# Race and Gender Differences in College Major Choice

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ABSTRACT: College major choice varies substantially by gender, race, and ethnicity among college graduates. This study investigates whether these differences are present at the start of the college career and whether they can be explained by variation in academic preparation. This study estimates a multinomial logit to evaluate whether students of similar academic backgrounds make similar college major choices at the start of their college career. The results demonstrate that significant differences by gender, race and ethnicity persist in initial college major choice even after controlling for the SAT score of the student and the high school class rank of the student. Gender differences in major choice are much larger than racial and ethnic disparities. Furthermore, women are significantly more likely to switch away from an initial major in engineering than are white men.

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JEL Classifications: I23, J16, J15

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BIO: Lisa Dickson is in an assistant professor of Economics at the University of Maryland Baltimore County. Her broad research interests include labor economics and economics of education. More specifically, she studies affirmative action policy and college accessibility. She has recently completed research about the effects of affirmative action policy on lowering the percent of minority students applying to college, and is currently investigating the economic returns to different college majors.

## Introduction

Several studies have documented the relatively low representation of women, blacks, and Hispanics with degrees in the sciences and engineering (S&E).[1] Because a student's choice of college major affects her occupational choice, earnings and the probability that she will pursue advanced degrees, it is important to understand why college major choice varies by race and gender.[2] This study uses administrative data from three Texas public universities to analyze the dynamics of college major choice and to determine why college major choice varies by race and gender.

College major choice is a dynamic process. As parents, college graduates, and college administrators know, students' college major during their first semester of study may change before graduation. Previous economic studies on college major choice have focused on students' majors at the time of graduation.[3] Unlike previous studies, this study considers students' initial college major, the probability of switching majors, and the final major choice. An analysis of the dynamics of major choice is important in order to inform public policy as to where in the academic pipeline women, blacks and Hispanics are deterred from pursuing majors in S&E.

College major choice varies by race and gender for at least four reasons. First, students may differ in their preparation for college work and this may affect their initial major choice. For example, students may only choose to pursue a major in engineering if they have strong math skills. If females and nonwhites have lower math skills, they might be less likely to choose engineering as a major during their first semester. Second, students may differ in their propensity to switch majors during college. Women, blacks and Hispanics who begin college intending to seek an engineering degree may be more likely to switch from these majors compared with whites. Third, the monetary reward for each major may vary by the

characteristics of the student. Brown and Corcoran (1997) and Joy (2000) find unequal returns for the same major between men and women. Differences in returns could explain unequal investments in specific fields of study by race and gender. Finally, preferences may vary by gender, race or ethnicity.

Accordingly, this study seeks to answer why college majors vary by gender, race and ethnicity. Because academic preparation could potentially affect initial major choice, I estimate a multinomial logit regression to test whether race and gender affect college major choice after controlling for academic preparation. Differences in major choice observed at the end of the college career could also be due to differences in the probability of switching majors, therefore I test whether women and nonwhites are more likely to switch majors. Finally, I estimate a multinomial logit model to ascertain whether final major choice varies by race and gender after controlling for initial major choice and academic background.

The dynamics of college major choice has implications for public and institution-specific policy. If the low number of graduates in S&E fields results because too few students proposed the major at the start of their college career, then perhaps public policies should be geared towards recruiting students to these majors at the K-12 level. If the paucity of students in the sciences and engineering results because students change their major during college away from these fields, then perhaps universities should design programs to retain and mentor students who aspire to careers in these fields.

**Data**

I use administrative from three public universities in Texas, which provide information on enrollees and their fields of study for up to ten years, depending on institution: University of

Texas at Austin (1991-2004), the University of Texas, Pan American (1995-2005), and the University of Texas at San Antonio (1990 – 2004). The analysis sample is restricted to individuals who report a college major both in their first and their last semester of study. I also excluded observations with incomplete data on ethnicity, gender, an admissions test score, and a high school class rank. This study uses data for all of the available years for these three universities.

The administrative data identifies 17 different divisions, which were aggregated to six different major categories in this study, as summarized below.

**Natural and Physical Sciences**
Agriculture, Natural sciences, Physical sciences, and Health sciences

**Business**
Business

**Social Science**
Social sciences

**Engineering and Computer Science**
Engineering and computer science

**Humanities and other majors**
Architecture, education, fine arts, general studies, humanities, individualized/interdisciplinary, military sciences, other, social work, technical/ vocational

**Undecided**

Empirical analyses are based on the six broad fields of study, which I call majors for parsimony of exposition.

**Descriptive Statistics**

Table 1 reports characteristics for all students enrolled at the three universities in their first semester. About 29 percent of students arrive on campus with no clear idea of their intended field of study. Of those reporting on major, the most popular major is the natural and physical sciences (18 percent) and the least popular major is humanities and other majors (12 percent). Students' characteristics differ appreciably according to intended major.. Engineering and computer science majors report higher test scores and higher class ranks than students who choose other majors. Engineering and computer science majors average an SAT score of 1194, and nearly half (48 percent) graduated in the top decile of their high school class. By contrast, only about one-quarter of students with an unspecified major graduated in the top decile of their high school class.

[Table 1 About Here]

Table 1 also reports the fraction of students in each major category at the beginning of their college career who belong to each demographic group. White males make up 26 percent of the total sample but 42 percent of engineering and computer science majors. Hispanic females are underrepresented in these majors; they comprise 15 percent of the study population, but only 5 percent of first semester freshmen intending to pursue a engineering and computer science major.

Table 2 illustrates whether which demographic groups are more or less likely to choose particular majors. Approximately one-in-four male students choose a major in engineering or computer science, but only 6 percent of women do so. Instead, 21 percent of women choose a major in the natural and physical sciences, compared with 15 percent of men. A higher

proportion of women are concentrated in the lower paying social sciences and humanities majors.[4]

[Table 2 About Here]

Major choice also varies by race and ethnicity. White males are actually the least likely of all groups to choose a major in the natural and physical sciences. For engineering and computer science, slightly smaller shares of black and Hispanic males choose this field of study compared with white males. In their freshman year, Asian and other males, including foreign students, are much more likely than white males to identify a major in engineering and computer science. Over one-third (37 percent) of Asian males intend to major in engineering or computer science fields compared to 26 percent of white males. Among male students, African-Americans are the most likely to be undecided at the start of their academic career.

Women's major preferences at college entry parallel those of men in many ways. Among female students, whites are the least likely to indicate their intention to major in the natural and physical sciences, but like their male counterparts, Asian females are more likely to choose a major in engineering and computer science than other women, with 11 percent opting for these fields. Black coeds are more likely to identify engineering or computer science as their first major than white, Hispanic, and other women. Finally, black and Hispanic women are more likely to declare a social science major than are white females, who, in turn, are more likely to be undecided than any other demographic group.

That students vary in their level of academic preparation may partly explain the observed differences in major choice. Several studies based on these data show that the average SAT score, and the fractions of students who graduated in the top two deciles of their high school class vary by race, ethnicity, and gender (see Fletcher and Tienda, this volume; Conger and

Long, this volume). For the three universities examined, the highest average SAT score corresponds to Asians (at 1202 points), and they also have the highest share of top decile graduates (51 percent). In our study population Hispanic students earn the lowest average SAT score (957) and the lowest proportion of top 10% graduates (27 percent). Black students report an average SAT score of 1016, with one-third of enrollees graduating in the top decile of their high school class.

In general, males average higher test scores, but a lower class rank for each race and ethnic category. The obverse holds for women, whose SAT test score averages 54 points below that of male students (1135). Two-in-five co-eds graduated in the top ten percent of their high school class, but only one-third of all male students did so. For both males and females, Asians maintain the highest SAT score and the largest proportion of top ten percent rank graduates. The largest gender performance gap corresponds to black students. Only 24 percent of black males graduated in the top ten percent of their high school class, but 40 percent of black co-eds did so.[5]

Because enrolled students who have not yet graduated can change their field of study, the analysis of switching majors focuses only on college graduates. Limiting the analyses to college graduates reduces the total sample by 61 percent, which includes both dropouts and enrolled students (right censored). Specifically, the sample of graduates is whiter and more female than the population of freshmen enrollees. Hispanic males and females comprised 14 and 15 percent of the enrollee population, respectively, but only 7 percent of graduates were Hispanic men and 9 percent Hispanic women. Further, owing to higher attrition rates at the San Antonio and Pan American campuses, UT-Austin students comprise a higher share of the graduate population. Almost 70 percent of the enrollee sample attended the University of Texas at Austin, but UT students represented almost 92 percent of all graduates from these three universities.[6]

Table 3 presents the cross-classification of initial field of study and final major. For the entire sample of individuals, approximately 29 percent of graduates changed majors at least once, including students who switched their major from undecided to a specified major. The most popular final major for college graduates is the social sciences with almost 31 percent of the population. Sorting the college graduate sample by the first major chosen permits analysis of switching propensities, and by answering whether students from a particular major are more likely to change. Natural and physical sciences as well as engineering and computer science witnessed the highest attrition rates (other than undecided). Over 40 percent of students who intended to major in engineering and computer science left the field. This outflow compares with the 38 percent of students from the natural and physical sciences, and 19 percent from business majors.

[Table 3 About Here]

As a result of switching fields of study, the gender and ethnoracial composition of the six major fields of study changes, but some initial patterns persist. (Appendix A provides details about the major switching patterns.) Consistent with national trends, Asian males are over-represented among graduates with degrees in science and engineering. Asian males comprise only 7 percent of college graduates at these three universities, but 20 percent of engineering and computer science graduates and they receive 12 percent of natural and physical science degrees. White males are also overrepresented among engineering and computer science graduates, but white females are underrepresented relative to their share of all graduates. Black male college graduates appear to be rather evenly distributed across the different major categories, however black females are overrepresented among the natural and physical science and the social science

graduates relative to their share of all graduates, and they are underrepresented among business, engineering and computer science majors.

Finally, Hispanic males are overrepresented in engineering and computer science and underrepresented in humanities and other majors, but the opposite obtains for Hispanic women graduates. Transitions into each major category reveal that very few students transition into engineering and computer science. Over 80 percent of students who graduated with these degrees began in the major. Almost half of the students who graduated with a degree in social science were originally undecided (43 percent). About one-quarter of natural and physical sciences graduates were undecided at the start of their college careers.

**Empirical Methodology**

Although large differences exist by gender and race in college major choice, there are also large differences across groups in test scores and academic preparation. The methodology employed in this study seeks to isolate the influence of race and gender in both initial field of study and a switching toward another field. Several studies have demonstrated that the choice of college major is related to the student's aptitude scores in math. All but one (Arcidiacono 2004) of these studies relate the aptitude scores to the observed final choice of college major rather than the initial major the student chose at the start of their academic career. I model for all enrollees the initial choice major, transitions out of the field, and for graduates, the final field of study.

I first estimate the relationship between the students' major choice and their academic background using a multinomial logit (see Turner and Bowen 1999). The model of initial major choice is as follows:

$$\Pr(M_i = j) = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^{5} e^{\beta_k' x_i}} \text{ for j = 0, 1, 2, 3, 4, 5}$$

The initial choice of college major is specified as a function of matrix X including: the student's test scores, class rank, race, ethnicity, gender, as well as year and university identifiers. Students' test scores and class rank reflect ability and eagerness to learn. Race, ethnicity, and gender may influence college major choice independently of academic preparation. Because college major choice may change over time, year identifiers are included in the model. In addition, university fixed effects are included in the model because university specific attributes may determine whether a student majors in a particular subject.

When the student arrives in college, students acquire new information about their ability and major options. This new information may lead to changes in intended field of study. In order to determine whether minorities and women are more likely to change their major than are white males a logit is estimated for students who have graduated from college:

$$\Pr(Change = 1) = \Lambda(\beta' x)$$

where the dependent variable is equal to 1 when the student switches major. This model is estimated for each major separately. The X variables included in the model are: gender, race, ethnicity, test scores, year indicators, and university identifiers. Because the logit is only estimated for college graduates, the results are conditional upon college graduation.

The final empirical model relates the graduation college major to the student's academic background, using the following specification:

$$\Pr(M_i = j) = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^{5} e^{\beta_k' x_i}} \text{ for j = 0, 1, 2, 3, 4, 5}$$

Where in the X matrix which includes: test scores, class rank, race, ethnicity, gender, year identifiers, university fixed effects and the initial choice of college major for the graduates.

**Results**

As expected, academic preparation, race, and gender are associated with initial choices of major. Table 4 shows the average marginal effects from estimating the multinomial logit regression on initial major choice.[7] The largest estimate is the sixteen percentage point decrease in the probability of choosing engineering and computer science for white females. Similarly large estimates obtain for minority women. To appreciate the magnitude of these estimates, a standard deviation increase in test scores (200 points) increases in the probability of choosing engineering and computer science by six percentage points. Thus, the gender effect is almost three times the size of a standard deviation increase in standardized test scores. Sample means revealed about a 20 percentage point gap between white women and white men in their tendencies to choose engineering and computer science as a major. Multivariate analysis allows comparisons of differences between white men and women after controlling for test scores, high school class rank, and fixed effects for university attended and year of first enrollment. After controlling for these factors in the regression, a large portion of the gender gap in choice of engineering and computer science majors remains unexplained; a gap of 16 percentage points remains.[8]

[Table 4 About Here]

Co-eds are significantly more likely to major in the natural and physical sciences than are white males even among those with similar test scores and class rank. The magnitude of the sex gap in these majors varies according to race and ethnicity, however. The effect is largest for

Asian females with a 0.069 higher probability and smallest for white females with a 0.017 higher probability of majoring in natural and physical sciences than their male counterparts. Hispanic, Asian, and other males are also more likely to choose the natural and physical sciences compared with white males. Specifically, Hispanic males are 0.013 more likely and Asian males 0.057 more likely to choose natural and physical sciences. Individuals with a higher test score and a higher class rank are more likely than less well prepared students to choose a major in the natural and physical sciences. Top decile students are 3.6 percentage points more likely to choose the natural and physical sciences than the social sciences.

White females and both Hispanic men and women, and Asian males are significantly less likely to choose a business major than are white males. Although statistically significant, the point estimates are small in magnitude – implying approximately a 1 percentage point lower likelihood in choosing a business major. Class rank also influences pursuit of a major in business, with students ranked in the top decile approximately 12 percentage points more likely than lower ranked students to choose a major in business than a major in the social sciences. Students ranked in the second decile are approximately 4 percentage points more likely to choose a major in business than a major in the social sciences relative to lower ranked classmates.

Women are more likely to declare a major in the humanities and other majors relative to the social sciences at the beginning of their college career. White and Hispanic females are approximately 0.05 more likely and Asian females about 0.017 more likely to choose a humanities major than white males. Hispanic males also are slightly more likely to choose a major in the humanities compared with white males, but Asian males are slightly less likely to elect a humanities major than white males.

Students with higher test scores and higher class ranks are significantly less likely to be undecided at the start of their college careers compared with less well prepared classmates. Black students, as well as black females, Hispanic, Asian, and other males are significantly less likely than white males begin their college careers with no clear major preference. White and Asian females are significantly more likely than white men to be undecided at the beginning of their college career.

In order to investigate whether there are differences in the relative probabilities of switching majors, logit regressions are estimated separately for each major choice. Table 5 reports the average marginal effects of covariates on the probability of switching majors for college graduates by initial field of study. The likelihood of switching fields of study differs by demographic group, but these differences also depend on the major.

[Table 5 About Here]

In accordance with descriptive results, the largest switching probabilities correspond to students who had originally proposed a major in engineering and computer science. White women are almost 19 percentage points more likely than white men to switch majors. Compared with white male grads, black women are 17 percentage points less likely to switch majors; Hispanic and Asian women are 19 and 15 percentage points, respectively, less likely to do so. Not only are equally qualified women less likely to declare a major in engineering and computer science (Table 4), but they are also significantly more likely to switch away from a major in engineering and computer science (Table 5). Hispanic male graduates are significantly more likely to switch away from engineering and computer science than are white males, although the magnitude of the effect is much smaller than it is for women (0.05). Asian male graduates are

three percentage points less likely to switch out of engineering and computer science than are white males.

For the remaining majors, significant race and ethnic differences in the probability of switching majors exist, but the point estimates are smaller for engineering and computer science majors. In the natural and physical sciences, white females (0.03) and Hispanic females (0.07) are significantly more likely to switch away from this major than white males. Black males are actually 10 percentage points less likely to switch away from a major in the natural and physical sciences than are white males. Notably, white Hispanic graduates who being college intending to major in humanities are significantly less likely to switch away from this relatively low paying field. Asian males and females are more likely to switch out of the humanities and other majors than are white males.

Graduates who were better prepared academically for college work are less likely to switch out of the natural and physical sciences and engineering and computer science, compared with graduates who were less well prepared. Average SAT score does not significantly affect whether students switch out of a business major, but a higher class rank reduces the likelihood that graduates changed their business major. Students with higher SAT scores and higher class ranks are actually more likely to switch out of the social sciences and the humanities.

[Table 6 About Here]

Table 6 shows the average marginal effects of each variable for choosing the final major category from a multinomial logit specification. Results reveal that initial major choice significantly affects final major choice. For example, students who start college intending to major in the natural and physical sciences and engineering, as well as those who are undecided are significantly more likely to major in natural and physical sciences. Students who initially

select the natural and physical sciences or engineering and computer science fields are significantly less likely to major in business. Significant race and ethnic differences in graduation major exist after controlling for initial major choice, test score, and class rank. White, black, Hispanic, and Asian females are 2 to 7 percentage points more likely to major in the humanities and other majors than white males *conditional on initial major choice*.

**Conclusion**

The National Science Board and other policymakers have been concerned about the low representation of women, blacks and Hispanics working in the science and engineering fields. Previous economic studies of college major choice have focused on the final major of college graduates, which presumes lack of interest in these fields. By analyzing major choice as a dynamic process, I show that both initial major choice and the probability of switching majors differs among race, ethnic, and gender groups.

Demographic variation in intended fields of study partly reflect group differences in academic preparedness. Men average higher test scores than women who achieve higher high school class rank than their male counterparts. Asians have higher test scores and class ranks than do students of other races. Because students in the natural and physical sciences and engineering and computer science average higher test scores and class ranks than students who select other majors, it is conceivable that these differences account for race, ethnic, and gender variation in major choice. Empirical results suggest that the differences in academic preparation explain only a small part of the variation in major choice by race and gender.

Race and ethnic variation in college major choice is small compared to gender differences. For example, women with SAT scores and class ranks equivalent to men are less

likely to choose a major in engineering. Moreover, if women who initially choose to major in engineering, they are more likely than men to switch away from this field. Although the gender differences in major choice are larger than the race differences, I still find that race and ethnicity affects major choice. Asian and other men (includes foreign students, American Indians and unspecified ethnicities) are significantly more likely to choose a major in sciences and engineering than white males of equivalent academic preparation. Asian males are also significantly less likely to switch away from a major in engineering and computer science than are white males who begin in these fields. Despite claims that blacks and Hispanics are underrepresented in S&E fields, I show that they appear to make major choices similar to white college graduates. Stated differently, the low levels of blacks and Hispanics with degrees in the sciences and engineering may be due to the low levels of blacks and Hispanics graduating from college.

## Notes

[1] The National Science Board (2008) reports that while women were 57.8% of students who obtained a bachelor's degree in 2005 that only 50.5% of bachelor's degrees in the sciences and engineering were awarded to women. According to the National Science Board, the low levels of black and Hispanic students with degrees in the sciences and engineering is due to the low levels of blacks and Hispanics who graduate from college.

[2] Several studies have found that the sciences and engineering are among the most highly rewarded in the labor market including: Black, Sanders and Taylor (2003), Berger (1988), Dickson (2008) and Hamermesh and Donald (2008). Bedard and Herman (2008) and Black, Sanders and Taylor (2003) provide evidence that undergraduate major affects graduate school attendance.

[3] Previous studies that used the final observed college major choice include Brown and Corcoran (1997), Daymont and Andrisani (1984), Gerhart (1990), Loury (1997), Polachek (1978) and Turner and Bowen (1999). Arcidiacono (2004) is the only study that investigates college major choice as a dynamic process.

[4] Black, Sanders and Taylor (2003), Berger (1988), Dickson (2008) and Hamermesh and Donald (2008) find that the sciences and engineering are the most highly rewarded and that the social sciences and humanities are relatively lower paying majors.

[5] Detailed sample characteristics by demographic group and major are available from the author on request.

[6] These tabulations are available from the author.

[7] The test score used in this study is the total SAT score and not the separate components of the SAT. It is possible that differences in math scores may help to explain some more of the remaining difference in college major choice. The total SAT score was used as it was available for all three universities in the study.

[8] An assumption maintained in the estimation of the multinomial logit is that the introduction of another alternative will not affect the relative probabilities of choosing a particular major. This is the independence of irrelevant alternatives assumption (IIA). For example in this model, it means that the introduction of social sciences as a possible major choice should not affect the relative probability of choosing engineering and computer science over humanities. This assumption can be tested by comparing the estimated coefficients from the multinomial logit model with the estimated coefficients from the model with a subset of choices. This can be done using a Hausman test (see Hausman and McFadden, 1984). I conducted the Hausman test by comparing the estimates from the model

to the estimates obtained when the natural and physical sciences is excluded as an option. The results suggested that IIA is violated. I proceeded to estimate a multinomial probit regression of college major choice. I found that the results from the multinomial probit regression were similar to those obtained from the multinomial logit regression. Results from the multinomial probit regression are available upon request from the author.

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**Table 1: Summary Statistics for Students in Their First Semester by Initial Major Choice (percent)**

| Characteristics | Total Sample | Natural and Physical Sciences | Business | Social Sciences | Engineering and Computer Science | Humanities and Other Majors | Undecided |
|---|---|---|---|---|---|---|---|
| *Demographic Characteristics* | | | | | | | |
| White Male | 26.2 | 17.0 | 28.3 | 20.8 | 42.1 | 19.1 | 27.2 |
| Black Male | 1.7 | 1.2 | 1.7 | 1.2 | 2.6 | 0.8 | 2.0 |
| Hispanic Male | 14.1 | 15.2 | 13.5 | 12.7 | 20.2 | 13.4 | 11.2 |
| Asian Male | 6.2 | 6.4 | 5.0 | 2.0 | 14.2 | 2.6 | 5.0 |
| Other Male | 0.7 | 0.7 | 0.7 | 0.5 | 1.2 | 0.6 | 0.5 |
| White Female | 26.8 | 24.3 | 26.2 | 33.3 | 9.0 | 35.9 | 32.1 |
| Black Female | 2.2 | 2.8 | 2.3 | 3.0 | 1.1 | 1.7 | 2.3 |
| Hispanic Female | 15.4 | 23.3 | 14.6 | 21.2 | 5.1 | 19.8 | 12.3 |
| Asian Female | 5.9 | 7.8 | 6.8 | 4.0 | 4.0 | 5.0 | 6.5 |
| Other Female | 0.8 | 1.3 | 0.8 | 1.0 | 0.4 | 1.0 | 0.6 |
| *Academic Preparation* | | | | | | | |
| Test score (SAT/ACT) | 1108 | 1066 | 1115 | 1090 | 1194 | 1113 | 1087 |
| Top Decile in High School | 36.8 | 37.4 | 49.8 | 34.2 | 48.4 | 38.5 | 24.5 |
| Second Decile in High School | 21.9 | 22.2 | 19.0 | 22.9 | 22.8 | 20.9 | 22.3 |
| *University Attended* | | | | | | | |
| UT Austin | 69.9 | 53.8 | 66.6 | 61.5 | 80.0 | 62.8 | 82.4 |
| UT Pan American | 11.9 | 19.2 | 9.5 | 12.7 | 8.5 | 18.9 | 7.2 |
| UT San Antonio | 18.1 | 27.0 | 23.8 | 25.8 | 11.5 | 18.3 | 10.4 |
| Sample size (%) | 100 | 17.8 | 12.9 | 12.7 | 16.2 | 11.7 | 28.7 |
| Sample size (n) | 127,330 | 22,698 | 16,374 | 16,209 | 20,591 | 14,953 | 36,505 |

Notes: The admissions test score presented in this table is the average SAT score. For students who reported an ACT score, their score was converted to the SAT scale.

**Table 2: Initial Major Choices by Demographic Group (percent)**

| | Natural and Physical Sciences | Business | Social Sciences | Engineering and Computer Science | Humanities and Other Majors | Undecided | Sample Size |
|---|---|---|---|---|---|---|---|
| All Students | | | | | | | |
| Male | 14.8 | 13.0 | 9.7 | 26.6 | 8.8 | 27.1 | 62,201 |
| Female | 20.7 | 12.7 | 15.6 | 6.2 | 14.6 | 30.1 | 65,129 |
| Male Students | | | | | | | |
| White | 11.6 | 14.0 | 10.1 | 26.0 | 8.6 | 29.8 | 33,311 |
| Black | 13.0 | 13.1 | 8.9 | 25.4 | 5.8 | 33.9 | 2,136 |
| Hispanic | 19.2 | 12.3 | 11.4 | 23.2 | 11.2 | 22.7 | 17,973 |
| Asian | 18.4 | 10.5 | 4.1 | 37.1 | 4.8 | 25.0 | 7,887 |
| Other[a] | 19.2 | 12.4 | 9.5 | 28.4 | 10.2 | 20.3 | 894 |
| Female Students | | | | | | | |
| White | 16.2 | 12.6 | 15.8 | 5.5 | 15.7 | 34.3 | 34,134 |
| Black | 22.0 | 13.3 | 17.4 | 8.1 | 9.1 | 30.1 | 2,834 |
| Hispanic | 26.9 | 12.2 | 17.5 | 5.4 | 15.1 | 22.8 | 19,610 |
| Asian | 23.7 | 14.8 | 9.1 | 11.0 | 9.9 | 31.7 | 7,528 |
| Other[a] | 28.5 | 12.1 | 16.4 | 7.5 | 14.9 | 20.6 | 1,023 |

Note: The sample is for all individuals who are enrolled at UT-Austin, UT-San Antonio, or UT-Pan American. The data in this table comes from students for their first semester enrolled.

[a] Includes international students

**Table 3: Characteristics of College Graduates According to Initial Major Choice (proportions)**

| Variable | Total Sample | INITIAL MAJOR CHOICE | | | | | |
|---|---|---|---|---|---|---|---|
| | | Natural and Physical Sciences | Business | Social Sciences | Engineering and Computer Science | Humanities and Other Majors | Undecided |
| Switched major | 0.289 | 0.384 | 0.194 | 0.175 | 0.421 | 0.278 | 0.904 |
| *Final Major Choice* | | | | | | | |
| Natural and physical sciences | 0.169 | **0.616** | 0.021 | 0.027 | 0.173 | 0.034 | 0.187 |
| Business | 0.200 | 0.047 | **0.806** | 0.046 | 0.048 | 0.102 | 0.072 |
| Social sciences | 0.307 | 0.184 | 0.087 | **0.825** | 0.130 | 0.128 | 0.432 |
| Engineering and computer science | 0.121 | 0.034 | 0.022 | 0.004 | **0.579** | 0.014 | 0.016 |
| Humanities and other majors | 0.199 | 0.118 | 0.063 | 0.097 | 0.067 | **0.722** | 0.197 |
| Undecided | 0.004 | 0.002 | 0.001 | 0.001 | 0.004 | 0.001 | **0.096** |
| Sample size | 49,159 | 9548 | 9259 | 12,254 | 9028 | 8634 | 375 |

**Notes:** These statistics are for all students who graduated from one of the three universities. The admissions test score presented in this table is the average SAT score. For students who reported an ACT score, their score was converted to the SAT scale.

**Table 4: Determinants of College Major Choice in the First Semester**

| | Natural and Physical Sciences | Business | Engineering and Computer Science | Humanities and Other Majors | Undecided |
|---|---|---|---|---|---|
| White Female | 0.017*** | -0.016*** | -0.163*** | 0.052*** | 0.063*** |
| | (0.002) | (0.002) | (0.003) | (0.002) | (0.004) |
| Black Female | 0.063*** | 0.001 | -0.106*** | 0.034*** | -0.046*** |
| | (0.006) | (0.005) | (0.010) | (0.004) | (0.012) |
| Hispanic Female | 0.050*** | -0.009*** | -0.141*** | 0.049*** | -0.009 |
| | (0.003) | (0.003) | (0.005) | (0.002) | (0.006) |
| Asian Female | 0.069*** | -0.001 | -0.140*** | 0.017*** | 0.068*** |
| | (0.004) | (0.003) | (0.005) | (0.003) | (0.007) |
| Other Female | 0.058*** | -0.001 | -0.135*** | 0.039*** | -0.011 |
| | (0.009) | (0.009) | (0.017) | (0.006) | (0.021) |
| Black Male | 0.007 | 0.000 | 0.082*** | -0.007 | -0.076*** |
| | (0.005) | (0.006) | (0.008) | (0.006) | (0.013) |
| Hispanic Male | 0.013*** | -0.014*** | 0.062*** | 0.013*** | -0.082*** |
| | (0.002) | (0.003) | (0.004) | (0.002) | (0.006) |
| Asian Male | 0.057*** | -0.014*** | 0.074*** | -0.026*** | -0.026*** |
| | (0.004) | (0.003) | (0.004) | (0.003) | (0.008) |
| Other Male | 0.015** | -0.002 | 0.078*** | 0.001*** | -0.089*** |
| | (0.007) | (0.009) | (0.012) | (0.007) | (0.021) |
| Test Score (SAT/ACT) Divided by 100 | 0.004*** | 0.0004 | 0.030*** | 0.020*** | -0.062*** |
| | (0.001) | (0.0006) | (0.0007) | (0.0006) | (0.001) |
| Top Decile | 0.036*** | 0.118*** | 0.123*** | -0.0002 | -0.268*** |
| | (0.002) | (0.003) | (0.004) | (0.002) | (0.003) |
| Second Decile | 0.032*** | 0.041*** | 0.088*** | 0.003** | -0.174*** |
| | (0.002) | (0.003) | (0.004) | (0.002) | (0.004) |
| UT – Pan American | 0.129*** | 0.090*** | 0.159*** | 0.114*** | -0.544*** |
| | (0.005) | (0.003) | (0.006) | (0.002) | (0.008) |
| UT – San Antonio | 0.131*** | 0.139*** | 0.089*** | 0.068*** | -0.487*** |
| | (0.004) | (0.003) | (0.005) | (0.002) | (0.006) |

**Notes:** The numbers presented in the table are the average marginal effects for choosing each major relative to choosing a major in the social sciences at these universities after estimating a multinomial logit model. The average marginal effects are calculated using the margeff command in STATA. Year indicators are included in the regression. *** 1%, **5%, *10%

**Table 5: Determinants of Switching Majors: College Graduates**

| | Natural and physical sciences | Business | Social sciences | Engineering and computer science | Humanities and other majors |
|---|---|---|---|---|---|
| White Female | 0.030** | 0.054*** | 0.031*** | 0.187*** | -0.049*** |
| | (0.015) | (0.011) | (0.008) | (0.017) | (0.011) |
| Black Female | 0.025 | 0.092*** | 0.023 | 0.172*** | -0.002 |
| | (0.035) | (0.033) | (0.021) | (0.047) | (0.040) |
| Hispanic Female | 0.072*** | 0.043*** | 0.040*** | 0.186*** | -0.074*** |
| | (0.021) | (0.017) | (0.013) | (0.029) | (0.018) |
| Asian Female | -0.015 | -0.030** | 0.080*** | 0.150*** | 0.077*** |
| | (0.020) | (0.013) | (0.017) | (0.023) | (0.023) |
| Other Female | 0.017 | 0.025 | 0.004 | 0.130 | -0.044 |
| | (0.067) | (0.057) | (0.034) | (0.103) | (0.065) |
| Black Male | -0.101* | 0.053 | 0.029 | 0.049 | -0.036 |
| | (0.056) | (0.042) | (0.034) | (0.040) | (0.060) |
| Hispanic Male | -0.024 | 0.008 | 0.007 | 0.047*** | 0.025 |
| | (0.024) | (0.016) | (0.013) | (0.019) | (0.025) |
| Asian Male | -0.014 | -0.015 | 0.066*** | -0.034** | 0.137*** |
| | (0.021) | (0.016) | (0.023) | (0.015) | (0.034) |
| Other Male | -0.117 | -0.018 | 0.101 | -0.036 | 0.010 |
| | (0.098) | (0.058) | (0.066) | (0.066) | (0.097) |
| Test score (SAT/ACT) Divided by 100 | -0.018*** | -0.003 | 0.012*** | -0.018*** | 0.030*** |
| | (0.004) | (0.004) | (0.004) | (0.005) | (0.006) |
| Top Decile | -0.122*** | -0.047*** | 0.029*** | -0.051*** | 0.043*** |
| | (0.013) | (0.007) | (0.008) | (0.014) | (0.015) |
| Second Decile | -0.055*** | -0.034*** | 0.017** | -0.038** | 0.018 |
| | (0.015) | (0.009) | (0.008) | (0.016) | (0.015) |
| UT-Pan American | 0.211*** | 0.350*** | 0.443*** | 0.136*** | 0.297*** |
| | (0.027) | (0.049) | (0.040) | (0.052) | (0.035) |
| UT-San Antonio | 0.023 | 0.151*** | 0.083*** | -0.050 | 0.098*** |
| | (0.022) | (0.025) | (0.020) | (0.033) | (0.029) |

Note: The numbers presented in the table are the average marginal effects for switching away from each major after estimating a logit regression. The average marginal effects are calculated using the margeff command in STATA. Year indicators are included in the regression. *** 1%, **5%, *10%

**Table 6: Average Marginal Effects for Final Major Choice: College Graduates**

| | Natural and physical sciences | Business | Engineering and computer science | Humanities and other majors |
|---|---|---|---|---|
| White Female | -0.002** | -0.013*** | -0.003*** | 0.058*** |
| | (0.001) | (0.002) | (0.000) | (0.004) |
| Black Female | 0.002 | -0.025*** | -0.003*** | 0.020** |
| | (0.002) | (0.005) | (0.001) | (0.009) |
| Hispanic Female | -0.003*** | -0.018*** | -0.004*** | 0.066*** |
| | (0.001) | (0.003) | (0.000) | (0.006) |
| Asian Female | 0.013*** | 0.025*** | -0.001* | 0.036*** |
| | (0.002) | (0.003) | (0.000) | (0.006) |
| Other Female | -0.002 | -0.022*** | -0.003** | 0.024 |
| | (0.004) | (0.011) | (0.001) | (0.017) |
| Black Male | 0.008** | -0.005 | 0.000 | 0.022* |
| | (0.004) | (0.007) | (0.001) | (0.013) |
| Hispanic Male | 0.003** | -0.007** | 0.000 | 0.008 |
| | (0.001) | (0.003) | (0.000) | (0.006) |
| Asian Male | 0.016*** | 0.029*** | 0.003*** | -0.018*** |
| | (0.002) | (0.003) | (0.000) | (0.007) |
| Other Male | 0.006 | 0.010 | 0.002 | -0.008 |
| | (0.007) | (0.012) | (0.001) | (0.025) |
| Test score (SAT/ACT) Divided by 100 | 0.007*** | 0.004*** | 0.007*** | -0.004*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Top decile | 0.025*** | 0.038*** | 0.003*** | 0.010*** |
| | (0.002) | (0.003) | (0.000) | (0.003) |
| Second decile | 0.006*** | 0.016*** | 0.001*** | -0.002 |
| | (0.001) | (0.002) | (0.000) | (0.003) |
| Initially natural and physical sciences | 0.416*** | -0.012*** | 0.019*** | -0.010* |
| | (0.018) | (0.004) | (0.003) | (0.006) |
| Initially business | -0.004*** | 0.504*** | 0.001 | -0.052*** |
| | (0.002) | (0.008) | (0.002) | (0.005) |
| Initially engineering and computer science | 0.120*** | -0.052*** | 0.756*** | -0.101*** |
| | (0.013) | (0.004) | (0.026) | (0.007) |
| Initially humanities and other majors | 0.004 | 0.047*** | 0.006*** | 0.372*** |
| | (0.002) | (0.004) | (0.001) | (0.007) |
| Initially undecided | 0.082*** | 0.060*** | 0.032*** | 0.079*** |
| | (0.007) | (0.005) | (0.003) | (0.006) |
| UT-Pan American | 0.011*** | 0.051*** | 0.004*** | 0.081*** |
| | (0.003) | (0.005) | (0.001) | (0.009) |
| UT-San Antonio | 0.013*** | 0.031*** | 0.005*** | 0.008 |
| | (0.002) | (0.004) | (0.000) | (0.007) |

Note: The numbers presented in the table are the average marginal effects for choosing each major relative to choosing a major in the social sciences at these universities after estimating a multinomial logit model. The average marginal effects are calculated using the margeff command in STATA. Year indicators are included in the regression. *** 1%, **5%, *10%