.7	4.6	10.3	127	4.3	3.3	7.6	126	4.3	3.4	7.7	126
15-19	3.2	3.6	6.8	88	2.8	3.9	6.7	72	3.3	3.9	7.2	85
20-24	2.8	3.8	6.6	73	5.8	5.8	11.6	100	5.6	5.6	11.2	100
25-29	3.3	4.4	7.7	73	7.1	5.9	13.0	121	7.4	5.5	12.9	135
30-34	3.3	5.6	8.9	59	6.4	5.2	11.6	123	5.7	4.4	10.1	128
35-39	3.0	4.2	7.2	70	4.5	2.7	7.2	168	3.8	2.2	6.0	174
40-44	2.8	3.6	6.4	81	3.4	1.9	5.3	180	3.0	1.7	4.7	180
45-49	2.7	2.8	5.5	96	2.3	1.1	3.4	208	2.2	1.1	3.3	193
50-54	2.6	2.1	4.7	122	1.1	0.3	1.4	380	1.3	0.6	1.9	230
55+	3.5	3.2	6.7	108	0.7	0.6	1.3	112	1.1	0.8	1.9	143
TOTAL	47.1	52.9	100.0	89	53.4	46.6	100.0	115	54.1	45.9	100.0	118

Gra h 3.10

RURAL, MIXED AND URBAN POPULATION PYRAMIDS (1%)
Zaire, 1955-8 Sample Survey.-

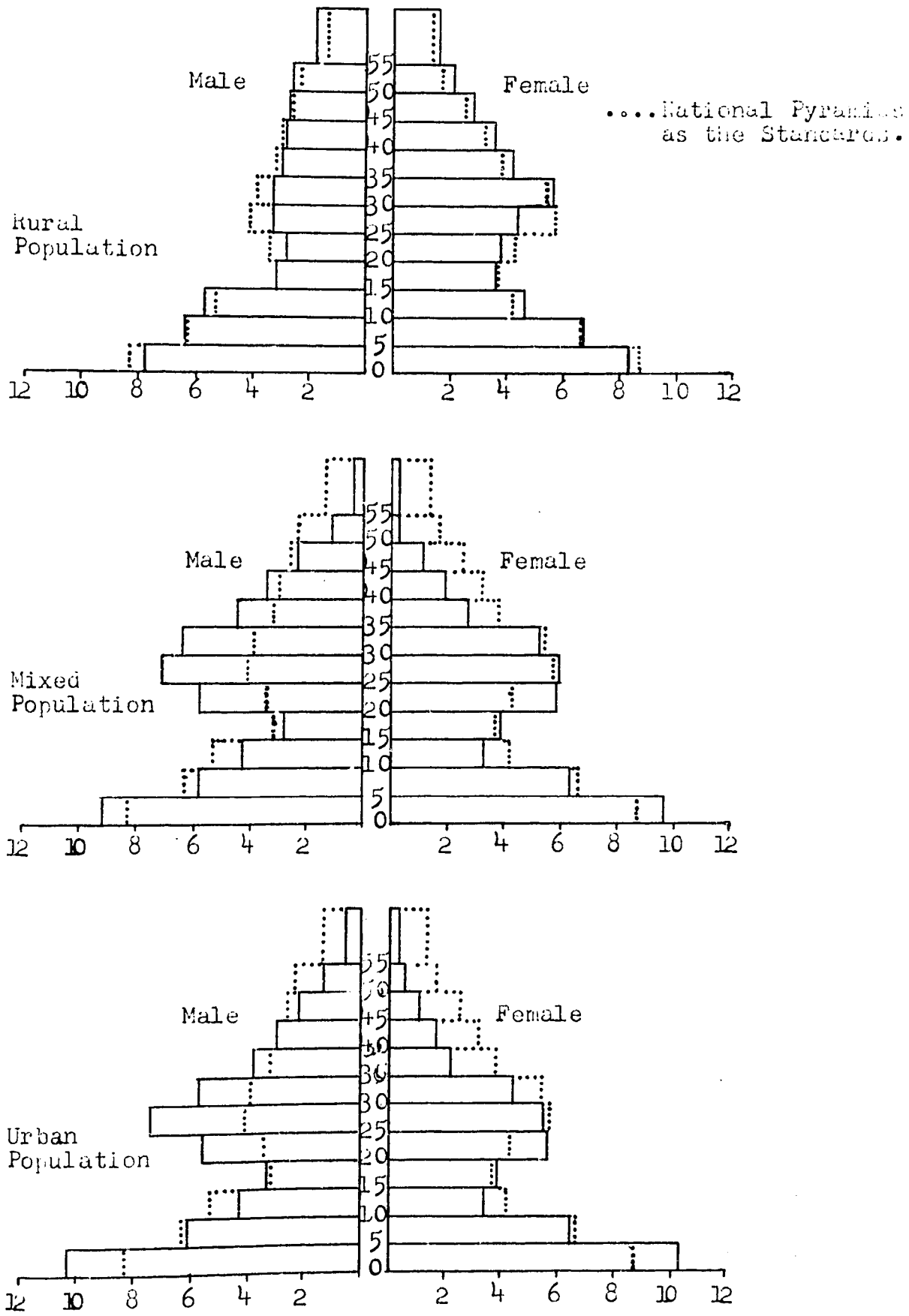


Table 3 .19

INDICES OF RELATIVE DIFFERENCE AND DISSIMILARITY FOR THE RURAL, MIXED AND URBAN POPULATIONS COMPARED WITH NATIONAL AGE DISTRIBUTIONS AS STANDARDS: ZAIRE, 1955-8 SURVEY

Age	Rural		Mixed		Urban	
	Age Specific Index	% Diff. from Standard	Age Specific Index	% Diff. from Standard	Age Specific Index	% Diff. from Standard
0-4	94.7	-0.9	110.5	+1.8	121.2	+3.6
5-9	101.6	+0.2	93.8	-0.8	96.9	-0.4
10-14	108.4	+0.8	80.0	-1.9	81.1	-1.8
15-19	98.6	-0.1	97.1	-0.2	104.3	+0.3
20-24	85.7	-1.1	150.6	+3.9	145.5	+3.5
25-29	87.5	-1.1	147.7	+4.2	146.6	+4.1
30-34	95.7	-0.4	124.7	+2.3	108.6	+0.8
35-39	102.9	+0.2	102.9	+0.2	85.7	-1.0
40-44	103.2	+0.2	85.5	-0.9	75.8	-1.5
45-49	107.8	+0.4	66.7	-1.7	64.7	-1.8
50-54	117.5	+0.7	35.0	-2.6	47.5	-2.1
55+	119.6	+1.1	23.2	-4.3	33.9	-3.7
I.R.D.	4.1	-	14.4	-	14.2	-
I.D.	-	3.6	-	12.4	-	12.3

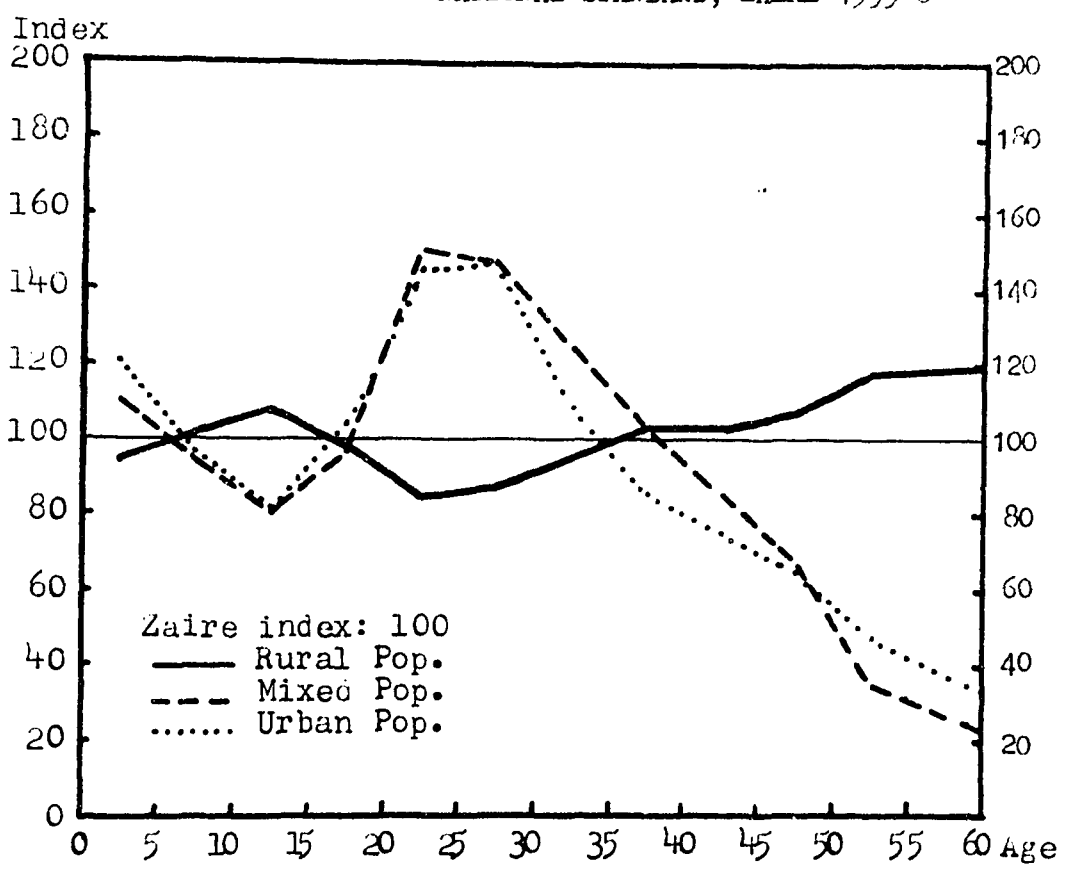
Age-Specific Index = $\frac{r_{2a}}{r_{1a}} \times 100$; with ($r_{2a}$ = % age in the distribution; (r_{1a} = % age in the standard.

I.R.D. = $\frac{1}{2} \frac{\sum[(\frac{r_{2a}}{r_{1a}} \times 100) - 150]}{n}$; with n = number of age groups.

I.D. = $\frac{1}{2} \sum(r_{2a} - r_{1a})$; based on the absolute difference between percents at each age.

Graph 3.11

AGE INDICES FOR THE RURAL, MIXED AND URBAN AREAS COMPARED WITH THE NATIONAL STANDARD; ZAIRE 1955-8



For both sexes and for the rural as against the non-rural populations, the direction of divergences from the standard is similarly opposite, except for the age-group 15-19 years for which the mixed population shows a minor deficiency as for the rural population whereas the urban population shows an excess. One possible explanation of the deficit for the 15-19 years age-group in the rural and mixed segments is a greater birth deficit from the World War II years. Another explanation could be the migration of late teens school populations from these areas into neighbouring centres,(1) as survey statistics referred exclusively to the de facto population. There is, unfortunately, no evidence in the survey report as to which people are migrating and which are not; there are, however, significant differences between various segments of population settlements, if their proportions are classified by broad age-groups.

3.2 The median age, proportions of children and aged persons

Regional differentials in age composition may also be examined with regard to some measures of central tendency and other characteristics of broad age distributions, and table 3.20 (p. 281) shows the resulting summary measures for the rural, mixed and urban populations in comparison with estimates for Zaire as a whole. The median age, which divides the population into two equal-size groups older and younger than the median provides the measure of central tendency.(2) Populations with medians under 20 may be described as young; those with medians 30 or over as old and those with medians 20-29 as of intermediate age. Zaire, with a national median of 22.5 as of mid-1956, was obviously in the third category. In comparison with the national

---

(1) In those years, it should be remembered, most rural schools included only the first two grades of primary education.

(2) It is computed with the formula:

$$Md = l_{md} + \left(\frac{\frac{N}{2} - \sum fx}{f_{md}}\right) i$$

where l_{md} is the lower limit of the class containing the middle or $\frac{N}{2}$th item, N being the sum of all the frequencies; fx is the sum of the frequencies in all the classes preceding the class containing the $\frac{N}{2}$th item; f_{md} is the frequency of the class containing the $\frac{N}{2}$th item; i is the size of the class interval containing the $\frac{N}{2}$th item.

figure, the medians for various segments of settlement did not vary appreciably; however, the urban population with a median of 20.9 appeared relatively younger than the mixed population with 22.0 and the rural one with 22.9.

Proportion of children under 15 years has also been regarded as an indication of a young or old population within the following limits: under 30 per cent as old and over 40 per cent as young.(1) Zaire as a whole, with 39.4 per cent clearly falls at the upper limit of the intermediate category; such is also the case with the rural population with 39.5 per cent, while the urban population with 40.8 per cent falls at the lower limit characterizing a population as young.

Table 3.20

SUMMARY MEASURES OF AGE COMPOSITION FOR THE RURAL, MIXED, URBAN AND TOTAL POPULATION, ZAIRE, 1955-8 SURVEY

Area	Median Age	% Total Population			Sex Ratio		
		0-14	15-49	50+	0-14	15-49	50+
Rural	22.9	39.5	49.1	11.4	103	75	114
Mixed	22.0	38.5	58.8	2.7	101	122	200
Urban	20.9	40.8	55.4	3.8	105	127	180
Zaire	22.5	39.4	51.0	9.6	102	85	118

Rural-urban differentials based on broad age distributions reveal more pertinent characteristics. For age-group 0-14 years, there are minor variations in percentages which, for both sexes, average 40 in the rural, mixed and urban segments. As expected, related sex ratios are everywhere slightly above 100, indicating a relatively small excess of male children over female ones. Percentages of children would suggest that the pattern and level of fertility and mortality during the decades preceding the survey were rather closer in all segments of settlement than had been generally assumed; but, in reality, the urban

(1) Proportions of aged persons, 65 years and over, and also the ratio of the number of elderly persons to the number of children or the aged-child ratio are still different indications of the degree to which a population is old or young, ageing or youthful: however, data from the Zaire survey are not adequate for such measurements.

and mixed age estimates are affected by the higher proportions in the fertile ages (due to immigration) thus tending to raise their birth rates.

In contrast, there are marked variations in percentages of persons at age-groups 15-49 and above 50 years. For the age-group 15-49 years, related percentage in the rural population is below 50, while the corresponding figures are quite large in both mixed and urban communities, amounting respectively to 59 and 55 per cent. The sex ratio for this age-group is 75 in the rural, 122 in the mixed and 127 in the urban settlements; this clearly indicates high sex-selective migration of males from rural to mixed and urban areas previously. As will be discussed in greater detail later, only in a few areas is the distorting effect due to migration apparent from age-sex data; this is because internal migration in Zaire generally took the form of an exodus from rural areas to neighbouring industrial, commercial and administrative centres of the mixed and urban settlements within the same politico-administrative areas.

For aged persons, 50 years and over, by far the highest proportions of persons of both sexes are found in the rural settlement totalling more than 11 per cent, compared to barely 3 per cent in the mixed area and 4 per cent in the urban segment. Related sex ratios are respectively 114 in the rural, 200 in the mixed and 180 in the urban populations. It is doubtful that age mis-statement, especially with respect to female ages,(1) could produce such considerable deviations from expected figures in all areas; the recorded excess is thus likely to reflect some true demographic trend. The most plausible explanation, as already stated, is very probably high sex-selective immigration previously of male labourers and own-account workers; the more so as the survey enumeration was a de facto count which included, as Zaireans, those Africans of neighbouring country origin.

4. Factors Affecting the Age-Sex Distributions

Several factors were mentioned in the preceding sections as probably having had consequences of one sort or another on the age-sex composition of the population of Zaire and its various regions; the present section summarizes these factors and their consequences. In his study

---

(1) It is often argued that African surveys generally tend to omit enumeration of old women, especially in the rural areas.

of the 1955-8 survey data, Romaniuk suggested that there were three main such factors, namely (a) age-selective migration, (b) erroneous enumeration, and (c) age mis-reporting.(1) It should be noted that while the last two of these factors affect the total population of Zaire, the first mentioned factor is especially true of internal migration but does not apply equally to international migration. In addition, Romaniuk overlooked the fact that socio-economic conditions prevailing in the country at the dawn of colonial rule and during the two World Wars had an undoubted impact on the age structure of the population and its subsequent rate of growth. Moreover, the changing fertility and mortality trends in the decades preceding the survey must have had the most determining consequences on the age pyramids of the country and its regions. Since fertility and mortality trends constitute primary factors affecting the age-sex composition of any population, an initial summary of these trends is in order.

4.1 Effects of changing fertility and mortality

Reasonable speculation is possible concerning the numerical levels of fertility and mortality at the time of early population estimates for Zaire, centred at 1885. However, available statistics of subsequent periods indicate noticeable changes in rates of vital events throughout the first half of this century until the time of the survey. For the country as a whole, the fertility level, with a crude birth rate of about 42 per thousand around 1925, was persistently characterized by a slight declining trend until about 1945, after which it shifted to a rising trend, yielding a crude birth rate of about 45 per thousand by the mid-fifties. Meanwhile, the mortality level moved from a high crisis rate, averaging 60 per thousand, during the years around the turn of the centruy to stabilise at around 30 per thousand in the early twenties before further but relatively slow decline to an average of 26 deaths per thousand persons by the mid-fifties. Certainly, because of their geographic location and historical and administrative circumstances, some areas, such as those of the low fertility belt, exhibited more marked changes in rates of natural increase than did other areas. The impact on age composition of changing fertility and mortality is much clearer when comparing population structures of the low and high

---

(1) Romaniuk, A.: in The Demography of Tropical Africa; op. cit., p.268.

fertility areas discussed in detail later; but it was sufficiently evident between rural areas with high mortality and low fertility and the mixed as well as urban centres with lower mortality and higher fertility.

4.2 Effects of population under-enumeration

Omissions of persons in certain areas as well as in particular age and sex groups certainly led to distorting effects on the age distributions. Differential undercount of regional populations was first suggested by the discrepancy between estimates of the de facto and de jure populations which varied by 2.7 per cent of the former, and also by the post-survey checks which suggested an under-reporting of 2.3 per cent. Secondly, as also admitted in the survey report, the complete omission of persons in certain institutions outside the sample universe in which they resided must have occurred. This would be especially true of some primitive tribes of the forests, such as the pygmies and others not under effective State administration in those years. Quoting some enumerators,Romaniuk stressed the possibility that some parents purposely sent young unmarried girls away before the arrival of the enumerators; and, probably more important, young men approaching the tax age (normally 18 years) tried to elude all official associations by avoiding both the registration system and survey enumerators.(1) Reportedly, these evasions were more prevalent among unemployed compared to employed men and also among unmarried persons compared to those who had achieved their status as adults by marriage and assumption of responsibilities for children. Since the recorded number of monogamous husbands was only 0.31 per cent short of the number of monogamous wives, the de facto deficiency was certainly largely among younger unmarried persons. Indeed, a closer examination of ratios of absent residents over de facto residents showed varying regional differences in the ratio and the age at which the resulting figures reached their maximum; but a pattern of absenteeism, concentrated at the critical age of early adulthood, 10-14 years for girls and 15-19 years for boys, was clearly noted with related ratios varying between 10.0 and 20.0.

With regard to enumeration of persons at old ages, the probability of some undercount was also reported because in certain areas old

---

(1) Romaniuk, A.: in The Demography of Tropical Africa; op. cit., p.272.

persons approaching death settled in huts at the edge of the villages in accordance with certain tribal customs, especially when such persons were under special treatment for rather unusual or contagious diseases. Finally, it should be remembered that most characteristics for demographic analysis, such as sex and age data, have been reported for 12,733,590 persons only (sometimes less), a figure which was well below the estimates of the recorded de facto population. All these understatements of population totals and differential under-enumeration must have affected the age-sex distributions, especially as available information suggested that the persons not recorded were apparently age and sex selective.

4.3 Effects of age mis-reporting

As demonstrated earlier, the measurement of age-accuracy by means of an index resulted in a high joint score of 70, while the sex and age ratios showed large degrees of fluctuation for adjacent age classes, very probably reflecting true demographic trends as well as erroneous enumeration and age mis-reporting of the regional populations and their subsequent totals. It was also noted that although the continuous registration system had been established for a considerable time, there were actually few records of date of birth for persons aged 10 years and above at the time of the survey and survey enumerators were to guess individual ages by the application of various criteria, which were often subject to misunderstanding and laxity. Because age data were originally recorded by 5-year classes, the results obtained were likely to be less mis-reported than those frequently recorded by single years in similar conditions; but, from analysis of the age and sex ratios, it appeared that various approaches to age estimates very probably led to a systematic upward or downward bias centred at ages around 25 years for both males and females.

It may well be pointed out that the high correlation between age mis-reporting and factors such as the mean age at marriage or undercount of persons in critical ages did not mean, for example, that overstatement of the age of young married persons was the major source of age variations from stable distributions. Indeed, in some areas, the deficit at age 10-14 years was nearly half the females in this age group; therefore, it could not be concluded that all the deficits consisted of married girls whose ages were overstated. Very likely,

deficits in the so-called critical ages resulted from a combined effect of undercount and mis-reporting just as they also reflected true demographic trends.

4.4 Effects of war-time conditions

It was noted also that the population of Zaire witnessed marked disruptions in social and family life as a result of the harsh conditions of the Leopoldian conquest and exploitation of the land, and also during the two World Wars, when particular efforts were required from indigenous populations under forced labour with no limitations of time and quantity. For the period up till about 1915, the margin of births over deaths was eliminated, at least for total population, either directly as a result of casualties among the indigenes or indirectly as a result of decreased birth numbers. The combined effects of war casualties and birth deficits were reflected in the proportions of both males and females at ages above 50 years. For some areas, such as the equatorial central basin and the north-east, these effects combined with pathological factors very probably resulted in long-term constraints upon fertility, and thus age-sex composition, with reciprocal effects on fertility trends.(1)

Although Zaire was not directly at war during either of the two World Wars, evidence from its contribution to the war efforts indicated that the impact on the country's demography was much greater than was generally assumed. Especially with regard to the World War II effort, available statistical information suggested a clear impact of reduced population growth with further effects on fertility and infant mortality as indicated by the unusually low proportions of children of both sexes whose approximate date of birth or early childhood fell within these years.

4.5 Effects of migration

Over time and in all parts of Zaire, migration certainly affected

---

(1) As pointed out by Professor Caldwell, there is a puzzle here as one curious matter is the near identity of the low fertility belt of middle Africa with the Congo Free State and the French Congo. The author argues that this may be coincidental, but he further agrees with a suspicion of a fertility decline from a previously higher level since that recorded seems insufficient to have counterbalanced the mortality encountered prior to this century. Caldwell, J.C.: Major Questions in African Demographic History; Australian National University, Canberra, 1977.

the age-sex distribution of the population to varying degrees in particular age groups, but evaluation of its real impact would remain difficult owing to the lack of appropriate records and conventional definitions in this domain.(1) At the time of the survey, it was estimated that the number of those who resided in Zaire but were born in other African countries was about 300,000 to 350,000, or 3 per cent of the total population, while the number of out-migrants was less than 50,000 persons. It was also estimated that half of the immigrants were natives of neighbouring Rwanda who settled in the highly populated region of Kivu with their families and, consequently, caused only a minor effect on age distributions; whilst the immigration from other neighbouring countries was largely age-sex selective and had no appreciable effect in view of its small size.(2)

Due to lack of verifiable records, the above information remains difficult to interpret, but, in all probability, the above figures were well below the actual volume of migration from abroad. Indeed, it is very likely that these figures referred solely to the so-called "autochthons" who registered as originating from Rwanda and other neighbouring states. Hence, there remained two additional categories of migrants whose numbers totalled with those registered must have had some effect on age-sex distribution. One such category included those Africans classified as non-autochthons;(3) though probably small in number and sex selective, they often took indigenous spouses and subsequently had a share in raising birth rates and affecting population profiles. This was generally the case with coastal West Africans settled in urban centres or engaged in small trade in rural areas. One other category comprized seasonal workers from neighbouring countries, especially Angola and Congo, in response to new employment markets opened up by the economic boom throughout the post-war decade. Under-reporting of these migratory movements was inevitable for two

---

(1) In the colonial period, included as Zaireans were all Africans of bordering countries, a dozen in all, and as immigrants or "non-autochthonous populations" other Africans and foreigners from other countries. Such definitions evidently tended to underestimate the actual volume of international migration.

(2) Romaniuk, A.: in The Demography of Tropical Africa; op. cit., p. 269.

(3) Africans from non-neighbouring countries, such as Nigeria, Ghana, Togo, Senegal, Guinea, Sierra Leone, etc.

major reasons: first, to the extent that these workers settled in labour camps of mixed segments, their enumeration was conducted by employers regardless of place of birth; second, beyond fiscal reasons, both the African host and guest - even without any parental relation - exhibited similar resentment for the term 'visitor' and generally substituted for this a relative of one sort or another. Such socio-cultural behaviour coupled with administrative laxity must surely have caused many visitors from neighbouring countries to be reported as nationals. Effects of this sex-selective migration of male workers seem the most plausible explanation of high sex ratios and age ratios recorded for persons in the prime working ages and also for those whose early adulthood corresponded with the establishment of large mining and agricultural complexes in the first quarter of the century; but, on the whole, the effects of external migration appeared noticeable due to the continuity of prevailing streams over a long period of time, except for the marked volume in the late 1910s and 1940s. In contrast, the considerable effects of internal migration on age-sex distributions were clearly noticeable, despite the lack of appropriate records. This is because migration within Zaire generally took the form of an exodus from rural areas towards urban and industrial settlements and involved particularly young adult males. Statistics indicated higher proportions of males in urban and mixed centres than in rural areas for all age-groups 20-40 years, and showed how sex ratios for adult ages in mixed and urban areas markedly deviated from the national standard, supporting the conclusion that adult migration affected particularly male persons. But internal migration affected also children under 15 years of age, though in smaller measure, as demonstrated by the analysis of the ratios of child populations. In conclusion, though varying in degree at national and international levels, migration certainly affected the age-sex distributions of populations in various parts of Zaire with greater consequence than is generally assumed; but in most cases this impact remained veiled due to lack of appropriate records and rigorous definitions of the persons concerned.

CHAPTER X

THE MORTALITY AND FERTILITY ESTIMATES

This chapter reviews together the mortality and fertility estimates since it is concerned primarily with their measurement rather than their determining factors, and also in view of the close interrelationship in many procedures of their estimation and treatment from the survey data.(1)

As with any demographic study, available statistics from the 1955-8 survey of Zaire and their quality not only set limitations with regard to the details of analysis, but also influence the methods and techniques to be used. Since adequate methods and techniques were previously applied by Romaniuk in deriving mortality and fertility rates, this chapter treats them rather briefly in order to allow more space for assessment of the statistical findings. Indeed, Romaniuk applied to reported statistics the methods invented by Brass and also the model life tables developed by Coale and Demeny.(2) A thorough examination of that analysis has demonstrated that operative estimates so derived command sufficient confidence for use in further studies of other population characteristics, despite certain shortcomings arising from the techniques used, notably with regard to age accuracy and assumptions of stability in previous years.

The first section of this chapter evaluates the quality of reported statistics and examines the problems involved in their collection during the survey. The following sections summarize the techniques used and

---

(1) For example: numbers of deaths and births during the twelve months preceding the survey, reports on proportions of surviving and non-surviving children.

(2) - For an extensive discussion of these techniques, see Brass, W. and Coale, A.: Methods of Analysis and Estimation, in The Demography of Tropical Africa, op. cit., p. 88-150; United Nations: Manual IV, op. cit.; Brass, W.: Methods for Estimating Fertility and Mortality from Limited and Defective Data, Laboratories for Population Statistics, The Carolina Population Center, University of North Carolina at Chapel Hill, Chapel Hill, N.C., 1975.

- Coale, A. and Demeny, P.: Regional Model Life-Tables and Stable Populations; op. cit.

assess the results obtained. In bringing out the key mortality and fertility measures most significant to demographic trends, calculations have been adapted to the present divisions of Zaire.

1. The Base Data and their Evaluation

1.1 Problems involved in the collection of data during the survey and comparison of reported events with those of the registration system

Two separate schedules were used for recording death and birth statistics. Mortality data were of two types: (i) number of deaths reported for the twelve months preceding the survey, and (ii) number of deceased children by deduction of those still living from children ever born to women in successive age-groups. Fertility data were of three kinds and were derived directly from (i) current births, i.e. births which occurred during the twelve months prior to the survey, and (ii) retrospective births, i.e. children ever born by age of woman, as well as indirectly from (iii) children classified by age. Additional information on both mortality and fertility was provided by the continuous registration system which, by 1956, covered about 95 per cent of the population. This, however, did not mean that all births and deaths, or other vital events, were registered for the population covered by the system or that the population outside effective administrative control was not more than the estimated remainder of 5 per cent.

Table 3.21 (p. 291), which compares crude death and birth rates recorded in the registration system with those estimated from the survey, indicates substantial under-registration: only 64 per cent of estimated deaths and 83 per cent of estimated births were actually registered. As with the derivation of population totals, estimation of deaths and births in the survey was not wholly independent of the registration and entailed some of its limitations. Both the reported death rate of 20 per thousand and birth rate of 43 per thousand from survey data required some upward adjustment.

Indeed, information on deaths and births was collected on a de facto basis and survey enumerators were expected to exclude those events which had occurred in other localities to absent residents. The survey report admitted that some categories of deaths and births escaped

Table 3.21

COMPARISON OF ZAIRE'S DEATH AND BIRTH RATES RECORDED IN THE CONTINUOUS REGISTRATION SYSTEM WITH THOSE ESTIMATED FROM THE 1955-8 SURVEY

Region or Sub-Region	Deaths		Births	
	Reg. 1956 Survey, 1955-8	Survey Death Rate (%)	Reg. 1956 Survey, 1955-8	Survey Birth Rate (%)
I. KINSHASA REGION [a]	.98	10	.87	52
II. BAS-ZAIRE REGION	.63	17	.93	46
S.R. Bas-Fleuve	.74	16	.99	48
S.R. Cataractes	.52	17	.86	45
III. BANDUNDU REGION	.76	20	.94	46
S.R. Mai-ndombe	.76	19	.95	44
S.R. Kwilu	.73	20	.93	45
S.R. Kwango	.83	22	.95	48
IV. EQUATEUR REGION	.78	19	.84	38
S.R. Equateur	.83	16	.83	34
S.R. Tshuapa	.81	22	.81	31
S.R. Mongala	.74	17	.85	41
S.R. Ubangi	.76	20	.84	44
V. HAUT-ZAIRE REGION [b]	.57	21	.68	31
S.R. Tshopo	.39	19	.48	34
S.R. Bas-Uele	.70	20	.83	19
S.R. Haut-Uele	.65	22	.72	23
S.R. Ituri	-	-	.78	43
VI. KIVU REGION	.67	20	.88	47
S.R. Nord-Kivu	.66	22	.96	49
S.R. Sud-Kivu	.66	20	.86	52
S.R. Maniema	.70	16	.77	34
VII. SHABA REGION [c]	.52	19	.73	50
S.R. Tanganika	.59	19	.52	54
S.R. Haut-Lomami	.51	22	.78	45
S.R. Haut-Shaba	.53	17	.75	57
S.R. Lualaba	.52	19	.97	44
VIII. KASAI-ORIENTAL REGION	.60	22	.84	45
S.R. Kabinda	.55	24	.85	48
S.R. Sankuru	.65	20	.83	42
IX. KASAI-OCCIDENTAL REGION	.49	27	.82	44
S.R. Kasai	.47	27	.78	45
S.R. Lulua	.51	27	.84	43
ZAIRE [d]	.64	20	.83	43

[a] The registration's crude death rate is for 1955 when the survey was conducted in that area. As regards birth rates, it was observed that many children under one year born outside the capital city were not generally included in the registration records.

[b] Death data for Ituri were not reported and they are excluded from the regional and national totals.

[c] The registration crude death rate for Lubumbashi is for 1957 and refers exclusively to the central city with an estimated death rate of 12 per thousand persons. Survey birth rates do not include those births (about 3,000) in areas not covered by the survey totalling about 63,515 persons; tabulated data made adjustments for both numerator and denominator of the regional population.

[d] Estimated births have been calculated on the basis of a total population of 12,734,000 persons as a result of the above footnotes.

detection despite efforts to secure maximum data in the interview procedures and local registers; it also stated that, though incomplete, the registration system was used to initiate or supplement the recording of events in the survey. For example, before entering rural areas, enumerators were instructed to draw up a list of all deaths and births from local registers during the previous 18 months in order to sharpen the distinction between events within 12 months and those prior to this period. Inadequacies in the registration were therefore likely to affect survey data collection to some degree. The writers of the survey report emphasized that checks based on inadequate registration must have been ineffective in some rural areas; and, in the case of infant death soon after birth, more often than not, neither the birth nor the death was registered. They also argued, with some justification, that the low registration of infant deaths resulted from lack of incentives comparable to the material and other advantages associated with birth whether in rural or urban areas. In most tribes, infant deaths rapidly became a matter of little public concern and subject to customary interdict; to a lesser degree, this was also the case with deceased old persons. The reliability of survey estimates of both births and deaths was thus to be tested against other sources of vital events and population models.

1.2 Deaths from the twelve months preceding the survey

The survey report stressed that collection procedures included various provisions, such as inspection of identity booklets, visits to medical centres, inquiry about abandoned huts or new graves, etc., to secure reports of deaths in the unit of observation, special attention being given to persons without surviving relatives. In an attempt to ensure accuracy with regard to the timing of these events, enumerators were instructed to enter the month of occurrence of each reported death, eventually relating this to a registered birth or other memorable event within the same family or village. Survey enumerators were also required to record the complete identity with name and other particulars of the deceased persons. The survey report admits, however, that despite safeguards some categories of deaths escaped detection. The main such category concerned infants who died soon after birth, in which case they were not registered and interviewees often forgot

or chose to ignore them. Another category of omission of deaths resulted from ineffective cross-checks in urban and mixed areas, owing to high mobility of populations. An additional category of death omissions was caused by reluctance to mention the death or even the name of a deceased person; this resistance was so strong in the area of Ituri that the collection of death data was finally abandoned. Death rates based on reported deaths for the year preceding the survey are shown in table 3.21 (p. 291) for the different regions and in table 3.22 below for the specific sex and age groups.

Table 3.22

REPORTED DEATH RATES BY AGE-SEX FOR ZAIRE AND ITS RURAL, MIXED AND URBAN AREAS, 1955-8 SURVEY

Age Group	Zaire			Rural	Mixed	Urban
	M	F	M+F	M+F	M+F	M+F
0-1	110	98	104	113	87	66
1-4	32	28	30	34	21	13
5-9	11	9	10	11	6	3
10-14	6	5	5	6	3	2
15-19	6	6	6	7	2	3
20-24	8	9	9	10	7	4
25-29	8	9	8	11	3	3
30-34	11	12	12	15	3	3
35-44	15	16	15	18	4	4
45-54	27	24	25	28	7	13
55+	51	43	47	48	27	28
All ages	21	19	20	23	11	9

The reliability of these rates is a function of the validity of two factors: the numerator or number of reported deaths and the denominator of total area population. It is shown later that the figure of 104 per thousand as the infant death rate results from substantial underestimation of infant mortality, in comparison with rates

Table 3.23

PROPORTIONS DECEASED CHILDREN (REPORTED PER 1,000) AMONG CHILDREN EVER BORN BY AGE OF MOTHER, ZAIRE 1955 SURVEY

Region or Sub-Region		15-19	20-24	25-29	30-34	35-44	45-54	55+
I.	KINSHASA REGION	89	103	150	200	240	275	475
II.	BAS-ZAIRE REGION	169	208	254	301	346	423	502
	S.R. Bas Fleuve	183	213	256	299	338	421	520
	S.R. Cataractes	155	203	252	303	351	424	483
III.	BANDUNDU REGION	171	211	272	310	352	407	476
	S.R. Mai-ndombe	127	181	217	233	295	333	439
	S.R. Kwilu	167	200	272	314	352	410	479
	S.R. Kwango	199	243	301	343	381	437	489
IV.	EQUATEUR REGION	127	192	238	272	306	345	434
	S.R. Equateur	101	118	138	184	243	306	417
	S.R. Tshuapa	107	152	214	260	286	330	416
	S.R. Mongala	147	204	254	279	325	363	453
	S.R. Ubangi	138	230	268	300	323	356	442
V.	HAUT-ZAIRE REGION	133	174	188	210	245	295	343
	S.R. Tshopo	141	191	220	262	313	353	419
	S.R. Bas-Uele	215	225	234	250	289	329	387
	S.R. Haut-Uele	94	161	165	184	210	248	301
	S.R. Ituri	(63)	116	(138)	(164)	(188)	(261)	(212)
VI.	KIVU REGION	168	230	291	334	367	406	454
	S.R. Nord Kivu	130	163	190	219	248	288	334
	S.R. Sud Kivu	204	286	360	412	467	497	556
	S.R. Maniema	189	249	278	312	361	412	467
VII.	SHABA REGION	134	166	193	236	268	318	362
	S.R. Tanganika	147	143	198	228	252	317	356
	S.R. Haut-Lomani	133	182	207	260	270	313	372
	S.R. Haut-Shaba	123	175	182	222	274	315	436
	S.R. Lualaba	137	161	195	226	282	340	386
VIII.	KASAI-ORIENTAL REGION	182	204	252	295	351	409	463
	S.R. Kabinda	193	202	241	278	347	413	465
	S.R. Sankuru	170	205	262	312	354	405	461
IX.	KASAI-OCCIDENTAL REGION	261	303	339	385	434	477	534
	S.R. Kasai	270	311	352	392	440	486	557
	S.R. Lulua	251	295	326	378	427	468	510
	ZAIRE	161	208	256	299	338	387	446

estimated for persons over one year of age and also from proportions of deceased children born to women aged 15-19 years, or corresponding values of ${}_1q_0$ in the models. Such underestimation resulted primarily from omission of those infants who died soon after birth without being registered. Though for the most part registered and better enumerated, mortality data for adults and aged persons must have suffered from erroneous age reporting similar to - if not worse than - that for living persons. Reported age-specific death rates obviously called for cautious treatment while the recorded overall death rate of 20 per thousand required some upward adjustment.

1.3 Children dead among children ever bornto women by age

According to the survey report, data on retrospective fertility were collected directly and exclusively from each woman aged 15 years and above for all births reported. The schedule had separate columns for children born alive and for those still living; further, a list of births by order was established including children's name, age, place of residence, notification of death, etc. Information on still-births was recorded separately in the report of births for the twelve months previous to the survey, but not in reports on children ever born. Data on retrospective fertility were thus exclusively limited to live births. Estimated proportions of children who died among those ever born, classified by age of mother, are shown in table 3.23 (p. 294); the reliability of these estimates is discussed later.

1.4 Births during the twelve months preceding the survey

Information on current fertility was recorded from questions put to all females aged 15 years and over, regardless of their marital status, the only exception being made in the case of some very old women. The questions explicitly concerned live births and were specifically addressed to women. Questions on still-births were dealt with under separate inquiries in order to avoid their possible inclusion in reports on live births. However, the survey report admitted two possible sources of error: ineffective checks in rural areas where the registration of vital events was inadequate and infant deaths occurring soon after birth without registration of either one or both events.

Table 3.21 (p. 291) shows estimates of crude birth rates, while

table 3.24 (p. 297) shows age-specific fertility rates and table 3.25 (p. 298) those of cumulative fertility rates. As with mortality data, the reliability of these rates depends on the validity of their components.(1) Concerning birth rates, the numerator or number of births was particularly affected by differential omission of infants who died without having been registered; the denominator or total population of reference varied by an amount very probably less appreciable than omission of infants. With respect to fertility rates, bias in the numerator is the same as above, but the denominator must have been considerably affected by erroneous age classification. As discussed previously, some women aged less than 15 years or over 45 years had been mistakenly reported in age-group 15-44 years. Such a bias naturally leads to underestimation of the resulting general fertility rates, to the extent that it increases the denominator. Thus, the estimated general fertility rate of 171 reported for Zaire as a whole also required some upward adjustment.

1.5 Children ever born to women classified by age

As with the data on births during the twelve months preceding the enumeration, statistics on children ever born were subject to omissions and erroneous enumeration. The probability of omission of children was higher for older women and erroneous enumeration was greater for families with a large number of children, especially in relation to deceased children. These omissions are very probably responsible for low mean live births recorded for women over 45 years of age, as shown in table 3.26 (p. 299). It may be remarked that fertility rates based on children ever born are likely to be more reliable in comparison with rates based on births for the year preceding the survey, in that rates of retrospective fertility are not subject to errors resulting from mis-reporting of the time when births actually occurred. However, the validity of the age-specific mean live births also depends on classification of women by age. In this regard, the 1955-8 survey did not escape the tendency observed in many developing countries to lower or

---

(1) The crude birth rate (BR) is the number of births per thousand persons in the population; the general fertility rate (GFR) is the number of births per thousand women aged 15-44 years; the age-specific fertility rate (ASFR) is the number of births to mothers per thousand women of that age.

Table 3.24

AGE-SPECIFIC AND GENERAL FERTILITY RATES OBSERVED FOR ZAIRE, 1955-8 SURVEY

Region or Sub-Region		f15-19	f20-24	f25-29	f30-34	f35-44	f45-54	GFR 15-44
I.	KINSHASA REGION	.195	.300	.287	.236	.131	.028	.244
II.	BAS-ZAIRE REGION	.085	.274	.279	.223	.111	.018	.191
	S.R. Bas-Fleuve	.118	.281	.264	.187	.095	.019	.194
	S.R. Cateractes	.057	.265	.297	.255	.123	.017	.189
III.	BANDUNDU REGION	.084	.278	.263	.206	.105	.019	.186
	S.R. Mai-ndombe	.150	.269	.240	.196	.103	.027	.189
	S.R. Kwilu	.079	.282	.259	.199	.094	.012	.179
	S.R. Kwango	.065	.274	.285	.230	.134	.034	.203
IV.	EQUATEUR REGION	.089	.249	.219	.160	.072	.011	.150
	S.R. Equateur	.131	.219	.190	.132	.063	.010	.133
	S.R. Tshuapa	.080	.191	.166	.118	.049	.008	.113
	S.R. Mongala	.079	.258	.244	.181	.084	.016	.164
	S.R. Ubangi	.086	.299	.256	.188	.088	.011	.176
V.	HAUT-ZAIRE REGION	.134	.201	.147	.103	.048	.012	.114
	S.R. Tshopo	.192	.196	.144	.086	.035	.011	.123
	S.R. Bas-Uele	.102	.115	.098	.059	.023	.003	.064
	S.R. Haut-Uele	.123	.168	.108	.065	.026	.006	.083
	S.R. Ituri	.092	.318	.243	.203	.108	.037	.184
VI.	KIVU REGION	.182	.290	.261	.182	.086	.018	.198
	S.R. Nord-Kivu	.190	.314	.303	.234	.105	.018	.226
	S.R. Sud-Kivu	.167	.316	.298	.199	.100	.034	.211
	S.R. Maniema	.194	.201	.152	.102	.043	.002	.129
VII.	SHABA REGION	.210	.306	.251	.186	.105	.022	.205
	S.R. Tanganika	.230	.324	.254	.212	.126	.021	.219
	S.R. Haut-Lomani	.194	.282	.248	.161	.095	.020	.184
	S.R. Haut-Shaba	.213	.334	.287	.226	.130	.038	.245
	S.R. Laulaba	.202	.275	.209	.152	.068	.016	.173
VIII.	KASAI-ORIENTAL REGION REGION	.156	.279	.239	.164	.080	.015	.172
	S.R. Kabinda	.191	.290	.252	.179	.094	.015	.189
	S.R. Sankara	.117	.268	.226	.149	.067	.015	.156
IX.	KASAI-OCCIDENTAL REGION	.135	.260	.229	.176	.080	.016	.169
	S.R. Kasai	.137	.249	.238	.177	.087	.016	.173
	S.R. Lulua	.134	.268	.222	.175	.074	.016	.166
	ZAIRE	.137	.265	.232	.168	.080	.016	.17

Table 3.25

CUMULATIVE FERTILITY BASED ON OBSERVED AGE-SPECIFIC FERTILITY RATES FOR ZAIRE, 1955-8 SURVEY

Region or Sub-Region		Ø19.5	Ø24.5	Ø29.5	Ø34.5	Ø44.5	Ø54.5
I.	KINSHASA REGION	.975	2.475	3.910	5.090	6.400	6.680
II.	BAS-ZAIRE REGION	.425	1.795	3.190	4.350	5.415	5.595
	S.R. Bas-Fleuve	.590	1.995	3.315	4.250	5.200	5.390
	S.R. Cataractes	.285	1.610	3.095	4.370	5.600	5.770
III.	BANDUNDU REGION	.420	1.810	3.125	4.155	5.205	5.395
	S.R. Mai-ndombe	.750	2.095	3.295	4.275	5.305	5.575
	S.R. Kwilu	.395	1.805	3.100	4.095	5.035	5.155
	S.R. Kwango	.325	1.695	3.120	4.270	5.610	5.950
IV.	EQUATEUR REGION	.445	1.690	2.785	3.585	4.305	4.415
	S.R. Equateur	.655	1.750	2.700	3.360	3.990	4.090
	S.R. Tshuapa	.400	1.355	2.185	2.775	3.265	3.345
	S.R. Mongala	.395	1.685	2.905	3.810	4.650	4.810
	S.R. Ubangi	.430	1.925	3.195	4.135	5.015	5.125
V.	HAUT-ZAIRE REGION	.670	1.675	2.410	2.925	3.405	3.525
	S.R. Tshopo	.960	1.940	2.660	3.090	3.440	3.550
	S.R. Bas-Uele	.510	1.085	1.575	1.870	2.100	2.130
	S.R. Haut-Uele	.615	1.455	1.995	2.320	2.580	2.640
	S.R. Ituri	.460	2.050	3.265	4.280	5.360	5.730
VI.	KIVU REGION	.910	2.360	3.665	4.575	5.435	5.615
	S.R. Nord-Kivu	.950	2.520	4.035	5.205	6.255	6.435
	S.R. Sud-Kivu	.835	2.415	3.905	4.900	5.900	6.240
	S.R. Maniema	.970	1.975	2.735	3.245	3.675	3.695
VII.	SHABA REGION	1.050	2.580	3.835	4.765	5.815	6.035
	S.R. Tanganika	1.150	2.770	4.040	5.100	6.360	6.570
	S.R. Haut-Lomani	.970	2.380	3.620	4.425	5.375	5.575
	S.R. Haut-Shaba	1.065	2.735	4.170	5.300	6.600	6.980
	S.R. Lualaba	1.010	2.385	3.430	4.190	4.870	5.030
VIII.	KASAI-ORIENTAL REGION	.780	2.175	3.370	4.190	4.990	5.140
	S.R. Kabinda	.955	2.405	3.665	4.560	5.500	5.650
	S.R. Sankuru	.585	1.925	3.055	3.800	4.470	4.620
IX.	KASAI-OCCIDENTAL REGION	.675	1.975	3.120	4.000	4.800	4.960
	S.R. Kasai	.685	1.930	3.120	4.005	4.875	5.035
	S.R. Lulua	.670	2.010	3.120	3.995	4.735	4.895
	ZAIRE	.685	2.010	3.170	4.010	4.810	4.970

Table 3.26

MEAN PARITY OF WOMEN (P) BY AGE OF MOTHER, ZAIRE, 1955-8 SURVEY

	Region or Sub-Region	P_1 15-19	P_2 20-24	P_3 25-29	P_4 30-34	P_5 35-44	P_6 45-54	P_7 55+
I.	KINSHASA REGION	.48	1.47	2.55	3.42	3.74	2.93	2.86
II.	BAS-ZAIRE REGION	.20	1.38	2.99	4.65	5.96	6.17	5.69
	S.R. Bas-Fleuve	.27	1.45	2.83	4.14	5.28	5.67	5.43
	S.R. Cataractes	.12	1.31	3.14	5.15	6.63	6.66	5.94
III.	BANDUNDU REGION	.17	1.27	2.59	3.84	4.84	5.01	4.64
	S.R. Mai-ndombe	.30	1.32	2.37	3.03	4.04	4.26	4.15
	S.R. Kwilu	.16	1.26	2.54	3.87	4.88	5.00	4.68
	S.R. Kwango	.13	1.27	2.76	4.16	5.19	5.39	4.83
IV.	EQUATEUR REGION	.17	1.06	1.89	2.67	3.27	3.51	3.75
	S.R. Equateur	.25	.97	1.46	1.97	2.37	2.50	3.14
	S.R. Tshuapa	.16	.75	1.33	1.94	2.38	2.79	2.94
	S.R. Mongala	.16	1.20	2.20	2.99	3.64	4.19	4.53
	S.R. Ubangi	.15	1.18	2.27	3.31	4.30	4.56	4.68
V.	HAUT-ZAIRE REGION	.35	1.23	1.63	2.07	2.54	2.72	2.82
	S.R. Tshopo	.54	1.47	1.93	2.35	2.96	3.13	3.36
	S.R. Bas-Uele	.31	1.00	1.23	1.45	1.77	2.09	2.75
	S.R. Haut-Uele	.30	1.10	1.41	1.63	2.01	2.27	2.64
	S.R. Ituri	.19	1.15	1.88	2.88	3.50	3.68	2.80
VI.	KIVU REGION	.52	2.02	3.32	4.33	4.88	4.42	3.22
	S.R. Nord-Kivu	.56	2.21	3.60	4.75	5.34	4.86	3.41
	S.R. Sud-Kivu	.39	2.07	3.61	5.09	6.03	6.15	6.23
	S.R. Maniema	.57	1.66	2.30	2.92	3.11	3.46	2.82
VII.	SHABA REGION	.54	1.66	2.46	3.29	3.83	3.70	3.39
	S.R. Tanganika	.55	1.67	2.50	3.37	4.00	3.61	3.26
	S.R. Haut-Lomani	.50	1.45	2.26	2.96	3.34	3.33	3.01
	S.R. Haut-Shaba	.60	1.91	2.83	3.91	4.64	4.57	4.09
	S.R. Lualaba	.54	1.59	2.26	3.06	3.57	3.68	3.73
VIII.	KASAI-ORIENTAL REGION	.36	1.37	2.18	3.03	3.57	3.62	3.51
	S.R. Kabinda	.44	1.50	2.38	3.33	3.82	3.65	3.42
	S.R. Sankuru	.28	1.24	1.97	2.72	3.31	3.59	3.60
IX.	KASAI-OCCIDENTAL REGION	.35	1.47	2.45	3.43	4.35	4.68	4.80
	S.R. Kasai	.31	1.35	2.40	3.32	4.21	4.47	4.69
	S.R. Lulua	.39	1.59	2.49	3.54	4.49	4.88	4.90
	ZAIRE	.35	1.45	2.39	3.25	3.85	3.97	3.75

raise the age of those women with fewer or more children respectively. The non-reporting of still-births and under-enumeration of infants who died soon after birth must therefore have rendered classification of women by age highly vulnerable to errors resulting from mistaken birth intervals. Normally, assuming fertility had been constant over a sufficiently long period of time and assuming also zero differences in prolificity of deceased as well as surviving women, the mean parity at age x (Px) would equal cumulated fertility at age x(Fx). However, comparison of table 3.26 (p. 299) with table 3.24 (p. 297) tends to invalidate such an assumption for Zaire, as reported values of Px are at all ages larger than the recorded values of Fx.

1.6 Proportions of children in the population

In addition to rates based upon a count of births, fertility measures can be estimated from (i) proportions of young children in the population, (ii) survivorship from birth to the specified age-group at the time of the survey and (iii) rates of population growth between the mid-period of birth and the time of enumeration.(1) These measurements can be affected by factors associated with differential under-enumeration and mortality of children and women as well as migration. In particular, the number of young children is affected by the tendency to give rounded statements of age, with the result that some children under 5 years may be included in those who are 5 years and over, or that some infants are considered to be one year old when they have not in fact reached one year. However, it is shown in this study that proportions of young children from the 1955-8 survey seem fairly reliable; the exact age was recorded with appreciable accuracy for ages below 10 years while the de facto enumeration meant that the effect of factors associated with migration was considerably reduced. Table 3.27 (p. 301) presents the observed proportions of children by age to total population and to women. As emphasized by Shryock and others, the ratio of children under 5 years of age to women in the childbearing period may be regarded as a better measure of "effective" fertility than the general fertility rates based on births, since children who die early in life do not contribute to procreation in future generations.

---

(1) Shryock, H.S. et al.: The Methods and Materials of Demography; op. cit., Chapter 17, p. 500-522.

Table 3.27

PROPORTIONS OF CHILDREN BY AGE TO TOTAL POPULATION AND TO WOMEN (PER THOUSAND), ZAIRE, 1955-8 SURVEY

	Region or Sub-Region	0-1	1-4	5-9	0-4	0-9	0-14	Children per 1000 women
I.	KINSHASA REGION	51	141	118	192	310	380	1614
II.	BAS-ZAIRE REGION	39	147	138	187	325	437	1447
	S.R. Bas-Fleuve	41	147	122	187	309	405	1321
	S.R. Cataractes	38	147	154	186	340	468	1568
III.	BANDUNDU REGION	43	137	140	180	320	436	1388
	S.R. Mai-ndombe	43	135	137	178	315	422	1348
	S.R. Kwilu	43	134	136	177	314	429	1354
	S.R. Kwango	44	145	150	189	339	460	1499
IV.	EQUATEUR REGION	36	113	119	149	268	254	1036
	S.R. Equateur	32	102	97	134	231	304	827
	S.R. Tshuapa	30	83	89	113	202	272	718
	S.R. Mongala	38	124	131	162	293	385	1189
	S.R. Ubangi	40	132	142	172	362	411	1301
V.	HAUT-ZAIRE REGION	30	98	113	127	240	327	947
	S.R. Tshopo	32	107	107	139	246	326	957
	S.R. Bas-Uele	19	66	85	85	170	238	590
	S.R. Haut-Uele	22	79	101	101	202	279	750
	S.R. Ituri	41	127	150	169	319	435	1525
VI.	KIVU REGION	44	149	143	192	335	436	1483
	S.R. Nord-Kivu	44	168	163	211	374	489	1819
	S.R. Sud-Kivu	50	155	145	205	350	447	1549
	S.R. Maniema	33	108	107	141	248	329	953
VII.	SHABA REGION	47	150	131	197	328	415	1343
	S.R. Tanganika	49	147	133	196	329	421	1343
	S.R. Haut-Lomani	43	136	119	179	298	383	1148
	S.R. Haut-Shaba	54	174	148	228	376	464	1713
	S.R. Lualaba	43	146	125	188	314	396	1289
VIII.	KASAI-ORIENTAL REGION	43	127	127	170	297	388	1148
	S.R. Kabinda	45	136	139	181	320	415	1254
	S.R. Sankuru	40	119	115	159	274	362	1050
IX.	KASAI-OCCIDENTAL REGION	41	126	129	167	296	395	1203
	S.R. Kasai	41	124	128	166	294	391	1170
	S.R. Lulua	41	127	129	168	297	398	1229
	ZAIRE	40	129	129	169	298	394	1229

Evaluation, in the foregoing section, of the various basic measures of mortality and fertility observed in the 1955-8 survey has shown that many biases were involved at different stages of data collection and calculation of the original rates and ratios. Estimation of the most probable parameters from these data thus called for the application of particular methods, such as those Brass-type techniques, and, to a large extent, appropriate model life tables and stable populations.

2. Estimation of Mortality Rates

2.1 Measured death rates

Before considering the analytical estimation of mortality patterns and levels, it is useful to recall key death rates obtained from the two sets of data: reported current deaths or deaths occurring within the preceding year, and cumulative deaths or deaths cumulated from birth of children.

DR per 1000 (Based on current deaths)			Proportions dying before specified age (Cumulative from births)	
Both Sexes	Male	Female	1 Year, q(1)	5 Years, q(5)
20.0	21.0	19.0	.104	.297

It was noted in the preceding section that the above and other mortality rates based on reported statistics of the survey required some upward adjustment, in view of the various biases - mostly omissions and reference period errors - leading to understatement of the actual number of deaths.

2.2 Adjustment of the observed rates

The initial step in the procedures for estimating the most probable mortality rates is to select a standard pattern of mortality where reported proportions dying at each age follow the same pattern as in the standard table. The next step is to convert, through particular techniques, indices of mortality levels into mortality rates.

In both steps, the major concern is the series of q(a) values for infant and early childhood mortality, the variations of which offer satisfactory indices to express the relationship of mortality levels at various ages.

(i) Estimation of the mortality patterns

The fixed standard pattern of mortality was selected from among the Coale and Demeny model life tables, based on indications provided by the two kinds of death data from the survey.

From current deaths, eliminating all infant deaths to account for omissions, ratios of death rates for all those over 5 years of age, or $4m_1/m_{5+}$, were used as indices of mortality patterns. Assuming a mortality rate above 5 years equal to that observed for Zaire and a growth rate of 2 per cent per annum, corresponding ratios were derived for each of the four families of the model life tables. This assumed growth rate would appear unjustified and, as shown later, it tended to overestimate the actual mortality level, since enumeration statistics indicated it to be no less than 2.5 per cent.(1) However, on the basis of the two above assumptions, it was found that ratios for females from the North (2.18) and West (2.16) families were virtually identical to those reported for Zaire (2.16), while for males the observed value (2.21) was equivalent to the West family (2.22) and differed only slightly from the North family (2.33). Values for other families showed much larger deviations.

From cumulative deaths of children, a comparison of observed q(a) values with corresponding values of different model families indicated that the North and South families were nearer the observed q(5) than were the other two. However, it was noted that the ratio of the observed q(5) to the hypothetical q'(5) implied by the observed q(1) was higher than expected from any of the four families of models as shown below.

	Observed q(5)	North q'(1)	South q'(1)	West q'(1)	East q'(1)
Absolute value	.297	.258	.257	.229	.210
Relative value	1.00	.87	.87	.77	.71

Concerning the resulting ratios, it may be remarked that in relation to each other, estimates of q(5)/q(1) may have a downward bias in the denominator or an upward bias in the numerator; in relation to infant

(1) This was obtained through quinquennial periods (p. 126) which allowed for annual fluctuations (p. 97).

mortality, post-infant child mortality may in fact have been unusually high (a hypothesis strongly supported by medical opinion in the country); and the high ratio of q(5) based on reports by women aged 30-34 years to q(1) based on reports by women aged 15-19 years could well reflect a true decline of child mortality during the decade preceding the survey.(1) In reality, all three factors could have affected the q(5)/q(1) ratios; it is therefore difficult to determine how erroneous reporting may have affected particular q(a) values. Also, Romaniuk's assumption of 2 per cent growth rate, applied to the model life tables, understated the actual growth rate which was 2.5 per cent. These considerations tend to demonstrate the lack of convincing evidence that any particular standard pattern of mortality fitted the observed data more adequately than another. However, for convenience of analysis, and on the basis of some indications noted earlier, the North pattern of mortality was used as standard.

Table 3.28 (p. 305) presents rates and ratios of reported current deaths by age and sex in comparison with expected corresponding model figures, assuming a growth rate of 2 per cent per annum with a death rate for persons aged over one year approximating that obtained from survey data, and also with the female model implying a level of mortality slightly higher than that reported. There appear two major findings. Firstly, as can be seen in graph 3.12 (p. 306) age-specific death rates for each sex exhibit a mortality pattern in considerable conformity with the model. However, at ages 15-24 years for males and 10-19 years for females, observed rates are markedly lower than the model rates; at ages 30-54 years for males and 20-54 for females, reported rates exceed those in the model (with widest divergences at ages 45-54 years for males and 35-54 for females); at ages over 55 years, both sexes have much lower reported rates than in the model. Secondly, graph 3.13 (p. 306) shows that, though with larger marked deviations from the model, for both sexes, reported age distributions of deaths parallel remarkably closely the observed irregularities in reported age distributions of living populations.

---

(1) Weaning conditions, where the mother's milk was replaced by various 'risky' foods, were suggested as the highest cause of post-infant deaths; these conditions would have improved after World War II, leading to a subsequent decline in child mortality. The evidence for this trend would appear to be quite conclusive for urban and mixed centres, though not so for rural areas.

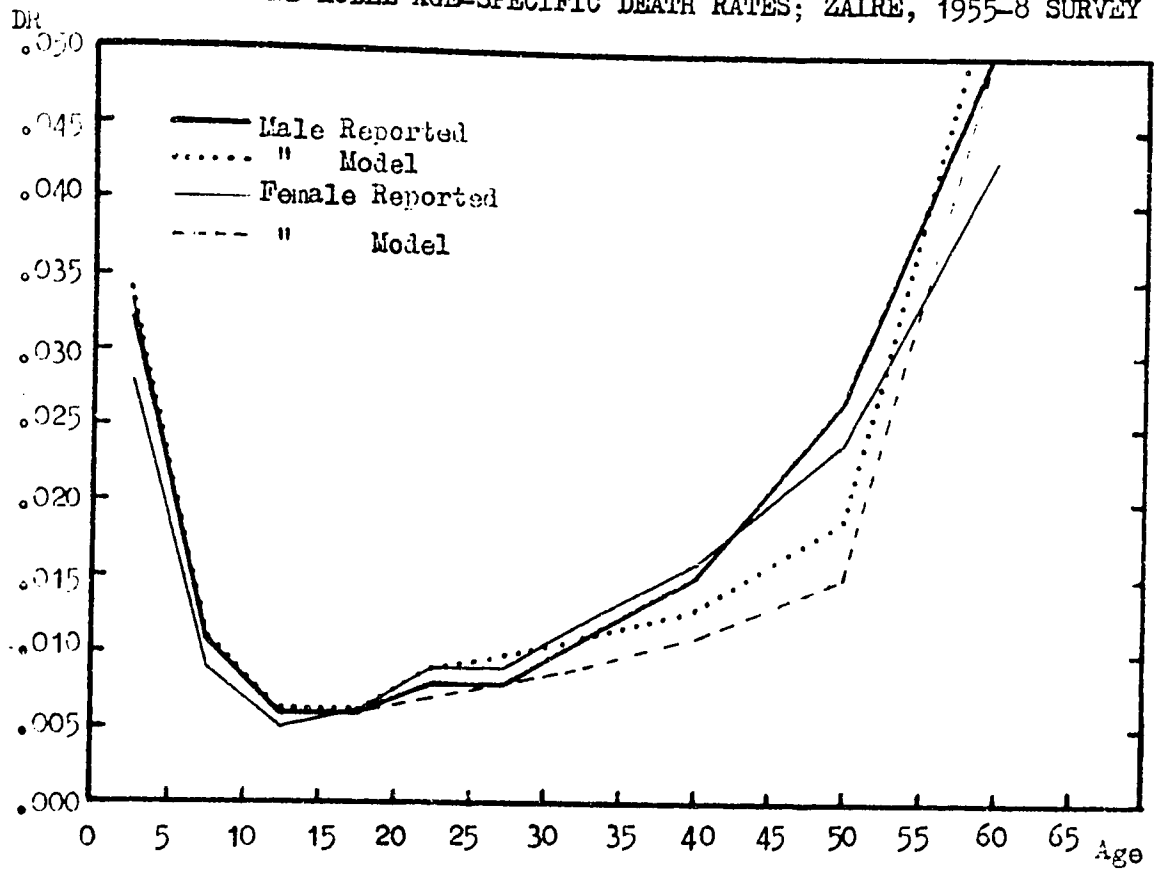
Table 3.28

OBSERVED AND STABLE AGE-SPECIFIC DEATH RATES, RATIOS AGE-DISTRIBUTIONS OF DEAD AND LIVING POPULATIONS, ZAIRE, 1955-8 SURVEY

Age Group	Death Rates		Age-Dist. Deaths		Ratio R/S Deaths	Ratio R/s Popn.
	Reported	Stable	Reported	Stable		
			MALES			
1-4	.032	.034	25.2	26.8	.94	-
5-9	.011	.011	8.7	9.0	.97	.96
10-14	.006	.006	4.0	4.0	1.01	.94
15-19	.006	.006	2.4	3.9	.60	.63
20-24	.008	.009	3.4	4.9	.70	.81
25-29	.008	.010	4.1	4.5	.93	1.12
30-34	.011	.011	5.4	4.1	1.32	1.25
35-44	.015	.013	11.6	8.1	1.43	1.25
45-54	.027	.019	16.5	8.4	1.96	1.44
55+	.051	.057	18.7	26.3	.71	.82
TOTAL	.017	.017	100.0	100.0	-	-
			FEMALES			
1-4	.028	.033	24.3	26.6	.91	-
5-9	.009	.011	7.8	9.2	.85	.99
10-14	.005	.006	2.8	4.2	.66	.72
15-19	.006	.006	2.9	3.9	.74	.71
20-24	.009	.007	5.0	4.0	1.27	.94
25-29	.009	.008	5.6	4.0	1.39	1.21
30-34	.012	.009	8.6	4.1	2.11	1.61
35-44	.016	.011	14.7	7.8	1.89	1.32
45-54	.024	.015	13.2	7.1	1.85	1.06
55+	.043	.051	15.1	29.1	.52	.67
TOTAL	.015	.016	100.0	100.0	-	-

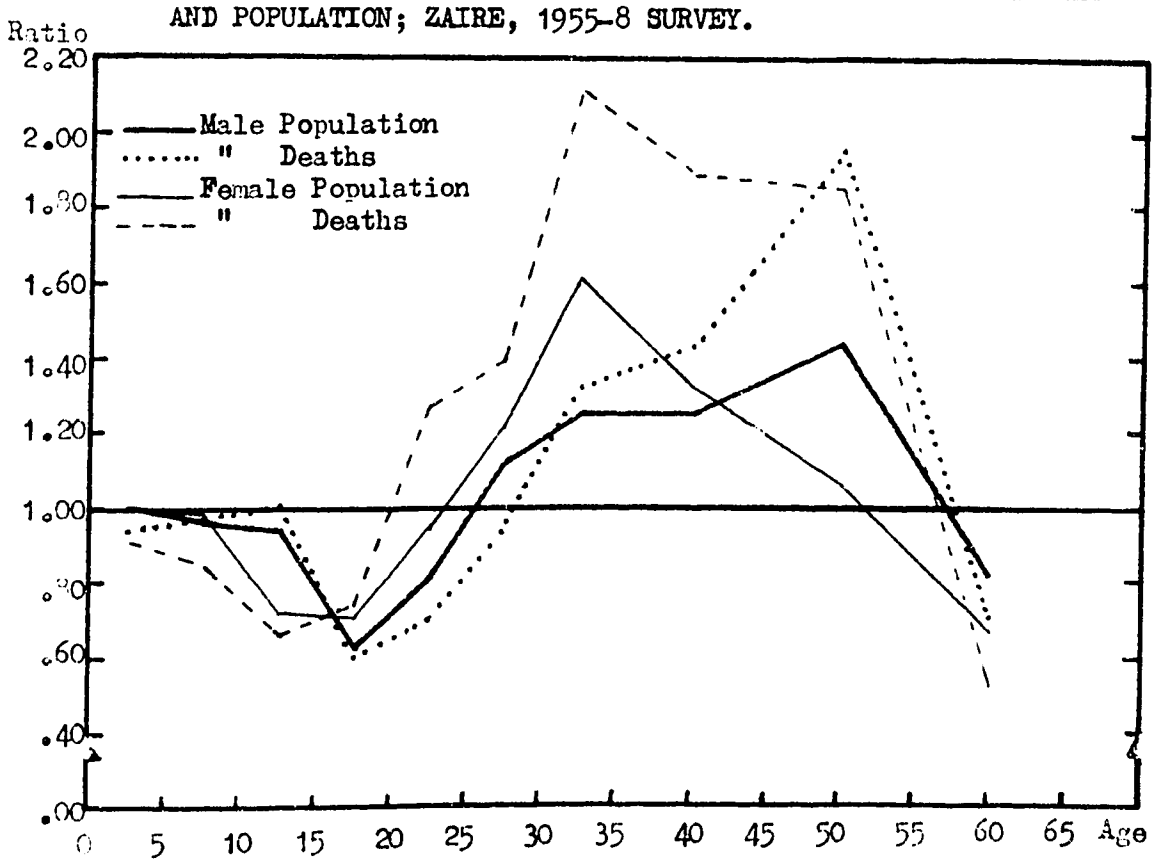
Graph 3.12

OBSERVED AND MODEL AGE-SPECIFIC DEATH RATES; ZAIRE, 1955-8 SURVEY



Graph 3.13

RATIOS OF OBSERVED TO MODEL AGE-SEX DISTRIBUTIONS OF DEATHS AND POPULATION; ZAIRE, 1955-8 SURVEY.



In his study, Romaniuk seemed to attribute deviations in ages of deceased persons exclusively to gross reporting errors; the observation made in the second point above would rather tend to support the hypothesis that, notwithstanding age mis-reporting, proportions deceased were probably affected by some true irregularities in population structures as already discussed. More significantly, it may be argued that the fact that the numbers of both persons and deaths diverge from the model pattern to much the same extent demonstrates that death rates follow the model pattern rather closely.

Based on mortality data from reports by mothers on proportions of children surviving among those ever born, and still using the North life table models, a series of observed q(a) values from q(1) through q(35) were developed into a systematic relationship. Given the values of observed q(1) through q(35), hypothetical q(5) values were as given below:

Observed q(5)	q'(5) values implied by specified q(a)					
	q(1)	q(2)	q(3)	q(15)	q(25)	q(35)
.297	.258	.273	.293	.280	.278	.290

Examination of the reported q(5) and estimated q'(5) values implied by various q(a) as specified above suggests two major observations: firstly, the derived values from q(1) through q(5) showed a fairly orderly progression in agreement with the hypothesis of a decline in child mortality for the years preceding the survey; secondly, the derived values from q(15) on, calculated from reports by mothers aged 35 years and above, appeared rather irregular, very probably owing to significant lapses in recall and other peculiarities of the survey procedures as well as true demographic trends.

(ii) Estimation of the mortality levels

In deriving and transforming indices of mortality levels, the initial step is to compare the observed infant mortality or q(1), i.e. the ratio of reported deaths of infants under one year of age to reported births for the same, and the observed post-infant mortality or m_{1+}, i.e. the ratio of reported deaths for all persons aged over one

year on last birthday to population over exact age one year. Reportedly a more reliable index than infant deaths,(1) post-infant mortality was thus used to estimate the implied level of the former through the selected set of North model life tables.(2) The values so obtained were as below:(3)

Reported Post-Infant Death Rate or m_{1+}	:	16.3 per thousand
Reported Infant Death Rate or q(1)	:	104 per thousand
Estimated Infant Death Rate of q'(1)	:	154 per thousand

The estimated q'(1) had its own bias; however, the discrepancy between the reported q(1) and the estimated q'(1) has generally been found in other surveys, as a result of larger omission of infants in comparison with observed deaths of children over one year of age and adults. For other mortality levels, transformation into the implied q(5) values in the models was carried out with available indices, i.e. the observed post-infant mortality or m_{1+} on the one hand, and the observed values of q(1) through q(5) on the other hand. Several observed q(a) values were combined by locating each value in the appropriate set of North tables, including supplemental tables for locating q(2) and q(3), and reading off the values of q'(5) in the table. The derived q'(5) values were subsequently arranged to give estimated q(5) from selected indices in combination. A comparable q(5) value was also derived from the mortality level implied by the observed m_{1+} and also from the observed proportion of children under 5 years of age. For the country as a whole, the resulting alternative indices of mortality were as follows:

Estimate basis	Estimated q(5)	Corresponding Death Rate
m_{1+}	.260	22.8
q(1)	.258	22.5
q(2)	.273	23.8
q(3)	.293	25.6
q(5)	.297	26.0

(1) United Nations, Manual IV, op. cit, pp. 36 and 75.
(2) This implies a crude death rate of about 23 per thousand persons.
(3) Excluding the Ituri sub-region for which data were not available.

These values were surely affected by several factors, in particular the 'reference periods' spreading over two years between regions and the 'reference areas' some of which were rapidly growing under the influence of active rural-urban migration. The observed divergences in the estimated death rates thus resulted from time interval and changing mortality and also from incorrect reporting. It was observed that divergences were more marked for certain types of population settlements. Also, mortality values from the q values were generally higher than those implied by the post-infant death rates, the figures being as below:

q(5) derived from m_{1+}	Average q(5) derived from q(1), q(2), q(3)	Reported q(5)
.260	.275	.297

In reality, these estimates could be affected by different factors leading to overestimation or underestimation of the true mortality rates. Not excluding possible sampling errors and unusual fluctuations of mortality in the year preceding the survey, it was noted that estimates based on current deaths could be over-reported as a result of erroneous extension of the twelve-month period(1) just as considerable under-reporting could be expected as a result of socio-cultural reluctance and erroneous exclusion of deaths of visitors as well as failure to include all institutions such as hospitals and prisons in the sampling design. On the whole, it would appear that the tendency to understate actual deaths was greater than the tendency to overstate them, particularly in the case of children who died in infancy. Thus, various indices were used to estimate levels of mortality for different regions:

- For the urban and mixed centres: q(1) and q(2) combined;
- For the rural areas where the mortality implied by post-infant deaths was greater than that implied by child mortality: m_{1+};
- For all other rural areas: q(1), q(2) and q(3) combined.

---

(1) Apparently, there was some evidence that the reference period had in some cases been extended. Since reporting of births was more effectively controlled through the registration system, it would seem reasonable to presume that extension of the reference period beyond twelve months was more frequent in the case of reported deaths.

Based on weighted averages by regions, the final estimates of death rates and other mortality functions were derived for the entire country as shown in table 3.29 (p. 311). These undoubtedly reflect the implications of the base data with regard to assumptions about mortality trends and methods of calculation.

2.3 The results and regional differentials

The analysis and resulting death rates with other mortality functions for different regions, as shown in table 3.29 (p. 311) were derived on the assumption that they related to the most reliable mortality indices in the same way as those in the North set of stable population models, with similar proportions of children under 5 years of age; estimates for the whole of Zaire were obtained as weighted averages of the various regions. It may well be pointed out that estimates derived by using model life tables and the Brass techniques, in their original form or as modified by Sullivan, are subject to several major qualifications.(1) While the analysis admitted that the probability of death was slightly lower for females than for males, it remained possible that sex differences in mortality differed from those incorporated in the model tables. Also, the estimates referred to average conditions of several years preceding the survey, during which period mortality had probably declined very rapidly. Indeed, most events related to child mortality were scattered with varying intensity from about 1950 to 1956 and concentrated probably in the latter half of this period. Moreover, conditions varied between the areas from which data were taken and averaged. Despite these reservations, estimated death rates for Zaire would appear plausible, particularly those derived by systems and methods broadly similar for many neighbouring countries. It is therefore difficult to argue with Romaniuk's conclusion that the results obtained from any reasonable alternative method would not be radically different.

---

(1) See especially a recent examination of early mortality data for tropical Africa by Page, Hilary: Infant and Child Mortality: Solicited paper for the African Population Conference, Accra, Ghana, 9-18 December 1971, M71-2930.

The Brass method is described in detail in Chapter 3 of The Demography of Tropical Africa, op. cit.; the Sullivan variation of the Brass method of estimating child mortality is described in: Sullivan, J.M.; Models for the Estimation of the Probability of Dying between Birth and Exact Ages of Early Childhood; Population Studies, Vol. 26, No.1 p. 79-97, 1972.

Table 3.29

ADJUSTED MORTALITY RATES AND FUNCTIONS FOR ZAIRE AND ITS REGIONS, BASED ON THE 1955--8 SURVEY

Region* or Sub-Region		DR	q(1)	q(5)	e_o^o
I.	REGION OF KINSHASA[1]	11.6	.078	.128	57.0
II.	REGION OF BAS-ZAIRE	26.0	.174	.294	37.7
	S.R. Bas-Fleuve[2]	26.1	.175	.295	37.5
	S.R. Cataractes[2]	25.9	.174	.294	37.8
III.	REGION OF BANDUNDU	26.9	.168	.283	36.8
	S.R. Mai-ndombe[3]	20.5	.142	.236	43.5
	S.R. Kwilu[2]	26.2	.178	.299	37.0
	S.R. Kwango[2]	32.3	.212	.354	32.5
IV.	REGION OF EQUATEUR	23.1	.168	.268	40.0
	S.R. Equateur[3]	17.1	.110	.185	49.5
	S.R. Tshuapa[3]	24.9	.167	.279	39.0
	S.R. Mongala[2]	19.3	.166	.281	39.0
	S.R. Ubangi[2]	25.5	.174	.293	37.8
V.	REGION OF HAUT-ZAIRE	23.6	.157	.262	40.8
	S.R. Tshopo[3]	21.2	.144	.243	42.8
	S.R. Bas-Uele[2]	27.8	.173	.291	37.8
	S.R. Haut-Uele[3]	24.1	.153	.258	41.3
	S.R. Ituri	-	-	-	-
VI.	REGION OF KIVU	29.7	.197	.329	34.6
	S.R. Nord-Kivu[3]	27.0	.173	.293	38.0
	S.R. Sud-Kivu[2]	38.3	.230	.379	30.8
	S.R. Maniema[2]	26.0	.178	.301	37.0
VII.	REGION OF SHABA	21.8	.146	.247	42.5
	S.R. Tanganika[3]	20.8	.138	.235	43.8
	S.R. Haut-Lomani[3]	26.4	.179	.300	37.0
	S.R. Haut-Shaba[3]	19.6	.127	.211	46.4
	S.R. Lualaba[3]	18.6	.127	.213	46.2
VIII.	REGION OF KASAI-ORIENTAL	24.2	.165	.279	39.2
	S.R. Kabinda[2]	24.1	.164	.276	39.3
	S.R. Sankuru[2]	24.3	.166	.281	39.0
IX.	REGION OF KASAI-OCCIDENTAL	35.6	.241	.395	30.0
	S.R. Kasai[2]	37.0	.250	.408	29.2
	S.R. Lulua[2]	34.1	.232	.381	30.8
	ZAIRE**	25.5	.173	.291	38.0

* Weighted average by Sub-Regions

** Weighted average by Regions.

1 Based on q(1) and q(2).

2 Based on q(1), q(2) and q(3).

3 Based on m_{1+}.

(i) The adjusted key rates of mortality

The estimated infant and child death rates, q(1) and q(5), for Zaire were respectively 173 and 291 per thousand per annum. Whatever the method of estimation, indications that infant mortality is relatively lower than child mortality, as in the North family of models, have often been presented for African countries. Though the evidence on age patterns is not conclusive, explanations of this observation have focused on effects of malnutrition after weaning, diseases such as malaria, and communicable diseases such as measles and enteric or respiratory infections. In any case, there is little doubt that levels of mortality during the earliest years of life appeared very high throughout most of tropical Africa; and in fact rates for Zaire were among the lowest, though data were collected at a relatively early date, as shown in the table below.(1)

Country	$_1q_0$	$_5q_0$	Date of Survey
Zaire	.150	.250	1955-8
Congo	.163	.272	1960-1
Gabon	.152	.256	1960-1
Uganda	.144	.242	1959
Chad	.181	.302	1964
Central African Republic	.189	.313	1959-60

The estimated crude death rate for the whole of Zaire was 26 per thousand and the life expectancy at birth was 38 years. Indications on growth rate and estimates of birth rate for the period of reference tended to support a death rate of around 25 per thousand; the difference seems insignificant, as these rates resulted from tentative inferences from partial and indirect evidence based on averages of different sub-populations, the figures for which were probably subject to various degrees of error. In comparison with other countries of tropical Africa, the crude death rate and the life expectancy for Zaire appear rather favourable, since in general death rates were close

---

(1) Figures in this table were derived by the Sullivan variation of the Brass method from proportion of children surviving as reported by women aged 20-24 and 25-29 years, based on North model life tables. Ref. Page, H.; op. cit.

to 30 per thousand while life expectancy averaged 35 years.

It should be noted that the survey period corresponded with those years which witnessed extremely rapid decline in mortality in most developing countries, and the Coale-Demeny approach, as used in estimating mortality levels for Zaire, accepts the adult mortality that would accompany the given estimated child mortality in the experience of the model data, without any weight for reported current deaths which on various grounds appear untrustworthy. Though the most convenient, the methodological approach used by Romaniuk, and just reviewed, does not rule out the possibility that the true level of mortality might have been slightly lower than the estimated figures.(1)

(ii) Regional differentials in mortality

For the different regions of Zaire, mortality estimates were obtained by applying various indices of mortality levels: either the average of q(1) and q(2), or q(1), q(2) and q(3), or post-infant mortality (m_{1+}) applied to the sub-regions of which weighted averages yielded the regional estimates. Indeed, it was observed that a data source would yield plausible mortality estimates for some sub-populations but would appear less reliable for others; also, as mentioned earlier, death reports referred to different time periods extending over three years, or to rapidly growing urban centres which included women who had migrated from rural areas. In particular, it was observed, in all cases, that reported q(1) values obtained directly from reports on infant deaths were lower than those implied by post-infant mortality in model life tables. More pertinently, differentials in mortality levels implied by post-infant deaths were much larger than those implied by child mortality. Because enumeration of deaths was exclusively de facto, differences should theoretically be smaller from the former index than the latter. While it is impossible to determine how mortality levels were affected by erroneous enumeration and mobility of reporting mothers in certain areas, it is nevertheless clear that regional variations in mortality were quite large both for the administrative divisions and for rural-urban settlements.

For the politico-administrative divisions, at all ages, mortality

---

(1) This reservation is worth noting and will be referred to when revising population projections based on parameters from the 1955-8 survey of Zaire in Part Four of this study.

levels were by far the lowest in the region of Kinshasa, with the overall death rate nearing 11 per thousand and a life expectancy approximating 60 years. Such favourable mortality conditions undoubtedly resulted from better living conditions and medical services, especially for infants, who recorded the only value for q(1) below one hundred within the country, i.e. 78 deaths per thousand per annum. The region of Shaba was next, with a crude death rate of 22 per thousand and an infant death rate of 146 per thousand, due to the existence of several urban centres and industrial settlements with organized living conditions and medical services. Four regions crossed by the main stream of the river system exhibited mortality rates just below or equal to the national average: Equateur (23), Haut-Zaire (24), Kasai-Oriental (24) and Bas-Zaire (26). As the river system constitutes the most developed means of transport and communication, populations along the river must have been greatly and favourably affected by modernizing influences. The regions with mortality rates above the country's average were those of Bandundu (27), Kivu (30) and Kasai-Occidental (36); the latter obviously showing the highest death rates recorded for all regions. Apart from the limitations in medical services, the predominance of traditional living conditions may have been a factor contributing to high mortality in these regions, which include predominantly rural areas.

For the different types of population settlement, on the basis of the two kinds of mortality indices available - the post-infant mortality and transformation of q(a) values implied by early child mortality - the final estimates of crude death rates and other mortality functions were as follows:

	Death Rate	q(1)	q(5)	e^o_o
Rural*	28.3	.195	.325	34.5
Mixed**	20.5	.142	.238	42.8
Urban*	15.8	.106	.178	49.8

* Based on q(1), q(2) and q(3) or m_{1+} in the case of specified areas in which q(a) values suggest underestimated mortality (see table 3.31, p. 311).

** Based on q(1) and q(2).

As might be expected the results so obtained indicate relatively low death rates for the urban population, nearing half those estimated for rural areas at all ages. Rates obtained for the mixed segment were intermediate, but closer to the urban than the rural figures.

3. Estimation of Fertility Rates

3.1 Measured fertility rates

For Zaire as a whole, indices of fertility levels from the three kinds of reported data - births during the previous twelve months, number of children ever born and proportions of children in the population to women classified by age - were as follows:

Birth rate per thousand	:	42.7
General fertility rate (15-44)	:	.171
Cumulative fertility to age 54.5	:	4.97
Mean parity of women over 55 years	:	3.75

As already mentioned, the above rates required some upward adjustment owing to defects in the base data. Five kinds of defects were recorded: (i) misinterpretation of the reference period by reporting only events occurring within six to eight months or by including events occurring more than twelve months prior to the survey; (ii) underreporting of the parity of women with increasing age and parity; (iii) recall lapse of births and deaths in relation both to the survey and registration records, especially in the case of children who died early in infancy; (iv) systematic omission of deaths at any age, hence deceased children, owing to socio-cultural reluctance, as,for example, in the sub-region of Ituri; (v) biases in age distributions due to misreporting by either interviewees or interviewers. To these defects one could add the ambiguity in the time-area reference, as data collection in certain regions differed by more than two years during which time fluctuations in vital events might have occurred and somehow affected the resulting national totals.

3.2 Adjustment of the observed rates

Taking account of the particular nature of available information, three methods were used for adjusting the reported birth rates and

different formulas for the more refined fertility measures.

(i) Birth rate adjusted for omission of infant deaths by means of the Logan's function of the separation factor(1)

The initial step in this procedure is to calculate the difference between the observed and estimated infant death rates or $_1q_0$ and $_1q'_0$; the resulting figure indicates approximately the magnitude of omitted infant deaths. But, of those infants who died during the twelve months preceding the survey, those born prior to this period are not included in the birth numbers used for calculating current birth rates. Hence, the next step in the procedure is to determine the proportion of those infants born and deceased within the twelve months preceding the survey. This proportion is obtained by the use of Logan's function of the separation factor (s) which varies between 0.5 and 0.8 and increases inversely with infant mortality rates. For Zaire's reported infant death rate of 173 per thousand, the corresponding value of the Logan's function is about 0.5; i.e. half the number of infants who died were born during the year preceding the survey and, consequently, this number is to be added to the reported births for omission of deceased infants.(2) In his analysis, however, Romaniuk suggested a much larger separation factor of 0.9, presuming that the omitted children were in the main those who had died shortly after birth.

The estimated factor s' at 0.9 seems rough and rather arbitrary, but it may be noted that relatively lower values of s' would yield negligible variations in estimates of birth rates; i.e. 45.4 for s' equal to 0.8 and 45.0 for s' equal to 0.7. The adjusted birth rate obtained for Zaire from this method was then 45.8 per thousand.

---

(1) Logan, W.P.D.: The Measurement of Infant Mortality; in United Nations Population Bulletin, No. 3, October 1953.

(2) The birth rate adjusted for omission of infant deaths is then obtained by use of the formula:

$$B' = B\left(\frac{1 - {}_1q_0 s'}{1 - {}_1q'_0 s'}\right)$$ where

- B' is the estimated birth rate;
- B is the reported birth rate;
- $_1q'_0$ is the estimated infant death rate;
- $_1q_0$ is the reported infant death rate;
- s' is the estimated separation factor.

(ii) Birth rate adjusted from combined proportions under 5 years and mortality estimates based on stable population models

Calculation of birth rate from proportions under 5 years of age requires, in addition to reported numbers in relation to total population, estimates of (a) survivorship ratios and (b) growth rates during the period from birth to the time of the survey. These estimates can be most conveniently derived by use of population models which, for a given mortality level, provide the relationship between the proportions in each age-group and the birth rate. Values of survivorship ratios for children aged 0-4 years to births during the previous five years or ${}_5L_0/{}_5l_0$, though based on reports by mothers on surviving children during a somewhat ill-defined period, were used in combination with reported proportions under 5 years to obtain model values with implicit rates of natural increase and, subsequently, reading off the implied birth rate corresponding to proportions under 5 years implied by the given mortality level.(1) The really major factor affecting such an estimate is the assumption of stability and absence of migration. It may be remarked, however, that the use of proportions of children under 5 years and the corresponding infant mortality level or ${}_5q_0$ certainly helped to minimize errors from application of the stable methods to a population previously destabilized. With a proportion of children equalling 16.88 per cent and a life expectancy of 38 years, the resulting birth rate for Zaire as a whole was 45.2 per thousand.

(iii) Birth rates adjusted from the Brass method of mean parity of women compared with cumulative specific fertility rates

This method has the advantage of being independent of any reference to birth period and the estimate is obtained by the use of a relatively simple formula:

$$B' = B \frac{Px}{Fx}$$ where

B' is the estimated birth rate;
B is the reported birth rate;
Px is the mean parity of woman at age x;
Fx is the cumulated fertility to age x.

---

(1) In reality, the Coale-Demeny approach used here consists of accepting as correct the most soundly based infant and child mortality data and then chosing the corresponding regional model life table. Thus, for purposes of analysis and because of near complete registration at the time of the survey, the age-group 0-4 years, conveniently broader than the single-year age group, was selected in comparison to age-class 0-9 years, which would yield a birth rate of 44.4 per thousand.

This requires resolution, beforehand, of (a) the comparability of Px and Fx values with regard to the age of women, and (b) the selection of the age group with the most reliable Px/Fx values for use as adjusting factor for estimating the average value over age groups of cumulated fertility. The first problem is generally resolved by the use of the Brass series of multipliers, which not only convert the Fx values into those corresponding to the median age of each age group but also implicitly carry out some adjustment of the Fx series.(1) Some of these values can be derived by means of graphical estimation, as Romaniuk did, leaving out the Fx value for the median age of the first age group or age 17.5 years. The second problem called for more caution in view of changing fertility in the years preceding the survey and observed omission of children increasing with ages of mothers. Consequently, Px/Fx values for the age-group 20-24 years were selected and used as correcting coefficient, as they appeared to reflect the conditions of changing fertility better than those for the more commonly selected 25-29 years age-group. Yet, three factors could still have affected the final result: first, an unmeasurable erroneous classification of women as suggested by the low ratios of Px/Fx values for age-group 25-29 years (see appendix B16, p. 488), and apparent overestimation of women in the reproductive ages; second, the observed omission of children even for relatively young mothers, a situation which would lead to an underestimation of Px values and a consequent underestimation of the resulting birth rates; and third, the assumption of constant fertility, when evidence suggested rather an increasing trend from the late forties on, implying lower Px than Fx values and birth rates underestimated by similar proportions. In any case, for Zaire as a whole, the adjusted birth rate obtained by this method was 42.6 per thousand.

(iv) Adjustment of the general fertility, total fertility and gross reproduction rates

Errors affecting the observed rates of general and total fertility resulted essentially from (a) under-reporting of births and (b) over-reporting of women classified in the reproductive age group.

For the general fertility rate, the required double adjustment was carried out using the formula: $GF' = GF \frac{B'.R.}{B.S.}$ where GF' and GF were

---

(1) Brass, W. et al.: The Demography of Tropical Africa; op. cit., p. 92.

respectively the estimated and reported general fertility; B' and B respectively the estimated and reported birth rate from proportions under 5 years; and R and S corresponding to the reported and stable proportions of women aged 15-44 years. In general, for the various regions, adjustments by this formula made no allowance for fluctuations resulting from migration which affected women aged 15-44 years; in particular, they would appear rather excessive for areas where fertility had showed a declining trend, as, for example, in Uele and Tshuapa. It may be speculated, however, that the resulting overestimation of the general fertility due to this method would be tempered as the decline in fertility was accompanied by a considerable decrease in mortality during the decade immediately preceding the survey. For Zaire as a whole, the general fertility rate adjusted by this formula was 203 per thousand.

Adjustment of the total fertility rate could also be made by use of the formula indicated above, if total fertility values were substituted for those of the general fertility, or $TF' = TF \frac{B'.R.}{B.S.}$ with TF' and TF as respective measures of estimated and reported total fertility, other terms of the equation being as above. The resulting estimate of total fertility rate from this formula was 5.93 children per woman. Alternatively, adjustment of the total fertility was obtained by derivation of the gross reproduction rates from stable population models which, for a given mean age of fertility distribution or $\bar{m}$, indicate the values corresponding to specified birth rates. Thus, given the birth rate and the mean age of fertility distribution, corresponding gross reproduction rates were graphically read off. However, conversion of gross reproduction rates into total fertility rates raised some problems as these values were to be multiplied by a coefficient $(1 + m)$ where m is the sex ratio at birth. Since observation then suggested, though not conclusively, that the sex ratio at birth for the populations under study was below those recorded in countries with more accurate data, the adjustment formula was applied with a sex ratio at birth of 1.03, yielding a coefficient of 2.03. For Zaire as a whole, the resulting rate of total fertility obtained from this stable population method showed little variation from the previous one and amounted to 5.91 children per woman.

3.3 The results and regional differentials

Before examining the regional differentials, it is desirable to evaluate the fertility rates as adjusted in the preceding section, and other related measures recorded from the survey data.

(i) Appraisal of the adjusted birth rate

On the basis of reported statistics and adjusted data from the 1955-8 demographic survey, estimates of birth rate for the whole of Zaire were as follows:

Reported or unadjusted data	:	42.7 per 1,000
Derived from mean parity/cumulated fertility	:	42.6 per 1,000
Adjusted for omitted infants	:	45.8 per 1,000
Derived from stable proportions under 5 years	:	45.2 per 1,000

As is the case in many other surveys in Africa, considerable omission of deceased infants was observed for Zaire, both for the twelve months preceding the survey and for the complete reproductive life of mothers retrospectively. Therefore, unless adjusted for these omissions, as in methods 1 and 2 above, the resulting figures understate the real birth rates. Method 3 on the whole made allowances for such omissions but, despite possible minor biases in the assumed mortality patterns, method 4 very probably yielded a much better approximation of the actual birth rate of the population studied. It is therefore reasonable to agree with Romaniuk's conclusion that the real birth rate for Zaire was about 45 or 46 per thousand.(1)

In comparison with other areas of the African continent - with a birth rate averaging 47 per thousand - the estimated birth rate for Zaire situated the country amongst those relatively prolific, as these rates varied from 25 per thousand in Gabon to 62 in Guinea.

(ii) Age-specific fertility and mean age of distribution

Observed age-specific fertility rates as obtained from reported births for the twelve months preceding the survey are shown in table

---

(1) It was pertinently observed that the estimated birth rate of 45 for Zaire would appear compatible with the observed proportions childless, about 20 per cent, as discussed later, while estimates over 50 were recorded only for countries where proportions of childless women were less than 10 per cent.

3.24 (p. 297). As already mentioned in relation to the general and total fertility rates, marked biases resulted from omitted births probably in direct relation to age of women, in which case levels as well as patterns of observed rates would have required further adjustment; available information, however, suggested that such omissions were unlikely to have been too great. In contrast, more marked biases appear to have affected classification of women by age, as mentioned in the analysis of age distributions. The observed tendencies to raise the age of those mothers under 15 years and to lower that of women without or with few children must surely have produced a deflating effect on the real age-specific rates. The magnitude and direction of such biases for each particular age-group would remain unmeasurable, and thus no attempt was made to adjust the observed rates. This limitation is to be borne in mind when considering these rates further, for example, in deriving the mean age of fertility distribution ($\bar{m}$), estimated at about 27 years;(1) a figure which, relative to the mean age at marriage, agrees with observed early marriage and procreation in Zaire.

(iii) Proportions of childless women

Recorded proportions of childless women among the population of Zaire require particular attention: first, in assessing the statistical values of the observations and, second, in assessing the hypothesis advanced for their explanation. The first point is dealt with in this section, while the second is discussed in the next chapter. It is of interest to evaluate these proportions against estimates of age distributions, proportions ever married and age-specific fertility rates, and these demographic characteristics are presented for comparison in table 3.30 (p. 322).

The reliability of the data presented in that table was discussed earlier in this study, except for the proportions of childless women, regional estimates of which are shown in appendix B17 (p.489). Three possibl

---

(1) With the formula:

$$\bar{m} = \frac{\sum_{15}^{44} \bar{x}\, fx}{\sum_{15}^{44} fx}$$

where

$\bar{x}$ is the median age;

f_x is the specific rate.

errors could have affected these proportions. First, mothers of only one still-birth could have been included among those with one child or mothers of only one infant who died soon after birth could have been reported as childless; though not necessarily so, such errors may be presumed to balance each other. Second, those mothers whose children had all died may have been reported as childless; such a category of women would have been extremely small in view of the indigenous attitude to fertility. Third, there could have been erroneous classification by survey enumerators in coding as zero children those women whose children had all died; such coding errors would obviously inflate the proportions of childless women. However, since marriage is near universal from about 25 years and given the presumably small margin of statistical errors, the observed proportions childless largely reflected reality, not only for older, but also for relatively young women.

Table 3.30

PERCENT CHILDLESS WOMEN RELATIVE TO AGE DISTRIBUTIONS, PROPORTIONS EVER-MARRIED AND AGE-SPECIFIC FERTILITY RATES, ZAIRE, 1955-8 SURVEY

Age Group	Age Distribution 15 yrs. plus	Ever-Married Women	A.S.F.R. Reported	Childless Women (All)
15-19	11.6	46.4	.137	74.0
20-24	13.3	90.1	.265	28.1
25-29	14.8	96.9	.232	22.1
30-34	17.0	98.7	.168	22.4
35-44	21.9	99.3	.080	22.3
45-54	13.0	99.4	.016	20.5
55+	8.4	92.2	-	17.6

(iv) Regional differentials

Table 3.31 (p. 323) presents adjusted estimates of births and fertility rates for Zaire and its different regions which, as expected, exhibit variations often considerable in extent. As with mortality estimates, fertility differentials for the areas of relatively low and high fertility are discussed in the next chapter; the scope of this

Table 3.31

ADJUSTED* RATES OF BIRTH AND FERTILITY FOR ZAIRE AND ITS DIFFERENT REGIONS BASED ON THE 1955-8 SURVEY

Region or Sub-Region		BR	GFR (15-44)	GRR	TFR	$\bar{m}$ (Reported)
I.	REGION OF KINSHASA	53.50	274.76	3.70	7.50	26.81
II.	REGION OF BAS-ZAIRE	48.96	221.41	3.58	7.26	28.49
	S.R. Bas-Fleuve	47.69	220.54	3.15	6.39	27.46
	S.R. Cataractes	50.15	222.19	3.96	8.04	29.40
III.	REGION OF BANDUNDU	48.91	212.23	3.27	6.66	28.04
	S.R. Mai-ndombe	45.85	207.88	3.02	6.13	27.53
	S.R. Kwilu	47.62	205.80	3.09	6.27	27.76
	S.R. Kwango	53.84	230.37	3.89	7.90	29.04
IV.	REGION OF EQUATEUR	38.76	173.21	2.48	5.03	27.26
	S.R. Equateur	32.50	145.71	2.07	4.20	26.52
	S.R. Tshuapa	28.63	128.68	1.82	3.69	26.89
	S.R. Mongala	42.58	204.57	2.78	5.64	27.81
	S.R. Ubangi	45.93	205.99	3.00	6.09	27.43
V.	REGION OF HAUT-ZAIRE	32.18	145.33	1.99	4.04	26.00
	S.R. Tshopo	35.30	159.53	2.13	4.32	24.81
	S.R. Bas-Uele	21.44	96.15	1.42	2.88	25.14
	S.R. Haut-Uele	24.65	106.81	1.57	3.19	24.91
	S.R. Ituri	44.11	205.71	-	-	29.20
VI.	REGION OF KIVU	53.42	243.53	3.51	7.13	26.61
	S.R. Nord-Kivu	57.88	278.67	3.95	8.02	27.02
	S.R. Sud-Kivu	60.43	284.83	4.18	8.49	27.11
	S.R. Maniema	37.21	167.81	2.22	4.51	24.83
VII.	REGION OF SHABA	51.86	243.64	4.04	8.20	26.68
	S.R. Tanganika	50.86	232.96	3.31	6.72	26.88
	S.R. Haut-Lomani	48.36	213.07	3.15	6.39	26.59
	S.R. Haut-Shaba	58.27	299.09	4.09	8.31	27.30
	S.R. Lualaba	47.80	229.78	3.02	6.13	25.83
VIII.	REGION OF KASAI-ORIENTAL	44.94	197.49	2.83	5.75	26.69
	S.R. Kabinda	48.36	211.88	3.10	6.29	26.57
	S.R. Sankuru	41.71	183.09	2.56	5.20	26.81
IX.	REGION OF KASAI-OCCIDENTAL	48.33	212.00	3.16	6.41	27.03
	S.R. Kasai	48.09	210.72	3.20	6.50	27.19
	S.R. Lulua	48.50	212.97	3.12	6.33	26.92
	ZAIRE	45.22	203.75	2.91	5.91	27.02

* BR = Birth Rates derived from proportions under 5 years and mortality estimates based on stable North models, except for Kinshasa and Lubumbashi for which rates were adjusted for omitted infant deaths.

GFR = General Fertility Rates adjusted with the formula $GFR' = GFR \frac{RR'.R}{BR.S}(15\text{-}44)$ where GFR is the reported rate; BR' and BR are respectively the estimated and reported birth rates; R and S are respectively the reported and estimated (stable, North) proportion of women aged 15-44 years.

GRR = Gross Reproduction Rates derived North model relationships between BR and GRR for a given Mean of Fertility Distribution or $\bar{m}$.

TFR = Total Fertility Rates based on GRR x 2.03 with 1.03 as sex ratio.

** Averages of the sub-regions with proportions total population as weighting factor.

section is thus limited to a summary of the differentials by administrative and rural-urban divisions.

By politico-administrative divisions, the birth rate was highest in the region of Kinshasa with 54 births per thousand, closely followed by Kivu (53), Shaba (52) and Bas-Zaire (49); all these regions exhibited a total fertility rate above 7.00, that is more than seven children per women as average completed family size. With a total fertility rate varying between 5.00 and 7.00, there were four regions with markedly unequal birth rates - Bandundu (40), Kasai-Occidental (48), Kasai-Oriental (45) and Equateur (39). The lowest rates. for both births (32) and total fertility (4.00), were recorded for the region of Haut-Zaire. Considerable differences were also recorded between areas within the same region. For example, in Equateur, the birth rates for Ubangi and Tshuapa were respectively 46 and 29 per thousand, while in Haut-Zaire, these rates were 44 for Ituri and 21 for Bas-Uele. Altogether, at the level of the sub-region, the second largest division, birth and total fertility rates varied by almost three times, as indicated by the extreme rates recorded for Bas-Uele (21 and 2.9) and those for Sud-Kivu (60 and 8.5).

Concerning the rural-urban differentials, two important points are to be borne in mind when comparing the final estimates of birth and fertility rates. First, with regard to age structure already discussed, it was noted that urban settlements showed larger proportions of women in their reproductive ages, especially for ages 15-29 years.(1) Second, with respect to adjustment of observed rates, two different methods were used.(2) In any case, as can be seen below, the urban birth rate appeared to exceed the rural one by about 20 to 28 per cent.

	Rural	Mixed	Urban	Ratio U/R
Observed rates :	41	48	52	1.27
Adjusted rates (a) :	43	51	55	1.28
Adjusted rates (b) :	45	51	54	1.20

---

(1) Survey data also indicated that there were 34 per cent married polygamous women as against only 5 per cent in urban areas.

(2) (a) Accounting for omitted children;
(b) Using the formula:

$$B'_x = B_x \left(\frac{B'}{B}\right)$$ where B'_x = adjusted birth rate for the settlement;
B_x = observed birth rate for the settlement.

In view of the variations in age structures, as already mentioned, total fertility rate would appear a more reliable measure of differentials, as it compares cumulated fertility for the various settlements. The ratio of urban to rural values obtained in this way indicated that total fertility for urban settlement exceeded that for rural settlement by about 28 per cent, as apparent from table 3.32 below.

Table 3.32

RURAL-URBAN AGE-SPECIFIC AND TOTAL FERTILITY RATES, ZAIRE, 1955-8 SURVEY

Age Group	Rural	Mixed	Urban	Ratio U/R
15-19	121	173	211	1.74
20-24	264	250	212	1.11
25-29	229	220	258	1.13
30-34	164	173	209	1.27
35-44	77	100	108	1.40
45-54	16	19	20	1.25
Total fertility (non-adjusted)	4.773	5.277	6.121	1.28

Zaire's higher urban fertility as compared to rural fertility would appear to contradict the pattern commonly found in most nations of the world. It may well be pointed out that further investigation of fertility differentials for all married women and those legitimate monogamous only indicated a reduction in the excess of urban fertility over rural fertility, these being respectively 19 and 10 per cent. However, it is worth noting that at the sub-regional level, while birth rates were systematically and constantly higher in urban areas than rural ones, 9 out of 24 areas exhibited higher total fertility rates in rural rather than urban segments as shown in appendix B18 (p.490).(1) It can be concluded that the pattern found in Zaire may have reflected true demographic trends resulting from perturbations in age distributions and matrimonial characteristics between the rural and urban

(1) These were the sub-regions of Kivilu, Kwango, Tshuapa, Mongala, Tshopo, Ituri, Nord-Kivu, Sud-Kivu and Tanganika, thus including indiscriminately the areas of lowest, medium and high fertility.

areas. It is not excluded, however, that other social factors, such as the impact of World War II which affected particularly the rural population, were also responsible for Zaire's divergence from the world-wide pattern of rural-urban fertility differentials.

At this juncture, it might also be appropriate to point out the apparent inconsistency between the 2.6 per cent growth rate from the population enumeration of 1956 and the 1.9 per cent natural increase estimated from the 1955-8 survey, as immigration was too little to account for the 0.7 per cent discrepancy. As will be shown later, there are a number of considerations which must be taken into account when attempting to reconcile such a discrepancy. However, it may be noted that while surveys such as that conducted in 1955-8 for Zaire usually provide reliable estimates of vital events for a fixed period, they nevertheless tend to yield less definite figures of population totals, which determine, in comparison with previous years, the actual rate of growth.

CHAPTER XI

CHARACTERISTICS OF THE LOW AND HIGH FERTILITY AREAS

It was noted earlier that, whatever the methods of measurement, fertility estimates for the different regions of Zaire presented considerable variations in levels compared to the national standards. The aim of this chapter is to circumscribe the geographical location of those areas of relatively lower and higher fertility, to assess their statistical differentials and to investigate in particular the reasons for lower fertility.

1. The Geo-Demography of the Low and High Fertility Areas

For the purposes of this study, Zaire has been divided into three functional area-groups based on adjusted total fertility rates from the 1955-8 survey data, as shown in map 4 (p. 328). In reality, neither the areas of low fertility nor those of high fertility correspond exactly to the administrative divisions of Zaire by region, sub-region and zone. However, the areas of low fertility are generally found along the rivers throughout the central equatorial basin and also in the savannah of the northeast along the rivers Uele and Ubangi,(1) while the high fertility areas have been observed mostly in the savannah of the south and the mountains of the east along the Rift Valley as well as in the northwest of the country around Gemena in the Ubangi. In fact, several high fertility spots have been found within geographically low fertility areas, just as high fertility areas carry segments of low fertility communities. For convenience of the present analysis, the different areas are considered in aggregate groups of low, medium and high fertility, as indicated in table 3.33 (p. 329) which summarizes their basic geo-demographic characteristics.

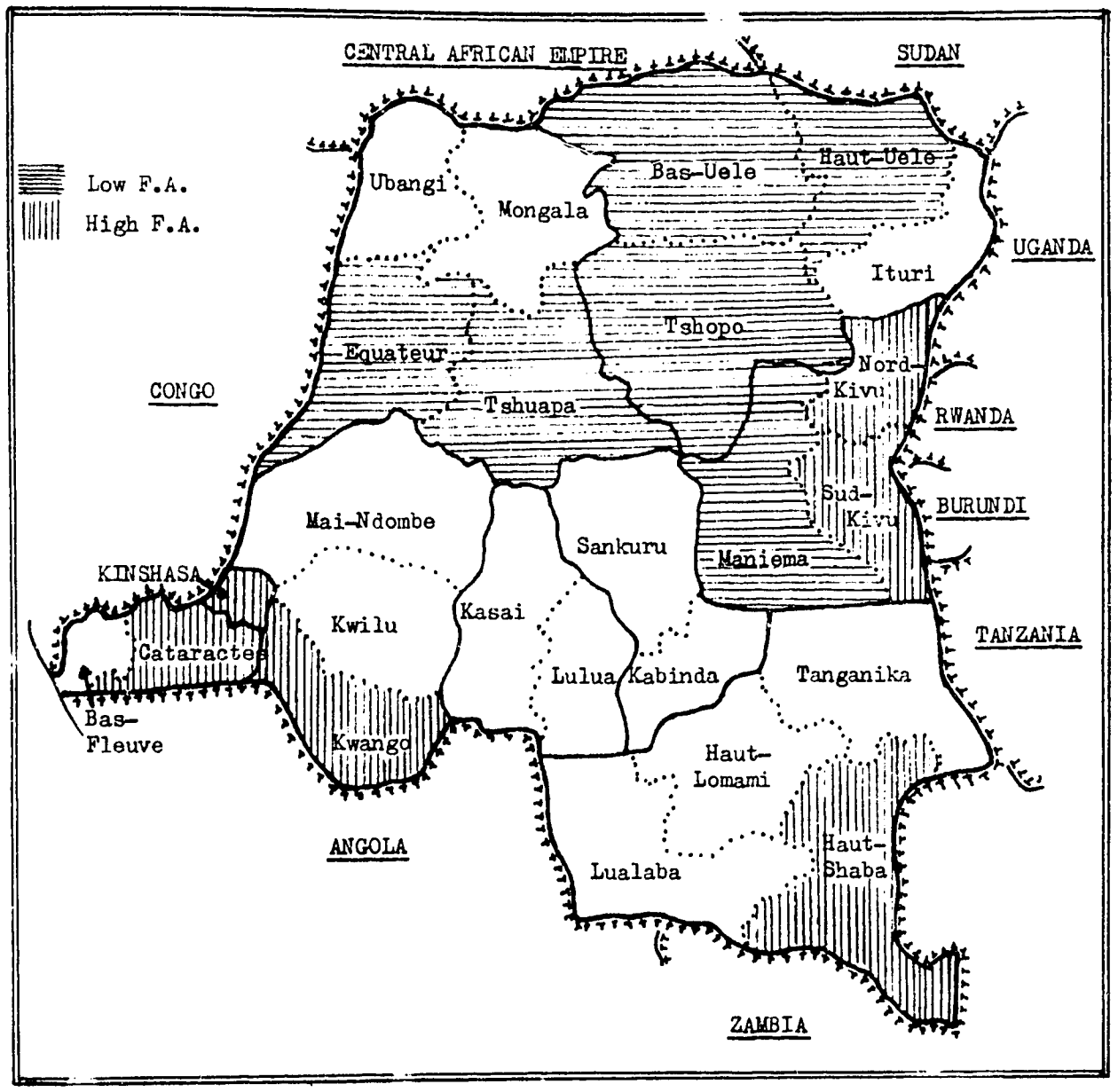
Three remarks are to be kept in mind, with regard to further interpretation of these summary characteristics. Firstly, though the

---

(1) It is pertinent to note that most low fertility areas in Africa are found in the vicinity of rivers and lakes, such as Zambeze, Kasai, Ruki-Busira-Tshuapa, Zaire, Uele, Ubangi, Ougoue, Sanaga, Volta and Senegal; these are also known to constitute natural means of communication.

Map 4

LOCATION OF THE LOW, MEDIUM AND HIGH FERTILITY AREAS OF ZAIRE



Area	TFR
1 KINSHASA REGION	7.5
2 BAS-ZAIRE REGION	7.3
SR Bas-Fleuve	6.4
SR Cataractes	8.0
3 BANDUNDU REGION	6.7
SR Mai-Ndombe	6.1
SR Kwilu	6.3
SR Kwango	7.9
4 EQUATEUR REGION	5.0
SR Equateur	4.2
SR Tshuapa	3.7
SR Mongala	5.6
SR Ubangi	6.1
5 HAUT-ZAIRE REGION	4.0
SR Tshopo	4.3
SR Bas-Uele	2.3
SR Haut-Uele	3.2
SR Ituri	-
6 KIVU REGION	7.1
SR Nord-Kivu	8.0
SR Sud-Kivu	8.5
SR Maniema	4.5
7 SHABA REGION	8.2
SR Tanganika	6.7
SR Haut-Lomami	6.4
SR Haut-Shaba	9.3
SR Lualaba	6.1
8 KASAI-ORIENTAL R.	5.8
SR Kabinda	6.3
SR Sankuru	5.2
9 KASAI-OCCIDENTAL	6.4
SR Kasai	6.5
SR Lulua	6.3

Based on adjusted Total Fertility Rate, 1955-8 Survey.

country is divided into three major area-groups, comparative considerations will focus on differentials between the low and high fertility groups. Secondly, levels of total fertility in these aggregate areas would appear not appreciably affected by their rural-urban variations, since relative proportions of populations in both types of settlement are fairly equal; that is, around 75 per cent in the rural sector and 25 per cent in the non-rural sector. Thirdly, relative to the country as a whole, the low fertility areas seem sparsely populated, as they represent 22 per cent of the inhabitants occupying 34 per cent of the land, while the corresponding figures for the high fertility areas are 21 and 16 per cent respectively.

Table 3.33

GEO-DEMOGRAPHIC CHARACTERISTICS OF THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	TFR	% Area Population		% Total Country	
		Rural	Non-rural	km^2	Population
Low fertility	5	75.0	25.0	34.0	22.0
Medium fertility	5-7	81.0	19.0	50.0	57.0
High fertility	7+	73.0	27.0	16.0	21.0
Zaire*	5.9	78.0	22.0	100.0	100.0

* The TFR for Africa then was 6.0; Demographic Yearbook, 1965.

2. Statistical Differentials in Demographic Characteristics

Due to developments already discussed in the collection of population statistics for Zaire, only the 1955-8 survey provided sufficient data for deriving refined measures required for appraisal of differentials between the areas contrasted; thus, no attempt is made in this chapter to extend the statistical considerations to periods before or after that survey. It should also be borne in mind that the measures for the aggregate areas have been derived by averaging regional estimates using proportions sub-regional to total population as weight factor.(1)

(1) For example, the Death Rate for aggregate low fertility areas is derived as $DR_{LFA} = d_1.\frac{P1}{P} + d_2.\frac{P2}{P} + \ldots d_6\frac{P6}{P}$ where d_1, d_2 .. d_6 are sub-regional death rates, P_1, P_2 ... P_6 are sub-regional population totals and P is the total population of the aggregate areas.

2.1 Differentials in population structures

Graph 3.14 (p. 331) presents population pyramids for the aggregate areas of low, medium and high fertility with the national ones as standards.(1) They all exhibit similar peculiarities: shortages of persons in late teens and early twenties, concentration on adult ages and excess of males over females at old ages. It may be presumed that reported estimates for all the area-groups were affected by similar recording errors and similarly reflected some true demographic trends.(2) The important point, however, is the fact that proportions of persons under 20 years of age are much smaller in the low fertility areas, where these persons represent only 35.5 per cent of the population total, than in the high fertility areas where the corresponding figure is 53.6 per cent. This large difference is a clear indication that age distributions in the area-groups compared were considerably affected by the fertility rates, as evidenced further in this section.

(i) Indices of relative difference and dissimilarity

Table 3.34 (p. 334) compares the age distributions by means of indices. As expected, the medium fertility areas exhibit minor variations from the national standard, with 1.8 as index of relative difference and 1.6 as index of dissimilarity.(3) As with other area-groups, the case of a broad terminal age-class 55 years and over, for the oldest ages, which are given equal weight in the average, seriously reduces the likelihood of a large percentage difference. In particular, recorded indices were certainly affected by the large proportion, 57 per cent, of the population of the medium fertility areas relative to Zaire's total population. Indeed, graph 3.15 (p. 332) clearly shows little variation of the age distributions of the medium fertility areas from the national standards, whereas table 3.34 indicates that percentage age-specific difference from standard are everywhere less than unity. However, concentration of positive variations for child ages and that of negative variations for ages 15-29 years suggests that while fertility levels of the medium fertility areas were generally

---

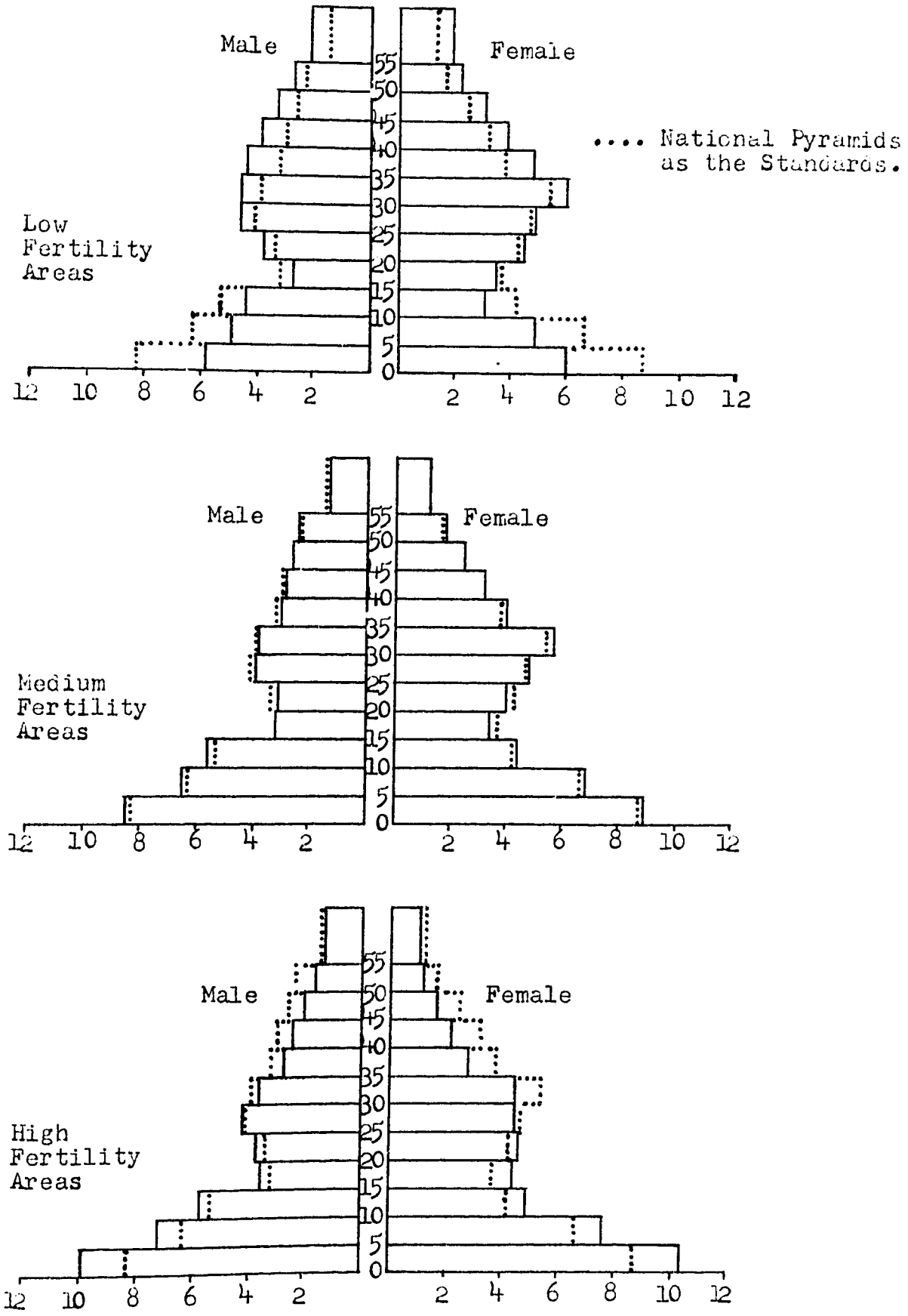
(1) Detailed statistics of the age and sex distributions can be seen in appendices B19 (p.491) and B20 (p.492) and B21 (p.493-5) for related pyramids.

(2) How these peculiarities resulted from erroneous reporting and true demographic trends has been discussed in Chapter IX, 4.

(3) See table 3.19 (p. 278) for the formula of calculation.

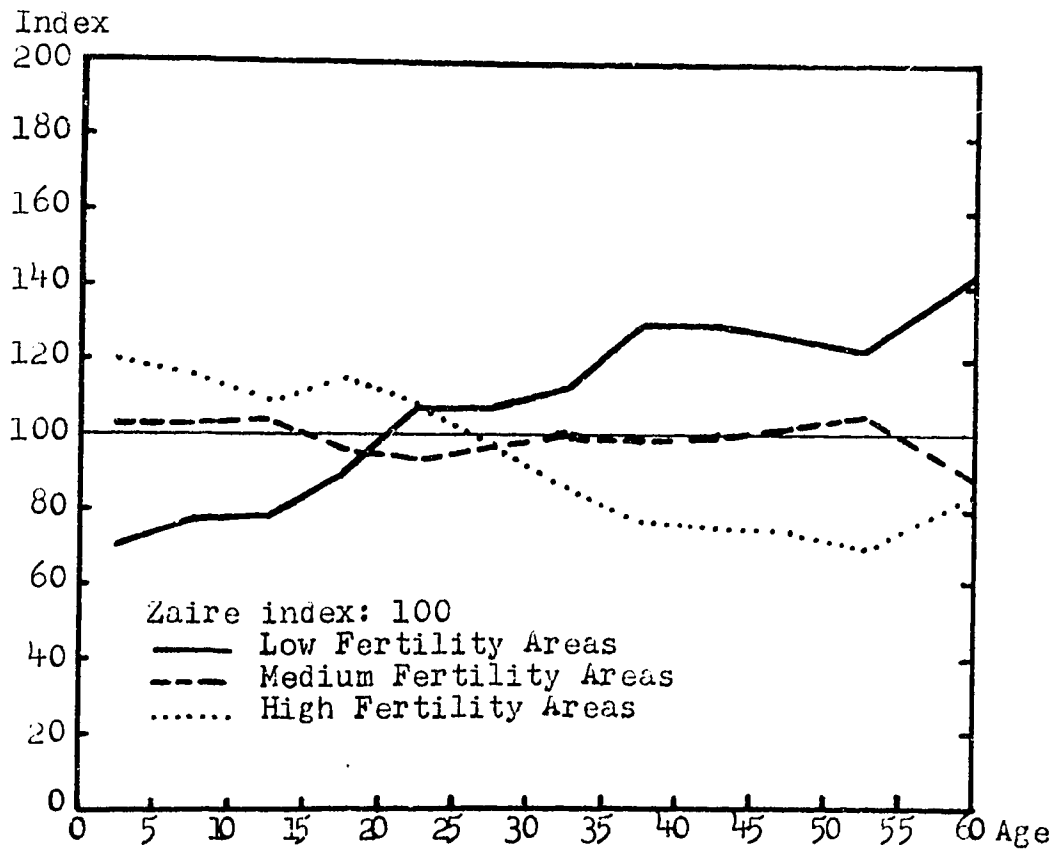
Graph 3.14

POPULATION PYRAMIDS (IN %) FOR THE LOW, MEDIUM AND HIGH FERTILITY AREAS OF ZAIRE; 1955-8 SURVEY.-



Graph 3.15

AGE INDICES FOR THE LOW, MEDIUM AND HIGH FERTILITY AREAS COMPARED WITH THE NATIONAL STANDARDS; ZAIRE, 1955-8



above the country's average, adult ages were affected by migration of males in their prime working ages. This was very probably due to workers migrating from the south-centre to the Shaba and Kinshasa regions.

For the high fertility areas, recorded indices of relative difference and dissimilarity are fairly large, amounting respectively to 8.4 and 7.9. For the low fertility areas, recorded indices appear the largest of all, as they reach 10.9 and 10.8 respectively. Most significantly, the low and high fertility areas show age-specific variations in opposite direction relative to the national standards, except for age-group 20-24 where both area-groups have an index of 107, clearly indicating a higher proportion of persons than the standard. For age groups younger than 20-24, deviations from the standard are negative in the low fertility areas and positive in the high fertility areas. The reverse of the situation is recorded for age groups above 20-24 years. Both above and below the 'age-group 20-24 years line', relative differences and dissimilarities are generally larger in the low fertility areas than in the high fertility areas. Further, examination of the sex ratios would suggest that high fertility areas experienced greater relative male deficit at old ages while low fertility areas witnessed deficit of males at young ages. The above considerations, obviously, lead to the conclusion that whatever the levels and patterns of mortality throughout the country, age distributions in the high fertility areas were substantially affected by the larger number of births.(1)

(ii) The median ages, proportions of children and aged persons

Examination of the summary measures of age composition, as shown in table 3.35 (p. 334), reveals that the lowest median age was recorded for the high fertility areas with a figure of 17.8 clearly indicating a young population, in contrast to the figure of 28.3 which puts the low fertility areas close to an aged population, while the median age for the medium fertility areas averaged the country's standard at about 22 years.

On the basis of proportions of children under 15 years of age, and stating what is rather obvious, 'round' limits still characterize

---

(1) Since the proportions of populations of the low and high fertility areas to Zaire's total population were practically similar, as apparent from table 3.33 (p. 329), indications from indices were largely appropriate.

Table 3.34

INDICES OF RELATIVE DIFFERENCE AND DISSIMILARITY FOR LOW, MEDIUM AND HIGH FERTILITY AREAS COMPARED WITH NATIONAL AGE DISTRIBUTION AS STANDARD: ZAIRE, 1955-8 SURVEY

Age group	L.F.A.		M.F.A.		H.F.A.	
	Age Specific Index	% Diff.from Standard	Age Specific Index	% Diff.from Standard	Age Specific Index	% Diff.from Standard
0-4	70.4	-5.0	103.0	+0.5	120.1	+3.4
5-9	76.7	-3.0	103.1	+0.4	115.5	+2.0
10-14	78.1	-2.1	104.2	+0.4	109.4	+0.9
15-19	89.9	-0.7	97.1	-0.2	114.5	+1.0
20-24	106.5	+0.5	93.5	-0.5	107.8	+0.6
25-29	106.7	+0.6	97.8	-0.2	97.8	-0.2
30-34	112.8	+1.2	100.0	0.0	86.2	-1.3
35-39	129.6	+2.1	98.6	-0.1	77.5	-1.6
40-44	130.0	+1.8	100.0	0.0	76.7	-1.4
45-49	126.0	+1.3	102.0	+0.1	74.0	-1.3
50-54	122.5	+0.9	105.0	+0.2	70.0	-1.2
55+	142.9	+2.4	89.3	-0.6	83.9	-0.9
IRD	10.9	-	1.8	-	8.4	-
ID	-	10.8	-	1.6	-	7.9

Table 3.35

SUMMARY MEASURES OF AGE COMPOSITION FOR THE LOW, MEDIUM AND HIGH FERTILITY AREAS: ZAIRE, 1955-8 SURVEY

Area	Median age	% Total Population			Sex Ratio			
		0-14	15-49	50+	0-14	15-49	50+	All ages
Low fertility	28.3	29	58	13	108	89	115	97
Medium fertility	21.9	41	50	9	102	81	116	92
High fertility	17.8	46	47	7	100	89	126	97
Zaire	22.5	39	51	10	102	85	118	94

the low fertility areas as old population, since they had less than 30 per cent of persons aged less than 15 years, and the high fertility areas as young population with 46 per cent of persons under 15 years. On the same basis, the medium fertility areas again approximated the national standard with a proportion of persons under 15 years averaging 40 per cent, i.e. just at the lower limit of a young population.

Proportions of persons aged 15-49 years indicate substantial variations between the low and high fertility areas, as these proportions amounted respectively to 58 per cent and 47 per cent. Although sex ratios for broad age-groups are equal in both areas, a closer examination reveals that there was a marked excess of males for ages above 25 years in the high fertility areas. The corresponding figures for the medium fertility areas again approximated the national standards. For ages 50 years and over marked variations in proportions of persons existed between the low fertility areas with 13 per cent and the high fertility areas with about 8 per cent, while the percentage for the medium fertility areas averaged that of the national standard around 10 per cent. All these proportions again reflect the large degree by which population of the low fertility areas appeared older than that of the high fertility areas.

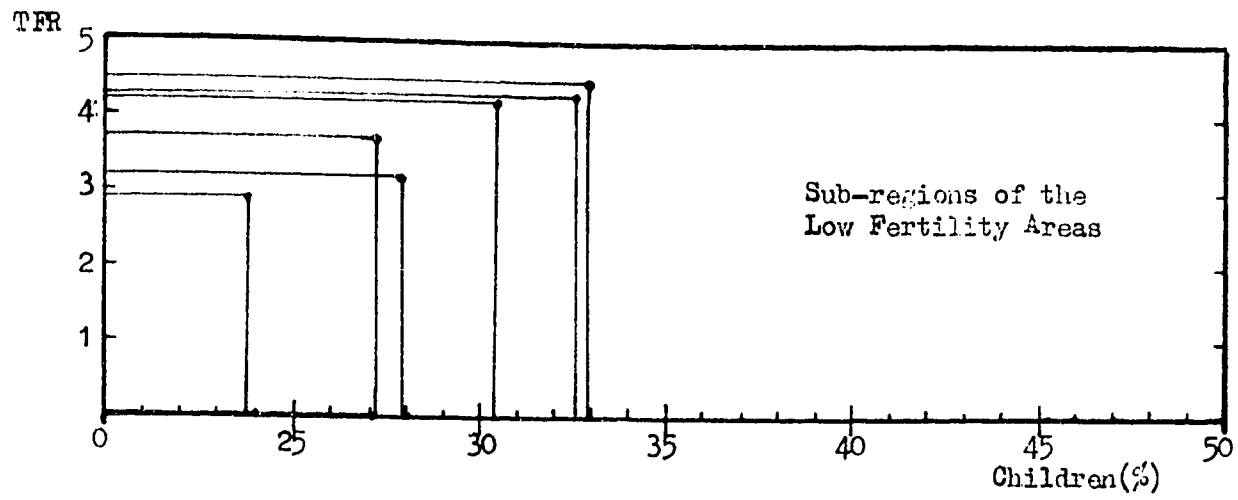
(iii) Proportions of children related to fertility rates

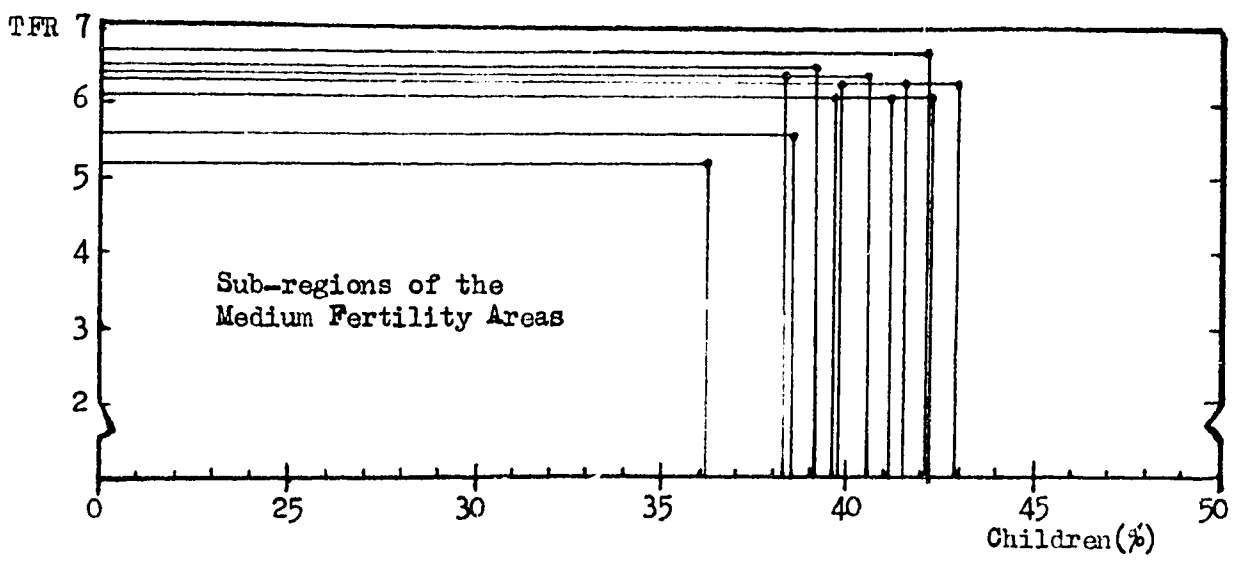
There is an extensive literature showing that age distributions are responsive to changing fertility; one may, therefore, attempt to make explicit the consequences on child age proportions of variations in fertility levels for the low, medium and high fertility areas. Thus, it is hypothesized that, if fertility levels are the main cause of deviations of age distributions from the national patterns, one could expect an association of lower fertility rates with lower proportions of children and that of higher fertility rates with higher proportions of children.

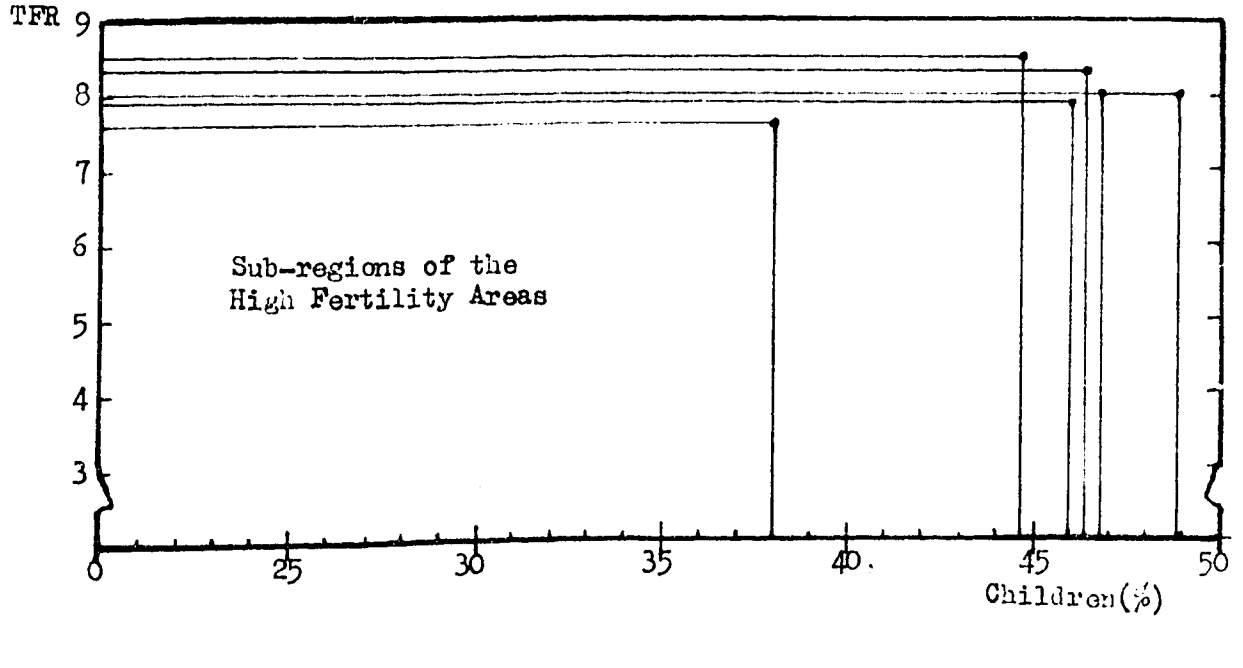
Graph 3.16 (p. 336) presents, for each area-group, reported proportions of children with the corresponding value of total fertility rate by sub-region. For the low fertility areas, the features of the analysis are in close accord with the hypothesis set up above, except for the sub-region of Equateur, which traditionally contributed important migration towards Kinshasa. The number of exceptions is larger for both the high and medium fertility areas. Most of these exceptions

Graph 3.16

PROPORTIONS OF CHILDREN RELATED TO TOTAL FERTILITY RATES FOR THE LOW, MEDIUM AND HIGH FERTILITY AREAS; ZAIRE, 1955-8 SURVEY







may well be due to endogenous distortions of de facto enumerations of the population during the survey. It is, in any case, clear from the graphical illustration that, in both the high and low fertility areas, the dominant pattern is that of an association of lower proportions of children with lower fertility rates, and of higher proportions of children with higher fertility rates.

2.2 Differentials in mortality estimates

Table 3.36 (p. 338) presents mortality estimates for the aggregate areas of low, medium and high fertility. It may be assumed that, if, as stated by Romaniuk and others, venereal diseases and other pathological factors were the main causes of lower fertility, this does not suggest good health conditions for the population of these areas, and this applies equally to the period of early childhood which affects considerably the overall death rate. Reported death rates would tend to support that assumption of higher mortality in the low fertility areas (20.8) than in the high fertility areas (19.0), even though the reported death rate for the medium fertility areas (21.1) clearly runs counter to this assumption by recording the highest estimate. But, contrary to expectation and reports, adjusted mortality rates and functions indicate the normal positive association of mortality with fertility: i.e. high mortality with high fertility and low mortality with low fertility. More particularly, the resulting overall estimates of death rates - i.e. 23.6 deaths per thousand persons in the low fertility areas and 28.1 deaths per thousand persons in the high fertility areas - indicate markedly more favourable mortality conditions for the low fertility areas; the same holds true for other mortality functions, i.e. q(1) and q(5) values as well as the life expectancy at birth.

Examination of table 3.36 in relation to table 3.29 (p. 311) and also table 2.6 (p. 105) reveals that, in the case of the low fertility areas, estimates were based on post-infant mortality or m_{1+} for four sub-regions and on child mortality or q(a) values for two sub-regions; while in the case of the high fertility areas, estimates were based on m_{1+} for two sub-regions and on q(a) values for four sub-regions, as was also the case with indices used to derive mortality estimates for the aggregate medium fertility areas. It may thus be tentatively presumed that the variety of indices used in estimating mortality rates

may have affected, to some extent, the final estimates. However, one possible explanation of the more favourable mortality conditions observed in the low fertility areas could be that death rates derived from estimated q values might have been generally too high in relation to the actual swiftness of mortality decline in the years preceding the survey. On the other hand, sampling errors and under-reporting of current deaths may have affected indices of post-infant mortality to a much larger extent than recorded. One further possible explanation could be some kind of effect of the estimation methods, with estimates based on age structures tending to be affected by the small or large proportions of children, subsequently yielding relatively low or high mortality estimates. A final explanation could be a better care for the average child in the low fertility areas as a result of smaller family size.

Table 3.36

DIFFERENTIALS IN MORTALITY ESTIMATES (ADJUSTED) FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY: ZAIRE, 1955-8 SURVEY

Area	DR (Reported)	DR	q(1)	q(5)	e_o^o
Low fertility	20.8	23.6	.155	.261	40.9
Medium fertility	21.1	25.9	.181	.299	37.2
High fertility	19.0	28.1	.178	.297	38.3
Zaire	20.0	25.5	.173	.291	38.0

2.3 Differentials in birth and fertility rates

According to table 3.37 (p. 339), which presents the summary rates of birth and fertility, estimates for the high fertility areas are all considerably higher than the corresponding values for the low fertility areas, with birth rates amounting respectively to 56.4 and 29.9 per thousand persons, while total fertility rates amounted to 8.1 and 3.8. Also notable is the fact that, invariably, measures related to medium fertility areas were everywhere intermediate. These differentials are hardly surprising since the areas have been aggregated according to

Table 3.37

DIFFERENTIALS IN FERTILITY ESTIMATES (ADJUSTED) FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY; ZAIRE, 1955-8 SURVEY

Area	$\overline{m}$ (Reported)	BR	GFR (15-44)	GRR	TFR
Low fertility	25	29.9	134	1.9	3.8
Medium fertility	27	46.6	202	3.0	6.2
High fertility	28	56.4	266	4.0	8.1
Zaire	27	45.2	203	2.9	5.9

Table 3.38

RURAL-URBAN TOTAL FERTILITY RATES ADJUSTED FOR LEGITIMATE MONOGAMOUS WOMEN FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY; ZAIRE, 1955-8 SURVEY

Area	Rural	Mixed	Urban	Ratio U/R
Low fertility	4.3	4.0	4.7	1.09
Medium fertility	6.9	7.3	7.6	1.10
High fertility	7.6	8.6	7.4	.97
Ratio H/L	1.77	2.15	1.57	-

Table 3.39

PERCENT CHILDLESS ALL WOMEN (REPORTED) BY AGE GROUP FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY; ZAIRE, 1955-8 SURVEY

Age group	Low fertility areas	Medium fertility areas	High fertility areas	Ratio H/L	Zaire
15-19	70.5	76.0	73.2	1.04	74.0
20-24	40.7	28.2	19.4	.48	28.1
25-29	40.4	20.3	8.3	.21	22.1
30-34	39.7	19.6	7.4	.19	22.4
35-44	37.0	19.1	6.9	.19	22.3
45-54	31.6	17.9	8.9	.28	20.5
55+	26.5	15.6	9.1	.34	17.6
15+	39.6	26.5	19.5	.49	28.4

their fertility levels. It may be presumed that, as with mortality estimates, adjusted rates of fertility were affected to some extent by the methods of estimation, but such an impact would remain less noticeable in view of the wide differences. Indeed, as can be seen in table 3.38 (p. 339), for the rural populations and for the urban ones, ratios of differences in total fertility rates of the high to low fertility areas are all markedly above unity, i.e. 1.77 and 1.57 respectively, and even greater in the case of the mixed populations which showed a ratio of 2.15. Ratios of urban-rural total fertility rates show an interesting pattern, as they vary little within each aggregate area with rural fertility slightly deficient in the low fertility areas but slightly in excess in the high fertility areas. In view of the virtually identical proportions of populations by type of settlement, it can be expected that the rural and urban rates would reflect true differentials in fertility levels. Table 3.39 (p. 339) supplies additional indications of considerable variations in fertility levels between the area-groups. The lower proportion of childless women for the age-group 15-19 years in the low fertility areas reflects to some extent earlier marriage (see table 3.43, p. 352). At all other ages, however, proportions of childless women are increasingly and considerably lower in the higher fertility areas. In particular, from ages 25 years onwards, these proportions are below 10 per cent for the high fertility areas as against 40 to 27 per cent for the low fertility areas. Without question, low fertility areas were affected by a sizeable degree of infertility.

3. Causes and Origins of Lower Fertility

It is apparent from all population pyramids (see graph 3.14, p. 331) that age structures were fairly consistent, suggesting that they had been affected by some kind of infertility for about three or more decades prior to the time of the survey under review. Thus, explanations of the recorded high proportions of infertile women should seek responsible factors not only of an immediate but also of a distant nature.

The prevalent and much quoted reason for lower fertility is that advanced by Romaniuk who, given the practices of universal marriage, polygyny and conjugal mobility, and assuming non-Malthusian attitudes for all the populations of Zaire, hypothesized that the observed

infertility was of physiological origin, caused by venereal disease.(1) He admitted that empirical data were not sufficient to reveal specifically the kind of venereal infection, but affirmed that the prevalence of gonorrhoea was borne out by various medical testimonies. Hence, he suggested further medical research to determine exactly the nature of the venereal disease involved. As statistical support of his hypothesis, Romaniuk constructed a series of mathematical representations, discussed later in this section, which by repetition and the authority granted their author in relation to Zaire's demography, have gained acceptance and are frequently quoted, almost invariably without qualification, as was the case with Retel-Laurentin.(2)

Our investigation has demonstrated that Romaniuk's correlation coefficients do not stand as such from a mathematical viewpoint and, in any case, they were based on hypothetical estimates. Moreover, the evidence on venereal diseases is of little significance in relation to substantially lower fertility, whereas other diseases causing sterility and miscarriage were found, often to a greater degree in the areas concerned. Finally, a thorough examination of the "intermediate variables" and historical events of Zaire has provided evidence to support the hypothesis that the reasons for the observed low fertility were partly pathological and partly social, the latter perhaps having the greater impact as recent trends in population growth of the areas in question would seem to suggest.

3.1 Unproved 'evidence' from venereal diseases

In his study of Zaire's population, Romaniuk understandably tended to identify sterility with infertility which, from a strict demographic viewpoint, includes fecundity impairment; the latter, in contrast to sterility, may provide gains in fertility following marriage or other similar union as well as appropriate treatment.(3) As indicated later

---

(1) Romaniuk, A.: Infertility in Tropical Africa; op. cit., p. 218.

(2) Retel-Laurentin, A.: Infécondité en Afrique Noire; op. cit., p. 64.

(3) Infertility is demographically defined as the incapacity to impregnate or to conceive and carry a pregnancy to live birth; this assumes that infertile persons could be fecund and have the biological capacity to reproduce. Sterility refers to the absolute incapacity to reproduce. United Nations: The Multi-lingual Dictionary of Demography, ST/SOA/Series A/29, Sales No. 58.XIII.4.; and also Sub-Fertility and Infertility in Africa, by B.K. Adadevoh (ed.), University of Ibadan, Nigeria, 1974, p. 2.

in this section, such gains accounted for some fertility increase in several areas during the years preceding the survey and very probably after the survey as well. Tables 3.40 and 3.41 (p. 343) present Romaniuk's indices and correlation coefficients of fertility measures with venereal diseases.

With regard to table 3.40, the following observations are of importance. Firstly, of all the data series, only birth rates were adjusted estimates while proportions of infertile persons were presumably affected by small reporting errors; estimates on venereal diseases, however, were derived from medical cases where the same or different persons were examined invariably without reference to their sex and age, and were liable to mis-reporting like most morbidity statistics all over the world. Secondly, the highest proportion of infertile persons was recorded for the sub-region of Tshuapa (423) while the highest incidence of venereal disease (67) was reported for the sub-region of Equateur. Thirdly, in terms of both direction and magnitude, as can be seen below, variations compared to the mean in proportions of infertile persons between areas are not proportionate to variations in levels of venereal disease.

Area	Variations between adjacent areas per thousand persons	
	Infertile	Affected by V.D.
SR Equateur		
	+ 34	- 15
SR Tshuapa		
	- 184	+ 19
SR Mongala		
	- 49	- 13
SR Ubangi		
	- 121	- 13
Zone Gemena		

Concerning table 3.41, it should be noted that the procedure of comparison is misleading, since the term of reference should be the level of infertility rather than the birth rate. However, correlations between the birth and sterility rates is meaningless, since it proves nothing but merely states a truism. More significantly, newly observed syphilis cases are based on fresh 'cankers' easily noticeable; such cases cannot affect or provide a valid explanation of fertility levels observed for past years. Even if it is assumed that their numbers

Table 3.40

ROMANIUK'S INDICES OF FERTILITY, STERILITY AND VENERAL DISEASES BASED ON DATA FOR THE REGION OF EQUATEUR, ZAIRE, 1957(1)

Area	Birth rates per 1000	Sterility per 1000 women 25-34	Syphilis* New	Syphilis* New & Old	Gonorrhoea*	S*+G*
SR Equateur	33	389	6	29	38	67
SR Tshuapa	29	423	6	25	27	52
SR Mongala	43	240	2	8	25	33
SR Ubangi	46	191	1	4	16	20
SR Gemena	56	70	1	3	4	7
Total Region	36*	295	3	14	25	39

* Per 1000 persons examined for all diseases, in the 1957 medical survey.

** The Correct estimate was actually 39 and not 36 as in the table.

(1) Source: Unpublished medical data for Equateur, quoted by Romaniuk in La fecondite des populations congolaises; op. cit., p. 309.

Table 3.41

ROMANIUK'S CORRELATION COEFFICIENTS OF BIRTH RATES TO STERILITY, VENEREAL DISEASES, ILLEGITIMATE FERTILITY AND CONJUGAL OFFENCES, ZAIRE, 1955-8 SURVEY(1)

BR and Sterility rates (Zaire)	-.89
BR and Newly observed syphilis index (13 areas)	-.82
BR and Illegitimacy index*	-.36
BR and Illegitimacy index (without Luapula-Moero)	-.49
BR and Proportions of sentences for conjugal offences**	-.78

* Ratio of cumulated illegitimate to cumulated legitimate fertility rates for women aged up to 25 years.

** Total recorded conjugal offences against total recorded offences of all classes.

(1) Source: Romaniuk, A., in The Population of Tropical Africa, op. cit., p. 222; and also in La fecondite des populations congolaises, op. cit., p. 309.

were proportionate to old cases in each area, their reliability would have to be dismissed on the grounds mentioned earlier. Correlation with illegitimacy indices is very dubious because illegitimate children may include those born within legitimate unions prior to completion of the dowry payment. Finally, adultery and other undefined conjugal offences were generally settled by customary elders or representatives of the families concerned; cases reported to the colonial judicial authorities were exceptions involving persons of different tribes and constitute a meaningless test of the degree of sexual promiscuity of populations primarily living within tribal communities, even in the relatively modernized and urban centres. The above considerations demonstrate the dubious nature and extreme weakness of the mathematical representations in question as well as the conclusions drawn from them.

In fact, for the year of the survey, 1956, medical reports indicated a total of 242,000 cases of venereal disease - 67,000 cases of syphilis and 175,000 cases of gonorrhoea - for the entire country of 12,500,000 inhabitants. Such figures are obviously insignificant compared to the magnitude of observed infertility. Even for the areas of Equateur and Tshuapa, where data collection was reasonably complete and where infertility reached about 40 per cent for all women, the proportions of persons with venereal diseases was only 6 per cent of the entire population, as indicated in table 3.40. Calculated against persons of reproductive ages - 15-45 years - the percentage rises to about 16, i.e. less than half the proportion of infertile persons.(1)

Turning to the actual importance of venereal disease in relation to infertility, available information indicates that women often recovered from a previous infection, whilst, on the other hand, not all infected persons necessarily became infertile. Bruaux, observing two groups of pregnant women infected with venereal disease in a Kinshasa hospital noted that of those who were systematically treated against syphilis, there were 1.7 per cent miscarriages and 0.9 per cent premature births; while of those not treated at all 24.2 per cent miscarried and 11.3 per cent gave birth prematurely.(2) In other words,

---

(1) Estimates arrived at also by Romaniuk in Infertility in Tropical Africa, in The Population of Tropical Africa; op. cit., p. 219.

(2) Bruaux, P. et al.: La lutte contre les infections vénériennes a Léopoldville; in Annales de la Societe Belge de Médecine Tropicale; XXXVII, 6, p. 801-14; December 1957.

venereal diseases were not necessarily a cause of total sterility since, in the complete absence of treatment, there were still 76 per cent of live births. Also notable is the fact that, under the same circumstances, the percentage of miscarriages remained insufficient to explain the higher proportions of infertile persons. Nevertheless, according to reports, increased birth rates were recorded in several areas of Equateur, Haut-Uele, Kivu and Kasai following intense anti-venereal campaigns in 1931 and further extensive use of sulphonamides and antibiotics in 1944 and 1950.(1) It should be noted that such campaigns were generally accompanied by active and comprehensive programmes of socio-economic welfare and it remains difficult to determine the extent to which this improvement was due exclusively to the anti-venereal action. Increased birth rates could also have been due to more adequate enumeration and reporting of births in those areas of sustained observation. From the above considerations, it is only fair to conclude that Romaniuk's correlations bore little validity, whilst their author overstated not only the incidence of venereal disease but its importance for infertility. It is clear that other factors, apart from venereal disease, were contributing to lower fertility.

3.2 Other pathological factors of infertility

Numerous medical reports and studies suggest, for both males and females, several non-venereal diseases found to lower fertility by causing still-birth, miscarriage and sterility. Though not exhaustive, table 3.42 (p. 346) lists many such diseases, all of which have been observed in varying degrees in Zaire, either in an endemic state or localized in certain centres. The impact of some of these pathological factors in certain areas would seem more damaging to fertility than venereal diseases, as suggested by the examples that follow. Non-supervised abortions, either voluntary or involuntary, are amongst the factors which lead to sterility. Available information is unfortunately insufficient to allow analysis of abortion by age of foetus and rank of the potential birth in order to derive the proportions and motivations of those generally induced abortions. However, based on reports by women during medical surveys, it was observed that proportions of abortions were generally larger in the areas of low

---

(1) Quoted by Retel-Laurentin, A.: in Infécondité en Afrique Noire; op. cit., p. 65.

Table 3,42

STERILIZING AND ABORTIVE DISEASES FOUND IN THE LOW FERTILITY AREAS OF AFRICA (BY ORDER OF IMPORTANCE)[1]

A. Name of the disease	Sterility	Abortion	Stillbirth or Premature
1. Gonorrhoea (gonococcus) or blenorrhoea	++	±	0
2. Venereal syphilis	+	++	+
3. Paludism	0	±	0
4. Rickettsia (5 strains)	0	+	±
5. Toxoplasmosis	?	+	+
6. Bilharzia (local centres)	+	+	0
7. Goitre hypothyroidism	±	±	sick children*
8. General viral diseases	?	±	±
9. Malta fever or brucellosis	-	+	±
10. Anaemia and hypoproteinaemia	0	±?	±?
11. Febrile contractions at the beginning of a pregnancy	0	±	±
12. Post-obstetrical complications**	+	+	±
13. Non-supervised abortions (voluntary or involuntary)	++	+	0
14. Non-infectious genital diseases	+	+	(premature)
15. Genital infections of exogenous origin	+	+	-
16. Leprosy	±	-	-
17. Tuberculosis	±	-	-
18. Malnutrition	-	-	-
B. Local customs			
1. Vaginal washing with plants	0(±?)	0	0
2. Ingestion of drugs	0	±	0
3. Enema with plants	0	±	0
4. Local tampons	+(rare)	±	0

* Myxoedema.

** Infections, laceration of the perineum, etc.

[1] Source: Adapted from Retel-Laurentin, op.cit.

N.B. The signs in the table are metro-biological symbols indicating the correlation between the disease and its effects. For example, two plus means double positive association; negative means unknown; minus and plus means may or may not affect; zero means total absence of correlation.

low fertility, 2.5-8.0 per cent, than in the areas of high fertility, 0.5-6.0 per cent. Soret suggested a much higher estimate of 22.3 per cent for the low fertility areas of Congo, and personal investigations by Retel-Laurentin revealed a much higher estimate of abortions, about 35 per cent, among the Zande of north Zaire where previous observations indicated only 8 per cent.(1) If, as suggested by Retel-Laurentin, abortions amounted to 35 per cent of pregnancies and were generally performed without appropriate supervision, this would demonstrate that they were considerably damaging to fertility. It may be remarked that data from Bruaux' experiment in Kinshsasa showed that spontaneous abortions were more frequent when the woman had venereal disease. Thus, the question may arise as to how prevalent were abortions independently of venereal disease. However, in addition to non-supervised abortions, there were also observed various post-obstretical complications and genital infections of exogenous origin which seemed to occur more frequently in the low fertility areas than in the high fertility areas.

A more apparent cause of infertility is goitre hypothyroidism; the seats of this disease seem to correspond to a large extent with areas of lower fertility throughout Africa. In Zaire, the largest centre is found in the basins of the Uele and Ubangi rivers, extending up north into Sudan and the Central African Republic and also southwards beyond the Aruwimi river to Basoko near Kisangani; such an area includes about half of the Haut-Zaire and an eighth of the Equateur regions. By the mid-fifties, this disease affected 20-50 per cent and 80 per cent of persons respectively in the surroundings and centre of the above area (see map 5, p. 348). Further cases of this disease were observed in the kasai and Kwango areas, but reports for the Equateur region are not available.

Sleeping sickness - with great epidemics extending largely over the low fertility belt of the continent until the mid-forties - is another pathological factor which had substantial negative effects on fertility as well as mortality. As indicated earlier,(2) arriving in the land via rivers and roads from the late decade of the previous century, epidemics of sleeping sickness initially spread in the humid forests of the equatorial basin where the tsetse flies abounded,

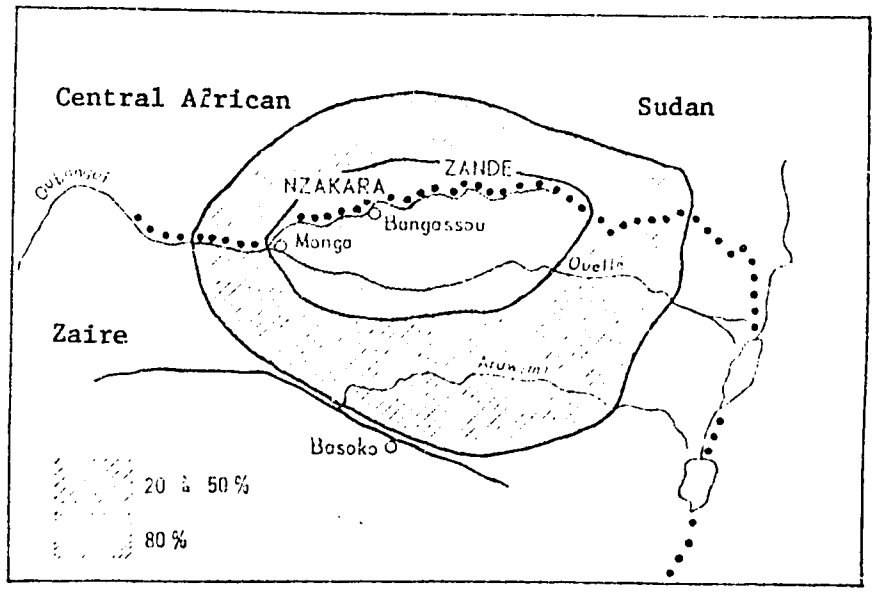
---

(1) Retal-Laurentin, A. in Infécondité en Afrique Noire; op. cit., p. 27. The author claimed that because she was a woman, repeated talks in privacy led indigenous women to admit to the true number or nature of abortions.

(2) See Chapter II, 5, and also appendix D6, map 11 (p.502).

Map 5

AREAS OF GOITRE HYPOTHYROIDISM IN ZAIRE



Source: Retel-Lautentin, A.: Infécondité en Afrique Noire; op.cit.

then in the neighbouring savannahs, before settling extensively north of the Zaire river in Sudan and the Central African Republic. Ouzilleau remarked that, in those years, fertility surely declined in most affected areas as a result of sterilizing lesions during the septicaemic phases of the disease and further permanent sterility in the case of persons treated too late.(1)

Several other diseases such as bilharzia, paludism, rickettsia, filariasis, toxoplasmosis, leprosis, pelvic tuberculosis, genital infections of exogenous origin and other non-infectious genital diseases have also been found to cause various degrees of infertility or increased rates of spontaneous abortion. As already indicated, inadequate medical action in Zaire meant that eradication of sleeping sickness and many other diseases was delayed until after World War II. It must be noted that, like venereal disease and sleeping sickness, most epidemics brought in through rivers and roads converged and settled in the Equateur and Haut-Zaire regions where areas of low fertility are generally found. In other words, the low fertility areas of Zaire appear as a major point of convergence for various diseases causing sterility and spontaneous abortion.

3.3 The under-rated intermediate variables

It would appear that previous attempts to interpret infertility in Zaire chose to focus solely on some immediate demographic features and ignored or gave little weight to the impact of traditional socio-cultural factors within changing politico-economic conditions, although these are known to affect fertility and reproduction in any population.(2)

Amongst such traditional factors were sexual interdicts and methods of contraception and abortion, the practice of which often resulted in temporary and sometimes unforeseen permanent infertility. Clellan Ford rather dramatically estimated that for some women in certain African societies, out of 30 years of reproductive life the total

---

(1) Ouzilleau : La maladie du sommeil au Congo Francais in Le Mouvement Geographique; col. 435-6, Bruxelles, 1911.

(2) See Caldwell, J.C.: Major Questions in African Demographic History, op. cit.; and Mitchell, J.C.: Cultural Explanations of Fertility Differences; in Journal of Biosocial Science, Suppl. 3 (1971), p. 53-63.

period of time without any sexual interdict was only about 5 years.(1) As elsewhere in Africa, widely varying methods of contraception and abortion were noted amongst the populations of Zaire, especially in the low fertility areas;(2) but it was generally presumed that such practices were carried out only occasionally and no attempt has ever been made to measure their frequency within any one area. Available information, though inconclusive due to the delicate conditions and methods of inquiries, seems to suggest that proportions of induced abortions were greater in the low fertility areas than in the high fertility areas. An inquiry conducted by Soret estimated at 5 and 23 respectively the ratio of voluntary abortions to fertility for the high and low fertility areas.(3) Reasons generally advanced for these unwanted pregnancies included adultery, practice of retaliation against imposed or disliked husbands in patrilineal regimes where children belong exclusively to the husband's family, or again following some social conflict, for example, delayed or incomplete payment of the dowry. No survey has yet determined the extent to which these anti-customary or conflict situations actually lead to induced abortions.

A much clearer factor accounting for lower fertility would be the relatively younger mean age at marriage for the aggregate areas of low fertility as can be seen in table 3.43 (p. 352). Though the estimated mean is 15.9 years, earlier marriage certainly might have occurred generally without delay in terms of sexual practices or marriage consummation. In his study, Romaniuk assumed that such early marriage favoured a larger number of births per woman and, thus, was a factor leading to higher fertility.(4) In reality, however, as supported by medical opinion, excessively young age at marriage, as observed in Zaire - i.e. 15 years or below, may result in greater risk

---

(1) Ford, CS.: Fertility Controls in Underdeveloped Countries; in Proceedings of the World Population Conference, Vol. 1, United Nations, 1954, p. 841-850.

(2) See especially Adadevoh, B.K. (Ed.) in Sub-Gertility and Infertility in Africa, op. cit.; and also Romaniuk, A. in La Fécondité des Populations Congolaises, op. cit., p. 279-296.

(3) Cited by Retel-Laurentin, A. in Infecondite en Afrique noire; op. cit., p. 26.

(4) Romaniuk, A. in La Fecondite des Populations Congolaises; op. cit., p. 259.

of foetal loss or other pathological problems and infertility.(1)

The observed low mean age of marriage and its effects on fertility are related to conjugal mobility which, as indicated in tables 3.44 to 3.46 (p. 352-353), seems greater in the low fertility areas. According to these tables, proportions of divorced, widowed and polygamous persons are much larger for the low fertility than for the high fertility areas. This would normally result in longer periods of non-sexual rapport, hence lower fertility, since the total period of exposure to risk of pregnancy is less.

With regard to changing politico-economic conditions, some idea of higher infertility in the low fertility areas may be gained by examination of differentials in rates of economically active population as shown in tables 3.47 and 3.48 (p. 353) and also in proportions of literate persons, shown in table 3.49 (p. 354). Data related to refined activity rates and working population by status suggest that in the low fertility areas more people were engaged in traditional activities; this is due to higher proportions of self-employed persons who, as already mentioned, were primarily individuals working for their own subsistence and for that of their families. Data on salaried persons, in contrast, show much higher proportions for the high fertility areas; such persons were those workers generally engaged in the modern sectors of agriculture, industry and public service. Modernization, especially in its early stages, is known to tend to break down the traditional constraints on fertility, such as sexual interdicts and length of lactation, and eventually to produce a negative effect through the use of various means of fertility control. Similarly, the early stages of education have generally been observed to increase fertility by breaking down the traditional constraints. Differentials in proportions of literate persons between the low and high fertility areas clearly support such a hypothesis, as percentages of persons

---

(1) Adadevoh, B.K. (Ed.): Sub-Fertility and Infertility in Africa; op. cit., p. 9-10. It is argued that physical maturity, especially of the pelvis, often lags behind the ability to conceive; as such, the pelvis and its outlet may not be matured enough for the delivery of a foetus when conception takes place. The experience all over Africa seems to be that because of the relative immature development of the pelvis, obstetrical complications in very young mothers occur widely; these are further accentuated by the widespread inadequacy of medical facilities which characterizes most, if not all, of the African countries.

Table 3.43

DIFFERENTIALS IN MEAN AGE AT MARRIAGE FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	Female		Male	
	Prop. single 15-19 (1000)	Age at marriage (stable)	Prop. single 20-24 (1000)	Age at marriage (stable
Low fertility	455	15.9	531	22.2
Medium fertility	569	16.9	606	21.5
High fertility	521	16.9	580	21.2
Zaire	536	16.7	581	21.5

Table 3.44

DIFFERENTIALS IN MARITAL STATUS FOR FEMALES 15 YEARS AND OVER IN THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	Per Thousand all women				
	Single	Ever-married	Married	Widowed	Divorced
Low fertility	56	944	793	117	34
Medium fertility	89	911	744	128	40
High fertility	111	889	743	112	34
Zaire	84	916	758	121	37

Table 3.45

DIFFERENTIALS IN MARITAL STATUS FOR MALES 15 YEARS AND OVER IN THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	Per Thousand all men				
	Single	Ever-married	Married	Widowed	Divorced
Low fertility	205	795	700	42	53
Medium fertility	240	760	709	25	26
High fertility	272	728	689	20	19
Zaire	239	761	700	29	32

Table 3.46

DIFFERENTIALS IN INTENSITY AND EXTENT OF POLYGAMY FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE 1955-8 SURVEY

Area	Females married to polygamous males per 1000 married females	Polygamous males per 1000 married males	No.of wives per polygamous male	Ratio all married females to married males
Low fertility	345	185	2.25	1.22
Medium fertility	312	172	2.33	1.23
High fertility	248	133	2.21	1.18
Zaire	310	166	2.25	1.21

Table 3.47

DIFFERENTIALS IN ECONOMICALLY ACTIVE POPULATION AND DEPENDENCY RATIOS FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	Crude Activity Rate %			Refined Activity Rate %			Non-workers per 100 workers
	Both Sexes	Male	Female	Both Sexes	Male	Female	
Low fertility	59.1	60.7	58.7	83.3	85.5	71.2	70
Medium fertility	47.8	46.9	48.7	80.5	81.5	79.8	110
High fertility	42.2	46.4	42.4	81.4	86.7	76.0	129
Zaire	49.5	49.6	49.4	81.5	84.0	79.4	102

Table 3.48

DIFFERENTIALS IN PROPORTIONS OF WORKING POPULATION BY STATUS AND INDUSTRY FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	Active Population by Status, %				Ratio Agric./ Non-agric.	
	Unemployed*	Self** employed	Salaried*	Total	Male	Both Sexes
Low fertility	0.6	81.7	17.7	100.0	3.58	8.28
Medium fertility	0.7	85.7	13.6	100.0	3.20	8.06
High fertility	1.3	72.0	26.7	100.0	1.53	3.93
Zaire	0.8	82.1	17.1	100.0	2.71	6.70

who received education, as with those able to read and write, are everywhere much lower for the low fertility than for the high fertility areas.

Table 3.49

DIFFERENTIALS IN PROPORTIONS OF LITERATE POPULATION FOR THE AGGREGATE AREAS OF LOW, MEDIUM AND HIGH FERTILITY, ZAIRE, 1955-8 SURVEY

Area	% Persons 10 yrs & over able to read and write			% Persons 10 yrs & over with school education		
	Both Sexes	Male	Female	Both Sexes	Male	Female
Low fertility	15.5	28.8	3.2	17.1	30.3	4.3
Medium fertility	17.9	31.7	4.6	23.6	39.9	7.8
High fertility	20.0	33.2	6.0	24.5	38.9	9.3
Zaire	17.5	31.3	4.2	21.2	36.3	6.9

3.4 Historical social disturbances and migration

In terms of demographic history, an important point is that the peopling of tropical Africa was sustained entirely by natural increase and not by immigration; thus, any violence other than accidents had an impact on demographic trends. Without question, there have been several events which constituted real assaults on Zaire's demographic balance: continued slavery, the Leopoldian system of occupation and exploitation (not development) of the Congo Free State, the colonial suppression of revolts and the punitive expeditions, and also the World War efforts. These events have been discussed in detail previously and are recalled here only briefly in terms of their lasting effects, in particular with regard to the low fertility areas.(1)

Slavery, either directly through man-hunting or indirectly through warring conditions, deprived indigenous communities of their most vigorous individuals whilst bringing and spreading diseases from elsewhere. The anti-Arab or anti-slavery war campaigns aggravated population

(1) Discussion of these events is given in Chapter II and Chapter V.2.

movements and disrupted social and family life, as the Belgians often adopted the "scorched earth policy", particularly in the east (Maniema) and northeast (Ueles) where low fertility has been recorded in most areas except for the immediate surroundings of the Rift Valley. It is difficult to imagine how successive events of this nature did not result in reduced reproductivity of the population.

The even greater brutality of the Leopoldian system of military control and economic exploitation of the land, the various abuses inflicted on the indigenes in the concessionnaire areas - especially rubber producing areas - and the labour movements all contributed to exposure to new diseases, depopulation and declining fertility in large parts of the country.(1) A comparison of the map of the revenue divisions of the Congo Free State (p. 501) with that of fertility distribution (p. 328) clearly shows that, geographically, the areas of crisis and rubber production corresponded largely with the low fertility areas.(2) With a few exceptions, the same holds true for the various and continuous colonial operations to suppress indigenous revolts, especially those of "Luluabourg" and Ndirfi in the centre and northeast of Zaire respectively, and the punitive expeditions.

There can be little doubt that the demographic impact of the World War effort was greater in the low fertility than in the high fertility areas. Indeed, it was noted that of the various burdens imposed on the populations of Zaire during the war years, the most oppressive and more generalized were the enforcement of increased acreage for cultivation of cotton and manioc, the resumption of wild rubber collection and a vast increase in roadworks, all of which were previously carried out with particular intensity in the equatorial central basin and northeast of the country - corresponding largely with the geographic location of low fertility areas.

---

(1) Within a decade of its establishment in Zaire, the Leopoldian-type system had spread in the neighbouring states of former French Equatorial Africa and remained virtually unchanged until World War I.

(2) In particular, rubber areas were developed all along the Zaire river from near Bolobo to the lakes of the east; along the rivers Ubangi, Mbomu, Uele, Mongala, Lulonga, Lopori, Ruki, Momboyo, Tshuapa and Lomami; throughout the region of Equateur, especially in the sub-regions of Equateur and Tshuapa - partly in the king's own domain and partly in the famous Anglo-British Indian Rubber concession, and also in the sub-region of Mongala under the Anversoise Trust; in various parts of the Haut-Zaire region, including Haut- and Bas-Uele down to the sub-region of Maniema in Kivu within the State's public revenue.

To interpret the forces determining population change in Zaire at least 50 years before the 1955-8 survey, it is important to consider factors other than the major ones mentioned above: for example, the commerce of strong alcoholic drinks, which certainly produced a deleterious effect on health. By 1885, spirits were being distributed on a huge scale and often as wages. The Brussels Act of 1892 attempted to limit this trade, but it was not in fact successfully regulated in tropical Africa until the eve of World War I. Further, among the earlier processing industries established in Zaire, beer production boasted one of the better distribution circuits throughout the country. It has sometimes been suggested that the spirit trade caused relatively little harm,(1) but such a view surely underestimates the true nature of the effects of alcohol on populations with a generally poor and unbalanced diet.(2)

Finally, though difficult to measure due to lack of basic statistics, this study demonstrated that migration affected the low fertility areas with marked net out-migration of male workers and others but no immigration either from within or outside the country as in the case of the high fertility areas. To the extent that only able-bodied and healthy persons were involved in migration - a health certificate being a requisite for authorization to travel - it may be presumed that the observed migratory flow contributed to increase fertility differentials between the low and high fertility areas. In relation to this, it may be remarked that, compared to the true levels of "natural" fertility observed elsewhere in Africa, those recorded for the medium fertility areas of Zaire seem relatively low; very probably due to some lasting impact of the background factors affecting most parts of the country. It is likely that the greater impact of these factors on the low fertility areas resulted also from the fact that the period of time elapsing between various crises was insufficient to allow a generation's

---

(1) Kingsley, M., cited by J.C. Caldwell in The Demographic Victory, op. cit.

(2) In this regard, it may be noted that M.E. Lashman recently observed that malnutrition is widespread and may actually be increasing throughout Zaire. Protein deficiency is the principal nutritional problem, with average daily protein intake estimated as between 33 and 43 grammes or just half the daily allowance recommended by the United Nations Food and Agriculture Organization. Lashman further attributed about 60 per cent of Zaire's morbidity and mortality to malnutrition. See: Syncresis: The Dynamics of Health, XIV, Zaire, US Department of Health, Education and Welfare; June 1975.

recovery, in addition to the fact that the small size and scattered nature of each population must have had some delaying effect on recovery.

CONCLUSION OF PART THREE

Without doubt, a clear picture of Zaire's demography as of the late fifties emerged from Romaniuk's study of the 1955-8 survey data. However, an extensive review of that study with analysis of those aspects previously left uncovered has provided not only a much more comprehensive picture but also useful additional indications concerning past and future population trends. Further interpretation of the final estimates from that survey should take into account the following remarks.

1. Although better planned than ever before, field operations of the 1955-8 survey inevitably entailed some sampling and non-sampling errors. The most notable of these errors was an understatement of total population as revealed by the post-survey check, notwithstanding additional omissions and errors caused by the registration which served as a frame for the sampling system. It has thus been estimated that, as of mid-1956, the total population of Zaire was about 13,100,000 persons, well above the reported de facto figure of 12,777,000 inhabitants. Of this population, 78 per cent was rural and 22 per cent non-rural, while 22 per cent lived in the relatively low fertility areas and 21 per cent in the high fertility areas, with 57 per cent occupying the medium fertility areas of the country. However, analysis of the survey data was generally based on a de facto total population of 12,733,000 persons for whom demographic characteristics were assembled in the summary report. This under-reporting of the base data and the use of analytical methods for estimating demographic measures from defective data meant that final estimates sc derived very probably approximated the actual values but caution is necessary in any further interpretation, as, for example, when developing population projections.

2. Investigation of the socio-cultural and economic characteristics of the population clearly showed that, at the time of the survey and despite considerable regional differentials, the whole of Zaire was in the early stages of modernization. This was evidenced quite precisely by the proportions of literate persons, those with schooling

and the levels of educational attainment, as well as by the rates of economically active population. Survey data also indicated for both males and females virtually universal marriage with prevalence of legitimate monogamous unions. To the extent that the early stages of modernization have the initial positive effect of increasing fertility by breaking down traditional constraints, it may be expected that for several years, perhaps a few decades, fertility would tend to rise in most regions of the country. With continuous mortality decline in addition to this, Zaire's population was expected to grow rapidly for many years after the time of the survey.

3. Analysis of reported age-sex data for Zaire and for its different regions, either by rural-urban settlement or by low-high fertility areas, has shown fairly similar patterns: a large base age-group 0-4 years and successive child age groups gradually smaller than the preceding one, marked deficits at ages 15-19 and 20-24 years followed by concentration of adult ages at the late thirties-early forties, and gradually smaller classes at old ages when proportions of males outweigh those of females. Evidence from historical socio-economic events, in particular the brutal effects of the Leopoldian system and the hardship sustained by the war efforts, showed that some marked and lasting impact was reflected within the populations concerned. It is thus clear that the observed peculiarities in Zaire's population structures resulted not only from age mis-reporting, as suggested by Romaniuk and Van de Walle, but were an indication of true trends, especially for ages below 25 years which could have been estimated with some accuracy by the time of the survey.

4. The crude birth rate for Zaire as a whole was estimated at 45.2 births per thousand persons. Though supported by several different sources of evidence, this figure was derived primarily from the proportions of persons under 5 years and mortality estimates based on the stable population models. This method has its own bias which affected particularly the estimated rates for the various regions; since this estimation is based on age structures of the population, those areas of high birth numbers tended to show higher rates and those of low fertility tended to produce lower rates in agreement with the large or

small proportions under 5 years in the model structures. Presumably, this method of estimation contributed to enhance the striking differentials in fertility levels among the regions as evidenced by the extreme cases of birth rates, estimated at 21.4 per thousand for the Bas-Uele as against 60.4 per thousand for the Nord-Kivu. However, for the country as a whole, the figure of 45 for the birth rate and 5.9 for the total fertility rate would appear plausibly close to the actual rates, especially in view of the relatively high proportions of childless women in about a quarter of Zaire's total population.

5. A most valuable contribution of this review was its provision of a much clearer picture of the extent of lower fertility and the reasons for this. Contrary to one previous hypothesis, often quoted without qualification, it has been shown that venereal diseases cannot stand as the main reason for lower fertility. In terms of both effectiveness and extent, statistical evidence demonstrated that this hypothesis was based on unproved estimates and that, in fact, the effect of venereal diseases was more apparent than real. Such a hypothesis resulted from an unjustified attempt to single out one cause of infertility. The present study has demonstrated that the origin and causes of lower fertility were not only pathological but also social, the latter possibly being of greater importance than the former. Indeed, the low fertility areas were seen (i) to have been a point of convergence historically for various diseases, including venereal and other diseases causing sterility and miscarriage; (ii) to have been particularly affected by social disturbances during the Leopoldian regime and the war efforts;(1) (iii) to have exhibited unfavourable intermediate variables such as age at marriage, conjugal mobility, level of education and modernization;(2) (iv) to have been senders but not receivers of migration.

Further investigation is, nevertheless, required in many areas to determine the extent to which lower fertility persists in present times and its causes. Such investigations should look at pregnancy histories, paying special attention to abortions and considering

---

(1) It is pertinent to note that most post-Independence disturbances also occurred largely in the same areas, namely Haut-Zaire and Maniema.

(2) Information is not available for other variables, such as sexual abstinence and lactation period, though these were presumably not much different than in other areas.

the extent of traditional contraceptive practices with their eventual consequences on subsequent birth numbers.

6. The crude death rate for the whole of Zaire was estimated at 26 deaths per thousand, yielding a life expectancy at birth of 39.5 years. As with fertility estimation, this figure and those for the different regions were derived with the method based on stable population models; the resulting estimates were presumably affected to some extent by this method of estimation, particularly in view of wide regional variations in age structures. Zaire's infant mortality rate was estimated at 173 deaths per thousand persons under one year of age, while the child mortality rate indicated a comparatively higher figure of 291 per thousand persons aged 1-4 years. Such patterns appear similar to those observed in most African countries and, despite errors involved in the base data, they probably reflected true demographic trends.

7. For the whole of Zaire, the balance of births and deaths, or the rate of natural increase, was estimated at 1.9 per cent, a figure which was certainly affected by Romaniuk's use of a 2 per cent growth rate as one of the two criteria for selecting the population model. Despite the lack of migration statistics to allow a firm reconciliation of the estimated natural increase and growth rate, this situation clearly understated the momentum of Zaire's population growth which, according to the annual enumeration for 1956 - by this time fairly reliable - had by that year reached a level of 2.6 per cent. For purposes of illustration, if migration could be assumed negligible, the birth and death rates for the survey period would be roughly 49 and 24 per thousand respectively. More importantly, indications of a rising trend in birth numbers were noted, probably at an increasing rate in the years after the survey, with an expected continuing decrease in mortality accompanying increased social stability and modernization. Thus, for several years after the survey, the rate of natural increase would be expected to show some rise, and external migration would probably also indicate a positive net increase following post-Independence and the opening up of the country to neighbouring African states. It seems, therefore, fair to conclude that, at the time of the 1955-8 demographic survey, which was soon to be followed by the attainment of Independence and further opening-up to the world, Zaire appeared to be a country emerging towards sustained and rapid population growth.

PART FOUR

THE POST-INDEPENDENCE AND FUTURE POPULATION OF ZAIRE 1960-2005

Introduction

Chapter XII : The Population Enumeration of 1970

Chapter XIII : Population Estimates for 1960-70 and Consistency of the 1970 Enumeration Results with those of the 1955-8 Survey

Chapter XIV : The Future Population of Zaire, 1970-2005

Chapter XV : The Socio-economic Implications of Current Population Trends 1970-2005 and Zairean Policy of "Desired Births"

Conclusion

INTRODUCTION

The first population enumeration* in the Republic of Zaire was conducted ten years after the proclamation of Independence, on 30 June 1960, and eleven years after the last enumeration of the colonial period. During the time that elapsed between these enumerations, important events occurred which had an impact on the growth and distribution of the population. However, despite the world-wide publicity concerning the so-called "Congo crisis", most regions of the country were not seriously affected, although there was a general slowing-down of administrative, economic and medical activity. Much of the crisis was, in actual fact, related to constitutional and governmental deadlocks.(1)

From a strict demographic viewpoint, though relevant statistics were not collected, it is clear that the events which followed Zaire's attainment of Independence resulted in considerable population movements, for example, from the areas of political upheavals into those areas apparently more secure such as the capital city, Kinshasa. They also resulted in some loss of life in a few areas where political rebellions developed into battle formations, notably in parts of the regions of Bandundu, Haut-Zaire and Kivu.(2) The immediate and long-term impact on fertility of these civil disturbances is yet to be determined, but, for the country considered as a whole, it would seem negligible. In actuality, these events occurred at irregular intervals and affected the areas in question with varying intensity between the second half of 1960 and the first half of 1962. The most memorable event was the secession of the region of Shaba, then the province of Katanga,(3) from July 1960 to late 1962; but this resulted in relatively

---

(1) For detailed discussion on that crisis, see especially:- Young, C.: Politics in the Congo, Decolonization and I dependence, op. cit.; Hoskyns, C.: The Congo since Independence, January 1960 to December 1961, Oxford University Press, 1965; Lefever, E.: Crisis in the Congo, A United Nations Force in Action, The Brookings Institution, Washington D.C., 1965; Willame, J.C.: Patrimonialism and Political Change in the Congo, Stanford University Press, 1972.

(2) Verhaegen, B.: Les rebellions au Congo; 2 t., Crisp, Bruxelles, 1966 and 1969.

(3) For a good account of the Katanga secession, see especially Gerard-Libois, J.: Katanga Secession, The University of Wisconsin Press, 1966; and O'Brien, C.C.: To Katanga and Back, Hutchinson, London, 1962.

* For the difference between "population enumerations" (census) and "population counts" (count from registration records), see p. 368, and also pp. 366, 367.

lesser loss of life in comparison with the rebellions elsewhere in the country. The same holds true for later rebellious outbreaks in 1964 and 1965 and for the mercenary insurgency of 1967, occurring successively in parts of Kwilu, Haut-Zaire and Kivu. During these years and throughout the sixties, migration across national boundaries also increased rapidly with greater migration into Zaire as a result largely of colonial repression and civil wars in neighbouring states such as Angola, Rwanda, Burundi and Sudan. Zaire's own civil disturbances seemingly caused relatively little out-migration, probably because the greater part of persons involved preferred to take temporary refuge in neighbouring forests.(1)

A number of population projections for Zaire for the period 1960-70 were previously developed, notably by the AIMO, by Fabri and Mayer of one Belgian research institute, and by the Population Division of the United Nations. The methods and results of these projections are discussed in some detail later on, but it should be noted that they were established on the basis of reported data from the 1955-8 survey; they indicated only slight modifications to the situation existing prior to Independence and projected population totals for 1970 which were considerably lower - by about 18.5 per cent - than the figures actually recorded during the enumeration of that year. The 1970 enumeration did not in fact meet the requirements of modern census taking, restricted as it was to a mere count of nationals and non-nationals by sex in two broad age groups of adults and non-adults. Nevertheless, examination of the previously established projections reveals serious inadequacies in methods and parameters, resulting in a definite understatement of Zaire's growth momentum during the late fifties and throughout the sixties.

The present study, therefore, presents new estimates for 1960-70 in order to test the degree of consistency between the results of the 1970 enumeration and those of the 1955-8 survey previously. Further, and more importantly, the future population of Zaire is analysed, based on current alternative projections for the period 1970-2000 as developed respectively by the United Nations Population Division and by the present author. Finally, implications of the estimated

---

(1) Studies are hardly available concerning the post-Independence population of Zaire. The most important contribution is that by Boute in La physionomie démographique de la République Démocratique du Congo en 1970; op. cit.

growth trends are discussed in relation to the socio-economic developments as well as the perception and prospects of Zaire's current policy of "Desired Births".

CHAPTER XII

THE POPULATION ENUMERATION OF 1970

As in the colonial period, reports from the 1970 enumeration provided only the regional and national population totals in age-sex groups of children and adults, or persons below and above 18 years of age. For the whole of Zaire, statistics indicated a total population of 21.6 million persons, a figure much greater than the highest estimate of 17.6 million based on the projections previously established. This situation gave rise to much criticism, this being most violently expressed by Lux, who referred to the results of the enumeration as "pure mirage and total illusion" because they implied an average annual growth rate of 4.2 per cent since 1959.(1) In general, critics of the 1970 enumeration overlooked some important developments relative to the renovation of the continuous registration system and the population count of 1968, both of which provided useful indications concerning the reliability of the procedures and results of the enumeration in question. This chapter thus summarizes these developments before going on to evaluate the 1970 enumeration and appraise its results by testing the degree of their consistency with previous enumerations. Comparison of the 1970 enumeration results with those of the 1955-8 survey is deferred until the next chapter.

1. Renewal of the Registration System and the Lost Count of 1968

As the country recovered from the Independence crisis, by the mid-sixties, the government took steps to renovate and up-date the continuous registration system. From early 1967, all residents of Zaire were to receive a new identity card to replace the old colonial identity

---

(1) Lux, A.: in Canadian Journal of African Studies; Vol. 10, 1976, p. 150. In this regard, it must be noted that the enumeration of Zaire's population in 1959, the year before Independence, would appear to have underestimated the population total, probably due to administrative disturbances during the national struggle for political independence. Moreover, even though the population total of the 1970 enumeration implied some overestimation relative to the 1958 population total, it certainly revealed significant indications concerning Zaire's growth momentum as discussed later in this study.

booklet. The new card for nationals was green and termed "carte de citoyen" or citizen's card, while that for non-nationals was yellow and termed "carte d'etranger" or foreigner's card. Regulations compelled all residents to possess and carry such a card, which they were required to produce during the course of various administrative transactions and at the request of the police or armed forces. The card was obtainable at all registration offices throughout the country upon a verbal declaration registered in an appropriate form and filled in either by the person concerned or by his nominee. The form was to be kept in the registration office. The identity card carried a photograph of the bearer, and eventually of the spouse also, and summarized most of the characteristics of the individual as reported in the form: i.e. full name, date and place of birth, actual place of residence, names of father and mother, marital status, family situation (with names of children), occupation, etc. School-age children were also given individual identity cards. According to the regulations, willingly or unwillingly, each national was a member of the national ruling party from birth to death and thus was allowed no excuse for non-compliance with the new population regulations.

An important point in this connection is that, as a result of past administrative disorder and inadequate means of checking the information supplied in the form, those non-nationals who reported themselves as natives of Zaire received a "citizen's card" without any further formalities.(1) This was observed to occur often, not only in urban centres but also in those areas where foreigners were subject to some suspicion; for example, within and around protected areas such as those of the diamond diggings or in localities bordering the troubled areas of Angola, Rwanda, Uganda and Sudan. The demographic consequence of this development was that during the subsequent population enumerations, based on the count of registered forms, unrecorded migrants

---

(1) The fact that such foreigners spoke the same language and bore names similar to those of the natives certainly made control difficult. In addition, under the prevailing circumstances, arrangements could be made with a registration officer aware of the true origin of the applicant. It must also be noted that in some cases there was certainly an advantage in having more than one card - and consequently filling in more than one registration form - for example, in the case of persons who had lost their cards or who had moved into new residential areas but were threatened with repatriation to their areas or villages of origin.

would have been reported as nationals. Estimation of unrecorded migration is attempted later in this section.

Following several months of what was known throughout the country as "operation carte de citoyen", during the second half of 1968, the government carried out a population count based on the registration system. The figures of this de jure count were not published officially until January 1970,(1) and they did not attract particular attention because the well-publicized enumeration of that year was almost under way. From that lost population count,(2) as of December 31, 1968, the total population of Zaire was estimated at 20,372,801 persons, including foreigners. Table 4.1 (p. 369) presents the results of that population count by region and in the usual age-sex groups of adult and non-adult persons. According to de Saint Moulin, the government Department of Political Affairs (then the Ministry of Internal Affairs) possessed relatively detailed statistics of the 1968 count with respect to nationals, but for non-nationals statistics were not collected in a systematic manner.(3) For the entire country, reported statistics indicated an overall sex-ratio of 97 and a proportion of children aged up to 18 years amounting to 50.5 per cent. Further discussion on these results is given later, together with evaluation of the result of the 1970 enumeration.

2. The Impact of Migration During 1958-70

The statistical data for analysis of migration by conventional methods are lacking, but a picture of the impact of both internal and external migration may be obtained from the following account of population movements which occurred during this period.

2.1 Internal migration

Though it had no direct effect on the country's total population size, internal migration in the decade following Independence seriously affected trends in regional and urban-rural totals. Factors leading to these population movements were essentially political, administrative and socio-cultural. Zaire's abrupt attainment of independence

---

(1) Le Progrès (Kinshasa daily) of 8 January 1970, p. 8.

(3) De Saint Moulin, Leon: Les statistiques démographiques en République Démocratique du Congo; in Congo-Afrique, X-47, août-septembre 1970, Kinshasa, p. 377-385.

(2) The Belgian administration no longer allows access to this data.

TABLE 4.1

RESULTS OF THE POPULATION COUNT OF 1968 (POP. IN THOUSANDS)

Region		Under 18 years Male	Under 18 years Female	Over 18 years Male	Over 18 years Female	Total
I.	REG. KINSHASA	248.7	250.1	225.5	202.7	927.0
II.	REG. BAS-ZAIRE	449.0	418.9	335.7	392.2	1,595.7
III.	REG. BANDUNDU	837.1	815.4	645.7	770.8	3,069.0
IV.	REG. EQUATEUR	587.5	566.8	564.6	646.6	2,365.5
V.	REG. HAUT-ZAIRE	663.6	643.0	832.1	896.0	3,034.8
VI.	REG. KIVU	878.3	883.1	786.8	844.7	3,392.9
VII.	REG. SHABA	664.6	606.2	592.8	614.6	2,478.3
VIII.	REG. KASAI-ORIENTAL	431.4	404.6	402.7	427.8	1,671.6
IX.	REG. KASAI-OCCIDENTAL	484.1	464.9	406.1	480.8	1,837.9
	ZAIRE	5,244.6	5,052.9	4,799.1	5,276.2	20,372.8

Source: Annuaire statistique 1958-1969, Institut National de la Statistique, Nouvelle Série No.1, Septembre 1971, Kinshasa, p.39.

was accompanied by attempts to establish a democratic system based on multi-partyism (i.e. more than two political parties), with various national and regional bodies of representatives, officials and supporting staff.(1) Many individuals involved in these new political and administrative functions were given or acquired new residences outside their traditional areas, as did also their dependents and followers. Disputes and armed conflicts between the central and regional governments also gave rise to massive internal population movements. Political and tribal conflicts between Baluba and Lulua within the former province of Kasai led to heavy concentrations in parts of what is now Kasai-Oriental and Kasai-Occidental. Events related to the secession of Shaba eventually led to the return to the Kasai, especially to Kasai-Oriental, of tens of thousands of Baluba who had previously migrated in large numbers to Shaba. From various parts of the country smaller numbers of persons fled to Kinshasa (over half a million), and to other apparently secure centres whenever further troubles began throughout the early sixties.(2) Further population movements occurred subsequent to the Balkanisation of the country - the 6 former provinces being sub-divided to make 24 provinces in 1964. Further politico-administrative reforms, between 1965 and 1968, finally reduced to 9 the number of provinces for the entire country. The division of the pre-Independence province of Kasai into Kasai-Oriental and Kasai-Occidental led to further regrouping of the Lulua in the latter and Baluba in the former, and also to various movements of minor tribes in these areas.(3)

In addition to population movements resulting from political and administrative developments, there were also those motivated by socio-cultural and economic factors, following difficulties in employment and schooling in various areas as a result of the massive departure of European populations.(4) It was not until the second half of the

---

(1) By 1961, there were about 110 different political parties, most of which claimed representation and branches throughout the country.

(2) Hance, W.: Population, Migration and Urbanization in Africa; Columbia University Press, New York, 1970, p. 152.

(3) Slade, R.: The Belgian Congo; Oxford University Press, 1960. Also, Mabika-Kalanda: Luba et Lulua à la recherche d'une ethnie; Editions Remarques Africaines, Bruxelles.

(4) This was generally followed by serious disruptions in the functioning or closure of schools, farms, shops and other small businesses previously under their control or ownership.

decade that new structures began effectively to replace the dying colonial educational and economic institutions. It is difficult to estimate, even roughly, the number of persons involved in internal population movements during the 1960s; the more so as a substantial proportion of them were of a semi-permanent nature. With the recovery of political stability and the Zaireanization of plantations and small businesses abandoned by Europeans leaving the country, a number of persons who had formerly migrated were attracted back to their areas of origin. This 'return to the land' was encouraged by several government programmes such as the proclamation of 1968 as 'agriculture year' and the subsequent expulsion from urban centres of those individuals not holding a permanent job. However, as in most African countries, the restriction of migration into overcrowded urban centres was generally rather ineffective.

2.2 External migration

As with internal migration, political factors were also of increasing importance in causing inter-African migration in the years immediately preceding and following Independence.

Concerning emigration, all reports agree that it involved relatively few Zaireans. The largest flows involved a few thousand "Katangese gendarmes" and other refugees who fled to the surrounding countries, mostly to Angola, after the failure of the secession of Shaba and rebellions in Haut-Zaire and Kivu. It was estimated that by 1966 about 70,000 Zairean refugees were in Uganda, Burundi, Tanzania and the Central African Republic;(1) but most of them had returned to Zaire by the time of the 1970 population enumeration, leaving only some 30,000 refugees still in exile.(2)

The situation was radically different as regards immigration, as it obviously involved much larger numbers of refugees into Zaire, coming (i) from Angola after the beginning of the revolt there in 1961; (ii) from Rwanda in 1963 after the Hutu-dominated government had sequestered traditional pastoral lands of the Tutsi, whose failed counter-invasion led to much bloodshed and further flight; (iii) from Sudan following political-racial-religious conflicts between the

---

(1) Hance, W.: Population, Migration and Urbanization in Africa; op. cit., p. 18.

(2) Boute, J., in Population Growth and Socio-economic Change in West Africa, op. cit., p. 597.

Muslim northerners and the Christian and pagan southern tribes; and also (iv) from other flows of populations belonging to minority groups in Burundi, Congo, Central African Republic, Uganda, Zambia and Southern Africa.

According to the United Nations reports, the number of refugees in various parts of Africa increased rapidly throughout the sixties and the largest receiving country was Zaire, with 414,000 persons in 1968, about 440,000 in 1970 and 490,000 in 1972; these figures represented approximately 50 per cent of all recorded refugees at each period (see table 4.2, p. 373). It may be noted here that for 1970, the number of refugees so estimated represented about 2 per cent of the population, or half the reported non-nationals, enumerated in that year. However, a closer examination of available information and statistics raises some serious problems concerning the reliability of the estimates advanced by the United Nations.

On the one hand, there are strong reasons for presuming that a number of refugees in Zaire may have escaped registration by the United Nations Commission. Indeed, some refugees could readily be absorbed in their host country and go un-recorded in official statistics, particularly those who could ensure their own survival and those who did not wish eventually to return to their country of origin. In fact, the government of Zaire estimated the number of refugees throughout the country as approximately 850,000 persons by the mid-sixties; and Shamuyarira, for example, estimated the 1967 total of refugees for the whole of Africa to be some 215,000 higher than the United Nations figure.(1)

On the other hand, examination, for example, of the Angola censuses of 1960 and 1970 suggests that the population of the six provinces neighbouring Zaire and totalling respectively 1,534,000 and 1,584,000 persons could not possibly have provided two fifths of a million emigrants during the intervening decade.(2) In fact, only in three provinces did the 1970 population show a decline by about 130,000 persons compared to the 1960 population;(3) a decline already observed with the data from

---

(1) Quoted by Hance, W., in Population, Migration and Urbanization in Africa; op. cit., p. 186.

(2) Angolan provinces of Cabinda, Zaire, Uige, Malange, Lunda and Moxico. See Angola: Direccao dos Servicos de Economia e Estatistica Geral, Reparticao de Estatistica Geral, do Recenseamento Geral da Populacao de 1960; Impressa Nacional, Luanda 1964. And also, Direccao dos Servicos de Estatistica. Censo da Populacao de 1970; Luanda 1971.

(3) Provinces of Zaire, Uige and Moxico with others showing a relatively slow rate of growth.

TABLE 4.2.

ESTIMATED TOTALS OF AFRICAN REFUGEES AS ON DECEMBER 31, 1972

country of origin \ country of reception	Botswana	Burundi	Central African Empire	Ethiopia	Kenya	Rwanda	Senegal	Sudan	Tanzania	Uganda	Zaire	Zambia	West Africa	Various Other Africa	Total
Angola	4,300	-	-	-	-	-	-	-	-	-	400,000	17,200	-	-	421,000
Burundi	-	-	-	-	-	4,000	-	-	23,000	-	31,000	-	-	-	58,000
Chad	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethiopia	-	-	-	-	-	-	-	52,500	-	-	-	-	-	-	52,500
Guinea Bissau	-	-	-	-	-	-	82,000	-	-	-	-	-	-	-	-
Mozambique	-	-	-	-	-	-	-	-	58,000	-	-	6,400	-	-	64,400
Namibia	50	-	-	20	-	-	-	-	50	10	-	900	-	-	1,000
Rwanda	-	42,000	-	-	-	-	-	-	14,000	72,800	23,000	-	-	-	152,000
Azania (South Africa)	100	-	-	30	100	-	-	-	100	30	20	300	-	200	900
Sudan	-	-	17,000	16,000	-	-	-	-	-	59,400	36,000	-	-	-	128,000
Zaire	-	100	3,500	-	-	-	-	4,500	1,400	34,500	-	-	-	-	43,000
Zambia	-	-	-	-	-	-	-	-	-	-	750	-	-	-	750
Various African Countries	50	-	-	-	2,400	-	-	-	1,450	-	-	200	4,000	100	8,200
Non-African Countries	-	-	-	-	-	-	-	-	-	-	-	-	-	4,200	4,200
Total	4,500	42,000	22,000	16,000	2,500	4,000	82,000	57,000	98,000	166,500	490,000	25,000	4,000	4,500	1,018,000

Source: United Nations High Commission for Refugees; quoted by W.T.S. Gould, op.cit.

N.B. Inconsistencies in the totals are due to rounding.

the 1950 census.(1)

As implied above, not all immigrants into Zaire were political refugees; before and after Independence, several thousand persons entered the country for economic, socio-cultural or other reasons. Some interesting indications have been provided by the wave of expulsion of foreign Africans from a number of countries during the 1960s; actions caused, as Cornevin put it, by more or less spontaneous nationalist reflexes.(2) For example, the decision by the government of Zaire in August 1964 to expel all persons originating from Congo and Burundi; this could have affected some 100,000 persons but led to an actual exodus of perhaps 30,000.(3) In 1969, the government further ordered out of the country all irregular foreigners (i.e. non-refugees without work permits); but following some difficulties in inter-African relations it retracted this order as did other African governments.

In the light of the above considerations, it is clear that available data are inadequate to permit a really thorough assessment of migration in Zaire which would justify firm conclusions. However, alternatives to the reported impact of migration on Zaire's population growth are considered later, when testing the degree of consistency between the population totals of the 1970 enumeration and those of the 1955-8 survey.

3. The Data Collection and Quality of the 1970 Enumeration

As in the colonial period, the population enumeration of 1970 attempted to evaluate the de facto number of residents throughout the country by carrying out a field control of the continuous registration system and a count of the registered population. The preparation of this enumeration apparently received more attention than ever before. For two years prior to the counting in May-June 1970, efforts were made to up-date population registers throughout the country and to overcome the practical difficulties of the operation; for example, access by the people to the registration offices and definition of the place of residence relative to that of enumeration, in order to avoid double

---

(1) Especially Lunda and Malange, as well as Zaire and Uige, with some long-established connections in the Zaire regions of Kinshasa, Kasai and Shaba.

(2) Cornevin, R.: Le grave probleme des refugies en Afrique noire; Europe-France Outre-mer, 420, January 1965, p. 32-35.

(3) Quoted by Hance, W., in Population, Migration and Urbanization in Africa; op. cit., p. 184.

entries and omissions.(1) Reports also agree that the role of the national youth party was determinant in involving and leading the people to register for enumeration.

Given the mode of enumeration, the initial practical step was the dispatching of various cards, registers and brochures from the central government to all administrative units, the smallest of these being the "collectivités". For the whole country, there were 758 such collectivités, outside the 72 sub-divisions of major cities. The transmission of enumeration documents was done through regular channels of the administrative hierarchy: from Kinshasa to the different regions, then to the sub-regions, then to the zones and finally to the collectivités; the latter often comprised several registration offices for communities in remote areas. All residents, including infants, were allocated an individual registration card, blue for nationals and red for non-nationals. Cards for females were marked with a diagonal line. Each card identified individual characteristics such as place and date of birth, place of residence and occupation; while the reverse side recorded information on spouses and children.

There is no report of the field operations which were actually carried out during February-May 1970 and which consisted basically of heads of families reporting to the local registration office to provide information about themselves and their dependents. However, de Saint Moulin wrote that from personal observations in rural areas within Bas-Zaire and Shaba, registration cards were often insufficient and

---

(1) The presidential ordinance no. 68/181 of 11 April 1968, calling for the population enumeration of 1970, was followed by several decrees issued by the Department of Internal Affairs responsible for the enumeration:

- 1968, April 30: Vade-mecum à l'usage des autorités administratives et agents charges du recensement.

- 1968, May 22: Arrêté ministériel no. 68/102 portant mesures d'exécution de l'ordonance relative au recensement général de la population.

- 1968, May 24: Introduction relative au recensement de la population.

- 1968, Sept. 6: Arrêté ministériel no.68/150 portant mes. d'exécution.

- 1968, Sept. 7: Lettre circulaire du Ministre de l'intérieur aux Gouverneurs de province no. 252/01/5550/624/68 sur la révision périodique du recensement.

- 1969, Feb. 4: Circulaire du Ministère de l'intérieur no. 252/01/0938 217/69 sur l'organisation du recensement et l'étude des populations.

- 1969, March 8: Circulaire à Messieurs les présidents des sous-commissions de recensement no. 252/01/4756/480/69 sur l'organisation et le déroulement des opérations.

old colonial cards and various paste-boards were substituted.(1) The actual enumeration therefore consisted, as before, of manual counting and summing of regional population totals by groups of males and females above or below 18 years of age.

According to de Saint Moulin, the distribution and establishment of registration cards were remarkable achievements throughout the country; and he claimed that it was very probable that the reported figures portrayed true demographic trends. He further quoted reports by the "French Urban and Demographic Unit", a group of experts assisting the government of Zaire in urban affairs, which carried out some sample checks of the registration records in 1971. It was found, for example, in the area of Mbanza-Ngunga with 50,000 persons, that the population count was fairly reliable, except for digit preferences in age statement for figures ending with zero and five.(2) There is no evidence, however, that the French mission actually interviewed the population and checked age or date of birth against registration records. Also, there was clearly some erroneous reporting, since enumerators were instructed, as in past times, to report as adults those females married, widowed or divorced even if aged less than 18 years. This obviously resulted in overestimation of adult females and, by the same token, underestimation of proportions of children.

4. The Results and Consistency with Previous Enumerations

The 1970 enumeration results indicated 21.7 million persons as the total population of Zaire and, as already mentioned, they showed only regional totals of nationals and foreigners in age-sex groups above or below 18 years of age, as presented in table 4.3 (p. 377). Obviously, the small range of data so reported seriously limits the effectiveness of demographic analysis. As remarked by de Saint Moulin, the whole situation was somewhat unfortunate, especially since most population characteristics had been recorded in the registers with sufficient accuracy. For example, for most persons under 20 years or born after 1950, exact age or date of birth was known to the month and often

---

(1) The official registration cards were rather thick, 25 of them coming to one centimetre. See de Saint Moulin, Léon: La répartition de la population du Zaire en 1970; in Zaire-Afrique, no. 86, juin-juillet, 1974, Kinshasa, p. 331-49.

(2) Ibid., p. 333.

Table 4.3

RESULTS OF THE POPULATION ENUMERATION OF 1970, BY REGION AND BY SEX-AGE GROUPS ABOVE OR BELOW 18 YEARS (POPULATION IN THOUSANDS)

Region and Sub-Region	Nationals				Foreigners			
	Under 18 years		Over 18 years		Under 18 years		Over 18 years	
	Male	Fem.	Male	Fem.	Male	Fem.	Male	Fem.
I. Region of Kinshasa	301.6	295.0	302.3	214.6	52.5	53.6	56.5	46.8
II. Region of Bas-Zaire	356.5	348.2	259.0	316.7	61.2	59.7	44.9	58.2
SR Bas-Fleuve	160.7	159.2	125.5	138.3	12.6	12.0	11.8	12.4
SR Cataractes	195.8	189.0	133.5	178.4	48.5	47.7	33.1	45.8
III. Region of Bandundu	696.7	669.4	543.8	683.5	1.6	1.5	2.5	2.6
SR Mai-ndombe	112.5	108.3	93.4	114.8	.0	.0	.2	.1
SR Kwilu	414.2	396.2	335.6	409.7	.1	.1	.6	.6
SR Kwango	170.0	164.9	113.8	159.0	1.5	1.4	1.7	1.9
IV. Region of Equateur	575.7	552.6	600.8	698.6	.5	.5	2.2	1.0
SR Equateur	104.3	98.1	113.5	131.5	.2	.2	.6	.3
SR Tshuapa	97.3	89.0	131.3	148.3	.0	.0	.2	.1
SR Mongala	181.0	174.7	178.2	204.7	.1	.1	.7	.3
SR Ubangi	193.1	190.8	177.8	214.1	.2	.2	.7	.3
V. Region of Haut-Zaire	722.6	684.4	885.8	1,027.6	6.2	5.9	11.2	12.8
SR Tshopo	221.5	208.5	237.6	273.9	.3	.2	1.6	.5
SR Bas-Uele	98.0	88.9	178.4	218.2	.7	.7	1.9	1.9
SR Haut-Uele	144.3	129.9	230.1	271.4	3.3	3.1	5.7	8.0
SR Ituri	258.8	257.1	239.7	264.1	1.9	1.9	2.0	2.4
VI. Region of Kivu	777.0	771.2	684.5	781.9	98.7	101.2	71.2	76.2
SR Nord-Kivu	316.4	319.5	255.1	287.1	85.2	88.2	58.0	63.8
SR Sud-Kivu	316.6	317.1	276.8	309.0	11.9	11.7	11.5	11.0
SR Maniema	144.0	134.6	152.6	185.8	1.6	1.3	1.7	1.4
VII. Region of Shaba	692.6	668.0	617.8	676.1	22.5	23.9	27.6	25.2
SR Tanganika	216.1	207.9	184.6	180.0	16.0	16.9	19.5	17.8
SR Haut-Lomami	151.4	149.3	141.3	159.7	..	.1	.3	.2
SR Haut-Shaba	183.8	175.2	155.8	179.7	.3	.3	.7	.5
SR Lualaba	141.3	135.6	136.1	156.7	6.1	6.6	7.1	6.7
VIII. Region of Kasai-Oriental	480.4	472.4	417.9	500.2	.1	.1	.7	.4
SR Kabinda	362.4	360.4	297.5	353.3	.1	.1	.6	.3
SR Sankuru	118.0	112.0	120.4	146.9	.0	.0	.1	.1
IX. Region of Kasai-Occidental	708.4	703.2	472.0	547.8	.2	.2	1.1	.7
SR Kasai	228.1	230.6	177.0	197.0	.1	.1	.3	.2
SR Lulua	480.3	472.6	295.0	350.8	.1	.1	.8	.5
ZAIRE	5,311.5	5,164.3	4,783.0	5,447.0	243.6	246.7	217.8	224.0

Source: Arrêté no.1236 du 31/7/1970 du Ministre d'Etat Chargé de l'Interieur; op.cit.

N.B. See Table 4.12 for the population totals.

to the day.(1)

Because of the limited statistics reported from that enumeration and for the purposes of testing their consistency with previous enumerations, the following sections will concentrate on examining the implied intercensal annual rates of growth and comparing the sex ratios as well as the proportions of children to total population.

4.1 The implied intercensal rates of growth

Table 4.4 (p. 379) presents the implied intercensal annual growth rates based on the enumerations for the years 1956, 1958, 1968 and 1970; for convenience of analysis, the table also shows rates of natural increase from the demographic survey of 1955-8. In interpreting the rates so tabulated, three remarks are to be borne in mind. Firstly, the 1968 enumeration was a de jure population count, while those of 1956, 1958 and 1970 attempted to evaluate the de facto population, though equally based on the continuous registration system; it could, however, be hypothesized that the bias (double entries or omissions) so caused by differences in the nature of the enumerations was relatively minor.(2) Secondly, during the time that elapsed between 1956 and 1970, several modifications of administrative divisions of the country occurred; and, in deriving the intercensal rates of growth, this feature has been largely taken into consideration through appropriate reconstitution of regional population totals of comparable areas. Thirdly, it must be remembered that rates of natural increase for 1955-8 were adjusted results of the survey data (exclusive of foreigners of non-African origin), while the intercensal growth rates from the enumerations were subject to various developments which occurred after 1956; the most significant of which was increased immigration of foreign-born Africans, aside from the probable effects on mortality of the civil disturbances of Independence.

Bearing in mind these remarks and for the purposes of analysis, it is assumed that any substantial divergence of the growth rate from the rate of natural increase reflected the impact of migratory move-

---

(1) De Saint Moulin, L.: La répartition de la population du Zaire en 1970; op. cit.

(2) Indeed, while the de jure count was based exclusively on a count of the registers, the de facto carried some field check and up-dating of these registers prior to the count by visiting the populations concerned or by requesting them to report to the registration offices.

Table 4.4

RATE OF NATURAL INCREASE FROM THE 1955-8 SURVEY AND INTERCENSAL GROWTH RATES FROM ENUMERATIONS OF 1956-70

Region and Sub-Region		Natural Increase 1955-8 Survey(%)	Average Annual Rate of Growth From the Enumeration (%)			
			1956-8	1958-68	1968-70	1958-70
		(1)	(2)	(3)	(4)	(5)
I.	REGION OF KINSHASA	4.2	0.3	9.0	20.4	9.8
II.	REGION OF BAS-ZAIRE	2.3	-0.2	5.6	-4.0	4.4
	SR Bas-Fleuve	2.2	9.4	1.1	11.2	2.4
	SR Catara tes	2.4	-6.7	7.9	-10.7	5.6
III.	REGION OF BANDUNDU	2.2	3.7	4.6	-11.4	2.6
	SR Mai-ndombe	2.5	1.6	4.4	-4.5	3.3
	SR Kwilu	2.1	3.0	4.4	-9.8	2.6
	SR Kwango	2.2	6.8	5.2	-17.9	2.2
IV.	REGION OF EQUATEUR	1.6	2.0	2.7	1.8	2.6
	SR Equateur	1.5	1.9	3.1	1.5	2.9
	SR Tshuapa	.4	0.5	1.6	-0.9	1.3
	SR Mongala	2.3	2.0	3.0	2.8	3.0
	SR Ubangi	2.0	3.3	3.0	2.8	2.9
V.	REGION OF HAUT-ZAIRE	.9	2.3	2.0	6.7	2.6
	SR Tshopo	1.4	2.4	1.7	11.3	2.9
	SR Bas-Uele	-.6	1.4	-0.4	14.3	1.5
	SR Haut-Uele	.1	0.7	2.3	2.0	2.3
	SR Ituri	-	4.1	3.5	2.4	3.3
VI.	REGION OF KIVU	2.4	3.1	4.0	-0.8	3.4
	SR Nord-Kivu	3.1	4.3	5.2	-1.7	4.3
	SR Sud-Kivu	2.2	3.4	3.5	-1.3	2.8
	SR Maniema	1.1	0.4	2.7	2.3	2.6
VII.	REGION OF SHABA	3.0	1.9	4.0	7.0	4.3
	SR Tanganika	3.0	4.0	3.6	5.6	3.9
	SR Haut-Lomani	2.2	1.8	3.3	11.4	4.3
	SR Haut-Shaba	3.8	0.2	4.0	7.9	4.5
	SR Lualaba	2.9	1.3	5.0	3.3	4.8
VIII.	REGION OF KASAI-ORIENTAL	2.1	1.5	6.7	1.2	6.0
	SR Kabinda	2.4	1.7	8.8	4.0	8.1
	SR Sankuru	1.7	1.2	2.9	-6.0	1.7
IX.	REGION OF KASAI-OCCIDENTAL	1.3	2.0	2.9	24.7	5.6
	SR Kasai	1.2	1.1	1.5	24.1	4.4
	SR Lulua	1.4	2.5	3.7	25.1	6.3
	ZAIRE	1.9	2.6	4.0	4.0	4.0

1. See text for remarks concerning the validity of the comparability of the various rates.

ments; in particular, it is hypothesized that a much lower growth rate reflected emigration while a much higher growth rate suggested immigration during the intervening period.(1)

Comparison of column (2) with column (1) in table 4.4 clearly suggests a relatively marked impact of migration in nearly all the regions. Indeed, outside the region of Kinshasa which recorded substantial emigration, twelve sub-regions exhibited emigration trends while others indicated immigration trends.(2) For the country as a whole, net immigration seems rather sizeable as the rate of growth clearly exceeds the rate of natural increase by about 37 per cent, a figure surely also reflecting increasing birth numbers during those years. Differences between regional rates of growth and natural increase varied from a minimum of 0.1 for Tshuapa (a low fertility area) to a maximum of 9.1 for Cataractes (a high fertility area bordering Kinshasa). The rates of growth and natural increase obtained for the different regions must be viewed with some reserve concerning the quality of the base statistics; nevertheless, they provide some idea of variations and trends in fertility and migration.

Comparison of columns (3) and (4) with either column (1) or column (2) in the table indicates much greater variations, even when allowing for some increase in birth rates and decrease in death rates during the periods 1958-68 or 1956-70. It would appear that migratory movements were greater during the two years 1968-70 than previously, with considerable immigration into Kinshasa, presumably from the neighbouring regions of Bas-Zaire and Bandundu. Considerable immigration into Kasai-Oriental and Kasai-Occidental would also seem to be the reason for the abrupt increase in rate of growth between 1960 and 1970, very probably subsequent to the creation of these two regions in 1968, which was followed by the return of many the Baluba and Lulua to their home-

---

(1) It was noted that rates of natural increase from the 1955-8 survey somewhat understated the growth momentum; however, it may be presumed that, since then, birth and death rates varied according to a fairly regular pattern throughout the years, except for periodic rises in mortality in certain areas.

(2) Figures for Kinshasa have been slightly affected by some administrative changes in area during 1956-8, but more seriously affected by heavy emigration of workers and their dependents following the economic crisis of these years.

lands.(1) Both these ethnic groups had formerly migrated in large numbers to Shaba, and had settled particularly in the sub-regions of Haut-Lomami and Haut-Shaba, areas of high fertility which nevertheless showed a decline in the rate of growth during 1968-70. It is pertinent to note that the region of Equateur showed less fluctuation with fairly moderate rates of growth throughout the various periods; this region is known to have been the only part of Zaire totally spared by troubles of a political or tribal nature. The region of Kivu showed fairly consistent rates of growth over time, except for the period 1968-70, during which it recorded substantial emigration due to political rebellions and the mercenary insurgency of 1967 in Nord- and Sud-Kivu; populations from these areas are known to have taken refuge in neighbouring Tanzania and Uganda, but most refugees had returned to Zaire by the time of the 1970 enumeration. The region of Haut-Zaire exhibited fairly normal rates of growth in most periods, except for 1968-70, suggesting heavy immigration; this is particularly noticeable for Tshopo which includes the regional capital, Kisangani, and also for the Ueles where most Sudanese refugees were settled. The region of Shaba seems to have received substantial immigration, especially in the areas of Haut-Lomami and Haut-Shaba; while it may be presumed that most immigrants into the latter area were Lumpa populations from Zambia, the origin of immigrants into the former remains difficult to determine. A cross-check with neighbouring areas tends to suggest that such immigrants very probably originated from Sankuru, usually a supplier of migrants, and which recorded marked emigration for the period 1968-70.

It may be remarked that, since the 1958 population is a common element in the comparison of rates of growth for the periods 1958-68 and 1958-70, the additional two years in the latter period should produce only a minor effect on the resulting growth rates, unless the population had changed considerably between 1968 and 1970. At the level of the different regions, definite conclusions based on such a hypothesis are difficult to reach because of the distorting effect of migration. However, table 4.4 shows clearly that relative to 1956-8, average annual rates of growth are lower or constant in several areas,

---

(1) Largely owing to continued conflicts and tensions between the Lulua and Luba ethnic groups, and also their persecution previously in Shaba, the 1968 administrative reform broke up the former united region of Kasai into Kasai-Oriental and Kasai-Occidental, to permit these ethnic groups to settle separately in the land they claimed.

notably the region of Bandundu, the sub-regions of Ubangi, Ituri, Nord-Kivu, Sud-Kivu and Tanganika. Most areas present a moderate increase in growth rates, while others show a much marked increase, especially the sub-regions of Equateur, Tshuapa, Haut-Uele, Maniema (all areas of low fertility) and the two regions of Kasai.

For the whole of Zaire, intercensal annual rates of growth appeared similar for the three periods 1958-68, 1968-70 and 1958-70, with an average estimate of 4.0 per cent. This suggests that population totals for 1968 and 1970 were fairly consistent relative to 1958; but, as shown by experience in most countries of the world, annual growth rates as high as 4 per cent over a long period of time are uncommon. Thus, the reliability of the total population from the 1970 enumeration requires to be assessed by further evidence; the next chapter discusses the implied vital rates and migration levels, attempting to reconcile the 1970 enumeration results with demographic parameters from the 1955-8 survey.

4.2 The sex ratios

Table 4.5 (p. 383) presents sex ratios by region for non-adult and adult populations for 1970, together with those previously recorded during the 1958 enumeration. Based on nationals alone, the overall sex ratio for 1970 was 95, a figure slightly lower than in 1958 when Africans from neighbouring countries were reported as indigenous populations. The table shows that, except for Kinshasa which recorded a relatively high proportion of males, regional differences in sex ratios were not considerable, since reported estimates vary in the range of 92-97 males per 100 females; with Bandundu and Kasai-Oriental in the lower limit and Shaba in the upper limit of this range.(1) Also, within the different regions, most areas recorded sex ratios in the same range of 92-97, except for the sub-regions of Cataractes (90), Kwango (88), Bas-Uele (90) and Tanganika (103). A closer examination of estimates for areas with sex ratios below the country's average confirms the conclusion previously arrived at by Boute that continued rural exodus more than the post-Independence

---

(1) This conclusion obviously differs from that of Boute, who found considerable regional differences, because he calcualted sex ratios for nationals and non-nationals together, the latter being predominantly male. See Boute, J.: Zaire, in Population Growth and Socioencomic Change in West Africa; op. cit., p. 603.

Table 4.5

REPORTED SEX RATIOS BY REGION AND AGE-GROUPS OF ADULTS AND NON-ADULTS FROM THE 1958 AND 1970[1] ENUMERATIONS

Region and Sub-Region		Under 18 yr.		Over 18 yr.		All ages	
		1958	1970	1958	1970	1958	1970
I.	Region of Kinshasa**	104	102	133	141	118	119
II.	Region of Bas-Zaire	102	102	85	82	93	93
	SR Bas-Fleuve	96	101	83	91	92	96
	SR Cataractes**	101	104	86	75	93	90
III.	Region of Bandundu	106	104	76	79	90	92
	SR Mai-Ndombe	109	104	81	81	92	92
	SR Kwilu	108	105	75	82	90	93
	SR Kwango**	102	103	73	72	87	88
IV.	Region of Equateur	109	104	89	86	97	94
	SR Equateur*	118	106	87	86	96	95
	SR Tshuapa*	111	109	87	89	94	96
	SR Mongala	108	104	91	87	98	95
	SR Ubangi	105	101	92	83	98	92
V.	Region of Haut-Zaire	109	106	101	86	104	94
	SR Tshopo*	113	106	108	87	110	95
	SR Bas-Uele*	115	110	90	82	96	90
	SR Haut-Uele*	108	111	103	85	105	93
	SR Ituri	104	101	103	91	104	96
VI.	Region of Kivu	103	101	91	88	96	94
	SR Nord-Kivu**	101	99	91	89	96	94
	SR Sud-Kivu**	101	100	91	90	96	95
	SR Maniema*	111	107	91	82	98	93
VII.	Region of Shaba	107	104	94	91	100	97
	SR Tanganika	104	104	90	103	96	103
	SR Haut-Lomami	107	101	91	88	98	95
	SR Haut-Shaba**	107	105	100	87	103	96
	SR Luolaba	110	104	95	87	102	95
VIII.	Region of Kasai-Oriental	109	102	84	84	94	92
	SR Kabinda	110	101	80	84	94	92
	SR Sankuru	107	105	88	82	95	92
IX.	Region of Kasai-Occidental	111	101	88	86	98	94
	SR Kasai	110	99	90	90	98	95
	SR Lulua	111	102	86	84	97	94
	ZAIRE	106	103	91	88	97	95

[1] Data for 1958 refer to nationals and Africans from neighbouring countries (Ref. AIMO). Data for 1970 refer to nationals only.

* Low fertility area. ** High fertility area.

rebellions was responsible for the observed situation.(1) Indeed, it was observed that in Kwilu, for example, the zones of Gungu (90) and of Idiofa (94), which were the main centres of the rebellion, exhibited higher sex ratios than the zones of Bagata (85) and Masi-Manimba (87) where the rebellion did not occur.(2)

Relative to sex ratios recorded for 1958, non-adult sex ratios for 1970 show less marked regional variations ranging between 101-106 boys per 100 girls, including Kinshasa, as against 102-111 previously. Also, allowing for the fact that married females under 18 years of age were reported as adult persons, regional sex ratios for non-adults would seem everywhere closer to 100 than previously; this would tend to suggest that enumeration of non-adult persons had improved, especially with regard to age statement.(3) In contrast, sex ratios for adults showed more marked regional differences in 1970 with estimates in the range of 72-141 compared to 73-133 previously, when other Africans (with a greater proportion of males) were reported as indigenous. Greater variations in adult sex ratios by 1970 would suggest that some adolescents may have been classified as adults or that differential mortality increased rapidly with age, or, more likely, that male numbers were particularly affected by migration during the sixties.

4.3 Proportions of persons under 18 years

Table 4.6 (p. 385) presents the proportions in regional populations of persons aged under 18 years. For 1970 and for the country considered as a whole, the corresponding figures were 48.7 for females, 52.6 for males and 50.6 for both sexes. As can be seen in the table, the relative proportions of non-adult males were higher than those of females in all regions, except for Kinshasa which usually received excessive male adult immigrants. It should be noted that lower proportions of non-adult females also resulted from the fact that the enumeration instructions deliberately authorized reporting of young

---

(1) Boute, J.: Zaire, in Population Growth and Socioeconomic Change in West Africa; op. cit.

(2) Ibid.

(3) Experience from a number of computations with reliable data has led to the conclusion that the sex ratio for populations under 19 years of age should be just over 100. See: Accuracy Tests for Census Age Distributions Tabulated in Five-Year and Ten-Year Groups, United Nations, Population Bulletin, No. 2, October 1952.

Table 4.6.

REPORTED PROPORTIONS UNDER 18 YEARS BY REGION FROM THE 1958 AND 1970 ENUMERATIONS[1]

	Region and Sub-Region	F.under 18 to all Fem. 1958	F.under 18 to all Fem. 1970	M.under 18 to all Males 1958	M.under 18 to all Males 1970	M+F under 18 to Tot.Popn. 1958	M+F under 18 to Tot.Popn. 1970
I.	Region of Kinshasa**	51.3	52.9	45.2	49.9	48.1	53.6
II.	Region of Bas-Zaire	48.4	52.4	53.1	57.9	50.7	55.0
	SR Bas-Fleuve	44.0	53.5	49.7	56.1	46.9	54.8
	SR Cataractes**	51.2	51.4	55.4	59.5	53.2	55.2
III.	Region of Bandundu	44.8	49.5	53.2	56.2	48.8	52.7
	SR Mai-ndombe	42.1	49.0	49.6	54.6	45.9	51.5
	SR Kwilu	43.5	49.2	52.8	55.2	47.7	52.1
	SR Kwango**	49.4	50.9	57.5	59.9	53.2	55.1
IV.	Region of Equateur	38.2	44.2	43.0	48.9	40.6	46.4
	SR Equateur*	31.0	42.7	38.0	47.9	34.4	45.2
	SR Tshuapa*	28.6	37.5	33.9	42.6	31.2	40.0
	SR Mongola	42.2	46.0	46.4	50.4	44.3	48.2
	SR Ubangi	46.0	47.1	49.2	52.1	47.5	49.5
V.	Region of Haut-Zaire	36.0	40.0	37.6	44.9	36.8	42.4
	SR Tshopo*	36.7	43.2	37.7	48.2	37.2	45.7
	SR Bas-Uele*	25.3	28.9	30.3	35.5	27.8	32.0
	SR Haut-Uele*	30.2	32.4	31.3	38.5	30.7	35.3
	SR Ituri	48.4	49.3	48.2	51.9	48.3	50.6
VI.	Region of Kivu	47.4	49.7	50.4	53.2	48.9	51.4
	SR Nord-Kivu**	52.2	52.7	54.8	55.4	53.4	54.0
	SR Sud-Kivu**	48.8	50.6	51.6	53.4	50.2	52.0
	SR Maniema*	35.1	42.0	39.8	48.6	37.4	45.2
VII.	Region of Shaba	44.7	49.7	55.4	52.9	46.3	51.3
	SR Tanganika	44.1	53.6	47.7	53.9	45.8	53.8
	SR Haut-Lomami	41.9	48.3	45.9	51.7	43.9	50.0
	SR Haut-Shaba**	49.4	49.4	51.1	54.1	50.3	51.7
	SR Lualaba	41.8	46.4	45.4	50.9	43.6	48.6
VIII.	Region of Kasai-Oriental	39.6	48.6	45.9	53.5	42.6	50.9
	SR Kabinda	47.6	50.5	45.0	54.9	46.2	52.6
	SR Sankuru	35.9	43.3	40.5	49.5	38.1	46.2
IX.	Region of Kasai-Occidental	42.7	56.2	48.5	60.0	45.6	58.1
	SR Kasai	41.7	53.9	46.7	56.3	44.2	55.1
	SR Lulua	43.4	57.4	49.8	62.0	46.5	59.6
	ZAIRE	42.6	48.7	46.6	52.6	44.6	50.6

[1] Data for 1958 refer to nationals and Africans from neighbouring countries (REF. AIMO). Data for 1970 refer to nationals only.

* Low fertility area.

** High fertility area.

ever-married women as adult, even though they were aged under 18 years. Relative to 1958, reported proportions of non-adults showed an increase for 1970 by about 6 per cent for females, males and both sexes in the country as a whole. This increase is reported for all the regions but with relatively greater degree for the low fertility areas than for the high fertility areas, as indicated in the table.(1) To the extent that registration of children improved markedly after the fifties, there is reason for concluding in agreement with Boute that "one may see in this change, much more clearly than in the increase of the volume of the population, an indication, not only of declining child mortality, but also of a rise in the birth rate in the last ten years".(2)

---

(1) The case of Kasai-Occidental, which recorded the highest percentage of children is more difficult to interpret; however, the observed figure may reflect some impact of adult migration and mortality resulting from the Lulua-Luba conflicts on the eve of and after Independence.

(2) Boute, J.: in Population Growth and Socioeconomic Change in West Africa; op. cit., p. 604.

CHAPTER XIII

POPULATION ESTIMATES FOR 1960-70 AND CONSISTENCY OF THE 1970 ENUMERATION RESULTS WITH THOSE OF THE 1955-8 SURVEY

The results of the 1970 population enumeration of Zaire gave rise to serious controversy, because of the wide differences between the expected or estimated population totals and those actually recorded. Thus, the concern of the present chapter is first to assess those estimates established prior to 1970, then to develop new estimates for that period, and finally to test the degree of consistency between the results of the 1970 enumeration and those of the 1955-8 survey which provided the basis for the new estimates.

1. Review of Previous Estimates to 1970

Based on reported statistics of the 1955-8 survey, three sets of projections were developed for the period until 1970 and beyond; the methods and results of these projections were as follows:

(i) Estimates by AIMO

The AIMO projections were developed by the so-called "mathematical method", applying to total population the estimated rate of population growth as a function of time. The AIMO provided only one set of estimates for the period 1960-80, assuming that future components of growth and socio-economic development would have only a minor gradual effect on population trends. For the entire country, based on the 2.3 per cent reported rate of natural increase, the projected total for 1970 was 17.7 million persons including all nationals and non-nationals of African origin.(1)

Obviously, the methods and procedures used for these projections were to result in an understatement of the future population. Indeed, the "mathematical method" of projection is known to be inappropriate where the age structures have marked peculiarities, as was observed

---

(1) The methods and results of these projections were reported in the General Report of the 1955-8 survey; op. cit., p. 65-9.

for Zaire in the survey data; and it is also inappropriate in conditions of rapid socio-economic change - conditions which characterized Zaire in the post-Independence period. Moreover, as already demonstrated, the population was growing steadily and rapidly at rates well above 2.3 per cent per annum throughout the second half of the fifties and certainly long after that period. There can be no doubt, therefore, that the AIMO estimate of 17.7 million persons for 1970 represented a substantial underestimation of the growth momentum of the population throughout that projection period.

(ii) Estimates by Fabri and Mayer

The population estimates established by Fabri and Mayer were more elaborate, using the component method, and making separate projections for males and females in five-year age groups over five-year periods throughout 1958-98.(1) In the two sets of estimated variants, mortality was assumed to decline constantly in accordance with the United Nations model life tables. Regarding fertility, the first variant assumed a constant trend while the second variant assumed a slight increase to 1973, after which fertility increase was to decline gradually. Age specific fertility rates were those reported from the survey, adjusted in accordance with registered births for women aged 15 to 44 in 1958. The base population comprised exclusively those persons reported by the continuous registration system, presuming that their number was only slightly below that of the actual population. Migration was assumed to be non-existent. The projections so established yield for 1970 (by interpolation) a population total of 16.1 million according to the first variant and 16.8 million according to the second variant. Both these variants yield population totals lower than that of the AIMO, probably due to understatement of age specific fertility rates, adjusted solely for registered births. That these projections led to understatement of the future population is evident from the fact that the parameters used, in particular the fertility levels, were non-adjusted survey data, which, as discussed earlier, understated demographic trends; in addition, the impact of migration was underestimated.

---

(1) Fabri, M. et Mayer, J.: La population future du Congo; op. cit.

(iii) Estimates by the United Nations

Projections by the Population Division of the United Nations were established using the age-sex composition reported from the 1955-8 survey and the year 1965 was taken as the initial date, assuming all components of growth constant until then; thus, all the variants differed only slightly long after 1955. Differences between the low, medium and high variants were due solely to the mortality assumptions; all variants assumed gradual fertility rise from a gross reproduction rate of 2.8 in 1965 to 3.0 in 1980-5. A fourth variant with constant fertility assumed a gross reproduction rate of 2.9 throughout the whole projection period in conjunction with the medium mortality assumption. The population totals obtained for 1970 were respectively 17.4 million persons with the low variant, 17.4 million with the medium variant, 17.5 million with the constant variant and 17.6 million with the high variant.(1)

Obviously, since the components of population growth were assumed constant from about 1955 to 1965, the resulting estimates for 1970 were inevitably close. As Boute remarked, it would appear that the political events which occurred soon after Independence led the United Nations officers to adopt a wait and see position vis-a-vis the demography of Zaire. Further, the political disorders and rebellions were unjustifiably assumed to have affected the whole country, whereas, in fact, vast regions were never seriously troubled and the population of much of Zaire experienced accelerated growth.(2)

As indicated above, the three sets of previous projections all contained errors - either in the methods used or in the hypothesis of future trends - clearly conducive to understatement of the growth momentum of the population and its future totals. In point of fact, these projections were based on reported rates of natural increase rather than adjusted rates of growth, while all statistical evidence concerning past trends suggested a rapid population increase especially after the mid-fifties. Such trends have been indicated by the annual rates of growth based on the enumerations and they have been supported

---

(1) Boute, J.: in J.C. Caldwell, Population Growth and Socio-economic Change in West Africa; op. cit., p. 593-4.

(2) Ibid.

by the evidence relating to the socio-economic developments already discussed in this study. Finally, none of the earlier projections made allowances for immigration which, as noted in the case of recorded refugees and others from neighbouring states, affected population growth fairly substantially during the post-Independence decade. There is also some evidence of a rather sizeable non-recorded immigration, which is discussed later in the present chapter.

2. New Estimates to 1970 with Base Line from 1955-8

As agreed by all demographers, population projections are not predictions but rather designed to quantify the implications of different sets of assumptions regarding population dynamics.(1) The present study thus attempts to re-develop the best possible estimates for Zaire during the first decade of independence, in the light of information just reviewed on the past population trends and socio-economic developments. Because of the uncertainty attached to internal migration, though it clearly affected the regional distribution of the population, it has appeared most convenient to project the population of the country as a whole without disaggregation for its various regions. The methods and base parameters as well as the results of this new estimation are as follows.

2.1 The methods and base parameters

(i) The methods: The simplest method of projection is the so-called "mathematical" one, which has already been discussed in connection with the AIMO's estimation of the population of Zaire to 1970. This method is of limited value as it does not allow for the changes in the components of growth, and only arrives at the population total, while for the purposes of planning and policy the structures as well as the totals are of significance. This is particularly important in the case of Zaire where past vital rates have been subject to marked

---

(1) For extensive discussion on projections, see particularly: Pollard, A.H. et al., Demographic Techniques, Pergamon Press Pty. Ltd., Australia, Rushcutters Bay, N.S.W., 2011, 1974, p. 101-106; Shyrock, H.S. et al, The Methods and Materials of Demography, op. cit., Chapter 24, p. 771-778; Cox, P.R.: Demography, Cambridge University Press, Cambridge, England, 1970, Chapters 14 and 15; United Nations, Manual III, Methods for Population Projections by Sex and Age, Series A, Population Studies, No. 25, New York, 1966.

changes which were reflected in the age-sex composition of the population. Thus, the projection method used here is the component method which takes into account the above considerations in the separate projections of numbers of males and females in each age group of the population.

(ii) Time elements: The starting date of the projections is end-June 1956, and the population is estimated by time-intervals equal to age intervals of five years. The significance of the date so selected stems from the fact that it is the mid-year time closest to the mid-point period of the 1955-8 demographic survey which provides the only definitive estimates for Zaire. The field operations of that survey began in April 1955 and ended in February 1958 but, by end-September 1956, approximately half the data had been collected.(1) Projected estimates for 1970 will subsequently be derived by interpolation of the results of the last five-year period 1966-71.(2)

(iii) Population total and age-sex distributions: It was noted that survey data were subject to errors of mis-reporting and under-enumeration of certain ages; thus, for the purposes of the present projections, some adjustments have been made of reported population total and age-sex composition. Survey data indicated two different population totals based respectively on the age structures (12,733,000) and the regional estimates (12,782,000). The reason for this discrepancy remains unknown; however, because regional population totals were established before the distribution by age and sex, the country's total so obtained has been used here. This total has been further corrected for under-reporting by 2.23 per cent, as indicated in the post-survey check; the number of persons of unknown age so yielded has been pro-rated to reported age-sex distributions. The figure for the starting date of the projections, i.e. end-June 1956, has finally been derived by back-dating, at a growth rate of 2.5 per cent, the corrected estimate of the survey. With respect to the age structures, it was noted that observed data departed from those of the stable

---

(1) By end-September 1956, data were collected for about 95 per cent of the estimated total population in about 13 out of the 26 districts of the country.

(2) Another technique would have consisted of bringing all the base figures to a date such as 1955 for matching the 5-year time interval with the final date of 1970; but this would have required more complex adjustments.

model (North family), with marked deficits for persons in their late teens and early twenties while, in contrast, figures for older persons seemed rather inflated around the period of middle adulthood. A thorough examination of these peculiarities led to the conclusion that they probably reflected in equal proportions both age mis-statement and true demographic trends. Thus, in order to reduce the effect of likely reporting errors while at the same time preserving the probable impact of true trends, the base age structures have been partly adjusted by averaging their reported and stable composition. The resulting total population for Zaire as of mid-1956 is thus 12,987,000 persons with the age-sex distributions as shown in table 4.7 below.

Table 4.7

ADJUSTED TOTAL POPULATION BY SEX AND AGE FOR ZAIRE AS OF MID-1956
(Based on the 1955-8 Survey)

	MALE		FEMALE	
Age Group	In Thousands	%	In Thousands	%
0-4	1,072	17.0	1,122	16.8
5-9	838	13.3	862	12.9
10-14	719	11.4	655	9.8
15-19	530	8.4	581	8.7
20-24	511	8.1	575	8.6
25-29	504	8.0	562	8.4
30-34	460	7.3	561	8.4
35-39	385	6.1	434	6.5
40-44	334	5.3	361	5.4
45-49	290	4.6	301	4.5
50-54	246	3.9	234	3.5
55+	416	6.6	434	6.5
All ages	6,305	100.0	6,682	100.0

(iv) Sex ratio at birth: It is known that the sex ratio at birth for African populations tends to be below the conventional figure of 105 males per 100 females. For Zaire, the recorded figure in the survey was 97. However, more recent and reliable surveys of urban

centres, such as Kinshasa in 1967, revealed relatively higher estimates of sex ratio at birth approximating 104. Thus, in the present projections, an estimate of 103 as sex ratio at birth has been assumed.

(v) Initial fertility and mortality: As already indicated, the fertility and mortality levels for the starting date of the projections are adjusted survey estimates; however, no allowance for possible changes in age structures has been made, in view of the short time between the survey mid-point and the starting date of the projections. Thus, as regards mortality, the death rate is 26.1 per thousand, the life expectancy at birth is 39.5 years for both sexes, and the estimated infant death rate is 167 per thousand; as regards fertility, the birth rate is 45.2 per thousand persons and the age-specific fertility rates are as follows:

Age Group	Fertility Rate[1]
15-19	164
20-24	316
25-29	276
30-34	200
35-39	110
40-44	83
45-49	35
Total fertility	5,920

(vi) Assumptions over time: Based on the discussion of vital rates and the assessment of the socio-economic developments after Independence, the following assumptions have been made regarding mortality, fertility and migration:

- Mortality: It has already been noted that the mortality decline of the late colonial period was brought about not only through eradication of communicable diseases but also as a result of specific action to combat infertility, and various measures for infant protection which presumably increased child survivorship. There certainly remained

---

(1) The adjusted total fertility rate varied between 5,910 and 5,930. The age-specific fertility rates are adjusted to weighted aggregate numbers of women by five-year age groups, using estimated births and the Newton formula for splitting reported ten-year groups into fives. Resulting figures indicate a pattern of early childbearing, high fertility for ages 20-29, and remaining high though tailing off after age 30 years.

much potential for further substantial reduction in mortality through improvement in public health and medical services; but this would have required major improvement in the socio-economic and nutritional status of the population at large, which was not much in evidence in the immediate post-Independence period. The lack of mortality data for the entire country over a period approximating a quarter of a century to date has made it necessary to look at the mortality trends of other African countries where, unfortunately, information is also scarce. Available estimates indicate that life expectancy at birth was rising at various rates, with annual gains ranging from 0.3 to 0.9 years.(1) Given this wide range, three courses of mortality decline may be hypothesized for Zaire, as illustrated in table 4.8 (p.397). The slow mortality decline assumes the life expectancy at birth to increase by 0.3 years per annum below 40 years, by 0.4 years per annum between 40 and 45 years, and by 0.5 years per annum after 45 years. The medium decline hypothesis corresponds to the model pattern with a gain of 2.5 years per five-year period until life expectancy at birth reaches 55 years, after which the gain slightly exceeds 2.5, but slows down appreciably after 65 years. The fast decline hypothesis assumes a gain of 3.5 years per five-year period. Though apparently very high, this third hypothesis is not necessarily unrealistic in the case of Zaire; indeed, it was often observed that, while the post-Independence picture was not very encouraging in conventional terms of health services and medical supplies, increasing awareness by mothers of all ages led to greater use - for deliveries - of the limited hospital and maternity facilities.(2) It is not improbable that this situation resulted in decreased infant and maternal mortality.(3)

---

(1) For example, in Ghana between 1960 and 1970, and in Kenya between 1962 and 1969, the average annual gain was 0.6 and 0.9 years respectively. The estimate was much lower for most countries of sub-Saharan Africa. See United Nations: World Population Prospects as Assessed in 1973; Population Studies, Sales no. E.76.XIII. 4., p.40.

(2) In a personal communication, a gynaecologist and director of a maternity hospital reported performing about 100 deliveries each day though funds and medical supplies had not been provided for several months in the mid-sixties.

(3) This aspect is related to mass education of women, especially mothers. As indicated previously, in the mid-fifties, about half of the births in Zaire occurred in hospitals and maternity centres; it is very likely that this proportion increased constantly over time, despite shortages of medical supplies.

- Fertility: Clear statistical indications of a steady increase in birth rates were observed for the period commencing at the end of World War II throughout the fifties. Allowing for possible changes in age structures, this still indicates a rise in more refined measures of fertility. Strong evidence of this is suggested by the growth rates which, after fluctuating around 2.1 per cent in the first half of the fifties, jumped to 2.5 per cent in the second half of the decade. The apparent drop in childlessness provides further indirect evidence that fertility was rising. Thus, for the period 1956-70, the general assumption concerning the fertility trend is a continued rise, and there is ample evidence of this for most parts of the country.

For example, a reliable survey of Kinshasa in 1967, with a population then totalling about one million, revealed a much higher fertility than previously and the survey analysis stressed that this was not due solely to improvement in data collection but represented a true increase in fertility by age of women.(1) It was estimated that by age 42.5 years, the mean parity was 5.8, indicating two live births in excess of the 1955 estimate or an increase by 53 per cent over the twelve-year period. It was observed that for women aged 25-35 years, of which the proportion single had fallen to 7.0 per cent, the number childless had fallen to 6.6 per cent as against 16.3 per cent, i.e. a drop in infertility of 9.9 per cent. For women aged over 45 years, the proportion childless was 21 per cent, but this still indicated a drop of about 10 per cent compared to the situation in 1955. The survey analysis concluded by estimating at 7.8 per cent the increase in general fertility for Kinshasa during the twelve-year period 1955-67.

The rate of fertility increase in Kinshasa was unlikely to be representative of other areas, in view of particular regional circumstances. There was even some indication of the beginning of a decline in fertility by 1970 for certain areas. For example, based on a study of the data from a 10 per cent (12,416 persons) sample survey in 1970 of Bukavu, the capital city of the Kivu region, measured fertility suggested a decline of recent origin.(2) Estimated total fertility

---

(1) Etude socio-démographique de Kinshasa 1967, Rapport général, p. 67; Institut National de la Statistique, avec le coopération de l'assistance technique française, Kinshasa, Mai 1969.

(2) Tshinyongolo Mulunda: La Fécondité des femmes de la ville de Bukavu au Zaire; Mémoire de Maîtrise ès sciences (démographie) à l'université de Montréal, Fac. arts et sciences, Montréal, November 1974.

rate was 6.8 as against a completed mean parity of 7.4 live births; that is a deficit of current fertility over retrospective fertility by about 8 per cent.(1) The author of that analysis drew attention to some limitations in the base data, but suggested that school education, later marriage and general modernization were the major factors leading to the observed fertility decline.(2)

However, for Zaire as a whole, it seems that the rising fertility trend prevailed throughout the period 1956-70. This conclusion was also reached by Boute, though from non-statistical arguments, when he wrote that: "Girls and mothers know more about confinement and childbearing. The proportion of young women entering the reproductive age is higher, and this means more mothers. Taboos with a birth-spacing effect are being neglected, especially in the eastern part of Zaire. In a country where large numbers of women in the past have remained sterile, more are now able to bear a first child. This apparently tremendous increase in fecundity is fairly uniform across the country except in a few regions that even before Independence were known to have low fertility."(3)

Taking into account the above considerations, we have assumed four courses of fertility paths in terms of total fertility rates during 1956-70. For illustrative purposes, the first fertility hypothesis or F1 assumes that fertility remains constant throughout the projection period. The three other hypotheses termed F2, F3 and F4, reflect differing assumed speeds of fertility rise; relatively moderate if the increase follows the path traced by F2 and relatively fast if it follows the path of F4. Assumed percentages of fertility increase and resulting values of total fertility for each five-year period of the projection are shown in table 4.9 (p. 397).

- Migration: As already noted, available information suggested that by the mid-fifties, about 300,000 to 350,000 persons or 3 per cent

---

(1) Tshinyongolo Mulunda: La Fécondité des femmes de la ville de Bukavu; op. cit., tableau p. 97.

(2) Idem., p. 21-32. Fairly serious reservations related to the definition of the 12-month period prior to the survey, the definition of live births and mis-statement of age of women.

(3) Boute, J.: Demographic Trends in the Republic of Zaire; Caltech Population Program Occasional Papers, Series 1, No. 5, California Institute of Technology, Pasadena, California, 1973, p. 8.

Table 4.8

ASSUMED COURSES OF MORTALITY DECLINE WITH LIFE EXPECTANCY AT BIRTH FOR THE PERIOD 1956-71

(e^o_o 1956 - 41.5 for females and 38.3 for males)

Mortality decline[1]	Gain in e^o_o (years)			Level of e^o_o (years)		
	1956-61	1961-6	1966-71	1956-61	1961-6	1966-71
M_1: Slow	1.9	2.0	2.1	F: 42.5	44.4	46.5
				M: 39.4	41.3	43.4
M_2: Inter-mediate	2.5	2.5	2.5	F: 42.8	45.3	47.8
				M: 39.7	42.2	44.7
M_3: Fast	3.5	3.5	3.5	F: 4 .3	46.8	50.3
				M: 40.1	43.6	47.0

[1] With North Life Tables.

Table 4.9

ASSUMED COURSES OF FERTILITY RISE WITH TOTAL FERTILITY RATE FOR THE PERIOD 1956-71

(TFR 1956 = 5.92)

Fertility Increase	Increase in TFR (%)			Level of TFR		
	1956-61	1961-6	1966-71	1956-61	1961-6	1966-71
F_1: Constant	0.0	0.0	0.0	5.92	5.92	5.92
F_2: Low	2.5	2.5	2.5	5.99	6.14	6.30
F_3: Medium	5.0	5.0	5.0	6.07	6.35	6.56
F_4: High	7.5	7.5	7.5	6.14	6.60	7.09

of the total population of Zaire were born in other African countries; while persons who left the country were probably less than 50,000 in total. It was also noted that after Independence, the number of immigrants increased considerably while that of emigrants remained practically identical by the close of the sixties. There is also a strong presumption that most Africans who immigrated before Independence subsequently reported themselves as Zaireans.(1) For convenience of analysis, given their small number and the uncertainty attached to their age structures, those Africans who immigrated into Zaire prior to the starting date of the projection period will remain included in the estimates of Zaire nationals, as was the practise in those years. Thus, the projections will assume zero migration for the whole period 1956-70; but the resulting estimates will be adjusted for reported non-nationals in 1970. However, for the final appraisal of the total population of Zaire as of mid-1970, further allowance will be made for "unrecorded migration", evidence of which will be discussed.

2.2 Discussion of the results

Table 4.10 (p. 399) presents estimates of population totals for 1970 under the various assumptions of the projections, with the new base line from mid-1956.(2) In large measure, these results speak for themselves. Despite fairly marked differences in assumed courses of mortality and fertility, nearly all the new projections put the population total for 1970 between 19 and 20 million persons. This would indicate broadly that the figure expected from the projections previously established underestimated Zaire's population total for 1970 by about 10 per cent, whereas the estimate from the enumeration of that year indicates - in almost the same order of magnitude - the reverse.

In evaluating the results of the various combinations of mortality and fertility, one would expect a positive relationship between the

---

(1) This was particularly the case with those originating from Angola, Rwanda, Congo and the Central African Republic.

(2) The calculation of these projections has been made using Shorter's computer package programs named FIVFIV, which make population projections by five-year age groups spaced at five-year intervals of time and SINSIN, which transform the results of the FIVFIV projection into annual estimates. These techniques are described in the manual, Computational Methods for Population Projections (with particular reference to development planning) by F.C. Shorter, with programming assistance from D. Pasta, The Population Council, New York, 1974.

Table 4.10

NEW PROJECTIONS OF POPULATION TOTALS (THOUSANDS) TO 1970 FOR ZAIRE WITH BASE LINE FROM 1956 AND COMPARISON WITH THE 1970 ENUMERATION TOTAL

Mortality & Fertility Assumptions	Projected Nationals mid-1970	Reported Immigrants[1] 1970	Unrecorded Migration[2]	Estimated Population Total, 1970[2]	Compar. with 1970 Enum. total, %[3]
M_1 F_1:	17,884	932	n.a.	18,816	-13.0
M_1 F_2:	18,155	932	n.a.	19,087	-11.8
M_1 F_3:	18,384	932	n.a.	19,216	-11.2
M_1 F_4:	18,720	932	n.a.	19,625	-9.2
M_2 F_1:	18,017	932	n.a.	18,949	-12.4
M_2 F_2:	18,291	932	n.a.	19,223	-11.2
M_2 F_3:	18,523	932	n.a.	19,455	-10.1
M_2 F_4:	18,863	932	n.a.	19,765	-8.6
M_3 F_1:	18,246	932	n.a.	19,178	-11.4
M_3 F_2:	18,525	932	n.a.	19,457	-10.1
M_3 F_3:	18,762	932	n.a.	19,694	-9.0
M_3 F_4:	19,110	932	n.a.	20,042	-7.4

[1] Total non-nationals reported in the 1970 enumeration.

[2] Excluding unrecorded migration hypothesized in the discussion of the total population as on mid-1970.

[3] i.e. 21,638 thousand persons of national and non-national origin.

pace of mortality decline and fertility increase during the projection period, not only because of the generally recognized association of mortality and fertility changes but also because of the social and economic circumstances which affected Zaire during the post-Independence years. We are inclined to consider that mortality decline during 1956-70 was probably best approximated by M_2, whereas fertility increase was probably best reflected by F_3. Indeed, our observation of the African continent suggests that medical infrastructure and health services in Zaire were not much different from those in countries such as Ghana and Kenya which experienced sizeable mortality decline in the sixties.(1) Certainly, both these countries are much smaller in area and much greater proportions of their populations would have had access to medical facilities. However, it should also be noted that for about a decade previously, Zaire had been subject to special programmes of action conducive to rapid mortality decline, particularly amongst infants. Nevertheless, because of some slowing-down in these services during the post-Independence crisis of Zaire, it seems reasonable to exclude a high mortality decline such as that assumed by M_3. For the same reasons, the mortality decline assumed by M_1 would seem rather too low, especially in view of the level of life expectancy at birth at the starting date of the projection. With regard to fertility, if, as most reports tend tc agree, the apparent increase in fecundity was noticeable throughout the country, it is plausible that by 1970 the total fertility rate might have exceeded 6.3, the rate assumed by F_2. This was probably the case, as throughout the country, there was very little deliberate control of births. However, considering the wide variations in regional fertility levels and in view of the lack of recent studies of the low fertility areas, one may exclude the possibility that total fertility had increased to a level of 7.09, as assumed by F_4. Fertility assumption F_3 would then seem the most probable one for 1956-70. Thus, tentatively, if it is correct to surmise that projection M_2 F_3 represented the most probable, then the projected population would be about 19.5 million persons including immigrants from abroad as reported in the 1970 enumeration.(1)

---

(1) This opinion is also shared by Boute; see 'Demographic Trends in the Republic of Zaire', Caltech Occasional Papers, op. cit., p. 2.

(2) The corresponding projected estimates based on reported and stable age structures of the initial population are respectively 19.2 and 19.7 million persons; i.e. 1.5 per cent below and 1.0 per cent above the total yielded by our adjusted base population. These differences are clearly insignificant.

The estimate so obtained varies little from the figure of 19.7 million arrived at by Boute and considered by him as the most probable population total for Zaire in 1970.(1) However, both these estimates, 19.5 and 19.7 million, do not make allowances for "unrecorded immigration" which, reportedly,was fairly sizeable during the sixties. Evidence of "unrecorded immigration" has been suggested by several observers of population change in Zaire, notably de Saint Moulin, who observed that illegal immigrants from abroad could easily report themselves as natives of Zaire during the 1970 enumeration.(2) Another source of "immigration" of a kind concerned those native Zaireans who emerged from the forests and other hiding places after the granting of Independence by the Belgian colonial government. This certainly occurred in the case of some Pygmy populations who agreed to submit themselves to effective government administration in the late sixties (some even agreed to join the national armed forces); but the significance of their numbers remains unknown to date. With regard to illegal immigrants from abroad, available population statistics seem to support the hypothesis of "unrecorded immigration". For example, table 4.12 (p.405) indicates for the region of Haut-Zaire a total of 36,000 foreigners, including residents of non-African origin; this figure equals the number of recorded refugees from Sudan who, like those from Uganda and the Central African Republic, were confined to movements over relatively short distances into the border areas. Obviously, "unrecorded immigration" would have increased the number of nationals reported for 1970 though, as demonstrated later, the total number of persons so involved was unlikely to have been much above a quarter million persons and certainly half a million at the most. If this was the case, the final estimate of total population for Zaire in 1970 would be 19,955,000 persons. Yet this estimate shows a deficit of 1,683,000 persons or 8 per cent in comparison with the figure of 21,638,000 persons reported from the 1970 enumeration.

---

(1) Boute's estimate was obtained as follows: Assuming the intercensal rate of growth between the 1956 and 1959 enumerations to continue up to 1970, he obtained for the 24 sub-regions of the country a total population of 18.3 million. Assuming further an increase of 5 per thousand in the rate of birth, he arrived at a total of 19.7 million persons. Ref. Demographic Trends in the Republic of Zaire, Caltech Occasional Papers, op. cit., p. 8-9.

(2) De Saint Moulin, Léon: La répartition de la population du Zaire en 1970; op. cit., p. 341-349.

From the above considerations, despite fairly generous assumptions about mortality decline and fertility increase, and unrecorded immigration during 1956-70, revised estimates suggest that the total population of Zaire, as reported from the 1970 enumeration, is open to serious question. However, it must be remembered that this conclusion has been reached as a result of retrospective assumptions about trends in components of growth from the 1955-8 survey, the base population of which could also have been inaccurate.

3. The 1970 Enumeration Results Compared to those of the 1955-8 Survey

At the conclusion of the preceding section, it was clearly apparent that there remained a marked inconsistency between the population total from the 1970 enumeration and the revised estimate from the 1955-8 survey. There are a number of considerations which must be taken into account when interpreting the observed discrepancy. However, the aim of this section is limited to an evaluation of the degree of consistency in trends of population totals and the implied rates of components of growth.

3.1 Degree of consistency in population totals

One way of testing the degree of consistency between the population totals of the survey and the enumeration in question is to assume that the two factors of unrecorded immigration - foreigners and indigenes not previously registered - explain all or most of the observed discrepancy, given the previous assumption that projection M_2 F_3 represented the most probable trends of mortality and fertility during the period 1956-70. Hence, the construction of table 4.11 (p. 403) which presents various hypotheses of levels of unrecorded immigrants.

For example, hypothesis IV in the table suggests that, given the estimate yielded by M_2 F_3, for the projected population of 1955-8 to match the enumeration total, the number of unrecorded immigrants from abroad should be 300,000 and that of non-registered natives, growing at a rate of 1.5 per cent per annum during 1956-70, must have been 1,525,000 or 11.7 per cent of the 1956 population total. Our knowledge of the situation suggests that such a hypothesis is highly improbable. On the one hand, because of transportation difficulties, most illegal immigrants tended to settle in areas around the borders,

Table 4.11

RECONCILIATION OF THE POPULATION TOTAL FROM THE 1955-8 SURVEY AND THE 1970 ENUMERATION WITH ADJUSTMENTS FOR VARIOUS ASSUMPTIONS OF "UNRECORDED IMMIGRATION"* DURING 1956-70

Assumed non-registered population, 1955-8		Total 1970, at specified rate of growth (1)	Assumed unrecorded immigration from abroad, 1970 (2)	Project. estimate M_2 F_3 + reported foreigners, 1970 (3)	Total Population Estimate for 1970 (1)+(2)+(3)	Ratio Estimate/ Enumeration, 1970 %
Percent	Thousands					
		(r=1.5%)				
I : 13.3	1,728	2,133	50	19,455	21,638	1.0
II : 13.0	1,687	2,083	100	19,455	21,638	1.0
III : 12.4	1,606	1,983	200	19,455	21,638	1.0
IV : 11.7	1,525	1,883	300	19,455	21,638	1.0
		(r=2.0%)				
V : 12.4	1,609	2,133	50	19,455	21,638	1.0
VI : 12.1	1,571	2,083	100	19,455	21,638	1.0
VII : 11.5	1,496	1,983	200	19,455	21,638	1.0
VIII: 10.9	1,421	1,883	300	19,455	21,638	1.0
		(r=2.5%)				
IX : 11.5	1,498	2,133	50	19,455	21,638	1.0
X : 11.3	1,463	2,083	100	19,455	21,638	1.0
XI : 10.7	1,392	1,983	200	19,455	21,638	1.0
XII : 10.2	1,322	1,883	300	19,455	21,638	1.0

* This relates to those immigrants from abroad who reported themselves as Zaireans during the 1970 enumeration and also to those Zaireans not covered by the continuous registration system which served as a frame for the 1955-8 demographic survey.

especially if accompanied by their families; while only a small proportion ventured further into the country usually to settle in urban areas. We are inclined to estimate that the total number of such illegal immigrants from abroad could not have been more than 100,000 persons. On the other hand, populations left uncovered by the continuous registration system at the time of the 1955-8 survey were certainly small communities of less than 100 persons each; this would require several thousands of such communities to match the 12 per cent indicated by hypothesis IV in the table.(1) But, in view of the substantial adjustment already made, for unreported population, to the base estimates of our projection, it is very unlikely that the estimate of native "immigrants" could be more than 400,000. The above considerations have led the author to suggest the figure of half a million, at the most, as an estimate of total unrecorded immigrants. This, in conclusion, would suggest that the 1970 population enumeration of Zaire very probably overestimated the total population by about 1,683,000 persons or 7.8 per cent of the reported population total for that year.

3.2 The implied growth by natural increase alone

In order to obtain the rates of population growth in Zaire by natural increase alone between 1956 and 1970, it is necessary to assume zero or balanced in and out migration during that period. Very broadly, this can be obtained by subtracting the number of foreigners reported for the lower and upper limits of that period, since the number of native Zaireans who left the country during those years was practically insignificant.(2)

Table 4.12 (p. 405) presents estimates of nationals and foreigners in 1956 and 1970 respectively as well as rates of natural increase for 1956 and average annual rates of increase based on the above assumption of zero migration from abroad. Thus, rates in column (6) of the table are strictly a function of regional natural increase and migration within the country. Examination of column (6) in com-

---

(1) Roughly, the number of such communities would be between 15-17,000, figures obviously much too high as the geography of the country was fairly well-known in those years; and although the continuous registration system was related to tax payment, it is unlikely that the number of all-time tax evaders would be as great as one million by the mid-fifties.

(2) That is, less than 50,000 persons. Ref. J. Boute in Population Growth and Socio-economic Change in West Africa, op. cit., p. 597.

Table 4.12

NATIONAL AND NON-NATIONAL POPULATIONS FROM THE 1955-8 SURVEY AND THE 1970 ENUMERATIONS; NATURAL INCREASE AS ON AUGUST 1956 AND AVERAGE ANNUAL RATE OF NATURAL INCREASE FOR 1956-70

Region and Sub-Region[1]	Total Nationals (1,000) Mid-1956	Total Nationals (1,000) Mid-1970	Total Foreigners (1,000) Mid-1956[2]	Total Foreigners (1,000) Mid-1970[3]	N.I.(%) Mid-1956	A.A.N.I. (%) 1956-70[4]
	(1)	(2)	(3)	(4)	(5)	(6)
1. REGION OF KINSHASA **	318	1,099	20	209	4.2	7.9
2. REGION OF BAS-ZAIRE	851	1,295	8	224	2.3	3.0
SR Bas-Fleuve	335	496	3	26	2.2	2.8
SR Cataractes**	516	799	5	198	2.4	3.1
3. REGION OF BANDUNDU	1,886	2,592	6	8	2.2	2.3
SR Mai-ndombe	272	429	2	-	2.5	3.2
SR Kwilu	1,148	1,555	2	1	2.1	2.2
SR Kwango**	466	608	2	7	2.2	1.9
4. REGION OF EQUATEUR	1,756	2,428	6	4	1.6	2.3
SR Equateur*	302	447	3	1	1.5	2.8
SR Tshuapa*	395	466	1	-	.4	1.2
SR Mongala	519	739	1	1	2.3	2.5
SR Ubangi	539	776	1	2	2.0	2.6
5. REGION OF HAUT-ZAIRE	2,336	3,320	16	36	.9	2.5
SR Tshopo*	635	941	8	3	1.4	2.8
SR Bas-Uele*	468	583	3	5	-.6	1.6
SR Haut-Uele*	582	776	3	20	.1	2.0
SR Ituri	651	1,020	2	8	-	3.2
6. REGION OF KIVU	2,013	3,015	14	347	2.4	2.8
SR Nord-Kivu**	735	1,178	3	295	3.1	3.3
SR Sud-Kivu**	831	1,220	7	46	2.2	2.7
SR Maniema*	447	617	4	6	1.1	2.3
7. REGION OF SHABA	1,501	2,655	35	99	3.0	4.0
SR Tanganika	397	695	4	2	3.0	3.9
SR Haut-Lomani	342	602	4	1	2.2	3.9
SR Haut-Shaba**	450	788	21	70	3.8	3.9
SR Lualaba	313	570	6	26	2.9	4.2
8. REGION OF KASAI-ORIENTAL	891	1,871	3	1	2.1	5.1
SR Kabinda	481	1,374	2	1	2.4	6.9
SR Sankuru	410	497	1	-	1.7	1.4
9. REGION OF KASAI OCCIDENTAL	1,231	2,431	5	2	1.3	4.7
SR Kasai	493	833	1	1	1.2	3.7
SR Lulua	738	1,598	4	1	1.4	5.3
ZAIRE	12,782	20,706	113	932	1.9	3.4

1. Between 1956 and 1970, some political-administrative divisions changed; the table largely takes this into account, save for Kinshasa which witness substantial immigration after the survey in September 1955.
2. European populations only.
3. Recorded migrants originating in Africa and outside.
4. Calculated for nationals only.

* = low fertility area; ** = high fertility area.

parison with column (5) of the table suggests several observations, the most important being as follows. For Zaire taken as a whole, the average annual rate of growth implied by the natural increase alone during 1956-70 is 3.4 per cent. Assuming unrecorded immigration to amount to half a million persons, the resulting rate will fall only by a negligible proportion to 3.1 per cent. Given the natural increase of about 2.0 per cent estimated for 1956, the average annual rate of natural increase obtained for the 14-year period 1956-70 would imply an extremely fast mortality decline and/or fertility increase in a combination to yield by 1970 a rate of 4.9 per cent, which is most unusual and which, apparently, no country has ever experienced. Moreover, with a death rate just below 20 per thousand, as might have been the case for Zaire by 1970, the implied birth rate would be at least 69 per thousand, a figure considerably higher than the 45 per thousand estimated 14 years earlier. It is shown later that such an increase in birth rates would require an implausible rise in more refined measures of fertility.

For the various regions, because of local developments and heavy internal migration after Independence, it is difficult to interpret the differences in the table between the rates of natural increase in 1956 and the corresponding averages estimated for 1956-70. Nevertheless, there appear implausibly high averages for several regions even under the hypothesis of considerable increase in fertility. Indeed, apart from Kinshasa which is known to have received substantial immigration from both inside and outside Zaire, the regions such as Haut-Zaire Kasai-Oriental, Kasai-Occidental and parts of Shaba show average rates exceeding those of 1956 by more than 1.0 per cent and suggesting for 1970 rates of natural increase that are twice or three times greater than fourteeen years earlier.

Certainly, there is some evidence to support an increase in fertility for particular areas during 1956-70, as indicated by the socio-demographic survey of Kinshasa in 1967 when estimated general fertility indicated an increase by about 8 per cent in comparison with the level estimated for 1955.(1) However, it is most unlikely that the pattern of fertility increase recorded for Kinshasa was typical of the entire country; in all probability it was typical neither of the

---

(1) Etude Socio-demographique de Kinshasa, 1967; op. cit.

populations of extra-customary centres, totalling 46 per cent of Zaireans, nor of the 4.2 million persons, i.e. 19 per cent, living in 45 major cities. According to Boute, there is no definite evidence that all the non-traditional centres increased as rapidly as the major cities; rather, it seems that the centres of intermediate size saw the most rapid increase.(1)

An observation more difficult to interpret is that, for the different regions of low, medium and high fertility, levels of average annual rates of natural increase present an order of graduation similar to that observed previously, i.e. highest in the high fertility areas and lowest in the low fertility areas, as shown in table 4.13 below.

Table 4.13

FOPULATION TOTALS AND NATURAL INCREASE FOR THE LOW, MEDIUM AND HIGH FERTILITY AREAS, 1956-70 *

	TOTAL NATIONALS (1,000)		TOTAL FOREIGNERS (1,000)		NATURAL INCREASE (%)	ANNUAL AVERAGE (%)
	1965	1970	1956+	1970	1956	1956-70
Low Fertility Areas	2,829	3,831	22	35	0.6	2.1
Medium Fertility Areas	6,637	11,183	33	72	2.1	3.6
High Fertility Areas	3,316	5,692	58	825	2.8	3.8
Zaire	12,782	20,706	113	932	1.9	3.4

* Derived from table 4.12 ante; + European population only

According to the table above, if it can be assumed that internal migration affected similarly all the area-groups during 1956-70, the rise in natural increase for that period appears fastest in the low

(1) Boute, J., in Population Growth and Socio-economic Change in West Africa; op. cit., p. 601.

fertility areas, intermediate in the medium fertility areas and slowest in the high fertility areas.(1) It can then be inferred that the low fertility areas experienced a greater increase in birth rates than the medium and high fertility areas. The table also shows that this rise in birth rates in either the low fertility areas or the medium fertility ones was not sufficient to reach the level of birth rate estimates for the high fertility areas; the latter showing a natural increase close to that of medium fertility areas but still much greater than for the low fertility areas - by about one-half. Although reflecting expected trends of assumed fertility increase and mortality decline, estimates of natural increase for the period under consideration here do not provide sufficient indications to allow definite conclusions concerning the reliability and estimation of mortality and fertility levels in 1970, for comparison with those estimated for 1956. Further evidence of the most probable levels of death and birth rates for 1970, in agreement with those for 1956, will be sought in more refined measures of mortality and fertility, as discussed in the following section.

3.3 The required levels of mortality and fertility for matching the results from survey and enumeration

Table 4.14 (p. 409) presents the required trends of mortality decline - in terms of life expectancy at birth, and fertility increase - in terms of total fertility rates, for the projected estimates based on the 1955-8 survey to match the result of the 1970 enumeration. The methods used for deriving the projected estimates are those described in the preceding chapter. Factors which may cause bias in these estimates are related to the base population, the age-sex distribution, the age-specific fertility rates and migration. It should be remembered that the base population total of the projection was adjusted for under-reporting, indicated by the post-survey check; and the highest figure was selected from the two estimates of total population indicated in the survey report. The age-sex composition was adjusted by averaging the reported and stable distributions; and, as already demonstrated, the projected estimates show little variation if based on reported or stable age-sex distributions of the initial population. In the

---

(1) Roughly, the increase is three times in the low fertility areas, 1.7 in the medium and 1.3 in the high fertility areas.

Table 4.14

REQUIRED MORTALITY AND FERTILITY DURING 1956-70 FOR PROJECTED ESTIMATES BASED ON THE 1955-8 SURVEY TO MATCH THE RESULTS OF THE 1970 ENUMERATION

(A): ASSUMING ZERO "UNRECORDED IMMIGRATION"

Projection estimate :	20,702,000
Reported immigrants :	932,000
Unrecorded immigration:	-
Total	21,634,000

Mortality decline: 5.5 years per five-year period.

Mortality level	1956	1961	1966	1971
e_o^o (M+F) :	39.5	45.0	50.5	56.0

Fertility increase : 16.1 per cent per five-year period.

Fertility level	1956	1961	1966	1971
TFR :	5.92	6.87	7.98	9.26

(B): ASSUMING ½MILLION "UNRECORDED IMMIGRANTS"[1]

Projection estimate :	20,207,000
Reported immigrants :	932,000
Unrecorded immigrants:	500,000
Total	21,639,000

Mortality decline: 5.0 years per five-year period.

Mortality level	1956	1961	1966	1971
e_o^o (M+F) :	39.5	44.5	49.5	54.4

Fertility increase : 13.4 per cent per five-year period.

Fertility level	1956	1961	1966	1971
TFR :	5.92	6.71	7.61	8.63

[1] See text for definition of "Unrecorded immigration".

computation of the projections, no allowances were made for possible change in age-specific fertility rates. Though younger women certainly had greater reproductive potential, it is unlikely that this would affect specific rates radically within the 14-year projection period. "Unrecorded immigration" is probably the major factor likely to cause bias in the estimates so obtained; thus our calculation made allowances in this regard.

Firstly, assuming zero unrecorded immigration, for estimates based on data of the 1955-8 survey to match the population total of the 1970 enumeration, the required mortality decline in terms of life expectancy at birth would be 5.5 years per five-year period, raising the life expectancy at birth for both sexes from a level of 39.5 years in 1956 to 54.9 years in 1970; at the same time, the required fertility increase in terms of total fertility rate would be 16.1 per cent per five-year period, raising the total fertility rate from a level of 5.9 in 1956 to 9.0 in 1970. Such a combination of very fast mortality decline with extremely rapid fertility increase is obviously implausible; in actuality, no country in Africa has a total fertility rate above 7.5. Secondly, assuming half a million unrecorded immigrants, the required mortality decline in terms of life expectancy at birth would be 5.0 years per five-year period in combination with a rise in total fertility rate by 13.4 per cent per five-year period, resulting in a rate of 8.43 by 1970.

It is without question, therefore, that the population total reported for the 1970 enumeration cannot be consistent with estimates based on data of the 1955-8 demographic survey. Finally, even with the results of the new estimation (see table 4.15, p. 413), assumed to be a better approximation of Zaire population estimates for 1970, the deficit in comparison with the implicit estimates of the 1970 enumeration would still be about 17 per cent in terms of mortality decline (life expectancy at birth) and about 33 per cent in terms of fertility increase (total fertility rate).

3.4 Appraisal of final results

The analytical comparison of population estimates based on the 1970 enumeration with those of the 1955-8 demographic survey has clearly shown that it is impossible to reconcile them fully. For

obvious reasons, especially the lack of detailed data and reports of field operations during the 1970 enumeration, it is difficult to determine the true reasons for the observed wide discrepancy in estimates of total population and implied levels of vital rates.

However, it should be noted that demographic surveys, even under difficult conditions, are fairly reliable in providing estimates of vital rates while there may remain a number of sources of inaccuracy in deriving the population totals. Thus, in developing new estimates for Zaire from the mid-period of the 1955-8 survey to 1970, sizeable but cautious adjustments were made as regards the base population, while the initially adjusted levels of vital rates were accepted. On the other hand, relative to the pre-Independence period, there seemed to be some consistency between the population total of the 1970 enumeration and that of the previous enumeration of 1968, both of which were based on a count of individual cards of the continuous registration system. This system is certainly ideal for the collection of population data, on condition that it covers the entire population and that the cards are kept up-to-date with respect to vital rates and migration, especially in areas of rapidly moving populations and with no incentive to volunteer the information required by the government registers. Though deliberate overestimation of national populations has sometimes been presumed for certain countries of Africa, there seems no evidence of this in the case of Zaire in 1970. However, evidence has been discussed in the present study of loopholes and serious disturbances in regional administration in most parts of Zaire during the years following the attainment of Independence.(1) For this reason, it may be speculated that the marked inconsistency

---

(1) While concluding that the population of Zaire in 1970 was about 20 million persons, de Saint Moulin nonetheless gave some examples of continued perturbations of the registration system (in La Repartition de la population du Zaire en 1970, op. cit., p. 341-9):
- In July 1971, examination of registers in Mbanza-Ngungu (50,000 persons, region of Bas-Zaire), showed that few individual cards had been removed but none had been added; and the number of births reported for 1970 represented only 70 per cent of those recorded for 1969.
- In May 1972, examination of registers in Likasi (130,000 persons, region of Shaba), showed that in reference to 1969, reported births were respectively 55 per cent for 1970, 25 per cent for 1971 and 8 per cent for 1972.
- In May-June 1972, examination of most registers in different areas of the region of Shaba showed detailed data files, village by village, with estimates corresponding to reported population numbers; but in Manono (region of Kasai) enumeration records were not found.

between population totals anticipated on the basis of the 1955-8 survey and that reported in the 1970 enumeration very probably reflected insufficient coordination and various errors of local administrative registers; i.e. allocation of new cards to unrecorded or deceased persons, double counts of families who had left their former residential areas, etc. Hence, given the apparent reliability of vital rates from the 1955-8 survey and the fairly substantial adjustment of the base population for the revised projections, it is difficult not to come to the conclusion that the 1970 enumeration was an overestimation by about one and a half million persons, or about 7.8 per cent of the total population reported for Zaire in that year.

Such a conclusion, however, should not obscure the fact that by the late fifties and throughout the sixties Zaire's population dynamics had reached a relatively rapid growth momentum under which the total population was to double in less than a quarter of a century. If the summary estimates of demographic parameters given in table 4.15 may tentatively be considered to reflect more accurately the actual situation in Zaire as of 1970, then it would appear that this growth momentum is likely to remain high with important socio-economic implications, even in the absence of substantial immigration.

Table 4.15

NEW ESTIMATES OF POPULATION TOTAL AND AGE-SEX DISTRIBUTIONS FOR ZAIRE AS ON END-JUNE 1970 (BASED ON PROJECTION ASSUMPTION M_2 F_3*) WITH BASE LINE FROM 1955-8

Age	Male		Female	
	Thousands	%	Thousands	%
0-4	1,797	18.4	1,791	17.5
5-9	1,431	14.7	1,433	14.0
10-14	1,195	12.3	1,210	11.8
15-19	931	9.6	986	9.7
20-24	798	8.2	809	7.9
25-29	667	6.8	623	6.1
30-34	490	5.0	562	5.5
35-39	483	5.0	551	5.4
40-44	465	4.8	532	5.2
45-49	405	4.2	506	5.0
50-54	326	3.3	376	3.7
55-59	272	2.8	307	3.0
60-64	216	2.2	238	2.3
65-59	155	1.6	158	1.6
70-74	49	0.5	59	0.6
75+	61	0.6	73	0.7
All ages**	9,741	100.0	10,214	100.0

* See text.

** Including reported foreigners from the 1970 enumeration and hypothesized "unrecorded migration", assuming they have similar age-sex structures to the nationals.

OTHER DEMOGRAPHIC CHARACTERISTICS

ASFR 15-19 :	182	CDR :	18.8
20-24 :	350	e_0^0F :	47.80
25-29 :	306	e_0^0M :	44.56
30-34 :	222	IMF :	115.57
35-39 :	122	IMM :	135.84
40-44 :	92		
45-49 :	56		
TFR :	6.560		
GRR :	3.2		
NRR :	2.2		
CBR :	46.0		

Per cent Selected Age Groups :

	0-14	15-65	65+
M :	45.4	51.4	2.7
F :	43.4	53.8	2.8
M+F :	44.4	52.8	2.8

CHAPTER XIV

THE FUTURE POPULATION OF ZAIRE, 1970-2005

At the close of the preceding chapters a much clearer picture of Zairean demography in 1970 has emerged as a result of testing the degree of consistency between the results of the population enumeration of that year and those of previous surveys and enumerations. Nevertheless, knowledge of current components of growth (mortality, fertility and migration), the age-sex and regional distributions of the population still remains inadequate. Moreover, future trends in socio-economic factors and their effect on the evolution of demographic variables cannot be foreseen with any degree of certainty. This is the more true, as,to date, no specific major policies or programmes have been designed to influence Zaire's population growth. As discussed in the final chapter of this study, the government of Zaire initiated from 1972 a population policy termed "naissances désirables" or "desired births", but this policy does not establish targets to be achieved. In view of all this, two sets of population projections, each based on differing assumptions, are considered in the present chapter. As with all projections, the resulting estimates are not predictions but are meant to provide an idea of the order of magnitude of the demographic parameters to be taken into account in assessing future prospects or in planning the future development of the country.

1. Current Alternative Sets of Population Projections

The Population Division of the United Nations has developed a set of projections for Zaire for the period 1970-2000, using as a base the official population total from the 1970 enumeration.(1) On the other hand, based on the discussion of the population estimates implied

---

(1) In the absence of projected estimates to the turn of the century by the government of Zaire, these United Nations projections may be regarded as having some official recognition. As mentioned previously, following the 1970 enumeration, the Zaire government requested the National Statistical Institute to compute projections but these were established for the period up to 1980 only, and, it appears, were only to be taken as provisional.

for 1970 by the adjusted data of the 1955-8 demographic survey, the present writer has established an alternative set of projections for the period 1970-2005. These two sets of estimates, as with all projections, are functions of the base data and of certain assumptions and methods of estimation, and these are briefly examined before the summary analysis of the projection results and their implications.

1.1 Projections 1970-2000 by the United Nations

The general approach and methods used in establishing these projections are described in several publications of the United Nations.(1) The cohort-component method was used. The base population total was the figure reported from the 1970 enumeration, with the age-sex distributions provided by the National Statistical Institute of Zaire. The mortality estimates were formulated in terms of life expectancy at birth. The initial mortality level was assumed to be on the low side for African countries, standing between 41.0 and 44.5 years for both sexes; and three assumptions through time suggested a slow, medium and fast mortality decline with 0.4, 0.5 and 0.6 years respectively as average annual increments in life expectancy at birth. The fertility assumptions were formulated in terms of the gross reproduction rate. The initial fertility level did not differ from that previously estimated from the 1955-8 survey. Fertility assumptions for the projection period comprised, in addition to the constant variant associated with the medium mortality assumption, three variants corresponding to the differing mortality trends. The medium variant assumed a fertility decline beginning during 1985-90 with 60 years duration of transition to replacement level. Relative to the medium fertility variant, the high variant assumed fertility decline to be delayed by five years and the transition to replacement level to be ten years longer; likewise, the low variant assumed fertility decline to begin five years earlier and the transition to be completed ten years earlier. No particular migration hypothesis was formulated,

---

(1) These projections are not related to those discussed in a previous section concerning the post-Independence population to 1970. For details of the methods, see particularly Manual III; op. cit. Details related to the base data and projection results are included in various sections concerning sub-Saharan and Middle Africa in World Population Prospects as Assessed in 1973; op. cit.

presumably assuming nil net migration. The resulting estimates of projected total population and annual rates of growth by quinquennial periods are presented in table 4.16 (p. 427). Reportedly, the 'medium' estimates were intended to represent the future population trend that appeared most plausible in view of what was known of past experiences and current circumstances in the country.

It should be noted that, based on the discussion in the present study of vital rates and population totals estimated for the period up to and including 1970, the base data and assumptions through time of the United Nations projections for Zaire appear subject to serious reservations. To begin with, the population total provided by the 1970 enumeration cannot be accepted as it stands. As already demonstrated, that figure very probably overestimated the country's inhabitants by about 8 per cent, even assuming that the population total of the 1955-8 survey was heavily understated. It is also noticeable that most estimates of initial levels of the components of growth as well as their assumed courses throughout the projection period tend, in contrast, to underestimate the growth momentum of the population. Indeed, according to the mortality estimates for the starting year of the projections, the life expectancy at birth increased only by about 5.0 years over the preceding 14 years; this is an unrealistically low estimate though the true level cannot be accurately determined. In addition, fertility is assumed to have remained constant during the period 1956-70, while all evidence suggested a rise not only in birth rates but also in more refined measures of fertility such as the total fertility rates. A more pertinent question concerns the assumed onset of fertility decline, in 1985-90 according to the medium variant or alternatively either five years earlier or five years later. There are reasons, however, to believe that fertility may have declined much earlier than the above assumptions suggest - possibly up to a decade earlier. Indeed, as suggested by the study of Bukavu in 1970, the high fertility areas of Zaire probably include several populations which not only had already reached the peak of their fertility in the late sixties but had also begun to experience a decline in both birth rates and more refined fertility measures. Although one would expect birth rates to increase further with changes in age structures in the low fertility areas, it is unlikely that this increase in birth rates would imply a rise in refined fertility measures to a level comparable

with that of the high fertility areas. Further, the United Nations estimates assumed zero migration throughout the projection period; this would seem unrealistic, especially with regard to immigration, though the numbers involved would remain relatively small in relation to the total population.(1) However, in spite of the above reservations, it may be speculated that the overestimation of the base population combined with the understatement of vital rates throughout the projection period would produce compensating effects to provide a fair order of magnitude of the future population of Zaire by the turn of the century.

1.2 Projections 1970-2005 with new base line from 1955-8

Faced with questions as to the reliability of the base population reported from the 1970 enumeration and accuracy of vital rates of the United Nations projections just reviewed, we decided to adopt as base data for current alternative projections the adjusted estimates provided by assumptions M_2 F_3 of the revised projections for 1956-70.

In developing the alternative projection 1970-2005, the cohort-component method was used. The computational techniques are those of the package programs FIVFIV developed by Frederic Shorter.(2) The necessary inputs concerning the base population, mortality and fertility levels of the starting date are those indicated in table 4.15 (p. 413). In estimating future mortality levels and sex-age patterns, use has been made as previously of the North family of the Coale and Demeny model life tables for life expectancy at birth below 55 years for both sexes; beyond this level, use was made of United Nations working models, as shown in appendix C (p. 496). The fertility inputs have been formulated in terms of total fertility rates with similar age-specific schedules. As regards migration, one assumption only has been made in all projection variants: a net quinquennial immigration of 35,000 persons in 1970-75 reducing to 7,000 persons by 2000-2005.(3) Because of the relatively small impact of mortality

(1) It is more than likely that the political situation in Southern Africa together with the enormous economic resources of Zaire will lead to increased immigration, as in the past.

(2) See footnote 2, p. 398.

(3) Experience has shown Zaire to be a receiver of immigrants from neighbouring countries and overseas; whilst migration for political reasons will depend largely on the situation in Southern Africa, migration motivated by labour and economic needs is likely to persist.

and limited immigration from a long-term perspective, the resulting estimates of the projections are assumed to be essentially a function of the fertility trends under the following variants:

- Constant: total fertility will not vary to the year 2005
- High : total fertility will fall to 5.0 by the year 2005
- Medium : total fertility will fall to 4.5 by the year 2005
- Moderate: total fertility will fall to 4.0 by the year 2005
- Low : total fertility will fall to 3.5 by the year 2005

Table 4.17 (p. 428) presents the resulting projection estimates by quinquennial population totals and annual growth rates. In formulating the different projection hypotheses, it is tentatively assumed that the medium variant would represent the most plausible trend. It is presumed that modernization alone will entail changes in the ideal family size in urban centres to a level just below 4.0; however, the average completed family size of rural populations could still fluctuate around 5.0 if, in the absence of radically new schemes, traditional family systems are to remain the socio-economic support of ageing persons.(1)

2. Projected Population Growth and Characteristics

It is fair to concede that the validity of projections of Zaire's population remains presently subject to a high degree of uncertainty due primarily to inadequacies in the base data and also to political and socio-economic development in a country which is vast and not easily integrated. For this reason, we feel justified in discussing the findings of current projections solely with regard to the medium assumption which, of the alternative sets, was constructed to represent the most plausible future trends in the light of past experience. Detailed estimates of the constant, high, medium, moderate and low variant projections are shown in tables 4.21-4.25 (p. 432-441).

2.1 Future population growth to the year 2000

According to the medium variant, alternative estimates in both tables 4.16 (p. 427) and 4.17 (p. 428) clearly reveal markedly increasing

(1) This point is related to wealth flows between parents and children over lifetime; see particularly Caldwell, J.C., in The Demographic Transition Theory Reconsidered, Australian National University,1976.

numbers in terms of absolute growth of Zaire's population. In either set of projections, the medium variant, which presumably represents the most plausible trend, indicates for the year 2000 a total population nearing 50 million persons; i.e. about 235 per cent or more than double the population of 1970. More precisely, our estimated total population for the year 2000 is 48.1 million as against 49.5 million estimated by the United Nations. This discrepancy, about 3 per cent, results from the fact that we were led to adopt a base population smaller than the official figure reported in the 1970 enumeration and, in addition, we assumed fertility decline to begin a decade earlier than in the United Nations projections. However, this discrepancy is insignificant in the face of the important implications for economic and social life resulting from the great potential and momentum of Zairean population growth.

2.2 Projected trends in rate of growth

As can be seen in table 4.17, the annual rate of population growth indicated by the medium variant of the projection for 1970-5 is fairly high, about 3.0 per cent, and it declines only slightly by the period 2000-2005, when it remains above 2.5 per cent. As also shown in table 4.16, the medium variant of the United Nations projections indicates growth rates rising steadily from 2.5 per cent in 1970-75 to 2.9 per cent in 1995-2000.(1) In both series, the estimated rates of growth imply a doubling of the population in about 23 years. Accordingly, the total population estimates for Zaire in 1970 will double during 1990-95, i.e. in the lifetime of many of its present leaders in academic and public life. Projected estimates of our medium variant also show that, by the year 2005, the total population of Zaire will be over 55 million persons, or 276 per cent of the total population in 1970, i.e. 35 years previously. It should be emphasized that this rapid population growth is not due mainly to immigration and mortality decline, but rather to increasing birth numbers, a phenomenon already observed in present times for some urban populations.

From graph 4.1 (p. 423), it is clear that, though all but the

---

(1) The differing trends of the United Nations' and our own estimates of growth rates result from differences in base parameters for 1970 as already discussed.

constant variants of our projections assume declining fertility, the actual number of births and survivorship at birth increase continuously each successive five-year period. According to the medium variant, for example, the number of births is about one million in 1970-75, but it will be nearly double that figure - 1.9 million - by the quinquennial period 2000-5. This development shows that as the population grows larger, any given birth rate means more total births. It also illustrates the impact on the number of births of the young age structure of Zaire's population, with nearly 45 per cent under 15 years of age throughout most of the period 1970-2005.

2.3 Projected trends in vital rates

Table 4.18 (p. 429) shows estimates of projected levels of fertility and mortality according to the medium variant of the alternative projection series. In comparison, estimates developed with the new base lines from 1955-8 indicate relatively higher initial fertility than does the United Nations' projection, but the reverse occurs with regard to mortality; this discrepancy is related, as already noted, to the uncertainty surrounding vital rates' estimates for 1970, the starting date of projection.

However, in both projection sets, the medium variant indicates for 1970-2000 a steady decline in crude birth rates; this is relatively slower in the United Nations' estimates, from 45.2 to 40.6 per thousand persons, as against a fall from 46.1 to 38.0 in our estimates. In terms of the gross reproduction rate, which measures fertility free of the effect of age composition, the United Nations' estimates show an unchanged level of 2.9 through the eighties, after which there is a slight fall to 2.7 by 1995-2000. In contrast, our estimates show a marked downward trend from 3.2 in 1970-75 to 2.4 in 1995-2000. This steady decline is the result of averaging of assumed limited fertility rise in the low fertility areas and decline in the much larger high fertility zones, in addition to expected changes in ideal completed family size even in the absence of clear targets of birth limitation.

As regards mortality, a continuous decline is anticipated at similar pace in the alternative medium variants throughout 1970-2000 with an overall gain of about 12 years in life expectancy at birth

for both sexes. According to either medium variant, by the year 2000, life expectancies at birth for both sexes are expected to reach levels between 55 and 60 years, with crude death rates down to levels approximating 11 per thousand persons; a marked mortality decline is expected to result from trends in age structures, which will be characterized by a large proportion of young people and small numbers of aged persons.

2.4 Projected trends in age structures

Population pyramids for 1970, as presented in graph 4.2 (p.424), clearly illustrate that Zaire's age structures have all the potential for explosive population growth during several subsequent decades, as each younger cohort of females constitutes a greater number of potential mothers than before. Hence, even if fertility per woman dropped instantly to replacement level, i.e. reaching a net reproduction rate equal to one, the population will continue to grow due to its youthful age composition.

From the graphical illustration, it can be inferred that the reproductive potential of those women below 25 years of age will enhance the already rapid growth momentum of the population throughout the remainder of the century; and the possibility that this may occur at an increasing rate cannot be totally excluded. Indeed, as shown in table 4.19 (p. 430), from 1975 onwards, the deficient female birth cohorts of 1935-40 and male birth cohorts of 1930-40 would have passed the peak reproductive ages 20-24 and 25-29 years, followed by much larger birth cohorts born after 1945 with greater reproductive potential also. Thus, the component projection of the population suggests that for several decades after 1970, the age structures of Zaire will experience continuous regeneration. This development can also be viewed from a different perspective, as illustrated in table 4.20 (p. 431). Indeed, in 1970, the age group 10-14 years is the boundary between larger and smaller age groups. As this cohort moves up, by 1975, there is a sharp increase in the 15-19 years age group; by 1980, the increase affects the age group 20-24 years, etc. Subsequently, in comparing the 1970 population with the projected population for 2005, as shown by the pyramid series in graph 4.2, it is apparent that the upsurge in the number of persons will have

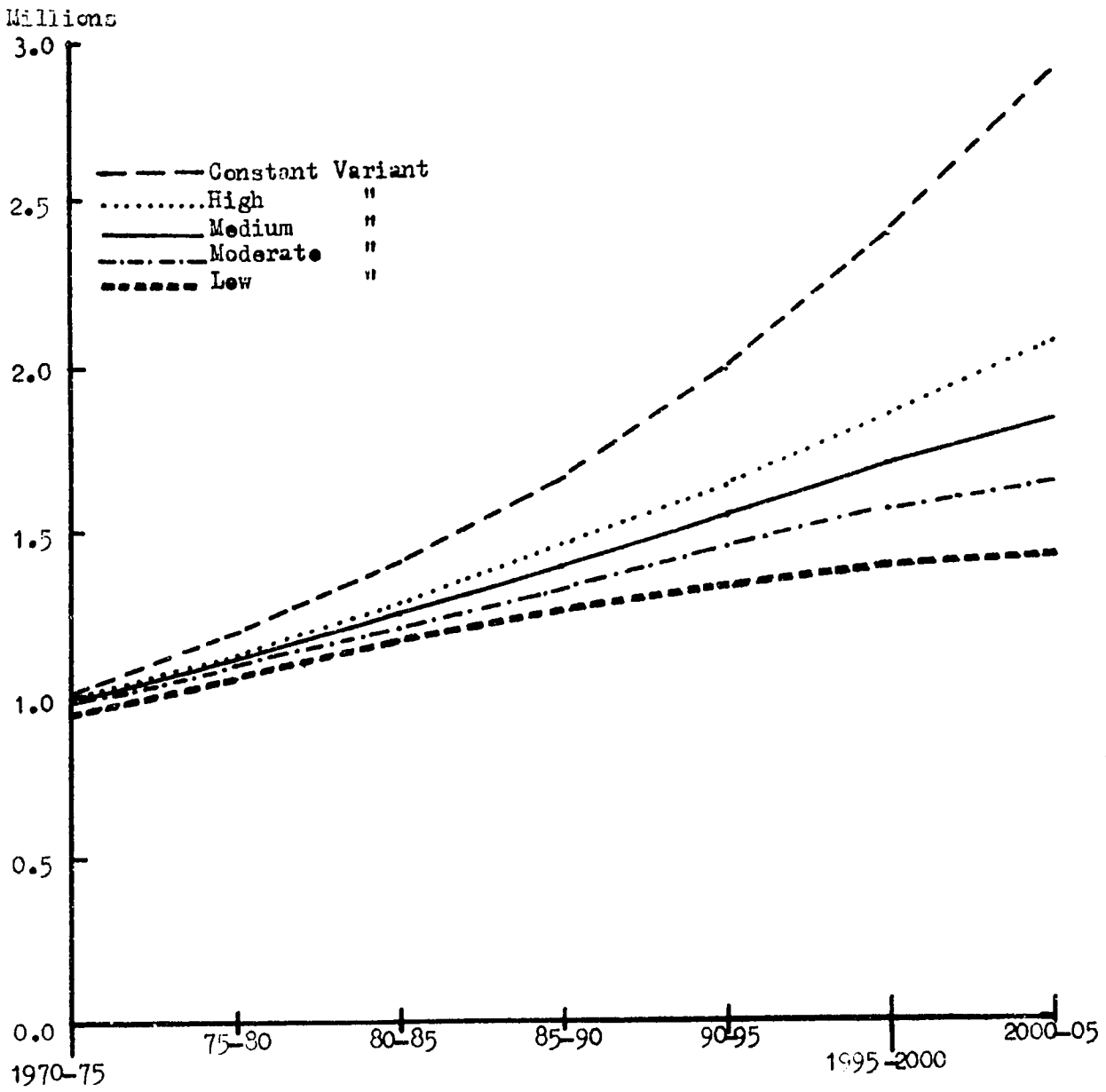
affected, gradually, most age groups.

The growth of different major age groups is shown in graph 4.3 (p. 425), the most striking feature of which is the successive accelerating increase of all the 14-year period age groups. Changes in the age distributions are illustrated in graph 4.4 (p. 426), which indicates that these changes will positively affect primarily the 15-29 years age groups, i.e. men and women of prime working age. Obviously, such population trends will have important socio-economic implications for Zaire, as discussed in the following and final chapter.

GRAPH: 4.1

PROJECTED NUMBER OF BIRTHS, ZAIRE, 1970-2005

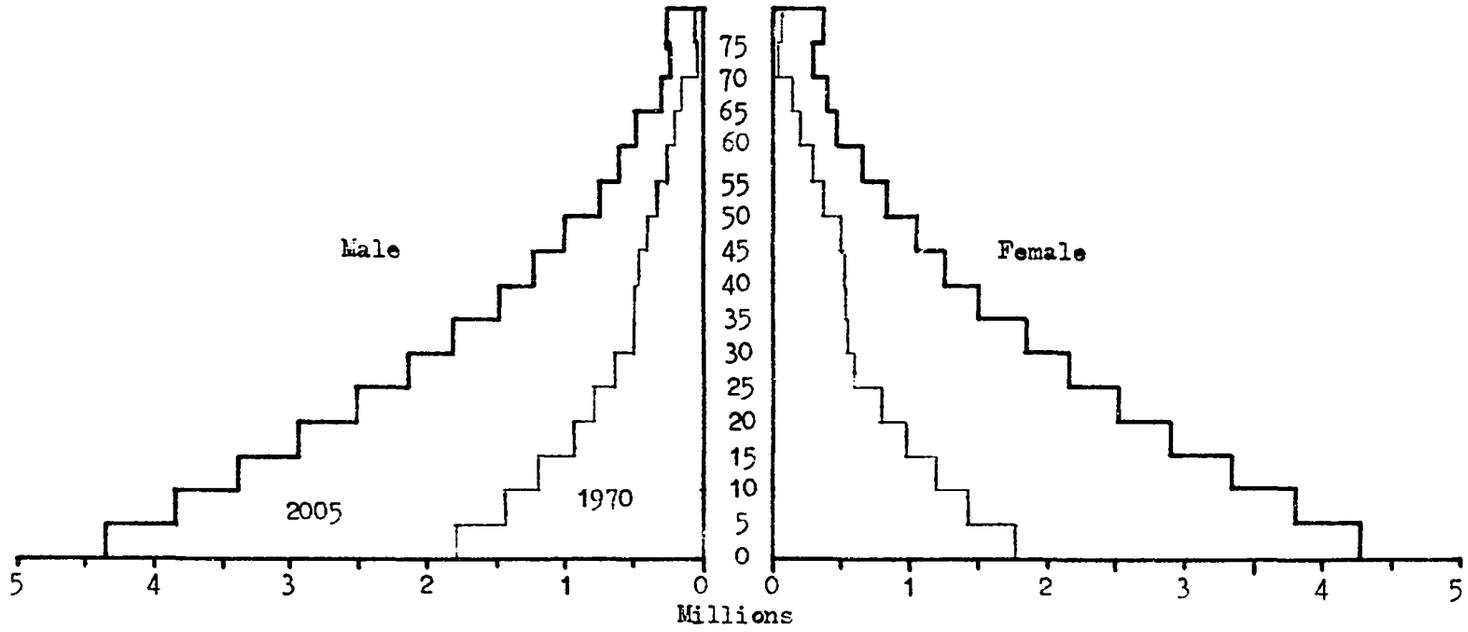
(With new base line from 1955-58 survey)



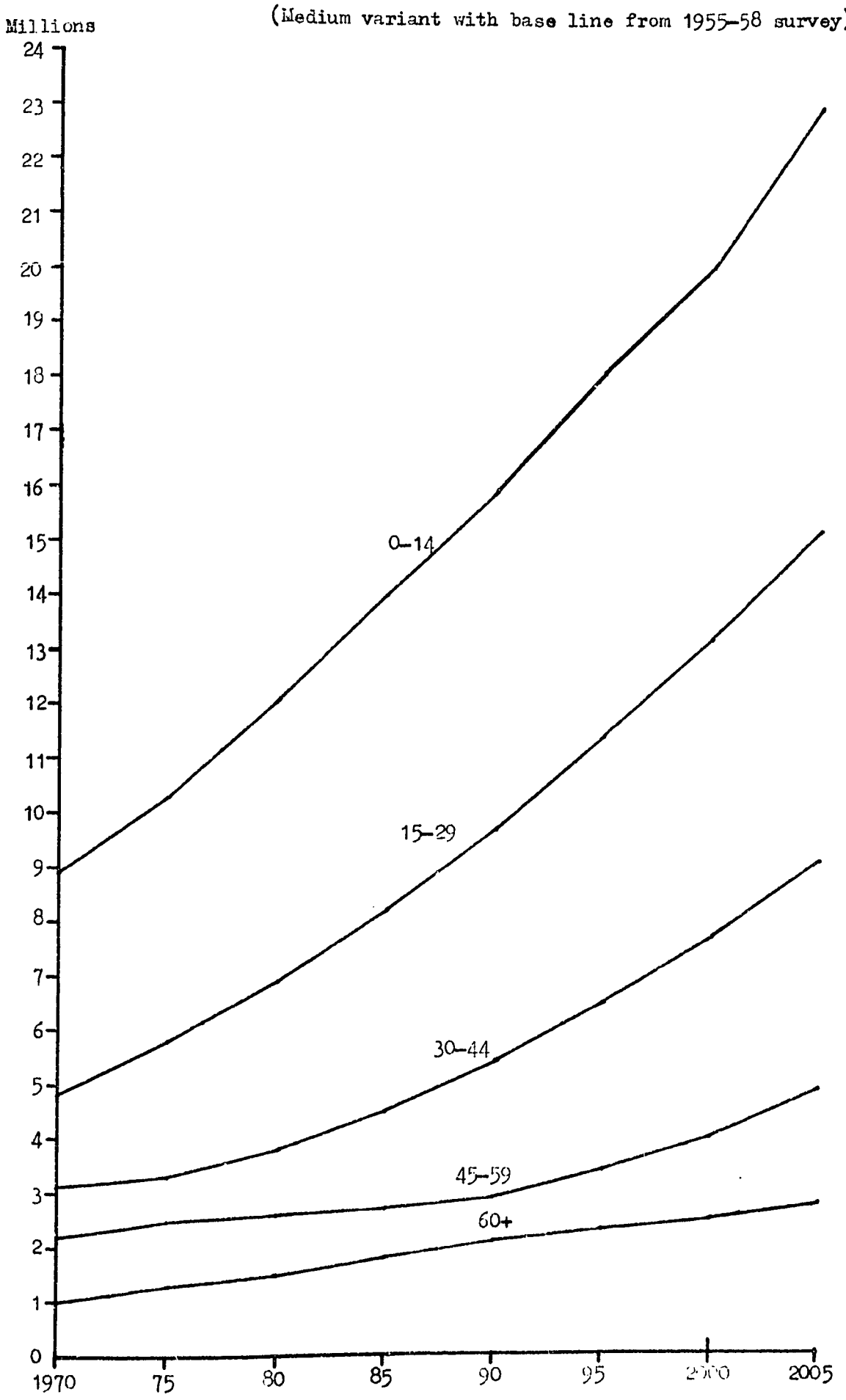
GRAPH: 4.2

POPULATION PYRAMIDS FOR ZAIRE, 1970–2005

(Medium variant projection, with base line from 1955–58 demographic survey)



GRAPH: 4.3 PROJECTED POPULATION BY BROAD AGE-GROUPS, ZAIRE 1970-2005
(Medium variant with base line from 1955-58 survey)



GRAPH: 4.4 PERCENT DISTRIBUTION OF PROJECTED POPULATION BY BROAD AGE-GROUPS, ZAIRE, 1970-2005
(Medium variant with base line from 1955-58)

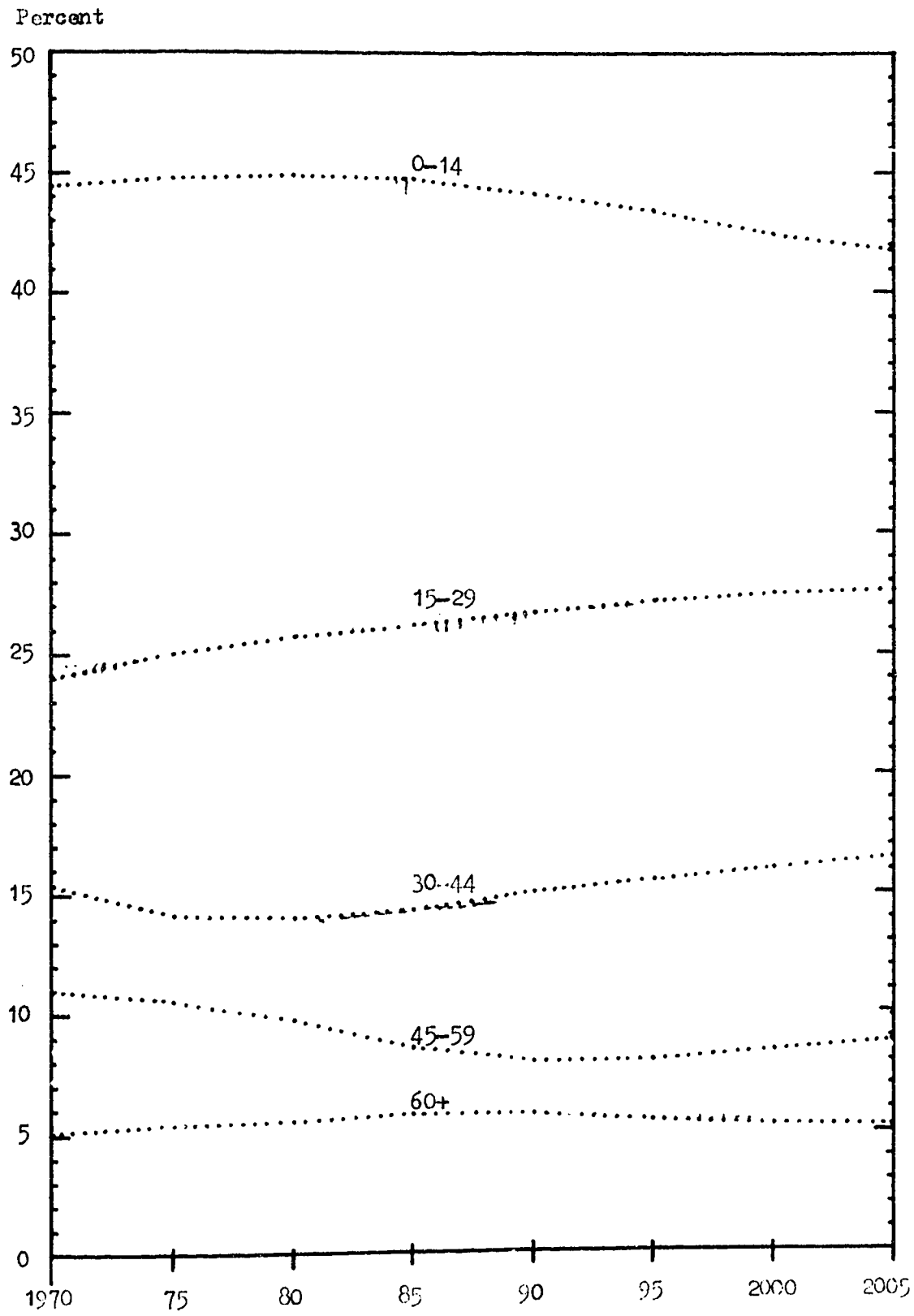


Table 4.16

UNITED NATIONS PROJECTED TOTAL POPULATION AND ANNUAL RATE OF GROWTH FOR ZAIRE, 1970-2000

Year	Low Variant		Medium Variant		Constant Variant		High Variant	
	Total Pop. (Thousands)	Ann.incr. (%)	Total Pop. (Thousands)	Ann.incr. (%)	Total Pop. (Thousands)	Ann.incr. (%)	Total Pop. (Thousands)	Ann.incr. (%)
1970	21,638		21,638		21,638		21,638	
		2.5		2.5		2.5		2.5
1975	24,485		24,485		24,485		24,485	
		2.6		2.7		2.6		2.7
1980	27,904		27,952		27,952		27,999	
		2.7		2.8		2.8		3.0
1985	31,858		32,139		32,139		32.472	
		2.6		2.9		2.9		3.1
1990	36,342		37,061		37,176		37,885	
		2.6		2.9		3.0		3.2
1995	41,369		42,809		43.246		44,379	
		2.5		2.9		3.1		3.2
2000	46,748		49,450		50,601		52,148	

Source: World Population Prospects as Assessed in 1973; Population Studies, No.60, United Nations, Department of Economic and Social Affairs, New York, 1977.

Table 4.17

PROJECTED TOTAL POPULATION AND ANNUAL RATES OF GROWTH FOR ZAIRE 1970-2005 WITH NEW BASE LINE FROM THE 1955-8 SURVEY

Year	Constant Variant		High Variant		Medium Variant		Moderate Variant		Low Variant	
	Total Pop. (Thousands)	Annual Growth %	Total Pop. (Thousands)	Annual Growth %	Total Pop. (Thousands)	Annual Growth %	Total Pop. (Thousands)	Annual Growth %	Total Pop. (Thousands)	Annual Growth %
1970	19,955	3.12	19,955	3.04	19,955	3.02	19,955	3.01	19,955	2.86
1975	23,315	3.25	23,232	3.05	23,206	2.98	23,187	2.94	23,104	2.90
1980	27,421	3.36	27,052	3.05	26,936	2.95	26,849	2.86	26,603	2.79
1985	32,43[illegible]	3.48	31,502	3.06	31,208	2.92	30,977	2.80	30,583	2.67
1990	38,584	3.60	36,701	3.06	36,115	2.89	35,637	2.73	34,956	2.54
1995	46,192	3.74	42,754	3.05	41,724	2.83	40,846	2.62	39,686	2.38
2000	55,678	3.88	49,789	3.00	48,071	2.73	46,563	2.46	44,699	2.17
2005	67,476		57,840		55,102		52,651		49,818	

Table 4.18

PROJECTED TRENDS IN VITAL RATES FOR ZAIRE, 1970-2000

		1970	1975	1980	1985	1990	1995	2000
Medium variant with new base line from 1955-8	CBR	46.1	44.3	42.8	41.3	39.8	38.0	
	GRR	3.2	3.0	2.9	2.7	2.6	2.4	
	CDR	17.5	15.7	14.2	12.6	11.4	10.7	
	e_0°(M+F)	47.9	50.4	52.9	55.4	57.6	59.7	
Medium variant, Population Division, United Nations[1]	CBR	45.2	44.9	44.5	43.4	42.1	40.6	
	GRR	2.9	2.9	2.9	2.9	2.8	2.7	
	CDR	20.5	18.5	16.7	15.0	13.3	11.8	
	e_0°(M+F)	45.1	47.6	50.2	52.7	55.3	57.8	

[1] Source: World Population Prospects as Assessed in 1973, op.cit.

TABLE: 4.19

PROGRESSION OF DEFICIENT BIRTH COHORTS OF 1935-45 (FEMALE)

AND 1930-40 (MALE) THROUGH PROJECTED POPULATION OF 1970-2005.

(Medium variant with base line from 1955-8)

FEMALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2113.8	2402.0	2727.1	3090.0	3485.4	3892.4	4277.1
5	1433.0	1671.2	1991.1	2283.0	2613.2	2980.8	3382.9	3797.4
10	1210.0	1399.3	1636.0	1954.1	2246.1	2576.4	2945.0	3348.2
15	986.0	1189.9	1377.8	1613.1	1929.3	2220.6	2550.5	2918.8
20	809.0	969.9	1170.7	1356.7	1590.0	1903.5	2193.5	2522.2
25	623.0	795.9	953.5	1151.0	1331.8	1565.6	1876.3	2164.5
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1847.5
35	551.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	230.0	279.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	99.0	122.2	158.0	186.8	218.1	286.1	298.2	310.6
75+	73.0	70.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10214.0	11835.2	13697.3	15830.1	18277.9	21073.7	24234.4	27733.5

MALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1792.0	2139.0	2423.8	2757.3	3129.8	3535.8	3955.0	4352.1
5	1431.0	1672.6	1998.7	2294.2	2630.5	3006.0	3418.0	3844.2
10	1195.0	1399.3	1637.8	1960.2	2254.5	2589.5	2965.0	3377.4
15	931.0	1176.7	1377.9	1613.7	1932.7	2224.8	2558.5	2932.6
20	798.0	914.2	1153.7	1351.0	1583.0	1897.2	2186.7	2517.8
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1858.1	2144.8
30	490.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1820.3
35	483.0	478.3	632.8	739.7	847.9	1070.5	1258.0	1480.4
40	485.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	272.0	295.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	237.5	259.8	305.0	340.7	350.0	354.0	474.9
65	155.0	177.5	197.1	217.8	258.3	291.2	302.0	308.0
70	99.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
101	9741.0	11371.1	13238.6	15377.4	17837.1	20650.0	23836.6	27368.3
GRAND TOTAL	19955.0	23206.3	26935.9	31207.5	36115.0	41723.7	48071.0	55101.8

Deficient birth cohorts

TABLE: 4.20

PROGRESSION OF THE 10.14 YEARS AGE-GROUP THROUGH PROJECTED POPULATION OF 1970-2005.
(Medium variant with base line from 1955-8)

FEMALES								
AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2113.8	2402.0	2727.1	3090.0	3485.4	3892.4	4277.1
5	1433.0	1671.2	1991.1	2283.0	2613.2	2980.8	3382.9	3797.4
10	1210.0	1399.3	1636.0	1954.1	2246.1	2576.4	2945.0	3348.2
15	966.0	1189.9	1377.8	1613.1	1929.3	2220.6	2550.5	2918.8
20	809.0	969.9	1170.7	1356.7	1590.0	1903.5	2193.5	2522.2
25	623.0	795.9	953.5	1151.0	1334.8	1565.6	1876.3	2164.5
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1847.5
35	551.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	238.0	275.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	59.0	122.2	158.0	186.8	218.1	286.1	298.2	310.6
75+	33.0	70.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10214.0	11835.2	13697.3	15830.1	18277.9	21073.7	24234.4	27733.5

MALES								
AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1797.0	2129.0	2423.8	2757.3	3129.8	3535.8	3955.0	4352.1
5	1431.0	1672.6	1998.7	2294.2	2630.5	3006.0	3418.0	3844.2
10	1195.0	1399.2	1637.8	1960.2	2254.5	2589.5	2965.0	3377.4
15	931.0	1176.7	1377.9	1613.7	1932.7	2224.8	2558.5	2932.6
20	798.0	914.2	1153.7	1351.0	1583.0	1897.2	2186.7	2517.8
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1858.1	2144.8
30	490.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1820.3
35	483.0	478.3	632.8	739.7	847.9	1070.5	1258.0	1480.4
40	465.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	272.0	295.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	237.5	259.8	305.0	340.7	350.0	354.0	474.9
65	155.0	177.5	197.1	217.8	258.3	291.2	302.0	308.0
70	49.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
TOT	9741.0	11371.1	13238.6	15377.4	17837.1	20650.0	23836.6	27368.3
GRAND TOTAL	19955.0	23206.3	26935.9	31207.5	36115.0	41723.7	48071.0	55101.8

TABLE: 4.21 ZAIRE POPULATION PROJECTION WITH NORTH E.T. POPULATION PROJECTION

CONSTANT VARIANT

FEMALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2168.0	2592.8	3106.9	3729.6	4512.0	5498.8	6719.7
5	1433.0	1671.2	2042.0	2463.8	2976.2	3596.8	4378.3	5363.8
10	1210.0	1399.3	1636.0	2003.8	2423.6	2933.9	3553.0	4332.8
15	986.0	1189.9	1377.8	1613.1	1978.3	2395.8	2904.1	3521.2
20	869.0	969.9	1170.7	1356.7	1590.0	1951.8	2366.4	2871.7
25	623.0	795.9	953.5	1151.0	1334.8	1565.6	1923.8	2334.9
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1894.2
35	551.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	238.0	275.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	99.0	122.2	158.0	186.8	218.1	286.1	298.2	310.6
75+	73.0	76.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10214.0	11889.4	13939.0	16440.4	19507.1	23297.2	28018.2	33896.0

MALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1797.0	2183.6	2616.3	3141.3	3777.7	4577.3	5587.3	6837.5
5	1431.0	1672.6	2049.6	2475.7	2995.9	3627.1	4423.6	5429.7
10	1195.0	1399.2	1637.8	2010.0	2432.4	2948.5	3577.0	4370.4
15	971.0	1176.7	1377.9	1613.7	1981.7	2400.0	2912.8	3537.5
20	798.0	914.2	1153.7	1351.0	1583.0	1945.2	2358.7	2866.1
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1904.9	2313.3
30	490.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1866.2
35	483.0	478.3	632.8	739.7	847.5	1070.5	1258.0	1480.4
40	465.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.0	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	275.0	295.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	237.5	259.8	305.0	340.7	350.0	354.0	474.9
65	155.0	177.5	197.1	217.8	258.3	291.2	302.0	300.0
70	49.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
TOT	9741.0	11495.7	13482.1	15992.6	19077.1	22894.9	27659.6	33599.7
GRAND TOTAL	19955.0	23315.1	27421.0	32433.1	38584.2	46192.1	55677.8	67495.8

MIDPERIOD INDICES FOR FIVE-YEAR TIME PERIODS

POPULATION SIZE	21634.2	25284.8	29821.9	35370.2	42217.1	50713.6	61302.6	
BIRTHS DURING	1613.2	1197.0	1412.9	1672.2	1998.2	2406.8	2911.4	
DEATHS DURING	386.2	105.8	439.5	462.0	491.6	520.7	554.9	
NET YEARLY MIGRANTS	25.0	30.0	25.0	20.0	15.0	11.0	7.0	

TABLE: 4.21 CONSTANT VARIANT (CONTD.)

FEMALES POPULATION: PERCENTAGES

	1970	1975	1980	1985	1990	1995	2000	2005
0	17.53	18.23	18.60	18.90	19.12	19.37	19.63	19.82
5	14.03	14.04	14.65	14.99	15.26	15.44	15.63	15.82
10	11.85	11.77	11.74	12.19	12.42	12.59	12.68	12.78
15	9.65	10.01	9.88	9.81	10.14	10.28	10.36	10.39
20	8.32	8.16	8.40	8.25	8.15	8.38	8.45	8.47
25	6.10	6.69	6.84	7.00	6.84	6.72	6.87	6.89
30	5.50	5.13	5.59	5.68	5.79	5.63	5.49	5.59
35	5.39	4.62	4.28	4.63	4.68	4.74	4.59	4.46
40	5.21	4.49	3.82	3.53	3.80	3.82	3.85	3.71
45	4.59	4.26	3.67	3.12	2.87	3.08	3.09	3.10
50	3.68	4.01	3.45	2.96	2.51	2.30	2.46	2.46
55	3.01	2.93	3.19	2.74	2.34	1.98	1.82	1.94
60	2.33	2.31	2.25	2.45	2.11	1.81	1.53	1.40
65	1.55	1.70	1.69	1.65	1.80	1.55	1.33	1.13
70	0.58	1.03	1.13	1.14	1.12	1.23	1.06	0.92
75+	0.71	0.59	0.81	0.97	1.05	1.08	1.17	1.12
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

		1970	1975	1980	1985	1990	1995	2000	2005
MALES	0	18.45	19.11	19.41	19.64	19.80	19.99	20.20	20.35
	5	14.69	14.64	15.20	15.48	15.70	15.84	15.99	16.16
	10	12.22	12.25	12.15	12.57	12.75	12.88	12.93	13.01
	15	9.56	10.30	10.22	10.09	10.39	10.48	10.53	10.53
	20	8.19	8.00	8.56	8.45	8.30	8.50	8.53	8.53
	25	6.85	6.83	6.63	7.04	6.92	6.76	6.89	6.88
	30	5.03	5.69	5.64	5.44	5.76	5.63	5.47	5.55
	35	4.96	4.19	4.69	4.63	4.44	4.68	4.55	4.41
	40	4.77	4.10	3.44	3.83	3.76	3.59	3.76	3.65
	45	4.16	3.89	3.33	2.79	3.09	3.01	2.87	3.00
	50	3.35	3.30	3.08	2.64	2.21	2.44	2.37	2.26
	55	2.79	2.58	2.55	2.38	2.04	1.71	1.88	1.83
	60	2.22	2.08	1.93	1.91	1.79	1.53	1.28	1.41
	65	1.59	1.55	1.46	1.36	1.35	1.27	1.09	0.92
	70	0.50	1.01	0.99	0.94	0.89	0.89	0.84	0.72
	75+	0.63	0.48	0.72	0.81	0.82	0.80	0.81	0.79
	TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	AGE	1970	1975	1980	1985	1990	1995	2000	2005
FEMALES	0-14	43.41	44.06	44.99	46.07	46.80	47.40	47.93	48.43
	15-64	53.75	52.63	51.38	50.17	49.23	48.74	48.50	48.41
	65+	2.84	3.31	3.64	3.76	3.96	3.86	3.56	3.16
MALES	0-14	45.41	46.00	46.76	47.69	48.26	48.71	49.13	49.52
	15-64	51.87	50.96	50.07	49.20	48.68	48.32	48.13	48.05
	65+	2.72	3.05	3.18	3.11	3.06	2.96	2.74	2.44
TOTAL	0-14	44.38	45.01	45.86	46.87	47.52	48.05	48.53	48.97
	15-64	52.83	51.81	50.73	49.69	48.96	48.53	48.32	48.23
	65+	2.78	3.18	3.41	3.44	3.52	3.41	3.15	2.80
MALES/FEMALES		0.954	0.961	0.967	0.973	0.978	0.983	0.987	0.991

TABLE: 4.22 ZAIRE POPULATION PROJECTION WITH NORTH L.T.

HIGH VARIANT

POPULATION PROJECTION

FEMALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2126.5	2447.8	2818.6	3239.9	3714.3	4244.5	4798.5
5	1433.0	1671.2	2003.1	2326.4	2700.6	3125.2	3604.8	4140.8
10	1210.0	1399.3	1636.0	1965.8	2288.7	2662.6	3087.5	3567.7
15	986.0	1189.9	1377.8	1613.1	1940.8	2262.6	2635.7	3060.0
20	809.0	969.9	1170.7	1356.7	1590.0	1914.9	2235.0	2606.4
25	623.0	795.9	953.5	1151.0	1334.8	1565.6	1887.4	2205.4
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1858.5
35	551.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	238.0	275.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	99.0	122.2	158.0	186.8	218.1	286.1	298.2	310.6
75+	73.0	70.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10214.0	11848.0	13755.0	15976.7	18569.4	21586.5	25088.9	29095.0

MALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1797.0	2141.8	2470.0	2849.9	3281.7	3768.0	4312.9	4882.6
5	1431.0	1672.6	2010.7	2337.8	2718.6	3151.5	3642.1	4191.8
10	1195.0	1399.2	1637.8	1972.0	2297.2	2676.1	3108.5	3598.8
15	931.0	1176.7	1377.9	1613.7	1944.3	2266.8	2643.8	3074.4
20	798.0	914.2	1153.7	1351.0	1583.0	1908.5	2228.0	2601.7
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1869.1	2185.3
30	490.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1831.1
35	483.0	478.3	632.8	739.7	847.9	1070.5	1258.0	1480.4
40	465.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	272.0	295.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	237.0	259.8	305.0	340.7	350.0	354.0	474.9
65	150.0	177.5	197.1	217.8	258.3	291.2	302.0	308.0
70	49.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
TOT	9741.0	11383.9	13296.8	15525.2	18131.1	21167.6	24699.7	28744.6
GRAND TOTAL	19955.0	23231.9	27051.8	31501.9	36700.6	42754.1	49788.5	57839.7

MIDPERIOD INDICES FOR FIVE-YEAR TIME PERIODS

POPULATION SIZE	21593.2	25069.2	29192.2	34002.0	39611.9	46137.5	53663.3
YEARLY BIRTHS	997.7	1129.9	1281.6	1452.5	1644.7	1857.6	2078.9
YEARLY DEATHS	327.3	395.9	416.6	432.7	449.0	461.8	475.7
NET YEARLY MIGRANTS	35.0	30.0	25.0	20.0	15.0	11.0	7.0

TABLE: 4.22 HIGH VARIANT (CONTD.)

POPULATION PROJECTION: PERCENTAGES

FEMALES	1970	1975	1980	1985	1990	1995	2000	2005
0	17.43	17.95	17.86	17.64	17.45	17.21	16.92	16.49
5	14.63	14.11	14.56	14.56	14.54	14.48	14.37	14.23
10	11.66	11.81	11.89	12.30	12.33	12.33	12.31	12.26
15	9.65	10.04	10.02	10.10	10.45	10.48	10.51	10.52
20	8.19	8.19	8.51	8.49	8.56	8.87	8.91	8.96
25	6.19	6.93	6.93	7.20	7.19	7.25	7.52	7.58
30	5.56	5.15	5.66	5.85	6.08	6.07	6.14	6.39
35	5.39	4.63	4.34	4.76	4.92	5.12	5.12	5.20
40	5.21	4.50	3.83	3.63	3.99	4.13	4.30	4.32
45	4.95	4.29	3.72	3.21	3.02	3.32	3.45	3.61
50	3.68	4.03	3.50	3.04	2.63	2.49	2.75	2.87
55	3.09	2.94	3.23	2.82	2.46	2.14	2.03	2.26
60	2.33	2.32	2.28	2.52	2.22	1.95	1.71	1.63
65	1.55	1.70	1.71	1.70	1.89	1.68	1.49	1.31
70	0.98	1.03	1.15	1.17	1.17	1.33	1.19	1.07
75+	0.71	0.59	0.83	1.00	1.10	1.16	1.30	1.30
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

MALES	1970	1975	1980	1985	1990	1995	2000	2005
0	18.45	18.81	18.58	18.36	18.10	17.80	17.46	16.99
5	14.68	14.69	15.12	15.06	14.99	14.89	14.75	14.58
10	12.27	12.29	12.32	12.70	12.67	12.64	12.59	12.52
15	9.52	10.34	10.36	10.39	10.72	10.71	10.70	10.70
20	8.19	8.03	8.68	8.70	8.73	9.02	9.02	9.05
25	6.85	6.85	6.72	7.26	7.28	7.31	7.57	7.60
30	5.63	5.71	5.72	5.61	6.06	6.09	6.13	6.37
35	4.96	4.20	4.76	4.76	4.68	5.06	5.09	5.15
40	4.77	4.11	3.49	3.95	3.95	3.89	4.21	4.26
45	4.16	3.90	3.37	2.87	3.25	3.26	3.21	3.50
50	3.35	3.32	3.13	2.71	2.32	2.63	2.66	2.64
55	2.79	2.59	2.59	2.46	2.14	1.84	2.11	2.14
60	2.22	2.09	1.95	1.96	1.88	1.65	1.43	1.65
65	1.58	1.56	1.48	1.40	1.42	1.38	1.22	1.07
70	0.90	1.01	1.01	0.97	0.93	0.96	0.94	0.85
75+	0.63	0.48	0.73	0.83	0.86	0.87	0.91	0.93
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	AGE	1970	1975	1980	1985	1990	1995	2000	2005
FEMALES	0-14	43.41	43.86	44.25	44.51	44.32	44.02	43.59	42.99
	15-64	53.75	52.81	52.06	51.63	51.52	51.82	52.43	53.33
	65+	2.84	3.32	3.68	3.87	4.17	4.16	3.98	3.68
MALES	0-14	45.41	45.80	46.01	46.12	45.76	45.33	44.79	44.09
	15-64	51.87	51.14	50.76	50.68	51.02	51.46	52.14	53.06
	65+	2.72	3.06	3.22	3.21	3.22	3.21	3.07	2.85
TOTAL	0-14	44.38	44.81	45.12	45.30	45.03	44.67	44.19	43.53
	15-64	52.83	51.99	51.42	51.16	51.27	51.64	52.28	53.20
	65+	2.78	3.19	3.46	3.54	3.70	3.69	3.53	3.27
MALES/FEMALES		0.954	0.961	0.967	0.972	0.976	0.981	0.984	0.988

TABLE: 4.23 ZAIRE POPULATION PROJECTION WITH NORTH L.T. POPULATION PROJECTION

MEDIUM VARIANT

FEMALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2113.8	2402.0	2727.1	3090.0	3485.4	3892.4	4277.1
5	1433.0	1671.2	1991.1	2283.0	2613.2	2980.8	3382.9	3797.4
10	1210.0	1399.3	1636.0	1954.1	2246.1	2576.4	2945.0	3348.2
15	956.0	1189.9	1377.8	1613.1	1929.3	2220.6	2550.5	2918.8
20	809.0	969.9	1170.2	1356.7	1590.0	1903.5	2193.5	2522.2
25	623.0	795.9	953.5	1151.0	1334.8	1565.6	1876.3	2164.5
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1847.5
35	501.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	238.0	275.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	99.0	122.2	148.0	186.8	218.1	286.1	298.2	310.6
75+	73.0	70.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10214.0	11835.2	13697.3	15830.1	18277.9	21073.7	24234.4	27733.5

MALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1797.0	2129.0	2423.8	2757.3	3129.8	3535.8	3955.0	4352.1
5	1431.0	1672.6	1998.7	2294.2	2630.5	3006.0	3418.0	3844.2
10	1195.0	1399.2	1637.8	1960.2	2254.5	2589.5	2965.0	3377.4
15	931.0	1176.7	1377.9	1613.7	1932.7	2224.8	2558.5	2932.6
20	798.0	914.2	1153.7	1351.0	1583.0	1897,2	2186.7	2517.8
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1858.1	2144.8
30	490.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1820.3
35	483.0	478.3	632.8	739.7	847.9	1070.5	1258.0	1480.4
40	465.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	275.0	299.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	232.5	259.8	305.0	340.7	350.0	354.0	474.9
65	150.0	177.5	197.1	217.8	258.3	291.2	302.0	308.0
70	99.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
TOT	9741.0	11371.1	13238.6	15377.4	17837.1	20650.0	23836.6	27368.3
GRAND TOTAL	19955.0	23206.3	26935.9	31207.5	36115.0	41723.7	48071.0	55101.8

MIDPERIOD INDICES FOR FIVE-YEAR TIME PERIODS

POPULATION SIZE	21519.3	25061.6	28993.1	33571.7	38818.2	44785.1	51466.5
YEARLY BIRTHS	991.7	1108.7	1240.0	1385.2	1543.3	1703.4	1853.0
YEARLY DEATHS	376.4	392.8	410.7	423.7	436.5	445.0	453.8
NET YEARLY MIGRANTS	35.0	30.0	25.0	20.0	15.0	11.0	7.0

TABLE: 4.23 MEDIUM VARIANT (CONTD.)

POPULATION PROJECTIONS: PERCENTAGES

FEMALES	1970	1975	1980	1985	1990	1995	2000	2005
0	17.53	17.86	17.54	17.23	16.91	16.54	16.06	15.42
5	14.03	14.17	14.54	14.42	14.30	14.14	13.96	13.69
10	11.57	11.82	11.94	12.34	12.29	12.23	12.15	12.07
15	9.69	10.05	10.06	10.19	10.56	10.54	10.52	10.52
20	7.92	8.19	8.55	8.57	8.70	9.03	9.05	9.09
25	6.18	6.73	6.96	7.27	7.30	7.43	7.74	7.80
30	5.56	5.19	5.69	5.90	6.17	6.22	6.35	6.66
35	5.49	4.64	4.36	4.81	5.00	5.24	5.30	5.45
40	5.01	4.51	3.89	3.66	4.05	4.23	4.45	4.54
45	4.95	4.30	3.73	3.24	3.06	3.40	3.57	3.79
50	3.69	4.03	3.51	3.07	2.68	2.55	2.85	3.01
55	3.01	2.94	3.24	2.84	2.50	2.19	2.10	2.37
60	2.38	2.32	2.29	2.55	2.25	2.00	1.77	1.71
65	1.95	1.70	1.72	1.71	1.92	1.72	1.54	1.38
70	1.32	1.03	1.15	1.18	1.19	1.36	1.23	1.12
75+	0.91	0.59	0.83	1.01	1.12	1.19	1.35	1.36
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

MALES	1970	1975	1980	1985	1990	1995	2000	2005
0	18.45	18.72	18.31	17.93	17.55	17.12	16.59	15.90
5	14.69	14.71	15.10	14.92	14.75	14.56	14.34	14.05
10	12.27	12.30	12.37	12.75	12.64	12.54	12.44	12.34
15	9.56	10.35	10.41	10.49	10.84	10.77	10.73	10.72
20	8.19	8.04	8.71	8.79	8.87	9.19	9.17	9.20
25	6.85	6.86	6.75	7.33	7.40	7.50	7.80	7.84
30	5.03	5.72	5.74	5.66	6.16	6.24	6.35	6.65
35	4.96	4.21	4.78	4.81	4.75	5.18	5.28	5.41
40	4.72	4.12	3.51	3.99	4.02	3.98	4.37	4.48
45	4.16	3.91	3.39	2.90	3.30	3.34	3.33	3.68
50	3.35	3.32	3.14	2.74	2.36	2.70	2.75	2.77
55	2.79	2.60	2.60	2.48	2.18	1.89	2.18	2.25
60	2.22	2.09	1.96	1.98	1.91	1.70	1.49	1.74
65	1.59	1.56	1.49	1.42	1.45	1.41	1.27	1.13
70	0.90	1.02	1.01	0.98	0.95	0.98	0.97	0.89
75+	0.63	0.49	0.73	0.84	0.88	0.89	0.94	0.98
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

AGE		1970	1975	1980	1985	1990	1995	2000	2005
FEMALES	0-14	43.41	43.80	44.02	43.99	43.49	42.91	42.17	41.19
	15-64	53.75	52.87	52.28	52.11	52.28	52.83	53.71	54.95
	65+	2.84	3.33	3.70	3.90	4.23	4.26	4.12	3.86
MALES	0-14	45.41	45.74	45.78	45.60	44.93	44.22	43.37	42.29
	15-64	51.87	51.20	50.99	51.17	51.79	52.49	53.45	54.72
	65+	2.72	3.06	3.24	3.24	3.27	3.29	3.18	2.99
TOTAL	0-14	44.38	44.75	44.88	44.78	44.20	43.56	42.77	41.73
	15-64	52.83	52.05	51.65	51.64	52.04	52.66	53.58	54.84
	65+	2.78	3.20	3.47	3.57	3.76	3.78	3.65	3.43
MALES/FEMALES		0.954	0.961	0.967	0.971	0.976	0.980	0.984	0.987

TABLE: 4.24 JAINE POPULATION PROJECTION WITH NORTH E.T. POPULATION PROJECTION

MODERATE VARIANT

FEMALES AGE	1975	1980	1985	1990	1995	2000	2005
0	1791.9	2104.2	2367.6	2653.9	2962.6	3280.4	3569.6	3796.3
5	1437.[illegible]	1671.2	1982.2	2250.5	2543.2	2858.1	3184.1	3482.7
10	[illegible]	1399.3	1636.0	1945.3	2214.2	2507.5	2823.9	3151.5
15	[illegible]	1189.9	1377.8	1613.1	1920.6	2189.0	2482.3	2798.8
20	[illegible]	969.9	1170.7	1356.7	1590.0	1895.0	2162.4	2454.9
25	[illegible]	795.9	957.5	1151.0	1334.8	1565.6	1867.9	2133.8
30	[illegible]	619.5	779.2	934.0	1128.6	1310.6	1539.5	1839.3
35	[illegible]	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	[illegible]	533.3	532.7	580.0	740.8	890.5	1079.4	1258.1
45	[illegible]	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	[illegible]	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	[illegible]	448.1	444.0	450.2	457.1	462.0	509.0	656.9
60	[illegible]	378.1	414.1	403.4	411.9	420.8	427.9	474.0
65	[illegible]	[illegible]	335.3	371.1	351.5	362.0	373.0	382.3
70	[illegible]	158.0	186.8	218.1	286.1	298.2	310.6
75+	[illegible]	96.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	[illegible]	11805.[illegible]	13454.0	15715.6	18040.0	20637.0	23484.1	26515.0

MALES AGE	1975	1980	1985	1990	1995	2000	2005
0	1797.[illegible]	2119.4	2389.1	2683.3	3000.8	3327.8	3627.1	3862.8
5	1431.[illegible]	1675.6	1989.7	2261.5	2560.1	2882.3	3217.1	3525.7
10	[illegible]	1397.8	1642.8	1951.5	2222.5	2520.3	2843.2	3179.0
15	[illegible]	1176.7	1377.9	1613.7	1924.1	2193.2	2490.2	2812.2
20	[illegible]	914.7	1154.7	1351.0	1583.0	1886.8	2155.8	2450.6
25	[illegible]	799.2	893.2	1126.5	1320.0	1548.0	1849.8	2114.5
30	[illegible]	660.3	760.3	870.8	1098.7	1288.8	1514.1	1812.2
35	[illegible]	496.3	635.8	739.7	847.9	1070.5	1258.0	1480.4
40	[illegible]	388.2	444.3	612.9	717.0	822.7	1040.5	1225.2
45	[illegible]	344.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	[illegible]	337.5	415.7	421.4	420.8	557.7	656.3	758.0
55	[illegible]	290.	344.0	381.2	388.8	390.5	520.4	615.6
60	[illegible]	232.5	269.8	305.0	340.7	360.0	354.0	474.9
65	[illegible]	157.1	197.8	214.8	258.3	291.2	302.0	308.0
70	[illegible]	119.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	[illegible]	95.3	98.5	128.9	156.5	184.1	224.1	266.9
TOT	[illegible]	11391.4	13194.9	15261.9	17597.0	20209.1	23078.4	26136.0

	1975	1980	1985	1990	1995	2000	2005
TOTAL TOTAL	[illegible]	24887.1	26848.9	30977.4	35636.9	40846.1	46562.5	52651.0

MIGRATION INDICES FOR FIVE-YEAR TIME PERIODS

PROJECTION SIZE	[illegible]	24887.1	26839.4	33229.6	38152.7	43610.7	49513.3
TOTAL BIRTHS	[illegible]	1892.8	1906.6	1308.0	1452.4	1562.1	1644.6
TOTAL DEATHS	[illegible]	396.5	405.9	416.1	425.6	429.9	433.9
NET MIGRATION	[illegible]	30.0	25.0	20.0	15.0	11.0	7.0

TABLE: 4.24 MODERATE VARIANT (CONTD.)

POPULATION PROJECTION- PERCENTAGES

FEMALES	1970	1975	1980	1985	1990	1995	2000	2005
0	17.03	17.79	17.34	16.89	16.42	15.90	15.20	14.32
5	14.03	14.13	14.52	14.32	14.10	13.85	13.56	13.13
10	11.85	11.83	11.98	12.38	12.27	12.15	12.02	11.89
15	9.65	10.06	10.09	10.26	10.65	10.61	10.57	10.56
20	7.92	8.20	8.57	8.63	8.81	9.18	9.21	9.26
25	6.10	6.73	6.98	7.32	7.40	7.59	7.95	8.05
30	5.59	5.16	5.71	5.94	6.26	6.35	6.56	6.94
35	5.39	4.64	4.37	4.84	5.06	5.36	5.47	5.70
40	5.21	4.51	3.90	3.69	4.11	4.31	4.60	4.74
45	4.95	4.30	3.75	3.26	3.10	3.47	3.68	3.96
50	3.68	4.03	3.53	3.09	2.71	2.66	2.94	3.15
55	3.01	2.94	3.25	2.86	2.53	2.24	2.17	2.48
60	2.33	2.33	2.30	2.57	2.28	2.04	1.82	1.79
65	1.55	1.70	1.72	1.73	1.95	1.75	1.59	1.44
70	0.58	1.03	1.16	1.19	1.21	1.34	1.27	1.17
75+	0.71	0.59	0.83	1.02	1.13	1.21	1.39	1.43
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

MALES	1970	1975	1980	1985	1990	1995	2000	2005
0	18.45	18.65	18.11	17.58	17.05	16.47	15.72	14.78
5	14.68	14.72	15.08	14.82	14.55	14.26	13.94	13.49
10	12.23	12.31	12.41	12.79	12.63	12.47	12.32	12.16
15	9.56	10.36	10.44	10.57	10.93	10.85	10.79	10.76
20	8.19	8.05	8.74	8.85	9.00	9.35	9.34	9.38
25	6.85	6.87	6.77	7.38	7.50	7.66	8.02	8.09
30	5.93	5.72	5.76	5.71	6.24	6.38	6.56	6.93
35	4.96	4.21	4.80	4.85	4.82	5.30	5.45	5.66
40	4.27	4.12	3.52	4.02	4.07	4.07	4.51	4.69
45	4.16	3.91	3.40	2.92	3.35	3.41	3.44	3.85
50	3.35	3.32	3.15	2.76	2.39	2.76	2.84	2.90
55	2.79	2.60	2.61	2.50	2.21	1.93	2.26	2.36
60	2.22	2.09	1.97	2.00	1.94	1.73	1.53	1.82
65	1.58	1.56	1.49	1.43	1.47	1.44	1.31	1.18
70	0.50	1.02	1.02	0.99	0.96	1.01	1.01	0.93
75+	0.63	0.49	0.74	0.84	0.89	0.91	0.97	1.02
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	AGE	1970	1975	1980	1985	1990	1995	2000	2005
FEMALES	0-14	43.41	43.76	43.84	43.59	42.79	41.90	40.78	39.34
	15-64	53.75	52.91	52.45	52.49	52.92	53.75	54.97	56.62
	65+	2.84	3.33	3.71	3.93	4.29	4.35	4.25	4.04
MALES	0-14	45.41	45.69	45.60	45.19	44.23	43.20	41.98	40.43
	15-64	51.87	51.25	51.16	51.55	52.45	53.44	54.74	56.44
	65+	2.72	3.06	3.25	3.26	3.32	3.36	3.28	3.13
TOTAL	0-14	44.38	44.71	44.70	44.37	43.50	42.54	41.37	39.88
	15-64	52.83	52.09	51.81	52.03	52.69	53.60	54.85	56.53
	65+	2.78	3.20	3.48	3.60	3.81	3.86	3.77	3.59
MALES/FEMALES		0.954	0.961	0.966	0.971	0.975	0.979	0.983	0.986

TABLE: 4.25 ZAIRE POPULATION PROJECTION WITH NORTH L.T. — **LOW VARIANT**

POPULATION PROJECTION

FEMALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1791.0	2018.1	2325.7	2576.1	2814.4	3033.9	3207.9	3298.4
5	1433.0	1671.2	1901.4	2210.7	2468.8	2715.3	2945.2	3130.0
10	1210.0	1399.3	1636.0	1866.3	2175.2	2434.3	2682.9	2915.1
15	986.0	1189.9	1377.8	1613.1	1842.8	2150.5	2409.9	2659.2
20	809.0	969.9	1170.7	1356.7	1590.0	1818.3	2124.4	2383.3
25	623.0	795.9	953.5	1151.0	1334.8	1565.6	1792.5	2096.3
30	562.0	610.5	779.2	934.0	1128.6	1310.6	1539.5	1765.1
35	501.0	548.8	596.6	761.3	913.5	1105.2	1285.6	1512.6
40	532.0	533.3	532.5	580.0	740.8	890.5	1079.4	1258.1
45	506.0	508.4	511.5	512.5	559.9	717.1	864.4	1050.6
50	376.0	477.1	481.4	486.3	489.3	536.6	689.7	834.2
55	307.0	348.1	444.0	450.2	457.1	462.0	509.0	656.9
60	238.0	275.1	314.1	403.4	411.9	420.8	427.9	474.0
65	158.0	201.6	235.3	271.1	351.5	362.0	373.0	382.3
70	59.0	122.2	158.0	186.8	218.1	286.1	298.2	310.6
75+	73.0	70.1	113.5	159.7	203.9	250.6	327.1	378.4
TOT	10514.0	11739.5	13531.2	15519.0	17700.4	20059.4	22556.7	25105.2

MALES AGE	1970	1975	1980	1985	1990	1995	2000	2005
0	1797.0	2032.7	2346.8	2604.7	2850.6	3077.8	3259.6	3356.3
5	1431.0	1672.6	1908.7	2221.6	2485.3	2738.3	2975.7	3168.7
10	1195.0	1399.2	1637.8	1872.4	2183.3	2446.8	2701.3	2940.7
15	931.0	1176.7	1377.9	1613.7	1846.3	2154.7	2417.6	2671.9
20	798.0	914.2	1153.7	1351.0	1583.0	1812.6	2117.9	2379.3
25	667.0	780.2	893.2	1126.5	1320.0	1548.0	1775.4	2077.4
30	496.0	650.3	760.3	870.8	1098.7	1288.8	1514.1	1739.3
35	483.0	478.3	632.8	739.7	847.9	1070.5	1258.0	1480.4
40	465.0	468.2	464.3	612.9	717.0	822.7	1040.5	1225.2
45	405.0	444.2	448.4	445.7	588.7	689.9	793.8	1006.4
50	326.0	377.5	415.7	421.4	420.8	557.7	656.3	758.0
55	272.0	295.2	344.0	381.2	388.8	390.5	520.4	615.6
60	216.0	237.5	259.8	305.0	340.7	350.0	354.0	474.9
65	155.0	177.5	197.1	217.8	258.3	291.2	302.0	308.0
70	49.0	115.4	134.0	150.9	169.1	203.2	232.0	243.5
75+	61.0	55.2	97.3	128.9	156.5	184.1	224.1	266.9
TOT	9741.0	11274.7	13071.6	15064.2	17255.1	19626.9	22142.7	24712.6
GRAND TOTAL	19955.0	23014.3	26602.9	30583.2	34955.5	39686.2	44699.4	49817.8

MIDPERIOD INDICES FOR FIVE-YEAR TIME PERIODS

POPULATION SIZE	21430.1	24743.6	28523.7	32696.4	37245.8	42118.3	47189.3
YEARLY BIRTHS	946.7	1073.4	1171.2	1261.5	1343.2	1403.8	1428.8
YEARLY DEATHS	369.8	385.7	400.1	407.0	412.1	412.1	412.2
NET YEARLY MIGRANTS	35.0	30.0	25.0	20.0	15.0	11.0	7.0

TABLE: 4.25 LOW VARIANT (CONTD.)

POPULATION PROJECTION, PERCENTAGES

FEMALES	1970	1975	1980	1985	1990	1995	2000	2005
0	17.53	17.19	17.19	16.60	15.90	15.12	14.22	13.14
5	14.03	14.24	14.05	14.25	13.95	13.54	13.06	12.47
10	11.95	11.92	12.09	12.03	12.27	12.14	11.89	11.61
15	9.65	10.14	10.18	10.39	10.41	10.72	10.68	10.59
20	7.92	8.26	8.65	8.74	8.98	9.06	9.42	9.49
25	6.16	6.78	7.05	7.42	7.54	7.80	7.95	8.35
30	5.50	5.20	5.76	6.02	6.38	6.53	6.82	7.03
35	5.39	4.67	4.41	4.91	5.16	5.51	5.70	6.02
40	5.21	4.54	3.94	3.74	4.19	4.44	4.79	5.01
45	4.05	4.33	3.78	3.30	3.16	3.57	3.83	4.18
50	3.68	4.06	3.56	3.13	2.76	2.67	3.06	3.32
55	3.01	2.87	3.28	2.90	2.53	2.30	2.26	2.62
60	2.33	2.34	2.32	2.60	2.33	2.10	1.90	1.89
65	1.55	1.72	1.74	1.75	1.99	1.80	1.65	1.52
70	0.58	1.04	1.17	1.20	1.23	1.43	1.32	1.24
75+	0.71	0.60	0.84	1.03	1.15	1.25	1.45	1.51
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

MALES	1970	1975	1980	1985	1990	1995	2000	2005
0	18.45	18.03	17.95	17.29	16.52	15.68	14.72	13.58
5	14.69	14.83	14.60	14.75	14.40	13.95	13.44	12.82
10	12.27	12.41	12.53	12.43	12.65	12.47	12.20	11.99
15	9.56	10.44	10.54	10.71	10.70	10.98	10.92	10.81
20	8.19	8.11	8.83	8.97	9.17	9.24	9.56	9.63
25	6.85	6.92	6.83	7.48	7.65	7.89	8.02	8.41
30	5.03	5.77	5.82	5.78	6.37	6.57	6.84	7.04
35	4.96	4.24	4.84	4.91	4.91	5.45	5.68	5.99
40	4.77	4.15	3.55	4.07	4.16	4.19	4.70	4.96
45	4.16	3.94	3.43	2.96	3.41	3.52	3.59	4.07
50	3.35	3.35	3.18	2.80	2.44	2.84	2.96	3.07
55	2.79	2.62	2.63	2.53	2.25	1.99	2.35	2.49
60	2.22	2.11	1.99	2.02	1.97	1.78	1.60	1.92
65	1.59	1.57	1.51	1.45	1.50	1.48	1.36	1.25
70	0.50	1.02	1.03	1.00	0.98	1.04	1.05	0.99
75+	0.63	0.49	0.74	0.86	0.91	0.94	1.01	1.08
TOT	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	AGE	1970	1975	1980	1985	1990	1995	2000	2005
FEMALES	0-14	43.41	43.35	43.33	42.87	42.14	40.80	39.17	37.22
	15-64	53.75	53.30	52.92	53.15	53.49	54.72	56.40	58.51
	65+	2.84	3.36	3.75	3.98	4.37	4.48	4.43	4.27
MALES	0-14	45.41	45.27	45.08	44.47	43.58	42.10	40.36	38.30
	15-64	51.87	51.64	51.64	52.23	53.04	54.44	56.22	58.39
	65+	2.72	3.09	3.28	3.30	3.38	3.46	3.42	3.31
TOTAL	0-14	44.38	44.29	44.19	43.66	42.85	41.44	39.76	37.76
	15-64	52.83	52.49	52.29	52.70	53.27	54.58	56.31	58.45
	65+	2.78	3.22	3.52	3.65	3.88	3.97	3.93	3.79
MALES/FEMALES		0.954	0.960	0.966	0.971	0.975	0.978	0.982	0.984

CHAPTER XV

THE SOCIO-ECONOMIC IMPLICATIONS OF CURRENT POPULATION TRENDS 1970-2005 AND ZAIREAN POLICY OF "DESIRED BIRTHS"

The present research work is being completed nearly ten years after the population enumeration of 1970.(1) During the period that has elapsed, important developments have occurred in the demography and socio-economic life of Zaire.

Since 1972, there has been an increasing awareness of population problems, marked by the government's initiation of a policy termed "naissances désirables" or "desired births", which is discussed in the closing section of this chapter. There has also been an increasing participation of women in modern political and economic activities; at the same time, the whole of social life has been dominated by the government philosophy of searching for 'authenticity', involving some return to traditional values and ways of living. Moreover, the whole national economy underwent spectacular developments in policy orientation affecting not only productivity but also structures. In the late sixties, there was nationalization of key sectors of production, in particular the mines, owned by foreign corporations or firms. From the early seventies, there has been first "Zaireanization" or take-over by nationals of foreign-owned medium and small business; then "radicalization" of the economy or take-over by the State of all privately-owned enterprises previously acquired through Zaireanization schemes and otherwise; this was followed, after a short period of stabilization, by the "retrocession" or return to former owners of all Zaireanized or radicalized enterprises; and most recently there has been a policy of "liberalization" or government schemes designed to help nationals as well as non-nationals promote free undertakings. The consequences of all the above developments, during a world economic

---

(1) Since then, various discussions have been held by Zairean officials, and with UNFPA representatives, concerning a national population census. This has been planned in several stages: cartography in February 1979 to March 1980; census enumeration during a period of three weeks in June and July 1980 if possible; a post-enumeration sample survey to test the census coverage, scheduled for the month following the census; and a complete demographic survey six months later.

crisis with undoubted impact on Zaire's economy,(1) are yet to be fully determined. However, there is no doubt that these developments produced significant changes in the most basic relationships between demographic and socio-economic variables as estimated in 1970, even though those estimates were made at a very general level.

1. The Socio-economic Implications

Well before the end of the colonial era in Zaire, Bezy and others strongly emphasized the need to develop a clear population policy for Zaire in view of the important implications of the rapid growth momentum observed in the country since the early fifties,(2) but no adequate quantitative and specific study has been undertaken to date.

However, since the second half of the sixties, when the first development decade was proclaimed by the United Nations, Zairean public authorities have shown an increasing interest in the impact on specific categories of the population of changes in certain aspects of national development, i.e. income level, education, employment, diet, housing and public health. As in most African countries, unfortunately, the base statistics are not always readily available or updated, and are of dubious reliability for the evaluation of trends in socio-economic perspectives and demographic projections. The attempt, in this chapter, to discuss the implications of future population trends for Zaire is thus clearly bound to be tentative at best, if only because of the complexity and multiplicity of the elements involved in such an evaluation.

1.1 Income level

Despite enormous resources and potential wealth, Zaire remains a poor nation, with a per capita income which has distinguished it as one of the United Nations' least developed states.(3) Reports from

---

(1) Traditionally, Zaire belongs to no particular economic zone similar to the Commonwealth or French Community; its exports are transacted at world market prices.

(2) Bézy, F.: Principes pour l'orientation du développement économique au Congo; Zaire, Louvain, Vol. XIII, no. 1, 1959, Belgium.

(3) Factors responsible for this situation appear to be of both past and recent origin. For an analysis of these factors, see Peemans, J.P.: (a) Capital Accumulation in the Congo under Colonialism: the role of the State; op. cit; and (b) The Social and Economic Development of Zaire since Independence: an Historical Outline; op. cit.

the Bank of Zaire indicated that the country's economy developed at a fairly rapid rate in 1969-74, with the Gross Domestic Product increasing by 6 per cent annually; but since 1975 it has experienced a negative growth rate of 4-5 per cent per annum.(1) It may be noted that subsequent to events of the immediate post-Independence period, mining areas and urban centres had expanded their share of the Gross Domestic Product to the detriment of those areas whose resources were mainly agricultural. This further benefitted the position of the capital city, Kinshasa, and the mining region of Shaba where the gross domestic per capita income reached three times the average estimated for the country as a whole, which is currently about 200 dollars.(2) For analytical purposes, it may be noted that an overall gross domestic product growth rate of 5 per cent when adjusted for a 2.5 per cent population increase would yield an annual growth rate of only 2.5 per cent per capita. As already discussed, for the whole period 1970-2000, all population projections for Zaire indicated growth rates not much below 3 per cent per annum. Clearly, this population increase will tend to significantly erode advances in per capita gross domestic product and the prospect may be much worse in rural areas where more than two-thirds of the population of Zaire is found.

Studies of population growth and economic development concluded that there would be immediate and distant economic advantages from controlled population growth, especially from reduced fertility in the low-income countries with high fertility.(3)

1.2 Food production

Food production and nutritional standards in Zaire remain amongst the most difficult factors to evaluate. On more than one occasion, the Department of Agriculture has issued statements that figures mentioned

---

(1) Adelman, K.L.: Zaire's Year of Crisis, African Affairs (London), Vol. 77, No. 306, January 1978, p. 36-44.

(2) De Saint Moulin, L.: La répartition par région du produit intérieur brut zairois, revue Zaire-Afrique, No. 73, Kinshasa.

(3) Coale, A.J. and Hoover, E.M.: Population Growth and Economic Development in Low Income Countries, Princeton Unit, 1958. See also a series of articles by Stephen Enke, notably, The Economic Aspects of Slowing Population Growth, in Economic Journal, 1966; Birth Control for Economic Development, in Science, 1969; and with Zind, R., Effect of Fewer Births on Average Income, in Journal of Biosocial Science, 1969.

in regional economic reports cannot be taken as given.(1) Indeed, in 1970 for example, they arrived at estimates such that, even allowing for correctives in quantities marketed, many people could not have survived eating only the portions indicated for them, whilst others could obviously not have absorbed the huge shares attributed to them. However, attempts were made to derive some general hypotheses, by relating agricultural production to rural population distribution and, similarly, marketed food supplies to urban population in every region. It was then estimated that each region catered for its urban population, except for the regions of Kinshasa and Shaba, over 60 per cent of whose food supplies were imported from outside the country. As pointed out by de Saint Moulin, in the years immediately after 1970, Zaire was not growing enough food and food imports were increasing significantly.

It is certainly true that, with sufficient input in terms of infrastructure and technology, Zaire could feed many times her present population. According to estimates, less than one per cent of the land has been under agricultural production and only about one-tenth of a hectare per person is productive land, i.e. given over to agriculture and permanent pasture.(2) It has been speculated that rapid population growth could push this figure even lower, to one-twentieth of a hectare per capita, by the turn of the century. Such a development is most improbable, not only because it is likely that more land is already being farmed on a subsistence level, but also because population growth will undoubtedly result in an extension of agriculture into the vast reserves of forest land. The proportion of total land area capable of cultivation is not a relevant factor with regard to food production in Zaire for the foreseeable future. Nevertheless, it must be emphasized that simply to keep pace with projected population growth, the area under agricultural cultivation will need to be doubled by the last decade of the century, as all projections indicate that the 1970 population will have doubled by the nineties. This is a demanding task, but not an impossible one if carefully planned and implemented.

---

(1) See also de Saint Moulin, L.: La répartition du PIB zairois; op.cit.

(2) Estimates by the World Bank indicate the distribution of land in Zaire to be as follows: Forest, 102.0 million hectares; agriculture, 2.3 million hectares; permanent pasture, 2.3 million hectares; mountains, rivers and lakes, 127.9 million hectares; total, 234.5 million hectares.

1.3 Health facilities

Undoubtedly, the events of the early sixties caused serious disruption of the existing health and medical facilities, with the disappearance of mobile medical teams, the dwindling of hospitals and dispensaries, the decrease in numbers of medical and paramedical personnel and the recurrence of epidemics and endemics in certain areas. However, from the early years of that decade, measures were increasingly taken to redress the situation: these included emergency action in the former areas of rebellion, the despatching of mobile teams to combat epidemics where needed, the introduction of vaccination campaigns, the reinforcement of supplies and the restoration of hospital equipment, all with the cooperation of the World Health Organization and other international bodies. By 1968, an "Ordre des medecins" or association of medical doctors was created with government authority to requisition physicians, at any time, for action in any area of the country.(1) Various medical schools were also created, 32 during 1960-65 and 35 during 1965-70, for training personnel at different levels: nurses, assistant doctors, pharmacists, doctors and hospital managers; the medical schools of the national university of Zaire were also strengthened.

For 1970, official documents indicate that the number of medical doctors, relative to the pre-Independence period, had declined only slightly: 761 doctors, all non-nationals, in 1959, as against a total of 728 (most in Kinshasa) including 266 nationals by end-1970; i.e. one doctor per 30,000 inhabitants, which was the African average in those years. However, the recurrent budget for the department of health represented only 6 per cent of the government budget as against about 9 per cent before Independence. It was also estimated that, by 1970, the sums allocated to the purchase of medical supplies were down by half compared to the situation on the eve of Independence. Reportedly, the sums actually disbursed for medical supplies amounted in 1970 to 0.21 dollars per capita, which is significantly below the figure of 0.60 dollars per person estimated as necessary by the World

---

(1) The "Ordre des medecins" was created by a decree of March 1, 1968. This body not only makes representations for professionals, but also regulates medical practice by its members in matters such as determination of fees and sanctions for professional mistakes.

Health Organization for ensuring adequate care.(1) Official documents also reported that by 1970 the situation concerning clinical installations, hospitals and specialized establishments for leprosy, sleeping sickness, tuberculosis, etc., was identical to that prevailing on the eve of Independence and summarized as follows:

	Establishments	Beds
Clinics	128	1,482
Hospitals	372	53,534
Rural dispensaries	2,571	18,855
Specialized Establishments	105	13,671
Total	3,176	87,542

If this was the case, then based on our estimated total population of 19,955,000 for 1970, the average number of persons per unit of equipment would be as below:

Year	Persons per hospital establishment	Persons per hospital bed
1959	4,403	160
1970	6,283	228

It should be remarked that in order to keep pace with estimated population growth during 1959-70, the number of hospital beds, for example, should have increased by an annual average of 3,382 beds to amount to 124,718 beds in 1970. Further, given an estimated population total of 48 million persons in the year 2000, the number of beds required by then to maintain the 1959 standards would be over 300,000; this would require an increase of hospital beds by more than 7,000 annually throughout 1970-2000.

Since by the mid-nineties the population of Zaire will certainly be double that estimated for 1970, it is clear that a greater effort will be necessary if medical facilities are even to keep pace with

(1) Bureau du Président de la République: Zaire, Livre Bilan 1965-70, p. 242, Kinshasa, 1970.

population growth, let alone to improve. Attention will need to be given to the construction and expansion of hospital establishments, the acquisition of medical supplies and also to problems concerning the management of these establishments and the training of more doctors and other medical personnel.(1) Moreover, in view of the vast size of the country, it will be important to envisage an improvement in health care through a "community health" approach.

1.4 Housing

At the outset, it is worth emphasizing that more often than not there is a tendency to look at the problem of housing solely as an urban problem, whereas, in fact, it is much wider. However, given the present inadequacy of statistical information in this area, it is not possible to make any speculations with regard to housing development.

Previously, in the latter part of the colonial period, government policy consisted of making up for the insufficient financial means of individuals either by loans from state agencies or by making it an obligation for employers to provide accommodation for their employees or workers. In particular, at the initiative of the colonial authorities, three agencies were designed to assist the country's elite (évolués) in their housing problems.(2) After Independence, these agencies were merged into a National Housing Office, whose aim was similar to that of the National Savings Bank and Housing Loan Fund, created in 1972 to assist those with small resources in house-building. In the years to come, it is likely that this new institution, the Savings Bank and Housing Loan Fund, will play a significant role in the area of housing, since it was anticipated that small communities in every region would set up similar private local organizations. However, the effectiveness and success of these local undertakings will obviously depend on the ability of the persons concerned to build up savings, and this in turn will be a function of income level and employment. As already mentioned, with regard to income levels, the current trends of population expansion would seem to indicate a rather unfavourable situation; much the same holds true

---

(1) Possibly including the type of Chinese "barefoot doctors".

(2) The colonial housing schemes have been discussed in Chapter V.

as regards employment.

1.5 Labour force and employment

It must be noted that because of pitfalls in the measurement of the employment level in most developing countries, where the "hidden economy" is relatively large in relation to the "registered economy", it is difficult to obtain a clear picture of economic activity and employment levels in Zaire. The major pitfall stems from the fact that reported statistics refer essentially to employees in typical colonial employee-employer relationships. Thus, the Bank of Zaire reported that between 1958 and 1967 employment in the country declined by about 40 per cent with the number of employed workers falling from 1.7 million to 1.0 million;(1) it is, however, certain that the number of people actually working did not fall by 40 per cent.(2) Subsequent estimates of employment levels in Zaire suggested some fluctuations, with rising trends in the private sector but declining ones in the public sector.

For 1972, the Bank of Zaire still estimated at 1.0 million the total salaried workers in both the public and private sectors: 0.2 million in the public sector, 0.5 million in the private sector registered with the National Institute of Social Security, and 0.3 million others - mostly independent farmers providing for agro-industries without being registered as salaried.(3) Furthermore, the Bank estimated that during 1969-72 only 19,000 new jobs were created within the framework of Zaire's investment code, owing to the capital-intensive nature of most new and expanding investr

---

(1) That is a decline by 24 per cent in the private firms and by 73 per cent in independent workers, whilst the government increased the number of its employees by about 73 per cent. Bank of Zaire: Annual report 1967, p. 66. See also, Dupriez, G. et Ngoie, J.: Emploi dans le secteur privé et parastataux, 1965-8; in Cahiers économiques et sociaux, IRES-Kinshasa, VIII-1, mars 1970, p. 70.

(2) In the immediate post-Independence decade and probably to date, not all employers reported their workers, just as there was little control by the administration over medium and small size enterprises. See Boute, J.: Population et développement économique et social en République du Zaire, UNECA Papers M71-2942, p. 21.

(3) Bank of Zaire: Annual report 1972-3, p. 64.

projects.(1)

From a demographic viewpoint, an important point to note is that the 1.7 million salaried workers of 1958 represented 51 per cent of the male population aged 15-59 years, whereas the 1 million estimated for 1970 would represent less than 25 per cent of the same age-sex group. But, as already mentioned, these official estimates of salaried workers around 1970 certainly understated the actual number of salaried workers in Zaire; the more so since they did not take into account salaried females, whose number was negligible in the fifties but sizeable soon after Independence.

The most significant point, as illustrated in graph 4.3 (p. 425), is that the population of working age of both sexes is increasing very rapidly, at about the same rate as the total population. Indeed, if one defines as economically active population those males and females aged 15-59 years, then the total increase in the working-age population from 1970 to 2000 will be 14.8 million persons. Thus, like the country's population total, the working-age population will have doubled by the early nineties. The distribution of this increase by age group will be as follows: 8.4 million for persons aged 15-19 years, 4.6 million for those aged 30-44 years and 1.8 million for those aged 45-59 years. Obviously, the most important development is the increase of the youngest working-age group 15-19 years, whose numbers will increase by 3.2 million during 1970-2000.

In other words, during the 30-year period up to the end of the century, the number of persons in the working-age population 15-59 years, will increase annually by about 0.5 million, out of which 0.1 million will belong to the youngest working-age group 15-19 years. It must be noted that, even if fertility falls more rapidly than anticipated for the years after 1985 (given socio-economic and family planning measures to this end), the 15-19 year old labour force will still increase in almost the same degree of magnitude by the end of

---

(1) This tenet, we are inclined to believe, is only partially true as it refers solely to direct jobs (those generated directly by the project) whereas the number of temporary or permanent indirect jobs could have been much greater. Indeed, under African conditions, capital-intensive investments appear to have a much higher multiplier effect than in industrialized countries because they often require labour-intensive services. For example, the creation of a tyre factory may generate indirect jobs in the building of roads and estates, rubber plantations, distribution networks, reactivation of transportation, etc.

the century, because changes in birth numbers are not reflected in the labour force until about 15 years later. Even allowing for children of both sexes who will pursue their studies beyond 15 years of age, and also for housewives and invalids of both sexes, projections of Zaire's active population still indicate that between 1970 and 2000 over one-third of a million jobs will have to be generated each year, and this simply to maintain the 1970 level, which itself entailed much unemployment and underemployment. Employment will need to increase at about 3 per cent per annum in order to have any significant impact on unemployment during 1970-2000. Given Zaire's economic potential, this should not prove an impossible task, though extremely demanding.

1.6 School education

Zaire's young age structure and the continuous rejuvenation of the population throughout 1970-2000 clearly implies an increasing burden on the country's education system. At the attainment of Independence, primary schooling was made compulsory under the Constitution and successive governments have been eager to improve, both quantitatively and qualitatively, the national education system.(1) This has been reflected in a series of profound reforms of the structures and programmes inherited from the colonial era and by the large proportion allocated to education in the State budget.(2) In 1968, school fees were abolished and the State was to provide all educational materials through its specialized agency, the Centre d'Achat et de Distribution de Matériel Pédagogique (CADMP), created in 1964. For 1970, expenditure on education represented 22 per cent of the State's overall budget, that is 28 per cent of the recurrent budget and 2 per cent of the investment budget, corresponding to 5 per cent

---

(1) According to the Constitution, 1967, Article 13, the State determines the norms and programmes and controls the teaching materials; while at the same time it authorizes and subsidizes Catholic, Protestant, kibanguist and other schools which conform to the State's requirements and guarantee a quality eduction.

(2) For the situation before Independence, see Part Three, Chapter VIII of this study. For the immediate post-Independence period, see particularly Georis, P. et Agbiamo, B.: Evolution de l'enseignement en République Démocratique du Congo depuis l'indépendance; Cemubac, LXXVII, Bruxelles, 1966; Les études supérieures en République Démocratique du Congo; published by the Bureau de l'Enseignement National Catholique, Kinshasa, 1971.

of the Gross Domestic Product.(1) In addition to official budgets, there were private contributions by parents, special allocations from the Office of the President and from regional or local authorities; moreover, substantial annual costs were also met by foreign technical assistance. It is thus obvious that the education system actually absorbed much more than 5 per cent of the Gross Domestic Product.

It should be remembered that, in Zaire, primary education is spread over six years and normally children of either sex enter school at a minimum age of six years to finish at the age of twelve years.(2) Secondary education is generally spread over six years but this is reduced to four years or less for special training or vocational schools.(3) Tertiary education is similar to that of most countries in Europe, especially Belgium and France. Table 4.26 (p. 453) summarizes estimates of school enrolment and annual increase during 1963-70; however, in view of the serious disturbances of the sixties, estimates prior to 1970 were only tentative at best.

Since the most significant implications of population growth trends in the immediate and more distant future concern primary school education, the following considerations will focus on this first educational level. There are a few studies existing which provide estimates based on whatever data were available and derived

---

(1) Bank of Zaire: Annual report 1969-70, 1970-71; and also Office of the President: Bilan 1965-70; op. cit.

(2) For primary education, the maximum age at entry is 8 years for boys and 9 years for girls; repetition is authorized only once every two grades; and the certificate for completion is given only after successfully passing the sixth grade examination.

(3) The secondary education system is organized as follows:

(i) The Long Cycle: over 6 years; with 2 years orientation and 4 years optional subjects. It has 2 sections of general education with 4 options and 11 sections of specialized education with 22 options. A "State Diploma" in the case of full success, and a "State Certificate" in the case of partial success, is awarded at completion of the cycle.

(ii) The Short Cycle: over 4 years; charged with the training of supporting staff for public and private enterprises. It has 7 sections with 15 optional subjects.

(iii) The Vocational Cycle: over 2-3 years; charged with training for specific jobs. It generally receives those who failed the long cycle.

by improvising or adapting the methods to the circumstances.(1)

There is a need for revision of these previous works, in view of the new population projections developed for Zaire in this study and also because of developments taking place in more recent times, such as the 1971 reform of higher education,(2) and the general economic situation.

Table 4.26

SCHOOL ENROLMENT AND PER CENT ANNUAL INCREASE, ZAIRE, 1963-70

	1st Level Primary	2nd Level Secondary	3rd Level Tertiary
Enrolment*			
1963	1,995,230	92,273	2,363
1965	2,066,809	121,232	3,899
1970	3,051,563	225,392	13,136
Annual Increase (%)			
1963-65	1.8	13.6	24.5
1965-70	7.7	12.0	21.7

* Source: Quoted by Boute, J., in Population et développement économique et social en République du Zaire; op. cit. p. 33.

Officially, the major goal with regard to primary education in Zaire is to achieve, progressively, compulsory education for all children and to limit school attrition rates. Because Zaire's population will be continually increasing and growing younger for several decades after 1970, such an educational goal has extremely important

(1) These works include notably: Esquisse du pré-plan d'éducation 1971-80, Ministère de l'éducation nationale, Kinshasa, 1971. Population et développement économique et social en République du Zaire; Boute, J.; op. cit. Contributions des données démographiques à l'élaboration des plans de développement économique et social: Wawa Sakrinia, A., mémoire de licence, Université Nationale du Zaire, Kinshasa, 1970.

(2) In June, 1971, higher education underwent an important reform, especially in the merging of the three separate universities of Kinshasa, Lubumbashi and Kisangani into one national university with different campuses, and also assimilating within it all other institutes of higher education.

implications, especially in the face of the situation prevailing by 1970, which is summarized in table 4.27 (p. 455).

Some features of that table merit particular comments. Firstly, with respect to enrolment: based on our estimates of primary school age populations aged 6-13 years in 1970, i.e. 1,954,000 boys and 1,961,000 girls, and given the reported school enrolment of 1,926,433 boys and 1,125,130 girls, the enrolment ratios would be 98.6 per cent for boys and 57.4 per cent for girls, with a ratio of 78.0 per cent for both sexes together. Such high ratios are certainly implausible not only for boys but also for girls. Indeed, an inquiry conducted in Kinshasa in 1967 uncovered a great number of adolescents aged 12-19 years in primary schools, in proportions reaching 30 per cent of the boys and 28 per cent of the girls; it is very probable that such peculiarities were common, perhaps even more common, in other urban centres and in the rural areas.(1) Elsewhere, the department of national education reported that half the primary school age population was not actually attending school,(2) which is quite inconsistent with the estimates given in the table. In any case, it can be safely presumed that for the country as a whole, the actual enrolment ratios were below those finally estimated for Kinshasa, i.e. 78 per cent for boys, 38 per cent for girls and 68 per cent for both sexes together.

Secondly, with regard to the ratio of boys to girls amongst pupils, no information is available from the table. However, it was estimated that this ratio fell from 12/2 to 3.6/2 between the beginning and the end of the sixties - a ratio that has been tending towards unity every year since.(3)

Thirdly, concerning school retention, the table shows a relatively high observed ratio of school retention. This ratio, like the repeater ratio, is considerably affected by migration or transfer of pupils from numerous sub-grade schools, often with no more than the first two grades, in rural areas as well as urban centres. It is thus

---

(1) Office of the President: Bilan 1965-70; op. cit., p. 253-6. The observed degree of retardation was largely due, in urban centres, to the repetition of grades in the face of examinations which were often made deliberately difficult; whilst, in rural areas, the phenomenon may be due to late entry and irregular school attendance.

(2) Ministère de l'éducation nationale: Esquisse du pré-plan ... op. cit., p. 9.

(3) Office of the President: Bilan 1965-70; op. cit., p. 256.

Table 4.27

EDUCATIONAL AND DEMOGRAPHIC INDICES RELATED TO PRIMARY SCHOOLING FOR ZAIRE IN 1970(1)

Enrolment ratio (6-13)	78.0%	
Intake ratio (6 years)	27.3%	
Progression ratio	28.0%	
Attrition ratio	72.0%	
Repeater ratio	13.0%	
Retention ratio	41.0%	
Output ratio	23.5%	
Pupil-Teacher ratio	42.3	Absolute numbers
Average class size	50.0	Absolute numbers

Source: Ministère de l'éducation nationale: Esquisse du pré-plan d'éducation, 1971-80; op. cit., p. 9.10.

(1) Explanation of terms:

SCHOOL-AGE POPULATION: number of persons within certain age groups who are either required by law or are eligible to attend schools at a certain level. ENROLMENT RATIO: proportion of pupils enrolled in school, at a given level of education, related to a relevant school-age population. INTAKE RATIO: number or cohort of new pupils compared to a group of persons eligible for entering that school level. PROGRESSION RATIO: the proportion of pupils who progress regularly from one grade to the next, as related to the original grade cohort. ATTRITION RATIO: the proportion of pupils who fail to make regular progress from one grade to the next. REPEATER RATIO: the proportion of pupils who repeat a specified grade. RETENTION RATIO: sum of repeaters and pupils who have progressed regularly through grades related to the original grade cohorts. OUTPUT RATIO: the group of pupils who complete a given course at a specified time related to the intake at the beginning of the same course. PUPIL-TEACHER RATIO: total pupil enrolment at a specified school level divided by the total number of teachers at that school level (thus, not a percentage but average number of pupils enrolled per teacher in service). This is not to be confused with the AVERAGE CLASS SIZE taught by one teacher: the latter may be, and often is, higher than the pupil-teacher ratio, since part-time teachers and school principals who do not teach classes are usually included in the number of teachers in service. For detailed discussion, see particularly United Nations: Estimating Future School Enrolment in Developing Countries; Population Studies, No. 40, ST/SOA/Series A, Paris, 1966.

likely that the true ratio of school attrition for the country as a whole was much lower than the reported estimate of 72 per cent.(1)

Against this base picture of Zaire's primary school system in 1970, we shall now estimate future school enrolment before examining the implications in terms of teaching force and building infrastructure required, on the basis of current educational goals and projected populations.(2) As in the preceding sections, since the base educational data are not adequate for refined details of projection, we feel justified in referring solely to the medium variant of our population projection and confining the discussion to the average school population rather than grade ratios. Zaire's educational goals, as stated in the "pre-plan", envisaged two successive hypotheses. Firstly, the hypothesis of a "status quo" throughout the seventies, assuming that ratios of school enrolment would remain constant at the 1965-70 average annual level. Secondly, the hypothesis termed "objective 80", involving, from the start of the school year 1979-80, school attendance by all children of either sex aged 6-15 years, with eventual elimination of the practice of non-promotion or annual examinations between grades. Thus, it may be seen, that by 1980, despite limiting factors, nearly a hundred per cent of the primary school age population would be enrolled in school.(3)

---

(1) Nevertheless, it was estimated, in 1970, that 52 per cent of children admitted in the first grade did not reach the fourth grade of primary schooling; the latter being the threshold for acquiring permanent literacy, according to UNESCO standards. Amongst the causes of dropouts, official sources mentioned particularly the under-qualification of teachers - 33,555 under-qualified out of 67,277. Also noted were the shortage of rooms for classes, the overpopulation of schools, the poverty and negative attitudes of the family and home environment vis-a-vis schooling, and last but not least important, the heavy weight of government subsidies and grants which had increased by more than ten times during 1960-69. All this would tend to suggest that, at present, problems of primary education are rather those of quality than of quantity.

(2) Methods of estimation of school populations are those described in the UNESCO/United Nations Manual: Estimating future school enrolment in developing countries; op. cit.

(3) Limiting factors relate the the potential supply of adequately trained teachers, the availability and suitability of school buildings and allied facilities, and the extent of economic and financial resources.

Given the age at entry into primary school education and the abolition of the practice of non-promotion, we shall consider the population aged 6-13 years inclusive as being of primary school age; in the present estimation, this has been derived by deducting one-fifth from each successive age-group 5-9 and 10-14 years, as an approximation. Table 4.28 (p. 458) presents estimates of the school age population so derived for the quinquennial periods between 1980 and 2000. However, for practical purposes, we shall consider a maximum enrolment of 97 per cent, instead of one hundred per cent, of the estimated primary school age population. From table 4.29 (p. 458), which shows estimates of school enrolment under successive hypotheses for 1970-79 and 1980-2000, it can be seen that enrolment for the year 1979 is greater than for 1980. This discrepancy results from the fact that the 1979 estimates were based on the 1965-70 experience which, as already noted, included a considerable number of persons aged 13-19 years while, in contrast, the 1980 estimates include only those pupils aged 6-13 years. We shall now summarize the implications based on the number of pupils according to each of the two enrolment hypotheses.

Firstly, with regard to the "status quo" hypothesis, the pre-plan estimated at 1.6 square metres, and a cost of 96 zaires, the space occupied per pupil per class.(1) Assuming that by 1970 all pupils were satisfactorily accommodated, the cost of additional building during the next nine years would total 313.4 million zaires, i.e. an average annual cost of 34.8 million zaires as against 5.9 million zaires for all school building throughout the decade of the sixties. Relative to the State's budget, the expected additional sums for school building would appear out of all proportion. On the other hand, assuming that all the teachers of 1970 remain in service during 1970-79, the required total additional teachers by 1979 would be 76,054, i.e. an average annual increase of 8,450 teachers, whose salaries and allowances would be added to the cost of school building. As admitted by the authors of the pre-plan, current provisions for the training of teachers would appear unable to cater for Zaire's needs in this area in the foreseeable future.

---

(1) Then at the official exchange rate of one zaire for two American dollars. The cost of school building so estimated seems rather expensive, but the pre-plan did not indicate whether the possibility of using local building materials had been exhausted.

Table 4.28

ESTIMATED ZAIRE'S PRIMARY SCHOOL AGE POPULATION, 1980-2000
(Aged 6-13 years, Pop. in thousands, medium projection)

	1980	1985	1990	1995	2000
Boys	2,909	3,403	3,908	4,477	5,106
Girls	2,902	3,390	3,887	4,447	5,062
Total	5,811	6,793	7,795	8,924	10,168

Table 4.29

ESTIMATED ZAIRE'S PRIMARY SCHOOL ENROLMENT, 1970-2000
(Enrolment in Thousand Pupils)

(1) Status quo Hypothesis	1970	1975	1979
Boys	1,927	2,652	3,415
Girls	1,125	1,904	2,901
Total	3,052	4,556	6,316

(2) Objective 80 Hypothesis	1980	1985	1990	1995	2000
Boys	2,851	3,336	3,830	4,387	5,004
Girls	2,844	3,322	3,809	4,358	4,961
Total	5,695	6,658	7,639	8,745	9,965

(1) Ministère de l'éducation nationale: Pré-plan ... op. cit., p. 31.

(2) See text inside for methods of estimation.

Secondly, with reference to the hypothesis of "objective 80", the implications discussed in terms of teachers and school infrastructure requirements under the status quo hypothesis would hold true for 1980 and with greater force over time. Indeed, as of 1980, and based on the medium variant of population projection, estimates of school enrolment vary little from those carried forward under the status quo hypothesis. However, projected estimates show that by the year 2000, primary school enrolment would be about 10 million pupils; i.e. an increase by about 4 million relative to the situation in 1980 or an average increase of one-fifth of a million each year from 1980-2000. This still means unbearable costs in terms of additional school building as well as salaries and allowances for teachers, not to mention the fact that requirements for the training of additional teachers will be greater as most teachers from 1970 would have left the service.

During 1980-2000, Zaire's primary school age population will grow at an annual rate of 2.7 per cent, thus doubling in less than 25 years. After abolition, from 1980, of the system of non-promotion, enrolment ratios at the secondary level will face similar pressure, with significant impact in terms of school infrastructures and teacher requirements. Because Zaire's population will continue to grow and rejuvenate steadily during that period, it is clear that the acuteness of the educational problem will lie not solely in the demographic factors(1) but also in the ambitious goals defined at a time when only a small proportion of children were attending school.(2) Clearly, there is

---

(1) In recent years, there has been a great deal of general research and country case studies in this area, especially with regard to the relationship between fertility decline and educational progress. See particularly: Jones, G.W.: Population Growth and Educational Planning in Developing Nations, A Population Council Book, Irvington Inc., New York, 1975. Ta Ngoc Chau: Population Growth and the Costs of Education in Developing Countries; UNESCO/IIEP, Paris, 1972. Chesswass, J.D., Methodologies of Educational Planning for Developing Countries, 2 vols., IIEP, Paris, 1969.

(2) A detailed analysis of the statistical evidence is contained in UNESCO: Regional Educational Targets and Achievements 1960-65; paper presented at the Conference on Education and Scientific Technical Training in Relation to Development in Africa, Nairobi, July 1968. See also, Le Brun, O.: Population Dynamics and Educational Development in Africa; in UNESCO Regional Office for Education in Africa, "Population-Education-Development in Africa South of the Sahara", Dakar, 1971.

not only room for further expansion of educational facilities, but a need for this expansion; for example, through communal school buildings, a possibility which obviously raises again the real question of wages and salaries, especially in the rural areas where the majority of the population reside. This need for rapid expansion and determination of the goals create a multiplicity of problems, but, as concluded by Gavin Jones, "If it is true that ability is distributed roughly equally in all socio-economic groups, an enormous waste of talent results from the typical situation in which only children from well-to-do families have much chance of reaching the universities".(1)

2. The Zairean Population Policy of "Desired Births"

In an attempt to determine the importance given to population growth in the overall strategy of development planning in Africa, Stamper found that, by 1970, only eight countries (out of twenty-two with development plans) had explicit population policies, though all the fifty-five countries studied recognized certain types of population problems.(2) Table 4.30 (p. 461) indicates problems explicitly recognized and table 4.31 (p. 462) provides a picture of population programme implementation. It was observed that recognition of population problems was in part a function of the use of quantitative and qualitative demographic data collected, and that the reality of planning was often not very concrete. Many of the population policy programmes outlined in plans were never implemented, just as some countries implemented programmes not mentioned in their development plans, while others carried out effective population policies outside any development plan.(3) The latter pattern would appear applicable to Zaire whose population growth was markedly affected by successive government measures in favour of increased birth rates, especially after World War II, until 1972 when, for the first time, a policy of "Desired Births" was officially introduced. An attempt is made in this final section of our study to assess the origin and prospects of this policy.

---

(1) Jones, G.W.: Population Growth and Educational Planning in Developing Countries; op. cit., p. 66.

(2) Stamper, B.M.: Population Planning in Developing Nations, A review of sixty development plans for the 1970s; The Population Council, New York, 1977.

(3) Ibid., p. 70-4.

Table 4.30

POPULATION PROBLEMS RECOGNIZED IN NATIONAL DEVELOPMENT PLANS OF 1970s (AFRICA)

	Any type of pop. problem	Growth of working-age pop.	Incr. of school-age pop.	Reduction of econ. growth	Pressure on social services	High dependency ratio	Pressure on health services	Pressure on housing	Pressure on individual welfare	Pressure on food or agri-cultural systems	High population density
Algeria, 70-3	x	x		x			x		x		
Botswana, 70-5	x		x				x			x	x
Burundi, 68-72											
Cameroon, 71-6											
Ethiopia, 68-73	x	x					x	x			
Ivory Coast, 71-5											
Kenya, 70-4	x	x	x	x	x	x	x				x
Mali, 70-2	x	x		x							
Mauritania, 70-3	x	x					x		x		
Mauritius, 71-5	x	x		x			x				
Morocco, 73-7	x	x		x			x				
Nigeria, 70-4											
Senegal, 69-73	x	x					x		x		
Somalia, 71-3	x		x	x	x	x	x				x
S. Africa, 66-71	x	x	x		x						
Sudan, 70-5	x	x		x	x	x	x	x			
Swaziland, 73-7	x	x	x								
Tanzania, 69-74	x	x	x	x	x	x	x				
Togo, 71-5	x	x	x								
Tunisia, 71-5	x	x	x	x	x						
Uganda, 71-6	x	x	x	x	x	x	x				
Zambia, 72-6	x	x	x		x			x			
Zaire, -											

Source: B.M. Stamper, op.cit., p.27-8.

Table 4.31

POPULATION POLICIES IN NATIONAL DEVELOPMENT PLANS OF 1970S, AFRICA

	Support of family planning for demographic reasons	Integration of family planning with health services	Population growth targets	Extension of family planning services	Socioeconomic development and fertility decline	Family planning acceptor targets	Family planning education	Population education	Delay of marriage to reduce fertility	Use of mass media for family planning information	Motivation schemes for smaller families	Policies on abortion	Family planning incentive schemes	Improved status of women and fertility decline	Comprehensive pop. strategy	Pro-natalist policies
Algeria																
Botswana	x	x	x	x				x	x							
Burundi																
Cameroon																
Ethiopia																
Ivory Coast																
Kenya	x			x	x											
Mali																
Mauritania																
Mauritius	x	x	x	x												
Morocco	x		x		x		x									
Nigeria	x	x														
Senegal																
Somalia																
S. Africa																
Sudan																
Swaziland	x	x														
Tanzania																
Togo																
Tunisia	x		x				x	x						x	x	
Uganda	x	x	x	x					x							
Zambia																
Zaire, -																

Source: B.M. Stamper, op.cit., p.50-1.

2.1 The origins of the policy

It was in his address to the National Legislative Council, on December 5, 1972, that the President of the Republic initially raised the question of the balance of death and birth rates in his declaration that "The decline in death rates no longer required, as in times past, that there were numerous births in order to have the same number of children".(1) The message was that the government was to search for various means to reduce infant mortality and to control fertility.

It would thus seem that Zaire's demographic policy is perceived by the country's public authorities in terms of the implementation of programmes to reduce infant mortality and to aid the regulation of births so as to allow each married couple the "desired number of children". This policy, if successful, should lead to an increasing matching of economic growth with population expansion, to a better education system and to a greater equality of opportunity for children from different social strata.(2)

Among the practical measures that followed this policy statement were the creation, in February 1973, of a National Council for the Promotion of the Principle of Desired Births, the setting up of family planning units in hospitals and encouragement to use contraceptives. Further, in October 1973, a department of demography was opened within the National University of Zaire,(3) with a view to training a body of professionals to assist and advise those Zaireans involved in population statistics at various levels.

It should be remembered that Zaire's population statistics are collected through four main sources: administrative enumerations, continuous registration records, regional sample surveys and various government sources, such as maternity clinics, hospitals and burials. These statistics are gathered together by the National Statistical Institute, created in 1967 and granted administrative autonomy in September 1977. Development planning of the country as a whole lies within the prerogative of the Office of the President. To the latter is attached a coordinating unit whose task is to collaborate with planning sub-units in the different regions and government departments. It is up to this unit to promote the necessary analyses and outlines

---

(1) Salongo (daily), 6 December 1972, Kinshasa.

(2) Salongo (daily), 6 December 1972, Kinshasa.

(3) Within the Faculty of Economics.

for future plans and programmes.

2.2 The prospects

With a view to achieving the national goal of desired births, Zaire's authorities have initiated family planning activities which, to date, are limited to hospitals and maternity clinics in the capital city. It is anticipated that these activities will be extended progressively to other urban centres and to the rural areas. Clearly, the time lag will be considerable between an effective programme and the achievement of a controlled population growth rate, let alone the articulation of the concept of desired births. Indeed, it has been remarked with some justification that "desired births" is a rather cumbersome title, since what may be desirable for the government is not necessarily desirable for parents. Also, in Africa, one has to contend with extended family conditions; a nuclear household might like to have fewer children but the uncles and grandparents may be pushing the parents to have more.

It must be emphasized that in stating a policy, underlying it should be a scientific and humane rationale. In so far as Zaire's demography is concerned, this study has observed that, by the early seventies, the scientific foundations were not yet adequate for the calculation of detailed targets for future demographic parameters.(1) The total population figure is still an issue; overall fertility trends and low fertility in certain areas still require investigation before definite conclusions can be drawn. Zaire remains in a position where it is difficult to appraise with confidence, for example, how many births should be averted between 1980 and 2000, in urban centres or in the whole country, to attain specified birth or growth rates. Also, as Stamper has observed, government officials may have every intention of extending family planning programmes, but may consider it wise to talk only of expanding maternal and health services.(2) In such a

---

(1) For discussion on population policies and recent experience, see Berelson, B. et al. (eds.): Population Planning and Population Programmes; University Press of Chicago, Chicago, 1966; and also Mauldin, W.P., Measurement and Evaluation of National Family Planning Programmes; Demography, IV, No. 1, 1967; Jaffe, A.J., Population Trends and Controls in Underdeveloped Countries: in Population Control, Duke University School of Law, USA, 1961, p. 132-159.

(2) Stamper, B.M.: Population and Planning in Developing Countries; op. cit., p. 11.

context, it is not the title given for population control which matters as much as the immediate and future prospects of its achievement.(1)

Nevertheless, as the present study has demonstrated, there are clear indications that Zaire's population is currently growing at a very rapid rate, with vital socio-economic implications. It is thus imperative that most urgent efforts be made to ascertain the true levels of components of growth and trends, so as to facilitate the formulation of precise objectives for policy measures and a national strategy for development. It may well be remarked that population policy in the narrow sense may be defined as the measures taken to achieve a particular population target or goal; this may be termed the positive approach. There is, also, the passive approach, in which nature is allowed, as it were, to take its course, and supported by those social and economic measures best suited to these 'natural' demographic patterns; policy is thus geared to serve demographic trends and not to change them. Zaire's policy of desired births would appear to follow this second approach. It should, at this juncture, be emphasized that, given Zaire's enormous resources, the problem is not that of attaining an "optimum population size", but rather that of reconciling population growth and socio-economic change.(2)

The experience of most developing countries has shown that it is crucial to remember that the family sizes desired by individual couples are much higher than would be consistent with the demographic goals of development programmes. Moreover, family planning programmes are obviously not the only means by which governments can hope to curb rapid population growth. Other factors, such as increased age at marriage, increased educational enrolment, urbanization, expansion of modern industry and employment of women in wage-earning jobs, are associated with fertility decline and could be promoted by the government. It is clear that, even if fully adopted and successfully

---

(1) On the development of the ethic of population control, see Margaret Mead in Singer, S.F. (ed.), Is There an Optimum Level of Population?: a Population Council Book, McGraw-Hill Book Co., New York, 1971.

(2) Spengler, J.J. attempted to define optimum population by applying the economic concept of optimizing scarce inputs and outputs; thus "a population is of optimum size when its welfare function takes as high a value as is attainable, given man's outer and inner environments". See Singer, S.F. (ed.): Is There an Optimum Level of Population?; op. cit., p. 289.

implemented, the policy of desired births cannot relieve the pressure on socio-economic development created by current population trends for the foreseeable future. Zaire's population will continue to grow at a rate approximating 3 per cent per annum. In fact, no government can bring about fertility decline; governmental policies can only serve to facilitate developments which are already under way.

Among the primary difficulties inherent in such a task, as shown by experience, those of a cultural nature predominate.(1) These are related to the weight of tradition, the inertia of pro-natalist attitudes built into the family system over centuries, the lack of population education, etc. This is especially true in the rural areas of Zaire, where the current search for authenticity serves to validate the large family as protection against hardship in old age in the absence of radical new schemes of social welfare. There are secondary, economic difficulties, related to the cost of the programmes - the competition for funds, not only with other medical services but also with other sectors in socio-economic development. Zaire, with all of its resources, should be able for the main part to solve these problems itself; but it has first to solve its organizational problems. Planning and coordination in the country have, to date, been rather unsuccessful, and difficulties in this area are likely to continue, less because of the vast size of the country than as a result of the attitude of the present leadership vis-a-vis development planning.(2) However, recent attempts to reactivate national development planning seem to have been more favourably received. It is to be hoped that this marks the end of an era which has already cast its shadow a long way ahead.

---

(1) For an interesting discussion on these experiences, see especially Berelson, B.: The Present State of Family Planning Programmes, in Singer, S.F. (ed.); op. cit..

(2) For further discussion of development planning in Zaire, see notably Comeliau, C.: Pour une strategie de la planification au Congo, in Cahiers économiques et sociaux, IRES, Kinshasa, V, II, 2-3, sept. 1969. Comeliau, C.: Conditions de planification du développement: l'example du Congo; Paris-La-Haye, Mouton, 1969. Mutatayi, V.: L'économie congolaise et la planification du développement, in Congo-Afrique, CEPAS, Kinshasa, No. 48, octobre 1970.

CONCLUSION OF PART FOUR

The post-Independence population of Zaire shares in common with populations of most developing countries a high rate of growth resulting from natural increase, a high dependency ratio owing to rising life expectancy and continuous rejuvenation of the age structure; and a rapid growth of urban settlements further increases discrepancies in the regional distribution of the population. Available data suggest that such trends are also experienced, though with lesser intensity, by those areas of Zaire previously characterized by relatively low fertility.

1. The initial chapter of Part Four of this study attempted to appraise the result of the population enumeration of 1970, officially the first held since Independence. In this connection, an examination was made of the impact of migration during the immediate post-Independence decade and of the renovation of the continuous registration system in the second half of the sixties, and also the lost population count of 1968. It was noted that, despite serious shortcomings, especially the failure to collect data other than population totals, the 1970 enumeration result was fairly consistent with the 1958 enumeration as well as the 1968 count; all such enumerations were essentially summations of the registered population. But further investigations have also shown that in reporting 21.6 million as the total population of Zaire, the 1970 enumeration very probably overstated the country's inhabitants, since this figure exceeded by about 4 million or 22 per cent the highest expectation based on the 1958-8 demographic survey. Even though that expectation rested on parameters which understated Zaire population growth momentum, an excess still remains after a reasonable adjustment of the death and birth rates for the intervening period.

2. Given serious limitations in the data collected during the 1970 enumeration, the evaluation of reported results has required a revision of previous projections to 1970, all of which were based on unadjusted statistics of the single-round sample survey of 1955-8. Applying the most recent techniques of computation, and allowing for unrecorded

immigration, the present study suggested that by mid-1970 the total population of Zaire was about 19,955,000 persons. This estimate was obtained with the medium projection intended to represent the most probable trend of population growth during the period 1956-70. The population total thus estimated appeared fairly close to the figures arrived at independently by Boute and de Saint Moulin.

3. An important observation is that the figure of 19,955,000 persons estimated as the total population for Zaire in 1970 appears 7.8 per cent below the 21.6 million persons reported from the enumeration of 1970 and 13.2 per cent in excess of the 17.7 million persons anticipated. It has been found that any attempt to match the adjusted estimates from the 1955-8 survey with the results of the 1970 enumeration would have required highly improbable trends in the components of growth - i.e. mortality, fertility and migration. There was some evidence that the population model selected by Romaniuk in the analysis of the 1955-8 survey may have yielded too high mortality and too low fertility estimates; but not until a complete and reliable census has been taken will it be possible to determine conclusively where the error lay. However, the existing discrepancy should not obscure the fact that by 1970, Zaire had already entered its era of "population explosion", as the estimated rate of growth had increased to about 3 per cent per annum, due not to migration from abroad but to a high rate of natural increase - in the order of 2.7 per cent for the country as a whole.

4. As a consequence of certain inadequacies in the base data for 1970, we have felt justified in discussing the future population of Zaire to the turn of the century solely on the basis of the medium variant of the projections. Computing these projections with hypotheses of negligible out-migration and little immigration, with mortality declining at the rate of 0.5 years' annual gain in life expectancy at birth, and with total fertility rate declining from 6.5 in 1970 to 4.5 in 2005, the total population of Zaire will be just over 48 million by the turn of the century. In other words, the 1970 population total will be double during the five-year period 1990-95 when it will approximate 40 million persons. All the evidence points

to the fact that, for most of the intervening period, Zaire will undergo an upsurge in the number of births and a continuous rejuvenation of its population, especially in the school- and prime working-age groups.

5. Projected population estimates suggest important implications, as they indicate that until the beginning of the next century, the entire population will grow at an annual rate between 2.7 and 2.9 per cent, unless anything radical happens to alter these trends. Some socio-economic implications of these trends have been discussed. On a national basis, Zaire will have to cope with more than half a million new urban residents each year, a development which will imply continuous provision for housing, roads, electricity, water supply and other urban infrastructures. Even if the gross domestic product was to increase by 5 per cent annually, which is doubtful, the population growth rate of 2.7 per cent per annum would imply a continuously declining per capita increase in gross domestic product. In the absence of radical improvements in the agricultural sector, the situation of both rural and urban populations may well go from bad to worse. Education, employment and health systems will have to be adjusted to meet the considerable burden imposed by the increasingly youthful composition of the population. In education, for example, it has been estimated that, simply to maintain the 1970 level of enrolment, the infrastructure will have to be expanded by one-third every decade. The labour force, it was noted, will increase at the same rate as total population, and the increase could be faster for a period of several years, should birth rates subside; in any event, it has been estimated that between 1970 and 2000 about one-third of a million new jobs will have to be generated each year. Finally, just to maintain the estimated situation of 228 persons per hospital bed (a situation already less favourable than a decade earlier), the number of hospital beds will have to be increased by about 28 per cent per annum, entailing further expansion of medical infrastructures, personnel and supplies. These are just some of the problems posed by current population growth trends.

6. Finally, it must be emphasized that any decrease in population growth will certainly reduce population pressure with regard to the

socio-economic problems touched on above. The more so as Zaire's vast land area and resources - mineral, agricultural and energy - can provide real affluence for many times more than its present population, if properly planned and developed. But any planning for the future must, clearly, be predicated on a thorough understanding of the conditions to be met and the objectives to be achieved. The President of Zaire has repeatedly made reference to "l'économie zairoise au service de l'homme zairois" or the economy of Zaire at the service of the Zairean people. It could well be that the population question is so crucial to the resolution of other matters that it should be brought to the forefront of any national development plan. There appears to be no good reason why this intellectual and moral challenge should not be met.

APPENDICES

APPENDIX A
PRESENT NAMES OF TOWNS, RIVERS AND ADMINISTRATIVE DIVISIONS OF ZAIRE AND THEIR CORRESPONDING NAMES IN COLONIAL PERIOD

I. NAMES OF TOWNS

Present Names	Colonial Names	Present Names	Colonial Names
Bambili :	Bomokandi	Lubao :	Sentery
Bandundu :	Banningville	Lubumbashi :	Elisabethville
Bukavu :	Costermansville	Lukutu :	Elisabetha
Dibaya :	Bakete	Lusanga :	Leverville
Ilebo :	Port-Francqui	Makanza	Nouvelle-Anvers
Isiro :	Paulis	Mbandaka :	Coquilhatville
Kalemie :	Albertville	Mbanza-Ngungu :	Thysville
Kananga :	Luluabourg	Mbuji-Mayi :	Bakwanga
Kinshasa :	Léopoldville	Moba :	Baudoinville
Kisangani :	Stanleyville	Mobayi :	Banzyville
Likasi :	Jadotville	Ubundu :	Ponthierville

II. NAMES OF RIVERS AND LAKES

Present Names	Colonial Names
Zaire River :	Congo and Lualaba Rivers
Pool Malebo :	Stanley Pool
Lake Mobutu :	Lake Albert
Lake Amin :	Lake Edward

III. NAMES OF THE ADMINISTRATIVE DIVISIONS

Present Names	Colonial Names
Region :	Province
Sub-Region :	District
Zone :	Territoire or Commune
Centre :	Extra-Customary Centre
Collectivity :	Sector, Chiefdom or Ward (urban)
Haut-Zaire :	Province Orientale

APPENDIX B1

ESTIMATED SLAVE EXPORTS FROM CONGO BY EUROPEAN TRADERS

(a) Estimates of shipment from the west coast:		Total
16th century	7,000 slaves each year	700,000
17th century	15,000 slaves each year	1,500,000
18th century	30,000 slaves each year	3,000,000
1800 - 1850	150,000 slaves each year	7,500,000
1850 - 1860	50,000 slaves each year	500,000
1860 - 1885	2,000 slaves each year	50,000
		13,250,000

(b) Estimates of loss and survivorship:	%
Deaths during capture, march and storage*	20
Deaths during ocean crossing	40
Deaths within the first year overseas	30
Survivors after one year overseas	30
	100

* To be added to reported exports for total estimates of area's depopulation through the slave trade operations.

Source: RINCHON, P.D.; op.cit. pp.133, 224-5.

ESTIMATED SLAVE EXPORTS FROM THE EAST COAST OF AFRICA BY ARABS

Around 1864: 10,000 slaves sold at Fezzan(Sudan) each year;
15,000 natives killed in the raids annually;
50,000 (proxy) captured in the Upper Nile valley annually.

Oct. 1873-Oct.1874:
32,768 slaves sold at Mombasa (ref. Holmwood).

Toward 1874:
4,000 slaves captured each year in the lake regions and sold on the coast of Arabia (ref.Rigby).
19,000 slaves captured in Nyassa region (ref. Rigby).
20,000 slaves crossed Tanganika (ref.Young).
6,000 slaves taken to Zanzibar via Mozambique canal (ref. Mullens).
24,000 slaves, in all, sold at Mozambique each year.

Source: L'Afrique et la conférence géographique de Bruxelles; by Banning, E.; Bruxelles 1878.

APPENDIX B2

ESTIMATED SLAVE IMPORTS INTO THE AMERICAS, BY IMPORTING REGION, 1451-1870 (000 OMITTED)

Region and Country	1451-1600	1601-1700	1701-1810	1811-70	Total
British North America	-	-	348.0	51.0	399.0
Spanish America	75.0	292.5	578.6	606.0	1,552.1
British Caribbean	-	263.7	1,401.3	-	1,665.0
Jamaica	-	85.1	662.4	-	747.5
Barbados	-	134.5	252.5	-	387.0
Leeward Is.	-	44.1	301.9	-	346.0
St. Vincent, St. Lucia, Tobago, & Dominica	-	-	70.1	-	70.1
Trinidad	-	-	22.4	-	22.4
Grenada	-	-	67.0	-	67.0
Other BWI	-	-	25.0	-	25.0
French Caribbean	-	155.8	1,348.4	96.0	1,600.2
Saint Domingue	-	74.6	789.7	-	864.3
Martinique	-	66.5	258.3	41.0	365.8
Guadeloupe	-	12.7	237.1	41.0	290.8
Louisiana	-	-	28.3	-	28.3
French Guiana	-	2.0	35.0	14.0	51.0
Dutch Caribbean	-	40.0	460.0	-	500.0
Danish Caribbean	-	4.0	24.0	-	28.0
Brazil	50.0	560.0	1,891.4	1,145.4	3,646.8
Old World	149.9	25.1	-	-	175.0
Europe	48.8	1.2	-	-	50.0
Sao Thome	76.1	23.9	-	-	100.0
Atlantic Is.	25.0	-	-	-	25.0
Total	274.9	1,341.1	6,051.7	1,898.4	9,566.1
Annual Average	1.8	13.4	55.0	31.6	22.8
Mean annual rate of increase*	-	1.7%	1.8%	-0.1%	

* These figures represent the mean annual rates of increase from 1451-75 to 1601-25, from 1601-25 to 1701-20, and from 1701-20 to 1811-20.

Source: CURTIN, P.D.; The Atlantic Slave Trade; op.cit., p.268.-

APPENDIX B3

DISTRIBUTION OF VILLAGES BY NUMBER OF INHABITANTS, ZAIRE 1956

NUMBER OF INHABITANTS	NUMBER OF GROUPS	SAMPLE GROUPS	%	% TOTAL VILLAGES GROUPS	% TOTAL VILLAGES SAMPLE
0 - 49	6,681	582	8.7	14.5	13.0
50 - 99	10,181	856	9.4	22.0	21.4
100 - 149	8,496	812	9.6	18.6	18.2
150 - 199	5,927	586	9.9	12.8	13.1
200 - 249	4,448	409	9.9	9.0	9.1
250 - 299	2,840	311	11.0	6.1	7.0
300 - 349	1,997	188	9.4	4.3	4.2
350 - 399	1,452	149	10.3	3.1	3.3
400 - 449	1,309	113	8.6	2.8	2.5
450 - 499	728	81	11.1	1.6	1.8
500 - 549	568	60	10.6	1.2	1.3
550 - 599	345	36	10.4	0.7	0.8
600 - 649	298	44	14.8	0.6	1.0
650 - 699	201	17	8.5	0.4	0.4
700 - 749	197	22	11.2	0.4	0.5
750 - 799	164	25	15.2	0.5	0.6
800 - 849	103	13	12.6	0.2	0.3
850 - 899	90	16	17.8	0.2	0.4
900+	479	49	10.2	1.0	1.1
TOTAL	46,202*	4,469**	9.7	100.0	100.0

* Not including ones where the survey was conducted in the second degree; villages in these ones totaled 2,045 of which 222 (10.9%) were surveyed.

** Idem for villages of ones where the sample units were coupling clusters; i.e. 2,801 villages of which 329 (11.7%) were surveyed.

APPENDIX B4

PERCENTAGE POLYGAMOUS HUSBANDS PER NUMBER OF WIVES, ZAIRE 1953

Region	2	3	4	5	6+	
Kinshasa, Bas-Zaire, Bandundu	78.5	16.5	3.2	0.9	0.9	100
Equateur	76.1	16.4	4.5	2.1	1.0	100
Haut-Zaire	75.3	17.7	4.6	1.3	1.0	100
Kivu	73.8	18.7	4.9	1.6	1.0	100
Shaba	85.2	12.3	1.8	0.5	0.2	100
Kasai-Oriental, Kasai-Occidental	73.9	18.7	4.8	1.6	1.2	100

Source: AIMO, La population congolaise en 1953; op. cit., p. 89.

APPENDIX B 5

REGIONAL DIFFERENTIALS IN MARITAL STATUS (FEMALE), ZAIRE 1955-8 SURVEY

Region and Sub-Region	All Women : Per Thousand					Married Women : Per Thousand			
	Single	Ever-Married	Married	Widowed	Divorced	Monogamous Legitimate	Monogamous de Facto	Polygamous Legitimate	Polygamous de Facto
I. REGION OF KINSHASA	98	902	820	40	42	908	51	n.a.	n.a.
II. REGION OF BAS-ZAIRE	192	808	624	135	49	737	90	n.a.	n.a.
S.R. Bas Fleuve	174	826	659	126	41	715	135	n.a.	n.a.
S.R. Cataractes	209	791	591	143	57	759	42	n.a.	n.a.
III. REGION OF BANDUNDU	125	875	694	140	41	567	99	270	64
S.R. Mai-Ndombe	104	896	717	147	32	552	147	228	73
S.R. Kwilu	130	870	672	148	50	582	109	249	60
S.R. Kwango	120	880	739	117	24	539	48	344	69
IV. REGION OF EQUATEUR	86	914	774	111	29	600	49	322	29
S.R. Equateur	75	925	764	134	27	615	38	327	20
S.R. Tshuapa	61	939	809	111	19	561	69	338	32
S.R. Mongala	95	905	756	113	36	653	52	265	30
S.R. Ubangi	107	893	767	94	32	576	35	357	32
V. REGION OF HAUT-ZAIRE	71	929	788	105	36	620	71	255	54
S.R. Tshopo	49	952	819	96	37	608	80	246	66
S.R. Bas-Uele	59	941	755	134	52	523	105	291	81
S.R. Haut-Uele	67	933	766	130	37	578	84	279	59
S.R. Ituri	111	889	813	57	19	771	14	206	9
VI. REGION OF KIVU	72	928	788	118	22	665	31	276	28
S.R. Nord-Kivu	108	892	745	124	23	720	27	236	17
S.R. Sud-Kivu	69	931	794	120	17	656	28	285	31
S.R. Maniema	32	968	833	107	28	616	38	307	39
VII. REGION OF SHABA	62	938	773	101	64	742	27	213	18
S.R. Tanganika	63	937	783	97	57	665	15	300	20
S.R. Haut-Lomani	59	941	760	125	56	675	19	280	26
S.R. Haut-Shaba	82	918	767	68	83	901	44	49	1
S.R. Lualaba	43	957	786	101	70	801	39	144	16
VIII. REGION OF KASAI-ORIENTAL	41	959	802	130	27	532	36	382	50
S.R. Kabinda	38	962	785	150	27	534	24	404	38
S.R. Sankuru	45	955	817	111	27	531	47	362	60
IX. REGION OF KASAI-OCCIDENTAL	58	942	742	166	34	620	42	304	34
S.R. Kasai	42	958	757	160	41	569	70	303	58
S.R. Lulua	71	928	731	170	28	661	18	305	16

n.a. = not available.

APPENDIX B6

REGIONAL DIFFERENTIALS IN MARITAL STATUS (MALE), ZAIRE 1955-8 SURVEY

	Region and Sub-Region	All Women: Per Thousand					Married Women: Per Thousand		
		Single	Ever-Married	Married	Widowed	Divorced	Monogamous Legitimate	Monogamous de Facto	Polygamous Legitimate and de Facto
I.	REGION OF KINSHASA	422	578	549	10	19	925	55	20
II.	REGION OF BAS-ZAIRE	319	681	648	18	15	807	100	93
	S.R. Bas-Fleuve	327	673	645	14	14	778	145	77
	S.R. Cataractes	310	690	652	22	16	841	47	112
III.	REGION OF BANDUNDU	289	711	680	18	13	692	121	187
	S.R. Mai-Ndombe	271	729	687	21	21	668	172	160
	S.R. Kwilu	297	703	671	18	14	701	129	170
	S R. Kwango	283	717	697	15	5	685	64	250
IV.	REGION OF EQUATEUR	230	770	703	30	37	746	62	192
	S.R. Equateur	221	779	689	42	48	762	47	191
	S.R. Tshuapa	234	766	698	31	37	708	89	203
	S.R. Mongala	218	782	726	26	30	784	62	154
	S.R. Ubangi	245	755	695	24	36	732	46	222
V.	REGION OF HAUT-ZAIRE	203	797	701	44	52	745	88	167
	S.R. Tshopo	207	793	709	32	52	734	96	170
	S.R. Bas-Uele	186	814	690	53	71	658	134	208
	S.R. Haut-Uele	203	797	675	59	63	716	107	177
	S.R. Ituri	215	785	728	34	23	865	18	117
VI.	REGION OF KIVU	229	771	717	26	28	802	38	160
	S.R. Nord-Kivu	251	749	706	23	20	889	32	129
	S.R. Sud-Kivu	243	757	715	22	20	794	36	170
	S.R. Maniema	182	818	731	35	52	770	48	182
VII.	REGION OF SHABA	188	812	748	31	33	845	31	124
	S.R. Tanganika	200	800	746	23	31	800	19	181
	S.R. Haut-Lomani	188	812	784	37	41	805	24	171
	S.R. Haut-Shaba	185	815	765	19	31	927	44	29
	S.R. Lualaba	175	825	755	25	45	875	41	84
VIII.	REGION OF KASAI-ORIENTAL	203	797	738	27	32	704	49	247
	S.R. Kabinda	199	801	750	25	26	713	32	255
	S.R. Sankuru	208	792	726	30	36	695	64	240
IV.	REGION OF KASAI-OCCIDENTAL	248	752	699	28	25	761	54	185
	S.R. Kasai	218	782	724	27	31	705	93	202
	S.R. Lulua	269	731	680	29	22	805	24	171

APPENDIX B 7

ABSOLUTE AND RELATIVE SIZE OF THE ECONOMICALLY ACTIVE POPULATION, ZAIRE 1955-8 SURVEY

	REGION AND SUB-REGION	POPULATION Over 15 years M & F	ECONOMICALLY ACTIVE POPULATION M & F	ECONOMICALLY ACTIVE POPULATION M.	ECONOMICALLY ACTIVE POPULATION F.*	CRUDE ACTIVITY RATE (%) M & F	CRUDE ACTIVITY RATE (%) M.	CRUDE ACTIVITY RATE (%) F.	REFINED ACTIVITY RATE (%) M & F	REFINED ACTIVITY RATE (%) M.	REFINED ACTIVITY RATE (%) F.
I.	REGION OF KINSHASA	206,378	123,646	120,296	3,350	37.2	63.1	2.4	59.9	93.9	4.3
II.	REGION OF BAS-ZAIRE	479,152	384,783	187,974	196,809	45.2	46.0	44.5	80.3	84.7	76.5
	S.R. Bas-Fleuve	245,208	197,059	103,514	93,545	47.9	51.2	44.6	80.4	86.9	74.2
	S.R. Cataractes	233,944	187,724	84,460	103,264	42.7	40.9	44.3	80.2	82.1	78.8
III.	REGION OF BANDUNDU	1,063,573	855,907	364,569	491,338	45.4	41.3	49.0	80.5	77.3	83.0
	S.R.Mai-Ndombe	156,866	121,324	54,183	67,141	44.7	44.3	47.9	77.3	75.3	79.1
	S.R. Kwilu	655,204	529,234	227,589	301,645	46.1	42.5	49.2	80.8	78.2	82.8
	S.R. Kwango	251,503	205,349	82,797	122,562	44.1	38.5	48.9	81.6	76.4	85.6
IV.	REGION OF EQUATEUR	1,135,196	903,751	437,203	466,554	51.5	51.1	51.8	79.6	81.6	77.9
	S.R. Equateur	210,248	161,310	77,531	83,779	53.4	52.6	54.2	76.7	78.3	75.4
	S.R. Tshuapa	288,087	231,580	114,127	117,453	58.6	58.6	58.5	80.4	82.4	78.6
	S.R. Mongala	319,599	255,730	125,834	129,896	49.2	49.8	48.7	80.0	83.1	77.3
	S.R. Ubangi	317,262	255,137	119,711	135,426	47.3	46.0	48.6	80.4	81.6	79.4
V.	REGION OF HAUT-ZAIRE	1,571,753	1,336,688	665,718	670,970	57.2	57.7	56.8	85.0	87.0	83.2
	S.R. Tshopo	428,215	360,749	188,873	171,876	56.8	59.3	54.3	84.2	89.0	79.6
	S.R. Bas-Uele	356,562	308,682	144,605	164,077	66.0	64.1	67.8	86.5	85.9	87.1
	S.R. Haut-Uele	419,342	362,953	176,321	186,632	62.4	61.6	63.1	86.5	87.0	86.1
	S.R. Haut-Uele	419,342	362,953	176,321	186,632	62.4	61.6	63.1	86.5	87.0	86.1
	S.R. Ituri	367,634	304,304	155,919	148,385	46.7	48.2	45.3	82.7	85.8	79.9
VI.	REGION OF KIVU	1,134,621	994,720	480,022	514,698	49.4	48.7	50.1	87.6	88.4	87.0
	S.R. Nord-Kivu	375,683	330,550	154,881	175,669	45.0	43.1	46.8	88.0	86.8	89.0
	S.R. Sud-Kivu	459,467	419,667	199,889	219,778	50.5	49.5	51.4	91.3	91.1	91.5
	S.R. Maniema	299,471	244,503	125,252	119,251	54.8	56.4	53.1	81.6	86.3	77.3
VII.	REGION OF SHABA	842,162	661,947	343,032	318,915	45.0	49.0	43.2	78.6	86.2	71.8
	S.R. Tanganika	227,916	186,188	89,745	96,443	47.3	47.8	46.9	81.6	85.7	78.3
	S.R. Haut-Lomani	271,317	225,487	103,735	121,752	51.3	49.4	53.0	83.1	83.3	82.9
	S.R. Haut-Shaba	177,719	121,581	77,622	43,959	36.7	47.0	26.4	68.4	88.4	48.9
	S.R. Lualaba	165,210	128,691	71,930	56,761	47.0	52.5	41.5	77.9	88.7	67.4
VIII.	REGION OF KASAI-ORIENTAL	595,886	494,431	216,942	277,489	50.8	47.1	54.1	83.0	81.4	84.2
	S.R. Kabinda	281,222	234,215	101,653	132,562	48.8	45.3	51.8	83.3	83.2	83.4
	S.R. Sankuru	314,664	260,216	115,289	144,927	52.7	48.8	56.4	82.7	79.9	85.1
IX.	REGION OF KASAI-OCCIDENTAL	693,892	542,046	247,624	294,422	47.2	45.3	49.0	78.1	78.1	78.1
	S.R. Kasai	300,054	240,978	108,368	132,610	48.9	46.5	51.1	80.3	80.1	80.5
	S.R. Lulua	393,838	301,068	139,256	161,812	46.0	44.5	47.4	76.4	76.6	76.3
	ZAIRE:	7,722,613	6,297,925	3,063,380	3,234,545	49.5	49.6	49.4	81.5	84.0	79.4

* Excluding 1,368 women reported as the only economically active population not engaged in agriculture.

APPENDIX B8

REGIONAL POPULATION BY BROAD AGE-GROUPS AND DEPENDENCY RATIOS, ZAIRE, 1955-8 SURVEY

Region and Sub-Region	BROAD AGE-GROUP (%)			DEPENDENT RATIO (%)	
	- 15 years	15-54	55+years	NON-WORKERS AND WORKERS	DEPENDENT AGES FORMULA
I. REGION OF KINSHASA	38.0	60.0	2.0	169	67
II. REGION OF BAS-ZAIRE	43.7	51.3	5.0	121	95
S.R. Bas-Fleuve	40.5	54.9	4.6	109	82
S.R. Cataractes	46.8	47.9	5.3	134	109
III. REGION OF BANDUNDU	43.6	52.0	4.4	120	92
S.R. Mai-Ndombe	42.2	51.9	5.9	124	93
S.R. Kwilu	42.9	53.3	3.8	117	88
S.R. Kwango	46.0	48.8	5.2	127	105
IV. REGION OF EQUATEUR	35.4	58.2	6.4	94	72
S.R. Equateur	30.4	60.3	9.3	87	66
S.R. Tshuapa	27.2	64.0	8.8	71	56
S.R. Mongala	38.5	56.3	5.2	103	78
S.R. Ubangi	41.1	54.5	4.4	111	84
V. REGION OF HAUT-ZAIRE	32.7	60.6	6.7	75	65
S.R. Tshopo	32.6	61.8	5.6	76	62
S.R. Bas-Uele	23.8	67.4	8.8	52	48
S.R. Haut-Uele	27.9	63.7	8.4	60	57
S.R. Ituri	43.5	51.6	4.9	114	94
VI. REGION OF KIVU	43.6	50.6	5.8	102	98
S.R. Nord-Kivu	48.9	46.2	4.9	122	117
S.R. Sud-Kivu	44.7	50.1	5.2	98	100
S.R. Maniema	32.9	58.6	8.5	83	71
VII. REGION OF SHABA	41.5	52.9	5.6	117	89
S.R. Tanganika	42.1	52.6	5.3	111	90
S.R. Haut-Lomani	38.3	53.5	8.2	95	87
S.R. Haut-Shaba	46.4	50.1	3.5	173	100
S.R. Lualaba	39.6	55.8	4.6	113	79
VIII. REGION OF KASAI-ORIENTAL	38.8	55.5	5.7	97	80
S.R. Kabinda	41.5	53.6	4.9	105	87
S.R. Sankuru	36.2	57.4	6.4	90	74
IX. REGION OF KASAI-OCCIDENTAL	39.5	55.7	4.8	112	80
S.R. Kasai	39.1	56.0	4.9	105	79
S.R. Lulua	39.8	55.4	4.8	117	81
ZAIRE:	39.4	55.0	5.6	102	82

APPENDIX B9

PERCENTAGE WORKING POPULATION BY STATUS AND INDUSTRY, ZAIRE 1955-8 SURVEY

	REGION & SUB-REGION	UNEMPLOYED*	SELF-EMPLOYED			SALARIED		Total Active Pop.	Ratio Male Agric/ Non-Agric.	Ratio M & F Agric/ Non-Agric.
			Female Agric.	Male Agric.	Male Non-Agric.	Non-Agric.	Non-Agric			
I.	REGION OF KINSHASA	4.6	2.7	2.2	6.3	83.6	0.6	100	0.03	0.06
II.	REGION OF BAS-ZAIRE	1.0	51.1	20.9	2.9	18.6	5.5	100	1.23	3.61
	S.R. Bas-Fleuve	1.2	47.5	17.4	2.4	24.5	7.0	100	0.91	2.67
	S.R. Cataractes	0.7	55.0	24.6	3.3	12.5	3.9	100	1.80	5.28
III.	REGION OF BANDUNDU	0.8	57.4	30.2	1.1	7.7	2.8	100	3.74	10.23
	S.R. Mai-Ndombe	1.0	55.3	27.5	1.5	9.8	4.9	100	2.88	7.79
	S.R. Kwilu	0.7	57.0	29.2	1.3	8.6	3.2	100	3.31	9.11
	S.R. Kwango	0.6	59.7	34.4	0.6	4.3	0.4	100	7.13	19.34
IV.	REGION OF EQUATEUR	0.6	51.6	30.7	0.5	8.3	8.3	100	4.43	10.29
	S.R. Equateur	0.9	51.9	28.7	1.0	11.3	6.2	100	2.84	7.07
	S.R. Tshuapa	0.6	50.7	27.1	0.3	8.4	12.9	100	4.56	10.34
	S.R. Mongala	0.6	50.8	30.9	0.4	8.8	8.5	100	4.25	9.74
	S.R. Ubangi	0.5	53.1	35.0	0.4	5.8	5.2	100	6.52	15.11
V.	REGION OF HAUT-ZAIRE	0.5	50.2	35.0	0.4	7.9	6.0	100	4.95	11.01
	S.R. Tshopo	1.0	47.7	28.6	0.6	10.3	11.8	100	3.69	8.04
	S.R. Bas-Uele	0.2	53.2	35.0	0.4	6.5	4.7	100	5.77	13.50
	S.R. Haut-Uele	0.4	51.4	37.6	0.3	6.5	3.8	100	6.12	13.72
	S.R. Ituri	0.2	48.8	39.5	0.2	8.2	3.1	100	5.10	10.94
VI.	REGION OF KIVU	0.9	51.7	25.0	0.6	13.1	8.7	100	2.46	6.26
	S.R. Nord-Kivu	0.5	53.2	27.6	0.3	7.4	11.0	100	5.05	11.99
	S.R. Sud-Kivu	1.3	52.4	23.0	0.8	13.1	9.4	100	2.34	6.12
	S.R. Maniema	0.8	48.8	24.8	0.7	20.8	4.1	100	1.35	3.62
VII.	RLGION OF SHABA	0.6	48.2	29.9	0.7	17.5	3.1	100	1.82	4.47
	S.R. Tanganika	0.5	51.8	32.5	0.4	13.4	1.4	100	2.45	6.20
	S.R. Haut-Limani	0.4	54.0	34.6	0.4	6.8	3.8	100	5.34	12.83
	S.R. Haut-Shaba	1.0	36.1	21.6	1.3	35.0	5.0	100	0.73	1.73
	S.R. Lualaba	0.7	44.1	26.1	1.1	25.4	2.6	100	1.08	2.75
VIII.	REGION OF KASAI-ORIENTAL	0.5	56.1	33.9	0.8	6.9	1.8	100	4.66	11.98
	S.R. Kabinda	0.5	56.5	32.3	0.9	7.9	1.8	100	3.88	10.31
	S.R. Sankuru	0.5	55.7	35.4	0.7	5.9	1.8	100	5.60	13.98
IX.	REGION OF KASAI-OCCIDENTAL	1.0	54.3	33.0	0.5	10.3	0.9	100	3.17	8.25
	S.R. Kasai	0.6	55.0	32.3	0.5	10.9	0.7	100	2.91	7.76
	S.R. Lulua	1.4	53.7	33.6	0.5	9.7	1.1	100	3.41	8.68
	ZAIRE:	0.8	51.3	29.9	0.9	12.0	5.1	100	2.71	6.70

APPENDIX B10

TRENDS IN SCHOOL ENROLMENTS; ZAIRE, 1944-57

Year	Official or Subsidized Schools	Non-Subsidized Schools	Total
1944 :	320,000	444,000	764,000
1945 :	353,000	439,000	792,000
1946 :	373,000	511,000	884,000
1947 :	416,000	515,000	931,000
1948 :	438,000	446,000	879,000
1949 :	451,000	486,000	937,000
1950 :	484,000	486,000	970,000
1951 :	520,000	452,000	972,000
1952 :	555,000	430,000	985,000
1953 :	679,000	374,000	1,053,000
1954 :	755,000	358,000	1,113,000
1955 :	890,000	358,000	1,258,000
1956 :	1,046,000	378,000	1,424,000
1957 :	1,302,000	390,000	1,698,000

Source: Van der Elst, G.: Populations des écoles du Congo Belge avant l'indépendance; op. cit., p. 11.

APPENDIX B11

INDICES OF INCREASE IN TOTAL POPULATION, CHILDREN AND SCHOOL ENROLMENT; ZAIRE, 1944-57 (Index 1944 = 100)

Year	Total Population*	Total Children**	School Enrolment
1944	100	100	100
1945	101	101	104
1946	103	103	116
1947	104	104	122
1948	105	106	115
1949	107	108	123
1950	110	111	127
1951	112	114	129
1952	114	117	129
1953	116	120	137
1954	119	124	146
1955	121	128	165
1956	124	133	187
1957	127	138	222

Source: Van der Elst, G.: Populations des écoles du Congo Belge avant l'indépendance; op. cit., p. 11.

* Based on the annual enumerations

** Aged under 18 years

APPENDIX B12

DISTRIBUTION POPULATION LITERATE AND WITH SOME SCHOOLING BY SEX AND REGION, ZAIRE, 1955-8 SURVEY

	REGION AND SUB-REGION	% Pop. ten Years and over able to read and write			% Pop. ten Years and over who received education		
		M.	F.	M.& F.	M.	F.	M.& F.
I.	REGION OF KINSHASA	57.9	18.7	42.7	59.3	22.7	45.1
II.	REGION OF BAS-ZAIRE	43.4	11.7	29.6	52.1	12.8	31.4
	S.R. Bas-Fleuve	41.9	15.7	34.4	49.3	20.3	39.4
	S.R. Cataractes	44.9	7.7	24.7	55.0	15.4	33.5
III.	REGION OF BANDUNDU	31.1	4.3	16.7	42.6	10.6	25.4
	S.R. Mai-Ndombe	36.2	4.5	19.6	48.4	11.2	28.9
	S.R. Kwilu	34.7	4.8	18.5	44.0	10.1	25.7
	S.R. Kasango	22.3	3.6	12.0	35.5	10.4	21.7
IV.	REGION OF EQUATEUR	27.2	1.8	13.3	32.4	3.1	17.3
	S.R. Equateur	33.4	3.5	17.8	36.5	4.9	20.2
	S.R. Tshuapa	29.0	0.8	12.0	29.0	1.6	14.9
	S.R. Mongala	28.2	2.5	14.9	35.4	4.8	19.7
	S.R. Ubangi	20.3	0.7	10.1	29.8	1.8	15.2
V.	REGION OF HAUT-ZAIRE	25.4	3.7	14.4	28.4	5.5	16.8
	S.R. Tshopo	32.3	4.1	18.2	35.2	5.7	20.5
	S.R. Bas-Uele	21.7	3.6	12.3	21.7	3.6	12.3
	S.R. Haut-Uele	20.6	2.6	11.5	23.1	3.4	13.1
	S.R. Ituri	26.2	4.5	15.3	31.9	9.1	20.6
VI.	REGION OF KIVU	28.4	3.0	15.5	30.8	3.1	17.3
	S.R. Nord-Kivu	26.7	3.0	14.6	30.6	4.1	17.4
	S.R. Sud-Kivu	23.4	2.1	12.7	26.3	2.8	14.3
	S.R. Maniema	38.0	4.4	21.2	39.0	6.1	21.9
VII.	REGION OF SHABA	35.0	5.2	19.6	37.9	6.5	21.5
	S.R. Tanganika	35.7	4.2	19.0	41.4	7.0	23.2
	S.R. Haut-Lomami	27.3	1.6	13.6	33.4	3.0	17.4
	S.R. Haut-Shaba	45.6	12.2	29.6	50.7	16.2	34.1
	S.R. Lualaba	36.1	7.3	21.8	41.0	9.9	25.4
VIII.	REGION OF KASAI-ORIENTAL	33.9	3.0	17.4	40.6	5.6	21.9
	S.R. Kabinda	37.4	3.7	19.1	43.4	6.3	23.2
	S.R. Sankuru	30.4	2.3	15.6	37.9	5.0	20.6
IX.	REGION OF KASAI-OCCIDENTAL	33.2	4.4	18.0	42.8	8.2	24.6
	S.R. Kasai	33.4	2.8	17.1	41.8	7.5	23.7
	S.R. Lulua	33.0	5.9	18.8	43.8	8.9	25.6
	ZAIRE:	31.3	4.2	17.5	36.3	6.9	21.2

APPENDIX B 13

RURAL AGE-SEX DISTRIBUTIONS AND SEX-AGE RATIOS OF THE POPULATION, ZAIRE, 1955-8 SURVEY

AGE	Males		Females		Both Sexes		Sex-Ratios	Age-Ratios	
	Numbers	%	Numbers	%	Numbers	%		Males	Females
0-1	187,560	1.9	196,434	2.0	383,494	3.9	95.5	-	-
1-4	592,390	5.9	625,226	6.3	1,217,616	12.2	94.7	-	-
5-9	638,037	6.4	660,857	6.7	1,298,894	13.0	96.5	95.0	104.4
10-14	562,647	5.7	444,448	4.6	1,007,095	10.3	126.6	117.8	87.0
15-19	317,553	3.2	361,108	3.6	678,661	6.8	87.9	75.6	87.4
20-24	277,144	2.8	382,233	3.8	659,377	6.6	73.3	107.3	94.5
30-34	329,221	3.3	556,713	5.6	885,934	8.9	59.1	106.0	128.8
35-39	295,651	3.0	420,876	4.2	716,527	7.2	70.2	96.6	92.7
40-44	282,661	2.8	350,891	3.6	633,552	6.4	80.6	100.0	100.0
45-49	269,672	2.7	280,908	2.8	550,580	5.5	96.0	100.0	100.0
50-54	256,682	2.6	210,922	2.1	467,604	4.7	121.7	83.1	70.0
55+	347,795	3.5	321,598	3.2	669,353	6.7	108.1	-	-
TOTAL	4,682,242	47.1	5,256,099	52.9	9,938,341	100.0	89.1		

APPENDIX B 14

MIXED AGE-SEX DISTRIBUTIONS AND SEX-AGE RATIOS OF THE POPULATION, ZAIRE, 1955-8 SURVEY

AGE	Males		Females		Both Sexes		Sex-Ratios	Age-Ratios	
	Numbers	%	Numbers	%	Numbers	%		Males	Females
0-1	37,166	2.4	37,152	2.4	74,318	4.8	100.0	-	-
1-4	109,179	6.8	114,539	7.2	223,718	14.0	95.3	-	-
5-9	91,632	5.8	99,148	6.3	190,780	12.1	92.4	86.0	96.9
10-14	66,733	4.3	52,928	3.3	119,661	7.6	126.1	97.9	65.7
15-19	44,707	2.8	61,948	3.9	106,655	6.7	72.2	56.4	85.3
20-24	91,754	5.8	92,244	5.8	183,998	11.6	99.5	117.1	119.2
25-29	112,007	7.1	92,849	5.9	204,856	13.0	120.6	116.2	106.3
30-34	100,988	6.4	82,458	5.2	183,446	11.6	122.5	110.1	121.9
35-39	71,420	4.5	42,458	2.7	113,878	7.2	168.2	92.4	75.7
40-44	53,625	3.4	29,779	1.9	83,404	5.3	180.1	100.0	99.7
45-49	35,833	2.3	17,263	1.1	53,096	3.4	207.6	100.0	100.0
50-54	18,039	1.1	4,747	0.3	22,785	1.4	380.1	77.3	35.2
55+	10,855	0.7	9,687	0.6	20,542	1.3	112.0	-	-
TOTAL	843,938	53.4	737,039	46.6	1,580,977	100.0	114.5		

APPENDIX B 15

URBAN AGE-SEX DISTRIBUTIONS AND SEX-AGE RATIOS OF THE POPULATION, ZAIRE, 1955-8 SURVEY

AGE	Males		Females		Both Sexes		Sex-Ratios	Age-Ratios	
	Numbers	%	Numbers	%	Numbers	%		Males	Females
0-1	31,610	2.6	31,977	2.6	62,887	5.2	101.1	-	-
1-4	92,945	7.7	94,480	7.7	187,425	15.4	98.4	-	-
5-9	73,779	6.1	77,891	6.4	151,670	12.5	94.7	83.7	93.4
10-14	51,817	4.3	41,102	3.4	92,919	7.7	126.1	90.7	65.4
15-19	40,540	3.3	47,878	3.9	88,418	7.2	84.7	67.4	87.5
20-24	68,434	5.6	68,317	5.6	136,751	11.2	100.2	104.8	119.3
25-29	90,069	7.4	66,693	5.5	156,762	12.9	135.1	131.2	109.2
30-34	68,819	5.7	53,776	4.4	122,595	10.1	128.0	100.8	115.1
35-39	46,445	3.8	26,735	2.2	73,150	6.0	173.6	88.4	72.3
40-44	36,251	3.0	20,132	1.7	56,383	4.7	180.1	100.0	100.0
45-49	26,086	2.2	13,530	1.1	39,616	3.3	192.8	100.0	100.0
50-54	15,921	1.3	6,927	0.6	22,848	1.9	229.8	80.6	60.4
55+	13,440	1.1	9,408	0.8	22,848	1.9	142.9	-	-
TOTAL	656,126	54.1	558,146	45.9	1,214,272	100.0	117.6		

APPENDIX B16

RATIOS OF AVERAGES OF PARITY TO CUMULATIVE FERTILITY RATE (Px/Fx) FOR ZAIRE, 1955-8 SURVEY

Region and Sub-Region		15-19	20-24	25-29	30-34	35-44	45-54
I.	REGION OF KINSHASA	.90	.79	.76	.74	-	-
II.	REGION OF BAS-ZAIRE	1.18	1.17	1.14	1.20	1.21	1.10
	S.R. Bas-Fleuve	1.04	1.04	1.01	1.06	1.10	1.05
	S.R. Cataractes	1.30	1.28	1.26	1.32	1.30	1.16
III.	REGION OF BANDUNDU	1.09	1.06	.99	1.01	1.01	.93
	S.R. Mai-ndombe	.79	.86	.84	.78	.84	.77
	S.R. Kwilu	1.12	1.06	.98	1.04	1.04	.97
	S.R. Kwango	1.19	1.17	1.08	1.08	1.04	.90
IV.	REGION OF EQUATEUR	.94	.91	.80	.81	.82	.80
	S.R. Equateur	.73	.75	.63	.63	.64	.61
	S.R. Tshuapa	.91	.79	.72	.76	.78	.84
	S.R. Mongala	1.07	1.07	.91	.86	.85	.87
	S.R. Ubangi	.96	.93	.84	.87	.92	.89
V.	REGION OF HAUT-ZAIRE	.95	.97	.77	.76	.79	.78
	S.R. Tshopo	.88	.95	.81	.80	.91	.88
	S.R. Bas-Uele	.98	1.17	.89	.82	.89	.99
	S.R. Haut-Uele	.85	.99	.79	.74	.82	.86
	S.R. Ituri	1.12	.85	.68	.74	.71	.68
VI.	REGION OF KIVU	1.07	1.15	1.05	1.02	.96	
	S.R. Nord-Kivu	1.12	1.18	1.05	1.00	.92	.76
	S.R. Sud-Kivu	.95	1.18	1.09	1.12	1.02	.94
	S.R. Maniema	.92	1.06	.94	.95	.89	.94
VII.	REGION OF SHABA	.93	.85	.74	.74	.71	.62
	S.R. Tanganika	.85	.79	.70	.72	.69	.55
	S.R. Haut-Lomani	.92	.81	.72	.72	.67	.60
	S.R. Haut-Shaba	1.00	.94	.78	.81	-	-
	S.R. Lualaba	.93	.87	.75	.78	.78	.73
VIII.	REGION OF KASAI-ORIENTAL	.96	.87	.76	.78	.77	.72
	S.R. Kabinda	.84	.83	.75	.79	.75	.65
	S.R. Sankuru	1.07	.91	.76	.77	.79	.78
IX.	REGION OF KASAI-OCCIDENTAL	1.09	1.04	.92	.94	.98	.95
	S.R. Kasai	.90	.96	.90	.90	.94	.89
	S.R. Lulua	1.22	1.10	.93	.96	1.02	1.00
	ZAIRE	1.03	1.00	.88	.88	.87	.81

APPENDIX B 17

PERCENT CHILDLESS WOMEN (ALL) BY AGE GROUP FOR ZAIRE, 1955-8 DEMOGRAPHIC SURVEY

	Region or Sub-Region	15-19	20-24	25-29	30-34	35-44	45-54	55+	15+
I.	REGION OF KINSHASA	63.9	22.2	14.1	18.6	21.8	35.7	31.4	25.9
II.	REGION OF BAS-ZAIRE*	83.9	29.4	10.0	7.7	7.2	6.5	6.1	23.6
	S.R. Bas-Fleuve	76.6	22.7	11.4	11.1	11.5	9.0	7.5	23.4
	S.R. Cataractes	90.3	35.2	8.7	4.7	3.4	4.3	4.9	23.7
III.	REGION OF BANDUNDU*	85.6	26.2	13.0	10.7	9.3	8.8	8.6	21.7
	S.R. Mai-ndombe	72.6	24.6	19.4	18.0	16.6	17.8	17.6	24.2
	S.R. Kwilu	85.9	26.9	14.1	12.0	10.3	8.9	8.0	22.7
	S.R. Kwango	87.9	25.5	6.8	3.7	2.7	3.4	4.7	18.0
IV.	REGION OF EQUATEUR	84.8	37.2	29.7	29.2	29.8	28.6	20.7	34.6
	S.R. Equateur	78.3	42.7	39.1	38.7	40.7	40.0	27.8	41.4
	S.R. Tshuapa	85.4	52.8	44.1	40.5	38.4	33.0	24.7	41.7
	S.R. Mongala	85.5	32.1	22.7	25.4	27.1	26.5	17.1	31.9
	S.R. Ubangi	86.4	27.7	19.4	18.8	17.3	14.6	11.7	26.6
V.	REGION OF HAUT-ZAIRE	72.1	38.9	38.9	38.1	35.3	30.3	24.2	38.9
	S.R. Tshopo	59.3	33.5	34.4	34.3	28.6	23.3	20.4	33.9
	S.R. Bas-Uele	75.4	48.1	50.7	49.0	44.7	37.3	25.5	45.8
	S.R. Haut-Uele	75.2	44.0	46.2	48.2	44.4	36.9	27.5	45.2
	S.R. Ituri	83.6	34.8	25.1	20.2	22.3	20.0	20.8	30.5
VI.	REGION OF KIVU	65.9	15.6	12.0	11.3	11.5	11.3	14.8	11.9
	S.R. Nord-Kivu	69.1	9.6	5.3	5.1	5.6	8.3	6.0	18.3
	S.R. Sud-Kivu	67.3	14.7	7.1	5.9	5.6	4.6	3.9	16.1
	S.R. Maniema	56.5	27.1	27.9	26.5	27.0	23.5	34.3	30.9
VII.	REGION OF SHABA	60.9	23.4	20.1	22.1	21.4	23.2	21.8	26.2
	S.R. Tanganika	65.9	25.2	22.3	23.0	22.3	27.4	24.0	28.4
	S.R. Haut-Lomani	61.8	25.4	20.1	25.4	24.4	25.8	25.4	28.0
	S.R. Haut-Shaba*	57.1	18.0	14.7	15.6	15.5	14.6	23.0	21.7
	S.R. Lualaba	59.2	25.2	24.1	22.3	20.2	17.8	13.1	25.8
VIII.	REGION OF KASAI-ORIENTAL*	69.0	30.0	25.1	26.3	26.5	26.0	22.8	29.7
	S.R. Kabinda	64.1	27.0	21.5	22.7	23.7	26.3	22.2	27.3
	S.R. Sankuru	73.9	33.0	28.7	29.8	29.3	25.7	23.3	32.0
IX.	REGION OF KASAI-OCCIDENTAL*	72.1	28.0	20.6	18.4	15.7	14.0	11.4	23.2
	S.R. Kasai	70.8	29.8	19.7	18.8	16.9	15.7	12.8	23.0
	S.R. Lulua	73.1	26.6	21.3	18.1	14.7	12.7	10.3	23.5
	ZAIRE	74.0	28.1	22.1	22.4	22.3	20.5	17.6	28.4

APPENDIX B 18

BIRTH AND TOTAL FERTILITY RATES BY TYPE OF SETTLEMENTS, ZAIRE, 1955-8 SURVEY

Region or Sub-Region		% BR Adjusted for Omitted Infants			TFR for Legitimate Monogamous Women		
		Rural	Mixed	Urban	Rural	Mixed	Urban
I.	REGION OF KINSHASA	45	-	54	7.03	-	8.00
II.	REGION OF BAS-ZAIRE	46	54	58	7.80	7.87	9.08
	S.R. Bas-Fleuve	43	55	56	6.89	8.45	8.25
	S.R. Cataractes	49	53	61	8.61	7.36	9.81
III.	REGION OF BANDUNDU	48	60	56	7.29	8.37	6.83
	S.R. Mai-ndombe	43	53	52	6.92	8.66	8.09
	S.R. Kwilu	46	59	58	7.20	7.23	7.08
	S.R. Kwango	54	66	-	7.72	11.01	5.52
IV.	REGION OF EQUATEUR	37	44	46	5.87	5.11	6.20
	S.R. Equateur	30	41	41	5.12	4.66	6.03
	S.R. Tshuapa	28	32	38	4.49	2.81	4.03
	S.R. Mongala	41	48	48	6.25	6.34	5.64
	S.R. Ubangi	44	55	55	6.87	6.03	7.55
V.	REGION OF HAUT-ZAIRE	30	40	40	5.13	5.36	4.67
	S.R. Tshopo	32	41	45	5.86	4.61	5.28
	S.R. Bas-Uele	19	29	31	2.39	3.46	3.52
	S.R. Haut-Uele	22	32	34	3.73	3.85	4.10
	S.R. Ituri	42	52	49	7.59	7.60	7.45
VI.	REGION OF KIVU	52	60	63	7.00	6.70	6.43
	S.R. Nord-Kivu	56	68	70	7.91	7.64	6.75
	S.R. Sud-Kivu	58	72	68	7.64	8.67	7.24
	S.R. Maniema	33	43	53	4.19	4.79	5.58
VII.	REGION OF SHABA	48	61	60	7.03	7.86	7.85
	S.R. Tanganika	48	68	53	7.88	9.40	7.69
	S.R. Haut-Lomani	46	60	62	6.80	6.88	9.32
	S.R. Haut-Shaba	56	59	72	8.22	8.22	10.63
	S.R. Lualaba	38	56	60	4.94	6.84	6.83
VIII.	REGION OF KASAI-ORIENTAL	44	52	45	6.71	7.18	8.62
	S.R. Kabinda	46	61	58	7.33	9.33	9.62
	S.R. Sankuru	42	43	32	6.08	5.02	7.62
IX.	REGION OF KASAI-OCCIDENTAL	48	56	63	6.57	7.11	7.65
	S.R. Kasai	48	60	64	6.51	7.19	8.93
	S.R. Lulua	47	53	61	6.61	7.05	6.68
	ZAIRE	43	51	55	6.50	6.12	7.16

APPENDIX B 19

PERCENT AGE DISTRIBUTION (BOTH SEXES) FOR THE AGGREGATE LOW, MEDIUM AND HIGH FERTILITY AREAS, ZAIRE, 1955-8 SURVEY

Region or Sub-Region	0-1	1-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55+
I. LOW FERTILITY AREAS:	2.8	9.1	9.9	7.5	6.2	8.2	9.5	10.6	9.2	7.8	6.3	4.9	8.0
1. SR Equateur	3.2	10.2	9.7	7.3	5.7	6.6	8.6	8.5	9.0	8.2	7.3	6.4	9.3
2. SR Tshuapa	3.0	8.3	8.9	7.0	5.5	8.3	10.2	10.0	9.5	8.2	6.8	5.5	8.8
3. SR Tshopo	3.2	10.7	10.7	7.9	7.3	10.3	10.2	9.8	8.5	6.9	5.2	3.6	5.7
4. SR Bas-Uele	1.9	6.6	8.5	6.8	5.7	6.6	8.6	12.3	11.0	9.4	7.7	6.1	8.8
5. SR Haut-Uele	2.2	7.9	10.0	7.7	5.8	7.6	9.2	11.3	9.9	8.3	6.7	5.1	8.3
6. SR Maniema	3.3	10.8	10.7	8.1	6.7	8.9	10.1	10.7	7.4	6.2	5.0	3.7	8.4
II. MEDIUM FERTILITY AREAS:	4.2	13.2	13.3	10.0	6.7	7.2	8.7	9.4	7.0	6.0	5.1	4.2	5.0
1. SR Bas-Fleuve	4.1	14.7	12.1	9.6	9.4	10.0	10.3	8.6	5.3	4.5	3.8	3.0	4.6
2. SR Mai-ndombe	4.3	13.5	13.7	10.7	6.7	7.5	8.2	8.0	6.6	5.8	5.0	4.1	5.9
3. SR Kwilu	4.3	13.4	13.7	11.6	8.3	7.7	8.5	8.2	6.6	5.6	4.7	3.7	3.7
4. SR Mongala	3.8	12.4	13.1	9.2	6.5	7.4	9.0	8.9	7.9	6.7	5.5	4.4	5.2
5. SR Ubangi	4.0	13.2	14.2	9.7	7.2	8.1	8.5	8.9	7.7	6.2	4.7	3.2	4.4
6. SR Ituri	4.1	12.7	15.0	11.7	5.8	5.8	7.0	9.4	7.3	6.4	5.4	4.5	4.9
7. SR Tanganika	4.9	14.7	13.3	9.1	5.9	7.2	8.2	9.3	6.6	5.9	5.2	4.4	5.3
8. SR Haut-Lomami	4.3	13.6	11.9	8.5	5.5	6.6	8.4	9.6	6.7	6.1	5.6	5.0	8.2
9. SR Lualaba	4.3	14.6	12.5	8.3	5.7	7.6	9.7	11.7	7.1	5.9	4.7	3.4	4.5
10. SR Kabinda	4.5	13.6	13.9	9.5	5.4	6.1	8.6	10.2	6.4	6.0	5.6	5.2	5.0
11. SR Sankuru	4.0	11.9	11.5	8.9	4.8	6.3	9.5	11.5	7.7	6.8	5.8	4.9	6.4
12. SR Kasai	4.2	12.5	12.8	9.7	5.2	6.3	9.5	11.0	7.2	6.4	5.6	4.7	4.9
13. SR Lulua	4.1	12.7	12.9	10.1	7.4	7.1	8.7	9.5	6.9	6.1	5.3	4.4	4.8
III. HIGH FERTILITY AREAS:	4.7	15.6	14.9	10.5	7.9	8.3	8.7	8.1	5.5	4.6	3.7	2.8	4.7
1. REG. Kinshasa	5.1	14.1	11.8	7.0	7.7	13.1	14.7	9.3	5.7	4.4	3.2	1.9	2.0
2. SR Cataractes	3.8	14.8	15.4	12.8	9.4	6.2	6.4	7.6	5.7	5.0	4.2	3.4	5.3
3. SR Kwango	4.4	14.5	15.0	12.1	7.9	6.7	7.7	7.4	5.6	5.1	4.5	3.9	5.2
4. SR Nord-Kivu	4.4	16.8	16.3	11.4	8.1	8.8	7.3	6.8	5.3	4.3	3.3	2.3	4.9
5. SR Sud-Kivu	5.0	15.5	14.5	9.7	7.7	8.2	8.8	9.0	5.4	4.5	3.7	2.8	5.2
6. SR Haut-Shaba	5.4	17.4	14.8	8.9	6.4	7.9	9.9	9.8	5.4	4.5	3.5	2.6	3.5
ZAIRE	4.0	12.9	12.9	9.6	6.9	7.7	8.9	9.4	7.1	6.0	5.0	4.0	5.6

APPENDIX B20

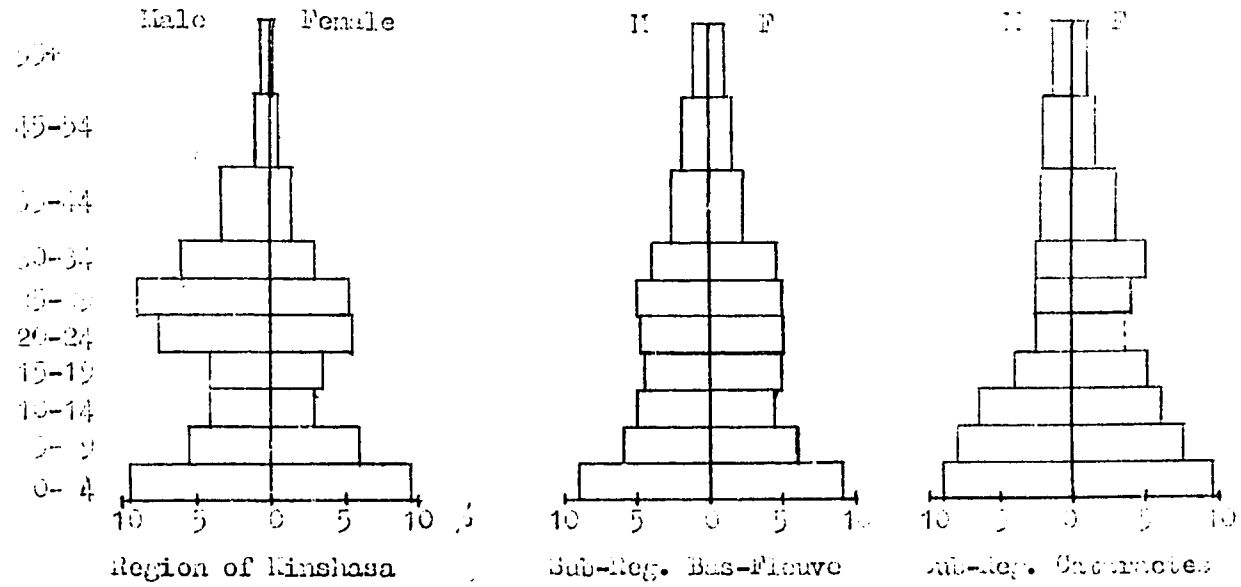
AGE-SEX POPULATIONS (%) IN THE LOW, MEDIUM AND HIGH FERTILITY AREAS, ZAIRE, 1955-8 SURVEY

Age	Low Fertility Areas				Medium Fertility Areas				High Fertility Areas			
	M	F	M + F	Sex Ratio*	M	F	M + F	Sex Ratio	M	F	M + F	Sex Ratio
0-1	1.4	1.4	2.8	97	2.1	2.1	4.2	97	2.3	2.4	4.7	97
1-4	4.4	4.6	9.0	96	6.4	6.8	13.2	95	7.6	8.0	15.6	95
5-9	4.9	4.9	9.8	100	6.5	6.8	13.3	95	7.2	7.6	14.8	95
10-14	4.4	3.1	7.5	142	5.6	4.4	10.0	127	5.7	4.9	10.6	117
15-19	2.7	3.5	6.2	76	3.2	3.4	6.6	93	3.5	4.4	7.9	79
20-24	3.8	4.5	8.3	86	3.1	4.0	7.1	78	3.7	4.6	8.3	82
25-29	4.6	4.9	9.5	93	3.9	4.8	8.7	82	4.2	4.5	8.7	94
30-34	4.6	6.0	10.6	77	3.8	5.7	9.5	67	3.6	4.5	8.1	79
35-39	4.4	4.8	9.2	92	3.0	4.0	7.0	76	2.7	2.8	5.5	100
40-44	3.9	3.9	7.8	98	2.8	3.2	6.0	86	2.4	2.2	4.6	105
45-49	3.3	3.1	6.4	108	2.6	2.5	5.1	103	2.0	1.7	3.7	114
50-54	2.7	2.2	4.9	125	2.4	1.8	4.2	133	1.6	1.2	2.8	132
55+	4.2	3.8	8.0	109	2.6	2.5	5.1	104	2.6	2.1	4.7	122
TOTAL	49.3	50.7	100.0	97	48.0	52.0	100.0	92	49.1	50.9	100.0	97

* Based on absolute figures.

APPENDIX B 21

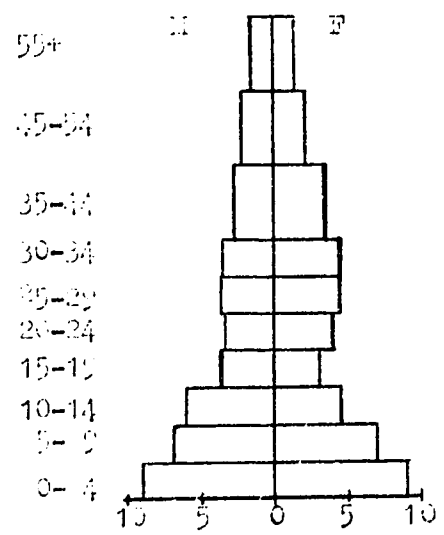
SUB-REGIONAL POPULATION PYRAMIDS; ZAIRE 1955-8 SURVEY



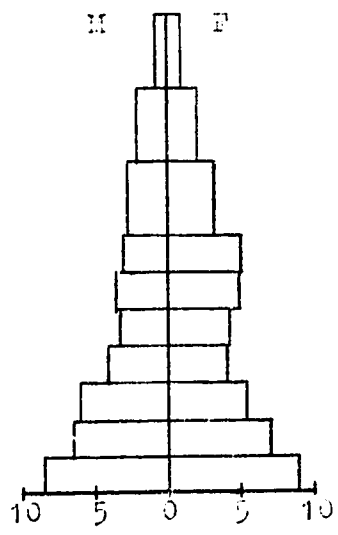
Region of Kinshasa

Sub-Reg. Bas-Fleuve

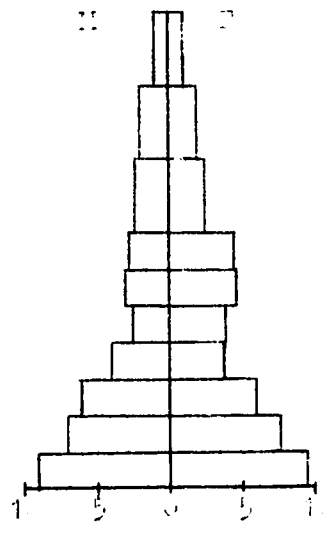
Sub-Reg. Cataractes



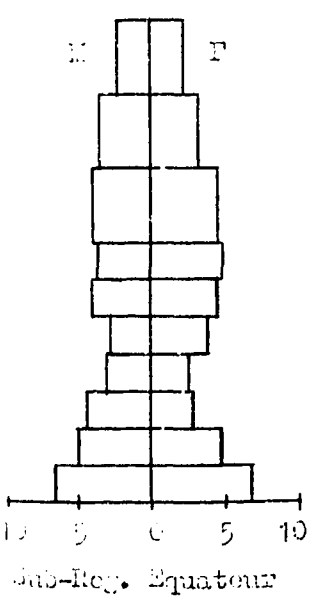
Sub-Reg. Mai-Ndombe



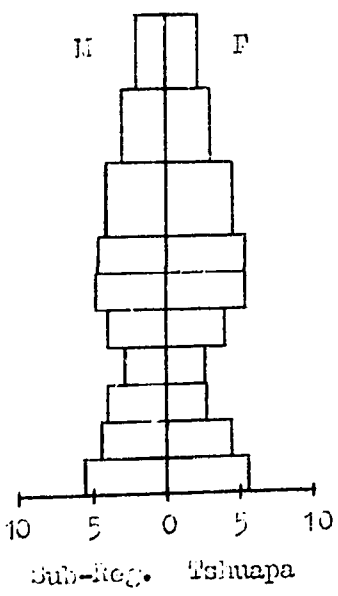
Sub-Reg. Kwilu



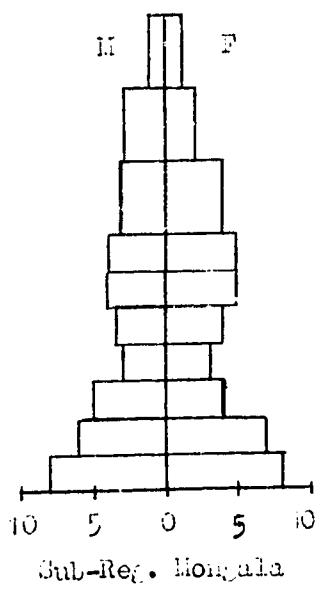
Sub-Reg. Kwango



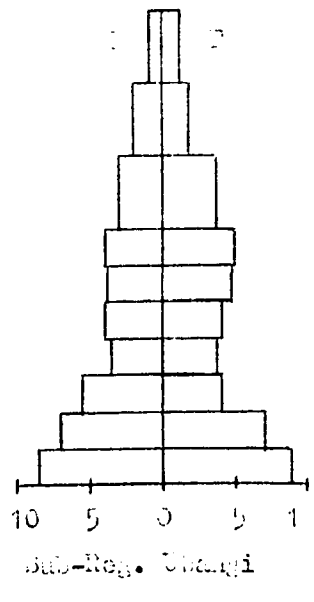
Sub-Reg. Equateur



Sub-Reg. Tshuapa

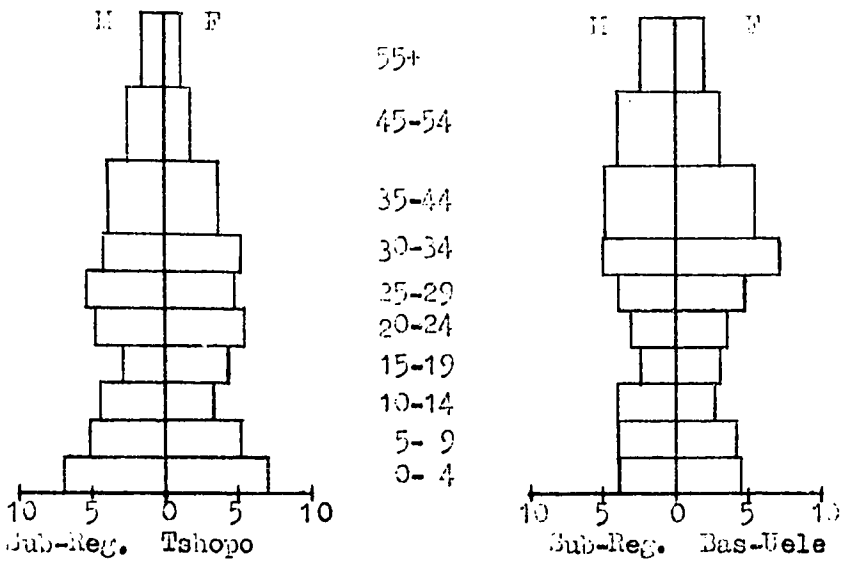


Sub-Reg. Mongala



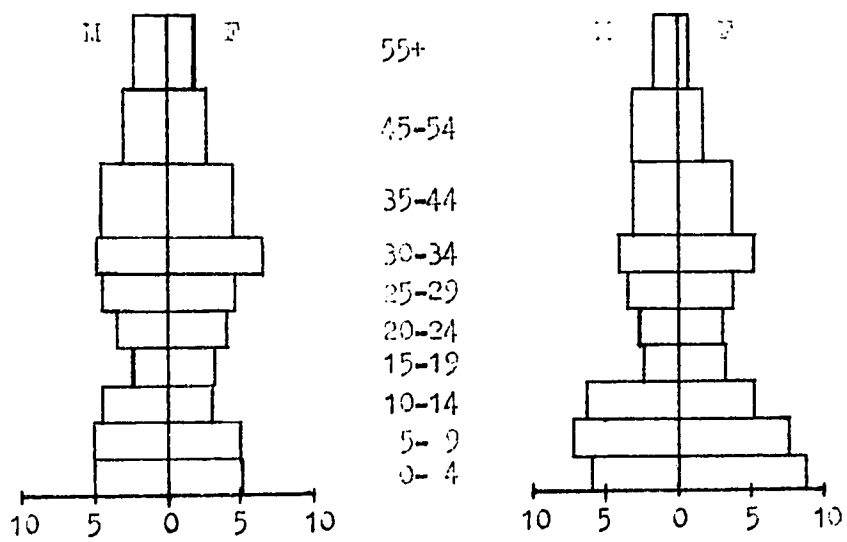
Sub-Reg. Uele

APPENDIX B 21 (Continued)



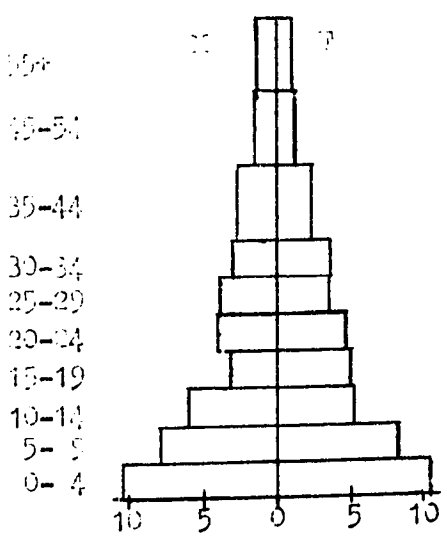
Sub-Reg. Tshopo

Sub-Reg. Bas-Uele

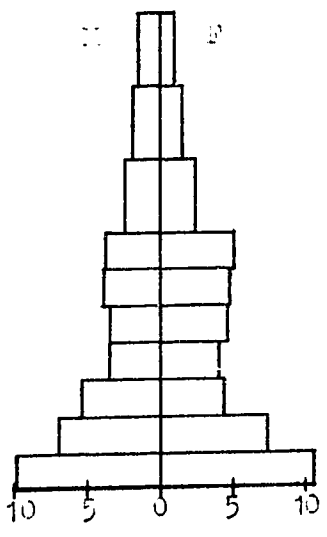


Sub-Reg. Haut-Uele

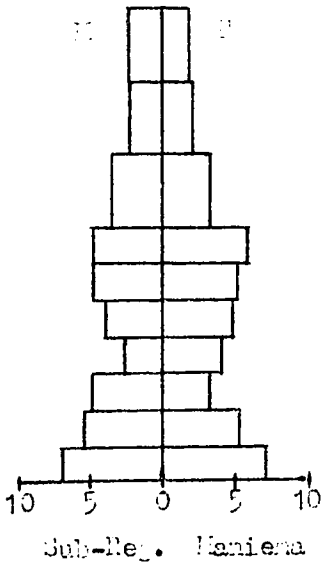
Sub-Reg. Ituri



Sub-Reg. Nord-Kivu

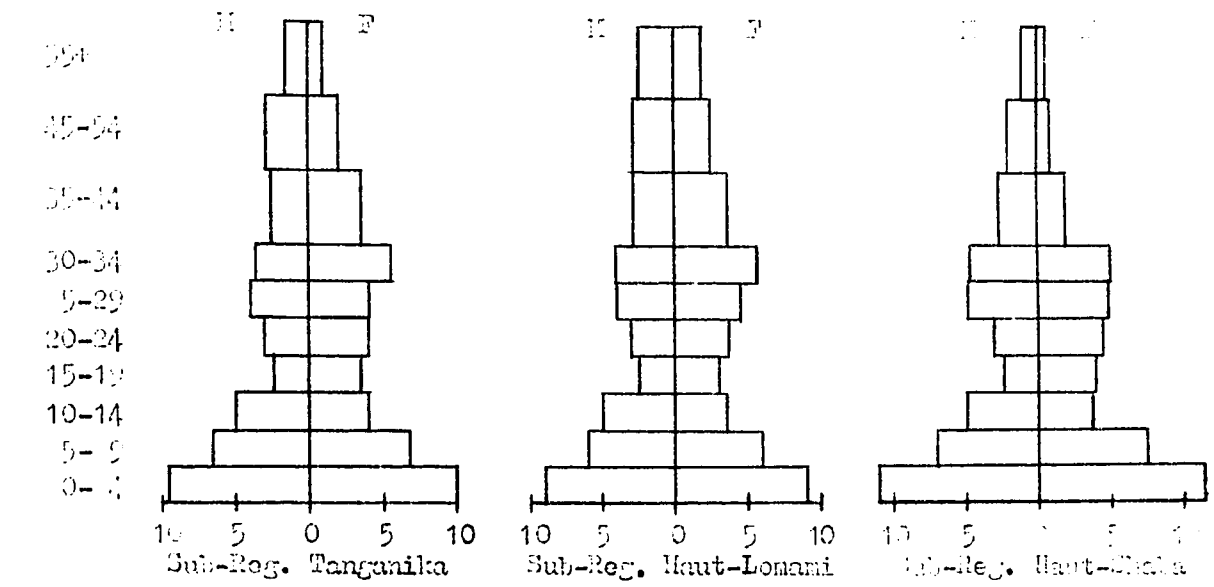


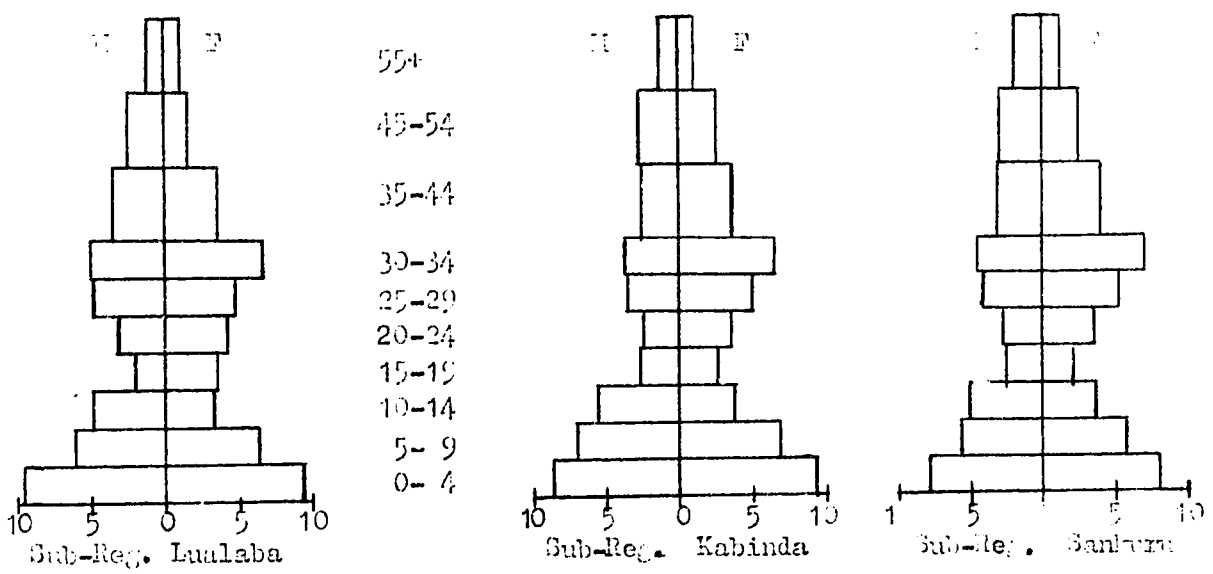
Sub-Reg. Sud-Kivu

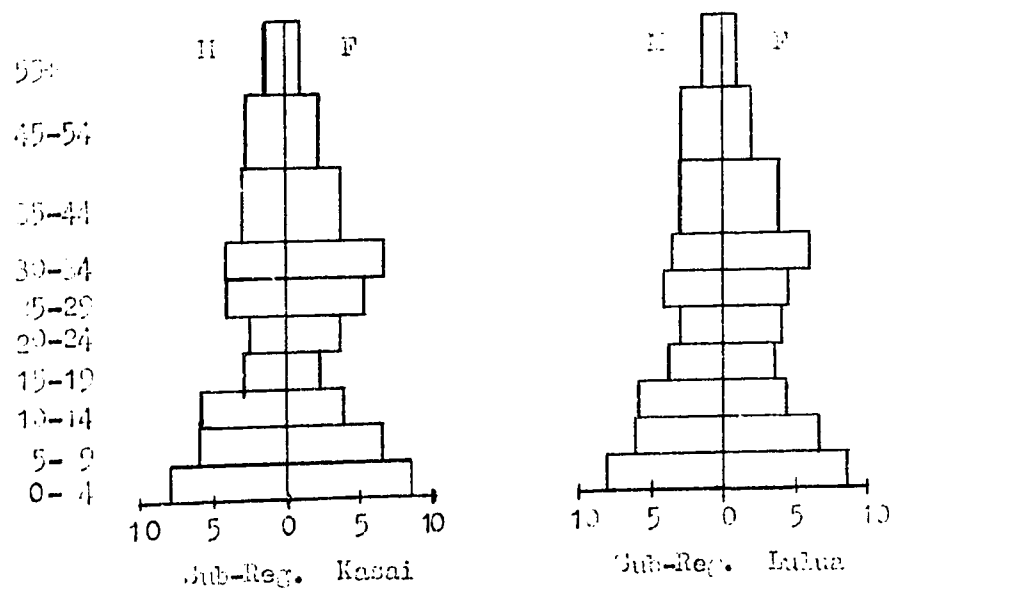


Sub-Reg. Maniema

APPENDIX B 21 (Continued)







APPENDIX C

WORKING MODEL FOR PROJECTING MORTALITY LEVELS IN TERMS OF LIFE EXPECTANCIES AT BIRTH FOR BOTH SEXES AGED 55 YEARS AND ABOVE *

Time Reference** (Years)	Males	Females	Both Sexes
t	53.50	56.50	55.00
t + 5	55.80	58.90	57.30
t + 10	58.05	61.20	59.60
t + 15	60.10	63.40	61.70
t + 20	62.00	65.50	63.70
t + 25	63.75	67.50	65.60
t + 30	65.35	69.40	67.30
t + 35	66.80	71.10	68.90
t + 40	68.10	72.60	70.30
t + 45	69.25	73.90	71.50
t + 50	70.25	75.00	72.60
t + 55	71.10	75.90	73.40
t + 60	71.75	76.60	74.10
t + 65	72.20	77.10	74.60
t + 70	72.45	77.40	74.90
t + 75	72.65	77.50	75.00

* Quinquennial increase of e_o^o is 2.5 years for each sex before e_o^o reaches 55 years.

** The time reference (t) refers to the beginning year.

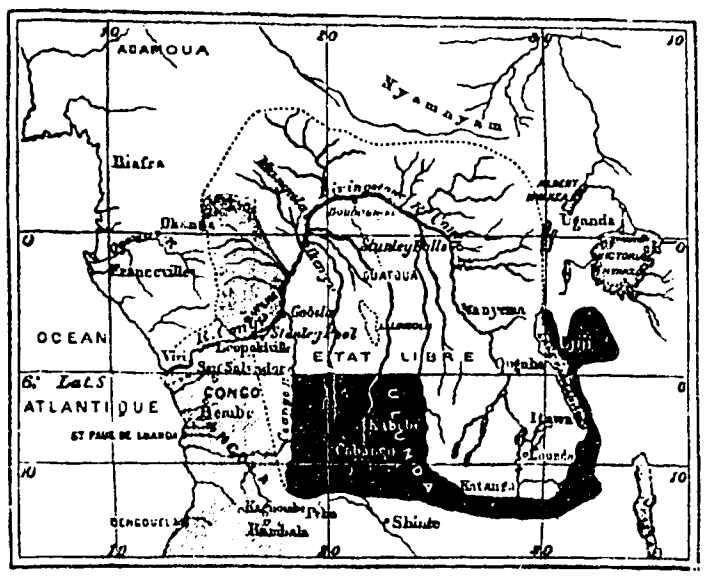
Source: United Nations, World Population Prospects as Assessed in 1973; Pop. Studies, No. 60; New York, 1977.

APPENDIX D1

Map 6

POLITICAL DIVISION OF THE CONGO BASIN IN 1885

(As drawn by H.M.Stanley, op.cit.)



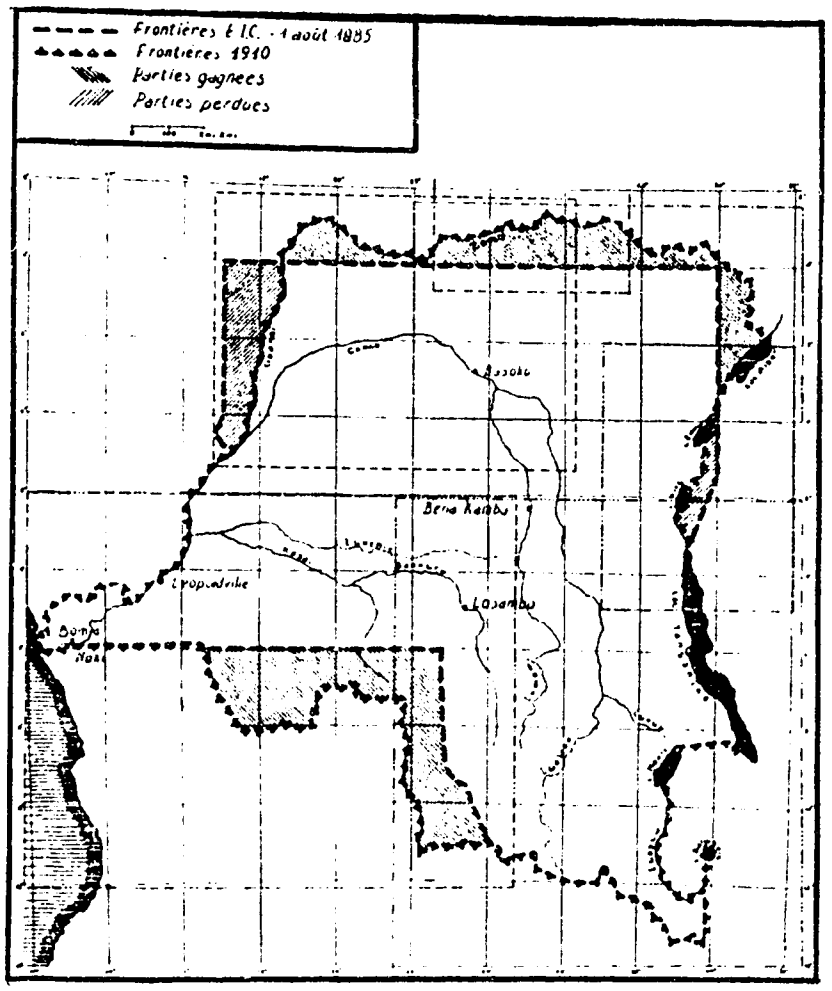
		Area in km^2	Population
.....	CONGO FREE STATE (ZAIRE):	1,704,320	7,694,1[illegible]
≡≡≡	FRENCH TERRITORY :	99,840	[illegible],121,000
//////	PORTUGUESE TERRITORY :	48,120	1[illegible]0,300
■■■■	UNCLAIMED TERRITORY :	559,320	6,910,000
		2,412,800	37,002,000

APPENDIX D2

Map 7

ZAIRE'S TERRITORIAL BOUNDARIES OF 1885 AND 1910

---- Boundaries of 1885
+ + + + Boundaries of 1910
\\\\\\\\ Gained territories
//////// Lost territories



Source: La Force Publique de sa naissance à 1914, op. cit.

APPENDIX D3

Map 8

THE CONGO REGIONS IN 1733.

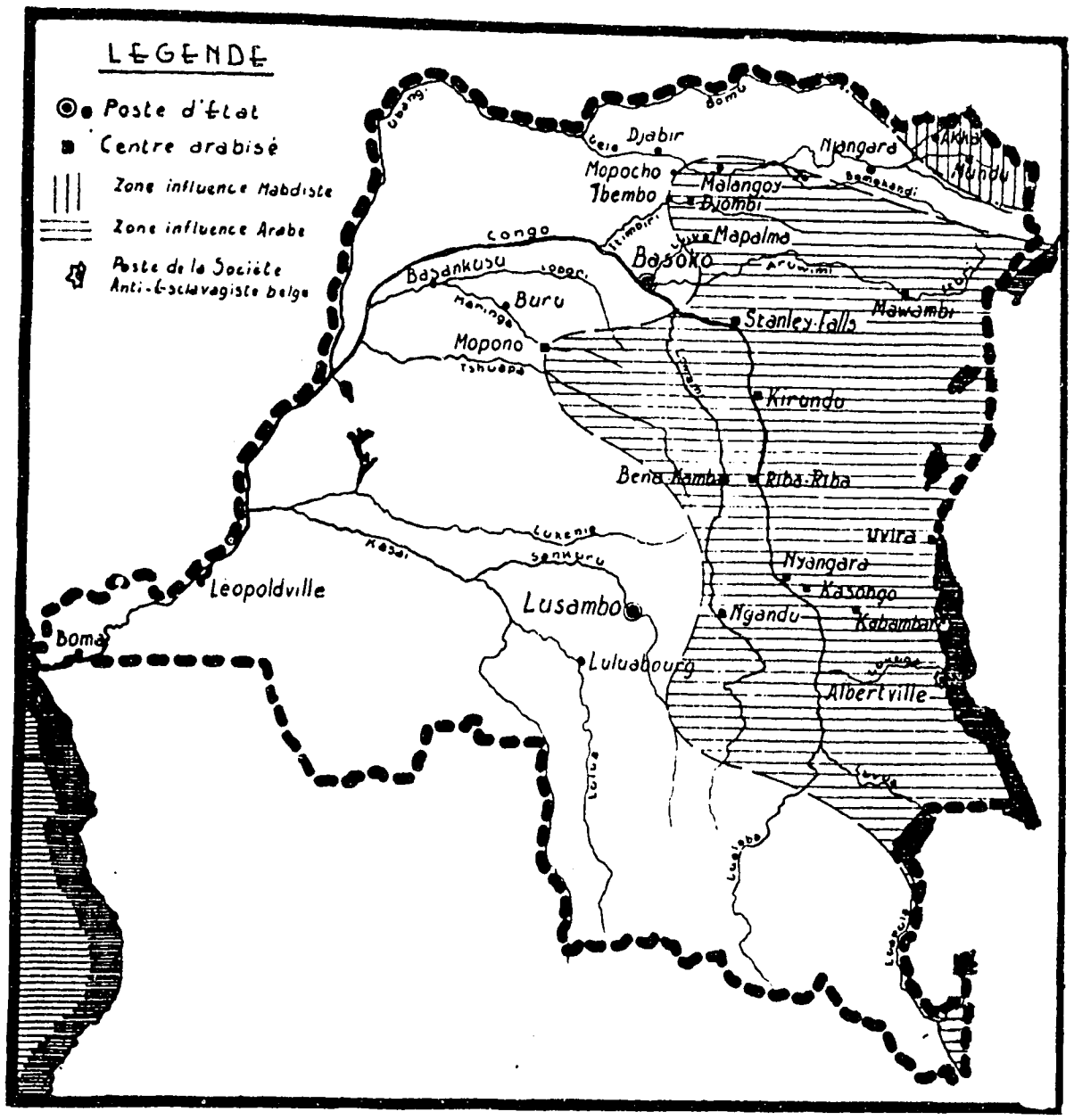
Source: In George Grenfell and the Congo; o.c.

APPENDIX D4

Map 9

THE ARAB CONTROLLED AREAS OF ZAIRE BY 1885

- Congo Free State's stations
- Arab's stations
- Zone of Arab influence
- Zone of Mahdist influence



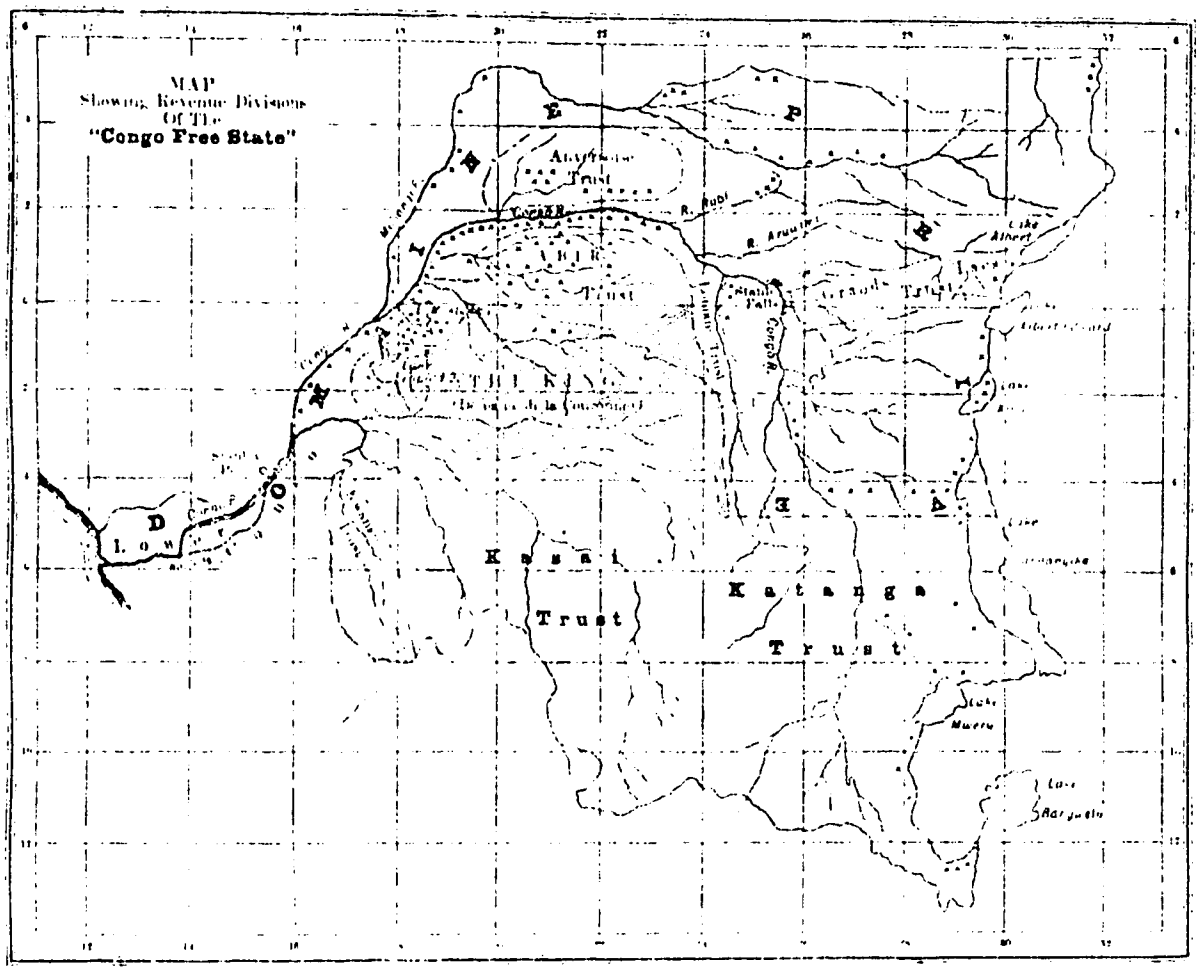
Source: La Force Publique de sa naissance à 1914; o.c.

APPENDIX D5

Map 10

REVENUE DIVISIONS OF THE CONGO FREE STATE

(Adapted from Wauters AJ, Cattier F & Morel ED)



ORANGE : Domaine Privé (National). So-called public revenue area

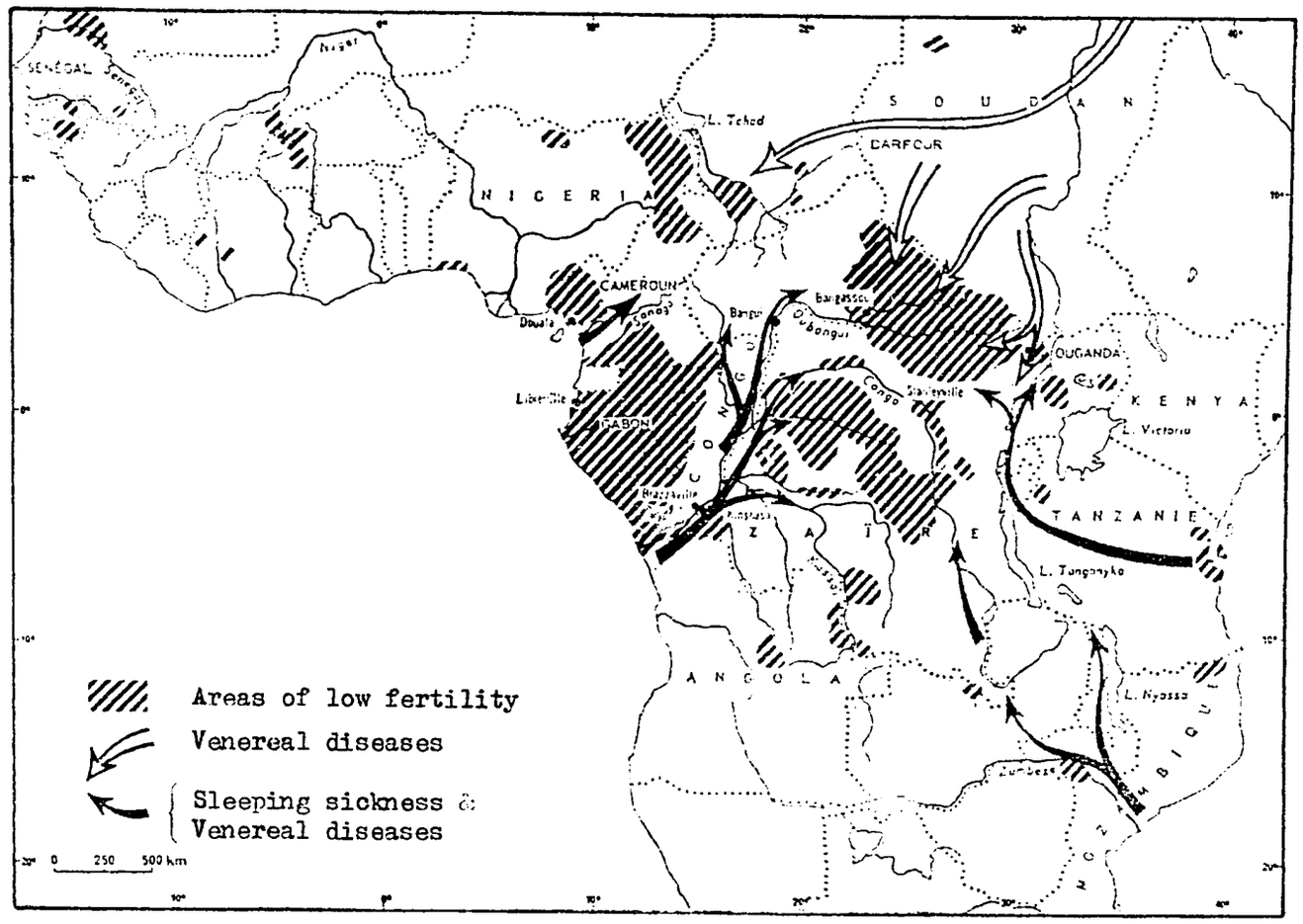
RED : Domaine de la Couronne. Revenue retained by the King and not accounted for

YELLOW : Concessionnaire Area. Revenues shared by the King and his partners in Trusts

X X X : Localities whence specific atrocities were reported

Map 11

PROCESS OF PENETRATION IN AFRICA OF THE SLEEPING SICKNESS & VENEREAL DISEASES.-



Source : in A. Retel-Laurentin, o.c.

BIBLIOGRAPHY

ABBREVIATIONS

AIMO : Affaires indigènes et de main-d'oeuvre (service des)

ARSC : Académie royale des sciences coloniales.

ARSOM : Académie royale des sciences d'outre-mer.

BPR : Bureau du Président de la République.

BMSCB : Bulletin mensuel des statistiques du Congo Belge.

CEMUBAC : Centre scientifique et médicale de l'université libre de Bruxelles en Afrique centrale.

CEPAS : Centre d'études pour l'action sociale.

CEPSI : Centre d'études des problemes sociaux indigènes.

CRISP : Centre de recherches et d'information socio-politiques.

EIC : Etat Indépendant du Congo.

FULREAC : Fondation de l'université de Liège pour les recherches scientifiques en Afrique centrale.

INS : Institut national de la statistique.

IRES : Institut de recherches économiques et sociales.

IRCB : Institut royal colonial belge.

IRSAC : Institut de recherches scientifiques en Afrique centrale.

ONRD : Office national de la recherche et du développement.

RDC : République Démocratique du Congo.

RGCB : Revue générale de la colonie belge.

BIBLIOGRAPHY

ADADEVOH, B.K. (ed.) — Sub-Fertility and Infertility in Africa; University of Ibadan, Nigeria, 1974.

ADELMAN, K.L. — Zaire's Year of Crisis; in African Affairs, Vol. 77, No. 306, January 1978, London.

AIMO — Le Mouvement de la population congolaise entre 1925 et 1952; in BMSCB, no. 36, octobre 1953.

La Population congolaise en 1953; in BMSCB, no. 2, fevrier 1955.

1955-1957 Demographic Survey. Summary Report: Tableau général de la démographie congolaise. Enquête démographique par sondage, 1955-1957: Analyse générale des résultats statistiques. Central Government, Ministry of Planning and Economic Co-ordination, Statistical Services, Léopoldville, 1961.

Detailed Fascicules: no 1, City of Leopoldville, 1957; no 2, Suburban Territory, 1957; nos 3-4, Districts of Bas-Congo and Cataractes, 1957; no 5, District of Tshuapa, 1958; no 7, District of Maniema, 1959; f.b., Equateur Province, 1959; f.e., Katanga Province, 1960; f.f., Kasai Province, 1959; no 11, Lac Leopold II, Kwilu, Kwango Districts, 1961; no 12, Nord and Sud-Kivu Districts (no date); f.e., contd., Katanga, 1961.

AMES, D. — The Economic Base of Wolof Polygyny; in South Western Journal of Anthropology, 11, 1955.

ANGOLA — Direcção dos Serviços de Economia e Estatistica Geral. Repartiçao de Estatistica Geral. 30 Recenseamento Geral de Populaçao 1960. Luanda 1964.

Direcção dos Serviços de Estatistica. Censo da Populaçao de 1970. Luanda 1971.

ANSTEY, R. — King Leopold's Legacy, The Congo Under Belgian Rule; Oxford University Press, 1966.

ARDNER, E. — Divorce and Fertility, An African Study; Oxford University Press, 1962.

ARIES, P. — Histoire des populations françaises et de leurs attitudes devant la vie depuis le 18° siècle; Edit. Self, Paris, 1948.

BANNING, E. — L'Afrique et la conférence géographique de Bruxelles, Bruxelles, 1878.

BANQUE DU ZAIRE — Rapport annuel ... (de 1967 à 1972); Banque du Zaire, Kinshasa.

BARCLAY, G.W. — Techniques of Population Analysis; John Wiley & Sons Inc., New York, London, 1958.

BERELSON, B. — The Present State of Family Planning Programmes; University of Chicago Press, 1966.

BEZY, F. — Problèmes structurels de l'économie congolaise; (ed.) Nauwelaerts, Louvain, Belgium, 1957.

Principes pour l'orientation du développement économique au Congo; in Zaire, vol. XIII, no 1, 1959, Louvain, Belgium.

BOGUE, J.D. — Principles of Demography; New York, J. Wiley, 1969.

BOSERUP, E. — The Economics of Polygyny; in Woman's Role in Economic Development, London, 1970.

BOUTE, J. — La physionomie démographique de la République Démocratique du Congo en 1970; INS, Kinshasa, 1970.

Population et développement économique et social en République du Zaire; UNECA Papers, M71-2942, Addis Ababa, 1971.

Zaire; in Population Growth and Socioeconomic Change in West Africa; by Caldwell, J.C. et al., a Population Council Book, New York, 1975.

Perspectives démographiques provisoires pour la République du Zaire, 1970-1980; avec la collaboration de l'INS; Bureau du Président de la République, Kinshasa, 1972.

Demographic Trends in the Republic of Zaire; Caltech Population Program Occasional Papers, Series 1, No. 5, California Institute of Technology, Pasadena, California, 1973.

BRASS, W. — Methods for Estimating Fertility and Mortality from Limited and Defective Data; Laboratories for Population Statistics; The University of North Carolina at Chapel Hill, N.C., 1975.

BRASS, W., et al — The Demography of Tropical Africa; Princeton University Press, 1968.

BRAUSCH, G. — Belgian Administration in the Congo; Oxford University Press, 1961.

BREBANT, B.V. — Introduction à la connaissance des populations congolaises; in Bulletin Militaire, Léopoldville (Kinshasa), 1954.

BRODEN, RYCKMAN, LEGRAND and ALLARD — "Rapport sur la conservation et le développement de la population indigène"; Congrès colonial national belge, 1920; A. Lesigne, Bruxelles, 1921.

BRUAUX, P., et al — La Lutte contre les infections vénériennes à Léopoldville; in Annales de la Société Belge de Médecine Tropicale; XXXVII, 6, décembre, 1957.

BUELL, R.L. — The Native Problem in Africa; New York, 1928.

BUSTIN, E. — Lunda Under Belgian Rule, The Politics of Ethnicity; Harvard University Press, 1975.

BUXTON, T.F. — De la traite des esclaves en Afrique et des moyens d'y remédier; traduction française de J.J. Pacaud, Paris, 1895.

CALDWELL, J.C. — African Rural-Urban Migration; The Movement to Ghana's Towns; Australian National University Press, 1969.

The Demographic Victory, Population Change 1880-1935; Australian National University, Canberra, 1976.

Towards a Restatement of Demographic Transition Theory; Australian National University, Canberra, 1977.

Major Questions in African Demographic History; Australian National University, Canberra, 1977.

CALDWELL, J.C. and OKONJO, C. (eds.) — The Population of Tropical Africa; Longmans, London, 1968.

CAMERON, B.L. — Slavery in Africa; National Review, Oct-Nov, 1888, London.

CARRIER, N. and HOBCRAFT, J. — Demographic Estimation for Developing Societies; Population Investigating Committee, London School of Economics and Political Science; London, 1971.

CARTWRIGHT, F. and BIDDIS, M. — Diseases and History; Rupert Hart-Davis, London, 1972.

CATTIER, F. — Etude sur la situation de l'Etat Indépendant du Congo; Larcier, Bruxelles, 1906.

CHANDRASEKARAN, C. and DEMING, W.E. — On a Method of Estimating Birth and Death Rates and Extent of Registration; in Journal of American Statistical Association, Vol. 44, 1949.

CHESSWASS, J.D. — Methodologies of Educational Planning for Developing Countries; Two volumes, IIEP, Paris, 1969.

CLAPIER, D. — La Trypanosomiase sur l'Ubangi; annales de médecine et pharmacie coloniales, numéro exceptionnel, Paris, 1920.

COALE, A.J. and DEMENY, P. — Regional Model Life Tables and Stable Populations; Princeton University Press, Princeton New Jersey, 1966.

COALE, A.J. and HOOVER, E.M. — Population Growth and Economic Development in Low-Income Countries: A Case Study of India's Prospects; Princeton University Press, 1958.

COALE, A.J. and ZELNIC, M. — New Estimates of Fertility and Population in the USA: A Study of Annual White Births from 1885 to 1960 and of Completeness of Enumeration in the Censuses from 1880 to 1960; Princeton University Press, 1963.

COCHRAN, W.G. — Sampling Techniques; John Wiley & Sons Inc., New York, 1953.

COMELIAU, C. — Conditions de planification du développement, l'example du Congo; Mouton, Paris-La Haye, 1969.

Pour une strategie de la planification au Congo; in Cahiers economiques et sociaux, V, II, 2-3 septembre, 1969, IRES, Kinshasa.

COMMHAIRE-SYLVAIN, S. — Femmes de Kinshasa, hier et aujourd'hui; Mouton et cie, Paris, 1968.

CONDE, J. — The Demographic Transition as Applied to Tropical Africa; with particular reference to health, education and economic factors; OECD, Development Centre, Paris, 1971.

COQUILHAT, C. — Sur le Haut-Congo; Lebègue et Co, Bruxelles, 1888.

CORNEVIN, R. — Le grave problème des refugiés en Afrique noire; Europe-France d'Outremer, 420, jan. 1965, Paris.

COX, P.R. — Demography; Cambridge University Press, 1970.

CURTIN, P.D. — The Atlantic Slave Trade; The University of Wisconsin Press, 1969.

DASSAS-DE-WITTE, C. — La Maladie du sommeil dans l'Etat Indépendant du Congo de 1890 à 1910; unpublished thesis at the Université Libre de Bruxelles, Bruxelles, 1963.

DE BRIEY, P. — Migration of Indigenous Workers in the Belgian Congo; in International Law Review, Vol. LII, July-December 1945.

DENIS, J. — Le Phénomene urbain en Afrique Centrale; ARSC, Classe des sciences morales et politiques; Mémoires in -8°, Tome XIX, Fasc. 1, Bruxelles, 1958.

DENIS, L. — Les Jésuites Belges au Kwango, 1893-1943; Museum Lovanium, Bruxelles, 1943.

DE SAINT MOULIN, L. — Les statistiques démographiques en République Démocratique du Congo; in Congo-Afrique, X-47, août-septembre 1970, Kinshasa.

La répartition de la population du Zaire en 1970; in Zaire-Afrique, no 86, juin-juillet 1974, Kinshasa.

La répartition par region du produit intérieur brut zairois; in Zaire-Afrique, no 73, Kinshasa.

Histoire des villes du Zaire, notions et perspectives fondamentales; in Cultures et Développement, vol. IV, no 2, 1974, Louvain, Belgium.

DE WOLF, Dr. — Contribution à l'etude de la démographie congolaise; in Congo, RGCB, tome I, Bruxelles, 1923.

DUMONT, G.H. — La Table Ronde Belgo-Congolaise; le Congo, du régime colonial à l'indépendance; Editions Universitaires, Paris, 1961.

DUPRIEZ, G. et NGOIE, J. — Emploi dans le secteur privé et parastataux, 1965-8; in Cahiers économiques et sociaux, mars 1970, IRES, Kinshasa.

EMBER, M. — Warfare, Sex Ratio and Polygyny; Ethnology, 13, 1974.

ENKE, S. — The Economic Aspects of Slowing Population Growth; in Economic Journal, 1966.

Birth Control for Economic Development; in Science, 1969.

ENKE, S. and ZIND, R. — Effect of Fewer Births on Average Income; in Journal of Biosocial Science, 1969.

EYAMBALA BOKUMBA — Authenticity and the Choice of a National Language: The Case of Zaire; in Présence Africaine; no 99-100, 3e et 4e trimestres, 1976, Paris.

FABRI, M. et MAYER, J. — La population future du Congo; perspectives démographiques; Centre d'études des problèmes sociaux et professionnels de la technique; Bruxelles, 1959.

FARHAT, Y. — PGE, Studies in Methodology; I, Matching of Vital Events; Pakistan, Institute of Development Economic Research, Report No. 67, 1968.

FINDLEY, M.I. — Between Slavery and Freedom; in Comparative Studies, VI, 1964.

FORD, C.S. — Fertility Controls in Underdeveloped Countries; in Proceedings of the World Population Conference, Vol. 1, United Nations, New York, 1954.

GEORIS, P. and AGBIANO, B. — Evolution de l'enseignement en République Démocratique du Congo depuis l'indépendance; Cemubac, LXXVII, Bruxelles, 1966.

CERARD-LIBOIS, J. — Katanga Secession; University of Wisconsin Press, 1966.

GIDE, A. — "Voyage au Congo. Carnets de route"; Gallimard, N.R.F., Paris, 1927.

GILBERT, O.P. — L'Empire du silence; les éditions du peuple; Bruxelles, 1947.

GILLET, J. — La Trypanosomiase humaine au Congo Belge et au Rwanda-Urundi; Bulletin de l'IRCB, 4, 1935 et 1, 1954, Bruxelles.

GOULD, W.T.S. — Refugees in Tropical Africa; International Migration Review, Vol. VIII, No. 3, 1974; Center for Migration Studies, New York.

GOUROU, P. — La population rurale du Congo Belge. Introduction à l'étude de sa répartition géographique; revue de l'université de Bruxelles, 1954.

La densite de population rurale au Congo Belge; memoire ARSC, tome I, vol. 2, Bruxelles, 1955.

GUEBELS, L. — Relation complète des travaux de la Commission Permanente pour la Protection des Indigènes, 1911-1951; Duculot, Gembloux (Belgium), 1952.

HAILEY, Lord — An African Survey: A Study of Problems Arising in Africa South of Sahara; Oxford University Press, 1938.

HAJNAL, J. — Age at Marriage and Proportions Marrying; in Population Studies, Vol. VII, 2, November 1953.

HANCE, W.A. — Population, Migration and Urbanization in Africa; Columbia University Press, New York, 1970.

HERKOVITS, M.J. and F.S. — Rebel Destiny. Among the Bush Negroes of Dutch Guiana; New York, 1934.

HINDE, S.L. — The Fall of the Congo Arabs; Methuen, London 1897.

HOLEMANS, R. — Contribution à la protection maternelle et infantile en mileiu rural du Kwango; ARSOM, X, Fasc. 1, Bruxelles, 1958.

HOSKYNS, C. — The Congo Since Independence, January 1960 to December 1961; Oxford University Press, 1965.

HULSTAERT, G. — Les sanctions coutumières contre l'adultère chez les Nkundo; in IRCB, VII, 1938, Bruxelles.

HOUT, Dr. — L'épidemie d'influence de 1918-1919 dans les colonies francaises; annales de médecine et de pharmacie coloniales; Paris, 1921.

INGLIS, B. — Roger Casement; Hodder and Stoughton, London, 1973.

INSTITUT NATIONAL DE LA STATISTIQUE ET DES ETUDES ECONOMIQUES (INSEE) — Afrique Noire, Madagascar, Comores; Démographie Comparée; Service de coopération, Delegation générale à la recherche scientifique et technique, Paris, 1967.

JAFFE, A.J. — Population Trends and Controls in Underdeveloped Countries; in Population Control, Duke University School of Law, 1961.

JAFFE, A.J. and STEWART, C.D. — Manpower Resources and Utilization, Principles of Working Force Analysis; New York, 1951.

JANSSENS, E. and CATEAUX, A. — Les Belges au Congo; Societe de geographie, Anvers, Belgium, 1912.

JEWSIEWICKI, B. — Notes sur l'histoire socio-économique du Congo, 1880-1960; in Etudes d'Histoire Africaine, Vol. 3, 1972.

JEWSIEWICKI, B., VELLUT, J.L. and LEMA Kilola — Documents pour servir à l'histoire sociale du Zaire; grêves dans le Bas-Congo (Bas-Zaire) en 1945; in Etudes d'Histoire Africaine, Vol. 5, 1973.

JOHNSTON, (Sir) Harry — George Grenfell and the Congo; in two volumes, Hutchinson and Co., London, 1908.

JONES, W. Gavin — Population Growth and Educational Planning in Developing Nations; A Population Council Book; Irvington Publishers Inc., New York, 1975.

KENT, R.K. — Palmares, An African State in Brazil; J.H.V., vi, 1965.

KLEIN, H.S. — The Middle Passage; Comparative Studies in the Atlantic Slave Trade; Princeton University Press, Princeton, 1978.

LASHMAN, K.E. — Syncresis: The Dynamics of Health, XIV, Zaire; U.S. Department of Health, Education and Welfare, June 1975.

LE BRUN, O. — Population Dynamics and Education Development in Africa; in UNESCO's "Population-Education-Development in Africa South of the Sahara", Regional Office, Dakar, 1971.

LEFEVER, E.W. — Crisis in the Congo; A United Nations Force in Action; The Brookings Institution, Washington, D.C., 1965.

LE GRAND, L. — La Dépopulation du Congo et les recensements de 1917; in Congo, RGCB, tome I, 1921, Bruxelles.

LEJEUNE-CHOQUET, Adj. — Histoire militaire du Congo; (ed.) A. Castaigne, Bruxelles, 1906.

LEJEUNE, L. — Le Vieux Congo; Les Editions de l'Expansion Belge, Bruxelles, 1930.

LEMARCHAND, R. — Political Awakening in the Belgian Congo; University of California Press, 1964.

LEONARD, H. — Le Contrat du travail au Congo Belge et au Ruanda-Urundi; F. Larcier, Bruxelles, 1935.

LIVINGSTONE, D. — Narrative of an Expedition to the Zambezi and its Tributaries and the Discovery of the Lake Shirwa and Nyassa; Murray, London, 1865.

LOGAN, W.P.D. — The Measurement of Infant Mortality; in Population Bulletin, No. 3, October 1953.

LORIMER, F. — Demographic Information on Tropical Africa; Boston University Press, Boston, Mass., 1961.

The Present Situation of Demography in Africa South of the Sahara; in Brass, W. et. al., The Demography of Tropical Africa, Princeton, 1968.

LOUIS, W.R. and STENGERS, J. — E.D. Morel's History of the Congo Reform Movement; Clarendon Press, Oxford, 1968.

LOUWERS, O. et TOUCHARD, G. — Recueil usuel de la législation du Congo; tomes 1-4, 1904-1906, Bruxelles, 1909.

LUX, A. — Migration, accroissement et urbanization de la population congolaise de Luluabourg (Kananga); in Zaire, XII, 7-8, 1958, Louvain, Belgium.

Notes de recherches, le problème de la stérilité en Afrique et ses implications en matière de politique démographique; Canadian Journal of African Studies, Vol. 10, 1976.

MABIKA KALANDA — Lula et Luba à la recherche d'une ethnie; (éd.) Remarques Africaines, Bruxelles, 1961.

MASOIN, F. — Histoire de l'Etat Indépendant du Congo; 2 vols., Namur (Belgium), 1912-3.

MAULDIN, W.P. — Measurement and Evaluation of National Family Planning Programmes; Demography, IV, No. 1, 1967.

MAURO, F. — L'expansion europeenne, 1600-1870; Presses Universitaires de France, Paris, 1967.

MERCIER, P. — Facteurs socio-culturels et programmes de developpement de l'education; Conference d'Addis Ababa, Rapport final, 1964.

MINISTERE DE L'EDUCATION NATIONALE — Esquisse du pré-plan d'éducation 1971-80; Departement de l'éducation nationale, Kinshasa, 1971.

MINISTERE DES COLONIES — Rapport annuel sur l'administration de la colonie du Congo Belge pendant l'année ... (présenté aux chambres législatives belges annuellement de 1910 à 1959), Bruxelles.

Situation économique du Congo Belge et du Ruanda-Urundi pendant l'année ... (annuellement de 1950 à 1959), Bruxelles.

Urbanisme au Congo; Ed. de Visscher, Bruxelles, 1948.

La Force publique de sa naissance à 1914; participation des militaires à l'histoire des premières années du Congo; mémoire de l'IRCB, sc. morales et politiques, tome XXVIII, Bruxelles, 1959.

"Belgian Congo"; 2 vols., ed. by Information and Public Relations Office, Bruxelles, 1959.

MITCHELL, J.C. — Cultural Explanations of Fertility Differences; in Journal of Biosocial Science, Suppl. 3, 1971.

MONTEIRO, J.J. — Angola and the River Congo; 2 vols., London, 1875.

MOREL, E.D. — Red Rubber; T. Fisher Unwin, London, 1906.

MORRISON, D.G. et al — Black Africa, A Comparative Handbook; The Free Press, New York, 1972.

MOSER, C.A. and KALTON, G. — Survey Methods in Social Investigation; Heinemann Educational Books Ltd., London, 1971.

MOULAERT, G. — A propos des mutineries au Congo Belge; in Zaire, Louvain, December 1948.

MURDOCK, G.P. — Ethnographic Atlas, 1967; University of Pittsburg Press, 1967.

MUTATAYI, V. — L'économie congolaise et la planification du développement; in Congo-Afrique, no. 48, octobre 1970, Kinshasa.

NICOLAI, H. — Divisions régionales et répartition de la population dans le sud-ouest du Congo; Cemubac, LXXXIII, Bruxelles, 1968.

O'BRIEN, C.C. — To Katanga and Back; Hutchinson of London, London, 1962.

OFFICE OF THE PRESIDENT, ZAIRE — Etude socio-démographique de Kinshasa 1967; rapport général, INS, avec la coopération de l'assistance technique française; Kinshasa, 1969.

Bilan, 1965-1970; Kinshasa, 1970.

OUZILLEAU, Dr. — La maladie du sommeil au Congo Francais; in Le mouvement geographique, 435-6, Bruxelles, 1911.

PAGE, H. — Infant and Child Mortality; Solicited paper for the African Population Conference, Accra, Ghana, 9-18 December 1971, UNECA, M71-2930.

PAULME, D. — Structures sociales traditionnelles en Afrique noire; in Cahiers d'Etudes Africaines, 1, 1960.

PEEMANS, J.P. — Capital Accumulation in the Congo under Colonialism: the Role of the State; in P. Duignan and L.H. Gann (eds.), Colonialism in Africa 1870-1960; Vol. IV, The Economics of Colonialism, Cambridge University Press, 1975.

The Social and Economic Development in Zaire Since Independence: an Historical Outline; in African Affairs, Vol. 74, No. 295, April 1975.

PERRINGS, C. — Black Mineworkers in Central Africa; Industrial strategies and the evolution of an African proletariat in the Copperbelt 1911-41; Heinemann, London 1979.

ROMANIUK, A. — La Fécondité des populations congolaises; Mouton et Cie, Paris, 1967.

The Demography of the Democratic Republic of the Congo; in Brass, W., et.al., The Demography of Tropical Africa; Princeton University Press,1968.

Infertility in Tropical Africa; in J.C. Caldwell and C. Okonjo (eds.), The Population of Tropical Africa; Longmans, London, 1968.

RUFAST, A. — Instructions pour la mise en application du système de recensement par fiches (circulaire du 18 septembre 1922); in Recueil à l'usage des fonctionnaires et agents du service territorial au Congo Belge; Ministère des colonies, Bruxelles, 1930.

RINCHON, P.D. — La Traite et l'esclavage des Congolais par les Européens; Histoire de la déportation de 13 million 250.000 Noirs en Amérique; J. De Meester et Fils, Wetteren, Belgium, 1929.

RUTTEN, A. — Notes de démographie congolaise; in Congo, RGCB, tome II, Bruxelles, 1920.

RYCKMANS, P. — Notes sur la démographie congolaise; in IRCB, Bulletin des séances; Bruxelles, 1931-2.

Démographie congolaise; in Africa, Journal de l'Institut International des Langues et Civilisations Africaines; Tome VI, Fasc. 3; Bruxelles, 1933.

Etapes et jalons; Ed. F. Larcier, Bruxelles, 1946.

SABAKINU KIVULU — Les sources de l'histoire démographique du Zaire; in Etudes d'Histoire Africaine, VI (1974), Lubumbashi.

SCHWETZ, J. — Contribution à l'étude de la démographie congolaise; in Congo, RGCB, tome 1, Bruxelles, 1923.

SHORTER, F.C. — Computational Methods for Population Projections: with Particular Reference to Development Planning; The Population Council, New York, 1974.

SHRYOCK, H.S. et al — The Methods and Materials of Demography; 2 vols., U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census; Washington, D.C., 1973.

SINGER, S.F. (ed.) — Is There An Optimum Level of Population? A Population Council Book, McGraw-Hill Book Company, New York, 1971.

SIO, A.A. — Interpretations of Slavery: The Slave Status in the Americas; in Comparative Studies, vii, 1965.

SLADE, R. — King Leopold's Congo; Oxford University Press, 1962.

The Belgian Congo; with an additional chapter by Marjory Taylor; Institute of Race Relations, Oxford University Press, London, 1960.

SLATER, D. — Colonialism and the Spatial Structure of Underdevelopment; in Progress in Planning, Vol. 4, Part 2.

SPENCER, S. — The Shambura; London, 1965.

SPIEGELMAN, M. — Introduction to Demography; Harvard University Press, 1969.

STAMPER, B.M. — Population and Planning in Developing Nations, A Review of Sixty Development Plans for the 1970s; The Population Council, New York, 1977.

STANLEY, H.M. — Cinq années au Congo, 1879-1884; Institut National de Géographie, Bruxelles, 1886.

STENMANS, A. — La reprise du Congo par la Belgique; Bruxelles, 1949.

STOLNITZ, G.J. — Comparison Between Some Recent Mortality Trends; Milbank Memorial Fund, 1956.

STORME, M. — NGAKABE, la prétendue reine de Bokoma, d'après H.M. Stanley; ARSOM, 8°, nouvelle série, 2, 1956, Bruxelles.

STROUHAL, E. — Evidence of the Early Penetration of Negroes into Prehistoric Egypt; Journal of African History, XII, I, 1971; Cambridge University Press.

SULLIVAN, J.M. — Models for Estimation of the Probability of Dying Between Birth and Exact Ages of Early Childhood; Population Studies, Vol. 26, No. 1, 1972.

TA NGOC CHAU — Population Growth and the Costs of Education in Developing Countries; UNESCO/IIEP, Paris, 1972.

TEW, M. — A Form of Polyandry Among the Lele of the Kasai, Africa, 21, 1-12, 1951.

TROLLI, G. — La situation démographique de la colonie; in Essor Colonial et Maritime, 22, 29 mars 1936.

TROLLI, G. and VAN NITSEN, R. — Démographie de la population indigène et la natalité au Congo Belge; in Congrès Colonial National, Ve session, no. 7, Bruxelles, 1940.

TSHINYONGOLO MULANDA — La Fecondité des femmes de la ville de Bukavu au Zaire; Mémoire de Maîtrise ès sciences (démographie) à l'université de Montréal, Fac. arts et sciences; Montréal, novembre 1974.

UNITED NATIONS — Handbook of Population Census Methods, Economic Characteristics of the Population; Sales No. 58.XVII. 6/2.

Methods of Analysing Census Data on Economic Activities of the Population; Sales No. E.69.XIII.2.

Age and Sex Patterns of Mortality. Model Life Tables for Under-Developed Countries; Sales No. 55.XIII.9.

The Concept of Stable Population: Application to the Study of Populations of Countries with Incomplete Demographic Statistics; Sales No. 65.XIII.3.

UNITED NATIONS (contd.) Estimating Future School Enrolment in Developing Countries: A Manual of Methodology; Sales No. 66.XIII.3.

Methods of Analysing Census Data on Economic Activities of the Population; Sales No. 69.XIII.2.

Demographic Yearbook; 1965, 1966, 1967.

Manual I: Methods of Estimating Total Population for Current Dates; Sales No. 52.XIII.5.

Manual II: Methods of Appraisal of Quality of Basic Data for Population Estimates; Sales No. 56.XIII.2.

Manual III: Methods for Population Projections by Sex and Age; Sales No. 56.XIII.3.

Manual IV: Methods of Estimating Basic Demographic Measures from Incomplete Data; Sales No. 67.XIII.2.

The Determinants and Consequences of Population Trends; Sales No. 53.XIII.3.

International Standards to Census Data on the Economically Active Population; Sales No. 51.XIII.2.

World Population Prospects as Assessed in 1973; Sales No. E. 76.XIII.4.

Population Bulletin No. 2; Accuracy Tests for Census Age-Distribution in Five-Year and Ten-Year Groups; Sales No. 52.XIII.4.

Handbook of Population Census Methods; 3 vols., Sales No. 58.XVIII.6.

National Programmes of Analysis of Population Census Data as an Aid to Planning and Policy Making; Population Studies No. 36.

VAN DE WALLE, E. Marriage in African Censuses and Inquiries; in Brass, W., et.al., The Demography of Tropical Africa; Princeton University Press, 1968.

The Relation of Marriage to Fertility in African Demographic Inquiries; in Demography, T.II, 1965.

Some Characteristic Features of Census Age Distribution in Illiterate Populations; American Journal of Sociology; Vol. LXXXI, No. 5, March 1966.

VAN DE WALLE, F.A. Mutineries au Congo Belge; in Zaire, mai 1947 et octobre 1948, Louvain, Belgium.

VAN DER ELST, G. Population des écoles du Congo Belge avant l'indépendance; Cemubac, XLVIII, Bruxelles, 1961.

VAN NITSEN, R. Contribution à l'étude de l'enfance noire au Congo Belge; in IRCB, XI, Bruxelles, 1941.

VANSINA, J. — Les Kuba et l'administration territoriale de 1919 à 1960; in Cultures et Développement, 4, no. 2, 1972; Louvain, Belgium.

VAN WING, R.P.J. — La situation actuelle des populations congolaises; in IRCB, Bulletin des séances, no. 16, Bruxelles, 1945.

VAN ZANDYCKE, R.F.A. — La révolte de Luluabourg en 1895; in Zaire, IV-9 and V-10, Louvain, Belgium.

VELLUT, J.L. — Guide de l'étudiant en histoire du Zaire; Editions du Mont Noir, in association with Presses Universitaires du Zaire, Kinshasa, 1974.

VERHAEGEN, B. — Les rebellions au Congo; tomes 1 and 2; Ed. Crisp, Bruxelles, 1966 and 1969.

WARE, H. — The Demography of Polygyny; Seminar paper, Australian National University, Canberra, 1976.

WAUTERS, A.J. — Referendum sur la question de la population de l'Etat Indépendant du Congo; in Le Mouvement géographique, journal populaire des sciences géographiques, Bruxelles, 1895-1898.

WAWA SAKRINIA, A. — Contributions des données démographiques à l'élaboration des plans de développement économique et social; mémoire de licence, université nationale du Zaire, Kinshasa, 1970.

WEST, R.C. — The Pacific Lowlands of Columbia; Bâton Rouge, 1957.

WHITTING, J. — Effects of Climate on Certain Cultural Practices; in Exploration in Cultural Anthropology, Ed. W.H. Goodenough, New York, 1964.

WILLAME, J.C. — Patrimonialism and Political Change in the Congo; Stanford University Press, 1972.

WILSON, H. — History of the Rise and Fall of the Slave Power in America; 3 vols., Boston, 1872-7.

WORLD BANK, The — L'économie du Zaire; Document à usage interne, 4 vols, Rapport No. 821-ZR, 23 juillet 1975.

YOUNG, C. — Politics in the Congo: Decolonization and Independence; Princeton University Press, 1965.