DEPARTMENT OF STATISTICS

ANNUAL REPORT - 1962 ?.1963.

Staff

Professor	E. J. Hannan, B.Com., Ph.D.
Senior Lecturer	C. R. Heathcote, B.A., Ph.D.
Lecturers	P. Winer, B.Sc.
	W. J. Ewens, B.A., Ph.D.
	E. A. Fridriksdottir, M.Sc.(Econ.)
Senior Tutor	J. H. T. Morgan, B.A., M.Sc.

Teaching Programme

	Initial Enrolment	Number Examined	H.Dn.	Dn.	Credit	Pass*	Fail
Statistics I	134	107	1	2	5	58	41
II	32	21	-	4	2	13	2
III Option A	18	17	1	2	-	11	3
Option B	3	3	-	-	-	3	-
IV	3	3	-	2**	1**	-	-
Masters Preliminary	2	2				2	
Masters Degree (Thesis stage)	2	1			1		
Total	194	154	2	10	8	88	46

*   Including Pass with Merit
** Two students received Honours IIb and one Honours III.

The failure rate in Statistics I (38% of those who sat) was higher than in recent years when it has been around 32%) but the proportion of students passing, of those initially enrolled, was slightly higher than in 1962 (49% compared to 46%).   The differences are probably chance though a change in the method of setting and collecting worked examples during the year may have induced more students to sit for examination with a consequent slight rise in the failure rate.

In Statistics II a remarkably large number did not sit for examination.   Of the eleven who did not sit, four withdrew very soon after the course began and amongst these were at least two who had studied first year mathematics some years earlier and were unable to understand the mathematics in the Statistics II course.   Six of the remaining seven were part time students, most of whom gave "pressure of work" as a reason for withdrawing.   Quite a large number of students taking Statistics II are working in E.D.P. systems in Canberra and have been pressed by their employers to study mathematical statistics.   Many are not truly interested and this may explain at least some of the high withdrawal rate.

The break up of students by faculties was as follows:

	Statistics I	II	III	IV	Masters	Total
Economics	105	10	17	1	2	135
Arts	28	17	4	2	1	52
Science	1	5	-	-	1	7
	134	32	21	3	4	194

Research Programme

Multiple Time Series. (Hannan). Work on estimating regression relations when the explanatory variables are measured subject to error was completed and will shortly be published in Biometrika. Other work, along the same lines, on relations involving distributed lags was completed and has been submitted for publication.

Generalised Stationary Processes. (Hannan). The study of second order stationary processes on a Cartan symmetric space was commenced. A series of lectures on this subject was given at the Fourth Summer Research Institute of the Australian Mathematical Society.

The Estimation of Seasonal Variation. (Hannan). The study of this subject was continued and a paper was prepared for the ANZAAS conference on a model for a changing seasonal.

Genetics. (Ewens). Work was continued on probabilistic problems arising in population genetics.

Diffusion Processes. (Ewens). Diffusion approximations in genetic models (and in general) were studied.

Renewal Theory. (Heathcote). Research carried out was in the general field of renewal and random walk theory, with application to unstable queueing systems. A specific problem considered was that of obtaining an asymptotic expansion for the expected value of the maximum of a transient random walk on the non negative integers. The work is almost completed.

Order Statistics. (Winer). Order statistics applied to estimation problems in censored samples.

Queueing and Traffic Theory. (Morgan). Queueing problems considered were those in which the number of servers was under control.

Publications.

Ewens, W. J.   1. Diploid populations with selection depending on gene
                    frequency. J.Aust.Math.Soc. III, Part 3, 359-374.

                2. The mean time for absorption in a process of genetic type.
                    J.Aust.Math.Soc. III, Part 3, 375-383.

                3. Two asymptotic results in sequential analysis. Aust.
                    J. of Statistics. Vol. 5, No.13, 1-4.

                4. The diffusion equation and a pseudo-distribution in
                    genetics. J.Roy.Stat.Soc., Series B.

                5. Numerical results and diffusion approximations in a
                    genetic process. Biometrika, Vol.50, Pts 3-4.

Hannan, E. J.   1. Regression for time series.   Time Series Analysis edited by M. Rosenblatt, John Wiley, 1963, 17-37.

2. The estimation of seasonal variation in economic time series. Journal of the American Statistical Association, 58, 31-44.

3. Regression for time series with errors of measurement. Biometrika, 50, Pts. 3-4.

4. (with B.V. Hamon). Estimating relations between time series. Journal of Geophysical Research, Vol. 68, No. 21, November, 1963

Winer, P.   The estimation of the parameters of the iterated exponential distribution from singly censored samples. Biometrics 19, 460-464.

E. J Hannan

13th January, 1964.