DEGREE COMPLETION AND ATTRITION RATES AND TIME TO DEGREE AT A MASTER'S INSTITUTION

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Our objectives are:

1. To examine the feasibility generating accurate data on attrition, completion and time-to degree from data that already exist at most universities.
2. To explore if such data can be used in an examination of factors that influence completion and time-to-degree.
3. Point out directions for further research on the subject of factors influencing completion and time-to-degree.

1. GENERATING THE DATA

- We use the Banner Student Information system.

- Each entering student is assigned a unique number that enabled us to track her/his academic progress.

- The data on each student include the quarter in which she/he matriculated, the graduate program in which the student is enrolled, the current enrollment status, the quarter of degree completion which enables us to calculate the time to degree, residency status, ethnicity and gender.

- We describe in the Appendix the two methods used to extract the information from the records.

- Because of the five year limit our data were limited to the four cohorts matriculating in the fall quarters of 2000, 2001, 2002 and 2003.

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- Our data cover twenty four Masters programs

- For each of the four cohorts we calculated the average completion rate and average time-to-degree for each of the programs. With four cohorts and twenty four programs we have 96 observations.

- It is possible to apply the same analysis and methodology to study individual student data rather than program averages. In this paper we study the average completion and time to degree rather than individual student data because of limits on the resources available to us.

FIELDS COVERED

STEM:
- Biology
- Chemistry
- Computer Science
- Environmental Sciences
- Geography
- Geology
- Mathematics

Social Sciences:
- Anthropology
- Political Science
- Psychology

Humanities & Arts:
- History
- English
- Music

Professional:
- Archives & Records Management
- MBA
- Mental Health Counseling
- School Counseling
- Rehabilitation Counseling
- Exercise Science
- Audiology
- Speech and Language Pathology

Education:
- Adult Education
- Secondary Education
- Educational Administration

Distribution of Matriculated Students

	2000	2001	2002	2003
% Female	67.4	64.8	58.1	58.8
% White	83.1	85.9	80.3	83.0
% Resident	66.5	68.6	71.5	68.6
% STEM	22.9	25.7	22.3	24.3
% Social Sciences	7.8	10.6	9.3	9.4
% Humanities & Arts	13.0	11.5	13.0	15.7
% Professional	34.2	28.8	33.0	33.0
% Education	22.1	23.5	22.3	17.6

Degree Completion Rates and Time to Degree

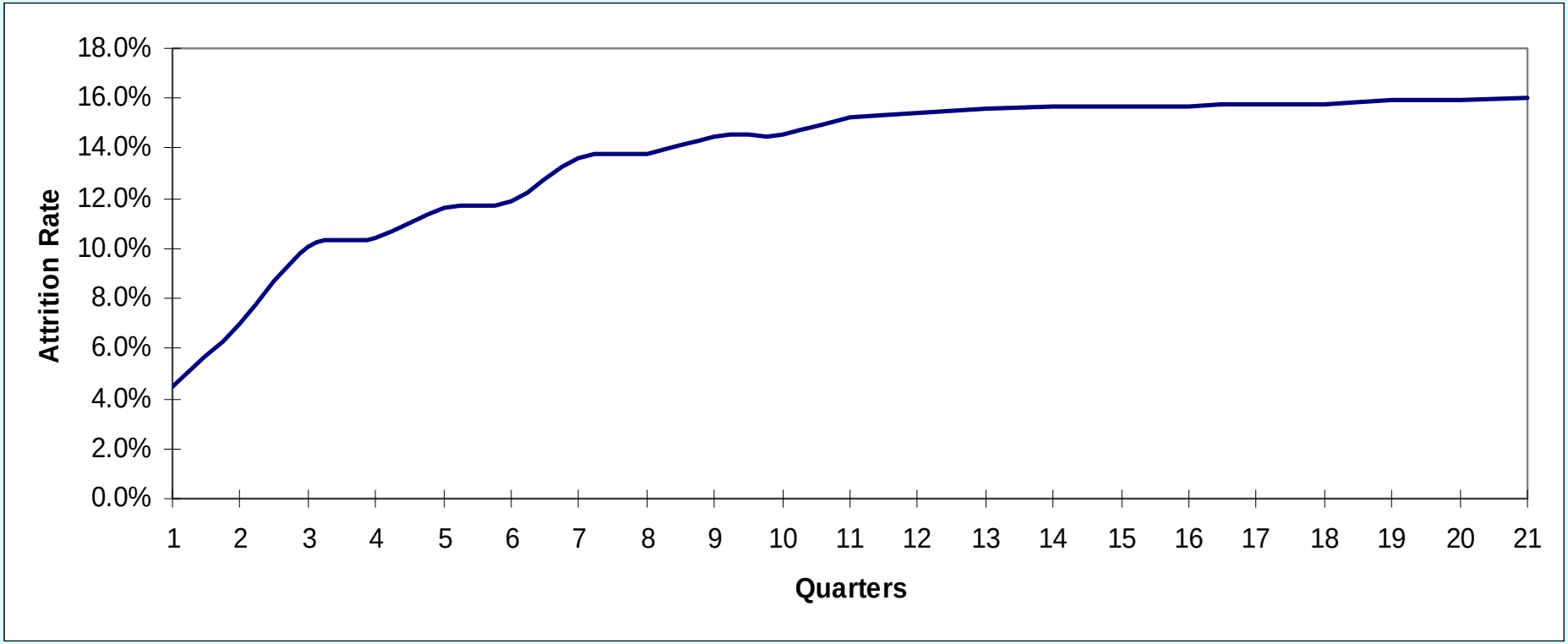
(in years)

BROAD DISCIPLINE	2000 COHORT		2001 COHORT		2002 COHORT		2003 COHORT	
	Completion Rate	Time to Degree	Completion Rate	Time to Degree	Completion Rate	Time to Degree	Completion Rate	Time to Degree
Sciences & Mathematics	67.11%	2.66	83.41%	2.61	76.72%	2.62	75.3%	2.95
Social Science	66.03%	3.23	82.60%	2.8	71.87%	2.43	72.23%	2.07
Humanities	81.90%	2.60	89.83%	2.50	83.50%	2.17	82.67%	2.20
Professional	78.24%	2.49	89.64%	2.35	73.78%	2.31	80.25%	2.26
Education	77.70%	2.33	86.67%	2.03	89.73%	2.13	83.80%	2.00
Overall	73.86%	2.63	86.60%	2.46	77.57%	2.39	78.38%	2.42

CUMULATIVE ATTRITION RATES

WITHDREW	4 COHORT AVERAGE
After 1 Quarter	4.4%
After 2 Quarters	6.9%
After 3 Quarters	10.1%
After 4 Quarters	10.4%
After 5 Quarters	11.6%
After 6 Quarters	11.9%
After 7 Quarters	13.6%
After 8 Quarters	13.8%
After 9 Quarters	14.4%
After 10 Quarters	14.5%
After 11 Quarters	15.3%
After 12 Quarters	15.4%
After more than 12 Quarters	16.0%

AVERAGE CUMULATIVE ATTRITION FOUR COHORTS



Note: General shape is similar to that of cumulative attrition in the PH.D. Completion and attrition data. However, slope in early periods is less than in Ph.D. (quarters vs. years) and asymptote is about ½ that of Ph.D. attrition rate.

CONCLUSION :

- It is possible to generate accurate data on attrition, completion and time-to-degree from existing data at institutions that use the banner system. We detail the steps involved in an appendix.

- It is likely that institutions that use other student information systems have the same data elements, and that at such institutions it is possible to generate the data.

2. FACTORS INFLUENCING COMPLETION AND TIME-TO DEGREE:

We now use the data to explore the feasibility of examining factors which may influence completion and time-to-degree.

We use data aggregated by degree program, although we will point out below that individual data can be used for analyses.

Factors influencing Degree Completion

Variable	Coefficient	Prob.
Intercept	45.842	0.004
Thesis	-9.814	0.142
Internship	-17.723	0.016
Part-time	-13.712	0.027
Lock-step	52.187	0.000
1/(Cohort-size)	35.347	0.075
Sciences	27.928	0.006
Humanities	36.880	0.000
Education	56.648	0.000
Social Sciences	25.378	0.011
% Female	0.021	0.792
% Resident	0.074	0.329
% White	-0.074	0.954

R^2 = .315 F = 3.174 Prob.=.001

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Factors Influencing Time to Degree

Variable	Coefficient	Prob.
Intercept	1.174	0.057
Thesis	0.439	0.109
Internship	0.958	0.002
Part-time	0.724	0.005
Lock step	-1.101	0.040
Sciences	0.371	0.355
Humanities	0.082	0.830
Social Sciences	0.151	0.700
Education	-1.267	0.044
% Female	0.002	0.513
% Resident	0.002	0.538
% White	0.007	0.073

R^2 = .375 F = 4.588 Prob. = .000

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CONCLUSIONS

- It is encouraging to find that students' demographic characteristics have no impact on completion rates and very little impact on the time to degree.

- However, because our sample is small, the estimated impacts of those characteristics as well as those of the programs' characteristics should not be viewed as precise measurements.

- For the students' demographic characteristics we used the percentages of students enrolled in the various programs who have the particular attribute. If a discrete choice model is applied to individual students' data, it is possible that demographic characteristics may have significant impacts.

- It is possible that for institutions bigger than ours or for data collected from a number of institutions and pooled into a larger sample to show significant effects for variables that did not have effects in this exploratory study.

3. NEXT STEPS

We suggest expanding the study in three directions:

- Analyze the data on individual students rather than program averages, using discrete choice models (such as Logit).
- Include more of the students' demographic variables that are available in the data such as residency, years since undergraduate degree, GRE scores, entering GPA, etc.).
- Encourage other institutions to generate similar data, pool data from institutions for a larger sample.

APPENDIX
CONSTRUCTING THE DATA

Our university uses the Banner Student Information System. Due to changes in student tracking methods in the years since we began using the Banner system, we had to employ different methods to identify students beginning their graduate studies in Fall of 2000, 2001 and 2002 and those beginning their graduate studies in Fall 2003. We briefly outline both methods below*.

Fall 2000, 2001, and 2002
By Cohort Code
Matriculated graduate students are identified by a cohort code unique to their quarter of admission. These records are then tied in a query to graduate level degree record types: PN (pending), XW (withdrawn) or AW (awarded), in the University's datawarehouse, which reflects only the most recent degree status posted for each student.

Since students in these cohorts are past their 5 year timeframe for degree completion, they should all have Degree status codes that would indicate they are either complete, or have been withdrawn (unless they have been granted an extension).

Tracking by cohort has certain limitations:

- Not all students are given current cohort codes when they matriculate (e.g., if they already have a graduate level cohort code because they matriculated into another graduate program earlier)

- Students in a master's program who might have been given the current cohort code when they matriculated may have subsequently matriculated into a post-master's level certification program and would have been assigned to a new cohort.

- Cohort codes that have been ended or inactivated will not be reflected in the datawarehouse.

As a result, some students were missing, and others were picked up in error. It was therefore necessary to check total numbers of students per program against matriculation lists for the given admission terms. Students were added to or removed from lists as necessary.

In some cases, academic histories of students had to be run to get the larger picture of when they began graduate studies and if/when they switched from one program to another.

Fall 2003
By Degree Record

By Fall of 2003, our office had implemented another system of coding matriculated graduate students to identify them as current and active (still within their 5 years permitted for degree completion) even if they were not enrolled for a given quarter. This is the XG (Expected Degree) record.

The XG record consists of a **Student Record Term** which is their admit term, and a **Degree Completion Term** that is set to five years and one quarter beyond the admit term (example Fall 2000=20040 and Fall 2005=200540)

If a student withdraws, or is withdrawn, the XG is changed to an XW (withdrawn) and Degree Completion Term is updated to the term the withdrawal is effective.

If a student applies for graduation, he/she receives a PN (pending) degree record. This record has the next sequence number after the active XG record.

When the student successfully completes degree requirements, the PN record is changed to an AW (awarded), and the Degree Completion Term in the XG is changed to match that indicated on the AW record. So, a student whose highest sequence number degree record is an XG or PN is still in progress, XW is withdrawn, and AW is completed.

The process:

The first step was to select all GR level student records with Student Record Term of Fall 2003 (200340). At this stage, a student who has applied to graduate or has been awarded the degree will return multiple records (XG and PN or XG and AW).

Next, we identified the maximum sequence number degree record associated with each student in the first query. The highest sequence number record should be the most current status of each student.

Once the highest sequence number degree record is determined for each student, then the applicable details of that degree record are collected and the students name and demographic data (e.g. gender, ethnicity, residency) are extracted from the student information system.

The data now reflect the most recent degree status information for each student matriculated Fall Quarter 2003.

Calculating Time To Degree:
Once we were certain that all students matriculating each fall term were accounted for and their degree completion terms identified, it was fairly simple to calculate their time to degree. Our university is on a quarter system. Terms are coded with the calendar year as the first 4 digits, and the last two digits representing the quarter (10 = Winter, 20 = Spring, 30 = Summer and 40 = Fall).

To determine the total number of elapsed quarters between matriculation and degree completion, we developed a formula for subtracting the term codes.

First it was necessary to separate the year from the quarter, for both admit and degree term codes:
Example-
Admit Term: 200040 becomes
Admit Year: 2000 and
Admit Quarter: 4

Degree Term: 200430 becomes
Degree Year: 2004 and
Degree Quarter 3

The difference in the terms can be arrived at by calculating first the difference in the years,
Year Diff= ([Degree Year]-[Admit Year]) Example result: 2004-2004
Then calculating the difference in quarters,
Quarter Diff= ([Degree Quarter]-[Admit Quarter]) Example result: 3-4=-1
And finally adding the two together (multiplying the years by 4 to convert to quarters):
TTD= (([Year Diff]*4) + [Quarter Diff] +1) Example result: (4*4) + (-1) +1=16
The +1 is added so the result is inclusive of the starting and ending quarters.

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* Note: We found that student tracking by degree record is much more reliable than using cohort codes. The only problems encountered with using the degree records are related to inconsistent data entry.

If an XG record is entered after-the-fact and has a higher sequence number than a PN or AW record, then the queries will erroneously identify the XG record as the most current status.

Also, if a PN or AW degree record is created with the graduation term entered for both Student Record Term and Degree Completion Term, then that degree record will be missed entirely, because we are selecting students based upon their matriculation term (which should be entered as Student Record Term in the XG, PN and AW records)