DOCUMENT RESUME

ED 474 944 JC 030 213

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TITLE	So How Long Have You Been Here? Using Retrospective Transcript Data To Examine Time to Completion at a Community College.
PUB DATE	2002-06-00
NOTE	24p.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	*Associate Degrees; Community Colleges; *Degrees (Academic); Nontraditional Students; *Outcomes of Education; Technical Institutes; *Time Factors (Learning); *Time to Degree; Two Year College Students; Two Year Colleges
IDENTIFIERS	City Colleges of Chicago IL

ABSTRACT

This study aims to quantify progress to the Associate degree. Transcripts of approximately half a class of degree recipients at a large multi-campus urban community college were analyzed to determine total time to degree, both in years elapsed since the first semester of enrollment and in resident semesters completed. A total of 1,581 transcripts from the 1997-98 class of graduates of City Colleges of Chicago (CCC) were analyzed. Of the 731 Associate degrees awarded in 1997-98, 313 recipients who reflected the makeup of the entire group were selected for the sample. The transcripts of these graduates were evaluated for a number of items, including the number of times they changed academic major, whether the student brought in any transferred hours and from what institution, and whether the student was in developmental studies. The guiding purpose of the study was to assess any student characteristics that might be associated with completion of an Associate degree within three years (the 150% rule). This class took an average of 5.9 years since first enrollment at CCC and 6.7 years from first entrance into higher education to complete an Associate degree. There were 60 graduates from the sample who took at least 20 years to complete their degrees. More than 62% of students did not meet the 3-year standard. Contains 22 references. (NB)

So How Long Have You Been Here?

Using Retrospective Transcript Data to Examine Time to Completion at a Community College

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Transcripts of approximately half a class of degree recipients at a large multi-campus urban community college were analyzed to determine total time to completion of an Associate degree, both in years elapsed since the first semester of enrollment and in resident semesters completed, in an effort to quantify the average and maximum such figures to be expected by similar institutions. Other student variables as well were analyzed. On average, a graduate took 4.2 calendar years and 9.6 semesters of resident coursework to complete an Associate degree. Only 37.4 percent of the sample completed their degrees within three calendar years.

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Transcripts of approximately half a class of degree recipients at a large multi-campus urban community college were analyzed to determine total time to completion of an Associate degree, both in years elapsed since the first semester of enrollment and in resident semesters completed, in an effort to quantify the average and maximum such figures to be expected by similar institutions. Other student variables as well were analyzed. On average, a graduate took 4.2 calendar years and 9.6 semesters of resident coursework to complete an Associate degree. Only 37.4 percent of the sample completed their degrees within three calendar years.

Theoretical Framework

It has become the bane of many administrators at community colleges nationwide to attempt to reconcile the open-access model of admissions and enrollment with the need to encourage, document, and possibly incentivize students' steady and purposeful progress toward completion of a degree.

Completion of a degree is the penultimate step in the career of a student. At a four-year institution, the path taken to the completion of a degree is relatively predetermined and well mapped out. Traditional four-year students, many of whom may be living on campus, come prepared with at least a general idea of a desired major and subsequent career path, not to mention a skill set appropriate to the task and financial and social support systems ready to assist them, and thus have preparedness and goal-centeredness on their sides in their quest to completion.

Community and technical colleges serve student populations for whom those factors are not guaranteed. Our students may come to us with no clear idea of a desired discipline, lives that are already full with work and family responsibilities, financial challenges, or skills that may require remediation before college-level work can be done. They may also come to us with a very clear idea of a discipline and career path, excellent prerequisite skills, the well-defined goal of completing transfer work at a lower cost, or interest in a narrow career skill that does not require a degree. The mission of the community and technical college is to provide a place for all of those students to be served.

Quantifying progress to the Associate degree in such a multi-purpose atmosphere can prove extremely frustrating. To gain greater understanding of the factors underlying persistence toward a degree, researchers have turned to tracking students from admission (Holton 1998) and creating models to predict completion (Kaliszeski 1988, Widlak 1997, Wyman 1997). Many variables have been posited to affect the likelihood of degree completion, including social and

academic integration (Tinto 1997, Napoli & Wortman 1998), pre-enrollment academic preparation (Clagett 1996, Hoyt 1999, Grimes & David 1999), and intent (Widlak 1997).

Once classic tracking programs have begun, however, researchers inevitably are faced with this question: "how much time should reasonably be given a student to complete their degree before we stop tracking them?" (Desantis-John 2001).

Project Genesis and Methodology

In response to growing concern over the college's graduation rate and general questions concerning the timely progress of students toward graduation, the institutional research department at a large multi-campus urban/suburban technical college (henceafter, "the College") was tasked in early 2000 with a retrospective analysis of recent graduates. A retrospective analysis would enable college administrators to see exactly how long graduates took to complete their coursework and other general information.

Retrospective transcript analysis has been used to great success (Garcia Z. 1994) to quantify the whole picture of a community college student's progress to completion of a degree. The transcripts of a class of 1581 graduates of the City Colleges of Chicago (CCC) were exhaustively analyzed to identify the typical and maximum amount of time a graduate takes to completion of an Associate degree. Calendar years elapsed since first enrollment at CCC and first enrollment in any institution of higher education were measured; this sample took an average of 5.9 years since first enrollment at CCC and 6.7 years from first foray into higher education to complete an Associate degree. There were sixty graduates among the sample of 1581 who took at least twenty calendar years to complete their degrees.

The methodology employed by Garcia also enabled extensive classification of the hours earned on the CCC transcripts to account for stopouts, coursework completed toward the desired degree, and "extra time enrolled," as well as coursework completed at other institutions during breaks from CCC and transferred in.

The impetus for the present study was furthered by a generous offer of research assistance in trade for credit in a graduate research methodology course offered by a senior faculty member at the nearby research university. Three graduate students were assigned to conduct data analysis on a chosen project, and it was determined that these students would provide crucial data collection support in the retrospective transcript analysis study.

An ambitious design for the scope of the project was developed by the IR staff; this design was cut back through negotiations with the faculty advisor and the graduate students about the time feasibility of the study. The sample size was narrowed to approximately half of a recent graduating class of Associate degree recipients. Of the 731 Associate degrees awarded in 1997-1998, 313 recipients were selected for the sample, stratified to reflect the makeup of the entire group on both academic department of major and a combined gender/race variable.

Unofficial transcripts were printed for those students selected for the sample, and the three graduate students were trained to consistently evaluate the transcripts for several items: whether

the student carried an all-developmental studies (DVS), all-curriculum level, or mixed course load in their first semester after admission; the number of times the student changed academic majors; whether the student brought in any transferred hours and from what institutions; the calendar date of their first semester at the College and the date on which they received the Associate degree; and the total number of terms they enrolled at the College, whether they finished the term successfully or not.

These variables were collected and input along with the information originally collected on these students: academic major in which the degree was awarded, gender, race, and date of birth. Additionally, several new variables were created: those students reporting transfer hours or none were sorted into "transfer" and "native" groups, the amount of time lapsed between entry to the College and graduation was recoded into years, and those students who completed their Associate degree in less than 36 months at the College were further defined by a variable denoting completion within 3 years.

Please note that the definition of "time at the College" for purposes of this study reflects the raw calendar time lapsed between the first time the student enrolled at the College and the date they received an Associate degree in 1997-1998. It does not in any way reflect stopouts, semesters in which the student dropped or failed all classes, or any other typical measure of continued progress toward the degree.

Also, in that the College transcript does not indicate the dates of attendance at other institutions, there is no way of prorating transferred hours to indicate the amount of time it took to complete them, nor whether they were earned before or at some point during the student's enrollment at the native institution.

One important limitation must be noted at the start. The guiding purpose of the research was to assess any student characteristics that might be associated with completion of an Associate degree within three years (36 months), the standard for gauging timely progress toward a two-year degree according to the National Graduation Rate Survey (GRS) 150 percent rule. This rule mandates that colleges identify first-time, full-time freshmen and track them to completion of their degrees, and annually report which percentage of these first-time, full-time freshmen complied with the GRS 150 percent rule.

Where this research project was able to count time toward completion, it did not attempt to identify which of the 1997-98 degree recipients sampled were among the College's initial cohort of first-time, full-time freshmen. This project does address characteristics of students who completed Associate degrees in three years or less and in more than three years, but these cohorts are not equivalent to those used to measure and report compliance with the 150 percent GRS rule. These cohorts include students with transfer hours and students who were not full-time their first semester. This research sought to describe all of the 1997-98 graduates sampled and not just those in the GRS first-time, full-time cohort.

Analysis

Description of Sample

The 313 students selected for the sample are summarized by gender and race in Table 1 below, along with the number and percentage of each group in the original entire population of 731 graduates.

Table 1: Sample Stratification by Gender and Race

	Frequency	Percent	1997-98 Population Frequency	Percent
White Males	81	25.88	190	25.99
Nonwhite Males	28	8.95	68	9.30
White Females	141	45.05	317	43.37
Nonwhite Females	63	20.13	156	21.34

The largest group of students were white females (45.1 percent; population representation 43.4 percent), followed by white males (25.9 percent; 26.0 percent), nonwhite females (20.1 percent; 21.3 percent), and nonwhite males (9.0 percent; 9.3 percent).

Stratification was done by gender/race crossed with academic department of major; for ease of explanation, the strata are presented separately here. Table 2 presents the sample representation in each academic department, along with the number and percentage of each department's majors in the original entire population of 731 graduates.

Table 2: Sample Stratification by Academic Department of Major

	Frequency	Percent	1997-98 Population Frequency	Percent
Arts & Sciences	93	29.71	197	26.95
Business/Information Systems	105	33.55	263	35.98
Industrial/Engineering Technology	33	10.54	75	10.26
Nursing/Health Science	82	26.20	196	26.81

The largest group of graduates majored in Business/Information Systems (33.6 percent; population representation 36.0 percent), followed by Arts & Sciences (29.7 percent; 27.0 percent), Nursing and Health Sciences (26.2 percent; 26.8 percent), and Industrial/Engineering Technologies (10.5 percent; 10.3 percent).

When their transcripts were examined, 166 of the 313 graduates (53.0 percent) were classified as "native" students, meaning that no work completed at other institutions was found on their

transcripts. The remaining 147 students (47.0 percent) were classified as "transfer," meaning that they had transferred at least some work in from another institution.

The first semester of each student's work at the College was also examined to see if they started in any Developmental Studies courses. They were sorted into "All DVS," "All curriculum level," and "Mixed" groups. Most of the graduates (180 graduates, 57.5 percent) were found to have started "All curriculum level," followed by 88 students (28.1 percent) with a "Mixed" first semester, and 45 students (14.4 percent) who graduated began with a first semester made up entirely of DVS coursework.

A variable was created to denote whether each student met the three-year standard in their progression to graduation. For purposes of this study, this variable was defined broadly. The "start date" from the College transcript was the month and year of the beginning of their first semester of work, and the "end date" was the month and year in which they received their degree, from this sample, in 1997-98. For example, a student whose first semester at the College was Fall 1991 and who graduated in May 1998 completed their degree in 81 months, or 6.75 calendar years; this student would not have met the three-year standard. This variable in no way adjusts for stopouts, full- or part-time work, or work completed at other institutions. It is merely a raw representation of the amount of time students worked at their degrees at the College before completion. Another variable was created that represented the total number of semesters students enrolled during that total College career; the ratio of these two variables gives a rough estimate of the persistence of coursework attempted during that time.

Of the 313 graduates whose transcripts were analyzed, 196 (62.6 percent) did not meet the three-year standard, taking longer than three calendar years to complete their degrees; the remaining 117 graduates (37.4 percent) did meet the standard.

Table 3 summarizes the crosstabulation of the native/transfer variable with the variable measuring whether each graduate met the three-year standard.

Table 3: Native/Transfer Status and Compliance with Three-Year Standard

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Native, 3 yrs +	120	38.34	120	38.34
Native, 3 yrs or less	46	14.70	166	53.04
Transfer, 3 yrs +	76	24.28	242	77.32
Transfer, 3 yrs or less	71	22.68	313	100.00

The largest group of students, about two-fifths of the graduates (38.3 percent), had only attended the College and did not meet the three-year standard. Almost a quarter (24.3 percent) had brought hours in from other institutions and also did not meet the three-year standard. The next largest group (22.7 percent) transferred hours in but did meet the three-year standard. The smallest group (14.7 percent) attended only the College and met the three-year standard.

Other data collected from the transcripts included the number of times each graduate changed program majors and the number of transfer institutions listed and total hours transferred in.

The entire sample of 313 students are summarized by whether or not they met the three-year standard, and their curricular standing at admission in Table 4.

Frequency
Percent
Row Pct
Col Pct

Table 4: Entire Transcript Analysis Sample, Compliance with Three-Year Standard by DVS Status at Admission

Three-Year Standard	Developmental Studies Status at Entry			Total
	All DVS	All curric	Mixed	
> 3 Yrs	41 13.10 20.92 91.11	90 28.75 45.92 50.00	65 20.77 33.16 73.86	196 62.62
<= 3 yrs	4 1.28 3.42 8.89	90 28.75 76.92 50.00	23 7.35 19.66 26.14	117 37.38
Total	45 14.38	180 57.51	88 28.12	313 100.00

Of the 313 1997-1998 Associate degree graduates at the College, 180 (57.5 percent) started in all curriculum-level coursework. Half of these (50.0 percent of the column) completed their degrees in three years or less and half did not. This group had the best rate of compliance with the three-year standard. Compliance with the standard tended to decrease as the amount of DVS coursework in the first semester increased. Among those students who started with a mixed DVS/curriculum-level schedule, only 26.1 percent met the three-year standard; this percentage declined to 8.9 percent among those who started with an all-DVS schedule.

Graduates were then tabulated according to their native/transfer and completion status and DVS status at admission for each gender/race group. This is summarized in Table 5.

Table 5: DVS at Admission and Compliance with Three-Year Standard in Gender/Race Groups

9798 Associate Recipients		Gender/Race							
		White Males		Nonwhite Males		White Females		Nonwhite Females	
		N	PctN	N	PctN	N	PctN	N	PctN
DVS at Admission	Group								
All DVS	Native, 3 yrs +	4	4.94	2	7.14	13	9.22	17	26.98
	Native, 3 yrs or less	1	1.23	.	.	1	0.71	1	1.59
	Transfer, 3 yrs +	2	2.47	.	.	1	0.71	2	3.17
	Transfer, 3 yrs or less	1	1.23	.	.	.	.	.	.
All curric	Native, 3 yrs +	9	11.11	2	7.14	16	11.35	8	12.70
	Native, 3 yrs or less	7	8.64	2	7.14	15	10.64	2	3.17
	Transfer, 3 yrs +	14	17.28	4	14.29	27	19.15	10	15.87
	Transfer, 3 yrs or less	20	24.69	3	10.71	29	20.57	12	19.05
Mixed	Native, 3 yrs +	10	12.35	9	32.14	22	15.60	8	12.70
	Native, 3 yrs or less	5	6.17	1	3.57	10	7.09	1	1.59
	Transfer, 3 yrs +	7	8.64	3	10.71	5	3.55	1	1.59
	Transfer, 3 yrs or less	1	1.23	2	7.14	2	1.42	1	1.59
Total		81	100.00	28	100.00	141	100.00	63	100.00

This table gives percentages of each gender/race classification—white males, nonwhite males, white females, and nonwhite females, in each combination of DVS status at admission and the combined native/transfer/compliance with three-year standard variable. Frequencies are listed, along with percentage calculated on the total at the bottom of the table; the denominator is the total number of white males, nonwhite females, etc. in the sample. Therefore, comparing the four percentages across rows gives an indication of high or low representation of gender/race in each DVS/compliance group.

For example, nonwhite females seem to be somewhat overrepresented in the group of graduates who started in an all-DVS schedule, were native to the College, and took more than three years

to complete their degrees. Of the nonwhite females in the sample, 27.0 percent fell into this classification, compared to 9.2 percent of white females, 7.1 percent of nonwhite males, and 4.8 percent of white males.

Among the group of graduates who started in all curriculum-level courses, two low percentages stand out. Only 3.2 percent of nonwhite females were all curriculum-level, native to the College, and finished within the three-year standard, compared to 10.6 percent of white females, 8.6 percent of white males, and 7.1 percent of nonwhite males. Nonwhite males were underrepresented (10.7 percent) among those with all curriculum-level at admission, transfer hours and completion within three years, compared to nonwhite females (19.1 percent), white females (20.6 percent), and white males (24.7 percent).

Nonwhite males were heavily represented in the category of students who started with a mixed DVS/curriculum-level schedule, native to the College, and took more than three years to finish; 32.1 percent of nonwhite males were in this category, compared to 15.6 percent of white females, 12.7 percent of nonwhite females, and 12.4 percent of white males. Interestingly, they were also overrepresented in the category of mixed schedule, transfer hours, and completion within the three year standard; 7.1 percent of nonwhite males fell into this category, compared to 1.6 percent of nonwhite females, 1.4 percent of white females, and 1.2 percent of white males.

Another discrepancy was seen for both groups of males compared to females. In the category of mixed DVS/curriculum-level schedule, transfer hours, taking more than three years to completion, 10.7 percent of nonwhite males and 8.6 percent of white males were classified, compared to 3.6 percent of white females and 1.6 percent of nonwhite females.

Taken as a whole, it appears that both nonwhite males and females tend to be slightly overrepresented in classifications native to the College, and nonwhite females tend to be slightly overrepresented in the group of graduates starting with all-DVS schedules.

Average Years and Semesters at the College

Table 6 summarizes the count variables used in this analysis. Broken down by DVS status in initial schedule and completion within the three-year standard, the table lists average years at the College, number of semesters completed at the College, and for those students with transfer hours, the number of other institutions and total hours transferred in.

Table 6: Years and Semesters at the College, Transfer Variables by DVS Status, Three-Year Standard Compliance

9798 Associate Recipients		Years at the College			Semesters at the College		Number of Other Schools			Hours Transferred In	
		N	Mean	Std	Mean	Std	N	Mean	Std	Mean	Std
DVS at Admission	Three-Year Standard										
All DVS	> 3 Yrs (Not Met)	41	5.96	1.57	14.24	3.31	5	2.20	1.79	21.80	18.43
	<= 3 yrs (Met)	4	2.71	0.28	7.50	1.29	1	2.00	.	24.00	.
	Total	45	5.67	1.76	13.64	3.72	6	2.17	1.60	22.17	16.51
All curric	Three-Year Standard										
	> 3 Yrs (Not Met)	90	5.35	1.82	10.61	3.47	55	1.44	0.76	24.25	18.52
	<= 3 yrs (Met)	90	2.13	0.68	5.74	1.86	64	1.55	0.83	30.16	18.59
	Total	180	3.74	2.12	8.18	3.70	119	1.50	0.80	27.43	18.71
Mixed	Three-Year Standard										
	> 3 Yrs (Not Met)	65	5.01	1.69	11.54	3.68	16	1.31	0.60	18.06	15.42
	<= 3 yrs (Met)	23	2.39	0.44	6.91	1.44	6	1.33	0.82	12.00	8.69
	Total	88	4.33	1.87	10.33	3.83	22	1.32	0.65	16.41	13.99
Total		313	4.18	2.10	9.57	4.19	147	1.50	0.83	25.56	18.34

The first five columns of the table summarize data for all students, regardless of transfer status; the rightmost five columns summarize data only for those students in each category who brought in hours from at least one other institution.

The first column lists number of students in each classification of initial DVS/curriculum-level schedule and compliance with the three-year standard; the cell totals in the first column are the same as those found in Table 4. The second column lists the mean (average) number of calendar years each group of students spent at the College; the third column lists the standard deviation of that variable.

From the cell aggregate means, we see that the average student who started at the College with an all curriculum-level schedule, irrespective of completion within three years, took 3.74 calendar years to do so; this number increased to 4.33 calendar years for those students who started with a mix of curriculum-level and DVS coursework, and to 5.67 years for those students who started with an all-DVS schedule. Overall, the 313 graduates in this sample took 4.18 calendar years to finish their degrees at the College.

When completion within three years is also taken into account, a slight variation in the pattern occurs. Among those who complied with the standard, the least amount of time was taken by those who started with an all curriculum-level schedule (2.13 years), followed by the mixed schedule group (2.39 years) and the all-DVS group (2.71 years, although this subgroup consisted of only four students). Among the noncompliers, the fastest group was those students with a mixed schedule (5.01 years), followed by the all curriculum-level group (5.35 years) and the all-DVS group (5.96 years).

Findings are similar for the number of semesters completed; it is important to remember that both variables are listed because "Years at the College" reflects the raw calendar time elapsed between a student's entry and graduation, and "Semesters at the College" reflects the actual number of semesters enrolled in that time.

The all curriculum-level group as a whole took 8.18 semesters to finish their degrees; this figure increased to 10.33 semesters for those students who started with a mixed schedule, and 13.64 semesters for those who started in an all-DVS schedule. Overall, the 313 students sampled who graduated in 1997-98 took 9.57 semesters of work to finish their degrees.

When completion within three years is factored in, the pattern for semesters remains the same. Among those who met the standard, the smallest number of semesters is seen among those who started with an all curriculum-level schedule (5.74 semesters), followed by the mixed schedule group (6.91 semesters) and the all-DVS group (7.50 semesters). Unlike the trend for years, the noncompliers behave accordingly; the smallest number of semesters is seen among the all curriculum-level group (10.61 semesters), followed by the mixed schedule group (11.54 semesters) and the all-DVS group (14.24 semesters).

Transfer Institutions and Hours

The rightmost five columns of Table 6 summarize information for a subset of the larger student sample: all students who brought in hours from institutions outside the College. The first column lists the number of such students in each subclassification. A total of 148 students listed at least one transfer institution; these came predominantly from the group who started at the College with an all curriculum-level schedule (120 of 180). Only 22 of the 88 students with mixed schedules also had transfer hours, and only 6 of the 45 students with all-DVS schedules had transfer hours.

The all curriculum-level group is so heavily represented among all students with transfer hours that their means tend to be very close to the means for the group as a whole. Overall, any student reporting transfer hours went to an average of 1.49 outside institutions to get them; this

figure was exactly the same among the all curriculum-level group (1.49 institutions), slightly lower for the mixed schedule group (1.32 institutions) and higher for the six students with all-DVS schedules (2.17 institutions).

The all curriculum-level group also tended to bring in more hours. Overall, any student from the sample transferring in hours brought in an average of 25.56 hours. The all curriculum-level group brought in more (27.43 hours), followed by the small all-DVS group (22.17 hours) and the mixed schedule group (16.41 hours). There was a slight interaction effect seen in this group. Among the all curriculum-level group, compliers with the three-year standard transferred more hours (30.16) than did noncompliers (24.25 hours). Among the mixed schedule group, however, compliers brought in fewer hours (12.00 hours) than did the noncompliers (18.06 hours). For purposes of this comparison, the all-DVS group was too small to consider.

Age, Year and Semester Analysis by Native/Transfer/Completion Group

Table 7 summarizes averages and standard deviations for years and semesters at the College for the combinations of the native/transfer/completion within three years variable and DVS status at admission. In this table, DVS status is the embedded variable, so it also provides a slightly different perspective for comparison.

Table 7 also summarizes the average age at completion for the graduates in each group. Age is an important variable to consider since it would be a natural covariate of time to completion of a degree when consistency of enrollment can be unstable. On average, graduates who remained native to the College and completed their degrees in three years or more were 30.3 years old at completion. Those who remained native and completed their degrees within three years were 26.2 years old at completion. Those bringing transfer hours and completing in more than three years were 32.2 years old at completion, and those bringing transfer hours and graduating within three years were 28.5 years old at completion. Within each major block, those graduates who started their careers with all-DVS schedules tended to be the oldest at graduation.

The subtotal number of students in each of the four major blocks correspond to the frequencies given in Table 3. One hundred twenty graduates were native to the College (no transfer hours reported) and completed their degrees in more than three years; on average, they took 5.4 years and 12.7 semesters of coursework to do so. Forty-six graduates were native to the College and complied with the three-year standard of completion; they took an average of 2.6 years and 7.0 semesters to graduate. Seventy-six graduates reported transfer hours and did not comply with the three-year standard; they took an average of 5.4 years and 10.1 semesters to graduate. Seventy-one graduates reported transfer hours and completed their degrees in three years or less; they took an average of 2.0 years and 5.4 semesters to do so.

Table 7: Age, Years and Semesters by Native/Transfer/Completion and DVS Status at Admission

9798 Associate Recipients		Years at the College			Semesters at the College		Age at Graduation	
		N	Mean	Std	Mean	Std	Mean	Std
Group	DVS at Admission	36	5.78	1.43	14.50	3.34	34.00	8.06
Native, 3 yrs +	All DVS							
	All curric	35	5.32	1.78	11.89	3.15	29.95	7.32
	Mixed	49	5.10	1.67	11.92	3.42	27.90	7.49
	Total	120	5.37	1.65	12.68	3.50	30.33	7.97
Native, 3 yrs or less	DVS at Admission	3	2.83	0.14	7.67	1.53	26.22	9.05
	All DVS							
	All curric	26	2.61	0.39	6.88	1.28	26.54	8.85
	Mixed	17	2.46	0.44	7.12	1.41	25.57	9.05
	Total	46	2.57	0.40	7.02	1.32	26.16	8.74
Transfer, 3 yrs +	DVS at Admission	5	7.20	2.09	12.40	2.70	38.21	1.60
	All DVS							
	All curric	55	5.37	1.87	9.80	3.44	32.11	8.87
	Mixed	16	4.75	1.80	10.38	4.30	30.48	7.78
	Total	76	5.36	1.92	10.09	3.62	32.17	8.48
Transfer, 3 yrs or less	DVS at Admission	1	2.33	.	7.00	.	39.92	.
	All DVS							
	All curric	64	1.94	0.69	5.28	1.86	27.85	7.35
	Mixed	6	2.19	0.43	6.33	1.51	33.29	10.53
	Total	71	1.97	0.67	5.39	1.85	28.48	7.80
Total		313	4.18	2.10	9.57	4.19	29.75	8.37

It appears in this table that being native to the College has a much more homogenizing effect on the amount of time taken to completion than does having transfer hours. The mean times to completion were much more similar across the DVS status groups among the native classifications than in the transfer classifications. Among the native/more than three years to completion group, mean years varied little: 5.3 years for all curriculum-level, 5.1 years for mixed schedule, 5.8 years for all-DVS. Similarly, among the native/three or fewer years group, mean years varied little: 2.6 years for all curriculum-level, 2.5 years for mixed schedule, 2.8 years for all-DVS.

There was much more variation seen among the groups with hours transferred in. Among the transfer/more than three years to completion group: 5.4 years for all curriculum-level, 4.8 years for mixed schedule, and 7.2 years for all-DVS. The transfer/three or fewer years group was much more unbalanced in cell frequencies—only one graduate in the all-DVS category (2.3 years) and six in the mixed schedule group (2.2 years), to be compared to the average of 1.9 years for the all curriculum-level group.

When looking at semesters to completion, the 'native' classification had slightly less of a homogenizing effect. Among the native/more than three years to completion group, the all-DVS subgroup took the most actual terms, at an average of 14.5, compared to 11.9 among both the all curriculum-level students and the mixed schedule students. The native/three or fewer years groups were more homogeneous: an average of 6.9 semesters for the all curriculum-level students, 7.1 semesters for the mixed schedule group, and 7.7 semesters for the all-DVS group.

In the transfer/more than three years to completion category, the all curriculum-level students took an average of 9.8 semesters to completion, compared to 10.4 for the mixed schedule group and 12.4 for all-DVS students. Among the transfer/three or fewer years groups, the all curriculum-level group needed an average of 5.3 semesters, compared to the 6.3 semesters for the six mixed-schedule students, and the 7.0 semesters used by the one all-DVS student.

Gender/Race Analysis of Years and Semesters to Completion

Table 8 summarizes averages and standard deviations in years and semesters at the College, number of transfer institutions and hours transferred in for combinations of the native/transfer/years to completion variable and the gender/race categories.

Among the native/more than three years to completion group, nonwhite males took the fewest average years and the fewest semesters to complete their degrees. Nonwhite males took 4.8 years to complete their degrees, followed by white females at 5.3 years, white males at 5.5 years, and nonwhite females at 5.7 years. Nonwhite males took 12.0 semesters to finish their degrees, followed by white males with 12.3 semesters, white females with 12.4 semesters, and nonwhite females at 13.7 semesters.

Table 8: Means and Semesters at the College, Transfer Variables by Native/Transfer/Completion and Gender/Race

9798 Associate Recipients		Years at the College			Semesters at the College		Number of Other Schools			Hours Transferred In	
		N	Mean	Std	Mean	Std	N	Mean	Std	Mean	Std
Group	Gender/Race										
Native, 3 yrs +	White Males	23	5.46	2.03	12.30	4.42	0	.	.	.	.
	Nonwhite Males	13	4.75	1.21	12.00	3.72	0	.	.	.	.
	White Females	51	5.28	1.48	12.39	2.88	0	.	.	.	.
	Nonwhite Females	33	5.69	1.74	13.67	3.55	0	.	.	.	.
	Total	120	5.37	1.65	12.68	3.50	0	.	.	.	.
Native, 3 yrs or less	Gender/Race										
	White Males	13	2.56	0.40	6.92	1.12	0	.	.	.	.
	Nonwhite Males	3	2.64	0.35	8.00	1.00	0	.	.	.	.
	White Females	26	2.59	0.42	7.00	1.44	0	.	.	.	.
	Nonwhite Females	4	2.42	0.42	6.75	1.50	0	.	.	.	.
	Total	46	2.57	0.40	7.02	1.32	0	.	.	.	.
Transfer, 3 yrs +	Gender/Race										
	White Males	23	5.79	2.21	9.87	2.96	23	1.26	0.54	16.87	13.65
	Nonwhite Males	7	4.70	0.97	6.57	2.99	7	1.86	1.07	34.71	14.21
	White Females	33	5.14	1.87	10.45	4.02	33	1.33	0.69	24.12	21.38
	Nonwhite Females	13	5.49	1.90	11.46	2.90	13	1.92	1.26	23.46	13.28
	Total	76	5.36	1.92	10.09	3.62	76	1.46	0.84	22.79	17.86

9798 Associate Recipients		Years at the College			Semesters at the College		Number of Other Schools			Hours Transferred In	
		N	Mean	Std	Mean	Std	N	Mean	Std	Mean	Std
Transfer, 3 yrs or less	Gender/Race White Males	22	1.83	0.73	5.14	2.25	22	1.32	0.57	29.86	16.59
	Nonwhite Males	5	2.40	0.45	6.60	1.14	5	1.80	0.84	27.80	28.49
	White Females	31	1.95	0.61	5.29	1.51	31	1.71	0.97	27.58	19.35
	Nonwhite Females	13	2.08	0.74	5.62	2.02	13	1.38	0.77	28.85	17.43
	Total	71	1.97	0.67	5.39	1.85	71	1.54	0.83	28.54	18.51
Total		313	4.18	2.10	9.57	4.19	147	1.50	0.83	25.56	18.34

It is important to note that cell frequencies were slightly more imbalanced in the native/three years or fewer subgroup; there were only three nonwhite males and four nonwhite females in this classification. Average years were more homogeneous; nonwhite females had the lowest number of years at the College, with 2.4 years, followed by white males with 2.6 years, white females with 2.6 years, and nonwhite males with 2.6 years. Nonwhite females also had the lowest average number of semesters to completion with 6.8 semesters, followed by white males with 6.9 semesters, white females with 7.0 semesters, and nonwhite males with 8.0 semesters.

Among the transfer/more than three years to completion group, again, nonwhite males used the least amount of time and fewest number of semesters to complete their degrees. Nonwhite males used an average of 4.7 years at the College, compared to 5.1 years for white females, 5.5 years for nonwhite females, and 5.8 years for white males. Nonwhite males took an average of 6.6 semesters during that time, compared to 9.9 semesters for white males, 10.5 semesters for white females, and 11.5 years for nonwhite females.

Interestingly, the pattern reversed in the transfer/three years or fewer group. White males took the least time and the fewest semesters in this group. White males took an average of 1.8 years, compared to 2.0 years for white females, 2.1 years for nonwhite females, and 2.4 years for nonwhite males. White males took 5.1 semesters to complete their degrees, compared to 5.3 semesters for white females, 5.6 semesters for nonwhite females, and 6.6 semesters for nonwhite males. Again, it is important to remember that there are fewer than ten nonwhite males in both of the transfer subcategories.

Gender/Race Analysis of Transfer Variables

Again looking at Table 8, analysis of the number of transfer institutions and average hours transferred in may give a partial explanation for the differential behavior of nonwhite males in each group. Among those who needed more than three years to complete their degrees, nonwhite males brought in an average of 34.7 hours from 1.9 institutions. Nonwhite females also had an average of 1.9 institutions but only 23.5 average hours transferred. White females brought in an average of 24.1 hours from 1.3 institutions, and white males an average of 16.9 hours from 1.3 institutions.

Among those who completed their degrees in three years or less, nonwhite males still had slightly more other institutions, with an average of 1.8, but had no higher average hours transferred in, at 27.8. White females brought an average of 27.6 hours in from 1.7 institutions, nonwhite females brought in 28.9 hours from 1.4 institutions, and white males transferred an average of 29.9 hours from 1.3 institutions.

Considering the totality of the gender/race findings, it appears that the numbers reflect the extreme diversity of the College student body. Nonwhite males are underrepresented among students persisting to completion of an Associate degree, but it appears from Table 8 that when they do persist to completion, they do so quicker than their other race/gender peers in some instances. Nonwhite females are overrepresented among students who start their careers at the College with an all-DVS schedule, and this may further explain their elevated average years and semesters taken to completion. Females appear in some cases to take a longer period of time to complete a degree, but the average number of semesters actually enrolled in that period of time may suggest that they are more prone to stopouts than other groups. Both nonwhite males and females seem to be somewhat underrepresented among students transferring hours from other institutions, but in the case of nonwhite males who did not meet the three-year completion standard, brought in more transfer hours than any other group.

Predicting Time to Completion

A general linear model was constructed to predict the number of years taken to completion. This variable was selected as the criterion because of its continuity; attempting to predict whether a student met the three-year rule using a logistic model was considered and ultimately rejected due to the loss of information in using that variable. Additionally, predicting the number of years in the academic career is theoretically sound and of practical value to an institution.

The model was constructed using student age at graduation, number of hours transferred in, DVS status at entry, department of major at graduation, white/nonwhite race, gender, and a race/gender interaction term. Table 9 summarizes the results of the analysis. Type III sums of squares are included for analysis due to the covariate design.

Table 9: Results of General Linear Model Predicting Years to Completion

The GLM Procedure

Dependent Variable: yrsin

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	219.832078	21.983208	5.72	<.0001
Error	302	1160.758976	3.843573		
Corrected Total	312	1380.591054			

R-Square	Coeff Var	Root MSE	yrsin Mean
0.159230	46.86939	1.960503	4.182907

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Age	1	44.46518349	44.46518349	11.57	0.0008
Trhrsnew	1	17.75101540	17.75101540	4.62	0.0324
dvsorno	2	53.86606489	26.93303245	7.01	0.0011
dept	3	14.95165750	4.98388583	1.30	0.2757
newrace	1	0.89658155	0.89658155	0.23	0.6295
gender	1	0.06183599	0.06183599	0.02	0.8992
newrace*gender	1	3.73726832	3.73726832	0.97	0.3249

The overall model is found to be significant at p<.0001, with an R-square of 0.15923. Three predictors were found to be significant: age at graduation (p=0.0008), number of hours transferred in (p=0.0324), and DVS status at entry (p=0.0011). Age at graduation has a direct and obvious mathematical relationship to the number of years taken to completion of a degree; the other two predictors found significant have somewhat obvious effects as well.

Department of major at graduation, white/nonwhite race and gender were found to not be significant predictors of time taken to completion of a degree.

Summary and Indications for Further Research

On average, a graduate first appeared at the college 4.3 calendar years before graduation and took 9.6 semesters of resident coursework to complete an Associate degree. Time to completion was greatest for students (14.4 percent of sample) needing a first semester comprised entirely of developmental coursework (5.7 years, 13.6 semesters), followed by those (28.1 percent of sample) who took at least one developmental course their first semester (4.3 years, 10.3 semesters) and those (57.5 percent of sample) who entered the college at curriculum level (3.7 years, 8.2 semesters). Using the standard of completion within 150 percent of the time required to graduate, 37.4 percent of the sample completed their two-year degrees in three years or less; about two-thirds of these students transferred hours from other institutions. All total, 47.0 percent of the sample transferred an average of 25.6 hours from an average of 1.5 other institutions.

Seventeen students (5.4 percent of the sample) took a hundred or more months (8.3 calendar years) to completion of their degrees; the maximum reported number of months was 125, or 10.4 calendar years. This indicates that it is not out of the question to continue following students in tracking programs for ten years or more from their first semester of coursework, particularly in community colleges.

Approximately equal percentages of the students with transfer hours completed their degrees within three years and in more than three years, while among students who remained native to the resident institution, completions in more than three years outnumbered completions in three years or less by almost a three-to-one ratio. Females tended to be overrepresented among students taking more than three years to completion. Nonwhite females tended to be overrepresented among students beginning their academic careers with schedules of entirely developmental courses.

Among the group of students who took more than three years to completion, nonwhite males tended to finish in fewer years and semesters than other groups. Among students who finished in three years or less and remained native to the resident institution, nonwhite females finished in fewer years and semesters. Among students transferring hours who completed their degrees within three years, white males finished in fewer years and semesters.

A general linear model predicting time to completion of the Associate degree was constructed; significant predictors included student age at graduation, number of hours transferred in, and developmental course status at entry. Race, age, and department of major were not found to be significant predictors when those variables were included in the model.

Although some interesting by-group variations in time to completion and transfer indicators were found, the variables addressed by this project by and large pointed to the great diversity in paths students take to the completion of an Associate degree. Further research should attempt to identify and collect information on more variables that may provide a clearer picture of students' use of stopouts and changing loads, the effects of major changes, and the correlates of persistence in those students who go on to finish despite early indicators that they may not be successful.

The long-term goal of this study is to attempt to sufficiently describe the differences between these students who graduated and cohorts who began their academic careers at the same time and did not graduate, to give us the tools to identify such students early and design and implement programs to incentivize completion of their degrees.

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