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RESEARCH DEGREE COMPLETION RATES

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ABSTRACT

The University of Sydney has the largest research higher degree program in Australia, with 3351 postgraduate research student enrolments in 1999. Consistent with its goal of enhancing research training, the need exists for improved management data which supports assessment of the effectiveness of the teaching and learning environment, identifies wastage within the system and leads to improvements.

Against this background a study has been undertaken of the rate of completion of postgraduate research students. The analysis takes the cohorts of commencing PhD and Masters Research students by Faculty each year from 1987 to 1998 and shows the number and percentage of students by gender who completed, as well as their completion time measured in terms of the number of equivalent full-time years between commencement and the submission of a thesis for examination. It enables the monitoring of comparative performance between faculties and against University norms. The analysis also identifies students who have discontinued, transferred to another research degree, were under examination or who were continuing as at the end of 1998.

Two variables have been derived. Firstly, Average Completion Rates, which represent the total number of students completing divided by the total number students in the commencing cohorts over the five year period 1987 to 1991, and secondly, Weighted Average Completion Times, which are calculated over a span of 5 years (1987 to 1991). The average completion times are weighted according to the number of completions at each bracket of EFTYR at completion.

The data have been extracted from files created in parallel with the first submission of the annual DETYA Student Data Collections which have as a reference date 31 March.

The analysis was initiated and carried out by the Planning Support Office in response to perceived need of the senior academic and administrative staff of the University. There were a number of major difficulties to be overcome. Perhaps the most difficult was the collection and organisation of the data on which the analysis was to be based.

RESEARCH DEGREE COMPLETION RATES

1. INTRODUCTION

The impetus to undertake a study of completion rates and times emanates from a number of sources. One of the major goals embodied in the University's Strategic Plan refers to the University developing its reputation as an institution where pure and applied research and research training are conducted at nationally and internationally recognised standards. Consistent with this goal, the University has recognised the need for improved management data which supports assessment of the effectiveness of the teaching and learning environment, identifies wastage within the system and leads to improvements.

In the recent Discussion Paper on Higher Education Research and Research Training released in June, 1999, reference is made to the Australian Government's intention to require institutions to develop strategic Research and Research Training Management Plans. These plans will be required to include auditable performance indicators which allow institutions to compare themselves with the higher education research system as a whole, as well as allowing for self assessment demonstrating how well an institution has met its strategic objectives.

Against this background the need clearly exists to examine the rate at which research students complete their degrees, transfer, fail and discontinue, as well as to measure the amount of time taken from commencement of candidature to submission of a thesis. The analysis described below builds on an earlier study undertaken in 1994 and attempts to provide a simple measure of completion rates and times that can be used for self assessment as well as for intra- and inter-institutional comparison. At this stage the summary results in this report must be regarded as preliminary since the final report is not due for release until December, 1999.

2. THE DATA

The enrolment data used for this study came from files produced in the Statistics Unit developed specifically to preserve key historical data elements which were not readily available from other sources. Development of these files was necessary since neither the University's own student record system or the DETYA student data collection contained all of the data elements required. For example, the DETYA student data collection has only recently included research degree students beyond DETYA time limits. Furthermore the University's own student record system does not include enrolment data relating to students enrolled at the Faculty of Health Sciences or Orange Agricultural College. Both of these formerly independent institutions currently maintain separate student record systems.

The key features of this Special Purpose Data Collection (SPDC) are as follows:

1. In common with the DETYA first submission, it reports the full-year situation as it appears at the 31 March each year, although there are a number of limitations arising from this feature.

2. It includes enrolments of research students beyond DETYA time limits which are not found on earlier DETYA enrolment files.

3. Further work has been done to verify key data elements and correct significant errors found in the data.

Given more time it may be possible to achieve more accurate results and to correct or find explanations for apparently anomalous data. The second submission of the DETYA load file could provide information on actual second semester load, and the third submission may also provide useful information. However there was the need to achieve a balance between the resource input and the desirable quality of outcome.

Completions data:

There were two sources of completions data used in this study. The only completions data available for Health Sciences and Orange Agricultural College is that contained in the DETYA files. It should be noted that these two areas account for only a small number of research degree enrolments. Much more detailed information is available for those students enrolled on the main student record system. A number of data elements relating to completions for the years 1987 to 1999 were extracted from the mainframe database.

Our initial intention was to simply extend the original study (1987-1994) to 1998, using the same method. It soon became evident that the improvement in computing resources available to us provided the opportunity for considerable improvement in the computing aspect of the study. In particular it is now possible to work with much larger files. Enrolments during the period 1987-1999 rose from 18089 to 35147 and the combined enrolment file for the period has 337637 cases (37mb), a size that can now be handled with ease. In the earlier study it was not possible to work with such a large file which made checks for consistency across the years much more complicated.

After making the consistency and completeness checks on the combined enrolment file, the data relating to research degree enrolments was then extracted. This file became the core to which completions data was added to enable further processing of the data.

The completions data were produced by downloading data from the mainframe and then adding the Faculty of Health Sciences and Orange Agricultural College data from files based on the DETYA completions files. The downloaded data required considerable work to obtain complete and consistent data and involved frequent consultation with staff in the student records area. A Completion Status Code was then computed for every completion in the file. These statuses were completed, failed and under examination.

As discussed elsewhere the current analysis distinguishes between degrees on the basis of level (PhD and Masters by research) and Faculty. The completions data were tabled over the enrolment data by faculty and level. The core file was then split into two components for further analysis: the first comprising all research degrees for which there was a Completion Status Code (CSC); the second comprising all research degrees for which there were no completions.

The second component was then subjected to further processing not required for the first. Transfers were identified and where the transfer was from Masters to PhD in the same faculty the year of first enrolment (YFE) of the PhD became (was replaced by) the YFE of the Masters. If the Masters was not a commencement during the reference period neither was the PhD. At this stage the transferring, continuing and discontinuing statuses were assigned.

3. DEFINITION OF TERMS

The terms used in the report are defined as follows:

'Commencing' – refers to all students identified as commencing in the annual enrolment files as at 31 March each year on the basis of the Course Commencement Date. (Analysis of the Special Purpose Data Collection revealed errors in a small number of dates and these were corrected.)

'Continuing' – refers to the number of students in each of the commencing cohorts who were still enrolled and had not completed by the end year, 1998.

'Transferring' – refers to the number of students in each of the commencing cohorts who were identified as having transferred out of their commencing degree and into another research degree in another faculty. Students transferring into another degree other than a research degree are not identified separately in the report. Such students are included in the category of 'discontinued'.

'Discontinued' – refers to the number of students in each of the commencing cohorts who were identified as not having re-enrolled in a year and thereafter all subsequent years up to and including the end year of 1998. 'Discontinued' includes also students who had transferred to another degree (other than a research degree) in the period up to and including the end year of 1998.

'Completions' – refers to the number of students in each of the commencing cohorts who had submitted a thesis for examination in any year in the period up to and including the end year, 1998. Completions of students who commenced prior to 1987 are excluded.

'% Completing' – refers to the percentage of the commencing cohort who had submitted a thesis for examination in any year in the period up to and including the end year, 1998.

'Students Completing by EFTYR at Completion' – refers to the amount of time in terms of equivalent full-time years between commencement and submission of a thesis. A year of full-time candidature counts as 1, a part-time year counts as 0.5.

'Weighted Average Completion Time' – refers to the average completion time for all cohorts of commencing students in the period covering 1987 to 1991 inclusive. The average is weighted according to the number of completions at each bracket of EFTYR at completion.

4. THE ANALYSIS

The analysis takes the cohorts of commencing PhD and Masters Research students by Faculty each year from 1987 to 1998. From these commencing cohorts the number and percentage of students by gender who completed are identified. Completion time is then measured in terms of the number of equivalent full-time years between commencement of candidature to submission of a thesis for examination. Also identified are the number of students by gender who have failed discontinued, transferred, are under examination or who were still continuing as at the end year, 1998.

Two variables have been derived:

Completion Rate: this represents the total number of students identified as having completed their degrees divided by the total number of commencing students in the cohort from which the completions came. The major problem faced in making meaningful calculations of completion rates relates to the span of years covered in the study. Clearly the completion rates have little meaning where a significant number of the commencing cohort are still continuing. In this study the number of students still continuing in their candidature is not significant in the commencing period 1987 to 1991 inclusive and consequently completion rates have been calculated for these years.

Weighted Average Completion Time: This calculation is based on the number of completing students from the 1987 to 1991 commencing cohorts. The calculation has been made for these years only since most students in the commencing cohorts in these years will have completed by the end year of 1998. Data for years after 1991 were not included for the same reason as for the completion rates, namely that significant numbers in the commencing cohorts are still continuing. Inclusion of these years would have skewed the weighted averages towards shorter completion times.

For the purposes of this report all Masters degrees by research offered by a particular faculty have been added together and presented as a single entry. Further, the degrees of EDD and SJD, where the research component represents two thirds of the total requirements, have been included in the PhD tables for the Faculties of Education and Law respectively. Students in Higher Doctorates have been excluded from the study. Students whose candidature exceeds the DETYA time limits are included in the study.

The report treats Masters Research and PhDs separately. One of the difficulties in matching commencements and completions for research students is caused by the incidence of students who commence a Masters by research and then transfer to PhD candidature. In other cases PhD students transfer to Masters candidature or remain enrolled in a PhD but are awarded a Masters degree.

In the study the method chosen to deal with this phenomenon is as follows:

Where the transfer occurs within the same faculty, irrespective of whether it is between degrees at the same or different levels, the whole of the candidature in both degrees is regarded as being in the degree that was awarded.

Where the transfer occurs between different faculties, either at the same or another level, the student would be regarded as 'Transferred to another research degree' in the cohort in the first faculty and counted separately as a commencement in the cohort in the second faculty.

5. THE RESULTS

Results in summary form only are presented and relate to Completion Rates, Weighted Average Completion Times and University wide summaries of the progress of the individual commencing cohorts between 1987 and 1991 by year and by faculty. Detailed results at the faculty level will be included in a separate report due for release in December, 1999.

Tables 1 (PhDs) and 2 (Masters by research) provide summaries for the University as a whole between 1987 and 1998 of the destination of each of the commencing cohorts up to and including

the end year, 1998. In addition the tables provide the distribution of those who completed according to the equivalent full-time years between commencement and completion.

Table 3 summarises by faculty the commencements, completions, average completion rates and weighted average completion times for both PhDs and Masters by research. The Graduate School of Business and the Conservatorium of Music are excluded from the summary because neither registered any commencing students in the period 1987 to 1991. Orange Agricultural College amalgamated with the University in 1994 and consequently is excluded from the table also. The Faculty of Nursing, Sydney College of the Arts and the Faculty of Health Sciences amalgamated with the University in 1990 and consequently the averages are based on data for only two years.

The Average Completion Rates for PhDs in the Faculties of Agriculture, Engineering, Medicine, Science and Veterinary Science all exceed 70% and for Masters by research, with the exception of Veterinary Science, all exceed 60%. Average Completion Rates in the faculties of Health Sciences and Nursing are of limited value since they are based on small numbers. For PhDs, females had higher average completion rates than males in 8 out of 13 faculties. Conversely for Masters by research, males had higher average completion rates in 9 out of the 13 faculties.

The Weighted Average Completion Time for PhDs (4.2 years) is exactly double that for Masters by research (2.1 years). Both weighted averages are below the time limits placed on the counting of student load by DETYA, which are 5 years for PhDs and 3 years for Masters by research. The Weighted Average Completion Times were below the University average in 8 faculties for PhDs and in 5 faculties for Masters by research.

6. CONCLUSION

The special skills of staff in the University's Statistics Unit have been harnessed to bring together research candidature data covering a twelve year period. These data have been subjected to checks for consistency and completeness with the result that we now have a core dataset suitable for analytical use and to which data for successive years and new data elements can be added.

The preliminary results presented with this paper amount to a brief summary only of the type of analysis for which the data can be used. As it is, or with further student characteristics added, the data provides the scope for a wide variety of analyses. For example, completion rates and times can be calculated for different categories of student or presented at the academic organisational unit level rather than by faculty.

It is intended that a more detailed account of the results of the study will be made available in a report due for release in December, 1999. Also it is intended that the file be offered to interested academic and general staff in the University, to perform their own analyses.