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Why Did Gender Wage Convergence in the United States Stall? *

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Abstract

During the 1980s, the wage gap between white women and white men in the US declined by approximately 1 percentage point per year. In the decades since, the rate of gender wage convergence has stalled to less than one-third of its previous value. An outstanding puzzle in economics is "why did gender wage convergence in the US stall?" Using an event study design that exploits the timing of state and federal family-leave policies, we show that the introduction of the policies can explain 94% of the reduction in the rate of gender wage convergence that is unaccounted for after controlling for changes in observable characteristics of workers. If gender wage convergence had continued at the pre-family leave rate, wage parity between white women and white men would have been achieved as early as 2017.

JEL Classification: J16, J31, and J32

Keywords: Gender Wage Gap, Family and Medical Leave Act, Family Leave.

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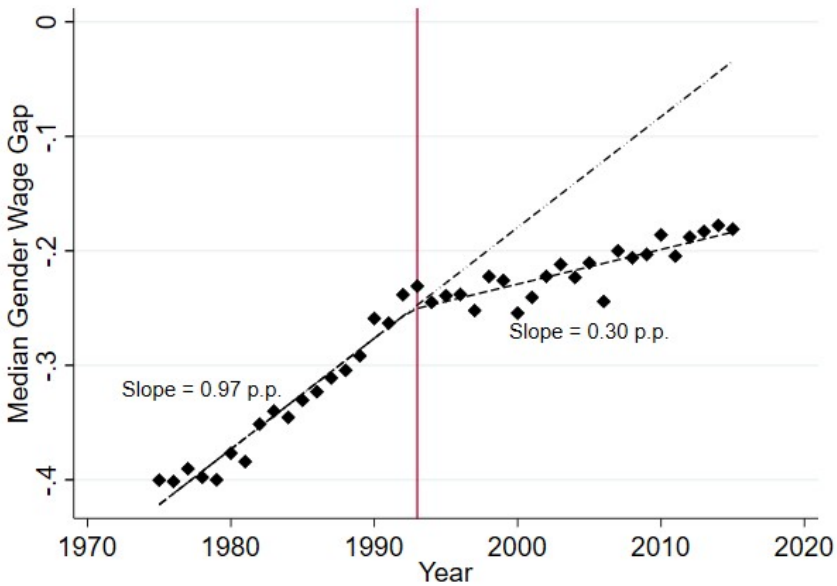
1 Introduction

Women entering the workforce en masse is one of the most important developments in the US labor market during the past century (Goldin, 2014). While female labor force participation increased following WWII, the gender wage gap held steady at 40% (Blau and Kahn, 2000). The 1980s, however, marked a time of steady gains for women, with the gender wage gap closing by roughly 10 percentage points, as shown in Figure 1. The 1990s and beyond, however, were marked by a return to stagnation in gender wage convergence. The ratio of women's earnings to men's earnings increased by a mere 2 percentage points in the 20 years between 1990 to 2010 (Fortin and Lemieux 2000; Blau and Kahn 2000, 2006, 2017; Maasoumi and Wang 2019). While the reasons for gender wage convergence during the 1980s are well-understood—namely declining unionization, a reduction in gender discrimination, and reduced gender gaps in education, labor market experience, and occupational sorting—the pattern of stagnant wage gains for women in the 1990s remains a puzzle (Blau and Kahn 2000, 2006, 2017; Kleven 2022). As stated by Henrik Kleven: "the literature has discussed a variety of explanations for this puzzle, but conclusive evidence has been elusive" (Kleven, 2022). We show that the introduction of state and federal family-leave policies can explain why gender wage convergence in the United States stalled.

Figure 1: Median Gender Wage Gap (1975-2015)



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS
For each year from 1975-2015 we use the Current Population Survey to calculate the difference in the median wages of women and men as a fraction of the median wages of men. Starting in 1975, the gender wage gap is 40% – women earn 60 cents on the dollar when compared to men. From 1980 to 1993, the gender wage gap falls from 40% to 22%. We project the rate of gender wage convergence from the 1980s with the dashed line.

In 1993, US President William Jefferson Clinton signed into law the Family and Medical Leave Act (FMLA), which guarantees 12 weeks of unpaid, job-protected leave to qualified workers for covered family or medical circumstances.[1] Waldfogel (1999) shows that the FMLA is effective at increasing family-leave coverage for employees. Despite the fact that the FMLA does not require firms to pay workers during their leave, it may impose costs on employers whose workers take leave. For 58% of employees on FMLA leave, work loads are shifted to another employee, while 6% of employees on FMLA leave are replaced by temporary workers (Brown et al., 2020).[2] Although the FMLA is a gender-neutral policy, women are more likely to file an FMLA claim; moreover, conditional on taking FMLA leave, the duration of leave spells are on average 14 business days longer for women than for men (Tompson 1997; Waldfogel 1999, 2001; Brown et al. 2020). Given the cost of employee leave taking to firms and the differential use of the FMLA by women, it is plausible that the introduction of family-leave policies could have have differential impacts on wages by gender.

There is a growing body of evidence documenting the negative causal impacts of leave policies on women's relative progress in the labor market. For example, Antecol et al. (2018) find that gender-neutral, tenure clock-stoppage policies in academia decrease female tenure rates in economics departments while increasing male tenure rates. National and state-specific studies in the US and Europe of family-leave policies document similar facts. For instance, Thomas (2016) shows the FMLA lowered female promotion rates by 8 percentage points despite increasing the likelihood of employment for women by 5 percentage points. Moreover, Bailey et al. (2019) found that California's paid family-leave policy reduced long-term wages for mothers, with first-time mothers experiencing the sharpest declines. Extensions in paid leave in Sweden likewise increased the gender wage gap (Ginja et al., 2020).

Both the increased scholarship demonstrating the unintended effects of family-leave policies and the descriptive fact that gender wage convergence stagnated around the same time as the passage of the FMLA makes it conceivable that the introduction of the FMLA could explain the puzzle of gender wage stagnation during the 1990s in the United States. Pinpointing the introduction of family-leave policies as the cause of gender wage stagnation during the 1990s is challenging, however, because there are contemporaneous changes in other federal policies that could also affect wages and the gender wage

[1] To qualify for coverage, employees must have worked for their employer for at least one year and worked 1,250 hours in the past year.

[2] Other responses include: "put the work on hold until the employee returns" (13%), "employee performs some work while on leave" (3%), "hire a permanent replacement" (1%), "call in an employee on vacation" (0%), and "cover work some other way" (19%) (Brown et al., 2020).

gap. The Earned Income Tax Credit (EITC), for example, was reformed in 1993, the same year as the FMLA was passed. Welfare reform at the federal level, which created the Temporary Assistance for Needy Families (TANF) program, was passed in 1996, 3 years following the passage of the FMLA. To overcome the potential policy endogeneity deriving from just the federal variation in the introduction of unpaid family leave in the US, we exploit the fact that 12 states and the District of Columbia enacted antecedents to the FMLA during the years 1972–1992 that offered unpaid maternity leave.

We use a stacked event study design applied to the subset of states and Washington, D.C. which passed family-leave policies prior to the FMLA. The event study allows us to exploit the state variation in the timing of family-leave policies that occurred prior to the FMLA. Using wage and demographic data we show that in the decade before a state family-leave policy is passed, the gender wage gap between white women and white men closed at a rate of 0.70 percentage points per year (standard error of 0.09 percentage points). In the decade after a state family-leave policy is passed, the rate of gender wage convergence drops by 0.53 percentage points (standard error of 0.13 percentage points), or 76% of its pre-leave value. Consequently, the post-leave rate of gender wage convergence stalls at 0.17 percentage points (standard error of 0.09 percentage points) per year.

By focusing on state variation in family-leave policies that pre-dated the FMLA, we can avoid the effects of confounding federal policies to show that the introduction of family-leave laws contributed to the stagnation in the rate of gender wage convergence for white women in the US. Moreover, the antecedents to the FMLA are passed in the 1980s, which is a period of gender wage convergence in the US. Finding a pattern of stalling convergence during the period is further evidence that family-leave policies caused stagnation in the gender wage gap. Further, we document that convergence in certain states' gender wage gaps begins during the 1980s, before the passage of the FMLA, foreshadowing the better-known stagnation of the 1990s.

Next, we expand our event study approach to incorporate all 50 states and the District of Columbia. For states with a leave-policy prior to the FMLA, we maintain the previously-assigned event years. For the 38 other states, we assign 1993 as the event year that a family-leave policy is introduced. To control for state-specific waivers to the welfare system and the federal welfare reform in 1997 in the national event study, we follow the approach in and use data from Kleven (2019). When we exploit variation in the timing of leave policies across all states, we recover very similar estimates to the estimates obtained using only the state-specific policies passed prior to the FMLA. Based on our event study estimates, in the decade before a family-leave policy is passed, the gender wage gap between white women and white men closed at a rate of 0.70 percentage points

per year (standard error of 0.07 percentage points). In the decade after a family-leave policy is passed, the rate of gender wage convergence drops by 0.67 percentage points (standard error of 0.11 percentage points), or 96% of its pre-leave value. Consequently, the post-leave rate of gender wage convergence stalls at 0.03 percentage points (standard error of 0.08 percentage points) per year. By leveraging state and federal variation in leave policies, we obtain more precise estimates of the rate of gender wage convergence.

The introduction of family-leave policies reduced the rate of gender wage convergence by 76%–96%. To understand whether the decline is due to a change in observable or unobservable factors, we decompose the change in the gender wage gap before (1976-1992) and after (1993-2015) the passage of the FMLA using the methodology developed in Juhn et al. (1991), Blau and Kahn (2000), and Blau and Kahn (2006). We find that the convergence in the gender wage gap due to observed factors is 2.7 percentage points before the FMLA and 6.4 percentage points after the FMLA. Therefore, stagnation after the passage of the FMLA is not due to changes in the importance of observable factors. However, the convergence due to the "Gap Effect," which captures unobserved skills of workers as well as discrimination, is 18.5 percentage points before the FMLA and only 2.8 percentage points after the FMLA. Therefore, stagnation in gender wage convergence is due to the "Gap Effect." Using the causal estimates from the state and federal variation of a 0.67 percentage point decline in the annual rate of gender wage convergence after the passage of leave laws and projecting it over the 22 year period 1993–2015, we predict a differential drop of 14.74 percentage points. We can therefore explain 94% of the difference in the rate of gender wage convergence in the pre and post period caused by the "Gap Effect."

To identify a potential mechanism for differential impacts by gender of the passage of family-leave policies, we use usage data provided by the Department of Labor for the years 1995, 2000, 2012, and 2018 to identify whether white women or white men take leave more frequently or for longer spells. We find that white women are more likely to take leave than white men. When we investigate the length of leave spells, we find that white women take leave spells for the birth or adoption of a child which are on average four-times longer than those taken by white men, despite taking leaves of similar lengths to white men for non-child related reasons. The usage data is consistent with gender differences in leave taking after child birth and adoption being a major factor for why the rate of gender wage convergence is impacted by the introduction of family-leave policies.

Having shown that family-leave policies caused the stagnation in the gender wage gap, we examine the value of the absolute effects of family-leave policies on annual earnings using a back of the envelope calculation. We use the event-study point estimates to evaluate the differences between observed and counterfactual earnings for workers who

work 2,000 hours per year (40 hours per week for 50 weeks). The year after a family-leave policy is passed, white women's earnings increase by $488 and white men's earnings increase by slightly less ($303), although the difference is not statistically significant. In the ten years after the passage of the policy, white women's observed earnings are not statistically different than what their earnings would have been without a leave policy. On the other hand, during the decade following the passage of a leave policy, the earnings for white men increase almost monotonically relative to the counterfactual. One decade after the policy, we find that the earnings of white men increase by $2,917 and the earnings of white women are not statistically different from the counter factual (-$197).

Overall, our results provide causal evidence that the introduction of family-leave policies can resolve an important puzzle in economics: "why did gender wage convergence in the United States stall?" Further, we calculate that in the absence of family-leave policies gender-wage parity for white women would have occurred in 2017.

2 Literature Review

The study of gender wage gaps draws upon literature in labor economics, economic history, behavioral economics, public economics, and macroeconomics. Understanding the labor market frictions faced by women deepens our understanding of how the labor market functions. Understanding why gender wage convergence stalled in the United States in the 1990s is important for completing the picture of women's progress in the labor market and understanding the remaining barriers faced by women to achieving labor market equality.

Claudia Goldin (2021) describes the experience of women in the US labor market as consisting of 5 distinct "groups," with each group becoming more active in the labor market than the prior. Throughout all of the groups, women have faced a gender wage gap. In an extensive list of papers including a recent literature review, Blau, Khan, and co-authors document changes over time in the gender wage gap and its causes (Blau and Kahn 2000, 2006, 2007, 2017; Blau et al. 2013a,b). Because the stagnation of the residual gender wage gap during the 1990s is not being driven by differences in observables, or the prices of observables, but rather differences in unobservables, there is a focus on alternative explanations. Recently, there is an increased focus on the extent to which gender differences in demand for labor market flexibility can explain gender gaps (Pitts 2003; Goldin 2014; Mas and Pallais 2017). Data on Uber drivers has shown that flexible work schedules provide increased surplus to workers compared to traditional work schedules (Chen et al., 2019) and the preference for flexibility can help to explain the gender wage

gap (Cook et al., 2021). Behavioral economists, likewise, have extensively studied the extent to which gender difference in competition contributes to differences in occupational sorting and ultimately gender wage gaps (Niederle and Vesterlund, 2011). While the recent literature has shown that gender differences in the demand for flexibility explains the residual gender gap in wages, "why did gender wage convergence in the United States stall?" is still an open question.

Several explanations for the stagnation of gender wage convergence have been offered to date, including changes in the occupational distribution, growth of the service sector, stagnation of labor force participation rates, increases in overwork, and stagnation of the child penalty. During the 1990s, convergence in the occupational distribution between the genders stagnated (Blau et al. 2013a,b). At the same time, Olivetti and Petrongolo (2016) show that the growth of the service sector in the US, where women have a comparative advantage to men, coincidentally stagnated during the 1990s compared to prior decades. Meanwhile, growth in labor force participation rates for women in the United States weakened relative to other OECD countries (Blau and Kahn, 2013). Cha and Weeden (2014) show that there has been little to no convergence in overwork, working more than 50 hours a week, and prevalence of overwork among men has increased the gender wage gap by 10 percent. Kleven (2022) proposes that a stagnation in the decline of the child penalty occurred in the United States during the 1990s.

There are several reasons why the existing explanations provide an incomplete picture of why gender wage convergence stagnated. First, based on our calculations from a decomposition of the gender wage gap, changes in observable characteristics and market prices cannot explain the stagnation. In fact, changes in observable factors predict more convergence in the gender wage gap and not less. Second, Blau and Kahn (2006) estimate that selection into the workforce can explain between 10%-25% of the puzzle. Third, given that the child penalty stagnates in the 1990s, a natural question is: what causes the child penalty to stagnate?

We propose a new solution to the puzzle of why gender wage gaps stalled— the introduction of family-leave policies, which can explain 94% of the stagnation which is unaccounted for with observable characteristics. There are reasons to expect family-leave policies to have a differential impact on male and female earnings. Prior work has shown that women may carry the responsibility of caring for newborns and sick family members more than men (Goldin 2014; Cortés and Pan 2019; Trajkovski 2019; Page et al. 2016). Moreover, the literature on the effects of pregnancy points to worse labor-market outcomes for mothers (Kuziemko et al. 2018; Kleven et al. 2019; Kleven 2022). The negative outcomes exist even among highly educated women. Bertrand et al. (2010), for exam-

ple, find that female MBA graduates from Chicago's Booth School had lower labor force participation 10 years after graduation, which was driven by changes after the birth of children. Juhn and McCue (2016) also documents that, while the marriage penalty for women has abated, there is still a significant negative wage impact for married women with a child. There is also evidence that scientific advances which allowed women to delay pregnancy led to changes in labor-market outcomes (Goldin and Katz 2000, 2002; Bailey et al. 2012). The end result is an expansion of the gender wage gap over the course of a worker's career (Bertrand et al. 2010; Noonan et al. 2005)

Other areas of public economics show that policies targeting a specific group of workers have unintended consequences, even at the expense of the workers the policy was meant to protect. For instance, evidence suggests that regulations designed to protect disabled workers may decrease their labor-market outcomes (Acemoglu and Angrist, 2001). There is also growing work that examines the gender-specific impact of family-leave policies in the labor market (see Waldfogel 1999; Trajkovski 2019; Patnaik 2019; Bailey et al. 2019; Balser 2020; Albanesi et al. 2022). Gruber (1994) finds that firms shifted the costs of state and federally-mandated increases in maternity-based insurance coverage during the 1970s to women's wages, but did not decrease their labor input. Our paper builds on the literature studying state and federal mandates by showing the introduction of mandated family-leave policies caused gender wage convergence in the United States to stall.

While the FMLA has been extensively studied, it has not been directly implicated in the puzzle at the heart of this paper (Waldfogel 1999, 2001; Thomas 2016; Brown et al. 2020). Our finding of a decline in the rate of gender wage convergence is congruent with the finding of Thomas (2016) that following the FMLA women were promoted at lower rates than before, which predicts a decrease in wage growth, if promotions are accompanied by raises. Waldfogel (1999) has shown using a difference-in-differences strategy that the passage of the FMLA did not negatively affect women's wages in the year immediately after its passage, a finding that we confirm. We generalize the findings of Waldfogel (1999) by extending our sample period 22 years after the passage of the FMLA to measure the long-run impact of the FMLA on the rate of gender wage convergence. Therefore, we show that while family-leave policies did not immediately change the level of women's wages, it affects the rate of progression of women's wages relative to men in the long run, similar to the negative effect on the growth of employment due to the minimum wage shown by Meer and West (2016).

3 Data and Description of Gender Wage Stagnation

For our analysis, we use the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS) available from IPUMS for the sample period 1976–2016 (Flood et al., 2020). Because many of the economic questions refer to the year prior, such as wage income last year, we relabel the year variables to correspond to a sample period of 1975–2015. Further, we restrict our sample to individuals aged 18–65 during the year the income was earned. We also only include workers who reported working at least 35 hours per week during a usual work week and had positive earnings for the prior year in order to create a sample of full-time workers. Finally, we only include workers who are white or black. Our final sample has 2,459,162 observations.

Using the ASEC, we construct several variables for our analysis. The first is a real hourly wage variable. The ASEC does not report hourly wages directly. However, an imputed hourly wage is obtained by dividing annual earnings by the product of hours worked per week and weeks worked last year. We then adjust for inflation using the CPI for all items for urban consumers in the US to create the real hourly imputed wage using 2000 as our base year (U.S. Bureau of Labor Statistics, 2019). Due to the creation of the hourly wage variable from imprecise inputs, we winsorize the wage data to the middle 99% of the distribution to handle extreme values. We also create an indicator variable for full-year workers equal to one if the worker reported working at least 40 weeks (Goldin, 2014).

The descriptive statistics for our sample are included in Table 1. White men, on average, earned \$19.23 in hourly wages and worked 44.54 hours per week. White women earned \$13.92 on average and worked about 41.57 hours per week. Black women worked 41 hours on average and had an hourly wage of \$12.97. Finally, black men earned \$15.23 on average and worked about 43 hours on average. White men in the sample tended to have about one-tenth of a standard deviation more children in the household than white women despite working longer hours per week. Given that selection into the sample is based on working at least 35 hours per week, the fact men have more children in the household could point to the differences in household production between men and women.

Table 1: **Summary Statistics**

	White Men		White Women		Black Women		Black Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Real Hourly Wage (Year 2000)	19.23	14.15	13.92	9.96	12.97	9.13	15.23	10.89
Hours	44.54	8.51	41.57	6.11	40.91	5.45	42.62	7.30
Age	38.58	11.87	38.28	11.94	38.29	11.57	38.49	11.85
Less than High-School	0.14	0.35	0.10	0.30	0.12	0.33	0.18	0.38
High-School Graduate	0.34	0.47	0.35	0.48	0.36	0.48	0.38	0.49
Some College	0.24	0.43	0.27	0.44	0.30	0.46	0.26	0.44
College	0.17	0.38	0.19	0.39	0.15	0.35	0.12	0.32
Post-Graduate	0.10	0.31	0.10	0.30	0.07	0.26	0.06	0.23
Number of Children	1.08	1.24	0.95	1.12	1.14	1.25	0.93	1.28
Married	0.70	0.46	0.60	0.49	0.38	0.49	0.54	0.50
Full-Year Worker	0.89	0.31	0.85	0.36	0.85	0.36	0.86	0.35
Weeks Worked	48.31	9.56	46.96	11.24	46.99	11.41	47.26	11.02
Observations	1,290,979		907,022		136,947		124,214	

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, U.S. Bureau of Labor Statistics (2019)
Real Hourly Wage is generated by dividing the total income from wages in the previous year by the product of usual hours worked per week and number of weeks worked. Due to the use of inputed wages, which can result in extreme values (both high and low) for the wages, we winsorize the wage data to the middle 99% of the data. *Hours* are the reported usual number of hours worked per week. *Less than High-School* is an indicator equal to one if the respondent reported less than 12 years of schooling completed or that they did not receive a diploma. *High-School Graduate* is an indicator equal to one if the respondent reported having a diploma or completing 12 years of school and it is unclear whether the respondent graduated. *Some College* is an indicator equal to one if the respondent reported having 1–3 years of college experience. *College* is an indicator equal to one if the respondent reported completing four years of college or having a college degree. *Post-Graduate* is an indicator equal to one if the respondent reported completing more than 4 years of college or having a graduate degree. *Number of Children* is an IPUMS generated variable for the number of children the respondent has living in the household. *Married* is an indicator equal to one if the respondent reported being married. *Full-Year Worker* is an indicator variable equal to one if the worker reported working at least 40 weeks the previous year. *Weeks Worked* is the number of weeks worked the previous year.

3.1 Description of Gender Wage Convergence

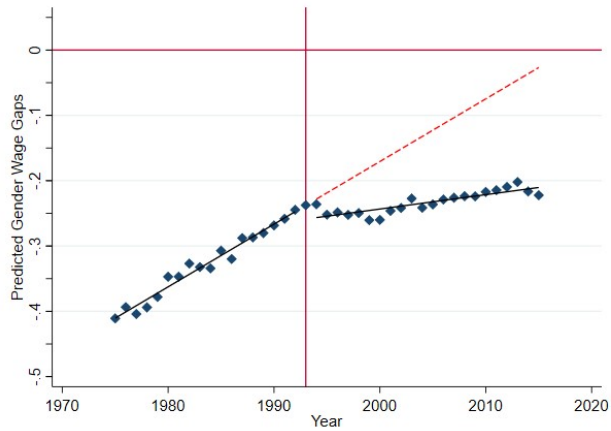
Prior to providing causal estimates in Section 4, we provide descriptive results here. The descriptive results help to illuminate what is occurring in the data during the sample period. The results here also provide details on how we obtain estimates for the gender wage gap that are used in subsequent sections. In our analysis, we rely primarily on gender wage gaps obtained via ordinary least squares. The regression model we use is

$$\log(w_{it}) = \alpha_{0t} + \beta_{1t} WW_{it} + \beta_{2t} BW_{it} + \beta_{3t} BM_{it} + \vec{\gamma}_t \cdot \vec{X}_{it} + \epsilon_{it}. \tag{1}$$

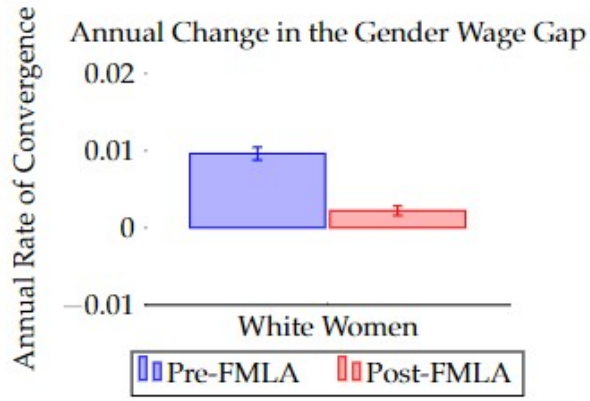
The dependent variable is the natural log of the implied real hourly wage calculated from the ASEC data. The variables of interest are WW_{it}, BW_{it}, and BM_{it}, which are indicator variables equal to one if worker i in year t is a white woman, black woman, or black man. We estimate the regressions separately for each year in the sample and include a vector of observable worker characteristics, including educational indicators, a quadratic in age, state fixed effects, occupation fixed effects, hours worked per week, and a full-year indicator. We follow Blau and Kahn (2017) and omit marital status variables and the number of children in the regressions. We do consider parental status in heterogeneity analyses presented in Section 7.

Figure 2: **Estimated Trends in National Wage Gaps (1975–2015)**

(a) Wage Gaps for White Women



(b) Convergence of the Gender Wage Gap



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS
The figures above show the estimated wage gap between white men and white women (a) using Equation 1. The trend rate prior to and after the passage of the FMLA are presented for white women in (b) using Equation 2.

In Figure 2, we plot the estimated gender wage gap between white men and white women (left panel) from Equation 1.[3] In the right panel, we report the average rate of convergence in the gender wage gap between white men and white women before and after the passage of the FMLA along with the 95% confidence intervals. The results show that there is steady wage convergence between white men and white women prior to the passage of the FMLA in 1993. Thereafter, the trend appears to stagnate.[4] To test if the break in trend is statistically significant, we run a piece-wise linear regression of the estimated wage gaps from Equation 1 on a time trend variable, where we allow for a discontinuous change in the slope of the rate of wage convergence and in the intercept of the wage gap at the FMLA year (1993)

$$\widehat{\text{Wage Gap}}_{gt} = \alpha_{0g} + \beta_g Trend_t + \gamma_g \mathbb{1}(FMLA_t) + \phi_g \mathbb{1}(FMLA_t) \times Trend_t + \epsilon_{gt}. \quad (2)$$

In Equation (2) the variable $Trend_t$ is a trend counter for the year centered around 1993 and $\mathbb{1}(FMLA_t)$ is equal to one if the year is in the post-FMLA time period. Descriptively, for white women, we estimate that the rate of gender wage convergence prior to the FMLA is $\hat{\beta}_1 = 0.96$ percentage points per year, where as the post-FMLA rate of gender wage convergence is $\hat{\beta}_1 + \hat{\phi}_1 = 0.22$ percentage points per year. Both point estimates and

[3]We obtain similar results to those presented for full-time, full-year workers in Altonji and Blank (1999).

[4]We include results for black women and black men in Appendix I. The results for black women also show stagnation after the FMLA, but, for black men, there is no change in trend after the FMLA. The results point to a shock that is gender specific.

the difference are statistically significant at the 0.01 significance level (see appendix Table A2).

As a thought experiment, we extrapolate the pre-FMLA trends in the gender wage gap to determine when gender wage parity would have occurred in the absence of the FMLA. At the time that the FMLA is enacted, the gender wage gap is given by the constant term in the regression Equation (2), and the pre-FMLA rate of convergence in the gender wage gap is given by the coefficient on trend, $\hat{\beta}_g$. Under a linear extrapolation, white women would have achieved gender wage parity in 2017.

The patterns documented in Figure 2 are suggestive of the fact the workplace regulations imposed by the FMLA stagnated gender wage gaps. A second piece of corroborating evidence comes from altering our model in Equation (2) by moving the break in the piece-wise linear regression from 1993 to alternative placebo years. Following the approach in Landais (2015), we plot the R^2 from the regression as a function of the chosen break year in Figure A2 in the Appendix. We find that the year which maximizes the R^2 is close to 1993, which is also the year in which FMLA is passed. It is important to note, however, that many years in the vicinity of 1993 also yield R^2 values that are close to the maximum value. This result is more reassuring than it is strong evidence that the FMLA caused the stagnation in gender wage convergence.

4 Empirical Specification and Causal Estimates

In Section 3.1, we present descriptive results on the gender wage gap for the sample period 1975–2015. Those results should only be considered descriptive due to several concerns. The crucial threat to identification with the descriptive results is that other federal policies that occurred at the same time as the FMLA could be contributing to the stagnation in gender wage convergence that we observe. In order to address the concern of policy endogeniety, we exploit state variation in the timing of family-leave policies that occurred prior to the FMLA. Between 1972–1992, 12 states and Washington, D.C. enacted job-protected, unpaid maternity-leave mandates that were similar in coverage to the family-leave offered by the FMLA (Waldfogel, 1999). In Table 2, we report the date when a state first enacted parental leave policies, following the coding used in Waldfogel (1999). Since these policies all predated the FMLA, a strong test for whether family-leave policies caused gender wage stagnation is to test whether we observe stagnation in gender wage convergence following the enactment of the state-level leave policies. Given that the pre-FMLA state policies all occur during a time of rapid gender wage convergence in the US overall, finding evidence of stagnation in the gender wage gap due to the

policies would provide compelling evidence of our hypothesis that family-leave policies caused gender wage stagnation.

Table 2: **Date of Family-Leave Policy by State**

State	Maternity	Paternity
Massachusetts	1972	-
Connecticut	1973	1990
Washington	1973	1989
California	1980	1992
Minnesota	1987	1987
Rhode Island	1987	1987
Maine	1988	1991
Oregon	1988	1988
Tennessee	1988	-
Wisconsin	1988	1988
New Jersey	1990	1990
Washington, DC	1991	1991
Vermont	1992	1992
All other states (FMLA)	1993	1993

We report the dates that workers in a given state first had access to unpaid maternity and paternity leave as a result of a state mandate or the Family and Medical Leave Act (1993). The coding of the laws follows and is obtained from Waldfogel (1999).

In Section 4.1, we specify the event study design that we use to estimate the gender wage gap before and after the passage of a family leave policy. In Section 4.2 we present results for two samples: the first omits states that did not pass parental-leave policies prior to the passage of the FMLA in 1993 and the second expands to also include the 38 states that first experience leave policies with the passage of the FMLA.

4.1 Event Study Research Design

For our event study specification, we restrict our sample to observations that fall within a 10 year window before or after a family-leave policy is enacted. We regress the log of the implied hourly wage for worker i in state s in calendar-year t and event-year τ i.e., $\log(\omega_{ist\tau})$, on a sequence of event-time indicators, $\mathbb{1}(\tau' = \tau)$. To capture heterogeneity by race and gender, we interact the event time indicators with indicator variables for race and gender. The reference group in our specification is white men. As is standard in wage regressions, we control for individual worker characteristics, including a quadratic in age, fixed effects for the different levels of education, and 3-digit occupation fixed effects. We

also control for calendar-year fixed effects and state fixed effects. The equation we use is

$$\begin{aligned}\log(\omega_{ist\tau}) = & \sum_{\tau'=-10}^{-2} \beta_\tau \mathbb{1}(\tau' = \tau) + \sum_{\tau'=0}^{10} \beta_\tau \mathbb{1}(\tau' = \tau) + \\ & \sum_{\tau'=-10}^{-2} \beta_{\tau,ww} WW_i \times \mathbb{1}(\tau' = \tau) + \sum_{\tau'=0}^{10} \beta_{\tau,ww} WW_i \times \mathbb{1}(\tau' = \tau) + \\ & \sum_{\tau'=-10}^{-2} \beta_{\tau,bw} BW_i \times \mathbb{1}(\tau' = \tau) + \sum_{\tau'=0}^{10} \beta_{\tau,bw} BW_i \times \mathbb{1}(\tau' = \tau) + \\ & \sum_{\tau'=-10}^{-2} \beta_{\tau,bm} BM_i \times \mathbb{1}(\tau' = \tau) + \sum_{\tau'=0}^{10} \beta_{\tau,bm} BM_i \times \mathbb{1}(\tau' = \tau) + \\ & \alpha_0 + \beta_{ww} WW_i + \beta_{bw} BW_i + \beta_{bm} BM_i + \vec{\gamma} X_i + Year_t + State_s + \epsilon_{ist\tau}.\end{aligned} \tag{3}$$

The identifying assumption for estimating the model is that the timing of the law is random across treated units.

We focus on the results for white women in the body of the paper.[5] The coefficients of interest from the model are $\beta_{\tau,ww}$, which represents the average gender wage gap between white women and white men in event year τ, relative to the gender wage gap between white men and white women in event-time $\tau = -1$.

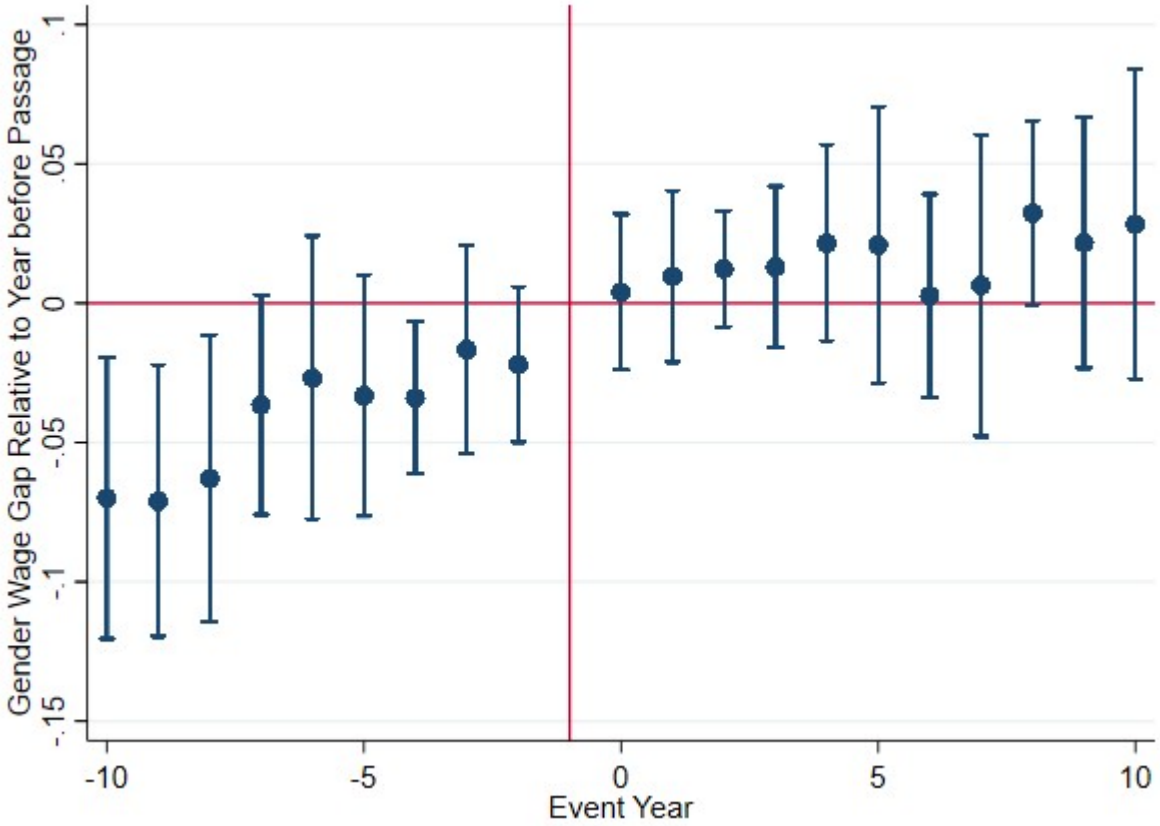
4.2 Event Study Results

To begin, we choose our sample to include only the observations for workers in states that passed family-leave policies prior to the passage of the FMLA. Focusing on these events exploits state-level variation that is less susceptible to contamination from the impacts of federal policy that is coincident with the FMLA. In Figure 3, we show that the gender wage gap converges prior to the passage of the leave policy and stagnates for the full decade after the policy is in place. It is clear from this figure that the family-leave policy does not impact the level of the gender wage gap instantaneously, but rather it eliminates the convergence.

Next, we generalize our results by implementing event studies that also include the federal variation deriving from the introduction of the FMLA. We keep the event time the same for states with family-leave policies prior to the FMLA and we assign the 38 other states to have family-leave policy events in 1993, the year the FMLA is enacted. We also follow Kleven (2019) and control for the passage of welfare reform during the 1990s at the

[5] All results for black women and black men can be found in Appendix I.

Figure 3: **Event Study of White Female Wage Gap Using State Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS and Waldfogel (1999)
This figure is an event study plot of the gender wage gap between white women and white men before and after the introduction of state mandated maternity leave. The gender wage gap is reported relative to its value in the time period before the event, i.e., $\tau = -1$. It uses data from 12 states and Washington, D.C., which each enacted an FMLA-type maternity-leave policy during the period 1972–1992 before the federal mandate. We cluster the standard errors at the state level.

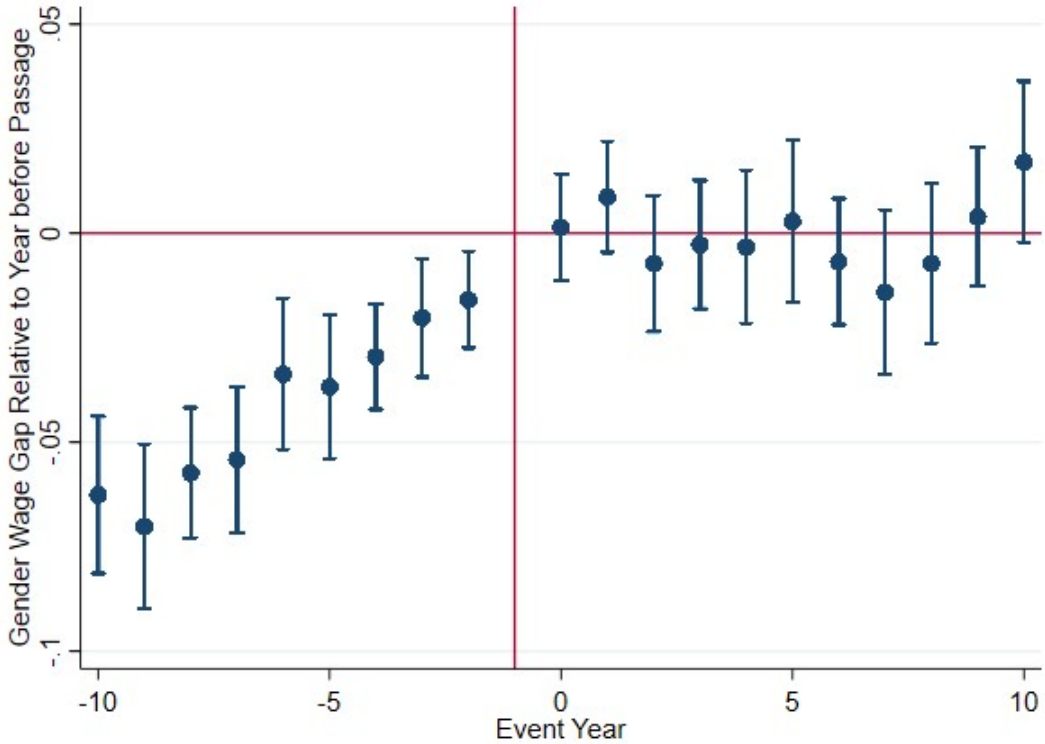
state and federal level by interacting state-based indicators for welfare-reform with the family-leave event time indicators.[6]

In Figure 4, we report the event study estimates for the full sample based on Equation (3) of the gender wage gap experienced by white women. Quantitatively, the results show that white women experienced about 7 log points of convergence in the gender wage gap in the decade preceding the passage of a family-leave policy (either state or federal) and no convergence after passage. Importantly, none of the point estimates for white women after the policy are statistically significant.[7]

[6]It is necessary to control for the welfare reform measures when we include the FMLA because the reforms may bias the results of the states which are only affected by the FMLA.

[7]In the Selection Appendix Figure B1, we expand the sample to anyone who worked at least 1 hour per week and show that our results are not driven by the use of 35 hours of work per week as the selection threshold. We also show in Figure B2 that the proportion of the sample which is female does not change before or after the passage of a family-leave policy.

Figure 4: **Event Study of White Female Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
This figure is an event study plot of the gender wage gap between white women and white men before and after the introduction of a family-leave policy. The gender wage gap is reported relative to its value in the time period before the event, i.e., $\tau = -1$. We cluster the standard errors by state.

4.3 Estimating the Rate of Stagnation

To estimate the impact of leave policies on the rate of convergence in the wage gap, we regress the event study point estimates of the wage gap for a given demographic group ($\widehat{\text{wage gap}}_{\tau g}$) on a linear event-time trend ($Trend_{\tau g}$), allowing for a change in both the level and the slope after the passage of family leave. Additionally, we weight each observation of the event-time wage gap in the regression by the inverse of its standard error. The exact specification that we run is

$$\widehat{\text{wage gap}}_{\tau g} = \tilde{\alpha}_{0g} + \tilde{\beta}_g Trend_{\tau g} + \tilde{\gamma}_g \mathbb{1}(\tau > 0) + \tilde{\phi}_g \mathbb{1}(\tau > 0) \times Trend_{\tau g} + \tilde{\epsilon}_{\tau g}.^{8} \quad (4)$$

In the first column of Table 3 we report our results from estimating Equation (4) on the event study estimates obtained in Figure 3, which include only observations from states

[8]The specification is identical to Equation (2), with the slight change that we use an event indicator $\mathbb{1}(\tau \geq 0)$ that is defined by the state-level variation in leave policy rather than just the federal variation used in the descriptive results.

Table 3: **Rate of Wage Convergence for White Women**

	State Variation	State and Federal Variation
Event-time Trend ($\tilde{\beta}_g$)	0.0070	0.0070
	(0.0009)	(0.0007)
Post ($\tilde{\gamma}_g$)	0.0078	-0.0022
	(0.0072)	(0.0065)
Event-time Trend $\times$ Post ($\tilde{\phi}_g$)	-0.0053	-0.0067
	(0.0013)	(0.0011)
Constant	0.0003	-0.0003
	(0.0050)	(0.0043)
Rate of Convergence Post Period ($\tilde{\beta}_g + \tilde{\phi}_g$)	0.0017	0.0003
	(0.0009)	(0.0008)
Observations	20	20
R-squared	0.9358	0.9251

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS and Waldfogel (1999)
Standard errors are given in parentheses. Regression of the estimated event-time wage gap for white women on a piece-wise event-time trend that allows for a different slope and intercept following a family-leave policy using Equation (4). The model is estimated separately on the event-time wage gaps for states who passed family-leave prior to the FMLA in column 1 and all states, including those treated only with the FMLA, in column 2.

with family-leave policies prior to the FMLA. From column 1, we notice that prior to the leave policy the gender wage gap experienced by white women was falling at a rate of 0.70 percentage points per year (p-value $<$0.001). In the post period, the rate of gender wage convergence falls by 0.53 percentage points per year to 0.17 percentage points per year. The decline is statistically and economically significant, and the post-leave rate of gender wage convergence is marginally different from zero.

In the second column of Table 3 we report our results from estimating Equation (4) on the event study estimates from Figure 4, which includes the federal passage of the FMLA in addition to the state variation. We find that the gender wage gap faced by white women declined by a statistically significant 0.70 percentage points per year prior to the policy change, which is identical to the pre-leave rate of gender wage convergence that we estimated using only the state variation (column 1). After the policy change, the rate of wage convergence for white women declines by 0.67 percentage points to 0.03 percentage points.

4.4 Stagnation in Wage Convergence Fully Explained by Leave Laws

Based on our estimates, family-leave policies reduced the annual rate of gender wage convergence for white women by 76-96% per year. To measure how much of the observed stagnation in gender wage convergence post-1993 is explained by family-leave policies, we use the wage decomposition approach in Blau and Kahn (2006) which builds on the method developed in Juhn et al. (1991). The method starts with a data generating process in which wages Y_{it}, are a function of observable worker characteristics X_{it}, the return to these characteristics β_t, and a residual which comprises a standardized index measure of unobserved worker skill θ_{it} and the price of the unobservable skill σ_t, as expressed in the following equation

$$Y_{it} = \beta_t X_{it} + \sigma_t \theta_{it}. \tag{5}$$

Changes in the wage gap during the pre-period (1976–1992) and the post period (1993–2015) are decomposed into changes in observed Xs, changes in observed prices of observables (β), changes in unobserved skills (θ_{it}; called the "Gap Effect" in Blau and Kahn, 2006) and changes in the price of unobserved skill (σ_t). For details on how the procedure is implemented, see Blau and Kahn (2006).

Table 4: Wage Decomposition Pre- and Post-FMLA

Time Period	1976-1992	1993-2015	Difference
Change in Gender Wage Gap	-0.1927	-0.0799	-0.1128
Observed Xs	-0.0999	-0.0296	-0.0703
Observed Prices	0.0731	-0.0348	0.1079
Gap Effect	-0.1850	-0.0282	-0.1568
Unobserved Prices	0.0191	0.0127	0.0064

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS. In this table we report a decomposition of the convergence of the gender wage gap following the methodology of Blau and Kahn (2006). Our analysis shows that the gender wage gap converged by 19 percentage points during the pre-FMLA period of our sample but only converged by 8 percentage points during the post-FMLA period. Moreover, the results show that the convergence due to the "Gap Effect" collapsed by 15.68 percentage points.

In Table 4, we report the change in the gender wage gap for (1976-1992) and for (1993-2015) and the difference in the two differences. For each time period we further decompose the period change in the gender wage gap into changes from observed Xs, observed prices, unobserved skill ("Gap Effect"), and unobserved prices. We find the gender wage gap converged by 19.3 percentage points during the pre-period, but it only converged by 8 percentage points during the post period – a net difference of 11.3 percentage points (Table 4). We find that the convergence in the gender wage gap due to observed factors is 2.7 percentage points before the FMLA and 6.4 percentage points after the FMLA. There-

fore, stagnation after the passage of the FMLA is not due to changes in the importance of observable factors. The driver of the differences in the convergence rates is the dramatic decrease of 15.7 percentage points in the "Gap Effect". The decline of the "Gap Effect" is crucial because of what it measures. As articulated in Blau and Kahn (2006): "The Gap Effect measures the effect of changing differences in the relative positions of men and women in the male residual wage distribution, including the effect of an improvement in women's unmeasured characteristics or a reduction in the extent of discrimination against women." Given the differences in family-leave taking between men and women, family-leave policies may simultaneously decrease the unmeasured characteristics of women in the labor market and increase the extent of discrimination women face.

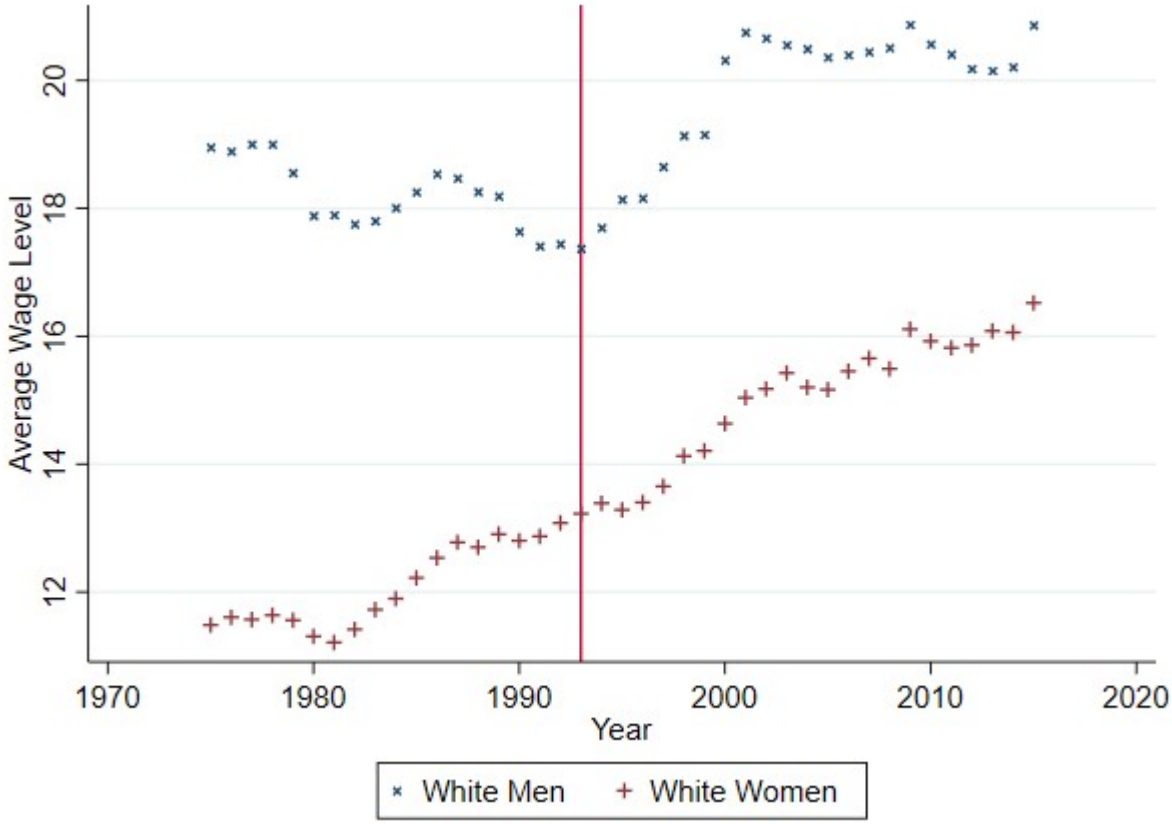
Using the causal estimates from the state and federal variation of a 0.67 percentage point decline in the annual rate of gender wage convergence after the passage of maternity leave laws and projecting it over the 22 year period 1993–2015 we predict a differential drop of 14.74 percentage points. We can therefore explain 94% of the difference in the rate of gender wage convergence in the pre and post period caused by the "Gap Effect."[9]

5 Whose Wages Changed to Cause Stagnation?

Was it changes in the wages of women or changes in the wages of men that explain why state and federal family-leave policies stagnated gender wage convergence? To make progress on this question, we first plot average wages of white men and white women over time in Figure 5 to build intuition based on the descriptive facts. Figure 5 suggests that white men experience declining real wages prior to the FMLA, while white women experience increasing wages prior to the FMLA. Therefore, convergence in the raw gender wage gap prior to the passage of the FMLA is driven by both decreasing wages for white men and increasing wages for white women. After the FMLA, white women's wages continue to grow, but white men's wages stop declining and in fact begin to grow, as well. The change in wage growth for white men is an effective reversal of wage decreases that men experience as women entered the labor market following WWII (Acemoglu et al., 2004).

[9] Using the state variation, we can also explain 74% of the decline in the gender wage gap caused by the "Gap Effect."

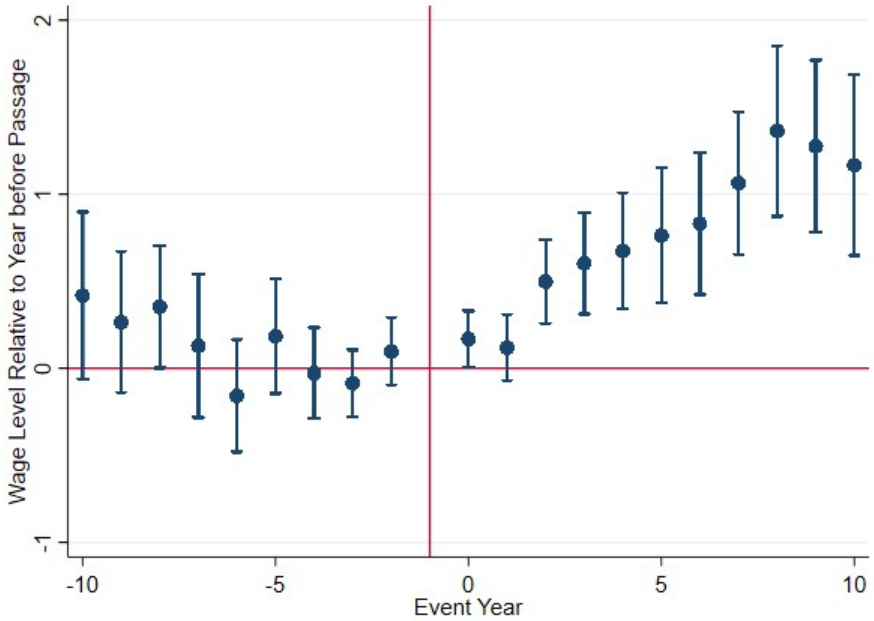
Figure 5: **Average Wages (1975–2015)**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS
This figure shows the average hourly wage for white men and white women per year without any controls.

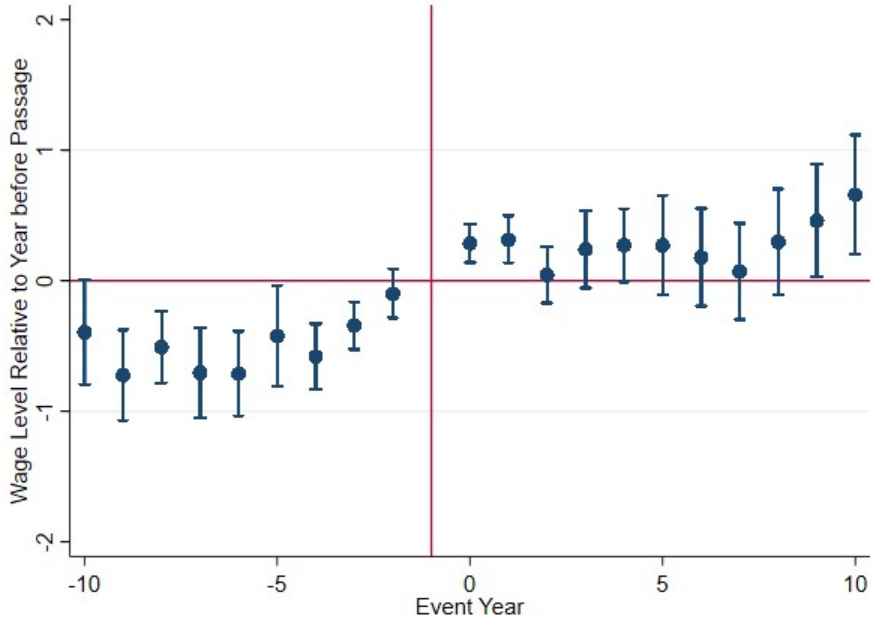
Because the evidence in Figure 5 is descriptive rather than causal we now turn to an event study, similar to the specification in Equation (3) using both the state and federal variation in leave laws. We make a change from the original equation by using wage levels $\omega_{ist\tau}$ instead of log wages. In Figure 6, we show that, in the decade prior to the passage of the family-leave policy, wages for white men are stable. After the passage of a family-leave policy, wages for white men grow steadily to levels that are more than $1 per hour higher. By contrast, in Figure 7, prior to the implementation of a leave policy, white women's wages are increasing steadily to a level that is nearly $1 per hour higher than one decade prior. After the policy, white women's wages continue to grow at nearly the same annualized rate compared to before the policy. While we show that the wages paid to white women do not decline, consistent with prior research (Waldfogel, 1999), we can find the stagnation in the gender wage gap is caused by the rebound in the wages of white men. In other words, white women experience declines relative to white men, but not absolute declines.

Figure 6: **Event Study: Wage Levels for White Men**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
The figure above shows the results of the event study on wage levels for white men following the methodology of the event study in Equation (3). The results are provided by the estimated coefficients β_τ.

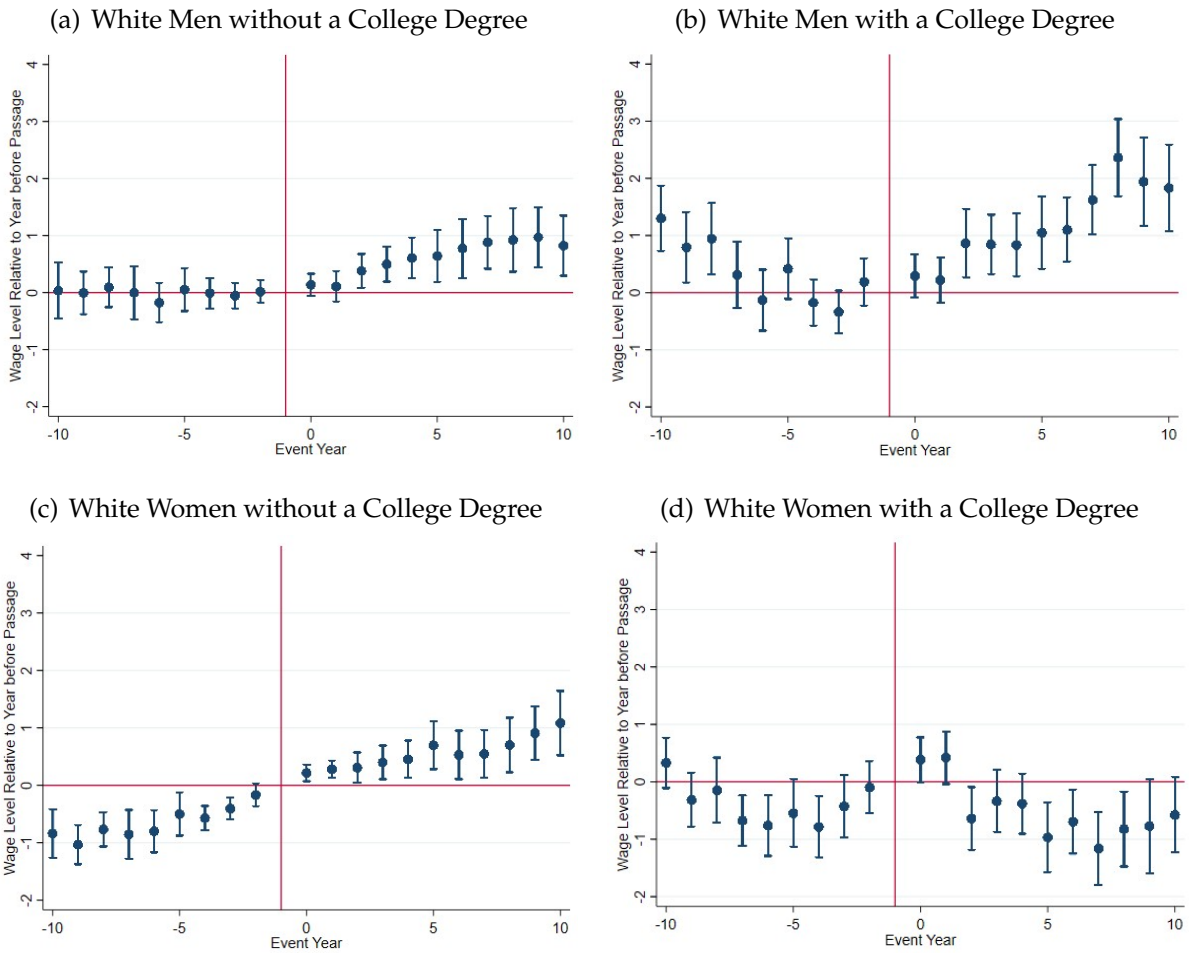
Figure 7: **Event Study: Wage Levels for White Women**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
The figure above shows the results of the event study on wage levels for white men following the methodology of the event study in Equation (3). The results are provided by the estimated coefficients $\beta_\tau + \beta_{\tau,ww}$.

5.1 Wage Impacts by Educational Attainment

Figure 8: **Event Study: Wage Levels Based on Educational Attainment**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven (2022)
The figure above shows the results of the event study on wage levels for white men and white women based on their educational attainment following the methodology of the event study in Equation (3). The results for white men are provided by the estimated coefficients β_τ and for white women by $\beta_\tau + \beta_{\tau,ww}$.

The two policies that may confound our results are welfare reform and the EITC. Because welfare reform occurred at different times based on state waivers, we can and do control directly for welfare reform in the causal evidence we presented in Section 4. However, the EITC is reformed nationally in 1993, so we cannot control for it directly in Section 4. To test whether the EITC and welfare reform are driving the results, we use the educational attainment of workers as a proxy for qualifying for either of the confounding policies. If the confounding policies were likely drivers of the stagnation, we would expect the largest effects to be centered around workers with a lower level of educational

attainment, who are more likely to qualify for welfare or the EITC.[10]

We plot an event study for the hourly wage by educational attainment for white men and white women in Figure 8. The methodology follows the event studies used in Section 5, but splits the sample into two groups by educational attainment: workers without a college degree and workers with at least a college degree. The results show that the strongest response to the passage of family leave occurs among workers who are college graduates. If the EITC or welfare reform were driving the results, we would have expected the opposite. The result suggests that neither the EITC nor welfare reform were causing the stagnation. Moreover, Kleven (2019) shows that the EITC reform in 1993 does not have a large impact on labor supply, whereas the welfare reform, which we control for, does.

6 Who Claims More Leave?

Having shown the introduction of family-leave policies increased wages for white men and did not change the wages for white women, we now exploit usage data on leave taking by employees to explain why we expect the differential impacts on wages by gender. We show that white women are more likely to take leave than white men. Moreover, conditional on taking leave, white women take an additional 37 days of leave when it is for a birth or adoption of a child compared to white men.

The Department of Labor conducted surveys on family-leave usage in 1995, 2000, 2012, and 2018 (United States Department of Labor, Office of the Assistant Secretary for Policy, 1996, 2013a,b, 2020). The surveys provide data on whether the respondent (employee) has taken leave recently (within either the prior 12 or 18 months), the length of leave spells, and the reason that leave was required. We use the data to construct indicator variables for three outcomes: leave taken for any reason, leave taken for reasons that are not related to the birth or adoption of a child, and leave taken for reasons that are related to the birth or adoption of a child. We also construct a consistent variable for the length of the leave spells taken by individuals across the four survey years.[11]

To test whether white women take more leave or longer leave spells compared to

[10] 86% of workers who are eligible for the EITC do not have a bachelor's degree (Murray and Kneebone, 2022). 94% of workers on TANF (welfare) do not have college degrees (King, 2022).

[11] For survey years 1995, 2012, and 2018, the length of leave spells are recorded as categories. We use the midpoint of a category, such as 17.5 for more than 15 but less than or equal to 20 days. We record the days using the categories available in 2018. For the top-coded lengths, such as greater than 120 days, we use the lower bound, i.e. 120 days.

white men, we estimate the regression

$$Leave_{it} = \eta_0 + \eta_1 WW_i + \eta_2 BW_i + \eta_3 BM_i + \eta_4 Age_i + \eta_5 Age_i^2 + Year_t + \epsilon_{it}. \tag{6}$$

$Leave_{it}$ is an indicator variable equal to 1 if employee i takes leave in year t. We estimate Equation 6 separately for leave taken for any reason, leave taken unrelated to the birth or adoption of a child, and leave taken related to the birth or adoption of a child. The regression also includes age as a quadratic and year fixed effects.

Table 5: **Probability of Taking Leave**

	Leave Taken?		
	Any Leave	Non-Family Leave	Family Leave
White Female	0.0361	0.0224	0.0137
	(0.0142)	(0.0082)	(0.0060)
Black Female	0.0945	0.0772	0.0174
	(0.0038)	(0.0044)	(0.0009)
Black Male	-0.0130	0.0033	-0.0163
	(0.0061)	(0.0109)	(0.0049)
Constant	0.0850	-0.0368	0.1217
	(0.0685)	(0.0665)	(0.0187)
Observations	10,673	10,673	10,673
R-squared	0.0081	0.0108	0.0256
Sample Mean	0.1722	0.1323	0.04

Source: United States Department of Labor, Office of the Assistant Secretary for Policy (1996, 2013a,b, 2020)
The regressions above are for a linear probability model and the dependent variable is an indicator equal to 1 if the individual reported taking leave (1), taking leave that was not due to the birth or adoption of a child (2), or taking leave that was due to the birth of adoption of a child (3). The estimation uses the survey weights from each survey year. Robust standard errors are clustered by year and reported in parentheses.

The results from estimating Equation 6 are provided in Table 5. In the first column, we show that white women are 3.6 percentage points more likely to claim leave than white men, which is 21% of the sample mean of 17.2 percent. In the second column, we see that women are 2.2 percentage points more likely to claim leave for a reason unrelated to adoption or the birth of a child than white men or 17% of the sample mean. In the third column, we show that white women are 1.4 percentage points more likely to claim leave due to the birth or adoption of a child than white men or 34% of the sample mean.

Having shown that white women take leave more often than white men, we now examine which groups have longer leave spells when leave is taken. We estimate the

linear regression

$$Length_{it} = \eta_0 + \eta_1 WW_i + \eta_2 BW_i + \eta_3 BM_i + \eta_4 Age_i + \eta_5 Age_i^2 + Year_t + \epsilon_{it}. \quad (7)$$

$Length_{it}$ is the length of a leave spell for employee i in year t measured in days. The controls variables are identical to those in Equation 6. We estimate the equation for three groups of leave takers: those taking leave for any reason, those taking leave for any reason other than the birth or adoption of a child (non-family leave), and those taking leave due to the birth or adoption of a child.

Table 6: **Length of Leave Taken in Days**

	Any Leave	Non-Family Leave	Family Leave
White Female	10.26	2.02	36.72
	(3.26)	(3.40)	(4.39)
Black Female	11.48	3.96	37.23
	(1.84)	(3.32)	(3.84)
Black Male	0.81	-1.79	13.11
	(1.47)	(1.65)	(3.31)
Constant	33.25	17.33	-11.47
	(9.24)	(7.32)	(12.71)
Observations	4,925	3,998	927
R-squared	0.0313	0.0153	0.2768
Sample Mean	26.83	24.41	34.87
Mean for White Men	20.85	23.16	12.73

Source: United States Department of Labor, Office of the Assistant Secretary for Policy (1996, 2013a,b, 2020)
The regressions above are for the length of a leave spell for all individuals who reported taking leave. In column 1, all leave spells are considered regardless of the reason for taking leave. In column 2, restrict the sample to employees who claimed leave due to any reason other than the birth or adoption of a child. In column 3, we restrict the sample to employees who claimed leave due to the birth or adoption of a child. The estimation uses the survey weights from each survey year. Robust standard errors are clustered by year and reported in parentheses.

The estimation results for the length of leave spells are given in Table 6. In the first column, we find that white women claim 10 days more leave on average than white men when we do not differentiate by the reason for leave. When we decompose the length of leave spells by the reason for leave taking, we find that white women do not take longer leave spells than white men when it is for any reason other than the birth or adoption of a child. Instead, when we look at leave spells due to the birth or adoption of a child, we find that white women take 37 more days of leave than white men. Since white men on average take 13 days of leave for the birth or adoption of a child, white women take

approximately four times more leave than white men. Therefore, the differences in the length of leave spells between white men and white women are driven exclusively by longer leave spells for white women due to the birth or adoption of a child.

Usage data on leave by employees shows that white women are more likely to claim leave and take much longer leave spells for the birth or adoption of a child compared to white men. The differential usage of leave by white men and women provides a potential mechanism for explaining why the introduction of family-leave policies has a differential impact on white men and women.

7 Heterogeneity Results

We show that event studies indicate the FMLA and other family-leave policies caused stagnation in the gender wage gap for white women using a sample of full-time workers. Having established that family-leave policies caused gender-wage convergence to stall, we now measure the heterogeneous impact of family-leave on the rate of gender wage convergence for 2 groups of workers: workers with children and workers without children.[12] First, we segment the data for each group. Second, within a group, we estimate the gender wage gap using the event study specification in Equation 3. Third, we use the point estimates from the event study to estimate the rate of convergence before and after family-leave using Equation 4. The analysis presented for each group is the same used to obtain the overall rate of gender wage convergence in Section 4. For comparison between the groups, we use a bootstrap with $n = 100$ replications.

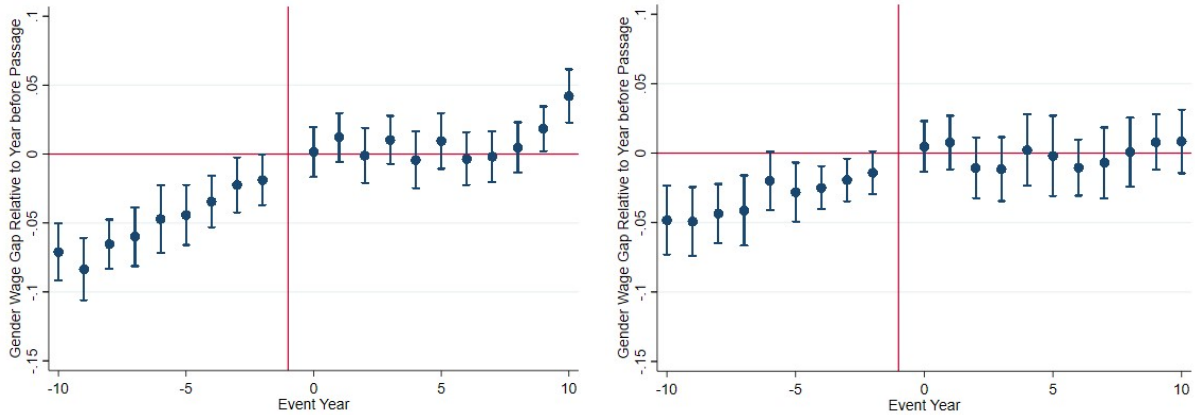
Due to differences in home production between men and women, especially with regards to child-rearing, we may expect women with children to experience a greater change in the convergence rate of the gender wage gap due to the passage of a family-leave policy than women without children (Goldin, 2014). In panel a of Figure 9, we show that white women with children experience a stronger pattern of convergence prior to the passage of a family-leave policy compared to white women without children (panel b). Both groups of women experience stagnation after the passage of a family-leave policy, but the decline in the rate of convergence is stronger for white women with children.

The rates of convergence before and after the passage of a family-leave policy for white women with children and those without are presented in Table 7. At the time a family-leave policy is passed, white women with children face a wage gap of -35% compared to white men with children. The wage gap faced by white women with children is 15 percentage points larger than that faced by white women without children (-20%). In the

[12] We also present a similar analysis for married and single workers in the appendix.

Figure 9: **Event Study: Family Leave Policy on Gender Wage Gaps**

(a) White Mothers (b) White Childless Women



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and white women for workers with children (a) and workers without children (b).

Table 7: **Annual Rate of Wage Convergence for White Women**

	Mothers	Childless	Difference
Convergence Rate Before (p.p.)	0.804	0.520	0.284
	(0.071)	(0.071)	(0.101)
Drop in Convergence Rates (p.p)	0.577	0.420	0.157
	(0.102)	(0.101)	(0.143)
Convergence Rate After (p.p.)	0.227	0.100	0.127
	(0.070)	(0.083)	(0.109)
Gender Wage Gap at Passage (p.p.)	-34.58	-19.66	-14.93
	(0.758)	(0.663)	(0.970)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
In the table above, we report the convergence rates in wage gaps before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures 9 using a bootstrap over $n = 100$ replications. The bootstrap standard errors are presented in parentheses.

decade prior to the passage of the family-leave policy, the gender wage gap for white women with children converged at a rate of 0.80 percentage points per year compared to 0.52 percentage points per year for white women without children. The difference is statistically significant at the 1% significance level. After the policy, the convergence rate for white women with children declines by 0.157 percentage points more than the decline for white women without children, but the difference is not significant. The post-policy rate of gender wage convergence is 0.23 percentage points for white women with children

and 0.10 percentage points for white women without children.

We show both white women with children and white women without children experience stagnation in the gender wage gap. We expect to see more stagnation for white women with children because 25% of FMLA claims are filed around the birth of a child (Brown et al., 2020), which we see in the point estimate. However, we also expect stagnation for white women without children because the FMLA also allows for leave due to the care of family members (24% of claims), which more commonly falls on women, regardless of parental status (Brown et al., 2020). Therefore, our results are consistent with our priors on parental status as well as the observed usage rates of workers.

8 Back of the Envelope Calculation for Earnings

So far we have shown that leave policies contribute to the stagnation of the gender wage gap. Now, we will quantify the impact of family-leave policies on annual earnings for white men and white women.

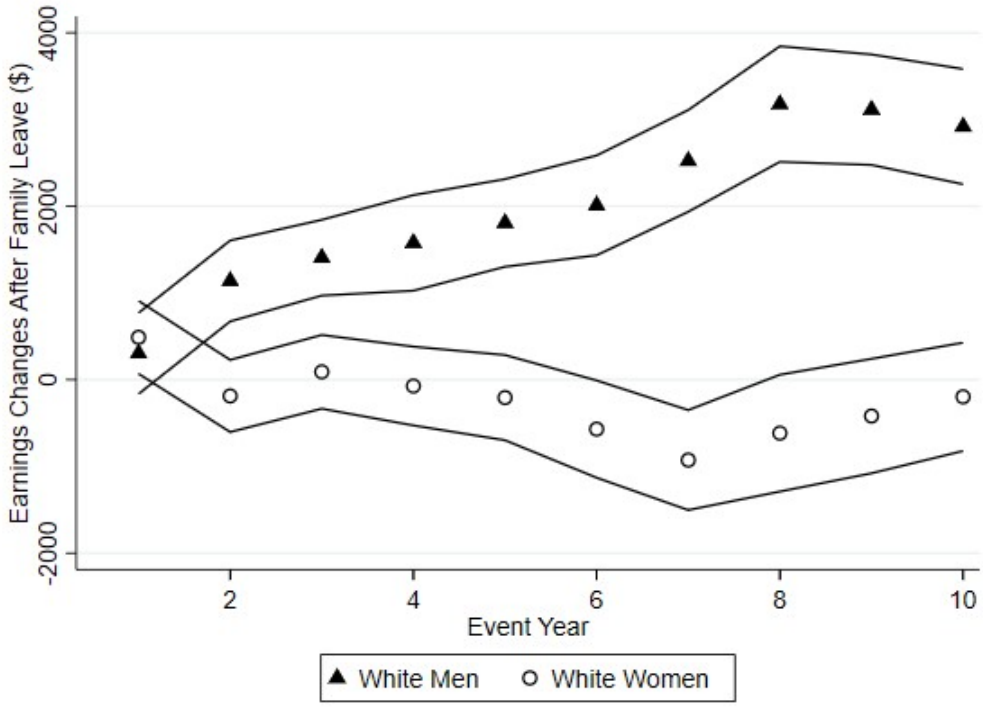
To estimate the impact on earnings for workers in our sample, we use event study estimates for the causal impact of a family-leave policy on the level of wages for workers using state-specific family-leave policies and the federal FMLA (Section 5). We use the rate of wage growth prior to the passage of a family-leave policy, $\tilde{\beta}_g$, to create a predicted counter-factual wage level without family-leave for the period after passage (see Equation 4). We calculate

$$PredictedWage_{g\tau} = \bar{Wage}_{g,\tau=0} + \tilde{\beta}_g \times Trend_\tau, \tag{8}$$

where $PredictedWage_{g\tau}$ is the counter-factual wage for demographic group g in event-year τ. $\bar{Wage}_{g,\tau=0}$ is the sample average for all workers in demographic group g in the event-year zero. $\tilde{\beta}_g \times Trend_\tau$ provides the counter-factual wage growth without family-leave. Next, we compare the counter-factual wage level to the observed wage level after the passage of family leave. We obtain the annual earnings impacts by multiplying the difference between the counter-factual and observed wage levels for each demographic group, a measure of the hourly wage cost of family-leave, by 2,000 hours to see the effect of the policy on a full-time, full-year employee with 2 weeks of vacation.

In Figure 10, we show the results for the back of the envelope calculation for the 10 years after the passage of a family-leave policy. In the first year, white men and white women experience very similar earnings impacts, which is consistent with the findings of Waldfogel (1999) that there is no short-run impact on wages of FMLA. Because we use a longer-time period of data, we are able to show that the earnings trajectories of white men

Figure 10: Back of the Envelope Calculation Results



In the figure above, we have reported the results of a back of the envelope calculation for annual wage effects τ years after the passage of a family-leave policy along with the 95% confidence intervals, which are obtained via a bootstrap with 100 replications.

and white women diverge in the long-run following the passage of family-leave policies. Ten years after the passage of family-leave, white men have higher annual earnings of $2,917 than the counterfactual without family-leave policies. By contrast, ten years after the passage of family-leave, white women have actual earnings that are statistically equal to the counterfactual without leave (-$197).

9 Conclusion

We solve an important puzzle in economics: "why did gender wage convergence in the United States stall?" We offer a novel solution to the puzzle—the introduction of family-leave policies.

Using an event study design that leverages timing in the passage of state and federal family-leave policies, we show that gender wage convergence stalls in states following the enactment of the policies. In fact, using the introduction of family-leave policies, we explain 94% of the stagnation in gender wage convergence that is unaccounted for after controlling for changes in observable characteristics between men and women. A key lesson from our work is that legally-mandated labor market flexibility can have the un-

intended effect of stymieing gender wage convergence, notwithstanding the increasing evidence that flexibility which arises endogenously in the labor market through technological innovation, or from firms changing their own policies, can lead to reduced gender wage gaps (Cook et al. 2021; Chen et al. 2019; Goldin 2014, 2021).

The evidence that we provide on the impact of leave policies on gender wage convergence in the US contributes to a growing literature documenting negative impacts of leave policies on gender wage equality in Europe and other OECD countries (Mandel and Semyonov, 2005; Kleven et al., 2019; Patnaik, 2019; Ginja et al., 2020; Albanesi et al., 2022). Because the leave offered in the US is less generous that what is offered in peer countries, our results suggests an important role for economists to consider what features of family-leave policy design can soften the equity-efficiency trade-off arising from the introduction of family-leave policies. We leave this work to future studies by other scholars having answered the question: "why did gender wage convergence in the United States stall?"

References

ACEMOGLU, D. AND J. ANGRIST (2001): "Consequences of Employment Protection? The Case of the Americans with Disabilities Act," *Journal of Political Economy*, 109, 915–957.

ACEMOGLU, D., D. AUTOR, AND D. LYLE (2004): "Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury," *Journal of Political Economy*, 112, 497–551.

ALBANESI, S., C. OLIVETTI, AND B. PETRONGOLO (2022): "Families, Labor Markets, and Policy," Working Paper 30685, National Bureau of Economic Research.

ALTONJI, J. G. AND R. M. BLANK (1999): "Chapter 48 Race and gender in the labor market," Elsevier, vol. 3 of *Handbook of Labor Economics*, 3143–3259.

ANTECOL, H., K. BEDARD, AND J. STEARNS (2018): "Equal but Inequitable: Who Benefits from Gender-Neutral Tenure Clock Stopping Policies?" *American Economic Review*, 108, 2420–41.

BAILEY, M. J., T. S. BYKER, E. PATEL, AND S. RAMNATH (2019): "The Long-Term Effects of California's 2004 Paid Family Leave Act on Women's Careers: Evidence from U.S. Tax Data," Working Paper 26416, National Bureau of Economic Research.

BAILEY, M. J., B. HERSHBEIN, AND A. R. MILLER (2012): "The Opt-In Revolution? Contraception and the Gender Gap in Wages," *American Economic Journal: Applied Economics*, 4, 225–54.

BALSER, C. (2020): "The Effects of Paid Maternity Leave on the Gender Gap: Reconciling Short and Long Run Impacts," *Available at SSRN: https://ssrn.com/abstract=3536677 or http://dx.doi.org/10.2139/ssrn.3536677*.

BERTRAND, M., C. GOLDIN, AND L. F. KATZ (2010): "Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors," *American Economic Journal: Applied Economics*, 2, 228–55.

BLAU, F., P. BRUMMUND, AND A. LIU (2013a): "Erratum to: Trends in Occupational Segregation by Gender 1970–2009: Adjusting for the Impact of Changes in the Occupational Coding System," *Demography*, 50, 493–494.

BLAU, F. AND L. KAHN (2007): "Changes in the Labor Supply Behavior of Married Women: 1980–2000," *Journal of Labor Economics*, 25, 393–438.

BLAU, F. D., P. BRUMMUND, AND A. Y.-H. LIU (2013b): "Trends in Occupational Segregation by Gender 1970-2009: Adjusting for the Impact of Changes in the Occupational Coding System," *Demography*, 50, 471–494.

BLAU, F. D. AND L. M. KAHN (2000): "Gender Differences in Pay," *Journal of Economic Perspectives*, 14, 75–99.

——— (2006): "The U.S. Gender Pay Gap in the 1990s: Slowing Convergence," *Industrial and Labor Relations Review*, 60, 45–66.

——— (2013): "Female Labor Supply: Why Is the United States Falling Behind?" *American Economic Review*, 103, 251–56.

——— (2017): "The Gender Wage Gap: Extent, Trends, and Explanations," *Journal of Economic Literature*, 55, 789–865.

BROWN, S., J. HERR, R. ROY, AND J. A. KLERMAN (2020): "Employee and Worksite Perspectives of the Family and Medical Leave Act: Results from the 2018 Surveys," *U.S. Department of Labor*.

CHA, Y. AND K. A. WEEDEN (2014): "Overwork and the Slow Convergence in the Gender Gap in Wages," *American Sociological Review*, 79, 457–484.

CHEN, M. K., J. A. CHEVALIER, P. E. ROSSI, AND E. OEHLSEN (2019): "The Value of Flexible Work: Evidence from Uber Drivers," *Journal of Political Economy*, 127, 2735–2794.

COOK, C., R. DIAMOND, J. V. HALL, J. A. LIST, AND P. OYER (2021): "The Gender Earnings Gap in the Gig Economy: Evidence from over a Million Rideshare Drivers." *Review of Economic Studies*, 88, 2210 – 2238.

CORTÉS, P. AND J. PAN (2019): "When Time Binds: Substitutes for Household Production, Returns to Working Long Hours, and the Skilled Gender Wage Gap," *Journal of Labor Economics*, 37, 351–398.

FLOOD, S., M. KING, S. RUGGLES, AND J. R. WARREN (2020): "Integrated Public Use Microdata Series, Current Population Survey: Version 7.0 [dataset]," https://doi.org/10.18128/D030.V7.0.

FORTIN, N. M. AND T. LEMIEUX (2000): "Are Women's Wage Gains Men's Losses? A Distributional Test," *American Economic Review*, 90, 456–460.

GINJA, R., A. KARIMI, AND P. XIAO (2020): "Employer responses to family leave programs," *IFAU Working Paper 2020:18*.

GOLDIN, C. (2014): "A Grand Gender Convergence: Its Last Chapter," *American Economic Review*, 104, 1091–1119.

——— (2021): *Career and Family : Women's Century-Long Journey toward Equity*, Princeton University Press.

GOLDIN, C. AND L. F. KATZ (2000): "Career and Marriage in the Age of the Pill," *The American Economic Review*, 90, 461–465.

——— (2002): "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions," *Journal of Political Economy*, 110, 730–770.

GRUBER, J. (1994): "The Incidence of Mandated Maternity Benefits," *American Economic Review*, 84, 622–41.

JUHN, C. AND K. MCCUE (2016): "Evolution of the Marriage Earnings Gap for Women," *American Economic Review*, 106, 252–56.

JUHN, C., K. M. MURPHY, AND B. PIERCE (1991): "Accounting for the Slowdown in Black-White Wage Convergence," in *Workers and Their Wages: Changing Patterns in the United States*, ed. by M. H. Kosters, Washington, D.C.: The AEI Press.

KING, M. D. (2022): "Those with a high school diploma or less make up majority of government assistance recipients," https://www.census.gov/library/stories/2021/05/more-than-one-in-seven-social-safety-net-recipients-in-2017-were-college-graduates.html.

KLEVEN, H. (2019): "The EITC and the Extensive Margin: A Reappraisal," Working Paper 26405, National Bureau of Economic Research.

——— (2022): "The Geography of Child Penalties and Gender Norms: Evidence from the United States," Working Paper 30176, National Bureau of Economic Research.

KLEVEN, H., C. LANDAIS, AND J. E. SØGAARD (2019): "Children and Gender Inequality: Evidence from Denmark," *American Economic Journal: Applied Economics*, 11, 181–209.

KUZIEMKO, I., J. PAN, J. SHEN, AND E. WASHINGTON (2018): "The Mommy Effect: Do Women Anticipate the Employment Effects of Motherhood?" Working Paper 24740, National Bureau of Economic Research.

LANDAIS, C. (2015): "Assessing the Welfare Effects of Unemployment Benefits Using the Regression Kink Design," *American Economic Journal: Economic Policy*, 7, 243–78.

MAASOUMI, E. AND L. WANG (2019): "The Gender Gap between Earnings Distributions," *Journal of Political Economy*, 127, 2438–2504.

MANDEL, H. AND M. SEMYONOV (2005): "Family Policies, Wage Structures, and Gender Gaps: Sources of Earnings Inequality in 20 Countries," *American Sociological Review*, 70, 949–967.

MAS, A. AND A. PALLAIS (2017): "Valuing Alternative Work Arrangements," *American Economic Review*, 107, 3722–59.

MEER, J. AND J. WEST (2016): "Effects of the Minimum Wage on Employment Dynamics," *Journal of Human Resources*, 51, 500–522.

MURRAY, C. AND E. KNEEBONE (2022): "The Earned Income Tax Credit and the White Working Class," https://www.brookings.edu/blog/the-avenue/2017/04/18/the-earned-income-tax-credit-and-the-white-working-class/.

NIEDERLE, M. AND L. VESTERLUND (2011): "Gender and Competition," *Annual Review of Economics*, 3, 601–630.

NOONAN, M. C., M. E. CORCORAN, AND P. N. COURANT (2005): "Pay Differences Among the Highly Trained: Cohort Differences in the Sex Gap in Lawyers' Earnings," *Social Forces*, 84, 853–872.

OLIVETTI, C. AND B. PETRONGOLO (2016): "The Evolution of Gender Gaps in Industrialized Countries," *Annual Review of Economics*, 8, 405–434.

PAGE, M., J. SCHALLER, AND D. SIMON (2016): "The Effects of Aggregate and Gender-Specific Labor Demand Shocks on Child Health," Working Paper 22394, National Bureau of Economic Research.

PATNAIK, A. (2019): "Reserving Time for Daddy: The Consequences of Fathers' Quotas," *Journal of Labor Economics*, 37, 1009–1059.

PITTS, M. (2003): "Why choose women's work if it pays less? A structural model of occupational choice," *Research in Labor Economics*, 22, 415–445.

THOMAS, M. (2016): "The impact of mandated maternity benefits on the gender differential in promotions: Examining the role of adverse selection (ICS 2016-001)," Retrieved 11/1/2020 from Cornell University, ILR School, Institute for Compensation Studies site: http://digitalcommons.ilr.cornell.edu/ics/16.

TOMPSON, HOLLY B. WERNER, J. M. (1997): "The Family and Medical Leave Act: Assessing the Costs and Benefits of Use," *Employee Rights and Employment Policy Journal*, 1, 125.

TRAJKOVSKI, S. (2019): "California Paid Family Leave and Parental Time Use," Center for Policy Research Working Papers 217, Center for Policy Research, Maxwell School, Syracuse University.

UNITED STATES DEPARTMENT OF LABOR, OFFICE OF THE ASSISTANT SECRETARY FOR POLICY (1996): "1995 Family and Medical Leave Act (FMLA) Surveys Data," https://www.dol.gov/agencies/oasp/evaluation/data-repo/1995-fmla-surveys-data.

——— (2013a): "2000 Family and Medical Leave Act (FMLA) Surveys Data," https://www.dol.gov/agencies/oasp/evaluation/data-repo/2000-fmla-surveys-data.

——— (2013b): "2012 Family and Medical Leave Act (FMLA) Surveys Data," https://www.dol.gov/agencies/oasp/evaluation/fmla-2012.

——— (2020): "2018 Family and Medical Leave Act (FMLA) Surveys Data," https://www.dol.gov/agencies/oasp/evaluation/fmla2018#:~:text=Overall\%2C\%2056\%20percent\%20of\%20employees,for\%20a\%20qualifying\%20FMLA\%20reason.

U.S. BUREAU OF LABOR STATISTICS (2019): "Consumer Price Index for All Urban Consumers: All Items," https://fred.stlouisfed.org/series/CPIAUCSL.

WALDFOGEL, J. (1999): "The Impact of the Family and Medical Leave Act," *Journal of Policy Analysis and Management*, 18, 281–302.

——— (2001): "Family and medical leave: Evidence from the 2000 surveys," *Monthly Labor Review*, 124.

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I Appendix: Additional Results

Table A1: Descriptive Statistics for Non-winsorized Wages (1975–2015)

	White Men		White Women		Black Women		Black Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Real Hourly Wage (Year 2000)	19.67	20.43	14.11	19.15	13.21	16.44	15.54	16.76
Hours	44.54	8.51	41.57	6.11	40.91	5.45	42.62	7.30
Age	38.58	11.87	38.28	11.94	38.29	11.57	38.49	11.85
Less than High-School	0.14	0.35	0.10	0.30	0.12	0.33	0.18	0.38
High-School Graduate	0.34	0.47	0.35	0.48	0.36	0.48	0.38	0.49
Some College	0.24	0.43	0.27	0.44	0.30	0.46	0.26	0.44
College	0.17	0.38	0.19	0.39	0.15	0.35	0.12	0.32
Post-Graduate	0.10	0.31	0.10	0.30	0.07	0.26	0.06	0.23
Number of Children	1.08	1.24	0.95	1.12	1.14	1.25	0.93	1.28
Married	0.70	0.46	0.60	0.49	0.38	0.49	0.54	0.50
Full-Year Worker	0.89	0.31	0.85	0.36	0.85	0.36	0.86	0.35
Weeks Worked	48.31	9.56	46.96	11.24	46.99	11.41	47.26	11.02
Observations	1,290,979		907,022		136,947		124,214	

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, U.S. Bureau of Labor Statistics (2019)
Real Hourly Wage is generated by dividing the total income from wages in the previous year by the product of usual hours worked per week and number of weeks worked. *Hours* are the reported usual number of hours worked per week. *Less than High-School* is an indicator equal to one if the respondent reported less than 12 years of schooling completed or that they did not receive a diploma. *High-School Graduate* is an indicator equal to one if the respondent reported having a diploma or completing 12 years of school and it is unclear whether the respondent graduated. *Some College* is an indicator equal to one if the respondent reported having 1–3 years of college experience. *College* is an indicator equal to one if the respondent reported completing four years of college or having a college degree. *Post-Graduate* is an indicator equal to one if the respondent reported completing more than 4 years of college or having a graduate degree. *Number of Children* is an IPUMS generated variable for the number of children the respondent has living in the household. *Married* is an indicator equal to one if the respondent reported being married. *Full-Year Worker* is an indicator variable equal to one if the worker reported working at least 40 weeks the previous year. *Weeks Worked* is the number of weeks worked the previous year.

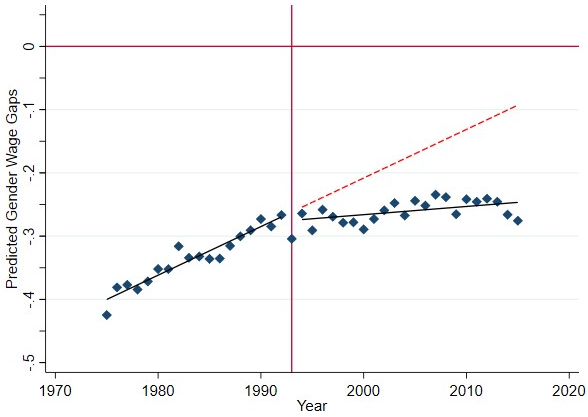
Table A2: **Impact of FMLA on Trends in Gender Wage Convergence**

	White Women	Black Women	Black Men
Trend	0.0096	0.0077	0.0009
	(0.0004)	(0.0006)	(0.0006)
FMLA	-0.0209	-0.0132	0.0307
	(0.0060)	(0.0093)	(0.0082)
Trend $\times$ FMLA	-0.0074	-0.0064	-0.0011
	(0.0005)	(0.0008)	(0.0007)
Constant	-0.2378	-0.2619	-0.1361
	(0.0045)	(0.0069)	(0.0061)
Rate of Convergence Post Period	0.0022	0.0013	-0.0002
	(0.0003)	(0.0005)	(0.0004)
Observations	40	40	40
R-squared	0.9791	0.9235	0.7070

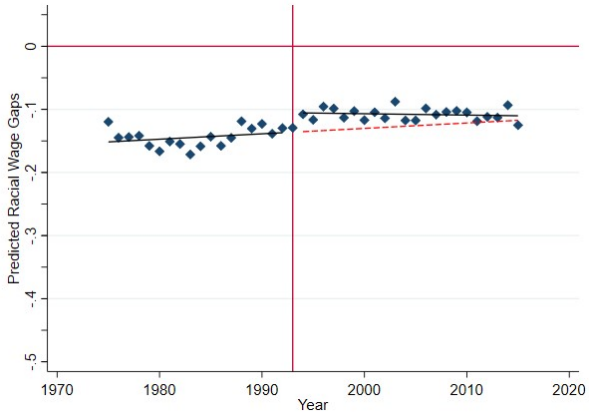
Regression of the estimated average wage gap on a piece-wise event-time trend that allows for a different slope and intercept following the FMLA using Equation 2. The model is run separately on the estimated wage gaps for white women, black men and black women and includes all years from 1975-2015.

Figure A1: **Estimated Trends in National Wage Gaps (1975–2015)**

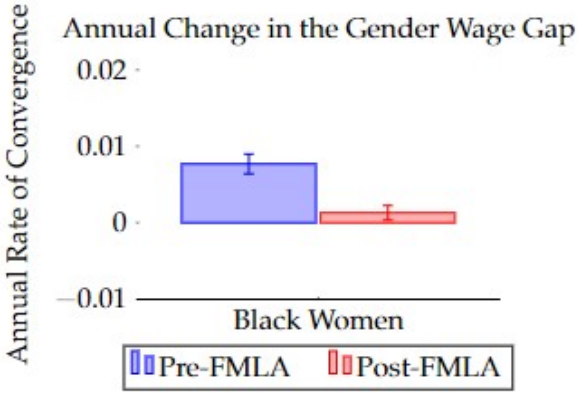
(a) Wage Gaps for Black Women



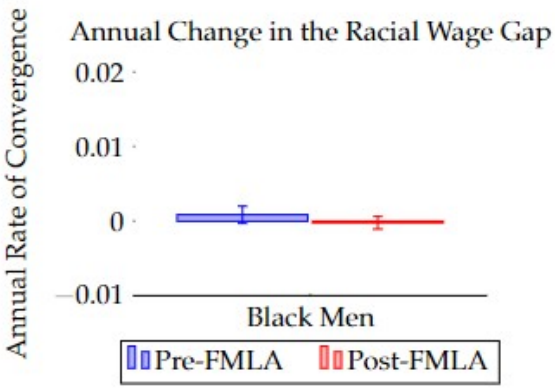
(b) Wage Gaps for Black Men



(c) Convergence of the Gender Wage Gap



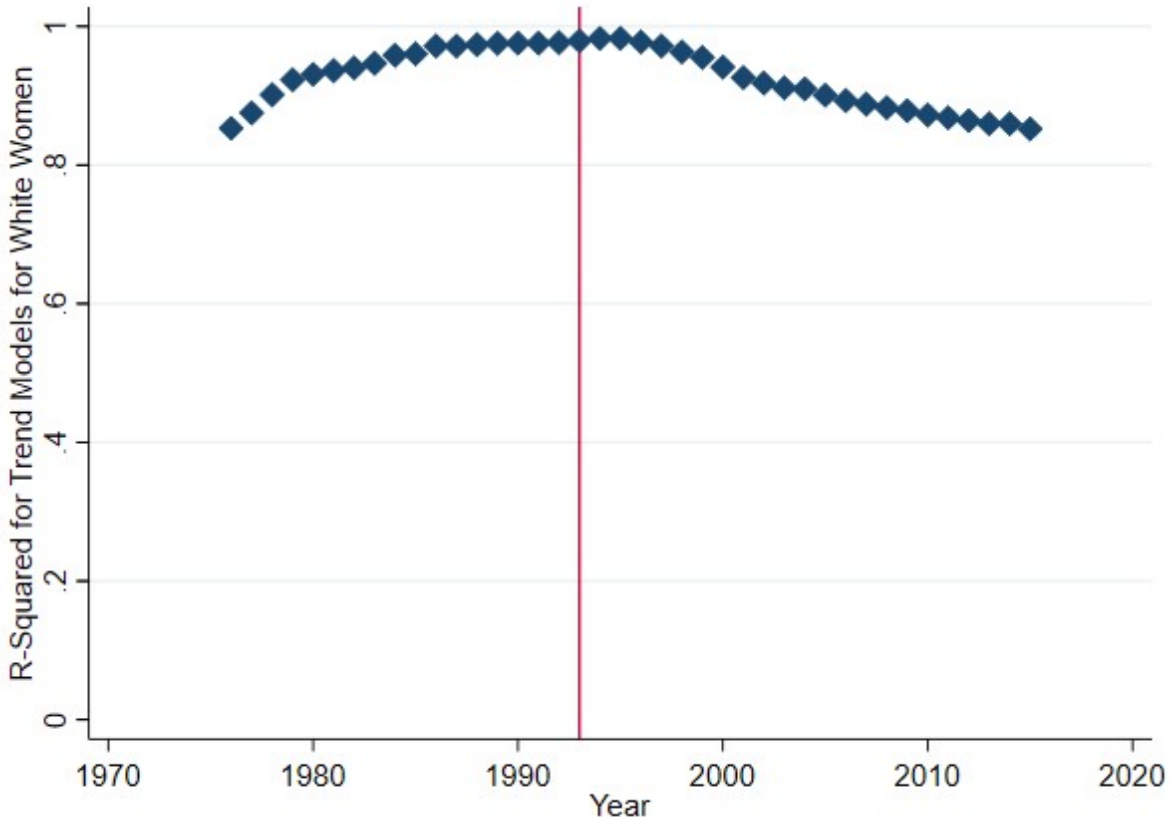
(d) Convergence of the Racial Wage Gap



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS

The figures above show the estimated wage gap between white men and black women (a) and white men and black men (b) using Equation 1. The trend rate, estimated by Equation 2, prior to and after the passage of the FMLA are presented for black women in (c) and black men in (d). This figure is the analog of Figure 2 in the paper for black women and black men.

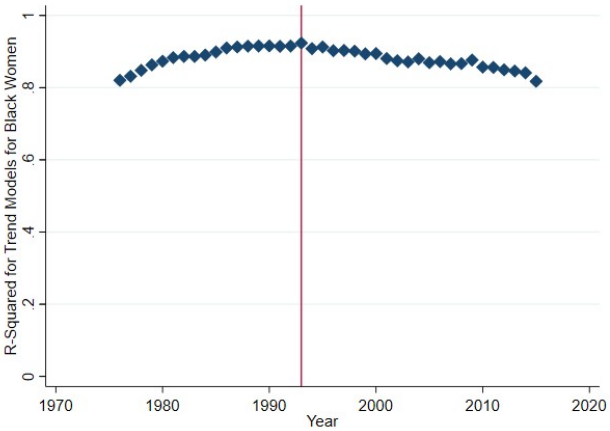
Figure A2: **Testing for Structural Break at FMLA Year (1993)**



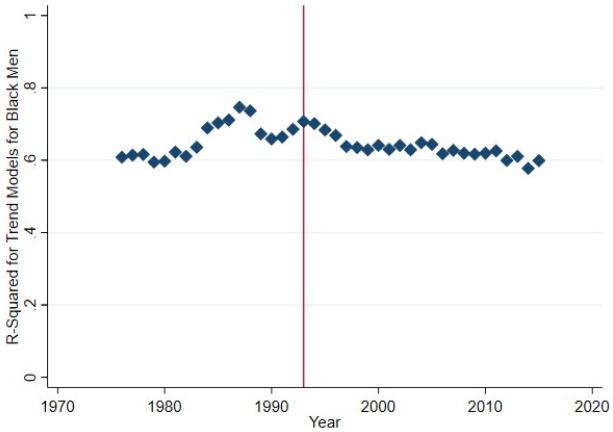
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS.
We report the results for the R^2 from altering the year for the break in the trend for Equation 2 for white women.

Figure A3: **Testing for Structural Break at FMLA Year (1993)**

(a) Black Women

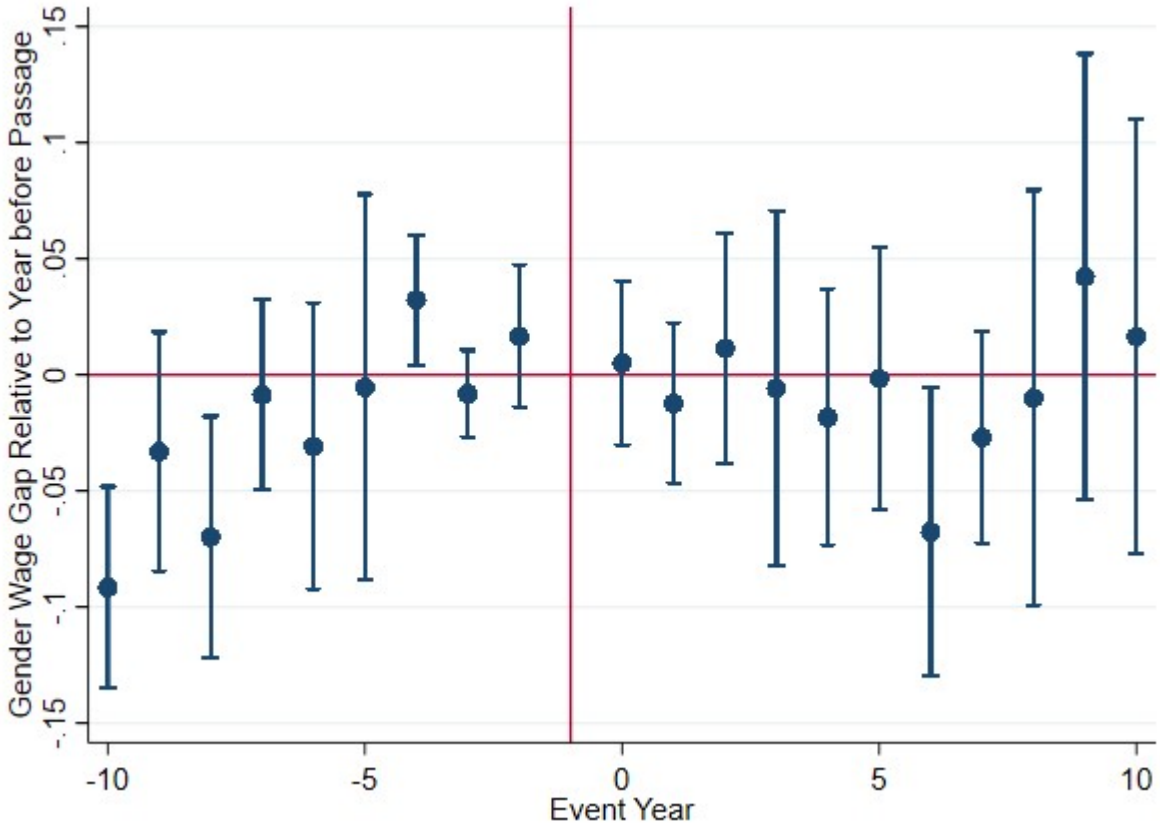


(b) Black Men



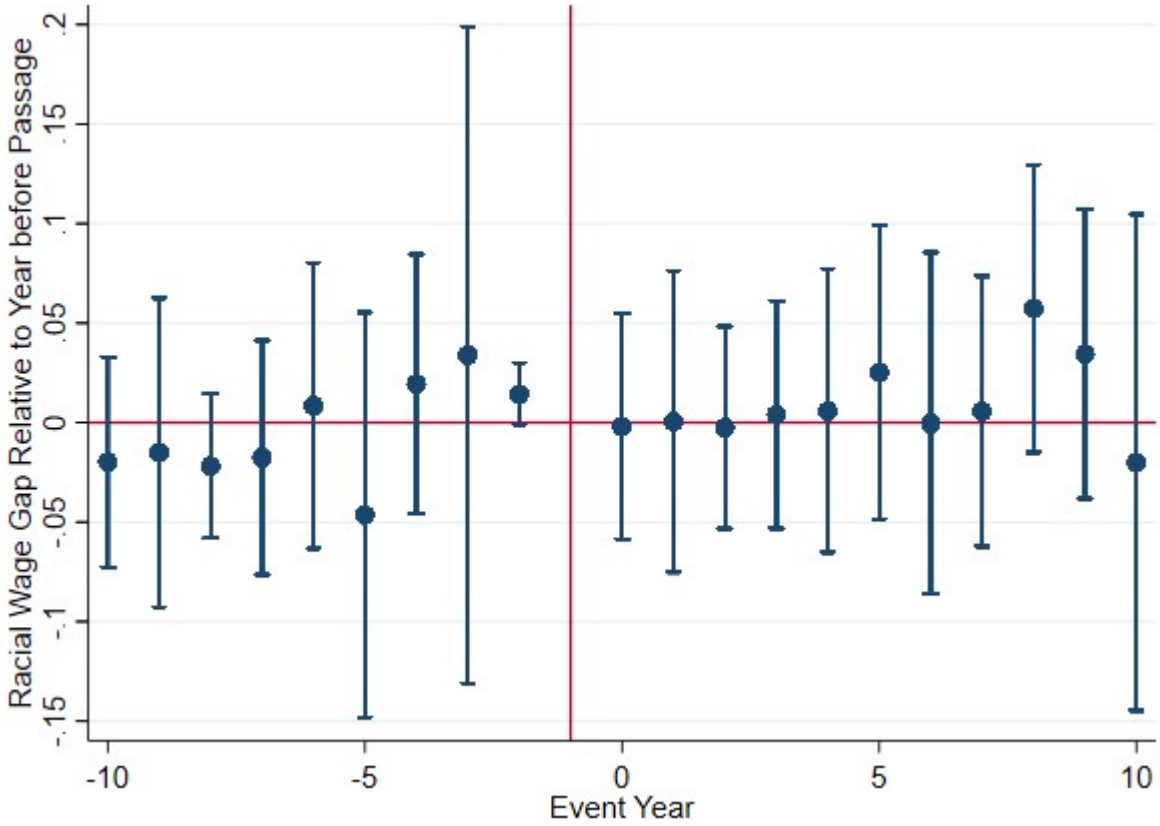
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS.
We report the results for the R^2 from altering the year for the break in the trend for Equation 2 for black women (a) and black men (b). The figure is analogous to Figure A2, but for black women and men.

Figure A4: **Event Study of Black Female Wage Gap Using State Variation**



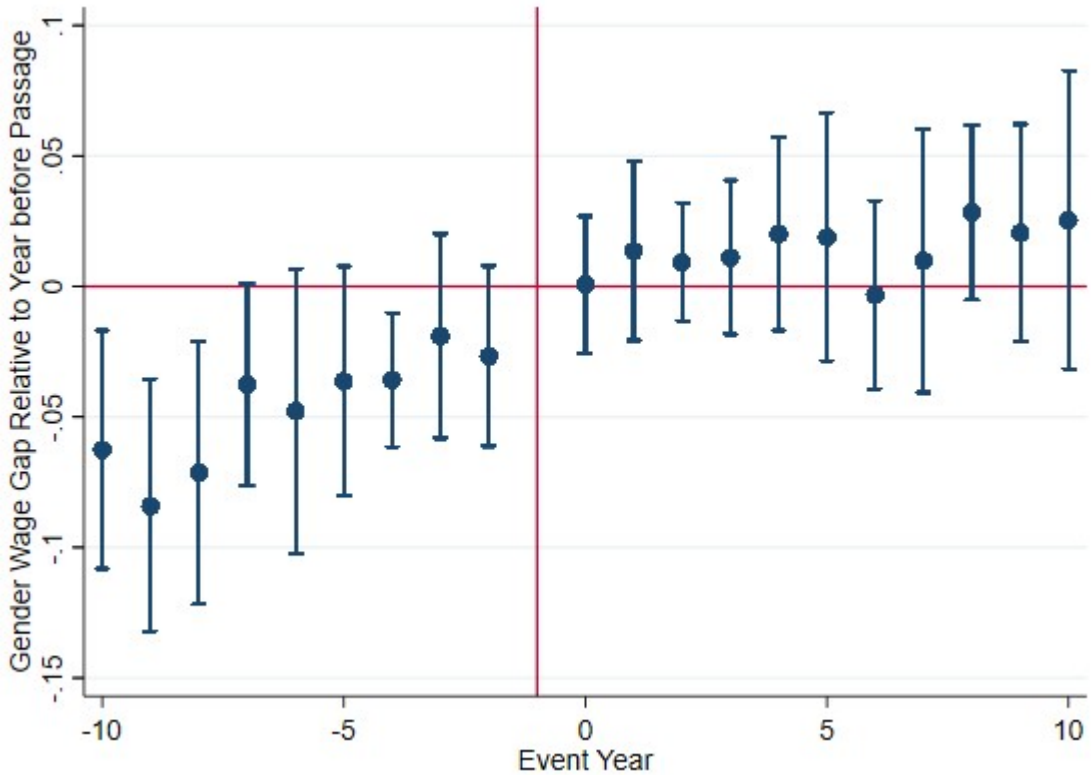
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999)
This figure is analogous to Figure 3 and reports results for black women.

Figure A5: **Event Study of Black Male Wage Gap Using State Variation**



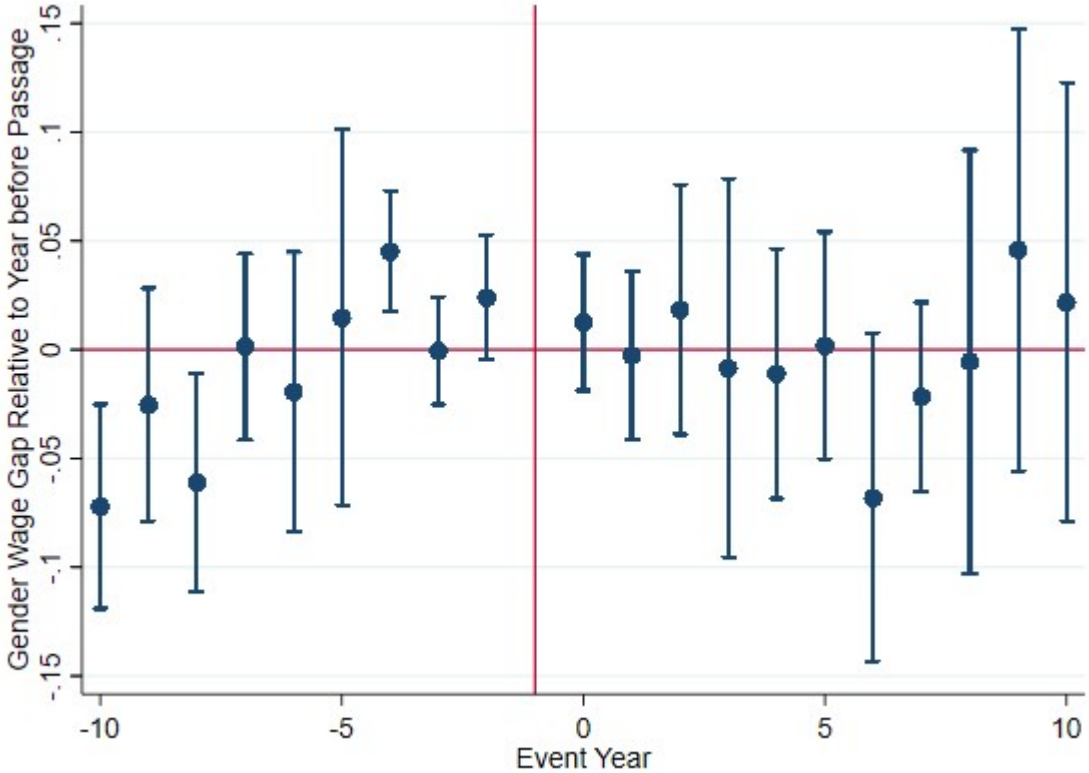
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS and Waldfogel (1999)
This figure is analogous to Figure 3 and reports results for black men.

Figure A6: **Non-winsorized Event Study of White Female Wage Gap Using State Variation**



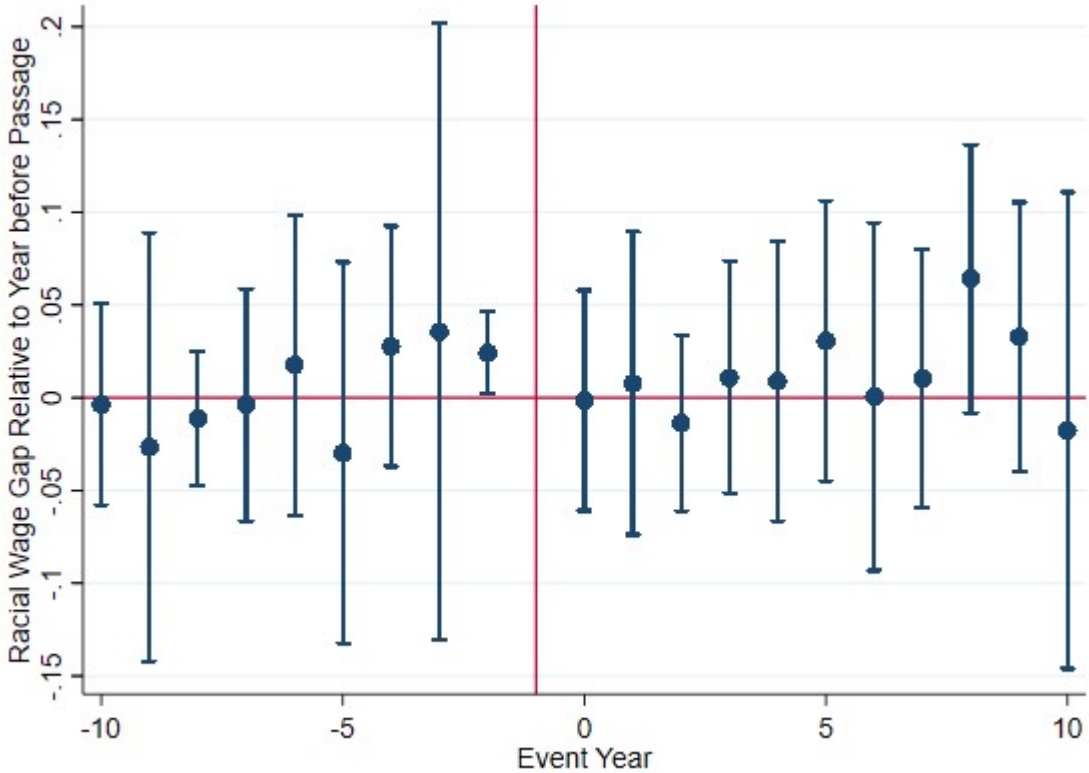
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999)
This figure corresponds with Figure 3 in the paper and uses non-winsorized wage data.

Figure A7: **Non-winsorized Event Study of Black Female Wage Gap Using State Variation**



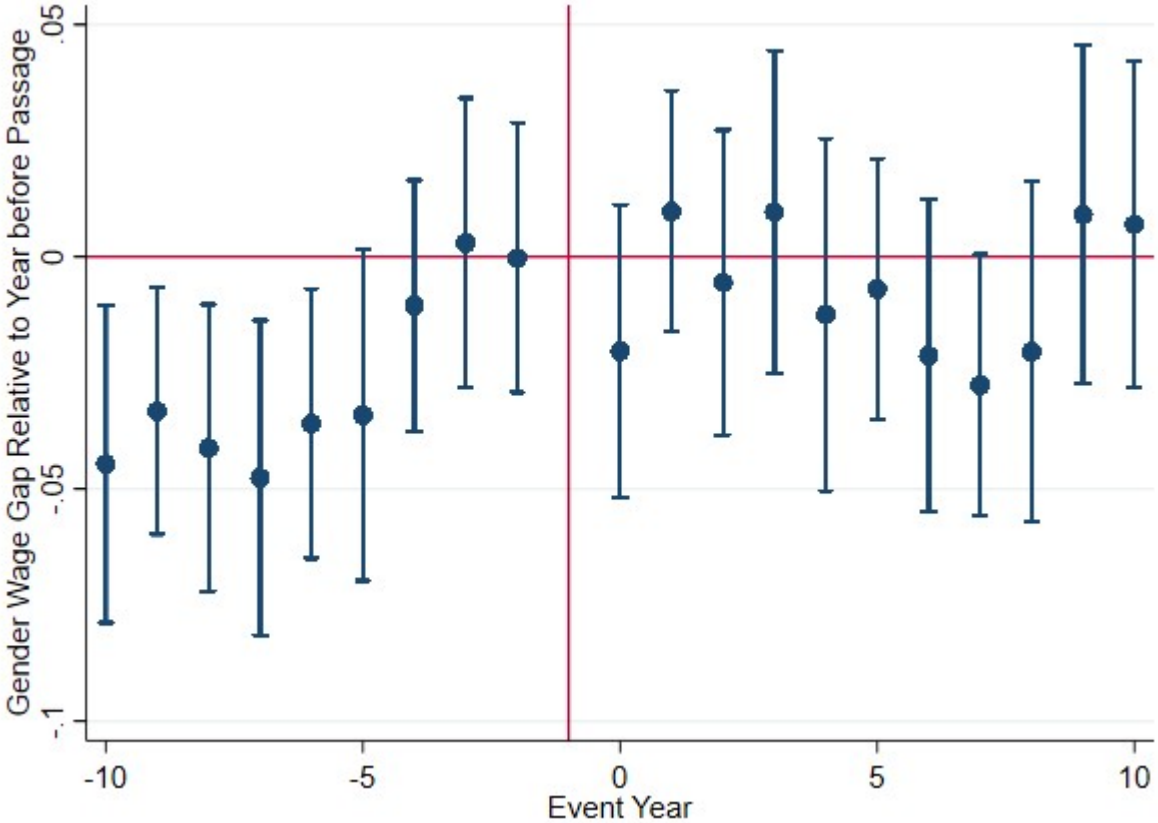
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999)
This figure is analogous to Figure 3 in the paper and uses non-winsorized wage data for black women.

Figure A8: **Non-winsorized Event Study of Black Male Wage Gap Using State Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999)
This figure is analogous to Figure 3 in the paper and uses non-winsorized wage data for black men.

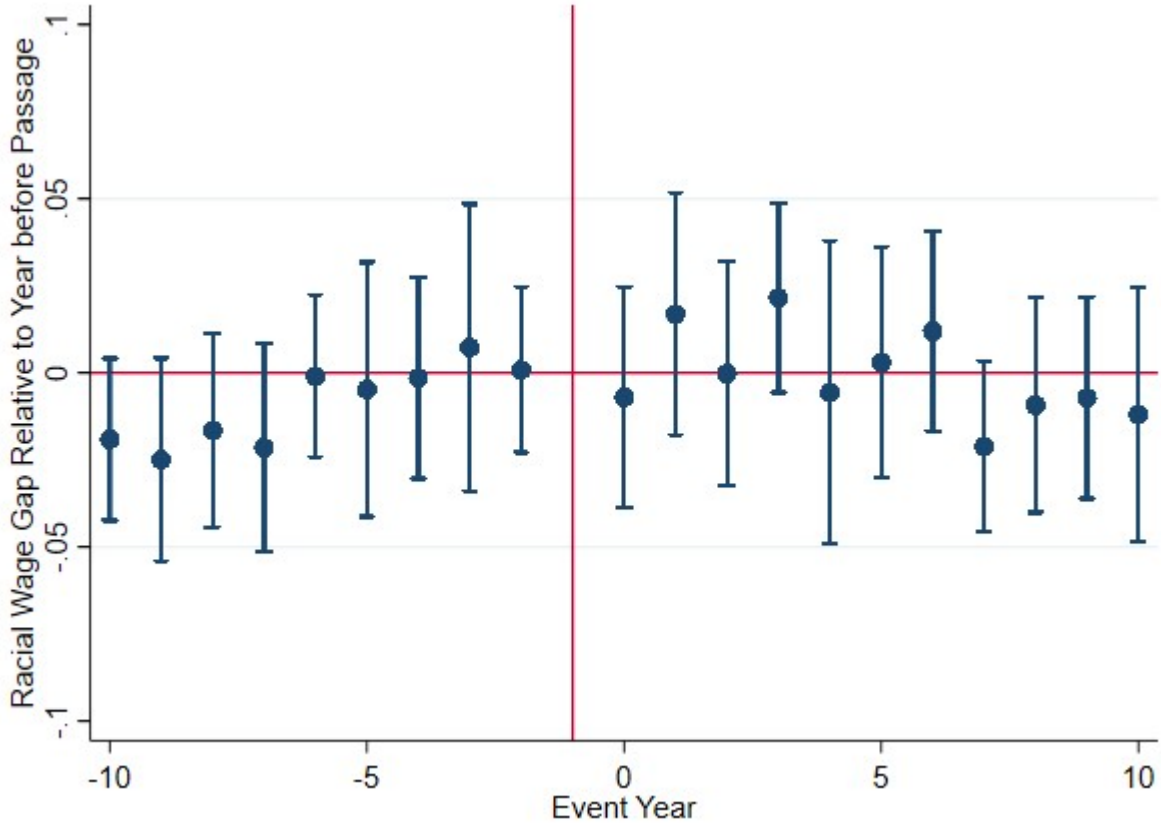
Figure A9: **Event Study of Black Female Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

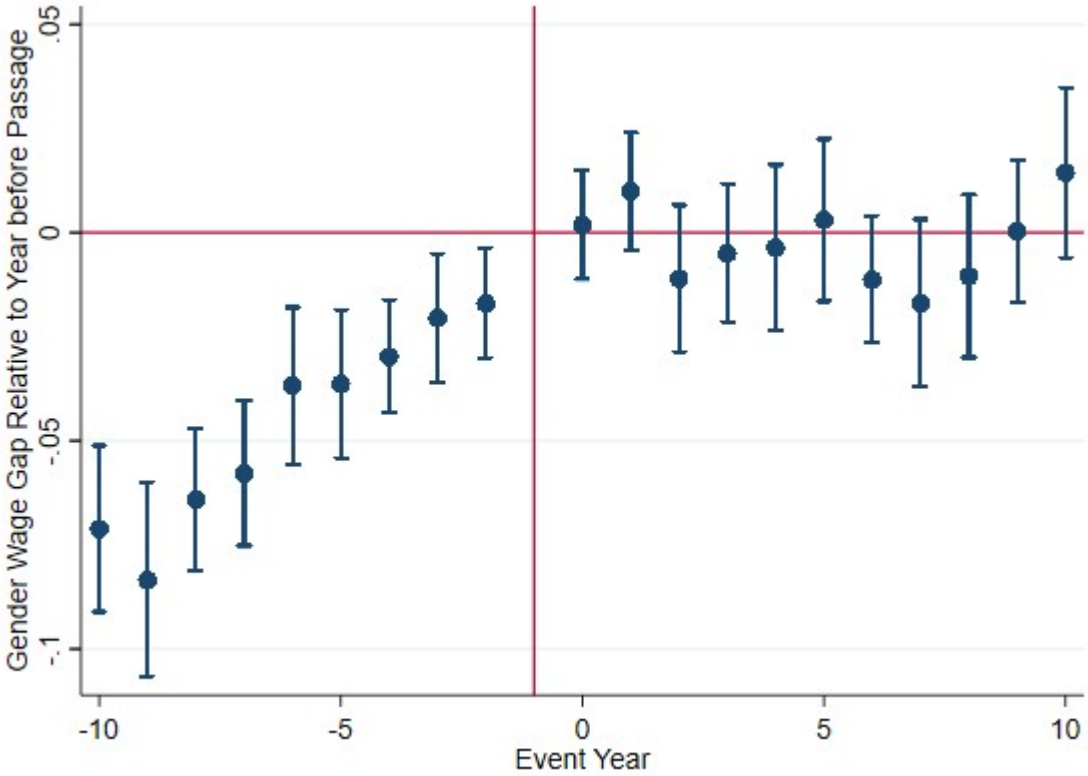
This figure is analogous to Figure 4 in the paper and uses data for black women.

Figure A10: **Event Study of Black Male Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
This figure is analogous to Figure 4 in the paper and uses data for black men.

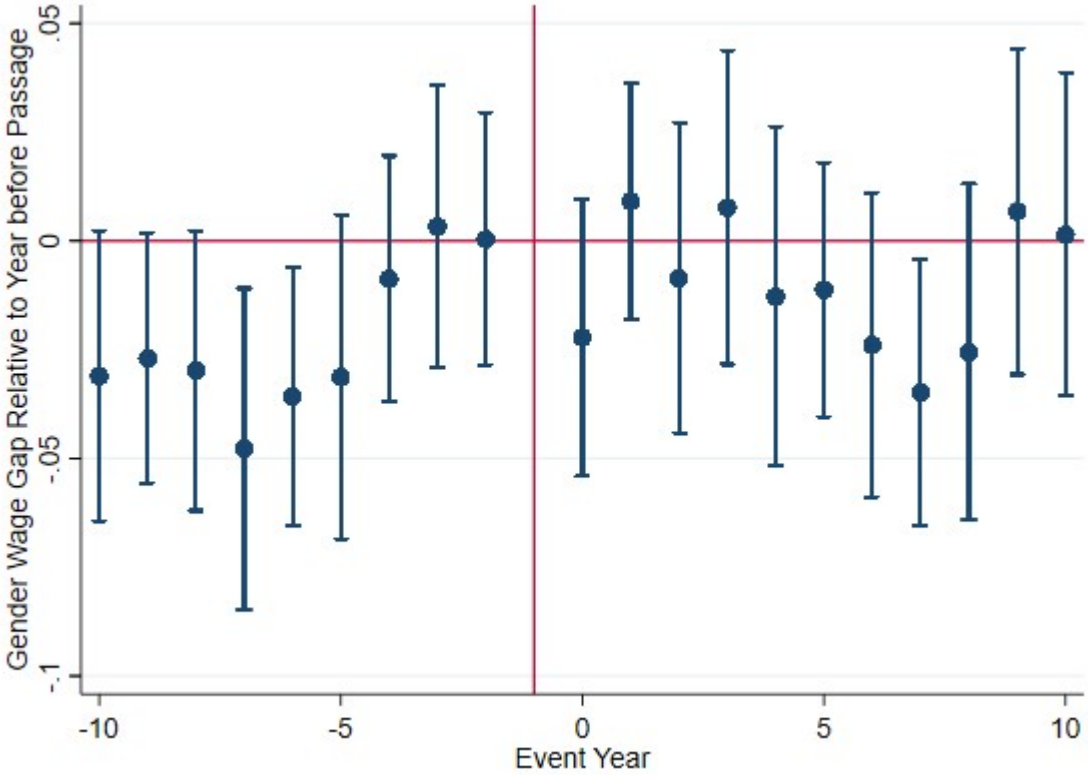
Figure A11: **Non-winsorized Event Study of White Female Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

This figure corresponds with Figure 4 in the paper and uses non-winsorized wage data.

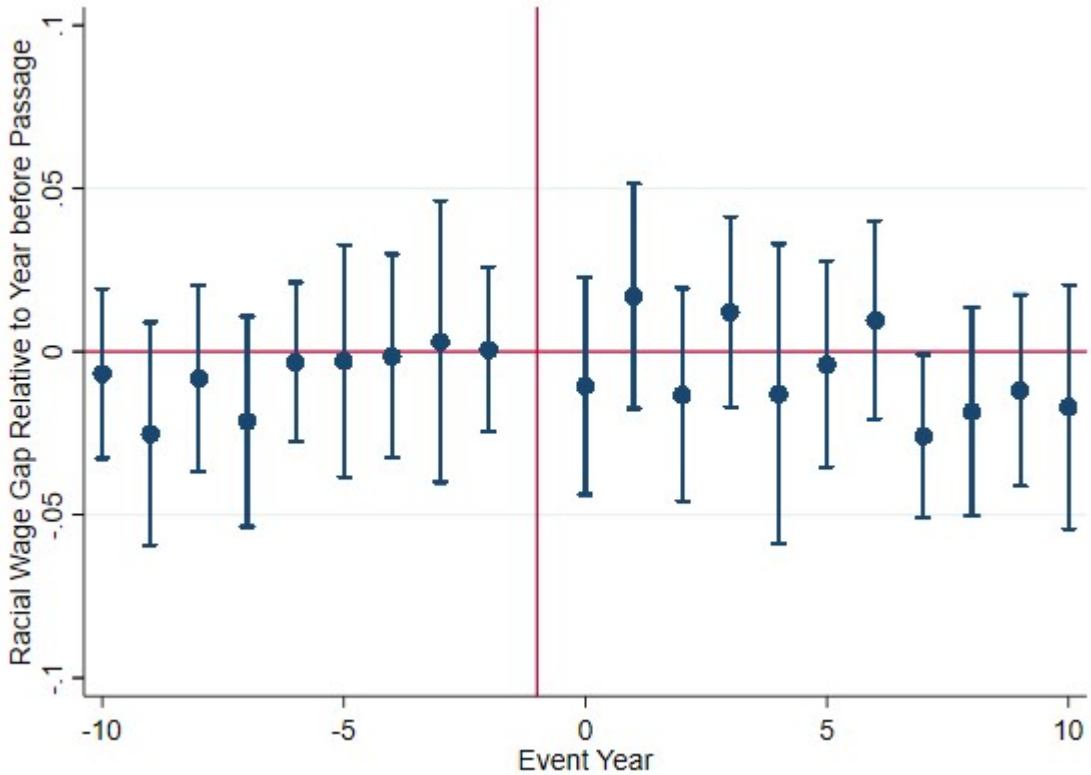
Figure A12: **Non-winsorized Event Study of Black Female Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

This figure is analogous to Figure 4 in the paper and uses non-winsorized wage data for black women.

Figure A13: **Non-winsorized Event Study of Black Male Wage Gap Using National Variation**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

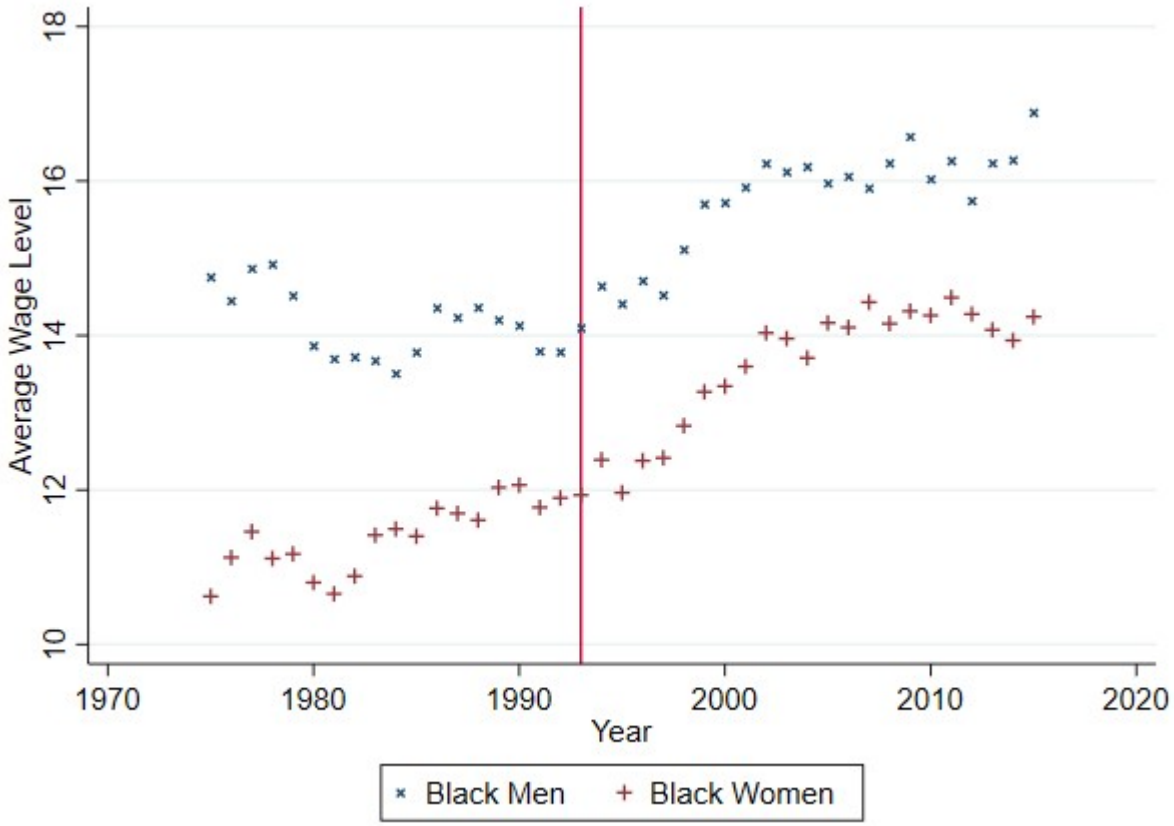
This figure is analogous to Figure 4 in the paper and uses non-winsorized wage data for black men.

Table A3: **Rate of Wage Convergence for Black Women and Black Men**

	Black Women		Black Men	
	State	State and Federal	State	State and Federal
Event-time Trend ($\tilde{\beta}_g$)	0.0090	0.0043	0.0040	0.0025
	(0.0025)	(0.0014)	(0.0016)	(0.0009)
Post ($\tilde{\gamma}_g$)	-0.0430	0.0028	-0.0214	0.0130
	(0.0236)	(0.0128)	(0.0162)	(0.0091)
Event-time Trend $\times$ Post ($\tilde{\phi}_g$)	-0.0083	-0.0054	-0.0009	-0.0057
	(0.0042)	(0.0021)	(0.0028)	(0.0014)
Constant	0.0294	-0.0027	0.0173	0.0047
	(0.0142)	(0.0088)	(0.0095)	(0.0060)
Rate of Convergence Post Period ($\tilde{\beta}_g + \tilde{\phi}_g$)	0.0007	-0.0011	0.0031	-0.0032
	(0.0034)	(0.0015)	(0.0023)	(0.0011)
Observations	20	20	20	20
R-squared	0.4434	0.5560	0.4018	0.5594

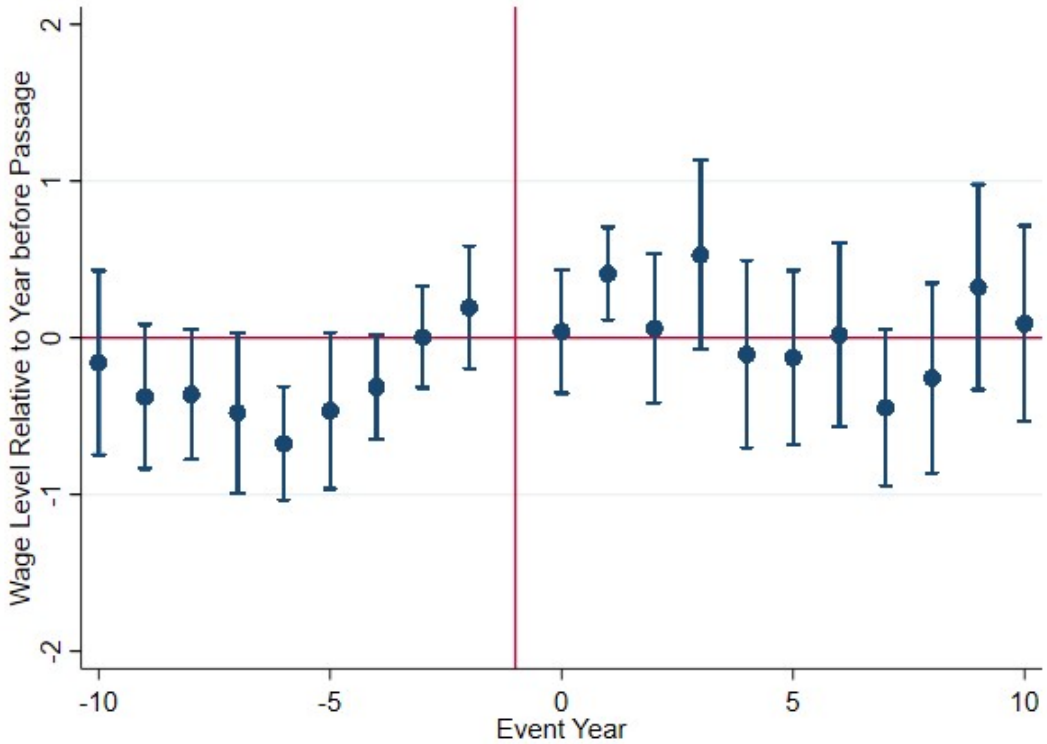
Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS and Waldfogel (1999)
Standard errors are given in parentheses. Regression of the estimated event-time wage gap on a piece-wise event-time trend that allows for a different slope and intercept following a family-leave policy using Equation (4). The table is analogous to Table 3, but includes results for estimating the model separately for black women (columns 1 and 2) and black men (columns 3 and 4). The model is estimated separately on the event-time wage gaps for states who passed family-leave prior to the FMLA in column 1 and column 3 and all states, including those treated only with the FMLA, in column 2 and column 4.

Figure A14: **Average Wages for Black Workers (1975–2015)**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS
This figure is analogous to Figure 5 in the paper and presents results for black women and black men.

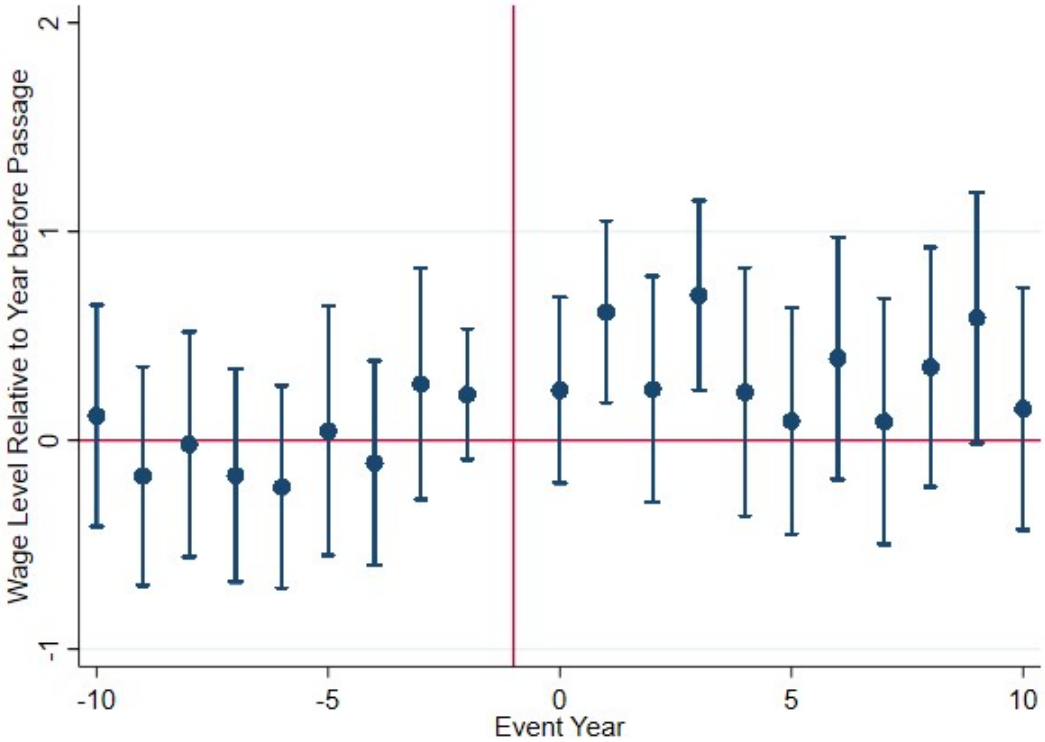
Figure A15: **Event Study: Wage Levels for Black Women**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

This figure is analogous to Figure 6 and Figure 7 in the paper and presents results for black women.

Figure A16: **Event Study: Wage Levels for Black Men**

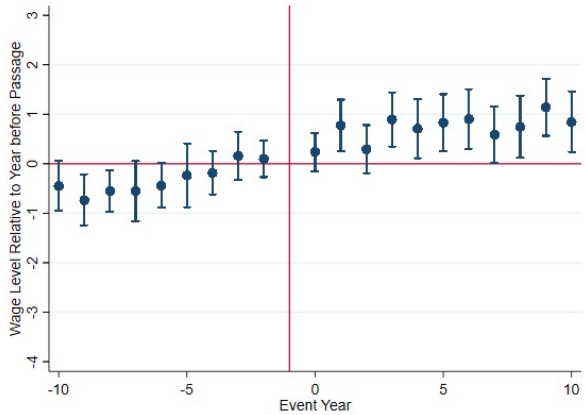


Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

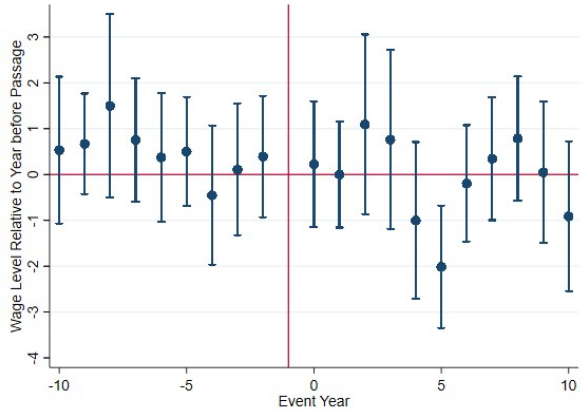
This figure is analogous to Figure 6 and Figure 7 in the paper and presents results for black men.

Figure A17: **Event Study: Wage Levels Based on Educational Attainment**

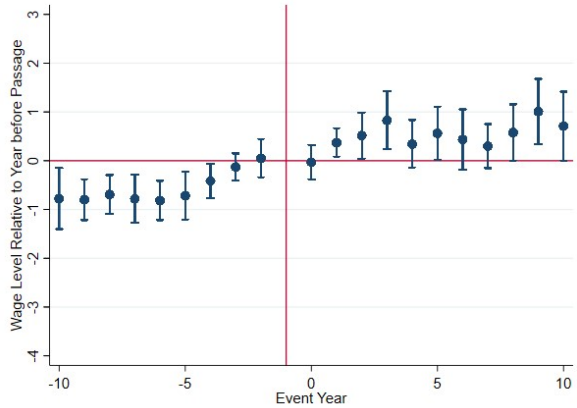
(a) Black Men without a College Degree



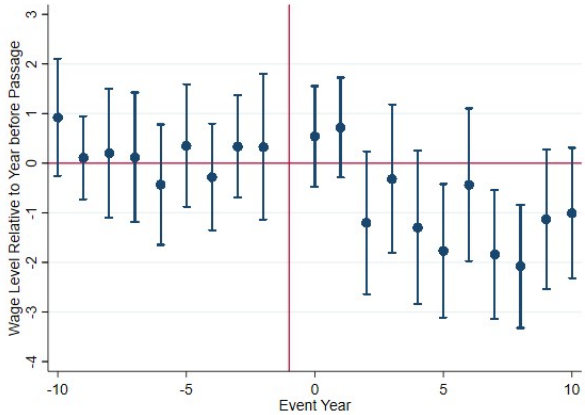
(b) Black Men with a College Degree



(c) Black Women without a College Degree



(d) Black Women with a College Degree

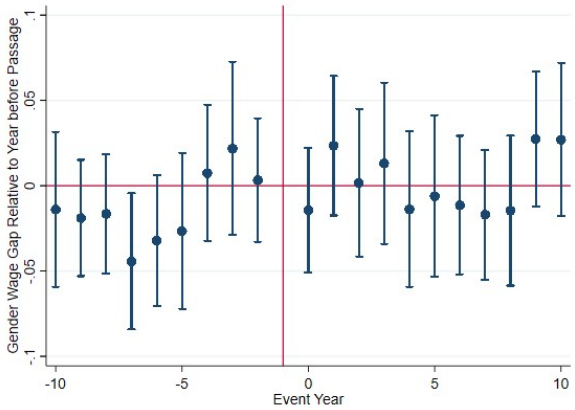


Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

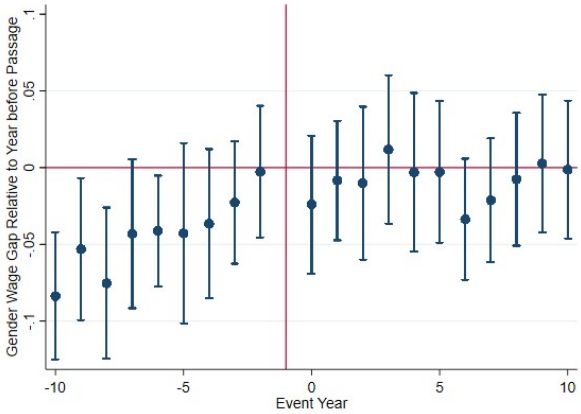
The figure above shows the results of the event study on wage levels for black men and black women based on their educational attainment following the methodology of the event study in equation (3). The results for black men are provided by the estimated coefficients $\beta_\tau + \beta_{\tau,bm}$ and for black women by $\beta_\tau + \beta_{\tau,bw}$. The figures are analogous to those in Figure 8 in the paper.

Figure A18: **Event Study: Family Leave Policy on Gender Wage Gaps**

(a) Black Mothers



(b) Black Childless Women



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and black women for workers with children (a) and workers without children (b). This figure is analogous to Figure 9 in the paper.

Table A4: **Annual Rate of Wage Convergence for Black Women**

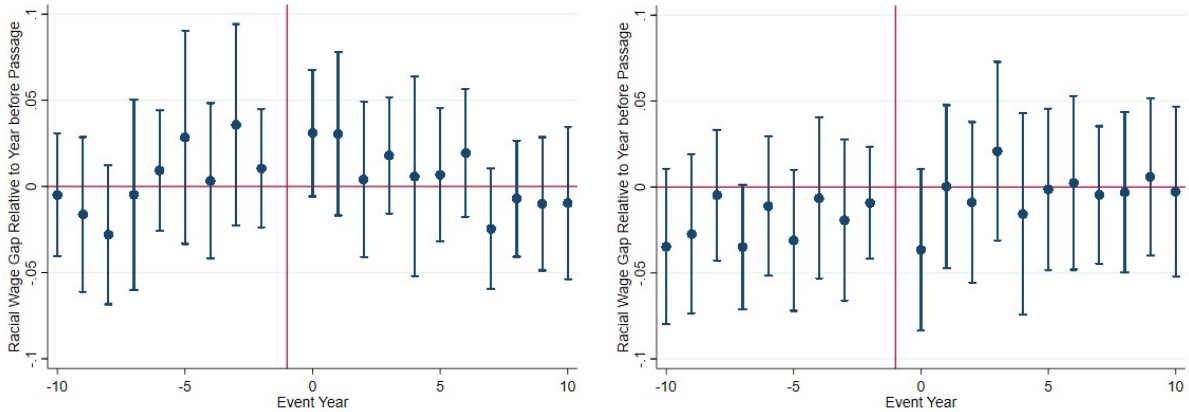
	Parents	Childless	Difference
Convergence Rate Before (p.p.)	0.301	0.649	-0.348
	(0.155)	(0.204)	(0.248)
Drop in Convergence Rates (p.p)	0.254	0.648	0.394
	(0.223)	(0.258)	(0.317)
Convergence Rate After (p.p.)	0.046	0.001	0.045
	(0.138)	(0.163)	(0.215)
Gender Wage Gap at Passage (p.p.)	37.775	21.148	16.63
	(1.332)	(1.617)	(2.313)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the table above, we report the convergence rates in wage gaps before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures A18 using a bootstrap over $n = 100$ replications. The table is analogous to Table 7. Bootstrapped standard errors are presented in parentheses.

Figure A19: **Event Study: Family Leave Policy on Racial Wage Gaps**

(a) Black Fathers (b) Black Childless Men



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and black men for workers with children (a) and workers without children (b). This figure is analogous to Figure 9 in the paper.

Table A5: **Annual Rate of Wage Convergence for Black Men**

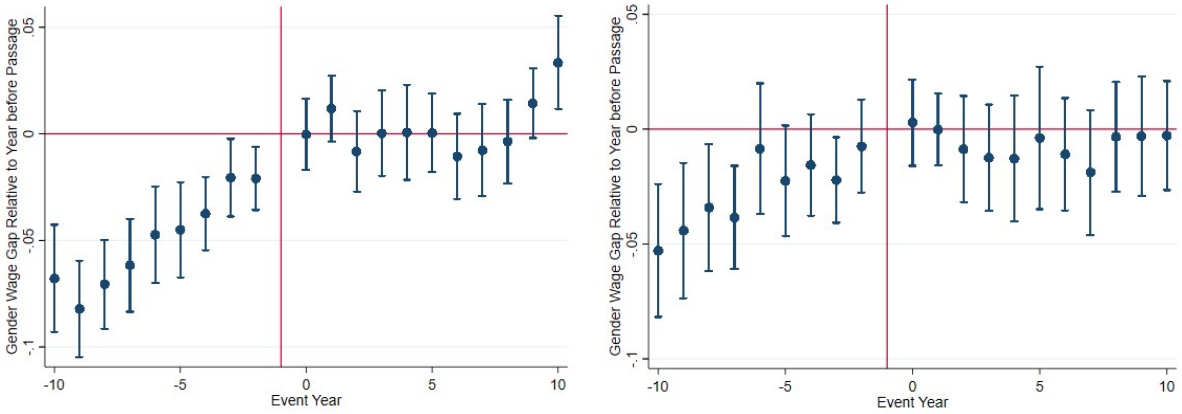
	Parents	Childless	Difference
Convergence Rate Before (p.p.)	0.515	0.016	0.498
	(0.165)	(0.164)	(0.230)
Drop in Convergence Rates (p.p)	0.905	0.039	0.866
	(0.247)	(0.232)	(0.316)
Convergence Rate After (p.p.)	-0.390	-0.022	-0.368
	(0.171)	(0.152)	(0.200)
Racial Wage Gap at Passage (p.p.)	-13.669	-9.726	-3.943
	(1.587)	(1.555)	(2.171)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the table above, we report the convergence rates in wage gaps before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures A19 using a bootstrap over $n = 100$ replications. The table is analogous to Table 7. Bootstrapped standard errors are presented in parentheses.

Figure A20: **Event Study: Family Leave Policy on Gender Wage Gaps**

(a) Married White Women (b) Single White Women



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and white women for married workers (a) and for single workers (b).

Table A6: **Annual Rate of Wage Convergence for White Women**

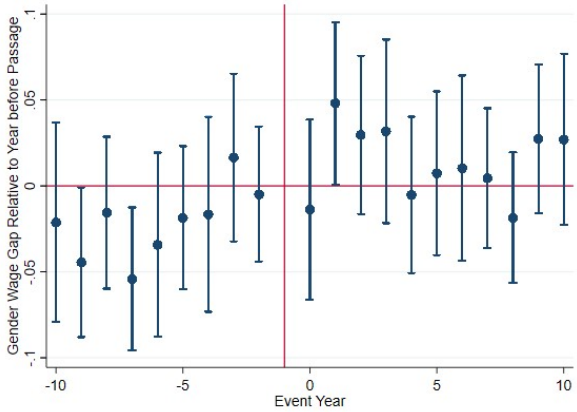
	Married	Single	Difference
Convergence Rate Before (p.p.)	0.784	0.505	0.280
	(0.066)	(0.090)	(0.116)
Drop in Convergence Rates (p.p)	0.598	0.491	0.107
	(0.093)	(0.132)	(0.170)
Convergence Rate After (p.p.)	0.186	0.014	0.172
	(0.064)	(0.095)	(0.115)
Gender Wage Gap at Passage (p.p.)	-32.57	-14.65	-17.92
	(0.706)	(0.791)	(1.086)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

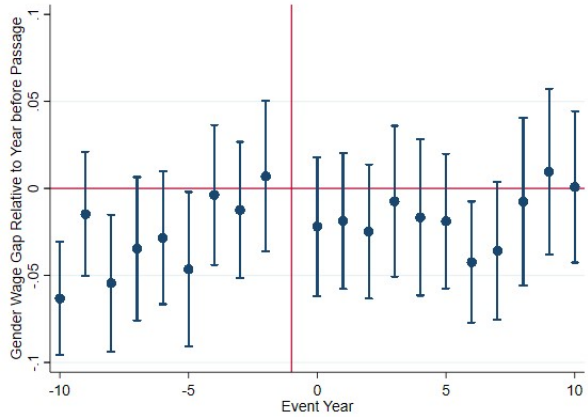
In the table above, we report the convergence rates in wages before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures A20 using a bootstrap over $n = 100$ replications. Bootstrapped standard errors are presented in parentheses.

Figure A21: **Event Study: Family Leave Policy on Gender Wage Gaps**

(a) Married Black Women



(b) Single Black Women



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and black women for married workers (a) and for single workers (b).

Table A7: **Annual Rate of Wage Convergence for Black Women**

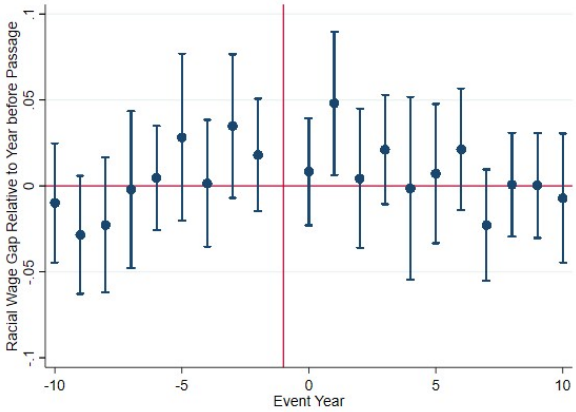
	Married	Single	Difference
Convergence Rate Before (p.p.)	0.401	0.433	-0.032
	(0.160)	(0.172)	(0.214)
Drop in Convergence Rates (p.p)	0.634	0.226	0.408
	(0.243)	(0.240)	(0.315)
Convergence Rate After (p.p.)	-0.233	0.207	-0.440
	(0.152)	(0.144)	(0.206)
Gender Wage Gap at Passage (p.p)	-35.08	-17.57	-17.51
	(1.524)	(1.404)	(2.282)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

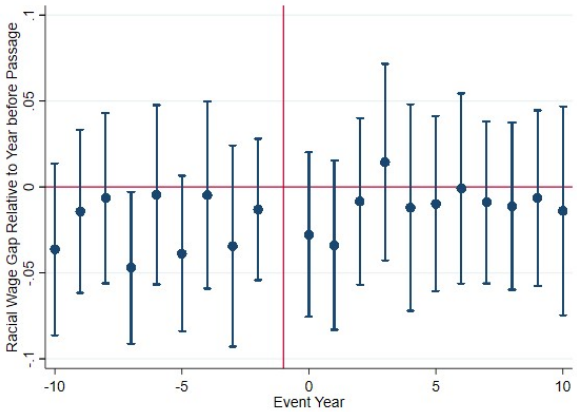
In the table above, we report the convergence rates in wages before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures A21 using a bootstrap over $n = 100$ replications. Bootstrapped standard errors are presented in parentheses.

Figure A22: **Event Study: Family Leave Policy on Racial Wage Gaps**

(a) Married Black Men



(b) Single Black Men



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

In the figure above, we have reported the results of event studies for convergence in wage gaps between white men and black men for married workers (a) and for single workers (b).

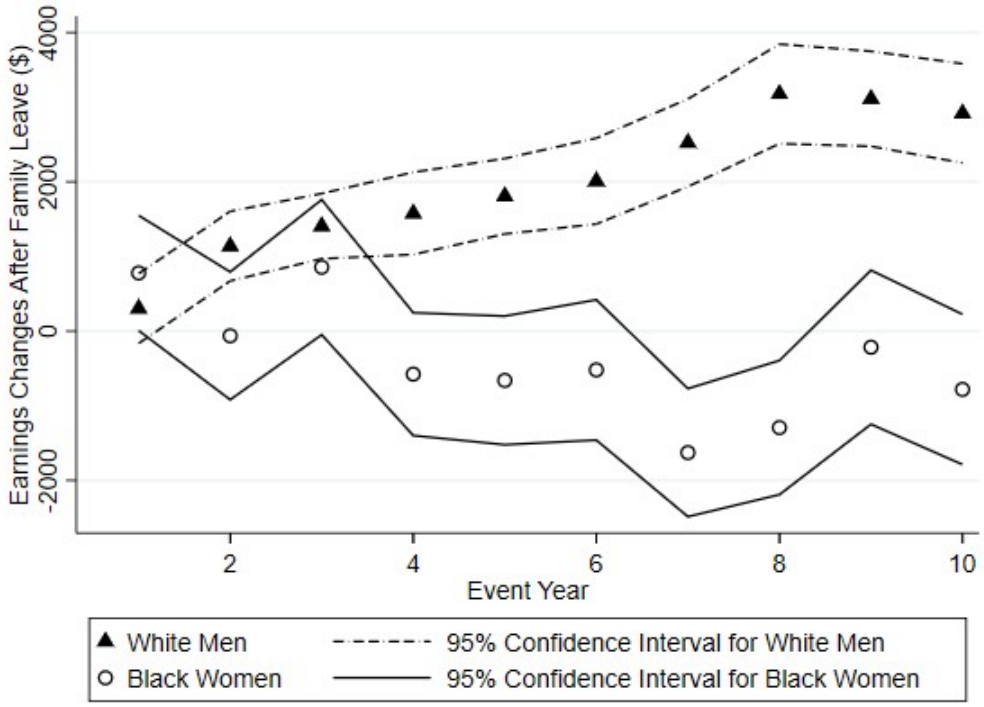
Table A8: **Annual Rate of Wage Convergence for Black Men**

	Married	Single	Difference
Convergence Rate Before (p.p.)	0.473	-0.030	0.503
	(0.160)	(0.197)	(0.260)
Drop in Convergence Rates (p.p)	0.881	-0.062	0.943
	(0.240)	(0.278)	(0.367)
Convergence Rate After (p.p.)	-0.408	0.032	-0.441
	(0.152)	(0.189)	(0.227)
Gender Wage Gap at Passage (p.p)	-12.60	-6.36	-6.23
	(1.462)	(1.871)	(2.408)

Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), Kleven et al. (2019)

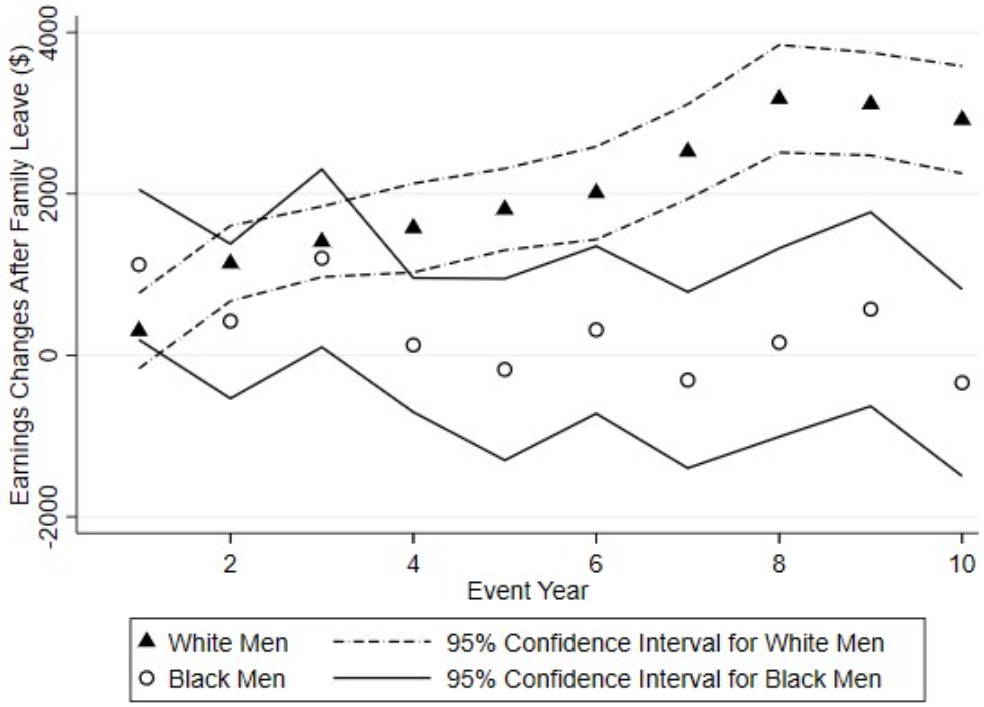
In the table above, we report the convergence rates in wages before and after the passage of family-leave policies for different groups of workers. The results are obtained by estimating Equation (4) on the point estimates displayed in Figures A22 using a bootstrap over $n = 100$ replications. Bootstrapped standard errors are presented in parentheses.

Figure A23: **Back of the Envelope Calculation Results for Black Women**



In the figure above, we have reported the results of a back of the envelope calculation for annual wage effects τ years after the passage of a family-leave policy along with the 95% confidence intervals, which are obtained via a bootstrap with 100 replications. Negative values are costs to workers. The figure is analogous to Figure 10 and displays results for black women.

Figure A24: **Back of the Envelope Calculation Results for Black Men**

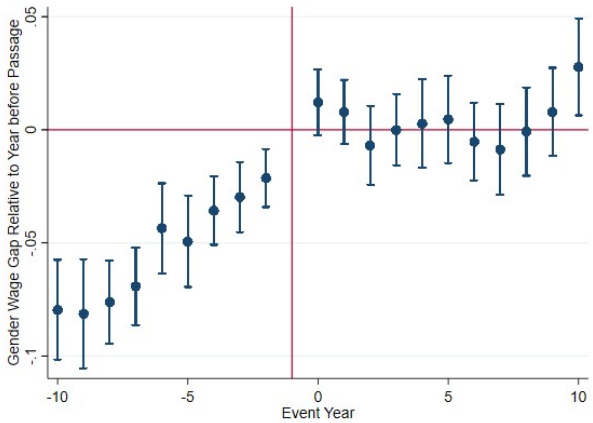


In the figure above, we have reported the results of a back of the envelope calculation for annual wage effects τ years after the passage of a family-leave policy along with the 95% confidence intervals, which are obtained via a bootstrap with 100 replications. Negative values are costs to workers. The figure is analogous to Figure 10 and displays results for black men.

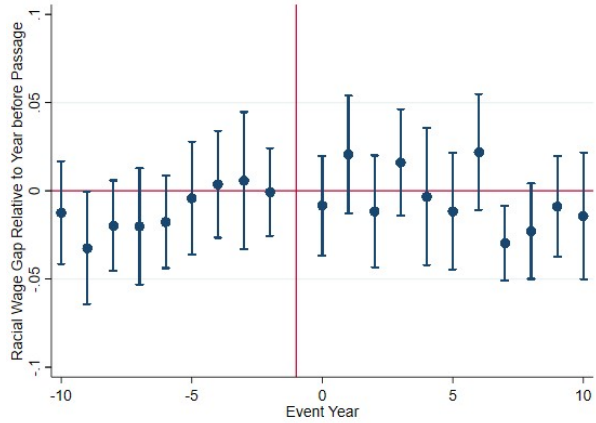
II Selection Appendix

Figure B1: **Event Study for All Workers with at Least 1 Hour Per Week**

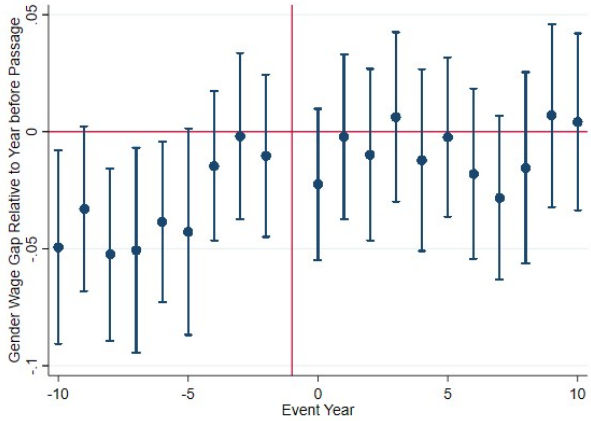
(a) Wage Gaps for White Women



(b) Wage Gaps for Black Men

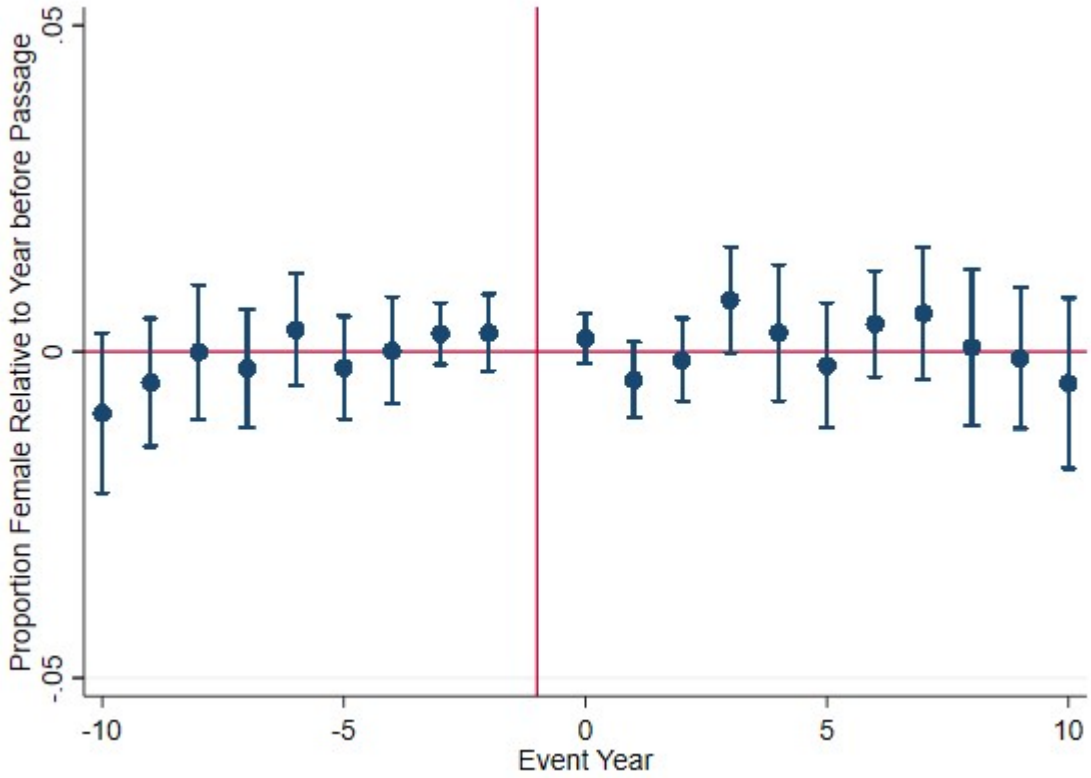


(c) Wage Gaps for Black Women



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
This figure is an event study plot of the wage gap between white men and white women, black women, and black men after the introduction of a family-leave policy. The gender wage gap is reported relative to its value in the time period before the event, i.e., $\tau = -1$. We cluster the standard errors by state. The sample is expanded to workers with at least 1 hour of work per week. The figure corresponds to Figure 4 in the paper. The results are similar to those found in the body of the paper, which shows the sample selection does not drive the results.

Figure B2: **Event Study for the Proportion of Women in the Sample**



Source: Annual Social and Economic Supplement of the Current Population Survey available through IPUMS, Waldfogel (1999), and Kleven (2019)
This figure is an event study plot of the proportion of workers who are women in the sample relative to its value in the time period before the event, i.e., $\tau = -1$. We estimate Equation 3 but omit the demographic controls. The dependent variable is an indicator variable equal to one if the worker is a woman. We cluster the standard errors by state.