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PROFILES OF CHANGE: EMPLOYMENT, EARNINGS, AND OCCUPATIONS FROM 1990-2013

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There has been tremendous focus in recent years on the plight of the typical American worker. With discussion among policymakers and the media around the impacts of globalization, technology, and other forces of change on the labor market, there are endless anecdotes describing the changing nature of work in the United States. This is a topic area in which the Hamilton Project has taken an active interest. In previous papers, the Project has considered the [future of work](#), [declining earnings](#) for the median male worker, and the [disparate earnings](#) of those with different levels or types of education.

In this economic analysis, The Hamilton Project takes a careful look at the data to examine what has been happening to America's workers since 1990, paying particular interest to differences across workers with different levels of education. This analysis includes an in-depth exploration of the profiles of eight distinct categories of workers over more than two decades. In addition, an accompanying [interactive feature](#) allows users to further explore these eight profiles by comparing employment, occupational, and earnings patterns between 1990 and 2013. A [technical appendix](#) describes the data and our methodology in more detail.

Specifically, the eight profiles we present shed light on occupational shifts in the labor market since 1990 for working-age adults with different levels of education:

1. *Men with less than a high school degree*¹
2. *Women with less than a high school degree*
3. *Men with a high school degree or some college*
4. *Women with a high school degree or some college*
5. *Men with a bachelor's degree*
6. *Women with a bachelor's degree*
7. *Men with a graduate or advanced degree*
8. *Women with a graduate or advanced degree*

Within the profiles, we compare trends in employment, earnings, and occupations for men and women age 30–45 using the 1990 Census and the 2013 American Community Survey. The data show clearly what many others have previously noted: individuals without a bachelor's degree have become less likely to work full-time full-year over the past two decades.² However, the data reveal that there is far more to the story, given the extent to which occupational shares have shifted for different groups of workers and what it has meant for workers' earnings.

¹ We combine workers who have passed the GED test with workers who have completed high school because the data do not record these groups separately prior to 2008.

² Throughout this economic analysis, working full-time full-year refers to working at least 35 hours per week and 48 weeks in the previous year.

A key finding is that non-college educated workers are substantially more likely to work in lower-paying service occupations than in the recent past. Indeed, these changes in occupational shares between 1990 and 2013 can account for one-third of the total change in earnings for men without a high school degree and two-fifths of the total change for similarly educated women.³ In contrast, individuals with a bachelor’s degree or more are just as likely to be employed today as they were in 1990, in similar occupations, and with steadily rising earnings.

Employment Rates

Table 1. Employment Statistics for Adults Aged 30–45, by Sex and Education Group

		<i>Share of this population</i>		<i>Employment rate</i>		<i>Full-time, full-year rate</i>	
		1990	2013	1990	2013	1990	2013
No high school degree	Men	7	6	74	72	55	55
	Women	7	6	50	45	30	26
High school degree or some college	Men	27	27	89	82	76	68
	Women	32	27	73	69	47	48
Bachelor's degree	Men	9	10	95	92	83	83
	Women	8	12	78	78	46	58
Advanced degree	Men	5	6	96	95	81	85
	Women	4	7	87	85	48	64

Source: Authors’ calculations using the 1990 Census and 2013 American Community Survey.

Note: Full-time, full-year refers to individuals who worked at least 35 hours per week and 48 weeks in the previous year. Estimates for the share of the population may not add up to 100 due to rounding. For more details, see the technical appendix.

Table 1 compares employment rates for men and women of different education levels for 1990 and 2013, showing both overall employment rates as well as full-time full-year employment rates. (For reference, the table also shows how the population has become more educated over time.)

More than one in four working-age men without a high school degree were not working in both 1990 and 2013, and just 55 percent worked full-time full-year.⁴ (It is worth noting that these statistics exclude incarcerated men, many of whom lack a high school degree; including them reduces the employment rate to 68 percent.) Among women without a high school degree, fewer than half were employed in 2013, and only one quarter worked full-time full-year, both declines from 1990.

One of the most dramatic changes in employment, however, occurred for men with a high school degree or some college, who account for more than half of men age 30–45. The share of this group working full-time full-year *fell from 76 percent in 1990 to 68 percent in 2013*. Furthermore, the share of these men who did not work at all jumped from 11 percent to 18 percent over this period.

³ The details of these calculations are found in the technical appendix.

⁴ This number masks offsetting trends between the native-born—whose employment rates showed sharp declines—and immigrants—whose employment rates showed slight increases. In 1990 the immigrant share in this cell was about 30 percent; by 2013 it had about doubled to 60 percent.

Women with a high school degree or some college were almost twice as likely as women without a high school degree to be working full-time full-year in 2013 (48 percent versus 26 percent). Although their employment rate fell by less than that of similarly educated men, these women were still less likely to be employed than men (69 percent versus 82 percent).

In contrast with less-educated workers, men and women with at least a bachelor's degrees have seen stable or even rising employment rates. Because men and women with more education were already more likely to work in 1990, the employment gap by education—especially for full-time full-year—has grown larger over time. For example, in 1990 men with a bachelor's degree were 7 percentage points more likely to work full-time full-year than men with a high school degree or some college; by 2013, this gap was 15 percentage points.

These employment gaps also grew much larger for women. Women with a bachelor's degree increased their rate of full-time full-year employment from 46 percent in 1990 to 58 percent in 2013; women with an advanced degree saw this rate increase from 48 percent to 64 percent. Notably, women with education ranging from just a high school degree through an advanced degree were all about equally likely to work full-time full-year in 1990. By 2013, however, women with an advanced degree were *one and a third times as likely* to be working full-time full-year as women with only a high school degree or some college.

Earnings Profiles of Workers

To examine earnings trends separately from employment trends, we focus on the real earnings of individuals who worked at least 750 hours in the preceding year.⁵ Over the period 1990 to 2013, the real earnings of those with lower levels of education have tended to decline, while they have risen for those with at least a bachelor's degree (as shown in figure 1).⁶ Furthermore, men without this degree have fared worse than similarly educated women in terms of earnings trends. This may in part reflect the fact that these women are working more than they did previously, and the men are working less.

For less-educated workers, the earnings story is bleak. The median earnings of men without a high school degree fell by *20 percent* between 1990 and 2013, from \$31,900 to \$25,500.⁷ Women without a high school degree fared only marginally better: their median earnings fell by 12 percent, from \$19,600 in 1990 to \$17,300 in 2013.

Median earnings for men with a high school degree or some college dropped by slightly more than 13 percent, from \$47,100 to \$40,700. Women with this level of education experienced a slight 3 percent gain, from \$28,600 to \$29,500.

In contrast, both working men and women with a bachelor's degree saw their earnings rise between 1990 and 2013, though these changes differed along gender lines. Specifically, the median earnings of these working women rose from \$41,400 to \$47,900, and the median earnings of these men rose from \$63,100 to \$67,200. The growth in median earnings for women with bachelor's degrees was more than twice that for men—16 percent versus 7 percent. This difference is likely due to a variety of factors, including a lower initial level of earnings for women relative to men, pressure on employers to reduce the gender wage gap, and women increasing their total number of hours worked.

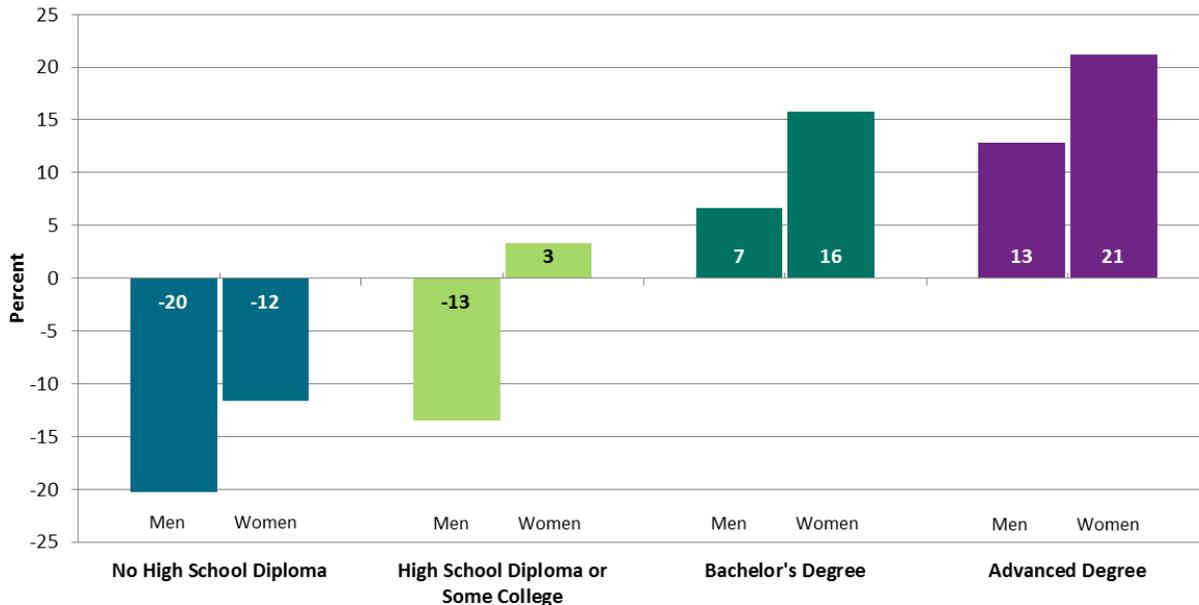
⁵ The threshold of 750 hours is meant to capture individuals who are attached to the labor market, but who do not necessarily work full-time.

⁶ All of the earnings we present are in year 2013 dollars, adjusted for inflation using the personal consumption expenditures (PCE) deflator from the U.S. Bureau of Economic Analysis.

⁷ Median earnings refers to the point at which half of workers earn more and half earn less.

Figure 1

Percent Change in Median Real Earnings for Men and Women from 1990 to 2013, by Educational Group



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.
 Note: Each bar shows the percent change in real median earnings for that gender and education group. The sample includes men and women aged 30–45 who are employed at the time of the survey and worked 750 or more hours in the previous year. For more details, see the technical appendix.



There were even larger increases in median earnings for those with advanced degrees. Median earnings for these men rose by approximately 13 percent (from \$76,800 to \$86,600), while median earnings for women with this level of education rose by 21 percent (from \$50,400 to \$61,100).

Changes at the median mask differences *within* an education group. For example, earnings at the 25th percentile—the point where one-quarter earn less and three-quarters earn more—were flat over this period among men with a bachelor’s degree. However, earnings at the 75th percentile—where three-quarters earn less and one-quarter earn more—grew by more than 20 percent. Women experienced similar variation in earnings.

These earnings changes reflect that a bachelor’s degree does not come with a particular well-defined wage premium; for any given individual, a variety of factors—including the educational institution attended, the skills acquired, and the [major pursued](#)—affect the earnings potential of graduates. Divergent earnings patterns like these are present in each education group, reinforcing the notion that [education alone does not determine earnings](#) and that other factors also influence a worker’s earnings. One such factor is the types of occupations available to workers, which we turn to in the next section.

Occupation Profiles of Workers

Occupational shifts have accentuated the economic struggles of workers without a bachelor’s degree. The types of jobs previously available in construction or manufacturing are no longer in abundance, forcing some workers with lower levels of education out of employment or into different sectors, particularly the lower-paying service sector.

As discussed in more detail below, median earnings have tended to fall in almost every occupation for less-educated workers and even in certain occupations (e.g., production) for more-educated workers.

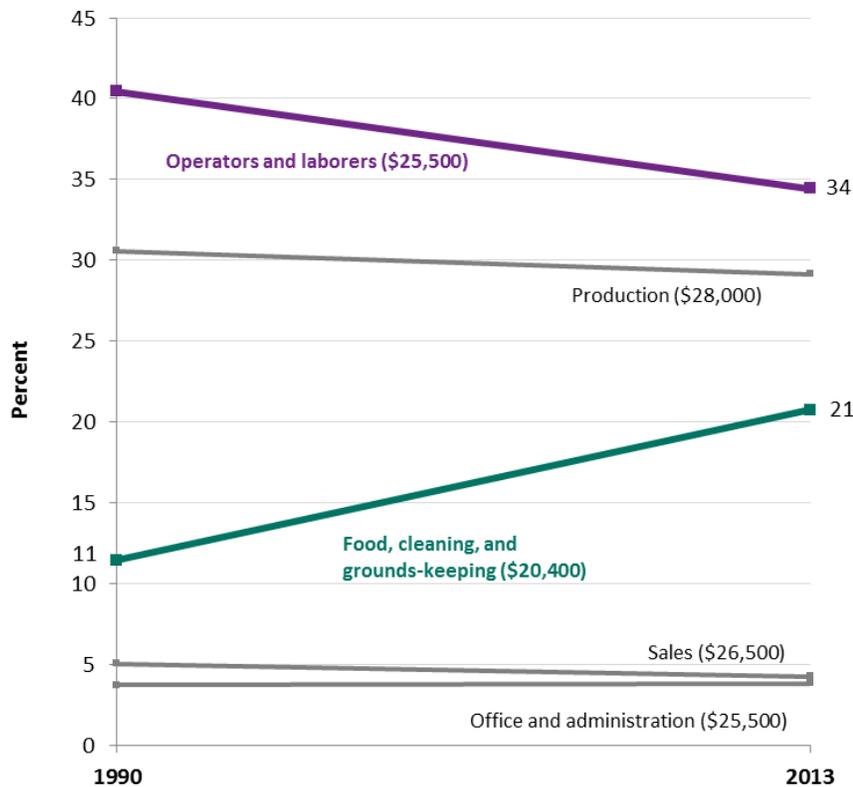
Yet, the change in the mix of occupations in which men and women work accounts for part of the overall decline in real median earnings. Changes in occupational shares account for one-sixth of the change in earnings for men with a high school degree or some college and one-third of the change in earnings for men without a high school degree.⁸

Occupations of Workers with Less than a High School Degree

Between 1990 and 2013, the share of working-age men without a high school degree working as operators and laborers—traditional, blue-collar, middle-paying jobs such as truck drivers and construction workers—fell from 40 percent to 34 percent (as shown in figure 2a). The share working in the lower-paying category of food, cleaning, and grounds-keeping (e.g., janitors and cooks) nearly doubled from 11 percent to 21 percent. Among this group of men, median annual earnings in the food, cleaning, and grounds-keeping occupation were only \$20,400 in 2013, compared to \$25,500 for operators, laborers, and production workers. In addition to more men working in lower-paying occupations, earnings for men without a high school degree [have fallen over time](#) within every occupation, with one notable exception—technicians.

Figure 2a.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Men Without a High School Degree, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

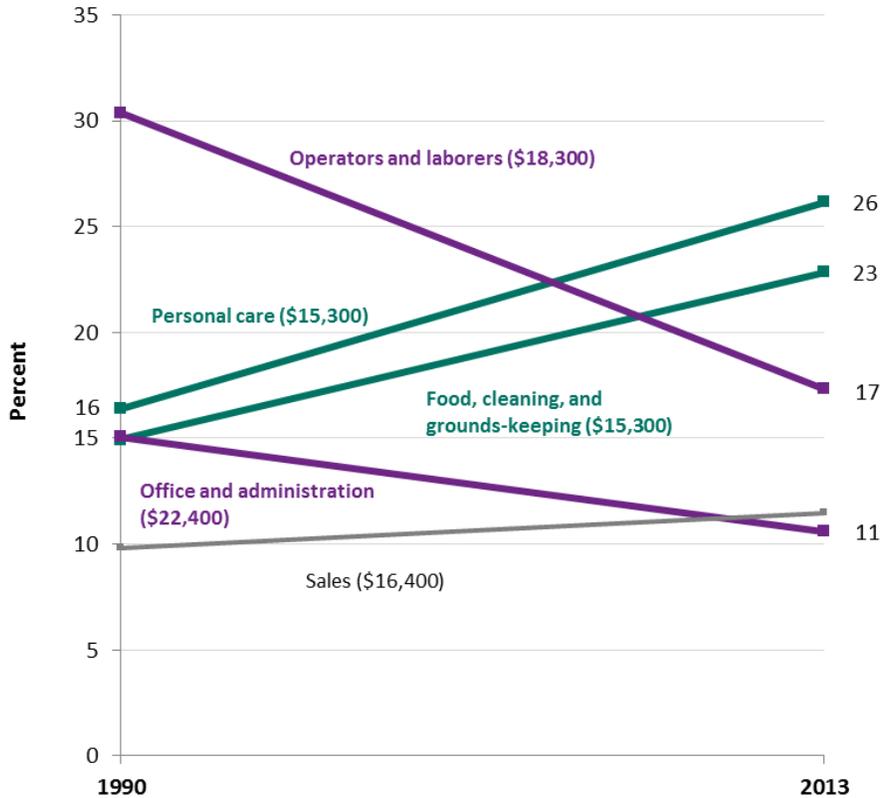
Note: The sample includes men aged 30–45 without a high school degree and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



⁸ Details from this decomposition are found in the technical appendix.

Figure 2b.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Women Without a High School Degree, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

Note: The sample includes women aged 30–45 without a high school degree and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



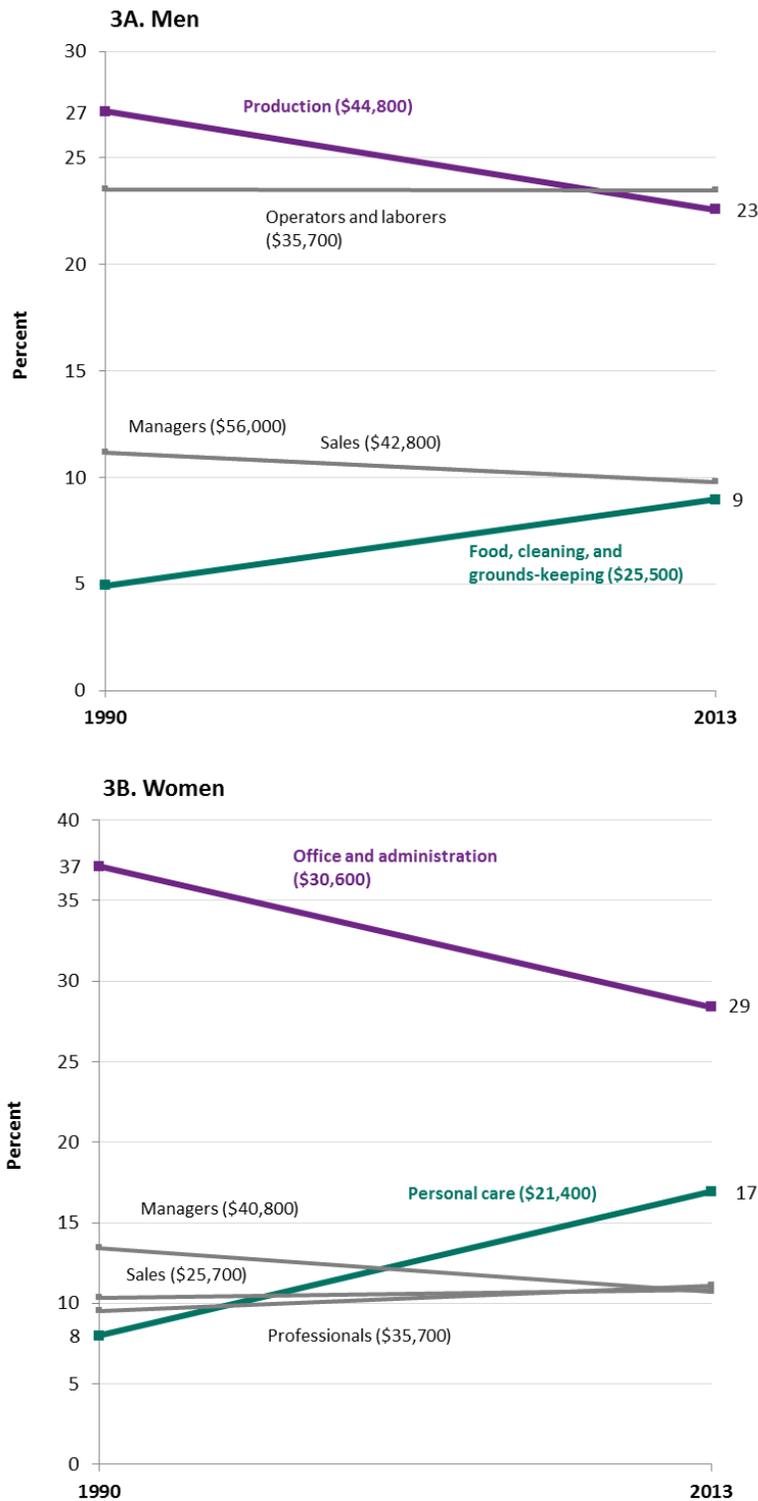
Women, too, experienced shifts from higher- to lower-paying occupations (as shown in figure 2b). The share of women without a high school degree working as operators and laborers (median earnings of \$18,300 in 2013) fell by about half, from 30 percent to 17 percent. Meanwhile, the share working in personal care (e.g., nursing aides and hairdressers) jumped from 16 percent to 26 percent and the share in food, cleaning, and grounds-keeping rose from 15 percent to 23 percent. In both of these latter occupations, median annual earnings were exceptionally low in 2013, at just \$15,300. The share in office and administration jobs—the third-most common group in 1990, with median annual earnings of \$22,400 in 2013—also fell by more than 4 percentage points to become the fifth-most common group.

Occupations of Workers with a High School Degree or Some College

As with men without a high school degree, the most common occupational groups for men with a high school degree or some college are operators and laborers as well as production jobs (e.g., mechanics and carpenters). The specific jobs within this group tend to be more skilled than for men without high school degrees, and this is reflected in higher median earnings.

Figure 3.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Men and Women With a High School Degree or Some College, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

Note: The sample includes individuals aged 30–45 with a high school degree or some college and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.

Yet, the occupational story of men with a high school degree is similar to that of men without one: more men in this education group are working in lower-paid occupations than they were in 1990. Specifically, the share working in production jobs—skilled blue-collar work with median annual earnings of \$44,800 in 2013—fell from 27 percent to 23 percent, while the share working in food, cleaning, and grounds-keeping (median annual earnings of \$25,500 in 2013) rose from 5 percent to 9 percent.

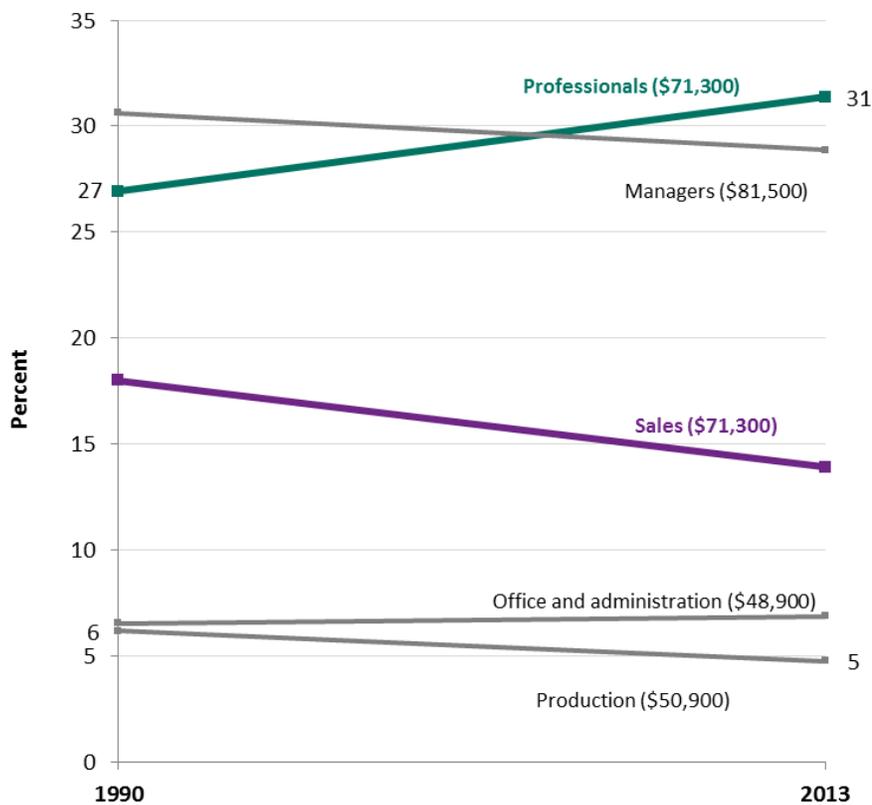
Women with a high school degree or some college experienced similar, but even larger, shifts toward lower-paying occupations over this period. The share working in personal care (median annual earnings of \$21,400 in 2013) more than doubled from 8 percent to 17 percent, and the share in higher-paying office and administration occupations (median annual earnings of \$30,600 in 2013) shrank from 38 percent to 29 percent.

Occupations of College-Educated Workers: Men and Women with Bachelor's or Advanced Degrees

In contrast to the employment and occupational changes experienced by workers with less than a bachelor's degree, workers with these degrees have enjoyed stability, without substantial shifts in occupational distributions.

Figure 4a.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Men With a Bachelor's Degree, 1990 and 2013



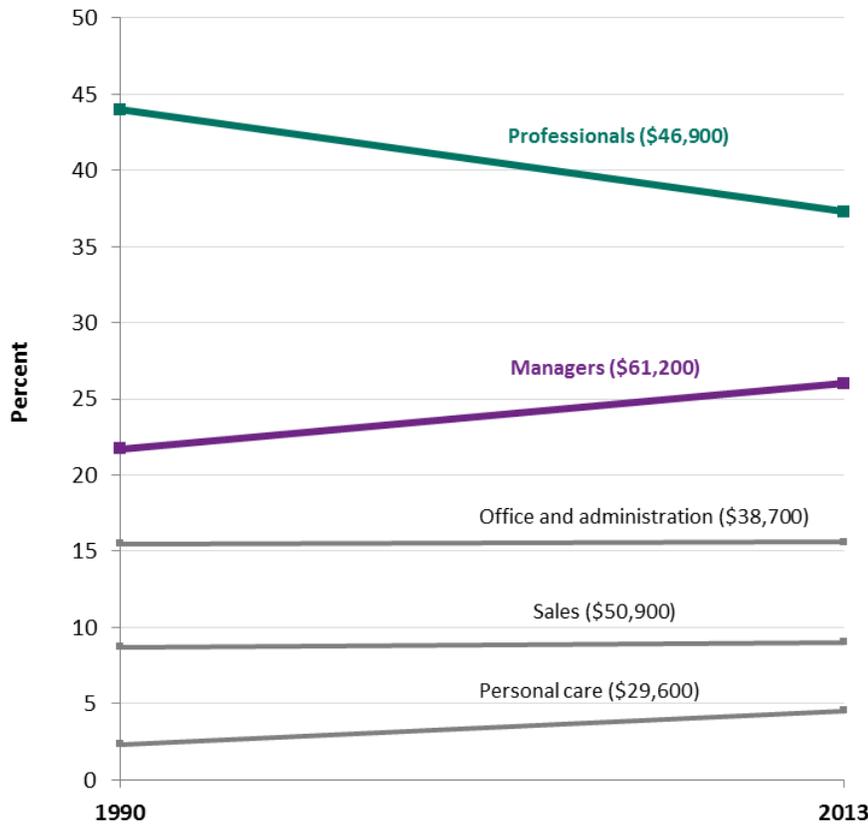
Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

Note: The sample includes men aged 30–45 with a bachelor's degree and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



Figure 4b.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Women With a Bachelor's Degree, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

Note: The sample includes women aged 30–45 with a bachelor's degree and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



Most working men with a bachelor’s or advanced degree work in professional (e.g., scientists and teachers), managerial, or sales occupations; this held true in both 1990 and 2013. In particular, 74 percent of working men with a bachelor’s degree, and 87 percent of working men with an advanced degree, were in one of these three occupational groups in 2013. (These shares were nearly identical in 1990.) One notable change for men with a bachelor’s degree is that the share working as professionals grew by 4 percentage points between 1990 and 2013, as the share working in sales fell by the same amount. Overall, though, not only did college-educated men remain in relatively high-paying occupations, but *median earnings also rose between \$4,000 to \$16,000* within the professional, managerial, and sales-related occupations.

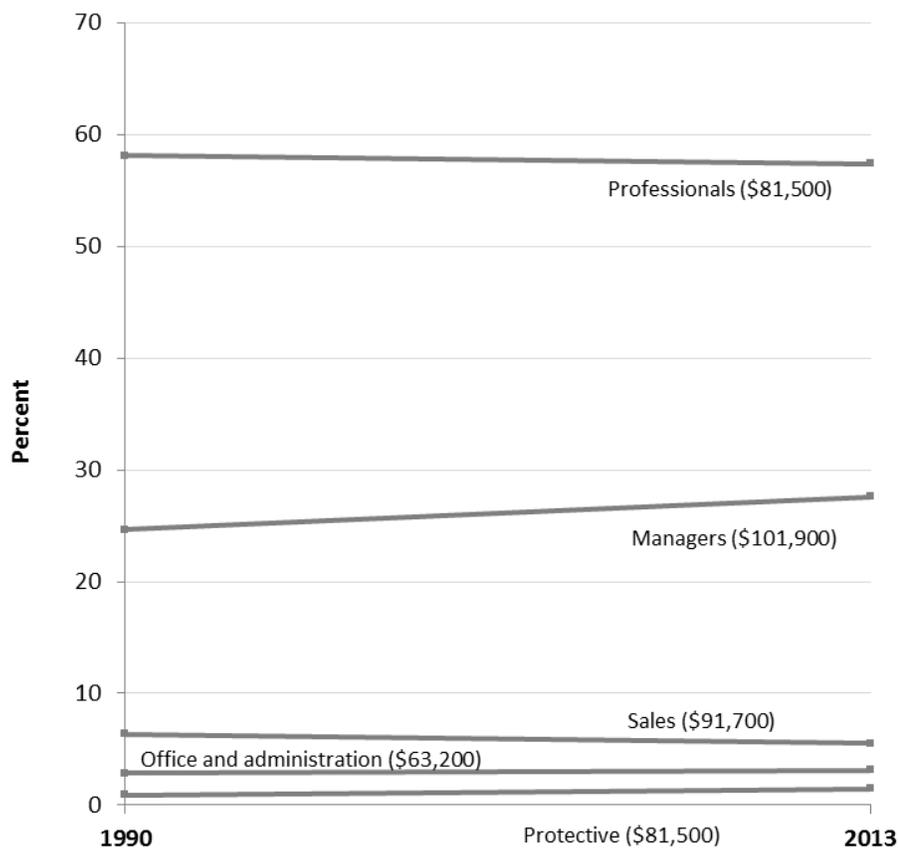
As with the men, the vast majority of working-age women with bachelor’s and advanced degrees—roughly 72 and 90 percent, respectively—worked in professional, managerial, and sales-related occupations in 2013. (Most of these women were actually just in professional and managerial positions.) A significant change between 1990 and 2013 for women with a bachelor’s or advanced degree was a

rise in the share of managers and a decline in the share of professionals. This trend can in part be explained by the falling share of women in teaching.⁹ These changes nonetheless occurred between well-compensated occupations: the median earnings for women with a bachelor’s degree (advanced degree) working in a professional occupation in 2013 was \$46,900 (\$59,100) and for those working in a managerial occupation was \$61,200 (\$76,400).

What’s more, women working in these occupations experienced sizable earnings increases between 1990 and 2013. Among women with a bachelor’s degree, median earnings rose by \$5,300 for professionals and by \$11,700 for managers; among women with an advanced degree, median earnings rose by even more: \$8,600 for professionals and \$14,200 for managers.

Figure 5a.

Occupational Shares and 2013 Median Real Annual Earnings for Employed Men With an Advanced Degree, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

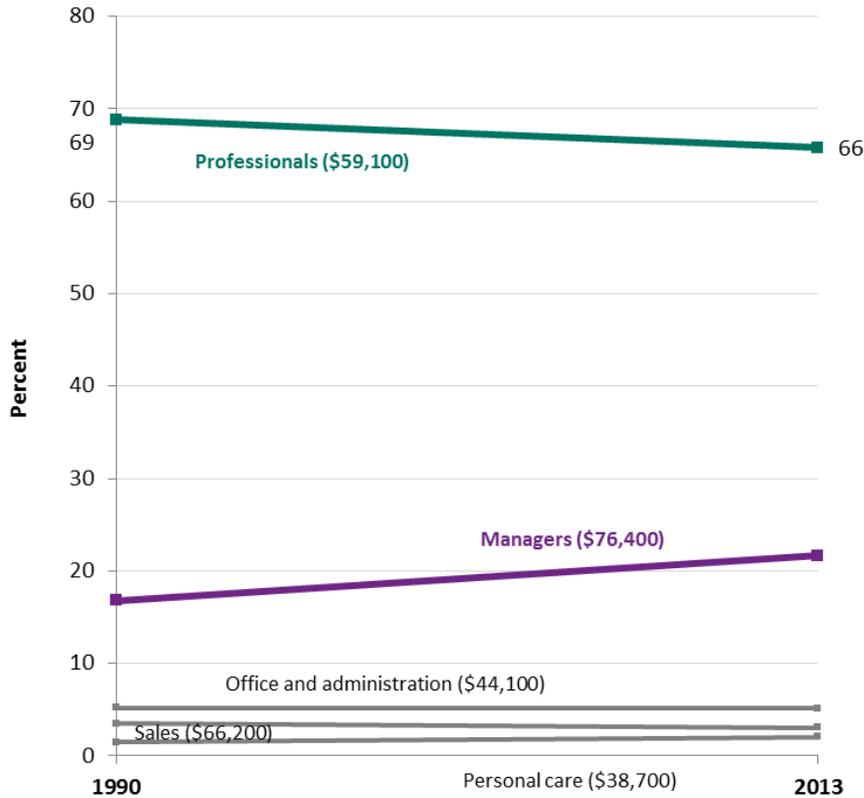
Note: The sample includes men aged 30–45 with an advanced degree and who worked at least 750 hours in the previous year. Values in parentheses represent 2013 median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



⁹ Between 1990 and 2013, the share of working women with a bachelor’s degree or more in teaching (kindergarten and earlier school teachers, primary school teachers, secondary school teachers, or special education teachers) fell from 19.8 percent to 13.7 percent.

Figure 5b.

Occupational Shares and 2013 Median Real Annual Wages for Employed Women With an Advanced Degree, 1990 and 2013



Source: Authors' calculations using the 1990 Census and 2013 American Community Survey.

Note: The sample includes individuals aged 30–45 with an advanced degree and who worked at least 750 hours in the previous year. Values in parentheses represent median annual earnings in that occupation for the specific gender and education group. For more details, see the technical appendix.



Conclusion

Over the past quarter-century, the types of jobs held by less-educated workers have shifted significantly, with important consequences for their earnings. Men and women with less than a bachelor's degree are less likely to be working full-time and full-year, and those who continue to work have been moving away from traditional, blue-collar, middle-paying jobs—such as truck drivers, construction laborers, and factory workers—to lower-paying service jobs. The shift to service jobs can explain between one-sixth and two-fifths of the overall decline in annual earnings for the typical worker without a bachelor's degree. Men and women with that degree—or more—have stayed in professional and managerial occupations and seen their earnings rise, although even among these groups, some have fared better than others.

The labor market will likely continue to change in the years and decades ahead. A return to the traditional occupations of previous decades is unlikely, but there is already some indication that new opportunities are opening for American workers who may not have a bachelor's degree but possess the skills demanded by tomorrow's economy. Whether these opportunities will lead to widespread economic prosperity for a majority of workers is an open and pressing question.