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The Pipeline Problem: How College Majors Contribute to the Gender Pay Gap

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Executive Summary

- In the 2016 study, *Demystifying the Gender Pay Gap*, Glassdoor Economic Research found that the biggest cause of today's gender pay gap is that men and women sort into different jobs — men into higher-paying positions and women into traditionally lower-paying jobs.

- In this study, we dig deeper into this "pipeline problem" by taking a step backward in time to study how college majors affect career paths and pay later on.

- During college, men and women gravitate toward different majors, often due to societal pressures. This puts men and women on different career tracks — with different pay — after college. How does this contribute to America's gender pay gap?

- Using a unique dataset of more than 46,900 resumes shared on Glassdoor, we illustrate how men and women sorting into different college majors translates into gender gaps in careers and pay later.

- Many college majors that lead to high-paying roles in tech and engineering are male dominated, while majors that lead to lower-paying roles in social sciences and liberal arts tend to be female-dominated, placing men in higher-paying career pathways, on average.

  - The most male-dominated majors are Mechanical Engineering (89 percent male), Civil Engineering (83 percent male), Physics (81 percent male), Computer Science and Engineering (74 percent male), and Electrical Engineering (74 percent male).

  - The most female-dominated majors are Social Work (85 percent female), Healthcare Administration (84 percent female), Anthropology (80 percent female), Nursing (80 percent female), and Human Resources (80 percent female).

- Nine of the 10 highest paying majors we examined are male-dominated. By contrast, 6 of the 10 lowest-paying majors are female-dominated.

- Even within the same major men and women often end up on different career tracks, resulting in a pay gap that could follow them for a lifetime. In our sample, across the 50 most common majors, men and women face an 11.5 percent pay gap on average in the first five years of their careers.

  - Majors leading to the largest pay gaps favoring men include Healthcare Administration (22 percent pay gap), Mathematics (18 percent pay gap) and Biology (13 percent pay gap).

  - Majors leading to the largest pay gaps favoring women — a reverse pay gap — include Architecture (-14 percent pay gap), Music (-10.1 percent pay gap) and Social Work (-8.4 percent pay gap).

- Choice of college major can have a dramatic impact on jobs and pay later on. Our results suggest that gender imbalances among college majors are an important and often overlooked driver of the gender pay gap.

I. Introduction

For many people, college is a time for personal growth and exploration. However, it's also a time that affects future careers. The choice among college majors can have a dramatic impact on jobs and pay in the years after graduation. While many think of choosing a college major as an expression of personal interests and values, it's also a practical financial decision — one with implications for a lifetime of work and earnings.

Many college majors are divided by gender. For a variety of reasons, men and women tend to cluster into different fields in college. For example, in 2014 women earned 57 percent of all bachelor's degrees granted in America,[1] but earned just 9 percent of degrees in Construction Management. By contrast, women earn 89 percent of degrees in Occupational Therapy today, compared to just 11 percent earned by men.

This gender divide among college majors effectively places men and women on different career tracks early in life. Although college majors certainly don't completely determine careers, differences in skills and training imparted by different college majors clearly affects which career doors are open or closed after graduation — skills like coding, knowledge of financial principles, written communication, engineering methods, statistical theory, best practices of design, and more.

Because men and women systematically sort into different college majors, they experience different early career paths, which pay differently. These pay differences in turn reveal themselves as major contributors to the well-documented gap between male and female pay in the labor market. Because the choice of college major affects job prospects and pay later on, choosing a field of study goes far beyond an expression of personal preference; it is also a decision that affects America's persistent gender pay gap.

In 2016, Glassdoor published a study showing a significant gender pay gap around the world.[2] In each country we examined, men earned more than women on average, both before and after adding statistical controls to make an apples-to-apples comparison between similar male and female workers, including age, education, job title, company, industry and other factors. On average, men in the U.S. earn about 24.1 percent higher base pay than women, and a gender pay gap of 5.4 percent remains even after statistically controlling for all observable differences between workers.

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[1] See National Center for Education Statistics, "Table 318.30. Bachelor's, Master's, and Doctor's Degrees Conferred by Postsecondary Institutions, by Sex of Student and Discipline Division: 2013-14."
Available at https://nces.ed.gov/programs/digest/d15/tables/dt15_318.30.asp.

[2] Andrew Chamberlain (March 2016), "Demystifying the Gender Pay Gap: Evidence from Glassdoor Salary Data," Glassdoor Economic Research report.
Available at https://www.glassdoor.com/research/studies/gender-pay-gap/.

What's causing that gender pay gap? In our study, we found the largest single factor that explains the 24.1 percent adjusted gender pay gap in the U.S. is *occupation and industry sorting of men and women* into different jobs that pay differently throughout the economy. For example, men tend to disproportionately work in high-paying executive roles, while women are over-represented among lower-paying retail positions. In the U.S., this type of occupational sorting explains about 54 percent of the overall gender pay gap — more than half the observed difference between men and women's pay.

In this study we examine an important part of the "pipeline" cause of the occupational sorting of men and women into different roles in the economy: Gender differences in college major. Using a large database of resumes shared on Glassdoor, we examine the gender, college major, and early career paths of more than 46,900 resumes from individuals who finished college between 2010 and 2017.[3] We then estimated pay for each post-college job using Glassdoor salary data. This provides a unique data set that shows the complete link between gender, choice of college major, and differences in male and female pay later on.

The remainder of this study is organized as follows. In Section II, we illustrate how the choice of college major affects pay with some examples. In Section III, we describe our data set. Section IV shows which college majors are most gender divided. Section V shows the most common jobs for each college major. Section VI connects career paths with pay to show the highest and lowest paying college majors. Section VII illustrates how men and women cluster into differently paying majors, fueling the gender pay gap. Section VIII notes some limitations of our data. Finally, Section IX summarizes what our results mean for job seekers, employers and universities.

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[3] All names and other personally identifying information were removed from resumes before access by our researchers. No personally identifying information of any kind was used in this research.

II. Pathways from College to Jobs

How does the choice of college major affect pay? In Figure 1, we illustrate how we think about the pipeline from college majors to jobs and compensation in this study. It illustrates a stylized choice between two popular college majors: Accounting and Communications. For each major, we've shown three of the most common jobs people go into during their first five years in the labor market after graduation, as well as the estimated median base pay for each job based on Glassdoor salary data.

For Accounting majors, common jobs during the first five years after graduation include financial analyst, accountant, and auditor. Median base pay for these jobs ranges from $54,714 to $61,853, for an average of pay of $57,242 per year. For Communications majors, typical career paths after college include social media manager, marketing coordinator, and account manager. Median base pay for these jobs ranges from $46,408 to $54,560 per year, for an average pay of $50,268 per year. Between the two majors, there's a roughly $7,000 per year difference in typical earnings.

If men and women choose Accounting and Communications majors equally in college, there will be no average difference in pay between men and women after graduation. However, if the gender balance tips in favor of one or the other, men and women are placed on different career paths with different pay. In the extreme case of *all* women majoring in Accounting while all men choose Communications, average post-graduation pay would reveal a gender gap of $6,974 or 13.9 percent in favor of women. This is the basic connection between gender, choice of college major, and pay that we examine in this study.
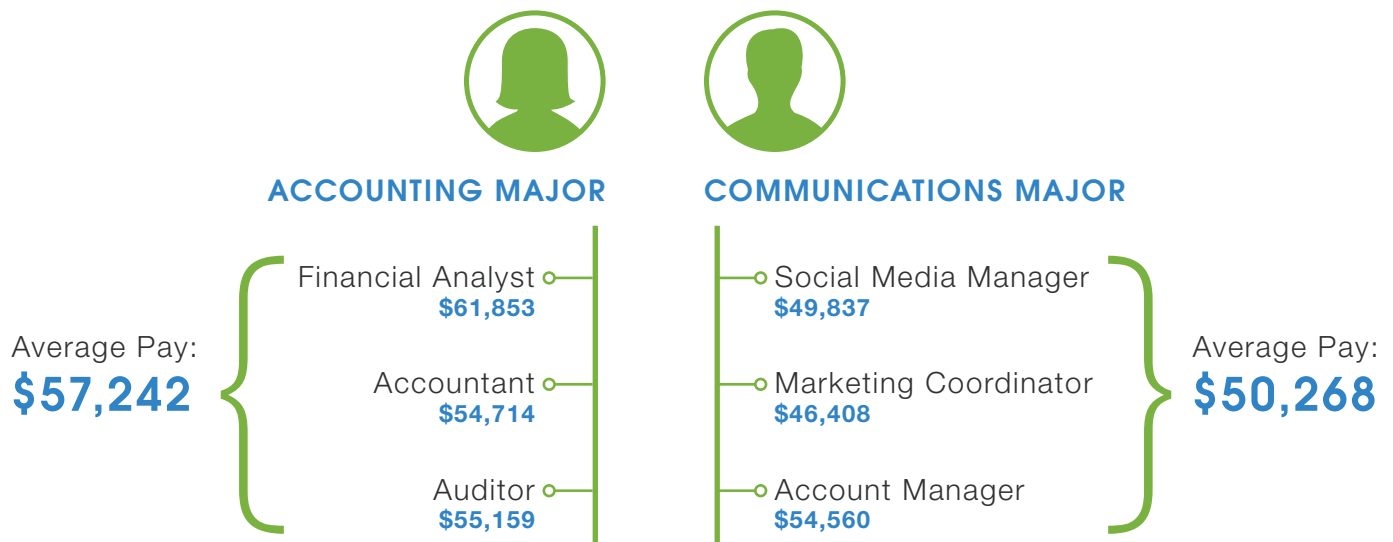
While the example in Figure 1 is hypothetical, research shows the impact of college majors on pay is real. In 2011, a study from the Center on Education and the Workforce at Georgetown University explored differences in earnings for 171 college majors in the U.S.[4] They found wide gaps in median pay among different college majors, ranging from $29,000 per year earned by Counseling Psychology majors to $120,000 per year earned by Petroleum Engineering majors. These vast differences in pay among college majors mean small differences in the gender balance within majors can lead to large gender pay gaps later on.

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[4] Anthony Carnevale, Jeff Strohl and Michelle Melton (2011). "What's It Worth? The Economic Value of College Majors," Center on Education and the Workforce at Georgetown University. Available at https://cew.georgetown.edu/wp-content/uploads/2014/11/whatsitworth-complete.pdf.

FIGURE 1. How College Majors Affect Career Paths and Pay

ACCOUNTING MAJOR

COMMUNICATIONS MAJOR

Average Pay:
$57,242

Financial Analyst
$61,853

Accountant
$54,714

Auditor
$55,159

Social Media Manager
$49,837

Marketing Coordinator
$46,408

Account Manager
$54,560

Average Pay:
$50,268

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Note: Annual base salaries are as of February 2017 based on Glassdoor data.
Source: Glassdoor Economic Research (glassdoor.com/research)

WHAT DRIVES CHOICE OF MAJOR?

One question that immediately arises is: What factors influence men and women to choose different college majors? While it may be tempting to describe the choice among college majors as a purely individual choice by students, research paints a more complex picture. Studies show that many broader social factors also influence the gender patterns we see among college majors.

For example, research shows that early academic preparation in elementary and high school has a powerful effect on the choice of college majors by men and women. A 2017 study published in the academic journal *Labour Economics* found that differences in college preparation account for many gender disparities by major, including "two-thirds of the gap in science, half of the gap in humanities, and almost half of the gap in engineering."[5]

[5] See Jamin Speer (2017), "The Gender Gap in College Major: Revisiting the Role of Pre-College Factors," Labour Economics, Vol. 44 No.1. Available at http://www.sole-jole.org/16332.pdf.

Other research points to broader social norms as a factor driving men and women into different fields of study. A 2012 study published in the *Journal of Human Resources* found that gaining parents' approval played a key role in gender differences among majors.[6] The study also found that "males and females differ in their preferences in the workplace, with males caring about the [monetary] outcomes in the workplace much more than females." These factors are clearly influenced by broader gender norms in society, not just the personal choice of individual students.

In reality, gender differences among college majors reflect many factors beyond a simple individual choice by students. Instead, they reflect a complex mixture of pre-college preparation, social norms regarding gender and work, and the preferences of male and female students and their families.

SELECTION BIAS OR COLLEGE PREPARATION?

One criticism often made of studies that link the choice of college major to pay is that they suffer from *selection bias.*

When it comes to picking college majors, students are not randomly assigned — they sort themselves into majors. If "high ability" students cluster in certain fields, those majors will earn high pay in the labor market later. But that high pay isn't just because of the skills and training students received from their college major — it's because of the underlying high ability of the students who chose that field.

Economists call this type of bias *selection on unobservables.* It makes it difficult to study the causal impact of picking a college major on earnings, because it's not possible to untangle how the choice of college major affects pay, separately from the impact of a student's underlying ability.

In this study, we're able to partly avoid this concern by separately estimating career paths and pay. That is, first we map the jobs each person worked at after college from resumes. We then independently estimate the market value of those jobs. That helps remove some of the selection bias in pay due to unobserved high or low ability of any particular student. Although we're not able to completely overcome selection bias concerns, this approach helps to mitigate them

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[6] See Basit Zafar (2012), "College Major Choice and the Gender Gap," Journal of Human Resources, Vol. 48, No. 3. Available at http://jhr.uwpress.org/content/48/3/545.refs.

III. How We Built the Data

In this study, we focus on the labor market experiences of recent college grads in the United States. From a large database of resumes shared anonymously on Glassdoor, we extracted a sample of 46,934 individual resumes that listed at least a college degree, such as a B.A., B.S. or similar degree. We restricted our sample to individuals who completed college between January 1, 2010 and January 31, 2017, and only to jobs started within the first five years after graduation. Some students went on to grad school during this period, and some did not — we include everyone, and all the jobs they list on resumes during the first five years after college.

Using Glassdoor salary data, we then estimated the median base pay for each job along graduates' early career paths. Because our sample consists of workers with five or fewer years of experience, we only use salary reports on Glassdoor from users who reported five or fewer years of relevant work experience for our estimates. From this sample of 824 U.S. college majors, we then restricted our analysis to the top 50 most common college majors in the data.

Table 1 shows summary statistics for the data. The file contains in 78,031 observations of college major and work experience from 46,934 unique resumes, representing workers in 719 U.S. metro areas working in 2,253 job titles.

TABLE 1. Summary of the Data Used in this Study

Education Time Period	Individuals completing college between January 1, 2010 and January 31, 2017
Work Time Period	Jobs started within five years of college graduation
College Majors in Sample	824, from which 50 most common were selected
Unique Resumes in Top 50 Majors	46,934
Observations of Work and College Degree in Top 50 Majors	78,031
Unique Job Titles Represented	2,253
U.S. Metro Locations Represented	719

Source: Glassdoor Economic Research (glassdoor.com/research)

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MOST COMMON COLLEGE MAJORS

Figure 2 shows the most common college majors in the sample. According to figures from the National Center for Education Statistics, Business was the most popular U.S. college major during the 2014-15 academic year.[7] In that year, U.S. colleges and universities granted a total of 363,799 undergraduate Business degrees. Business was also the most common college major listed in our sample of resumes, comprising 11.3 percent or 8,837 observations in our sample.

The second most common major in our sample was Computer Science and Engineering, which made up 7,769 observations or 10.0 percent of our sample. That was followed by Psychology (5,880 observations or 7.5 percent), Electrical Engineering (5,206 observations or 6.7 percent), Mechanical Engineering (3,592 observations or 4.6 percent), and Communications (3,338 observations or 4.3 percent).

The least common major among the 50 we examined was Kinesiology (227 observations or 0.3 percent), followed by Music (278 observations or 0.4 percent), Statistics (316 observations or 0.4 percent), Architecture (317 observations or 0.4 percent), and Spanish (319 observations or 0.4 percent). A complete list of the 50 majors we examined in this study is available in the Appendix.

FIGURE 2. 25 Most Common College Majors in Our Sample

Major	Observations
Business	8,837
Computer Science and Engineering	7,769
Psychology	5,880
Electrical Engineering	5,206
Mechanical Engineering	3,592
Communications	3,338
Marketing	3,334
Information Technology	3,069
Economics	2,991
Finance	2,967
Accounting	2,677
Biology	2,630
English	2,361
Political Science	2,031
Criminal Justice	1,480
Sociology	1,454
Mathematics	1,334
History	1,186
Nursing	1,015
Civil Engineering	968
Chemical Engineering	862
Chemistry	851
Human Resources	806
Journalism	800
Public Relations	714

Source: Glassdoor Economic Research (glassdoor.com/research)

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IV. Gender Divide by College Major

For a variety of reasons, men and women gravitate toward different college majors. In Figure 3, we show the 15 most male-dominated college majors in our sample. For each major, the percentage of males in our sample is shown in blue, while the percentage of females is shown in green.

The most male-dominated college major in our sample was Mechanical Engineering. In that major, 89 percent of bachelor's degrees were earned by men, compared to just 11 percent by women. That was followed by Civil Engineering (83 percent male, 17 percent female), Physics (81 percent male, 19 percent female), Computer Science and Engineering (74 percent male, 26 percent female), and Electrical Engineering (74 percent male, 26 percent female).

**FIGURE 3.** 15 Most Male-Dominated College Majors
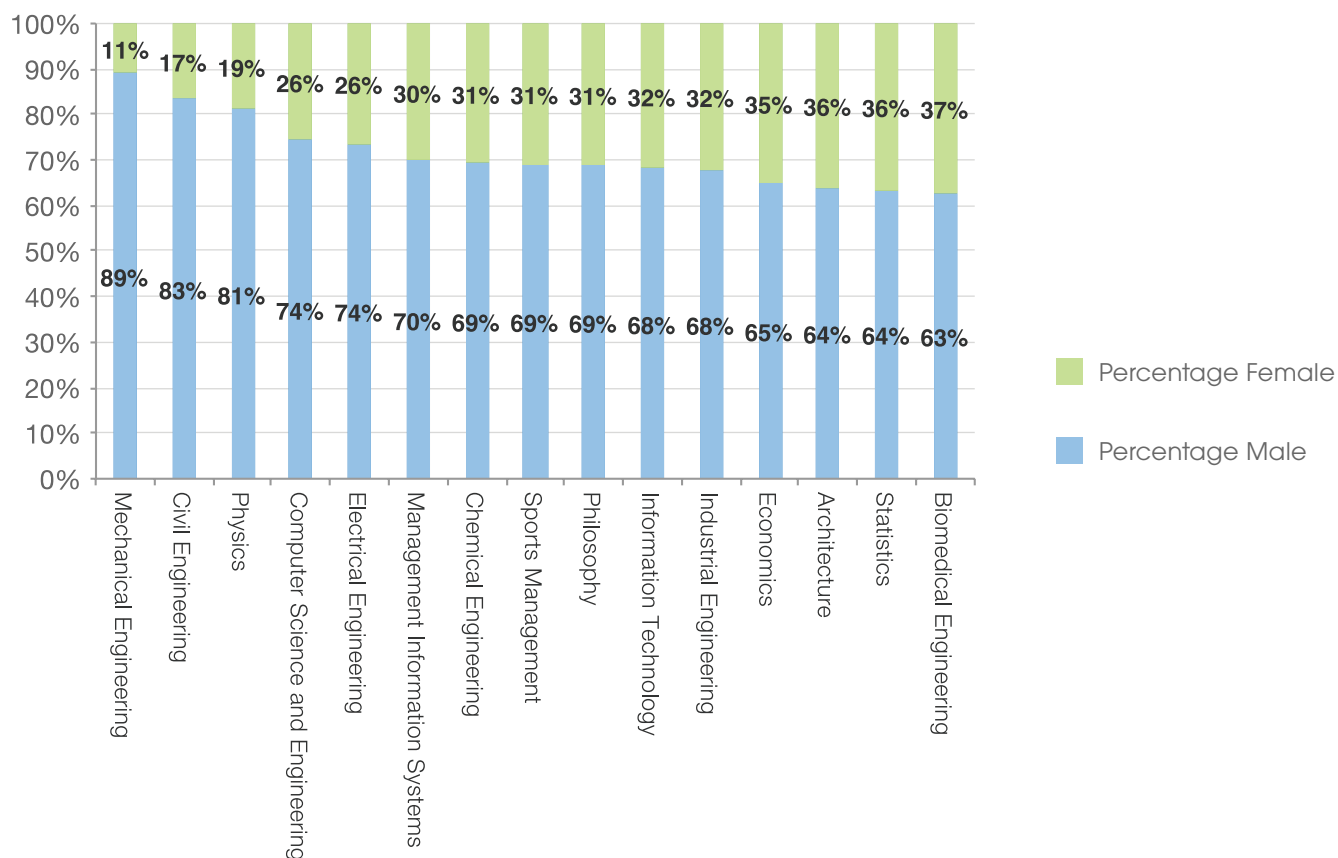
In Figure 4, we show the 15 most female-dominated college majors in our sample. The college major with the largest share of women in our sample was Social Work, with 85 percent of bachelor's degrees earned by women, compared to 15 percent by men. That was followed by Healthcare Administration (16 percent male, 84 percent female), Anthropology (20 percent male, 80 percent female), Nursing (20 percent male, 80 percent female) and Human Resources (20 percent male, 80 percent female).

FIGURE 4. 15 Most Female-Dominated College Majors
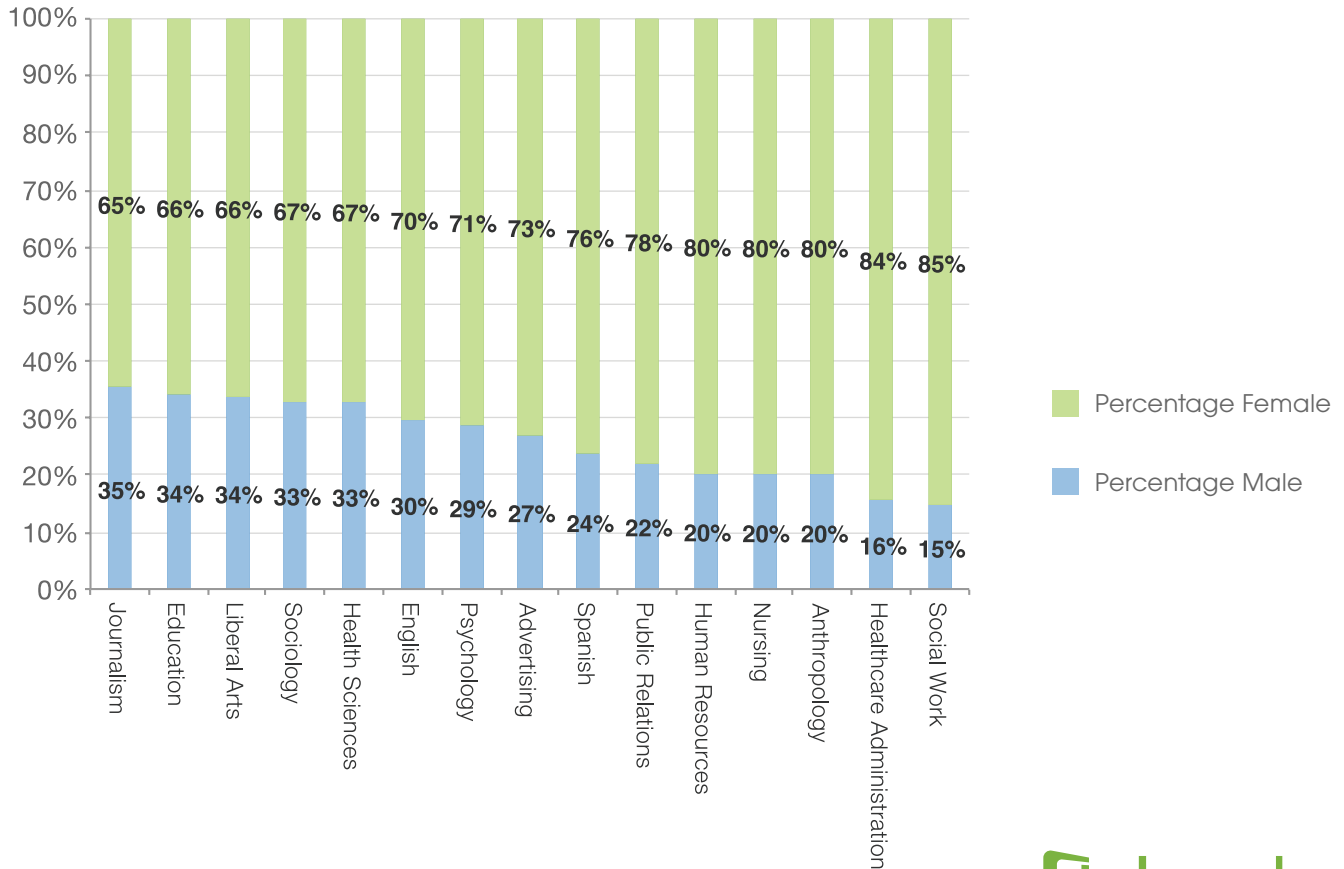
Source: *Glassdoor Economic Research (glassdoor.com/research)*

It is a well-known fact that women today are underrepresented in many fast-growing science, technology, engineering and mathematics (STEM) fields.[8] According to a 2010 study by the American Association of University Women (AAUW), "men outnumber women in nearly every science and engineering field, and in some, such as physics, engineering, and computer science, the difference is dramatic."

As we illustrate in the sections below, this under-representation of women among STEM majors in turn helps fuel the gender differences in jobs and pay we observe in the broader U.S. labor market.

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8 See for example, Catherine Hill, Christianne Corbett, and Andresse St. Rose (2010). "Why So Few? Women in Science, Technology, Engineering and Mathematics," American Association of University Women (AAUW) research report. Available at http://www.aauw.org/resource/why-so-few-women-in-science-technology-engineering-mathematics/.

V. Job Pathways by College Major

Which major we choose in college helps determine what career doors are open or closed during the early years after graduation. In this section, we show the most common jobs students from each major work in during the first five years of their careers — illustrating how choosing among different majors places workers on sharply different career tracks.

A. MOST COMMON JOBS BY MAJOR

In Table 2, we show the 25 most common college majors in our sample. For each major, the columns show the five most common job titles worked in during the first five years after graduation, along with the percentage of our sample who held each type of job.

For some majors, jobs are closely linked to college coursework. For example, the most common job for Computer Science and Engineering majors is software engineer, with 17 percent working in that role during the first five years after college. Similarly, the most common job for Nursing majors is registered nurse (31 percent), while the most common role for Human Resources majors is HR assistant (10 percent).

By contrast, some majors work in jobs not closely related to coursework. For example, the most common job for Communications majors is account executive (3 percent), which is typically a sales role. Similarly, the most common job for History majors is manager (3 percent) — a general business role — while the most common job for Sociology majors is intern (4 percent).

TABLE 2. Most Common Jobs After College for the Top 25 Majors

←— **Most** Common Jobs   **Least** Common Jobs —→

Major Field of Study	FIRST Job Title	%	SECOND Job Title	%	THIRD Job Title	%	FOURTH Job Title	%	FIFTH Job Title	%
Business	Manager	2%	Account Manager	2%	Admin. Assistant	2%	Operations Manager	2%	Sales Associate	1%
Computer Science and Engineering	Software Engineer	17%	Software Developer	7%	Systems Engineer	4%	Teaching Assistant	4%	Research Assistant	3%
Psychology	Mental Health Counselor	2%	Intern	2%	Research Assistant	2%	Case Manager	2%	Manager	2%
Electrical Engineering	Software Engineer	8%	Research Assistant	6%	Systems Engineer	6%	Teaching Assistant	5%	Engineer	3%
Mechanical Engineering	Mechanical Engineer	9%	Research Assistant	7%	Engineer	6%	Design Engineer	6%	Teaching Assistant	4%
Communications	Account Executive	3%	Social Media Manager	3%	Admin. Assistant	3%	Account Manager	2%	Marketing Coordinator	2%
Marketing	Account Manager	3%	Marketing Coordinator	2%	Account Executive	2%	Manager	2%	Marketing Manager	2%
Information Technology	Software Engineer	9%	Software Developer	5%	Systems Engineer	4%	Web Developer	2%	Research Assistant	2%
Economics	Financial Analyst	4%	Analyst	3%	Intern	3%	Manager	2%	Research Assistant	2%
Finance	Financial Analyst	6%	Analyst	3%	Intern	3%	Accountant	2%	Associate	2%
Accounting	Accountant	15%	Tax Accountant	2%	Accounting Manager	2%	Financial Analyst	2%	Auditor	2%
Biology	Research Assistant	4%	Lab Technician	3%	Teaching Assistant	2%	Pharmacy Technician	2%	Lab Assistant	2%
English	Editor	2%	Sales Associate	2%	Social Media Manager	2%	Teaching Assistant	2%	Admin. Assistant	1%
Political Science	Law Clerk	3%	Intern	2%	Account Executive	2%	Manager	2%	Account Manager	2%
Criminal Justice	Security Officer	3%	Customer Service Rep.	3%	Case Manager	2%	Admin. Assistant	2%	Manager	1%
Sociology	Intern	4%	Manager	3%	Admin. Assistant	2%	Sales Associate	2%	Customer Service Rep.	2%
Mathematics	Teaching Assistant	6%	Research Assistant	6%	Data Analyst	5%	Intern	3%	Software Developer	2%
History	Manager	3%	Intern	2%	Sales Associate	2%	Customer Service Rep.	2%	Account Executive	1%
Nursing	Registered Nurse	31%	Nurse Practitioner	8%	Nursing Manager	5%	Case Manager	4%	Registered Nurse Case Manager	2%
Civil Engineering	Project Engineer	8%	Engineer	8%	Civil Engineer	7%	Research Assistant	6%	Structural Engineer	5%
Chemical Engineering	Process Engineer	9%	Research Assistant	8%	Teaching Assistant	6%	Engineer	4%	Project Engineer	3%
Chemistry	Research Assistant	5%	Teaching Assistant	4%	Chemist	4%	Lab Technician	3%	Researcher	3%
Human Resources	HR Assistant	10%	HR Generalist	8%	HR Coordinator	5%	Recruiter	5%	Corporate Recruiter	2%
Journalism	Editor	3%	Social Media Manager	3%	Writer	2%	News Reporter	2%	Admin. Assistant	2%
Public Relations	Account Manager	4%	PR	4%	Marketing Coordinator	4%	Intern	4%	Social Media Manager	3%

Note: Most common jobs after college are restricted to jobs held within five years of graduation.
This report uses job title normalization, which groups similar job titles.
Source: Glassdoor Economic Research (glassdoor.com/research)

Many college majors in Table 2 list "teaching assistant" and "research assistant" as a common job on resumes during the first five years after college. Why is this?

Most of these are students who enrolled in graduate school during that period. It's common for students in Master's and Doctorate programs to work as teaching and research assistants, law clerks, or other grad-school related jobs while completing their coursework.

The college majors with the highest fraction of teaching and research assistants indicates a bigger share of those majors go on to grad school during the first five years after college. In our study, we include all jobs listed in the five years after college, and include both students who go directly to grad school and those who find jobs in the ordinary labor market.
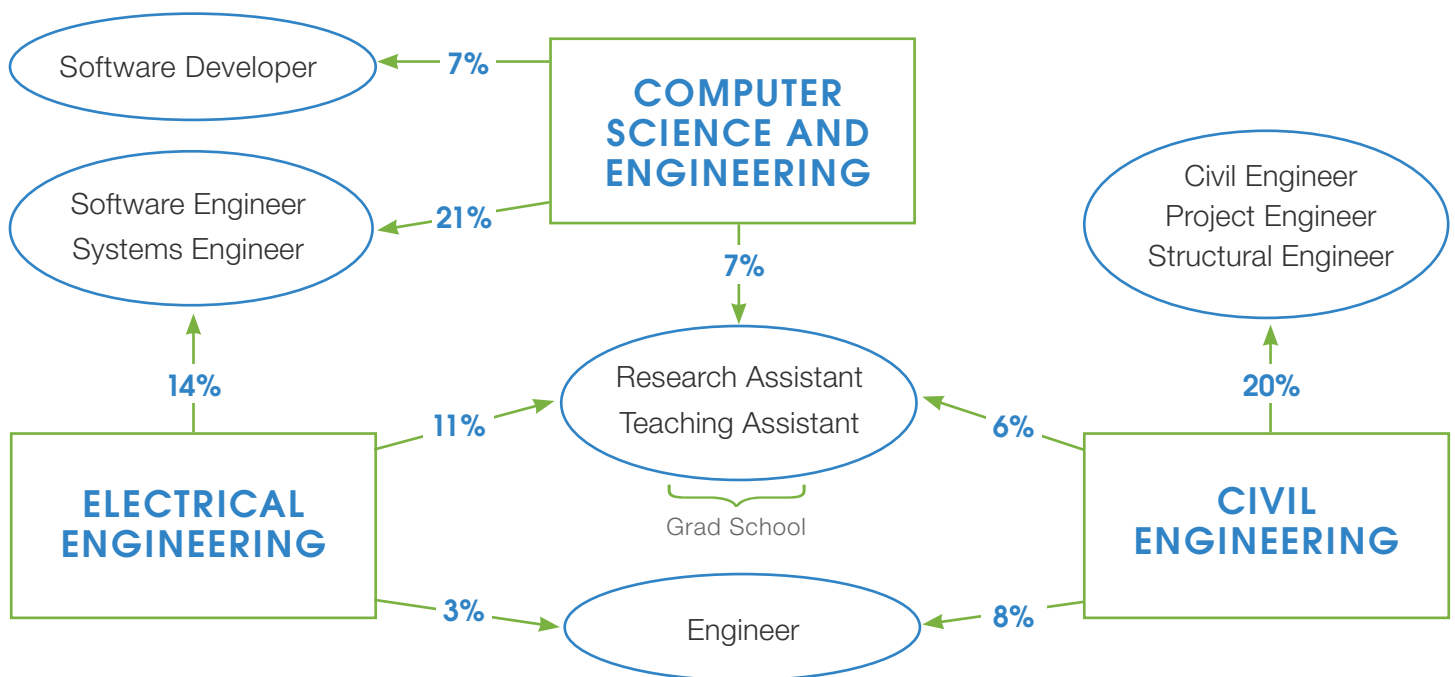
B. NETWORKS OF JOBS AND MAJORS

One useful way of visualizing the figures from Table 2 is as a *network* between majors and jobs, showing the differences and similarities in the types of work done by different college majors.

Figure 5 shows a simple visualization of how three common engineering majors lead to different career paths: Computer Science and Engineering, Electrical Engineering, and Civil Engineering. In the figure, college majors are shown as squares. The lines connecting majors to jobs are labeled with the percentage who worked in each job in our sample.

Students who choose Computer Science and Engineer and Electrical Engineering majors have many common career paths. For example, between 14 percent and 21 percent of these majors work as software engineers and systems engineers after college. However, these types of tech roles are less common among Civil Engineering majors, who instead often work in roles like civil engineer, project engineer and structural engineer. A common theme among all three majors is they send a significant fraction of students on to graduate school, with between 6 percent and 11 percent working as research or teaching assistants after college.

FIGURE 5. Network of Most Common Jobs for Engineering Degrees

Software Developer

COMPUTER SCIENCE AND ENGINEERING

7%

Software Engineer
Systems Engineer

21%

Civil Engineer
Project Engineer
Structural Engineer

7%

14%

Research Assistant
Teaching Assistant

20%

ELECTRICAL ENGINEERING

11%

6%

Grad School

CIVIL ENGINEERING

3%

Engineer

8%

Source: Glassdoor Economic Research (glassdoor.com/research)

Figure 6 shows a similar visualization of common jobs for three non-engineering majors: Business, Psychology, and Economics. A common job path for all three majors is manager, a general business role that attracts about 2 percent of students from each. Each major has their own unique job paths as well. Among Economics majors, 7 percent work in financial occupations like financial analyst. Business majors tend to work in sales-related roles, with 7 percent working in sales associate, account manager, or other operations and administrative roles. By contrast, 4 percent of Psychology majors find jobs as mental health counselors and case managers — a role that is uncommon for the other two majors.

Source: Glassdoor Economic Research (glassdoor.com/research)

C. MOST SPECIALIZED COLLEGE MAJORS

As is clear from the previous section, some college majors are specialized and prepare students for a few narrow jobs after graduation. Others are more general, with students working in a variety of jobs after graduation. To quantify this idea, we calculated an index of the most and least "clustered" college majors in terms of the variety of jobs students are likely to work in after graduation.[9]

This can be thought of as a measure of "uncertainty" facing students about their post-graduation career paths and pay. If college majors are tightly clustered into just a few jobs, students can be fairly sure what they'll end up doing for work after college. If instead majors are widely spread among many types of jobs, there is more uncertainty after college about what your career path and pay will be.

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[9] The degree of concentration of college degree holders among jobs is measured using a standard Herfindahl-Hirschman index (HHI). More information about HHI indices is available at https://www.justice.gov/atr/herfindahl-hirschman-index.

In Figure 7, we show the 15 most "job concentrated" college majors in our sample. The most concentrated major is Nursing, with students disproportionately working in directly related jobs such as registered nurse, nurse practitioner and nursing manager. The second most concentrated major was Graphic Design, with most students working in related jobs like graphic designer, web designer and art manager. Other concentrated majors with relatively clear career paths include Computer Science and Engineering, Civil Engineering and Statistics.

FIGURE 7. 15 College Majors with the Clearest Career Paths
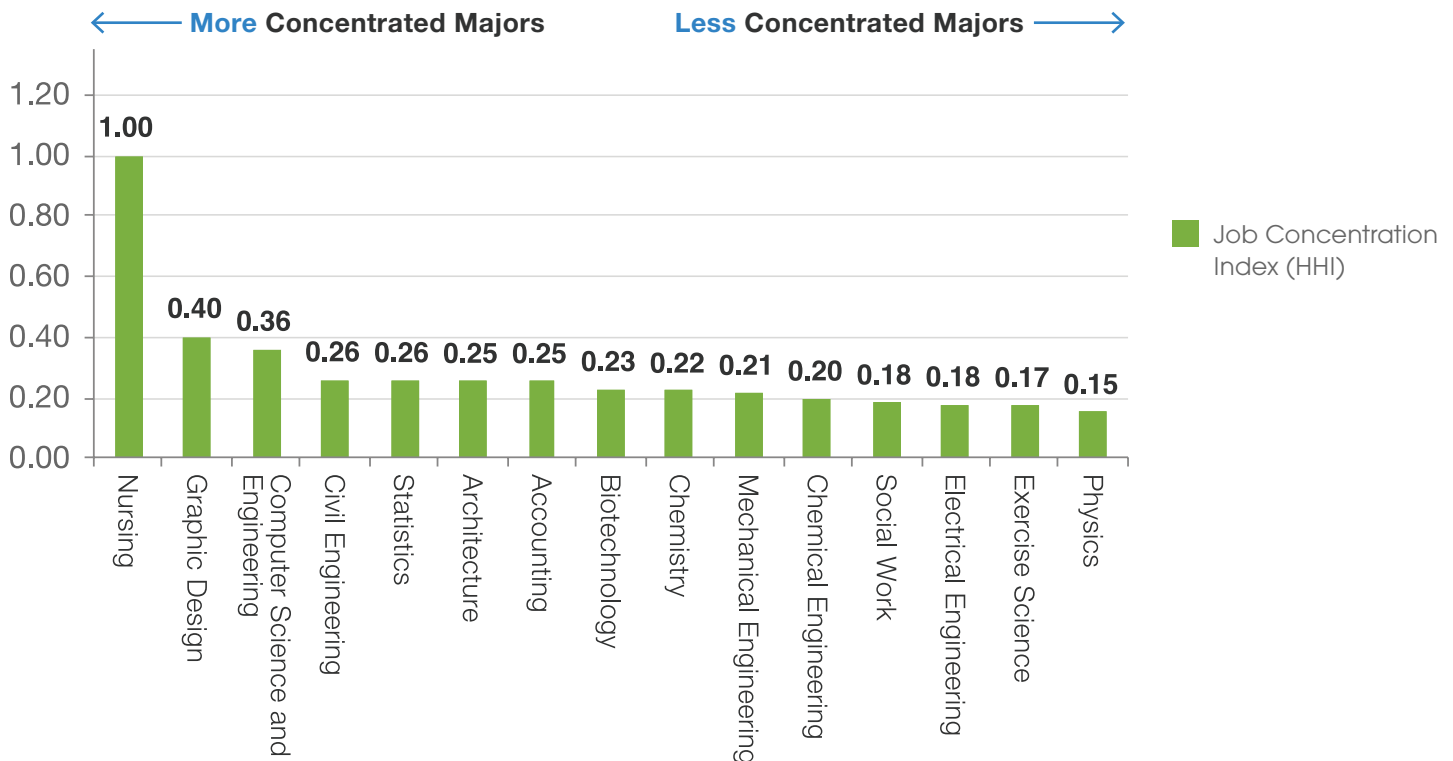
← **More** Concentrated Majors   **Less** Concentrated Majors →

Major	Job Concentration Index (HHI)
Nursing	1.00
Graphic Design	0.40
Computer Science and Engineering	0.36
Civil Engineering	0.26
Statistics	0.26
Architecture	0.25
Accounting	0.25
Biotechnology	0.23
Chemistry	0.22
Mechanical Engineering	0.21
Chemical Engineering	0.20
Social Work	0.18
Electrical Engineering	0.18
Exercise Science	0.17
Physics	0.15

Note: Concentration index is based on a Herfindahl-Hirschman index
with the scale normalized such that Nursing = 1.0.
Source: Glassdoor Economic Research (glassdoor.com/research)

In Figure 8, we show the least concentrated college majors. The least concentrated was Philosophy, followed by English, Business, History and Sociology. In each case, graduates from these majors worked in a wide variety of jobs after college — likely reflecting the general nature of most coursework in these degree programs — rather than clustering in a few related occupations. From the standpoint of future careers and pay, these college majors present a lot of uncertainty to students.

FIGURE 8. 15 College Majors with the Least Clear Career Paths

More Concentrated Majors ⟵   Less Concentrated Majors ⟶

Job Concentration Index (HHI)

Chart values (left to right):
- Criminal Justice: 0.04
- Marketing: 0.04
- Journalism: 0.03
- Anthropology: 0.03
- International Relations: 0.03
- Communications: 0.03
- Political Science: 0.03
- Liberal Arts: 0.03
- Healthcare Administration: 0.03
- Psychology: 0.02
- Sociology: 0.02
- History: 0.02
- Business: 0.02
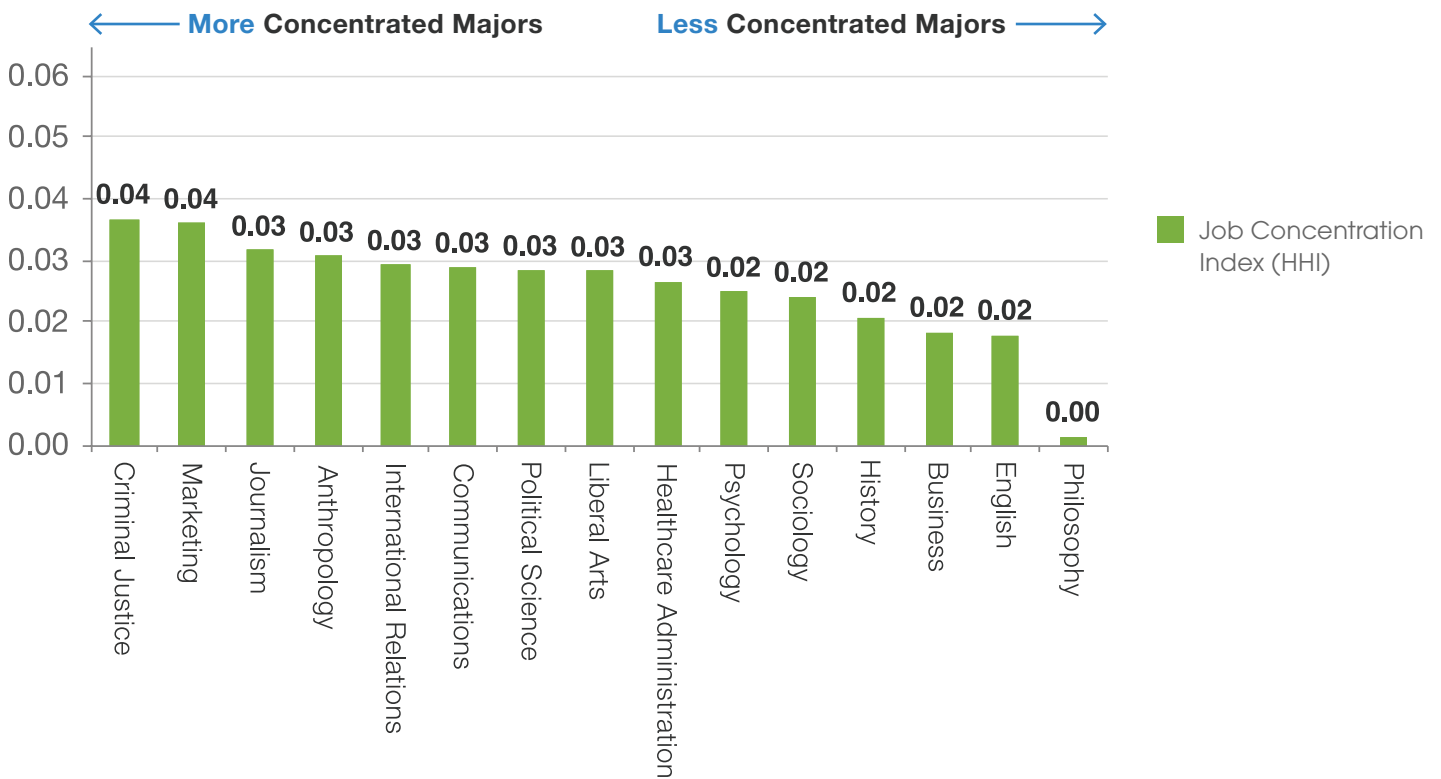- English: 0.02
- Philosophy: 0.00

Note: Concentration index is based on a Herfindahl-Hirschman index with the scale normalized such that Nursing = 1.0.
Source: Glassdoor Economic Research (glassdoor.com/research)

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D. WHAT MAJORS LEAD TO EACH JOB?

Just as some college majors lead to a few specific jobs, some jobs attract most candidates from specific majors. This is important for students to understand upfront — if aiming for a particular career path after college, it's helpful to know which college major is mostly likely to lead to it.

In Table 3, we show a list of 25 popular jobs and the most common college majors found in each. In some cases, the pathway into jobs is clearly linked to the choice of college major. For registered nurse jobs, 75 percent of our sample held a degree in Nursing. Similarly, for jobs as mechanical engineers, 70 percent held Mechanical Engineering degrees, while 48 percent of jobs as software engineers were held by those with degrees in Computer Science and Engineering. For those looking for careers in these in-demand roles, the choice of college major really matters.

By contrast, some jobs in Table 3 are open to a variety of college majors. Those working as teachers in our sample were drawn relatively evenly from Psychology, English, Mathematics, and other majors. Similarly, jobs as sales associate were common for Business, Marketing, Biology and many other majors. In these roles, because job requirements are not closely linked to specialized skills from a particular major, the choice of college major plays a minor role.

TABLE 3. Most Frequent College Majors Working in 25 Common Jobs

← Most Common Majors   **Least Common Majors →**

Job Title	FIRST Major	%	SECOND Major	%	THIRD Major	%	FOURTH Major	%	FIFTH Major	%
Accountant	Accounting	50%	Business	11%	Finance	8%	Economics	4%	English	1%
Admin. Assistant	Business	11%	Psychology	7%	Communications	5%	Biology	3%	English	3%
Business Analyst	Computer Science and Engineering	9%	Business	9%	Electrical Engineering	8%	IT	6%	Finance	5%
Consultant	Computer Science and Engineering	10%	Business	7%	Economics	6%	IT	5%	Finance	5%
Data Scientist	Computer Science and Engineering	18%	Mathematics	11%	Electrical Engineering	9%	Statistics	5%	Economics	4%
Editor	English	20%	Journalism	10%	History	3%	Creative Writing	3%	Journalism and Media Studies	2%
Financial Analyst	Finance	26%	Economics	15%	Business	11%	Accounting	9%	Mathematics	2%
Graphic Designer	Graphic Design	22%	Visual Communications	4%	Computer Science and Engineering	2%	Illustration	2%	Studio Art	2%
HR Manager	Business	19%	Human Resources	10%	Psychology	8%	Accounting	4%	English	2%
Lab Technician	Biology	21%	Chemistry	11%	Chemical Engineering	4%	Biochemistry	4%	Environmental Science	2%
Manufacturing Engineer	Mechanical Engineering	48%	Industrial Engineering	5%	Manufacturing Engineering	3%	Production Engineering	2%	Materials Science	2%
Marketing Coordinator	Marketing	16%	Business	11%	Communications	10%	Public Relations	5%	Psychology	3%
Mechanical Engineer	Mechanical Engineering	70%	Aerospace Engineering	3%	Mechanical Engineering Technology	2%	Engineering Mechanics	1%	Thermal Energy and Power Engineering	1%
Medical Assistant	Biology	14%	Business	11%	Nursing	8%	Psychology	7%	Healthcare Admin.	4%
Personal Trainer	Exercise Science	11%	Business	5%	Kinesiology	5%	Psychology	4%	Communications	3%
Pharmacy Technician	Biology	23%	Chemistry	5%	Psychology	4%	Biomedical Science	4%	Business	3%
PR	Communications	12%	Public Relations	10%	Business	5%	Marketing	4%	Journalism	3%
Project Manager	Business	10%	Marketing	5%	Civil Engineering	3%	Mechanical Engineering	3%	Economics	3%
Recruiter	Business	11%	Human Resources	9%	Communications	8%	Psychology	7%	Marketing	7%
Registered Nurse	Nursing	75%	Psychology	4%	Nursing Science	2%	Exercise Science	1%	Accounting	1%
Sales Associate	Business	8%	Psychology	6%	Marketing	3%	English	3%	Biology	3%
Social Media Manager	Communications	14%	Marketing	8%	English	7%	Public Relations	4%	Journalism	4%
Software Engineer	Computer Science and Engineering	48%	Electrical Engineering	15%	IT	10%	Mechanical Engineering	1%	Information Science	1%
Teacher	Psychology	8%	English	4%	Mathematics	3%	Business	3%	Marketing	2%
Web Developer	Computer Science and Engineering	35%	IT	12%	Electrical Engineering	10%	Business	3%	Mathematics	2%

Note: Similar job titles are grouped or "normalized" using a proprietary machine-learning algorithm.
Source: Glassdoor Economic Research (glassdoor.com/research)

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VI. College Majors and Pay

Because college majors affect career paths, they also affect pay. In this section we connect the dots from college majors to compensation by estimating the "market value" of each job people in our sample worked in after graduation. That allows us to aggregate these pay estimates by college major into a median base pay for each of the 50 majors we examined.

In Table 4, we show the 25 highest-paying college majors in our sample. These estimates take into account the pay for each job held by graduates in our sample from each college major during the first five years after graduation. It includes all workers in our sample — including those who go straight to work after college, those who go onto grad school during this period, and all other work and life circumstances.

The highest paying major in our sample is Computer Science and Engineering with a median base pay of $70,000 per year. Other high-paying majors include Electrical Engineering ($68,438 per year), Mechanical Engineering ($66,040 per year), Chemical Engineering ($65,000 per year), and Information Technology ($63,500 per year) — all relatively specialized STEM majors featuring heavy quantitative requirements including mathematics, programming and statistics.

TABLE 4. 25 Highest-Paying College Majors

Major Field of Study	Median Base Pay (All Jobs in First 5 Years)
Computer Science and Engineering	$70,000
Electrical Engineering	$68,438
Mechanical Engineering	$66,040
Chemical Engineering	$65,000
Information Technology	$63,500
Civil Engineering	$63,000
Nursing	$63,000
Industrial Engineering	$62,270
Management Information Systems	$60,960
Statistics	$60,000
Biomedical Engineering	$57,200
Economics	$55,000
Finance	$55,000
Physics	$52,500
Accounting	$51,562
Mathematics	$51,250
Architecture	$50,000
Biotechnology	$48,442
Biochemistry	$46,406
Philosophy	$46,328
Business	$46,302
Marketing	$46,000
Political Science	$45,000
International Relations	$45,000
History	$45,000

Source: Glassdoor Economic Research (glassdoor.com/research)

In Table 5, we show the 25 lowest-paying college majors. The lowest paying major is tied between Criminal Justice and Kinesiology — the study of mechanics of body movements, a major closely related to Exercise Science — both with a median base pay of $40,000 per year. That's followed by Exercise Science ($40,640 per year), Healthcare Administration ($41,000 per year) and Social Work ($41,000 per year). A common theme between these low-paying majors is that all are relatively non-technical majors, which typically involve limited quantitative requirements and few job-specialized skills.

Tables 4 and 5 paint a clear picture of the connection between choice of college major and pay. Majors with the highest estimated median base pay in our sample are drawn almost exclusively from engineering, technology, and scientific fields that offer specific technical training applicable to today's fast-growth STEM careers in tech, engineering, biotechnology, and healthcare. By contrast, the college majors with the lowest estimated pay are typically less technical, more general, and do not offer a direct career path into today's highest-paying roles in the labor market.

TABLE 5. 25 Lowest-Paying College Majors

Major Field of Study	Median Base Pay (All Jobs in First 5 Years)
Criminal Justice	$40,000
Kinesiology	$40,000
Exercise Science	$40,640
Healthcare Administration	$41,000
Social Work	$41,000
Education	$41,203
Liberal Arts	$41,250
Music	$41,290
Psychology	$41,500
Biology	$42,000
Anthropology	$42,116
Sociology	$42,200
Health Sciences	$42,500
Chemistry	$43,040
Spanish	$43,040
Hospitality Management	$43,306
Public Relations	$43,500
Communications	$43,576
Journalism	$43,576
Sports Management	$43,576
English	$43,688
Environmental Science	$43,925
Human Resources	$45,000
Graphic Design	$45,000
Advertising	$45,000

Source: Glassdoor Economic Research (glassdoor.com/research)
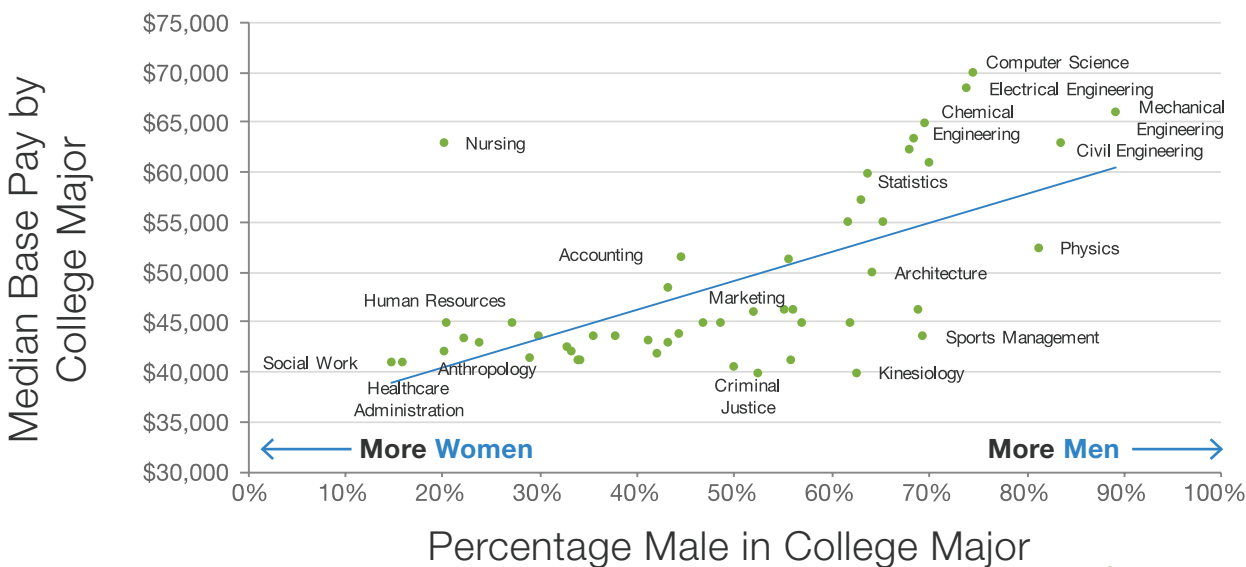
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VII. Gender, College Majors, and the Gender Pay Gap

Because men and women are not equally represented among college majors, America's system of colleges and universities effectively places men and women on different career tracks early in life, with different pay. This phenomenon is a key driver of the gender pay gap we observe in the overall U.S. labor market.

In Figure 11, we gather the findings from previous sections to illustrate the clear link between choice of college major and the gender pay gap. It shows a scatterplot of the gender balance in each college major in our sample, along with the estimated base pay for each. Each dot represents one college major. The horizontal axis shows the percentage male in each major, and the vertical axis shows median base pay by major for the first five years after graduation.[10]

The overall pattern in Figure 11 is clear. Among the 10 highest-paying majors in our sample, women are under-represented in all but one: Nursing. In each other case, the gender balance among the remaining nine highest-paying majors ranged from 64 percent male in Statistics to 89 percent male in Mechanical Engineering. This gender imbalance means colleges and universities are effectively feeding men into today's highest paying jobs at a greater rate than women, boosting the average gender pay gap.

FIGURE 11. Men & Women Sort Into Different Majors, Affecting Base Pay Later

Source: Glassdoor Economic Research (glassdoor.com/research)

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[10] For a complete table of gender balance and pay for all 50 majors we examined, please see the Appendix.

By contrast, women are over-represented in 6 of the 10 lowest-paying college majors in our sample, with a gender balance ranging from 58 percent female in Biology to 85 percent female in Social Work. This imbalance has the effect of feeding a disproportionate share of women into today's relatively lower-paying jobs, putting downward pressure on average female wages relative male wages in the U.S. labor market.

In Glassdoor's 2016 study of the gender pay gap in Glassdoor salary data, we found this type of occupational sorting of men and women into differently paying jobs explains about 54 percent of the overall pay gap between men and women in the U.S.[11] Figure 11 illustrates starkly how the academic pipeline from America's colleges and universities helps contribute to gender segregation in the workforce and the nation's persistent gender pay gap.

GENDER PAY GAPS BY COLLEGE MAJOR

One surprising finding is that even *within the same college major*, men and women tend to sort into different jobs — which pay differently — after college. This leads to a gender pay gap after college, even for students who major in the same subject.

For example, among women who major in Biology, the most common three jobs after college are lab technician, pharmacy technician, and sales associate. By contrast, the three most common jobs for male Biology majors are lab technician, data analyst, and manager. The fact that men are more likely to work as higher-paying data analysts or managers, while women are more likely to work in lower-paying roles as pharmacy technicians and sales associates creates a gender pay gap, even for students with the same college major.

For our sample overall, men across all college majors earned on average a median base pay of $56,957 per year, while women earned $50,426 per year. That amounts to an overall gender pay gap of $6,531 per year or 11.5 percent of male pay. Table 6 shows the 15 college majors in our sample with the biggest gender pay gaps due to occupational sorting of men and women into different types of jobs after graduation.

The largest gender pay gap was found in Healthcare Administration majors, with men working in jobs that paid $11,250 per year more on average than women, about 22 percent of male pay. For those majoring in Healthcare Administration, the three most common jobs after college for women are administrative assistant, customer care representative, and intern. For men, the three most common jobs are higher-paying roles as implementation consultant, quality specialist and data consultant. This pattern is what's behind the large pay gap between men and women from that major.

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[11] Andrew Chamberlain (March 2016), "Demystifying the Gender Pay Gap: Evidence from Glassdoor Salary Data," Glassdoor Economic Research report. Available at https://www.glassdoor.com/research/studies/gender-pay-gap/.

The second-highest gender pay gap is found in Mathematics (18 percent pay gap). For female Mathematics majors, the three most common jobs after college (ignoring grad-school jobs like teaching and research assistants) are data analyst, analyst, and business analyst. For men, the three most common jobs are (ignoring grad-school jobs) analyst, data analyst, and data scientist. The larger share of male math majors working as highly-paid data scientists is the primary factor driving this male-female pay gap after college.

Other college majors with large gender pay gaps due to occupational sorting are Biology (13 percent pay gap), Human Resources (11.6 percent pay gap) and Health Sciences (11.1 percent pay gap). In all of these fields, women on average tend to work in lower-paying roles after college compared to men, despite having the same college major.

TABLE 6. 15 Largest Gender Pay Gaps Within College Majors
(Due to Occupational Sorting by Men and Women)

Major	MEDIAN BASE PAY (ALL JOBS IN FIRST 5 YEARS)		Gender Pay Gap %
	Male	Female	
Healthcare Administration	$51,250	$40,000	22.0%
Mathematics	$60,000	$49,182	18.0%
Biology	$46,000	$40,000	13.0%
Human Resources	$50,000	$44,222	11.6%
Health Sciences	$45,000	$40,000	11.1%
Biomedical Engineering	$60,000	$53,450	10.9%
Industrial Engineering	$65,000	$58,000	10.8%
Business	$50,000	$45,000	10.0%
Marketing	$50,000	$45,000	10.0%
Exercise Science	$44,232	$40,000	9.6%
Statistics	$60,000	$54,469	9.2%
Physics	$55,714	$50,800	8.8%
Political Science	$47,103	$43,000	8.7%
Management Information Systems	$65,000	$60,000	7.7%
Biochemistry	$48,000	$44,500	7.3%

Source: Glassdoor Economic Research (glassdoor.com/research)

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In Table 7, we show the 15 college majors with the smallest gender pay gaps due to occupational sorting. In two-thirds of these majors, women actually worked in higher paying roles than men from the same major after college — a "reverse" gender pay gap. The smallest gap is in Architecture, with women earning an $7,000 more per year on average than men, or a -14 percent pay gap. That's followed by Music (-10.1 percent pay gap), Social Work (-8.4 percent pay gap), Advertising (-8.1 percent pay gap) and Environmental Science (-6.8 percent pay gap).

TABLE 7. 15 Smallest Gender Pay Gaps Within College Majors
(Due to Occupational Sorting by Men and Women)

Major	MEDIAN BASE PAY (ALL JOBS IN FIRST 5 YEARS)		Gender Pay Gap %
	Male	Female	
Architecture	$50,000	$57,000	-14.0%
Music	$40,000	$44,020	-10.1%
Social Work	$37,500	$40,640	-8.4%
Advertising	$43,020	$46,500	-8.1%
Environmental Science	$44,000	$47,000	-6.8%
Chemical Engineering	$60,480	$63,770	-5.4%
Kinesiology	$41,000	$43,000	-4.9%
Mechanical Engineering	$66,040	$68,000	-3.0%
Sports Management	$42,000	$42,672	-1.6%
Anthropology	$40,640	$41,250	-1.5%
Accounting	$51,562	$51,562	0.0%
Finance	$55,000	$55,000	0.0%
Nursing	$63,000	$63,000	0.0%
Graphic Design	$45,000	$45,000	0.0%
Civil Engineering	$60,000	$60,000	0.0%

The key takeaway from Tables 6 and 7 is that although gender differences in the choice of college major is an important cause of today's gender pay gap, it's not the complete story. College majors alone don't completely determine the career destiny of men and women. Instead, we find that even within the same college major men and women often find themselves on different career tracks early in their working lives — a complex phenomenon that helps drive apart male and female pay in the U.S. labor market.

VIII. Limitations

All data have limitations, and the resume data used for this study are no exception. Here are the key limitations to keep in mind when thinking about the results of this study.

- **REPRESENTATIVENESS:**
  Our study is based on anonymized resumes from Glassdoor for which users reported having earned a college degree between 2010 and 2017. We do not examine those with less than a college degree, and we examine both workers who went on to grad school during the first five years after college, as well as those who did not. Our sample may not be representative of all college graduates during this time period, or of the broader U.S. workforce.

- **ACCURACY:**
  Individuals don't always report their college and work experience accurately on resumes. By using college majors and jobs from resumes, we rely the job information provided by those individuals, which cannot be independently verified.

- **"PIPELINE" FACTORS BEYOND COLLEGE MAJOR:**
  This study examines how differences in college major help drive the gender pay gap. It does not examine why men and women sort into different majors, or how many other conscious and unconscious biases in hiring, pay and promotion may help amplify the gender pay gap we observe in the labor market. While many factors other than college major affect career paths and pay, they are beyond the scope of this study.

IX. Conclusion

In recent decades, there's been significant progress toward gender equality in America. As recently as 1982, women in the U.S. earned roughly 62 cents per dollar earned by men on average.[12] By 2016, that gap had receded to women earning 82 cents per dollar on average earned by men.[13] But closing this remaining gender pay gap has proven a stubborn challenge.

In this study, we examine a key driver of the gender pay gap: Gender differences in the choice of college major, and how these differences drive men and women into different early career paths, with different pay.

Based on an analysis of more than 46,900 resumes shared anonymously on Glassdoor, we find dramatic differences in gender balance among college majors. On average, men are sharply over-represented among high-paying engineering and technical majors. This in turn places men disproportionately on career tracks for high-paying roles in tech, finance, health care, biotechnology and engineering — helping fuel the average pay gap between men and women observed in the labor market over time.

Even within the same college major, our analysis shows men and women routinely end up working in different roles — with different pay — in the years after graduation. This highlights how America's system of colleges and universities plays a complex role in the persistent gender pay gap we observe in the labor market.

While the choice of college major partly reflects an individual choice by students, research shows that broader social factors heavily influence men and women's choice of major — including pre-college preparation, gender norms regarding work and family, and more.

For employers, these findings suggest that hiring candidates based on skills — rather than strictly based on college majors — may be a useful strategy to prevent gender imbalances among majors from translating into gender biases at work. And for students, our findings emphasize the critical importance of researching how fields of study are linked to jobs and pay later on, before choosing among majors.

America has made considerable progress toward gender pay equality in recent decades, but much work remains. Our findings suggest that solutions to today's remaining gender pay gap must go beyond examining current pay practices among employers. Instead, they must also address pipeline issues — including the choice of college major — that help drive men and women into different career paths and pay.

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[12] See "American Women: Three Decades of Change" (November 9, 1983). Hearing before the Joint Economic Committee of the United States. Available at https://www.jec.senate.gov/reports/98th%20Congress/Ameircan%20Women%20-%20Three%20Decades%20of%20Change%20(1257).pdf.

[13] See "Women's Median Earnings 82 Percent of Men's in 2016" (March 8, 2017). The U.S. Bureau of Labor Statistics The Economics Daily. Available at https://www.bls.gov/opub/ted/2017/womens-median-earnings-82-percent-of-mens-in-2016.htm.

Appendix

Major Field of Study	Observations	Percentage of Top 50 Majors	Percentage Male	ESTIMATED MEDIAN BASE PAY	
				Male	Female
Business	8,837	11.3%	55.9%	$50,000	$45,000
Computer Science and Engineering	7,769	10.0%	74.4%	$70,000	$68,000
Psychology	5,880	7.5%	28.8%	$43,000	$41,000
Electrical Engineering	5,206	6.7%	73.7%	$70,000	$69,000
Mechanical Engineering	3,592	4.6%	89.1%	$66,040	$68,000
Communications	3,338	4.3%	37.5%	$45,000	$43,500
Marketing	3,334	4.3%	51.8%	$50,000	$45,000
Information Technology	3,069	3.9%	68.1%	$65,000	$63,300
Economics	2,991	3.8%	65.0%	$55,000	$55,000
Finance	2,967	3.8%	61.5%	$55,000	$55,000
Accounting	2,677	3.4%	44.3%	$51,562	$51,562
Biology	2,630	3.4%	41.9%	$46,000	$40,000
English	2,361	3.0%	29.7%	$45,000	$44,211
Political Science	2,031	2.6%	61.8%	$47,103	$43,000
Criminal Justice	1,480	1.9%	52.2%	$43,000	$40,000
Sociology	1,454	1.9%	33.0%	$44,344	$42,000
Mathematics	1,334	1.7%	55.3%	$60,000	$49,182
History	1,186	1.5%	56.8%	$45,000	$42,000
Nursing	1,015	1.3%	20.1%	$63,000	$63,000
Civil Engineering	968	1.2%	83.4%	$60,000	$60,000
Chemical Engineering	862	1.1%	69.3%	$60,480	$63,770
Chemistry	851	1.1%	43.1%	$45,000	$44,900
Human Resources	806	1.0%	20.4%	$50,000	$44,222
Journalism	800	1.0%	35.3%	$45,000	$43,500
Public Relations	714	0.9%	22.1%	$43,750	$43,500
International Relations	692	0.9%	46.7%	$48,000	$46,000
Education	598	0.8%	34.0%	$42,200	$42,000
Management Information Systems	517	0.7%	69.8%	$65,000	$60,000
Graphic Design	498	0.6%	48.4%	$45,000	$45,000
Industrial Engineering	474	0.6%	67.9%	$65,000	$58,000
Sports Management	451	0.6%	69.1%	$42,000	$42,672
Liberal Arts	425	0.5%	33.7%	$42,732	$40,000
Philosophy	416	0.5%	68.8%	$45,000	$43,688
Anthropology	408	0.5%	20.0%	$40,640	$41,250
Hospitality Management	404	0.5%	40.9%	$43,497	$42,000
Environmental Science	401	0.5%	44.3%	$44,000	$47,000
Biochemistry	365	0.5%	55.0%	$48,000	$44,500
Exercise Science	359	0.5%	49.7%	$44,232	$40,000
Biotechnology	354	0.5%	43.0%	$53,034	$51,035
Physics	353	0.5%	81.2%	$55,714	$50,800
Healthcare Administration	352	0.5%	15.7%	$51,250	$40,000
Biomedical Engineering	347	0.4%	62.8%	$60,000	$53,450
Advertising	341	0.4%	27.1%	$43,020	$46,500
Social Work	338	0.4%	14.7%	$37,500	$40,640
Health Sciences	329	0.4%	32.6%	$45,000	$40,000
Spanish	319	0.4%	23.6%	$43,364	$43,349
Architecture	317	0.4%	64.0%	$50,000	$57,000
Statistics	316	0.4%	63.5%	$60,000	$54,469
Music	278	0.4%	55.6%	$40,000	$44,020
Kinesiology	227	0.3%	62.3%	$41,000	$43,000

Source: Glassdoor Economic Research (glassdoor.com/research)

TABLE A2. Five most common post-college job titles for each of the 50 majors examined in this study.

Major Field of Study	Most Common Job 1	Most Common Job 2	Most Common Job 3	Most Common Job 4	Most Common Job 5
Business	Manager	Account Manager	Administrative Assistant	Operations Manager	Sales Associate
Computer Science And Engineering	Software Engineer	Software Developer	Systems Engineer	Teaching Assistant	Research Assistant
Psychology	Mental Health Counselor	Intern	Research Assistant	Case Manager	Manager
Electrical Engineering	Software Engineer	Research Assistant	Systems Engineer	Teaching Assistant	Engineer
Mechanical Engineering	Mechanical Engineer	Research Assistant	Engineer	Design Engineer	Teaching Assistant
Communications	Account Executive	Social Media Manager	Administrative Assistant	Account Manager	Marketing Coordinator
Marketing	Account Manager	Marketing Coordinator	Account Executive	Manager	Marketing Manager
Information Technology	Software Engineer	Software Developer	Systems Engineer	Web Developer	Research Assistant
Economics	Financial Analyst	Analyst	Intern	Manager	Research Assistant
Finance	Financial Analyst	Analyst	Intern	Accountant	Associate
Accounting	Accountant	Tax Accountant	Accounting Manager	Financial Analyst	Auditor
Biology	Research Assistant	Lab Technician	Teaching Assistant	Pharmacy Technician	Lab Assistant
English	Editor	Sales Associate	Social Media Manager	Teaching Assistant	Administrative Assistant
Political Science	Law Clerk	Intern	Account Executive	Manager	Account Manager
Criminal Justice	Security Officer	Customer Service Representative	Case Manager	Administrative Assistant	Manager
Sociology	Intern	Manager	Administrative Assistant	Sales Associate	Customer Service Representative
Mathematics	Teaching Assistant	Research Assistant	Data Analyst	Intern	Software Developer
History	Manager	Intern	Sales Associate	Customer Service Representative	Account Executive
Nursing	Registered Nurse	Nurse Practitioner	Nursing Manager	Case Manager	Registered Nurse Case Manager
Civil Engineering	Project Engineer	Engineer	Civil Engineer	Research Assistant	Structural Engineer
Chemical Engineering	Process Engineer	Research Assistant	Teaching Assistant	Engineer	Project Engineer
Chemistry	Research Assistant	Teaching Assistant	Chemist	Lab Technician	Researcher
Human Resources	HR Assistant	HR Generalist	HR Coordinator	Recruiter	Corporate Recruiter
Journalism	Editor	Social Media Manager	Writer	News Reporter	Administrative Assistant
Public Relations	Account Manager	PR	Marketing Coordinator	Intern	Social Media Manager
International Relations	Intern	Account Manager	Sales Associate	Assistant	Service Associate
Education	Substitute Teacher	Teacher	Language Teacher	Kindergarten Teacher	Account Manager
Management Information Systems	Business Analyst	Data Analyst	Software Engineer	Systems Analyst	Consultant
Graphic Design	Graphic Designer	Web Designer	Art Manager	Manager	Store Manager
Industrial Engineering	Industrial Engineer	Intern	Quality Engineer	Research Assistant	Teaching Assistant
Sports Management	Sales Representative	Manager	Operations Manager	Sales Associate	Marketing

Major Field of Study	Most Common Job 1	Most Common Job 2	Most Common Job 3	Most Common Job 4	Most Common Job 5
Liberal Arts	Sales Associate	Preschool Teacher	Substitute Teacher	Social Media Manager	Writer
Philosophy	Manager	Consultant	Sales Associate	Writer	Teaching Assistant
Anthropology	Administrative Assistant	Sales Associate	Pharmacy Technician	Teacher Assistant	Teacher
Hospitality Management	General Manager	Manager	Housekeeping Manager	Sales Coordinator	Office Manager
Environmental Science	Research Assistant	Environmental Scientist	Manager	Teaching Assistant	Student Researcher
Biochemistry	Research Assistant	Chemist	Lab Technician	Teaching Assistant	Research Associate
Exercise Science	Personal Trainer	Exercise Physiologist	Physical Therapy Aide	Sales Associate	Physical Therapy Technician
Biotechnology	Research Assistant	Teaching Assistant	Research Associate	Student Researcher	Software Engineer
Physics	Research Assistant	Teaching Assistant	Researcher	Intern	Student Researcher
Healthcare Administration	Manager	Administrative Assistant	Medical Assistant	CNA	Sales Associate
Biomedical Engineering	Research Assistant	Student Researcher	Intern	Quality Engineer	Teaching Assistant
Advertising	Account Manager	Marketing Assistant	Account Executive	Marketing Coordinator	Marketing Manager
Social Work	Social Worker	Case Manager	Service Coordinator	Clinical Social Worker	Medical Social Worker
Health Sciences	Physician Assistant	Patient Care Technician	Health Educator	Physical Therapy Technician	Pharmacy Technician
Spanish	Language Teacher	Intern	Tutor	Team Member	Translator
Architecture	Architectural Designer	Architect	Designer	Project Manager	Sales Associate
Statistics	Data Analyst	Research Assistant	Analyst	Teaching Assistant	Intern
Music	Music Teacher	Audio Engineer	Sales Associate	Manager	Program Manager
Kinesiology	Personal Trainer	Physical Therapist	Sales Associate	Waiter	Team Manager

Source: Glassdoor Economic Research (glassdoor.com/research)

TABLE A3. Most concentrated 50 majors in terms of job focus after graduation (Herfindahl-Hirschman Index).

Major Field of Study	Female
Nursing	1.000
Graphic Design	0.402
Computer Science and Engineering	0.360
Civil Engineering	0.258
Statistics	0.256
Architecture	0.254
Accounting	0.253
Biotechnology	0.227
Chemistry	0.221
Mechanical Engineering	0.214
Chemical Engineering	0.195
Social Work	0.183
Electrical Engineering	0.176
Exercise Science	0.174
Physics	0.151
Information Technology	0.125
Industrial Engineering	0.123
Biochemistry	0.118
Mathematics	0.111
Education	0.107
Kinesiology	0.099
Human Resources	0.091
Public Relations	0.084
Music	0.078
Advertising	0.074
Biomedical Engineering	0.069
Finance	0.066
Hospitality Management	0.061
Management Information Systems	0.058
Spanish	0.046
Sports Management	0.044
Biology	0.043
Environmental Science	0.043
Economics	0.042
Health Sciences	0.037
Criminal Justice	0.037
Marketing	0.036
Journalism	0.032
Anthropology	0.031
International Relations	0.029
Communications	0.029
Political Science	0.028
Liberal Arts	0.028
Healthcare Administration	0.027
Psychology	0.025
Sociology	0.024
History	0.021
Business	0.018
English	0.018
Philosophy	0.013

Source: Glassdoor Economic Research (glassdoor.com/research)