

Changes of Major by First-time Frosh Students, AY 2017-18 to AY 2020-21

About the data

The descriptive statistics shown in this exploratory analysis are calculated based on application and enrollment data for first-time frosh entrants enrolled within the past four years, from AY 2017-18 to AY 2020-21. Additional details regarding the data, definitions, and measures used in this report can be found in the appendix.

How often do changes of major occur?

Within the timeframe covered by the dataset, an average of 5046 major changes occurred per academic year.

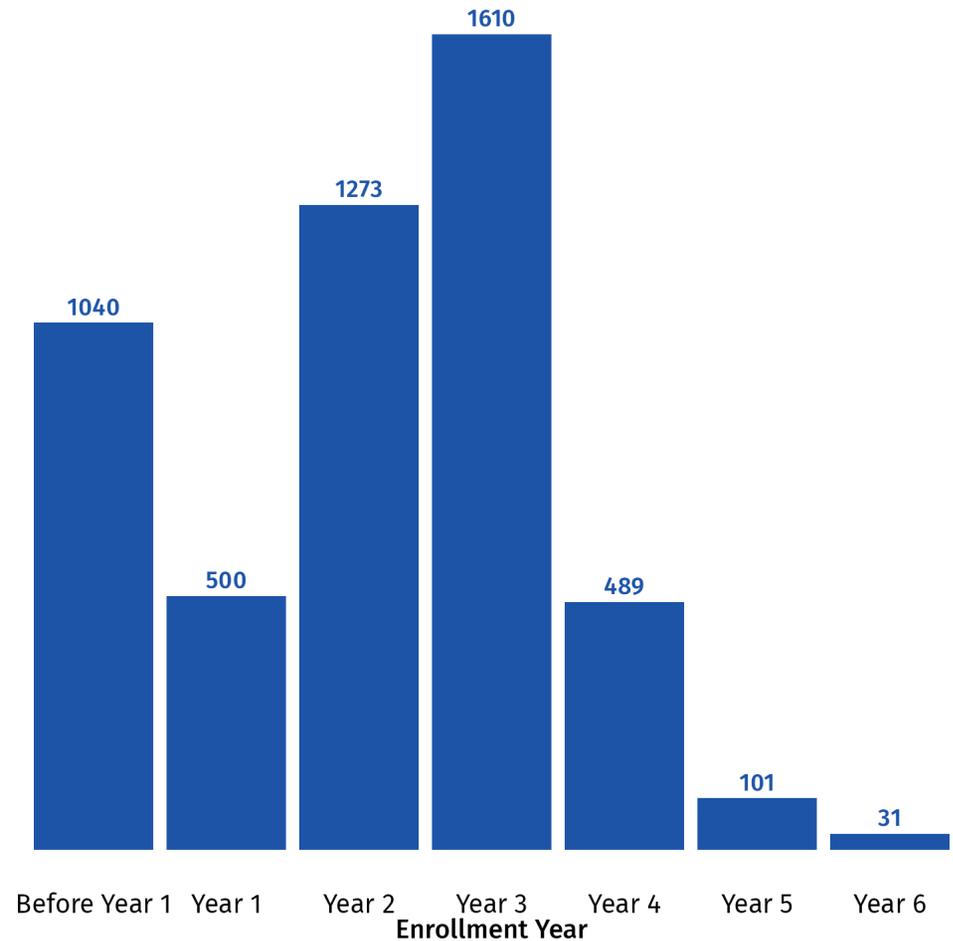
When do changes of major occur in a first-time frosh student's career?

Overall, changes of major occurred most frequently among students midway through their normative UCR career, in their second or third enrolled year, and among students between admission and the start of their first term.

The adjacent plot shows the average number of major changes made each academic year, grouped by student enrollment year. The student enrollment year denotes a student's progress through their undergraduate career at UCR at the time of their major change. For example, a change of major made by a student in the winter term of their first year would be counted under "Year 1". Changes of major occurring between admission and a student's first fall quarter are counted in the "Before Year 1" group.

For most elements of this analysis, we group changes of major into two general timeframes:

1. **Before First Term:** Any change occurring between admission and the third week of a student's first fall quarter.
2. **After First Term:** Any change occurring after the third week of a student's first fall quarter.



Change of Major Pathways by College

How do students transition between and within colleges?

Overall, changes of major tend to occur most commonly between programs within the same school or college (61% of all changes), but a substantial minority of changes (39%) involve movement between colleges.

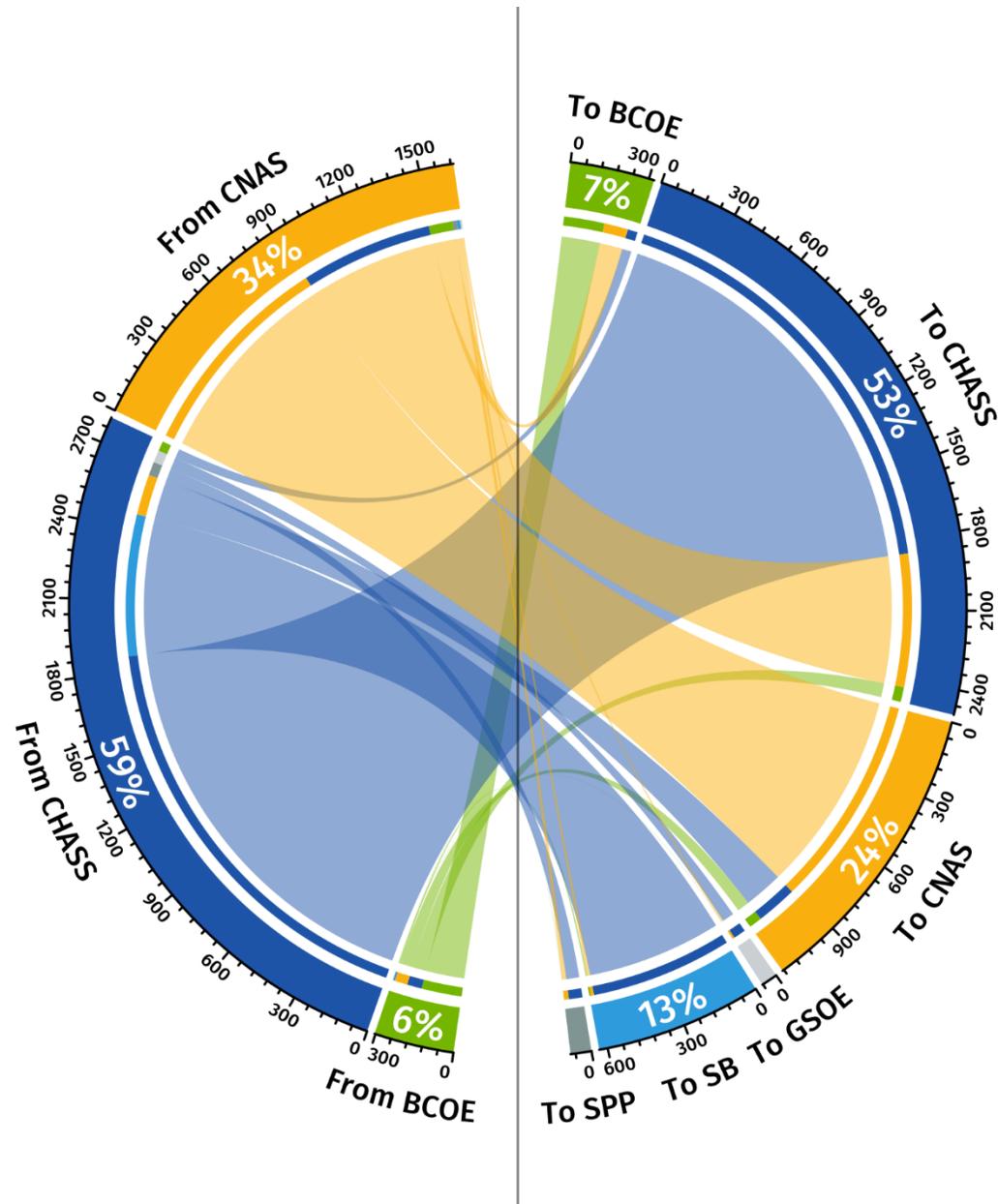
The chord diagram to the right visualizes the average number of major changes from one college to another per academic year.

The left side of the diagram shows the student's initial college prior to changing majors, while the right side shows the student's new college after their change of major.

The width of each path crossing the diagram is proportional to the number of major changes for the given pair of colleges; the color of the path corresponds to the starting college.

Percentages indicate the proportion of major changes starting or ending in the corresponding college (e.g., 59% of all major changes start in CHASS, while 53% of all major changes end in CHASS).

Major changes from SPP, GSOE, and Business are not shown due to the low frequency of these changes.



Types of Changes of Major

How does the type of major change interact with the timing of the change?

Major-to-major changes account for about half of all changes; students who switch from one major to another most frequently do so either before their first term or midway through their normative UCR career (in their second or third enrolled year).

Undeclared students declaring a major follow a similar pattern, although undeclared entrants are less likely to choose a major between admission and their first term.

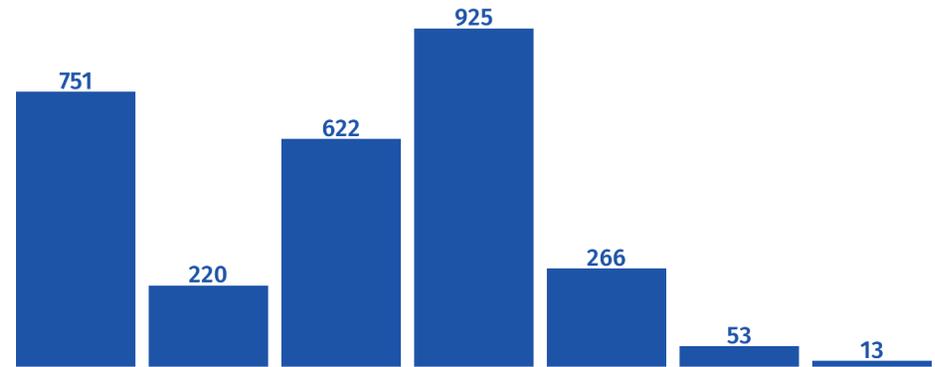
For students moving from a specific program into an undeclared program, this change tends to occur earlier, in the first or second enrolled year.

As the mechanisms and effects of changes of major are likely to differ depending on whether a change of major is expected (e.g., for undeclared students), we separately consider three broad pathways of major changes:

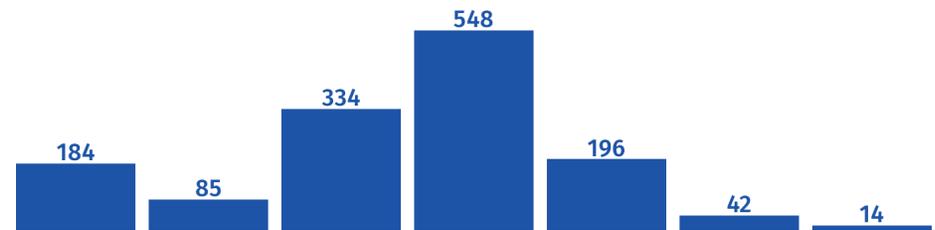
1. **Major → Major:** Any change from one program to another, including from Pre-Business (CHASS) to Business Administration (School of Business).
2. **Undeclared → Major:** Any change from undeclared to a specific program.
3. **Major → Undeclared:** Any change from a specific program to undeclared.

The adjacent plots display the average number of major changes made each academic year, grouped by student enrollment year, with the averages shown in each plot corresponding to one of the pathways listed above.

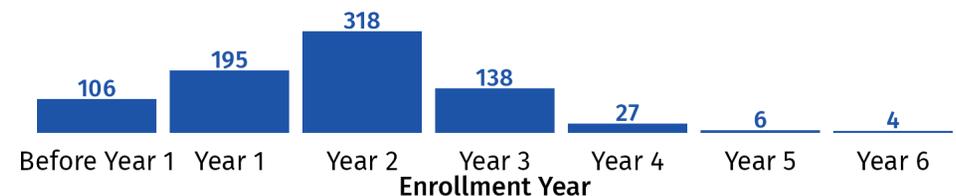
Major → Major



Undeclared → Major



Major → Undeclared



Frequency of Changes of Major by Demographics

How do patterns of major change frequency compare across demographic groups?

Exploratory results suggest that patterns of major changes among URM, first-generation, and low-income students may meaningfully differ from those of their non-URM, non-first-generation, and non-low-income peers. Further investigation is needed to explore the magnitude and mechanisms of these potential effects.

The tables below compare the frequency of changes of major between demographic groups (e.g., first-generation students vs. non-first-generation students). For changes of major occurring after a student's first term, each change pathway (major to major, undeclared to major, and major to undeclared) is considered separately.

To facilitate comparisons between groups of unequal size, frequency of major changes is measured by calculating the number of major changes per 100 students (for changes occurring before the first term) and number of major changes per 100 students per term (for changes occurring after the first term). For example, among a random sample of 100 undeclared underrepresented minority (URM) students in a given term, we would expect about 23 students to declare a major in that term; among an equivalent random sample of 100 undeclared non-URM students, we would expect about 28 students to declare a major.

Changes of Major Before First Term		Changes of Major After First Term			
Demographic Group	Changes per 100 Students	Demographic Group	Changes of Major per 100 Students per Term		
			Major to Major	Major to Undeclared	Undeclared to Major
Gender		Gender			
Female	17.6	Female	4.2	1.4	25.8
Male	17.6	Male	4.1	1.3	25.6
Underrepresented Minority (URM)		URM			
No	19.0	No	4.5	1.2	28.4
Yes	15.9	Yes	3.7	1.6	23.3
First Generation		First Generation			
No	18.0	No	4.3	1.2	27.6
Yes	17.3	Yes	4.0	1.5	24.6
Low Income		Low Income			
No	17.0	No	4.2	1.2	26.8
Yes	18.4	Yes	4.0	1.6	24.8

Frequency of Changes of Major by College

How do patterns of major change frequency compare across colleges?

Our exploratory results indicate that patterns of major changes vary between schools and colleges. While further analysis is needed to draw stronger conclusions, the present results suggest that BCOE, CNAS, and CHASS Pre-Business students are less likely to change majors prior to their first term relative to their peers in other CHASS programs, but more likely to experience a change from an existing major into an undeclared program after their first term.

The tables below compare the frequency of changes of major between schools and colleges at UCR. As in the demographics tables above, frequency of change of major is measured per 100 students or per 100 students per term. For example, among a random sample of 100 BCOE students with a declared major in a given term, we would expect 1 student to change into an undeclared program in that term, whereas among an equivalent random sample of 100 CNAS students, we would expect 2 to 3 students to change into an undeclared program. Using CHASS majors (excluding Pre-Business) as a baseline, the change of major index allows for an at-a-glance comparison of frequency between colleges.

Changes of Major Before First Term

College	Changes per 100 Students	Change Index (Relative to CHASS)
BCOE	4.9	0.22
Business	--	--
CHASS		
Pre-Business	3.2	0.14
All Other	22.3	1.00
CNAS	13.1	0.59
GSOE	19.1	0.86
SPP	24.6	1.10

Changes of Major After First Term

College	Changes of Major per 100 Students per Term			Change of Major Index (Relative to CHASS)		
	Major → Major	Major → Undeclared	Undeclared → Major	Major → Major	Major → Undeclared	Undeclared → Major
BCOE	2.6	0.8	64.7	0.83	2.25	2.89
Business	0.1	0.0	--	0.03	0.02	--
CHASS						
Pre-Business	15.5	3.7	--	4.91	10.16	--
All Other	3.2	0.4	22.4	1.00	1.00	1.00
CNAS	3.3	2.5	23.2	1.04	6.79	1.03
GSOE	1.1	0.2	--	0.35	0.53	--
SPP	1.9	0.1	--	0.60	0.23	--

Change of Major Pathways by College and Program

How and when do students transition between specific programs?

The plots on the following pages show the average number of major changes per academic year among students starting in each college, broken down by type of major change and target college/program. The ten most common major change pathways for each college and type of major change are also shown.

CHASS (Pre-Business) Average Annual Major Changes

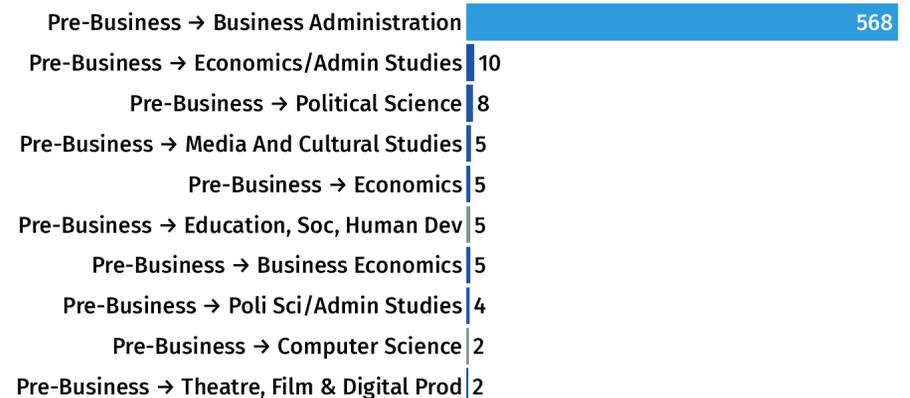


Most Common Change Pathways

Any → Any (Before First Term)



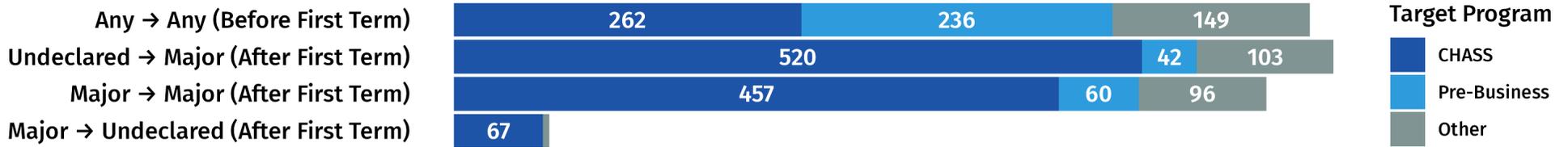
Major → Major (After First Term)



Major → Undeclared (After First Term)

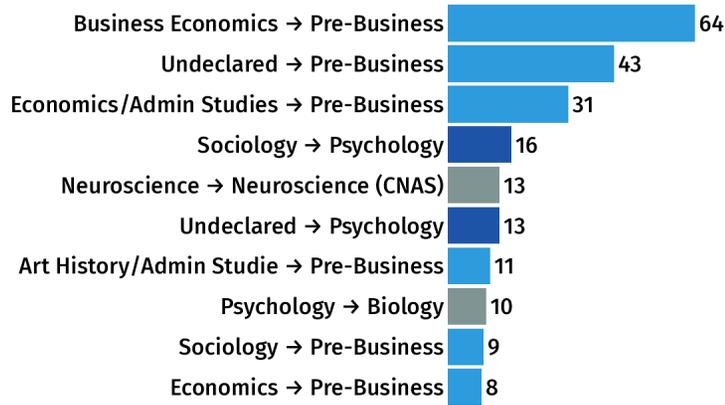


CHASS (excl. Pre-Business) Average Annual Major Changes



Most Common Change Pathways

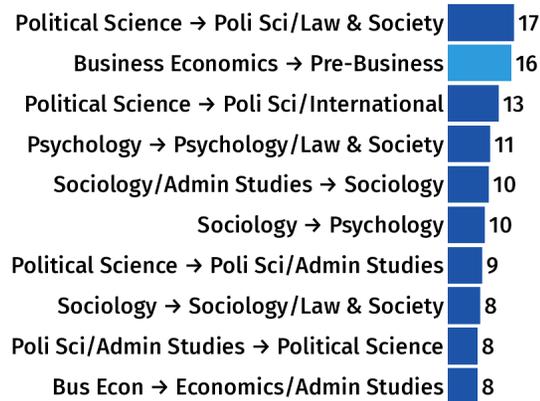
Any → Any (Before First Term)



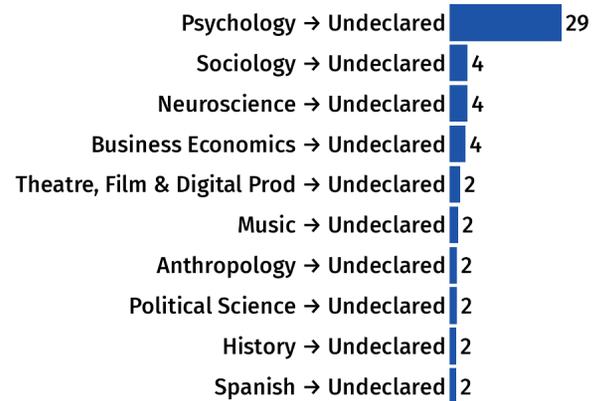
Undeclared → Major (After First Term)



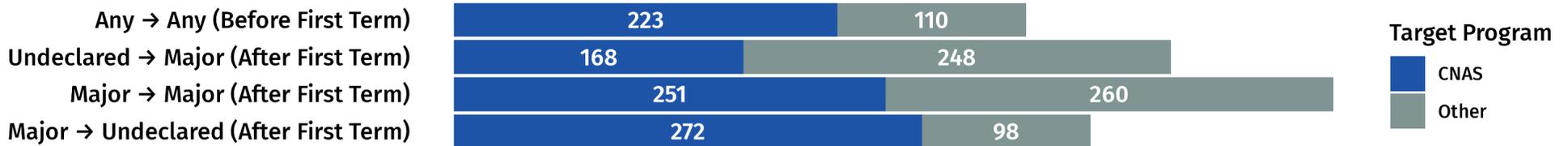
Major → Major (After First Term)



Major → Undeclared (After First Term)

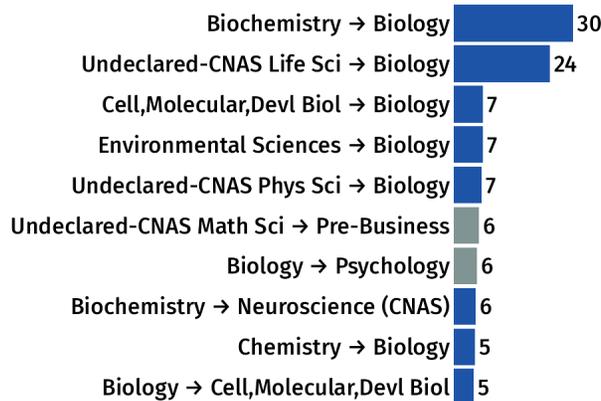


CNAS Average Annual Major Changes

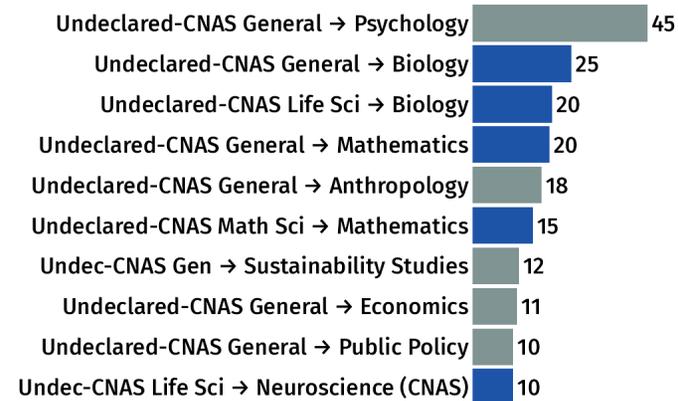


Most Common Change Pathways

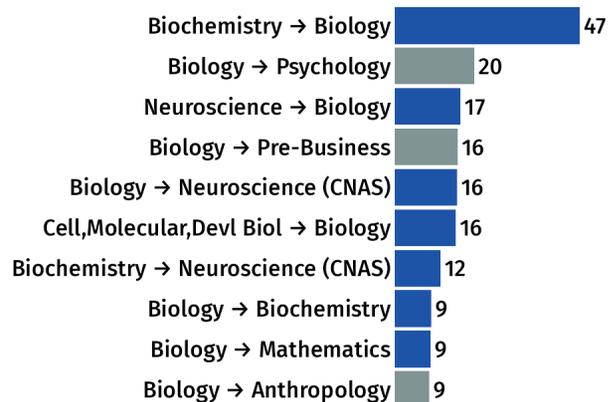
Any → Any (Before First Term)



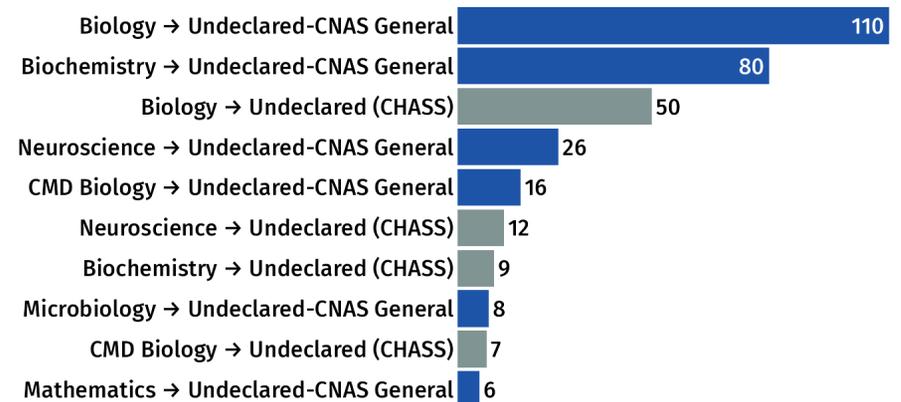
Undeclared → Major (After First Term)



Major → Major (After First Term)



Major → Undeclared (After First Term)

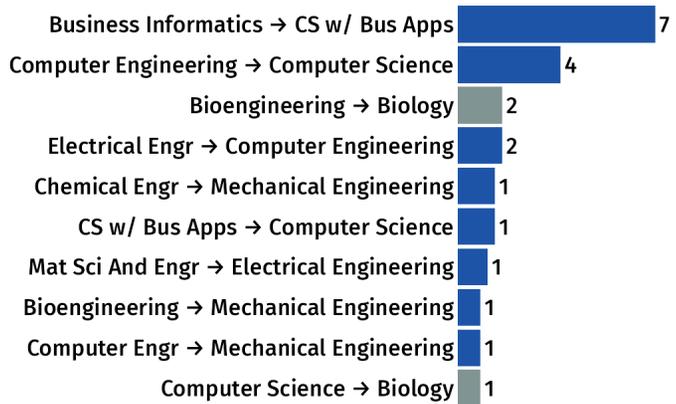


BCOE Average Annual Major Changes

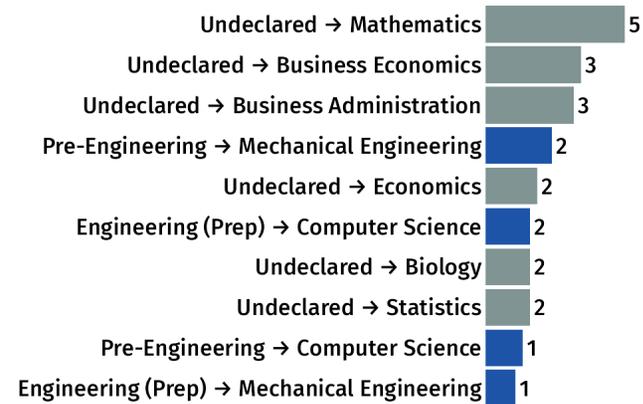


Most Common Change Pathways

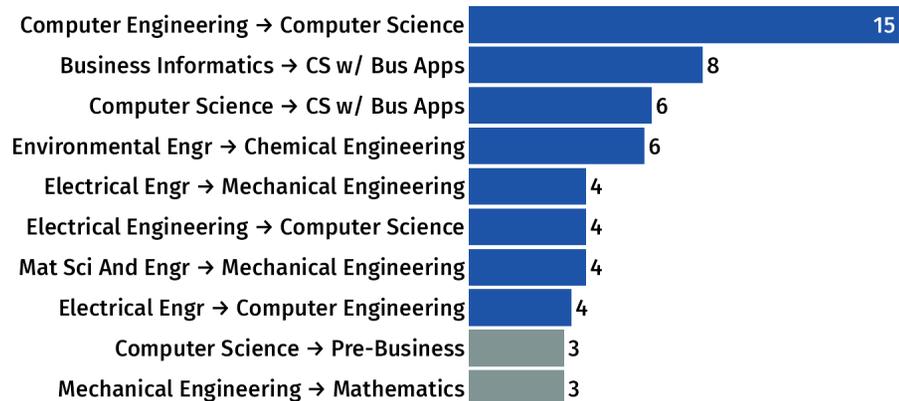
Any → Any (Before First Term)



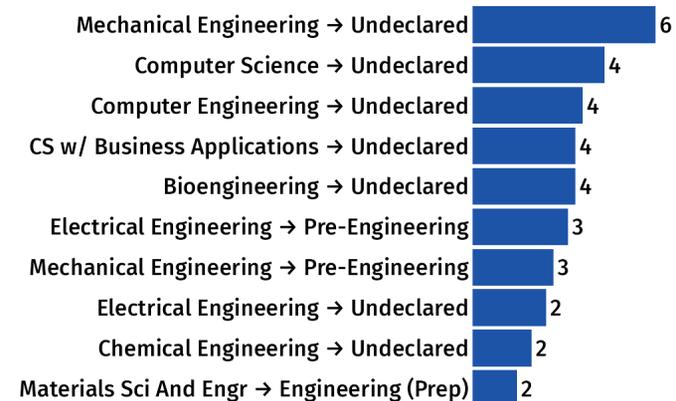
Undeclared → Major (After First Term)



Major → Major (After First Term)



Major → Undeclared (After First Term)



Changes of Major and Short-Term Outcomes

How are changes of major associated with student outcomes?

Our initial results indicate that most types of changes of major occurring after the first term are not strongly correlated—either positively or negatively—with student retention/graduation one year later. However, the data suggest a negative association between transitions into an undeclared program and student retention/graduation in the following year. The magnitude of the effects of this major-to-undeclared transition may vary depending on its timing in the student’s undergraduate career. In some cases, major changes of this type occur due to disqualification from the original major based on GPA or other factors; this link to academic performance likely plays a role in the apparent negative effect on retention/graduation.

The table below provides outcome summaries by each type of post-matriculation major change based on the timing of the change. Changes of major for each student are summarized by enrollment year; if a student had multiple changes within a year, we report only the first type of change. We then look ahead to the next academic year to see if the student either persists in enrollment through spring of that year or graduates at any time in between. For example, if a second-year student changes from their original program to an undeclared program in the winter term of their second year, they will appear under “Year 2 Changes,” and their outcome will be measured through the spring of their third academic year.

Type of Change	% Graduated or Still Enrolled One Academic Year Later							
	Year 1 Changes		Year 2 Changes		Year 3 Changes		Year 4 Changes	
	N	Rate	N	Rate	N	Rate	N	Rate
No Change	21,453	88.1%	16,416	89.5%	13,363	92.1%	15,293	93.9%
Undeclared → Major	291	94.2%	981	91.3%	1,732	93.8%	621	85.7%
Major → Major	731	90.3%	1,937	91.8%	2,954	95.2%	861	90.0%
Major → Undeclared	669	74.0%	1,181	83.2%	508	83.7%	98	73.5%

This method only examines one measure of short-term progress following a change of major. Future analyses should look further into additional measures, such as total time-to-degree and graduation rates by the type and timing of major changes.

Appendix – Measures and Definitions

- **Changes of major** exclude second-major declarations by double majors, as well as changes to a BS+MS program from its BS-only equivalent and vice-versa.
- **Average annual changes of major** are calculated by dividing the total number of major changes by the number of academic years included within the timeframe covered by the data.
- **Student enrollment year** measures time elapsed in a student's undergraduate career relative to their first term at UCR. For example, a student in their second year at UCR, or change-of-major events for a student occurring in their second year, would be included in the Year 2 enrollment year group.
- **College** indicates the school or college administering a student's program prior to change of major. In some cases, Pre-Business majors are considered separately from other CHASS majors. All Public Policy majors are retroactively included in School of Public Policy counts.
- **Student-terms**, as a measure of person-time, represent counts of each student enrolled in a given college for one term within the time period (as measured retroactively from the third week of one term to the third week of the preceding term).
- **Changes of major per 100 students per term** are calculated for a given group of students by dividing the total count of major changes within the measurement period by the number of student-terms attributed to that group. This measure allows for clearer comparisons of the frequency of major changes between groups of unequal size (for example, between CNAS and BCOE). When considering different types of major changes (i.e., major to major, major to undeclared, undeclared to major), only students who can make the type of major change under consideration are included in the count. For example, values for undeclared-to-major changes are per 100 undeclared students per term, as other students cannot make this type of major change. Similarly, values for major-to-major and major-to-undeclared changes are per 100 declared students per term.
- **Change index** is calculated by dividing changes of major per student-term for a given category with the equivalent value for a reference category. For example, when comparing frequency of changes among colleges using CHASS as the reference category, values below 1 indicate fewer changes of major per student per term relative to CHASS, while values above 1 indicate more changes of major per student per term.