

**THE ABORIGINAL POPULATION OF ALICE SPRINGS:
A DEMOGRAPHIC STUDY**

**By
Noor Ahmad Khalidi**

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Declaration

Except where otherwise indicated this
thesis is my own original work.

A handwritten signature in black ink, featuring a large, stylized 'N' and 'K' followed by the name 'Khalidi' in a cursive script.

Noor Ahmad Khalidi

February 1989

For Nadira, Abubaker and Mariam and my parents who were always a source of encouragement and support to me.

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Abstract

Our knowledge of Aboriginal demography in Australia at a national level is limited by the lack of conformity of the census counts on the size of the population and the unavailability of vital data. Hence, regional and small area studies were found useful to reveal the recent patterns of Aboriginal demography. This study begins with a review of Aboriginal demography at a national level. The distinct demographic characteristics of the Aboriginal population are pointed out in comparison with the total population of the country. The study then focuses on a regional level, Central Australia, for a closer examination of mortality and fertility levels, patterns, trends and differentials. It confirms that the levels of Aboriginal mortality and fertility in Central Australia are substantially higher than those of the total population of the country and are similar to those found for the Aboriginal population elsewhere; however, it registers, for the first time through a single study on a particular population, the occurrence of a process of steady decline in Aboriginal mortality and establishes that this decline in mortality is largely due to the reduction in deaths from diseases of the circulatory and respiratory systems, which are in the meantime still the leading causes of death of the Aboriginal people. Aboriginal fertility was found to be very high in the early ages of childbearing and the observed decline is mostly due to the reduction of fertility of the older women of 30 and over and younger women of 15-19. A detailed study of the demographic characteristics of the Aboriginal population in Alice Springs revealed that while as a whole the characteristics of Alice Springs Aborigines are similar to those of Aborigines elsewhere, different patterns of socio-economic and historical conditions have led to the emergence of two demographically distinct Aboriginal groups in Alice Springs; those Aborigines who live in the town proper and those who live in the town camps. While the majority of those Aborigines who migrated to the town proper came from other urban centres, most of the town campers are rural-urban migrants mostly from other Aboriginal settlements and stations in Central Australia.

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Chapter 1

Rationale of the Study and Research Organization

1.1 Background and research needs

The study of Aboriginal¹ demography is a relatively new subject in Australian demographic literature. In 1963 F. L. Jones (1963:112) pointed out that Australian Aboriginal demography had been neglected for too long a time; he described Aborigines as 'Australia's demographically retarded minority'. Ten years later, complaining about the quantity and quality of Aboriginal statistics, he wrote that Aboriginal statistics in Australia were as poor as in most of the developing countries (Jones, 1973). One reason for this lack of interest in studying Aboriginal demography has been the unavailability of Aboriginal population statistics amenable to demographic analysis. In the report of the National Population Inquiry, published in 1975, it was stated that fewer hard population data were available on the Australian Aborigines than on the most recent immigrant group (National Population Inquiry, 1975:455). A complete enumeration of all people of Aboriginal descent was not even attempted until the 1966 population census (Smith, 1980:2).

Most of the information about Aboriginal population parameters in the past comes from scholars in disciplines such as anthropology and geography (e.g. Radcliffe-Brown, 1930; Elkin, 1954; Meggitt, 1962; Berndt and Berndt, 1964; Gale, 1964); even now the number of scholars working on Aboriginal demography is very limited.

Before it was repealed by a referendum in 1967 (Commonwealth Bureau of Census and Statistics, 1968:66), Section 127 of the Australian Constitution required that in population censuses, Aborigines should not be counted as part of the Australian population. Accordingly,

¹ In this thesis the term 'Aboriginal', unless qualified, includes Torres Strait Islander people.

though the Aborigines were, to some extent, counted in Australian census operations from 1911 to 1971, they were then excluded from the published general population statistics. Also the published census returns on Aborigines were largely underestimates because no attempt was made to achieve a full coverage. A full count was only attempted, as mentioned above, in the 1966 census. During these operations persons of mixed descent were required to reveal their racial composition and accordingly the population of less than half Aboriginal descent was included in general population data. From 1971, race was defined on the basis of self-identification and persons of mixed descent were no longer required to indicate the mix of races but were asked to show the race to which they considered they belonged.

These and subsequent improvements in the formulation of questions for the identification and enumeration of the Aboriginal population in the census operations of 1971, 1976, 1981 and 1986 have resulted in: relatively better coverage of the Aboriginal population in the census enumerations; improvements in the quantity and the quality of the released tabulations of the census results; a process of in-migration into the Aboriginal population of those who previously concealed their identity or were not classified as Aborigines by the law; and a situation where the census data on the Aboriginal population in different censuses are not comparable to each other with varying degrees.

A demographic profile of the Australian Aboriginal population is sketched in Chapter 2. The unavailability of certain demographic statistics, for example births and deaths, makes it difficult for researchers to reach sound conclusions on the parameters of the Aboriginal population of Australia as a whole. For instance, what is known about Aboriginal mortality and health is obtained from, as Gray (1986:5) puts it, 'careful analysis of bare bits and pieces of information from here and there, and a lot of guess work to fill the gaps'. Such a lack of hard data especially provides obstacles in studying the trends of the events. For this reason and in order to fill the data gaps, small area studies are most useful and practical. Therefore, I decided to have a close look at the mortality and fertility conditions of Aborigines in Central Australia (areas between parallel 20 and parallel 26 in the Northern Territory) and to focus particularly on

Aborigines of Alice Springs, which is the supply and service centre of this region, for more detailed investigation of other demographic parameters. Why has this particular region been selected for this study? Apart from other more general reasons discussed later, it is important to note that Aboriginal people constitute a very significant proportion of the total population of this area, about 34 per cent in 1986, and of the Northern Territory population as a whole, 23 per cent in 1986 (ABS, 1988a). Here the situation is different from other states. In Devanesen's (1986:1) words: 'Anything to do with Aboriginal issues is talked about, not only at an academic level, but at the very day-to-day level in the streets.'

Central Australia contained an Aboriginal population of over 10,000 persons in 1986 (ABS, 1988b). Population figures of the Aboriginal communities of this region can be obtained from various censuses. It has a population large enough to produce the number of vital events amenable to mortality and fertility investigations, as well as small enough for it to be possible, in the absence of separate statistics for Aborigines, to distinguish Aboriginal records in general registries. Furthermore, there is access to the vital records of many past years, which are maintained in various locations such as the District Registration of Births, Deaths and Marriages in Alice Springs, the Department of Health and Community Services and the Department of Aboriginal Affairs.

By taking the Aborigines of Central Australia as the study population, it is possible to directly establish the levels, patterns and differentials of Aboriginal mortality and fertility and **for the first time** the trends in fertility and mortality may be discerned using consistently direct observations in a particular population instead of drawing inferences from a variety of separate studies in various parts of the country or using indirect techniques.

A demographic study of the Aboriginal population in Alice Springs is of importance for a number of other reasons. First, because Alice Springs is the largest town in the vast area of Central Australia, located in the heart of the continent with a large concentration of the Aboriginal population. It had an Aboriginal population of 3,424 persons in 1986 (ABS, 1988b), about 15 per

cent of the total population of the town. This is the second largest Aboriginal population concentration in a single town in the Northern Territory. Second, the town is a melting-pot for a large number of Aboriginal tribal groups from all over Central Australia, so the population characteristics could be roughly representative of the Aborigines in the Central Region. Third, two spatially distinguishable large Aboriginal populations live in Alice Springs, namely town campers and Aboriginal town dwellers; between 25 and 35 permanent and transient camps are scattered in and around Alice Springs (Beck, 1985:15). While, for historic reasons, living in the town camps became the way of life for the so-called 'full-blooded' Aborigines (Drakakis-Smith, 1980:431), in the town proper according to Heppell and Wigley (1981), a distinct so-called 'mixed-blood' population lives;

the majority of these people are more or less integrated into the wider society but still proudly identify as Aborigines. They have been educated in European schools, share many European values, speak English as their principal tongue, hold a variety of jobs in Alice Springs and live in conventional European houses (Heppell and Wigley, 1981:9).

This is not to say that all those living in the camps are full-descent Aborigines and all Aborigines who live in the town proper are of mixed-descent, but rather to emphasize that the town camps and town proper contain different proportions of Aboriginal sub-populations, which, it has been argued, have been separated from each other and from the non-Aboriginal community of Alice Springs by wide socio-economic and cultural gulfs (Drakakis-Smith, 1980:431; Heppell and Wigley, 1981:9-10). Meanwhile the existence of a strong interaction between the two Aboriginal groups of Alice Springs cannot be ignored. Thus, a comparative study of the two groups' demography yields valuable information about the contrasts and linkages between them and the characteristics and trends of the Aboriginal population and its sub-groups. The question is raised to what extent they are distinct populations.

1.2 Previous research

So far, until the present enquiry, there had been no demographic study covering the entire Aboriginal population of Alice Springs town and its camps. Population censuses, especially since 1971, provide some demographic and housing information on the Aborigines in Alice Springs but do not distinguish between town dwellers and town campers; an attempt by myself and the Aboriginal Statistics Unit of the Australian Bureau of Statistics, Canberra, to obtain

separate tabulations from the 1986 Census returns for the Alice Springs town through identification of the census collection districts ('CDs') where town-camps are located, proved to be unsuccessful owing to the existence of overlap (some camps were incorporated with non-camping population to form CDs). In addition, the census figures suffer from varying degrees of under-enumeration; and detailed information regarding mortality, natality and migration cannot be obtained from the census data.

In addition to the returns of the previous censuses, which provide data on ethnic groups in Alice Springs from which we can obtain information on the Aborigines in the town, camp population surveys have been made on several occasions since the late 1970s.

Discrepancies in the figures obtained from camp surveys suggest inaccurate enumeration of the population as well as methodological differences in various operations resulting from variations in objectives which make comparisons difficult. In general the objectives of the camp surveys were to collect information useful to groups working on behalf of the campers; therefore, the choice of the camps and the types of data needed were influenced by the immediate needs and goals of the Tangentyere Council which is the umbrella organization for Alice Springs town campers.

A survey was conducted between August and October 1978; it covered only 229 individuals (Drakakis-Smith, 1982:114), and has some limitations. Not all items of information are available for all 229 individuals; on a household basis, again, not all 55 heads of households provided full information on their family or their dwelling. Lastly, the information on adults 20 years of age and over is most uncertain owing to coding difficulties, but in general the group totalled about 100 (Drakakis-Smith, 1982:115). The original data and tables derived from this survey were not located at the Tangentyere Council in 1987, but there is a research paper which used the results of this survey as the core of its information and includes tables and statistics.

A very brief report containing comments on the 1981 survey data with attached summary tables and statistics (Young, 1981) is all that has been obtained so far on this survey. This is not publicly available and does not provide sufficient data for a thorough demographic analysis. The data base of this survey was not located at the Tangentyere Council in Alice Springs in 1987.

Although the data collected in the 1983 Camps Survey, sponsored by the Tangentyere Council with Dr. R. O'Conner from the Department of Anthropology of University of Western Australia as principal investigator, were processed by the computer at the University of Western Australia, efforts to obtain a copy of the unit record magnetic tape of the survey or computer print-outs of its tabulations were unsuccessful. As far as is known no detailed analysis of the results of this survey has been carried out and the survey report has not been written.

The data collected from the 1985 Tangentyere census of town camps provide some useful information on town campers. Some of this study's results have been reflected in the Tangentyere Council Interim Report (Dillon, Dixon and Young, 1985), and a brief report based on the survey results has been prepared (Simmons, 1987). However, since the survey was not designed primarily to collect data for demographic analysis it has limited utility in this respect. The survey results lack population data by single year of age or even conventional age groupings, and they lack certain important information on the camp visitors and family composition; nor were any questions on mortality and fertility included in the survey.

1.3 Potential value of a comprehensive population research in Central Australia for Aboriginal and other organizations

A demographic study of the Aboriginal population living in Alice Springs seems important not only in terms of an academic interest in shedding more light on the demography of an important segment of Australia's 'demographically retarded minority' (Jones, 1963) but also because of the urgent need of a number of local Aboriginal and other organizations for such a study. A number of organizations such as the Central Australian Aboriginal Congress (CAAC), Tangentyere Council Inc., Central Land Council (CLC), Aboriginal services of the Northern Territory Department of Community Development (restructured in 1987 into Department of

Health and Community Services and some other departments), Department of Aboriginal Affairs (DAA), and the Aboriginal Development Commission, are involved in programmes to improve the living conditions of the town campers and to provide necessary services for the Aboriginal people, of Alice Springs and its vicinity. Most of these organizations need separate demographic and other socio-economic information about the Aboriginal population in town camps and in town housing. This will enable them to formulate and implement appropriate development programmes.

Because of the existing high levels of mortality and morbidity, the Aboriginal people of Alice Springs and other parts of Central Australia have special health care needs. Therefore, collection and analysis of basic demographic, mortality, fertility and cause of death data are extremely important for an organization such as CAAC which deals with health aspects of the Aboriginal people. Defining the health status of the Aboriginal people in Alice Springs and other parts of the Central Australia in terms of mortality, cause of death and fertility at different times will not only provide baseline data for the CAAC and the Health Department but also enable them to monitor the effectiveness of the services to improve the health status of the Aboriginal people. In addition such data will enable them to plan and develop effective, appropriate and culturally relevant primary health care services and to adapt their services in future years to the changing needs of the Aboriginal population.

Demographic data such as family size and composition, population mobility, growth and population projections together with other socio-economic information about the town campers are of special interest to the Tangentyere Council for the formulation of housing schemes and other supporting services. The Council is especially interested in studying the problem of the transients (visitors to the town camps and urban Aboriginal dwellings) in order to assess their impact upon the resources of the town based organizations.

One main focus of the Central Land Council includes outstations in Central Australia, in an attempt to create a comprehensive picture of outstation development in the centre. The CLC is

interested in collection of data on existing outstations, including their location, infrastructure, demographics, current land use and most importantly people's aspirations and desires with regard to them. The aim is to elucidate land use practices, permanence of outstations and long-term trends.²

There is also a need for research on the following three general areas: the movement of Aboriginal people from remote communities into urban centres, such as Alice Springs; the movement of Aboriginal people from the larger resource centres to outstations; and a macro view of Aboriginal population migration, giving specific attention to cyclic type movement, and to trends which indicate permanent unidirectional movement. Information on these areas, especially the third, would be of immense benefit as a planning tool to the organizations such as the Department of Health and Community Services. Such data could be used in planning the infrastructure for communities, and as a means of assessing the impact of natural hazards such as droughts on the size of communities, and on the mobility of their residents. Availability of demographic information through research in areas described in earlier paragraphs is also important for the purpose of accountability to the Aboriginal people whom the Aboriginal organizations serve and also to the funding bodies.

A comprehensive assessment of the structure of the Alice Springs Aboriginal population, its residential specifications, trends and requirements and the dynamics of its change is of interest to Alice Springs Town Council. Such a study fits in the context of the council's efforts to formulate its potential future role in providing Alice Springs community needs.

It would be ambitious to cover all the population questions described above and of interest to various organizations in a single study. Moreover, some of the research topics on migration and movements of the Aboriginal people have been covered by studies undertaken by Young and Doohan.³

² Personal communication from Sarah Dunlop, Research Officer, Central Land Council Alice Springs, 18 June, 1986.

³ Elspeth Young and Kim Doohan, forthcoming, NARU, Darwin.

1.4 Objectives and data requirements

1.4.1 Objectives of the Study

Taking into consideration the research requirements discussed above, the broad objectives of the study can be defined as the following:

- (a) Building a demographic profile of the Aboriginal population living in Alice Springs; this would consist of a clear picture of the population under study, its age-sex structure and other demographic characteristics, and where possible, a comparison of those characteristics with those of the Northern Territory and the total Aboriginal population of Australia in order to reveal the extent to which the Alice Springs Aborigines are distinctive.
- (b) Assessment of the spatial stability of the core population and their migration history as well as assessment of short term movements and the possibly distinctive nature of the Aboriginal mobility in the study area; also where possible, comparisons with other populations.
- (c) Analysis of the socio-economic characteristics of the population including the living environment and the linkages and contrasts that exist between the Aborigines of the town proper and town-camps.
- (d) An analysis of the levels, differentials and trends of Aboriginal mortality and fertility in Central Australia, where possible in comparison with the total Aboriginal population of the Northern Territory and Australia. The mortality analysis includes causes of death and differential mortality.
- (e) The linkages and contrasts between those Aborigines who live in Alice Springs town proper and those who live in the town camps (possible for all analyses except fertility and mortality).

1.4.2 Data requirements

The demographic profile consists of all demographic information about the population under study, including size of the total Aboriginal population in Alice Springs classified by town campers and urban dwellers, a brief history of past population growth and its determinants, age and sex composition of the population and changes in them over time, detailed description of the current population, its structure and characteristics in terms of marital status, literacy and educational attainment, employment occupation and industry. Labour force participation rates by sex and languages are also discussed. Family structure and relationship of the household

members are of special interest. Population mobility, dynamics of population change in terms of fertility, mortality and migration and the consequences of population growth are discussed.

A major interest of the study is the health status of the Aboriginal population living in Central Australia in terms of mortality, cause of death and natality which leads us to understanding the determinants of population change. To fulfil this task, it was necessary to obtain detailed mortality data such as number of Aboriginal deaths by age and sex and cause of death for particular years to be compared with population figures of those years. This made it possible to measure the change that occurred in mortality during a specific period. It was desirable to obtain death statistics for a period of ten years because our study population is a small one. Cross tabulation of mortality and cause-of-death data, if possible, with socio-economic characteristics of the deceased and population under risk is of importance in studying differential mortality. Cause-of-death statistics by age of the deceased provide the required information for the interpretation of mortality status of the population under study and enables assessment of the completeness of the registration and quality of the death certification. This kind of information together with environmental conditions at different periods of time make it possible to determine the reasons for changing mortality status. Assessment of the health status of the population is incomplete without evaluating its fertility condition; therefore, appropriate fertility information about women in child-bearing ages is needed. Again birth data for at least ten years were needed for fertility analysis. Collection of birth histories of the Aboriginal mothers through a survey of women of child-bearing age is of great help in a thorough fertility analysis. But, unfortunately, I was unable to obtain agreement from the interested Aboriginal organizations in Alice Springs to ask questions pertaining to birth histories and contraceptive use on the grounds of the sensitive nature of the subject in Aboriginal culture and inappropriateness of such questions in a survey context.

Collection and analysis of data on migration and population mobility are an integral part of the study. The statistics needed include place of birth, place of growing up, place of last previous residence and factors which influenced the individuals' decisions to migrate to Alice Springs.

The data include number of visitors, as reported by the households, by age and sex, place of last residence, length of stay in town camps or town dwellings, their intention for permanent or temporary settlement in Alice Springs, reason for visiting Alice Springs, and relationship of the visitors to the heads of the households they live in during their stay in Alice Springs.

To investigate the short-term cyclical movements requires data on movements of the adult population during one year before the date of investigation along with duration and reasons for the movement. Migration analysis is not complete without data about out-migrants, and statistics on this aspect of migration should be collected from the households about their former household members who now live elsewhere.

1.5 Sources of data

1.5.1 Population census data

Australian population censuses, especially from 1971, provide a range of demographic data on the Aboriginal population which is used wherever needed throughout this thesis. The results of the 1986 population census have been utilized in Chapter 2 and also used to provide population denominators for the analysis of Aboriginal mortality and fertility in Central Australia. Also information on the number of children ever born and surviving by women in the reproductive ages 15-49 years by various subsections is used to supplement fertility and mortality investigations based on health and registration records of births and deaths.

1.5.2 Household survey, 1987

A household survey was conducted in Alice Springs during April-June, 1987. It covered all households currently living in 25 town-camps and a sample of 185 Aboriginal households in the town itself.

The town Aboriginal households were mainly selected from two sources of information: a list of more than 200 Aboriginal households occupying Northern Territory Housing Commission Houses compiled from the Commission records and an address list of more than 400 Central Australian Aboriginal Congress patients in Alice Springs for the recent years. In addition to

these two major sources of information, personal knowledge of some Aboriginal informants was used in the updating and expansion of the above lists.

Because of the unavailability of a comprehensive sampling frame, that is a master list containing the addresses of all Aboriginal households in the town, random selection of town households was not possible. Therefore, 185 households were selected on a purposive basis making sure that Aboriginal households living in different suburbs of the town were represented in the study. Comparison with the returns of the 1986 ABS population census total counts reveals that the selected households constitute nearly 37 per cent of all Aboriginal households of the town. This is thus a substantial sample size.

The survey questionnaire, which was developed by the end of October 1986, underwent extensive modifications during a prolonged process of consultation with Aboriginal organizations and interested bodies in Alice Springs. It addressed the following major concerns:

- Structural and sanitary condition of the dwellings,
- Possession of household goods,
- Identification, age, sex, relationship to head of the household and birth place,
- Marital status,
- Languages and education,
- Migration and mobility,
- Employment and economic activities.

This information was collected for all dwellings, household members and visitors, persons 5 years and over and 12 years and over as appropriate.

During the course of consultations with various interested Aboriginal organizations in Alice Springs, a number of items were dropped from the questionnaire. These included questions on fertility experience of the women, birth control knowledge and practice, health status and mortality.

Twenty interviewers were recruited from the community by the Tangentyere Council. It was hoped that households would be interviewed by a person from the same camp and thus their maximum co-operation would be secured and the interview environment would be familiar to the interviewers.

All of the prospective interviewers, mostly educated young men and women, underwent training sessions conducted by myself, but not all of those recruited actually took part in the interview operation. Moreover, not all of those who initially participated in the conduct of the household interviews completed their designated areas. A few enthusiastic persons undertook the bulk of interviews and ultimately, nearly all the 185 interviews in the town were conducted with satisfactory quality by only two interviewers neither of whom had any prior experience of field research. In the town-camps 169 interviews were conducted by 18 interviewers, some of whom had experience of interviewing during the 1986 ABS population census in town camps.

The interview operation was supervised by myself and a research assistant from the Tangentyere Council. The completed questionnaires were checked for completeness and internal consistency and defective forms were corrected in the field with assistance from the supervisor either by the interviewer or, if required, by another interviewer.

In essence, the questionnaire was designed as a precoded form. The uncoded questions such as names of the places, occupations and industries were coded simultaneously with the progress of the field work and data were entered into the computer by a research assistant.

A report containing a summary description of the major findings of the survey supported with 137 basic statistical tables, derived from the survey data, was completed in August, 1987 and submitted to the Tangentyere Council Inc. in Alice Springs for further distribution to a number of Aboriginal organizations and funding bodies such as the Aboriginal Development Commission, Department of Community Development and Alice Springs Town Council.

1.5.3 Registration of Births and Deaths

Under the Registration of Births, Deaths and Marriages Ordinance of 1941, which came into force on 1 July 1949, the registration of Aboriginal births and deaths was made compulsory, but it is generally believed (Jones, 1963:15) that the Ordinance was ineffective in the Northern Territory before 1956. The registration of Aboriginal births and deaths also improved as a consequence of the development of the Register of Wards⁴. Since 1961 nearly all Aboriginal births and deaths reported to the Registrar have been checked against the Register of Wards, now called the Aboriginal Population Record⁵.

Aboriginal births and deaths for the Northern Territory areas south of the twentieth parallel of latitude, which was called the District of Central Australia (N.T. Registration of Births, Deaths and Marriages Ordinance, 1941-1954, Section 6.) are registered in the District Deputy Registrar's Office in Alice Springs⁶.

Unfortunately, the registration forms do not distinguish Aboriginal events specifically, therefore, to recognize an Aboriginal event one should rely on certain general characteristics of the individual cases. The distinguishing features used to recognize Aboriginal cases include Aboriginal name, type of marriage, place of residence, information about the parents, and notifying body.

4, 5 Full-blood Aborigines were included in the Register of Wards which came into legal existence under the Northern Territory Welfare Ordinance of 1953. An Aboriginal could be brought under the provisions of the Welfare Ordinance only by virtue of his individual declaration as a 'ward' of the Director of Welfare, who thereby became his legal guardian (N.T., Welfare Ordinance 1953, Section 14 and 24). Therefore, sufficient information was required for the identification of every person declared to be a ward. To fulfil this requirement, from 15 July 1953 to 13 May 1957, when the Ordinance came into operation, all persons to be declared wards (namely full blood Aborigines) were enumerated and all required personal information about them was collected for entry on the Register of Wards (N.T. Annual Report 1955:37). With the repeal of the Welfare Ordinance in 1964, the Register of Wards was maintained under the name of Aboriginal Population Record (APR).

⁶ I was given access to the registration data kept in Alice Springs Registration Office according to a special deed signed by the Registrar of Births, Deaths and Marriages of the Northern Territory and The Australian National University on 12 February 1987.

By the use of the above criteria, Aboriginal death records were collected from the year 1975 to 1986 and birth records were collected for the Central Australian Region for the census years 1976, 1981 and 1986. The quantity of the birth records, nearly 200 per year, and the limitation of time are the main reasons for collection of the birth records only for the census years. The records of births, collected from the registration office, include the registration number, name of the child, name of the mother, sex, date of birth, place of birth and place of usual residence of the mother.

The death records collected from the registration office include name, date of death, sex, age, registration number, place of usual residence and causes of death by detail of: (1) *Disease or condition directly leading to death* (This does not mean the mode of dying for example, heart failure, asthenia. It means the disease, injury, or complication which caused death.), and *antecedent causes*, morbid conditions, if any, giving rise to the above cause, stating the underlying condition last, (2) *other significant conditions* contributing to the death, but not related to the disease or condition causing it.

1.5.4 Medical Records of Births and Deaths

Aboriginal birth and death records for the Central Australian Aboriginal communities, namely Alice Springs and parts of Barkly Region, are kept in the medical records office of the rural health section of the Department of Health in Alice Springs. It has been claimed by the officers of this section that all events are reported to them by the medical attendants in various parts of the central region and the information is then recorded on the medical records of the people.

For the purposes of this study the Regional Health Directorate in Alice Springs granted me access to the medical records of the Aboriginal people living in Alice Springs and Barkly Region. On the basis of this permission birth records for the years 1976 and 1980-1986 and death records for the period 1975-1986 were collected. The collected birth records consist of the child's name, mother's name, father's name, place of residence, sex, date of birth, birth weight,

length, head circumference, delivery type, Apgar scores⁷ for one minute and five minutes (Apgar, 1953:260-267), place of birth, date of birth of the mother or her age, and health registration numbers for the child and for the mother. Death records include name, age, date of death, place of death, place of residence, cause of death, a brief medical history, the nearest relatives and health registration number.

1.6 Organization of the thesis

The thesis contains eight more chapters. In Chapter 2, the state of our knowledge about the Aboriginal demography in Australia as a whole is reviewed. The findings from the 1986 Census for the total Aboriginal population are discussed in detail and attention is drawn to possible variations from the total Aboriginal population of the Northern Territory, where Alice Springs, the specific study area, lies.

The geographical and historical background, covering the environmental conditions, and the political and administrative situations in which the Aboriginal people of Central Australia have lived since non-Aboriginal settlement over 100 years ago must be understood in order to assess the changes which occurred in Aboriginal mortality and fertility conditions. Such a background also helps to explain the present demographic profile of the Aboriginal population in Alice Springs. Therefore, Chapter 3 reviews this background and explains the process of the Aboriginal town-camps and town dwellers development in Alice Springs.

Chapter 4 discusses the mortality conditions of the Aboriginal population in Central Australia and establishes the mortality schedules prevailing during the last 15 years. The chapter also describes the causes of death and their variations over time.

⁷ Apgar is a score from 0 to 10 obtained from five vital signs namely heart rate, respiratory effort, muscle tone, reflex irritability and colour calculated routinely in the delivery rooms of Australian hospitals at one and five minutes after birth.

Fertility levels, patterns and differentials of Aboriginal women in Central Australia are discussed in Chapter 5 and trends in fertility behaviour during the last 15 years are studied. Wherever possible, comparisons are made with other populations.

In Chapter 6, the demographic conditions of the Alice Springs Aboriginal population are analysed, and compared according to categories of town proper and town-camps. These are compared with the total Northern Territory Aboriginal population.

In Chapter 7, the residence stability and migration characteristics of the study population are examined and variations in places of origin and characteristics of the migrants and non-migrants in town proper and town-camps are discussed.

Chapter 8 describes social, cultural and economic characteristics, including living environment and housing conditions, of the Aboriginal population in Alice Springs. The chapter spells out the contrasts and linkages in social, cultural and economic characteristics between Aboriginal town dwellers and town-campers in Alice Springs.

Chapter 9 is a summary conclusion of the whole study; it spells out the extent to which the Aboriginal population of Alice Springs differs from the Aboriginal population of the Northern Territory as a whole and the total Aboriginal population of the country. It also summarizes the similarities and contrasts which exist between the two subgroups of Alice Springs Aborigines: the Aboriginal town dwellers and town-campers. The determinants of the demographic characteristics of the Alice Springs Aboriginal population and its subgroups are summarized in this chapter and their consequences are briefly presented.

Chapter 2

What is known of Aboriginal demography?

2.1 Population size, spatial distribution, change and residence stability

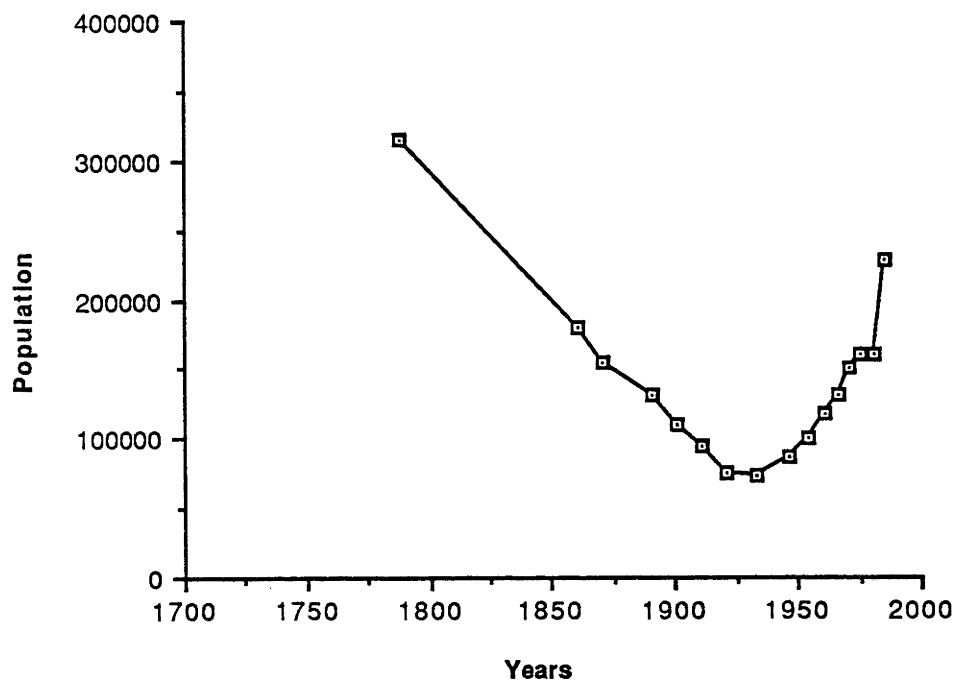
In 1986 there were 227,645 persons of Aboriginal and Torres Strait Islander origin in Australia (ABS, 1987c), to whom I refer as Aborigines as a single category. They constituted about 1.5 per cent of the total Australian population and are unevenly scattered among the states and territories with major concentrations in Queensland (26.9 per cent), New South Wales (25.9 per cent), Western Australia (16.6 per cent) and the Northern Territory (15.3 per cent); the remaining 15.3 per cent of the total Aboriginal population live in South Australia, Victoria, Tasmania and the Australian Capital Territory. The proportion of Aborigines in the total populations of states and territories varies from 0.3 per cent to 2.8 per cent except for the Northern Territory where the Aboriginal population constitutes 22.4 per cent of the total Territory population. This high proportion of the Aboriginal population in the Northern Territory is due to the smaller size of the non-Aboriginal population in the Territory compared to other states.

The size of the Aboriginal population at the time of first European settlement in 1788 is a matter of dispute. A high estimate of 1,000,000 was proposed by Arthur Phillip, the first Governor of New South Wales (Smith, 1980:57) and also by Bleakley (1929), and a very low estimate of 150,000 was reflected in the *Australian Handbook* from 1881, and *Australian Yearbooks* up to 1929 (Smith, 1980:68). However, further research (Radcliffe-Brown, 1930; Davidson, 1938; Jones, 1970; Smith, 1980) resulted in population size ranging from 227,000 to 314,000 (Smith, 1980:69). Till recently these estimates were considered an acceptable general order of magnitude for the size of the Aboriginal population at the time of the European arrival in Australia. On the basis of newly available historical, archaeological and environmental studies in

various parts of the country and especially based on Noel Butlin's work (1983) about the impact of diseases brought into Australia by Europeans from 1788 onward, Peter White and D. J. Mulvaney (1987:115-117) are of the opinion that an estimate of about 750,000 people is a reasonable figure. Considering the size of the continent, the number of the Aborigines in the eighteenth century was small indeed.

Since it has been established that human beings have been living in the continent during the last 30,000 to 50,000 years (McCarthy, 1957; Berndt and Berndt, 1964; Calaby, 1971; White and Lampert, 1987), the small size of the Aboriginal population at the time of first European settlement can only be explained by assumption of a virtually stationary population throughout the prehistoric period (Gray, 1985). With the expansion of European settlements throughout the continent, the Aboriginal population declined drastically because of conflict with the settlers and economic displacement as the frontiers of European settlement expanded; the introduction of new diseases to which Aborigines had no natural immunity; usage of alcohol; and consequent disturbed demographic behaviours, such as sharp decline in the birth rate and rise in the death rate. As can be seen in Figure 1.1, the combination of all these factors resulted in population decline due to an excess of death rates over birth rates from about 1800 to the early 1930s (Smith, 1980:210); as a result, by the early 1930s the Aboriginal population had probably decreased to about 74,000 (Smith, 1980:209). Then the process of population decline was checked and by the beginning of the 1950s population numbers had fully recovered with a sustained and continuous growth of about 2 per cent a year which increased to over 2.5 per cent in the period 1966-1971 (Smith, 1980:210).

Figure 2.1: Trend In the size of the Aboriginal population



Source: Data for the years 1788 to 1976 from Smith, 1980:210 and for the years 1981 and 1986 from the ABS Census results.

In 1986, the majority of Aboriginal people of Australia, as Table 2-1 shows, lived in urban areas. A large proportion were concentrated in small and medium urban centres with population under 100,000 people. This is true for all states and territories except the Northern Territory where only about 31 per cent of Aboriginal people live in urban centres and the rest live in rural areas.

The urbanization trend is remarkable. While in 1947 more than 88 per cent of the Aboriginal population was living in rural areas the figure dropped to 76.7 in 1961 and it dropped further to 40.5 in 1976. In 1986 only about 34 per cent of the Aboriginal population was living in rural localities. The increase in urbanization from the late 1960s was associated with relaxation of restrictions on the movements of the Aboriginal people, changes in the working conditions in the

pastoral stations, which resulted in loss of jobs and forced the Aboriginal people to become marginal residents of towns and cities as evident from the Northern Territory experience (see Chapter 3), and changing racial identification especially in urban centres.

Table 2-1: Distribution of the Aboriginal population by urban and rural; Australia, States and Territories, 30 June 1986

STATES AND TERRI- TORIES	Major Urban (A)	Other Urban (B)	Rural Local- ities. (C)	Other Rural (D)	Total
NSW	21416	27352	3075	7168	59011
VIC	5986	5224	229	1172	12611
QLD	11091	28788	11013	10376	61268
SA	5696	4580	1223	2792	14291
WA	8949	15775	4672	8393	37789
TAS	1351	3460	568	1337	6716
NT	-	10700	13274	10765	34739
ACT	1048	-	-	172	1220
AUS	55537	95879	34054	42175	227645
			Per cent		
NSW	36.3	46.4	5.2	12.1	100.0
VIC	47.5	41.4	1.8	9.3	100.0
QLD	18.1	47.0	18.0	16.9	100.0
SA	39.9	32.0	8.6	19.5	100.0
WA	23.7	41.7	12.4	22.2	100.0
TAS	20.1	51.5	8.5	19.9	100.0
NT	-	30.8	38.2	31.0	100.0
ACT	85.9	-	-	14.1	100.0
AUS	24.4	42.1	15.0	18.5	100.0

(A) Major Urban areas are urban centres with a population of 100,000 persons and over.

(B) Other Urban areas are urban centres with a population of 1,000 to 99,999 persons.

(C) Rural Localities are population clusters of 200 to 999 persons.

(D) Other Rural is the balance of a State including migratory.

Source: ABS, Census 86, Table C2, Catalogue no. 2499.0.

During the last 15 years, as Table 2-2 shows, the census-enumerated Aboriginal population increased by 111,692. This suggests an average rate of population growth¹ of 4.5 per cent per annum with fluctuations from a 6.6 per cent average growth rate during the first five-year period (1971-1976) to a negative -0.1 per cent average decrease during the second five-year period (1976-1981) and again a 7.1 per cent increase during the last five-year period ending in 1986.

¹ Annual rate of population growth is calculated by using the following formula: $r = [\log_e(P_2/P_1)/n] * 100$, where P_1 is the population at first census and P_2 is the population at the second census, and n is the number of years between censuses.

Obviously, in the absence of in-migration, the 4.5 per cent average annual growth rate is far from matching the natural rate of population increase, even before fertility decline, about 2.9 per cent per year (Smith, 1980:278), of the Australian Aboriginal population and cannot be accounted for by the excess of births over deaths. Therefore large fluctuations in the last four census counts which resulted in contrasting rates of population change during the study periods are largely due to inconsistencies in Aboriginal population counts in various census operations rather than to the effects of changing demographic factors. Changes in the definition of the Aboriginal population contributed to variations of the census counts especially where the census data before and after 1971 are compared. From the 1971 Census persons of more than one race were no longer required to indicate the mix of races. The following questions were asked during the the last four population censuses to ascertain the racial origin of the people:

1971 Census;

5. What is this person's racial origin?

(If of mixed origin indicate the one to which he considers himself to belong)

(Tick one box only or give one origin only)

- 1 European origin
- 2 Aboriginal origin
- 3 Torres Strait Islander origin
- 4 Other (give one only).....

1976 Census;

9. What is each person's racial origin?

. If of mixed origin, indicate the one to which the person considers himself/herself to belong.

. Tick one box only for each person.

- | | |
|--------------------------------|---|
| European origin..... | 1 |
| Aboriginal origin..... | 2 |
| Torres Strait Islander origin. | 3 |
| Other origin..... | 4 |
| (State only one) | |

1981 Census;

16. Is the person of Aboriginal or Torres Strait Islander origin?

. For persons of mixed origin, indicate the one to which they consider themselves to belong.

- | | |
|------------------------------|---|
| No..... | 1 |
| Yes, Aboriginal..... | 2 |
| Yes, Torres Strait Islander. | 3 |

1986 Census;

9. Is the person of Aboriginal or Torres Strait Islander origin?

For persons of mixed origin, indicate the one to which they consider themselves to belong.

- 4 No
- 5 Yes, Aboriginal
- 6 Yes, Torres Strait Islander

Though, in essence, the questions on ethnicity in the last four censuses were the same and all of them were based on the principle of self identification, the wording in the 1981 and 1986 censuses is different from that used in the 1971 and 1976 censuses. Quite naturally even a small variation in wording as well as people's wish to identify or not may produce somewhat different results.

Table 2-2: Changes in size and distribution of Aboriginal population by States and Territories from 1971 to 1986

States & Territories	1971	1976	1981	1986
NSW	23,873	40,450	35,367	59,011
VIC	6,371	14,760	6,057	12,611
QLD	31,922	41,345	44,698	61,268
SA	7,299	10,714	9,825	14,291
WA	22,181	26,126	31,351	37,789
TAS	671	2,942	2,688	6,716
NT	23,381	23,751	29,088	34,739
ACT	255	827	823	1,200
AUS	115,953	160,915	159,897	227,645

Sources: ABS, Census publications.

An evaluation by age of Aboriginal census counts (Choi and Gray, 1985:29) reveals that in spite of 'a broad level of consistency between 1971 and 1981 Census counts, there is a large excess in almost all age groups in the 1976 Census which is inconsistent with both 1971 and 1981 counts'; and also apparently there is a high increase (+42.4 and +41.5 per cent) in the 1986 Census counts compared to the 1981 Census and 1976 Census. Since it was shown (Gray and Smith, 1983:7) that the 1981 Census returns are a gross underestimate of the Aboriginal population size, and the 1976 Census provided the highest count of the total Aboriginal

population before the 1986 Census, it is possible to compare their consistency by forward surviving the 1976 Census counts to 1986, applying survival ratios obtained by Gray (1983).

The above exercise revealed that the 1986 Census counts for population aged 10 years and over is 16.6 per cent higher than the survived 1976 Census Aboriginal population in 1986 which could be related to improvement in the level of enumeration and data processing of the Aboriginal population in the 1986 Census and increase in identification as Aboriginal. It should be noted that the age specific percentage difference between the 1986 Census figures and the 1976 survived population to 1986, which was 28.4 per cent in age group 10-14, steadily drops by consequent age groups up to age group 35-39, where the difference is only 7.2 per cent, with the exception of age group 35-39 where the difference was a negligible figure of only 0.4 per cent. But the difference again increases towards the older ages and reaches 27.7 per cent in age group 60-64 though the increase in the age specific differences is consistent from age group 40-44 onward. This could be accounted for partly by the better coverage of the younger and older people in the 1986 Census than the 1976 Census.

Applying the reverse-survival method, a comparison between 1981 and 1986 Census counts shows (Gray, 1987b:3) that in the 1981 Census the level of under-enumeration in the 0-4 age group was much higher than in most age groups and the relative size of population aged 0-4 in the 1986 Census is reasonable. Also a very large increase in the level of enumeration of the Aboriginal population occurred in the 1986 Census which is claimed (ABS, 1987b:2-2) to be partly the result of a better awareness campaign, improvements in the field enumeration procedures in Aboriginal communities and improvements in coding and data processing system, and possibly more self-identification of Aboriginal people.

The returns of the 1986 Census on mobility reveals that the Aboriginal population is less stable in terms of changing place of residence than the whole population of the country though the difference between them is not very wide. Table 2-3 shows that while 77.6 per cent of the total population aged one year and over did not change their place of residence during 1985-1986

this figure for the Aboriginal population aged one year and over is 67.8 per cent. The patterns of change in the level of stability over a short period of one year and a relatively longer period of five years are similar for the Aboriginal population and the total population.

Table 2-3: Population aged 1 year and over and 5 years and over who did not move place of residence between 1985-86 and 1981-86. (Per cent)

	Males	Females	Persons
Australia:1985-1986			
Total population	77.2	78.1	77.6
Aborigines	67.0	68.5	67.8
Australia:1981-1986			
Total population	52.6	53.2	52.9
Aborigines	45.9	46.0	46.0
Northern Territory:85-86			
Total population	57.9	60.4	59.1
Aborigines	75.8	76.5	76.4
Northern Territory:81-86			
Total population	33.2	35.1	34.1
Aborigines	62.3	61.7	62.0

Source: Derived utilizing 1986 Census data: Small area Data Table C04: Australia; Table CA0004: Northern Territory, Australia.

Table 2-3 also indicates that the level of residence stability between the total population and the Aboriginal population in the Northern Territory is quite different. It shows that the Aboriginal population is far more stable than the Territory population as a whole and the difference in the level of stability between them grows with increase in the length of residence period. The table indicates that the Aboriginal population of the Northern Territory is also far more stable than the total Aboriginal population of Australia and, in the longer period, even than the whole population of the country. The transient nature of many non-Aboriginal residents of the Northern Territory, who usually moved into the Territory on short employment contracts, is accountable for the high residence mobility of the Territory's population.

2.2 Age and sex distribution

According to the results of the 1986 Population Census there are 98 Aboriginal males for each 100 Aboriginal females. This is comparable with the ratio of the total population where the overall sex ratio is 99.2. In the Northern Territory, the sex ratio of the Aboriginal population is

94.9 which is even lower than the average sex ratio of the total Aboriginal population and much below that of the total Territory population where the ratio is 111.2. The higher sex ratio of the total population in the Territory is because of the high proportion of males of working age in the Territory.

Examination of the 1986 Census results on age distribution of Aboriginal population, as summarized in Table 2-4, reveals that the total Aboriginal population and similarly the Northern Territory Aboriginal population still have young age structures, e.g. the proportion of the population under age 20 is about 53 per cent for the total Aboriginal population compared to only about 32 per cent of the whole population of the country. Similarly the median age² for the total population is 31.1 years, much higher than that of the total Aboriginal and the Northern Territory Aboriginal population, 19 years and 19.2 years respectively.

The age dependency ratio, that is the ratio of population aged 0 to 14 and 65 years and over to the working age population of 15 to 64, for the total Australian population is a low figure of 51.2 compared to the high figures of 73.6 and 73.5 for the total Aboriginal and the Northern Territory Aboriginal population. This is because, as shown in Table 2-4, the child dependency ratios for the total Aboriginal population and the Northern Territory Aboriginal population are each about twice as high as the child dependency ratio for the whole population of Australia.

² Median age divides the population into two equal-size groups, one of which is younger and the other of which is older than the median (Shryock and Siegel, 1971:233).

Table 2-4: Aboriginal population age structure compared to the total population age structure, June, 1986

	Total population	Aboriginal population	N.T. Aborigines
Total persons	15,602,156	227,645	34,522
	-per cent of total-		
Age groups			
0-4	7.6	14.0	13.9
5-9	7.4	12.5	13.1
10-14	8.3	13.3	12.8
15-19	8.4	12.8	12.4
20-39	32.4	31.3	31.1
40-59	20.8	12.0	12.2
60-64	4.5	1.5	1.8
65 and over	10.6	2.6	2.7
Dependency Ratios	-ratio to age 15 to 64-		
Child Dep. Ratio	35.2	69.0	68.8
Old age Dep. Ratio	16.0	4.6	4.7
Overall Dep. Ratio	51.2	73.6	73.5
Median Age (years)	30.0	19.0	19.2

Sources: Basic data from ABS, Census 86: Table CA0001-Total persons-Age by Aboriginal Origin by sex, Australia and the Northern Territory.

Figure 2.2: Age Structure of the Aboriginal Population

1971

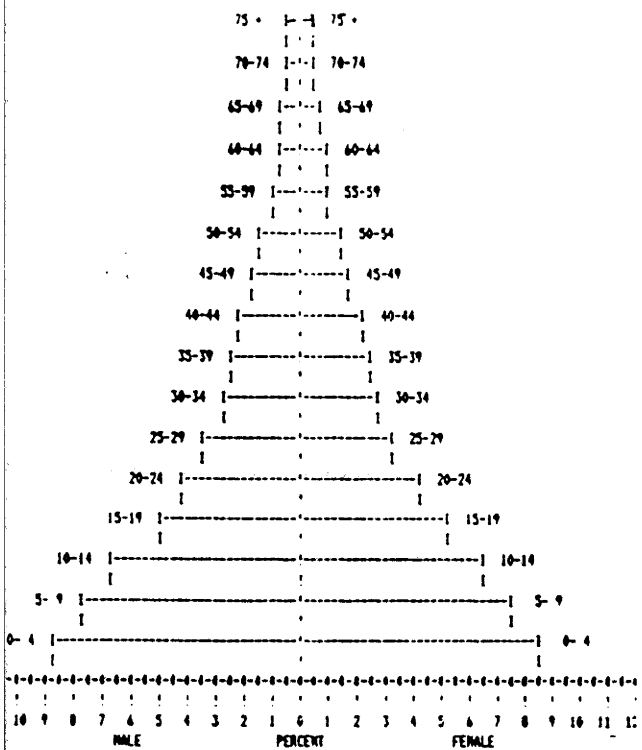


Diagram 1

1976

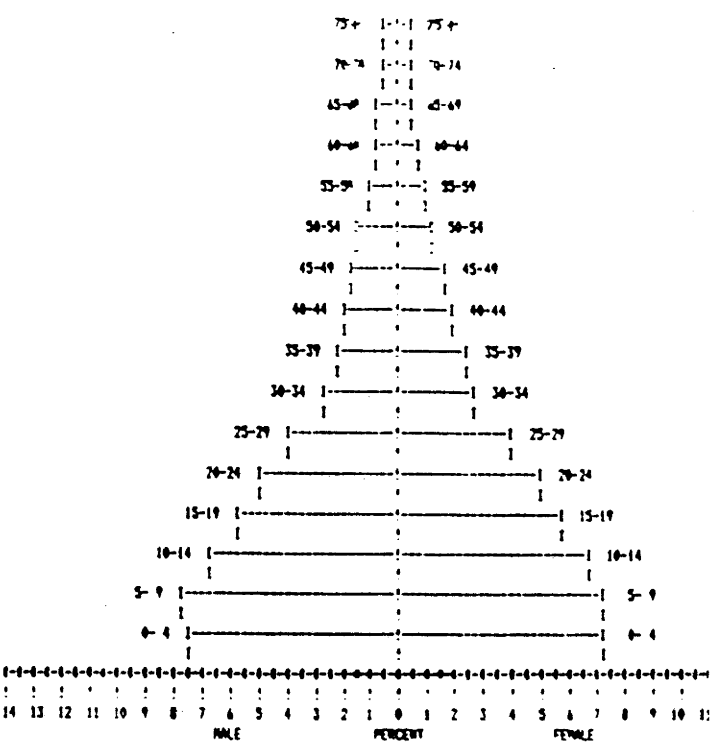


Diagram 2

1981

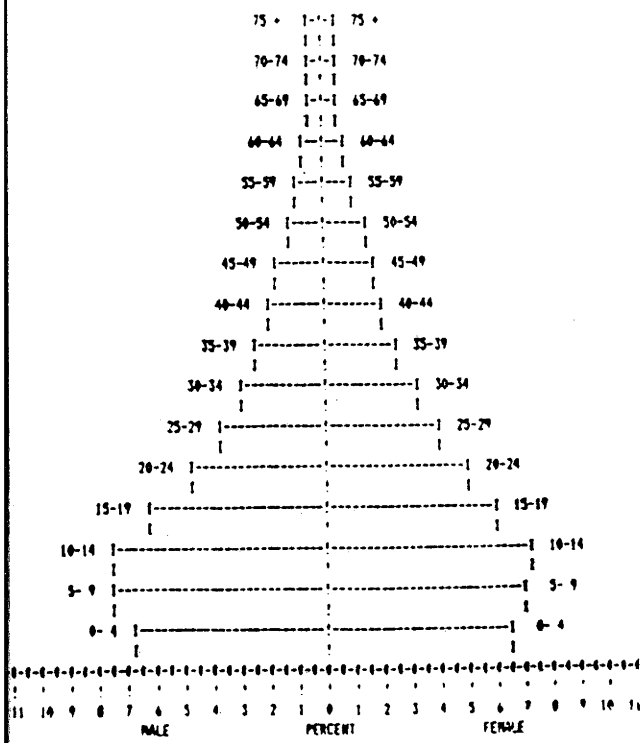


Diagram 3

1986

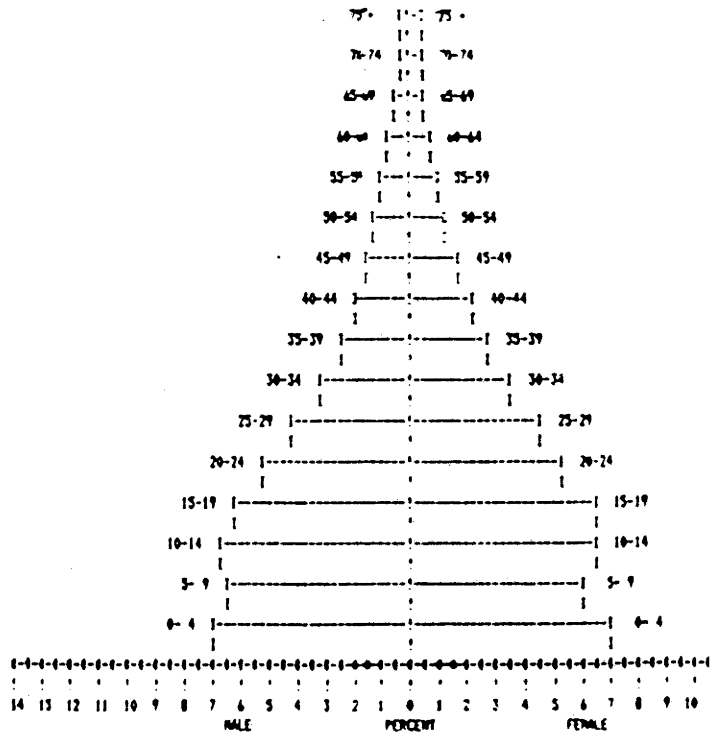


Diagram 4

Generally, the Aboriginal population age structure, as seen in Figure 2.2, is quite similar to those of many developing countries, characterized by a pyramid shape with the broad base of rapidly growing populations.

As shown in diagram 4 of Figure 2.2, the only deviation, in the 1986 age distribution, from a smooth pyramid shape is that the size of the 5-9 age group is smaller than the 10-14 age group and the size of 10-14 age group is about the same as the 15-19 age group. This is the result of a sharp decline in Aboriginal fertility, that is to say from a total fertility rate of 5.9 for the period 1966-1971 to 3.3 for 1976-1981 (Smith and Gray, 1985:6), resulting in declining growth rates which affected the age distributions as contractions occurred at the bases of the population pyramids of the 1976 and 1981 Census age distributions shown in diagrams 2 and 3 of Figure 2.2. But the unusual feature of the 1986 age distribution is the larger size of the 0-4 age group than the 5-9 which is a reverse process of what was mentioned above about the 1976 and 1981 age distributions. This is the echo of the 1960s high fertility, where the cohorts of women born then entered the highly reproductive ages, and its occurrence was predicted before by some scholars (Gray, 1984:6). The age structure of the Northern Territory Aboriginal population is, in general, quite similar to that of the Aboriginal population as a whole.

2.3 Households and Marital Status

Data from the 1986 Population Census confirmed that the majority of Aboriginal households are not some types of extended families, that is two or more couples living in the same household. The majority (63.3 per cent)³ consist of nuclear type and non-familial households⁴. Though a slightly larger proportion of Aboriginal households in the Northern Territory are of extended types than the whole country Aboriginal average, nuclear families still constitute the single largest category (46.5 per cent) and combined with the non-familial households they constitute

³ Derived from ABS Census 86, Australia: Table CA0018-Aboriginal and Torres Strait Families and Persons in Families-Family Type.

⁴ By Non-Familial households I mean single parent households and lone persons (see section 4.3.3 in chapter 4 for a discussion on this subject).

62.1 per cent⁵ of all households. For both the whole Australian Aboriginal population and for the Northern Territory Aborigines the proportion of single parent families is large, about 16 per cent. The existence of a very large proportion (55.5 per cent) of women in separated, divorced or widowhood status among the older females 55 and over partly accounts for the higher proportion of single parent families.

Aboriginal households are large: on average there are 4.6 persons in a household⁶. With 5.9 persons per household, the Northern Territory Aboriginal households are relatively larger than the average Aboriginal household size in the country as a whole. This is because the majority of the Aboriginal population of the Northern Territory, as mentioned earlier, are living in rural Aboriginal communities where traditional Aboriginal kinship obligations and responsibilities are strong. It should be also mentioned that Aboriginal households in the Northern Territory are crowded compared to the whole Australia Aboriginal households. There are, on average, 2.4 persons per bedroom in the Territory against 1.7 persons per bedroom in the latter case.

The results of the 1986 population census on marital status reveal that marriage is not universal in the Aboriginal population (see Table 2-5). Only 3 per cent of the males and about 8 per cent of the female population in the age group 15 to 19 are ever married and by the end of reproductive life at age 49 only about 86 per cent of the females eventually married.

On average, females marry 1.4 years younger than males and the singulate mean age at marriage (Hajnal, 1953:112-136) is high for both of the sexes, 28.3 years for males and 26.9 years for the females. The singulate mean age at marriage for females has increased by about

⁵ Derived from ABS Census 86, Northern Territory: Table CA0018-Aboriginal and Torres Strait Families and Persons in Families-Family Type.

⁶ Derived from ABS, Census 86, Australia: Table CA0023, A/TSI Dwellings excluding Caravan Parks-Number of Persons in Households, and Table CA0028, Persons in A/TSI Dwellings excluding Caravans etc. in Caravan Parks-Aboriginal Origin by number of persons in households.

2 years⁷ since 1981. About 9.5 per cent of the females 55 and over have never married while twice as many (18 per cent) have never married in the male population 55 and over.

Widowhood claims a large proportion of older Aboriginal women and a much smaller proportion of the older male population. Thus, a very wide difference exists in the proportion widowed

Table 2-5: Aboriginal population by marital status: Australia, 1986

Age groups	PROPORTIONS				
	Never Married	Married	Separated & Divorced	Widowed	Total Ever Married
MALES					
15-19	.974	.021	.004	.000	.026
20-24	.819	.156	.020	.002	.181
25-29	.592	.347	.057	.003	.408
30-34	.418	.469	.107	.006	.582
35-39	.320	.538	.132	.010	.680
40-44	.252	.567	.160	.022	.748
45-49	.231	.589	.145	.035	.769
50-54	.206	.569	.160	.065	.794
55-59	.193	.570	.145	.092	.807
60-64	.183	.544	.136	.138	.817
65-69	.167	.542	.102	.190	.833
70-74	.163	.530	.084	.223	.837
75+	.188	.428	.042	.342	.812
Singulate Mean Age at Marriage for males = 28.3					
FEMALES					
15-19	.925	.067	.005	.002	.075
20-24	.698	.264	.042	.006	.302
25-29	.479	.407	.102	.012	.521
30-34	.325	.495	.159	.021	.675
35-39	.219	.538	.200	.044	.781
40-44	.159	.557	.204	.080	.841
45-49	.135	.542	.191	.132	.865
50-54	.108	.501	.177	.215	.892
55-59	.087	.469	.156	.288	.913
60-64	.089	.421	.099	.390	.911
65-69	.093	.359	.080	.467	.907
70-74	.100	.295	.053	.551	.900
75+	.113	.213	.035	.636	.884
Singulate Mean Age at Marriage for females = 26.9					

Source: Basic data from ABS, Census 86: Australia Table CA002-Total A/TSI-Age by Marital Status by Sex.

Note: The proportions may not add to unity because of roundings of the figures to third decimal points.

⁷ Basic data from ABS, 1984: Australia Table ASC05.

between males and females in the higher ages. Of women aged 55 years and over, 47 per cent are reported as widowed; for men the number is only 20 per cent. This could only be accounted for by the differential mortality among males and females in higher ages. Separation and divorce is an option exercised by about 10 per cent of the Aboriginal men and 12 per cent of the women.

The Aboriginal population's marital status in the Northern Territory is markedly different from that of the Australian Aboriginal population as a whole. It seems (see Table 2-6) that marriage is closer to universal among the Aboriginal population of the Northern Territory than the total Aboriginal population. More than a quarter of the Aboriginal females in age group 15-19 are ever married though the male proportion (8 per cent) in the same age group is much lower than that of the females, and about 93 per cent of the females eventually marry by the end of the reproductive life at age 49. Also more than 90 per cent of the male population eventually marry by age 55 years and over.

Table 2-6: Aboriginal population by marital status: Northern Territory, 1986

Age groups	<u>PROPORTIONS</u>				
	Never Married	Married	Separated & Divorced	Widowed	Total

	<u>MALES</u>				
15-19	.920	.075	.005	-	1.000
20-24	.634	.340	.024	.002	1.000
25-29	.404	.543	.049	.002	1.000
30-34	.265	.640	.084	.010	1.000
35-39	.185	.703	.102	.012	1.000
40-44	.146	.731	.094	.029	1.000
45-49	.147	.716	.110	.031	1.000
50-54	.134	.696	.119	.054	1.000
55+	.097	.670	.086	.148	1.000
Singulate Mean Age at Marriage for males = 25.0					
	<u>FEMALES</u>				
15-19	.747	.232	.016	.005	1.000
20-24	.453	.481	.042	.019	1.000
25-29	.307	.590	.073	.031	1.000
30-34	.203	.644	.111	.042	1.000
35-39	.126	.683	.131	.062	1.000
40-44	.094	.640	.140	.126	1.000
45-49	.071	.596	.139	.190	1.000
50-54	.065	.490	.136	.308	1.000
55+	.077	.375	.074	.473	1.000
Singulate Mean Age at Marriage for females = 23.1					

Source: Derived from ABS, Census 86:State Northern Territory, Table CA002-Total A/TSI-Age by Marital Status by sex.
 Note: The proportions may not add to unity because of roundings of the figures to third decimal points.

Overall, Aborigines in the Northern Territory marry younger on average than those elsewhere. The singulate mean age at marriage is 25.0 years for the males and 23.1 years for the females. The difference between male and female mean age at marriage is slightly greater than that of the total Aboriginal population of Australia. Widowhood claims a large fraction of the Northern Territory Aboriginal population too and the level is similar to that of the whole Australia Aboriginal population. Separation and divorce are also an option for the Northern Territory Aborigines though the level (7.5 per cent for the males and 9.6 per cent for the females) is slightly lower than Aborigines in Australia as a whole.

2.4 Dynamics of Population Change

2.4.1 Fertility

Aboriginal vital statistics are not readily available in Australia. This is because most states, including the Northern Territory do not distinguish racial origin on the registration records.

Therefore, the Bureau of Statistics does not publish birth and death statistics by Aboriginality. This situation forces researchers to use indirect techniques to calculate Aboriginal vital rates using census data, or to confine themselves to regional studies where vital records are available by ethnicity, or to conduct special household surveys and collect the vital data for a particular year themselves or undertake the labour of record-by-record search in registry offices to separate Aboriginal records from the rest. At present the use of national census information for derivation of vital rates is the only option open.

From census age returns, we can obtain a rough index of fertility level, called the child-woman ratio, by comparing the number of children in the 0-4 age group to the number of women in the 15-49 age group who are responsible for these children. Examination of the child-woman ratios, obtained from 1971 to 1986 population census age distributions, reveals that though Aboriginal fertility is much higher than that of the whole Australian population, as Table 2-7 shows, it has continued to decline more rapidly than the whole Australian population during the last 15 years.

Table 2-7: Children aged 0 to 4 per thousand women of reproductive ages (15-49) at Australian Censuses 1972-1986.

	1971	1976	1981	1986
Australia Total	402	363	305	294
Per cent of 1971	100	90	76	73
Aborigines Total	799	762	539	530
Per cent of 1971	100	95	67	66
N.T. Aborigines	774	676	571	518
Per cent of 1971	100	87	74	67

Derived from: (1) ABS, Census 1986, Australia: Table CA0001, Total Prsons - Age by Aboriginal Origin by Sex, Total Australia (2) ABS, Census 1981, Catalogue No.2443.0: Australia, Table 7. Ages in single years, and Table CAB01 Age by Racial Origin by Sex (3) ABS, Census 1976, Catalogue No.2417.0: Australia, Table 6. Population by Age, and Aboriginal Summary Data (ACDSF) 6. Age last Birthday (4) ABS, Census 1971, Reference No.2.83.9: Australia, Table 1. Population by age, and Reference 2.91, The Aboriginal Population.

The decline in the values of child-woman ratios is also noticeable in the Northern Territory. It should be noted that the continuation of decline in Aboriginal fertility, confirmed by the 1986 Census results, is occurring while the number of births during the five years preceding the 1986 Census, reflected in the size of the 0-4 age group of 1986 Census Aboriginal age distribution, is higher than in the previous period. This, as mentioned before, is because of the echo effects of

high fertility of the 1950s and 1960s; the women born then are now going through the most fertile years of their reproductive life.

Though the child-woman ratio as a measure of fertility has the advantage of simplicity of calculation and its data requirements are easily obtainable from a census age distribution, it is affected by mortality as well as underenumeration of 0-4 age children. Therefore, to obtain more plausible indices of fertility measurement it is necessary to examine other available options.

During the 1986 population census, women were asked about the number of children they had ever borne and the number surviving. Similarly, the 1981 Census collected information about the total number of children borne by a woman. The returns of the 1981 and 1986 Censuses on number of children ever borne by women in five year age groups of reproductive ages are presented in Tables 2-8 and 2-9 below.

Table 2-8: Aboriginal females and mothers by five year reproductive age groups with number of children ever born, 1981.

Age groups	Number of women	Number of mothers	Number females childless	Children ever born	Parity not stated
15-19	9570	1814	3847	2361	4089
20-24	7964	4901	1773	9887	1290
25-29	6267	4810	660	13965	788
30-34	5229	4295	371	16036	563
35-39	3978	3329	237	14873	412
40-44	3392	2766	191	13789	435
45-49	2756	2242	183	11733	331

Source: (1) ABS 1981 Census, Ausatralia: Table ASC05-Female Aboriginal and Torres Strait Islanders Aged 15 years and over-Total issue by Age by Marital Status.

Table 2-9: Aboriginal females and mothers by five year reproductive age groups with number of children ever born and surviving, 1986.

Age groups	Number of Women	Number of Mothers	Children Ever Born	Children Surviving	Childless Women	Parity Not Stated
15-19	14629	2502	3461	3350	8295	3832
20-24	12201	6649	12857	12690	3843	1705
25-29	10083	7323	19777	19606	1722	1031
30-34	7942	6428	21179	20822	741	773
35-39	6495	5285	20267	19734	515	697
40-44	4847	3913	18160	17580	355	579
45-49	3901	3129	15866	15329	301	476

Source: ABS, Census 86, Australia: Table ABSTAT16 -Aboriginal and Torres Strait Islanders Females aged 15 years and over - age by number of females then total issue then total living issue, Australia.

The availability of information about the number of children ever-born by five year age groups of women in reproductive ages of 15-49 years, allows us to estimate average fertility rates in effect during the intercensal period, 1981-1986, based on the increment of cohort parities from information about average parities by age group of women between the two censuses or surveys five or ten years apart.

Examination of the 1981 Census and 1986 Census data on number of Aboriginal women by parity, as presented in Tables 2-8 and 2-9, shows that a large proportion of women have not stated their parity which could contain those with no children as well. The exclusion of women who did not state their parity from the calculations of average parities will inflate the average parities and the inclusion of such women in the calculation of average parities, while their children are omitted, will lead to an underestimation of the true average parities. Empirical studies (El-Badry, 1961) have shown that this error is often due to the failure of interviewers and of the data processing personnel to differentiate between a childless woman and one who does not state her parity. El-Badry (1961) proposed a correction method to adjust the number of parity-not-stated women who should have been classified as childless based on the observed high correlation existing between the proportions childless and the proportions of parity-not-stated. The figures on the average parities of the Aboriginal women and mothers in 1981 and also average parities of women and mothers and average number of the surviving children in

1986, presented in Tables 2-10, 2-11 and 2-12, are adjusted with the help of El-Badry correction factors obtained from data in Tables 2-8 and 2-9.

As was mentioned earlier, the method used for obtaining fertility indices is based on the increment of hypothetical, intercensal cohort parities (United Nations, 1983:59-64). Since the interval between the 1981 and 1986 Censuses is five years, the women in the 1986 Census represent the survivors of the next younger five-year age group of the 1981 Census. The difference in the average parity of the cohort between 1981 and 1986 reflects its childbearing experience between the two censuses assuming that the fertility of those women who died or migrated during this period is not systematically different from that of those who remained. The intercensal average parities for a hypothetical cohort could be estimated by cumulating the intercensal parity increments. The estimated average age-specific fertility rates and also the associated total fertility rate of the Australian Aboriginal women prevailing during the period 1981-1986 are presented in Table 2-10 below.

Table 2-10: Average age-specific fertility rates and the total fertility rate of the Aboriginal women of Australia for the period 1981-1986.

Age groups	Average parities 1981	Average parities 1986	Age specific fertility rates
15-19	0.261	0.260	0.1304
20-24	1.336	1.158	0.1924
25-29	2.398	2.155	0.1364
30-34	3.300	2.929	0.0650
35-39	4.023	3.428	0.0100
40-49	8.956	8.584	0.0340
TFR	-	-	2.8410

The estimated total fertility rate of 2.84 for the period 1981-1986, as presented in Table 2-10, indicates that the level of Aboriginal fertility is higher than the whole-Australia fertility level (TFR=1.93 in 1983 from ABS, 1987e:18) and has fallen from the Aboriginal average total fertility rate of 3.32 for the period 1976-1981 (Gray, 1983:87). Also we can calculate the average crude birth rate for the period under study, 1981-1986, by estimating the average annual number of births through the application of the estimated age-specific fertility rates to the

average mid-period population. The period average crude birth rate is implied to be 27.8 per 1000 population. This again confirms the continuation of the Aboriginal fertility decline starting from the early 1970s.

2.4.2 Mortality

As with fertility, the unavailability of Aboriginal death statistics presents obstacles in obtaining mortality measurements. Data on the number of annual Aboriginal deaths are published for only some of the states such as the Northern Territory by the Department of Health. Thus, it is not possible to obtain Aboriginal mortality levels or age patterns through direct application of annual death statistics on a national scale. Also it is not appropriate to use the census data on distribution of population by age for calculation of mortality measures through indirect methods based on model life-table and stable population techniques, owing to the assumption of stability or even quasi-stability of the population in the recent past behind the proposed techniques.

Using the 1986 Census data a recent study on the Aboriginal child survival concluded that there is a single general pattern of Aboriginal infant and child mortality which exists throughout the country, with only marginal geographical variations, which 'implies infant mortality rates at least 20 per thousand live births during most of the decade before 1986' (Gray, 1988:31). Meanwhile data from the Departments of Health for the period 1981-86 suggest Aboriginal infant mortality rates in the range of 25 to 34 per thousand live births in Queensland (14 communities), the Northern Territory and Western Australia. These might be overestimates (Gray, 1988a:28) because of uncertainty about the relative coverage of statistical collections. Hence, the Aboriginal infant mortality rate lies in the range of 20 to 34 per thousand live births per year.

In the absence of information on adult deaths for the total Australian Aboriginal population, we will rely on the Northern Territory data, which are systematically being recorded by the Northern Territory Department of Health, to assess the age pattern of Aboriginal adult mortality. A recent study based on the 1981 and 1986 Censuses results (Gray, 1988b) indicates that the levels and patterns of Aboriginal mortality are very similar throughout the country. Therefore estimates based on the Northern Territory data will not be markedly different from those for the Aboriginal

population at the national level. The average estimates of the highest and lowest infant mortality rates were combined with the five-year age specific mortality rates of the Aboriginal population (Devanesen, et al., 1986:23), assumed as a rough average of the total Aboriginal mortality schedule of the country, to obtain provisional life tables for Aboriginal males and females. These are presented in Tables 2-11 and 2-12. It was assumed that the infant and early childhood mortality for male and female children is identical.

Table 2-11: Aboriginal male abridged life table, 1979-83.

x (Age)	n^q_x	n^d_x	n^{M_x}	l_x	n^{L_x}	n^{S_x}	T_x	e^o_x
0	.02993	2993	.03081	100000	97142	.96222	5346924	53.47
1	.01583	1536	.00400	97007	383969	.98849	5249783	54.12
5	.00747	713	.00150	95471	475573	.99191	4865814	50.97
10	.00871	826	.00175	94758	471725	.98797	4390241	46.33
15	.01538	1445	.00310	93932	466050	.97855	3918516	41.72
20	.02761	2554	.00560	92488	456053	.96809	3452466	37.33
25	.03633	3267	.00740	89934	441501	.95338	2996413	33.32
30	.05731	4967	.01180	86667	420916	.94200	2554912	29.48
35	.05872	4798	.01210	81700	396505	.92710	2133997	26.12
40	.08795	6764	.01840	76902	367601	.89284	1737492	22.59
45	.12822	8993	.02740	70138	328209	.85833	1369892	19.53
50	.15711	9606	.03410	61145	281711	.82354	1041683	17.04
55	.19941	10278	.04430	51539	232001	.79468	759972	14.75
60	.21269	8776	.04760	41261	184367	.77913	527972	12.80
65	.23126	7513	.05230	32485	143646	.71426	343605	10.58
70	.35661	8906	.08680	24973	102600	.59782	199959	8.01
75	.47299	7600	.12390	16067	61337	.37000	97359	6.06
80+	1.00000	8468	.23506	8468	36023	.00000	36023	4.25

Note: The data sources used to derive this life table is explained in subsection 2.4.2.

Table 2-12: Aboriginal female abridged life table, 1979-83.

x (Age)	n^q_x	n^d_x	n^m_x	l_x	n^l_x	n^s_x	T_x	e^o_x
0	.03001	3001	.03081	100000	97419	.96307	6070583	60.71
1	.01584	1536	.00400	96999	384115	.98950	5973164	61.58
5	.00349	334	.00070	95462	476477	.99626	5589049	58.55
10	.00399	380	.00080	95129	474693	.99328	5112572	53.74
15	.00946	896	.00190	94749	471504	.98833	4637879	48.95
20	.01390	1305	.00280	93853	466003	.98561	4166375	44.39
25	.01489	1378	.00300	92548	459296	.97952	3700372	39.98
30	.02615	2384	.00530	91170	449890	.97529	3241076	35.55
35	.02323	2062	.00470	88786	438773	.95993	2791186	31.44
40	.05731	4970	.01180	86724	421193	.94223	2352413	27.13
45	.05825	4762	.01200	81754	396862	.92756	1931220	23.62
50	.08750	6736	.01830	76991	368115	.88603	1534358	19.93
55	.14299	10046	.03080	70255	326159	.84043	1166244	16.60
60	.17892	10773	.03930	60209	274113	.79983	840085	13.95
65	.22605	11175	.05097	49436	219244	.73884	565972	11.45
70	.30652	11728	.07240	38261	161987	.66168	346727	9.06
75	.38416	10193	.09510	26534	107185	.41981	184740	6.96
80+	1.00000	16340	.21069	16340	77555	.00000	77555	4.75

Note: The data sources used to derive this life table is explained in subsection 2.4.2.

The above life tables indicate that the Aboriginal female expectation of life at birth is around 7 years higher than that of the males. The average life expectancy at birth for both sexes is about 56 years which is 18 years lower than the average life expectancy at birth for the total population of Australia. The most recent Australian Life Tables (Australian Government Actuary, 1985:2-5) show a life expectancy at birth of 71.23 for males and 78.27 for females for the period 1980-1982.

It will be valuable to use the constructed life tables in order to study variations in the age patterns of mortality and to make comparisons of different possible reasons for mortality variations. For this purpose it is helpful to consider four periods of life separately, infancy and childhood, adolescence, adulthood and old age. Factors which affect mortality are differently associated with the different phases of life, and hence such a division is useful for analytical purposes. In this study of variations in mortality by age, the age ranges have been taken as infancy and early childhood (0-5 years), childhood and adolescence (5-15 years), adulthood (15-60 years) and old age (60 years and over). The levels of mortality in these phases is measured by an index known as temporary life expectancy between ages x and $x+n$. It is defined, in life table notation, (Arriaga, 1984:84) as:

$${}_nE_x = (T_x - T_{x+n}) / l_x$$

This index gives the average number of years lived between ages x and $x+n$ under life table mortality conditions by those who are alive at exact age x . This measure provides a fairly complete and concise measure of level of mortality in the phase. The values for different phases by sex for the Aboriginal population are shown in Table 2-13.

If none dies during any particular age interval, the value of the index ${}_nE_x$ would obviously be equal to the length of the age interval. Since the length of age interval is different for different phases of life, another index, defined as the ratio of observed temporary expectation of life to maximum possible years in each phase of life, would be better for comparative purposes. The values of this index for the Aboriginal population are also presented in Table 2-13.

Table 2-13: Temporary expectation of life for different spans of life (nE_x) by sex, and ratios of observed temporary expectations to maximum possible years in each phase of life by sex, Aboriginal population.

Phases of life	MALES		FEMALES	
	nE_x	Ratios	nE_x	Ratios
0-5	4.81	.962	4.82	.964
5-15	9.92	.992	9.96	.996
15-50	30.63	.875	32.76	.936
15-60	36.10	.802	40.08	.891
60+	12.80	13.95	-	-

Table 2-13 reveals that under the 1986 Aboriginal life table mortality conditions, tables 2-11 and 2-12, a new born Aboriginal baby lived an average of 4.8 years of the possible 5 years from birth to age 5. The figures indicate low infant and early childhood mortality for both of the sexes because they attain more than 95 per cent of the maximum years of life in early childhood. As in any other population, the Aboriginal adolescent mortality represents the lowest point of the mortality schedule. The temporary expectation of life in the childhood and adolescence ages of 5-15 years is very high (9.96 years for females and 9.92 years for males) and both of the sexes attain more than 99 per cent of the maximum expectation of life in this phase. Since a sizable section of the population depends on persons in the working ages, mortality during the adulthood ages of 15-60 years has great economic implications. Because of the long age interval, most of the general mortality is contributed by this phase of life. The expectation of life for the Aboriginal population in this phase of life varies from 40 for the females to about 36 years for the males. Though the mortality level for the Aboriginal people in adult ages is high and they do not attain 90 per cent of the maximum years of this phase, the male mortality is much higher than that of the females. The data in Table 2-13 indicate a very high level of old-age mortality. Those Aboriginal people who reach age 60 years have, on average, the chance of only about 13 more years to live while the figure for the total Australian population is about 20 years.

The average crude death rate of the Aboriginal population for the period 1981-1985 is estimated to be around 9.2 per 1000 population (Commonwealth Department of Health, 1987:25). Taking into consideration the average crude birth rate of 27.8, obtained earlier for the period 1981-86, the natural growth rate of the Aboriginal population is estimated to have been about 1.86 per

cent per year for the same period. The difference between this figure and the observed 7.1 per cent average intercensal population growth rate from 1981 to 1986 (subsection 2.1), indicates the extent of the undercount of the Aboriginal population in the 1981 Census compared to that of 1986.

2.5 Summary

The 1986 Census of Population and Housing reported 227,645 persons of Aboriginal and Torres Strait Islander origin in Australia which constituted about 1.5 per cent of the total population. Large fluctuations in the last four census counts resulted in contrasting rates of population change, largely due to inconsistencies in Aboriginal population counts in various census operations rather than to the effects of changing demographic factors.

Aborigines are unevenly scattered among the states and territories with major concentrations in Queensland, New South Wales, Western Australia and the Northern Territory; only about 15.3 per cent of the total Aboriginal population live in South Australia, Victoria, Tasmania and the Australian Capital Territory.

The true size of the Aboriginal population at the beginning of European settlement in the continent is still a matter of dispute. By the early 1980s estimates ranging from 227,000 to 314,000 were considered acceptable, but historians as recently as 1987 proposed an estimate of about 750,000. Further research is needed to clarify this. The small estimated population size about 200 years ago can only be explained by assumption of a virtually stationary population throughout the prehistoric period.

Currently the majority of Aboriginal people live in urban areas; many in urban centres with population under 100,000. This urbanization over the last 40 years has resulted from increased freedom of movements by Aboriginals and loss of jobs on pastoral stations.

The returns of the 1986 Census reveal that there are 98 Aboriginal males for each 100 Aboriginal females. This is comparable with the overall sex ratio of the total population: 99.2.

The Aboriginal population has a young age structure; the median age is estimated to be 19 years, which is about 12 years lower than that of the total population.

Aboriginal households are large: on average there are about five persons in a household at the national level. With about six persons per household, the Northern Territory Aboriginal households are relatively larger than the average Aboriginal household size in the country as a whole. Basically the majority of Aboriginal households consist of nuclear and non-familial types. At a sub-national level, in the Northern Territory, a slightly larger proportion of Aboriginal households are of extended types but nuclear families still constitute the single largest category (46.5 per cent) and combined with the non-familial households they comprise 62.1 per cent of all households. With 1.7 persons per bedroom Aboriginal dwellings at the national level are somewhat crowded while in the Northern Territory, with average 2.4 persons per bedroom, crowding appears to be substantial.

At the national level marriage is not universal among the Aborigines. Only 3 per cent of the males and about 8 per cent of the female population in the age group 15 to 19 are ever married and by the end of reproductive life at age 49 only about 86 per cent of the females have eventually married. Mean age at marriage is high for both sexes, 28.3 years for males and 26.9 years for the females. Since 1981 females' mean age at marriage has increased by about two years. At a subnational level, in the Northern Territory, marital status is markedly different: more than a quarter of the Aboriginal females in age group 15-19 are ever married though the male proportion (8 per cent) in the same age group is much lower, and about 93 per cent of the females eventually marry by the end of the reproductive life at age 49. In the Northern Territory Aboriginal males and females marry 3.3 and 3.8 years younger than the Aboriginal males and females at the national level.

Though Aboriginal fertility is estimated to be about 50 per cent higher than that of the whole Australian population, it has continued to decline more rapidly than the latter during the last 15 years. The Aboriginal total fertility rate has fallen from the estimated levels of 4.1 for the period

1971-76 and 3.32 for the period 1976-1981 to a level of 2.84 for the period 1981-1986. The 1981-86 period average crude birth rate is inferred to be about 27.8 per 1000 population.

Indirect estimates suggest that the levels and patterns of Aboriginal mortality are very similar throughout the country. A recent study on Aboriginal child survival concluded that there is a general pattern of Aboriginal infant mortality ranging from 20 to 34 per thousand live births per year. Therefore based on estimates of the Aboriginal adult mortality derived from the Northern Territory Aboriginal death records, which is assumed to be not markedly different from that for the Aboriginal population at the national level and the estimated average infant mortality rate for the country, provisional life tables for Aboriginal males and females were obtained: the Aboriginal female expectation of life at birth is around seven years higher than that of the males. The average life expectancy at birth for both sexes is about 56 years which is 18 years lower than the average life expectancy at birth for the total population of Australia.

Though the mortality level for the Aboriginal people in adult ages is generally high, the male mortality is much higher than that of the females. Aboriginal people who reach age 60 years have, on average, the chance of only about 13 more years to live while the figure for the total Australian population is about 20 years. The Aboriginal average crude death rate is estimated to be around 9.2 per 1000 population which in conjunction with the estimated crude birth rate of 27.8 implies a natural growth rate of about 1.86 per cent per year for the 1981-86 period.

Chapter 3

Alice Springs Aborigines in the Historical Perspective of Central Australia

3.1 Introduction

Of over 31,000 persons in the total population of Central Australia, between parallels 20 and 26 in the Northern Territory, in 1986 about 34 per cent were reported to be of Aboriginal descent with a concentration of over 3,000 persons in Alice Springs. Fifty two per cent of the present Aboriginal inhabitants of Alice Springs were born in various parts of Central Australia including Alice Springs itself. Of those aged 12 years and over, 53 per cent grew up in places within Central Australia.¹ What happened during the last hundred or so years in this area, therefore, has had its effect on the present generation of the Aboriginal population of Alice Springs and shaped its demographic composition and characteristics.

In this chapter, therefore, a review is made of the literature concerning geographical, environmental, historical and administrative aspects of central Australia from the time of early contact between Aborigines and Europeans to the present date. Attention is focused, wherever possible, on how historical events and changes in conditions affected the demographic composition and characteristics of the Aboriginal population of the region.

3.2 Geographical conditions

3.2.1 Location

Alice Springs is located in the heart of the Macdonnell Ranges in the centre of the Australian continent. It lies half way between Darwin and Adelaide, more than 1500 kilometres in either direction. In spite of the fact that, since 1931, Central Australia has not had politically recognized boundaries, Alice Springs remains the regional capital of the area.

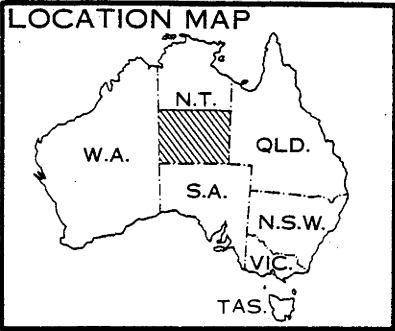
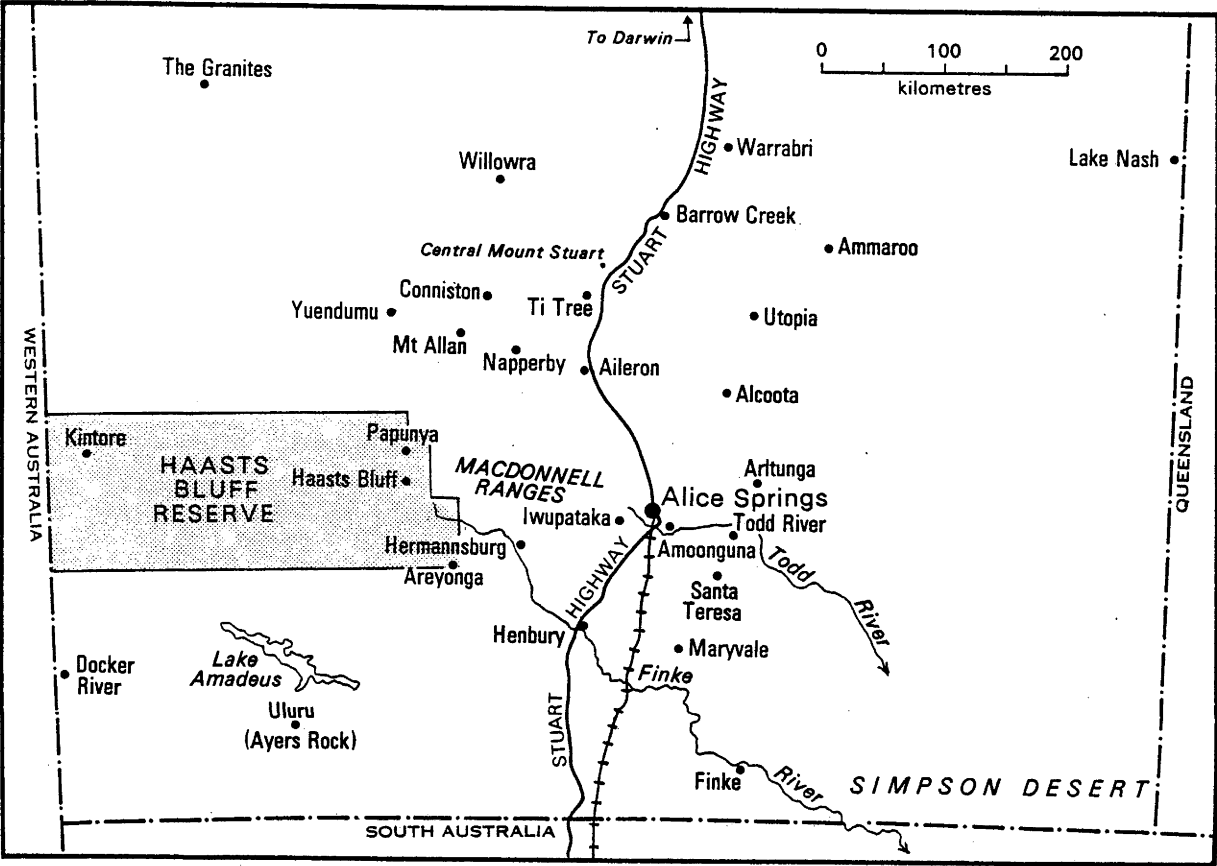
¹ See Chapter 5 on residence stability and migration.

Central Australia as a separate administrative unit was formed by the Commonwealth Government in 1926, dividing the former Northern Territory of South Australia into two districts (Madigan, 1944:6). The district of North Australia extended from the north coast to the 20th parallel and the district of Central Australia from the 20th parallel to the South Australian border on the 26th parallel. After 1931, Darwin became the administrative capital of the Northern Territory which combined the District of North Australia and the District of Central Australia. It should be added that the Northern Territory boundaries are arbitrary and not particularly meaningful to Aboriginal inhabitants, who have connections across the South Australian and Western Australian borders.

In area, Central Australia occupies one sixth of Australia. Though it no longer exists as an autonomous political administrative unit, it has been defined as such for service delivery and data collection such as birth and death records. Alice Springs serves as the administrative and supply centre for the whole area.

From the town, the Macdonnell Ranges extend towards the Simpson Desert in the east and also towards the sand plains and salt lakes in the Western Australian border areas to the west. To the south of the Macdonnell Ranges, the country extends toward Ayers Rock and a plain towards Lake Eyre. To the north of the Macdonnells an inland plateau extends beyond Tennant Creek where lies a grassland and pastoral area.

Map 3.1: Central Australia



3.2.2 Climate

Alice Springs is located in an arid zone. The rainfall averages about 25 centimetres per annum which is too low for cropping or sown pastures, with nearly half of the annual rainfall occurring in falls of less than 12 mm (Perry, 1976:73). The temperature in the summer exceeds 40 degrees Celsius during the day and drops at night to much lower degrees. In winter, nights at Alice Springs are cold and frosty but the days are clear and mild. Sometimes it is extremely windy with small tornadoes (Heppell and Wigley, 1981:1).

The Todd River runs through Alice Springs north to south. The Todd and other Central Australian rivers are dry for much of the year, but after rain they run swiftly. Only one quarter of the annual rainfall occurs in the winter, three quarters falling in summer (Perry, 1976:73); the rainfall is unpredictable and the occurrence of big and frequent droughts is inevitable in Central Australia (Rowley, 1970:208).

3.2.3 Aborigines in the ecosystem of the region

Central Australia unlike the Sahara is not a flat treeless desert as is often imagined (Finlayson, 1936:21). In broad terms, topography, soils and vegetation in Central Australia form a pattern of landscapes which can be described as: hills which contribute most of the water to watercourses, foothills, piedmont plains and floodplains whose soils vary from clays to gritty sands and are the most fertile in the region (Perry, 1976:73). Vegetation is open woodland or grassland and most of the temporary or permanent waterholes are located in this landscape. The infertile red clayey soils of the lateritic plains are generally covered with mulga vegetation while the deep sand soils of the sand plains and dunes carry spinifex vegetation and no surface. Dry salt lakes complete the topography of the area.

The amount of rain water reaching the ground in Central Australia is not adequate for the growth of most plant species. It is only the concentration of the rain water in the smaller areas by run-off and percolation underground along impermeable strata that permits many species to grow and confines them to their restricted habitats (Maggs, 1976:116).

The continent of Australia was inhabited by human beings for thousands of years before the early European explorers discovered the continent and made early contacts. Curr (1886:152-207) thought that Australian Aborigines descended from African intermixtures with some other race who migrated to Australia by sea and landed on the north shores of the continent when the Africans were in their infancy as a people, mere hunters, whose weapons were the spear, and possibly the boomerang prior to the time that the bow and arrow took the place of spear. He says that 'Australia and Tasmania were the only ones which received no second influx of population up to the date of our own colonization' (Curr, 1886:187). An official document of the Commonwealth Government describes the prehistoric Aborigines in brief as follows:

The Aborigines were living in Australia long before civilization came to Europe. Their original home was probably southern India and it is thought that they moved to Australia through the Malay Peninsula and Indonesia by land bridges that have since disappeared. In their natural state they were nomads, neither having nor seeking even the most primitive of dwelling to call homes. They were hunters and gatherers of food, practising no forms of agriculture or animal industry (Department of Territories, 1958:5).

Berndt and Berndt (1964:5), contradict the above argument about the way the first human beings arrived in Australian continent, and are certain that Aboriginal man came to Australia by sea. They refer to McCarthy's (1957:19) argument that the land bridge between Asia and Australia 'disappeared before it could be used by placental Asian animals' (Berndt and Berndt, 1964:5). Calaby (1971:81) while agreeing with the theory of the Aboriginal arrival by sea adds that perhaps this happened around '30,000 years ago, when the last glaciation was in progress and sea levels were much lower than at present. Australia and New Guinea formed a continuous land mass and the Timor Strait was less than 160 km wide'. It is mostly accepted now that habitation of the Australian continent commenced at least 40,000 years ago and possibly 100,000 years. There is no guarantee that the earliest inhabitants were anything like modern Aborigines. In fact, the Tasmanian Aborigines were cut off from the mainland only 8000 years ago but constituted quite a distinct racial stock (Mulvaney and White, 1987).

In earlier days, before the expansion of the European settlements in central Australia, Aborigines were mostly dependent, for food gathering and hunting, on the foothills, piedmont plains and flood plains because almost all of their reliable water sources are in these regions

(Perry, 1976:74). Lateritic plains and spinifex sand plains were probably used for hunting and food gathering after rains when surface water was available in these regions.

In the arid interior, animal food provided about 20 per cent of the diet of the Aboriginal people (Peterson, 1976:27). The relative share of plant and animal food in the regular diet of the Aborigines in various regions might have been roughly proportional to the regional differences in the biomass of the two (Frith, 1976:88). Gould (1969) and Meggitt (1962) concluded that vegetable food accounts for as much as 70-80 per cent of the diet of Aborigines in the central region (Peterson, 1976:27). Before the occupation of the Europeans and the introduction of their livestock to the Central region the animal food of the Aborigines comprised mammals, birds and reptiles (Frith, 1976:87). There are 60-100 edible vegetable species known in the region which reduce to around a dozen staples (Peterson, 1976:27).

As a consequence of one hundred years of European intervention and settlement in Central Australia, today the flora and fauna of the region are very different from the ones that existed before. Frith describes the changes that occurred in the wildlife of the arid zone as follows:

The wildlife has changed greatly. The region now is infested with feral stock and rabbits...the composition of the native mammal fauna, at least, has changed greatly...as European settlement proceeded ...feral animals became abundant. They include donkeys, horses, cattle, camels, goats, rabbits, foxes and cats...There were no ...ecological competition...the feral stock thrived, have expanded to the limits of their climatic tolerance...Feral stock...on the one hand...offer ...source of meat, but on the other hand...the effect of their grazing on the native vegetation is not fully understood... the effect of cattle on virgin range in central Australia has been shown to be great (Chippendale 1963). Within one year the abundance and diversity of the vegetation fell by two-thirds but even then it was ten-fold that of country that had been grazed for many years...There is little doubt that the grazing of the fragile desert communities by feral animals will...have severe deleterious effects on the natural plant foods of the Aborigines...There have been rapid and great changes in the fauna there since exotic grazing animals reached the area...the position with mammals is that most of the small ground living species have disappeared or declined very greatly... around Alice Springs for instance in 1932 there were 10 surviving species of bandicoots, wallabies and kangaroos but only four remain now (Newsome, 1971)... these smaller species probably are the ones that provided the great bulk of mammal food to tribal aborigines. Most small marsupials are now very rare ...the nest building *Leporillus apicalis* which is now probably extinct is known to have existed in great numbers. The rock haunting *Zyzumys* is now rare, the *pseudomys* species are not common...it can be concluded that small native mammals probably no longer could be a substantial item of diet for aborigines. The situation of the two large kangaroos of the arid zone, the red Kangaroo and the Euro is quite different and they seem to have benefited from the impact of ...grazing stock on their habitats...in central Australia however the Euro has not increased and remains confined to the stony hills though spinifex grasslands are extensive...The changes in bird populations since settlements are not known but seem to have been less than those described for the mammals ...Reptiles are a major source of food to the introduced feral fox and cat which

now occur in considerable numbers throughout the arid zone. We cannot exclude the possibility that this predation, at least, has caused a decline in reptile populations (Frith, 1976:87-91).

In Central Australia, the foothills, piedmont plains and floodplains are now almost entirely occupied by cattle and also the majority of the station homesteads are on, or near, this landscape (Perry, 1976:74). Therefore, this landscape, which is only 15 per cent of central Australia, formed a vital factor for the survival of the hunting and gathering nomadic societies of the central Australian Aborigines as well as for the survival and expansion of the cattle industry in the region. This antagonism dictated the fate of the Aboriginal population in central Australia.

3.2.4 Aboriginal tribal areas in the region

Map 3.3 in page 252 illustrates the distribution of the major Aboriginal language groups in Central Australia. It is based on the Department of Aboriginal Affairs records regarding places of residences of various Aboriginal language groups as of 31 December 1972 (Milliken, 1976:239). Though by 1972, the traditional distribution of Aboriginal people over central Australia has been transformed, in general the map still corresponds with the tribal distribution maps drawn by Spencer and Gillen (1938:3), Berndt and Berndt (1964:29) and Strehlow (1965:123), and suggests the approximate location of Aboriginal tribes² in central Australia. According to this map the Aboriginal people living in the environs of Alice Springs and to its east belonged to the Arrernte language group. The Luritja tribe occupied areas to the west, the Anmatyerre and Kaytetye to the north, Alyawarra language group to the north east, Warlpiri further north west and finally the Pitjantjatjara tribes lived towards the west and south west.

Berndt and Berndt (1964:34) in defining a tribe, among other things, refer to the occupancy of a recognized stretch of country and of hunting and religious rights over that area as features for labelling a group of people as a tribe. Their view is that the size of the areas occupied by various tribes varies and depends on the fertility, quality and quantity of its natural resources. They mentioned that in the central west of the Northern Territory the tribal areas are large and

² I use tribe and language group alternatively in this thesis without going into detail of the possible differences between them.

among the tribes in Central Australia which possessed large territories were the Arrernte, the Pitjantjatjara and Warlpiri.³

The Arrernte people, within whose territory Alice Springs lies, occupied, according to Strehlow (1965: 133), relatively 'the best-watered and most fertile region of Central Australia' and were, according to Spencer and Gillen (1899 reprint in 1938:8-9), 'distributed in a large number of small local groups, each of which occupies, and is supposed to possess, a given area of the country, the boundaries of which are well known to the natives...Each local group, composed largely, but not entirely, of individuals who describe themselves by the name of some one animal or plant'. The men in each of these local group areas 'belonged almost exclusively to two classes which stood in a father-son relationship to each other' (Strehlow, 1965: 136). Strehlow described the Arrernte local group areas as follows:

The boundaries of each...section area were demarcated by episodes in the sacred myths, and were therefore not subject to revision....Method of marking ...section areas ensured that all border rockholes, springs, and other water were located within accurately described boundaries. No neighbouring groups could quarrel about their borders, since it was believed that these had been set down by their own supernatural beings....Each of the Aranda...section areas contained at least one important ceremonial centre....Hence Aranda religious, art, poetry, and drama, were all based on definite geographical centres....Since every...section area originally contained men belonging to two classes only, exogamy was a necessary institution in order to provide wives for them. Each...section area was therefore linked by marriage ties with at least two other...section areas....A group of ...section areas which were linked by exogamic marriage ties eventually came to constitute a linguistic unit.... A favourable geographic environment...enabled the Aranda local groups to live in ...section areas from which very few of them had to move even temporarily, and then only in very bad droughts. Those that did had to move only a few miles out of their own territory into that of their neighbours, with whom they had exogamic marriage ties or ceremonial links in any case....Each section area had a sacred cave or tree storehouse for the local sacred objects; and consequently its immediate environs constituted a prohibited area, whose edge was generally about a mile (or even more) from the sacred cave. Within these sacred precincts all hunting and food gathering was forbidden. Even wounded animals could not be pursued into this forbidden zone, which could be entered only for ceremonial purposes....In drought times the animals and birds from thousands of square miles of drought stricken country found refuge at these ...(sacred places); and when the drought broke, the surrounding countryside was restocked with game as quickly as it became covered with food plants (Strehlow, 1965:136-144).

Alice Springs was an important place for the Aboriginal people of the area. The place, for the Arrernte people, embodied many associations from the dream time (Spencer and Gillen, 1938).

³ The spellings used for tribal names by Berndt and Berndt (1964: 28-34), which differ from the current spellings used by the Institute of Aboriginal Studies and adapted in this thesis, are respectively Aranda, Bidjandjara, Wailbiri, Loridja and Waramunga.

With its permanent waters and sacred sites, it was a gathering place for ceremonial purposes (Drakakis-Smith, 1979:285).

3.3 Early contacts and colonization of the Centre

Only a few years after the foundation of Adelaide in 1836 (Madigan, 1944: 12), the struggle began for penetration to the centre of the continent in search of new pastoral lands and a possible land route to the north coast. Then, the present Northern Territory was administered by New South Wales. The exploration party which attempted to explore the centre during the years 1844-1846 included MacDouall Stuart and was led by Sturt who was then the Surveyor General of South Australia. The party discovered and named Broken Hill and went as far as the Simpson Desert (Madigan, 1944:17).

It was John MacDouall Stuart with two of his party members, Kekwick and Heed, who reached the centre of the continent at approximately latitude 22 and longitude 133, on 22 April, 1860, on his fourth attempt to cross the continent from south to north (Madigan, 1944:20). They built a cairn of stones and raised the British flag on top of a hill which Stuart named Mt. Sturt, which was subsequently renamed Central Mount Stuart by the South Australian Government after Stuart himself. Central Mount Stuart is located about 220 kilometres to the north of present-day Alice Springs. Stuart went as far as today's Tennant Creek and reached latitude 18 at Attack Creek where they were attacked by the Aborigines of the area 'who paid the price with the lives of tribesmen' (Blackwell and Lockwood, 1965:56). Stuart in his sixth, and last, expedition succeeded in reaching the north coast on 24 July 1862 (Madigan, 1944:24-25) thus becoming the first European to cross the continent of Australia from south to north and opening the way for colonization of the centre.

South Australia's attempts to explore the centre and northern parts of the continent led to the annexation of the Northern Territory, though temporarily, to South Australia in July 1863 (Rowley, 1970^a/206) exactly one year after Stuart's successful crossing of the continent. After taking over the administration of the Northern Territory, the South Australian Government constructed a telegraph line from Adelaide to Darwin (then Palmerston). This major project

facilitated access to the centre and north, and subsequent colonization of these territories was completed in 1872 (Madigan, 1944:28).

In 1870, a survey party called the Adelaide Overland Telegraph Exploring Expedition, led by John Ross, followed Stuart's tracks, and looking for a route for the telegraph line and for water and timber for the poles, passed the area today known as Alice Springs. The permanent waterhole at that location was named Alice Springs, after the wife of Charles Todd, the superintendent of Magnetic Telegraphs of South Australia (Madigan, 1944:28; Blackwell and Lockwood, 1965:40; Forrest, undated). A telegraph station was built on this site. The survey party named the river Todd after Charles Heavitree Todd, and went through a gap which they called the Heavitree gap (Forrest and Egan, undated), which is in fact the southern gateway to Alice Springs. Other telegraph relay stations were built along the line to Darwin at about 300 kilometre intervals; they include Barrow Creek and Tennant Creek. These stations, as Forrest (undated) describes,

...became tiny enclaves of European settlements...they were places from which pastoral settlements and exploration work could begin....It seems that at first the Aboriginal people were not concerned about the telegraph stations and the telegraph line but after a year or two after it was clear that the white people were there to stay they began to organize resistance against the new settlers. Attacks became common and the reprisal by white man also became common and the map of the Northern Territory began to get place names such as Black Fellows Bones, Squeal Creek, places where large numbers of the Aboriginal people were exterminated by punitive parties.

The route to the centre of the Australian continent was opened by Stuart and the telegraph parties and the settlements at the telegraph stations. At the same time, European exploration of the areas east of the telegraph line to the coast was carried out by Sturt, Leichhardt, Burke and Wills, A.C. Gregory, McKinlay, Howitt, and other explorers (Madigan, 1944:30). European exploration of the country from the telegraph line to the settled districts of coastal Western Australia was carried out between 1872 and 1876 by explorers such as Forrest, Giles, Gibson (who was lost in the desert and died in fulfilling this task), and others. Forrest made one crossing of the western region in 1874 and Giles made two, along the 24th and 30th parallels. On the first of these, in 1872, Giles was the first European to sight Uluru from the north side of Lake Amadeus. But the first European who actually visited the Rock and climbed it was William

Gosse in 1873. He named it Ayers Rock after the South Australian premier (Rose, 1965:16) It was officially renamed Uluru, its Aboriginal name, in 1985, when it became Aboriginal freehold land. Warburton in 1873 travelled from the telegraph line at Alice Springs in the centre to the north western coast at Roeburne; he was accompanied in this expedition by a team of companions including two Afghan camel-drivers with 17 camels (Madigan, 1944:36). Further exploration of the areas to the east of the telegraph line towards Queensland was carried out by Vere Barclay and Charles Winnecke in 1878 and 1879 respectively. Barclay found some attractive pastoral country in the Harts Range northeast of Alice Springs and Winnecke went to the Queensland border and returned along the southern margin to Tennant Creek. By 1880 the centre was quite fairly defined (Bauer, 1983: 31).

3.4 The Expansion of colonization

3.4.1 Pastoral stations

On 22 April, 1860 when Stuart raised the British flag in the centre of the continent he wrote in his diary: '...may it be a sign to the natives that the dawn of liberty, civilization, and Christianity is about to break upon them' (Madigan, 1944:20-21). Many would now disagree .

Pastoralists were quick to capitalize on the discoveries of Stuart. The sale of the Northern Territory lands began in 1864 in Adelaide and the settlers and cattle reached the centre two years later (Rowley, 1970:206) when the waterholes of the Alice Springs area were stocked. According to Rowley, by 1880 one-fifth and by 1890 nearly two-fifths of the 523,600 square miles of the Northern Territory had been taken up through pastoral leases (1970:212). Beck (1985:96) states that during the 1870s and 1890s pastoral stations were established on Western Arrernte and Luritja lands around present Alice Springs in Erldunda, Henbury and Tempe Downs. Glen Helen pastoral station was created around 1890. Pastoral properties were established in Coniston on Warlpiri country in 1917 and in Ernabella on Pitjantjatjara lands in the early 1930s.

Since the occurrence of droughts is high in central Australia, the stocking of land around waterholes in more arid parts of the centre had severe consequences on the human and animal

lives of the area. This was the reason for the growing tensions and hostilities between the Aborigines and the settlers which contributed to the abandoning of many of the pastoral stations by 1900 (Rowley, 1970^a/212) and, as Rowley wrote '...here the small scale resistance had something of the character of a struggle for life itself...the land was settled either at the point of the gun or against the background of Aboriginal knowledge of what the gun can do' (Rowley, 1970^a/208,214).

In the colonial environment of central Australia, government officials (even police who possessed a nominal position as protectors of Aborigines), and European settlers were interdependent (Rowley, 1970^a/216). The Aboriginal people learnt from experience that in order to survive they must adapt to the new circumstances and that they could make use of the settlers as a source of food and shelter in return for their labour at the pastoral stations. At the same time, after their supremacy was established, the European settlers also realized that they needed the labour and often the companionship of Aboriginal people.

By the 1920s most of the Aboriginal people had been in contact with the pastoral stations and by the 1930s the only place with no contact or limited contact in central Australia was the Southwest desert (Rowley, 1970^a). A sizable number of people from those areas had already moved to Alice Springs and other centres, or had filled the vacuum created by depopulation in the pastoral districts (Rowley, 1970^a: 242). With the domination of water sources by European settlers and the spread of cattle stations over the best food-gathering areas in the centre, the structure of the nomadic hunting and gathering life was soon changed and the Aboriginal people were forced to be dependent on handouts from the settlers, missionaries and the government or on under-paid wage labour for which wages were often in kind (Drakakis-Smith, 1979: 285). Where non-Aboriginal labour was inadequate or unavailable, which was often the case, the pastoral station managers had access to Aboriginal labour at least for some of the time. This was supplied without enthusiasm or interest in return for food or a few implements required by the group as a whole (Rowley, 1970^a: 208-209). Gorey (1952:8) acknowledged that the pastoral

industry of the Northern Territory could not be carried on without the labour of the Aboriginal stockmen. Rowley wrote that:

...Among the Aborigines the employment did not take the place of initiation as a socialising experience...one (reason) may be the comparative lack of interest by Aborigines in material artifacts beyond a narrow range with immediate appeal. More important...was the fact Aboriginal Labour was not rewarded in the first stages with cash; that the worker remained under the control of the group and in the camp...Work on the station forming, from the point of view of the Aborigines, a means of acquiring food somewhat easier than hunting... The employer's refusal of opportunities for a greater share in the enterprise caused those who might have developed real interest to withdraw into what remained of their own tradition (Rowley, 1970:209).

Some other scholars (e.g. McGrath, 1987) dispute lack of Aboriginal interest in working in the cattle stations and argue that they had an interest in working as stockmen because they were good at this occupation.

3.4.2 Mining camps

The employees and geologists working on the construction of the telegraph line from Adelaide to Palmerston (Darwin) discovered and explored several mineral deposits in the areas where the line was to pass (Beck, 1985: 95). This attracted attention to the mineral assets of the area. But the real rush began with the discovery of gold at Arltunga to the east of the Macdonnell Ranges in 1887 (Forrest and Egan, undated). Within a few months of the gold discovery at Arltunga, there was a rush of several hundred European miners from South Australia to the area. The mineral boom ended in the late 1890s; during it, in addition to gold, other minerals such as copper, tin and silver were also discovered and exploited. The discovery of the Tanami Gold Fields revived the gold rush in the years 1900-1910 and in the early 30s at Granites, and with the discovery of gold at Tennant Creek in 1939 (Beck, 1985: 95) there was another boom which brought new waves of miners and prospectors to the area. Since mining required water, the use of scarce water resources made the Aborigines even more dependent than were the stock on the waterholes in pastoral stations (Rowley, 1970:205).

3.4.3 The influx of non Aboriginal population

With the construction of telegraph repeater stations along the telegraph line in central Australia, and with the expansion of mining camps, pastoral stations and the development of the Stuart (later Alice Springs) town in the centre, the contacts of the Aboriginal population of central Australia with people such as telegraph technicians, pastoralists, miners, workers,

administrators, camel-drivers as well as missionaries, policemen, stockmen and drovers greatly increased. People of non-European nationality also arrived. The consequences of this increased interaction upon the Aboriginal population are examined in section 3.7.

At the time, the government of South Australia wanted to develop the mining industry with the help of cheap and disciplined Asian labour (Rowley, 1970: 214). Thus, in 1875 the first Chinese miners were brought in from Singapore and for more than thirty years Asian workers from countries such as Malaya and the Philippines outnumbered all others. In 1894-5, there were 2,000 Asian workers in the mining fields, in a ratio of twelve to one with other workers (Rowley, 1970: 214). At the end of the 19th century, in Arltunga alone, there were about 200 miners of various nationalities, almost all of them men (Forrest and Egan, undated).

With the Arltunga gold rush, the South Australian Government decided to establish a town in the centre to serve as an administrative, communication and supply centre for the whole of central Australia. The foundation of the town, to be called Stuart, was laid down on the banks of the Todd River about three kilometres to the south of the Alice Springs telegraph station by Surveyor David Lindsey in 1888 (Forrest and Egan, undated). At the turn of the century the town had a non-Aboriginal population of about 30. It had a few buildings and store rooms and a camping area which was used as a resting place by the Afghan camel-drivers who were engaged in transportation of goods between the mining and pastoral stations, other settlements in central Australia and major cities and towns elsewhere. At this time a dozen Europeans lived in the telegraph station itself including one or two women (Forrest and Egan, undated). The town was popularly known as Alice Springs till it was officially named so in 1930 (Beck, 1985:97).

Mining towns such as Tennant Creek and Arltunga attracted Aboriginal people, a number of whom camped around these and other centres. 'Miners of both races, white Australians and Chinese, interfered deeply by their demands on the women, and probably were no more under government control than the pastoral employers and workers' (Rowley, 1970:215).

Another source of European influx involved the Christian missionaries. The earliest mission in central Australia was established at Hermannsburg on the banks of the Finke River, 137 kilometres west of Alice Springs by German Lutherans in 1877 (Love, 1915:22). In the 1930s Ernabella station was taken over by the Methodists. Hermannsburg Mission established government ration depots at Haasts Bluff in 1940 and Areyonga in 1942. The Little Flowers Mission, which was established on the outskirts of Alice Springs in 1935, was forced to move to Arltunga by pressure from the local European community. Later owing to water problems in Arltunga the mission finally ended up at Santa Teresa in the 1950s. The missions' practice was to hold the Aborigines together in certain places in order to avoid open contacts with others and to provide some relief and welfare services to them. After World War II, the government subsidies to the missions increased resulting in expansion of education, hygiene, health and housing services to the Aboriginal people in the missions. Rowley (Beck, 1985:96) described the role of the missionaries as protective against the extreme exploitation of the Aboriginal groups by some of the pastoralists and prospectors. Beck (1985:96) says the missionaries were '...partially responsible for the arrest of the destruction of the full-blood Aboriginal population'. It is also impossible to separate the need of the settlers to be rid of competitive use of resources by Aborigines from the missionaries' willingness to provide a concentrated settlement. There was less opportunity for miscegenation, which is probably what Beck meant.

During the 1890s, the big companies which owned the pastoral properties in central Australia withdrew and sold their holdings. By 1900 all large companies were gone and the best pastoral areas were being picked up by individuals known as 'battlers' with moderate sized holdings run by the owners themselves. This characteristic still distinguishes the pastoral industry in central Australia (Bauer, 1983:44). This process resulted in a drastic decline in the European population of the centre. The population which had increased from 82 in 1881 to 392 in 1891, dropped to 159 in 1901, when there were 143 European men, but only 16 European women in the centre (Bauer, 1983:44).

People of Asian origin were banned from employing Aborigines by the Northern Territory Aboriginal Act 1910⁴. The only people who were affected by this legislation in central Australia were the Afghan camel-drivers. They employed Aborigines to help with loading and unloading the camel trains every morning and evening during their long journeys and used their local knowledge. Deprived of Aboriginal labour, the Afghans left for New South Wales and Western Australia (Love, 1915:34).

The extension of the railway from the most northern terminus at Oodnadatta in South Australia to Alice Springs was completed in 1929. The arrival of the railway at Alice Springs had far greater effects upon the economy and population of the centre; it connected the pastoral stations and the mining camps more efficiently to the southern markets, and also brought a new influx of population to the centre.

3.4.4 Government policies and legislation

When the Northern Territory was annexed to South Australia in 1863, the office of Protector of Aborigines for the Territory was created. It was filled by the senior medical officer till 1910, when the Commonwealth took over the administration of the Northern Territory (Long, 1970:198). The protectors had no special powers to control relations between the Aborigines and the settlers.

During the 1860s a pattern of Aboriginal administration was established in the frontier regions of South Australia, and was also applied to the Northern Territory when the latter became part of South Australia.

...for usual frontier reasons, the interdependence of the settlers and the police, as well as their common attitudes meant that race relations were a matter for the settlers and the local Aborigines without effective government interference... The settlers were subject mainly to their own consciences for many decades... There was no legislation from the beginning of responsible government until the act of 1910 and 1911 (Rowley, 1970:205-206).

⁴ According to this Act Asians were specifically excluded from the issue of licenses to employ Aborigines. (Rowley, 1970 : 219).

Even with two decades of special legislation from 1910 the situation was not improved. An official document of the Commonwealth Government states that:

...from 1870 to the early 1930's, the Aborigines suffered from a mounting tempo of largely uncontrolled conditions. It was a period of many abuses, armed clashes, punitive expeditions, exploitation of Aboriginal women, and decline of population from introduced diseases and other causes (Department of Territories, 1958:6).

In fact not only in the Northern Territory but all over Australia throughout the process of colonization of the new territories, government influence and administration lagged far behind the frontier settlements. Aborigines and the settlers or prospectors were left to settle matters themselves. Some scholars (Drakakis-Smith, 1981:40) doubt whether events would have been different, had government 'control' occurred along with settlements. Others agree that '...without the establishment of the institutions there could well have been even greater loss of life' (Rowley, 1970:220). In general the destruction of the Aboriginal social and economic life started with the occupation of land by settlers and their stock. For instance the drastic decrease in the Aboriginal population of South Australia during the 1840s and 1850s (Rowley, 1970:203), in spite of some government welfare efforts and the creation of certain reserve areas, followed the process of settlement expansion in that region. This experience supported the prevailing prejudice arising from and rationalized by the Social Darwinist theory of 'survival of the fittest', that the dying out of the Aborigines is an 'almost inevitable process' (Drakakis-Smith, 1981: 40). Hence, 'the expediency of allowing the process to continue, and of being as kind as possible in the meantime became here (as in other colonies) the basis for practice' (Rowley, 1970:204). Later this policy was reflected in an editorial in the Melbourne Age in 1888:

...the inferior race is doomed to wither and disappear...we need not lament his disappearance. All that can be expected of us is that we shall make his last days as free from misery as we can (The Age, 1888).

The Australian constitution, before it was altered in 1967 (Commonwealth Bureau Census and Statistics, 1968:66), excluded Aboriginal people from many rights and privileges of Australian citizens. According to the Constitution Aborigines were not to be counted in the census (section 127) and the Commonwealth parliament could make laws for the people of all races other than the Aboriginal race for whom it was deemed necessary to make special laws (section 51).

Accordingly from 1911 when the administration of the Northern Territory was handed over by South Australia to the Commonwealth the latter assumed direct control of the Aboriginal Affairs in the Territory.

The South Australian parliament, in preparation for the Commonwealth takeover of the Northern Territory, approved the Northern Territory Aboriginal Act of 1910 and on 16 September 1911, the Commonwealth Regulations under this Act were gazetted (Rowley, 1970:231,233). This Act was primarily based on the presumptions that Aborigines were incapable of handling their own affairs and that they were an inferior race (Rowley, 1970:220-221). Thus, they should be protected and should not be allowed to mix with the European race and produce 'half-caste' children. In order to protect them, they should have a special place in the law which meant further restrictions on their rights. For instance, they should live in special reserves, institutions and missions (only those employed by or married to non-Aborigines were exempt from this provision), they could be expelled from any township or area and detained by any police officer, and any township could be declared a 'prohibited area' for unemployed Aborigines. Accordingly, Alice Springs was declared a prohibited area and remained so until 1947 (Dillon Dixon & Young, 1985:17). A Chief Protector became the legal guardian of all Aboriginal and half-caste children up to age 16 with authority to overrule the Aboriginal parental authority. He or his appointed sub-protectors could remove light-skinned children from their Aboriginal mothers and put them in special institutions. The Chief Protector could take over the property of an Aboriginal or half-caste. Marriage between an Aboriginal and non-Aboriginal was subject to official consent. The Chief Protector could refuse consent to any such case without the obligation of reporting to the minister, but, in the event that he approved, he was bound to explain to the minister the grounds for his approval. It was an offence for a non-Aboriginal to be found without authority within five chains or about 100 metres of an Aboriginal or half-caste camp. The alleged father of a half-caste child could be ordered to make a contribution towards the rearing cost of the child in an institution but he was not liable if the child lived with the Aboriginal mother in the camp. With the obvious difficulties in controlling the cohabitation of Aboriginal women and non-Aboriginal men in the vast areas of central Australia, and by practically banning any legal marriage between

them, such provisions of the law lowered even further the status of the Aboriginal women. Finally as mentioned above the Act provided for the issue of a license for employers of Aboriginal labour with the provision that the license could not be issued to Asians (Rowley, 1970).^a

The Northern Territory Aboriginal Ordinance of 1918 replaced all prior legislation concerning the Aboriginal people and became the basis of all subsequent legislation until the Welfare Ordinance of 1953. According to the 1918 Ordinance '... the definition of "Aboriginal" now includes all female half-castes, unless legally married to a person of "substantial" European descent and all of half-caste males under eighteen years (previously sixteen)' (Rowley, 1970:236).^a There were few basic changes in this Ordinance from the previous legislations and the basic concern remained to keep Australia 'white' and to 'protect' Aborigines and half-castes by restricting the Aborigines in the reserves and the half-castes in urban institutions. Any mission, station, or private institution could be declared an Aboriginal institution for the care of the Aboriginal and half-caste children. Strehlow (1965: 221) wrote:

The reserves were inevitably to become enclaves where the Aboriginal family produced in safety the labourers of the future. From here they were to go into rural employment, and here they were to return when not required.

The aim of the policy of segregation between full descent and mixed descent Aborigines and the careful definition of the two and their separate status in the law with various degrees of restrictions on their rights was designed, as far as those of mixed descent were concerned, '...to prevent the growth of a separate and dissident "half-caste" population outnumbering the non-Aborigines in the Territory, and so offering a threat to the "white Australia" policy' (Rowley, 1970b:39). The objective of the restrictions on half-caste marriages was to discourage marriage between mixed descent and full descent Aborigines in order to eventually 'breed out' the 'black strains' and to make the mixed descents acceptable in white Australia.

It is important to mention that before the enforcement of the Welfare Ordinance of 1953, the administration of the Commonwealth government Aboriginal Affairs was handled by agents who were not under the government's direct control, such as missions and cattle station pastoralists,

or by some Commonwealth departments for whom this task was a secondary function such as the police and health. Thus, the Commonwealth did not possess a specialized administrative apparatus to handle Aboriginal affairs. The relatively ineffective application of protectionist laws or improper delivery of the welfare services especially in pastoral stations was related to this administrative impairment (Collmann, 1979).

After the bombing of Darwin during the Second World War, the allied forces camped in Alice Springs. Aborigines were employed in the construction of the highway from Alice Springs to Darwin and some other jobs. This had other implications in terms of Aboriginal and non-Aboriginal contact and cash payment for the labour.

3.5 Policy changes in the post war era

Before World War 2, as Rowley has argued (1970:242), a world-wide colonial system seemed to justify the internal pattern of race relations. The process of world-wide decolonization largely began after the war and by the mid 1950s a number of new independent nations emerged from the old colonies of the world colonial empires in Asia, Africa and South America. The creation of the United Nations with its strong support for national independence movements in the colonies and its calls for the recognition of human rights and elimination of racism by the member countries had its positive effects in many parts of the world including Australia; this helped in the development of a political will to reform race relations and progress towards legal equity with other Australians for the Aboriginal people.

In the early post-war years the protectionist policies of the government toward Aboriginal people continued but as it became clear that the Aboriginal people were increasingly coming into contact with the European settlers, owing to the rapid growth of the Aboriginal population (Drakakis-Smith, 1979:284), the policies changed towards assimilation.

3.5.1 The process of acquiring equal status in the law

In the Northern Territory Welfare Ordinance of 1953 and also in the Wards' Employment Ordinance of 1953, the use of the term 'Aborigines' was avoided by using the term 'ward' which

meant a person, judged by the administration to be unable for special social reasons to care for himself.

As a ward he was subject to the complete authority of the Director of Welfare. The Director controlled the movements, property, choice of residence and marriage rights of all wards...it excluded all persons with the right to vote from ward status. Consequently, it excluded most of part-Aborigines and all whites (Collmann, 1979:41).

While by 1953, Aborigines were largely institutionalized, the objective, according to Rowley (1970:240), was to train and educate the inmates to be assimilated in the general community. With the establishment of the Welfare Branch, as a requirement under the Northern Territory 1953 Welfare Ordinance, the Commonwealth government established an administrative apparatus with handling of Aboriginal Affairs as its primary function, which obtained complete control over the Aborigines and increased substantially the administrative power over them (Collmann, 1979: 39-40). The power of the administration extended over a greater number and range of Aboriginal people. Before 1953 the government activities were mostly concerned directly with the administration of urban institutions for the mixed descent Aborigines. Collmann says

...the welfare Branch had quite extensive resources which it used actively to encapsulate whole new Aboriginal populations and to reorganize many of the Aborigines who had previously been living in contact with other white agencies. It further redistributed most of the Aboriginal population in space. The administration accomplished these tasks by developing new residential communities both in the bush and in the urban and moving Aborigines into them...The Welfare Branch had the power and legal authority to interfere in the everyday domestic life of urban and settlement Aborigines. In contrast, it substantially yielded its authority over cattle station residents to the pastoralists. It paid the pastoralists subsidies to support their resident Aboriginal population and relied upon them to enforce its regulations (Collmann, 1979:40-41).

The repeal of the Welfare Ordinance in August 1964 was praised by Rowley as an '...important step towards Aboriginal equality' (1970: 241). The Northern Territory Social Welfare Ordinance 1964 withdrew the whole superstructure of quite rigid controls, through which the *ward* was to be assimilated, civil rights were emphasized and restriction on the right of the Aborigines to drink alcohol was lifted. The remaining restrictions required permits to visit reserves by non-Aborigines, regulations against fighting, riotous behaviour, drunkenness, and use of firearms, on the reserves (Rowley, 1973:406).

In July 1965, the Conference of Commonwealth and State Ministers on Aboriginal Affairs agreed on a new definition of assimilation which contained for the first time the choice by Aboriginal groups as a factor in assimilation into the wider Australian community and attaining a similar manner and standard of living to that of other Australians (Rowley, 1973:402-403). By 1967, it was becoming clearer that public opinion was ready for granting legal equality to the Aboriginal people and this was illustrated in the 27th May 1967 referendum when 91 per cent of the formal votes cast favoured the legal equality of the Aboriginal people with the rest of the Australians by repealing section 127 and altering section 51 of the constitution; it was decided that the Aborigines were to be counted in the census and that the Commonwealth Parliament had concurrent power to pass laws on Aboriginal affairs (Commonwealth Bureau of Census and Statistics, 1968:66). Describing the referendum in August 1968 E. G. Whitlam, then leader of the opposition and future Prime Minister of Australia, said that

The referendum was not designed merely to remove discrimination against Aborigines; its purpose was to give the National Parliament and the National Government authority to grant especially favourable treatment to them to overcome the handicaps we have inflicted on them (Commonwealth of Australia, 1968:15-17).

3.5.2 Creation of government settlements

In 1913, Baldwin Spencer proposed the creation by the government of Aboriginal settlements and communities on reserves. Until World War 2 the government did not show any interest in the matter and only the missions were engaged in limited efforts in Central Australia. But the expansion of activities in the centre during the Second World War and the construction work on more than 1500 kilometres of highway from Alice Springs to Darwin resulted in a rapid influx of people to Alice Springs. A large number of Aboriginal people were also employed by the Army to work on the highway. The government realized the possibility of a large scale Aboriginal drift to the towns and work camps. To avoid such a 'danger', as described by Long (1964:72), the government established a large reserve from Papunya and Haast Bluff in the north to Areyonga in the south and the management of this reserve was carried out by the Hermannsburg mission which established ration depots at these places. Later sinking of bores by the Northern Territory Administration and the positioning of a stockman and a herd of cattle at Haast Bluff, established the conditions for provision of fresh meat and some sort of work for the Aboriginal population of

the reserve. The policy of developing Aboriginal settlements to control the drift of the people to the towns continued during the post-war years (Long, 1970: 199). The management of the Haast Bluff settlement was taken over by the Administration and in the late 1950s the settlement was moved to a new site 48 kilometres to the north at Papunya because of the high mineral content of the Haast Bluff water which was considered unsuitable for human consumption. The settlement at Haast Bluff remained as the headquarters for the cattle stock management. The Haast Bluff reserve had a permanent population of 300 in 1951 and 500 in 1958 (Long, 1964:75). The Aboriginal people settled in Papunya belong mainly to the western language groups of Pintubi and Warlpiri.

Another large Aboriginal community, established as a government settlement in the centre of a 2200 km² Aboriginal Reserve in the early 1950s, is Yuendumu. It is located on the edge of the Tanami desert 300 kilometres to the northwest of Alice Springs. According to the Welfare Branch records, the Yuendumu population was reported as 459 persons by 1960, 758 persons in 1965 (Long, 1970: 200) and 900 by 1970. In 1978 the Aboriginal population of the township was reported as 1,170, according to the Health Centre records, and there were about 100 Europeans (Young, 1981a:63). Contrary to these figures, the census figure for 1981 is very much lower and gives an Aboriginal population of 587 persons (ABS, 1981 Census: NT, Table CAB01). This discrepancy is due to poor census enumeration (Young, 1981a) and the 'outstation movements' of the Aboriginal people which gained impetus during the 1970s and resulted in the relocation of many Aboriginal people in small settlements on their traditional lands, but usually still within the large reserves or Aboriginal-leased pastoral properties or excisions from pastoral properties. Yuendumu lies in the western Anmatyerre boundary and the majority of its population in the early years were Warlpiri who came from distant areas, some Anmatyerre, and later (1964) some Pintubi people who arrived at the settlement (Young, 1981a:61-62).

In 1964, the Northern Territory Government established a settlement at Amoonguna, 14 kilometres to the southeast of Alice Springs, and moved the Aboriginal community on the former

telegraph station reserve to the new settlement. This reserve had quarters for the government staff, two dormitories, hospital, canteen, ablution blocks, a school and 51 Kingstrand⁵ houses. By 1965 there were 538 Aboriginal people living in Amoonguna, this declined to 150 by 1977. The causes of population decline in Amoonguna and the failure of the settlement were many. For example, there was no means of regular transportation between the settlement and the town and the 28-kilometre round trip to the town was very discouraging for those who wanted to visit the town. Second, mixing of various tribal groups in the settlement without the necessary opportunity for maintaining social distances caused endless fights and trouble which discouraged many families from living in the settlement. Third, the aluminium Kingstrand houses, with no water or electricity, fireplace or furniture inside them were unsuitable for protection against the excessive heat of the Central Australian long summer sun. They became what the people called 'bloody fire boxes' (Young and Drakakis-Smith, 1978:13).

In central Australia by 1965, in addition to two mission settlements at Hermannsburg and Santa Teresa, there were six government settlements and communities at Jay Creek, Amoonguna, Papunya (and its Haast Bluff cattle project), Areyonga, Warrabri and Yuendumu with an Aboriginal population of 4,086 persons (Long, 1970:200). The stated objective of these settlements was to house the Aboriginal people in segregated communities, provide them with some employment and medical facilities, educate the children and make the people learn the European way of living and be ready to be assimilated into the wider Australian community.

3.6 The post-war development of Alice Springs

During World War 2, the Northern Territory became a war zone. The Allied forces established a base in Alice Springs and work on the highway from Alice Springs to Darwin begun. These activities boosted the population of Alice Springs town. The population of the town had risen from 200 (European) in 1932 to a total of 1,871 in 1941 (Heppell and Wigley, 1981:1). The number of mixed descent Aborigines was reported as 300 in 1944 and apparently the full-descent Aborigines did not form a resident group in the town itself (Harvey, 1946).

⁵ Kingstrand aluminium sheets were used without insulation to built at about 51 unfurnished housing units.

During the 1960s, the population of the town increased considerably. It took 20 years from 1941 to 1961 for the population to double, but in only 10 years from 1961 to 1971 it almost tripled to about 11,200 persons. The tempo of population growth continued into the 1980s. The total population of the town reached 18,395 in 1981 including 2,974 Aborigines and 22,759 in 1986 which includes a total of 3,435 Aborigines and Torres Strait Islanders (ABS, 1988b:26).

The reasons for this continued high rate of population growth, at various paces, have been the recognition of Alice Springs location as an important place for the strategic defence information gathering systems for which the Pine Gap Space Research Facility was established during the 1960s, 19 kilometres to the southwest of the town; the expansion of the commonwealth and state government administration activities in the centre and the growing attraction of Central Australia as a major tourist centre for national and international visitors.

The American employees of the Pine Gap Base are housed in Alice Springs town; this has increased the demand for quality housing, consumer goods and services. The increase in government activities has considerably expanded local employment, and with the funds it has spent on various projects especially for welfare, housing and other purposes, the demand for goods and services of the private industrial sector has increased; while has boosted the local economy. Tourism is a fast-growing industry in Alice Springs; it brings more and more people and money to the centre each year. The development of air transportation, and holiday packages and better coach facilities, give a real boost to this industry which has resulted in the construction of better accommodation and recreation facilities in the town and at major tourist sites in the centre. The expansion of tourism has also increased the demand for Aboriginal art and cultural artifacts. The reflection of Aboriginal culture in tourist advertising materials is playing a role in attracting more and more visitors from all over the world especially the United States, Japan, and Europe as well as Australian tourists.

The development process, as outlined above, converted the tiny out-back and forgotten Alice Springs of the 1930s and former years into the present modern town flourishing in the 'big silent centre', which is not silent anymore and could hardly be described as frontier country any longer.

3.7 Consequences of growing contact on the Aboriginal population

More than a century of European intervention and settlement in central Australia has left its stamp on virtually all aspects of Aboriginal society in the region. This section briefly reviews some documented demographic, social and economic changes which occurred during this period.

3.7.1 The effects on size and spatial distribution of the Aboriginal population

The growing contacts of the Aboriginal population with the newcomers resulted in changes in the size, spatial distribution, ethnic composition and trends in demographic parameters of the Aboriginal population of central Australia in a way that could not have been expected to happen, had the traditional Aboriginal society continued undisturbed. Long (1964:73), describing Aboriginal communities in Papunya and Haast Bluff to the west of Alice Springs, writes that in the decades of European settlement from the 1870s and pastoral occupation from the 1880s, contacts with the Europeans drastically reduced the size of the Aboriginal population. As for the causes of this decline in population size, he mentions the neglect of the physical needs of those who abandoned their bush life. Long (1964:75) writes that 'The people of the Haast Bluff Range area, sometimes called *Kukatja*, have largely disappeared from the area, having died out or gone to live at Hermannsburg or on the cattle stations to the east'. Even in the fifteen years prior to 1964, no rapid population increase was observed (Long, 1964: 73).

Punitive expeditions played an important part in reducing the size of the Aboriginal population of the area and forcing them to move to other territories. For example, as reprisal for the killing of the telegraph station officer-in-charge and a lineman on the 22nd of February 1874 at Barrow Creek,

A punitive party of police and white bushmen was sent out to avenge the dead men. They ranged over thousands of square miles of country then inhabited only by aborigines and shot every one they found-men, women and children (Blackwell and Lockwood, 1965:55-56).

In 1928, the murder of a European dingo scalp collector at Coniston station caused a reprisal by the police in which between 60 and 100 Warlpiri and Anmatyerre Aboriginal people were killed (Young, 1981:59-60). This second case resulted in the dispersion of the Warlpiri and Anmatyerre people from the eastern Warlpiri country to their western and northern neighbouring areas of the Tanami Desert. These examples refer only to extreme cases, not the more casual murders which went unremarked at the frontier.

During the late 1930s three main Aboriginal communities had developed in central Australia, namely the Hermannsburg mission, the Arltunga Catholic mission (later at Santa Teresa) and a mission at Jay Creek. It should also be mentioned that an Aboriginal camp grew up at Alice Springs old telegraph station where there was a government institution for the half-caste Aboriginal children, the Bungalow. As mentioned before, from the late 1940s to the 1960s, government settlements were created and Aboriginal people were encouraged or forced to move to them from various places including cattle stations. Though it left many Aborigines who lived on the cattle stations as they were, because pastoralists needed cheap Aboriginal labour, it was the policy of the Welfare Branch to reorganize the settlement pattern of the Aboriginal people and to make sure that they lived in designated communities on the reserves or cattle stations. It also housed a select number of mixed-descent Aborigines in urban welfare housing. As a result of this deliberate population resettlement policy, the current pattern of Aboriginal population settlement in central Australia was established. The total number of the Aboriginal population on missions and settlements in central Australia increased from under 1,000 in 1950 to 6,200 in 1971. By 1971, about 1,850 Aborigines also lived in Alice Springs town, mostly in the Housing Commission and Welfare houses and a minority in town camps (fringe-camps); while another 1,200 lived on cattle stations (Collmann, 1979:40). By the 1960s, in the Alice Springs area there were probably no Aborigines still supporting themselves independently of the European community by hunting and gathering (Long, 1964:72). This shows the completion of a process begun by the first stocking of the land around waterholes of the area during the 1870s.

Thus, a basically nomadic hunter and gatherer people, roaming for centuries in traditionally well demarcated areas, was institutionalized and became sedentary, relying largely on the welfare services for survival.

3.7.2 The emergence of the mixed descent population

It was recorded above (3.4.4) that as early as in the late 1890s, there were about 200 Chinese and European miners working in the Arltunga gold mines, all of them men. These miners had contact with the Aboriginal women who camped with their families near the fields; the situation was similar everywhere in the centre, particularly because of the large sex imbalance among the immigrants and workers. In the year 1901 for 143 European men there were only 16 European women in the centre. According to Love (1915:21-22):

The woman in a blacks' camp has no possibility of a life of virtue...there is no limit to the white man, and I believe I am not exaggerating when I say that probably every gin in any blacks' camp in the interior is at the disposal of any passing traveller for the price of a stick of tobacco or a piece of damper. One cannot blame the blacks. Life is never too easy for them, and frequently food is hard to obtain. The white man has flour, tea, sugar, and above all, tobacco, and perhaps some spare clothing and a few yards of Turkey twill. The gin sees no wrong in obtaining the coveted luxuries easily...

Rowley (1970: 215), discussing the practice of encouraging the prospectors, before 1913, by giving them money and rations to go to the interior, mentioned that many would go to places where a tribe of 'black gins' was waiting for them. As a result, as early as 1912 in the Alice Springs district alone the number of half-caste children under the apparent age of 15 years was estimated at 119 (Love, 1915:21); of quadroons, the children of half-caste mothers and white fathers, 21. Love adds that these numbers refer only to the Aborigines in contact with the Europeans. This clergyman was disturbed by the fact that

At times one is startled to find, in a blacks' camp, children with white skins and golden hair...it seems particularly painful that these children should be growing up to the life of the camps-in a word, white savages (Love, 1915:21).

The existence of the half-caste children in the black camps attracted much attention. The opinion of Spencer, as quoted by Long (1971), in this regard is worth noting. Long says that Professor Baldwin Spencer, as special Commissioner and Chief protector of the Aborigines, recommended in 1913 that:

no half-caste child should be allowed to remain in any native camp and that all such children should be placed on stations...on the other hand he rejected that they should be segregated into one or two special training institutions, because he felt certain that the white population as a whole will never mix with half-castes (Long, 1971:189-190).

Because of such concerns and the fact that the number of 'half-castes' was increasing, the government started to remove the light-skinned children from their mothers in the camps and commit them to institutions. In 1908 the Protector of Aborigines in the Territory recorded 99 names on the Register of Half-Castes. By 1911, the figure was 280 in a total non-Aboriginal population of 3,310; in 1921 the estimate was 482 and in 1933 the figure reached 743 (Long, 1971:189). The official count in 1940 was 913 and in 1953 a rough estimate was 2,000. The increase in mixed-descent population over these years in the Territory continued despite the laws prohibiting cohabitation of the Europeans with Aboriginal women. But, as Long pointed out, the increase was because the mixed-descent Aborigines were having children. The fact that the population of mixed descent was fast increasing, was considered by the administration to be a problem.

The arrangements for establishing an institution for half-caste children in the town of Stuart (now Alice Springs) were made when, in 1915, an Aboriginal mother with her seven mixed-descent children moved in from Arltunga mining town (Heppell and Wigley, 1981:15). The Alice Springs schoolmistress, who was appointed by the South Australian Education Department, was also in charge of the institution known as the Bungalow which, by 1923, housed about 60 half-caste children. The institution was accommodated in a tin shed and, in 1927, Madigan (1944:70) noticed that the children in the institution, which was run by the government, slept at nights under the trees, unless there was rain, and attended the school for an hour and a half in the afternoons. At the institution, the elder girls did all the cooking and cleaning. According to the rule enforced by Sergeant Stott, the Police Officer and Protector of Aborigines, the children took their fathers' names according to their mothers' information. The institution became the only known home for the half-caste children.

Here they grew up till they could get employment on the stations; and here the girls returned when it was time to add to the population of the 'bung' as this 'bungalow' was called (Madigan, 1944:69).

After the transfer of the Alice Springs telegraph station, which was seven kilometres away from the town centre, to its new location inside the town, the Welfare Department took over the premises of the old Station and moved the Bungalow institution into them. In 1939, the population of the Bungalow was 120 children and 14 adults (Stone, 1974: 181). With the bombing of Darwin in 1942, the Bungalow, as an educational institution, was closed and all residents were sent to Balaclava in South Australia. The old telegraph station premises were transferred by the Army to house the Aboriginal labourers working on the Alice Springs-Darwin highway. In 1945, the mixed-descent children were placed in St Mary's school in town and the old Station became a reserve for the full-descent Aborigines, officially for '...only those natives authorized to be within the prohibited area of Alice Springs' (Heppell and Wigley, 1981:16).

By 1944, there were 300 Aborigines of mixed descent in Alice Springs town including people of Chinese-Aboriginal and Afghan-Aboriginal descent (Rowley, 1976:35-36) thus forming a sizable residential group, who in the absence of full descent Aborigines in the town during the war became the targets of racial prejudice with the insistence of the local European community on segregated housing, and pressure for separate schooling (Rowley, 1976:37) as was practised in other states for mixed descent Aborigines.

According to the data collected by Harvey in 1944, most of the mixed descent Aborigines were employed in various occupations such as stockmen on award wages, municipal labourers also on award wages, drovers, truck drivers, miners, carriers, shop assistants and the like, and in the armed services. There were ten pastoralists including owners and part-owners, who inherited properties from their European parents. There were 25 employed women mainly in domestic or cleaning work who were mostly deserted wives, widows, and unmarried mothers (Rowley, 1976:36). Collmann says (1979:43) '...in general whites considered part-Aborigines more valuable as workers and clients than other Aborigines. Consequently, they usually had a greater range of opportunities available...than most "full-blood" aborigines'.

In 1965 a survey of the mixed descent population of Alice Springs was carried out by Alta Gordon. Of the total 6,000 population of the town at the time, she reported the size of the mixed descent population as 900 persons against the official figure of 520 in 1964 (Rowley, 1976:38). With the high mobility of the European population of the town, many of whom were on short contracts, Gordon regarded the people of Aboriginal descent to be the 'most stable element'.

3.7.3 The development of Aboriginal town-camps in Alice Springs

As observed in earlier sections, the present Alice Springs area was an important place for the Arrernte people. Their sacred sites were located in this area and it served as a sanctuary for the wildlife of the surrounding environs. The place was also used as a gathering location for very important ceremonial and religious purposes. Although the Aboriginal nomadic hunting and gathering way of life generally precluded any permanent settlement in a specific place, the available evidence suggest that as early as at the turn of the century, after the stocking of the best surrounding pastoral lands and occupation of the waterholes, the Aboriginal groups were camped at Alice Springs on a fairly permanent basis. Their number, estimated at about 150 in 1899 (Blackwell, 1965:52), was many times larger than that of the Europeans working in the telegraph station or living in the adjoining Stuart town on the bank of the River Todd (now Alice Springs). This situation continued and even the colonial officials were referring to the permanent camping of a large number of Aborigines, 120-140 persons, in Alice Springs in 1914 (Heppell and Wigley, 1981:7). Plawman (1934) acknowledged the presence of many Arrernte-speaking people in late 1920s. The existence of a permanent Aboriginal camp along the Todd River near the telegraph station, throughout the early decades of this century, was acknowledged by Blackwell (1965), who was living in Alice Springs during that period. She refers to the recruitment of some workers and domestics from this camp by the station staff. Apparently after the arrival of the railway and the transfer of the telegraph station to the town, the people in this camp were taken to Hermannsburg (Heppell and Wigley, 1981:17). The reason for this transfer appears to be fear of the moral and physical threat the railway workers posed, especially to the Aboriginal women (Collmann, 1979:47).

After the development of the Bungalow, many Aboriginal parents, who did not want to be parted from their children, camped nearby, and therefore a permanent Aboriginal camp grew up around the old telegraph station; there were also short-term visitors to the town who lived in this camp. Collmann (1979:47) refers to an Aboriginal camp called *tjuritja* during the 1930s and early 1940s between the western boundary of the Bungalow reserve and eastern areas of the Charles River; during the war its administration was handed over to the Catholic Church. This camp was first removed from Alice Springs to Arltunga and then was granted a lease in Santa Teresa, about 290 kilometres to the southeast of Alice Springs.

As noted above, during World War 2 the old telegraph station buildings were used as an Aboriginal labour camp by the Army; after the war in 1945 the area was declared an Aboriginal reserve for full descent Aborigines. During this time relatives who accompanied patients to the hospital and visitors to the town as well as those with employment and authority to be in the area of Alice Springs used to reside in the telegraph station reserve. The population of the reserve reached 386 by 1960, which aroused much criticism from the European community and organizations in the town (Heppell and Wigley, 1981:16). The Bungalow reserve was first administered by the Native Affairs Branch and then, after 1953, by the Welfare Branch. Some Aboriginal people were camping in the hills surrounding Alice Springs; many of them were those who refused to live in the Bungalow reserve, though as wards they were legally obliged to have the administration's permission to live outside the reserve (Collmann, 1979:49).

When the Bungalow reserve was relocated by the Welfare Branch to the new settlement in Amoonguna in 1961 by the Welfare Branch, many people refused to move from the town and its immediate environs. People also drifted back from the Amoonguna settlement and established new camps (Collmann, 1979:50). These people were joined in the late 1960s and early 1970s by those expelled from the cattle stations, after the introduction of award wages in 1968 (Drakakis-Smith, 1981:42).

The population of the town camps was increased by the addition of those mixed descents evicted by the Welfare Branch from the town houses for failing, according to the Welfare Branch, to maintain a life-style consistent with the assimilation policy (Collmann, 1979:50). In 1965 about 109 part-Aboriginal households were living in various types of housing in the town (Rowley, 1976:40). There were some Aborigines who refused ever to move to town houses though they had the right to live in the urban area and were eligible for welfare houses. The reason for this refusal, according to Collmann (1979:50), was to stay out of the Welfare Branch control.

During 1974-1976, the number of town camps was at least fifteen, ranging from very small camps of only a few occupants to a camp with 60 people, with total population between 200 and 500 persons (Collmann, 1979: 51). Most of the camps had emerged after 1953 and according to Collmann (1979: 50)

...the Aborigines who became fringe-dwellers after 1953 did so as a result of the conditions created by the increased power and structural involvement of the welfare apparatus in their everyday lives...What is significant about the camps is that they create conditions which enable some Aborigines to manipulate the content and pattern of their relationship with whites and thereby, partially control the effects of their dependence upon them.

Until granting of leases to some of the camps, no facilities such as water and electricity were extended to them despite the fact that some of the camps had been in existence for over 30 years (Heppell and Wigley, 1981:11). In a submission to the Senate Standing Committee on Social Environment, the Northern Territory Administration stated that '...while it is necessary to ensure adequate health and hygiene services and basic shelter, this should not represent an encouragement to permanent residence' (Commonwealth of Australia, 1971-76:152). Despite this official position which reflected the popular view of the European community of Alice Springs that 'permanent life in fringe camps is no basis for acceptance within the wider community' (Payne and Ford, 1972) the town-camps remained and steadily grew because they were not occupied mostly by 'itinerant Aborigines visiting town for a holiday or for medical attention' (Payne and Ford, 1972). According to Heppell and Wigley (1981:14):

Town campers are people who have largely rejected the European suburban way of life, desire to live in small closely knit homogeneous groups which exalt certain human values above those held

and expected by white society (such as kinship obligations) and, above all, want to pursue their chosen lifestyle away from any possible interference by outsiders who little understand the values and aspirations of the town campers.

Town-campers had available to them a relatively wide range of opportunities. According to Collmann (1979:51) they all maintained links with both the urban and rural contexts and an ultimately more significant benefit from living in Alice Springs was, especially before 1974 when many rural Aborigines did not have access to social security benefits, the privileged access to social security pensions. During Collmann's field work, 1974-1976, the core of every camp was a group of pensioners (Collmann, 1979: 51).

By the early 1970s, during the long process of expansion of Alice Springs, the living conditions in the town camps had not improved. The residents were not in a position to improve their conditions because the erection of any permanent utility on crown land was forbidden by law. The unsuccessful attempts to remove the town camps and the appalling conditions in them resulted in limited attempts to provide some basic services, but

By the end of 1975, all that had been provided for the many permanent homeless Aboriginal people living in and around Alice Springs were a few ablution blocks and five units built at Charles River (Heppell and Wigley, 1981:106).

In 1974, Judge Woodward, the Commonwealth appointed Land Rights Commissioner, in his second report, recommended that urban Aborigines who were unable to seek land on the basis of traditional ownership should be able to seek land on the basis of need (Heppell and Wigley, 1981: 92). In 1976, the Northern Territory Land Rights Bill was passed by Parliament and it was proclaimed in January 1977.

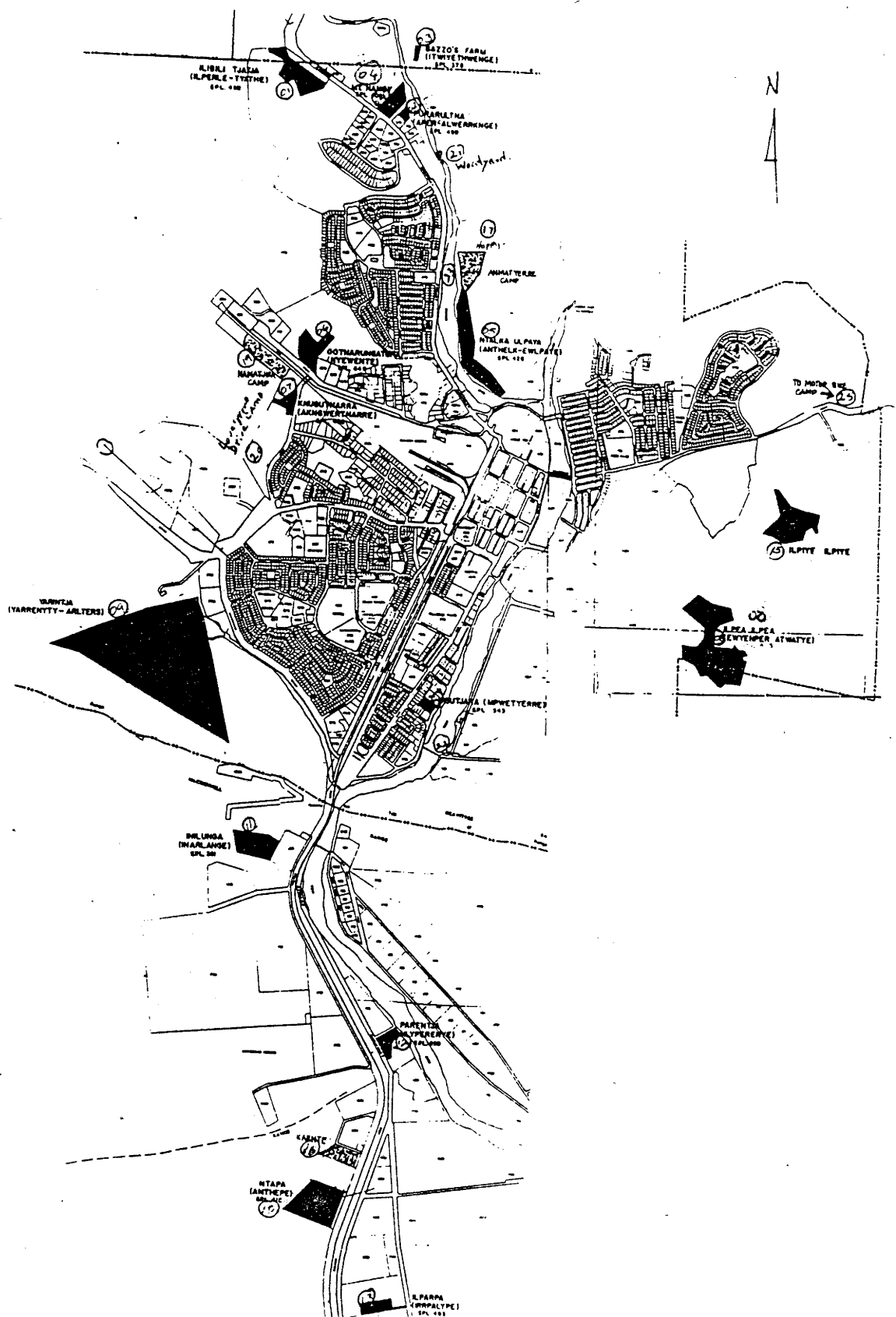
The first lease for a town camp was granted on 11 June 1973 for the Little Sisters (now Inarlenge) camp but the lack of sufficient funds for the development of the camp resulted in construction of only two ablution blocks and extension of water and electricity to them (Heppell and Wigley, 1981: 90). In fact, the housing program and provision of facilities for the town campers was largely started in 1976 from Mount Nancy camp. It took over two years, from the

date of initial application for the lease on 27 February 1974 to final approval on 15 April 1976, for the Northern Territory Government to process and grant a lease for the Mount Nancy camp.

In April 1974, a committee called Tangentyere Association was formed with the initiative of the Department of Aboriginal Affairs to assist the camp communities to obtain leases and improve general living conditions in the camps. For several years it did not achieve much and was inactive because it did not have a strong community base but in 1977 Tangentyere recommenced its activities and some camps were provided, in this year, with essential services. The growing involvement of the representatives from various town camps in running the Association and growing interest in land rights are the keys to the success of this Association which is now called the Tangentyere Council Inc. and represents 16 camp Housing Associations and Aboriginal Community Corporations. The Council not only is involved in designing the houses and the building program for all the town camp leases but it provides the delivery of essential services to most of the town camps and works as an umbrella organization for all of them. The Tangentyere Council is funded by the Commonwealth Government. By June 1987 the housing program had been extended to 16 camps in and around the town where considerable development has occurred during the last ten years; but there are still at least nine more permanent camp sites without secure lease titles; for detailed information on housing conditions and facilities in Alice Springs town-camps see Chapter 8.

In May 1987, about 1,200 persons were living in 25 Alice Springs town-camps. According to the 1986 Census results, this forms about 34 per cent of the total Aboriginal population of Alice Springs. Some argued (Heppell and Wigley, 1981:9-10) that Aboriginal urban dwellers and town-campers in Alice Springs form two socio-cultural and economically distinctive groups. A comparative analysis of the socio-economic and demographic characteristics of the town-campers and Aboriginal urban dwellers in Alice Springs is carried out, wherever possible, in the next chapters.

Map 3.2: Location of Alice Springs town camps, May 1987



Chapter 4

Aboriginal Mortality in Central Australia

4.1 Introduction

In this chapter as well as in the subsequent chapter on fertility, the scope of the study is extended beyond Alice Springs to cover major Aboriginal population centres in the whole area of Central Australia, from the 20th parallel in the north to the South Australian border in the South. It should be mentioned that this is the area served by the District Registrar of Births, Deaths and Marriages in Alice Springs and also approximately the same area served by the Northern Territory Department of Health Regional Office in Alice Springs. The reason for the extension of the geographical coverage of the study is a technical one: meaningful mortality and fertility studies, which require the breaking up of the data by sex, age groups and other characteristics such as causes of death, cannot be carried out on a small population. Furthermore, with a common history (see Chapter 3) and continuous very strong interactions and migration movements (see Chapter 7), the Aboriginal population of Alice Springs is an integral part of the whole Central Australian Aboriginal population. Hence, with common characteristics, mortality observations from this extended geographical area will be also valid for Alice Springs alone.

There are many reasons for undertaking mortality analysis of the Central Australian Aborigines: first, the story of Aboriginal demography in Alice Springs would not be complete without an understanding of the population's mortality regime and its trend which, in conjunction with fertility behaviour, directly affects the size and age distribution of the population and reflects the health status and well-being of the people.

Second, up till now a comprehensive mortality analysis of the Aboriginal people living in the vast areas of Central Australia has not been conducted; most of the studies have been concentrated on the state level. Meanwhile the mortality conditions of the total Aboriginal population of the Northern Territory may not necessarily completely reflect the mortality regime which prevails in Central Australia.

Third, a longitudinal study of Aboriginal mortality in the region will enable us to assess the trends in mortality indices and thus will provide necessary tools for evaluation of the health intervention programs. This is the first analysis of Aboriginal mortality data for a long period from the same geographic area using the same data source. Previous studies on Aboriginal mortality e.g. Hicks (1985) in Western Australia, 1983 and Thomson and Smith (1985) in New South Wales country regions, 1980-1981 mainly focused on mortality conditions in a particular year or period. A very recent work on Aboriginal mortality, covering the total Northern Territory (Plant, 1988) did not study the trends in the causes of death and how they affect the survivorship of the Aboriginal people.

Finally, it was mentioned in the first chapter that study of Aboriginal mortality in Central Australia is a research priority for those organizations responsible for the delivery of the health care services for the Aboriginal people in the region, especially in the case of the health services provided by the Central Australian Aboriginal Congress. A comprehensive mortality study will define the health status of the people in terms of mortality measurements and provide a guide to intervention strategies.

4.2 Sources of Data

4.2.1 Mortality Data

I was granted access to birth and death registers by arrangement with the Registrar of Births, Deaths and Marriages, Darwin. In neither set of records is the Aboriginality of the deceased mentioned; therefore, to distinguish Aboriginal deaths, every individual record has to be verified by the help of variables such as name, type of marriage, reporting authority, place of residence

and others. By this process information on 1,253 Aboriginal deaths was obtained for the years 1975-1986.

The collected information includes date of the event, age of the deceased at the time of death, sex, place of residence and full details of causes of death reported in the Medical Certificate of Death in accordance with the recommendations of the Ninth Revision (1975) of the International Classification of Diseases and Causes of Death 'ICD' (World Health Organization, 1977). The collected information was subsequently coded and transcribed to computer using the NT Department of Health coding scheme (1984) for places of residence, and for causes of death, the ICD codes. All of the causes of death which appear on the death records were coded and transcribed to computer. However, the underlying cause of death for each individual record was used in the following analysis.

Not all of the 1,253 Aboriginal death events obtained for the years 1975-86, in all of the Aboriginal communities in Central Australia, are used in the estimates of Aboriginal mortality rates produced here. The use of a particular community's data in a particular year or period was mainly dictated by the availability of the population figures for the communities under study. Nevertheless, in the analysis where the population figures were not involved, all of the death events were utilized. Numbers of deaths by age and sex for the periods 1975-77 for eight major Aboriginal communities are presented in Table 4-18 and for the periods 1979-1983 and 1984-1986 for 12 major Aboriginal communities (described in subsection 2.2 below) are presented in Table 4-19 and Table 4-20. For the purpose of comparison, the total Northern Territory deaths by age and sex and cause of death published by the Australian Bureau of Statistics were utilized (ABS, 1987a).

4.2.2 The Population

The ABS Population Censuses of 1976, 1981 and 1986 furnish basic population data for this study. The returns of these censuses related to the major Aboriginal communities in Central Australia were used to estimate the Aboriginal population by age and sex for the intermediate

years. From the 1976 Census separate statistics were published by the Australian Bureau of Statistics for the following eight population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River (ABS, 1976 Census, Aboriginal Summary Data Table 4-6, N.T.). From the 1981 Census, separate statistics are available for the Aboriginal populations in 12 centres, Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri, Willowra, Yuendumu, Utopia and Docker River (ABS, 1981 Census: N.T. Table CAB01). To be comparable with the 1981 Census, the Aboriginal population data by age and sex for these 12 communities from the 1986 Census are also used (ABS, 1986 Census: N.T. Table CA0073). By a process of linear interpolation (McGirr and Pinal, 1986: A-61 to A-64) population figures were estimated by age and sex for the aggregate of eight communities for the years 1977 to 1980 and for the aggregate of 12 communities for the years 1982 to 1985 (Tables 4-18 to 4-20).

4.3 Analytical Approach

Since the number of deaths is small in a single year for the communities understudy (they vary from 22 to 49 for a particular sex in a single year), it was necessary to avoid zero cells in an age-sex distribution of deaths by using aggregates of three years in the analysis.

To study mortality levels, patterns and age-sex differentials, crude death rates as well as age-specific mortality rates (Table 4-17) and cause-specific mortality rates are computed for each sex (Tables 3, 4 and 5) and abridged life tables were generated (Table 4-11 to Table 4-16). For estimating ${}_1q_0$ and ${}_4q_1$ from ${}_1M_0$ and ${}_4M_1$ and for estimating ${}_1L_0$ and ${}_4L_1$ from ${}_1q_0$ and ${}_4q_1$, the Coale-Demeny (1966) West region death separation factors are used. Misreporting of age data and small number of deaths resulted in age-specific mortality rates not smooth enough to provide smooth life tables. Therefore, a process of graduation was applied on the observed mortality probabilities in age groups 0-1, 1-5, 5-10, 10-15, ..., 75+ by the use of an eight-parameter formula (Heligman and Pollard, 1980):

$${}_1q_x = A^{(x+B)^C} + D^{-E(\ln x - \ln F)^2} + \frac{GH^x}{1 + GH^x}$$

where ${}_1q_x$ is the probability of dying in exact age x before reaching exact age $1+x$, and $A, B, \dots, H$ are parameters to be estimated. A least square method was applied to minimize the sum of squares of the proportional differences of the fitted from the observed mortality probabilities, after regrouping into age groups 0-1, 1-5, 5-10, 10-15, ... and a smoothed set of ${}_nq_x$ values and single year ${}_1q_x$ values which aggregated to the smoothed ${}_nq_x$ values. In order to derive the fitted mortality probabilities a computer application of this procedure UNABR (United Nations, 1988:111-114) was applied. To make sure the fitted life table agreed with the observed level of mortality, the graduated ${}_nM_x$ values from the resultant fitted life table were then applied on the age distribution of the study population in order to get the expected number of deaths. The ratio of the observed number of deaths and expected deaths was then multiplied to the graduated ${}_nM_x$ values and the resultant adjusted ${}_nM_x$ values were then used to generate a final adjusted life table (Tables 4-11 to 4-16).

For comparative purposes indices such as standardized death rates, age and cause-specific mortality rates and temporary expectations of life (${}_nE_x$) were used. Wherever required, comparisons are made with the non-Aboriginal population and the total population of the Northern Territory, and the total population of Australia. For this purpose, abridged life tables were computed for the 1986 total Northern Territory males and females. To make comparisons sound, standardized mortality rates and ratios were computed for the total Northern Territory and the total Australia population (Tables 4-1 and 4-6). Given the relatively small number of deaths in the study population, an indirect standardization technique was used, applying the Northern Territory and Total Australia mortality rates to the age distribution of the Aboriginal population in Central Australia.

Cause Specific Aboriginal Death Rates in 1984-86 for males and females were compared with the total Northern Territory population and the relative risk of Aboriginal death by various

causes, the ratio of the Aboriginal rate to the total Northern Territory standardized rate, was determined and the excess risks were derived by subtracting the total Northern Territory standardized death rates from the Aboriginal rates and the proportions of excess risks by each major cause are shown (Table 4-6).

Trends in Aboriginal cause-specific mortality have been studied by comparing mortality indices for the periods 1975-77, 1978-80, 1981-83 and 1984-86. For this purpose standardized cause-specific mortality rates for the periods mentioned have been calculated taking as standard the age structure of the Central Australian Aboriginal population in 1984-86 (Tables 4-4 and 4-5). In order to compare the findings on Aboriginal mortality in Central Australia with the results of other studies (e.g. Plant, 1988; Devanesen et al., 1986), tabulations from the present study were produced for the period 1979-83 as well.

Improvements in cause-specific mortality of the Aboriginal population of the Central Australia over the period 1975-77 to 1984-86 are also examined. This was done by calculating the contribution of the various causes of death, 17 classes of the ICD classifications (WHO, 1977), to the improvement in expectation of life (Pollard, 1982:225-240; 1983:427-442; 1986:1-17) during the reference period both for males and the females (Tables 4-7 and 4-8). The changes in expectation of life at a particular age group over the period 1975-77 and 1984-86 are expressed as a weighted sum of the changes over the period of all-cause mortality rates at all subsequent ages.

The improvement in the expectation of life at birth over the study period from 1975-77 (denoted 'a') to 1984-86 (denoted 'b') is therefore, by Pollard's (1983:431-432) formulation

$$e_{0b} - e_{0a} = W_{0.5}(1Q_{0a} - 1Q_{0b}) + W_{3.4}(4Q_{1a} - 4Q_{1b}) + W_{7.5}(5Q_{5a} - 5Q_{5b}) + W_{12.5}(5Q_{10a} - 5Q_{10b}) + \dots$$

where

$$W_t = 0.5[(x p_{0a} * e_{0b}) + (x p_{0b} * e_{0a})],$$

and

$${}_xP_0 = \frac{l_x}{l_0}.$$

The force of mortality, or instantaneous mortality rate at any age x in a population, is denoted by μ_x , and defined (Pollard, 1983:431-432) as:

$$M_x = \int_0^x \mu_t dt$$

For computational convenience

$${}_nQ_x = \int_0^n \mu_{x+t} dt$$

and for numerical evaluation purposes,

$${}_nQ_x = -l_x (l_{x+n}/l_x)$$

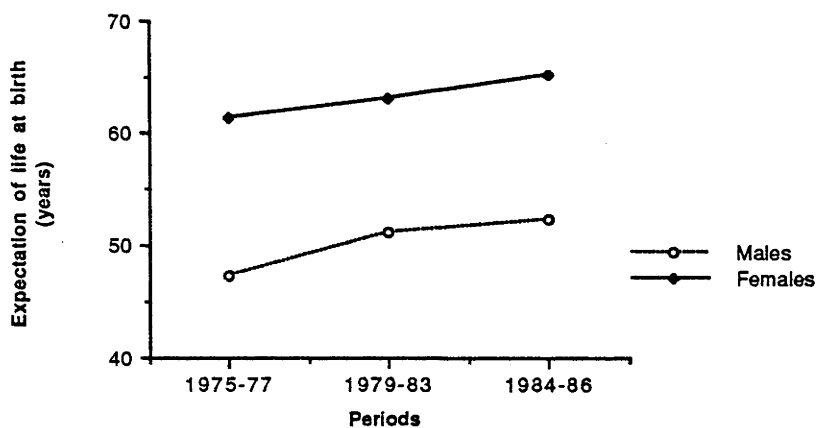
which, in fact is the sum of the force of mortality at a particular age for all the various causes. As a result, the contribution of the various causes of death and age groups to the overall change in expectation of life can be determined from the same weighted sum formula presented above (Pollard, 1986:3).

4.4 Findings

4.4.1 Mortality levels

Analysis of Aboriginal death records from 1975 to 1986 in central Australia suggests that Aboriginal mortality is steadily declining. The decline is exhibited in the gain in expectation of life at birth from 1975-77 to 1984-86 for Aboriginal males which was found to be more than five calendar years and for Aboriginal females during the same period, which was about four years. The study also shows that the gap between male and female expectation of life at birth which was recorded as about 14 years during the period 1975-77, is perhaps closing; during 1984-86 the gap was about 13 years. The effects of various causes of death in the improvement in Aboriginal mortality are examined in the subsequent subsections.

Figure 4.1: Trend of expectation of life at birth, Aborigines of Central Australia



In spite of these improvements over the last 10 years, the level of Aboriginal mortality in Central Australia is still much higher than that of the total population of the Northern Territory or the total population of Australia. The Aboriginal crude death rates are found to be up to three times higher than the standardized rates for the total population of Australia in 1986 (Table 4-1). Compared to the total Northern Territory males and females in 1986, the Central Australian Aboriginal mortality rates are respectively higher by more than 2.6 and 2 times (Table 4-1). Similarly, the expectation of life at birth for the Aborigines of Central Australia is up to 17 years less than that of the population of the Northern Territory as a whole and up to 20 years less than that of the total population of Australia.

Figure 4.2: Levels of the Aboriginal expectations of life at birth in Central Australia compared to those of other populations, 1984-86

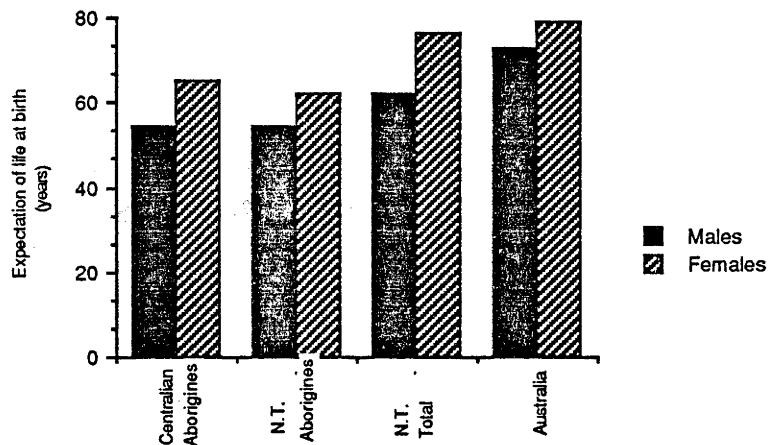


Table 4-1: Crude death rates¹, for the Aborigines of Central Australia² compared with the total Northern Territory and Australia, by sex

	1975-77	1979-83	1984-86
Central Australia			
Aborigines			
Crude Death Rates:			
- Persons	13.0	11.0	9.0
- Males	16.8	13.2	11.2
- Females	9.6	8.9	6.9
Difference	7.2	4.3	4.3
Expectations of life at birth (years):			
- Males	47.26	51.21	52.39
- Females	61.32	62.99	65.08
NT Aborigines³ e^o			
- Males	-	51.32	54.7
- Females	-	58.16	62.2
Australia⁴			
(Total population 1986)			
(a) Observed CDRs:			
- Males	-	-	7.8
- Females	-	-	6.6
Difference	-	-	1.2
(b) Standardized ⁵ CDRs:			
- Males	-	-	3.9
- Females	-	-	2.8
Difference	-	-	1.1
(c) Standardized Mortality Ratio ⁶ :			
- Males	-	-	287
- Females	-	-	246
Expectations of life at birth (years):			
- Males	-	-	72.77
- Females	-	-	79.13
Northern Territory			
(Total population 1986)			
(a) Observed CDRs:			
- Male	-	-	5.3
- Females	-	-	3.3
Difference	-	-	2.0
(b) Standardized CDRs:			
- Males	-	-	4.1
- Females	-	-	3.2
Difference	-	-	0.9
(c) Standardized Mortality Ratio:			
- Males	-	-	273
- Females	-	-	216

Table 4-1 (cont.): Crude death rates¹, for the Aborigines of Central Australia² compared with the total Northern Territory and Australia, by sex

	1975-77	1979-83	1984-86
Expectations of life at birth (years):			
- Males	-	-	69.29
- Females	-	-	76.37

1 Rates are deaths per 1000 population.

2 For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres; Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River. For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres; Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

3 Data for 1979-83 period from Plant (1988:69-70) and data for 1984-86 from Gray (1988).

4 Observed crude death rates for Australia from Australian Bureau of Statistics 1987:7. Basic mortality data for Northern Territory from ABS, 1987:11, and population data from ABS, *Census 86*, NT, Table CA0001.

5 Indirectly standardized crude death rates for Australia (1986) and Total Northern Territory (1986) based on the age structure of the Central Australian Aboriginal population.

6 Standardized crude death rates for Australia and total Northern Territory=100.

4.4.2 Age-Specific Mortality Rates

The study shows (Table 4-3) that in Central Australia the infant mortality rate for Aboriginal males during the period 1984-86 was about 35 and for females about 29 per thousand live births. These figures are consistent with the rates produced by other studies for the total Aboriginal population of the Northern Territory (Plant, 1988:33) where infant mortality rates ranging from 51.1 for 1979 to 36.6 in 1983 for both sexes combined were found.

Relative risk of mortality for Aborigines of Central Australia, as Table 4-3 shows, is substantially higher in all ages than those exhibited by the total population of Australia. For example, the relative risk of mortality for Aboriginal male infants is 3.5 times and for the Aboriginal female infants 3.7 times the rates exhibited by the total population of Australia. The table also reveals that the relative mortality risks in the middle adult ages of 25 to 49 for Aborigines of the study area are up to 14.4 times higher than those of the total population of Australia. Compared with the non-Aboriginal population of the Northern Territory during the period 1979-83, the relative mortality risks for Aborigines of Central Australia were up to 17.5 times higher in the middle adult ages of 25-49 (Table 4-2 and figure 4.1).

Table 4-2: Age-specific mortality rates and relative risks¹ for Aborigines in Central Australia² and total Northern Territory Non-Aborigines³, 1979-83 (Rates=Deaths/1000 Population)

Age Groups	MALES			FEMALES		
	Aboriginal	Non-aboriginal	Relative risk	Aboriginal	Non-aboriginal	Relative risk
0-4	13.1	2.9	4.5	11.0	2.4	4.6
5-9	0.9	0.3	3.0	1.2	0.4	3.0
10-14	0.9	0.7	1.3	0.6	0.3	2.0
15-19	1.6	2.0	0.8	0.6	0.9	0.7
20-24	5.2	2.2	2.4	2.2	0.7	3.1
25-29	11.1	2.9	3.8	5.9	0.4	14.8
30-34	18.1	1.7	10.6	7.0	0.4	17.5
35-39	23.7	2.8	8.5	5.6	0.8	7.0
40-44	27.0	3.1	8.7	4.9	1.1	4.5
45-49	30.5	5.9	5.2	6.1	2.4	2.5
50-54	32.1	8.6	3.7	9.6	2.7	3.6
55-59	35.1	12.7	2.8	15.9	6.2	2.6
60-64	40.1	13.0	3.0	26.5	5.5	4.8
65-69	50.3	27.0	1.9	44.1	11.1	4.0
70-74	64.6	32.5	2.0	72.7	19.1	3.8
75+	155.6	-	-	163.3	-	-

1 Relative Risk is the ratio of the observed Central Australia Aboriginal rate to the Total Northern Territory Non-Aboriginal rate.

2 See notes to Table 4-1.

3 Adapted from Devanesen et al., 1986:23.

Figure 4.3: Relative risks of mortality for the Aboriginal population of Central Australia to those of the total Non-Aboriginal population of the Northern Territory, by age 1979-1983

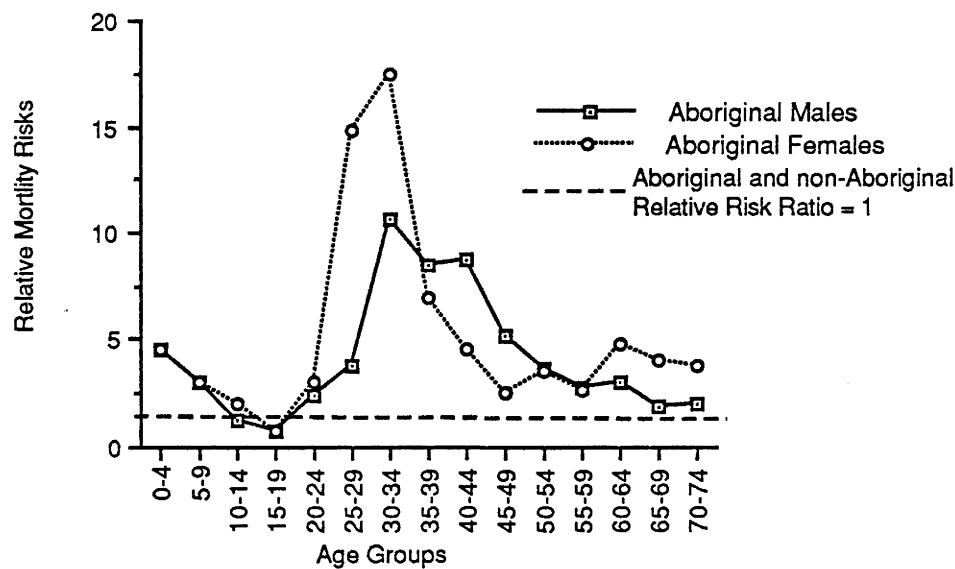


Table 4-3. Aboriginal age-specific mortality rates (ASMRs)¹, relative risks² in Central Australia³ (1984-86) compared with the total population of Australia (1986)⁴.

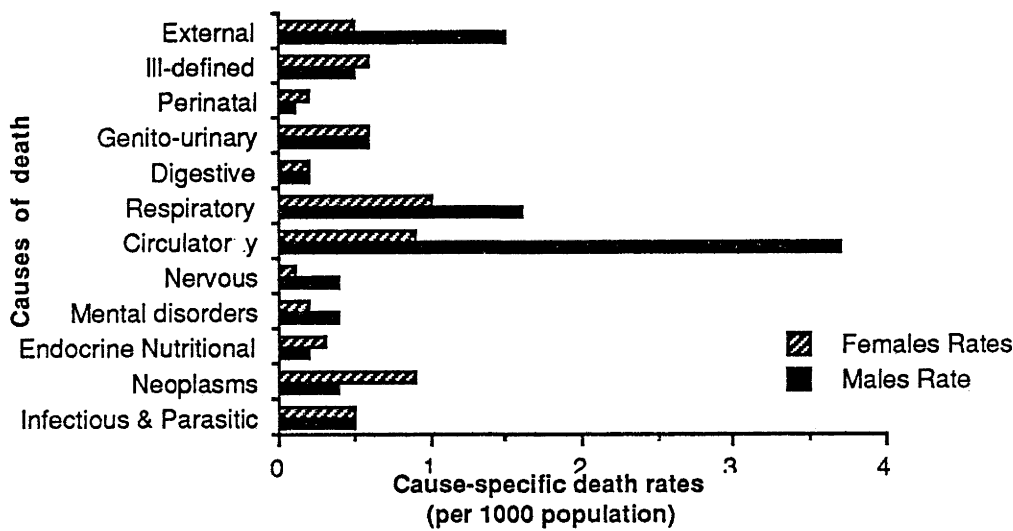
Age Groups	MALES		FEMALES			
	Aboriginal ASMRs	Total Australia ASMRs	Relative Risk	Aboriginal ASMRs	Total Australia ASMRs	Relative Risk
0	35.0	10.2	3.5	29.0	7.9	3.7
1-4	1.9	0.5	3.8	1.5	0.4	3.8
5-9	1.2	0.3	4.0	0.3	0.2	1.5
10-14	1.0	0.3	3.3	0.4	0.2	2.0
15-19	1.3	1.1	1.2	0.5	0.4	1.3
20-24	3.2	1.5	2.1	0.8	0.5	1.6
25-29	7.0	1.3	5.4	1.9	0.5	3.8
30-34	12.8	1.3	9.8	4.6	0.6	7.7
35-39	20.1	1.4	14.4	7.7	0.8	9.6
40-44	28.0	2.3	12.2	9.3	1.3	7.2
45-49	35.8	3.5	10.2	10.2	2.2	5.5
50-54	42.4	6.3	6.7	12.5	3.6	3.5
55-59	48.8	10.8	4.5	17.3	5.7	3.0
60-64	53.4	18.2	2.9	25.8	9.0	2.9
65-69	56.6	28.8	2.0	39.3	14.9	2.6
70-74	58.5	45.5	1.3	59.6	25.0	2.4
75+	86.6			131.0		

1 Rates are deaths per 1000 population.
2 Relative risk is the ratio of the Aboriginal rate to the total Australia rate.
3 See notes to Table 4-1.
4 ABS, 1987/9

4.4.3 Leading Causes of Death

During the period 1984-86, the leading causes of Aboriginal male deaths in Central Australia were found to be, in order, diseases of the circulatory system, diseases of the respiratory system, accidents, poisoning and violence (external causes), diseases of genito-urinary system and infectious and parasitic diseases. These causes alone contributed more than 70 per cent of the Aboriginal male crude death rate (Table 4-4). For the females during the same period the leading causes of mortality were found to be, in order, diseases of the respiratory system, diseases of the circulatory system, neoplasms, diseases of the genito-urinary system, external causes and infectious and parasitic diseases. These causes contributed about 63 per cent of the Aboriginal female death rate during the period 1984-86 (Table 4-5).

Figure 4.4: Cause-specific death rates by major ICD Classes, Aborigines of Central Australia by sex, 1984-86. (per 1000 population)



Aboriginal standardized cause-specific death rates in Central Australia (tables 4 and 5) demonstrate that from the period 1975-77 to 1984-86, diseases of the circulatory system, diseases of the respiratory system, accidents, poisoning and violence, and infectious and parasitic diseases were consistently the leading causes of death. Importantly, the tables also reveal that the rates are steadily declining, except for neoplasms and diseases of the genito-urinary system among females. For example, as tables 4 and 5 show, the leading cause of death for Aboriginal males, diseases of the circulatory system, dropped from 7.7 per thousand population in 1975-77 to 4.6 during 1978-80 and to 3.3 during 1981-83, then slightly increased to 3.7 per thousand population during the period 1984-86. For Aboriginal females, the leading cause of death, diseases of the respiratory system, declined from 3.5 per thousand population in the period 1975-77 to 2.6 during 1978-80 and to 0.8 during 1981-83; then slightly increased to 1.0 per thousand population during 1984-86.

Compared to the total Northern Territory population, about 39 per cent of the excess mortality risk for the Aboriginal males is due to diseases of the circulatory system (Table 4-6). For females external causes constitute up to 18.3 per cent of the excess risk (which makes up about 14 per cent of the excess risk for males) and diseases of the genito-urinary system make up about 15 per cent of the excess risk.

Figure 4.5: Relative risks of mortality for the Aborigines of Central Australia to those of the total Northern Territory standard by leading causes of death and sex, 1984-86

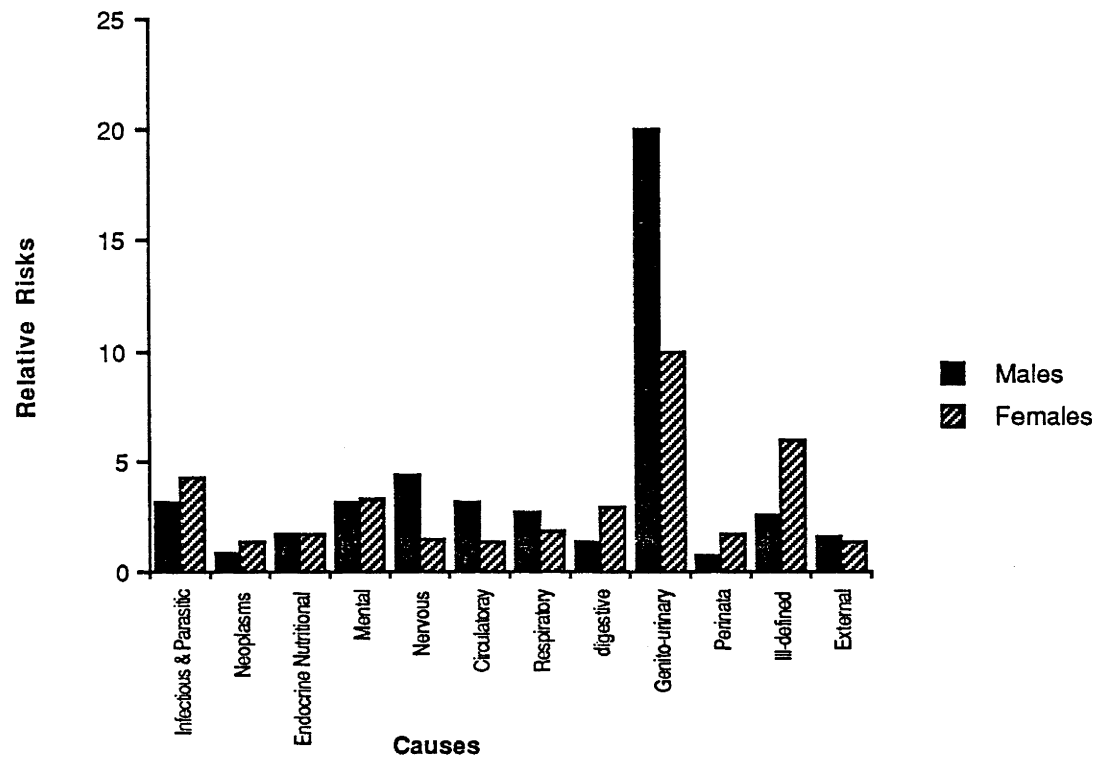


Table 4-4: Aboriginal standardized¹ cause-specific death rates², Central Australia³, 1975-77 to 1984-86, males

Cause of death and ICD ⁴ code	1975 to 1977	1978 to 1980	1981 to 1983	1984 to 1986
Class I (001-139)				
Infectious and Parasitic	1.8	0.9	0.9	0.5
Class II (140-239)				
Neoplasms	0.4	0.7	0.6	0.4
Class III (240-279) Endocrine, Nutritional and Metabolic	0.9	0.6	0.5	0.2
Class V (290-319)				
Mental Disorders	1.0	0.2	0.5	0.4
Class VI (320-389)				
Nervous System and Sense Organs	0.5	0.9	0.2	0.4
Class VII (390-459)				
Circulatory System	7.7	4.6	3.3	3.7
Class VIII (460-519)				
Respiratory System	4.2	3.4	1.4	1.6
Class IX (520-579)				
Digestive System	0.3	1.3	0.2	0.2
Class X (580-629)				
Genito-urinary System	1.3	0.3	0.2	0.6
Class XV (760-779)				
Perinatal Causes	0.9	0.4	0.5	0.1
Class XVI (780-799) Symptoms, Signs and Ill-Defined Conditions	3.3	1.8	1.0	0.5
Class XVII (E800-E999) Accidents, Poisoning and Violence	3.7	4.3	1.6	1.5
Other Classes and Causes Not Stated	0.2	2.5	0.6	1.0
All Causes	26.2	21.9	11.5	11.2

¹ Age distribution of Central Australian Aboriginal males in the period 1984-86 as standard.

² Rates are deaths from a specific cause per 1000 population.

³ See notes to Table 4-1.

⁴ International Classification of Diseases (ICD) Ninth Revision (1975) by the World Health Organization (1977).

Table 4-5: Aboriginal standardized¹ cause-specific death rates², Central Australia³, 1975-77 to 1984-86, females

Cause of death and ICD ⁴ code	1975 to 1977	1978 to 1980	1981 to 1983	1984 to 1986
Class I (001-139)				
Infectious and Parasitic	1.3	0.4	0.8	0.5
Class II (140-239)				
Neoplasms	0.9	0.7	0.9	0.9
Class III (240-279) Endocrine, Nutritional and Metabolic	0.4	1.9	0.4	0.3
Class V (290-319)				
Mental Disorders	0.0	0.6	0.4	0.2
Class VI (320-389)				
Nervous System and Sense Organs	0.6	0.4	0.5	0.1
Class VII (390-459)				
Circulatory System	2.3	2.3	1.9	0.9
Class VIII (460-519)				
Respiratory System	3.5	2.6	0.8	1.0
Class IX (520-579)				
Digestive System	0.7	0.0	0.4	0.2
Class X (580-629)				
Genito-urinary System	0.5	0.8	0.2	0.6
Class XV (760-779)				
Perinatal Causes	0.6	0.2	0.3	0.2
Class XVI (780-799) Symptoms, Signs and Ill-Defined Conditions	1.5	0.9	0.8	0.6
Class XVII (E800-E999) Accidents, Poisoning and Violence	1.7	1.6	0.8	0.5
Other Classes and Causes Not Stated	1.2	1.8	2.2	0.8
All Causes	15.2	14.2	10.4	7.0

¹ Age distribution of Central Australian Aboriginal females in the period 1984-86 as standard.

² Rates are deaths from a specific cause per 1000 population.

³ See notes to Table 4-1.

⁴ International Classification of Diseases (ICD) Ninth Revision (1975) by the World Health Organization (1977).

Table 4-6: Aboriginal cause-specific death rates¹, relative risks², and proportion of excess risks³ in Central Australia⁴ (1984-86) compared with the total Northern Territory population (1986).

ICD Class & Causes Of Death	MALES			FEMALES		
	Aboriginal Rates	Total N.T. S.Rates ⁵	Excess Risk	Aboriginal Rates	Total N.T. S.Rates ⁶	Excess Risk
1. Infectious & Parasitic	0.5	0.16	3.1	0.5	0.12	4.2
2. Neoplasms	0.4	0.47	0.9	0.9	0.67	1.3
3. Endocrine Nutritional	0.2	0.12	1.7	0.3	0.18	1.7
5. Mental Disorders	0.4	0.13	3.1	0.2	0.06	3.3
6. Nervous & Sense Organs	0.4	0.09	4.4	0.1	0.07	3.3
7. Circulatory System	3.7	0.96	3.2	0.9	0.66	1.4
8. Respiratory System	1.6	0.60	2.7	1.0	0.55	1.3
9. Digestive System	0.2	0.15	1.3	0.2	0.07	1.8
10. Genito-urinary System	0.6	0.03	20.0	0.6	0.06	2.9
15. Perinatal Causes	0.1	0.15	0.7	0.2	0.12	10.0
16. Ill-defined Conditions	0.5	0.19	2.6	0.6	0.10	1.7
17. External Causes	1.5	0.96	1.6	0.5	0.39	6.0
Other Causes & Unknown	1.1	0.12	9.2	0.8	0.14	1.3
All Causes	11.2	4.11	2.7	6.8	3.19	5.7
			100.0			2.1
						100.0

¹ Rates are deaths per 1000 population. For the Total Northern Territory, the cause-specific rates are indirectly standardized based on the Central Australian Aboriginal age structure, 1984-86.

² Relative risk is the ratio of the observed Aboriginal rate to the standardized total Northern Territory rate. Basic mortality data for calculating Northern Territory cause-specific death rates are taken from ABS, 1988 *Cause of Death Australia 1986*, pages 17-19 and population data from ABS, *Census 86*, NT, Table CA0001.

³ Excessive risk is derived by subtracting the indirectly standardized cause-specific death rates for the total Northern Territory (1986) from Aboriginal rates (1984-86). The proportions excess risk are shown as the percentages of the excess risk for all causes.

⁴ See notes to Table 4-1.

^{5, 6} The observed cause-specific Northern Territory rates are prorated based on the Indirectly Standardized CDRs (for males 4.1/5.28 and for the females 3.2/3.3).

4.4.4 Life Expectancy

Decline in Aboriginal mortality in Central Australia from 1975-77 to 1984-86 resulted in gains in complete expectations of life for both Aboriginal males and females though the improvement in the male life expectancy was slightly greater. The following subsection examines the effects of improvements in age-specific mortality rates and various causes of death on the gains in male and female complete expectation of life from 1975-77 to 1984-86. It should be mentioned at the outset that the apparent discrepancies between gains in expectations of life at birth in tables 7 and 8 and the life tables in Table 4-11 and Table 4-12, as well as Table 4-15 and Table 4-16 are due to the fact that while smoothed life table l_x values were used to calculate the effects of changes in age-specific mortality rates on the complete expectations of life, at the same time observed deaths by various causes (ICD 17 major classes) in various age groups were also incorporated in the calculations. As a result, the total gains in expectations of life at birth for males and females are slightly over-estimated by this procedure compared to what is shown in the life tables.

4.4.4.1 Contributions of the various causes of death and age-specific mortality rates in improvements in expectations of life

Tables 7 and 8 show the contribution of the various causes of death and age groups to the improvements in Aboriginal male and female expectation of life at birth in Central Australia from 1975-77 to 1984-86. A quick look at the tables reveals that while over the study period mortality due to some of the diseases reduced, these reductions were to some extent balanced by the increase in mortality from some other diseases; the combined effects of these two processes resulted in gains in expectations of life of 6.77 years for Aboriginal males and 5.76 years for Aboriginal females.

For men the following observations may be noted: the contribution of diseases of the circulatory system is dominant in the improvement in expectation of life at birth (3.45 years or 50.9 per cent of the improvement); the contribution of one year or 14.7 per cent of the improvement is due to reduction in mortality from symptoms, signs and ill-defined conditions; a contribution of 0.96 years or 14.24 per cent is due to the reduction in mortality from diseases of the respiratory

system; reduction in mortality from endocrine, nutritional and metabolic diseases and immunity disorders contributed 0.8 years or 11.79 per cent; a contribution of 0.26 years or 3.77 per cent is due to reduction in mortality from certain conditions originating in the perinatal period. Diseases of the nervous system and sense organs and diseases of the digestive system each contributed 0.24 years or 3.60 per cent in the expectation of life improvement.

Reduction of mortality from diseases of the musculoskeletal system and connective tissue, infectious and parasitic diseases and accidents, poisoning and violence (external causes) contributed from 0.2 year or 2.93 per cent to 0.22 year or 3.2 per cent in the improvement in the expectation of life at birth for males. The contribution of 0.11 year or 1.58 per cent of the improvement due to reduction in mortality from diseases of blood and blood-forming organs also may be mentioned.

Increase in the occurrence of certain diseases made a negative contribution: neoplasms -0.56 year or -8.31 per cent, complications of childbirth and the puerperium -0.16 year or -2.31 per cent, diseases of the genito-urinary system -0.14 year or -2.13 per cent, diseases of the skin and subcutaneous tissue and congenital anomalies each made a marginal negative contribution of -0.2 year or -0.29 per cent.

It is worth mentioning the large contribution of mortality improvement in age group 15-29 from all causes (except from diseases of the respiratory system which made a negative contribution) in the increase in expectation of life of 4.36 years. Similarly, positive contributions were also observed in the age group 1-4 (0.9 year), age group 50-69 (0.64 year); 1.21 years contribution of age 70 and over and a marginal contribution in age group 5-14.

Age 0 and age group 30-49 had negative contributions of -0.21 year and -0.17 year in expectation of life improvement. At age 0, this was due to increase in infectious and parasitic diseases, neoplasms, respiratory system, digestive system and childbirth complications; in ages

30-49 the increase in mortality was mainly due to the mortality increase from external causes and violence.

For Aboriginal women in particular the following may be noted: reduction in mortality from diseases of the respiratory system contributed about 3 years or 51.91 per cent in the expectation of life improvement, and a contribution of 1.75 years or 30.91 per cent improvement was due to reduction of mortality from diseases of the circulatory system; a contribution of about one and a half years or 25.87 per cent of the improvement was due to reduction of mortality from symptoms, signs and ill-defined conditions. There is nearly a year improvement in expectation of life due to reduction in mortality from accidents, violence and other external causes. This reduction is mostly occurring in the 15-29 age group.

For women, increase in diseases of the genito-urinary system had a major negative effect of - 0.83 year or -14.35 per cent which occurred at age 30 and over; and contrary to the case with men, mental disorders and diseases of the nervous system also had noticeable negative impacts; congenital anomalies made a substantial negative contribution too.

Mortality in all age groups, except ages 30-49 which had a negative contribution of slightly more than a year, declined during the study period. The contribution of the reduction in mortality at older ages of 70 and over and 50-69 is very remarkable: more than four years in improvement in expectation of life.

Table 4-7: Contribution of the various causes of death to the improvement in expectation of life between 1975-77 and 1984-86, Central Australian Aborigines¹, males (years)

Class Causes of death	0	1-4	5-14	15-29	30-49	50-69	70+	TOTAL
I Infectious & Parasitic	-0.25	0.23	0.25	0.10	-0.08	-0.10	0.07	0.21
II Neoplasms	-0.16	0.00	0.00	0.18	-0.04	-0.52	-0.02	-0.56
III Endocrine, Nutritional	0.00	0.23	0.00	0.25	0.40	-0.10	0.02	0.80
IV Blood & Blood Organs	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.11
V Mental Disorders	0.00	0.00	0.00	0.10	-0.08	0.00	-0.02	0.00
VI Nervous system & Sense	0.20	0.00	0.00	0.25	-0.32	0.11	0.00	0.24
VII Circulatory system	0.00	0.00	0.16	1.73	0.02	1.11	0.42	3.45
VIII Respiratory system	-0.10	0.23	0.00	-0.23	0.19	0.65	0.22	0.96
IX Digestive system	-0.16	0.00	0.00	0.51	0.20	-0.32	0.00	0.24
X Genito-urinary system	0.00	0.00	0.00	0.18	0.12	-0.42	-0.02	-0.14
XI Pregnancy, Childbirth	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	-0.16
XII Skin & Subcutaneous T.	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.02
XIII Musculoskeletal system	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.20
XIV Congenital Anomalies	0.00	0.00	0.00	0.00	0.00	0.00	-0.02	-0.02
XV Perinatal origin	0.35	0.00	-0.09	0.00	0.00	0.00	0.00	0.26
XVI Symptoms & Ill-defined	-0.01	0.00	0.00	0.10	-0.08	0.54	0.45	1.00
XVII External, Violence	0.07	0.23	-0.28	1.17	-0.69	-0.41	0.13	0.22
All Causes	-0.21	0.90	0.04	4.36	-0.17	0.64	1.21	6.77

¹ For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres namely Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River.

For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres namely Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

Table 4-8: Contribution of the various causes of death to the improvement in expectation of life between 1975-77 and 1984-86, Central Australian Aborigines¹, females (years)

Class Causes of death	0	1-4	5-14	15-29	30-49	50-69	70+	TOTAL
I Infectious & Parasitic	0.41	0.10	0.00	-0.09	-0.34	0.10	-0.07	0.11
II Neoplasms	0.00	0.00	0.00	0.00	0.01	-0.83	0.53	-0.29
III Endocrine, Nutritional	-0.12	0.26	0.00	0.00	-0.17	0.10	0.05	0.13
IV Blood & Blood Organs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
V Mental Disorders	0.00	0.00	0.00	0.00	-0.34	0.00	-0.06	-0.40
VI Nervous system & Sense	0.31	0.00	0.00	0.00	-0.17	-0.56	-0.06	-0.48
VII Circulatory system	-0.01	0.00	0.57	0.21	-0.28	1.52	-0.26	1.75
VIII Respiratory system	-0.34	0.26	-0.14	0.39	0.59	1.42	0.80	2.99
IX Digestive system	0.00	0.13	0.00	0.00	-0.15	0.28	0.11	0.67
X Genito-urinary system	0.00	0.00	0.00	0.00	-0.34	-0.37	-0.12	-0.83
XI Pregnancy, Childbirth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
XII Skin & Subcutaneous T.	0.00	0.00	0.00	0.00	0.18	-0.37	0.00	-0.19
XIII Musculoskeletal system	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.10
XIV Congenital Anomalies	-0.33	0.00	0.00	0.00	0.00	0.00	0.00	-0.33
XV Perinatal origin	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.09
XVI Symptoms & Ill-defined	-0.01	0.00	0.00	-0.18	-0.01	-0.09	1.75	1.49
XVII External, Violence	0.10	-0.32	0.00	0.80	-0.11	0.28	0.18	0.93
All Causes	0.23	0.44	0.43	1.41	-1.08	1.48	2.85	5.76

¹ For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres namely Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River.

For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres namely Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

4.4.4.2 Temporary Expectations of Life

In addition to the use of the complete expectation of life for comparative study of mortality or longevity over time or across populations, as was carried out in the earlier subsection, it would be useful to have a study comparing the length of time Aborigines of Central Australia survive in various important phases of life to those of the total Northern Territory and total population of Australia. This is done by calculating the temporary expectations of life for such ages as childhood (0-5 age group), adolescence (5-15 age group), early adulthood (15-25 age group), middle adulthood (25-45 age group), late adulthood (45-60 age group) and old ages (60-80 age group).

In Table 4-9 and Table 4-10, the temporary expectations of life of the Central Australia Aboriginal males and females in the six major phases of life are compared to those of the total Northern Territory and total population of Australia. The following observations could be drawn from the tables: the pattern of differences between the Aboriginal temporary expectations of life and those of the total Northern Territory and total Australia populations is the same, the differences for ages 0-5, 5-15 and 15-25 are very marginal and differences gradually increase over the subsequent phases of life. At ages 60-80 Aboriginal men live up to 3.5 years less than their counterparts making up the total Northern Territory or total Australia population. Aboriginal women at ages 60-80 live up to three years less than the Total Northern Territory or total Australia women.

It may be noted that the pattern of difference here is not the same as for relative mortality risks - the reason is that death rates are highest at the higher ages in all mortality schedules.

Table 4-9: Difference in temporary expectations of life (${}_nE_x$) in different spans of life between Aborigines of Central Australia¹ (1984-86) and the total Northern Territory population² (1986) by sex.

(years)

Phases (years)	FEMALES			MALES		
	Total N.T.	Aborig- inals	Diffe- rence	Total N.T.	Aborig- inals	Difference
0-5	4.90	4.84	0.06	4.90	4.87	0.08
5-15	10.00	9.99	0.01	9.98	9.94	0.04
15-25	9.97	9.97	0.00	9.91	9.91	0.00
25-45	19.72	19.17	0.55	19.23	17.73	1.50
45-60	14.47	13.66	0.81	14.08	11.36	2.72
60-80	17.27	14.32	2.95	15.64	12.13	3.51

¹ See notes to Table 4-1.

² Basic death data for life table generation are from ABS 1987:11. Population data from ABS, Census 86, NT Table CA0001.

Table 4-10: Difference in temporary expectations of life in different spans of life (${}_nE_x$) between Aborigines of Central Australia¹ (1984-86) and the total population of Australia² (1986) by sex.

(years)

Phases (years)	FEMALES			MALES		
	Total Aus.	Aborig- inals	Diffe- rence	Total Aus.	Aborig- inals	Difference
0-5	4.96	4.84	0.12	4.94	4.87	0.07
5-15	9.99	9.99	0.00	9.98	9.94	0.04
15-25	9.98	9.97	0.01	9.94	9.91	0.03
25-45	19.88	19.17	0.71	19.73	17.73	2.00
45-60	14.75	13.66	1.09	14.45	11.36	3.09
60-80	17.18	14.32	2.86	15.27	12.13	3.14

¹ See notes to Table 4-1.

² Derived from Life Tables Australia, 1986 from ABS 1987a:24-25.

4.5 Summary

This is the first study on Aboriginal mortality to establish a process of steady decline in Aboriginal mortality occurring during a period of about 10 years. The study covered Aborigines of Central Australia in the periods 1975-77, 1979-83 and 1984-86. The decline is exhibited by improvement in expectation of life at birth of up to 5.13 calendar years. The gap between male and female mortality levels, which was very disadvantageous for males at the beginning, is closing. But the Aboriginal mortality level is still far higher than those of the total Northern Territory and total Australia; the standardized crude death rates are up to about three times higher and the complete expectations of life are lower by up to 20 years. The risk of mortality for Aborigines of Central Australia is substantially higher at all ages than those for the total Northern Territory or total Australia; the rates are up to 17.5 times higher in the middle adult ages of 25-49.

Diseases of the circulatory system and respiratory system, accidents, poisoning and violence, diseases of the genito-urinary system and infectious and parasitic diseases are in order the leading causes of death for the Aboriginal population. Up to 39 per cent of the male excess mortality risk is due to the diseases of the circulatory system (compared to the total Northern Territory population).

Though an increase in mortality rates from neoplasms and diseases of the genito-urinary system and some other diseases was observed for the Aboriginal, a process of steady decline in the cause-specific death rates of the leading causes of death is registered for both males and females. The reduction of mortality from diseases of the circulatory system contributed up to 51 per cent of the improvement in complete expectation of life for Aboriginal males during the period between 1975-77 and 1984-86. For Aboriginal females, reduction in mortality from diseases of the respiratory system contributed up to 52 per cent of the improvement in expectation of life.

The differences in length of life for Aborigines of Central Australia and the total Northern Territory and total population of Australia, are marginal in the 5-15 and 15-25 age groups, gradually increase for age groups 25-45 and 45-60, and are highest in the 60-80 age group for both males and females.

Table 4-11: Aboriginal male abridged life table for Central Australia¹, 1975-77.

x (Age)	n ^a _x	n ^d _x	n ^m _x	l _x	n ^l _x	n ^s _x	T _x	e ^o _x
0	.02991	2991	.03071	100000	97393	.96222	4726078	47.26
1	.01827	1773	.00462	97009	383716	.98754	4628684	47.71
5	.00449	428	.00090	95236	475112	.99405	4244969	44.57
10	.00742	704	.00149	94809	472284	.98364	3769856	39.76
15	.02537	2388	.00514	94105	464555	.95585	3297572	35.04
20	.06342	5817	.01310	91717	444043	.91789	7833017	30.89
25	.10206	8767	.02151	85900	407583	.89368	2388973	27.81
30	.11107	8567	.02352	77133	364248	.89192	1981390	25.69
35	.10471	7180	.02210	68566	324880	.89809	1617142	23.59
40	.09877	6063	.02078	61386	291773	.88535	1292262	21.05
45	.13228	7318	.02833	55323	258320	.85662	1000489	18.08
50	.15617	7497	.03388	48005	221282	.82363	742169	18.46
55	.20031	8114	.04452	40508	182254	.77064	520887	12.86
60	.26570	8607	.06128	32394	140452	.69724	338633	10.45
65	.35323	8402	.08580	23787	97929	.60195	198181	8.33
70	.46734	7190	.12197	15385	58948	.48489	100252	6.52
75	.60478	4956	.17339	8195	28584	.30796	41303	5.04
80+	1.00000	3239	.25462	3239	12720	.00000	12720	3.93

¹ For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River.

Table 4-12. Aboriginal female abridged life table for Central Australia¹, 1975-77.

x (Age)	n _q x	n _d x	n _m x	l _x	n _l x	n _s x	T _x	e ^o _x
0	.03264	3264	.03357	100000	97219	.96119	6132041	61.32
1	.01458	1411	.00368	96736	383377	.98863	6034822	62.38
5	.00628	599	.00126	95326	475131	.99493	5651444	59.29
10	.00384	364	.00077	94727	472724	.99492	5176313	54.64
15	.00633	597	.00127	94363	470321	.98830	4703589	49.85
20	.01710	1604	.00345	93766	464819	.97728	4233268	45.15
25	.02844	2621	.00577	92162	454257	.97013	3768449	40.89
30	.03135	2807	.00637	89541	440686	.97022	3314192	37.01
35	.02815	2441	.00571	86734	427565	.97300	2873505	33.13
40	.02581	2176	.00523	84292	416022	.97203	2445940	29.02
45	.03019	2479	.00613	82117	404385	.96193	2029918	24.72
50	.04621	3680	.00946	79638	388989	.93670	1625533	20.41
55	.08121	6169	.01693	75958	364367	.88717	1236545	16.28
60	.14725	10276	.03179	69789	323255	.80060	872177	12.50
65	.26057	15507	.05992	59513	258796	.66656	548923	9.22
70	.43199	19010	.11020	44006	172504	.48086	290127	6.59
75	.67258	16812	.20267	24996	82950	.29478	117623	4.71
80+	1.00000	8184	.23604	8184	34673	.00000	34673	4.27

¹ For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River.

Table 4-13: Aboriginal male abridged life table for Central Australia¹, 1979-83.

x (Age)	n _x ^o	n _x ^d	n _x ^m	l _x	n _x ^l	n _x ^s	T _x	e ^o _x
0	.03008	3008	.03089	100000	97380	.95655	5120713	51.21
1	.02992	2902	.00762	96992	380893	.98146	5123333	51.79
5	.00444	418	.00089	94090	469403	.99549	4642440	49.34
10	.00459	430	.00092	93672	497284	.99379	4173037	44.55
15	.00792	738	.00159	93242	464364	.98336	3705753	39.74
20	.02542	2352	.00515	92504	456638	.96057	3241389	35.04
25	.05381	4851	.01106	90152	438631	.93023	2784751	30.89
30	.08663	7389	.01811	85301	408029	.90124	2346120	27.50
35	.11205	8730	.02374	77911	367731	.88121	1938090	24.88
40	.12638	8743	.02698	69181	324049	.86654	1570359	22.70
45	.14157	8556	.03047	60438	280802	.85524	1246310	20.62
50	.14849	7704	.03208	51882	240152	.84562	965508	18.61
55	.16130	7126	.03509	44178	203077	.82784	725357	16.42
60	.18512	6859	.04080	37050	168114	.79769	522280	14.10
65	.22341	6145	.05030	30193	134103	.75263	354166	11.73
70	.27824	6524	.06464	23448	100929	.69423	220063	9.39
75	.34392	5820	.08307	16924	70068	.41185	119134	7.04
80+	1.00000	11103	.22630	11103	49066	.00000	49066	4.42

¹ For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amooinguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

Table 4-15: Aboriginal male abridged life table for Central Australia¹, 1984-86.

x (Age)	n_x	d_x	nM_x	l_x	l_x	n_x	T_x	e^o_x
0	.03395	3395	.03497	100000	97081	.96338	523718	52.39
1	.00764	738	.00192	96605	384612	.99205	5141638	53.22
5	.00613	588	.00123	95867	477864	.99456	4757026	49.62
10	.00474	452	.00095	95279	475266	.99434	4279163	44.91
15	.00658	624	.00132	94827	472577	.98889	3803897	40.11
20	.01568	1477	.00316	94204	467326	.97504	3331320	35.36
25	.03440	3190	.00700	92727	545660	.95194	2863994	30.89
30	.06220	5570	.01284	89537	433762	.92157	2408334	26.90
35	.09574	8039	.02011	83968	399741	.88753	1974571	23.52
40	.13097	9945	.02803	75929	354783	.85346	1574830	20.74
45	.16446	10852	.03584	65984	302791	.82222	1220047	18.49
50	.19372	10682	.04290	55132	248960	.79564	917256	16.64
55	.21755	9670	.04882	44452	198083	.77455	668295	15.03
60	.23555	8193	.05340	34781	153425	.75907	470212	13.52
65	.24796	6593	.05661	26589	116461	.74891	316787	11.91
70	.25526	5104	.05852	19996	87218	.74155	200326	10.02
75	.26274	3913	.06049	14892	64677	.42818	113108	7.60
80+	1.00000	10979	.22670	10979	48431	.00000	48431	4.41

¹ For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

Table 4-16: Aboriginal female abridged life table for Central Australia¹, 1984-86.

x (Age)	n _a x	n _d x	n _m x	l _x	n _l x	n _s x	T _x	e ^o _x
0	.02826	2826	.02897	100000	97955	.96055	6508452	65.08
1	.00602	585	.00151	97174	387221	.99540	6410897	65.97
5	.00165	159	.00033	96589	482548	.99830	6023677	62.36
10	.00175	169	.00035	96430	481728	.99783	5541129	57.46
15	.00260	250	.00052	96261	480682	.99661	5059401	52.56
20	.00419	402	.00084	96011	479051	.99308	4578720	47.69
25	.00965	923	.00194	95609	475737	.98371	4099669	42.88
30	.02298	2176	.00465	94686	467990	.96983	3623932	38.27
35	.03753	3472	.00765	92510	453869	.95868	3155942	34.11
40	.04525	4029	.00926	89038	435116	.95251	2702073	30.35
45	.04983	4236	.01022	85009	414454	.94501	2266957	26.67
50	.06042	5880	.01246	80773	391664	.92862	1852504	22.93
55	.08305	6303	.01733	75893	363706	.89867	1460840	19.25
60	.12127	8439	.02582	69590	326850	.85186	1097133	15.77
65	.17871	10928	.03925	61150	278431	.78485	770283	12.60
70	.25951	13033	.05964	50222	218528	.69738	491852	9.79
75	.36942	13738	.09062	37189	151599	.44535	273324	7.35
80+	1.00000	23451	.19265	23451	121725	.00000	121725	5.19

¹ For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

Table 4-17: Aboriginal age-specific mortality rates¹ (graduated), in central Australia²: 1975-77, 1979-83 and 1984-86 by sex

Age	1975-77		1979-83		1984-86	
	Males	Females	Males	Females	Males	Females
0-4	9.7	10.3	13.1	11.0	7.6	7.9
5-9	0.9	1.3	0.9	1.2	1.2	0.3
10-14	1.5	0.8	0.9	0.6	1.0	0.4
15-19	5.1	1.3	1.6	0.6	1.3	0.5
20-24	13.1	3.5	5.2	2.2	3.2	0.8
25-29	21.5	5.8	11.1	5.9	7.0	1.9
30-34	23.5	6.4	18.1	7.0	12.8	4.6
35-39	22.1	5.7	23.7	5.6	20.1	7.7
40-44	20.8	5.2	27.0	4.9	28.0	9.3
45-49	28.3	6.1	30.5	6.1	35.8	10.2
50-54	33.9	9.5	32.1	9.6	42.9	12.5
55-59	44.5	16.7	35.1	15.9	48.8	17.3
60-64	61.3	31.8	40.8	26.5	53.4	25.8
65-69	85.8	59.9	50.3	44.1	56.6	39.3
70-74	122.0	110.0	64.6	72.7	58.5	59.6
75+	238.0	225.9	155.6	163.3	86.6	131.0

¹ Rates are deaths per 1000 population.

² For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River. For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

Table 4-18: Number of deaths, population and observed age-specific death rates¹, Central Australian Aborigines², 1975-77 by sex

Age Groups	MALES			FEMALES		
	Deaths	Pop.	ASDRs	Deaths	Pop.	ASDRs.
0	7	237	29.54	7	228	30.70
1-4	4	900	4.44	3	836	3.59
5-9	1	1152	0.87	2	1023	1.96
10-14	2	1562	0.13a	0	986	2.97b
15-19	4	726	5.51	0	865	3.97c
20-24	8	630	12.70	3	602	4.98
25-29	8	477	16.77	3	519	5.78
30-34	11	405	27.16	2	372	5.38
35-39	8	246	32.52	4	288	13.89
40-44	3	231	12.99	6	315	19.05
45-49	5	168	29.76	1	213	4.69
50-54	13	171	76.02	2	189	10.58
55-59	10	189	52.91	4	153	26.14
60-64	11	114	96.49	5	162	30.86
65-69	4	99	40.40	8	126	63.49
70-74	3	54	55.56	3	51	58.82
75+	9	54	166.67	6	75	80.00
Total	113	6732	16.79	66	7003	9.42

¹ Rates are deaths per 1000 population.

² For 1975-77, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres namely Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River.

a Deaths, population and the rate is based on 1975-79.

b, c Interpolated values between the values for 10-14 and 15-19 age groups in order to avoid zero cells in the mortality schedule.

Table 4-19: Number of deaths, population and observed age-specific death rates¹ (ASDRs),
Central Australian Aborigines², 1979-83 by sex

Age Groups	MALES			FEMALES		
	Deaths	Population	ASDRs	Deaths	Population	ASDRs.
0	16	540	29.63	21	540	38.89
1-4	14	1910	7.33	8	2010	3.98
5-9	2	2380	0.84	3	2130	1.41
10-14	4	2315	1.73	0	2335	0.72a
15-19	3	2005	1.50	1	1990	0.53
20-24	17	1660	10.24	6	1875	3.20
25-29	16	1345	11.80	7	1400	5.00
30-34	14	886	15.80	8	1195	6.70
35-39	12	715	16.78	4	860	4.65
40-44	18	735	24.49	4	720	5.56
45-49	15	495	30.30	7	630	11.11
50-54	16	410	39.02	3	465	6.45
55-59	8	320	25.00	8	265	30.19
60-64	11	330	33.33	17	320	53.13
65-69	10	230	43.48	8	220	36.36
70-74	10	170	58.82	15	255	58.82
75+	34	175	194.29	34	240	141.67
Total	220	16620	13.24	154	17360	8.87

¹ Rates are deaths per 1000 population.

² For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

a Adapted from total N.T. Aborigines 1979-83 (Plant, 1988:29).

Table 4-20: Number of deaths, population and observed age-specific death rates¹ (ASDRs),
Central Australian Aborigines², 1984-86 by sex

Age Groups	MALES			FEMALES		
	Deaths	Population	ASDRs	Deaths	Population	ASDRs.
0	4	245	16.33	10	312	32.05
1-4	2 ^a	1976 ^b	1.00	2	1203	1.66
5-9	2	1320	1.52	0	1233	0.37 ^c
10-14	2	1298	1.54	0	1370	0.35 ^d
15-19	2	1306	1.53	4	1351	2.97
20-24	6	1001	5.99	1	1173	0.85
25-29	7	816	8.58	2	960	2.08
30-34	9	628	14.33	5	753	6.64
35-39	10	558	17.92	4	573	6.98
40-44	5	484	10.33	5	413	12.11
45-49	5	292	17.12	5	387	12.92
50-54	8	258	31.01	3	270	11.11
55-59	4	197	20.31	6	190	31.58
60-64	16	159	100.63	9	243	37.04
65-69	8	129	62.02	8	161	49.69
70-74	6	93	64.52	2	138	14.49
75+	19	93	204.30	10	141	70.92
Total	113	10076 ^e	10.60	76	10871	6.99

¹ Rates are deaths per 1000 population.

² For the periods 1979-83 and 1984-86 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

^a To avoid zero cells, 1982-86 deaths have been taken,

^b 1982-86 population,

^{c, d} Adapted from N.T Female Aboriginal Life Table, 1986 (Gray, 1988)

^d 1984-86 population.

Chapter 5

Aboriginal Fertility in Central Australia

5.1 Introduction

As mentioned in the introduction to Chapter 4, the population under study in this chapter is extended beyond Alice Springs and it covers the main Aboriginal population centres in the whole area of the Northern Territory part of Central Australia. This is mainly to avoid the occurrence of random errors associated with working with small numbers.

It was mentioned in Chapter 2 that the process of recent decline in Aboriginal fertility is already well established. From the indirect evidence of census data, Gray (1982:9) notes that

...total fertility rates of the Aboriginal population reached their highest levels, in most parts of Australia, in the decade from 1956 to 1966, remained relatively quite high until 1971, then tumbled over the last decade to levels generally not recorded since the beginning of the century.

The total fertility rate fell from 5.9 for the period 1966-1971, to 3.3 for 1976-1981 (Gray, 1984:406) and declined further to 2.8 for the period 1981-1986. (See Chapter 2 subsection 2.4.1). Apparently there is little difference in the levels of Aboriginal total fertility rates among the states and territories (Gray, unpublished) and the decline is occurring in all states and territories including the Northern Territory.

In spite of its continuing decline, the level of Aboriginal fertility is still quite high compared with that of the rest of the Australian population. This was exhibited by the 1986 Census results analysed in Chapter 2.

The above observations are based on indirect estimation, from census results on the Aboriginal age distribution and average parities of Aboriginal women. It would be interesting to see how direct information on annual Aboriginal births in recent years matches the above conclusions.

Also the apparent high level of Aboriginal fertility may be partly explained by studying the relationship between the characteristics of Aboriginal women such as age at leaving school and labour force status.

The present study provides the opportunity to examine levels, patterns, trends and differentials in Aboriginal fertility in Central Australia combining direct data on the number of Aboriginal annual births and census data on age distribution and parity of Aboriginal women. It was not possible to include any type of fertility question during the household survey conducted in Alice Springs, as a result of which it is not possible to probe agents of Aboriginal fertility change processes, particularly the motivations of Aboriginal women for limiting family size or the extent of knowledge, attitude and practice of family planning.

5.2 Sources of Data

5.2.1 Fertility Data

Three sources of fertility data are used to produce fertility estimates of the Aboriginal population in Central Australia. These sources are: Aboriginal birth records maintained by the Northern Territory Department of Health Regional Office in Alice Springs; birth registration records maintained in the Office of Births, Deaths and Marriages Registration in Alice Springs; and the 1986 Population Census returns on the total issue of Aboriginal females aged 15 and over by various characteristics.

Births occurring to women in Central Australia are recorded separately by Aboriginality in the Regional Office of the Northern Territory Department of Health (now Northern Territory Department of Health and Community Services). These records, though very comprehensive as far as particulars of birth are concerned, do not carry the age of the mother or her date of birth. Therefore, dates of births of the mothers were obtained from their medical records maintained separately. By this process 252, 283 and 301 births recorded for the years 1976, 1981 and 1986 respectively were transcribed to computer with particulars as described in chapter 1. In order to maximize the coverage of the data, births to Aboriginal women in Central Australia and registered in the District Registration of Births, Deaths and Marriages Office in Alice Springs

were also identified by the process described in Chapter 4 and recorded. These records, which number 252, 268 and 283 for the years 1976, 1981 and 1986, carry information on ages of the mothers. Subsequently, birth records from both these sources were compared against each other and necessary corrections were made; then the dual record method (Chandrasekar and Deming, 1949) was applied to assess the magnitude of the events which were likely to have been missed by both of the sources:

$$M = \frac{B1 * B2}{T}$$

Where

M = number of births missed by both systems,

B1 = number of births detected by source 1,

B2 = number of births detected by source 2,

T = number of births detected by both sources.

It was found that 6.5 per cent of the total recorded births in 1976, 4.8 per cent in 1981 and 3.8 per cent in 1986 were not detected by either of the sources. The gradual decrease in the number of missing events during the last 10 years suggests that the coverage of registration is improving, both in the health and in the registration systems. Subsequently, the total number of births by five year age groups of mothers (15-19, 20-24, ..., 45-49) for the communities under study in this chapter (see the following subsection) were adjusted on a pro-rata basis.

For comparative purposes, fertility data for the total Northern Territory and total population of Australia published by the Australian Bureau of Statistics (ABS, 1978; 1982 and 1987b) were used. The returns of the 1986 Census on Aboriginal females' total issue (ABS, 1988b and 1988c) also form an important data source in the analysis of Aboriginal fertility undertaken in this chapter.

5.2.2 Population Data

The population data used as denominators in this chapter are those which are used for the study of mortality described in detail in subsection 4.2.2 in Chapter 2. For 1976, the data cover eight major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga,

Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River. For 1981 and 1986 the data cover these eight and four other major Aboriginal population centres: Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu and Utopia.

5.3 Analytical Approach

The level of Aboriginal fertility in Central Australia in 1986 is determined by calculating the total fertility rate (TFR) (Table 5-1), that is the total number of live births that a woman would have if she experienced each of the age-specific fertility schedules of 1986 (see Table 5-2 and Table 5-4) during her childbearing life. Though not a refined measure as the total fertility rate is, the crude birth rate was also calculated. It is the total number of births in a year per thousand mid year population and while it is quite a good indicator of the level of fertility it is more usually used to calculate the rate of natural increase of a population in conjunction with the crude death rate. The levels of Aboriginal fertility in central Australia were compared with those of the total Aboriginal populations of the Northern Territory and Australia as well as the total populations of the Northern Territory and Australia (Table 5-1). The trend in the level of Aboriginal fertility in Central Australia was determined by calculating the total fertility rates and crude birth rates for 1976 and 1981 (Table 5-4) and comparing them with the trends in the total fertility rates of the total Aboriginal population of Australia as well as the total population of the Northern Territory and Australia (Table 5-5).

The age pattern of fertility of the Central Australian Aboriginal population in 1986 is determined by calculating the age-specific birth rates for women in the reproductive ages in five-year age groupings from 15-19 to 40-44 (Table 5-2). The rates are the number of live births to each thousand women of the specified age group per year. Births to women less than 15 years were added to those of the women in age group 15-19. No births were reported to women aged over 44.

While the observed age-specific fertility rates derived from health and registration records reflect the age pattern of Aboriginal fertility which prevailed in Central Australia in 1986, it was also decided to reinforce these estimates with the level of fertility revealed by average parities of the

Aboriginal women reported by the 1986 Census for the same geographical area in age groups lower than 30, which are generally believed to be fairly accurate (Brass, 1964; 1975). The Brass P/F ratio method (United Nations, 1983:31-37) was applied and the level of the observed age-specific fertility rates was adjusted based on the average P/F ratios for the women in age groups 20-24 and 25-29. The estimated P/F ratios used for the adjustments of the observed age-specific fertility rates can be found in Table 5-12.

The Aboriginal women's age-specific fertility rates (or birth rates) in Central Australia, compared to those of the total Aborigines of the Northern Territory and Australia as well as the total populations of the Northern Territory and Australia, are presented graphically in Figure 5.1. The trend in the total fertility rate and age pattern of Aboriginal fertility in Central Australia was established by studying changes in the age-specific fertility rates and total fertility rates for the same population from 1976 to 1986 (Tables 5-3 and 5-4).

Age at leaving school and labour force status are the variables selected for studying fertility differentials of Aboriginal women. This is important to see how different levels of fertility within a particular Aboriginal population are associated with such variables. In order to remove the possible effects of those women who had zero parity but might be categorized in the 'not stated' group, average parities for women by age group and age at leaving school and labour force status were computed separately, first for all women, treating the not stated category as zero parity (first panel in Table 5-6 and Table 5-8), and secondly, excluding those women with not stated parity (second panel in Table 5-6 and Table 5-8).

To study the *tempo* (distribution) and *intensity* (level) of Aboriginal fertility in Central Australia associated with such characteristics as age at leaving school and the labour force status, a *childlessness index*, an indirectly age-standardized index of number of women with no children against expected number, and an *index of maternal fertility*, an indirectly age-standardized index of average children ever borne by mothers against expected number (Gray, unpublished), are computed (Tables 5-7 and 5-9). Variations in fertility differentials between the Aboriginal

women of Central Australia and other parts of the country are also studied by comparing the results from this study with those from other studies (Gray, unpublished).

5.4 Findings

5.4.1 Fertility levels and patterns

The study shows that an Aboriginal woman living in Central Australia would have about three live births during her entire childbearing life, given the age-specific fertility rates of 1986. This level of fertility is very comparable to those of Aboriginal women elsewhere in Australia but much higher than the level of the total population of Australia (see Table 5-1).

Table 5-1: Level of Aboriginal fertility in Central Australia (1986)¹, compared with the total Aborigines of the Northern Territory and Australia (1981-1986)² and total populations of the Northern Territory and Australia (1986)³

Population	Crude Birth Rates ⁴	Total Fertility Rates ⁵
Aborigines		
Central Australia	30.9	3.01
Northern Territory	31.5	3.20
Australia	27.8	2.84
Total population		
Northern Territory	22.3	2.38
Australia	15.2	1.87

1 The data cover 12 major Aboriginal population centres between parallels 20 and 26 in the Northern Territory: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

2 Total fertility rates for the total Aborigines of the Northern Territory are adopted from Gray (unpublished). Similarly the accompanying crude birth rate was derived using the age-specific birth rates proposed by Gray (unpublished) and the total Aboriginal populations of the NT (ABS, 1987d). For the total Aboriginal population of Australia the total fertility rate and crude birth rate estimates derived using the 1986 Census returns by the present study as presented in subsection 2.4 of Chapter 2 are adopted.

3 ABS, 1987b: 5,7.

4 Total births in a year per 1000 total population.

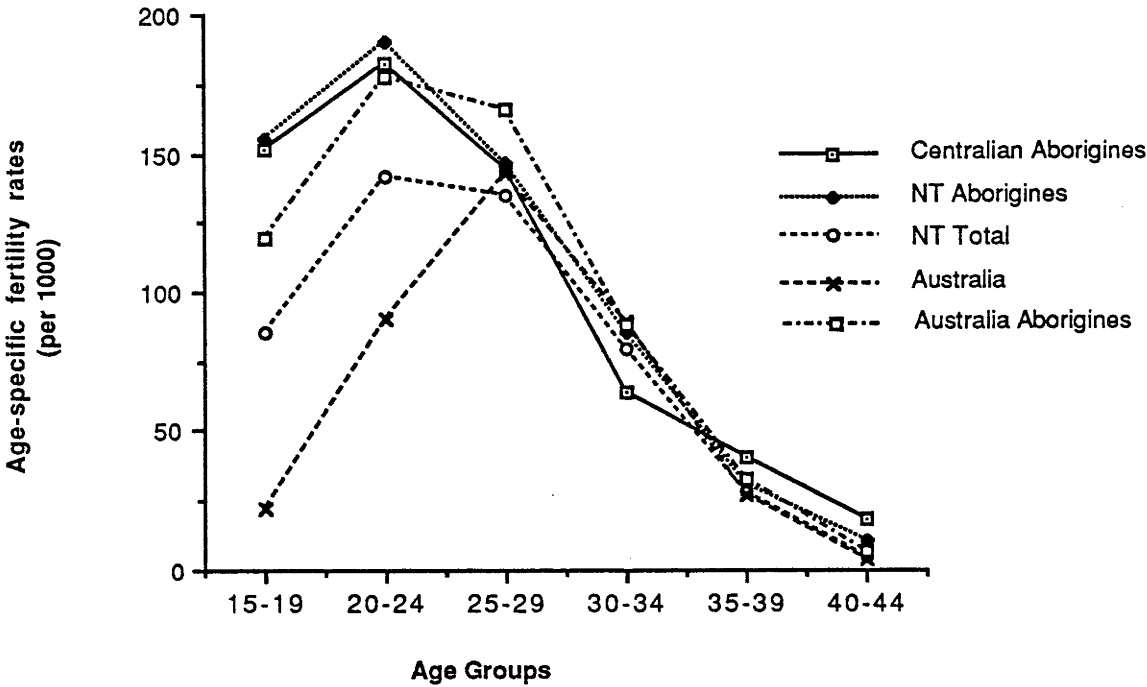
5 The number of live births that a woman would have if she experienced each of the age-specific birth rates between exact ages 15 and 50.

It can be easily seen that the level of Aboriginal women's fertility in Central Australia, measured by the total fertility rate, is close to the levels of Aboriginal fertility prevalent in the rest of the country. Such an apparent lack of geographical difference in Aboriginal total fertility rates for the period 1981-1986 was also referred to by Gray (unpublished) in the levels for States as well as urban and rural components.

The levels of crude birth rates of the Aboriginal population in Central Australia in 1986 are also similar to those for Aborigines elsewhere in the country but twice as high as the total population of the country (Table 5-1). It may be noticed that comparison of the crude birth rate of the Aboriginal population with that of the total population of Australia indicates a very much higher level of fertility for the Aborigines compared to what was shown by the total fertility figures. This apparent inconsistency is justified by the fact that the crude birth rate, being the total number of births in a year per thousand total mid-year population, is affected by the larger number of women going through their childbearing ages in 1986 as a result of high Aboriginal fertility of the 1960s, the effects of which on the 1986 Aboriginal age distribution were discussed in Chapter 2.

Comparisons of the age patterns of fertility of the Aboriginal women in Central Australia and elsewhere with those of the total population reveal the context of apparent similarities and differences among them. Figure 5.1 illustrates comparatively the age-specific fertility rates of Central Australian Aborigines (1986) and those of the total Aboriginal populations of the Northern Territory and Australia (1981-1986) as well as those of the total populations of the Northern Territory and Australia (1986).

Figure 5.1: Age pattern of Aboriginal fertility in Central Australia in 1986 compared to those of some other populations



Source: based on data in Table 5-2.

Some distinctive similarities and differences between the Aboriginal fertility pattern and the total Australian population can be seen in Figure 5.1 . The age patterns of fertility show a very high fertility in the early childbearing ages for Aboriginal women with the peak of the fertility schedule in the age group 20-24 compared with a very low fertility for the total population of Australia in the early ages of childbearing and a later peak of the fertility schedule, in age group 25-29. In older ages, very similar patterns of fertility are found for both Aborigines and the total population. Figure 5.1 also illustrates that the age pattern of fertility of the Northern Territory total population follows, not the pattern of the total Australia population, but exactly the pattern of the total Aboriginal population of the country (at a slightly different level). This is because of the very high Aboriginal fertility at the early ages of childbearing in the Northern Territory which shifts the fertility peak of the total N.T. women from age group 25-29 to age group 20-24. Once Aboriginal births were subtracted from the total births, the peak age group of fertility shifts from

age group 20-24 to age group 25-29 and the resultant shape of the Non-Aboriginal fertility curve, as Figure 5.2 shows, conforms to that of the total Australia fertility schedule, with slight variations in the early ages.

Figure 5.2: Northern Territory total and Non-Aboriginal age pattern of fertility compared with total Australia pattern, 1986.

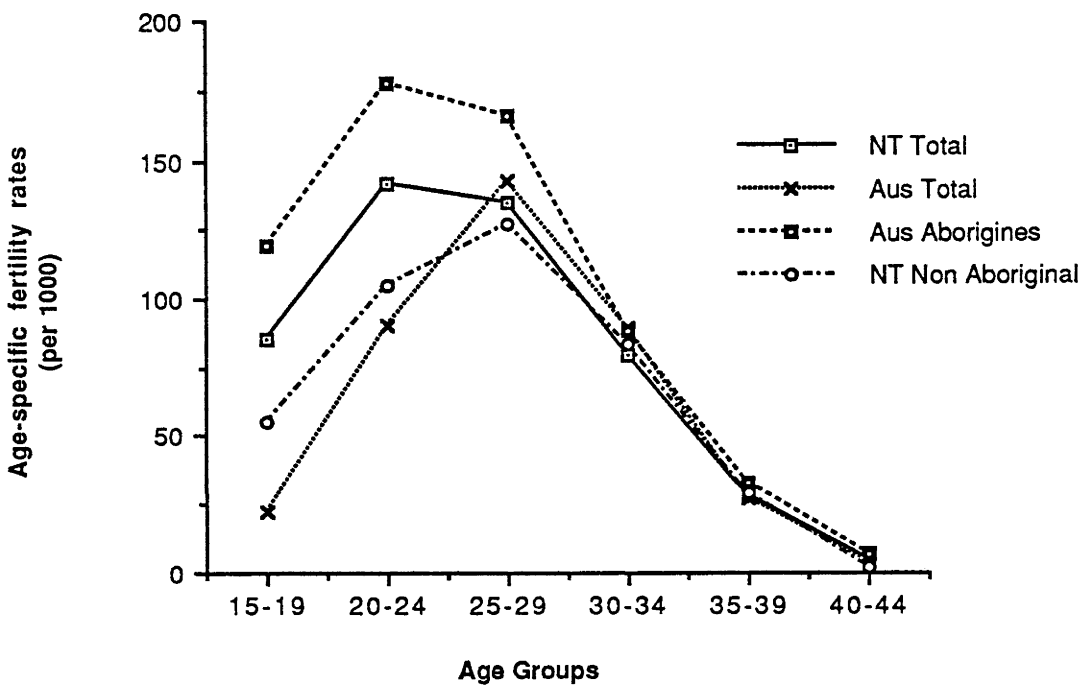


Table 5-2: Aboriginal women's age-specific birth rates¹ in Central Australia (1986)² compared with the total Aborigines of the Northern Territory and Australia (1981-1986)³ and the total populations of the Northern Territory⁴ and Australia⁵, 1986

Age groups	Aborigines			Total Population	
	Central Australia	Northern Territory	Australia	Northern Territory	Australia
15-19	150.9	155.0	119.0	85.0	21.7
20-24	182.8	190.0	178.0	142.2	89.6
25-29	145.1	147.0	166.0	134.9	142.5
30-34	63.9	85.0	88.0	80.3	88.9
35-39	41.4	31.0	33.0	27.5	27.3
40-44	17.9	11.06	7.07	5.0	4.3
45-49	-			0.7	0.2
TFR	3.01	3.20	3.00	2.38	1.87

¹ Number of live births to each thousand women of the specified age per year,

² The data cover 12 major Aboriginal population centres between parallels 20 and 26 in the Northern Territory: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River,

³ Gray, unpublished.

^{4, 5} ABS, 1987b: 5,7.

^{6, 7} The rates relate to the age group 40-49.

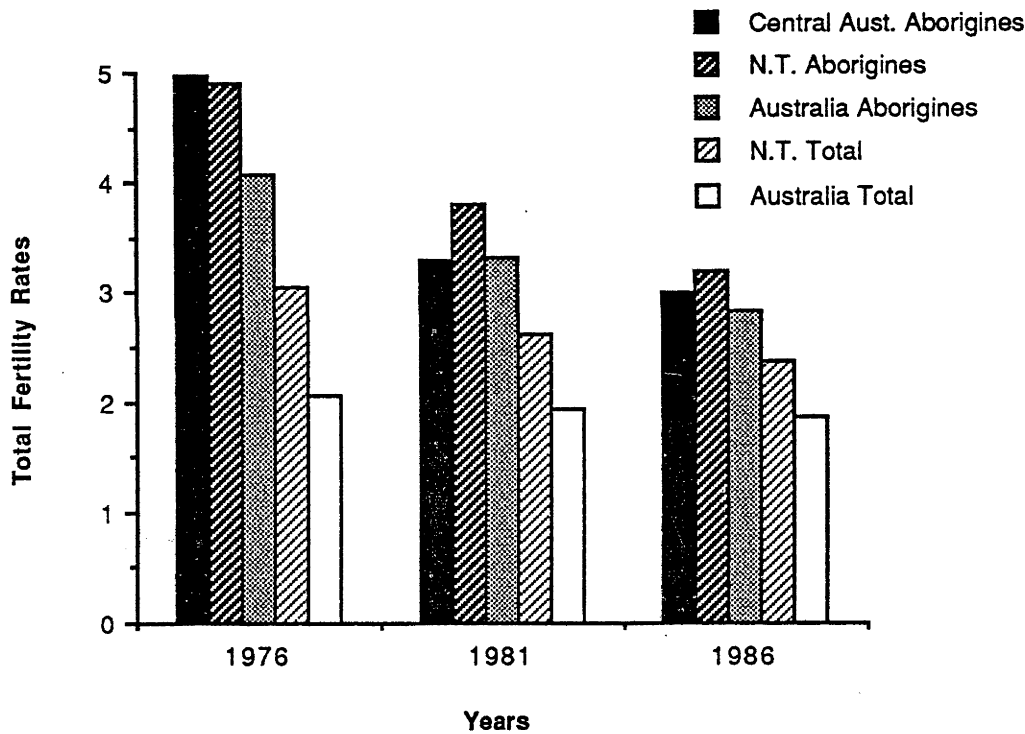
A marked similarity in the age pattern of fertility was observed between the Aboriginal population of Central Australia and the total Aboriginal population of the Northern Territory especially in the very important early ages of childbearing. (It should be borne in mind that the Aboriginal population of Central Australia is part of the total Northern Territory Aboriginal population.) This similarity in the age pattern of fertility among the Aboriginal population in various parts of the country, especially in the most fertile ages, reveals, to some extent, the context of lack of geographical differences in recent levels of Aboriginal fertility in Australia.

It is interesting to note that the similarity in the age pattern of fertility is revealed by the use of two independent and different data sources, the census returns on Aboriginal women's parity in the case of the total Aboriginal population of the Northern Territory and Australia and service statistics of annual births to Aboriginal women in the case of the Aboriginal population of Central Australia, recorded by the health and registration systems.

The trend in Aboriginal total fertility rate in Central Australia from 1976 to 1986 (Figure 5.3) suggests a continuing decline, though with a slower pace during the later five year period than

was observed from 1976 to 1981. During the ten years of the study period the total fertility rate (TFR) was reduced by 1.98. This decline in total fertility rate occurred mostly as a result of decline in the age-specific fertility rates in the later ages of childbearing, 30 and over, and the very early ages of less than 20. As Table 5-3 indicates, reduction in the fertility of women aged 30 and more averted 0.85 live births or about 43 per cent of the reduction in total fertility rate from 1976 to 1986 and reduction for the younger women aged less than 20 averted 0.72 live births or 36 per cent of the reduction in the total fertility rate during the study period.

Figure 5.3: Trends in the Aboriginal and total population total fertility rates, 1976-1986.



Notes: (1) Rates for the total Aboriginal population of Australia refer to the periods 1971-1976, 1976-1981 and 1981-1986. (2) Diagrams are the graphic illustration of the rates presented in Table 5-5.

Table 5-3: Components of decline in Aboriginal total fertility rate in Central Australia¹ by women's age from 1976 to 1986

Age groups	ASFRs 1976	CTFR ² 1976	ASFRs 1986	CTFR ³ 1986	Decline (3)-(5)	Cumulative per centage
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15-19	294.1	1.47	150.9	0.75	0.72	36.4
20-24	260.0	1.30	182.8	0.91	0.39	56.1
25-29	150.3	0.75	145.1	0.73	0.02	57.1
30-34	121.0	0.61	63.9	0.32	0.29	71.7
35-39	114.6	0.57	41.4	0.21	0.36	89.9
40-44	57.1	0.29	17.9	0.09	0.20	100.0
TFR	4.986	4.99	3.010	3.01	1.98	

¹ See subsection 5.2.2.

^{2, 3} Components of total fertility rate by age per woman:

CTFR = (ASFR*5)/1000.

The decline in fertility of the women in their peak childbearing ages of 20-29 during 1976-1986 averted only 0.41 live births or about 21 per cent of the total reduction in the total fertility rate.

Table 5-4: Aboriginal fertility trends in Central Australia¹, 1976-86

Age Groups	Age-Specific Birth rates ²		
	1976	1981	1986
15-19	294.1	197.4	150.9
20-24	260.0	208.0	182.8
25-29	150.3	150.0	145.1
30-34	121.0	79.5	63.9
35-39	114.6	11.6	41.4
40-44	57.1	13.9	17.9
TFR ³	4.986	3.302	3.010
CBR ⁴	40.70	32.07	30.87
N	185	218	265

¹ For 1976, Central Australia (areas between parallels 20 and 26 in the Northern Territory) includes 8 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Yuendumu and Docker River. For 1981 and 1986 the data cover 12 major Aboriginal population centres: Alice Springs, Amoonguna, Areyonga, Hermannsburg, Papunya, Santa Teresa, Ti Tree, Warrabri (Ali Curung), Willowra, Yuendumu, Utopia and Docker River.

² Number of live births to each thousand women of the specified age per year.

³ Total fertility rate is the number of live births that a woman would have if she experienced each of the age-specific birth rates between exact ages 15 and 50.

⁴ Crude birth rate is total births in a year per 1000 total population.

The trend in Aboriginal total fertility rate in Central Australia is consistent with the process of overall decline in Aboriginal fertility in Australia (Table 5-5) associated, as suggested by Gray

(1983:313-314), with the improvement in health services in Aboriginal communities, emphasis on family planning methods by medical practitioners, and socio-economic changes within Aboriginal households including greater opportunities for secondary education for Aboriginal children. Figure 5.3 reveals that as a result of the decline in Aboriginal fertility, the gap between the total fertility rates of the Aboriginal population and the total population, both in the Northern Territory and total Australia level, is narrowing.

Table 5-5: Trend in total fertility rate, Aboriginal women in Central Australia¹ compared to the total Northern Territory² and total Australia women, 1976-1986

Reference population	1976	1981	1986
Aboriginal women:			
- Central Australia	4.986	3.302	3.010
- Northern Territory.	4.900	3.800	3.200
- Australia	4.070 ³	3.320 ⁴	2.841 ⁵
Total women:			
- Northern Territory	3.060 ⁶	2.629 ⁷	2.388
- Australia ⁹	2.061	1.936	1.873

¹ Areas between parallels 20 and 26 in the Northern Territory.

² Averages for 1971-76, 1976-81 (Gray, 1982:9) and 1981-86 (Gray, unpublished).

³ Average 1971-1976 (Gray, 1983:87).

⁴ Average 1976-1981 (Gray, 1983:87).

⁵ Average 1981-1986 see Chapter 2.

^{6,7} ABS, 1982:3,8.

⁸ ABS, 1987b:7.

⁹ ABS, 1982:3,8; 1987b:7.

5.4.2 Fertility Differentials

In order to study the relationship between fertility and characteristics of the Aboriginal women, especially those related to the status of women, two characteristics were selected: the age at leaving school and the labour force status. It has been argued that the decline in fertility experienced by Australian women since the early 1960s was partly a function of changes in position and role of women in the society associated with, among other things, increasing participation outside the home and greater access to higher, secondary and post secondary education (Hugo and Wood, 1983:48-62). Working with the 1986 Census data Gray (unpublished) found that Aboriginal women who left school at ages 17, 18 or higher or were still at school had lower fertility possibility due to delay in the commencement of childbearing. Similarly, he found that employed women had lower fertility than unemployed (seeking work)

and those not in the labour force. The contrasts were more striking in the major urban areas where the opportunities for different lifestyles are greatest. Gray argues that age at leaving school could be classified in the determinants of fertility while labour force status can be both a cause and an effect of fertility.

It seems that the findings of this study in Central Australia are consistent with those of the total Australian population and the total Aboriginal population as was seen above. Measured by the average number of children ever born to women in various childbearing age groups, it was found (Table 5-6) that Aboriginal women in Central Australia who left school at higher ages, especially 17-18, had lower parity. This pattern is observed in all age groups. Indices of childlessness and maternal fertility also reveal this pattern (Table 5-7). Apart from those women who did not go to school, who also have a higher value of the childlessness index, the values of the index increase steadily with increasing age at leaving school, which reflects the delays occurring in the commencement of childbearing as women stay longer in educational institutions. The apparently inconsistent very high value of the index for those women who did not go to school may include a higher proportion of infecund women rather than delay in commencement of childbearing. This is because variation in the size of the childlessness index not only is associated with variation in the proportion of women who delayed their childbearing but also reflects infecundity in some categories (Gray, unpublished).

Table 5-6: Average number of children ever borne by Aboriginal women by age group in 1986 and age at leaving school, Central Australia¹,

Age at leaving school	<u>Age groups</u>			
	15-19	20-24	25-29	30-34
Including women whose parity not stated				
Did not go to school	0.23	1.22	2.48	3.24
Less than 13	0.53	1.31	2.67	2.78
13-16	0.42	1.31	2.07	3.12
17-18	0.20	0.97	1.62	2.54
19 and over	-	-	1.75	*
Still at school	-	-	-	-
Not stated	0.29	0.83	1.58	2.17
Total	0.33	1.12	2.04	2.67
Excluding women whose parity not stated				
Did not go to school	0.29	1.32	2.58	3.32
Less than 13	0.62	1.70	2.91	2.78
13-16	0.51	1.43	2.19	3.28
17-18	0.29	1.20	1.88	2.75
19 and over	-	-	2.33	*
Still at school	-	-	-	-
Not stated	0.53	1.71	2.45	3.13
Total	0.47	1.43	2.34	3.05

¹ Areas between parallels 20 and 26 in the Northern Territory. Basic data from ABS, 1988 (Census 86).

* Frequencies less than five.

The index of maternal fertility which is a measurement of the intensity of fertility more clearly signifies age at leaving school as a determinant of fertility. It can be seen from the last column in Table 5-7 that the values of the index drop as the age at leaving school increases. It shows that mothers who did not go to school or spent less time in school have more children than those who left school at later ages, who delayed having children or started working outside the home because of their qualifications related to their length of schooling.

Table 5-7: Aboriginal women with no children, reported children ever borne by Aboriginal women aged 15-34, and mothers by age at leaving school, Central Australia¹, 1986

Age at leaving school	No children		Mothers		
	Number	Index ²	Number	CEB ³	Index ⁴
Did not go to school	53	156	95	316	117
Less than 13	13	100	30	82	111
13-16	203	107	423	1030	98
17-18	24	126	50	118	89
19 and over	*	-	10	30	94
Still at school	17	85	-	-	-
Not stated	48	64	135	371	103
Total	359	100	743	1924	100

¹ Areas between parallels 20 and 26 in the Northern Territory. Basic data from ABS, 1988 (Census 86).

² Childlessness index: indirectly age-standardized index of number of women with no children against expected number (Gray, unpublished).

³ Children ever borne

⁴ Index of maternal fertility: indirectly age-standardized index of average number of children ever borne by mothers (CEB) against expected number (Gray, unpublished).

* Frequencies less than five.

Whether we take it as a determinant or a consequence of fertility or both, the relationship between labour force status and fertility, as can be seen in tables 5-8 and 5-9 in the case of Aboriginal women of Central Australia, is very distinctive. The data in Table 5-8 suggest that women in all age groups who are employed have substantially lower fertility, measured by the average number of children ever borne, than women unemployed and especially those not in the labour force.

Table 5-8: Average number of children ever borne by Aboriginal women by labour force status and age group in 1986¹ Central Australia

Labour force status	Age groups			
	15-19	20-24	25-29	30-34
Including women whose parity not stated				
Employed	0.28	0.72	1.64	2.87
Unemployed	0.33	0.98	1.73	2.41
Not in labour force	0.42	1.33	2.34	3.07
Not stated	0.06	0.75	0.92	1.35
Total	0.33	1.12	2.04	2.75
Excluding women with parity not stated				
Employed	0.35	0.89	1.89	3.00
Unemployed	0.42	1.17	2.03	2.75
not in labour force	0.60	1.69	2.54	3.31
Not stated	0.20	1.80	3.67	4.60
Total	0.47	1.43	2.34	3.14

¹ Areas between parallels 20 and 26 in the Northern Territory. Basic data from ABS, 1988 (Census 86).

It has been argued that those not in the labour force may include women who worked before and dropped out to have children; thus, the high fertility rates associated with women not in the labour force may not necessarily represent those who never worked (O'Connell and Rogers, 1982:284). This supports the classification of labour force status in the category of fertility effects rather than causes. The existence of an inverse relationship between fertility and employment is strikingly revealed by the indices of childlessness and maternal fertility presented in Table 5-9. The marked difference in the values of the childlessness index between the employed women and those not in the labour force suggests that there are few women with no children among those not in the labour force compared to those who are employed, where there are many more women with no children. Here, the index of childlessness clearly suggests that there is a pattern of increasing fertility differentials between employed women and those not in the labour force.

Table 5-9: Aboriginal women aged 15-34 with no children and reported number of children ever borne by Aboriginal women, and mothers by labour force status, Central Australia¹, 1986

Labour force status	No children		Mothers		
	Number	Index ²	Number	CEB ³	Index ⁴
Employed	61	130	35	289	91
Unemployed	122	136	42	420	98
Not in labour force	166	84	104	1181	102
Not stated	10	40	5	54	117
Total	359	100	186	1944	100

¹ Areas between parallels 20 and 26 in the Northern Territory. Basic data from ABS, 1988 (Census 86).

² Childlessness index: indirectly age-standardized index of number of women with no children against expected number (Gray, unpublished).

³ Children ever borne

⁴ Index of maternal fertility: indirectly age-standardized index of average number of children ever borne by mothers (CEB) against expected number (Gray, unpublished).

The index of maternal fertility by labour force status of Central Australian Aboriginal women, presented in the last column of Table 5-9, substantiates the above interpretations. It shows that the employed mothers have lower fertility than those unemployed or not in the labour force compared to average Aboriginal mothers in Central Australia.

Table 5-10: Aboriginal women by age groups in 1986 and age at leaving school, Central Australia¹,

Age at leaving school	Age Groups					
	15-19	20-24	25-29	30-34	35-39	40-44
Did not go to school	26	41	50	42	72	68
Less than 13	15	13	12	9	9	10
13-16	230	191	179	100	61	33
17-18	10	37	29	13	6	1
19 and over	3	12	8	4	2	1
Still at school	46	-	1	-	-	-
Not stated	80	84	73	75	37	37
Total	410	378	352	243	187	150

¹ Areas between parallels 20 and 26 in the Northern Territory.

Source: ABS, unpublished.

Table 5-11: Aboriginal women in particular labour force status and age groups, Central Australia¹, 1986

Labour force status	Age Groups					
	15-19	20-24	25-29	30-34	35-39	40-44
Employed	40	47	70	45	34	28
Unemployed	100	107	82	58	59	29
Not in labour force	236	200	188	123	83	80
Not stated	34	24	12	17	11	13
Total	410	378	352	243	187	150

¹ Areas between parallels 20 and 26 in the Northern Territory.

Source: ABS, unpublished.

Table 5-12: Adjustment of age-specific fertility rates. (Estimates based on Brass multipliers.)

Age groups	Unadjusted Age-specific Fertility	Children Ever Born	Cumulative Fertility	P/F Ratios	Adjusted age-specific fertility based on		
(i)	(Bi)	(Pi)	(Fi)		P(2)/F(2)	P(3)/F(3)	Average of P(2)/F(2) and P(3)/F(3)
15-19	.1859	.3488	.4766	.7318	.1417	.1600	.1509
20-24	.2253	1.1323	1.4852	.7624	.1718	.1939	.1828
25-29	.1788	2.1676	2.5188	.8606	.1363	.1539	.1451
30-34	.0788	3.0864	3.1636	.9756	.0601	.0678	.0639
35-39	.0510	3.3422	3.6775	.8939	.0389	.0439	.0414
40-44	.0221	3.2869	3.6775	.8937	.0168	.0190	.0179
45-49	.0000	3.5083	3.7095	.9458	.0000	.0000	.0000
TFR	3.7095				2.8281	3.1923	3.0102

Note: For all age groups estimated cumulative fertility is derived from B(1)/B(2).

For a description of the P/F ratio method and derivation of the cumulative fertility refer to United Nations, 1983:31-37 and McGirr and Pinal, 1986:A101-A106.

5.5 Summary

In general, the estimates of Aboriginal fertility in Central Australia derived from birth registration records are consistent with those from the census for the same area and other parts of the country. This suggests that the quality of the data is sufficiently good and also the coverage was found to be improving over time. To make direct Aboriginal fertility estimates, it is necessary to distinguish Aboriginal birth records in the district registrar office, something which is difficult to do at present.

The decline in fertility of the Aboriginal women in Central Australia, like other parts of the country, has been continuing though with a slower pace. The level of Aboriginal fertility, while very similar in Central Australia to other parts of the country, is still much higher than that of the total population of Australia. (The total fertility rate is about 60 per cent higher.)

While fertility is still very high in the early ages of childbearing, with the peak age group of fertility being 20-24, the decline of Aboriginal fertility is mostly due to the reduction of fertility in the older ages of 30 and more and the very early ages of 15-19. The age pattern of fertility of the Aboriginal women in Central Australia is very similar to that of the total Northern Territory Aboriginal population.

Age at leaving school and labour force status are characteristics which are very clearly associated with the fertility behaviour of Aboriginal women. Women who left school at early ages or have never been to school had higher fertility than those who left school at later ages. Similarly the fertility of employed women is much lower than of those unemployed or not in the labour force. The proportion of childless women who are not in the labour force is much lower than among employed women, which suggests that a pattern of differentials exists between those Aboriginal women who work outside the home and those who do not.

Chapter 6

Demographic Characteristics of Alice Springs Aboriginal Population

6.1 Population size and growth

Aborigines are the largest ethnic minority group in Alice Springs. In 1986 this group made up about 15 per cent of the total population of the town (ABS, 1988b:Table CX7012). According to the 1986 population census figures (ABS, 1988c:Table ABSTAT2), the total population of Alice Springs was 22,759 persons of whom 3,428 persons were reported as Aborigines and Torres Strait Islanders¹. Compared with the 1981 census returns, the intercensal population growth for the total town population and Aboriginal population suggests overall average annual growth rates of 4.26 and 2.84 per cent respectively. The crude birth rate² and crude death rate³ of the Aboriginal population in Central Australia⁴ in 1986 are estimated to be, respectively, 30.9 (Table 5-1 in Chapter 5) and 9.0 (Table 4-1 in Chapter 4); implying an average annual natural growth rate of 2.19 per cent per year. Assuming that the natural growth rate of the Alice Springs Aboriginal population is the same as for the Aborigines of the whole Central Australia, then migration to Alice Springs accounts for only about 23 per cent of the overall annual growth rate of the Aboriginal population in Alice Springs (for detailed migration analysis see Chapter 7).

¹ The terms 'Aborigines' and 'Aboriginal population' will be used as a single category taken to include Torres Strait Islanders.

² Crude birth rate is the total number of births in a year per thousand total mid-year population.

³ Crude death rate is the total number of deaths in a year per thousand total mid-year population.

⁴ Area between parallels 20 and 26 in the Northern Territory is referred to in this thesis as Central Australia.

Applying the overall intercensal population growth rate of 2.84 per cent per year, the total Aboriginal population of Alice Springs in June 1987 is estimated to have been 3,527 persons. Table 6-1 below presents the growth of Alice Springs's population from 1961 to 1987 by Aboriginality.

Table 6-1: Population growth in Alice Springs 1961-1987

Years	Total population		Aboriginal (recorded)			Non Abori- ginal
	Number	Rate	Total	Rate	Camps	
1961 ^d	4648		589			3914
1966 ^d	6390	6.4	875	7.9		4815
1971 ^d	11179	11.2	1369	9.0	250	6045
1976 ^b	14149	4.7	1575	2.8	632	12574
1979					1063a	
1981 ^b	18395	5.7	2974	12.7	877a	15421
1983					987a	
1985					1075a	
1986 ^b	22759	4.3	3428	2.8	1064a	19329
1987	23749 ^c	4.3	3525 ^c		1192 ^e	20224 ^c

a Tangentyere Council Inc. Alice Springs estimates

b ABS censuses of population figures

c Estimated based on 1981/1986 population growth

d Drakakis-Smith, 1981:42

e 1987 population survey (conducted by the researcher)

Rate = Per cent annual average growth rate for the period ending at the respective year $[\log_e(p_2/p_1)/n] \times 100$, where p_1 =population at time 1 and p_2 =population at time 2.

It was mentioned in Chapter 3 that the Aboriginal population in Alice Springs can be classified into two groups, those who live in the town proper and those who live in the town camps. In all there were 19 organized camps and about six 'illegal' or temporary camps in 1987. The historical circumstances which helped the development of the town camps and also resulted in residential dualism of the Aborigines in Alice Springs were discussed in Chapter 3 and the socio-economic and cultural conditions and differentials among the camp population and the town Aborigines are presented in Chapter 8.

The survey which was conducted during April-June 1987 covered all households living in various camps including organized and temporary camps, plus a purposive sample of 183 Aboriginal households from the town proper. The town sample constitutes about 37 per cent of

all Aboriginal households living in the town itself. The survey results indicate that about 1,192 persons are living in 25 town camps and 866 persons are living in 183 selected dwellings in the town proper.

During the survey it was found, as Table 6-2 shows, that in the camps about 10 per cent of the people were reported as visitors to the households. The figure is about 6 per cent for the town residents. While there were equal numbers of male and female visitors to the town households the visitors to the town camps were predominantly males. The data demonstrate that the Aboriginal people in the town camps are not merely visitors from elsewhere who wish to spend leisure time in Alice Springs, because about 89 per cent of the population are recognized as permanent household members. About 61 per cent of the adult town-campers have decided to continue living in Alice Springs for more than the next two years (See section 7.7 in Chapter 7). There is a balanced number of males and females which is an indication of the stability of the population.

Table 6-2: Aboriginal population by residence status and sex ratios, Alice Springs town and town camps, May 1987.

	Town (Sample)		Town-Camps		Total
	Number	%	Number	%	
Household Members:					
Males	363	42.0	537	45.1	900
Females	446	51.5	520	43.6	966
Persons	809	93.5	1057	88.7	1866
Sex Ratio	81.4		103.3		93.2
Household visitors:					
Males	28	3.2	69	5.8	97
Females	28	3.2	55	4.6	83
Persons	56	6.5	124	10.4	180
Sex Ratio	100.0		125.5		116.9
Total population:					
Males	391	45.2	613	51.4	1004
Females	474	54.8	579	48.6	1053
Persons	865	100.0	1192	100.0	2057
Sex Ratio	82.5		105.9		95.3

It should be noted that the classification of the population according to residence status presented above, is based on self definition or on the basis of the head of the household's

perception. Distribution of the population according to the duration of residence is discussed in Chapter 7.

6.2 Population composition

6.2.1 Sex composition

According to the survey results, presented in tables 6-2 and 6-3, it appears that the overall sex ratio of the Aboriginal population in Alice Springs is 95.3 which means that there are 95.3 males for each 100 females. The results of the 1986 population census give an even lower sex ratio of 90.4 for the total Aboriginal population of Alice Springs.

The survey also reveals, as shown in Table 6-2, that the sex ratio is higher for town campers (105.9) and much lower for town residents (82.5): there are more males in the town camps and more females in the town. Although it appears that the overall sex ratio in town camps is more or less a balanced one, the sex compositions of the individual camps show large imbalances (Table 6-3). Generally the small number of the people in camps contributes to large fluctuations in the individual camps' sex ratio figures, whereas such fluctuations conceal themselves in an overall average figure. The least balanced sex ratios can be found in camps 20 to 24 which are located on provisional unapproved sites without proper lease. These camps are inhabited mostly by men except camp number 20 where there are far more women than men. The sex imbalance of the visitors also contributed to an unbalanced sex ratio of an individual camp such as camp number 8 where the number of male visitors is three times the number of the female visitors.

Table 6-3: Sex composition of the Aboriginal population of Alice Springs town and town camps, May 1987.

Place of Residence	Males	Females	Persons	Sex Ratio
Town (Sample)	391	474	865	82.5
Camp 1	24	26	50	92.3
Camp 2	6	6	12	100.0
Camp 3	1	1	2	100.0
Camp 4	33	27	60	102.0
Camp 5	73	78	151	93.6
Camp 6	59	54	113	109.3
Camp 7	28	22	50	127.3
Camp 8	78	67	45	116.4
Camp 9	40	38	78	105.3
Camp 10	12	9	21	133.3
Camp 11	40	32	72	125.0
Camp 12	20	14	34	142.9
Camp 13	32	34	66	94.1
Camp 14	21	22	43	95.5
Camp 15	30	26	56	115.4
Camp 16	30	39	69	76.9
Camp 17	14	14	28	100.0
Camp 18	3	7	10	42.9
Camp 19	12	9	21	133.3
Camp 20	9	15	24	60.0
Camp 21	10	6	16	166.7
Camp 22	7	4	11	175.0
Camp 23	6	4	10	150.0
Camp 24	7	5	12	140.0
Camp 25	18	20	38	90.0
Total Camps	613	579	1192	105.9
Total	1004	1053	2057	95.3
Total (Census 86) ¹	1626	1798	3424	90.4

¹ ABS, 1988b: Table CX7012.

Examination of sex ratio figures by age, as shown in Table 6-4, suggests that the Aboriginal population of Alice Springs town proper has low sex ratios in all age groups. The apparently very high ratio in the age group 50 to 59 is due to a small number of observations in older ages in our sample of the town proper Aboriginal households. In fact, the sex ratio for ages 50 years and over in the town proper is about 83, a figure which is comparable with other age groups.

Table 6-4: Sex ratios of Alice Springs Aboriginal population by 10 year age groups in comparison with those for the total Aboriginal population of the Northern Territory. (Sex ratio=number of males per 100 females)

Age groups (1)	Town (2)	Town Camps (3)	Total (4)	Northern Territory (5)
0-9	82.4	101.5	96.3	103.6
10-19	84.0	139.2	88.5	99.2
20-29	88.4	87.0	86.3	89.5
30-39	71.0	113.0	96.2	87.5
40-49	73.5	113.3	93.8	93.5
50-59	120.0	114.3	102.8	87.8
60-69	60.0	112.0	64.8	74.0
70+	20.0	25.0	57.1	72.6
Total	82.5	105.9	90.4	94.7

Sources: Basic data for columns (2) & (3) from 1987 survey. Basic Data for columns (4) & (5) from 1986 ABS population census.

Similarly the town-camps have higher sex ratios from age group 10-19 to age group 60-69 years except for the age group 20-29 where there is a shortage of 17 males. The aggregate sex ratio for ages 50 years and over for the town-camps is about 97 which could be accounted for by the higher differential mortality for males in the older ages which is also the reason for the apparently very low sex ratio for ages 70 years and over in the town-camps.

The sex-ratio score, that is the mean difference between sex ratios for successive age groups, averaged irrespective of sign (United Nations, 1952:61), for Alice Springs Aboriginal population, covered in the survey, is about 22.17 which is comparable with the figure 21.27 derived from 1986 census data for the whole Aboriginal population of Alice Springs. Both the figures, presented in Table 6-5, reflect the poor quality of age-sex data. However Table 6-5 shows that the score is becoming better as the size of the population under study becomes larger (the score is 9.41 for the total Central Australian Aboriginal population and 8.98 for the total Northern Territory Aboriginal population based on the 1986 census data) and on the contrary, the scores are becoming larger as the size of the populations under study is diminishing: the score is 30.16 in the case of Alice Springs town-camps and 41.68 in the case of the Alice Springs town Aborigines based on 1987 survey data.

The sex ratio at birth for the total Aboriginal population of Alice Springs covered in the 1987 survey is 100 which means that during the 12 months prior to the survey equal numbers of baby boys and girls were born to the Aboriginal women living in Alice Springs.

Table 6-5: Evaluation of Aboriginal age and sex data.

Places	Sex-ratio score	Age-ratio scores ^a		Joint score ^b
		Males	Females	
1987 Survey:				
Alice Springs	22.17	15.96	15.65	98.13
-Town	41.68	51.17	21.89	198.11
-Camps	30.16	19.33	23.02	132.83
1986 Census:				
Alice Springs	21.27	13.10	15.53	92.45
CentralAustralia	9.41	2.81	8.33	39.38
Northern Territory	8.98	4.08	8.68	39.70

^a Age-ratio score is the mean deviation of age ratios from 100 per cent irrespective of sign.

^b Joint score is the addition of three times the sex-ratio score to the sum of the age-ratio scores for the two sexes (United Nations, 1952:61).

The overall sex ratio and also the figure relating to the sex ratio at birth obtained during the 1987 survey for the Aboriginal population of Alice Springs are consistent with the similar figures for the whole of CentralAustralia and the total Aboriginal population of the Northern Territory, Table 6-6, derived from 1986 population census data.

Table 6-6: Overall sex ratio and sex ratio at birth, CentralAustralia and total Northern Territory Aboriginal population, 1986 census.

Places	Overall Sex ratio	Sex ratio at birth
CentralAustralia	95.5	101.3
Northern Territory	94.7	100.2

Derived from: ABS 1986 Census of Population and Housing, Northern Territory, Table CA0001-Total persons-age by Aboriginal origin by sex, and Table CX7012 - Aboriginal and Torres Strait Islander Persons - age by sex Area between Parallels 20 and 26.

This indicates that the Aboriginal population of Alice Springs has a similar sex composition to that of the total Aboriginal population of CentralAustralia and also to that of the total Northern Territory Aboriginal population.

6.2.2 Age structure

Generally speaking, the age composition of the Aboriginal population of Alice Springs is indicating, as Table 6-7 below shows, a young age structure with a large number of population in the younger ages and a small proportion in the older ages.

Table 6-7: Percentage distribution of Alice Springs Aboriginal population by broad age groups, median ages, aged-child ratios and age dependency ratios by town and camps, May, 1987.

Age Groups	Town	Camps	Total
0-14	39.2	35	36
15-29	33.7	30	32
30-44	18.4	19	19
45-64	7.3	13	11
65 years and over	1.4	3	2
All ages	100.0	100	100
Median age (years)	19.2	22.6	21.1
Aged-Child Ratio ^a	3.5	9.2	6.7
Age dependency ratio ^b 68.3	60.4	63.6	

^a Aged-child ratio = $(P_{65+}/P_{0-14})100$, ^b Age dependency ratio = $[(P_{0-14} + P_{65+})/P_{15-64}]100$

If we take the *proportion of children under age 15* as an indication of the degree to which a population is old or young and is aging or becoming younger, and decide that with 30 per cent of the population under age 15 the population can be called 'old' and with 40 per cent and over as 'young' (Shryock and Siegel, 1971:234), then the Aboriginal population of Alice Springs with 36 per cent of population under age 15, as Table 6-7 shows, falls in the upper half of the intermediate category. The 1986 population census results give the proportion of population under age 15 as 37 per cent which is very close to the 1987 survey results and hence confirms the above conclusion. But if we use the *proportion of aged persons* as an indicator of a young or old population which classifies populations with 10 per cent or more 65 years and over as old and those with under 5 per cent as young, then the results of the 1987 survey and also of the 1986 population census, which give the proportions of aged persons as about 2 and 3 per cent respectively, are indicative of a young age structure for the Aboriginal population of Alice Springs.

Another index, the *aged-child ratio*, which is the number of old persons to the number of children, shows (Table 6-7) that with a value of 6.7 the Aboriginal population of Alice Springs is

indeed a very young population because the limits for characterizing a population as young or old by this index are values under 15 and over 30 (Shryock and Siegel, 1971:234). Again the census returns for 1986 give an aged-child ratio of 8.4 for the total Alice Springs population which is indicative of a young age structure. Similarly, Table 6-7 shows that the *median age*, the age which divides the population into two equal-sized groups, of the Aboriginal population of Alice Springs, is just above the lower limit of the intermediate category (with median age between 20 and 29 years) while the 1986 census provides a median age of 19.6 years.

Accordingly the Aboriginal population of Alice Springs can be classified as young. In Table 6-8 summary measures of the age composition of the Alice Springs Aboriginal population for the years 1976, 1981 and 1986 are compared with those for the Northern Territory and total Australian Aboriginal populations for the same years based on census data.

Table 6-8: Summary measures of age composition of Alice Springs, the Northern Territory and the whole Aboriginal population of Australia, 1976-1986.

Populations and years	Median Age	Per cent under Age 15	Per cent 65 years & over	Aged- child ratio	Age depend- ency ratio
(1)	(2)	(3)	(4)	(5)	(6)

Alice Springs:					
1976	15.0	50.1	2.8	5.6	112.3
1981	15.6	42.0	4.2	10.0	86.0
1986	19.6	37.0	3.1	8.4	67.0
Northern Territory:					
1976	18.0	43.5	3.8	8.7	89.9
1981	18.4	42.3	3.4	7.9	83.9
1986	19.2	39.7	4.1	6.8	73.5
Australia:					
1976	17.9	43.2	1.7	3.9	81.6
1981	18.0	42.6	2.8	6.7	83.2
1986	19.0	39.8	2.7	6.7	73.7

The process of aging of the Aboriginal population is clearly indicated by Table 6-8 and is visible from the population pyramids in figure 6-1. Increase in the median ages, decline in the percentages of the population under age 15 and increase in the relative sizes of the 15 to 65 age groups, which resulted in drops in the age dependency ratios from 1976 to 1986, have occurred in all the three populations shown. Generally, other indices computed in Table 6-8,

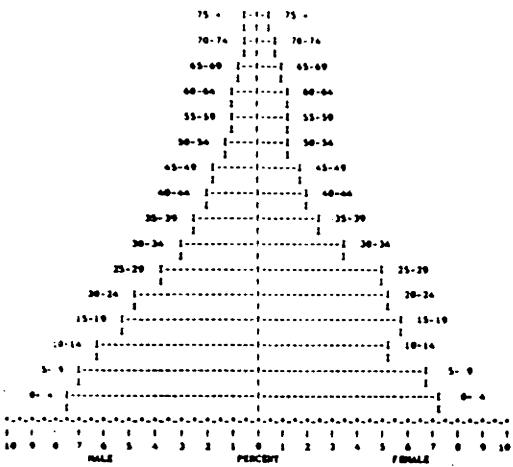
such as the proportion of the old persons and the aged-child ratios also confirm the process of change in the age composition from a young structure to a more mature one. The apparently inconsistent figures of 1981 in columns (4) and (5) of Table 6-8 could be related to the overall underestimation of the Aboriginal population at the 1981 census (Gray and Smith, 1983:7) and especially of the 0-4 age group which was more evident for the Northern Territory (Gray, 1987:3).

In Figure 6.1 the age structure of the Alice Springs Aboriginal population and its residential sub-groups are compared with those of CentralAustralia and the whole of the Northern Territory Aboriginal populations. As can be seen from Figure 6.1, the pyramids of Aboriginal age structure no longer possess the sharp triangle shape of high fertility and high mortality populations, instead, the bases of the pyramids are converting to barrel shapes due to the decrease in the proportion of children under 15 years of age resulting from a decline in Aboriginal fertility, discussed in Chapter 2 in the case of the total Aboriginal population of Australia and in Chapter 5 in relation to the Aboriginal population of CentralAustralia.

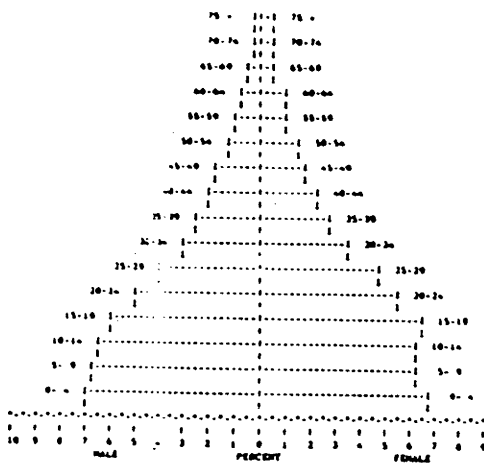
The pyramids in Figure 6.1 are becoming smoother as the sizes of the populations increase.

Figure 6.1: Age structures of the Aboriginal population

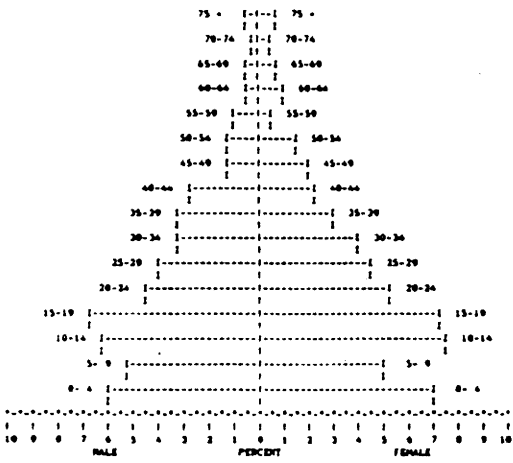
Central Australia 1986 Census



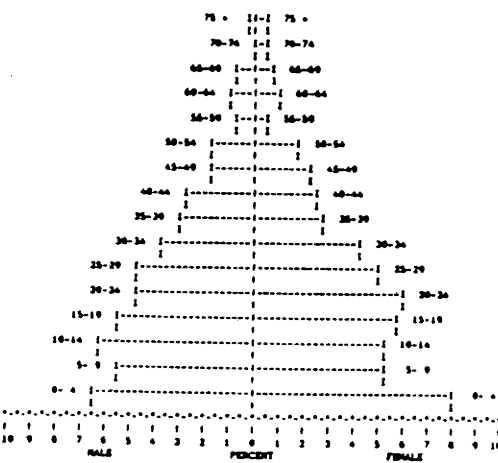
Northern Territory 1986 Census



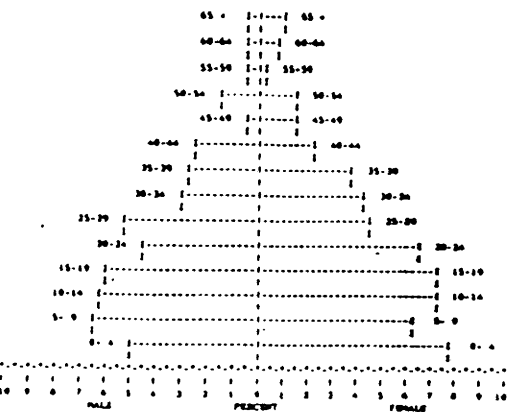
Alice Springs 1986 Census



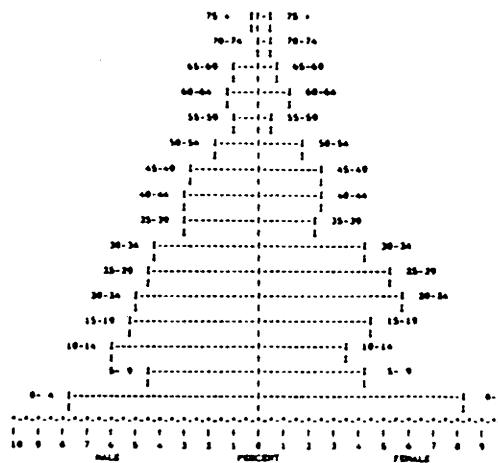
Alice Springs 1987 Survey



Alice Springs Town 1987 Survey



Alcie Springs Camps 1987 Survey



In comparing the Alice Springs Aboriginal population age composition reported in the 1987 survey for the town camps and town Aboriginal residents with each other and with those reported in the 1986 census for Alice Springs and the total Northern Territory Aboriginal populations, it will be useful to see their relative differences and similarities. In order to do so the index of relative difference⁵ and also the index of dissimilarity⁶ for the populations mentioned above have been computed and presented in Table 6-9.

Table 6-9 shows that the magnitude of the differences between the results of the 1986 census and the 1987 survey age distributions of the Aboriginal population in Alice Springs as well as the differences between the census returns for 1981 and 1986 and also the differences between the Alice Springs Aborigines and the total Northern Territory Aboriginal population age structures are consistent and are reasonably small. But in contrast, the age structures of the Alice Springs town Aborigines and those in the town-camps are not very similar to each other.

⁵ The index of relative difference shows the magnitude of the difference between any two age distributions and is defined as the deviations of the age-specific indexes from 100, summed without regard to sign (Shryock and Siegel, 1971:232).

⁶ Index of dissimilarity is another measure of the difference between two age distributions which is based on the absolute differences between the per cents at each age (Shryock and Siegel, 1971:232-233).

Table 6-9: Index of relative difference and index of dissimilarity

Populations under study	Index of Relative Difference	Index of Dissimilarity
Alice Springs		
(1987 Survey:1986 Census)		
- Persons	8.32	6.95
- Females	8.04	8.13
- Males	8.53	5.80
(1987 Survey, Persons)		
- Town-camps:Town	23.45	12.47
(1981 Census:1986 Census)		
- Females	7.55	6.03
- Males	10.88	8.10
1986 Census		
(Alice Springs:N.T. Aborigines)		
- Females	7.83	5.60
- Males	7.49	6.52

6.2.3 Marital status

Data from the 1987 survey indicate that marriage (including de facto) is an almost universal phenomenon among the Aborigines of Alice Springs. As Tables 6-10 and 6-11 show, about 96 per cent of the males and 97 per cent of the females in the town proper as well as 96 per cent of the males and 99 per cent of the females in the town-camps eventually marry by the age of 50. The proportion of the male population in the town remaining single at age 55 and over is about 4 per cent while only 3 per cent of the females remain single at age 55 years and over. In the town-camps less than 1 per cent of the males and none of the females are single at age 55 years and over.

It was found that early marriage is very common among the Aboriginal population of Alice Springs; a sizable proportion of the population marries before reaching age 20. As Table 6-10 shows, 10 per cent of the males and 21 per cent of the females in the town were married before 20. But as Table 6-11 shows, the proportion marrying before 20 is higher in the town camps than in the town proper. In the town camps, 25 per cent of the males and 43 per cent of the females marry before reaching age 20. In general, females marry 2.3 years younger than males. On average the singulate mean age at marriage (Hajnal, 1953:111-136) for the Aboriginal males in Alice Springs is 23.4 and for the females is 21.1 years. Age at marriage is

higher in the town than in the town camps for both males (1.6 years) and females (0.7 years). As can be seen from notes to Table 6-10, in the town proper the singulate mean age at marriage for the males is 23.9 and for the females it is 21.3 while these figures for the town-camps are 22.3 and 20.6 years respectively (see notes to Table 6-11).

Table 6-10: Alice Springs town Aboriginal population by marital status, 1987 Survey, proportions of age-sex totals.

Age groups	MALES			FEMALES		
	Married	Used to be Married	Never Married	Married	Used to be Married	Never Married
15-19	.1000	.0000	.9000	.2105	.0000	.7895
20-24	.5000	.0526	.4474	.4815	.2407	.2778
25-29	.5778	.0800	.3422	.5381	.3158	.1461
30-34	.7600	.1065	.1335	.5946	.3298	.0756
35-39	.8086	.1335	.0579	.5973	.3438	.0589
40-44	.8572	.0958	.0470	.6000	.3578	.0422
45-49	.7766	.1874	.0361	.5000	.4745	.0255
50-54	.6429	.2143	.0361	.3971	.5774	.0255
55+	.6154	.3485	.0361	.2941	.6804	.0255

Notes:

- (a) Married and used to be married include de facto marriages,
- (b) Singulate Mean age at Marriage: Males = 23.9 years, Females = 21.3 years,
- (c) Inconsistent figures derived from reported data were replaced by figures derived from interpolation or extrapolation of the adjacent figures.

Table 6-11: Alice Springs town-camps population by marital status by sex, 1987 Survey, proportions of age-sex totals.

Age Groups	MALES			FEMALES		
	Married	Used to be Married	Never Married	Married	Used to be Married	Never Married
15-19	.2203	.0339	.7458	.4118	.0196	.5686
20-24	.6379	.0690	.2931	.6119	.1642	.2239
25-29	.6807	.0771	.2422	.6497	.1833	.1670
30-34	.7234	.0851	.1915	.6875	.2083	.1042
35-39	.7377	.1375	.0722	.6923	.2692	.0385
40-44	.7520	.1900	.0558	.6000	.3667	.0333
45-49	.7181	.2424	.0395	.5381	.4453	.0089
50-54	.5789	.3979	.0232	.4762	.5238	.0000
55+	.4397	.5534	.0069	.3721	.6279	.0000

Notes:

(a) Married and used to be married include de facto marriages,

(b) Singulate Mean age at Marriage: Males = 22.3 years, Females = 20.6 years,

(c) Inconsistent figures derived from reported data were replaced by figures derived from interpolation or extrapolation of the adjacent figures.

Generally, wives are younger than husbands but in 16 per cent of cases studied in the town and 14 per cent in the town-camps husbands were younger than their wives.

As can be seen from Table 6-12, while the distribution of currently married household heads by their age differences with their spouses in the town and town-camps show some similarities, they also demonstrate different patterns. For example, while the proportion of the couples in the town with no age difference is similar to that in the town-camps, generally the age gaps between the household heads and their wives are wider in the town-camps than those in the town proper. While 32 per cent of such couples in the town have an age difference of 1 to 2 years, the figure for the town-camps is only 24 per cent. At the same time the proportion of the household heads with 10 years or more age difference from their spouses in the town-camps is nearly two times that in the town proper.

Table 6-12: Distribution of differences between the ages of the household heads and their spouses in Alice Springs town and town-camps, 1987 survey.

Husband and wife age difference (years)	Town		Town-camps	
	Number	(%)	Number	(%)
0	13	12	13	13
1	18	16	13	13
2	17	16	11	11
3	10	9	14	14
4	12	10	9	9
5-9	32	29	26	26
10+	8	7	13	13
Total	110	100	99	100

Separation, divorce and widowhood claim a large proportion of the Aboriginal women in Alice Springs, especially in the town proper. As early as at ages 20 to 24 about a quarter of the females are already separated from their spouses, divorced or widowed; (the category 'used to be married') and at age 55 years and over the proportion with this status is as high as 68 per cent. The figures for Aboriginal males in the same age groups in the town proper are only 5 per cent and 35 per cent respectively (see Table 6-10). In the town-camps around 16 per cent of the females in age group 20-24 are reported to be in separated, divorced or widowed and at age 55 years and over about 63 per cent are in this status while the proportions of the men in this status at ages 20-24 and 55 years and over are lower, about 7 per cent and 55 per cent respectively.

The difference in the number of men and women who 'used to be married', both in the town and in the town-camps, especially in the younger and middle ages, could be accounted for by remarriage of Aboriginal men with younger girls. Both Table 6-10 and Table 6-11 show that the proportion of females currently married at ages 15-19 is twice that of males. Naturally, with a low sex ratio (97.4) in ages 15-19, more than half of the women in these ages are married to men in ages over 20, many of whom were married before. For the older persons the difference between male and female 'used to be married' status is also affected by the differential mortality among men and women which favours females (see Chapter 4). Some cases of polygyny also occur especially among the Aborigines of the town-camps.

Compared to the total Aboriginal population of the Northern Territory and Australia, as Table.6-13 shows, according to the 1987 survey data marriage is more common among the Aboriginal population of Alice Springs. The table also shows that Alice Springs Aborigines marry at younger ages and the difference between the male and female singulate mean age at marriage is greater (2.3 years) than those for both the Northern Territory Aborigines (1.9 years) and the whole country Aboriginal population (1.4 years).

Table 6-13: Proportions of the Aboriginal population currently married in selected age groups and areas.

Age groups	Alice Springs 1987 Survey	Northern Territory 1986 Census	Australia 1986 Census
(1)	(2)	(3)	(4)
<u>MALES</u>			
15-19	.141	.075	.021
25-29	.613	.543	.347
35-39	.785	.703	.538
45-49	.757	.716	.589
55+	.556	.670	.536
SMAM	23.4	25.0	28.3
<u>FEMALES</u>			
15-19	.279	.232	.067
25-29	.576	.590	.407
35-39	.629	.683	.538
45-49	.513	.596	.542
55+	.321	.375	.380
SMAM	21.1	23.1	26.9

(3) Basic data from ABS, 1988a: N.T. Table CA002,
(4) Basic data from ABS, 1988a: Australia Table CA002.

6.3 Household structure

6.3.1 Household size

Household is often, as in this case, the unit of enumeration in demographic enquiries. A household 'consists of a group of individuals who share living quarters and their principal meals...an individual living by himself is considered to be a one-person household for statistical purposes' (United Nations, 1958:4). By this definition a person or persons living in the same dwelling unit comprise a 'household', whether they are all related or not (Ross, 1982:299). The average size of a household in a population is a product of economic, social, cultural and demographic factors. Thus, it varies from time to time, place to place and society to society. Table 6-14 provides the distribution of households by size in Alice Springs town and town-camps.

Table 6-14: Household by size

Household Size (persons)	Town (sample)		Town camps	
	Number	Cumulative percentages	No.	Cumulative percentages
1	11	5.9	9	5.3
2	18	15.6	13	12.9
3	28	30.7	16	22.4
4	39	51.8	9	27.7
5	36	71.3	25	42.5
6	18	81.0	18	53.2
7	14	88.6	18	63.9
8	9	93.5	8	68.6
9	5	96.2	11	75.1
10	3	97.9	12	82.2
11	0	97.9	6	85.5
12	2	99.0	7	89.9
13	0	99.0	4	92.3
14	1	99.5	1	92.9
15+	1	100.0	12	100.0
All	185		169	

Whereas some 70 per cent of the town Aboriginal households, as Table 6-14 shows, contained no more than 5 persons, nearly 60 per cent of the town camp households contained more than 5 persons, with a quarter of town camp households consisting of more than 9 persons. There are 12 households with 15 or more persons in the camps, whereas only one such large household is found in the town. On average, as reflected in Table 6-15, Aboriginal household size is 6.7 persons in Alice Springs town and 7.1 persons in town camps.

One of the reasons for the larger household size for the town campers is the higher number of short time visitors to the town camp households. As mentioned in section 1, about 10 per cent of the people in the town camps and about 6 per cent of the town residents were reported as visitors to the households and the visitors to the town camps were predominantly males.

Table 6-15: Household composition, Alice Springs Aboriginal population: May, 1987

	Town camps	Town(sample)
No. of households	169	185
No. of population:	1192	866
Household members	1057	809
Household visitors	124	57
Av. household size	7.1	4.7
Household heads:	169	185
-Males	97	73
-Females	72	112
Spouses of male heads	80	64
Spouses of female heads	34	43
Wife/male head ratio	.82	.88
Husband/female head ratio	.38	.47

The role of various factors in determining this pattern of characteristics is dealt with in the discussion of socio-economic, cultural and demographic differences between the town campers and Aborigines living in the town itself.

6.3.2 Pattern of relationships within the households

It should be noted that the relationship terms used in the survey interviews are considered in their European meaning and not according to Aboriginal usage. For example, a brother or sister here means siblings born to the same mother, not those traditionally considered as brothers or sisters in Aboriginal culture.

As we saw in Table 6-15, while the majority of household heads in the camps are men (57 per cent), the majority (60 per cent) of the household heads in the town are women. Of 112 sample Aboriginal households in the town, where women were reported as household heads only 43 of them (38 per cent) were living with their husbands or partners; a large number of them consist of single-mother families. Where men were reported as household heads, 88 per cent of them were living with their spouses.

In the town camps, there is also a number of basically single-parent households but compared with the town the number is relatively small (see Table 6-17). Where women were reported as household heads 47 per cent of them lived with their spouses which is a higher proportion than

that of the town. Where men were reported as household heads 82 per cent of them were living with their spouses. This shows that there are more single-father households in the camps than in the town.

A close examination of the interviewed households in the town and in the town-camps indicated that in the town proper 20 per cent of the households were single-parent and another 10 per cent augmented (living with some other single relative or single non-relatives) single-parent households. A closer observation reveals that 52 cases or more than 28 per cent of the town sampled households were single-mother households whether augmented or not. In the town camps, there were only four single-parent households and 14 augmented single-parent households with three basically single-father households.

Data from the household survey, as depicted in Table 6-16, suggest that in the town, immediate members of the household, such as household head, husband or wife and head's children constitute about 80 per cent of the household members while in the camps the figure is only 47 per cent and many nuclear families are augmented with other relatives or non-relatives. While this indicates a more traditional orientation of the town-campers, also, as we have seen earlier, there are more visitors to town camps than to households living in the town proper, which increased the ratio of distant relatives and non-relatives to immediate members of the households.

Table 6-16: Relationship patterns within the households (per thousand).

Relationship to household head	Town	Town camps
	(N=865=1000)	(N=1192=1000)
Household head	212	141
Husband/wife	126	95
Daughter/son	462	236
Daughter or son-in-law	9	39
Grandchildren	35	127
Father/mother	8	13
Brother/sister	29	39
Brother/sister-in-law	5	8
Nephew/niece	47	111
Grandparents	2	4
Uncle/aunt	2	29
Cousins	25	49
Other relations	12	59
Not related	23	28
Unknown	3	22
Total	1000	1000

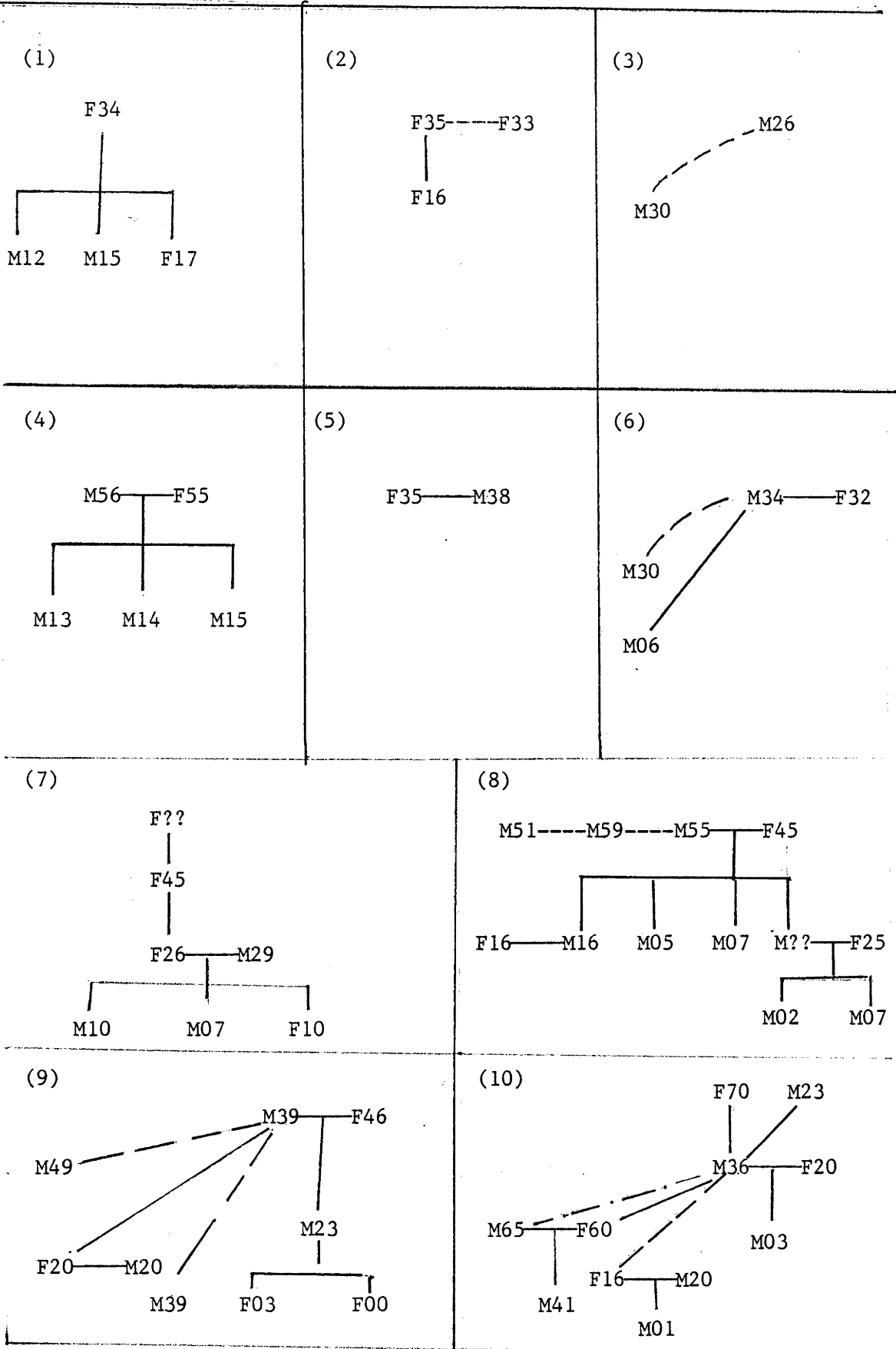
6.3.3 Household Types

In order to have a close look at the household structures and to determine various household types and their frequency of occurrence, the structures of the interviewed households, both in the town and in the town-camps, were examined one by one in detail. To arrive at a full description of household types, household structures were described by drawing diagrams of all relationships within the household. An illustration of various household structures observed is presented in Figure 6.2. The diagrams in the figure are examples of diverse combinations of relationships encountered in 351 diagrams of the interviewed households.

The method used for illustrating various relationships within the households by diagrams, as illustrated in Figure 6.2, is adapted, with minor modifications, from a similar work (Gray, 1987:3). In diagrams a short horizontal line links a husband and a wife, a short vertical line connects a child to a parent or parents, long horizontal, vertical and diagonal continuous or broken lines show other relationships and broken curves link non-relations and unknown relationships. Long vertical lines link grandparents to grandchildren. In some cases the relationships are labelled.

Examination of the household structures revealed that arriving at a relatively few basic types of classifications was a fairly straightforward matter because there were no endless combinations although the work of some writers about Aboriginal family typologies (Eckermann, Watts and Dixon, 1984:4) would lead one to expect them. This finding is in agreement with the findings of a recent study on Aboriginal Family Demography on the far north coast of New South Wales (Gray,1987a:2) where household structures were able to be classified into a relatively few basic types, and endless combinations were not observed.

Figure 6.2: Examples of Household Structures



(1) Diagram number, F34=Female age 34, M??= Male age unknown,
—— Husband and wife, ---- Siblings, | Parents and children,
/ Niece/nephew, \ Cousin, \ Other relatives,
- - - - - Not related

It may be mentioned that for the determination of household typologies two main views are prominent: 'Compositional', which takes into account the composition of the household, that is the kinship and sex composition of the household members, and 'Structural and Functional', which takes the structure and function of the household such as relations of authority, socialization, intrafamilial relations and so on as the criteria for grouping the households into specific types (Hancioglu, 1985:62).

In line with some other works constructing household typologies which have frequently mixed the two approaches (Timur, 1974; Nimkoff and Middleton, 1960), it would be appropriate to consider a combined approach which could possibly best describe the specific household structures of our study population.

Looking at the example diagrams presented in Figure 6.2, we can find single parents living with their children (Diagram 1). There were 40 such cases, 38 of them women with their children, in the interviewed households. Also, another 32 such households were augmented with some other single relatives or single non-relatives such as the case in Diagram 2; again 29 cases were women with their children. Sometimes we have one-person households (16 cases) and single-generation households (5 cases) as exemplified by Diagram 3. Such households which represent non-familial structures could be classified into one category. Some writers (Timur, 1974) used the term 'dissolved family' to describe such structures but I prefer to use the term 'non-familial households' which covers in addition the dissolved families where one of the spouses is missing, and other possibilities such as single generation and one person household.

Diagrams 4 and 5 in Figure 6.2 are examples of typical simple nuclear households. There were 90 such cases among the interviewed households.

In 103 cases, simple nuclear households were extended by the addition of some other single relatives or non-relatives, or widowed parents or widowed grandparents. Some examples of

these cases are Diagrams 6 and 7. To describe such households I am borrowing the term 'augmented nuclear' (Gray, 1987:5) with more restricted application. Its usage is restricted because here it does not cover couples with their married children and grandchildren.

There were 17 cases in which two or more couples were linked together lineally, that is, parent-child relations existed among them. In some cases such households were also extended by addition of some other unmarried relatives or non-relatives. Diagram 8 represents such a structure. To group them together I use the term 'lineally extended' households which was used elsewhere (Timur, 1974) in a similar way but only to describe patriarchal relationships, that is, the link between a couple and their married sons and wives with their children.

Twenty three households consist of couples who lived together with their children or without children, and their married relatives or non-relatives without their parents or grandparents. The relation linkages between two or more couples in these cases were also horizontal and not in direct line of descent from the basic household unit. Diagram 9 in Figure 6.2 is an example of this type of structure. The term 'joint households' (Gray, 1987:6) best describes such structures.

In 18 cases, joint households, as described above, were augmented with parents of one or more household units. With more complex structure, they were combined 'lineal extended' and 'joint' households, therefore, to group them together the term 'complex' households will best describe such structures. Diagram 10 in Figure 6.2 is an example of complex household structures.

The process of reaching a meaningful household classification for the study population, as described above, is summarized in the table below which provides a typology covering all possible relationship combinations within the Aboriginal households in Alice Springs.

Table 6-17: Distribution of Aboriginal households by type and average size, town and town-camps:
Alice Springs

Household Types	Households %		Persons		Average size	
	Town	Camps	Town	Camps	Town	Camps
Non-familial:	35	22	254	151	4.0	4.1
- one person household	4	5	9	9	1.0	1.0
- lone persons	0	3	0	14	0.0	2.8
- single parents	20	2	144	19	4.0	4.8
augmented	10	8	93	85	5.2	6.1
- other non-familial	1	4	4	24	2.0	4.0
Simple nuclear	34	15	241	116	3.9	4.5
Augmented nuclear	27	32	300	343	6.0	6.5
Lineally extended	2	8	37	148	9.3	11.4
Joint	1	13	19	211	9.5	10.1
Complex	1	10	14	215	14.0	13.0
All	100	100	865	1192	4.7	7.1

In general, the size of the household is closely connected to the type of the household. In principle, non-familial and simple nuclear households tend to be of smaller sizes compared to other household types. A non-familial household may be formed by one person and simple nuclear households may be formed only by two persons, a man and his wife. The minimum number of persons required to form an augmented nuclear household is three persons, that is a couple and a relative or non-relative. Lineally extended households can only be formed with the existence of two couples, that is a couple and their married son or daughter with his or her spouse, therefore, a minimum of four persons is required. The same minimum requirement is true for the joint households, that is, two siblings with their spouses; and complex households can only be formed by five persons, that is, two couples and a father or mother.

As can be seen from the last two columns in Table 6-17 the average household size varies from four for non-familial households to 14 for complex households in the town and from 4.1 to 13 in the camps. Generally, the average household sizes steadily increase for subsequent household types both in the camps as well as in the town proper.

6.4 Summary

Aborigines constitute about 15 per cent of the total population of Alice Springs. The average annual growth rate of the Aboriginal population is estimated to be about 2.84 per cent which is

lower than the estimated 4.26 per cent growth of the total population of the town. With an average annual natural growth rate of 2.19 per cent per year, a small proportion of the overall Aboriginal population increase is due to migration.

In Alice Springs about 34 per cent of Aborigines live in 19 organized and about six temporary camps.

The existence of a high proportion of persons whose usual residence was reported as Alice Springs (90 per cent were reported as household members), together with the majority intending not to migrate elsewhere for at least the next two years, suggests the stability of Alice Springs Aboriginal population.

While the sex ratio of the town campers is high (105.9), a very low sex ratio for the Aborigines of the town proper (82.5) resulted in an overall low sex ratio (95.3) for the the Aboriginal population of Alice Springs. A large number of single-mother Aboriginal households are living in the town proper, which contributes to the observed low Aboriginal sex ratio in the town proper. The small number of the people in camps contributes to large fluctuations in the individual camps' sex ratio figures, where such fluctuations conceal themselves in an overall average figure. The most unbalanced sex ratios can be found in camps which are located on provisional unapproved sites without proper lease.

With a large number of people in the younger ages and a small proportion in the older ages, in general, the Aboriginal population of Alice Springs has a young age structure. Meanwhile, decline in the proportion of the population under age 15 and increase in the proportions of the 15 to 65 age groups from 1976 to 1986 indicate the beginning of the aging process. This is due to the reduced fertility of Aboriginal women (as discussed in Chapters 2 and 5) and the improved Aboriginal longevity in CentralAustralia (as discussed in Chapter 2 and Chapter 4).

Marriage is more common among the Aboriginal population of Alice Springs than in the total Aboriginal population of the Northern Territory and Australia. More than 95 per cent of either sex, both in the town proper and in the town-camps, eventually marry by the age of 50. Alice Springs Aborigines marry at younger ages. On average the singulate mean age at marriage for the Aboriginal males is 23.4 and for the females is 21.1 years. The difference between the male and female singulate mean age at marriage is greater (2.3 years) than those for both the Northern Territory Aborigines (1.9 years) and the whole country Aboriginal population (1.4 years) and early marriage is very common.

Contrary to the general belief a relatively large number of Aboriginal households are basically nuclear, both in the town and in the town-camps, and a high proportion of Aboriginal people live in augmented nuclear households. But compared to the town-camps, a very low proportion of Aboriginal households in the town are composed of some types of extended structures. Even in the camps joint and complex types of households, which imply the combination of several household types and relationships, are not common. It was also found that a very large proportion of town Aboriginal households consist of non-familial types and in the town-camps nearly a quarter of households are of non-familial type. In the town, 28 per cent of the interviewed households basically consist of single-mother households. Large household size is a common feature of the Aboriginal communities in Alice Springs. Average household size is much higher in the camps than in the town. Even in the town the average household size is about five persons.

Chapter 7

Residence Stability and Migration

7.1 Introduction

In Chapter 1, assessment of the spatial stability of the Alice Springs Aboriginal population and their migration history was included as an objective of the study. Chapter 3 has shown how historical events during the last one hundred years, associated with the colonization of Central Australia by the Europeans, resulted in displacement of the Aboriginal people and whole communities in the area and helped the creation of the Aboriginal settlements and townships including the development of the Alice Springs town-camps. In this chapter, the residential stability of the Aboriginal population in Alice Springs is examined, together with its migration history and the factors behind migratory movements.

Data on migration were obtained directly by including questions in the survey about place of birth (place of usual residence of mother at the time of delivery), place of growing up, place of last previous residence and duration of residence in the place of enumeration. Also questions about the movements of people during the year preceding the survey provide information on population mobility and cyclic movements. Since only the Aborigines currently living in Alice Springs were included in the survey, it is unfortunately not possible to estimate out-migrants directly. But an indication of the magnitude of out-migration is provided by the answers to a question concerning the likelihood of out-migration during the next two years which was asked of all persons 12 years and over, and also through the collection of certain information about the former household residents who moved to other places during the two years preceding the survey.

For a comparative study of the migratory status of the Alice Springs Aboriginal population in relation to those of the total Alice Springs population and other populations, the 1986 ABS population census data on places of residence one and five years before the census were utilized.

7.2 Volume of migration

It is possible to classify the enumerated population into two broad categories of 'migrants' and 'non-migrants' according to responses to the place-of-birth question. 'Migrants' are defined as persons who were enumerated in a place different from the place where they were born and 'non-migrants' as persons who were enumerated in the place where they were born (United Nations, 1970:5).

Table 7-1: Aboriginal lifetime migrants and non-migrants to Alice Springs town and town camps

Place of Birth	Town		Camps	
	Number	Per cent	Number	Per cent
Born in Alice Springs	518	60	402	34
- Age 12+	(302)	(51)	(206)	(24)
Born elsewhere	347	40	790	66
- Age 12+	(292)	(49)	(591)	(69)
Total	865	100	1192	100
- Total age 12+	(594)	(100)	(851) ^a	(100)

^a Total includes 54 persons whose place of birth was not known.

As Table 7-1 indicates, 60 per cent of the Aborigines who currently live in Alice Springs town proper were born in Alice Springs but this figure is 34 per cent for the town camps. By this definition 40 per cent of town Aborigines and 66 per cent of town camps are lifetime migrants¹ to Alice Springs.

Place of birth data cannot provide information on direct moves, that is for persons who have migrated more than once, place of birth gives no information on residence at the time of last move. Instead, data on place of last residence will permit identification of persons as migrants

¹ Migration that has occurred between birth and the time of the census or survey has been called lifetime migration (Shryock and Siegel, 1971:618).

whenever their place of last previous residence and place of current residence are not the same. Therefore, according to the 'last residence' definition 'migrants' include all lifetime migrants and return migrants, those who have ever lived outside their birth-place. 'Non-migrants' will be those who have never lived outside their birth-place (United Nations, 1970:18). During the 1987 Survey, questions on place of last residence were asked of all persons 12 years of age and over who had not lived all their lives in Alice Springs. The results are summarized in Table 7-2.

Table 7-2: Aboriginal population aged 12 years and over currently living in Alice Springs town and town-camps by place of last previous residence.

Place of Last Previous Residence	Town		Camps	
	Number	Per cent	Number	Per cent
Alice Springs	205	35	215	25
Elsewhere	339a	57	569b	67
Unknown	50	8	67	8
Total	594	100	851	100

a Of 339 persons currently living in town, who previously lived elsewhere, 294 were born in Alice Springs.
b Of 569 persons currently living in town-camps who previously lived elsewhere, 123 person were born in Alice Springs.

As Table 7-2 shows, on the basis of place of last previous residence data, 57 per cent of adult town Aboriginal residents and 67 per cent of the town-campers are migrants.

7.3 Duration of residence

During the survey, the respondents were asked about the duration of their residence in the present place of residence. This question provided the timing of the last moves of migrants as presented in Tables 7-3 and 7-4. It was found that the level of Aboriginal migration to Alice Springs is significantly associated with the period of migration, taking 1981 as the threshold². This suggests that

² A statistical test shows that $X^2 = 4.766$ at 5% level of significance and a degree of freedom = 1.

Table 7-3: Persons 12 years of age and over by duration of residence in Alice Springs and by place of current residence, May 1987.

Duration of Residence (years)	Place of Current Residence				All
	Town (Sample)	%	Town Camps	%	
Less than one year	72	12	115	14	187
1-3	37	6	139	16	176
3-6	56	9	174	20	230
6-10	52	9	148	17	200
10-15	56	9	68	8	124
15 years and over	87	15	56	7	143
All life	195	33	42	5	237
Unknown	39	7	109	13	148
All	594	100	851	100	1445

Table 7-4: Periods of in-migration of persons 12 years age and over.

Periods of in-migration	Town		Town-Camps	
	Per cent	Cumulative Percent	Per-cent	Cumulative Percentage
Before May 1972	24.2	24.2	8.0	8.0
May 72 to May 77	15.6	39.8	9.7	17.7
May 77 to May 81	14.4	54.2	21.1	38.8
May 81 to May 84	15.5	69.7	24.9	63.7
May 84 to May 86	10.3	80.0	19.9	83.6
After May 1986	20.0	100.0	16.4	100.0
All ^a	100.0		100.0	

^a Include lifetime migrants with known duration of residence only.

Aboriginal migration during the period after 1981 has undergone changes from that of the earlier years, and this is demonstrated by the data in Table 7-4. The table shows that the proportion of recent migrants, those who moved in after May 1986, is higher for the town than for the town camps. While more than half of the town adult Aboriginal residents moved in before May 1981 the bulk of migrants to the town-camps moved in after that date. Development of the town-camps with the increasing availability of proper housing and other facilities and the security of permanent tenure they provide for the Aboriginal households, explain this process. The high proportion of the recent migrants to both areas includes some transients or visitors. The survey data on intentions to stay suggest that in the town proper about 40 per cent and in the town-camps about 22 per cent of those who moved in after May 1986 intended to move away during the next two years (Table 7-16). It also should be mentioned that 7 per cent of the migrants to

the town and 4 per cent of the camp migrants are those who have a duration of residence of less than one month. The proportion of those who migrated before May 1972 is higher for the town than the town-camps. This is related to the early stages of the town-camps development where few or even no facilities existed in the town-camps and also the Northern Territory Administration, the town authorities and non-Aboriginal town citizen groups strongly opposed the idea of permanent settlement of Aborigines in the town-camps (Commonwealth of Australia, 1971-76:152).

It could be concluded that after an initial high intake of Aboriginal migrants during the late 60s and 70s into the town proper, the intake has been stable during the last 10 years. This pattern of the Aboriginal migration flow to town is consistent with the growth of the town's total population from 1960 to 1986. The annual average growth rate of Alice Springs's total population during the period 1961-1966 is estimated at about 6.4 per cent which increased to 11.2 per cent during the next five years, and then became stable between 4 and 5 per cent per year for the next 15 years. The average intercensal growth rate of the Aboriginal population in Alice Springs is estimated to have been about 2.84 per cent between 1981 and 1986 (see Chapter 6). This trend in the growth rate of the total population of Alice Springs from 1960 is a reflection of the fact that Alice Springs was becoming an important area for tourism, administration services and strategic defence purposes (see section 3.6 of Chapter 3); it is now firmly established as such.

For the town-camps the intake of migrants reached its peak during the early 80s which coincides with the establishment and subsequent growth of the town campers' umbrella organization the 'Tangentyere Council'. Then, the intake of migration by the town-camps became stable at a high rate due to the development of town camps as permanent secure residential areas for the Aboriginal people especially for the more traditionally oriented ones drifting from outlying settlements and missions to the town.

The observation of a stable high rate of Aboriginal migration intake to Alice Springs during the past years may not seem consistent with the findings of an earlier study which suggested that

Alice Springs has played a minor role as a migrant destination (Young, 1981b:325). The pattern of town and camp population growth (Table 4-1) indicates a fairly stable Aboriginal population in town and in the camps for the last seven years, taking into consideration possible small variations in population counts during various operations; this seems to be in contradiction to an observed high level of Aboriginal migration intake. It seems that a high level of Aboriginal out-migration from Alice Springs operates as a controlling factor against the high flow of Aboriginal migrants to the town. As mentioned in Chapter 6, the natural growth rate (the difference between annual crude birth and death rates) of the Aboriginal population of Alice Springs is estimated to be about 2.19 per cent per year. By subtracting it from the total 2.84 per cent average annual Aboriginal population growth rate in Alice Springs, then it will be found that the annual net Aboriginal migration gain in Alice Springs is only about 0.65 per cent or about 23 per cent of the overall growth rate. This confirms the earlier studies' findings that Alice Springs is not a major migrant destination for the Aboriginal people and with the present limited employment opportunities, the situation is not going to change in the foreseeable future.

7.4 Places of origin and migration streams

Tabulation of data on the Aboriginal population of Alice Springs by places of birth show migration streams for the lifetime migrants (Table 7-5). A migration stream has been defined as a group of migrants having a common place of origin and destination in a given migration period (Shryock and Siegel, 1971:618). According to Table 7-5, 20 per cent of the town residents and 52 per cent of the town campers are lifetime migrants from other parts of the Northern Territory. It also reveals that more than half of all lifetime migrants to the town-camps were born in central and southern parts of the Northern Territory where Alice Springs is also located, and less than a quarter were born in other states especially the neighbouring areas of Queensland, West Australia, and South Australia.

A larger proportion of town Aboriginal residents are originally from major cities compared to the town-campers who mostly migrated from the neighbouring places to Alice Springs.

Table 7-5: Alice Springs Aboriginal population by place of birth and place of current residence, persons, May 87

Place of Birth	Place of Current Residence			
	Town (sample)	%	Town Camps	%
Northern Territory:				
- Alice Springs	518	59.9	402	33.7
- Other Central parts NECa	61	7.1	520	43.6
- Southern parts	2	0.2	28	2.3
- Darwin	55	6.4	8	0.7
- Other Northern parts NEC	42	4.9	29	2.4
- Other N.T. NEC	16	1.8	32	2.7
South Australia:				
- Northern parts	1	0.1	19	1.6
- Adelaide	27	3.1	0	0.0
- Other S.A. NEC	27	3.1	30	2.5
Western Australia	30	3.5	17	1.4
Queensland	42	4.9	17	1.4
Other States & Territories 21	2.4	2	0.2	
Other Capital Cities NEC	8	0.9	2	0.2
Overseas, areas Unknown and no response	15	1.7	86	7.2
Total	865	100.0	1192	100.0

a NEC = Not Elsewhere Classified.

For example, while about 12 per cent of the town Aboriginal residents were born in the capital cities of Darwin, Adelaide and those states and territories not bordering the Northern Territory, less than one per cent of the town-camps residents were born in such places. In contrast, while only 7.4 per cent of the town Aborigines were born in the central and southern parts of the Northern Territory (excluding Alice Springs) and northern parts of South Australia, the percentage of the town-campers who were born in these areas is 47.6. Figure 7-1 and Figure 7-2 show the distribution of the Aboriginal population by birth place in the town and town-camps.

Figure 7.1: Aboriginal population in the town by birthplace

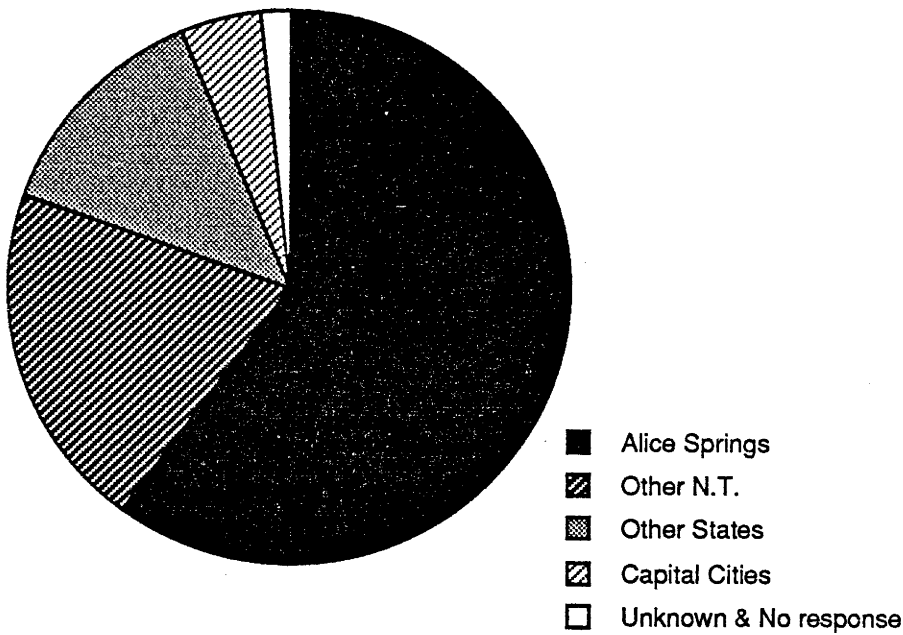
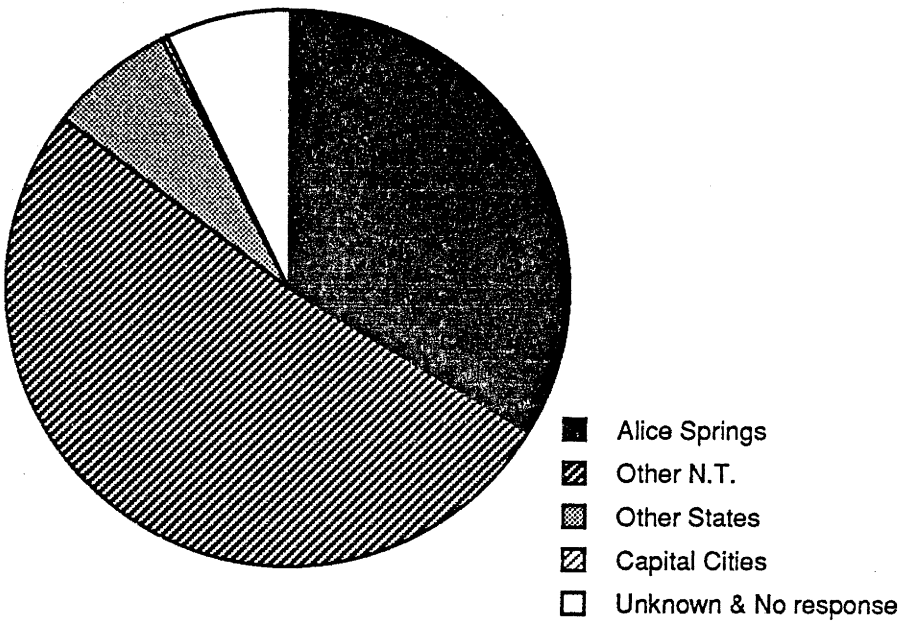


Figure 7.2: Population in the town camps by birthplace



Before migration to Alice Springs, most of the migrants to the town proper lived in the following places, in order, Darwin, Adelaide, Queensland, other parts of South Australia, Western Australia, Victoria, Santa Teresa mission in the Northern Territory and other areas (Figure 7.3). These areas include some large urban centres and smaller urban areas such as Katherine and Tennant Creek as well as some rural areas. It could be concluded that urban to urban migration is the dominant stream for the Alice Springs town proper Aboriginal population.

The majority of Aboriginal migrants to the town-camps lived in settlements, missions and cattle stations in the Northern Territory:, in order, Hermannsburg, Santa Teresa, Yuendumu, Areyonga, Jay Creek, Amoonguna and others (Figure 7.4). These places can be classified as rural areas; therefore, rural to urban migration signifies the pattern of Aboriginal migration to Alice Springs town-camps.

The survey data indicate that about 12 per cent of Aboriginal persons 12 years of age and over who currently live in the town proper are return migrants: they were born in Alice Springs, lived elsewhere and then returned. In the town-camps slightly more than 17 per cent (derived from data in Table 7-1 and Table 7-3) of the adult population are return migrants. But the proportion of return migrants to total migrants, based on place of last previous residence data, is much higher in the town proper than in the town-camps. While in the town proper about 50 per cent of migrants (12 years age and over) were also born in Alice Springs but later migrated to some other areas and then returned to town, in the town camps this figure is only 18 per cent (derived from Table 7-2).

The survey data reveal that a large proportion of migrants to Alice Springs grew up in places other than where they were born, and also that nearly half of them previously lived in places other than their places of birth. For 32 per cent of all persons 12 years age and over who currently live in Alice Springs (who have not lived all their lives there and whose duration of residence in Alice Springs is known) the place of birth and place of growing up are different. Similarly 44 per cent lived previously in places other than where they were born. This process is

the result of the historical conditions affecting the Aboriginal people in Central Australia. Chapter 3 showed that by the 1960s the Aboriginal people of Central Australia were largely institutionalized; they were afterwards moved around from one place to another, by administrative decisions and labour requirements of the cattle stations.

Figure 7.3: Aboriginal migration streams to town proper based on the last residence data

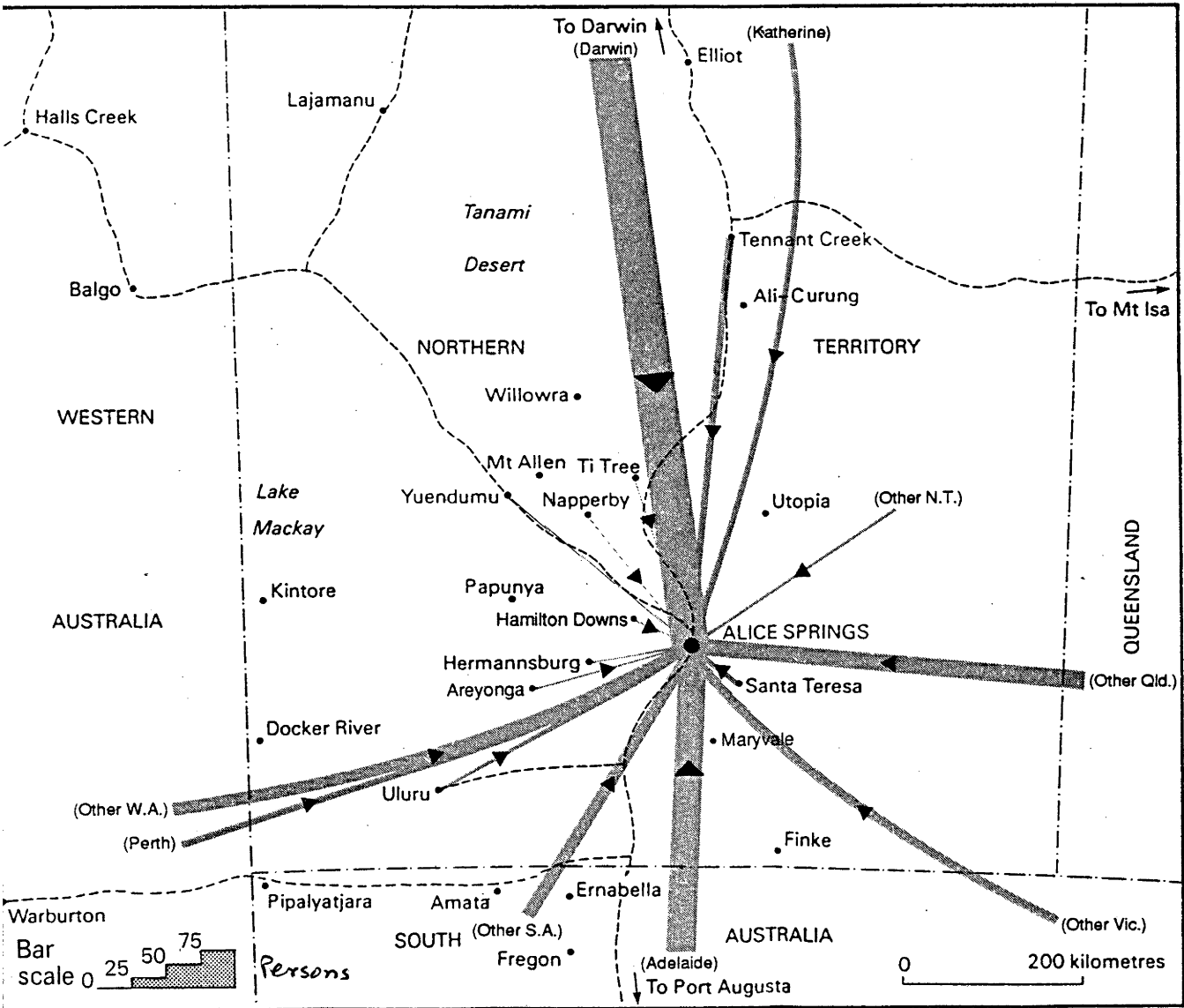


Figure 7.4: Aboriginal migration streams to town camps based on the last residence data

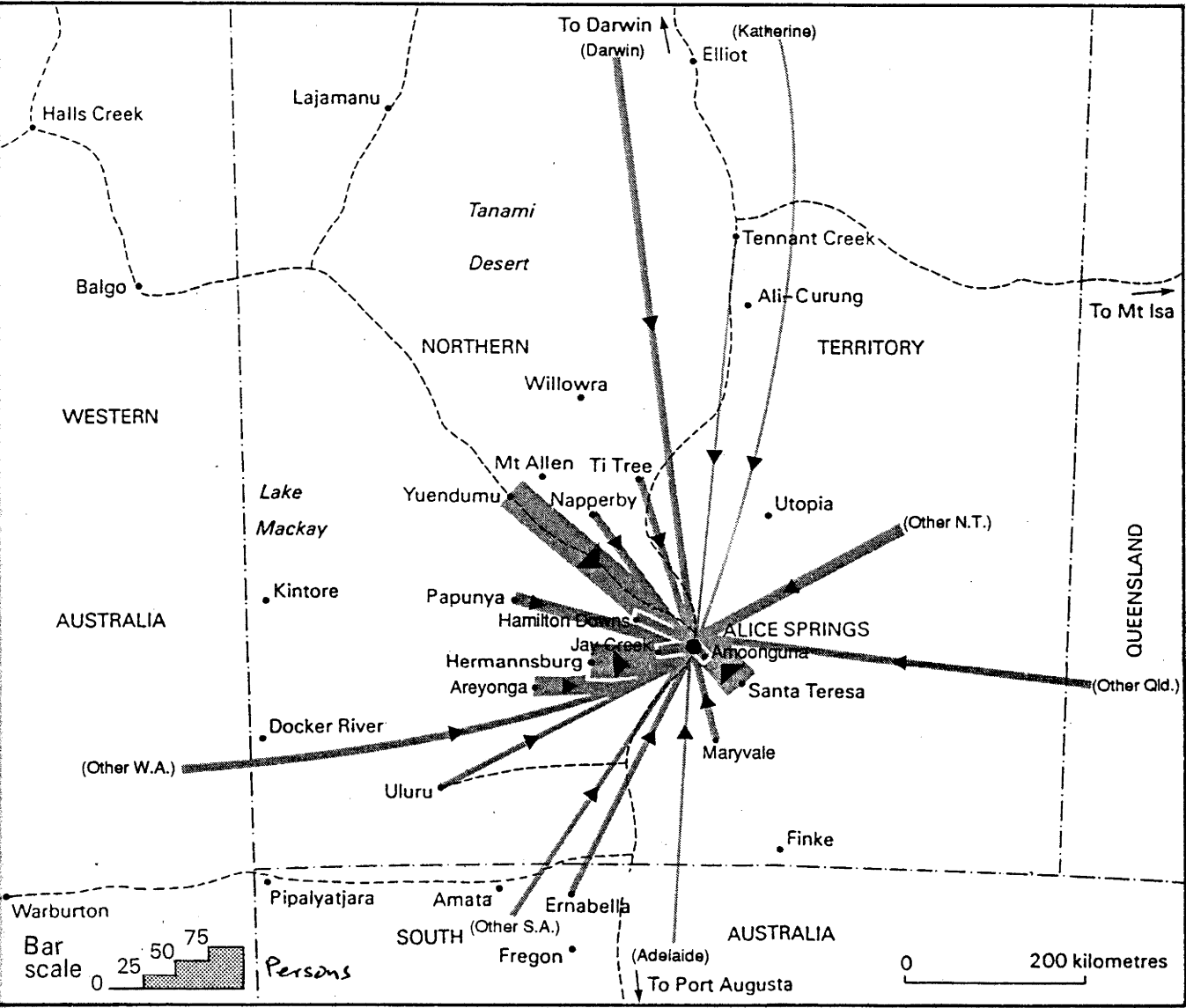


Table 7-6: Population 12 years and over who have not lived all their lives in Alice Springs by place of birth, place of growing up and place of last previous residence.

		Place of Birth		
		Alice Springs	Elsewhere	All
Place of Growing up	Alice Springs	159	122	281
	Elsewhere ^b	101	704	805
	All	260	826	1086 ^a
Place of Last Previous Residence	Alice Springs	83	95	178
	Elsewhere	177	731	908
	All	260	826	1086

^a Only those 12 years and over who have not lived all their lives in Alice Springs and their duration of residence in Alice Springs are known. ^b 'Elsewhere' for people in the town proper mostly includes Darwin, Adelaide, Katherine, Tennant Creek, Santa Teresa, Qld, other SA and WA. For the town-campers, 'elsewhere' mostly includes Hermannsburg, Santa Teresa, Yuendumu, Areyonga, Papunya, Amoonguna, Darwin and other areas.

Cross-classification of the data on duration of residence by place of birth provides information on place of birth and duration cohorts (Table 7-7), and also on migration streams by duration of residence (Table 7-8). A duration cohort is defined as a group of migrants with the same duration of residence.

Table 7-7: Percentage distribution of duration cohorts by place of birth, Alice Springs Aborigines, persons, May 1987

Duration of Residence (years)	Percentage of total in each place				
	All	Northern N.T. & other N.T. NEC	Central and Southern N.T.	Other States	Unknown and No-response
All	100.0	18.5	57.6	21.8	2.1
0-1	100.0	16.7	45.1	33.3	4.9
1-3	100.0	10.4	70.9	17.9	0.8
3-6	100.0	11.6	59.7	25.0	3.7
6-10	100.0	21.0	65.5	12.3	1.2
10-15	100.0	27.8	53.0	18.3	0.9
15+	100.0	23.5	45.2	27.8	3.5
Not known	100.0	20.7	59.2	20.1	0.0

Table 7-7 shows that migration streams of Aboriginal people to Alice Springs have undergone some changes in the past. The surrounding areas have more or less unchanged importance while the share of migrants from other states is increasing at the expense of migration from the northern parts of the Northern Territory. For example, the proportion of those migrants born in the central and southern parts of N.T. was 45 per cent for duration of residence 15 years and more, and was still 45 per cent for duration less than one year. For migrants born in other states the proportion was only 28 per cent for duration 15 years and more and it is 33 per cent for duration less than one year. On the other hand, the proportion of migrants from the northern parts of the Northern Territory decreased from 24 per cent for duration 15 years and more to only 17 per cent for duration less than one year.

Distribution of migrants by duration of residence, as shown in Table 7-8, is not the same for all lifetime streams. While on average about 11 per cent of all lifetime migrants, those who were born elsewhere and migrated to Alice Springs, have been in Alice Springs for more than 15 years, the highest average is for migrants born in other states, with 14 per cent in duration interval 15+ years; the lowest is for those born in central and southern parts of the Northern Territory, where the proportion of migrants in the duration interval 15+ was only about 9 per cent.

Table 7-8: Percentage distribution of migration streams by duration of residence, Alice Springs
Aborigines (based on place of birth data), May 1987

Duration of Residence years)	Percentage of total in each duration				
	All	Northern N.T. & other N.T. NEC	Central and Southern N.T.	Other States	Unknown and No- response
All	100.0	100.0	100.0	100.0	100.0
0-1	14.0	12.6	11.0	21.4	33.3
1-3	13.0	7.4	16.0	10.7	4.8
3-6	16.0	10.0	16.6	18.3	28.6
6-10	16.7	19.0	18.9	9.4	9.5
10-15	11.2	16.8	10.3	9.4	4.8
15+	11.2	14.2	8.8	14.3	19.0
Not known	17.9	20.0	18.4	16.5	0.0

Let us take place of last previous residence instead of place of birth as our reference point and cross-classify with duration of residence to see what difference it will make to the distribution of migration streams by duration of residence and distribution of migration duration cohorts. As Table 7-9 and Table 7-10 show, the results are more or less similar to those of birth place in relation to the distribution of migration streams by duration of residence (compare tables 7-8 and 7-9).

Table 7-9: Percentage distribution of migration streams by duration of residence, based on place of last previous residence, persons, May 1987

Duration of Residence (years)	Percentage of total in each duration					
	All Places	Northern N.T.	Other N.T. NEC	Central & Southern N.T.	Other States	Capital Cities
All	100.0	100.0	100.0	100.0	100.0	100.0
0-1	15.8	12.1	43.3	10.1	28.0	24.4
1-3	15.3	15.9	6.7	17.0	18.9	2.2
3-6	21.2	14.7	16.7	25.5	15.4	20.0
6-10	17.6	12.1	0.0	22.5	11.2	16.7
10-15	13.5	25.5	23.3	9.9	9.1	15.6
15+	12.9	17.8	6.7	10.3	12.5	21.1
Not known	3.7	1.9	3.3	4.7	4.9	0.0

In contrast, the distribution of migration cohorts by duration of residence based on place of last previous residence, as shown in Table 7-10, shows a pattern different from that of distribution of migration cohorts based on place of birth data as presented in Table 7-7 above. For example, while the proportion of migrants who lived previously in the

Table 7-10: Percentage distribution of migration duration cohorts by place of last previous residence, persons, May 1987

Duration of Residence (years)	Percentage of total in each duration					
	All Places	Northern N.T.	Other N.T. NEC	Central & Southern N.T.	Other States	Capital Cities
All	100.0	17.2	3.3	54.0	15.6	9.9
0-1	100.0	13.2	9.0	34.7	27.8	15.3
1-3	100.0	17.9	1.4	60.0	19.3	1.4
3-6	100.0	11.9	2.6	64.9	11.3	9.3
6-10	100.0	11.9	0.0	68.9	9.9	9.3
10-15	100.0	32.5	5.7	39.8	10.6	11.4
15+	100.0	23.7	1.7	43.2	15.3	16.1
Not known	100.0	8.8	2.9	67.7	20.6	0.0

central and southern parts of the Northern Territory was almost the same for longer and shorter durations now, these areas show decreasing importance, from 43 per cent for duration of 15+ years to 35 per cent for duration less than one year. The increase is 37 per cent compared to about 20 per cent in the case of birth place data. On the other hand although the proportion of migrants who previously lived in the northern parts of the Northern Territory for duration 15 years and more compared to duration less than one year was still declining, as was the case in analysis based on birth-place statistics, the decline is 28 per cent in the case of birth place and about 13 per cent for place of last previous residence analysis.

In order to study the possible variations in the relationship between the periods of migration, defined as up to May 1981 and after May 1981, places of origin, as defined in tables 7-9 and 7-10, and places of destination, town proper and the town-camps, chi square tests were applied. The results suggest very strong association between places of origin, whether birthplace or last residence, and periods of migration for the town proper, but comparatively insignificant

association for the town-camps, no matter whether places of origin were defined on the basis of birthplace or last residence data³.

Population movements between town and town-camps do have an important role in the net gain or loss of population for both of the residence areas and especially for the town proper. The survey data show, as reflected in Table 7-11, that of the camp Aboriginal population 12 years and over about 40 per cent lived previously in the town proper. Similarly of the total town-camps population 12 years and over about 13 per cent previously lived in the town proper.

Table 7-11: Population movements between Alice Springs town and town-camps, both sexes 12 years age and over, May 1987

		Places of Current Residence		
		Town ^a	Camps	Total
Places of Last Previous Residence	Town	531	80	611
	Camps	22	135	157
	Total	553	215	768

a To become comparable to town-camp figures, the sampled town Aboriginal population figures have been inflated by the total town proper Aboriginal population to the sampled Aboriginal population ratio (2333/865) in order to approximate the estimated total town proper Aboriginal population for 1987 (see table 6-1 in Chapter 6).

Table 7-11 also shows that in the interaction between town and town-camps, the town proper has a net loss of 58 persons while the town-camps gained the same number from the town proper. This process is a clear contradiction to the propositions that the town camps should be 'assimilationist in function - places where traditionally-oriented Aboriginal people could learn to live in houses before taking their place in mainstream society' often suggested by various government departments and politicians (Tangentyere Council, 1988:5).

3 For the town proper at df.=3 the resultant values of $X^2=21.48$ (based on birthplace data) and $X^2=15.20$ (based on last residence data) against the tabulated X^2 value of 7.815 at the 5% probability level (Blalock, 1972:569). For the town-camps the estimated X^2 values are 4.21 (birthplace) and 2.91 (last residence) with df.=2; against the tabulated value of $X^2=5.991$ at 5% probability level (Blalock, 1972:569). The degree of freedom 'df.' is 2 for the town-camps because places of origin are grouped into 3 major areas, the northern parts of the Northern Territory, central and southern parts of NT, and other States including the capital cities (due to few migrants to town-camps from the capital cities) whilst for the town proper the capital cities constituted a separate place of origin, thus, there were 4 major areas.

7.5 Who are the migrants?

7.5.1 Age and sex differentials

The survey data show, as summarized in Table 7-12, that in general migrants are older than non-migrants, both in the town and in the town-camps, no matter whether the point of reference is birth place or place of last previous residence.

Table 7-12: Median age of migrants and non-migrants in Alice Springs town and town-camps for population 12 years and over.

	Median Age (years)		Difference (years)
	Migrants	Non-Migrants	
Birth Place Data:			
Town	31.6	25.1	6.5
Town-Camps	32.7	26.4	6.3
Last Residence Data:			
Town	30.0	24.5	5.5
Town-Camps	32.1	29.0	3.1

As reflected in Table 7-12, the differences in median ages of the migrants and non-migrants, for both the town and the town-camps, are much larger in the case of birthplace data than in the case of those derived from last previous residence data. This suggests that if direct and recent moves are taken as the basis for analysis the difference in ages of migrants and non-migrants becomes smaller since return migrants are included as well as those who were classified before as non-migrants. Table 7-12 also reveals that residents in the town-camps, both migrants and non-migrants, are older than those in the town proper.

Chapter 6 showed that the overall sex ratio of the Aboriginal people in Alice Springs town proper was very low: only 82 males for every 100 females. As Table 7-13 shows, there is a very wide gap between the sex ratios of the lifetime migrants and non-migrants. While the adult lifetime migrants' sex ratio is estimated to be about 92, the sex ratio of adult non-migrants is as low as 75. This suggests that a large number of Alice Springs-born Aboriginal adult males are living elsewhere. In the town-camps, the situation is completely reversed. While there is a more or less balanced overall adult sex ratio of 106, the sex ratio of the adult non-migrants is as high as 148 compared to 94 for the lifetime migrants.

Table 7-13: Sex ratios (number of males to 100 females) of migrants and non-migrants 12 years and over by type of migration

Population Categories	Birth Place		Last Residence	
	Town	Town-Camps	Town	Town-Camps
Migrants	92.1	94.4	86.3	104.7
Non-Migrants	74.6	148.2	83.0	108.7

But as Table 7-13 also shows, the sex ratios of migrants and non-migrants based on place of last residence statistics are closer to each other, both in the town as well as in the town-camps, though generally low in the town and high in the town-camps.

7.5.2 Education

Studies on internal migration in various developing countries have shown that migrants are less educated than non-migrants with respect to the place of destination (Kothari, 1980; Singh and Yadava, 1981; Zachariah, 1968). Studies also reveal that migrants are more educated than non-migrants at the places of origin (Yadava, 1987; Connell et al., 1976). These two observations are particularly valid in the context of rural-urban migration which is not a clear-cut pattern in the case of Aboriginal migration to Alice Springs as a whole, as was seen earlier in this chapter, where migrants are originating from major cities as well as rural localities. The survey data reveal that, as found in other studies, Aboriginal non-migrants in Alice Springs generally have better schooling than the Aboriginal migrants, both in the town and in the town-camps. For example, as shown in Table 7-14, on the basis of birth place data, the proportion who have never been to school is fifty times higher for migrants than for non-migrants in the town, and four times higher for migrants than non-migrants in the town-camps. No evidence from the survey could be produced to speculate about the education level of the migrants compared to the non-migrants at the places of origin.

Table 7-14: Proportions of migrants and non-migrants 12 years and over never been to school by type of migration in Alice Springs town and town-camps, May 1987

Population Categories	Birth Place		Last Residence	
	Town	Town-Camps	Town	Town-Camps
Non-Migrants	0.1	5.3	1.5	10.2
Migrants	4.8	20.3	2.7	18.8

But, as Table 7-14 also shows, based on the last previous residence data, while in the town-camps the proportion of migrants who have never been to school is about 9 percentage points more than that of the non-migrants, in the town proper the proportions who have never been to school are very low for both migrants and non-migrants.

7.5.3 Employment

Survey data reveal that in Alice Springs town proper those Aborigines who are classified as migrants participate more in the labour force and also include a higher proportion employed than those who are non-migrants. For example, as Table 7-15 shows, while about 47 per cent of the migrants are working compared with 34-36 per cent for the non-migrants, the number of those seeking jobs is also higher for the migrants. The table also reveals that while more migrants are working or seeking employment a higher proportion of the town Aboriginal non-migrants are continuing their schooling.

Table 7-15: Percentage distribution of migrants and non-migrants (12 years and over) by economic activities in Alice Springs town and town-camps, May 1987

Migration Status	Working	Seeking Job	In School	Other	Total
Town:					
	Birthplace				
Non-Migrants	36.0	11.2	27.0	25.8	100.0
Migrants	46.6	14.7	13.7	25.0	100.0
Town-camps:					
Non-Migrants	14.6	31.1	15.5	38.8	100.0
Migrants	10.0	39.6	4.6	45.8	100.0
Town:					
	Last Residence				
Non-Migrants	33.7	10.2	29.3	26.8	100.0
Migrants	47.5	14.2	15.6	22.7	100.0
Town-camps:					
Non-Migrants	17.7	33.0	13.5	35.8	100.0
Migrants	9.3	39.4	5.1	46.2	100.0

In the town-camps, as Table 7-15 shows, labour force participation of the migrants and non-migrants is similar; but the table also shows that a higher proportion of non-migrants are working. It further shows that the proportions currently in school are nearly three times greater than those of the migrants. This suggests that, to a larger degree, non-migrants in the town camps have adapted themselves in economic activities.

7.6 Reasons for migration

The survey results reveal that 31 per cent of migrants were attracted to the town in search of employment, while only about 7 per cent of the town-camps migrants moved in for this reason. The main reasons given by the town campers include accompanying other family members, liking to live in Alice Springs, family reasons; also a relatively strong factor for the town campers seems to be the occurrence of conflicts in the places of origin: 6.5 per cent of the camp migrants gave this as the reason for their move while for the town migrants this is hardly ever a reason. About 87 per cent of those who came to town in search of jobs had migrated from the northern parts of the Northern Territory, other states and other capital cities; most of them currently live in the town proper and are accompanied by family members. It should be remembered that the mixed descent children of the Aboriginal women were removed from the camps and sent away to grow up elsewhere, as discussed in Chapter 3; many of those who grew up in cities like Adelaide and Darwin, and in other places, later returned to Alice Springs. About 50 per cent of those who came to town to go to school came from the other parts of the Northern Territory central and southern region, missions, settlements, and stations.

7.7 Out-migration

During the survey some information was collected from the interviewed households about former household members who currently live elsewhere. In cases where households moved away all together no information about them could have been recorded, so the reported number of out-migrants is an under-estimation of the true level of out-migration. The data show that during the year preceding the survey 58 persons from the interviewed Aboriginal households in the town and 18 persons from the camp households changed their place of residence. From the

town, 37 per cent moved to another dwelling in the town, as they acquired their own flats or houses; about 6 per cent moved to the town-camps and the same proportion moved to Darwin. Another 16 per cent moved to other areas in the Northern Territory, and about 18 per cent to other states, many of them to the capital cities. The reasons given for their move include transfer with work, returning home and to go to school. From the town-camps, about 37 per cent moved to dwellings in the town proper, about 7 per cent moved to other camps and 48 per cent to other Aboriginal settlements and townships in Central Australia; the destinations of the remaining 7 per cent are unknown. The reasons for those who migrated from the camp households include acquiring their own houses, returning home, prefer to live in another camp, to live back in out-stations and to find work.

In order to assess the stability of the Aboriginal population currently living in Alice Springs town and town-camps, during the 1987 survey a question was asked of all persons 12 years and over about the likelihood of them moving to any other place away from Alice Springs during the following two years. According to answers to this question, presented in Table 7-16, about 77 per cent of the town adult Aboriginal residents and 61 per cent of the town-camps adult residents are unlikely to move out. At the same time about 12 per cent of the town adult Aboriginal residents and 9 per cent of the town-camps adult residents are certain that they will move out and the rest in both places are undecided.

Table 7-16: Likelihood of out-migration from town and camps by duration of residence

Duration of residence	Quite likely	Uncertain	Unlikely	All ^a
Town (sample):				
Less than 1 year	29	14	27	72
1-3 years	7	6	24	37
3-6 years	9	13	34	56
6-10 years	4	10	38	52
10-15 years	1	8	47	56
15 years and more	11	2	74	87
All life	8	8	179	195
Unknown, no resp.	2	3	32	37
Total	71	64	455	594
Town camps:				
Less than 1 year	25	34	50	115
1-3 years	12	24	97	139
3-6 years	10	52	110	174
6-10 years	13	47	80	148
10-15 years	5	9	54	68
15 years and more	1	6	49	56
All life	6	6	29	42
Unknown, no resp.	4	28	47	109
Total	76	206	516	851

^a All includes unknown and no response.

About 41 per cent of those who decided to move out are persons who have only been in the town for less than a year. In the town-camps about 33 per cent of those who are quite likely to move out were in the camps for less than a year and there is a clear-cut negative relationship between the residence duration and the likelihood of out-migration: the greater the length of stay the smaller is the likelihood of moving away.

7.8 Volume and pattern of short term movements

Short-term cyclic movements occur more often among the town Aboriginal residents than among the camps residents. The survey results indicate that about 34 per cent of adult town Aborigines were away from Alice Springs for various durations and reasons during the year preceding the survey. Of the adult town campers, this proportion was only 21 per cent. The destinations of those away from the town were mainly the northern parts of the Northern Territory and other States, mostly for a period of one to four weeks and generally for holidays. Those from the town-camps mostly went to the central and southern parts of the Northern Territory, the majority from one week to six months and mostly to visit their friends and relatives

and on holiday. Meanwhile the survey results show short-term cyclic movements occurring in both directions. For example, there were 30 persons in the town-camps with a duration of less than one month, of whom 43 per cent were on temporary visits and another 47 per cent uncertain about their intention as to whether they would stay for the next 2 years or not. This type of movement occurs in the context of urban and rural links. It occurs more frequently where 'kinfolk' are living (Young, n.d.).

7.9 How does the spatial mobility of Alice Springs Aborigines compare to other populations?

Tabulations of the 1986 Census on the question of mobility are available for the total population and for the Aboriginal population. The census results indicate, as Table 7-17 shows, that Aborigines in the Northern Territory as a whole are more stable than the total population of the same area whether the usual residence one year or five years before the census is taken as the reference point. For example, of all Aboriginal usual residents of dwellings in

Table 7-17: Comparison of the Aboriginal population spatial mobility to that of the total populations of Alice Springs and Northern Territory

Indices	Northern Territory		Alice Springs	
	Total	Aboriginal	Total	Aboriginal
1. Proportions of usual residents				
86 reside in 1985 in:				
- Same address	66.6	76.4	61.0	57.0
- Elsewhere in NT	14.4	10.1	17.4	18.9
- In other States	10.0	2.0	12.0	4.4
2. Proportions of usual residents				
86 reside in 1981 in:				
- Same address	35.5	62.0	29.4	33.8
- Elsewhere in N.T.	21.3	17.2	23.0	29.0
- In other States	22.0	3.4	26.0	6.9

Sources: Basic data for the total populations of the Northern Territory and Alice Springs from ABS 1986 Census, (Microfiche) Small Area Data, Format USG 05, Northern Territory, Table U04 usual residence, 1986 and table U05 usual residence, pre 1986. Basic data for the Aboriginal populations of the Northern Territory and Alice Springs from ABS 1986 Census, State NT, Table CA0004 - Total Aboriginal & Torres Strait Islander - SLA of usual residence 1986 then SLA of usual residence 1985 and SLA of usual residence 1981 for those counted at their 1986 usual residence by sex.

June 1986, about 26 per cent in 1985 and 46 per cent in 1981 were living elsewhere, while among the usual residents in the total population these proportions are 33 and 65 per cent

respectively. This shows that Aborigines are far more stable in their usual places of residence over a longer period compared to the total population of the Northern Territory. If we look at the interstate movements in Table 7-17, the total population is five times as mobile in a one-year period and more than six times as mobile over a period of five years.

In Alice Springs, as Table 7-17 shows, although Aborigines are less stable than the total population over a short period of one year, they are more stable over a longer period of five years. Generally, in Alice Springs Aborigines are more mobile in intrastate movement and the total population is more mobile in interstate movement irrespective of the length of the reference period.

7.10 Summary

The 1987 survey and also the 1986 Census results provided basic data for migration analysis of the Aboriginal population of Alice Springs. Migration accounts for less than half of the annual Aboriginal population growth in Alice Springs. About 40 per cent of Alice Springs town proper Aborigines and 66 per cent of town campers are lifetime migrants to Alice Springs: they were born elsewhere and then migrated to Alice Springs. On the basis of place of last previous residence data, 57 per cent of adult town Aboriginal residents and 67 per cent of the town-campers are migrants.

While more than half of the town adult Aboriginal migrants moved to Alice Springs before May 1981, the bulk of migrants to the town-camps moved in after that date. This process is closely associated with the improvements in conditions in the town-camps and the increase in the number of houses and other types of accommodation in the camps.

After an initial high intake of Aboriginal migrants during the late 60s and 70s by the town proper, the intake has been stable during the last 10 years. For the town-camps the intake of migrants reached its peak during the early 80s and then became stable afterwards. This process is, as mentioned, associated with the development of the town camps and house building programs in the camps. Meanwhile, a process of out-migration exists which nullifies, to a large extent, the

effects of migration flow to Alice Springs; as a result migration is accountable for about 23 per cent of the total annual growth of the Alice Springs Aboriginal population.

Urban to urban migration is the pattern of migration to the town proper while rural to urban migration characterizes the pattern of Aboriginal migration to the town-camps. A larger proportion of town Aboriginal residents are originally from major cities such as Darwin and Adelaide compared to the town-campers who mostly migrated from the surrounding rural places to Alice Springs. A strong association was observed between places of origin and period of migration in the town proper whilst such a strong association did not exist for the town-camps. This suggests that migration origins for the town proper have undergone some changes; the share of the migrants from other States is increasing at the expense of migration from the northern parts of the Northern Territory.

About 12 per cent of Aboriginal adults in the town proper are return migrants; that is they were born in Alice Springs, grew up elsewhere and then returned to Alice Springs. In the town-camps slightly more than 17 per cent of the adult population are return migrants.

In the interaction between town and town-camps over a longer period, the town proper is losing population to town-camps.

On the basis of birthplace data, migrants are comparatively older than non-migrants, both in the town and in the town-camps though the difference in age becomes smaller if place of last residence is taken as reference point.

There is indication that a large number of Aboriginal adult males born in Alice Springs town proper out-migrate, while in the town-camps the situation is completely reversed. The sex ratio of the adult non-migrants is as high as 148 compared to 94 for lifetime migrants. This suggests that a large number of town camp born adult females out-migrated.

Both in the town and in the town-camps non-migrants are better educated than migrants, while in the town proper migrants have higher labour force participation and employment rates than those who are non-migrants. In the town camps labour force participation of the migrants and non-migrants is similar and a higher proportion of non-migrants are working. Many migrants were attracted to the town proper in search for employment, while the main reasons given by the town campers include accompanying other family members, liking to live in Alice Springs, family reasons and occurrence of conflicts in the places of origin.

Short term cyclic movements are more frequent among the town Aboriginal residents. During the year preceding the survey most of the visitors from the town mainly went to the northern parts of the Northern territory especially Darwin, Tennant Creek, and other States, mostly for a period of one to four weeks and generally for holiday. Visitors from the town-camps have mostly been to the surrounding communities in central Australia, and were away for comparatively longer periods than the visitors from the town proper, and mostly to visit their friends and relatives.

In general, Aborigines form a core stable population group in Alice Springs. Only about 12 per cent of the town adult Aboriginal residents and 9 per cent of the town-camp adult residents are certain that they will out-migrate during the next two years. A clear-cut negative relationship between residence duration and the likelihood of out-migration has been observed.

While in the Northern Territory Aborigines are more stable than the total population no matter the length of residence, in Alice Springs, although Aborigines are less stable over a shorter period of one year, they are more stable over a longer period of five years. Generally, in Alice Springs, as well as in the Northern Territory as a whole, Aborigines are more mobile in intrastate movement and the total population is more mobile in interstate movements irrespective of the length of the reference period.

Chapter 8

Social, Cultural and Economic Characteristics of the Aboriginal Population of Alice Springs

8.1 Introduction

Aboriginal people have always lived in the environs of the place now known as Alice Springs. As a result of the historical factors described earlier in this thesis, it has been argued that today there are two socio-cultural and economically distinctive Aboriginal groups in Alice Springs (Heppell and Wigley, 1981:9-10). The first group consists of those who found it appropriate to live an urban lifestyle that in many ways resembles that of the non-Aborigines. Most of the town Aboriginal residents are more or less integrated into the wider society but they identify themselves as Aborigines and many of them have kept their contact with the mainstream Aboriginal population living in close community groups in the town camps. The second group comprises those for whom living in town among non-Aboriginal families was neither proper nor possible. They form communities maintaining traditional ties and obligations to their traditional tribal areas beyond Alice Springs. The second group also includes a large number of Aborigines of mixed descent.

Previously because of the unavailability of separate data for town residents and town-campers it was impossible to make a close examination of the extent of the differences, which have been claimed to exist, in the socio-cultural and economic characteristics of the two groups. While ABS population census figures provide aggregate data for the Aboriginal population of Alice Springs irrespective of place of residence, town camps population surveys and censuses provided data only about the town campers. Thus, by providing for the first time separate tabulations of data for the town residents and town-campers based on results of a household survey conducted during April-June 1987 in Alice Springs town and town-camps, to which I

refer throughout this and other chapters as 'the survey', it becomes possible to compare the socio-cultural and economic characteristics of the two sub-groups of the Aboriginal population of Alice Springs.

Furthermore, a study of Aboriginal demography of Alice Springs would not be complete or even meaningful without a comprehensive knowledge of the socio-economic and cultural setting of the population under study and without placing the demographic variables in their proper socio-economic, cultural and historical context.

8.2 Languages

Historically, for most of the time Aboriginal people of Central Australia lived, under the ecological pressure of the environment, in small family groups over a very large area. These small groups used to gather, and still continue to do so, for religious ceremonial occasions. The small groups belonged to lineages or clans which in turn were associated with other clans and formed large language groups. Sometimes these large language groups are called 'tribes'¹. More than 147 Aboriginal languages and dialects are spoken in the Northern Territory (Milliken, 1976:239). The Aboriginal people of Central Australia, with Alice Springs located in its centre, belong to a number of main language groups namely: Arrernte, Luritja, Kaytetye, Warlpiri, Pintupi, Anmatyerre, Pitjantjatjara, Warumungu and Alywarre. Geographically, as Map 3.3 in page 252 shows, the Arrernte language group extends from the centre to the east. The Luritja spreads from Areyonga in the west to Alice Springs in the centre and then extends to Finke in the south. The Kaytetye group is located in the north; Warlpiri country lies to the north-west; Anmatyerre extends from the centre to the north-west, Pintupi to the west, Pitjantjatjara to the south-west and Warumungu and Alywarre lie to the North-East of Alice Springs.

Alice Springs, with its permanent sources of water, for centuries formed an important place for Aboriginal people of the centre and surrounding areas, especially for the Arrernte. For the

¹ For a discussion about the definitions of language and tribe and their differences see Dixon, R.M.W., 1976:232-236.

historical reasons discussed earlier Aboriginal people from different parts of Central Australia moved into Alice Springs so that today quite a number of Aboriginal language groups are living in Alice Springs. The survey results show that in the town-camps 40 per cent of the people reported Arremte, 11 per cent Luritja, 10 per cent Warlpiri, 8 per cent Pitjantjatjara and 6 per cent Anmatyerre as their original languages.

It was found that nearly 95 per cent of town Aborigines reported English as their best language. This is not unexpected since the majority of the Aborigines who currently live in the town proper are those who grew up in Alice Springs town or elsewhere in other urban centre institutions under assimilation policies, and returned to Alice Springs as their home town or in search of a job.

Analysis of survey data about places of last previous residence of persons aged 12 years and over reveals that out of 783 life-time migrants to the town-camps about 6 per cent previously lived in the town itself. After the establishment and development of town-camps these people found it more convenient to move to the camps and live with their own people rather than living in isolation among non-Aboriginal families in the town. Thus, the number of those Aborigines in the camps who speak only English or among whom English is their best language increased. The survey data indicate that 23 per cent of the camp adult residents reported English as their best language.

It was also found that people belonging to various language groups are not evenly distributed among the town-camps. With the exception of the Arrente group, people in general, belonging to a specific language tended to gather in one or a few particular camps. The majority of people in camp number 1 are Warlpiri speakers and this is why the camp was known as 'Warlpiri camp'. Most Anmatyerre speakers are concentrated in camps no. 5, 8 and 17. Kaytetye speakers are mostly in camps 4 and 8. People belonging to the Pitjantjatjara group are largely grouped in camp no.16. Similarly, Luritja speakers, who are the third largest group in the camps

are now living in camps 6 and 11. Although we find Arrernte speakers in most of the camps, they are largely concentrated by size order in camps 8, 15, 5, 6 and 25.

Even the selection of the camp locations around the town is in relation to the direction of the particular tribal areas. Because Alice Springs is geographically located in Arrernte country the Arrernte speakers are distributed among most of the camps and not concentrated in particular locations. Other Aboriginal language groups mostly camped in relation to the direction of their traditional areas. (See Map 3.3 for locations of Alice Springs town camps.) For example, camp no. 1 is located to the north west and camp 20 and 21 in the west of the town and as we saw earlier the dominant language of the people in these camps was Warlpiri. In camps 2, 4, 5, which are located to the northeast and 8, 14, 15, 24 and 25 which are located to the east of the town, the dominant Aboriginal language is Arrernte. Most of the people in camp 11 in the southwest of the town speak Luritja. Similarly the majority of Pitjantjatjara people are in camp 16, which is located to the southwest of the town.

8.3 Education level

Changes in the mean age at marriage, family size, employment in non-agricultural sectors and other variables have been found to be strongly associated with a population's education status². It can be argued that lack of appropriate formal education, which is the case with many Aboriginal people, is a major obstacle to socio-economic development and self determination of the Aboriginal people in Australia.

In this section, an overview of the education status of the Aboriginal people of Alice Springs and, where possible, its changes over time are presented. The effect of education on other socio-economic and demographic variables of the town and town-camps populations is examined throughout this chapter.

² For a discussion about the relationship between education status and fertility, marriage, health and mortality and employment refer to United Nations, 1973: 98-99, 149, 315.

Survey data suggest that more than 15 per cent of Alice Springs town-campers aged 5 years and over have never been to school, 52 per cent have attended only primary school, and only 26 per cent have attended secondary school. The situation is better in town where only 3 per cent have never been to school, 34 per cent have received primary education, and 58 per cent have attended secondary school although only about 1 per cent have completed secondary education.

Evaluation of the survey data suggests that roughly 91 per cent of town and 79 per cent of town-camps Aboriginal children 6 to 12 years old have been to primary school. Similarly, while 92 per cent of town persons aged 13 to 18 had attended secondary schools the figure is only 49 per cent for the town-campers. Thus, a sharp decline occurs in the secondary level attendance for the town camps children while in the town population in general, those who complete primary levels usually attend secondary school as well.

Comparison of town-camp data with data obtained from three selected camps in 1979 (Beck, 1985:77) reveals a noticeable improvement in the education status of the town campers over the last eight years. For example, the percentage of those who have never been to school dropped from 29 to 15 in the total population. Similarly, the percentage of children attending schools increased from 28 in 1979 to 65 in 1987. The figure for 1987 could be a somewhat higher estimate in the sense that it includes those children who may have attended school at some time and then stopped going to school. However, in spite of a possible over-estimation in the 1987 figure, the data still indicate a major improvement in the level of school attendance of the town-camps children.

Among other things, the establishment in 1983 of the Yipirinye School, which is an Aboriginal-run school, and in 1973, of Yirara College which is an Aboriginal boarding school run by the N.T. Department of Education, has greatly expanded the education facilities for the Aboriginal children of Alice Springs and surrounding areas. Detailed statistics about education levels of the population by age groups are presented in Appendices.

8.4 Housing conditions and facilities

8.4.1 Housing delivery system

Generally speaking, Alice Springs residents have access to a housing delivery system which includes private houses, the Northern Territory Housing Commission (NTHC) houses, employee houses supplied by the government and private sector, institutional housing, and camp housing.

The private sector which contains houses belonging to individuals and private firms constitutes the largest number of the town houses. Aboriginal people of Alice Springs, owing to very low employment status and dependency on the welfare system for survival, have little access to this source of housing because of the high costs involved in renting or, in rare cases, buying them.

The Northern Territory Housing Commission is the second largest supplier of accommodation in the town. It owns about 30 per cent of houses and flats in the town. Aboriginal families constitute a major customer group for the Housing Commission houses, of which nearly 20 per cent are inhabited by Aboriginal people (Drakakis-Smith, 1981:43) who had prior 'suitable experience' in living in conventional houses.

Due to the low Aboriginal employment status, employee houses are of limited availability to the Aboriginal people. There is little immediate prospect for any change in this because no dramatic improvement in Aboriginal employment is expected in the near future.

Institutional housing consists of Aboriginal hostels, which accommodate temporary and semi-permanent Aboriginal persons and families, and are run by Aboriginal Hostels Limited. Some Aboriginal families who want to prove to the NTHC that they are capable of living in a conventional house are meanwhile living in the hostels.

A major component of the housing delivery system for the Aboriginal people in Alice Springs is houses built in the town camps and run by the Housing Association of each camp. Each Association is an incorporated body which applies for and holds a Special Purpose Lease for that camp. All Housing Associations (18 in 1987) are incorporated into one single council, the Tangentyere Council. The Council designs and builds houses for all town leases and then rents them at nominal rates to the camp residents. In addition to the standard conventional houses, the Tangentyere council also builds tin sheds for the benefit of camp families before standard houses become available to all the applicants.

The Tangentyere housing program started in 1976 in Mt. Nancy camp, and by June 1987 the program had been extended to 16 camps in and around the town. This program has brought a considerable improvement to the general housing condition of town-campers.

8.4.2 Dwelling types

The results of the survey suggest that about 66 per cent of the households in the camps live in standard housing units, 30 percent live in improvised dwellings consisting of tin sheds, tents, humpies and other dwellings, and the remaining 4 per cent live in the open without any type of shelter (see Table 5-1).

Relative to the 1960s and 70s when people in the camps usually lived without shelter or in improvised owner-built shelters of scavenged material (Heppell and Wigley, 1981; Drakakis-Smith, 1981), the present standard housing units and tin sheds built by the Tangentyere Council with assistance from other sources are a major improvement. In the town proper the sample contains only one household living in a caravan. The remainder were living in standard family houses or flats.

Table 8-1: Aboriginal households by dwelling type, in town and camps Alice Springs: May, 1987.

Places of Residence	House/ Flat	Average Person Per Room	Tin Shed	Tent Humpy Other	Total Impro- vised Dwellings	No Shel- ter	All
Town (Sample)	182	1.2	0	1	1	0	183
Camp No. 1	5	2.6	2	0	2	0	7
" 2	2	1.7	0	0	0	0	2
" 3	1	0.5	0	1	1	0	2
" 4	12	2.9	1	0	1	0	13
" 5	14	3.1	5	0	5	0	19
" 6	9	3.4	1	0	1	0	10
" 7	5	1.7	6	0	6	0	11
" 8	15	3.1	2	0	2	0	17
" 9	10	1.6	3	0	3	0	13
" 10	3	2.6	0	0	0	0	3
" 11	10	2.1	2	0	2	0	12
" 12	5	2.0	0	0	0	0	5
" 13	9	3.3	0	0	0	0	9
" 14	4	3.6	0	0	0	0	4
" 15	5	3.1	2	0	2	0	7
" 16	0	0.0	10	0	10	0	10
" 17	3	2.3	1	0	1	0	4
" 18	0	0.0	1	0	1	0	1
" 19	0	0.0	4	0	4	0	4
" 20	0	0.0	0	2	2	1	3
" 21	0	0.0	0	1	1	1	2
" 22	0	0.0	0	0	0	2	2
" 23	0	0.0	0	0	0	1	1
" 24	0	0.0	0	0	0	1	1
" 25	0	0.0	5	2	7	0	7
All Camps	112	2.8	45	6	51	6	169
Total	294	-	45	7	52	6	352

The survey results also indicate that in the town camps the average number of persons per room in the standard dwellings is more than twice as high as it is among the town Aborigines. The survey shows that in the town on average there were only 1.2 persons per room while in the camps there were on average 2.8 persons per room in the standard dwellings (See Table 8-2).

8.4.3 Crowding

As we have seen in the earlier section, Aboriginal households in Alice Springs are on average large in size no matter whether they are in the town or in the town-camps. But, being

a large household does not necessarily imply that the household is also crowded. To assess the crowding aspect of the Aboriginal dwellings we should look at the size of the households and the number of rooms available to dwelling residents as in Table 8-2. Here I do not talk about those households lacking accommodation or living in shelters other than standard housing units or even tin sheds.

The table shows that relatively larger households are living in larger houses (compare column 1 and column 13), both in the town and in the camps. But it can also be seen that dwellings with more rooms and more people in them are more crowded (column 11). The average number of persons per room increases with household size.

If we decide that on average the minimum requirement for an Aboriginal household to live comfortably without disruptive conditions caused by crowding, is 2 persons per bedroom, then with an average figure of 1.7 persons per bedroom, Aboriginal dwellings in the town sample are not considered crowded. Still, there are 34 households in the sample with more than 2 persons per bedroom which accounts for about 19 per cent of all interviewed households in the town. By this criterion, with an average of 4.4 persons per bedroom, Aboriginal dwellings in the town-camps can be classified as crowded. There are 133 dwellings with more than 2 persons per bedroom which is about 97 per cent of all households in standard dwellings plus tin sheds in the camps.

But if we decide that under the prevailing socio-economic conditions of Alice Springs Aboriginal communities, the concept of 'bedroom' is somewhat irrelevant, at least for the town camps, and therefore, not only bedrooms but all of the rooms in a dwelling excluding the kitchen, toilet, bathroom and laundry should be considered in calculating person/room ratios, then there are 12 Aboriginal dwellings in the town sample (7 per cent of all interviewed households in the town) and 82 dwellings in the camps (60 per cent) with more than 2 persons per room.

Table 8-2: Aboriginal households by household size and number of rooms, Alice Springs town (sample): May 1987

Size (Persons)	Dwellings by number of rooms					6+	House- holds	Persons	Rooms	Persons/ Room	Persons/ Bedroom	Rooms/ household
	1	2	3	4	5							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	0	6	2	1	1	0	10	10	27	0.4	0.6	2.7
2	1	1	12	4	0	0	18	36	55	0.7	1.0	3.1
3	0	0	9	16	1	1	27	81	104	0.8	1.1	3.9
4	1	0	5	30	1	0	37	148	141	1.1	1.4	3.8
5	0	0	3	31	2	0	36	180	143	1.3	1.7	4.0
6	0	0	0	16	2	0	18	108	74	1.5	1.9	4.1
7	0	0	0	9	4	0	13	91	56	1.6	2.1	4.3
8	0	0	0	4	5	0	9	72	41	1.8	2.3	5.0
9	0	0	0	3	2	0	5	45	22	2.1	2.6	4.4
10	0	0	0	2	1	0	3	30	13	2.3	3.0	4.3
11	0	0	0	0	0	0	0	0	0	0	0	0
12+	0	0	1	2	1	0	4	46	16	2.9	3.8	4.0
All	2	7	32	118	20	1	180	847	692	1.2	1.7	3.8

Table 8-2 (cont.): Aboriginal households by household size and number of rooms, Alice Springs town-camps: May 1987

Size (Persons)	Dwellings by number of rooms				Households			Persons	Rooms	Persons/ Room	Persons/ Bedroom	Rooms/ household
	1	2	3		4	5	6+					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	5	2	0	0	0	0	7	7	9	0.8	3.5	1.3
2	7	1	1	2	0	0	11	22	20	1.1	2.4	1.8
3	2	5	3	1	0	0	11	33	25	1.3	2.4	2.3
4	1	0	2	0	1	0	4	16	12	1.3	2.0	3.0
5	6	4	5	5	2	0	22	110	59	1.9	3.0	2.7
6	1	7	4	4	0	0	16	96	43	2.2	3.6	2.7
7	2	3	3	4	1	1	14	91	44	2.1	3.0	3.1
8	0	1	1	4	0	0	6	48	21	2.3	3.2	3.5
9	2	1	3	3	1	0	10	90	30	3.0	4.5	3.0
10	1	1	6	0	0	0	8	80	20	4.0	6.2	2.5
11	2	1	2	1	0	0	6	66	14	4.7	8.3	2.3
12	1	1	1	1	1	1	6	72	22	3.3	4.8	3.7
13	0	0	1	1	0	2	4	67	19	3.5	4.5	4.8
14	0	0	0	1	0	0	1	14	4	3.5	4.7	4.0
15+	0	1	3	5	2	0	11	215	41	5.2	7.2	3.7
All	30	28	35	32	8	4	137	1072	383	2.8	4.4	2.8

By any definition the majority of Aboriginal dwellings in Alice Springs town-camps are crowded. This situation, among other things, adversely affects the development of children (Gray, 1987:13). At the minimum there is a need for 153 more rooms in the town camps in order to bring the overall room density ratio to the minimum level of 2. If we consider bedroom density instead of overall room density, there will be a need for an additional 290 bedrooms. Even if this requirement is met the average person/room or person/bedroom ratio in the town camps will still be higher than that of town Aboriginal dwellings.

Building additional houses to provide more rooms will not solve the crowding problem if the size distribution of new houses is the same as in the existing houses. The housing requirement is closely linked with household type. We have studied in Chapter 6, subsection 6.3.3 the types of households along with mean household size of each type (see Table 6-17). In the Table 8-3 the current size distribution of dwellings in town camps, derived from the occupant responses to the question on the number of rooms in the dwellings, is compared with the pattern needed on the basis of mean household sizes of various household types and their frequencies.

Table 8-3: Comparison of the existing and required distribution of standard dwellings by size

Dwelling size	Existing pattern% (1)	Required pattern% (2)	Difference (1)-(2) (3)
1-2 bedrooms	59	20	39
3 bedrooms	30	52	-22
4 bedrooms	7	16	-9
5+ bedrooms	4	12	-8
All	100	100	

Column 3 of Table 8-3 shows that the current distribution of dwellings by various sizes in Alice Springs town-camps does not match the pattern required. There are far more small units of 1-2 bedrooms and far fewer medium sized units of three bedrooms than are needed, and there is a need for more units of 4, 5 or more bedrooms than are available now.

This discussion leads us to conclude that Aboriginal households, especially in Alice Springs town-camps, are generally large and most dwellings in town-camps are very crowded; nearly 300 more bedrooms are required in the town camps to bring down the bedroom density to an acceptable norm. The house building program, in regard to the sizes of the dwellings, should be modified so as to change the existing size distribution of the dwellings in order to meet the required pattern.

8.4.4 Access to facilities

The survey shows that in the camps 61 per cent of the dwellings were supplied with electricity, while in the town nearly all dwellings were using electricity at least for lighting purposes.

According to the survey 82 per cent of the households in the town camps had access to tap water though 20 per cent of them are using common taps away from their dwellings. The rest of the households obtain their water from tanks and drums. In contrast all the households surveyed in the town reported their source of water as private taps in the dwellings.

The survey also provides information about the type of toilet used by the Aboriginal households in both town and the town camps. About 69 per cent of the households in the camps have access to flush toilets, either private or common. In the town households covered, only one happened to live in a caravan and did not have access to a flush toilet.

The data obtained during the survey about the tenure status of the dwellings suggest that about 90 per cent of those town households who responded to this question rent their dwellings and only 10 per cent own them or are buying them. In the camps all houses and tin sheds are rented.

8.4.5 Possession of household goods

The survey also collected information about the possession of certain selected household goods by Aboriginal households. A summary of the results is presented in Table 8-4.

Table 8-4: Households by type of possessions, town and town camps. (Percentage of total households)

Household goods	Town	Town camps
Motor Vehicle	68.3	30.1
Motor Cycle	18.3	1.8
Bicycle	43.2	11.2
T.V. set	91.3	38.5
Radio, Cassette player	83.6	40.2
Record player	59.0	4.7
Video	77.0	20.7
Washing machine	91.3	43.8
Electric or gas stove	97.3	50.9
Refrigerator	96.7	41.4
Vacuum cleaner	54.1	4.7
Fan	37.2	27.2
Airconditioning	96.7	7.1
Hunting gun	0.1	4.7
Furniture	97.3	41.4
Carpet	71.2	10.7
HGA Score*	67.7	23.7

*Household Goods Accessibility Score, maximum value 100.0, minimum 0.0.

As is evident from Table 8-4 Aboriginal households living in the town have more access to household goods than households living in the town camps. This can be presented more clearly by a single index which I call Household Goods Accessibility Score (HGAS), presented in the last row of Table 8-4, which combines the percentages of the households having access to various goods, in this case 16. The score¹ (HGAS) is for the town nearly three times that of the town campers. It is interesting to note that out of 16 goods listed the only one to which town campers have more access than households living in the town is the hunting gun. Although response to this question was, as expected, poor, it does reflect the fact that town campers go hunting more frequently than do town residents.

8.5 Economic activities

Pre-contact Aboriginal societies of Central Australia were characterized by a hunting and gathering mode of production. The social relations of production were governed by a well developed kinship system and a nomadic existence. As Godlier (1975:14) puts it the kinship

¹ HGAS= $\frac{Sp}{P} \times 100$, Where Sp=summation of the percentages for all items and P being the maximum score if all the households have all of the items 'number of items or N * 100'.

system determines 'the totality of the production forces and of the social relations of human beings with each other and with nature that depend on the level of the material condition of existence'. Economic resources, namely the geographical environment and knowledge of the resources within a circumscribed geographical area, and simple tools for hunting and gathering food, constituted the means of production.

The Aboriginal economy of Central Australia was based on the ecosystem of desert and semi-arid steppes (Lawrence, 1971:252-3) which requires small but mobile groups of hunters and gatherers. Thus, the groups possessed few material possessions (Sahlins, 1972). The techniques of production were relatively simple permitting production usually only for day to day needs. Surplus food and materials were, therefore, not created. This in turn, precluded appropriation and control by a minority group. The knowledge of land and its resources which was the privilege of the elderly people was transferred to offspring and access to land and its resources was shared. The economic life was, therefore, governed by specific and limited objectives (Sahlins, 1972:17). The division of labour between the sexes was clear-cut, the man primarily providing the meat and the woman the vegetables, though the latter also participated in hunting for small game.

Though an extensive ceremonial exchange system operated, none of the domestic groups were economically dependent on such trade. The introduction of cattle and the establishment of pastoral stations in Central Australia which started a century ago, meant the beginning of the destruction of the traditional Aboriginal economy based on the nomadic coexistence of hunting and gathering. The loss of land and its main and scarce water resources, taken by the pastoralists (Heppell and Wigley 1981:5), removed Aborigines from the very means of production of their economy.

The dependence of the Central Australian Aborigines for survival on the rations of the pastoralists in return for their cheap labour and on the welfare services of the government and missions developed soon after the introduction of the cattle industry into the area.

Many men and women worked with livestock and as domestic servants until 1968 when the introduction of the award or equal wage system for the same job for Aborigines and non-Aborigines resulted in the virtual expulsion of many of the Aborigines from the pastoral stations (Drakakis-Smith, 1981 :42). It was then that many Aboriginal families moved to Alice Springs to join the so-called 'fringe' campers of the town.

8.5.1 Economically active population

'Economically active population comprises all persons of either sex who furnish the supply of labour for the production of economic goods and services during the time-reference period chosen for the investigation' (Shryock and Siegel, 1971:336). This is the definition provided by the United Nations Secretariat. According to this definition both persons employed and those unemployed but seeking jobs are included in the economically active population.

By the above definition the number of Aborigines economically active, or in other words labour force participants, in Alice Springs town camps is 410 persons of whom only 98 were employed while 312 were unemployed. The number of economically active Aborigines in the town sample was 324 of whom 247 were employed and 77 were unemployed but seeking jobs. Using these statistics the Crude Activity Rate, which represents the number of economically active persons as a percentage of the total population, for Alice Springs town Aborigines is calculated at 38 per cent and for the town campers is 34 per cent. It can be seen that the crude activity rate is slightly higher for the town residents than for the town campers because the number of persons employed is much greater for the town residents. Detailed statistics on the economic activities of the population are in Appendices 8 to 13.

Since children and elderly people, who are physically unable to work, are included in calculating crude activity rates, a more refined rate would be the labour force participation rate which is simply the activity rate for persons of working age. The labour force participation rates for the Aboriginal population of Alice Springs town and town camps are 63 per cent and 55

per cent respectively. These figures suggest that on average over half of the Alice Springs Aborigines of working age are economically active.

Age-sex-specific labour force participation rates provide more detailed and specific information than do the crude or general activity rates. Figure 8.1 provides a graphical representation of the labour force participation rates for the Aboriginal population of Alice Springs, based on the survey results.

Figure 8.1: Labour force participation rates by sex

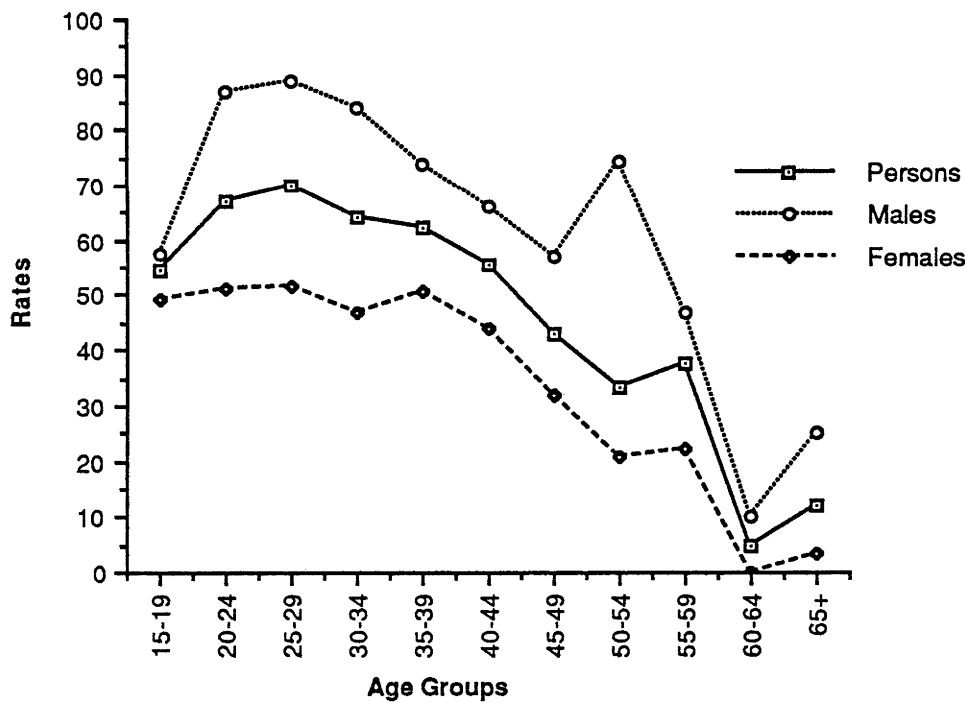
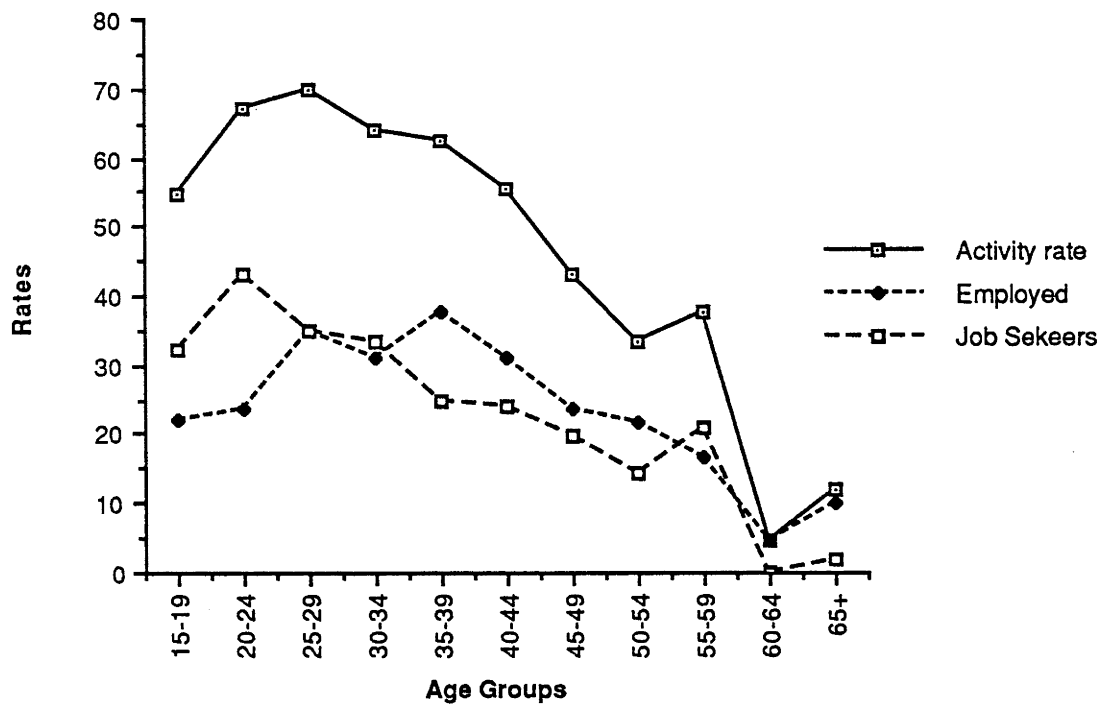


Figure 8.2: Labour force participation rates by employed and job seekers: Alice Springs Aborigines



As can be seen from Figure 8.1, the age-specific labour force participation rates reach their highest levels in age groups 20 to 24 and 25 to 30 for both the sexes, but the rates for males are very much higher than those for females.

Normally for males between 25 and 54 years old, there is universal participation in the labour force in most of the world's populations; variations occur at ages above and below this range (United Nations, 1962:10-28). But, as is clear from Figure 8.1, the rates do not exceed 89 per cent of the total economically active population in the case of the study population. For the females the rate, at best, is not more than 52 per cent. The reason for lower participation rates for the Aboriginal population of Alice Springs could be the fact that people were not actively seeking jobs because they believed that no jobs were available for them.

Figure 8.2 provides the relative share of employed persons and those who are seeking jobs in the labour force participation rates for both sexes. It is obvious from Figure 8.2 that more than half of the labour force participants are without jobs. In age groups 25-29 and 30-34, where the highest employment rates were expected, the rates of employed persons and job seekers are equal.

8.5.2 Employment Status, occupation & industries

As was indicated earlier by other researchers (Altman, 1978; Altman and Nieuwenhuyse 1979) about the low participation of the Aborigines in the European economy, the town campers in Alice Springs also have only a minor involvement in the European employment market. The data from the household survey show that less than a quarter of the town-camp Aboriginal labour force is employed. As discussed later in this section, little of this is in the private industrial employment market but most is in the semi-governmental community and public sectors.

The employment status of the population derived from survey results is summarized in Table 8-5.

Table 8-5: Employment status, Aboriginal population: Alice Springs, 1987

Place and sex	Percentages of economically active	
	Employed	Unemployed (seeking job)
Town (sample):		
Both sexes	76.2	23.8
Males	74.9	25.1
Females	78.0	22.0
Camps:		
Both sexes	23.9	76.1
Males	19.8	80.2
Females	30.9	69.1

The data in Table 8-6 indicate that while 92 per cent of town employed Aborigines are holding full-time jobs the figure is only 69 per cent for the town-camps employed persons, with 26 per cent of them working in part-time positions; the rest have only casual jobs.

Table 8-6: Employed persons by employment type, town and town-camps

Employment type	Town		Town-camps	
	Number	%	Number	%
Full-time	211	92	66	69
Part time	9	4	25	26
Casual	10	4	5	5
All	230	100	96	100

The trend of employment status of the town-campers since 1981 is not satisfactory. Comparing the data obtained during previous camp surveys (Dillon and Young, 1985:32) on the percentages of the adults employed in previous years with the results of the 1987 household survey of town-camps, showed (Table 8-7) somewhat similar employment status for at least seven years.

Table 8-7: Adult employment trend:1981-1987,Alice Springs Town-camps

Years	Per cent	Sample size
	Adult employed	(N)
1981	13.6	605
1983	12.9	544
1985	14.1	686
1987	12.9*	743

* This figure is simply the percentage employed of the total number of persons aged 15-64. It is calculated to be comparable to figures for years 1981, 1983 and 1985. Thus, it is not the employment rate that is the percentage employed persons of the total labour force, as presented in Table 8-5.

The survey results suggest that while most of the female workers are in the clerical and professional related occupations (such as health workers) the majority of male workers are involved as landscapers and labourers especially in construction for the town camps. The data also suggest that about 54 per cent of workers were employed by the community organizations such as the Tangentyere Council Inc., Central Australian Aboriginal Congress, the community educational organizations such as the Institute for Aboriginal Development and special schools and the Central land council. About 11 per cent of the workers were employed by the commonwealth, state or local government; the share of local government in employing Aboriginal workers seems to be marginal. The Tangentyere Council alone employed 16 per cent of all employed persons.

Table 8-8: Age-pattern of employment and unemployment, Alice Springs town and town-camps (Percentages)

Broad age groups	Population		Employed		Unemployed	
	Town	Camps	Town	Camps	Town	Camps
15-24	39	32	30	30	65	40
25-34	28	28	35	35	21	35
35-44	19	16	23	22	9	16
45-54	9	14	9	10	4	8
55+	5	10	3	3	1	1
15+	100	100	100	100	100	100

Analysis of the data on unemployment and job-seekers, suggests that in contrast to the age-pattern of employment (Columns 3 and 4 in Table 8-8), the unemployment data show a quite different age-pattern between the town Aborigines and those Aborigines who live in the town-camps. As the last two columns in Table 8.8 show, while 65 per cent of town job-seekers

are concentrated in the young-adult ages of 15-24 years, the bulk of the town camp job-seekers are aged between 25 and 44 years and only 40 per cent of the town-camp job-seekers are aged 15 to 25. This suggests that while the majority of town Aboriginal job-seekers are young adults, in the town camps relatively more mature people are looking for a job.

The difference between the age-structures of the two populations, as shown in Columns 1 and 2 of Table 8-12, are not likely to account for the differences in the age-pattern of unemployment between town and camp Aborigines.

Table 8-9: Percentage distribution of employed and unemployed 'job-seekers' by marital status

Employment status and places	Ever-married	Never-Married	Unknown	All
Employed:				
Town(sample)	71	29	0	100
Town-camps	86	13	1	100
Unemployed:				
Town(sample)	49	43	8	100
Town-camps	70	27	3	100

Examination of data on employment status differentials by marital status and age, as depicted in Tables 8-9 and 8-10, indicates that 49 per cent of town Aboriginal job-seekers were ever-married and as is shown in Table 8-14, 54 per cent of them are in age group 15 to 24 years and only 35 per cent are in mature ages of 25 to 44 years. While 70 per cent of the town camp job-seekers were ever-married (see last row of Column 1 in Table 8-9), only 30 per cent of them are aged between 15 and 24 years and a large figure of 60 per cent are in mature adult ages of 25 to 44 years.

Table 8-10: Age-pattern of ever-married persons by employment status in Alice Springs town and town-camps

Age groups	Employed		Unemployed (job-seekers)	
	Town	Town-camps	Town	Town-camps
15-24	14	25	54	30
25-34	41	41	22	40
35-44	30	22	13	20
45-54	12	9	8	8
55+	3	3	3	2
15+	100	100	100	100

Thus, more young-adult job-seekers are found in the town than the town-camps because a higher proportion of them have already formed their own families compared to the town campers in the same ages.

The survey data indicate that education has a very strong bearing on the employment of the Aboriginal people in Alice Springs, among both town residents and town-campers. With the exception of only one person whose education status was not known, as Table 8-11 reveals, almost all of the employed Aborigines from the town sample had some level of formal education; 72 per cent of them had attained a secondary level of schooling.

Table 8-11: Employed persons by education levels and age, Aboriginal population, Alice springs town and town camps. (Data in brackets belong to town camps.)

Education levels	Age groups					
	15-24	25-34	35-44	45-54	55+	15+
Primary	0 (10)	1 (13)	14 (10)	13 (6)	3 (1)	31 (40)
Attended secondary	73 (13)	78 (17)	34 (6)	8 (1)	3 (2)	196 (39)
Completed secondary	1 (1)	1 (1)	0 (2)	0 (0)	0 (0)	2 (4)
Attended higher	0 (4)	1 (1)	3 (0)	0 (0)	0 (0)	4 (5)
Completed higher	1 (1)	2 (1)	4 (0)	0 (1)	0 (0)	7 (3)
Other.	0 (0)	2 (0)	1 (0)	1 (0)	1 (0)	5 (0)
Never been to school	0 (0)	0 (1)	0 (1)	0 (2)	0 (0)	0 (4)
Unknown	0 (0)	1 (0)	0 (0)	0 (0)	0 (0)	1 (0)
All	75 (29)	86 (34)	56 (19)	22 (10)	72 (3)	46 (95)

As Table 8-11 shows, 96 per cent of the town-camp employed persons also have some schooling, though the proportion of those who had secondary schooling is very much lower than among the town residents and is almost equal to those who only attended primary school.

If we look at the unemployment differentials by education, we will find that those who are looking for jobs are mostly educated persons. This is true for both the town Aborigines and the town-camps residents. The data in Table 8-12 reveal that while only 8 per cent of town Aboriginal job-seekers have never been to school, in the camps about 13 per cent of job-seekers have never gone to school and a large majority, 87 per cent, have had some level of education.

Table 8-12: Job-seekers by education levels and age, Aboriginal population, Alice springs town and camps. (Data in brackets belong to town camps.)

Education levels	Age groups					
	15-24	25-34	35-44	45-54	55+	15+
Primary	4 (60)	2 (50)	3 (32)	0 (11)	1 (0)	10 (153)
Attended secondary	44 (45)	12 (34)	0 (7)	1 (2)	0 (0)	57 (88)
Completed second.	0 (6)	0 (3)	1 (1)	0 (1)	0 (0)	1 (11)
Attended higher	0 (3)	1 (3)	0 (1)	0 (0)	0 (0)	1 (7)
Completed higher	0 (1)	0 (0)	0 (1)	0 (0)	0 (0)	0 (2)
Never been to school	1 (4)	1 (14)	2 (7)	2 (9)	0 (4)	6 (38)
Unknown	0 (0)	0 (1)	0 (0)	0 (0)	0 (0)	0 (1)
All	49 (119)	16 (105)	6 (49)	3 (23)	1 (4)	75 (300)

It is obvious from the above analysis that labour force participation of the Alice Springs Aboriginal population is strongly related to education in a positive way. Not only are almost all currently employed persons educated, but those who are looking for jobs are also mostly educated persons.

8.5.3 Sources of income

Naturally, with the lack of sufficient job opportunities for the Aboriginal people in Alice Springs and other parts of Central Australia, Social Security Benefits have become the principal source of cash income for the people. The survey data reveal that 50 per cent of the interviewed adult population of 16 years and over in the town and 73 per cent in the town-camps receive some type of Social Security Benefits. In the town 46 per cent have income from employment while only 13 per cent of town-campers receive wages. It should be mentioned that figures regarding the receivers of welfare money and wage earners are not exclusive. This is because 23 per cent of those who receive Family Allowance in the town are also employed and have wage income. In the camps, only 2 per cent of those who receive Family Allowance are employed but some of those who have casual and temporary jobs are also eligible for the

Social Security Benefits. Table 8-13 provides detailed information about the types of Benefits received by the people.

Although the Aboriginal population do not participate in a major way in the production and service sectors of the Alice Springs economy they do form an integral part of the town's economy. They participate directly through the utilization and consumption of services and goods: major industries that benefit from direct Aboriginal spending of income are transport (e.g. taxis), and supermarkets. The building industry also benefits largely from investments in the Aboriginal housing programs (Drakakis-Smith, 1980:440-441). Thus, Aboriginal people, as a sizable consumer group, make a single large demand source for the retail trade in the town.

Table 8-13: Aboriginal persons 16 years age and over receiving Social Security Benefits by types of benefits

Types of Benefits	Town (sample)	Town-camps
Unemployment Benefits.....	67	273
Unemployment Benefits and Family Allowance.....	2	23
Old Age Pension.....	5	68
Old Age Pension and Family Allowance.....	2	3
Old Age Pension and Invalid Pension.....	-	1
Invalid Pension.....	12	41
Invalid Pension and Family Allowance.....	3	2
Invalid Pension and other types.....	1	-
Supporting Parents Benefit.....	4	33
Supporting Parents and Family Allowance.....	46	27
Special Benefit.....	1	11
Special Benefit and Family Allowance.....	1	-
Widows Pension.....	4	14
Widows Pension and Family Allowance or Unemployment Benefit or Old Age Pension.....	3	3
Sickness Benefit.....	3	35
Sickness B. with Family Allowance.....	1	1
Family Allowance.....	92	26
Family A. with Supporting Parents Benefits.....	-	1
Other types.....	3	-
All Benefit types.....	250	562
Total persons 16 years plus.....	502	766

The dependency of the Alice Springs economy on Commonwealth government funding of the Central Australian Aboriginal people (Heppell and Wigley, 1981:47) could be classified as an indirect contribution of the Aboriginal people to the economy of Alice Springs. Commonwealth funds allocated for the improvement of the socio-economic conditions of the Aboriginal people in Central Australia are channelled through some departments of the ~~N.T.~~ Government and through the Department of Aboriginal Affairs which has large multiplier effects in the economy of the area.

A large number of governmental and semi-governmental organizations provide services or operate on behalf of Aboriginal people in the town and in other parts of Central Australia such as the Tangentyere Council, Central Aboriginal Congress, Central Land Council, Northern Territory Department of Health and Community Services, Aboriginal Development Commission, Institute for Aboriginal Development and a number of other organizations. These organizations furnish employment opportunities not only to Aboriginal people but to the wider community of Alice Springs and expand the scope of demand for various sectors of the town economy. The scale of such services in Alice Springs leads some researchers to talk of a reverse economic dependency (Drakakis-Smith, 1980) of the non-Aboriginal population of the town upon the Aboriginal population of the town and surrounding areas. It is estimated that in 1979 about 32 per cent of the town working force owed their jobs to the presence of the Aboriginal people in the area. It has been argued that this figure is a conservative estimate because it did not take into account those firms engaged in the local tourist industry with a turnover of \$32 millions to the centre in 1977-78 (N.T. 'Visitor statistics' mimeo) which heavily emphasized Aboriginal culture and presence in their publicity.

8.6 Summary

In Alice Springs, Aboriginal people live in town and in about 25 town-camps. Five of the camps are 'illegal' without secure lease. In this chapter, general socio-economic and cultural conditions of Aboriginal people in the town and in the town-camps were examined and differentials in socio-economic and cultural characteristics between town and town-camps were distinguished.

The general housing condition of town-campers has improved considerably since 1976; however, there is still a long way to go. Nearly one third live in improvised dwellings and some live in the open. Aboriginal dwellings in the town sample are not considered crowded but the town-camps dwellings can be classified as crowded. More houses of medium and larger sizes, and a redistribution of the existing houses are needed.

Many camp residents have access to facilities such as tap water, flush toilets and electricity, but there are about nine camps without proper living facilities. The household goods accessibility score for the town is three times that of the town campers.

Quite a number of different Aboriginal language groups are living in Alice Springs. In the town-camps Arremte is spoken by more people than other common major languages. Nearly all town Aborigines are commonly English speakers.

Education levels are higher in the town where a majority had some secondary schooling though few had completed secondary school. More campers than town-dwellers had no schooling and the majority of campers had only primary education, but a noticeable improvement has occurred in the educational status of the town campers over the last eight years.

The labour force participation rates are higher for the town than the town camps. On average just over half of the Alice Springs Aborigines of working age are economically active. Participation rates reach the highest peaks in age group 20 to 29 for both sexes but the rates for males are very much higher than those for females. People were not actively seeking jobs because they believed that no jobs were available for them. Less than a quarter of the town camp Aboriginal labour force is employed; the employment rate for the town Aboriginal residents is more than three times that of the town campers. In the town the proportions of employed males and females are closer but in the camps the employed females greatly outnumbered the males. Employment trends are unsatisfactory and have not changed over

the last seven years. The majority of workers were employed by community organizations. While the majority of town Aboriginal job-seekers are young adults, in the town camps relatively more mature people are looking for jobs. The labour force participation of the Alice Springs Aboriginal population is strongly related to education.

Although the Aboriginal population is not making a major contribution to the production and service sectors of the Alice Springs economy they do form an integral part of the town's economy directly and indirectly by providing demand for consumer goods and services and by attracting funds from the Commonwealth Government to the region which in turn enhance the region economy with Alice Spring as its supply centre.

Chapter 9

Summary and Conclusions

9.1 Aboriginal Demography at the National Level

Aborigines constitute about 1.5 per cent of the total population of Australia, unevenly distributed among the states and territories. Owing to the unconformity of the Aboriginal counts in various Australian censuses, the true size and rate of growth of the Aboriginal population has had to be estimated. This problem is compounded by the unavailability of vital statistics, as a result of which it is not possible to arrive directly at an estimate of natural growth rate for the Aboriginal population at the national level. Therefore, one has to rely on indirect estimates or use subnational vital data to estimate vital rates. Based on this procedure the annual natural growth rate of the Aboriginal population for the period 1981-86 has been estimated at about 1.9 per cent.

The size of the Aboriginal population has undergone major changes due to disturbed demographic conditions after the Europeans' settlement in the continent. From an age-old stationary state of about 300,000 to 700,000 persons in 1788, the population declined to a low level of probably about 70,000 in the early 1930s. Then, first from stabilization of family life and later with active medical and welfare intervention, and adaption to changed lifestyle, the process of decline was checked and by the 1950s the process of recovery developed into a sustained growth which continued well into the 1970s and 80s.

Currently most Aboriginal people live in small and medium sized urban centres except in the Northern Territory where the majority still live in rural areas. With relaxation of restrictions on the movements of Aboriginal people from the late 1960s, and changes in working conditions in pastoral stations, many people moved or were moved to urban centres. At the national level the Aboriginal population is less mobile than the total population, while in the Northern Territory

Aborigines seems to be far more stable than the total population of the state, owing to the transient nature of the Territory's non-Aboriginal population.

As in the total population of the country, there are slightly more Aboriginal females than males both at the national level and in the Northern Territory. The total Aboriginal population as well as the Northern Territory Aborigines have young age structures. The median age of the total national population is up to 12 years higher than that of the Aboriginal population. While on average, Aboriginal households are large on the national level (4.6 persons) and even larger in the Northern Territory (5.9 persons) basically the majority at national level (63.3 per cent) do not consist of some extended types. A large proportion (16 per cent) of the Aboriginal households at national level are single-parent (mostly single-mother) households. Mean age at marriage is high for both sexes and increasing, especially among women. On average, females marry 1.4 years younger than males. Marriage is not universal for the Aborigines. About 86 per cent of women eventually marry by the end of their reproductive life. The total fertility rate of the Aboriginal women declined from 3.32 in the period 1976-81 to 2.84 for the period 1981-86, but the level of Aboriginal fertility is still higher than the total fertility rate of the country.

Similarly, while the mortality conditions are improving, as reflected in improvements in expectations of life, the level of Aboriginal mortality, especially in adult ages, is still much higher than that of the total population. On average, Aborigines live about 18 years less than the total population of the country.

9.2 Research Priorities at National Level

The above summary of Aboriginal demographic characteristics at the national level has two main limitations: the problem of the lack of conformity between the census counts of the size of the population during various operations and the unavailability of vital data amenable for analysis of fertility, causes of death and pattern of Aboriginal mortality and dynamics of population change. The conclusions drawn above about Aboriginal fertility and mortality are based on the indirect evidence from census results and some available local pieces of direct evidence which indicate the peculiar fertility and mortality conditions of the Aboriginal sub-group

of the Australian population. This situation invites more attention and detailed analysis which under the present circumstances ought to be carried out on a regional and small scale area basis. Of course our understanding of Aboriginal demography at the national level would be greatly enhanced by looking more closely at such phenomena as patterns of family formation, household characteristics and types, spatial stability and mobility. This is possible only with in-depth studies focused on population sub-groups and linkage of population characteristics and conditions with the historical context of particular geographical area. This is why this study has concentrated on Aboriginal mortality and fertility conditions in Central Australia and been restricted to Aborigines of Alice Springs for a detailed study of other demographic characteristics of the population.

The lack of conformity between census counts is thought to be largely due to an ethnic migration into the Aboriginal population of those who previously did not identify themselves as Aborigines or were not recognized as such by the law. Therefore, the direction of future trends is difficult to anticipate, in view of the subjective nature of the problem. More research is needed to determine the true size of the Aboriginal population at present and at the time of first European contact.

The second limitation, the problem of the unavailability of separate vital statistics for Aboriginal people, seems to be administrative in nature. But it has another dimension, too. In the past, distinguishing Aboriginality in statistics was perceived as being discriminatory. For many the introduction or reintroduction of distinguishing Aboriginality on the statistical forms and registration records seems incompatible with the principle of equality in treatment of all sub-populations in Australian society. But to provide Aboriginal people with specialized and culturally acceptable services, especially with regard to health intervention programs, it is necessary that Aborigines be separately denoted on the statistical and registration forms. There are many reasons for collection and dissemination of Aboriginal births and deaths statistics on a national level. As summarized by Gray (1986:7), these include: providing measures of fertility with the aim of assessing risk factors associated with motherhood; measuring the number of Aboriginal

births with the aim of assessing demographic change in the population base; measuring health status of mothers and children and the outcomes of confinements, in the context of Aboriginal health programs; providing measures of mortality with the aim of assessing demographic change in the population base; through classification of Aboriginal deaths by age, sex and cause, and comparison with population estimates, describing the health problems contributing to Aboriginal mortality patterns; facilitating epidemiological studies of particular health problems. In the absence of Aboriginal birth and death statistics at the national level, I estimated fertility and mortality measures with the aim of serving the above requirements at a regional level.

9.3 A close look at a regional level

9.3.1 Background

Central Australia is a semi-desert arid zone. Though it does not exist any more as an autonomous political administrative unit, it has been defined as such for service delivery and some data collection. Alice Springs serves as the administrative and supply centre for this area.

Aboriginal groups occupied Central Australia for thousands of years, following a nomadic hunting and gathering lifestyle, and were heavily dependent on access to land as the sole source for collection and hunting of food. This was largely altered with the colonization of the area by Europeans.

Subsequent to the crossing of the continent from south to north by Stuart and his party in 1860, European colonization of Central Australia began. A telegraph line was extended from Adelaide to Darwin and settlements at the telegraph stations were established. Stocking of land around waterholes followed, which in more arid parts of the centre, had severe consequences on the human and animal lives of the area and resulted in growing tensions and hostilities between the Aborigines and the settlers. In order to survive, Aborigines had no choice but to adapt to the new circumstances. They started to make use of the settlers and their organizations such as the government and the missionaries as a source of food and shelter in return for their labour at the pastoral stations and abiding by the new order. By the 1920s most of the Aboriginal people

visited pastoral stations or settlements and by the 1930s the only place with no contact or limited contact in central Australia was the southwest Western Desert.

From 1870 to the early 1930s, Europeans settlement displaced many Aboriginal groups and individuals from their land and drastically reduced the size of the Aboriginal population through armed clashes and neglect of the physical needs of those who were forced to abandon their bush life and become inmates of centralized settlements. Many Aborigines were institutionalized and became sedentary, relying largely on the welfare services for survival.

In Central Australia by 1965, in addition to two mission settlements at Hermannsburg and Santa Teresa, there were six government settlements and communities at Jay Creek, Amoonguna, Papunya and Haast Bluff, Areyonga, Warrabri and Yuendumu. These had a combined Aboriginal population of 4,086 persons. The stated objective of these settlements was to house the Aboriginal people in segregated communities, provide them with some employment and medical facilities, formally educate the children in English and make the people learn the European way of living in order to assimilate them into the wider Australian community. The Welfare Branch also housed a select number of mixed descent Aborigines in Alice Springs welfare housing units. Many Aborigines also lived on pastoral stations to provide cheap labour. The current pattern of Aboriginal population settlement in central Australia resulted from this deliberate population resettlement policy. In June 1986, more than 10,000 Aboriginal people were living in Central Australia, forming about 34 per cent of the total population of the region.

9.3.2 Examination of vital rates at a regional level

It was possible to distinguish Aboriginal vital events in Alice Springs District Registration Office for the period 1976-1986. The results of analysis carried out on deaths records made it possible for the first time in Aboriginal mortality analysis to establish a process of steady decline in Aboriginal mortality occurring during a period of about 10 years. The decline is exhibited by improvement in expectation of life at birth of up to 5.13 calendar years. The gap between male

and female mortality levels, which was very disadvantageous for males at the beginning, is closing.

The Aboriginal mortality level is still far higher than that of the total Northern Territory and total Australia; the standardized crude death rates are higher by up to three times and the complete expectations of life are shorter by up to 20 years. The relative risk of mortality for Aborigines of Central Australia is substantially higher at all ages than those for the total Northern Territory or total Australia; the rates are up to 17.5 times higher in the middle adult ages of 25-49. The leading causes of death for the Aboriginal population are in order: diseases of the circulatory system and respiratory system, accidents, poisoning and violence, diseases of the genito-urinary system and infectious and parasitic diseases. Up to 39 per cent of the male excess mortality risk is due to diseases of the circulatory system. A process of steady decline in the cause-specific death rates of the leading causes of death is registered for both males and females. The reduction of mortality from diseases of the circulatory system contributed 51 per cent of the improvement in complete expectation of life for Aboriginal males during the period between 1975-77 and 1984-86. For Aboriginal females, reduction in mortality from diseases of the respiratory system contributed 52 per cent of the improvement in expectation of life.

While fertility of Aboriginal women in Central Australia has been declining, its level is about 60 per cent higher than that of the total population of Australia. A similarity in the level of Aboriginal fertility and its pace of decline in Central Australia and other parts of the country was observed; this may indicate lack of marked geographical differences in the provision of health services to Aboriginal communities as well as a spatially balanced set of socio-economic changes, irrespective of their adequacy, in Aboriginal communities affecting the fertility behaviour of Aboriginal women across the country. Aboriginal fertility is still very high in the early ages of childbearing. The observed decline of fertility is mostly due to the reduction of fertility of the older women of 30 and more, and younger women of 15-19. The age pattern of fertility of the Aboriginal women in Central Australia is very similar to that of the total Northern Territory Aboriginal population. Women who left school at early ages or have never been to school had

higher fertility than those who left school at later ages. Similarly the fertility of employed women is much lower than of those unemployed or not in the labour force. A clear pattern of differentials exists between those Aboriginal women who work outside the home and those who do not.

The crude birth and death rates of the Aboriginal population in Central Australia are estimated to be about 31 and 9 per 1000 population respectively, implying an average natural growth rate of 2.2 per cent per year.

9.4 A Case Study of Alice Springs Aborigines

While the nomadic hunting and gathering culture of Aborigines precluded any permanent settlement in a particular area, Alice Springs, with its permanent waters and sacred sites, was an important place for Aboriginal people. Historically, the Aboriginal people who lived in the environs of Alice Springs and to its east belonged to the Arrernte language group. The Luritja occupied areas to the west, the Anmatyerre and Kaytetye to the north, the Alyawarre language group to the north-east, the Warlpiri further north-west and finally the Pitjantjajara groups lived towards the west and south west. Today, these language groups, especially the Arrernte, have strong representations among the Aboriginal population of Alice Springs town-camps.

After the stocking of the best surrounding pastoral lands and occupation of the waterholes at the turn of the century, Aboriginal groups were camped at Alice Springs on a fairly permanent basis. Their number, estimated at about 150 in 1899, was many times larger than that of the Europeans of the area. A permanent Aboriginal camp grew up around the old telegraph station where the Bungalow institution was located. There were also short-term visitors to the town who lived in this camp. In the meantime, Alice Springs town was, under the Northern Territory Aboriginal Ordinance of 1918, declared a prohibited area for Aborigines and remained so till 1947. The implication was that Aborigines could be expelled from the town by the authorities.

Growing contact with non-Aborigines resulted, among things, in the emergence of Aborigines of mixed-descent who were forcibly separated during childhood from their mothers and grew up in institutions in Alice Springs and other towns and cities around the country. Many later returned to Alice Springs. Currently about 12 per cent of the town proper adult Aborigines and 17 per cent of the town-camps adults are those who were born in Alice Springs but grew up elsewhere, and could be classified as return migrants. By 1944, there were 300 Aborigines of mixed descent in Alice Springs town including people of Chinese-Aboriginal and Afghan-Aboriginal descent. All became the targets of racial prejudice because the local European community insisted on segregated housing, and pressed for separate schooling. Similar policies were practised in other States.

The current pattern of Aboriginal settlement in Central Australia is largely the result of deliberate population resettlement policies of the government during the 1960s which involved government-run settlements, missions, cattle stations and a select housing of mixed descent Aborigines in urban welfare dwellings. In the context of this policy, which also embodied the concerns of the European community of Alice Springs, there was no room for development of Aboriginal residential areas in Alice Springs. Access to the very limited units of the Housing Commission was also restricted by certain criteria such as prior experience of living in an urban housing unit, which many Aboriginal people lacked.

To block the development of Aboriginal residential areas in Alice Springs, the Bungalow Aboriginal reserve was relocated by the Welfare Branch to the new settlement in Amoonguna in 1961 and subsequently an Aboriginal township was established there. Many people refused to move from the town and its immediate environs. Later many people also drifted back from the Amoonguna settlement and established new camps in and around the town. In addition many former employees of cattle stations and their families, who lost their jobs after the introduction of award wages, migrated to Alice Springs and took residence in the town-camps. Thus, the present residential dualism of the Aboriginal population in Alice Springs developed: those who live in the town proper and those who live in the town camps. In May 1987 there were 19

organized and about six temporary camps. Of about 3,500 total Aboriginal population of Alice Springs, which made up about 15 per cent of the total population of the town in 1987, the total number of persons living in the town-camps was 1,200, about 34 per cent of the total Aboriginal population of Alice Springs. But the interaction between the town and the camps is strong. Migratory movements occur in both directions; as a result of this interaction over a longer period the town proper is losing population to the town-camps. This demonstrates that given the opportunity and facilities, many Aboriginal people not only reveal their Aboriginal identity (as shown, in part, by the larger than expected 1986 Census counts), but also prefer to live in a more culturally familiar environment.

After an initial high intake of Aboriginal migrants during the late 60s and 70s by the town proper, the intake has been stable during the last 10 years. For the town-camps the intake of migrants reached its peak during the early 80s and then became stable afterwards. This process is associated with the development of the town camps and house building programs in the camps from the mid 70s. Meanwhile, a process of out-migration between Alice Springs and its surrounding Aboriginal communities in Central Australia to a large extent nullifies the effects of migration flow to Alice Springs. As a consequence, contrary to what is happening to the total population of the town, currently Aboriginal migration does not play a major role in increase of the Alice Springs population. The average annual growth rate of the total Alice Springs population during 1981-86 was 1.5 times that of the Aboriginal population (4.26 and 2.84 per cent respectively). While the bulk of the non-Aboriginal population increase in the town was due to migration, with the estimated 2.19 per cent annual natural growth rate of the Aboriginal population in Central Australia, only about 23 per cent of the Aboriginal population growth in Alice Springs is accounted for by migration.

About 40 per cent of Alice Springs town proper Aborigines and 66 per cent of town campers are lifetime migrants to Alice Springs. By the place of last previous residence definition, 57 per cent of adult town Aboriginal residents and 67 per cent of the adult town-campers are migrants. The origins of Aboriginal migrants to the town proper are other urban centres such as Adelaide and

Darwin, while the surrounding rural areas are the origins for most of the migrants to the town-camps. Many migrants were attracted to the town proper in search of employment, while the main reasons given by the town campers include accompanying other family members, liking to live in Alice Springs, family reasons and occurrence of conflicts in the places of origin.

Short term cyclic movements are more frequent among the town Aboriginal residents. Most of the visitors from the town mainly visit other urban centres in the Northern Territory and in other States, mostly for a period of one to four weeks and generally for holidays. Visitors from the town-camps mostly go to the surrounding communities in central Australia, and stay away for comparatively longer periods, mostly to visit their friends and relatives.

The Alice Springs Aboriginal population suffers from a sex imbalance, which is in favour of females, and revealed by both the 1986 census results and, to a lesser extent, the 1987 survey. However this sex imbalance in the total population is due to the very low sex ratio of the Aborigines in the town in spite of a higher sex ratio in the town camps. A large number of single-mother households are living in the town, which contributes to the low sex ratio in Alice Springs town. The sex ratio is high for town campers (105.9) and much lower for town residents (82.5).

While the age composition of the Aboriginal population of Alice Springs still indicates a young age structure, comparisons with the earlier census data reveal the beginning of an aging process which will transform the age composition from a young structure to a mature one.

Compared to the total Aboriginal population of the Northern Territory and Australia, marriage is more common among the Aboriginal population of Alice Springs. Alice Springs Aborigines marry at younger ages; the mean age at marriage for the Aboriginal males is 23.4 and for the females is 21.1 years. The difference between the male and female mean age at marriage is greater (2.3 years) than those for both the Northern Territory Aborigines (1.9 years) and the whole country Aboriginal population (1.4 years). Marriage is an almost universal phenomenon, about 96 per cent of the males and 97 per cent of the females in the town proper as well as 96 per

cent of the males and 99 per cent of the females in the town-camps eventually marry by the age of 50. Early marriage is very common; a sizable proportion of the population marry before reaching age 20 and females marry 2.3 years younger than males. Age at marriage is higher in the town than in the town camps for both males (1.6 years) and females (0.7 years). Separation, divorce and widowhood claim a large proportion of the Aboriginal women in Alice Springs, especially in the town proper.

While large household size is a common feature of the Aboriginal communities in Alice Springs, many of them are basically nuclear. Average household size is much higher in the camps than in the town. Even in the town the average household size is about five persons. In the town the proportion of Aboriginal households composed of some type of extended structure is very low. Even in the camps joint and complex types of households are not common. A very large proportion of town Aboriginal households consist of non-familial types while in the town-camps nearly a quarter of households are of non-familial type. In the town, 28 per cent of the interviewed households basically consist of single-mother households.

The general housing condition of town-campers has improved considerably since the mid 1970s; however, there is still a long way to go. Nearly one third live in improvised dwellings and some live in the open. Dwellings are crowded; while many camp residents have access to facilities such as tap water, flush toilets and electricity, there are still about nine camps without proper living facilities. The present pattern of house size is not matching the requirements. More houses of medium and larger sizes, and a redistribution of the existing houses are needed.

The town-campers have three times less access to household goods than their Aboriginal counterparts in the town.

Education levels are higher in the town where a majority had some secondary schooling though few had completed secondary school. More campers than town-dwellers had no schooling and

the majority of campers had only primary education. But a noticeable improvement has occurred in the educational status of the town campers over the last eight years.

The labour force participation rates are higher for the town than the town camps. On average just over half of the Alice Springs Aborigines of working age are economically active. Participation rates reach the highest peaks in age group 20 to 29 for both sexes but the rates for males are very much higher than those for females. Some people were not actively seeking jobs because they believed that no jobs were available for them.

Employment trends are unsatisfactory and have not changed over the last seven years. Less than a quarter of the town-camp Aboriginal labour force is employed; the employment rate for the town Aboriginal residents is more than three times that of the town campers. Of those employed the majority were employed by community organizations.

While the majority of town Aboriginal job-seekers are young adults, in the town camps relatively more mature people are looking for jobs. The labour force participation of the Alice Springs Aboriginal population is strongly related to education, most of the employed and job-seekers were educated.

In general, today Aborigines form a core stable population group in Alice Springs. Only about 12 per cent of the town adult Aboriginal residents and 9 per cent of the town-camp adult residents are certain that they will migrate out during the next two years. The stability of Aboriginal residents in Alice Springs is revealed by the fact that the population is not formed of a male-dominated group who are here away from their families for temporary work or spending their leisure time. Although Aborigines are less stable over a shorter period of one year than the total population, they are more stable over a longer period. Generally, in Alice Springs, as well as in the Northern Territory as a whole, Aborigines are more mobile in intrastate movement and the total population is more mobile in interstate movements irrespective of the length of the reference period.

There is no evidence to suggest the present growth rates of the Alice Springs total population as well as the Aboriginal population will change markedly in the foreseeable future. The continuation of the present growth rates of the total population and the Aboriginal population will take the total population to about 43,000 persons in the year 2001 and reduce the proportion of the Aboriginal population from the current 15 per cent to 12 per cent. This is the scenario for the highest Aboriginal population growth: other variants, based on declining fertility and mortality and constant migration rates (see Figure 9.1) may further decrease the proportion of the Aboriginal population to a low level of 10 per cent of the total population in Alice Springs around the year 2000.

Figure 9.1: Projections of the Alice Springs total and Aboriginal population to year 2006.



Appendix 1

Census counts of Australian Aboriginal population by age and sex

Age groups	1971		1976		1981		1986	
	Males	Females	Males	Females	Males	Females	Males	Females
0-4	10229	9971	12230	11552	10922	10295	16193	15656
5-9	8943	8724	12294	11812	11965	11375	14526	13860
10-14	7766	7538	10981	10718	11916	11601	15117	14760
15-19	5847	5959	9245	9288	9827	9749	14475	14631
20-24	5044	4992	8213	8131	7731	7963	11847	12197
25-29	3932	3720	6459	6525	5947	6265	9405	10075
30-34	3160	3232	4617	4493	4616	5228	7410	7942
35-39	2884	2906	3578	3967	3817	3977	5912	6496
40-44	2528	2496	3252	3378	3151	3393	4553	4845
45-49	2153	1988	2683	2722	2627	2758	3500	3907
50-54	1776	1666	2262	2001	2179	2315	2813	3071
55-59	1296	1144	1662	1480	1543	1538	2168	2362
60-64	1005	1078	1252	1343	1291	1365	1578	1901
65-69	952	732	1047	1003	968	989	1213	1284
70-74	666	576	670	660	620	667	736	916
75+	553	498	710	687	604	689	809	1098
Total	48505	47248	81154	79759	79722	80175	112655	114990

Sources: ABS, 1971 Census of Population and Housing; ABS (1979), 1976 Census of Population and Housing, Aboriginal Summary data - Table 6. ABS (1984), 1981 Census of Population and Housing - Table ASCO1 - Total Aboriginal and Torres Strait islanders - age by race by sex. ABS, 1986 Census of Population and Housing - Table CA0001 - Age by Aboriginal origin by sex - Total Australia.

Appendix 2

Aboriginal population of the Northern Territory, Central Australia and Alice Springs, by age and sex, June 1986

Age groups	Northern Territory		Central Australia		Alice Springs		Total	
	Aboriginal		Aboriginal		Aboriginal			
	Males	Females	Males	Females	Males	Females		
0-4	2428	2370	538	513	208	239	1020	1069
5-9	2299	2192	501	481	183	167	887	864
10-14	2261	2151	440	367	214	257	963	970
15-19	2075	2219	377	410	233	248	954	976
20-24	1741	1900	333	378	154	178	1262	1224
25-29	1397	1606	265	352	136	158	1389	1238
30-34	1072	1216	214	243	115	133	1111	1055
35-39	846	975	174	187	113	104	1113	918
40-44	670	735	148	150	92	81	819	691
45-49	588	610	121	120	45	65	611	498
50-54	415	506	92	92	42	52	396	370
55-59	338	352	80	92	32	20	421	364
60-64	249	382	70	94	17	32	311	295
65-69	192	214	54	69	18	22	217	242
70-74	125	142	41	51	9	16	127	171
75+	95	161	31	44	15	26	102	116
Total	16791	17731	3479	3643	1626	1798	11703	11061

Sources: ABS (1988a), 1986 Census of Population and Housing - Table CA0001 - total persons - age by Aboriginal origin by sex, pp. 45 total Northern Territory and pp. 26 Alice Springs Town; ABS (1988b), Census 86: Table CX012.

Appendix 3

Alice Springs Aboriginal population by age and sex
in town proper (sample) and town-camps, May 1987

Age groups	Town (sample)			Town camps		
	Males	Females	Persons	Males	Females	Persons
0-4	44	66	110	92	97	189
5-9	57	55	112	54	52	106
10-14	54	63	117	73	43	116
15-19	51	62	113	62	54	116
20-24	38	56	94	61	69	130
25-29	46	39	85	53	62	115
30-34	25	37	62	50	50	100
35-39	24	32	56	37	27	64
40-44	21	20	41	35	30	65
45-49	4	14	18	33	30	63
50-54	14	13	27	21	21	42
55-59	4	2	6	11	7	18
60-64	5	7	12	15	15	30
65-69	1	3	4	13	10	23
70-74	0	1	1	1	7	8
75+	3	4	7	2	5	7
Total	391	474	865	613	579	1192

Source: 1987 Survey conducted by the researcher.

Appendix 4

ABORIGINAL DEMOGRAPHIC STUDY OF ALICE SPRINGS
HOUSEHOLD QUESTIONNAIRE¹

IDENTIFICATION:

Location/Address: _____

Code: (1) Town (2) Camp

Dwelling Number: _____ Household Number: _____

Name of the House Boss: _____

Date of the interview: / /1987

Time started: _____ Time completed: _____

Name and signature of the interviewer: _____

STRUCTURAL AND SANITARY CONDITIONS OF THE DWELLING

1. Type of dwelling?

(1) Room or flat in a larger structure,

(2) Single family house,

(3) Tin shed,

(4) Tent,

(5) Humpies,

(6) Open air, wind break,

(7) Other (specify) _____

2. Number of rooms in the house occupied by the household?

(Do not count kitchen, toilet and showers.)

3. Type of lighting used?

¹ Due to the format problem a specimen copy of the questionnaire is not attached here, instead the questions included in the questionnaire are reproduced. However, as an example of how the questionnaire was designed, the cover page and page 1 of the actual questionnaire are reprinted.

(1) Electricity,

(2) Other (specify) _____

4. Source of drinking water?

(1) Tap (private in the dwelling),

(2) Common tap,

(3) Bore,

(4) Drum,

(5) Other (specify) _____

5. Type of toilet used by the household?

(1) Flush toilet in the house,

(2) Common flush toilet,

(3) Pit or borehole privy,

(4) Other (specify) _____

6. Tenure status of the dwelling?

(1) Own,

(2) Rented,

(3) Other (specify) _____

7. Total number of rooms in the house excluding kitchen, toilet and showers?

POSSESSION OF HOUSEHOLD THINGS

8. If there any of these things available in the house?

TICK IF AVAILABLE.

01 Car/ Vehicle of any type

02 Motor bike

03 Bicycle

04 Television

05 Radio/Cassette player

06 Record player

07 Video

08 Washing machine

09 Electric or gas stove

10 Fridge.

11 Vacuum cleaner

12 Fan

13 Air conditioning

14 Hunting gun

15 Furniture

16 Carpet

ASK FOR ALL PERSONS IN THE HOUSEHOLD

1. Person Number

(A) NAMES

2. I would like to know how many people usually live here counting all children, adults and babies. Can you tell me who they are?

ENTER NAMES IN THIS COLUMN AGAINST EACH PERSON NUMBER. START WITH THE HOUSE BOSS THEN HIS OR HER WIFE OR HUSBAND, THEN THEIR UNMARRIED CHILDREN, MARRIED CHILDREN, SON IN LAW AND DAGHTER IN LAW, GRAND CHILDREN, FATHER, MOTHER, BROTHER, SISTER AND SO...

Did any visitor stay last night? Can you tell their names?

3. Of all people you have told me who are...

(1) usual members of this household,

(2) visitors who are here in this household only

temporarily?

If usual member enter 1 and if visitor enter 2 in this column against each person name.

(B) AGE AND SEX

4. How old ...is?

Enter ages in completed years e.g. 40. For babies under one year write 00

5. Is ...a

(1) male

(2) female

(C) RELATIONSHIP

6. Is ...related to house boss (person number 01 in column 1)?

What is his/her relationship to house boss?

(01) house boss

(02) husband/wife

(03) son/daughter

(04) daughter in law/son in law

(05) grand children

(06) father/mother

(07) brother/sister

(08) brother's wife/sister's husband

(09) nephew/niece

(10) grand father/grand mother

(11) uncle/aunt

(12) cousins

(13) other relatives

(14) not related

(99) Unknown

Write the relationship of each person to the house boss against his/ her name in this column.

(D) BIRTH PLACE

7. Where ...mother lived the year he/she born?

ASK FOR PERSONS 12 YEARS AND OVER

(E) MARITAL STATUS

8. Is ...

- (1) married or living with some one now,
- (2) used to be married or used to be living with some one,
- (3) never married,
- (99) unknown?

Married includes legal, Christian, traditional, de facto.

IDENTIFICATION OF NUCLEAR FAMILIES WITHIN HOUSEHOLD

9. Number each group of husband wife and their unmarried children. For example: enter 1 against house boss, his wife, his unmarried son and daughter..., enter 2 against a married daughter, her husband and their children names and so on.

ASK FOR PERSONS 5 YEARS AND OVER

(F) LANGUAGE AND EDUCATION

10. What is ...best language?

- (01) Arrernte
- (02) Anmatyerre
- (03) Alyawarre
- (04) Kaytetye
- (05) Pitjantjara
- (06) Luritja
- (07) Pintupi
- (08) Warlpiri
- (09) English
- (10) Other
- (99) Unknown

11. What is ...highest level of education?

- (1) Primary,
- (2) Attended secondary,
- (3) Completed secondary,
- (4) Attended higher education,

(5) Completed higher education,

(6) Other (specify),

(7) Never been to school.

ASK FOR PERSONS 12 YEARS AND OVER

(G) MIGRATION

12. How long have ... been living in this place continuously?

'This place' for those who live in the town is 'town' and for those live in the camp is 'camp'. Write down the answer.

ASK THOSE WHO HAVE NOT LIVED ALL THEIR LIVES IN THEIR PRESENT LOCATION

13. Where did ... mostly lived before ... came to this place?

Enter name of the place. Do not write in the code box.

14. Why did ... move to this place? (Main reason)

(1) to find job,

(2) to go to school,

(3) marriage,

(4) accompanied other family members,

(5) other family reasons,

(6) liked to live in the town,

(7) because of conflict in the area,

(8) other reasons (specify)

(99) Unknown

Enter one main reason, school includes higher education institutions such as I.A.D.

15. Where did ... mostly live while growing up?

Enter name of the place. Do not write in the code box.

16. While growing up did ... mostly live in a:

- (1) house,
- (2) tin shed,
- (3) humpy,
- (4) tent,
- (5) wind break, open camp,
- (6) other (specify)

17. How likely is that ... move to another place away from Alice Springs during next 2 years?

- (1) Quite likely,
- (2) Uncertain,
- (3) Not likely,
- (99) Unknown

18. Before moving to Alice Springs did ... go for hunting or getting plant bush tucker?

- (1) Yes
- (2) No

IF YES IN COLUMN 18,

19. How often ... go?

- (1) Every day,
- (2) Every weekend,
- (3) Just sometimes.

ASK THOSE WHO LIVED ONE YEAR OR MORE IN ALICE SPRINGS.

20. During the past year did ... live elsewhere for any part of the year?

- (1) Yes
- (2) No

ASK FOR THOSE WHO LIVED ELSEWHERE FOR SOME PART OF THE LAST YEAR.

21. Where did ... live while away?

22. For how long ... was away?

- (1) 1-6 days,
- (2) 1-4 weeks
- (3) 1-6 months
- (4) more than 6 months.

23. What did ... do most of the time while elsewhere?

- (1) Working,
- (2) Attending ceremonies,
- (3) Visiting friends & relatives,
- (4) On holiday,
- (5) On study tour,
- (6) Accompanied other family members,
- (7) Other (specify).

(H) EMPLOYMENT AND ECONOMIC ACTIVITIES

24. Have ... been working during the last week?

- (1) Yes
- (2) No

ASK FOR THOSE WHO HAVE BEEN WORKING OR HAD A JOB DURING THE LAST WEEK.

25. What did ... do in his/her job?

26. Who did ... work for?

27. Was it a:

- (1) full time,
- (2) part time,
- (3) casual job?

28. How much money ... get from the job a week?

ASK Q29-Q30 FOR THOSE WHO DID NOT HAVE JOB.

29. Why did not ... work?

- (1) Couldn't find job,
- (2) Too old for work,
- (3) Husband/father disapprove, social customs
- (4) Poor health, disability,
- (5) Busy with house work,
- (6) In school,
- (7) Other (specify)

30. Does ... get any social security money?

- (1) Unemployment benefit,
- (2) Old age pension,
- (3) Invalid pension,
- (4) Supporting mothers,
- (5) Special benefit,
- (6) Widow's pension,
- (7) Sickness benefit,
- (8) Family allowance,
- (9) Other (specify)
- (10) Nil
- (99) Unknown

31. Since last Christmas did ... go for hunting or getting plant bush tucker?

- (1) Yes
- (2) No

ASK Q32 FOR THOSE WHO ANSWERED YES TO Q31.

32. How often ... go?

- (1) Every day
- (2) Every weekend
- (3) Just sometimes.

33. Does he/she or someone else teach his/her children to hunt or get plant bush tucker?

- (1) Yes
- (2) No

34. Does ... get income from any other source such as selling craft, etc. ? if yes how much a week?

ASK PRINCIPAL RESPONDENT

(H) OUT-MIGRATION

35. In the last 2 years, did any one leave who had been living here?

- (1) Yes
- (2) No

IF YES, ASK:

Can you give me the following information about them:

36. Names

37. Sex

- (1) Male
- (2) Female

38. Relationship to house boss?

39. About how long ago he/she first left?

40. What was his/her age at the time he/she left?

41. Why did he/she move?

42. Does he/she still visit?

43. Where he/she lives now?

REMARKS: _____

TANGENTYKE COUNCIL, Inc.

THE
AUSTRALIAN NATIONAL UNIVERSITY
CANBERRA



RESEARCH SCHOOL OF SOCIAL SCIENCES
DEMOGRAPHY DEPARTMENT

ABORIGINAL DEMOGRAPHIC STUDY OF ALICE SPRINGS
HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION:

LOCATION/ ADDRESS:

CODE: (1) TOWN (2) CAMP ☐

DWELLING NUMBER: _____ HOUSEHOLD NUMBER: _____

NAME OF THE HOUSE BOSS: _____

DATE OF INTERVIEW: / /1987

TIME STARTED: _____ TIME COMPLETED: _____

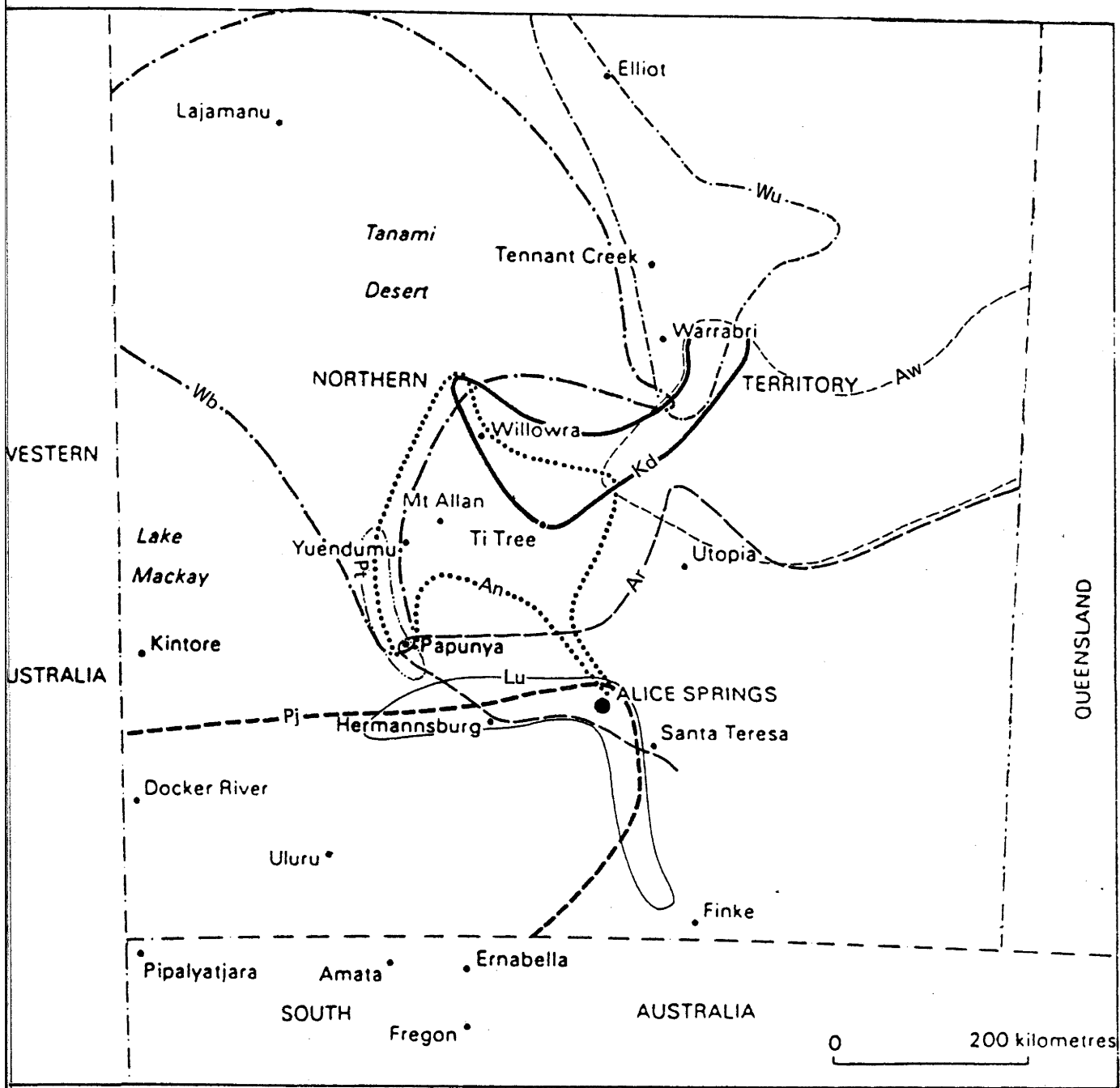
NAME AND SIGNATURE OF THE INTERVIEWER:

STRUCTURAL AND SANITARY CONDITIONS OF THE DWELLING	
1. TYPE OF DWELLING? 1 ☐	
(1) Room or flat in a larger structure ,	(5) Humpies,
(2) Single family house,	(6) Open air, wind break,
(3) Tin shed,	(7) Other (specify)-
(4) Tent	
2. Number of rooms in the house (Do not count kitchen and toilet occupied by the household? 2 ☐	
3. Type of lighting used? 3 ☐	
(1) Electricity,	
(2) Other . Specify _____	
4. Source of drinking water? 4 ☐	
(1) Tap (private in the dwelling).	
(2) Common tap,	
(3) Bore	
(4) Drum	
(5) Other. Specify _____	
5. Type of toilet used by the household? 5 ☐	
(1) Flush toilet in the house,	
(2) Common flush toilet,	
(3) Pit or borehole privy,	
(4) None	
(5) Other. Specify _____	
6. Tenure status of the dwelling? 6 ☐	
(1) Own	
(2) Rented	
(3) Other . Specify _____	
7. Total number of rooms in the house excluding kitchen, toilet and showers? 7 ☐	
POSESSION OF HOUSEHOLD THINGS.	
8. If there any of these things available in the house? TICK IF AVAILABLE.	
01 CAR / Vehicle of any type ☐	09 ELECTRIC OR GAS STOVE ☐
02 MOTOR BIKE ☐	10 FRIDGE. ☐
03 BICYCLE ☐	11 VACUUM CLEANER ☐
04 TELEVISION ☐	12 FAN ☐
05 RADIO/CASSETTE PLAYER ☐	13 AIR CONDITIONNING ☐
06 RECORD PLAYER ☐	14 HUNTING GUN ☐
07 VIDEO ☐	15 FURNITURE ☐
08 WASHING MACHINE ☐	16 CARPET ☐

ASK FOR ALL PERSONS IN THE HOUSEHOLD						PERSONS 12 YEARS + (E) MARITAL STATUS	IDENTIFICATION OF NUCLEAR FAMILIES WITHIN HOUSEHOLD	
(A) NAMES	(B) AGE AND SEX	(C) RELATIONSHIP	(D) BIRTH PLACE	(E) MARITAL STATUS				
I would like to know how many people usually live here counting all children, adults and babies. Can you tell me who they are? ENTER NAMES IN THIS COLUMN AGAINST EACH PERSON NUMBER. START WITH THE HOUSE BOSS THEN HIS OR HER WIFE OR HUSBAND, THEN THEIR UNMARRIED CHILDREN, MARRIED CHILDREN, SON IN LAW AND DAUGHTER IN LAW GRAND CHILDREN, FATHER, MOTHER, BROTHER, SISTER AND SO... Did any visitor stay last night? Can you tell their names?	Of all people you have told me who are ... (1) usually members of this household (2) visitors who are here in this household only temporarily IF USUALLY MEMBER ENTER 1 AND IF VISITOR ENTER 2 IN THIS COLUMN AGAINST EACH PERSON NAME	How old ... is? ENTER AGES IN COMPLET-YEARS E.G. 40. FOR BABIES UNDER ONE YEAR WRITE 00	Is.....a (1) male (2) female	Is related to house boss (person number 01 in col. 1)? What is his/her relationship to the house boss? (01) house boss (02) husband/wife (03) son, daughter (04) daughter in law son in law (05) grand children (06) father/mother (07) brother/sister (08) brother's wife/sister's husband (09) nephew/niece (10) grand father/grand mother (11) uncle/aunt (12) cousins (13) other relatives (14) not related (99) UNK WRITE THE RELATIONSHIP OF EACH PERSON TO THE HOUSE BOSS AGAINST HIS NAME IN THIS COLUMN.	Where ... mother lived the year he/she born?	Is... (1) married or living with some one now, (2) used to be married or used to be living with some one, (3) never married (99) UNK MARRIED INCLUDES LEGAL, CHRISTIAN TRADITIONAL, DEFACTO. ASK THIS QUESTION FOR PERSONS 12 YEARS OF AGE AND OVER ONLY	NUMBER EACH GROUP OF HUSBAND WIFE AND THEIR UNMARRIED CHILDREN. FOR EXAMPLE: ENTER 1 AGAINST HOUSE BOSS, HIS WIFE HIS UNMARRIED SON AND DAUGHTER..., ENTER 2 AGAINST A MARRIED DAUGHTER, HER HUSBAND AND THEIR CHILDREN NAMES AND SO ON.	
1	2	3	4	5	6	7	8	9
01								
02								
03								
04								
05								
06								
07								

PERSON NUMBERS

Map 3.3: Distribution of Aboriginal language groups in Central Australia



- Aw Alyawarra
- An Anmatyerre
- Ar Arrernte
- Lu Luritja
- Pt Pintubi
- Pj Pitjantjatjara
- Wb Warlpiri
- Wu Warumungu
- Kd Kaytetye

References

- Altman, J.C. and Nieuwenhuyse, J., 1979.
The Economic Status of Australian Aborigines, Cambridge University Press, Cambridge.
- Altman, J.C., 1987.
Hunter Gatherers Today: an Aboriginal Economy in North Australia. Australian Institute of Aboriginal Studies, Canberra.
- Apgar, V., 1953.
 'Proposal for a new method of evaluation of the newborn infant', *Current Research in Anaesthesia and Analgesia*, 32: 260-267.
- Arriaga, E. E., 1984.
 'Measuring and explaining the change in the life expectancies', *Demography*, 21, 1,:83-96.
- Australian Bureau of Statistics (ABS).
1971 Census: The Aboriginal Population (Ref. 2.91).
- Australian Bureau of Statistics (ABS), 1978.
Births 1976, catalogue No. 3301.0
- Australian Bureau of Statistics (ABS), 1979a.
Population and Dwellings: Cross-Classified Tables. 1976 Census of Population and Housing, Northern Territory, catalogue No. 2424.0.
- Australian Bureau of Statistics (ABS), 1979b.
Population and Dwellings: Cross-Classified Tables. 1976 Census of Population and Housing, Australia, catalogue No. 2426.0.
- Australian Bureau of Statistics (ABS), 1982
Births Australia 1981, catalogue No. 3301.0.
- Australian Bureau of Statistics (ABS), 1984
1981 Census of Population and Housing, Australia Table ASCO1- Total Aboriginal and Torres Strait Islanders- Age by race by sex; State N.T. Table CAB01 total Aboriginal and Torres Strait Islanders-age by racial origin by sex.
- Australian Bureau of Statistics (ABS), 1984.
1981 Census of Population and Housing, Australia Table ASCO5 - Females Aboriginal and Torres Strait Islanders Aged 15 years and over - Total issue by marital status
- Australian Bureau of Statistics (ABS), 1987a
Death Australia 1986, Catalogue No. 3302.0
- Australian Bureau of Statistics (ABS), 1987b.
Births Australia 1986, catalogue No. 3301.0.
- Australian Bureau of Statistics (ABS), 1987c.
Census 86-Australia in Brief, Catalogue no.2501.0, table 3.

- Australian Bureau of Statistics (ABS), 1987d.
Census 86, Aboriginal and Torres Strait Islanders: Australia, States and Territories, catalogue no. 2499.0, p. 1.
- Australian Bureau of Statistics (ABS), 1987e.
Australian Demographic Statistics, Catalogue No. 3101.0.
- Australian Bureau of Statistics (ABS), 1988a.
ABS, 1986 Census of Population and Housing, State N.T. Tables CA0001-CA0028 Statistical Local Areas and Tables CA019A and CA0501.
- Australian Bureau of Statistics (ABS), 1988b.
ABS, 1986 Census of Population and Housing, State N.T., Tables CX7009-CX7013.
- Australian Bureau of Statistics (ABS), 1988c.
ABS, 1986 Census of Population and Housing, Australia and States Table ABSTAT16 - Aboriginal and Torres Strait islanders females aged 15 years and over - age by number of females then total issue then total living issue.
- Australian Bureau of Statistics (ABS), 1988d.
Causes of Death Australia 1986, Catalogue No. 3303.0
- Australian Government Actuary, 1985
Australian Life Tables 1980-82, Australian Government Publishing Service, Canberra.
- Bauer, F.H., 1983.
 'The coming of European Man', in Gillian Crook (Ed.), *Man in the Centre*. Proceedings of a symposium held at CSIRO, Alice Springs, 3-5 April 1979. CSIRO, Perth, pp. 26-45.
- Beck, J. E., 1985.
The Enigma of Aboriginal Health, Interaction between Biological and Economic Factors in Alice Springs Town Camps. Australian Institute of Aboriginal Studies, Canberra.
- Berndt, Ronald M. and Berndt, Catherine, H., 1964.
The World of the First Australians, Ure Smith, Sydney.
- Berndt, Ronald M. and Berndt, Catherine H., 1986.
End of an Era: Aboriginal Labour in the Northern Territory. Australian Institute of Aboriginal Studies, Canberra.
- Blackwell, D. and Lockwood, D., 1965.
Alice on the Line, Rigby, Adelaide.
- Blalock, Hubert M., 1972.
Social Statistics, second edition. McGraw-Hill Kongakusha, Tokyo.
- Bleakley, J. W., 1929
The Aborigines and the Half-castes of Central Australia and North Australia, Government Press, Melbourne.
- Brass, W., 1964.
 'Uses of Census or Survey Data for the Estimation of Vital Rates' (E/CN.14CAS.4/V57), paper prepared for the African Seminar on Vital Statistics, Addis Ababa.
- Brass, W., 1975.
Methods for Estimating Fertility and Mortality from Limited and Defective Data, Carolina Population Centre, Laboratories for Population Statistics, Chapel Hill, North Carolina.

Butlin, N.G., 1983.

Our Original Aggression: Aboriginal Populations of Southeastern Australia, 1788-1850, George Allan & Unwin, Sydney.

Calaby, J.H., 1971.

'Man, fauna, and climate in Aboriginal Australia'. In Mulvaney, D.J. and Golson, J. (Eds.), *Aboriginal Man and Environment in Australia*, Australian National University Press, Canberra.

Chandrasekar C. and Deming, W.E., 1949.

'On a method of estimating birth and death rates and the extent of registration'. *American Statistical Association Journal*, March: 101-115.

Choi, C.Y. and Gray, A., 1985.

An Evaluation of Census Counts of the Aboriginal Population, 1971, 1976 and 1981 Censuses, Australian Bureau of Statistics occasional paper No. 1985/2.

Coale, A.J., 1965.

'Factors associated with the development of low fertility: an historic summary'. *World Population Conference*, 1965, Vol. II, Department of Social and Economic Affairs, United Nations, New York, pp. 205-209.

Coale, A.J. and Demeny, P., 1966.

Regional Model Life Tables and Model Populations. Princeton University Press, Princeton.

Coale, A.J. and Trussell, J., 1977.

'Estimating the time to which Brass estimates apply', annex I to Samuel H. Preston and Alberto Palloni, 'Fine-tuning Brass-type mortality estimates with data on ages of surviving children', *Population Bulletin of the United Nations*, No. 10-1977.

Collmann, Jeff, 1979.

'Fringe-camps and the development of Aboriginal administration in central Australia', *Social Analysis*, 2.

Commonwealth Department of Health, 1987.

Director's Report, Commonwealth Department of Health, Canberra.

Commonwealth of Australia, 1968.

Parliamentary Debates, House of Representatives, Vol. H of R 60, E.G. Whitlam, Debate, 13 August, pp. 15-17.

Commonwealth of Australia, 1971-76.

Submission by E.E. Pyne and H.M. Ford, Northern Territory Administration, April 1972, Senate Standing Committee on Social Environment (reference: Aborigines and Torres Strait Islanders), Government Printer, Canberra, p. 152.

Commonwealth of Australia, 1982

Strategies to Overcome the Problem of Aboriginal Town Camps. House of Representatives Standing Committee on Aboriginal Affairs, Canberra.

Commonwealth Bureau of Census and Statistics, 1968.

Official Year Book of the Commonwealth of Australia, No. 54, 1968.

Connell, J., Gupta, D., Laishley, B. and Lipton, M. 1976.

Migration from Rural Areas: the Evidence from Village Studies, Oxford University Press, New Delhi.

- Curr, E.M., 1886
The Australian Race: its Origin, Languages, Customs, Place of Landing in Australia and Routes by which it Spread Itself over the Continent. Government Press, Melbourne.
- Davidson, D.S., 1938
 'An ethnic map of Australia', *Proceedings of the American Philosophical Society*, 79 (4):64-79.
- Department of Territories, 1958.
Progress Towards Assimilation, Aboriginal Welfare in the Northern Territory, Commonwealth of Australia, Canberra.
- Devanesen, D., 1986.
 'Opening and current perspective', in Thomson, N. (Ed.), *Aboriginal Health Statistics. Proceedings of a workshop*, Darwin, April, 1986, Australian Institute of Health, Canberra: 1-3.
- Devanesen, D., Furber, M., Hampton, D., Honari, M., Kinmonth, N. and Peach, H. D., 1986.
Health Indicators in the Northern Territory. Northern Territory Department of Health, Darwin.
- Dillon, D. and Young, E. A., 1985.
Tangentyere Council Interim Report, Tangentyere Council Inc. Alice Springs.
- Dixon, R.M.W., 1976.
 'Tribes, languages and other boundaries in northeast Queensland', in Nicolas Peterson (ed.), *Tribes and Boundaries in Australia*, Australian Institute of Aboriginal Studies, Canberra.
- Drakakis-Smith, D., 1980.
 'Alice through the looking glass: marginalisation in the Aboriginal town camps of Alice Springs', *Environment and Planning, A* 12:427-449.
- Drakakis-Smith, D., 1981.
 'Aboriginal access to housing in Alice Springs', *Australian Geographer*, 15: 39-51.
- Drakakis-Smith, D., 1982.
 'The Alice Springs town camps'. In Young, E.A. & Fisk, E.K. (Eds.) *Town Populations.* Development Studies Centre, Australian National University, Canberra and Miami, Florida, pp. 107-132.
- Eckermann A.-C., Watts B.H., and Dixon P.A., 1984.
From Here to There: a comparative case study, Queensland and New South Wales. Report to the Department of Aboriginal Affairs.
- El-Badri, M. A., 1961.
 'Failure of enumerators to make entries of zero errors in recording childless cases in population censuses', *Journal of the American Statistical Association*, 56: 296.
- Elkin, A.P., 1954.
The Australian Aborigines, Angus and Robertson, Sydney.
- Feeney, G., 1976.
 'Estimating infant mortality rates from child survivorship data by age of mother', *Asian and Pacific Census Newsletter*, 3, 2.
- Feeney, G., 1980.
 'Estimating infant mortality trends from child survivorship data', *Population Studies*, 34, 1: 109-128.

Finlayson, H. H., 1936.

The Red Centre: Man and Beast in the Heart of Australia, 2nd ed. Angus and Robertson, Sydney.

Forrest, P. and Egan, T., Undated.

The Centre, [Sound recording]. Australia: The Authors 1 sound cassette, ANU Library.

Frith, H.J., 1976.

'Wildlife resources in central Australia'. In Hetzel, B.S. and Frith, H.J. *The Nutrition of Aborigines in Relation to the Ecosystem of Central Australia*. Papers presented at a CSIRO symposium, 23-26 October, Canberra, CSIRO, Melbourne, pp. 87-93.

Gale, F., 1964.

A study of assimilation: part-Aborigines in South Australia. Thesis, University of Adelaide.

Gale, F. and Wundersitz, J., 1982.

Adelaide Aborigines. A case study of urban life 1966-1981. Development Studies Centre, Australian National University, Canberra, Australia and Miami, Florida.

Gaynor, M. R. F., 1985.

Annotated Bibliography and Literature Survey: Aboriginal family related issues in New South Wales.

Godelier, M. 1975.

'Modes of production, kinship and demographic structures', in Maurice Bloch (Ed.), *Marxist Analyses and Social Anthropology*, John Wiley & Sons, New York.

Gordon, A., 1965

Urbanization of Aborigines in Alice Springs Area. Report of survey, August-September 1965, for S.S.R.C. Aborigines project: typescript in SSRC-AP File.

Gorey, N., 1952.

The Alice. A Story of the Town and District of Alice Springs, Northern Territory, Alice Springs Branch of Country Women's Association of South Australia, Adelaide.

Gould, R.A., 1969

'Subsistence behaviour among the Western desert Aborigines in Australia.' *Oceania* 39:253-274.

Gray, A., 1982.

'An historical perspective on recent changes in Aboriginal fertility'. Paper presented to first conference of the Australian Population Association, Canberra.

Gray, A., 1983.

Aboriginal fertility in decline, PhD Thesis, Australian National University, Canberra.

Gray, A., 1984.

'Changes in Aboriginal family formation and fertility', Australian family research conference November 1983 proceedings Volume I, *Family Formation, Structure, Values*, Institute of Family Studies, Melbourne, pp. 380-408.

Gray, A., 1985.

'Limits for demographic parameters of Aboriginal population in the past', *Australian Aboriginal Studies*, 1: 22-27.

Gray, A., 1986.

'An introduction to Aboriginal health statistics', in Thomson, N. (Ed.), *Aboriginal Health Statistics*. Proceedings of a Workshop Darwin, April 1986, Australian Institute of Health, Canberra: 4-13.

Gray, A., 1987a.

Description of disadvantage: The households of Aboriginal children. Aboriginal Family Demography, Working paper No. 2. Department of Demography, Australian National University, Canberra.

Gray, A., 1987b.

Preliminary Comments on 1986 Census Data on the Aboriginal Population. Department of Demography, Australian National University, Canberra.

Gray, A., 1988a.

Aboriginal Child Survival. An analysis of results from the 1986 Census of Population and Housing. Occasional paper, Catalogue No. 4126.0, Australian Bureau of Statistics, Canberra.

Gray, A., 1988b.

Reference Estimates of Aboriginal Mortality 1981-1986. National Centre for Development Studies, Australian National University. Paper presented to the 4th Australian Population Association National Conference, August 31st to September 2nd 1988, Brisbane.

Gray, A., Unpublished.

'Aboriginal Fertility 1981-1986', typescript.

Gray, A., and Smith, L.R., 1983.

'The size of the Aboriginal population', *Australian Aboriginal Studies*, 1: 2-9.

Hajnal, J., 1953.

'Age at marriage and proportions marrying', *Population Studies*, 7, 2: 111-136.

Hames Sharley Australia, 1985.

Alice Springs Community Needs Study Reports. Alice Springs Town Council, Alice Springs.

Hancioglu, A., 1985.

'Family types and household size in Turkey'. *Nufusbilim Dergisi*, (Turk. J. Popul. Stud.) 7.

Harvey, A., 1946.

Ethnic and Sociological study of an Australian Mixed-Blood group in Alice Springs, N.T., with reference to Ethnic Assimilation and Interaction of groups, undergraduate thesis, University of Sydney.

Heppell, M. and Wigley, J.J., 1981.

Black out in Alice. A History of the Establishment and Development of Town Camps in Alice Springs. The Australian National University Press, Canberra.

Hicks, D.G., 1985.

Aboriginal Morbidity and Mortality in Western Australia. A Comparative Analysis of Mortality and Morbidity Statistics, Including Births, Infant Mortality and Perinatal Mortality in Aboriginals and Non Aboriginals in Western Australia 1983. Health Department of Western Australia, Perth.

Hogg, R., 1988.

'Aboriginal mortality in Western New South Wales', Paper presented to the 4th Australian Population Association National Conference, August 31st to September 2nd 1988, Brisbane.

Holman, C.D.J and O'Neil, D.F., 1985.

Premature adult mortality and Short-stay Hospitalization Attributable to Aboriginal Ill-health in Western Australia 1983, Health Department of Western Australia, Perth.

Hugo, G. and Wood, D., 1983.

Recent Fertility Trends and Differentials in Australia. 1981 Census study working paper 4. Department of Immigration and Ethnic Affairs, ACT.

Jones, F.L., 1963.

A Demographic Survey of the Aboriginal Population of the Northern Territory, with special reference to Bathurst Island Mission, Occasional Papers in Aboriginal Studies Number One, Australian Institute of Aboriginal Studies, Canberra.

Jones, F.L., 1970.

The Structure and Growth of Australia's Aboriginal Population. Aborigines in Australian Society 1. A Series sponsored by The Social Science Research Council of Australia. Australian National University Press, Canberra.

Jones, F.L., 1973.

'Racial and ethnic minorities: the case of Aboriginal Australians'. Paper presented to the conference of the International Union for Scientific Study of Population, Liege, Belgium.

Kothari, D.K., 1980.

Pattern of rural-urban migration: a case study of four villages in Rajasthan, India. PhD. thesis, Department of Demography, Australian National University, Canberra.

Long, J., 1964.

'Papunya: westernization in an Aboriginal community', in Marie Reay (Ed.) *Aborigines Now*. Angus and Robertson, Sydney.

Long, J.P.M., 1970.

Aboriginal Settlements. A survey of institutional communities in Eastern Australia, Australian National University Press, Canberra.

Long, J.P.M., 1971.

'The administration and the part-Aborigines of the Northern Territory', *Oceania*, 37, 1966-1967 Kraus reprint: 186-201.

Lopez, A. D. and Ruzicka, L. T. (eds.), 1983.

Sex differentials in mortality: Trends, determinants and consequences. Selection of the Papers presented at the ANU/UN/WHO Meeting held in Canberra, Australia 1-7 December 1981. Miscellaneous Series No.4, Department of Demography, Australian National University, Canberra.

Love, J.R.B., 1915.

The Aborigines. Their Present Condition as Seen in Northern South Australia, The Northern Territory, Northern West Australia and Western Queensland. Arbuckle Waddell & Fawckner Printers, Melbourne.

Lucas, D. and Kane, P. (Eds.), 1985.

Asking Demographic Questions. Australian National University, Canberra.

McGrath, A., 1987.

Born in the Cattle: Aborigines in the Cattle Country, Allan & Unwin, Sydney.

Madigan, C.T., 1944.

Central Australia, Oxford University Press, Melbourne.

Maggs, D.H., 1976.

'The potential for horticulture in central Australia', in Hetzel, B.S. and Frith, H.J. *The Nutrition of Aborigines in Relation to the Ecosystem of Central Australia*, CSIRO, Melbourne, pp. 115-122.

Malinowski, B., 1913.

The Family among the Aborigines: a Sociological Study. University of London Press, London. Reprinted in 1963 by Schocken Books, New York.

McCarthy, F.D., 1957.

Australia's Aborigines Their Life and Culture, Colorgravure Publications, Melbourne.

McGir, N. and Pinal, J. D., 1986.

MicroComputer Programs for Demographic Analysis MCPDA, Institute for Resource Development at Westinghouse, Columbia, USA.

Meggitt, M.J., 1962.

Desert People: A Study of the Walpiri Aborigines of Central Australia. Angus and Robertson, Sydney.

Meggitt, M.J., 1964.

'Aboriginal food gatherers of tropical Australia.' In *The ecology of man in tropical environment*. Proceeding and papers, Publ. Ser. 4. IUCN, Morges, Switzerland, pp. 30-37.

Milliken, E.P., 1976.

'Aboriginal language distribution in the Northern Territory'. In Peterson, N. (Ed.) *Tribes and Boundaries in Australia*, Australian Institute of Aboriginal Studies, Canberra.

Mulvaney, D.J. and White, J.P. (Eds), 1987.

Australians to 1788, Fairfax, Syme & Weldon Associates, Broadway, New South Wales.

National Population Inquiry, 1975.

First Report. *Population and Australia: A Demographic Analysis and Projection*. Australian Government Publishing Services, Canberra.

Nimkoff, M.F. and Middleton, R., 1960.

'Types of economy and types of family', *American Journal of Sociology*, 67:215-225.

Northern Territory,

Welfare Ordinance 1953-1960. Commonwealth Government Printer, Canberra.

Northern Territory,

Annual Report 1955. Northern Territory Administrator, Welfare Branch, Darwin.

Northern Territory,

Registration of Births, Deaths and Marriages Ordinance, 1941-1954.

O'Connell, M. and Rogers, C.C., 1982.

'Differential fertility in the United States: 1976-1980.' *Family Planning Perspectives*, 14, 5:281-286.

Payne, E.E. and Ford, H.M., 1972.

Submission to the Senate Standing Committee on Social Environment, Northern Territory Administration. Commonwealth of Australia, 1971-76, Vols. 1-6, Government Printer, Canberra.

- Perry, R.A., 1976.
 'Climate and landforms in Central Australia'. In Hetzel B.S. and Frith, H.J., (Eds.) *The Nutrition of Aborigines in Relation to the Ecosystem of Central Australia*, Commonwealth Scientific and Industrial Research Organization, Melbourne, pp. 73-75.
- Peterson, N., 1976.
 'Aboriginal uses of Australian Solanaceae'. Symposium on the Biology and Taxonomy of the Solanaceae (University of Birmingham, England). In Hawkes, J. G., (Ed.) 1979. *The Biology and Taxonomy of the Solanaceae*. Academic Press, London.
- Plant, A. J., 1988.
 Aboriginal Mortality in the Northern Territory, 1979-1983. Thesis for the Degree of Master of Public Health, University of Sydney.
- Plawman, R.B., 1934.
The Man from Oodnadatta, Angus & Robertson, Sydney.
- Pollard, J.H., 1982.
 'The expectation of life and its relationship to mortality', *J. Institute of Actuaries*, 109:225-240.
- Pollard, J.H., 1983.
 'Some methodological issues in the measurement of sex mortality patterns', in Alan D. Lopez and Lado T. Ruzicka (Eds.) *Sex differentials in Mortality: Trends, Determinants and Consequences*. Department of Demography, Australian National University, Canberra, pp. 427-442.
- Pollard, J.H., 1986.
 'Causes of death in Australia 1971-1981', *Journal of the Australia Population Association*, 3, 1: 1-17.
- Radcliffe-Brown, A. R., 1930.
 'Former numbers and distribution of the Australian Aborigines', *Official Year Book 1930*, 23:687-696.
- Rele, J. R., 1967.
Fertility Analysis through Extension of Stable Population Concepts, Population Monograph Series. No. 2, University of California, Berkeley.
- Rose, F. G. G., 1965.
The Wind of Change in Central Australia: The Aborigines at Angas Downs 1962. Akademie Verlag, Berlin.
- Rose, F. G. G., 1975.
 'Australian marriage, land-owning groups, and initiations', in Lee R. B. and Devore, I. (eds), *Man the Hunter*. Fifth print, Aldine, Chicago.
- Ross, J. A., (Ed. in chief), 1982.
International Encyclopedia of Population, Volume 1, The Free Press, London.
- Rowley, C.D., 1970a.
The Destruction of Aboriginal Society, Australian National University Press, Canberra.
- Rowley, C.D., 1970b.
The Remote Aborigines, Penguin, Sydney.
- Rowley, C.D., 1973.
Outcasts in White Australia. Australian National University Press, Canberra.

- Sahlins, M. D., 1972.
Stone Age Economies, Aldine, Chicago.
- Shryock, H. S. and Siegel, J. S., 1971.
The Methods and Materials of Demography, Vol. 1, U.S. Department of Commerce, Bureau of the Census, Washington D.C.
- Simmons, L., 1987.
Tangentyere Council 1985 Population Study Report. Tangentyere Council, Alice Springs.
- Smith, L.R., 1980.
The Aboriginal Population of Australia. Aborigines in Australian Society, No. 14, Australian National University Press, Canberra.
- Smith, L.R., and A. Gray, 1985.
'The Australian Aborigines' Demographic Transition'. Paper presented at the Informal Session on the Demography of Indigenous Minorities, General Conference of the International Union for the Scientific Study of Population, Florence.
- Singh, S.N. and Yadava, K.N.S., 1981.
'On some characteristics of rural out migration in Eastern Uttar Pradesh'. *Society and Culture*, 12, 1: 33-46.
- Stone, S., 1974.
Aborigines in White Australia. A Documentary History of the Attitudes Affecting Official Policy and the Australian Aborigine 1697-1973, Heinemann Educational Books, Griffin Press, Adelaide.
- Strehlow, T.G.H., 1965.
'Culture, social structure, and environment in Aboriginal Central Australia'. In Berndt, R.M. and Berndt, C.H. (Eds.), *Aboriginal Man in Australia*, Angus and Robertson, Sydney, pp. 121-145.
- Spencer, B. and Gillen, F.J., 1938.
The Native Tribes of Central Australia, Macmillan and Co. Limited, London, First Published in 1899.
- Sullivan, J.M., 1972.
'Models for the estimation of the probabilities of dying between birth and exact ages of early childhood', *Population Studies*, 26, 1: 79-97.
- Tangentyere Council Inc. 1988.
Land Needs of Aboriginal Town Campers, Alice Springs, Tangentyere Council Inc., Alice Springs.
- Tatz, C. M., 1965.
Aboriginal Administration in the Northern Territory of Australia, Ph.D. Thesis, Australian National University, Canberra.
- The Age, 1888,
Editorial, 11 January, Melbourne.
- Thomson, N. and Smith, L., 1985.
'An analysis of Aboriginal mortality in NSW country regions, 1980-1981.' *The Medical Journal of Australia* - Special Supplement, 143: S49-S54.

- Timur, S., 1974.
Research on the Family in Turkey. Hacettepe Institute of Population Studies, Ankara.
- Tindale, N.B., 1974.
Aboriginal Tribes of Australia, Australian National University Press, Canberra.
- Trussell, J., 1975.
 'A re-estimation of the multiplying factors for the Brass technique for determining childhood survivorship rates', *Population Studies*, 29, 1: 97-107.
- United Nations, 1952.
 'Accuracy tests for census age distributions tabulated in five-year and ten-year groups', *Population Bulletin*, No. 2, New York.
- United Nations, 1958.
Multilingual Demographic Dictionary, English Section, Department of Economic and Social Affairs, New York.
- United Nations, 1962.
Demographic Aspects of Manpower, Report I, Sex and Age Patterns of Participation in Economic Activities, Department of Economic and Social Affairs, New York.
- United Nations, 1964.
Handbook of Household Surveys, Statistical Office of the United Nations, Department of Economic and Social Affairs, United Nations, New York.
- United Nations, 1970.
Manual 6, Methods of Measuring Internal Migration, New York.
- United Nations, 1973.
The Determinants and Consequences of Population Trends, Vol. 1, New York.
- United Nations, 1982.
Population of Australia, Vol. 1. Economic and Social Commission for Asia and the Pacific (ESCAP), Country monograph series No.9, United Nations, New York.
- United Nations, 1983.
Manual X, Indirect Techniques for Demographic Estimation. Department of International Economic and Social Affairs, Population Studies, No. 81, New York.
- United Nations, 1988
MortPak-Lite, The United Nations Software Package for Mortality Measurement, Department of International Economic and Social Affairs, Population Studies No.104 New York.
- Yadava, K.N.S., undated.
Determinants, Patterns and Consequences of Rural-Urban Migration in India. Forthcoming publication.
- Young, C., 1987.
Young People Leaving Home in Australia. The Trend Towards Independence. Australian Family Formation Project Monograph No.9. Department of Demography, Australian National University, Canberra.
- Young, E. A. and Drakakis-Smith, D.W., 1978.
 'Socio-economic change amongst Aborigines in the Northern Territory', seminar paper, Department of Human Geography, Australian National University, Canberra.

Young, E. A., 1981a.

Tribal Communities in Rural Areas. Development Studies Centre, Australian National University, Canberra.

Young, E. A., 1981b.

'The medium-sized town in the context of mobility: rural-urban linkages and decentralization policies', in Jones, G.W. & Richter, H.V. (eds.), *Population Mobility and Development*, Monograph No. 27, Development Studies Centre, Australian National University, Canberra, pp. 305-327.

Young, E. A., and Fisk, E.K. (Eds.), 1982.

Town Populations, Development Studies Centre, Australian National University, Canberra

White, J.P. and Lampert, R., 1987.

'Creation and discovery', in D. J. Mulvaney and J. Peter White (Eds), *Australians to 1788*, Fairfax, Syme & Weldon Associates, Broadway, New South Wales, pp. 3-24.

White, J.P. and Mulvaney, D.J., 1987.

'How many people', in D. J. Mulvaney and J. Peter White (Eds), *Australians to 1788*, Fairfax, Syme & Weldon Associates, Broadway, New South Wales, pp. 115-117.

World Health Organization (WHO), 1977.

Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death, 1975 Revision, World Health Organization, Geneva.

Zachariah, K.C., 1968.

Migration in Greater Bombay. Asian Publishing House, Bombay.