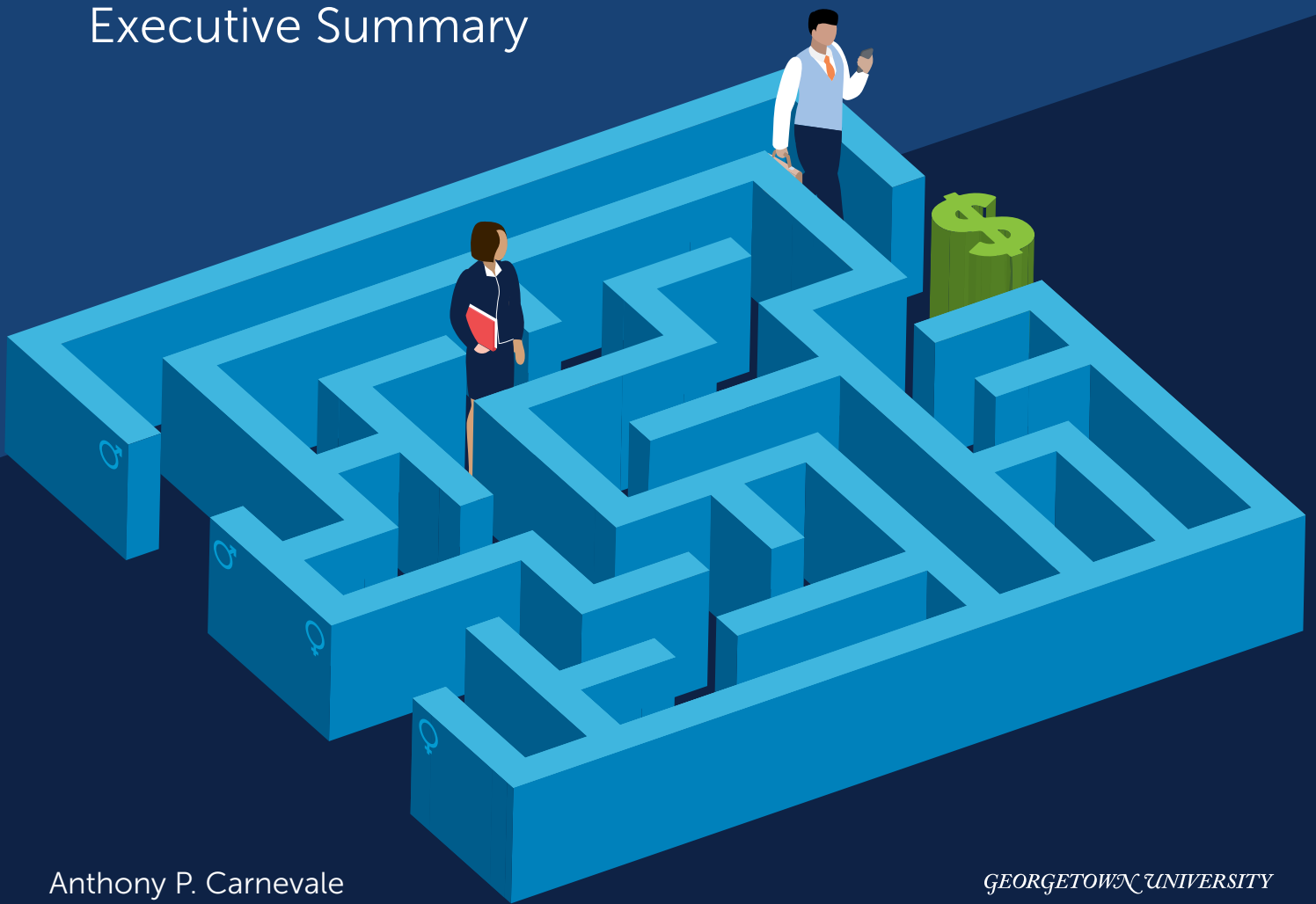


Women Can't Win

Despite Making Educational Gains and Pursuing High-Wage Majors, Women Still Earn Less than Men

Executive Summary



Anthony P. Carnevale
Nicole Smith
Artem Gulish

2018

GEORGETOWN UNIVERSITY



Center
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College Major Selection Is at the Heart of Gender-based Occupational Segregation and the Gender Wage Gap.

Gender wage disparities have always been an intractable problem in the workforce. Women are doing all the right things to close wage disparities—going to college in greater numbers than men, pursuing majors that offer higher incomes, and graduating college in greater numbers than men. Despite these achievements, women still make just 81 cents for every dollar that men earn.

A complex set of reasons has kept this gender wage disparity in place. At its heart is discrimination in pay for the same sets of qualifications and experience. When it comes to earnings, women simply can't win. Here's why:



Choice of field of study. While it is true that more women than ever are majoring in fields traditionally dominated by men—for example, women account for 17 percent of engineering majors today (Figure 1)¹ compared to 1 percent in 1970—women are still disproportionately concentrated in the lowest-earning majors. For example, women account for 76 percent of education majors today, compared to 75 percent in 1970.²



Choice of majors within fields of study. Even when they choose to pursue degrees in high-paying fields, women are still more likely to choose the least lucrative majors within those fields compared to men. For example, 32 percent of all workers who majored in environmental engineering are women, more than for any other engineering field. Yet, environmental engineering is the lowest-paying engineering major. The same trend applies to business majors, in which women choose specific majors that tend to be the least lucrative of the available options such as human resources, where women account for 69 percent of workers. Finance is one of the more lucrative majors in business, yet only 33 percent of finance majors are women.



Choice of occupation. Even in high-paying career fields, women are generally less likely to pursue the highest-paying occupations compared to men. For example, only 27 percent of chief executive officers, 44 percent of lawyers, and 43 percent of physicians and surgeons are women.



Discrimination. Finally, even when they do everything “right”—seek a career in a high-paying field, choose a high-paying major, and get a job in a high-paying occupation—women still get paid less than their male peers. If a man and a woman who are equally qualified get the same job, the woman still only makes 92 cents for every dollar the man makes.³

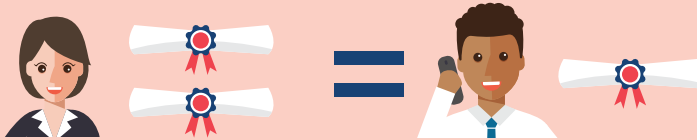
The traditional answer for women to overcome the pay advantages that men have traditionally held in the marketplace has been, and continues to be, more education. And women have widely embraced this strategy. The share of bachelor's degrees going to women has increased from 43 percent in 1970 to 57 percent in 2015.⁴

As women outperform men in college, some of the patriarchy of the job market is being wiped away. But the gender wage disparity is still far from being resolved. In the workplace, women are forced to play by a different set of rules than men.

1. Statistics referring to women's share of majors refer to prime-age workers between the ages of 25 and 54.
2. Unless otherwise noted, in this report the discussion of majors refers to bachelor's degree holders (and in some cases graduate degree holders) based on their undergraduate, BA-level program of study.
3. The 81 cents on the dollar statistic is the prevailing definition of the gender wage gap. However, after controlling for educational attainment, choice of major and job tenure, the gender wage gap narrows to 92 cents on the dollar for equivalently educated and experienced women.
4. National Center for Education Statistics (NCES), *Digest of Education Statistics* tables, 2015. For the full list of references, please see the main report.

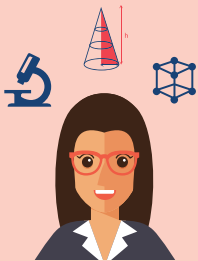
THERE ARE **SIX RULES** OF THE GAME FOR WOMEN.

Rule **01** Get one more degree in order to have the same earnings as a man.



A woman with a bachelor's degree earns \$61,000 per year on average, roughly equivalent to that of a man with an associate's degree. The same rule holds true for women with master's degrees compared to men with bachelor's degrees and for each successive level of educational attainment.⁵ Over a lifetime, women with bachelor's degrees in business earn \$1.1 million less than men with bachelor's degrees in business. In fact, men earn more than women within every industry.

Rule **02** Pick majors that pay well, as major choice largely determines earnings.



Women majoring in STEM (science, technology, engineering, and mathematics) fields earn \$840,000 more from the base year to retirement than women who major in the liberal arts, regardless of the occupations they choose.⁶ Occupations predict wages, but major choice determines the occupations that women can access.

Rule **03** If you major in liberal arts, get a graduate degree to attain middle class earnings.



A graduate degree in any discipline is important for earning high wages, but it is essential for female liberal arts majors. On average, women with graduate degrees in the liberal arts earn the same as men with a bachelor's degree in most other disciplines.⁷

5. Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, *Current Population Survey*, March supplement, 2016. According to the 2015 *Digest of Education Statistics* from the NCES, on average, women with a doctoral degree earn \$80,500 per year, almost equivalent to that of men with a master's degree, \$84,800.
6. The difference is based on annual average earnings of female workers with a bachelor's degree in architecture and engineering as their highest level of educational attainment relative to female workers with a bachelor's degree in humanities and liberal arts extended over a 40-year career; Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau, *American Community Survey*, 2015.
7. Georgetown University Center on Education and the Workforce analysis of *American Community Survey*, 2011–2015 pooled data.

Rule 04 **Negotiate your first paycheck well, as it will impact your lifetime earnings. The gender wage gap increases with age, peaking by the early 50s.**



Not only do women start off at lower salaries, but the rate of increase in pay is also lower over time. By his early 50s, the average man with a bachelor's degree earns \$34,000 more annually than a similarly educated woman. A man with a bachelor's degree will see his annual earnings increase by 87 percent over his career, but a woman with a bachelor's degree will only receive a 51 percent increase in her annual earnings over her career.

Rule 05 **Be careful with postsecondary vocational certificates because they have limited labor market value for women.**



Women do not get traction in the labor force until they get at least an associate's or a bachelor's degree. Certificates are not enough; there are few jobs that pay a living wage for women whose highest academic credential is a certificate.⁸

Rule 06 **If you don't pursue a BA, consider getting an industry-based certification.**



Few jobs that pay a living wage remain for women with industry-based certifications and licenses as their highest level of education. Nevertheless, women with business certifications as their highest credential attained after high school tend to have higher wages compared to those with a high school diploma as their highest credential.

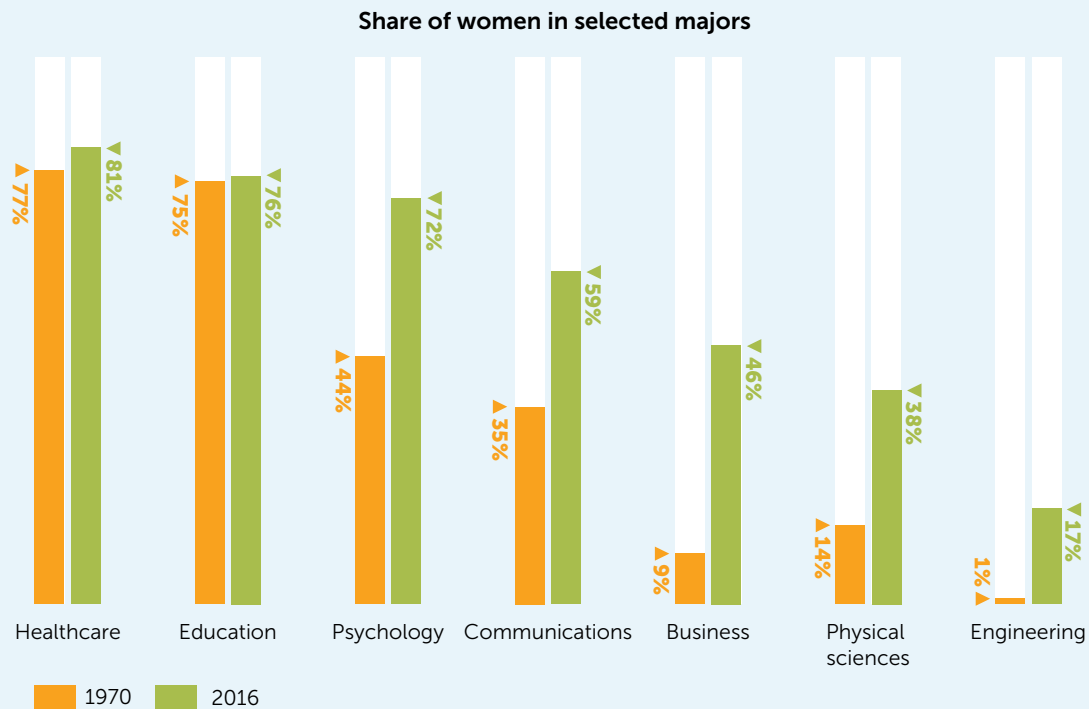
8. Glasmeier and Arete, "Living Wage Calculator," 2015. The living wage is defined as the wage needed to cover basic family expenses, plus all relevant taxes.

Women’s Educational Gains Have Not Eliminated the Gender Wage Gap.

The educational gains of women in the past four decades have been remarkable. Women now make up nearly half of all business majors and nearly two-fifths of all majors in the physical sciences (Figure 1). In ever greater numbers, women are entering the higher-paying majors that have long been dominated by men. However, simply making inroads into those majors is not leveling the playing field. The specific majors that women choose are still largely traditional, dominated by interests and values that tend toward nurturing, caregiving, and human interaction. For example, women dominate two of the lowest-paying majors—education and psychology. Among education majors, 76 percent are women, compared to 75 percent in 1970. Also, today, 72 percent of psychology majors are women, compared to 44 percent in 1970.⁹

These choices of majors have contributed to the occupational segregation that so heavily influences the lower wages earned by women. Women are majoring in areas that seem to promise higher wages. The proportion of women in engineering jobs has grown from 1 percent in 1970 to 17 percent in 2016. While this represents significant progress, it will take a substantial period of time before women achieve proportional representation to men in engineering jobs.

Figure 1. While women have made significant strides in pursuing traditionally male-dominated majors, many major choices remain highly segregated.



Source: Georgetown University Center on Education and the Workforce analysis of *American Community Survey* data, 2016 and *Decennial Census* data, 1970.

9. Psychology majors’ career pathways today are different from those who majored in psychology in 1970. In 1970, a bachelor’s degree was sufficient to become a private practitioner, whereas currently becoming a licensed private practitioner requires at least a master’s degree, and many students who major in psychology at the bachelor’s level go into careers in other fields, such as marketing and early childhood education.

The wage gap between men and women exists at every level of educational attainment.

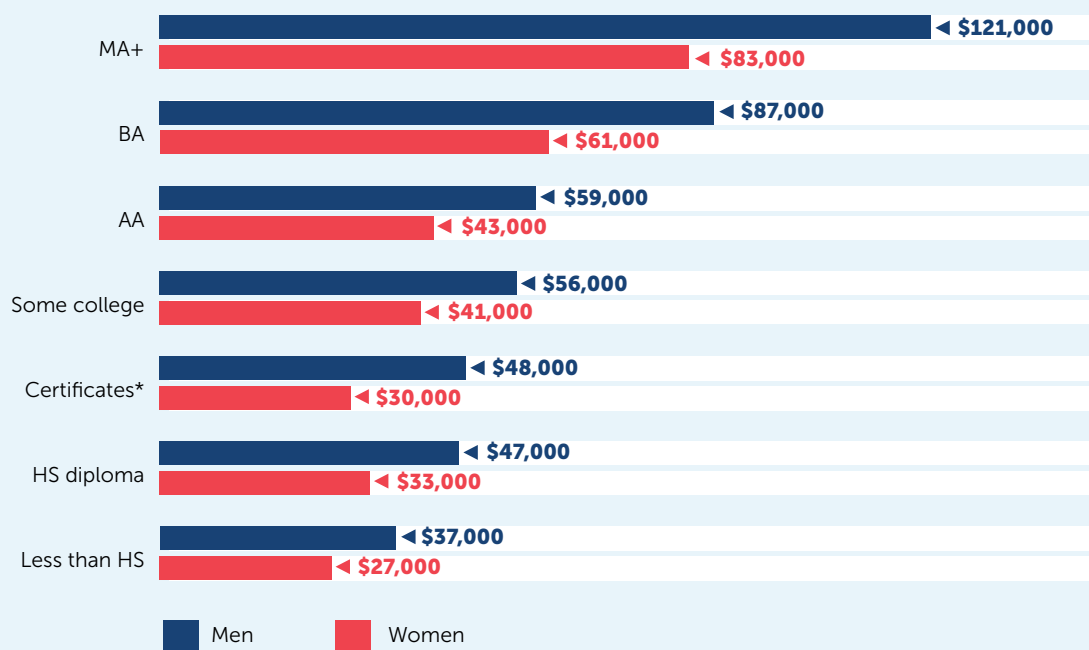
Women have been told that more education will lead to better wages, a notion they have largely bought into. At every level of educational attainment, women have been graduating in higher percentages than men. While higher levels of education lead to higher wages in general, more education for women does not necessarily lead to the same wage gains as it does for men.

As shown in Figure 2, men out-earn women at every level of education. Between the high school dropout and associate's degree level, men earn between \$10,000 and \$16,000 more than women. The disparities get even greater with more advanced degrees. A man with a bachelor's degree out-earns an equally qualified woman by about \$26,000 per year, on average. At the graduate degree level, this difference in earnings rises to \$38,000 per year.

The disparities exist, as well, when men and women earn the same credential and work in the same occupations. For example:

- A woman who receives a certificate in police or protective services gets paid a median salary of \$31,000. A man with the same credential earns \$49,000.¹⁰
- A woman with a bachelor's degree in business is paid \$68,000 a year; a man with the same degree earns \$95,000.¹¹

Figure 2. Annual earnings for men are higher than those for women at every level of educational attainment.



Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, *Current Population Survey*, March supplement, 2017 and *Survey of Income Program Participation*, 2009.

* Earnings for certificate holders are median values from *Survey of Income Program Participation*, 2009, adjusted to 2016 dollars.

10. Carnevale et al. *Certificates*, 2012.

11. Georgetown University Center on Education and the Workforce analysis of *American Community Survey* data, 2016

Over the course of a career, a man with a bachelor's degree, on average, will earn about \$1 million more than a woman with the same degree.

High-paying, low-paying, lots of education required, or almost no education required—it does not matter. If a man and a woman hold the same job, on average, the man will always be paid more.

College major segregation is an important precursor to occupational segregation. The major chosen can open opportunities for jobs that require a specific entry-level credential as a prerequisite for employment. For example, engineering majors are more likely to seek out engineering jobs—one of the highest paid entry-level professions straight out of college. Education majors are more likely to seek out teaching jobs that can often pay wages below the median for bachelor's degree holders. Since engineering classes are predominantly male and education classes are predominantly female, the college classroom is creating the pipeline that leads to later occupational segregation. Though there are many examples of graduates with the same major working in different professions, major choice can be an important stepping stone for where one ends up in the job market.

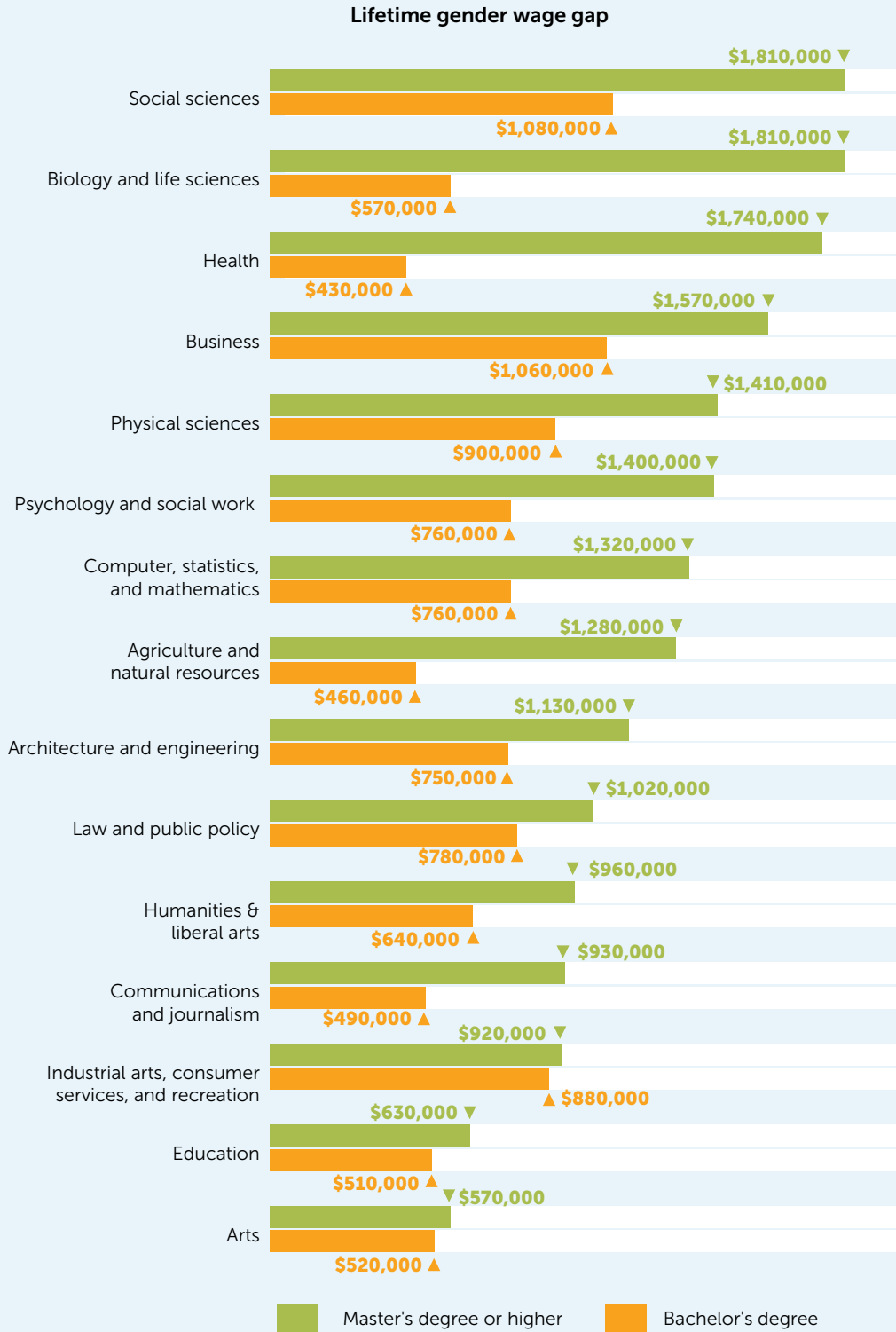
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The gap between women's and men's earnings varies across majors (Figure 3), but is generally smaller in the arts and education and is the largest in business, health, and the sciences. Women with bachelor's degrees in art earn \$520,000 less over the course of their careers than men with the same degree and major. In business, if both a man and a woman have a bachelor's degree, the man will make, on average, \$1.1 million more over his career.¹²

At the graduate level, career wage disparities are even greater; a man with a graduate degree in biology and life sciences or social sciences will make \$1.8 million more over a career than a woman with the same degree.

12. Lifetime earnings are defined as cumulative average wages per year during prime earning years (25-54).

Figure 3. Accumulated earnings differentials between men and women often top \$1 million by retirement.



Source: Georgetown University Center on Education and the Workforce analysis of US Census Bureau, *American Community Survey* data, 2012–2016.

Women entering high-wage occupations still earn less than men.

Wage equality is not simply a matter of ensuring that women go into the highest-paying professions. They have already done that. Women have increasingly taken up a diverse array of professional careers. For example, in 1985, women accounted for just 18 percent of all people working in law, 21 percent of chemists, and 11 percent of architects.¹³ By 2016, women's share of employment in each of these select occupations increased substantially to 56 percent, 44 percent, and 29 percent, respectively.¹⁴ Similar trends can be observed among other traditionally male occupations such as engineer, economist, and purchasing manager.

Still, in almost every occupation, men earn more than women (Table 1).

Table 1. Men consistently earn more than women in various occupations.

| Major occupational group | Women's share of employment | Women's earnings as a percentage of men's earnings |
|---------------------------------------|-----------------------------|--|
| Healthcare support | 88% | 79% |
| Healthcare professional and technical | 74% | 61% |
| Education | 70% | 81% |
| Sales and office support | 57% | 65% |
| Social science | 52% | 92% |
| Community services and arts | 49% | 82% |
| Managerial and professional office | 44% | 74% |
| Food and personal services | 40% | 65% |
| STEM | 24% | 80% |
| Blue collar | 12% | 70% |

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, *Current Population Survey* data, 2017.

Part of the reason for the persistent inequality in pay is that, even when women enter higher-paying fields, they are more likely to gravitate toward lower-paying occupations compared to men. Take law, for instance: female lawyers make more than twice as much (\$126,000) as paralegals and legal assistants (\$52,000), but women nevertheless compose a much larger share of paralegals and legal assistants. They make up 85 percent of paralegals and legal assistants and only 44 percent of lawyers.¹⁵

Similarly, in medicine, women are also more represented in lower-paying fields. Female physicians and surgeons can expect to make \$182,000 annually, but only 43 percent of physicians and surgeons are women. Dietitians and nutritionists can expect to make \$48,000 per year, but nevertheless 90 percent of them are women. The theme carries over into engineering. On average, the highest-paying engineering field for women is petroleum engineering, with average earnings of \$142,000 per year. However, only about 20 percent of petroleum engineers are women. One of the lowest-paying engineering occupations is environmental engineer (\$77,000 annual earnings for women). It is also the engineering occupation where women are most represented: 33 percent of environmental engineers are women.¹⁶

13. Georgetown University Center on Education and the Workforce analysis of data from US Census Bureau and Bureau of Labor Statistics, *Current Population Survey*, 1985.

14. Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, *American Community Survey*, 2016.

15. Georgetown University Center on Education and the Workforce analysis of *American Community Survey* data, 2016.

16. Georgetown University Center on Education and the Workforce analysis of *American Community Survey* data, 2016.

Cultural bias and child care responsibilities also contribute to the wage gap. Traditionally, women have been the caretakers of minor children and the elderly in their families. To accommodate this caregiving role, many women choose to work part-time to increase their flexibility to attend to family obligations. Women hold nearly two-thirds of part-time jobs, and work slightly fewer hours when employed full-time. Women employed in full-time jobs work 37 hours per week on average, while men employed in full-time jobs work 40 hours per week on average.¹⁷ Because our societal values delegate that responsibility to women more so than men, there is increased pressure to perform these duties, even at the expense of long-term career goals. These implicit responsibilities therefore contribute to women taking on more part-time work at the expense of better salaries.

The old go-to explanations for the gender wage gap, however, are less relevant to today's women. The standard apology has been that the responsibility for child-rearing falls more heavily on women than on men. But this argument has gradually weakened over the past several decades. This is because attitudes regarding gender roles are slowly adjusting as both parents work to shoulder care-giving responsibility. To reflect this slow paradigm shift, some states have enacted laws that equally affect women and men as it pertains to child rearing.¹⁸

A man's average salary of \$51,000 is \$10,000 more than a woman's average salary of \$41,000. Even when women are engaged in high-paying careers, the wage gap is still evident. The fact that the gap remains demonstrates that historical and cultural biases still exist. For example, more than 73 percent of CEOs are men,¹⁹ and they tend to promote other men.²⁰

Male-dominated fields tend to pay higher wages across the board. Architecture, engineering, computers, statistics, and mathematics are among the majors that lead to the best-paying careers, but less than a quarter of college graduates in these fields are women. The field of education as well as the fields of psychology and social work have some of the lowest wages for people who pursued those majors in college, and these fields have workforces that are more than 70 percent women. Nevertheless, in all fields—whether they are dominated by men or women, or fairly equally divided among men and women—men consistently earn more.

Women also gravitate to jobs in which they can be nurturing or provide care to others. Women overwhelmingly outnumber men in professions related to education, healthcare, and social work. The choices are cultural, educational, and personal. And these professions consistently are low-paying. Men value jobs in which they can make decisions, solve problems, and be independent, often in fields with high financial stakes and significant financial consequences to winning or losing. Many of these jobs are high-paying technical and managerial occupations.

17. Georgetown University Center on Education and the Workforce analysis of *American Community Survey data*, 2016.

18. The New Parent Leave Act in California went into effect January 1, 2018 and gives three months of unpaid maternity and paternity leave to parents who work at businesses with 20 to 49 employees. California, New Jersey, and Rhode Island mandate paid paternal leave; Jackson, "Governor Signs Jackson Bill to Provide Job-Protected Leave for New Parents," 2017.

19. Georgetown University Center on Education and the Workforce analysis of *American Community Survey*, 2016.

20. Blau and DeVaro, "New Evidence on Gender Difference in Promotion Rates," 2006.

Cultural biases begin early.

Differences in aptitudes and interests begin early. The work interests that appeal most to women usually are jobs involving teaching and communicating with people, often in professions that provide caregiving service to others. Those types of jobs also tend to be lower-paying professions.

Societal cues may be responsible for steering women to these professions.²¹ A substantial body of literature²² indicates that traditional ideas about women's roles in society are visibly apparent in girls as early as middle school, and that the influence of these traditional ideas on girls early in the career decision-making process is greater than the long-term prospect of someday earning a higher salary.²³ In fact, the potential earnings capacities of career choices are rarely communicated to girls at an early age, particularly because society still does not see women as the primary breadwinners in families.²⁴ These influences are communicated in subtle and varied ways, starting with the common expectation, for example, that little girls should play with dolls instead of with blocks.²⁵ Later influences include such factors as gender bias, classroom climate, sex stereotypes, the male-dominated culture of science and engineering departments in postsecondary institutions, and the lack of female role models in male-dominated occupations.²⁶ These interests and values become key determinants in the occupational choices that women make, and have major economic consequences.²⁷

The national standardized tests administered at the fourth-, eighth-, and 12th-grade levels show a picture of increasingly similar academic abilities. Traditionally, girls outperform boys in reading and vocabulary, and boys outperform girls in math and science. However, in the most recent set of test scores, the only meaningful differences that remain are in 12th-grade science, where boys score 5 points higher on average than girls, and reading across all three tested grade levels, where girls score 7–10 points higher than boys.²⁸

Nonetheless, perceived differences in math and science abilities continue to impact women. Of course, the cultural and social signals that influence personal choices are highly complex, especially in outlining a causal balance between nurture versus nature. However, without articulating the exact value of the contributions of socialization and, more deeply, social conditioning, we know that these choices have real and financial implications in the long run. To a large extent, the decisions of which major to pursue are an important precursor to occupational segregation by sex, which then reinforces the gender wage gap.

21. Schieder and Gould, *Women's Work' and the Gender Pay Gap*, 2016.

22. Adler et al., "Socialization to Gender Roles," 1992; Eagly, "Prejudice," 2004; and Albert and Porter, "Children's Gender-role Stereotypes," 1998.

23. LoBue and DeLoache, *Pretty in Pink*, 2011.

24. Caspi, *Life-Course Development*, 2004.

25. Freeman, "Preschoolers' Perceptions of Gender Appropriate Toys and their Parents' Beliefs About Genderized Behaviors," 2007.

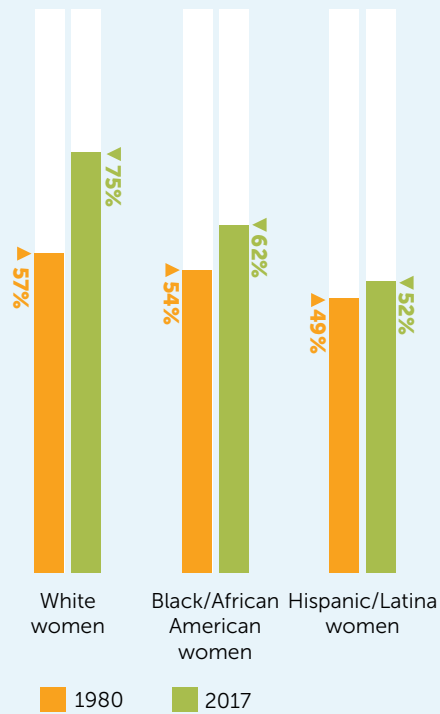
26. Correll, "Gender and the Career Choice Process," 2001.

27. Vella, "Gender Roles, Occupational Choice and Gender Wage Differential," 1993.

28. National Center for Education Statistics (NCES), *National Assessment of Educational Progress Data Explorer* various years.

Figure 4. Despite recent progress in narrowing the wage gap, women of all races trail far behind White men in earning power.

Gender wage gap relative to White men



Source Georgetown University Center on Education and the Workforce analysis of data from the US Census Bureau, *Current Population Survey*, March supplement, 1980, 2017.
 Note: As the largest group of income earners, White men are used in this figure as the comparison point. For both years, we use the average earnings of women by race/ethnicity as the numerator and the average earnings of White men as the denominator to determine the extent to which racial differences matter in the gender wage gap.

Underneath the gender wage gap, racial disparities are even deeper. Women of all races are affected by the gender wage gap, although not all women are affected equally.²⁹ The gender wage gap by race compared to White men is 75 percent for White women, 62 percent for Black women, and 52 percent for Latina women (Figure 4).

Among the races, White women did the best comparing their earnings to White men in 2017, just as they did in 1980. The racial/ethnic disparity in women’s earnings relative to White men was much smaller in 1980, when there was only a difference of 8 percentage points between Latina women, the lowest paid, and White women, the highest paid. By 2017, that disparity increased dramatically, with a 23-percentage point difference in earnings between Latina and White women.

White women earn 18 percentage points more relative to White men than they did in 1980. Black women earn 8 percentage points more relative to White men, and Latina women earn just 3 percentage points more relative to White men than they did in 1980. So, there have been improvements. But relative to White men, the “glass ceiling effect” limits the upward mobility of all women and prevents them from occupying all but a very small percentage of high-status positions.³⁰

29. Note that the point of comparison is to White males and not all males, so the gap will be larger than the popularly cited 81 cents on the dollar.

30. We choose to compare all wages to that of White men to facilitate comparisons of women’s wages by ethnicity to one standard.

Where Do We Go from Here?

Of course, not every person can or should pursue a major or occupation simply because of its earnings potential. Individual interests and values should remain paramount in determining choice in courses, majors, and occupations. These decisions, however, should be made with full information regarding career opportunities and the quality of life that these potential careers can afford.

The new relationship between postsecondary education and the economy is one in which economic success is now inextricably linked to postsecondary education. In 1967, the share of workers with at least some postsecondary education and training beyond high school was 25 percent; these workers contributed 36 percent of the economy's value added from labor. By 2012, the share of workers with at least some postsecondary education or training moved to 61 percent; these workers contributed 77 percent of the economy's value added from labor.³¹

Linking programs of study to workforce outcomes is especially important for women who face a persistent wage gap that endures and broadens with time and experience on the job.³² In most instances, incurring debt to go to college is a smart bet, if done wisely. The loans that cannot be repaid are the ones that cripple. Today, when many girls and women can expect to be the primary provider or co-providers for themselves and their families, the development of knowledge and skills is their smartest investment. In today's complicated higher education system, there is a dearth of information about which courses of study, certificates, and classes lead to middle-class incomes—and overwhelmingly, the majors with the lowest post-graduation earnings potential are dominated by women.³³

There is no definitive research that causally connects access to deeper information on programs of study with improved outcomes for women. Studies show that mentoring and counseling with the objective of demonstrating long-term outcomes can help.³⁴ Social conditioning is at least as important as genetic inheritances in determining preferences.³⁵ By the time girls are two years old, they have already conformed to societal norms such as selecting pink over blue—and much more so than boys.³⁶

31. Carnevale and Rose, *The Economy Goes to College*, 2015.

32. There is every reason to believe that if women were provided with more information about the long-term earnings implications of where and what they study, their college decisions would be even smarter.

33. Carnevale et al., *What's It Worth?*, 2011.

34. DuBois et al., "Effectiveness of Mentoring Programs for Youth," 2002; and Jacobi, "Mentoring and Undergraduate Academic Success," 1991.

35. LoBue and DeLoache, *Pretty in Pink*, 2011.

36. *Ibid.*

Girls, from a young age, need more information and counseling about career choices and the financial repercussions of those choices. This is mostly because the ramifications of poor decisions seem costlier for girls than boys.³⁷ Women who have not gone on to college are far less likely to enter the middle class or earn a living wage. For example, of all the people making over \$100,000 with a high school diploma or less, only 3 percent are women, and 97 percent are men. Among workers with some college but no degree making more than \$100,000 annually, only 19 percent are women—81 percent are men.

Differing interests and values are powerful biases that result in occupational segregation. Historically, that segregation has resulted in economic disadvantages for women. On a practical level, this means that more female talent needs to be attracted to STEM and other higher-paying fields at the high school and college levels, and that greater equity in wages between the sexes needs to be promoted.

The inherent and systemic biases in the labor market will still take some time to evaporate. However, the time seems ripe. With women going to college and earning degrees in greater numbers—and venturing further into what have historically been higher-paying male-dominated fields—they *might* be able to achieve gender wage equality in their lifetimes.

37. Stoeger et al., "The Effectiveness of a One-Year Online Mentoring Program for Girls in STEM," 2013.

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3300 Whitehaven Street, N.W.
Suite 3200
Washington D.C. 20007

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