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 AAUW

Empowering women since 1881



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## THE MOONEEN LECCE GIVING CIRCLE

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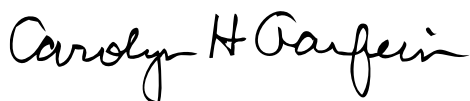


Women are paid significantly less than men are in nearly every occupation. Because pay equity affects women and their families in all walks of life, it is not surprising that many women consider the issue important. Many business leaders also believe that pay equity is “good business,” because it improves morale and productivity. Yet progress in closing the gap between men’s and women’s pay has been slow and, in recent years, has stagnated.

For more than 130 years, the American Association of University Women (AAUW) has advocated for gender equity in education and the workplace. During this time, women have gone from a small minority on college campuses to a majority of the student body. Today, women make up half the workforce, but they continue to earn less than men do throughout their careers.

Why does this gender pay gap persist? This question is a focal point of AAUW’s research and advocacy work. Graduating to a Pay Gap finds that women working full time already earn less than their male counterparts do just one year after college graduation. Taking a closer look at the data, we find that women’s choices—college major, occupation, hours at work—do account for part of the pay gap. But about one-third of the gap remains unexplained, suggesting that bias and discrimination are still problems in the workplace.

At AAUW, research informs action. As an organization of college-educated women, we believe that the pay gap among college-educated workers and its ramifications—starting with higher student loan debt burden immediately after college graduation—are of great importance. AAUW is proud to share research that you can trust. We hope this report will inspire you to join us in taking action to eliminate the pay gap.



Carolyn H. Garfein  
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AAUW Executive Director



AAUW thanks Robin Henke and Jennie Woo of MPR Associates for their work on the technical report that provided the basis for the data analysis used in *Graduating to a Pay Gap*. We thank Matt Reed from the Project on Student Debt for his thoughtful comments on the student debt portion of the report. AAUW also recognizes its staff and member leaders for their contributions. Special appreciation goes to Jill Birdwhistell, chief operating officer, for her role in shaping this work; Julie Smolinski, former research intern, for her work on the report's figures; Rebecca Lanning, director of art, editorial, and media, for managing the editorial process; Beth Pearsall, freelance editor, for editing the report; and Allison VanKanegan, graphic designer, for designing and composing the report.

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Nearly 50 years after the passage of the Equal Pay Act of 1963, women continue to earn less than men do in nearly every occupation. Because pay is a fundamental part of everyday life, enabling individuals to support themselves and their families, the pay gap evokes passionate debate. Although the data confirming the persistence of the pay gap are incontrovertible, the reasons behind the gap remain the subject of controversy. Do women earn less because they make different choices than men do? Does discrimination play a role? What other issues might be involved?

Graduating to a Pay Gap explores the pay gap between male and female college graduates working full time one year after graduation. You might expect the pay gap between men and women in this group of workers of similar age, education, and family responsibilities to be small or nonexistent. But in 2009—the most recent year for which data are available—women one year out of college who were working full time earned, on average, just 82 percent of what their male peers earned. After we control for hours, occupation, college major, employment sector,

and other factors associated with pay, the pay gap shrinks but does not disappear. About one-third of the gap cannot be explained by any of the factors commonly understood to affect earnings, indicating that other factors that are more difficult to identify—and likely more difficult to measure—contribute to the pay gap.

Education and occupational differences between men and women help explain the pay gap. Explaining or accounting for a portion of the pay gap simply means that we understand the effect of certain factors, not that the gender differences related to those factors are necessarily fair or problem-free. Both discrimination and cultural gender norms can play a role in the “explained” portion of the pay gap. With that in mind, we find that college major is an important factor driving pay differences. Men are more likely than women to major in fields like engineering and computer science, which typically lead to higher-paying jobs. Women are more likely than men to major in fields like education and the social sciences, which typically lead to

lower-paying jobs. But college major is not the full story. One year after graduation, a pay gap exists between women and men who majored in the same field. Among business majors, for example, women earned just over \$38,000, while men earned just over \$45,000. Gender differences in college major only partially explain the pay gap.

Occupational factors also drive differences in pay. Although the choice of major is related to occupation, the relationship is not strict. For example, male engineering majors are more likely than their female counterparts to work as engineers after graduation. Women are more likely than men to work in business support and administrative assistance occupations and as teachers, social services professionals, and nurses and other health care providers one year after college graduation. Men are more likely than women to work in business and management occupations, computer and physical science occupations, and as engineers. The jobs that primarily employ men tend to pay more than the jobs that primarily employ women.

Differences in the number of hours worked also affect earnings and contribute to the pay gap. One year out of college, women in full-time jobs reported working 43 hours per week on average, and men in full-time jobs reported working an average of 45 hours per week. Economic sector is another part of the equation. Men were more likely than women to work in higher-paying sectors of the economy.

Yet, when we control for each of these factors, women still tended to earn less than their male peers did. Within a number of occupations, women already earned less than men earned just one year out of college. Among teachers, for

example, women earned 89 percent of what men earned. In business and management occupations, women earned 86 percent of what men earned; similarly, in sales occupations, women earned just 77 percent of what their male peers earned.

When we compare the earnings of men and women who reported working the same number of hours, men earned more than women did. For example, among those who reported working 40 hours per week, women earned 84 percent of what men earned. Among those who reported working 45 hours per week, women's earnings were 82 percent of men's.

Finally, when we control for economic sector, again men typically earned more than women did. In the two largest economic sectors—the for-profit and government sectors—men earned significantly more than women did one year after college graduation. Occupation, hours worked, and economic sector help us understand the pay gap, but these differences do not fully explain it.

Consider a hypothetical pair of graduates—one man and one woman—from the same university who majored in the same field. One year later, both were working full time, the same number of hours each week, in the same occupation and sector. Our analysis shows that despite these similarities, the woman would earn about 7 percent less than the man would earn. Why do women still earn less than men do after we control for education and employment differences?

Gender discrimination is one potential contributor to the unexplained pay gap. The increasing numbers of claims filed with the Equal Employment Opportunity Commission and the millions

of dollars employers pay annually in awards, settlements, and other legal fees make clear that gender discrimination remains a serious problem in American workplaces. Experimental evidence confirms that many people continue to hold biases against women in the workplace, especially those who work in traditionally male fields. Thus, there are solid reasons to believe that gender discrimination is a problem in the workplace.

Yet discrimination is impossible to measure directly, and many who discriminate—both men and women—may not be aware that they are doing so. For all of these reasons, it is likely that at least part of the unexplained gap results from discrimination.

Another possible explanation for the unexplained portion of the pay gap is a gender difference in willingness and ability to negotiate salary. Negotiating a salary can make a difference in earnings, and men are more likely than women to negotiate their salaries. In part, this difference may reflect women's awareness that employers are likely to view negotiations by men more favorably than negotiations by women. Nonetheless, negotiation may account for some portion of the unexplained gap.

For many young women, the challenge of paying back student loans is their first encounter with the pay gap. "Student loan debt burden" is defined as the percentage of earnings devoted to student loan payments. A high student loan debt burden is an indicator that repayment may create hardship. Individuals with high student loan debt burden are less likely to own a home, have a car loan, or even make rent payments.

High student loan debt burden is a challenge for a growing number of college graduates, men and women alike, but is particularly widespread among women, in large part because of the pay gap.

Women and men pay the same amount for their college degrees, but they often do not reap the same rewards. Among 2007–08 college graduates, women and men typically borrowed similar amounts to finance their educations, about \$20,000. Because women earn less than men do after college, student loan repayments make up a larger part of women's earnings. In 2009, among full-time workers repaying their loans one year after college graduation, nearly half of women (47 percent) were paying more than 8 percent of their earnings toward student loan debt compared with 39 percent of men. These numbers have risen in recent years. In 2001, 38 percent of women and 31 percent of men in the same situation were paying more than 8 percent of their earnings toward student loan debt. Among those with very high student loan debt burden, we again see a gender difference. In 2009, 20 percent of women and 15 percent of men working full time and repaying their loans one year after graduation were paying more than 15 percent of their earnings toward student loan debt. Women are more likely than men to have high student loan debt burden in large part because of the pay gap.

What can be done about the pay gap? To begin with, we must publicly recognize it as a problem. Too often, both women and men dismiss the pay gap as simply a matter of different choices. But even women who make the same educational and occupational choices that men make do not typically end up with the same earnings.

Although women cannot avoid the pay gap completely, they can make choices that enhance their earning potential. A critical first step is paying attention to the salaries associated with college majors and occupations and understanding the long-term financial implications of those decisions. Women can also seek out union jobs and negotiate salary offers to improve their earnings. Taken together, these individual choices can help close the pay gap.

A problem as long-standing and widespread as the pay gap, however, cannot be solved by the actions of individual women alone. Employers and the government have important roles to play.

Federal equal pay laws have laid the groundwork, but new legislation is needed to modernize and strengthen these laws. Guided by better public policies, employers can invest in fairer and more transparent pay systems and be confident that their competitors are taking similar steps.

The pay gap has been part of the workplace for so long that it has become simply normal. Yet the pay gap has serious ramifications for women and their families throughout their lifetimes. Graduating to a Pay Gap sheds light on the roots of the gender pay gap among recent college graduates and provides recommendations for what we can do about it.



Women earn considerably less money than men do. Although the earnings of men and women are more similar today than they were in 1963 when the Equal Pay Act was signed, a sizeable gender pay gap remains, and in recent years, progress in narrowing the gap has stalled (AAUW, 2012; DeNavas-Walt et al., 2012). In this report, we explore the reasons behind the pay gap among a group of similarly situated men and women at the beginning of their careers. Using the latest nationally representative data available, we examine the gender pay gap among college-educated, full-time workers just one year after graduation.

The pay gap has far-reaching consequences for women and their families. According to one estimate, college-educated women working full time earn more than a half million dollars less than their male peers do over the course of a lifetime (Carnevale, Rose, & Cheah, 2011). Having less money means that women have more limited choices. The pay gap influences the neighborhoods in which women live, the educational

opportunities they offer their children, and the food they put on their tables. The pay gap can have especially dire consequences for single mothers, since they are often the only breadwinners for their families.

Because married couples tend to prioritize the career of the higher-earning spouse, the pay gap negatively affects married women's careers in other ways. Women are more likely than men to relocate for their spouses' jobs (McKinnish, 2008), and they are more likely to leave the workforce or reduce their work hours after becoming parents (AAUW Educational Foundation, 2007). With each of these decisions, the gap between men's and women's current and future earnings widens. In the long run, the pay gap contributes to a higher poverty rate among elderly women, with 11 percent of elderly women compared with 6 percent of elderly men living in poverty in 2011 (DeNavas-Walt et al., 2012). Overall, the pay gap makes achieving economic security more difficult for women and their families.

Few dispute the existence of the pay gap, but some argue that it is simply the result of men and women making different choices. Many studies have explored this question, including AAUW's report *Behind the Pay Gap* (AAUW Educational Foundation, 2007). *Behind the Pay Gap* found that part of the pay gap is indeed explained by differences in the jobs men and women hold, the hours they work, and their education and training, factors that are influenced—although not solely determined—by individual choices. The report also found that a portion of the gender pay gap is not explained by any of the factors known to affect earnings. Likewise, other studies of the pay differences between men and women have been unable to fully explain the pay gap (Lo Sasso et al., 2011; Broyles, 2009; Black et al., 2008; Blau & Kahn, 2007, 2006; Bobbitt-Zeher, 2007).

For example, a recent analysis found that specialty accounted for much of the overall gender difference in the salaries of physician researchers. Women were far less likely to work in higher-paying specialties than men were. But women still earned an unexplained \$13,399 less than their male colleagues did each year, even after the authors considered and controlled for factors that had a significant effect on salary, including specialty, age, parental status, additional graduate degrees, academic rank, institution type, grant funding, publications, work hours, and time spent in research (Jagsi et al., 2012). Similarly, a recent analysis of pay differences between male and female full-time managers found that female managers were younger and had less education than male managers did. But even after researchers controlled for age, education, hours worked beyond full time, industry sector, marital status, and presence of children in the

household, female managers still earned just 81 percent of what male managers did, leaving an unexplained 19 percent pay gap (U.S. Government Accountability Office, 2010).

In discussions of the pay gap on television, in newspapers and magazines, and online, there is often an underlying assumption that the only troubling part of the pay gap is the part that is unexplained. Yet explaining or accounting for a portion of the pay gap simply means that we understand how various factors affect earnings, not that the resulting salary disparities are fair or desirable. For example, women are more likely to become teachers, a relatively low-paying job for a college graduate, while men are more likely to enter higher-paying fields such as engineering. Although different job types “explain” part of the pay gap, cultural and other external factors influence the occupations in which men and women work. The AAUW report *Why So Few? Women in Science, Technology, Engineering, and Mathematics* (2010) chronicles some of the cultural norms and pressures that drive choices about college major and the type of job pursued after graduation. Both the explained and the unexplained portions contribute to the pay gap, and each points to its own set of solutions for narrowing that gap.

Gender discrimination, overt and subtle, persists in American workplaces. It occurs when employers and co-workers treat women in a particular way because they are women rather than on the basis of individual merit. In 2011 alone, the federal Equal Employment Opportunity Commission (EEOC) received more than 28,000 complaints of sex discrimination, an increase of about 18 percent compared with a decade earlier. Although the EEOC will not find all of

these cases to have merit, each year millions of dollars are awarded to individuals who file sex discrimination claims. Monetary awards for cases resolved through the EEOC in 2011—not including monetary benefits obtained through litigation—totaled just over \$145 million (Equal Employment Opportunity Commission, 2012).

Additional money is awarded each year in cases that are resolved through the courts. In one notable case in 2010, a federal jury found Novartis Pharmaceuticals Corporation liable for gender discrimination in pay, promotion, and pregnancy-related matters. Twelve former Novartis sales representatives were awarded \$3.36 million in compensatory damages, and 5,600 female Novartis sales representatives were awarded an additional \$250 million in punitive damages (*Vélez v. Novartis Pharmaceuticals*). It is likely that many more women who face similar circumstances do not bring charges against their employers. The millions of dollars awarded each year as a result of gender discrimination claims demonstrate that gender discrimination in the workplace continues to be a significant problem.

Gender discrimination probably accounts for at least part of the unexplained portion of the pay gap. A strong body of experimental research shows that most men and women continue to hold biases—often unconscious—against women in the workplace, especially against those who work in traditionally male fields (AAUW, 2010; Jost et al., 2009; Heilcs -loyyi0esea42 gs /Gs6 gs BT 11 0Eespewho w& K0 1201arau5.0 1 Oppod through78T

sional degrees affect earnings or differences in earnings among college graduates further along in their careers. We focus solely on earnings differences among women and men working full time one year after earning their first bachelor's degree.

Analyzing the gender pay gap among college graduates at the beginning of their careers provides valuable insight. Most are young (23 years old, on average), are relatively inexperienced in the workplace, have never been married, and are not raising children. The broad similarities in the lives of men and women at this time set the stage for a solid comparison.

This focus on recent college graduates is also important because college graduates are an increasing proportion of the labor force, and this is especially true for women. In the civilian labor force in 1970, only 11 percent of women ages 25 to 64 had attended college for at least four years; in 2010, 36 percent of women in the same age group were college graduates. In fact, today, working women between the ages of 25 and 64 are more likely than their male counterparts to have a college degree (36 percent of women compared with 33 percent of men) (U.S. Department of Labor, 2011b, table 9). By looking at earnings differences between men and women working full time one year after graduating from college, this report examines the pay gap in an increasingly large segment of the workforce at a time when gender differences in work experience and family responsibilities are relatively small.

This report uses descriptive statistics and regression analysis to describe pay differences between women and men one year after college graduation. All gender differences reported in

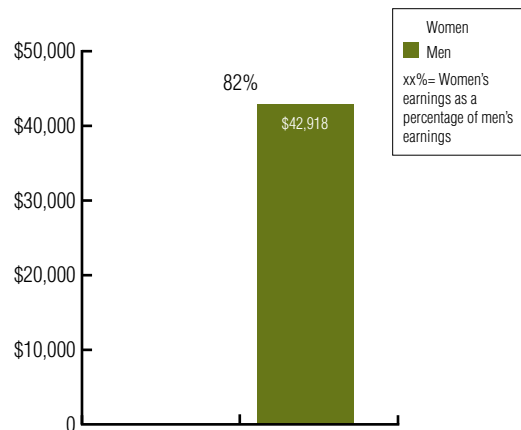
the text and shown in the figures are statistically significant ( $p < 0.05$ , two-tailed t-test) unless otherwise indicated. Statistics in this report were calculated using data from the 2008–09 Baccalaureate and Beyond Longitudinal Study conducted by the National Center for Education Statistics (NCES) at the U.S. Department of Education, unless otherwise noted. This most recent Baccalaureate and Beyond cohort was chosen from 2007–08 bachelor's degree earners and interviewed in 2009. NCES interviewed, mostly by telephone or online, approximately 15,000 individuals. This nationally representative sample represents all individuals who earned their first bachelor's degree between July 1, 2007, and June 30, 2008, by age 35 or younger at institutions eligible for federal financial aid (Title IV-eligible institutions) in the United States and Puerto Rico. Wherever earnings are reported, the analysis is restricted to full-time workers, with the exception of the regression analysis. In the regression analysis—presented in figures 10 and 13—full-time workers and multiple-job holders were included, and hours worked were held constant.

The remainder of *Graduating to a Pay Gap* focuses on how factors such as college major, occupation, and hours worked affect earnings and the pay gap among recent college graduates and provides an estimate of the unexplained portion of the gender pay gap. We also examine one immediate effect of the pay gap for many women—high student loan debt burden—and suggest ways to address that burden, along with steps that individuals, the government, and employers can take to eliminate the pay gap. For a detailed description of our methodology, see the appendix.

One year after college graduation, men and women have much in common. In 2009, most women and men who had earned bachelor's degrees the year before were young, single, childless, relatively inexperienced in the workplace, and working full time. We might expect to find little or no gender pay gap among this group of workers at the start of their careers. Yet just one year after college graduation, with their newly printed degrees in hand, men already earn more than women do. Women working full time earned \$35,296 on average, while men working full time earned \$42,918 (see figure 1). These figures represent a female/male earnings ratio of 82 percent, which is slightly higher than it was in 2001 when, among the same group, women earned just 80 percent of what their male peers earned (AAUW Educational Foundation, 2007).

Why does a pay gap already exist between the earnings of men and women who have just graduated from college? In this chapter, we look at the effect on earnings of gender differences in factors such as college major, occupation, hours at work, economic sector, and the presence of

**FIGURE 1. Average Annual Earnings One Year after College Graduation, by Gender**



*Note:* This chart shows average earnings among 2007–08 bachelor's degree recipients employed full time in 2009 and excludes graduates older than age 35 at bachelor's degree completion.  
*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 Baccalaureate and Beyond Longitudinal Study data.

children. Using regression analysis, we then examine the earnings of women and men after controlling for all of these factors taken together.

A college degree improves earnings considerably (AAUW, 2012), and this statement is even more true today than it was in the past (Goldin & Katz, 2008; Blau & Kahn, 2007). In 2009, among full-time workers, women with a bachelor's degree typically earned 161 percent of what women with just a high school degree earned, up from 153 percent in 1990 (authors' analysis of table 391, Snyder & Dillow, 2011). For men, this trend is the same.<sup>1</sup> According to one estimate, individuals with a bachelor's degree earn, on average, \$1 million more over the course of a lifetime than do individuals with just a high school degree (Carnevale et al., 2010).

But not all college degrees result in equal earnings. How does attending a selective college or university affect earnings? Do good grades make a difference? And what is the effect of college major? Two of these factors have little effect on the pay gap, whereas the third turns out to make a considerable difference.

### Women and men graduate from similar kinds of colleges and universities.

For the most part, women and men graduate from similar types of colleges and universities,<sup>2</sup> and the colleges and universities from which they graduate are similarly selective. Just over half (52 percent) of 2007–08 college graduates graduated from “moderately selective” schools, and nearly half (47 percent) graduated from public universities. Women were more likely than

men to have graduated from colleges (36 percent of women compared with 29 percent of men) rather than universities. Men, on the other hand, were more likely than women to have graduated from “very selective” colleges or universities (34 percent compared with 30 percent) and from public universities (51 percent compared with 45 percent). Apart from these differences, men and women earned their degrees from similar kinds of institutions.

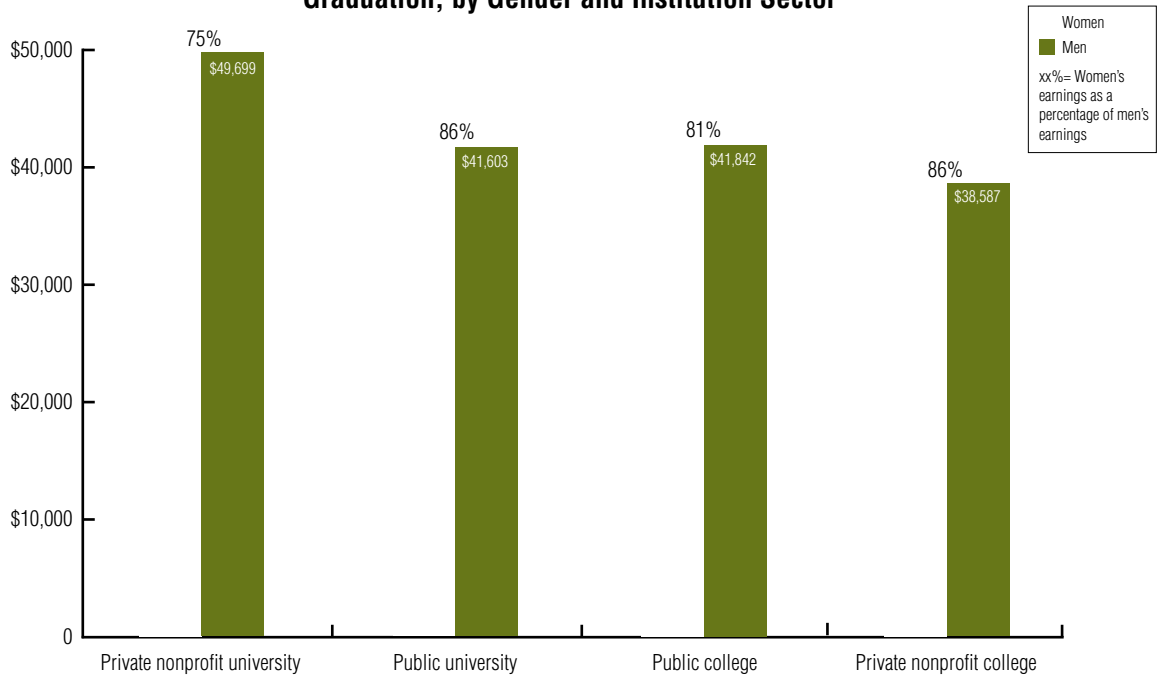
Earnings one year after graduation varied by institution type and selectivity, with graduates of very selective, private universities typically having higher earnings. Because men and women generally graduated from institutions of similar type and selectivity, however, the differences in earnings based on institution type and selectivity do little to explain the pay gap. In fact, the pay gap exists within nearly every category of institution and level of selectivity. Among public and private college graduates, women earned 81 percent and 86 percent, respectively, of what men earned one year after graduation. Women who graduated from public universities earned 86 percent of what their male peers earned. The pay gap was largest among graduates of private universities, where women earned just 75 percent of what men earned (see figure 2). Among graduates of similarly selective schools, women earned between 81 percent and 84 percent of what men earned. No matter which type of institution a woman graduates from or how selective it is, one year later, chances are good that she is earning less than the men with whom she graduated.

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<sup>1</sup>In 2009, median earnings for men ages 25 and older with a bachelor's degree working full time, year-round were 158 percent of median earnings for men with just a high school degree, up from 147 percent in 1990 (authors' analysis of table 391, Snyder & Dillow, 2011).

<sup>2</sup>A university is defined here as an institution that offers doctoral, four-year, and other degrees. A college is defined as any four-year school that does not also offer doctoral degrees.

**FIGURE 2. Average Annual Earnings One Year after College Graduation, by Gender and Institution Sector**



*Note:* This chart shows average earnings among 2007–08 bachelor's degree recipients employed full time in 2009 and excludes graduates older than age 35 at bachelor's degree completion.  
*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

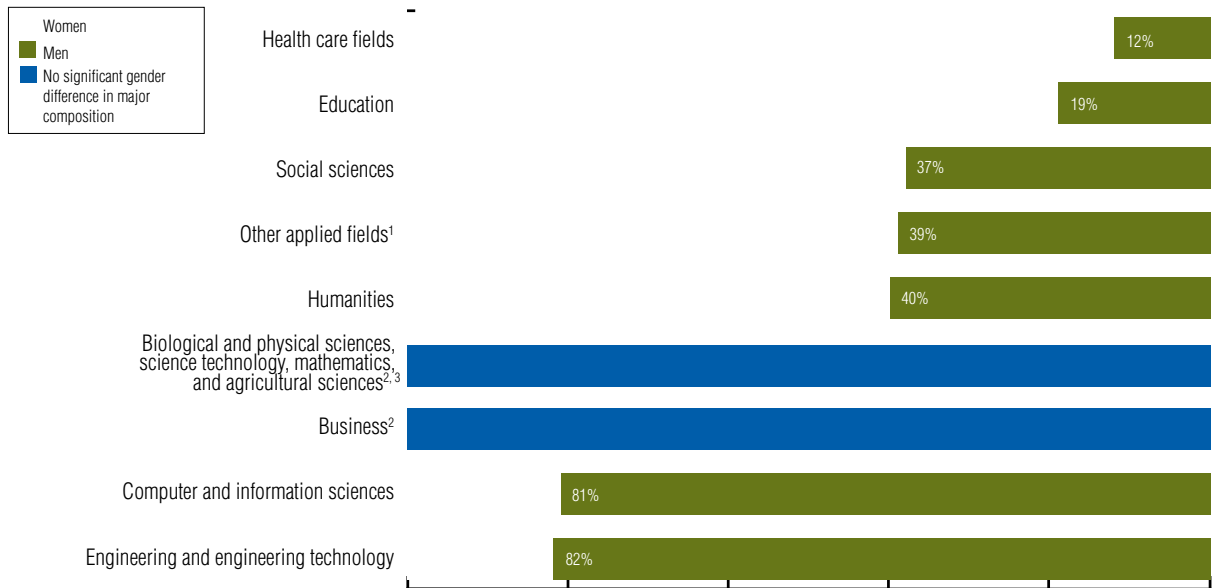
### Women and men earn similar grades.

Women as a group had a slightly higher grade point average (3.30 on a 4.0 scale) than did their male peers (3.18). In 2009, one year out of college, 19 percent of women compared with 15 percent of men had graduated with a grade point average of 3.75 or higher. For both men and women, earnings tend to increase with higher grades. Still, when we compare men and women with similar grades, men earned more than women did, on average, at every level. Academic achievement does not shed any light on why women earn less than men do.

### Men and women major in different fields.

Although men and women attended similar types of colleges and universities and earned similar grades, they tended to major in different fields. Despite the dramatic increase in women's educational achievements in recent decades, deep-rooted gender differences remain in field of study (Zhang, 2008; Bobbitt-Zeher, 2007; England, Allison, Li, et al., 2007; McDonald & Thornton, 2007; Charles & Grusky, 2004; Charles & Bradley, 2002). Research on doctoral degree recipients, for example, shows that the proportion of doctoral degrees awarded to

**FIGURE 3. Gender Composition of College Majors**



Note: This chart shows undergraduate majors among 2007–08 bachelor's degree recipients and excludes graduates older than age 35 at bachelor's degree completion.

Source: Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 Baccalaureate and Beyond Longitudinal Study data.

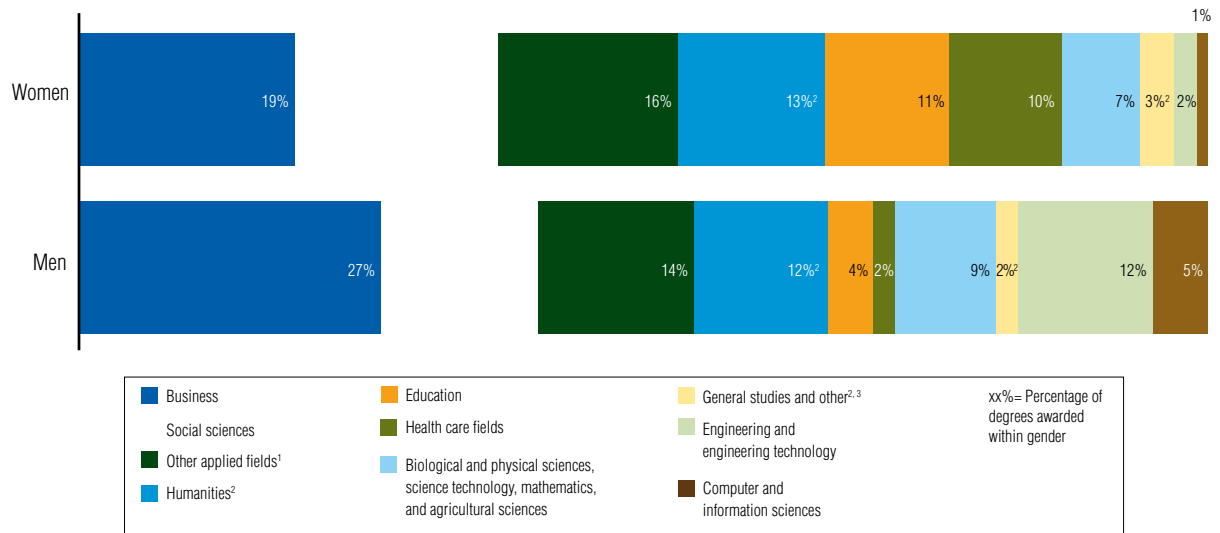
<sup>1</sup> Includes architecture, communications, public administration and human services, design and applied arts, law and legal studies, library sciences, and theology and religious vocations.

<sup>2</sup> Women and men each make up about half of graduates who majored in these fields. Percentages are not significantly different for men and women ( $p < 0.05$ , two-tailed t-test).

<sup>3</sup> Although these majors are gender balanced as a group, the representation of women varies substantially among the majors included in this category. Women are more likely than men to major in the biological sciences, and men are more likely to major in the physical sciences, agricultural sciences, and mathematics (National Science Foundation, 2011, table 5-1).



**FIGURE 4. College Major Choice, by Gender**



*Notes:* This chart shows undergraduate majors of 2007–08 bachelor's degree recipients and excludes graduates older than age 35 at bachelor's degree completion. Percentages may not add up to 100 because of rounding.

*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

<sup>1</sup> Includes architecture, communications, public administration and human services, design and applied arts, law and legal studies, library sciences, and theology and religious vocations.

<sup>2</sup> Percentages are not significantly different for men and women ( $p < 0.05$ , two-tailed  $t$ -test).

<sup>3</sup> Includes general studies, community and citizenship studies, liberal studies, humanistic studies, multi- and interdisciplinary studies, developmental and remedial education, and others.

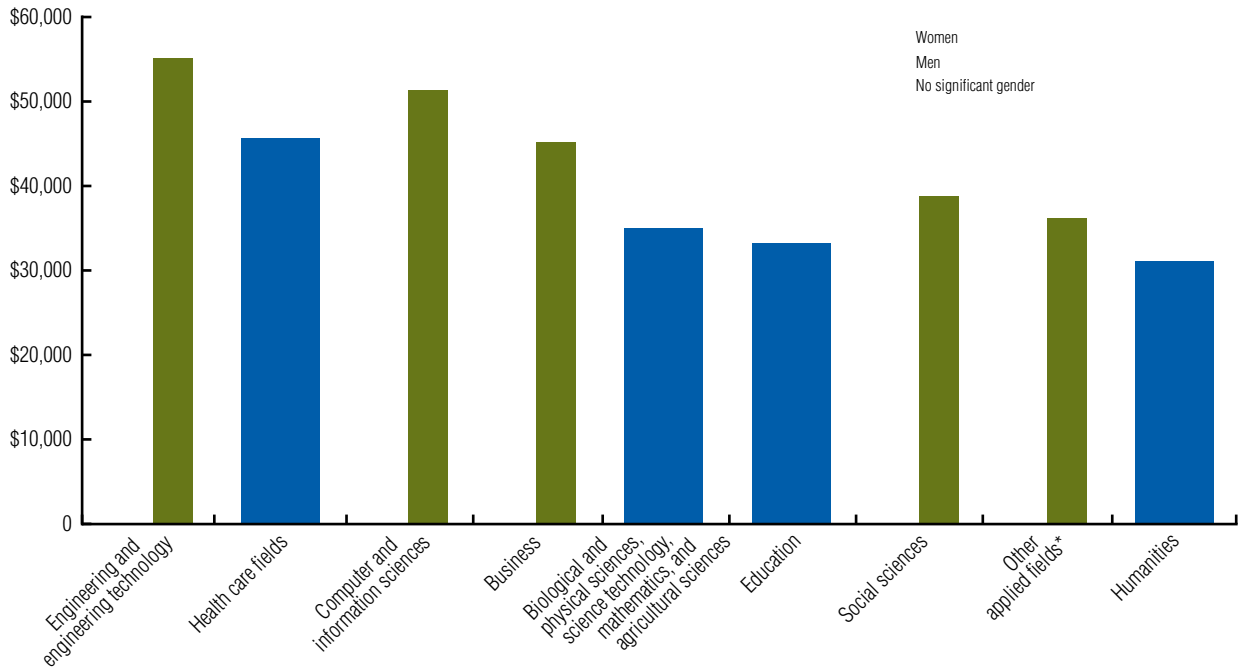
science and math, engineering, and computer and information sciences. Women have made great inroads into higher levels of education, but they have done so largely without desegregating the various fields of study.

Different college majors lead to different earnings. When we look at women's and men's earnings by undergraduate major, clear patterns emerge. Graduates who earned degrees in female-dominated majors tend to get jobs that pay less than the jobs held by graduates who earned degrees in male-dominated majors. For example, one year after graduation, the average full-time-employed female social science major earned just 66 percent of what the average full-time-employed female engineering or engineering technology major earned (\$31,924 compared with \$48,493). Men who majored in a social

science field, likewise, earned just 70 percent of what men who majored in engineering or engineering technology earned (\$38,634 compared with \$55,142; see figure 5).

Perhaps not surprisingly, many of the majors that offer higher earnings one year after college are the same majors that provide higher earnings throughout the course of a career. A recent analysis conducted by Georgetown University's Center on Education and the Workforce (Carnegie, Strohl, & Melton, 2011) determined median salaries for college graduates at all levels of their careers, combining salaries of workers from ages 25 to 64 to arrive at one median salary for a specific major. This analysis provides a sense of the comparative earnings of majors over the span of a lifetime career. Researchers found that individuals who majored in science,

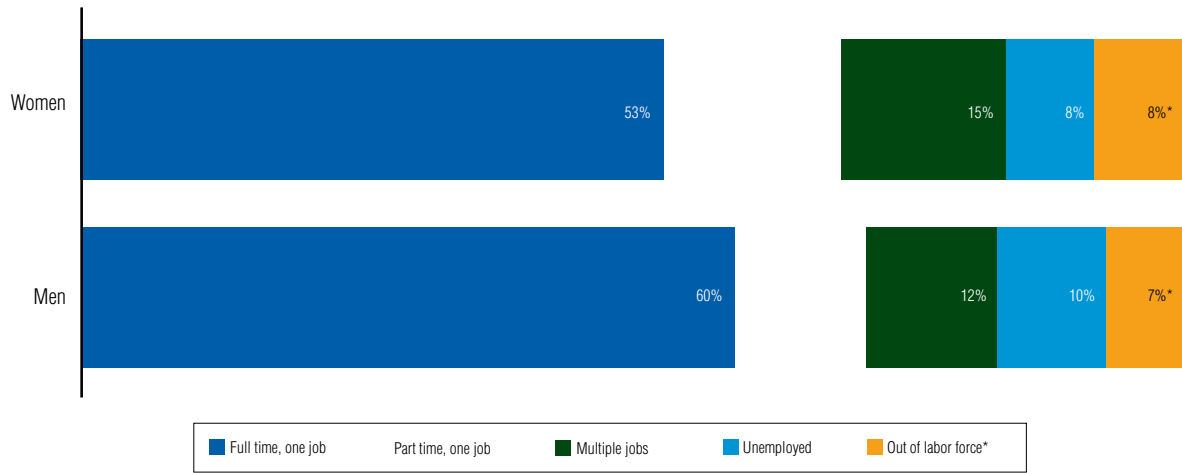
**FIGURE 5. Average Annual Earnings One Year after College Graduation, by Undergraduate Major and Gender**



*Notes:* This chart shows average earnings among 2007–08 bachelor's degree recipients employed full time in 2009 and excludes graduates older than age 35 at bachelor's degree completion. In majors with red and green columns shown, men earned significantly more than women earned. In majors with one blue column shown, there were no significant gender differences in earnings one year after graduation.  
*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, *2008–09 Baccalaureate and Beyond Longitudinal Study* data.

\*Includes architecture, communications, public administration and human services, design and applied arts, law and legal studies, library sciences, and theology and religious vocations.

**FIGURE 6. Employment Status One Year after College Graduation, by Gender**



*Notes:* Excludes graduates older than age 35 at bachelor's degree completion. Percentages may not add up to 100 for each gender because of rounding.  
*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.  
 \* Percentages are not significantly different for men and women ( $p < 0.05$ , two-tailed  $t$ -test).

typically earn less than the men with whom they graduated. Women earn higher grades in college, on average, than men do, so academic achievement does not help us understand the pay gap. The most influential education difference is that men and women tend to choose different college majors. Traditionally “male” majors tend to lead to jobs that pay more than jobs associated with traditionally “female” majors. Yet when we compare the earnings of men and women who chose the same major, women still often earn less than their male peers do one year out of college. Education does affect earnings, but gender differences in college major and other education factors do not fully explain the pay gap.

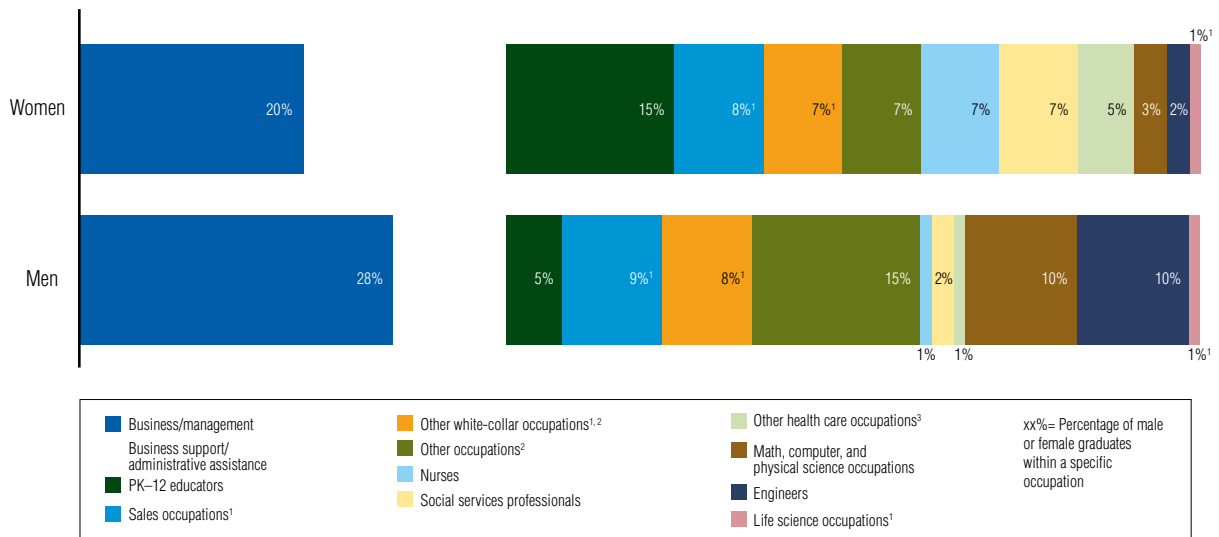
Despite the poor job market in 2009, the large majority (84 percent) of women and men who graduated in 2007–08 were employed one year

after graduation (see figure 6). Most graduates were working full time for one employer, and this situation was more common for men than for women (60 percent of men compared with 53 percent of women). Just as with education, gender differences in employment help explain part—but not all—of the pay gap. How do occupation, hours worked, and economic sector affect the earnings of full-time workers, and how do women’s earnings compare with men’s earnings when we control for each of these factors?

**Women and men tend to work in different occupations.**

One year after graduation, women and men tend to work in different types of jobs (see figure 7). Women are more likely than men to work in business support and administrative assistance occupations and as teachers, social services professionals, and nurses and other health care providers. Men are more likely than women to work in business and management occupations;

**FIGURE 7. Occupation One Year after College Graduation, by Gender**



Note: This chart shows occupations among 2007–08 bachelor's degree recipients employed full time in 2009 and excludes graduates older than age 35 at bachelor's degree completion.

Source: Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 Baccalaureate and Beyond Longitudinal Study data.

<sup>1</sup> Percentages are not significantly different for men and women ( $p < 0.05$ , two-tailed t-test).

<sup>2</sup> See footnotes in appendix, figure 13, for lists of occupations included in the "other white-collar occupations" and "other occupations" categories.

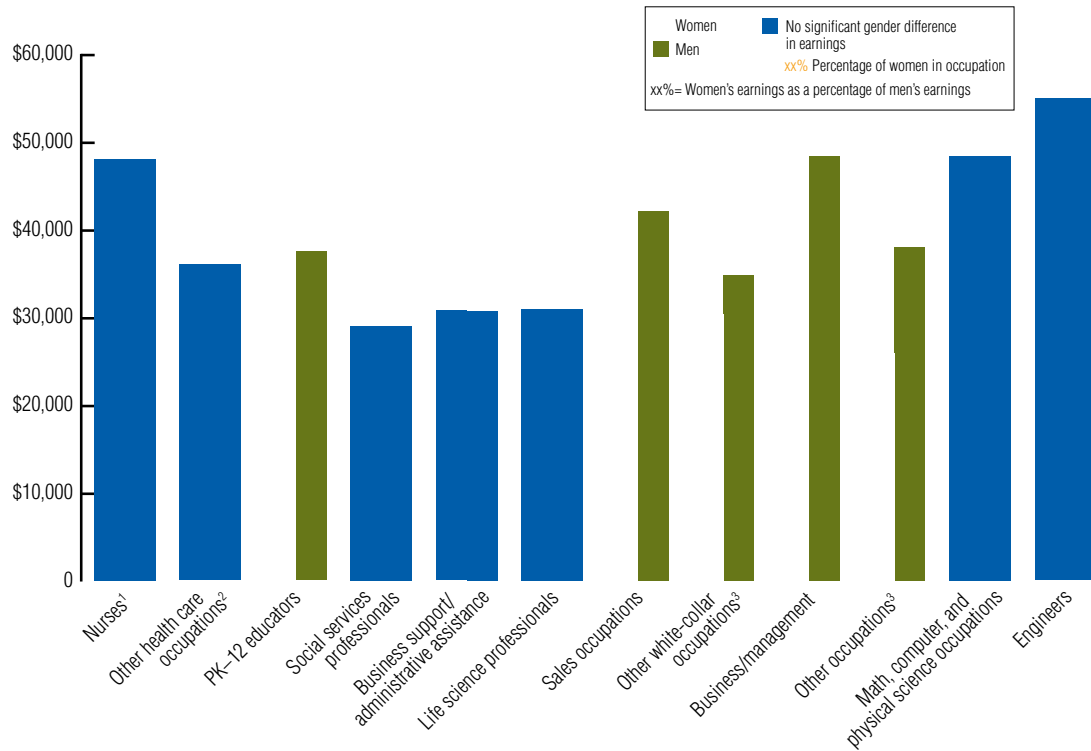
<sup>3</sup> Includes health care practitioners and technical occupations (except registered nurses, emergency medical technicians/paramedics, and licensed practical/vocational nurses), and health care support occupations.

math, computer, and physical science occupations; engineering; and "other," mainly blue-collar, occupations.

of women compared with 2 percent of men). Among engineering and engineering technol

Since men and women tend to major in different fields, it may not seem surprising that they often end up in different occupations. But occupational segregation is a stubborn and persistent phenomenon that occurs even among students who graduate with degrees in the same fields. Among social science graduates, for example, men were more likely to work in business or management occupations (26 percent of men compared with 11 percent of women), while women were more likely to work as social services professionals (16 percent of women but only 6 percent of men), in health care occupations (7 percent of women compared with 1 percent of men), and as PK-12 educators (7 percent

**FIGURE 8. Average Annual Earnings One Year after College Graduation, by Occupation and Gender**



of college. In some fields, the earnings of men and women were similar, but in no occupational category did women earn significantly more than men. Among business support workers and administrative assistants, for example, men

and women had similar earnings. Among teachers, however, women earned 89 percent of what men earned. Likewise, in business and management occupations, women earned 86 percent of what men did. The two occupational categories with the largest pay gaps were sales occupations, in which women earned just 77 percent of what their male peers earned, and “other occupations,” a category that includes mainly blue-collar jobs, such as food service, farming, and construction occupations, in which women earned just 68 percent of what men did.

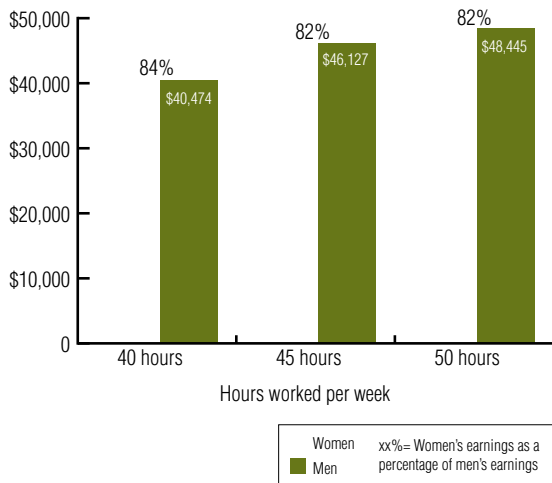
In a court case against the grocery chain Lucky Stores, both sides agreed that female store employees earned, on average, between 76 percent and 82 percent of what male employees earned due to sex segregation in jobs. The plaintiffs argued that the differences were the result of discrimination, while the employer argued that the differences resulted from women’s and men’s choices. The plaintiffs said that women were regularly placed in jobs that paid less than jobs given to male co-workers, even though there was no significant difference between their education and experience. Lucky Stores said it assigned women and men to different jobs because that’s what the employees preferred. For example, one manager testified that women were more interested in cash register work, and men were more interested in floor work.

Ultimately, the judge ruled that “sex discrimination was the standard operating procedure at Lucky with respect to placement, promotion, movement to full-time positions, and the allocation of additional hours” (*Stender v. Lucky Stores*, 803 F. Supp. 259, N.D. Cal. 1992). The case illustrates how discrimination can play a role in the explained portion of the pay gap when employers mistakenly assume that female employees prefer lower-paid positions traditionally held by women and—intentionally or not—place men and women into different jobs, ensuring higher pay for men and lower pay for women. Occupational segregation is likely affected by both individual choices and discrimination (Blau & Kahn, 2007).

#### Among full-time workers, men report working more hours than women do.

Although full-time work is typically considered to be 40 hours per week, full-time workers reported working considerably different numbers of hours. Some full-time workers reported working as few as 35 hours a week, and others reported that they worked more than 50 hours a week. One year out of college, women in full-time jobs reported working an average of 43 hours per week; men reported working an average of 45 hours per week. Half of full-time-employed men reported working more than 40 hours per week compared with one-third of full-time-employed women. Yet when we compare the earnings of men and women who reported working the same number of hours, men still earned more than women did (see figure 9). Among workers who reported working 40 hours per week, women earned 84 percent of what men earned. Similarly, among those who reported working 45 hours per week and those who reported working 50 hours per week, women earned just 82 percent of what men earned. Gender differences in hours worked explains part, but not all, of the gender pay gap.

**FIGURE 9. Average Annual Earnings One Year after College Graduation, by Hours Worked and Gender**



*Note:* This table shows average earnings among 2007–08 bachelor’s degree recipients employed full time in 2009 and excludes graduates older than age 35 at bachelor’s degree completion. *Source:* Authors’ analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

**Women and men work in different economic sectors.**

Women and men tend to work in somewhat different parts of the economy. In 2009, among full-time workers one year after college graduation, the majority of both men and women worked in the for-profit sector. Men were more likely than women (70 percent compared with 52 percent) to work in this sector. Women, on the other hand, were more likely than men to work in the nonprofit sector (19 percent compared with 7 percent). Compared with their male peers, women were also more likely to work for the government (18 percent compared with 13 percent), and less likely to be in the military (1 percent compared with 3 percent).

Earnings varied by sector, as did pay gaps. Earnings were highest overall in the military and for-profit sectors. Earnings were highest for women in the military, where only 1 percent of women worked. Men’s earnings were high in the military as well. As a result, there was no pay gap in the military (average earnings were \$44,325). Men earned significantly more than women earned in the for-profit and government sectors, where more than three-quarters of recent college graduates who were working full time were employed. Among full-time workers in the for-profit sector, women earned just 80 percent of what their male counterparts earned (\$35,841 compared with \$44,638); among government workers, women earned 86 percent of what their male colleagues earned (\$34,848 compared with \$40,613).<sup>4</sup> In the nonprofit sector, as in the military, there was no significant pay gap between men and women one year after graduation (average earnings were \$35,015).

Gender differences in occupation, hours worked, and employment sector help explain a portion of the pay gap. One year after graduation, women typically were working in lower-paying “women’s jobs,” and men were typically working in higher-paying “men’s jobs.” Men reported working longer hours than women did and were more likely to work in the higher-paying for-profit and military sectors. Yet when we control for each of these factors, we find that men still tended to earn more than their female peers earned. In many occupational categories, women earned less than their male peers did one year after college graduation. When men and women worked the same number of hours, men earned more than women did. When men and women worked in the same economic sector, men typically

<sup>4</sup> These findings are consistent with other research showing that the pay gap between men and women is wider in the private sector than in the public sector (Miller, 2009; U.S. Government Accountability Office, 2009).

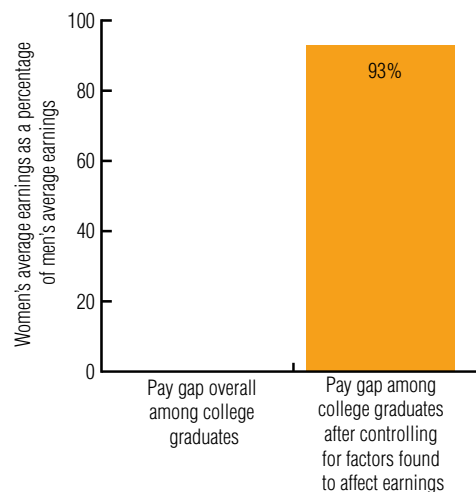
earned more than women earned. Employment affects earnings, but gender differences in occupation, hours worked, and other employment factors do not fully explain the pay gap.

A number of demographic factors and personal characteristics are relevant to earnings but do little to help explain the pay gap between men and women. These include race and ethnicity, geographical location, age, and marital status.

Differences in parenting responsibilities between mothers and fathers are often cited as a major factor behind the pay gap. Indeed, becoming a mother can negatively affect women's earnings, while becoming a father does not typically have the same effect (Correll et al., 2007). Women are more likely than men to leave the workforce or reduce their work hours after they have children, thus reducing their earnings (AAUW Educational Foundation, 2007). Research has found that even among full-time workers, mothers face an earnings penalty in the workforce compared with women without children (Correll et al., 2007).

In this analysis, we examined the pay gap between men and women at a time in life before most respondents had children. Among those who did have children, though, both men and women earned more than their counterparts without children. Mothers tended to be older than other female graduates, which may account in part for their relatively higher levels of pay. Not surprisingly, among full-time workers just one year after college graduation, the pay gap cannot be explained by motherhood.

**FIGURE 10. The Pay Gap One Year after College Graduation, with and without Explanatory Variables**



*Notes:* The chart shows the pay gap among 2007–08 bachelor's degree recipients in 2009. The column on the left shows the pay gap among all bachelor's degree recipients working full-time one year after college graduation. The column on the right shows the pay gap among bachelor's degree recipients working full time or in multiple jobs after controlling for factors found to affect earnings. Factors controlled for include occupation, economic sector, hours worked per week, multiple jobs, months unemployed since graduation, undergraduate GPA, undergraduate major, undergraduate institution sector, institution selectivity, age, region of residence, and marital status. This analysis excludes graduates older than age 35 at bachelor's degree completion. *Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 Baccalaureate and Beyond Longitudinal Study data.

Although education and employment factors explain a substantial part of the pay gap, they do not explain it in its entirety. Regression analysis allows us to analyze the effect of multiple factors on earnings at the same time. One might expect that when you compare men and women with the same major, who attended the same type of institution and worked the same hours in the same job in the same economic sector, the pay gap would disappear. But this is not what our analysis shows. Our regression analysis finds that just over one-third of the pay gap cannot be explained by any of these factors and appears



to be attributable to gender alone. That is, after we controlled for all the factors included in our analysis that we found to affect earnings, college-educated women working full time earned an unexplained 7 percent less than their male peers did one year out of college (see figure 10; see also figure 13 in the appendix).

Women and men who earned bachelor's degrees in 2007–08 attended similar kinds of colleges. On average, women earned slightly higher grades.

Most women and men entered full-time employment after graduation. Yet one year later, women working full time earned only 82 percent of what their male colleagues earned. Gender segregation in undergraduate majors and the subsequent segregation of the workforce partly explain the pay gap, but a pay gap also exists within fields of study and occupations. Indeed, after accounting for factors known to affect wages, about one-third of the gap remains unexplained. In 2009, among full-time workers one year after college graduation, women earned an unexplained 7 percent less than men did.





For many female college graduates, an immediate outcome of the pay gap is high student loan debt burden. “Student loan debt burden” is defined as the percentage of earnings devoted to student loan payments.<sup>5</sup> A high student loan debt burden is an indicator that repayment may create hardship. Graduates with a high student loan debt burden are less likely to buy a home, get a car loan, or even make rent payments (Choy & Li, 2005). Most research indicates that a college degree pays for itself over time. But as college costs rise and more students borrow more money to finance their education, a surprisingly large and growing percentage of students—especially women—are graduating with high levels of student loan debt burden.

Student loan debt affects both men and women, but it is especially onerous for many women.

Among 2007–08 college graduates, women and men typically borrowed similar amounts of money to finance their educations—about \$20,000.<sup>6</sup> The median monthly student loan payment for both men and women one year after graduation was just over \$200. Repaying student loans is likely to present a hardship for more women than men for two reasons. First and foremost, women earn less than men earn one year after graduation. Because women earn less, student loan repayments make up a larger portion of their earnings. Second, more women have student loan debt, in part because they are more likely to go to college than men are. In 2007–08, women earned 57 percent of the bachelor’s degrees awarded. Women are also more likely than men to borrow money for school: Among 2007–08 college graduates, 68 percent of women borrowed money for college compared with

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<sup>5</sup>The shorter term “debt burden” has also been used to describe student loan payment as a percentage of earnings (see American Council on Education, 2004). Here, we use “student loan debt burden” to emphasize that the debt burden to which we refer is only the debt burden related to loans from public and private sources (excluding family and friends) to pay for undergraduate education. Many recent graduates carry other types of debt. Student loan debt is only a part of the debt picture for many graduates.

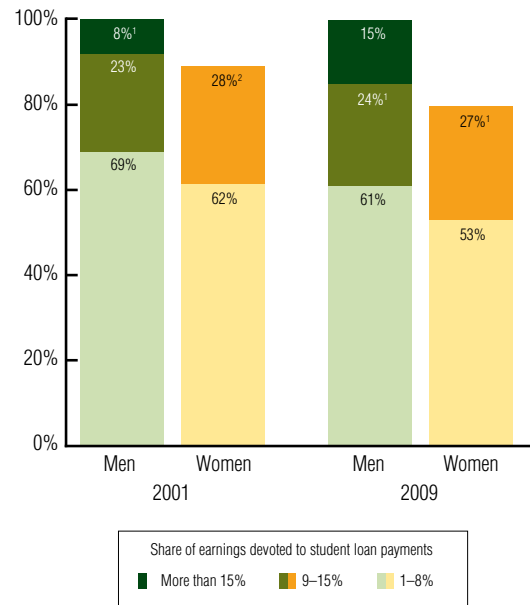
<sup>6</sup>We present the median amount borrowed because it indicates the amount a typical student borrows. Half of borrowers borrowed more than \$20,000, and half borrowed less. The mean, or average, amount borrowed is also a useful measure. The mean is influenced by those who borrow very high amounts; therefore, it may give an inflated sense of the amount students typically borrow. In terms of averages, college students borrowed around \$24,000 to pay for college, and women borrowed slightly more than men did.

63 percent of men. Because of these factors, high student loan debt burden is a particularly widespread problem among women.

Higher percentages of recent college graduates—especially women—were paying a sizeable portion of their earnings toward student loan debt in 2009 than in 2001. Among full-time workers who were repaying their loans in 2009, nearly half (47 percent) of women one year after college graduation were paying more than 8 percent of their earnings toward student loan debt, compared with 38 percent in 2001. Among men, 39 percent were devoting more than 8 percent of their earnings toward student loan debt in 2009, compared with 31 percent in 2001. Among those with very high student loan debt burden, we again see a gender difference. In 2009, one year out of college, 20 percent of women working full time and repaying their loans were paying more than 15 percent of their earnings toward student loan debt, compared with 15 percent of men (see figure 11).

How much student loan debt is too much? For many years, analyses of student debt considered a student loan debt burden of 8 percent or less (i.e., paying 8 percent or less of one's earnings toward student loan debt) manageable and anything more than 8 percent unmanageable (Greiner, 1996; Scherschel, 1998; American Council on Education, 2004). More recent analysis suggests that there is no single percentage beyond which student loan debt is unmanageable, as borrowers with higher earnings can afford to devote a higher proportion of their earnings to debt repayment without sacrificing basic expenditures (Baum & Schwartz, 2006).

**FIGURE 11. Student Loan Debt Burden One Year after College Graduation, by Year and Gender**



*Notes:* Student loan debt burden is the percentage of earnings devoted to student loan payments. This chart shows student loan debt burden among 1999–2000 and 2007–08 bachelor's degree recipients who were making non-zero payments on their student loans and were employed full time one year after graduation. This analysis excludes graduates older than age 35 at bachelor's degree completion. Percentages may not add up to 100 because of rounding.

*Source:* Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2000–01 and 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

<sup>1</sup> Percentages are not significantly different for men and women ( $p < 0.05$ , two-tailed  $t$ -test).

<sup>2</sup> Before rounding, these numbers add up to 38 percent.

For a typical recent graduate, however, the 8 percent guideline provides a fairly close estimate of manageable student loan debt burden. We estimate that a typical woman working full time one year after college graduation in 2009 could reasonably afford to devote 7.8 percent of her \$33,753 annual earnings to student loan payments. We estimate that her typical male counterpart, who made \$39,985 a year, could reasonably afford to devote 8.9 percent of his earnings to student loan payments. In 2001, the comparable numbers were 9.5 percent for men

When estimating manageable student loan debt burden (MSLDB), we based our calculation on the formula the U.S. federal government uses to determine eligibility for federal student loan payment reductions through the Income Based Repayment (IBR) program (U.S. Department of Education, Federal Student Aid, 2012). IBR currently sets the threshold for eligibility at 15 percent of discretionary income, where discretionary income is income minus 150 percent of the federal poverty level. IBR's threshold for eligibility is soon scheduled to drop to 10 percent of discretionary income. IBR considers only federal student loans when determining eligibility for loan payment reductions; we considered not only federal student loans but also student loans from private sources, states, and colleges and universities. Among 2007–08 graduates, federal loans made up about 70 percent of the total student loan amount borrowed by a typical borrower. Because we consider nonfederal as well as federal loans, we approximate MSLDB using 15 percent of discretionary income rather than the 10 percent of discretionary income to which IBR's threshold is soon scheduled to drop.

MSLDB = Maximum Reasonable Annual Student Loan Payment (MRASLP)/Annual Earnings, where MRASLP = 15% [Annual Earnings – 150% (poverty level)].

We used median earnings to provide an estimate of manageable student loan debt burden for a “typical” man and a “typical” woman one year after college graduation.

In 2009, for individuals working full time with a family size of one and who lived in the 48 contiguous United States or Washington, D.C., one year after college graduation,

MSLDB for a typical man =  
 $15\% [\$39,985 - 150\%(\$10,830)]/\$39,985 = 8.9\%$   
MSLDB for a typical woman =  
 $15\% [\$33,753 - 150\%(\$10,830)]/\$33,753 = 7.8\%$

In 2001, for individuals working full time with a family size of one and who lived in the 48 contiguous United States or Washington, D.C., one year after college graduation,

MSLDB for a typical man =  
 $15\% [\$35,000 - 150\%(\$8,590)]/\$35,000 = 9.5\%$   
MSLDB for a typical woman =  
 $15\% [\$29,900 - 150\%(\$8,590)]/\$29,900 = 8.5\%$ .

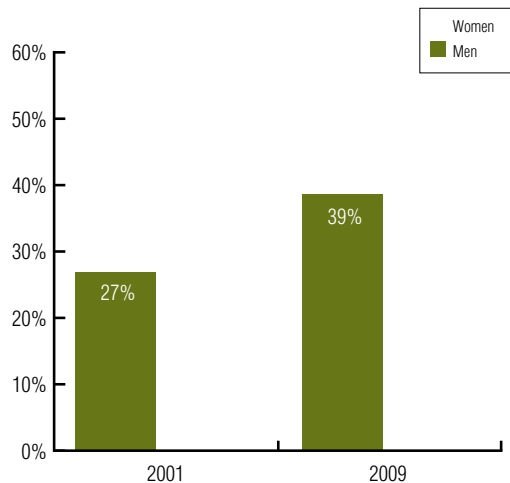
For poverty guidelines by year and household size, see U.S. Department of Health and Human Services (2012).

and 8.5 percent for women. (See the sidebar for a description of the method we used to estimate manageable student loan debt burden.)

This analysis takes a conservative approach in estimating debt burden among recent student loan borrowers. For one thing, we look only at student loan debt. Many recent college gradu-

ates also have other forms of debt, such as credit card debt and car loans. Second, we include only payments on student loans obtained from the federal government, states, colleges, universities, banks, and other private lenders. In addition to these student loans, some recent graduates have borrowed money for college from family and friends, and these loans are not included. Many

**FIGURE 12. Share of Women and Men with High Student Loan Debt Burden One Year after College Graduation, by Year**



*Notes:* Student loan debt burden is the percentage of earnings devoted to student loan payments. This chart shows the share of 1999–2000 and 2007–08 bachelor’s degree recipients working full time and making non-zero payments on their student loans one year after graduation who were paying a higher proportion of their earnings toward student loan debts than a typical individual could reasonably afford. We estimate that, in 2009, a typical man could reasonably afford to devote 8.9 percent of his earnings to student loan payments, and a typical woman could reasonably afford to devote 7.8 percent of her earnings to student loan payments. In 2001, those percentages are estimated at 9.5 percent and 8.5 percent for men and women, respectively. This analysis excludes graduates older than age 35 at bachelor’s degree completion.

*Source:* Authors’ analysis of U.S. Department of Education, National Center for Education Statistics, 2000–01 and 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

parents have also borrowed money to finance their children’s education. Our analysis does not include payments on any of these other debts. Finally, this analysis includes only students who completed their bachelor’s degrees and were working full time one year after graduation. Student loan debt often causes even greater difficulty for those who dropped out of college

before finishing their degrees (Nguyen, 2012) or who graduated but were either unemployed or working part time one year after graduation.

Among full-time workers repaying their loans one year after college graduation in 2009, just over half of women (53 percent) and 39 percent of men were paying a greater percentage of their earnings toward student loan debt than what we estimate a typical woman or man could reasonably afford to pay. By comparison, in 2001, 38 percent of women and just over one in four men (27 percent) in the same group were paying a greater percentage of their earnings toward student loan debt than was affordable for a typical woman or man (see figure 12).<sup>7</sup>

An increasingly large proportion of men and women are experiencing high student loan debt burden one year after college graduation. This analysis understates the full magnitude of the overall debt problem among recent college graduates because it considers only student loan debt among those working full time one year after college graduation. Assessing the full magnitude of the debt problem among recent college graduates is a subject for another study. Here, we show that even when we look only at student loan debt facing recent college graduates fortunate enough to be working full time, we have a significant and growing problem. Women are especially likely to have high student loan debt burden, largely because of the pay gap.

<sup>7</sup>Not all recent graduates paying a high percentage of their earnings toward student loan debt were necessarily experiencing economic hardship. Some of those with a high student loan debt burden may have been earning more money than is typical and, therefore, could more easily devote a higher percentage of their earnings toward student loan debt. Likewise, some of those with a high student loan debt burden may have had other resources to lessen the actual burden of the debt. Still, the gender difference in percentages of men and women who were paying more than was typically affordable is noteworthy. Similarly, figures 11 and 12 both illustrate that student loan payments constitute a sizeable portion of more college graduates’ budgets in 2009 than in 2001.

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Remedies for the pay gap have been put forward, but implementation remains slow and not always steady. What can employers, public policy makers, and individuals do to narrow the pay gap?

Employers have a great deal of discretion in pay

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public the salary and wage range for each level of federal worker and additional locality pay for areas where the cost of living is higher. This information is easily accessible on the Internet ([www.opm.gov/oca/12tables/indexGS.asp](http://www.opm.gov/oca/12tables/indexGS.asp)).

Increased transparency about pay can also increase job satisfaction among employees. Transparency does not mean that everyone must know everyone else's salary. Rather, simply by making salary ranges for specific job titles available to all employees, employers provide workers with information that puts wages in context and helps them assess the fairness of their earnings. Employers may be hesitant to provide salary ranges for fear that many employees will ask for more money. Transparency in pay scales increases a sense of fairness among workers, however, and evidence indicates that employees' performance and morale are better when they believe their employer is fair (Kim, 2009; Cohen-Charash & Spector, 2001; Colquitt et al., 2001).

### Conduct a pay equity study.

In addition to increasing transparency in pay systems, employers can create fair workplaces by assessing the pay gap within their organizations and taking steps to address any gender pay differences they find. The state of Minnesota provides a good example. Public-sector employers in Minnesota are required to conduct a pay equity study every few years and eliminate pay disparities between female-dominated and male-dominated jobs that require comparable levels of expertise. Employers use a job evaluation tool to compare the complexity of issues encountered, the depth and breadth of knowledge needed, the nature of interpersonal contacts required, and the physical working conditions. This allows employers to identify jobs—for example, deliv-

ery van drivers and clerk typists—that, despite being different, require similar levels of knowledge and responsibility. An analysis then compares wages for predominantly female jobs with those of predominantly male jobs of comparable skill levels. If the results show that women are consistently paid less than men are paid for jobs requiring similar levels of knowledge and responsibility, the employer makes the necessary salary adjustments (Minnesota Management and Budget, 2012).

The government has a role to play in both eliminating the pay gap and alleviating the burden of student loan debt. As we describe in chapter 3, women are more likely to experience high student loan debt burden, largely because of the pay gap. What can the government do to help reduce student loan debt burden and narrow the pay gap?

### Address the burden of student loan debt.

**Protect Pell grants.** One way to help slow the growing burden of higher education debt is to protect and fund the federal Pell Grant Program, which provides financial assistance to students with demonstrated need. Since Pell grants are, as the name implies, grants and not loans, they do not add to student loan debt and help reduce the need to borrow. Despite relatively recent increases in the maximum grant, its current purchasing power is the lowest in the grant's history: less than one-third of what it costs to attend a public four-year college or university as an in-state student. AAUW supports increasing grant levels and ensuring that eligibility for Pell grants is not eroded.



**Ensure that borrowers are well informed.** For students who must borrow to finance their education, Congress can take action to ensure that they are well informed about their borrowing options. It is critical that students exhaust their federal grant and loan options before taking on risky private student loans. Private student loans typically have uncapped variable rates that are highest for those with the weakest credit histories. Even fixed-rate private loans usually set higher rates for those who can least afford them. Private loans also lack the consumer protections and flexible repayment options that come with federal student loans. Borrowers may only realize the unfavorable terms that accompany private loans when they enter repayment or hit hard times.

Although the annual volume of new private loans has declined substantially from the 2007–08 peak, students are still taking out billions of dollars in new private loans every year. At some colleges, private loans—despite being one of the riskiest ways to pay for college—account for a majority of their graduates’ debt (Project on Student Debt, 2011b). About half of students who took out private student loans in 2007–08 could have borrowed more in federal student loans than they actually did (Project on Student Debt, 2011a). A bill before Congress, the Know Before You Owe Act, would require students to be counseled on federal aid eligibility as well as the different terms and conditions of federal and private student loans before the lender issues a private loan. This type of disclosure is important for helping students make the most informed decisions when they must borrow.

**Increase awareness of student loan relief programs.** The U.S. Department of Education’s Income-Based Repayment (IBR) program is an

important, underused tool that provides relief for college graduates with high student loan debt burden. IBR caps federal student loan payments at a manageable level—as low as \$0—based on an individual’s income and family size. It also provides a light at the end of the tunnel for those who are seriously overburdened by student loan debt by forgiving any remaining debt after 25 years of payments (or as few as 10 years if an individual works for a public or nonprofit employer). AAUW encourages the Department of Education to increase awareness of IBR and make the application process as user-friendly as possible. Because women are more likely to experience high student loan debt burden, IBR can be especially useful to them.

**Treat private student loans like other private loans.** While IBR and related programs can help keep federal student loan payments manageable for many borrowers, some still find themselves overwhelmed by their debt. Student loan debt is not discharged in bankruptcy like many other types of debt. Since 2005, private student loans have been treated just as harshly in bankruptcy as federal student loans, even though private loans are not a form of student aid. AAUW supports passage of the Private Student Loan Bankruptcy Fairness Act, which would remedy part of the problem by allowing private student loans to be discharged in bankruptcy like similar types of unsecured consumer debt, such as credit cards and payday loans, helping borrowers in severe financial distress.

Until such proposals to strengthen protections for private student loan borrowers become law, students and graduates have a new resource in the Consumer Financial Protection Bureau’s student loan ombudsman, who can help borrowers navigate their student loan repayment

options and file complaints. AAUW encourages the Consumer Financial Protection Bureau to use its full authority to protect consumers from abuses by private student lenders, servicers, and collection agencies.

### Eliminate the pay gap.

Federal and state laws can help ensure fair pay for all employees. The Equal Pay Act of 1963 prohibits employers from discriminating on the basis of sex by compensating workers differently for jobs that require equal skill, effort, and responsibility. The federal Equal Employment Opportunity Commission (EEOC) enforces both the Equal Pay Act and Title VII of the Civil Rights Act of 1964, which prohibits discrimination in employment on the basis of race, religion, national origin, and sex. Thousands of charges have been brought against employers with these laws, resulting in millions of dollars in awards and settlements.

The Lilly Ledbetter Fair Pay Act, passed in 2009, clarifies that the 180-day statute of limitations for filing an equal pay lawsuit for pay discrimination resets with each new discriminatory paycheck. This measure is a narrow fix that returned legal practices and EEOC policies to what they were before the U.S. Supreme Court issued its problematic 2007 decision in *Ledbetter v. Goodyear Tire & Rubber*—nothing more, nothing less.

Legislative measures that have been pending in Congress for several years could improve both enforcement of pay equity laws and public awareness of the pay gap itself. Key among these measures is the Paycheck Fairness Act (S. 797/H.R. 1519), a comprehensive bill and a much-needed update to the Equal Pay Act of

1963. It would create incentives for employers to follow the law, empower women to negotiate for equal pay, and strengthen federal outreach and enforcement efforts. Passed by the House in January 2009 with a bipartisan majority, the Paycheck Fairness Act was narrowly defeated on a procedural vote in the Senate in November 2010. The bill was reintroduced in the 112th Congress and unfortunately failed in procedural votes in summer 2012, this time in both the Senate and the House. AAUW remains vigilant in urging Congress to support this legislation.

Equal pay laws provide protection against discriminatory practices by employers, but litigation is an action of last resort and can be prohibitively expensive. In 2011, the Supreme Court refused to allow a class-action suit against Wal-Mart, the nation's largest private employer, to proceed, saying that the size of the group of female employees alleging pay discrimination was too large (*Wal-Mart v. Dukes*). This decision makes it much more difficult for women to band together to challenge companywide pay discrimination. Without the option to participate in class-action lawsuits, many deserving plaintiffs find it financially infeasible to pursue a pay discrimination lawsuit. As discussed above, employers can and should take steps to address the pay gap within their organizations to prevent the need for sex discrimination lawsuits in the first place.

A problem as long-standing and widespread as the pay gap cannot be solved by the actions of individual women alone. Women cannot choose to avoid the pay gap, but they can make choices that enhance their earning potential.

### Choose your college major carefully.

An individual's college major has lifelong financial implications. Our analysis finds that engineering, health care fields, and computer and information sciences are some of the best-paying majors for women one year after graduation.

Other analysis has shown that these are some of the best-paying majors throughout a lifetime as well (Carnevale, Strohl, & Melton, 2011).

Women are already well represented in health care fields, but not all health care fields pay the same. Choosing a higher-paying health care major like pharmaceutical sciences or nursing will make achieving economic security easier for women. Similarly, choosing a major in one of the typically "male" fields of engineering or computer science tends to lead to higher earnings.

Of course, future salary is not the only factor to consider when choosing a major. Research shows that young women tend to choose fields where they see themselves as helping others, while young men tend to be driven more by financial considerations and personal interests (Eccles, 2011; Shauman, 2006). Fortunately, the highest-paying majors for women—engineering, health care fields, and computer and information sciences—also lay the groundwork for careers that have great potential to help people. Women (and men) who are motivated to help others need not sacrifice their own economic security in pursuit of that worthy goal. It is possible to simultaneously do work that benefits society and earn a good salary. Considering the financial return on a college major along with other factors will benefit women and help reduce the gender pay gap.

### Research your intended occupation.

It is equally important for young women to prioritize earnings when they choose a first job.

An individual's first salary provides the foundation on which future raises are based and earnings expectations are formed. Our analysis shows that occupations like nursing; engineering; and math, computer, and physical science occupa-



negotiations. Women are still expected to be “nice,” and women who negotiate for a higher salary can be perceived negatively (Bowles et al., 2007). Start Smart salary negotiation workshops, a collaboration between AAUW and the WAGE Project, provide college women with the knowledge and skills they need to negotiate salaries and benefits so that they receive fair compensation when they enter the job market.

### Seek out union jobs.

Union membership is associated with higher earnings for women and a smaller pay gap between men and women. In 2011, women union members who were working full time had weekly median earnings of \$879 compared with \$653 among their peers who were not represented by unions (U.S. Department of Labor, 2012). In other words, the average woman working full time who is represented by a union earns more than 30 percent more than the average woman working full time who is not represented by a union. Women union members working full time earned 90 percent of what their male counterparts earned. In comparison, among full-time workers who were not represented by unions, women earned just 82 percent of what men earned (authors’ analysis of U.S. Department of Labor, 2012).

Although overall union membership is declining, college-educated workers make up a higher proportion of union members today than in decades past. In 2008, nearly four out of 10 union members were college graduates compared with just two out of 10 in 1983 (Schmitt & Warner, 2009). And although men are still more likely to be union members than women are, women represent an increasing proportion of union members, approaching 50 percent (U.S. Department of Labor, 2012). In 2011, workers in education,

training, and library occupations had the highest unionization rate at 37 percent. Teaching is one of the most popular occupations for college-educated women in which unions are strong.

Union membership varies dramatically by geographical area, with states on the east and west coasts much more likely to have high rates of union membership than states in the south. Union membership varies considerably by economic sector as well: In 2011, public-sector workers had a union membership rate more than five times higher than that of private-sector workers (37 percent compared with 7 percent; U.S. Department of Labor, 2012). Seeking out union jobs can help women achieve economic security.

Help eliminate the pay gap and address the burden of student loan debt. Here are some steps employers, public policy makers, and individuals can take.

### Employers

- Increase transparency in pay systems.
- Create clear structures for evaluation.
- Conduct internal pay equity studies and take steps to address any gender disparities.
- Learn about implicit biases at [www.implicit.harvard.edu](http://www.implicit.harvard.edu).

### Public policy makers

- Strengthen pay equity laws, and pass the Pay-check Fairness Act (S. 797/H.R. 1519).
- Protect Pell grants.
- Ensure that student loan borrowers are well informed about their borrowing options and the terms under which they are borrowing.

- Pass legislation that allows private student loans to be discharged in the event of bankruptcy.
- Increase awareness of the Income-Based Repayment program for individuals overburdened by student loan debt, and make the application process user-friendly.
- Protect student loan borrowers from abuses by private student lenders, servicers, and collection agencies.

### High school and college students

- Educate yourself about typical salaries for various college majors. Consider future earnings when making the critical decision of college major. Your choice will affect the economic security of you and your family throughout your lifetime.
- If you must borrow money for college, educate yourself about the terms associated with public and private student loans. Exhaust your federal borrowing options before considering more risky private student loans.
- Attend a \$tart \$mart salary negotiation workshop at a campus near you.

### Recent college graduates

- Consider future earnings when deciding which job to pursue. Like college major, occupation has a significant effect on earnings. Your paycheck affects many parts of your life, from quality of life to your health to your retirement savings. Choose your occupation carefully.
- Know what your skills are worth in the labor market. Be skeptical of salary offers and pay raises, and negotiate if you believe your contributions are worth more.

- Consider pursuing a job where you are represented by a union.

### Parents and teachers

- Help your children and students understand the financial implications of various fields of study and work so they can make well-informed decisions.

### AAUW members and other activists

- Join the AAUW Action Network. Subscribe to receive e-mail notices to contact your members of Congress when pay equity issues are being considered on Capitol Hill, find detailed information on legislation currently under consideration, and write letters to the editor of your local paper.
- Get involved with AAUW's \$tart \$mart salary negotiation workshops, conducted in partnership with the WAGE Project. Recruit a campus to hold a \$tart \$mart salary negotiation workshop, become a \$tart \$mart facilitator, encourage your branch or community to sponsor a \$tart \$mart facilitator training, or become a \$tart \$mart leader in your state.
- Use AAUW pay equity Programs in a Box to educate your community about equal pay issues and how to advocate for pay equity.

The gender pay gap among college graduates starts immediately after graduation. Although men are less likely to attend college than women are, men who do invest in a college education have higher earnings than the women with whom they graduate beginning in the first year out of college. Among full-time workers just one year after college graduation in 2009, women

earned 82 percent of what men earned. This pay gap is not merely the result of women's choices. Among recent graduates who made the same education and career choices, women still earned just 93 percent of what men earned, leaving a 7 percent unexplained pay gap. We know from previous research (AAUW Educational Foundation, 2007) that the pay gap only grows larger as women spend more years in the workforce.

The pay gap has implications from the moment college graduates throw their caps in the air. More than half of women working full time and repaying their college loans one year after college graduation are paying a higher percentage of

their earnings to student loan debt than a typical woman can reasonably afford. Lower earnings have an immediate effect after college, setting into motion a chain of disparities that will follow women throughout their careers. Women experience the consequences of the pay gap from their very first paycheck to their very last Social Security check. Nearly 50 years after the passage of the Equal Pay Act of 1963, it is surprising that women continue to earn less than men do, even when they make the same choices. Making equal pay for men and women a reality will require action on the part of employers, public policy makers, and individuals.



This report is based on the 2008–09 Baccalaureate and Beyond Longitudinal Study, by the National Center for Education Statistics at the U.S. Department of Education (U.S. Department of Education, National Center for Education Statistics, 2012). This study provides nationally representative information on the lives of students who received a bachelor’s degree between July 1, 2007, and June 30, 2008, one year after college graduation.

Participants in the 2008–09 Baccalaureate and Beyond Longitudinal Study were chosen from lists of enrolled students provided by institutions participating in the 2007–08 National Postsecondary Student Aid Study. The sample of approximately 15,000 graduates who responded to the 2009 survey represents the 1.6 million students who completed the requirements for a baccalaureate degree between July 1, 2007, and June 30, 2008, in Title IV-eligible institutions in the United States and Puerto Rico. The weighted student response rate was 78 percent.

To reduce within-sample variation in age and work experience—both factors that affect labor market outcomes—the sample in each year was restricted to those who were age 35 or younger at the time of bachelor’s degree completion. To avoid the confounding influence of prior bachelor’s degrees, the sample in each year was restricted to those for whom the bachelor’s degree that qualified them for participation was their first bachelor’s degree. Prior certificates, licenses, associate degrees, or postsecondary enrollment without program completion were permitted.

Data collection included conducting a web- or telephone-based student interview as well as obtaining administrative data from the U.S. Department of Education’s financial aid records, information on postsecondary institutions in the United States from NCES’s Integrated Postsecondary Education Data System, SAT and ACT scores from students who were under 30 years old, enrollment data from the National Student Clearinghouse, and student transcripts from degree-granting institutions.



After data collection, the Baccalaureate and Beyond data were edited, imputed, and weighted. Logical edits were imposed to correct inconsistencies in responses. When participants did not provide responses or provided incorrect data to individual items, hot-deck imputation methods were used, in which data from similar cases within the sample were applied to fill in missing values. Analysis weights were computed to correct for oversampling and undersampling of specific populations (e.g., oversampling of graduates majoring in STEM fields). These weights allow analysts to generate estimates that represent the national population, not just the sample of graduates who responded to the survey. In addition, because the Baccalaureate and Beyond sample is clustered—that is, students were sampled only from sampled institutions—replicate weights were computed to allow variance estimates that take the nonrandom sample design into account to be computed. Cataldi et al. (2011) provide further information on the methods used in gathering data for the 2008–09 Baccalaureate and Beyond Longitudinal Study.

### Descriptive statistics

The bivariate analysis presented in this report allows us to understand the association between an individual variable and earnings. It also indicates whether earnings for men and women are significantly different after controlling for one variable.

### Regression analysis

Regression analysis allows us to assess the combined effect of all the factors at the same time as well as estimate the effect of gender on wages net of other factors.

In estimating the regression equation, we defined the dependent variable as the natural log of average annual earnings. The resulting regression coefficients can be interpreted as the percentage change in annual earnings for a one-unit change in the independent variable. For the regression, we specified an equation in which log annual earnings one year after graduation are a function of the employee's characteristics, including job and workplace, employment experience and continuity, education and training, and demographic and personal characteristics. We selected model variables from those examined in the bivariate analyses on the basis of preliminary tests of multicollinearity. We entered multicategorical variables in their entirety even if some categories were not significant. We analyzed earnings for all full-time workers and those with multiple jobs. Variables that were not significant were not included in the final model (see figure 13 for a list of the variables used in the regression equation).

We combined earnings for women and men and used an independent variable of gender to see whether women's and men's earnings were statistically significantly different after controlling for other choices and characteristics. The regression coefficient of gender (see the top line in figure 13) can be interpreted as the remaining percentage difference in earnings when taking into account the other variables in the model. This model shows that in 2009, women working full time or multiple jobs one year after college graduation earned, other things being equal, 6.6 percent less than their male peers did. This estimate controls for differences in graduates' occupation, economic sector, hours worked, employment status (having multiple jobs as opposed to one full-time job), months unemployed since



**FIGURE 13. Significant Coefficients from Regression of Log of Annual Earnings One Year after College Graduation**

Gender (female)	-0.066
<b>Job and Workplace Characteristics</b>	
<b>Occupation</b>	
Other white collar <sup>1</sup>	†
Business and management	0.246
Life sciences	—
Math, computer, and physical science	0.323
Engineering	0.464
Nursing	0.401
Other health professions	—
Education	0.174
Social services	—
Sales	—
Business support	—
Other <sup>2</sup>	—
<b>Economic sector</b>	
Institution <sup>3</sup>	-0.189
For-profit	—
Nonprofit	†
All government	0.080
Military	0.133
Self-employed	—
Other	—
<b>Hours worked per week</b>	0.075
<b>(Hours worked per week) squared</b>	-0.001
<b>Multiple jobs</b>	-0.071
<b>Months unemployed since graduation</b>	-0.012

<b>Education and Training</b>	
Undergraduate GPA	0.000
<b>Undergraduate major</b>	
Education	†
Computer science, engineering, science, technology, math	0.125
General studies	0.104
Social sciences	0.070
Humanities	—
Health	0.266
Business and other applied	0.106
<b>Institution sector</b>	
Public university	†
Private university	—
Public college	—
Private college	-0.073
For-profit four-year institution	—
<b>Very selective institution</b>	0.083
<b>Demographic and Personal Characteristics</b>	
Age in bachelor's completion year	0.018
<b>Region of residence</b>	
Northeast	†
Midwest	-0.108
South	-0.092
West, outside U.S.	-0.059
<b>Marital status</b>	
Single, never married	†
Married/cohabiting	0.052
Divorced/separated/widowed	—
<b>Multiple R<sup>2</sup></b>	0.3646

Notes: This table includes 2007–08 bachelor's degree recipients employed in one full-time job or multiple jobs in 2009. Results shown are significant at  $p < 0.05$ . This analysis excludes graduates older than age 35 at bachelor's degree completion.

Source: Authors' analysis of U.S. Department of Education, National Center for Education Statistics, 2008–09 *Baccalaureate and Beyond Longitudinal Study* data.

<sup>1</sup>The category "other white-collar occupations" includes social scientists and related workers (except clinical, counseling, and school psychologists); lawyers, judges, and related workers; education, training, and library occupations (except primary, secondary, and special education school teachers); arts, design, entertainment, sports, and media occupations (except commercial and industrial designers, fashion designers, and floral designers); social science research assistants; and law clerks.

<sup>2</sup>The category "other occupations" includes drafters; protective service occupations; food preparation- and serving-related occupations; personal care; service occupations (except supervisors, animal care and service workers, and entertainment attendants and related workers); farming, fishing, and forestry occupations; construction and extraction occupations; installation, maintenance, and repair occupations; production occupations; transportation and material moving occupations (except air transportation workers); military specific occupations; farm/ranch/other agricultural managers; farmers and ranchers; cartographers and photogrammetrists; surveyors; athletes and sports competitors; coaches and scouts; umpire/referee/other sports officials; and emergency medical technicians/paramedics.

<sup>3</sup>"Institution," in this case, is defined as the school from which respondents earned their bachelor's degree.

— Results not significant ( $p > 0.05$ ).

† Reference category for comparison.

graduation, grade point average, undergraduate major, kind of institution attended, age, geographical region, and marital status.

All gender differences reported in the text and figures are statistically significant ( $p < 0.05$ , two-tailed t-test) unless otherwise indicated.

Throughout the report, earnings are reported for full-time workers only. In figures in which full-time employment status is not indicated, we include all 2007–08 graduates. In the regression analysis, we include full-time workers as well as those with multiple jobs. Hours worked per week and having multiple jobs are both significant coefficients in the regression analysis.

The regression analysis of earnings one year after graduation for the combined sample of women and men shows a gender pay difference of 6.6 percent, controlling for education and occupational choices as well as demographic and personal characteristics (see figure 13). That is, when we include all the selected job and workplace, education and training, and demographic and personal variables, women earned 6.6 percent less in 2009 than men earned.

### Job and workplace characteristics

Not surprisingly, the regression results show that occupation exerts a strong influence on earn-

ings. Graduates have higher earnings when they choose business and management occupations; math, computer, and physical science occupations; engineering; nursing; and education compared with other white-collar occupations.<sup>8</sup>

The regression results also show that sector of the economy affects earnings. When we consider all the factors together, one year out of college, individuals working in the government or the military earned more than those working in the nonprofit sector. Graduates working for the higher-education institution from which she or he graduated earned less than those working in the nonprofit sector.

Hours worked per week significantly contributed to pay. Having multiple jobs and more months of unemployment were associated with lower earnings.

### Education and training characteristics

Also not surprisingly, undergraduate major affects pay. Majoring in a health field, computer science, engineering, science, technology, or math was associated with higher pay compared with majoring in education. The same is true to a lesser extent for graduates majoring in business, general studies, and social science. Attending a private college was associated with lower earnings, whereas attending a very selective institution was correlated with higher earnings.

Age at the time of bachelor's degree completion affects earnings positively (for this sample,

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<sup>8</sup>The category "other white-collar occupations" includes social scientists and related workers (except clinical, counseling, and school psychologists); lawyers, judges, and related workers; education, training, and library occupations (except primary, secondary, and special education school teachers); arts, design, entertainment, sports, and media occupations (except commercial and industrial designers, fashion designers, and floral designers); social science research assistants; and law clerks.

which included only recent graduates ages 35 and under), although the effect is small. Individuals living in the northeast earn more than people living in other parts of the country. Being married or cohabiting is also associated with higher earnings.

Overall, the regression analysis of earnings one year after graduation suggests that a 6.6 percent difference in annual earnings remains between women and men after accounting for all variables known to affect earnings. This is referred to in the text as the “unexplained” wage gap between men and women.





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