



Hours Flexibility and the Gender Gap in Pay

By Claudia Goldin April 2015

Center for American Progress



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Introduction and summary

The issues facing workers and their families are currently in the spotlight. The gender wage gap, minimum wage, and expansions of paid leave have all been the subjects of media attention and increasing political action. As part of the conversation about the need to update the nation's labor standards, considerable attention is focused on the working hours and scheduling of lower-wage workers, particularly hourly workers.

The weak labor market of the past several years has exacerbated the problem; employees often struggle with fewer hours than desired and unpredictable hours. Some of these trends are increasing with the growing use of “just-in-time” scheduling software, which allows employers and managers to adjust staffing levels throughout the course of a business day. In retail sales, where demand varies with weather conditions, this software has led workers to experience less predictable and more unstable schedules. Some workers in retail sales have been asked to appear with little notice—known as on-call shifts—while others may be sent home during slow periods only to be called back in later. The inability of workers to have foreseeable schedules imposes hardships that are especially severe for parents—particularly mothers—as well as for students and dual-job employees. Many would like to work part time to accommodate family and student life, but unpredictable scheduling reduces the ability to work even part time. Others are unable to work more hours when they want.

However, the problems facing those who work fewer than 40 hours per week and those with variable schedules go beyond the logistical issues associated with not having reliable work hours. Workers with low to moderate incomes are more likely to be paid on an hourly basis than they are to receive a fixed salary. Wages are higher for nonhourly workers than they are for hourly workers, even for the same occupations, primarily because nonhourly workers have supervisory responsibilities and labor more hours per week.

If all equally productive workers were paid the same on an hourly basis for identical work—independent of the number and timing of hours worked—differences in pay, paid as or calculated as an hourly rate, would disappear. Women, far more so than men, often work fewer hours at some point in their lives. During those periods in their life cycle, some prefer to work specific hours, including students who cannot work during class and parents who must be home to care for children, even if they work regular or long hours. Furthermore, many prefer to work predictable hours rather than being on call or working at the whim of an employer even if they work 40 hours or more per week. Many of these considerations regarding the temporality of work are harder to measure empirically than the number of hours. Due to data limitations, the need to work particular hours cannot be directly considered in the calculations for this report, but it will loom large in the background.

This report begins with a summary of research on the role of hours in determining earnings at the higher end of the income distribution. More hours of work in some of the higher-income occupations are associated with significantly greater earnings per hour. The relationship is strongest in the business, finance, and legal fields. Advances in information technology and various organizational changes in certain sectors have weakened the relationship between hours worked and earnings per hour. These technological changes have increased the ability of employees to hand off clients, customers, and patients with little loss in efficiency and have made employees better substitutes for each other. What this change implies is that an individual working 50 hours per week is no longer worth much more than twice what two 25-hour-per-week workers are worth to an employer. Thus, these changes have served to increase the earnings of women relative to those of men when calculated as earnings per hour, even for salaried workers.

High-income professional workers in many occupations receive a wage premium for working long hours compared with those working fewer hours, but the wage effects for lower-income workers follow a different pattern. This report finds that further down the income scale, the impact of hours worked on pay is less one of receiving an hourly wage premium for working more hours than it is one of experiencing a penalty for working fewer hours. The analysis reported here finds that there is a large hourly wage penalty for working fewer than 40 hours per week for moderate- to lower-income workers. For most occupational groups, however, the penalty is not a function of gender: Both men and women who work fewer hours get less pay per hour. But because women work fewer hours than men on average per week, they are affected the most.

This report also demonstrates that of the occupational groups studied, those in the technician group who work fewer than 40 hours per week are the least likely to have a wage penalty among both men and women; the food, operator, and sales groups are the most likely to have a wage penalty among hourly workers. Relative to men, women do less well in terms of their implicit hourly wage in nonhourly sales jobs, especially if they work fewer than 40 hours per week.

This report delves into these issues in greater detail through original data analysis using the U.S. Census Bureau's Current Population Survey Merged Outgoing Rotation Groups. The findings, previewed here, provide a new perspective on the wage issues facing low- to moderate-income workers. Although developing solutions to these concerns is beyond the scope of this report, a better understanding of wage disparities is an important first step to address the needs of the modern workforce.

Hours flexibility and the gender gap in pay at the high end

Previous research shows that the gender gap in pay, particularly at the higher end of the earnings distribution, would be considerably lower and might disappear entirely if workers were not paid differently per unit time worked, depending on the number of hours each preferred to work or the particular hours each worked.¹

The problem in the labor markets and organizations previously studied is not that there is inherent bias against low-hour workers or against those who would like to work particular or predictable hours. Rather, certain professions and organizations experience higher overall productivity if workers are around for more hours or for particular hours.²

These productivity differences vary with the particular occupation and industry, but there are commonalities. Some of the productivity differences concern the real costs of handing off clients, patients, customers, and so on to the next worker on the shift or to a worker who is covering for the originally scheduled worker who, perhaps, had to take time off during the regular day. Other productivity differences occur when workers are around for different periods during the day, which increases coordination costs among team members. If a team has higher productivity when all members get together at certain intervals, then the coordination costs increase with the number in the team and with their varying schedules. Another possible reason for lower productivity with varying hours involves the fixed costs incurred in having short or irregular shifts.³

Analysis of data from the Bureau of Labor Statistics O*NET database showed that differences in earnings gaps across occupations between men and women are related to a host of occupational characteristics that affect costs to employers of temporal flexibility. These characteristics include the requirement to be onsite; the need for face-time; intensive client contact; the importance of working in interdependent teams; and the degree to which work is independent, rather than not, and on specific, structured projects, rather than on less-defined ones. Some of these characteristics, it should be noted, may be inefficient for various reasons and not related to actual business imperatives.

Some occupations do not require particular hours since there is little client contact and because projects are often done independently and are highly structured. Most of the technology and science occupations fall in this group. Most of the business, finance, and legal occupations on the other hand, have high requirements for particular hours, considerable client contact, and projects that are done interdependently and are more idiosyncratic.

The health occupations, however, are a diverse group. Many of its varied occupations have become highly flexible as the costs of shorter and irregular hours have greatly decreased. Leading this group is the occupation of pharmacist, for which earnings are high and there is almost no part-time earnings penalty. Many physician specialties also have had enhanced flexibility with the advent of larger groups and less individual and small group practice ownership.

The main finding of this previous work is that the gender gap in pay is larger when an occupation's compensation increases non-linearly with increasing hours of work. An occupation with earnings that is non-linear, or convex, in hours means that an individual working 60 hours per week makes more than twice as much as an identical individual working 30 hours per week. Put another way, if both salaries are recalculated as an hourly wage—even though this is not necessarily how their salaries are determined—the individual working 60 hours per week receives a higher hourly rate than the individual who works 30 hours per week. Thus, even though the two workers are identical, one worker will make more per hour just because the individual is willing to work more hours or work a particular schedule.⁴

The sample used for this analysis contained the 469 occupations taken from the 2009–2011 U.S. Census and American Community Survey, or ACS.⁵ Although all occupations were analyzed independent of annual earnings, the research focused on occupations for which the mean annual earnings of men 25 to 64 years old exceeded approximately \$60,000. These occupations can be classified in the groups business, law, health, science, and technology that were of interest to study because many have intensive hours demands both in terms of sheer number of hours and continuous hours. These positions are often described as “professional service occupations.”

The research described above is predicated on the notion that differences in the gender wage gap within occupations are far larger than those across occupations. That is, even if men and women were found in the occupations in proportion to their total workforce, gender gaps would not be reduced to any great extent. In fact, across all full-time, full-year workers in the ACS for 2009 to 2011, only 15 percent of the

gender gap in annual earnings would be eliminated if men and women were equally represented in each occupation. But 85 percent would be eliminated if the pay gap within each occupation were eradicated.

One of the motivating findings of the study is that the business and finance occupations have rather large gender gaps in pay. Those in tech and science, however, have much smaller gaps. In both cases, corrections are added for various factors such as age and education. An additional finding is that positions in the technology and science fields have the lowest wage penalties for not working long hours and those in corporate, financial, and legal sectors have the highest penalties. But what are earnings gaps for positions at the moderate to the lower end of the earnings distribution and what are the wage penalties for working lower hours?

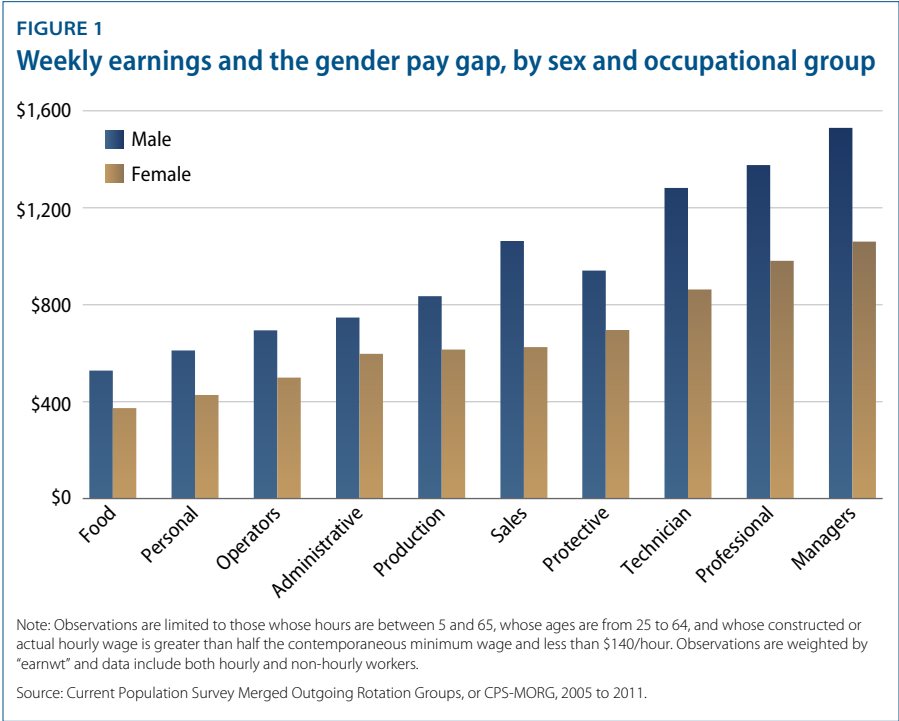
The issues are somewhat different for these positions than for those with higher incomes. For the higher-income positions, the data analyzed were only for those who worked full-time, more than 34 hours per week, during the full-year. The questions regarding work flexibility in that study concerned the degree to which employers compensated their workers disproportionately for hours exceeding 34 hours per week. Implicit in the work was the question whether employers paid workers more for longer hours and for greater continuity of hours. These restrictions on the data made sense for the higher income group.

But workers at the moderate to lower end often work part-time and occasionally cobble together income by working several jobs, an aspect of employment and earnings that is difficult to study using conventional sources. High-income workers are rarely paid an hourly wage whereas moderate to lower earnings workers typically are.

In shifting the focus to the moderate- to lower-income workers, the data source needed to change. Because of the need to understand the role of hours in determining the hourly wage, this report uses the Current Population Survey Merged Outgoing Rotation Groups, or CPS-MORG, rather than the ACS.⁶ The CPS-MORG contains hourly earnings, weekly earnings, and hours, in addition to the more usual demographic and educational characteristics of the respondents.

Hours flexibility and the gender gap in pay at the moderate to lower end

Nearly 320 additional three-digit occupations exist that were not the focus of the previous study, which mainly concerned the professional and managerial groups. The moderate- to lower-income occupations analyzed in this study can be aggregated into eight additional occupational groupings, excluding agriculture. From the lowest to the highest in average weekly earnings (see Figure 1) all the occupational groups are: food preparation, personal service, operator and laborer, administrative and office, production, sales, protective service, technician, professional, and managerial.⁷



This section explores the role of hours in determining hourly earnings for hourly and non-hourly workers across the eight occupational groups at the moderate to lower end of the earnings distribution.⁸ But before examining the occupational groups separately, it is instructive to look at all workers across the eight groups combining individuals working hourly and non-hourly.

The majority of workers across the eight occupational groups give 40 hours as their usual work week: 70 percent of men and 61 percent of women. But far more women than men work fewer than 40 hours per week (32 percent versus 10.5 percent) and far more men than women work more than 40 hours (20 percent versus 7 percent).⁹ Across the eight occupational groups, 66 percent of men and 72 percent of women stated that they worked hourly jobs. Therefore, there are several important differences between men and women in these occupational groups. How do these factors affect the ratio of female-to-male earnings?

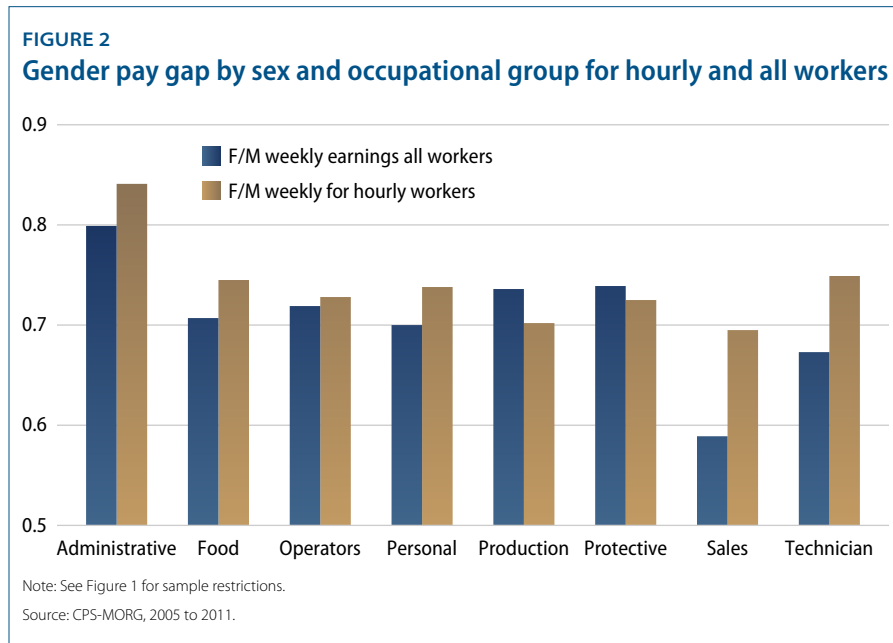
For all groups combined, the female-to-male ratio in hourly pay was 0.779, with flexible education, age, race, and ethnicity controls.¹⁰ The ratio increases to 0.831, adjusting for the effects of hours worked on the hourly wage.¹¹ Note that taking work hours into account when comparing wages reduces the gender gap in pay by fully one-quarter. Accounting for three-digit occupational differences between the genders increases the ratio to 0.868; and controlling for whether the worker is paid as an hourly worker increases it further to 0.876.¹²

An important conclusion from this aggregate analysis is that women, on average, earn less than men on an hourly basis because they work fewer hours and because they work more frequently in hourly jobs, as well as in particular occupations. Men, as well as women, lose out when they work fewer hours and when they work in hourly jobs.

Women with children work more in hourly jobs than those without children, given their education level and age. Interestingly, women who work for pay when they have infants and toddlers tend to be higher wage workers and employed disproportionately in non-hourly work. Thus, women who are not highly educated and have children lose out in the labor market in several ways. First off, they are generally not employed when their children are young and lose skills by not being employed. When they re-enter the labor force, they do so disproportionately as hourly workers who work lower-than-average hours. Because they work fewer than 40 hours, they earn a lower hourly wage. These women lose earnings due to several factors: skill depreciation, lower hourly wage, and fewer hours.

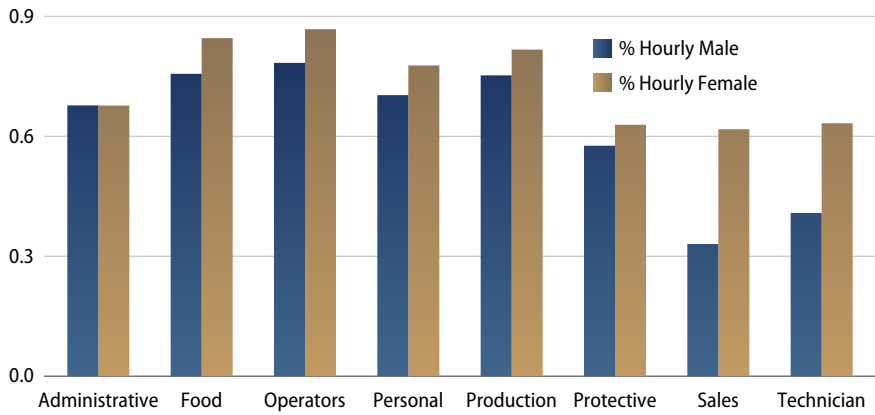
Gender gaps in pay for hourly and non-hourly workers

Not surprisingly, men earn more than women on a weekly basis as is seen through the uncorrected ratio of female-to-male weekly earnings by occupational group for all workers and the hourly separately.¹³ (see Figure 2) There are several reasons that account for weekly earnings differences by occupational group.



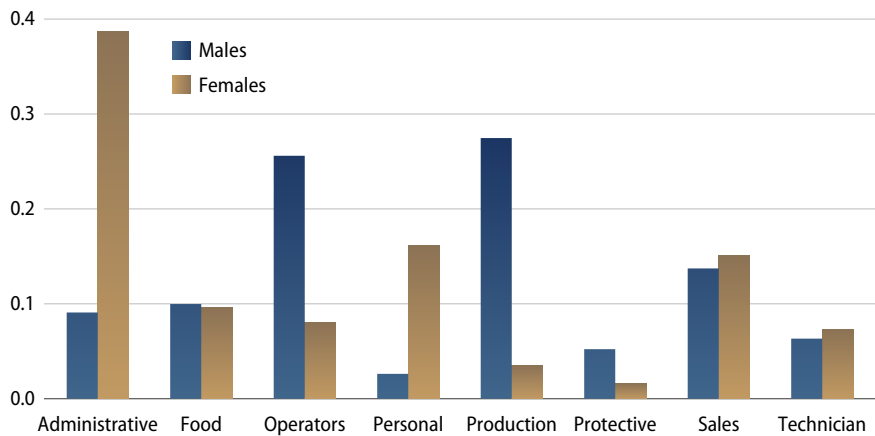
Women work fewer hours in each of the hourly and non-hourly positions than do men, and more women are hourly workers than are men within each of the occupational groups (see Figure 3). With the exception of technicians and sales, more than 60 percent of both men and women in each of the groups are hourly workers, and in some groups, more than 80 percent are hourly workers. Non-hourly workers in each occupational group earn more per hour than hourly workers by sex (see Appendix Figure A.1 and A.2). Although there is considerable overlap in occupational groups between men and women, men are disproportionately operators and production workers, and women are disproportionately administrative and personal service workers among the eight occupational groupings (see Figure 4).

FIGURE 3
Fraction paid hourly, by occupational group and sex



Note: See Figure 1 for sample restrictions.
 Source: CPS-MORG, 2005 to 2011.

FIGURE 4
Occupational distribution by sex for all workers: hourly and non-hourly



Note: See Figure 1 for sample restrictions.
 Source: CPS-MORG, 2005 to 2011.

To better understand the gender gap in earnings by occupational group, it is necessary to analyze the ratio of female-to-male earnings by incrementally correcting for various factors. (see Figure 5A and 5B). The ratio from the weekly earnings is the first bar in the graphs. The second bar, hourly wages, expresses wages in terms of the hourly amount either computed or given by the hourly wage. The third bar adds levels of education, age (as a quartic), race, and ethnicity variables, and the fourth adds a correction for whether weekly work hours alter the hourly wage. The construction and meaning of the last bar is addressed below.

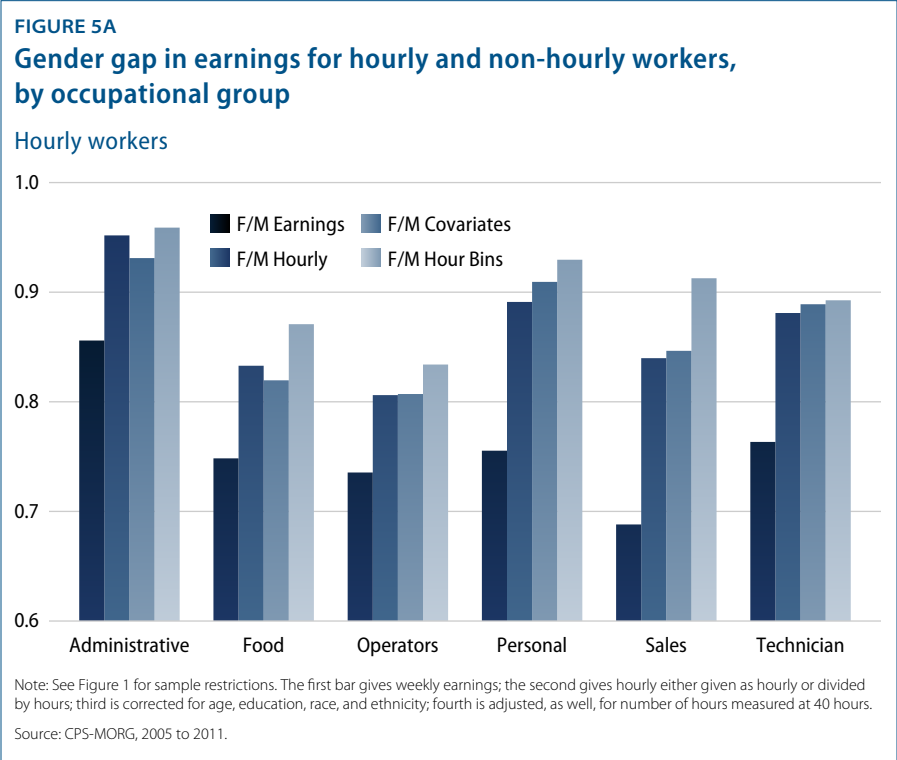
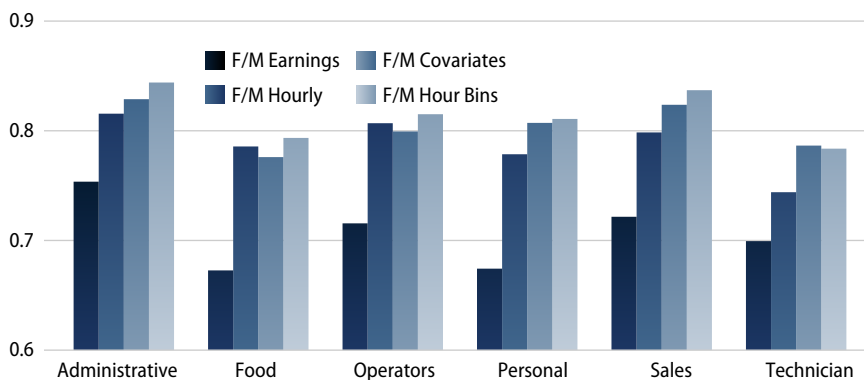


FIGURE 5B
Gender gap in earnings for hourly and non-hourly workers,
by occupational group

Non-hourly workers



Note: See Figure 1 for sample restrictions. The first bar gives weekly earnings; the second gives hourly either given as hourly or divided by hours; third is corrected for age, education, race, and ethnicity; fourth is adjusted, as well, for number of hours measured at 40 hours.
 Source: CPS-MORG, 2005 to 2011.

As can be seen, the move from the raw weekly earnings data to the hourly wage encompasses the largest of the corrections. That should not come as a surprise. The correction for various covariates, such as school grade and degrees, has little effect to increase the ratio and even decreases it for various groups because women are often more educated than are men in those positions.

The ratio of female-to-male wages is higher for hourly workers than for the non-hourly. At the high end of the gender equity scale, the corrected hourly ratio for the administrative group is 0.93 for the hourly group and 0.83 for the non-hourly; the ratio for personal services is 0.91 for the hourly and 0.81 for the non-hourly. At the lower end the ratio for operators is 0.81 for the hourly and 0.80 for the non-hourly and that for food is 0.82 for the hourly and 0.78 for the non-hourly. One component of why men do better on average is that they disproportionately get non-hourly jobs, and it is probable that they do so because they put in more hours.

The role of hours in the hourly wage by occupational group

Correcting for hours among the hourly workers increases the ratio of female-to-male hourly wages in all of the groups. (see Figure 5A) In some cases—administration, operators, personal, and technician—the change is modest, but in others—food, sales—it is substantial. There is somewhat less of a change for the non-hourly workers, although it is generally positive. But this does not mean that shorter hours have no impact on hourly earnings. In fact, for most of these occupational groups, working fewer hours has a large effect on hourly pay.¹⁴ This is based on the finding that shorter hours do not differentially affect men and women to a substantial degree. Rather, shorter hours greatly affect the hourly earnings of both men and women.

The role of hours can be seen by looking at the penalty in the hourly wage to working shorter hours and the gains to working more hours.¹⁵ (see Figures 6A to 6F) The distribution of hours is also provided. Hours are grouped in seven categories, or bins, from 5 to 65 hours: 5 to 19; 20 to 29; 30 to 34; 35 to 39; 40; 41 to 49; and 50 to 65.

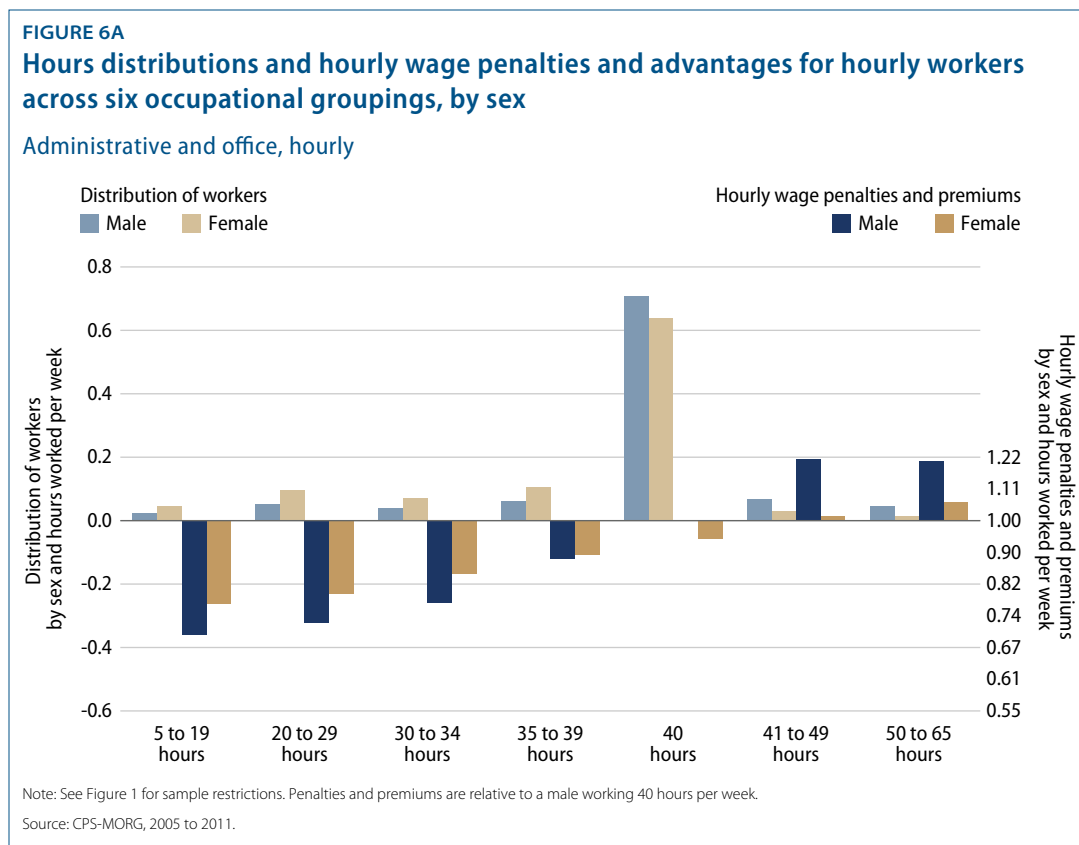
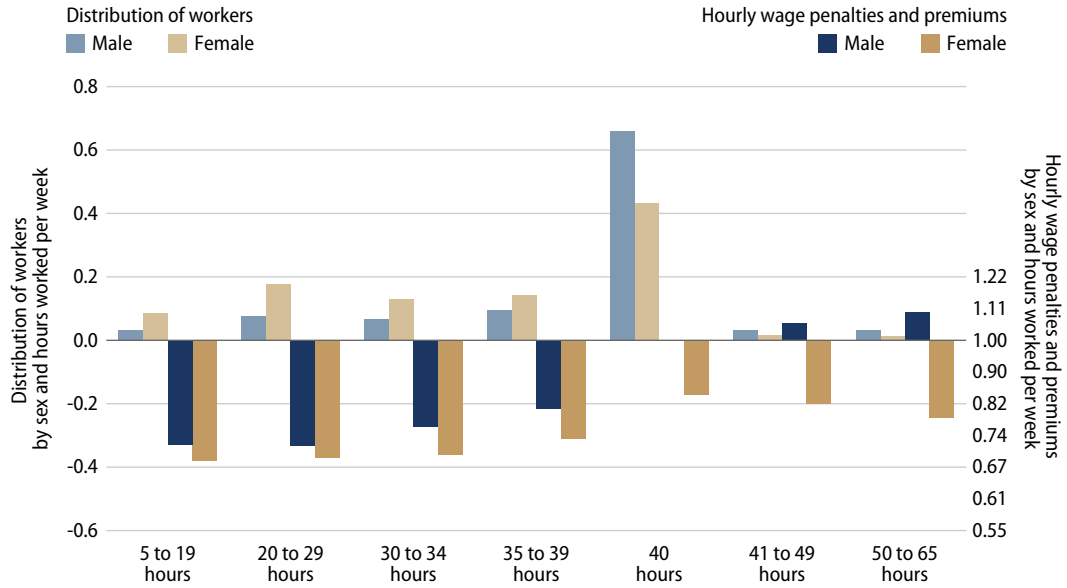


FIGURE 6B

Hours distributions and hourly wage penalties and advantages for hourly workers across six occupational groupings, by sex

Food and cleaning, hourly



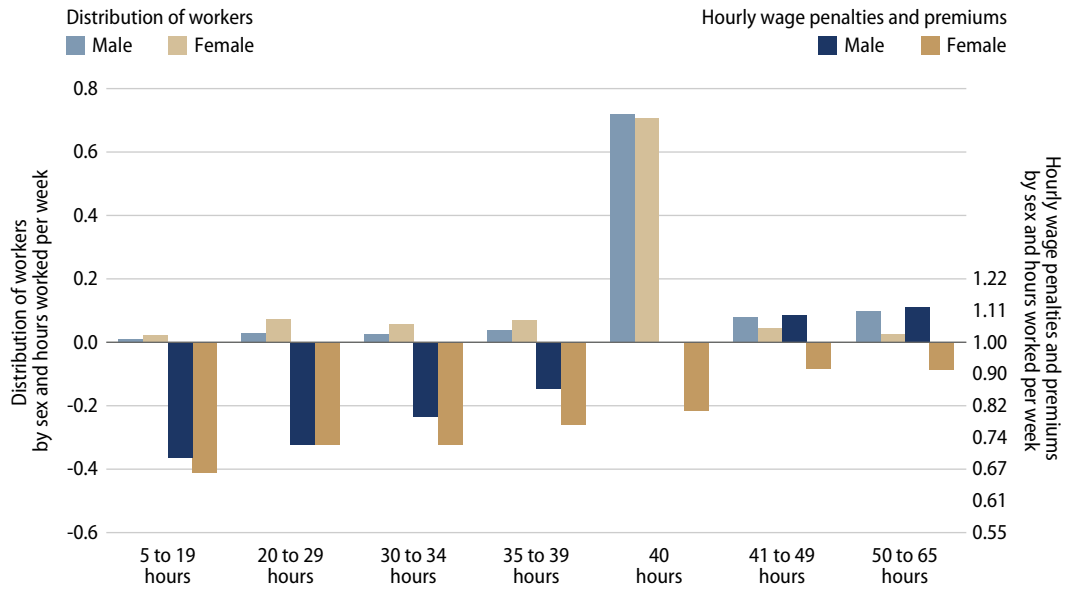
Note: See Figure 1 for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

FIGURE 6C

Hours distributions and hourly wage penalties and advantages for hourly workers across six occupational groupings, by sex

Operators and laborers, hourly



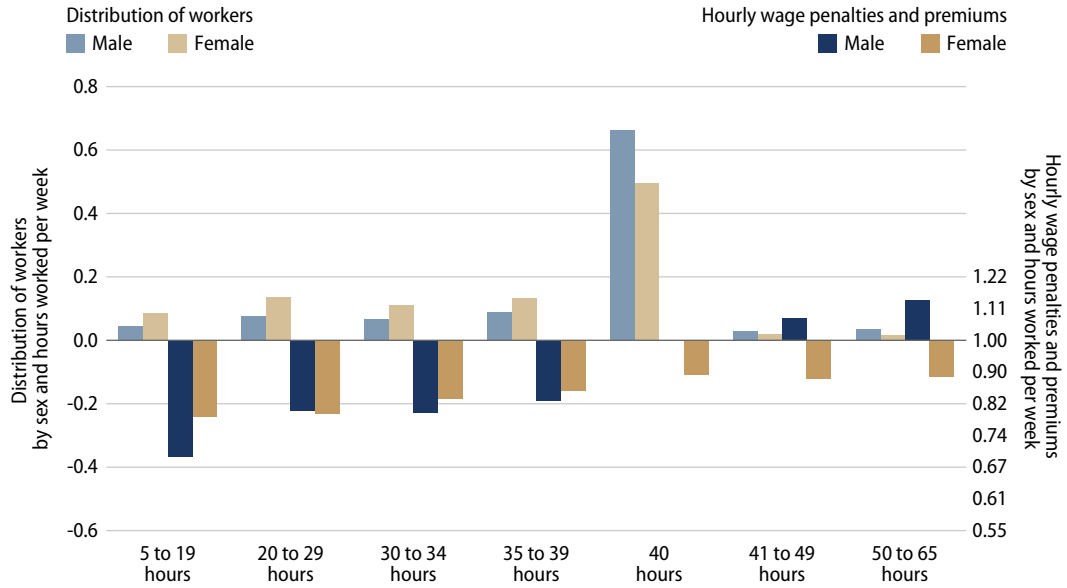
Note: See Figure 1 and text for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

FIGURE 6D

Hours distributions and hourly wage penalties and advantages for hourly workers across six occupational groupings, by sex

Personal services, hourly

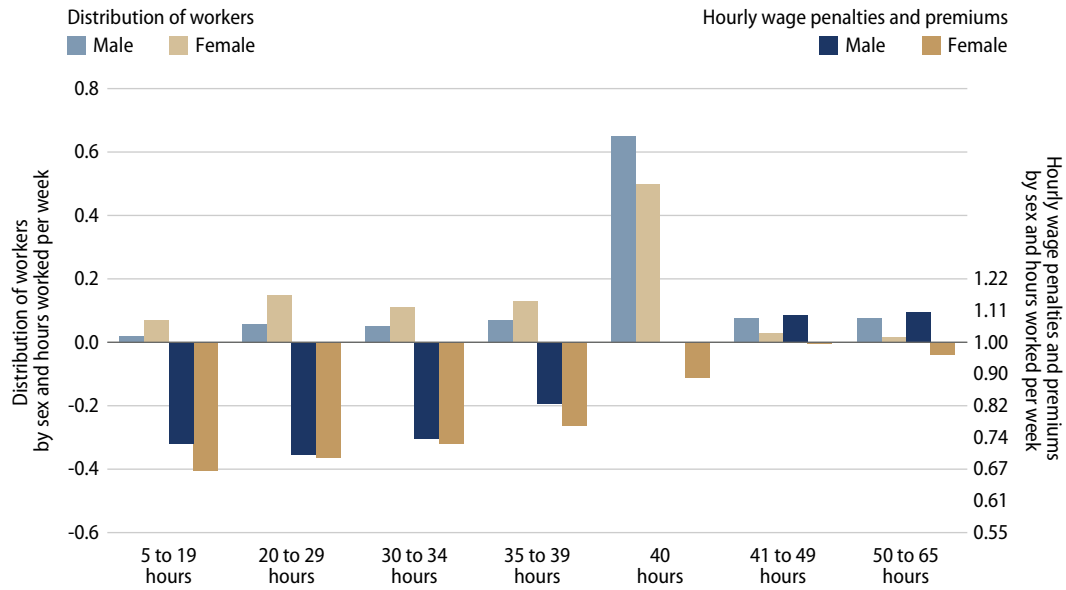


Note: See Figure 1 and text for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

FIGURE 6E
Hours distributions and hourly wage penalties and advantages for hourly workers across six occupational groupings, by sex

Sales, hourly

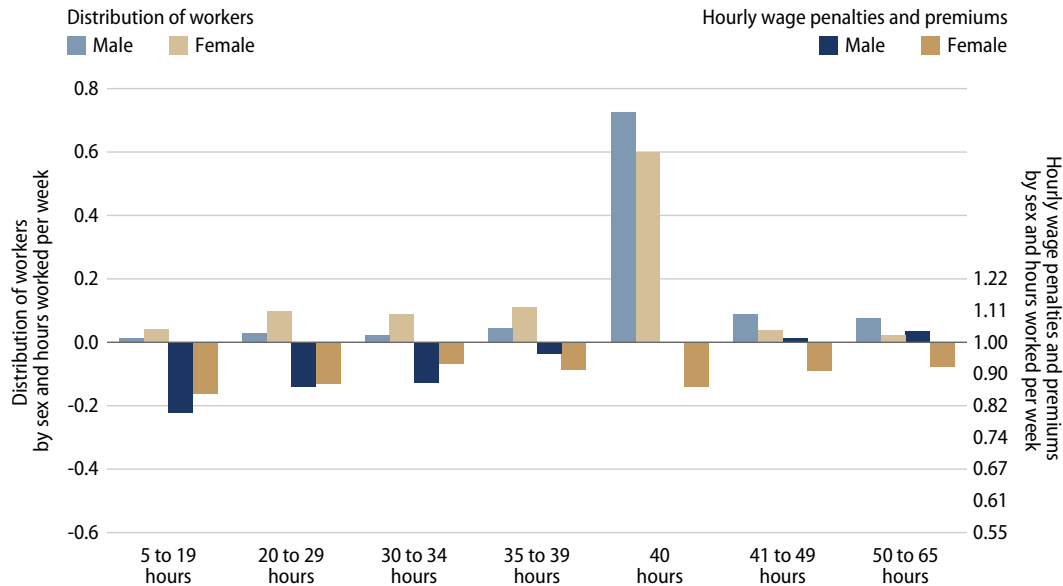


Note: See Figure 1 and text for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

FIGURE 6F
Hours distributions and hourly wage penalties and advantages for hourly workers across six occupational groupings, by sex

Technicians, hourly



Note: See Figure 1 and text for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.
 Source: CPS-MORG, 2005 to 2011.

Figure 6 needs detailed explanation since each of the graphs has many bars and some of these are computed in slightly complicated ways. The first and second bars are the simplest ones to explain. They give the fraction of hourly men and women in the occupational group who work the number of hours in the hours bin. The light blue bar—first bar—gives the hours distribution for men and the beige bar—second bar—gives the hours distribution for women.

For example, 71 percent of men and 64 percent of women in the administrative group put in 40 hours a week. Similarly for operators, men (72 percent) and women (71 percent) have about an equal fraction working 40 hours a week. In food preparation, however, men have a greater fraction working 40 hours (66 percent) than do women (43 percent). The point is that although 40 hours a week is the norm for most of the occupational groupings, some have a substantial percentage of workers with fewer hours per week and some have many with longer hours, particularly among male workers. Operators and sales have the greatest number with long hours, but for most of these groups, the less-than-40-hours bins are much bigger than the more-than-40-hours-bins.

Is there an hourly wage penalty to working fewer hours and an hourly wage gain to working more hours? If the answer is that there are both penalties and gains, are these different for men and women?

The answers to these questions are found in the dark blue and gold bars—the third and fourth bars—in each of the figures. These bars are computed by adding to the initial regression containing observables such as age and education, a variable for the hour bins, whether the respondent is a woman, and an interaction between the two. The coefficients on the hours bins measure the degree to which there is a penalty or a gain to the hourly wage of working more or fewer hours. Although the penalty or gain is measured in log units, the coefficients have been translated into a fraction given on the right axis of the first graph (see Figure 6).

The penalties or gains are measured relative to a man working 40 hours a week. Therefore, the female penalty at 40 hours is the coefficient on women in the regression. It tells us what a woman would earn relative to a man if she worked 40 hours a week given all the observables. Because the CPS-MORG does not have an extremely rich set of observables, it is not known whether the difference is due to other productive attributes, such as job tenure, or whether it is due to various constraints facing women more than men.¹⁶

The penalty to being a woman who works 40 hours a week given in the Figure 6 graphs is identical to that graphed as the fourth bar in Figure 5A, where it is expressed as a ratio. The penalty is lowest in the administrative grouping and greatest in the operators grouping. What about the penalties to the male and female hourly wage from working lower hours or the gains to working more hours?

There are generally substantial penalties to the hourly wage from working fewer than 40 hours and only modest gains to the hourly wage from working more than 40 hours. For example, the penalty for working 34 hours per week in a personal services occupation for either a male or female means that the worker would earn 82 percent on an hourly basis of a male working 40 hours per week. The occupational groups with the largest penalties to low hours are food, operators and sales. Those with the smallest are technicians and, to some extent, administrative.

Even though there are substantial hourly wage penalties from working fewer hours, the penalties are not that different between men and women. It is often the case that men have an even greater penalty than women from working shorter hours.¹⁷

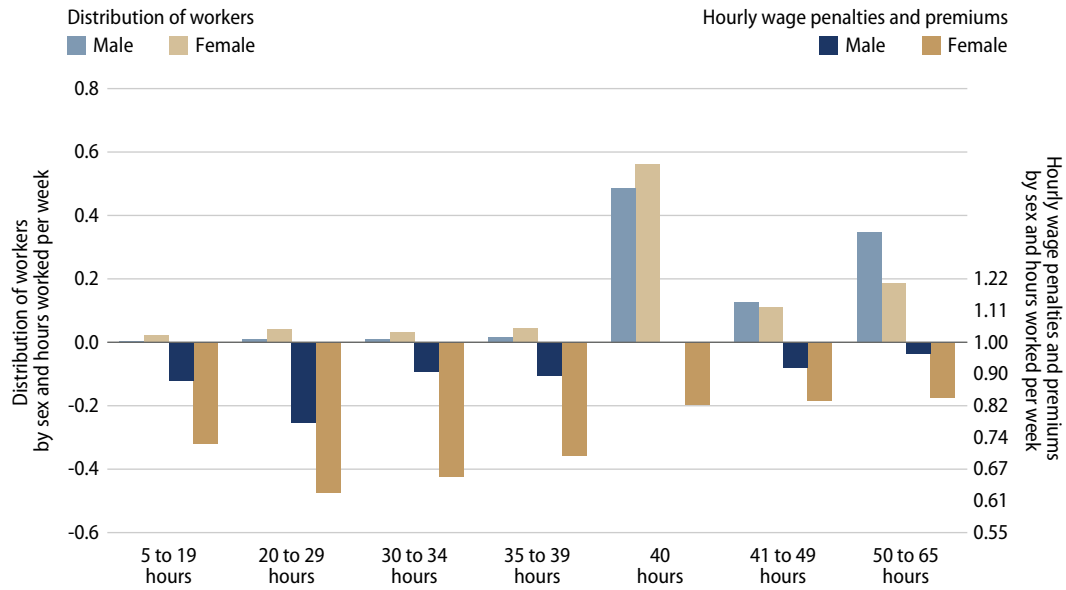
These diagrams contain a lot of material but it is easy to see that, going from low to higher hours per week, the penalty-gain bars almost all increase in value. Those who work fewer hours, say less than 40 per week, get less per hour and those who work greater hours, say more than 40 per week, get more per hour. The one exception is the technician group in which there is almost no difference in the height of the bars. It will be recalled that among the higher-income occupations discussed previously, the technical and science occupations had the lowest gender gap in earnings.

Of great importance, there are few differences in earnings by hour bins between men and women. If anything, the bars for men increase more than those for women. Because the gradient of earnings with respect to hours does not differ much by gender and often involves a larger low-hours penalty for men and because the fraction working more than 40 hours is generally small, there is a small difference between the gender gap in hourly wages with and without controlling for hours (recall Figure 5A). The one possible exception is sales in which men have a greater fraction above 40 hours and women have a greater fraction below 40 hours.

This report is focused on hourly employees because they are the vast majority of female (and male) workers in these occupational groups. In addition, the wage variable for hourly employees is better measured than that for the non-hourly group, which must be calculated. But there are occupational groups, such as sales and technicians, for which non-hourly workers are a large fraction of both men and women. Figure 7 explores the relationship between hours and the implicit hourly wage for these groups.

FIGURE 7A
Hours distributions and hourly wage penalties and advantages for non-hourly workers across occupational groupings, by sex

Sales, non-hourly

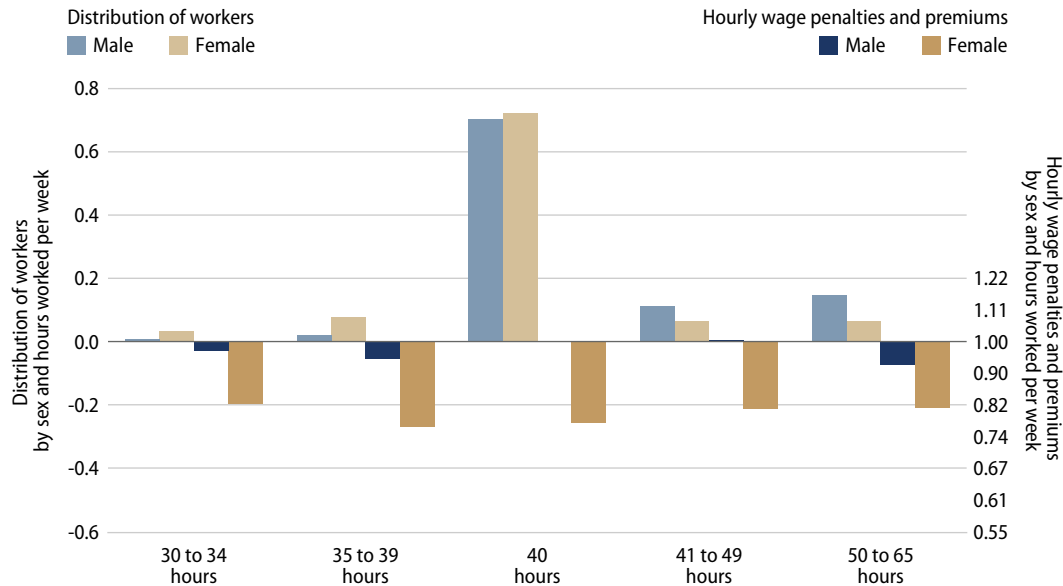


Note: See Figure 1 and text for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

FIGURE 7B
Hours distributions and hourly wage penalties and advantages for non-hourly workers across occupational groupings, by sex

Technicians, non-hourly



Note: See Figure 1 for sample restrictions. Penalties and premiums are relative to a male working 40 hours per week.

Source: CPS-MORG, 2005 to 2011.

The distribution of non-hourly workers by hour bins is highly skewed to the higher hour bins. Whereas among hourly workers who did not work 40 hours per week most worked fewer than 40 hours, the non-hourly work more than 40 hours per week. But there is no substantial gain on an hourly basis to those who work more than 40 hours, whereas there is a large loss in the hourly wage to those who work fewer than 40 hours. The relative absence of women in the non-hourly jobs is likely due to an advantage men have in working more hours per week. The non-hourly are, not surprisingly, a higher-hours group in all occupational groups.

Conclusion

Whereas highly paid, professional workers often struggle with the overwork associated with very long hours, low- to moderate-income workers regularly find themselves dealing with the opposite problem of too few hours or wildly unpredictable schedules or low hours that are poorly compensated. In this report, earnings and hours for about 320 moderate- and low-income occupations are analyzed to determine what impact total hours worked has on hourly wages. The data show that there is a large hourly wage penalty associated with working fewer hours per week. In most instances this is not gendered, as men are penalized for working fewer hours as well. However, because women are more likely to work fewer than 40 hours per week, they experience the wage penalty more often.

One aspect of the hourly wage penalty that cannot be explored with the CPS-MORG data is that due to the provision of various benefits such as health care, pensions, vacation time, and sick leave. If employers provide the same or similar benefits to lower-hour workers as they do to higher-hour workers, then those working fewer hours will, most likely, be paid a lower hourly wage. It is likely that the provision of benefits is not fully responsible for the lower hourly rate of pay for lower-hours workers but more research on the subject is needed.

The example of the sales group makes the points of this report more forcefully. The sales group is a useful group to pick because it is relatively large: About 15 percent of employees across the eight occupational groups work in sales, independent of sex. (see Figure 4) At 62 percent, women in this group are disproportionately hourly workers relative to the 33 percent of men in sales who are hourly workers. (see Figure 3) The wage penalty of working fewer hours for hourly workers reduces women's earnings relative to men's by 0.075 because women work fewer hours. (see Figure 5A, fourth minus third bars)

The penalty to working hourly versus non-hourly is even larger in sales. If women had the same fraction hourly as men but their hourly earnings remained the same for both hourly and non-hourly jobs (see Figure A1), their wage per hour would increase by about 1.19.

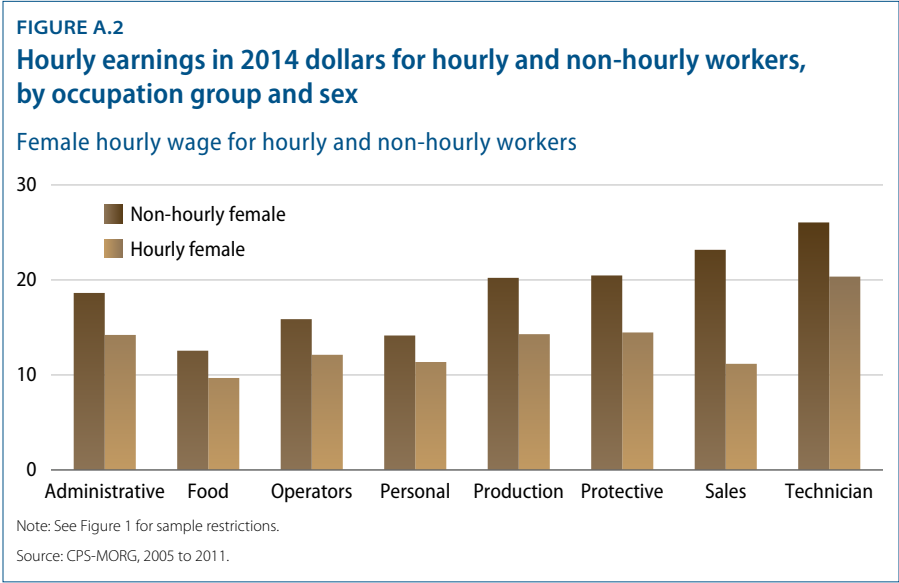
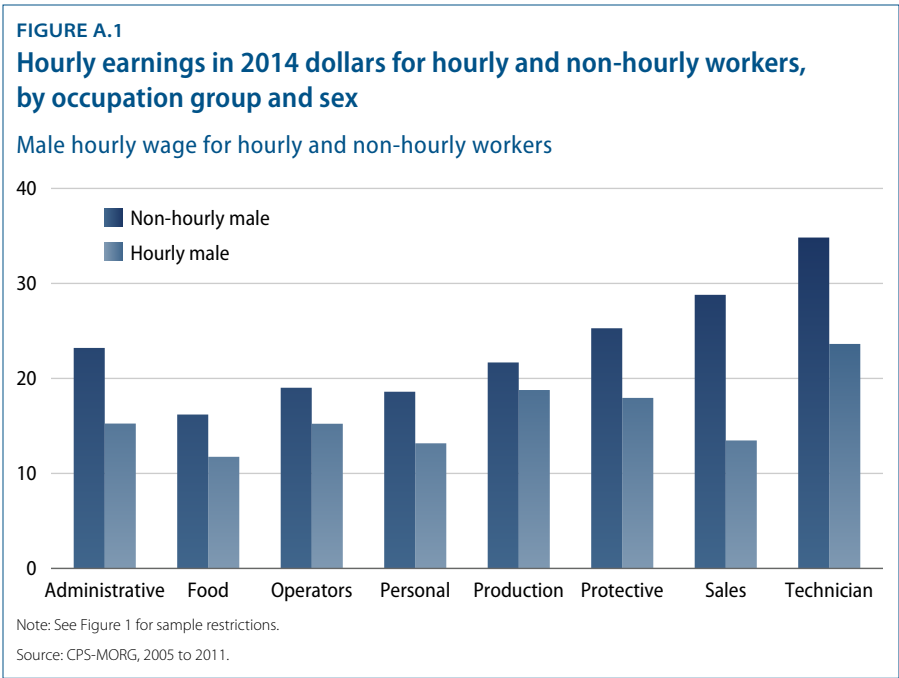
It should be noted that the sales group has the largest difference in the fraction of men and women working hourly. In most of the other occupational groups the fraction working hourly is about the same. (see Figure 3) Across the eight occupational groups considered here, the difference is just 6 percentage points: 72 percent for women and 66 percent for men. The increase in the female wage per hour would be only 1.02 if women had the same fraction hourly as men. That does not mean that the hourly and non-hourly distinction is not important. It is of great importance.

The wage penalty associated with working fewer hours is worthy of further consideration for several reasons. First, because it is more likely to affect women than men, addressing the issue would help to eradicate the gender wage gap within occupations. At a time when a record number of women are supporting themselves and their families as breadwinners, the consequences of women's greater likelihood of lower pay can have negative consequences for families' economic security. Second, 10.4 percent of workers report that they are working part-time because they cannot find full-time work.¹⁸ Therefore, these workers experience a wage penalty on top of their inability to work more hours, doubly harming their economic well-being. Although determining solutions to this problem is beyond the scope of this report, addressing the hours wage penalty would benefit workers and their families.

About the author

Claudia Goldin is the Henry Lee professor of economics at Harvard University and director of the National Bureau of Economic Research, or NBER's, Development of the American Economy program. Goldin is an economic historian and a labor economist. Her research has covered a wide range of subjects including slavery, women in the economy, immigration, economic inequality, technological change, and education. Most of her research interprets the present through the lens of the past and explores the origins of current issues. Her current work concerns women's achievement of career and family and the role of workplace flexibility. She is the author of many articles and books, among them *Understanding the Gender Gap: An Economic History of American Women* (Oxford 1990), *The Regulated Economy: A Historical Approach to Political Economy* (with G. Libecap; University of Chicago Press 1994), *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century* (with M. Bordo and E. White; University of Chicago Press 1998), and *Corruption and Reform: Lesson's from America's Economic History* (with E. Glaeser; Chicago 2006). Her most recent book is *The Race between Education and Technology* (with L. Katz; The Belknap Press, 2008), winner of the 2008 R.R. Hawkins Award. In 2013 Goldin was the president of the American Economic Association and was its vice president in 1991. She is a member of the National Academy of Sciences, and a fellow of the American Academy of Political and Social Science, the American Academy of Arts and Sciences, the Society of Labor Economists (SOLE), the Econometric Society, and the Cliometric Society. In 2009 SOLE awarded Goldin the Mincer Prize for lifetime contributions to the field of labor economics. She was president of the Economic History Association in 2000. From 1984 to 1988 she was editor of the *Journal of Economic History* and is currently an associate editor of the *Quarterly Journal of Economics*. Goldin received her B.A. from Cornell University and her Ph.D. from the University of Chicago.

Appendix



Endnotes

- 1 Claudia Goldin, "A Grand Gender Convergence: Its Last Chapter," *American Economic Review* 104 (4) (2014): 1091–119.
- 2 Some may have inherited social work norms from the past that are now inconsistent with the desires of workers.
- 3 There are, of course, costs to the firm that do not depend on hours worked. These include training costs, office expenses, and benefits.
- 4 Note that this does not mean that the additional hours are exceptionally late—such as the "graveyard" shift—and does not mean that the added hours are necessarily on weekends or holidays.
- 5 These occupations are those defined by the Bureau of the Census at the three-digit level. For more information on the data and methods, please see Goldin, "A Grand Gender Convergence: Its Last Chapter."
- 6 The CPS-MORG has the earnings per hour of individuals who say that they are paid by the hour. The ACS does not.
- 7 Agriculture is the eleventh grouping and has been omitted here.
- 8 The "Hourly" and "Non-Hourly" worker classifications are self-declared in the CPS-MORG rather than determined by the strict definition that hourly workers are paid by the hour and are not on fixed salary.
- 9 Using the usual metric of 35 hours per week as full-time, across the eight occupational groups, just 6.4 percent of men work less than 35 hours per week and 21.8 percent of women do.
- 10 Hourly earnings are constructed for the non-hourly workers. Age is entered as a quartic, education is entered in grades and degrees, CPS year dummies are included, and race or ethnicity is held constant.
- 11 Controlling for hours was achieved through the inclusion of seven hours bins, created as dummy variables to differentiate between workers with different total work hours.
- 12 The CPS-MORG does not have a rich enough group of observables to adjust for job experience and tenure with the current firm.
- 13 Means, rather than medians, are provided.
- 14 Elena Bardasi and Janet C. Gornick, "Working for Less? Women's Part-time Wage Penalties across Countries," *Feminist Economics* 14 (1) (2008): 37–72.
- 15 The production group, which includes production, craft, and repair, is omitted because it is 90 percent male. The protective services group was also omitted because it is relatively small and is 78 percent male.
- 16 A richer set of observables would include work experience and quality of education, such as field of concentration.
- 17 The larger penalty for men at lower hours could be due to unobservable heterogeneity between men and women working lower hours.
- 18 Bureau of Labor Statistics, *Table A-8. Employed persons by class of worker and part-time status* (Washington: U.S. Department of Labor, 2014), available at http://www.bls.gov/news.release/empsit.t08.htm#cps_empsit_a05.f3.

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