

Undeclared Students and their Major Changing Behavior

Highlights:

- ❖ **New freshmen with a declared major have higher graduation and retention rates compared to freshmen who start with an undeclared major**
- ❖ **After declaring a major undeclared students change majors less often than declared students**
- ❖ **The proportion of students who change majors one or more times is increasing in more recent cohorts compared to older cohorts**
- ❖ **Of new freshmen who start as undeclared seeking a specified major, less than half actually graduated with a major from their original college**

A previous research brief (August 2011) looked at the major changing behavior and corresponding graduation of CSU students. That initial study excluded students who started as open-option and subsequently did not enroll in any other major and did not persist. That study prompted additional questions about the differences between new students who start with an undeclared major and those who start with a declared major. The current study is similar in design to the first study but addresses those additional research questions regarding undeclared students by dividing them into two groups; those who are undeclared but seeking a specified major and those who are undeclared without a stated interest.

Question #1: How do the retention and graduation rates vary for students who start out with a declared major compared to students who start out with an open-option major?

Table 1 displays the freshman retention rates and six-year graduation rates for students who have a declared major, are undeclared but seeking a specified discipline, and those who are open option/undeclared. On average, declared students have considerably higher retention and graduation rates compared to the other two groups. Undeclared students have a higher average retention rate compared to undeclared-seeking students by 0.4 of a percentage point. In contrast, undeclared-seeking students have a higher average 6-year graduation rate compared to undeclared students by 0.8 of a percentage point. It should be noted that undeclared-seeking students have a higher average retention rate compared to undeclared (82.7% compared to 81.8%) for the terms for which 6-year graduation rates are available.

Table 1.

Cohort	First Year Retention Rates (%)			6 Year Graduation Rates (%)		
	Declared	Undeclared Seeking	Undeclared	Declared	Undeclared Seeking	Undeclared
FA00	83.6	83.1	78.7	65.7	66.5	59.3
FA01	83.9	82.7	84.8	65.8	64.1	65.2
FA02	83.8	83.2	81.6	65.3	62.5	61.5
FA03	84.9	83.1	83.5	66.3	62.6	63.3
FA04	85.1	82.9	82	66.9	61.2	61
FA05	84.6	81.3	80.2	67.1	60	61.5
FA06	84.2	78.5	80.8			
FA07	83.6	80.3	83			
FA08	84.1	81.5	83.2			
FA09	85.5	81.1	84.1			
FA10	84.1	82.2	82.2			
Average	84.3	81.8	82.2	66.2	62.8	62.0

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Question #2: How do the demographics and academic performance (GPA) vary for students who start out with a declared major compared to students who start out with an open-option major?

Demographically, declared students have the lowest average proportions of male and first-generation students, but their average proportion of minority and Pell students falls between the average proportions for undeclared and undeclared-seeking students. Declared students have the highest average proportion of nonresidents. The average proportion of first-generation students is very similar for both undeclared seeking and undeclared students. Undeclared students have a considerably lower average proportion of nonresidents. Demographically, there do not appear to be trends that might contribute to the higher retention and graduation rates for declared students.

Academically, declared students have a (statistically) higher average index, first-term GPA, and last-term cumulative GPA compared to the other two groups (undeclared-seeking and undeclared). The effect sizes for the mean differences of index scores are medium to large while the effect sizes for the mean differences in GPA's are small.

Undeclared students have a (statistically) higher average index, first-term GPA, and last-term cumulative GPA compared to undeclared seeking students. All of these mean differences have small effect sizes.

Linear regression results do not show a statistically significant association for declared students compared to undeclared in regard to their predicted GPA. Interestingly, there is a positive association for undeclared-seeking compared to declared students in terms of their predicted GPA once index is controlled for. It appears that the higher GPA of declared students is mostly explained by the higher index of these students.

Table 2 displays the average demographics, index score, and academic performance of new full-time freshmen who started in the FA03 through FA09 academic years by major declaration.

Table 2.

FA03 through FA09 Average Demographics			
	Declared	Undeclared Seeking	Undeclared
Percent Nonresident	22.6%	20.0%	14.8%
Percent Male	41.4%	55.5%	42.7%
Percent Pell	14.8%	13.6%	15.5%
Percent First Generation	25.6%	27.6%	27.2%
Percent Minority	13.3%	16.7%	12.9%
Average Index	115.8	108.2	110.9
Average First Term GPA	2.8	2.6	2.7
Average Last Term Cum GPA	2.9	2.6	2.8

The remaining analyses (questions #3, #4, and #5) include only students who graduated from the FA00 to the FA05 new full-time freshmen cohorts.

Question #3: Do undeclared students change majors more or less often than students who start out with a declared major?

Table 3 displays the average proportion of graduates who change majors up to three times by major declaration. Similar to what was seen in the initial study, on average about 37% of declared students change majors once. Undeclared students change majors less than declared students since half of the graduates who enter as undeclared-seeking and nearly half of graduates who start as undeclared only change their major once to a declared major (0 major changes). Fewer than 40% of declared students graduate in their original major. On average, larger proportions of graduates who begin with a declared major end out changing majors two or more times compared to graduates who start out undeclared or undeclared-seeking.

Table 3.

Average Proportion of Graduates who Change Majors					
Declared					
	Average Proportion of Cohort	0 Changes	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	61%	39.41%	36.63%	17.74%	6.21%
Undeclared Seeking a Specified Major					
	Average Proportion of Cohort	0 Changes*	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	23%	54.39%	33.71%	10.31%	1.60%
Undeclared					
	Average Proportion of Cohort	0 Changes*	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	16%	48.20%	37.05%	12.68%	2.06%

*The first major declaration for undeclared students is not counted as a major change

Table 4 shows the proportion of graduates who change major by cohort. There appears to be a consistent trend that students in the more recent cohorts change majors more often than students in the older cohorts. For instance, in the fall 2000 cohort of declared students, approximately 51% never changed majors. However, in fall 2005 only 27% of students who entered with a declared major never changed majors. This trend holds across major declaration status. This upward trend in the proportion of students who change majors was not apparent in the original research brief because the previous analysis looked at more recent cohorts (FA05 through FA09) and did not limit the population to only graduates.

Table 4.

Proportion of Graduates who Change Majors					
Declared					
	Graduates	0 Changes	1 Change	2 Changes	3 Or More
FA00	1377	50.84%	31.15%	13.94%	4.07%
FA01	1515	42.44%	35.18%	16.37%	6.01%
FA02	1398	46.78%	33.98%	13.73%	5.51%
FA03	1433	42.08%	33.91%	16.75%	7.26%
FA04	1683	27.39%	40.34%	24.36%	7.90%
FA05	1574	26.94%	45.24%	21.28%	6.54%
Undeclared Seeking a Specified Major					
	Graduates	0 Changes*	1 Change	2 Changes	3 Or More
FA00	489	65.44%	24.95%	8.38%	1.23%
FA01	568	62.68%	29.93%	5.99%	1.41%
FA02	659	65.71%	25.80%	7.44%	1.06%
FA03	665	52.18%	35.19%	10.38%	2.26%
FA04	528	39.58%	44.13%	14.58%	1.70%
FA05	464	40.73%	42.24%	15.09%	1.94%
Undeclared					
	Graduates	0 Changes*	1 Change	2 Changes	3 Or More
FA00	297	58.25%	31.99%	8.75%	1.01%
FA01	366	51.37%	37.70%	9.29%	1.64%
FA02	423	55.79%	30.50%	11.58%	2.13%
FA03	384	47.40%	33.33%	16.41%	2.86%
FA04	432	32.87%	47.69%	17.13%	2.31%
FA05	411	43.55%	41.12%	12.90%	2.43%

*The first major declaration for undeclared students is not counted as a major change

Question #4: What is the average time to graduation (in terms including summer) by the number of major changes for undeclared and declared students?

Table 5 displays the average time to graduation by the number of major changes and declaration status. In contrast to the original study, table 5 reports the average time to graduation for declared students who never change majors as 11.9 semesters and the original study reported an average of 12.1 semesters for graduates who never change majors. This difference is due to the research design differences discussed at the beginning of this report; the original study included open option students whose only major change was a declaration as a graduate with zero changes. It should also be noted that less than 25% of all graduates entered as a freshman with a declared major and graduated with that major. This small proportion is important to recognize because very few CSU students graduate in less than four years so it is surprising to see a group of students with an average time to graduation that is less than 12 semesters.

Similar to the initial study, the average time to graduation increases by slightly over a half of a semester with each additional major change. This holds true no matter the major declaration status. Undeclared students (including undeclared-seeking students) have a longer average time to graduation by about a half semester compared to declared students.

Table 5.

Average Time to Graduation by Number of Major Changes					
Declared					
	Average Proportion of Graduates	0 Changes	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	61%	11.9	12.5	13.0	14.0
Undeclared Seeking a Specified Major					
	Average Proportion of Cohort	0 Changes*	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	23%	12.4	13.1	13.8	15.3
Undeclared					
	Average Proportion of Cohort	0 Changes*	1 Change	2 Changes	3 Or More
FA00 to FA05 Average	16%	12.5	13.3	13.4	14.2

*The first major declaration for undeclared students is not counted as a major change

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Table 6 displays the average time to graduation by cohort. In this study and the original study there appears to be a downward trend in the average number of semesters until graduation for more recent cohorts. This downward longitudinal trend is more easily seen in the IR Interactive graduation rate table because the four year graduation rate has increased since the fall 2000 cohort while the six year rate has remained relatively stable.

Table 6.

Average Time to Graduation by Number of Major Changes					
Declared					
Cohort	Graduates	0 Changes	1 Change	2 Changes	3 Or More
FA00	1377	12.0	13.1	13.1	14.9
FA01	1515	12.0	12.4	13.3	14.5
FA02	1398	11.9	12.6	13.4	14.3
FA03	1433	11.7	12.5	13.3	14.2
FA04	1683	11.8	12.1	12.7	13.2
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FA03	666	12.1	13.4	13.9	14.3
FA04	528	12.5	12.7	13.0	14.2
FA05	464	12.2	12.5	12.9	13.3
Undeclared					
Cohort	Graduates	0 Changes*	1 Change	2 Changes	3 Or More
FA00	297	12.5	13.9	14.5	16.7
FA01	366	12.7	13.8	13.2	13.7
FA02	423	12.6	13.4	13.6	13.3
FA03	384	12.3	13.4	13.5	13.8
FA04	432	12.6	12.6	12.8	14.3
FA05	411	12.6	12.6	13.1	13.4

*The first major declaration for undeclared students is not counted as a major change

Question #5: Do undeclared students seeking a specified interest graduate with a major in that specified area of interest?

Table 7 displays the percent of students who graduated within the college originally specified as their area of interest. Across all undeclared-seeking majors, only 46% of students who began their first term as an undeclared student seeking a specified area of interest actually graduated from that college; however, there is considerable variation in the percentage across majors. For instance, over 80% of students who start out as an open-option seeking construction management, technical journalism or business open-option graduated within the same college as their initial interest. In contrast, less than 25% of students who start out as an open-option seeking engineering, art, or biomedical sciences graduate within the same college as their initial interest. Table 7 only contains the students (23% of the FA00 to FA05 cohorts) whose initial major was undeclared seeking a specified interest.

It should be noted that the undeclared seeking majors (besides Engineering Open Option) listed in table 7 are college open option declarations that are no longer offered to students. Currently, students have the opportunity to enter with a major that is undeclared but seeking a specified interest rather than open option within a college.

Table 7.

Percent of Graduates in FA00 through FA05 New Freshmen Cohorts who Graduate within the College they are Initially Seeking			
Undeclared Seeking Majors	Number of Graduates	Graduated out of Initial College	Graduated in College
Agricultural Sciences Open Opt	10	30.00%	70.00%
Applied Human Sci Open Option	107	41.12%	58.88%
Bus Op Opt	313	17.57%	82.43%
Engineering Open Option	105	50.48%	49.52%
Environmental Studies Open Opt	41	29.27%	70.73%
Liberal Arts Open Option	282	34.40%	65.60%
Life Sciences Open Option	352	63.35%	36.65%
Natural Resources Open Option	53	37.74%	62.26%
Natural Sciences Open Option	49	61.22%	38.78%
Open Opt Biomedical Sciences	442	79.86%	20.14%
Open Option Seeking Art	77	88.31%	11.69%
Open Option Seeking Business	980	61.02%	38.98%
Open Option Skg Computer Sci	26	65.38%	34.62%
Open Option Skg Constr Mgmt	101	11.88%	88.12%
Open Option Skg Engineering	300	76.00%	24.00%
Open Option Skg Technical Jour	136	12.50%	87.50%
Grand Total	3374	54.24%	45.76%

Conclusions from this study:

- Undeclared students have lower graduation and retention rates compared to declared students. There is not a dramatic difference in the graduation and retention rates across undeclared and undeclared seeking status.
- Demographically, declared students are more likely to be nonresidents and have a higher index. Declared students also have higher GPA's their first year; however, the higher GPA appears to be mostly due to their higher index.
- On average, over half of undeclared seeking students and nearly half of undeclared students only change their major once to a declared major. Only 40% of declared major students graduate with the major they originally declared. Larger proportions of declared students change their majors often (2 or more times) compared to both types of undeclared students.
- Students who graduate appear to be changing majors more often in recent cohorts than students in the older cohorts. There is an upward trend in the proportion of students who change their major.
- Table 6 suggests that the time to degree is decreasing. This is further supported by the graduation rates in IR interactive.
- Every major change increases the average time to graduation by over a half of a semester for students. On average, undeclared students have a longer time to graduation compared to declared students.
- There is considerable variation in the proportion of students who remain in their initial specified area of interest across the different open option interests.

Future research questions:

- Why are we seeing larger proportions of students who change their major one or more times?
 - Is this trend related to any particular major?
 - Is this trend related to any particular student demographic?
 - Is this trend realistic from a developmental perspective because new freshmen need to explore which major is best for them?
- This study focused on the major changing behavior of students who graduated.
 - What is the major changing behavior of students who don't persist?
 - Are non-persisters more or less likely to change their major?
 - Is major changing indicative of attrition?