

Motherhood and the Wages of Women in Professional Occupations



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It is well established that mothers are paid less than childless women and that fathers tend to earn higher wages relative to childless men, but we do not know whether these findings apply to workers in all occupations. Using IPUMS and ACS data from 1980 and 2010, we examine the family wage gap for highly educated professionals, the most advantaged sector of the occupational distribution. Results indicate that the size of the negative wage differential for motherhood has declined over time in all professions. Moreover, in the traditionally male-dominated professions of STEM, medicine, and law, women with children experience a positive wage differential, whereas their counterparts in female-dominated professions continue to experience a negative one. The positive differential for fatherhood has remained stable over time. These findings underscore the growing heterogeneity of women's experiences in combining work and family and raise important questions for further research.

Keywords: work, family, professional women, wages

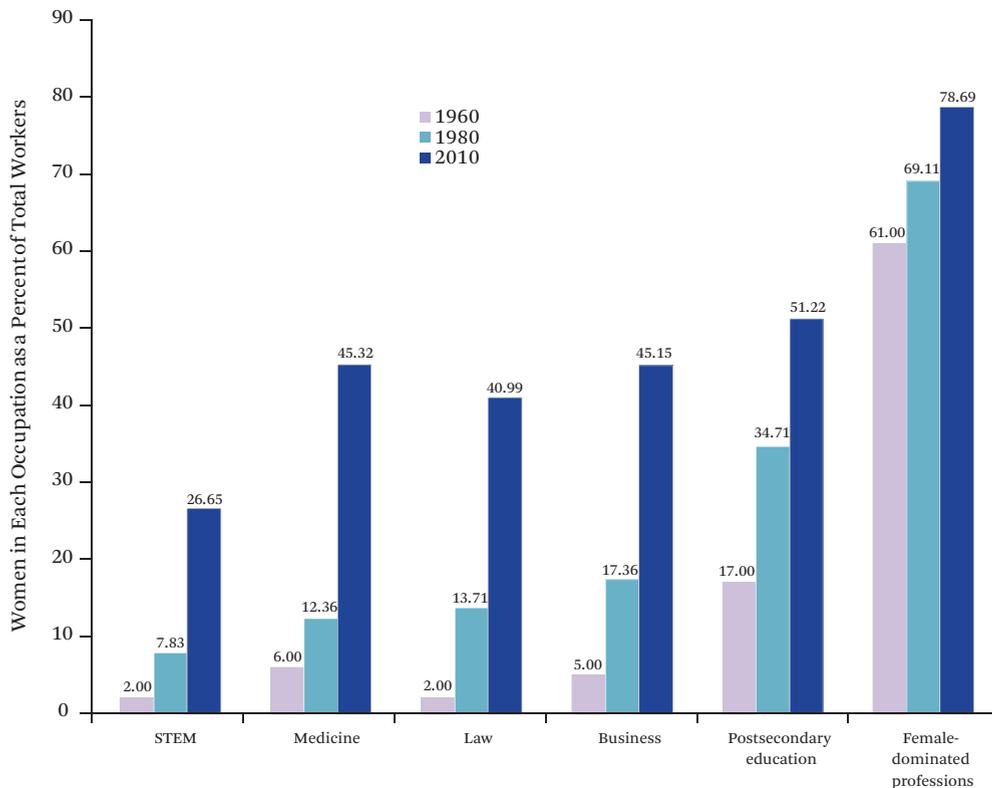
In 2009, American women reached an important milestone in the world of work. For the first time in history, women were the majority (51.4 percent) of workers in highly paid managerial and professional occupations despite being only 47 percent of the total workforce (Chao and Rones 2007). This milestone is undoubtedly related to widespread societal changes that are well documented elsewhere and include rapid rises in women's educational attainment (DiPrete and Buchmann 2013), declining discrimination against women in the

labor market, the expansion of work-family policies in many workplaces (Gornick and Meyers 2003), and a host of other factors.

As women's labor-force participation has increased substantially, they have also made inroads into previously male-dominated occupations. Among college-educated thirty- to forty-four-year-olds, women now make up 51 percent of postsecondary education professionals, 45 percent of business professionals, 41 percent of attorneys, and 45 percent of medical professionals (see figure 1). These tradi-

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Figure 1. Women's Share of Professional Occupations in 1960, 1980, and 2010

Source: Authors' calculations.

tionally male-dominated professions are often characterized as having higher wages, greater autonomy, and better opportunities for promotion than other occupations (Glass 1990), but they have also typically entailed longer work hours and norms of overwork (Jacobs and Gerson 2004; Cha 2013). Thus it is an open question whether women in traditionally male-dominated professions are advantaged or disadvantaged in their ability to combine work and family, relative to other women.

Women in demanding professions are said to experience “competing devotions” (Blair-Loy 2003) to their careers and their families, both of which are “greedy institutions” (Coser 1974). This may be especially true for women in the United States, which has no publicly provided childcare and no national policy of paid parental leave (Percheski 2008; Gornick and Meyers 2003). One of the most prevalent explanations for occupational sex segregation among

supply-side theorists is that women choose jobs that maximize their ability to combine paid work and family responsibilities (Marini and Brinton 1984) and that as a result they enter traditionally female-dominated occupations that offer greater flexibility and fewer work hours (Glass 1990). But the recent rise of women in several traditionally male-dominated professions raises important questions about the degree to which different occupations offer amenities conducive to balancing work and family demands. Are more women entering traditionally male-dominated professions regardless of the work-family challenges they impose and merely conforming to the demands of the professions? Or have some professions changed to offer more workplace flexibility thus enabling greater work-family balance for women?

One indicator of women's challenges in combining work and family is the consistent

finding that mothers earn less than childless women. The family wage gap—the differential in wages between women with children and women without children—has been documented across studies using a variety of model specifications and for many industrialized societies (Gough and Noonan 2013; Harkness and Walfogel 2003; Budig and England 2001). A family wage gap exists for women of varying levels of education (Anderson, Binder, and Krause 2002), earnings (Budig and Hodges 2014), race and ethnic status (Budig and England 2001; Glauber 2007), age at childbirth (Taniguchi 1999), and cohort (Avellar and Smock 2003). In contrast, men experience a positive wage differential for fatherhood, in that fathers tend to earn more than childless men (Glauber 2008; Hodges and Budig 2010; Percheski and Wildeman 2008). The differential association between parenthood and men's and women's wages is thought to result from gendered responses to having children, where women reduce work hours to care for children and men increase work hours to provide for their family, as well as employer discrimination against mothers and favoritism toward fathers (Coltrane 1997).

In this paper, we advance the understanding of the family wage gap in three ways. First, we examine the degree to which it has changed among college-educated women in professional and managerial occupations (professional occupations) from 1980 to 2010 with data from the Integrated Public Use Microdata Series (IPUMS) of the U.S. Census and the American Community Survey (ACS). Women's experiences have become more heterogeneous over time in terms of educational attainment and occupational choices, but few studies have explored differences in the association between parenthood and wages over time or have examined such trends beyond the late 1990s (but see Pal and Waldfogel, this volume). We compare women across a range of educational and occupational groups to determine which groups have experienced the largest changes in the family wage gap.

Second, we investigate the family wage gap for highly educated women in professional occupations and examine differences for women in traditionally female-dominated and several male-dominated professions. Because most research has studied the family wage gap for women as a cohesive group, we know little about the degree to which the general finding holds for women in different occupations.

Third, to be as comprehensive as possible, we compare the family wage gap for women with that for men and examine the degree to which the association between parenthood and wages varies by race-ethnicity. Research on the family wage gap tends to focus either on women or men. Comparing their experiences provides a more complete picture of changing inequalities in the family wage gap—between men and women as well as among women and among men. We know from prior research that the negative wage differential for motherhood and the positive wage differential for fatherhood vary by race and ethnicity (Waldfogel 1997; Budig and England 2001; Glauber 2008; Greenman 2011).¹ However, we do not know whether or how they vary by race and ethnicity among highly educated men and women in different professions.

PRIOR RESEARCH

The differential in wages between women with children and women without children is well established in prior research. The reasons for the commonly-found negative association between motherhood and wages are complex (for a review, see Gough and Noonan 2013). Employers may discriminate against mothers in hiring, promotion, and compensation, likely because mothers are perceived as less committed to work (England 2005). Women often take maternity leave and reduce their work hours when they have a child, which results in the loss of work experience—a key determinant of higher wages, promotion, and future productivity (Budig and England 2001; Staff and Mortimer 2012).

In contrast, the positive wage differential

1. White women experience a 6 percent, 10 percent, and 7 percent negative wage differential for one, two, and three or more children, whereas black women and Latinas tend to experience smaller ones (Glauber 2007). Black men experience a smaller positive wage differential for fatherhood than whites or Latinos (Glauber 2008).

for fathers is believed to be due to “men’s gender-traditional response to the birth of a child, wherein normatively good fathers increase their breadwinning capacity” (Hodges and Budig 2010, 718) by increasing work hours and effort when they have a child, particularly when mothers reduce work hours, thereby maximizing their earnings (Bianchi, Robinson, and Milkie 2006; Lundberg and Rose 2000). Some employers may favor fathers because of their fatherhood and perceived breadwinning status. To the degree that fathers are less involved in childcare than mothers, their earnings are less likely to be affected than those of mothers, even in inflexible jobs. At any rate, the positive wage differential for fatherhood persists even after controlling for a host of other relevant factors that include human capital, work hours, and effort (Glauber 2008; Lundberg and Rose 2000).

How has the family wage gap changed over time for women or men in the United States? Sarah Avellar and Pamela Smock (2003) compare the average wage gap for mothers and non-mothers for two cohorts of women (1975 to 1986 and 1986 to 1998) and find no differences between the two groups. Christine Percheski and Christopher Wildeman (2008) finds rising full-time, year-round employment rates across women born between 1906 and 1975, even for women in traditionally male-dominated professions and among mothers of young children. She also finds that the differences in employment rates between mothers and childless women are shrinking across cohorts (see also Boushey 2005). She does not examine whether the wage gap between mothers and childless women also declined over that period, however. Most recently, Ipshita Pal and Jane Waldfogel (this volume) find a decline in the family gap in wages over time, from about 5 to 6 percent in 1967 and 1968 to about 1 percent in 2011 through 2013, with variations for marital status, education, race-ethnicity, and immigration status.

There are several reasons to expect that the family wage gap declined between 1980 and 2010. Two of the purported mechanisms for the gap, discrimination and the traditional gender division of labor, have declined over the past thirty years. Federal legislation, including Title VII provisions of the Civil Rights Act of

1965 and the Family and Medical Leave Act, barred discrimination against women in the workplace and require employers to provide unpaid maternity leave. Since the middle of the 1970s, Americans have become more supportive of gender equality (Bolzendahl and Myers 2004). Moreover, some evidence indicates that traditional gender roles have eased in recent decades. The gender gap in time spent on housework and childcare has declined, especially among highly educated, dual-earner couples such that, by the late 1990s, the ratio of mothers’ to fathers’ time spent on housework and childcare decreased to 1.8 and 1.6, respectively (Sayer 2005; see also Hook 2006). Also, men’s and women’s attitudes toward work and family may be converging. A study by the Families and Work Institute finds that men and women are now equally likely to want jobs with greater responsibility (Galinsky, Aumann, and Bond 2009). These large-scale changes may have resulted in mothers taking less time off for childrearing as well as in employers discriminating less against mothers or reducing the penalty for time off for childrearing, which, coupled with changes in the selection of women into motherhood and into professions, could have led to a decline in the family wage gap. To determine whether the family wage gap declined generally for all women during this period, we examine the degree to which the association between parenthood and wages has changed for women between 1980 and 2010 and compare these changes with those for men over the same period.

GROWING HETEROGENEITY IN THE FAMILY WAGE GAP FOR WOMEN

Although large-scale societal changes may be related to overall changes in the family wage gap, we also expect that the gap has become increasingly heterogeneous for women over time. After all, the declines in inequality between women and men in many realms of society in recent decades have been coupled with increasing inequalities among women in terms of the resources they can bring to bear on managing work and family demands. For example, occupational sex segregation has declined most among those with a college degree, and professional and managerial jobs have become

more integrated than clerical and blue-collar jobs have (Cotter, Hermsen, and Vanneman 2004). As a result, today college graduates work in dramatically less sex-segregated contexts than those at other educational levels.

The few studies that examine the heterogeneity of women's experiences find that some women experience smaller negative wage differentials for motherhood than others. For example, highly paid, highly educated women and those who delay childbearing to later ages experience a smaller family wage gap and, in some cases, earn higher wages than childless women (Taniguchi 1999; Anderson, Binder, and Krause 2002; Amuedo-Dorantes and Kimmel 2005). Analyses of the 1979 National Longitudinal Survey of Youth (NLSY79) find variations in the family wage gap across the wage distribution and, depending on estimates, either no gap or even a small positive wage differential for women at the very top of the distribution (Budig and Hodges 2014; Killewald and Bearak 2014). In addition, recent research examines heterogeneity in the association between fatherhood and wages. Alexandra Killewald (2013) finds that the positive wage differential for fatherhood exists only for married, residential, biological fathers.

Beyond considering heterogeneity among individuals with different attributes, there are good reasons to expect that variations across professions impact the family wage gap. If occupations vary in terms of workplace flexibility or penalties for job interruptions, the family wage gap may be smaller for women in some professions than in other professions. Some preliminary evidence supports this idea. Using data from the NLSY, Rebecca Glauber (2011) finds that among working women, mothers earn 5 percent less if they work in gender-integrated jobs and 12 percent less in female-dominated jobs than their counterparts in traditionally male-dominated jobs (including both professional and nonprofessional occupations). Glauber also finds that women in male-dominated and integrated jobs experience no negative wage differential for having one or two children. Using data from 1982 through 1993, Michelle Budig and Paula England find that the family wage gap was smaller for women in male-dominated (less than 35

percent female) professional or managerial occupations than women working in female-dominated occupations. They conclude that "high-level, 'male' jobs penalize women a bit less for having children," but do not speculate about why this is the case (2001, 219).

DATA AND METHODS

We analyze differences in wages for highly educated parents and nonparents working in elite occupations using decennial census data from the 1980 IPUMS 5 percent sample and the 2006–2010 ACS (Ruggles et al. 2010). Throughout the paper, we refer to the ACS data as *2010* or *the most recent period*. We seek to understand how parenthood is associated with wages across professional occupational groups; therefore, we restrict the sample to thirty- to forty-four-year-olds because they have most likely completed their education and established career and family formation trajectories (Hertz 2004). We further restrict the sample to those with a bachelor's degree or higher who are currently employed in professional occupations. This sample includes 17,413 women and 30,772 men in 1980 and 261,380 women and 227,643 men in 2010. Using ordinary least squares (OLS) regression, we analyze the family wage gap measured as logged hourly wages for separate models for each professional group of interest for 1980 and 2010; we create interacted models with the pooled samples from 1980 and 2010 to see whether the family wage gap is different at these two time points. We produce parallel analyses for men and discuss key findings as well as important differences between women and men where they are found.

Research on the wage differentials between mothers and childless women tends to use longitudinal data and individual fixed-effects models to examine changes in women's wages over their life course and control for factors that do not change over time. Budig and England (2001) report a 6.8 percent motherhood penalty from a fixed-effects model and an 8.1 percent motherhood penalty from an OLS model. Deborah Anderson, Melissa Binder, and Kate Krause (2002) report a 3.0 percent penalty from a fixed-effects model and a 5.2 percent penalty from an OLS model. Avellar and Smock (2003) report OLS estimates that are slightly

Table 1. Participation in the Labor Force, Thirty- to Forty-Four-Year-Olds, All

	1960		1980		2010	
	Percent	N	Percent	N	Percent	N
Women						
Nonprofessional, less than bachelor's degree	84.5	51,737	68.5	83,810	49.0	484,924
Nonprofessional, bachelor's degree or higher	2.8	1,682	6.1	7,469	12.8	126,556
Professional, less than bachelor's degree	7.0	4,292	11.2	13,688	11.8	116,460
Professional, bachelor's degree or higher	5.7	3,529	14.2	17,413	26.4	261,380
Total	100	61,240	100	122,380	100	989,320
Men						
Nonprofessional, less than bachelor's degree	78.3	109,488	62.4	108,666	56.7	624,236
Nonprofessional, bachelor's degree or higher	5.5	7,651	10.6	18,458	14.6	161,285
Professional, less than bachelor's degree	8.8	12,271	9.3	16,231	8.0	88,390
Professional, bachelor's degree or higher	7.4	10,459	17.7	30,772	20.7	227,643
Total	100	139,869	100	174,127	100	1,101,554

Source: Authors' calculations.

Note: Data are weighted.

smaller than fixed-effects estimates, but their general conclusions remain the same. Thus, overall, it appears that unobserved heterogeneity accounts for about 20 to 30 percent of the motherhood wage penalty. Because the IPUMS and ACS data we use here are cross-sectional, we are not able to estimate fixed-effects models, so it is possible that our estimates are biased by unobserved heterogeneity. The benefit of using IPUMS and ACS data is that we have appropriate sample sizes to analyze differences in the association between parenthood and wages for men and women across professions and over time. Sample sizes of women in traditionally male-dominated occupations like STEM, medicine, and law are small (see table 1) and therefore are not possible to study using longitudinal datasets like the NLSY.

Highly educated professional women make up only 5 percent of working women in 1960, 14 percent of working women in 1980, and 26 percent of working women in 2010. Highly educated professional men make up 7, 18, and 21

percent of the male labor force in 1960, 1980, and 2010, respectively (see tables 1 and 2). Although we focus on highly educated professional women, we also compare them with all employed women to see how they differ. For this analysis, we break the full sample of employed women into four categories: nonprofessionals with less than a college degree, nonprofessionals with at least a college degree, professionals with less than a college degree, and professionals with at least a college degree. Professional occupations include the six occupational categories discussed in the following section.

Occupational and Education Categories

The occupational classification scheme for the 1990 census offers a consistent, long-term classification of occupations comparable from 1960 to 2010. It contains 389 occupations that fall into seven broad occupational categories, including professional and managerial occupations.² We created a six-category occupational

2. These occupational categories include managerial and professional; technical, sales, and administrative; service; farming, forestry, and fishing; precision, production, craft, and repairers; operatives and laborers; and nonoccupational responses.

Table 2. Participation in the Labor Force, Thirty- to Forty-Four-Year-Olds, College Graduate Professionals

	1960		1980		2010	
	Percent	N	Percent	N	Percent	N
Women						
STEM	1.6	58	2.7	465	7.0	18,398
Medical professions	1.0	37	1.6	284	4.2	10,987
Law	0.2	7	1.2	213	2.8	7,278
Business	5.7	200	17.5	3,049	35.0	91,505
Postsecondary education	3.1	108	5.1	893	3.7	9,615
Female-dominated professions	88.4	3,119	71.8	12,509	47.3	123,597
Total	100	3,529	100	17,413	100	261,380
Men						
STEM	28.9	3,013	17.8	5,473	22.2	50,643
Medical professions	5.3	554	6.5	2,013	5.8	13,255
Law	3.2	341	4.4	1,341	4.6	10,477
Business	38.3	4,008	47.2	14,514	48.8	111,168
Postsecondary education	5.0	526	5.5	1,680	4.0	9,156
Female-dominated professions	19.3	2,017	18.7	5,751	14.5	32,944
Total	100.0	10,459	100	30,772	100	227,643

Source: Authors' calculations.

Note: Data are weighted.

code representing only professional and managerial occupations: STEM (mathematics, statistics, engineering, computer science, life science, and physical science); medicine (physicians, dentists, veterinarians, optometrists, podiatrists, and pharmacists); law (lawyers and judges); business (including managerial and management-related occupations);³ postsecondary education; and female-dominated specialties (K–12 teachers; health professionals, excluding medical occupations that require a doctoral degree; librarians; and social work-

ers).⁴ See appendix for details. Women made up 69 percent of employees in female-dominated occupations in 1980 and 79 percent in 2010. The census records an individual's educational attainment in categories, the highest two are four years of college and five or more years of college. Our sample consists of individuals with at least four years (a bachelor's degree) or more.⁵ Our models include a dummy variable indicating whether an individual completed a graduate or professional degree (five or more years of college, bachelor's degree is the refer-

3. Managerial and management-related professions both fall under the broader umbrella of business occupations but are separated because managerial represent higher-level business professions, including chief executives, legislatures, managers, and administrators. Management-related professions include accountants, insurance underwriters, human resource personnel, analysts, and other management support occupations. Both are included in our business category.

4. We exclude individuals working in the following professional occupations due to small sample sizes: archivists and curators, social scientists, recreation workers, clergy and religious workers, and writers-artists-entertainers-athletes.

5. Fewer than 1 percent of the sample either had no data on their years of schooling or responded that they received no schooling. They are excluded from the analysis.

ence category). Although this measure is not ideal because it does not distinguish between type of degree completed, it is the best approximation of advanced degree completion available in the data.

CHANGE IN WOMEN'S PARTICIPATION IN PROFESSIONAL OCCUPATIONS

Tables 1 and 2 show the distribution of women and men with or without a college degree in professional and nonprofessional occupations in 1960, 1980 and 2010. The percentage of women holding at least a bachelor's degree and employed in professional occupations was a very low 6 percent in 1960 and grew to 14 percent by 1980. This figure nearly doubled between 1980 and 2010, from 14 percent to 27 percent, as did the percentage of women with at least a bachelor's degree in nonprofessional occupations (from 7 percent to 14 percent). The percentage of women without a college degree employed in nonprofessional jobs shrank from a high 85 percent in 1960 to less than half of all working women (47 percent) in 2010. These figures underscore the rapid rise of women's college degree receipt and entry into professional occupations over the past several decades (DiPrete and Buchmann 2013). Over the same period, the percentage of men holding at least a bachelor's degree and employed in professional occupations more than doubled between 1960 and 1980 (from 7 to 18 percent) but increased only 4 percentage points (from 18 to 22 percent of male workers) between 1980 and 2010. Women's share of all highly educated professionals increased over time. In 1980, women made up 36 percent of professional workers with at least a college degree. By 2010, the figure was 53 percent (not shown).

Table 2 divides the sample of highly educated professionals into six categories: STEM, medical professions, law, business, postsecondary education, and female-dominated professions. One of the most striking changes over time is the exodus of women from traditionally female-dominated professions. Between 1960 and 2010, the number of professional women working in them declined from 88 percent to 47 percent. At the same time, women have

made inroads into other professions, most notably business, where 35 percent of college-educated, professional women work in 2010 (versus 18 percent in 1980 and only 6 percent in 1960), and other traditionally male occupations. Fewer than 3 percent of women worked in STEM occupations in 1980, versus 7 percent in 2010. Between 1980 and 2010 the percentage of women working in medical professions increased from nearly 2 percent to more than 4 percent and in law from 1 percent to nearly 3 percent. Although these changes appear small, it is clear that women have moved into business, STEM, medicine, and law, and that these shifts have occurred mainly at the expense of female-dominated professions. The trends for men are less dramatic. Men's participation in female-dominated professions declined (from 19 percent in 1960 to 15 percent in 2010) and their participation in business rose (from 38 percent to 49 percent); their participation in all other professions remained relatively stable.

Figure 1 displays females as a percentage of total employees and shows that women came to make up a much larger share of workers in all six professional categories between 1960 and 2010. This figure underscores the dramatic rise of women in professional occupations, especially those once dominated by men. In light of these striking changes, it is important to ask how women's experiences in these occupations, in particular how the wages for mothers in these occupations relative to childless women, changed over time as more women entered professional occupations. It is also important to compare the experiences of women with those of men.

Dependent Variable

The dependent variable is the natural logarithm of hourly wages for the current occupation. It is derived from respondents' reported income, measured as total pretax income for the past twelve months, including wages, salaries, commissions, cash bonuses, tips, and other income received from an employer, expressed in constant 2014 dollars. We divide annual income by fifty-two weeks, then by the respondent's reported average number of hours worked in a typical week to arrive at average

hourly wages. Following earlier research (such as Budig and England 2001), we bottom and top-code hourly wages at \$1 and \$200 to eliminate potential outliers.⁶

Independent Variables

To examine how parenthood status is related to wages, the main independent variable is a dummy variable measuring whether the individual has any biological, adopted, or stepchildren living in the home (1) or not (0).⁷ Following Budig and England (2001), we control for average hours worked per week, industrial sector, and demographic factors. Wages vary across industrial sectors; for example, wages in the public sector tend to be lower than in the financial sector, so we include dummy variables for the industrial sector in which the respondent works.⁸ Demographic controls include any education beyond a bachelor's degree (coded as five or more years of postsecondary education), age, age squared, marital status, and race.⁹ Marital status is measured with dummy variables indicating currently married, divorced, or separated, with never married serving as the reference category.¹⁰ Race is measured with a series of dummy variables indicating non-Latino black, Latino, Asian American or Pacific Islander, other (which includes American Indian–Alaskan Natives, biracial or multiracial individuals), and non-Latino white

(the reference category). Descriptive statistics for all variables are presented by occupational category for 2010 in tables 3 and 4.

CHARACTERISTICS OF ELITE, PROFESSIONAL WOMEN

How do college-educated professional women compare with all other employed women in terms of their labor market and family characteristics? The descriptive statistics in tables 3 and 4 highlight some important differences. In 2010, employed women earn, on average, \$20.83 per hour, whereas college-educated, professional women earn \$29.94 per hour. College-educated, professional women also work more hours (40.2 per week on average, versus 38.2) and have fewer children (1.25 on average, versus 1.34) than other employed women. Finally, college-educated professionals are more likely to be married (71 percent) and less likely to be divorced (10 percent) than other employed women (of whom 63 percent are married and 17 percent are divorced).

Differences among women within professional occupations are also important. Women in postsecondary education and female-dominated professions earn the lowest hourly wage (\$24.08 and \$22.69, respectively). Women in medical professions (\$48.28) and law (\$45.86) earn more than women in other traditionally male-dominated occupations. Even among

6. Payments-in-kind or reimbursements for business expenses are not included. IPUMS recommends that income data are top-coded. Before, top- and bottom-coding hourly wages, we top-coded yearly income data. For 1980, income data are top-coded at \$75,000 and for 2006–2010, income data are top-coded at 99.5th percentile of income within each state. The top codes for each state vary from a low of 169,000 to a high of 689,000. We replicated all results without top-coding the IPUMS/ACS data as suggested by IPUMS as well as the additional top- and bottom-coding of hourly wages to eliminate outliers.

7. This measure excludes children not currently living in the household. Because the sample comprises highly educated professional women, few are likely to have had children so young that those children are old enough to be living on their own. Although we would like to compare this measure with a woman's total fertility or the number of children ever born to her, these measures are not available in the data.

8. Industrial sectors include agriculture, forestry, and fisheries; mining; construction; manufacturing; transportation, communications, and public utilities; wholesale trade; retail trade; finance, insurance, and real estate; business and repair services; personal services; entertainment and recreation services; public administration; professional and related services; active duty military; and a category for missing or not applicable. Public administration is the reference category.

9. Models for lawyers and doctors do not include professional or graduate degree measure because all respondents in these occupations have completed a professional degree or graduate degree.

10. Currently divorced includes widowed because too few cases are available to analyze separately.

Table 3. Descriptive Statistics in 2010, All Women

	All Women	Nonprofessional, <BA	Nonprofessional, BA+	Professional, <BA	Professional, BA+
Hourly wages	20.83 (11.31)	14.77 (7.61)	23.66 (12.02)	20.59 (9.19)	29.94 (13.27)
Number of children	1.34 (1.19)	1.42 (1.22)	1.12 (1.13)	1.51 (1.19)	1.25 (1.14)
Hours worked	38.23 (10.71)	37.05 (10.22)	37.98 (11.68)	38.70 (10.07)	40.22 (10.99)
Age	37.40 (4.33)	37.65 (4.33)	36.94 (4.34)	37.85 (4.28)	37.01 (4.31)
Single	0.19	0.20	0.23	0.15	0.18
Married	0.63	0.58	0.65	0.66	0.71
Divorced	0.17	0.22	0.12	0.19	0.10
White	0.74	0.71	0.73	0.77	0.77
African American	0.12	0.15	0.10	0.12	0.08
Latina	0.06	0.07	0.05	0.05	0.04
Asian	0.06	0.04	0.10	0.03	0.09
Other	0.02	0.03	0.02	0.03	0.02
Graduate degree	0.16	—	0.23	—	0.46

Source: Authors' calculations.

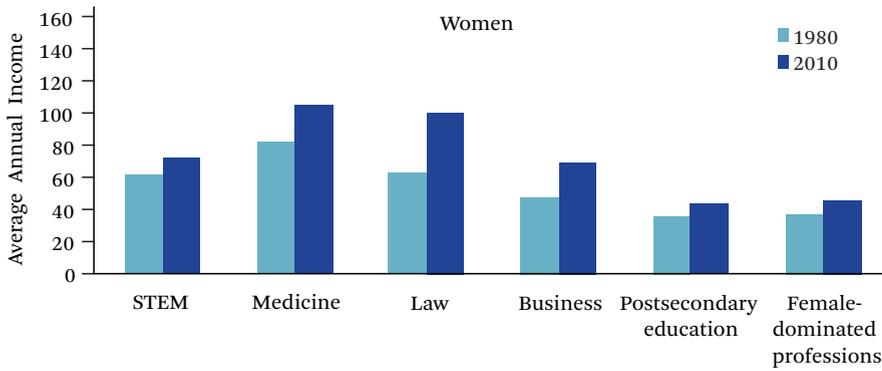
Note: Standard deviation in parentheses, wages are reported in 2014 dollars.

Table 4. Descriptive Statistics in 2010, STEM, Medical, Law, Business

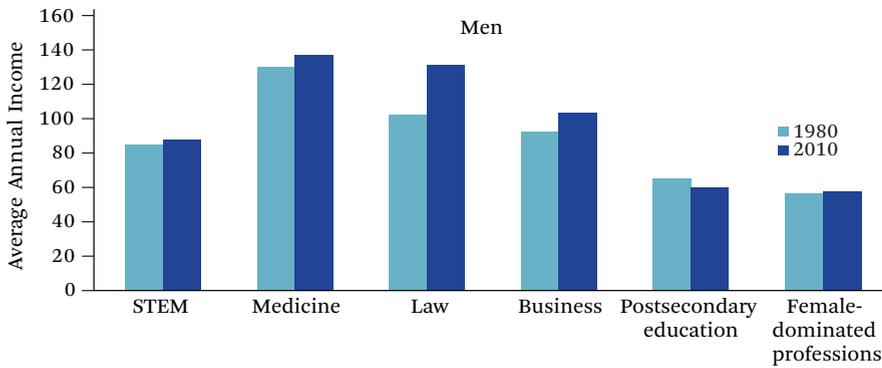
	STEM	Medicine	Law	Business	Postsecondary Education	Female-Dominated Professions
Hourly wages	33.65 (11.95)	48.28 (21.51)	45.86 (17.93)	33.05 (13.54)	24.08 (11.19)	22.69 (11.17)
Number of children	0.96 (1.04)	1.16 (1.13)	0.97 (1.06)	1.10 (1.09)	1.01 (1.10)	1.49 (1.18)
Hours worked	40.96 (8.56)	44.95 (15.77)	44.50 (11.16)	42.31 (9.87)	37.37 (14.38)	37.58 (10.49)
Age	36.67 (4.38)	36.45 (4.24)	36.44 (4.26)	37.20 (4.28)	36.94 (4.29)	37.08 (4.31)
Single	0.23	0.19	0.25	0.21	0.23	0.16
Married	0.67	0.74	0.66	0.68	0.69	0.71
Divorced	0.10	0.06	0.08	0.11	0.09	0.13
White	0.66	0.62	0.80	0.76	0.76	0.73
African American	0.07	0.07	0.07	0.09	0.06	0.11
Latina	0.04	0.06	0.04	0.04	0.04	0.09
Asian	0.21	0.24	0.07	0.10	0.12	0.05
Other	0.02	0.01	0.02	0.02	0.02	0.02
Graduate degree	0.45	1.00	1.00	0.33	0.84	0.31

Source: Authors' calculations

Note: Standard deviations in parentheses, wages are reported in 2014 dollars.

Figure 2. Average Annual Income, Women

Source: Authors' calculations.

Figure 3. Average Annual Income, Men

Source: Authors' calculations.

those with a graduate or professional degree, women earn an average hourly wage of \$33.65 in STEM and \$33.05 in business.

As Tanya Byker (this volume) and Kim Weeden, Youngjoo Cha, and Mauricio Bucca (this volume) explore in detail, hours worked are related to wage differentials between mothers and childless women, especially during the period after childbirth. Here we compare women's work hours across professional occupations. Women in medicine and law work the most hours per week (44.9 and 44.5), followed by women in business and STEM (42.3 and 40.9). Women in postsecondary education and female-dominated professions work fewer than forty hours per week, on average. Women in female-dominated professions also have the highest average number of children (1.49), followed by women in medicine (1.16); women in

STEM and law have the fewest (0.96 and 0.97). In sum, women in medical professions stand out in that they earn the highest wages and work more hours but also have higher rates of marriage and more children. Women in law are similar to those in the medical professionals in that they enjoy higher wages and work longer hours, but have lower rates of marriage and fewer children than female medical professionals. Women in STEM professions have equally low marriage rates and number of children as their counterparts in law but earn lower average wages.

Figures 2 and 3 present average annual incomes for highly educated women and men in professional occupations in 1980 and 2010 reported in 2014 dollars. The higher earnings of women in medicine and law in 2010 are striking, as is their income growth between 1980

Table 5. OLS Regression of the Effect of Children on Women's Hourly Wages

	All Women	Professional, BA+	Professional, <BA	Nonprofessional, BA+	Nonprofessional, <BA
Model 1: 1980					
Children	-0.18* (0.01)	-0.22* (0.01)	-0.21* (0.02)	-0.27* (0.02)	-0.16* (0.01)
Constant	2.55** (0.19)	2.6** (0.45)	1.59* (0.54)	4.24** (0.82)	2.79** (0.23)
Adjusted R ²	0.12	0.07	0.06	0.09	0.07
N	122,380	17,413	13,688	7,469	83,810
Model 2: 2010					
Children	-0.03* (0.00)	-0.02* (0.00)	-0.08* (0.01)	-0.02* (0.01)	-0.03* (0.00)
Constant	0.47 (0.07)	0.52 (0.13)	0.65 (0.21)	-0.03 (0.21)	1.04** (0.11)
Adjusted R ²	0.23	0.09	0.07	0.11	0.08
N	989,320	261,380	116,460	126,556	484,924

Source: Authors' calculations.

Note: Models control for age, age², race, marital status, logged work hours, and industry.

Difference between effect of children for 1980 and 2010 is significant ($p < 0.001$) for all five columns.

* $p < 0.01$; ** $p < 0.001$

and 2010. Women's incomes in STEM, postsecondary education and female-dominated professions changed little, increasing by an average \$7,000 over the period. Despite professional women's increasing wages over time, in 2010 they still earn less than men in all occupations.

THE FAMILY WAGE GAP

Before we examine the family wage gap for highly educated women in different professional occupations, we determine how the family wage gap has changed over time. The very low numbers of women in professional occupations precludes analysis of 1960 data, so this analysis is limited to 1980 and 2010. Table 5 presents the OLS regression of logged hourly wages on number of children for women in each professional and education group, after controlling for work hours, industry, and demographic factors. Model 1 presents the results for 1980; model 2, for 2010. Results align with prior research, in that they show a significant negative family wage gap in all professional and education groups in 1980 and 2010.

In another analysis, we pooled the sample of women in 1980 and 2010 and included an interaction between year and the dummy variable for children to see whether the family wage gap differed substantially in the two periods. The size of the family wage gap declined between 1980 and 2010 for all professional-education groups. In 1980, the logged hourly wages of women with children were 19 percent lower than those of childless women, but by 2010 this gap had declined to 3 percent.¹¹ In contrast, fathers in all professional and educational groups at both time points experienced a positive wage differential relative to nonfathers (not shown). Next we investigate whether the patterns for the family wage gap found in 1980 and 2010 differ for highly educated professional women in traditionally female-dominated and several male-dominated professions.

PARENTHOOD AND THE WAGES OF PROFESSIONAL WOMEN AND MEN

To assess differences in the relationship between parenthood and wages for different pro-

11. To calculate the percentage change in logged hourly wages for a 1 unit change in number of children, we exponentiate the coefficient.

Table 6. OLS Regression of the Effect of Children on Wages

	STEM			Medicine			Law		
	Women	Men	W:M	Women	Men	W:M	Women	Men	W:M
Model 1: 1980									
Children	-0.12 (0.06)	0.09** (0.02)	**	-0.20 (0.12)	0.07 (0.06)		-0.16 (0.13)	0.16 (0.07)	
Constant	-1.03 (2.37)	3.88** (0.54)		-1.51 (4.40)	1.09 (1.75)		-2.89 (5.39)	1.38 (2.52)	
Adjusted R ²	0.10	0.16		0.13	0.16		0.05	0.08	
N	465	5,473		284	2,013		213	1,341	
Model 2: 2010									
			W:M			W:M			W:M
Children	0.04* (0.01)	0.09** (0.01)	**	0.10** (0.02)	0.12** (0.02)	**	0.05 (0.02)	0.11 (0.02)	**
Constant	1.47** (0.45)	2.67** (0.24)		-0.16 (0.71)	-3.17** (0.65)		0.92 (0.73)	0.04 (0.72)	
Adjusted R ²	0.07	0.10		0.13	0.24		0.06	0.07	
N	18,398	50,643		10,987	13,255		7,278	10,477	
Model 3: 1980 and 2010									
			W:M			W:M			W:M
Children	-0.15* (0.05)	0.09** (0.02)	**	-0.08 (0.10)	0.10 (0.04)	*	-0.24 (0.11)	0.14* (0.05)	**
Year (2010)	0.02 (0.03)	0.01 (0.01)		0.16 (0.08)	0.09 (0.04)		0.28** (0.06)	0.29** (0.05)	
Children x year	0.20** (0.05)	-0.005 (0.02)		0.18 (0.11)	0.01 (0.05)		0.29 (0.12)	-0.04 (0.06)	
Constant	0.86 (0.47)	2.74** (0.25)		0.46 (0.56)	-1.42 (0.82)		-0.06 (0.62)	0.00 (1.03)	
Adjusted R ²	0.07	0.12		0.14	0.20		0.10	0.09	
N	18,863	56,116		11,271	15,268		7,491	11,818	

Source: Authors' calculations.

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.
* $p < 0.01$; ** $p < 0.001$

fessions, we conduct OLS regressions of logged hourly wages on whether children are in the home for women in each professional category, after controlling for work hours, industry, and demographic factors for 1980 and 2010. Table 5 shows a negative pay differential for motherhood in the full sample of college-educated, professional women; tables 6 and 7 demonstrate different relationships between motherhood and wages for women in different professions. According to model 1 in table 6, in 1980, the presence of children has no significant association with women's wages in STEM, medical professions, law, and postsecondary education. Mothers in business and

female-dominated professions experience a negative wage differential relative to nonmothers.

Model 2 of table 6 indicates that in 2010, women within STEM and medical professions actually experience a positive pay differential relative to those without children. For women in STEM, motherhood is associated with a 4.1 percent increase in logged hourly wages. In medicine, the positive wage differential for mothers is even larger: 10.5 percent. Model 2 of table 7 indicates that mothers in female-dominated professions experience a negative wage differential relative to nonmothers. Motherhood is not related to the wages of women in business or postsecondary education.

Table 7. OLS Regression of the Effect of Children on Wages

	Business			Postsecondary Education			Female-Dominated Professions		
	Women	Men	W:M	Women	Men	W:M	Women	Men	W:M
Model 1: 1980									
Children	-0.15** (0.03)	0.10** (0.01)	**	-0.12 (0.06)	0.14** (0.04)	**	-0.25** (0.02)	0.10** (0.02)	**
Constant	2.86 (1.23)	1.95** (0.40)		1.58 (1.81)	-0.85 (1.31)		2.71** (0.53)	2.31** (0.64)	
Adjusted R ²	0.05	0.18		0.05	0.13		0.06	0.19	
N	3,049	14,514		893	1,680		12,509	5,751	
Model 2: 2010									
Children	-0.01 (0.01)	0.09** (0.01)	W:M **	0.04 (0.02)	0.15** (0.02)	W:M **	-0.04** (0.01)	0.05** (0.01)	W:M **
Constant	0.40 (0.20)	1.23** (0.18)		-1.03 (0.71)	-1.34 (0.64)		1.16** (0.18)	0.84 (0.35)	
Adjusted R ²	0.07	0.11		0.07	0.15		0.05	0.08	
N	91,505	111,168		9,615	9,156		123,597	32,944	
Model 3: 1980 and 2010									
Children	-0.16** (0.03)	0.11** (0.01)	W:M **	-0.10 (0.05)	0.13** (0.03)	W:M **	-0.23** (0.01)	0.09** (0.02)	W:M **
Year(2010)	0.23** (0.02)	0.09** (0.01)		-0.02 (0.04)	-0.12** (0.03)		0.02 (0.01)	0.04* (0.02)	
Children x year	0.14** (0.03)	-0.03 (0.01)		0.14* (0.05)	0.03 (0.03)		0.19** (0.01)	-0.04 (0.02)	
Constant	0.33 (0.24)	1.08** (0.19)		-0.41 (0.76)	-1.40 (0.69)		1.26** (0.22)	1.11* (0.35)	
Adjusted R ²	0.09	0.13		0.06	0.15		0.06	0.12	
N	94,554	125,682		10,508	10,836		136,106	38,695	

Source: Authors' calculations.

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.
* $p < 0.01$; ** $p < 0.001$

No consensus is evident in prior research on how to construct the independent variable for children. Some studies use a dummy variable (Lundberg and Rose 2000; Pal and Waldfogel this volume; Byker this volume), others use a dummy variable distinguishing between children under and over the age of five, no children being the reference category (Percheski 2008). Some use a categorical variable indicating one child, two children, and three or more children (Petersen, Penner, and Hogsnes 2010).

In light of this lack of consensus, we tested a host of model specifications using different measures for children. Generally, the results are robust to variations in model specification with the following exception: in the model using a continuous variable for the number of children, in law (as in medicine and STEM), mothers experience a positive pay differential relative to childless women.¹² When we specify the variable in categories of no children (reference), one child, two children, or three or more

12. Also, the association between number of children and logged hourly wages differs significantly across professional occupations. For example, the positive wage differential for women in medicine is significantly larger than for women in STEM.

children (following Petersen and his colleagues), we again find that in medicine, STEM, and law, mothers earn more than nonmothers, regardless of number of children.¹³ On the basis of these results, it is reasonable to conclude that women in law are similar to women in medicine and STEM in that mothers earn more than childless women, even though the statistical significance of the association between children and the wages of women in law professions varies depending on how the measure of children is specified.

Model 3 of tables 6 and 7 examines the full sample of women and includes an interaction for children and time period. In STEM, the positive, significant coefficient for the interaction term indicates that a positive wage differential emerged for motherhood between 1980 and 2010. The size of the wage differential for motherhood did not change over time in medical or law professions. In postsecondary education and business, the relationship between children and women's wages changed from being negative in 1980 to having no significant relationship with wages in 2010. Finally, the size of the negative wage differential for mothers relative to childless women significantly declined over time in female-dominated professions. In sum, over the past three decades, a positive wage differential for mothers emerged in STEM, and the negative pay differential for mothers in business and postsecondary education disappeared.

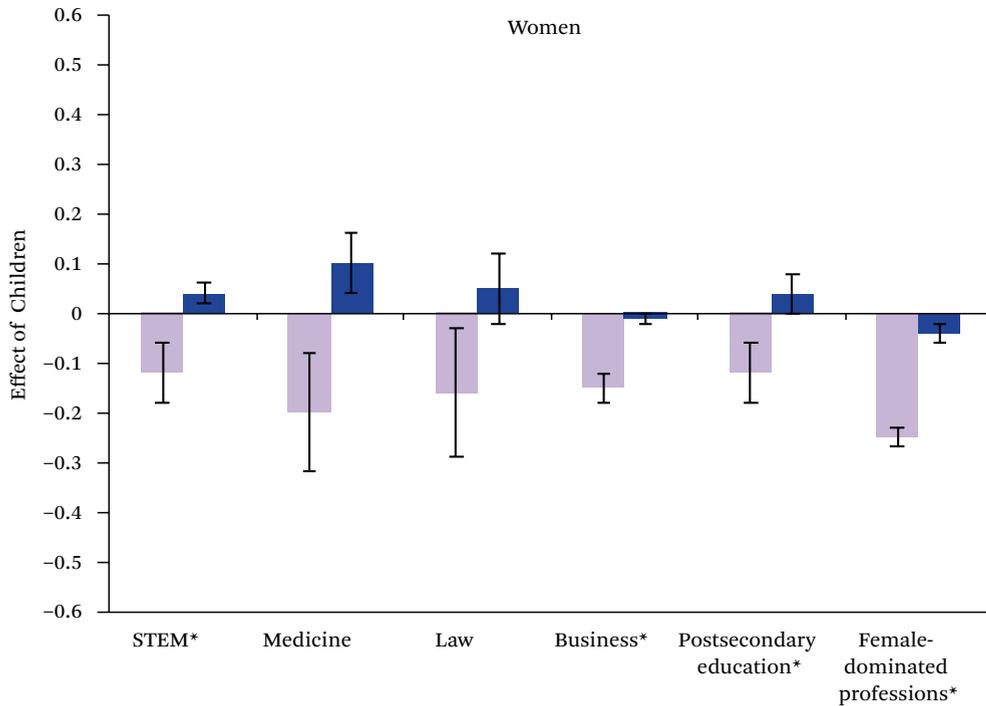
The finding of a positive wage differential for motherhood in medical, STEM, and law occupations (depending on specification) is remarkable given that numerous studies have consistently documented a negative association between motherhood and women's wages across varying levels of education (Anderson, Binder, and Krause 2002), age (Avellar and Smock 2003), and the timing of children (Taniguchi 1999). Women in these three professions represent 14 percent of all highly educated,

professional women. Furthermore, mothers in business and postsecondary education experience no wage differential relative to childless women, and the negative pay differential for mothers has declined over time in female-dominated professions.

How do the associations between parenthood and wages for women compare to those for men in professional occupations? Are the positive wage differentials that mothers now experience relative to childless women in medicine, STEM, and (to a lesser degree) law professions similar in size to those for fathers in these professions? We address these questions by comparing the results of women and men and report them in tables 6 and 7. Column 2 shows the relationship between parenthood and the wages of fathers; column 3 indicates whether the relationship between children and men's and women's wages are significantly different. Model 1 indicates that this relationship is significantly different for men and women in all professions in 1980. The association between children and wages is either nonexistent or negative for women though it is positive and significant for men in STEM, business, postsecondary education, and female-dominated professions. In medical professions and law, the association is not significant for men or women, nor is the interaction between gender and children in 1980 significant.

According to model 2, by 2010, both women and men enjoyed a positive pay differential in STEM and medicine, though it is larger for men than women. In business, postsecondary education, and female-dominated professions, the association between parenthood and wages is significantly different for men and women. Fathers experience a positive wage differential in business and postsecondary education and mothers do not, whereas in female-dominated professions, women experience a negative wage differential and men experience a positive one for parenthood.

13. In STEM, women with one child or three or more children earn similar wages to women with no children. Yet women with two children earn significantly more than women with no children. For women in business, having one child is not associated with wages, but each additional child is associated with a negative wage differential. For women in female-dominated professions, the association between one child and wages is negative and each subsequent child is associated with a larger negative wage differential.

Figure 4. Effect of Children on Wages, Women

Source: Authors' calculations.

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.

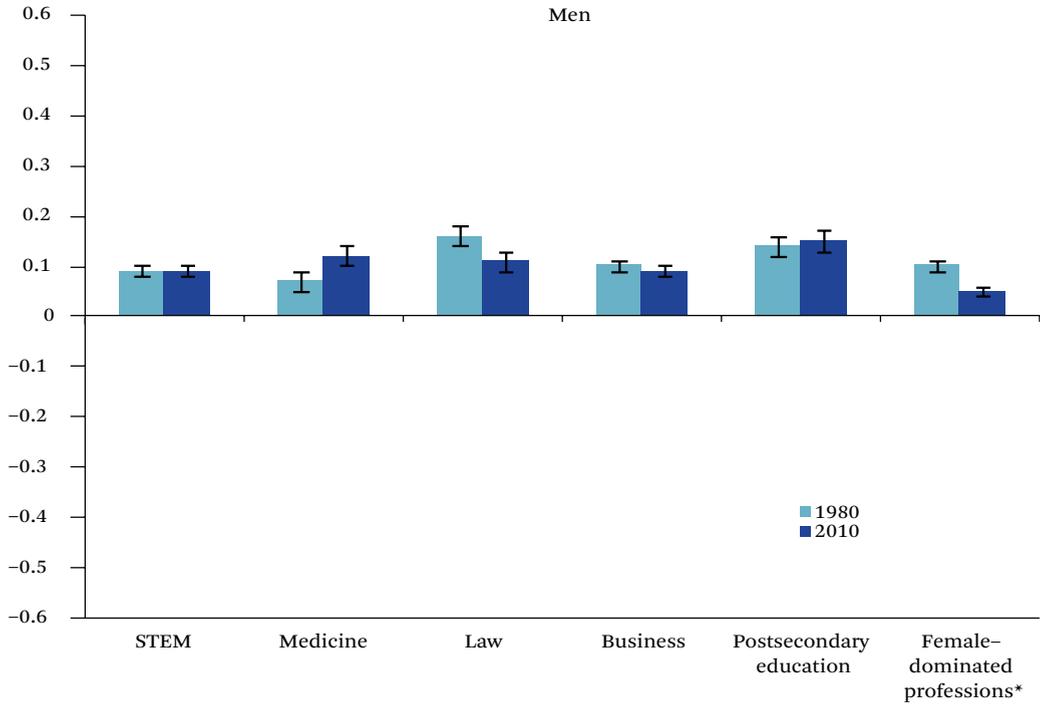
*= significant difference between effect of children for 1980 and 2010.

Figures 4 and 5 redisplay the coefficients from table 5 and present the association between children and logged hourly wages for women and men in 1980 and 2010 in each professional occupation. For women, it is striking that the size of the negative wage differential has declined in every occupation over time, and has even become positive in some occupations. For men, the positive differential for having children has been remarkably stable over time, showing virtually no difference between 1980 and 2010. The only exception is for female-dominated professions, where the positive wage differential is significantly smaller in 2010. Our results show that by 2010 within some elite professions, most notably STEM, medical professions, law, and postsecondary education, the association between parenthood and wages has become more similar than different for men and women. In female-

dominated occupations, the family wage gap continues to be negative for women but does not exist for men.

RACIAL DIFFERENCES IN THE FAMILY WAGE GAP

Research finds that the family wage gap varies by race and ethnicity (Pal and Waldfogel, this volume; Waldfogel 1997; Budig and England 2001; Glauber 2007, 2008; Greenman 2011). Glauber finds that African American and Latina women tend to have smaller negative wage differentials for motherhood than white women (2007) and that African American men experience smaller positive wage differentials for fatherhood than whites or Latinos (2008). Prior research has not examined whether racial differences exist for highly educated men and women in different occupations. Tables 8 and 9 present the results of an OLS regression that

Figure 5. Effect of Children on Wages, Men

Source: Authors' calculations.

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.

*= significant difference between effect of children for 1980 and 2010.

includes an interaction term for children and race for logged hourly wages for women and men in 2010.¹⁴ The results show that the family wage gaps hardly vary for women of different races. The association between children and women's wages does not vary by race in any profession with the exception of female-dominated professions, where the interaction terms for blacks and Asians indicate that they experience no family wage gap in contrast to whites, Latinos, and others.

For men, all races enjoy a positive wage differential for fatherhood and this relationship does not vary much by race, except for in business, where black and Asian men experience a smaller positive wage differential for father-

hood than white men. The finding for black men in business compared to white men aligns with Glauber's (2008) finding that positive association between fatherhood and wages is smaller for black men than white men. To the best of our knowledge, prior research has not examined the association between parenthood and wages for Asians in addition to whites, Latinos, and blacks. Moreover, although prior research examines heterogeneity in women's and men's experiences by race and ethnic status, our findings demonstrate that, with the few exceptions noted, the association between parenthood and wages is not substantially different across racial-ethnic groups.

14. Small sample sizes of some highly educated racial groups in professional occupations prevent such an analysis for 1980.

Table 8. OLS Regression of the Effect of Children and Race on Wages, Profession

	STEM			Medicine			Law		
	Women	Men	W:M	Women	Men	W:M	Women	Men	W:M
Children	0.03 (0.01)	0.09** (0.01)	**	0.10** (0.02)	0.11** (0.02)	**	0.05 (0.02)	0.11** (0.02)	*
Race (reference white)									
Black	0.00 (0.03)	-0.11** (0.02)	*	-0.01 (0.06)	-0.18 (0.09)		-0.06 (0.05)	-0.34 (0.23)	
Asian	-0.01 (0.02)	0.01 (0.01)		0.02 (0.03)	-0.04 (0.03)		0.10 (0.04)	0.04 (0.05)	
Latino	-0.07 (0.03)	-0.10** (0.02)		-0.17* (0.06)	-0.21** (0.06)		-0.08 (0.05)	-0.11 (0.06)	
Other	-0.01 (0.04)	-0.09 (0.04)		-0.11 (0.09)	-0.05 (0.08)		-0.04 (0.07)	0.00 (0.07)	
Children x race									
x black	-0.08 (0.04)	-0.01 (0.03)		-0.03 (0.07)	0.14 (0.10)		-0.02 (0.07)	0.08 (0.24)	
x Asian	0.05 (0.03)	0.02 (0.01)		-0.05 (0.05)	0.01 (0.04)		-0.01 (0.06)	0.00 (0.07)	
x Latino	-0.01 (0.04)	0.02 (0.02)		0.14 (0.08)	0.08 (0.07)		0.02 (0.07)	0.05 (0.07)	
x other	-0.01 (0.06)	0.04 (0.05)		0.14 (0.11)	0.07 (0.11)		0.04 (0.11)	-0.01 (0.10)	
Constant	1.49* (0.45)	2.68** (0.24)		-0.18 (0.71)	-3.16** (0.65)		0.92 (0.74)	0.04 (0.72)	
Adjusted R ²	0.07	0.10		0.13	0.24		0.06	0.07	
N	18,398	50,643		10,987	13,255		7,278	10,477	

Source: Authors' calculations

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.

* $p < 0.01$; ** $p < 0.001$.

CONCLUSION

Between 1960 and 2010, women entered traditionally male-dominated professions in greater numbers, and now are close to reaching parity with men in terms of the size of cohorts in business, medical professions, and law. Between 1980 and 2010, women also surpassed men as the majority of workers in postsecondary education. Women have made smaller gains in STEM occupations, and these professions remain male dominated. This study examined how the family wage gap changed for women and men across these professional occupations over time. We find that the gap for women declined in every occupation. It disap-

peared in business and postsecondary education and a positive wage differential emerged in STEM, medicine, and law. In contrast, for men, the positive association between fatherhood and wages has been remarkably stable over time, declining only for men in female-dominated professions.

Although most research assumes that the family wage gap is negative for all women and positive for all men, some recent work argues that the size for men and women varies by income, race, marital status, or broad professional category (Budig and England 2001; Glauber 2007, 2008, 2011; Killewald 2013). Some of this research provides hints that the experi-

Table 9. OLS Regression of the Effect of Children and Race on Wages, Other

	Business			Postsecondary Education			Female-Dominated Professions		
	Women	Men	W:M	Women	Men	W:M	Women	Men	W:M
Children	-0.01 (0.01)	0.10** (0.01)	**	0.04 (0.02)	0.16** (0.02)	**	-0.06** (0.01)	0.05** (0.01)	**
Race (reference white)									
Black	-0.10** (0.01)	-0.14** (0.02)		0.01 (0.05)	0.05 (0.06)		-0.02 (0.01)	-0.04 (0.02)	
Asian	0.00 (0.01)	0.01 (0.01)		-0.03 (0.04)	-0.07 (0.03)		0.18** (0.02)	0.12** (0.03)	
Latino	-0.09** (0.01)	-0.11** (0.02)		0.03 (0.04)	-0.01 (0.04)		-0.01 (0.01)	0.02 (0.02)	
Other	-0.07 (0.03)	-0.07 (0.03)		-0.06 (0.06)	-0.04 (0.09)		-0.07 (0.03)	-0.05 (0.05)	
Children x race									
x black	-0.01 (0.02)	-0.09** (0.02)	**	0.02 (0.07)	-0.16 (0.09)		0.06** (0.02)	-0.04 (0.03)	**
x Asian	-0.04 (0.02)	-0.05* (0.02)		0.02 (0.05)	0.03 (0.04)		0.08** (0.02)	0.08 (0.04)	
x Latino	-0.02 (0.02)	-0.01 (0.02)		-0.06 (0.06)	-0.06 (0.06)		0.02 (0.02)	0.00 (0.03)	
x other	0.02 (0.04)	-0.04 (0.04)		0.05 (0.12)	-0.04 (0.11)		0.06 (0.04)	-0.04 (0.06)	
Constant	0.40 (0.20)	1.22** (0.18)		-1.02 (0.71)	-1.33 (0.64)		1.16** (0.18)	0.86 (0.35)	
Adjusted R ²	0.07	0.11		0.07	0.15		0.05	0.08	
N	91,505	111,168		9,615	9,156		123,597	32,944	

Source: Authors' calculations

Note: Models control for age, age², graduate degree, race, marital status, logged work hours, and industry.

* $p < 0.01$; ** $p < 0.001$.

ences of highly educated professional women, especially those at the top of earnings distribution (Budig and Hodges 2014) or in male-dominated occupations (Glauber 2011), are quite different from those of other women. However, prior work has not investigated explicitly the experiences of highly educated, professional women in various occupations. This paper definitively demonstrates substantial heterogeneity in the family wage gap, depending in particular on the professional field in which women are working. Furthermore, by comparing men and women, which prior work fails to do, we find that in some elite occupa-

tions, the gap is more similar than different for men and women. This finding accords with Claudia Goldin's argument of "a grand gender convergence" (2014) marked by the narrowing of the economic and social roles of women and men, and especially a convergence in their earnings, over the last century.

The finding of a positive wage differential in STEM, medicine, and law is surprising and raises an important question: why is there a positive association between motherhood and wages in some professions? Research has documented a positive association between fatherhood and wages, but the mechanisms behind

the premium remain elusive. Cecilia Ridgeway and Shelly Correll (2004) argue that the “fatherhood wage premium” as well as the “motherhood wage penalty” is due to institutionalized gender inequalities and cultural ideologies about motherhood and fatherhood. Because, on average, fathers take on fewer childcare responsibilities than mothers after the birth of a child (Yavorsky, Kamp Dush, and Schoppe-Sullivan 2015), the inflexibility of many jobs may benefit fathers who not disrupt their work to take care of children. It has also been argued that employers favor fathers over childless men because fathers may be motivated to be more productive at work, or that employers view fathers as breadwinners and reward them with higher wages (Coltrane 1997; Glauber 2008). However, the succession of women in professional occupations may have also changed the continuity of their employment over the life course and in response to family events, thus becoming more productive at work or making career choices to maximize earnings as it is believed fathers do. Because we do not have data on work tenure or continuity, we cannot investigate this possibility. Women are also more likely to be the breadwinners in families than in the past (Wang, Parker, and Taylor 2013), which could increase their motivation to be productive at work. It is possible that when employers recognize women’s breadwinner status, they reward it accordingly, just as they have long done for male breadwinners. However, this assumption should be approached with caution because our results also show that the majority of working mothers still experience a negative wage differential for motherhood.

Another possible reason for the positive association between motherhood and wages in some occupations is that those occupations afford workers with greater workplace flexibility

and autonomy which benefits both mothers and fathers. Some occupations appear to have changed to offer more workplace flexibility in recent decades (Goldin and Katz 2011). Research finds increasing flexibility, declining work hours, and smaller penalties for part-time work in pharmacy, optometry, and some subspecialties of medicine, which may be related to the increasing share of women in these medical professions (Goldin and Katz 2011, 2012).¹⁵ Other professional occupations have been slower to change. Business carries larger penalties for career interruptions due to childbearing than other elite professions, which is a key contributor to the gender gap in earnings among individuals with an MBA. In fact, among Harvard University graduates, the earnings penalties for job interruptions due to childbearing are the largest for MBAs, followed by JDs and MDs (Goldin and Katz 2011). This finding for a highly select group of women aligns well with our findings for nationally representative data of all college-educated women: in business, the wages of mothers and childless women are not significantly different, but in medicine and law they are.

Future research should address the open question of why women experience a positive wage differential for motherhood in some occupations and a negative one in others. This paper outlines historical trends in motherhood wage differentials but is unable to tease out the mechanisms behind them. No doubt, important differences exist between women who enter each of the occupations studied and how women within occupations respond to having children. For example, higher incomes in some professions, such as medicine, may provide strong incentives to remain employed after the birth of a child, whereas lower paid female-dominated professions may not offer similar incentives. Higher incomes may

15. The shift away from small private practices and the rise of regional hospitals and emergency care facilities have led to the increasing ability of doctors in some specialties to schedule set hours and reduce on-call, night, and weekend hours. Likewise, the decline of pharmacists and optometrists in small private practices and the rise of large national pharmacy chain stores and big box retailers offering these services means that many pharmacists and optometrists are employees who “became better substitutes for each other” and thus “decreased the pecuniary penalty for working part-time and part-year” (Goldin and Katz 2012, 9). Notably, Goldin and Katz show that medical specialties with lower weekly hours that do not require regular on-call, emergency or night hours are now dominated by women (2011).

also mean greater financial resources to purchase high quality childcare. Women in elite, male-dominated professions are likely qualitatively different than women in other professions in ways that we cannot measure. Future research should attempt to tease out these differences, but the challenge lies in finding data with appropriate sample sizes to analyze women within these elite professions. At any rate, the experiences of women in these professions will grow in their importance as women continue earning more college and professional degrees and entering professional occupations in greater numbers than any time in history.

APPENDIX

Coding of occupational classification scheme into professional occupations from census variable OCC1990, including numeric code. Note that n.c.e. means not classified elsewhere.

1) STEM

Math and Physical Science

- 066 actuary
- 067 statistician
- 068 mathematician/math scientist
- 069 physicist and astronomer
- 073 chemist
- 074 atmospheric and space scientist
- 075 geologist
- 076 physical scientist, other

Engineering and Computer Science

- 043 architect
- 044 aerospace engineer
- 045 metallurgical/materials engineer
- 047 petroleum, mining and geological engineer
- 048 chemical engineer
- 053 civil engineer
- 055 electrical engineer
- 056 industrial engineer
- 057 mechanical engineer
- 059 other engineer
- 064 computer systems analyst/computer scientist
- 065 operations and systems researcher and analyst

Life Science

- 077 agricultural/food scientist
- 078 biological scientist

- 079 forester/conservation scientist
- 083 medical scientist

2) MEDICAL PROFESSIONS

- 084 physician
- 085 dentist
- 086 veterinarian
- 087 optometrist
- 088 podiatrist
- 089 other health and therapy
- 096 pharmacist

3) LAW

- 178 lawyer
- 179 judge

4) BUSINESS

- 003 legislator
- 004 chief executive and public admin
- 007 financial manager
- 008 human resource and labor relations manager
- 013 manager in marketing, advertising, and public relations
- 014 manager in education and related fields
- 015 manager of medicine and health occupations
- 016 postmaster and mail superintendent
- 017 manager of food-serving/lodging establishments
- 018 manager of properties/real estate
- 019 funeral director
- 021 manager of service organizations
- 022 manager and administrator
- 023 accountant and auditor
- 024 insurance underwriter
- 025 other financial specialist
- 026 management analyst
- 027 personnel, HR, training, and labor relation specialist
- 028 purchasing agent/buyer of farm products
- 029 buyer, wholesale and retail
- 033 purchasing manager, agent, and buyer
- 024 business and promotion agent
- 035 construction inspector
- 036 inspector/compliance officer outside construction
- 037 management support occupation

5) POSTSECONDARY EDUCATION

- 113/154, teacher, postsecondary

6) FEMALE-DOMINATED PROFESSIONS

Health Professionals

- 095 registered nurse
- 097 dietitian and nutritionist
- 098 respiratory therapist
- 099 occupational therapist
- 103 physical therapist
- 104 speech therapist
- 105 therapist, n.e.c.
- 106 physician's assistant

K-12 Education

- 155/163 teacher, except postsecondary

*Other Female-Dominated**Professional Occupations*

- 164 librarian
- 174 social worker

REFERENCES

- Amuedo-Dorantes, Catalina, and Jean Kimmel. 2005. "The Motherhood Wage Gap for Women in the United States: The Importance of College Fertility Delay." *Review of Economics of the Household* 3(1): 17-48.
- Anderson, Deborah J., Melissa Binder, and Kate Krause. 2002. "The Motherhood Wage Penalty: Which Mothers Pay It and Why?" *American Economic Review* 92(2): 354-58.
- Avellar, Sarah, and Pamela J. Smock. 2003. "Has the Price of Motherhood Declined over Time? A Cross-Cohort Comparison of the Motherhood Wage Penalty." *Journal of Marriage and Family* 65(3): 597-607.
- Bianchi, Suzanne M., John P. Robinson, and Melissa A. Milkie. 2006. *Changing Rhythms of American Family Life*. New York: Russell Sage Foundation.
- Blair-Loy, Mary. 2003. *Competing Devotions: Career and Family Among Women Executives*. Cambridge, Mass.: Harvard University Press.
- Bolzendahl, Catherine, and Daniel Myers. 2004. "Feminist Attitudes and Support for Gender Equality: Opinion Change in Women and Men, 1974-1998." *Social Forces* 83(2): 759-89.
- Boushey, Heather. 2005. "Are Women Opting Out? Debunking the Myth." Briefing Paper. Washington, D.C.: Center for Economic and Policy Research.
- Budig, Michelle J., and Paula England. 2001. "The Wage Penalty for Motherhood." *American Sociological Review* 66(2): 204-25.
- Budig, Michelle J., and Melissa J. Hodges. 2014. "Statistical Models and Empirical Evidence for Differences in the Motherhood Penalty Across the Earnings Distribution." *American Sociological Review* 79(2): 358-64.
- Cha, Youngjoo. 2013. "Overwork and the Persistence of Gender Segregation in Occupations." *Gender and Society* 27(2): 158-84.
- Byker, Tanya. 2016. "The Opt-Out Continuation: Education, Work, and Motherhood from 1984 to 2012." *RSF: The Russell Sage Journal of the Social Sciences* 2(4). doi: 10.7758/RSF.2016.2.4.02.
- Chao, Elaine L., and Philip L. Rones. 2007. "Women in the Labor Force: A Databook." Washington, D.C.: Bureau of Labor Statistics. Accessed April 11, 2016. <http://www.bls.gov/opub/reports/womens-databook/archive/women-in-the-labor-force-a-databook-2014.pdf>.
- Coltrane, Scott. 1997. *Family Man: Fatherhood, Housework, and Gender Equity*. New York: Oxford University Press.
- Coser, Lewis. 1974. *Greedy Institutions: Patterns of Undivided Commitment*. New York: Free Press.
- Cotter, David A., Joan M. Hermsen, and Reeve Vanneman. 2004. *Gender Inequality at Work*. New York: Russell Sage Foundation.
- DiPrete, Thomas A., and Claudia Buchmann. 2013. *The Rise of Women: The Female Advantage in Education and What It Means for American Schools*. New York: Russell Sage Foundation.
- England, Paula. 2005. "Gender Inequality in Labor Markets: The Role of Motherhood and Segregation." *Social Politics* 12(2): 264-88.
- Galinsky, Ellen, Kerstein Aumann, and James T. Bond. 2009. *Times Are Changing: Gender and Generation at Work and Home*. New York: Families and Work Institute.
- Glass, Jennifer. 1990. "The Impact of Occupational Segregation on Working Conditions." *Social Forces* 68(3): 779-96.
- Glauber, Rebecca. 2007. "Marriage and the Motherhood Wage Penalty Among African Americans, Hispanics, and Whites." *Journal of Marriage and Family* 69(4): 951-61.
- . 2008. "Race and Gender in Families and at Work: The Fatherhood Wage Premium." *Gender and Society* 22(1): 8-30.
- . 2011. "Women's Work and Working Conditions: Are Mothers Compensated for Lost Wages?" *Work and Occupations* 39(2): 115-38.
- Goldin, Claudia. 2014. "A Grand Gender Convergence: Its Last Chapter." *American Economic Review* 104(4): 1091-119.
- Goldin, Claudia, and Lawrence F. Katz. 2011. "The Cost of Workplace Flexibility for High-Powered

- Professionals." *The Annals of the American Academy of Political and Social Science* 638(1): 45–67.
- . 2012. "The Most Egalitarian of All Professions: Pharmacy and the Evolution of a Family Friendly Occupation." NBER working paper no. 18410. Cambridge, Mass.: National Bureau of Economic Research.
- Gornick, Janet C., and Marcia K. Meyers. 2003. *Families That Work: Policies for Reconciling Parenthood and Employment*. New York: Russell Sage Foundation.
- Gough, Margaret, and Mary Noonan. 2013. "A Review of the Motherhood Wage Penalty in the United States." *Sociology Compass* 7(4): 328–42.
- Greenman, Emily. 2011. "Asian American-White Differences in the Effect of Motherhood on Career Outcomes." *Work and Occupations* 38(1): 37–67.
- Harkness, Susan, and Jane Waldfogel. 2003. "The Family Gap in Pay: Evidence from Seven Industrialized Countries." *Research in Labor Economics* 22: 369–413.
- Hertz, Rosanna. 2004. "Book Review Essay: The Contemporary Myth of Choice." *The Annals of the Academy of Political and Social Science* 596 (November): 232–44.
- Hodges, Melissa, and Michelle Budig. 2010. "Who Gets the Daddy Bonus? Organizational Hegemonic Masculinity and the Impact of Fatherhood on Earnings." *Gender and Society* 24(6): 717–45.
- Hook, Jennifer. 2006. "Care in Context: Men's Unpaid Work in 20 Countries, 1965–2003." *American Sociological Review* 71(4): 639–60.
- Jacobs, Jerry A., and Kathleen Gerson. 2004. *The Time Divide: Work, Family, and Gender Inequality*. Cambridge, Mass.: Harvard University Press.
- Killewald, Alexandra. 2013. "A Reconsideration of the Fatherhood Premium: Marriage, Coresidence, Biology, and Fathers' Wages." *American Sociological Review* 78(1): 96–116.
- Killewald, Alexandra, and Jonathan Bearak. 2014. "Is the Motherhood Penalty Larger for Low-Wage Women? A Comment on Quantile Regression." *American Sociological Review* 79(2): 350–57.
- Lundberg, Shelly, and Elaina Rose. 2000. "Parenthood and the Earnings of Married Men and Women." *Labour Economics* 7(6): 689–710.
- Marini, Margaret M., and Mary C. Brinton. 1984. "Sex Typing in Occupational Socialization." In *Sex Segregation in the Workplace: Trends, Explanations, Remedies*, edited by Barbara F. Reskin. Washington, D.C.: National Academies Press.
- Pal, Ipshita, and Jane Waldfogel. 2016. "The Family Gap in Pay: New Evidence for 1967 to 2013." *RSF: The Russell Sage Journal of the Social Sciences* 2(4). doi: 10.7758/RSF.2016.2.4.04.
- Percheski, Christine. 2008. "Opting Out? Cohort Differences in Professional Women's Employment Rates from 1960 to 2005." *American Sociological Review* 73(3): 497–517.
- Percheski, Christine, and Christopher Wildeman. 2008. "Becoming a Dad: Employment Trajectories of Married, Cohabiting, and Non-Resident Fathers." *Social Science Quarterly* 89(2): 482–501.
- Petersen, Trond, Andrew M. Penner, and Geir Hognesnes. 2010. "The Within-Job Motherhood Wage Penalty in Norway, 1979–1996." *Journal of Marriage and Family* 72(5): 1274–88.
- Ridgeway, Cecilia L., and Shelly J. Correll. 2004. "Motherhood as a Status Characteristic." *Journal of Social Issues* 60(4): 683–700.
- Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. 2010. Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. Minneapolis: University of Minnesota.
- Sayer, Liana. 2005. "Gender, Time and Inequality: Trends in Women's and Men's Paid Work, Unpaid Work, and Free Time." *Social Forces* 84(1): 285–303.
- Staff, Jeremy, and Jeylan T. Mortimer. 2012. "Explaining the Motherhood Wage Penalty During the Early Occupational Career." *Demography* 49(1): 1–21.
- Taniguchi, Hiromi. 1999. "The Timing of Childbearing and Women's Wages." *Journal of Marriage and the Family* 61(4): 1008–19.
- Weeden, Kim A., Youngjoo Cha, and Mauricio Bucca. 2016. "Long Work Hours, Part-Time Work, and Trends in the Gender Gap in Pay, the Motherhood Wage Penalty, and the Fatherhood Wage Premium." *RSF: The Russell Sage Journal of the Social Sciences* 2(4). doi: 10.7758/RSF.2016.2.4.03.
- Waldfogel, Jane. 1997. "The Effect of Children on Women's Wages." *American Sociological Review* 62(2): 209–17.
- Wang, Wendy, Kim Parker, and Paul Taylor. 2013. *Breadwinner Moms*. Washington, D.C.: Pew Research Center.
- Yavorsky, Jill E., Claire M. Kamp Dush, and Sarah J. Schoppe-Sullivan. 2015. "The Production of Inequality: The Gender Division of Labor Across the Transition to Parenthood." *Journal of Marriage and Family* 77(3): 662–79.