

# Racial Difference in the Child Penalty

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## Abstract

This paper documents substantial racial differences in the child penalties in the US. Black women experience only half the child penalties as white women. The racial gap is driven by married women. Furthermore, the racial gap is driven by women with high wages in the South. Controlling for the racial difference in the distribution of wage, occupation, husband's labor income, and non-labor income only reduces the racial gap by 11%, 13%, 24%, and 0%. Finally, the paper rules out gender norms, homeownership, and family structure as the main mechanisms for driving the gap, leaving preference and discrimination as potential explanations.

**Keywords:** Race, Child Penalty, Labor Supply, Gender Norms

**JEL classification:** J13, J15, J16, J22

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# 1. Introduction

Mothers experience a substantial reduction in labor market income after childbirth, while fathers remain unaffected. This "child penalty" on women accounts for two-thirds of the overall gender earnings gap in the US (Cortés and Pan, 2020). Kleven et al. (2019 b; 2021 a; 2021 b) find that comparative advantage, biology or parental leave policies cannot explain the child penalty. Instead, the recent literature considers preferences, gender norms, and labor market discrimination as lead candidates (Andresen and Nix, 2021; Kleven et al., 2021; Cortés and Pan, 2020; Kleven, 2022).

Despite norms and discrimination being potential mechanisms, it is surprising that little is known about the racial difference in the child penalties, except Kleven (2022) with a brief analysis of racial differences. First, racial discrimination is substantial in the labor market in the US (Bertrand and Mullainathan, 2004; Kline et al., 2021). Second, Scarborough et al. (2021) find that Black households have more progressive gender attitudes than white counterparts, potentially due to slavery (Davis, 1981) or discrimination in masculinity identity construction (Bederman, 1993).

Therefore, this paper first documents substantial differences in the child penalties between black and white women in the US. Black women have a significantly smaller child penalty in labor earnings than white women. The racial gap in child penalty is driven by all margins, including employment, annual hours worked, and wage rate. I use the data from the US Panel Study of Income Dynamics (PSID) with the event study decomposition method, which is extensively used by the child penalty literature (Angelov, Johansson, and Lindahl, 2016; Kleven et al., 2019, Kleven et al., 2021; Andresen and Nix, 2021; Cortés and Pan, 2020; Kleven, 2022).

Furthermore, four main findings are presented. First, this paper rules out single parenthood as the explanation. The racial gap in the child penalties is driven by married women, while there is no racial gap in child penalties among single women.

Second, the racial gap only exists among women in the South, while Black and white women have similar child penalties in other regions. Furthermore, the racial gap is driven by women whose wage is higher than the female median wage, whereas there is no significant racial difference among women with lower wages. Moreover, the racial gap is larger among women

in households with lower family non-labor income and smaller among women with high non-labor income.

Third, this paper rules out homeownership and family composition as the explanation. The racial gap remains substantial when we compare black and white women who own the place they live (homeownership) or live in a household with no other family members except her husband and children (family structure). The results demonstrate that the racial gap in child penalties is not driven by the need for work to pay rent or informal help from other family members in the same household.

Fourth, I use inverse probability weighting (IPW) methods to reweight the sample so that Black and white women have a nearly identical distribution of economic variables or husbands' attitudes about the wife working. As a result, I find that the racial difference in the distribution of covariates has a very limited contribution to the racial gap in the child penalties. For example, the racial gap in the short-run child penalty (employment) is reduced by 11% after controlling for the racial difference in the distribution of her wages. The racial gap is reduced by 9% after controlling for the distribution of her industry, 13% for occupation distribution, and 24% for husband labor income distribution. On the other hand, controlling for the distribution in family non-labor income or the husband's attitude about the wife working has virtually no impact on the racial gap in the child penalties. Results are similar for long-run penalties and other labor market outcomes.

This paper makes two main contributions to the child penalties literature. First, it systemically documents the substantial racial difference in the child penalty, a new finding in this literature. Second, the paper rules out single parenthood, homeownership, family structure, and gender norms to explain the racial gap, leaving preference and discrimination as potential candidates for future research. Furthermore, the paper quantifies the limited contribution of economic variables to the racial gap in the child penalties using inverse probability weighting methods. Moreover, this paper highlights that the racial gap exists primarily in the South, among women with high wages and low non-labor income. Future research disentangling preference from discrimination within this population may eventually identify the cause of child penalties and the racial gap.

The structure of the paper is as follows. Section 2 documents related literature. Section 3 explains methods and data. Section 4 presents results in event study decomposition. Section 5 concludes.

## **2. Related Literature**

### **2.1 Child penalty**

Parenthood has long been considered a major cause of gender inequality in the labor market. Influential work by Kleven et al. (2019a; 2019b) uses event-study analysis to show how immediately and substantially the earnings diverge between men and women after first childbirth and how persistent the gender earning gap has remained ever since.

The magnitude of child penalties is similar between biological and adoptive mothers in Denmark (Kleven et al., 2021) and Norway (Andresen and Nix, 2021). Andresen and Nix (2021) further show that the child penalty is no longer significant between birth-mother and co-mother for same-sex couples and rule out comparative advantage as the main explanation. Furthermore, substantial expansions of parental leave policies and child care subsidies have not affected the child penalty in Austria for over 60 years (Kleven et al., 2021)

Gender norms, preferences, and labor market discrimination are key candidates to explain the child penalty (Kleven et al., 2019a; 2019b; 2021; Andresen and Nix, 2021; Cortés and Pan, 2020; Kleven, 2022). To the best of my knowledge, economic research has not explored the racial perspective on the child penalty. The exception is Kleven (2022) with a brief analysis on the racial comparison of the child penalties.

### **2.3 Racial difference in gender norms**

Scarborough et al. (2021) document that Black men and women have more progressive gender attitudes than their white counterparts, using General Social Survey from 1977 to 2018.

Historians provide two views on why black households have developed less conservative gender norms. First, slavery may have undermined the conservative gender identities in black households, as the slavery system may have changed the ideology of womanhood as black women had to work intensively in manual labor, and the slave system harshly discouraged male supremacy in Black men (Davis, 1981).

On the other hand, less conservative gender norms in Black households may result from racial discrimination in the construction of male supremacy. First, the working-class version of modern manliness is constructed by women's exclusion from paid labour (Melosh, 1993). Powerful manhood identity is a political language, and such construction deliberately excluded other races, refusing to concede that men of other races were equally manly as white men

(Bederman, 1993). As Bederman explains, under gender and racial hierarchy, the gender identity of white men was constructed as self-controlled protectors of women and children, and white women as motherly and dedicated to the home. In contrast, non-white men and women were almost identical.

### 3. Data and methods

I follow the specification of event study decomposition, which is extensively used by the child penalty literature (Angelov et al., 2016; Kleven et al., 2019, Kleven et al., 2021; Andresen and Nix, 2021; Cortés and Pan, 2020; Kleven, 2022). Furthermore, I add individual fixed effects to account for endogenous timing across women entering motherhood earlier or later. Therefore, only within-individual variation is used.

$$Y_{it} = \alpha' D_{it}^{Event} + \beta' D_{it}^{Age} + \gamma' D_{it}^{Year} + v_i + \varepsilon_{it}, \quad (1)$$

where  $Y_{it}$  is the annual labor income (adjusted by inflation index and transformed by inverse hyperbolic sine) or labor supply (participation dummy or annual hours worked if participating) of individual  $i$  at event time  $t$ . The first term includes event time dummies, indexed such that  $t = 0$  denotes the year of the arrival of the first child and omits the dummy for  $t = -1$  so that each  $\alpha'$  measures the impact of children each year relative to the year before the child's arrival. The second and third terms include a full set of age and year dummies to control nonparametrically for life cycle trends and time trends. This specification is run separately for white women, black women, and men<sup>1</sup>.

Similarly to Kleven et al. (2019b) and Kleven (2022), the estimated effects are converted into percentage effects by calculating

$$P_t^g = \frac{\hat{\alpha}_t^g}{E[\tilde{Y}_{it}^g | t]}, \quad (2)$$

Where  $\tilde{Y}_{it}^g$  is the average predicted outcome excluding the contribution of the event time coefficients, as the counterfactual outcome absent children. Finally, the child penalty is constructed as the average effect of having children on women compared to the effect on men.

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<sup>1</sup> Men are not separately run by race as I find that neither black nor white men have their labour market outcomes affected by the childbirth.

$$\text{child penalty} = E [P_t^m - P_t^w | t \geq 0] - E [P_t^m - P_t^w | t < 0], \quad (3)$$

Furthermore, the short-run penalty is defined as the average percentage by which women's labor outcome falls behind men one to five years after the first child's arrival. The long-run penalty is the average penalty from six to ten years after the arrival of the first child.

Data comes from the Panel Study of Income Dynamics (PSID-CDS) from 1967 to 2017. I follow the sample selection criteria of Kleven et al. (2019a) and Cortés and Pan (2020) to include only individuals with their first child between the ages of 20 and 45.

**Table1. Summary statistics between black and white mothers in male-headed households**

	White women	Black women
<b><i>One year before childbirth</i></b>		
Age	25.95	25.63
Year	1989.97	1987.13
Husband labor income	6838.68	5059.60
Labor income	3813.95	2714.38
Husband wage	8.07	2.59
Her wage	7.13	1.67
Employed	0.89	0.83
Annual hours worked	1531.13	1467.55
Work for government	0.19	0.28
Homeowner	0.45	0.27
South	0.32	0.70
Household composition (head wife child only)	0.98	0.93
Wage above the median of childless women	0.40	0.26
Household non-labor income	724.36	270.40
Year of schooling	14.23	13.73
<b><i>Five years after childbirth</i></b>		
Husband against wife working	0.16	0.11
Homeowner	0.51	0.37
Family composition (head wife child only)	0.97	0.93
Work for government	0.22	0.35
Household non-labor income (mean)	984.83	486.50
Household non-labor income (median)	100.00	0.00
Number of observations	2159	485

Note: The sample consists of married women in male-headed households only, having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Source: Panel Study of Income Dynamics, 1967 to 2017.

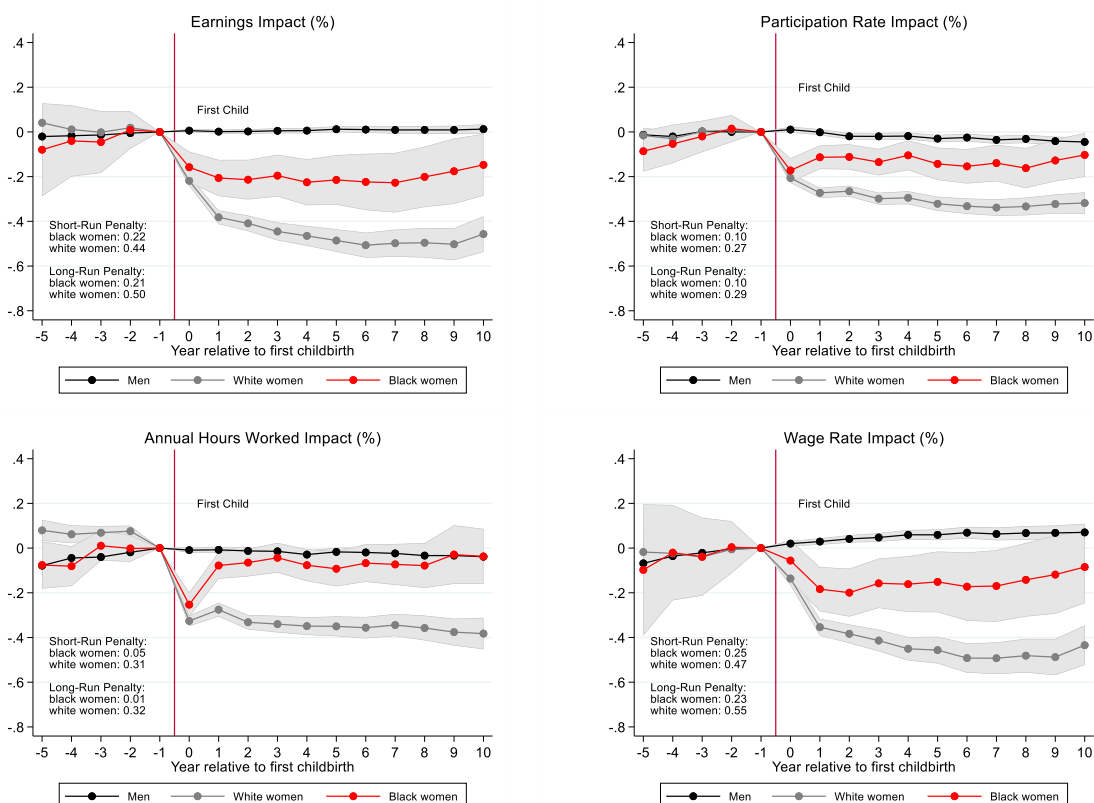
First, we restrict the sample to married women in male-headed households. Then, I report the summary statistics in Table 1. One year before childbirth, Black women have lower wages, husbands' labor income, wages, and non-labor income. They are also less likely to own the place where they live. Five years after the first childbirth, black women are less likely to have their husbands being against their wife working, less likely to own the house, and have less non-labor income.

## 4. Child penalties by race

### 4.1 Child penalties by race among married women

Figure 1 shows the racial differences in the child penalties between black and white married women. The long-run child penalty in labor earnings is around 44% for white women while around 22% for black women. The racial gap is driven by all margins, including participation rate, annual hours worked conditional on being employed, and wage rate.

**Figure 1. Racial differences in the child penalties among married women**

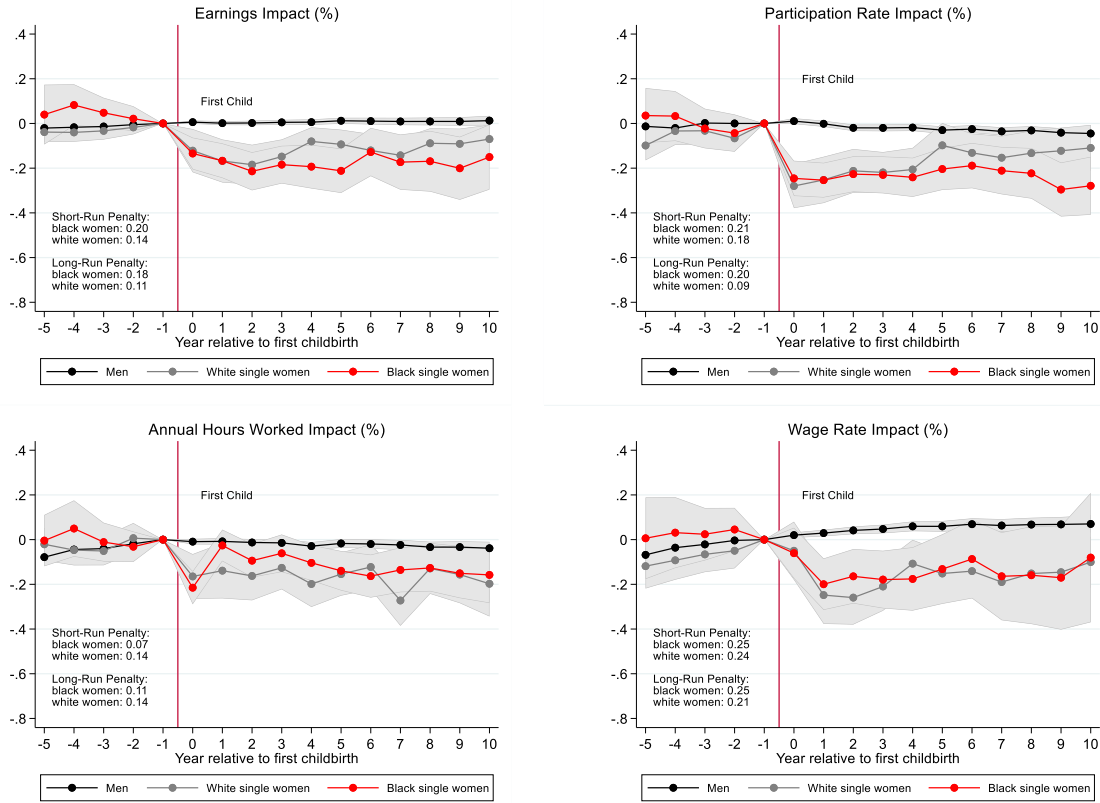


Note: The sample consists of married women in male-headed households having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Wage and income are transformed by inverse hyperbolic sine. Annual hours worked are conditional on being employed. Source: Panel Study of Income Dynamics, 1967 to 2017.

### 4.2 Single women

Figure 2 shows the child penalties among single women. The magnitude of child penalties is similar between black women and white women. Furthermore, if we compare Figure 1 and Figure 2, the magnitude of child penalties among black women is similar between single and married women. Therefore, the racial gap is primarily driven by married white women having significantly larger child penalties than the other women.

**Figure 2. Racial difference in the child penalties (single women)**



Note: The sample consists of single women as the head of their households, having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Source: Panel Study of Income Dynamics, 1967 to 2017.

## 4.2 Other heterogeneity

As married women drive the racial gap in the child penalties, the entire analysis onwards is carried out using the sample of married women in male-headed households.

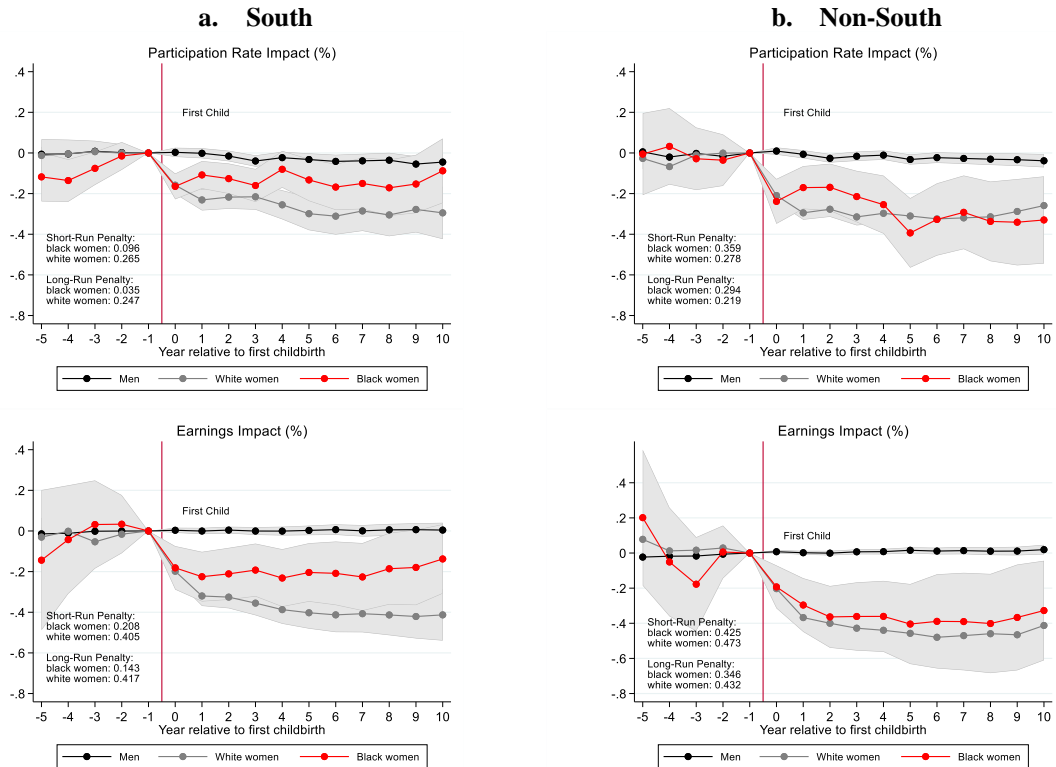
The heterogeneity analysis divides women by region, wage, family non-labor income, homeownership, and family structure. First, Figure 3 shows that women in the South drive the racial gap, while there is no racial difference in the child penalties in the other regions.

Figure 4 shows that high-wage women drive the racial gap in child penalties, while there is no racial gap among women with a wage below the female median. I first measure the median wage per year among childless women in the PSID. Then, I construct a binary indicator if her wage (1 year before childbirth) is above the median female wage of that year.

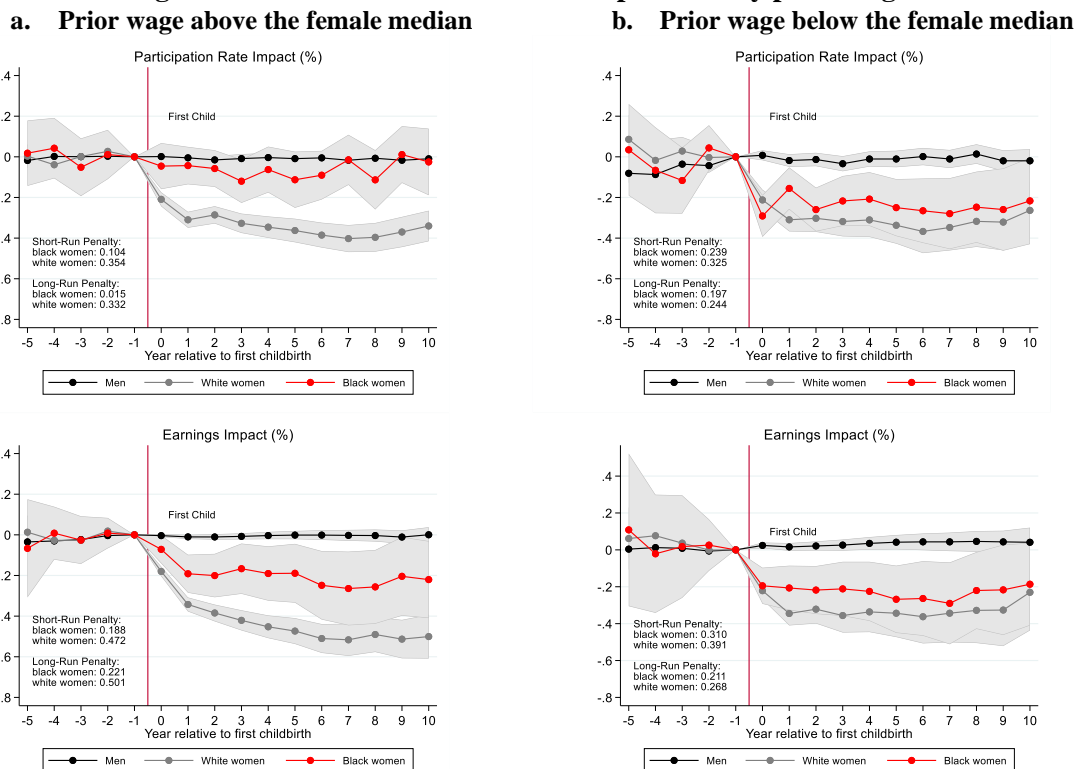
Figure 5 shows a larger racial gap among women with lower family non-labor income. The racial gap is smaller among women with high non-labor income. I measure the average family non-labor income from one to ten years after childbirth and construct a binary indicator if her average family non-labor income is above the median of 10-year average non-labor income.



**Figure 3. Racial differences in the child penalties by region**



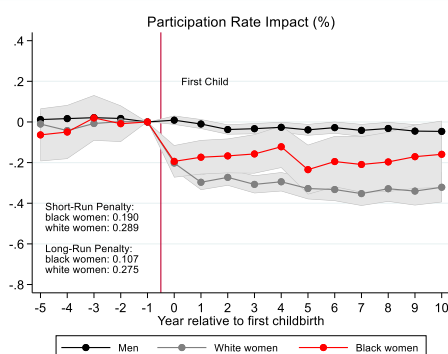
**Figure 4. Racial difference in the child penalties by prior wage**



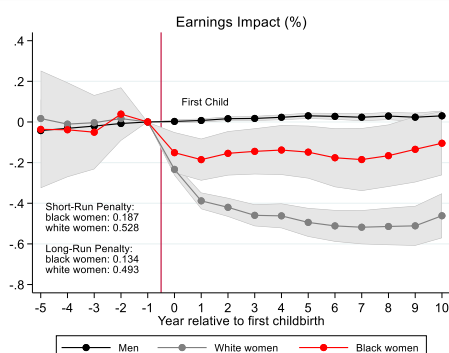
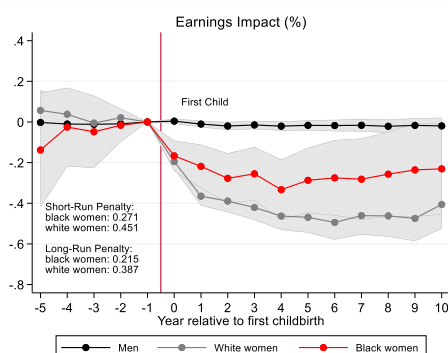
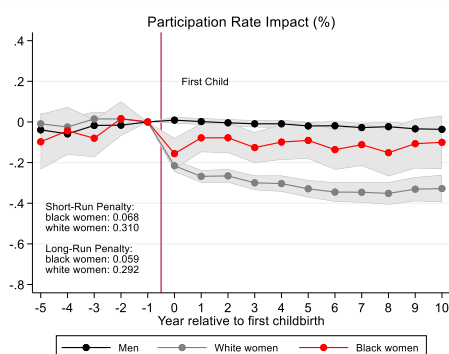
Note: The sample consists of married women in male-headed households having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Wage and income are transformed by inverse hyperbolic sine. Annual hours worked are conditional on being employed. Source: Panel Study of Income Dynamics, 1967 to 2017.

**Figure 5. Racial differences in the child penalties by family non-labor income**

**a. Non-labor income above the median**

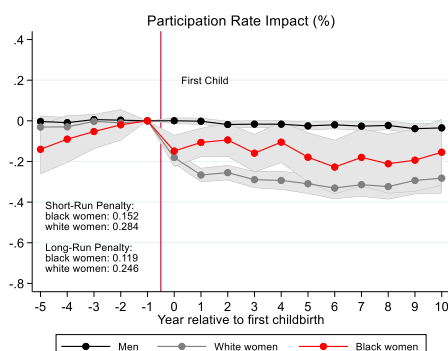


**b. Non-labor income below the median**

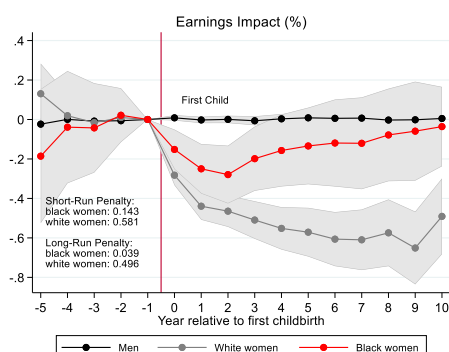
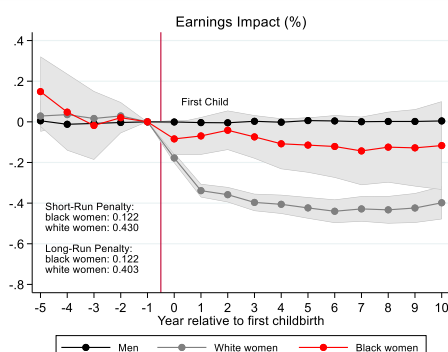
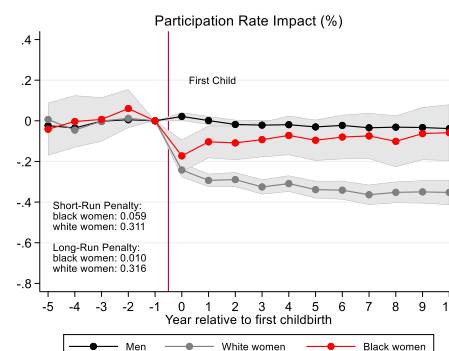


**Figure 6. Racial differences in the child penalties by homeownership**

**a. Owns this home or apartment**



**b. Rent this home or apartment**



Note: The sample consists of married women in male-headed households having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Wage and income are transformed by inverse hyperbolic sine. Annual hours worked are conditional on being employed. Source: Panel Study of Income Dynamics, 1967 to 2017.

Moreover, Figure 6 shows that the child penalties' racial gap does not systematically differ by homeownership. Finally, in Appendix A2, I show that the racial gap remains unchanged after restricting the sample of married women living in a family structure with only a husband, wife, and children. In addition, I also run the event study analysis with family structure as the outcome variable. I find that parenthood has no effect on other family members moving into the household. However, this paper cannot rule out the potential explanation that black women have more informal access to childcare from family members who do not exactly live in the same household but still provide support.

#### **4.4 Use inverse probability weighting (IPW) to control for the racial gap in the distribution of covariates**

Black and white women are likely to have a different distribution of potential wage, husband labor income (including being single or having an unemployed husband), family non-labor income, and other economic observables, as well as work-related gender attitudes of their husbands. Therefore, I use inverse probability weights to ensure that Black and white women have the nearly identical distribution of these covariates.

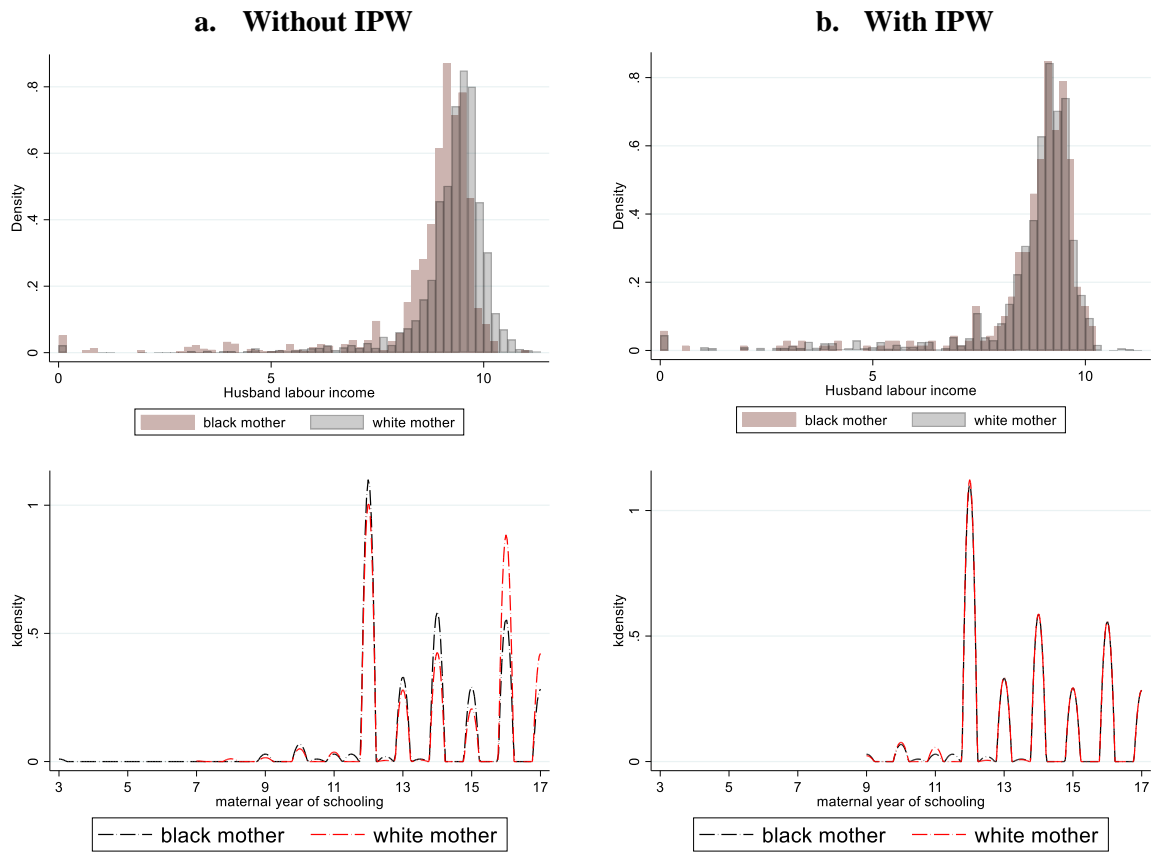
As shown in Figure 7.a, the husband labor income of white women is higher than that of black women. Moreover, more black women have fewer years of schooling than white women. Therefore, using the inverse probability weighting method will reweight the sample such that the distribution of covariates becomes almost identical, as shown in Figure 7(b).

As the availability of years varies among different variables in PSID, controlling for different covariates will cause sample and year to change. Therefore, a direct comparison between child penalties with and without controlling for IPW may capture not only the effect of controlling for the distribution of covariates but also changes in child penalties from different years and samples.

Therefore, the changes in the child penalty are measured by comparing the child penalty estimates with inverse probability weighting and the estimates without IPW but on the same sample where IPW is applicable. Therefore, the percentage change in the child penalty is driven by reweighting the distribution of covariates on the same sample. For example, the gender attitude of the husband was only measured in 1976 and 1977. Therefore, the child penalty estimate without IPW is also obtained using the sub-sample of individuals with gender attitudes measured but not weighted to control for the racial gap in gender attitudes. Appendix B presents

the distribution of all covariates with and without using IPW. Then, the IPW is used as weights in the event study analysis.

**Figure 7. the racial difference in the distribution of covariates**



Note: Husband labour income is the 11-year averaged (5 years before and after childbirth) and transformed by inverse hyperbolic sine. The sample consists of women as the head of their households, having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Source: Panel Study of Income Dynamics, 1967 to 2017.

Table 2 shows the percentage change in the employment child penalty before and after controlling for the distribution of covariates. Appendix C presents all event study figures with different IPW weights.

The racial gaps in covariates have a very limited contribution to the racial gap in the child penalty. For example, the racial gap in child penalty is reduced by 11 percent by reweighting such that black and white women have the same wage distribution. Similarly, the racial gap is reduced by 9 percent and 13 percent after controlling for occupation and industry distribution (both at the 1-digit level). In addition, the gap is reduced by 3 percent after controlling for education(years of schooling).

The racial gap in employment child penalty is reduced by 24 percent after controlling for the racial difference in the distribution of her husband's labor income (10 years average after childbirth).

**Table 2. The changes of the racial gap in the employment penalty (extensive) before and after controlling for the distribution of covariates by race**

	Child penalty with IPW			Child penalty without IPW			% in the racial difference with and without IPW
	White women	Black women	Racial difference	White women	Black women	Racial difference	
<b><i>a. Short-run employment penalty</i></b>							
Prior wage	31%	17%	-14%	29%	17%	-12%	<b>11%</b>
Prior industry	32%	14%	-17%	30%	14%	-16%	<b>9%</b>
Prior occupation	31%	14%	-17%	29%	14%	-15%	<b>13%</b>
Husband labor income	25%	13%	-13%	22%	13%	-10%	<b>24%</b>
Year of schooling	32%	8%	-24%	31%	8%	-23%	<b>3%</b>
Family non-labor inc	27%	11%	-16%	27%	11%	-16%	<b>0%</b>
Husband attitude	24%	3%	-21%	24%	3%	-21%	<b>-1%</b>
<b><i>b. Long-run employment penalty</i></b>							
Prior wage	33%	14%	-20%	32%	14%	-18%	<b>10%</b>
Prior industry	34%	10%	-24%	32%	10%	-22%	<b>8%</b>
Prior occupation	33%	9%	-24%	31%	9%	-21%	<b>12%</b>
Husband labor income	24%	10%	-14%	22%	10%	-12%	<b>16%</b>
Year of schooling	33%	3%	-30%	32%	3%	-29%	<b>3%</b>
Family non-labor inc	29%	11%	-18%	29%	11%	-19%	<b>-1%</b>
Husband attitude	26%	3%	-23%	25%	3%	-22%	<b>4%</b>

Note: Short-run (long-run) penalty is the average child penalty between 1-5 (6-10) years after childbirth. Her Prior wage is 1 year before childbirth. Industry is 1 to 5 years before childbirth. Husband labour income is the average of 10 years after childbirth. Family non-labour income is the total of 10 years after childbirth. The husband attitude question asks "How do you feel about your (Wife/friend) working/the possibility of your (Wife/ friend) working? Are you very much in favor of it, somewhat in favor of it, neither for or against it, somewhat against it, or very much against it?" The sample consists of married women in male-headed households, having her first child at the age between 20 and 45. Income and wage adjusted by inflation index (1960 price) and transformed by inverse hyperbolic sine. Source: Panel Study of Income Dynamics, 1967 to 2017.

Table 3 shows the child penalty at the intensive margin. The racial gap in the penalty of annual hours worked is conditional on employment. The short-run racial gap is reduced by 15 percent by controlling for husband labor income and by 11 percent by controlling for non-labor income. In addition, the gap is reduced by 7-8 percent after controlling for education.

As shown in Table 1, white women are more likely to have a husband against wife working. I have reweighted the distribution in response such that black and white women have the same

distribution of husband attitude. As shown in Table 3 and Table 4, controlling for the distribution of husband attitude about wife working does not affect the racial gap in the child penalties.

Gender attitude was measured only in 1976 and 1977. In 1976, the wife was asked, "How does your husband feel about (your working/the possibility of your working)? Is he very much in favor of it, somewhat in favor of it, neither for nor against it, somewhat against it, or very much against it?" In 1977, the husband was asked, "How do you feel about your (Wife/friend) working/the possibility of your (Wife/ friend) working? Are you very much in favor of it, somewhat in favor of it, neither for or against it, somewhat against it, or very much against it?" Answers range from "Very much in favor", "Somewhat in favor", "Neither for nor against", "Somewhat against", and "Very much against".

**Table 3. The changes of the racial gap in the annual hours worked penalty (intensive margin) before and after controlling for the distribution of covariates by race**

	Child penalty with IPW			Child penalty without IPW			% in the racial difference with and without IPW
	White women	Black women	Racial difference	White women	Black women	Racial difference	
<i>a. Short-run annual hours worked penalty</i>							
Prior wage	33%	1%	-32%	33%	1%	-31%	<b>2%</b>
Prior industry	33%	0%	-33%	33%	0%	-33%	<b>1%</b>
Prior occupation	33%	-1%	-34%	32%	-1%	-32%	<b>5%</b>
Husband labor inc	29%	5%	-24%	25%	5%	-20%	<b>15%</b>
Year of schooling	31%	2%	-29%	29%	2%	-27%	<b>7%</b>
Family non-labor inc	30%	5%	-25%	27%	5%	-22%	<b>11%</b>
Husband attitude	33%	2%	-31%	33%	2%	-31%	<b>-1%</b>
<i>b. Long-run annual hours worked penalty</i>							
Prior wage	35%	-2%	-37%	34%	-2%	-36%	<b>3%</b>
Prior industry	36%	-5%	-41%	35%	-5%	-40%	<b>1%</b>
Prior occupation	36%	-5%	-41%	34%	-5%	-40%	<b>5%</b>
Husband labor inc	30%	2%	-28%	26%	2%	-24%	<b>13%</b>
Year of schooling	33%	2%	-31%	31%	2%	-29%	<b>8%</b>
Family non-labor inc	30%	1%	-29%	29%	1%	-28%	<b>4%</b>
Husband attitude	31%	-2%	-33%	31%	-2%	-32%	<b>1%</b>

Note: Short-run (long-run) penalty is the average child penalty between 1-5 (6-10) years after childbirth. Her Prior wage is 1 year before childbirth. Industry is 1 to 5 years before childbirth. Husband labour income is the average of 10 years after childbirth. Family non-labour income is the total of 10 years after childbirth. The husband attitude question asks "How do you feel about your (Wife/friend) working/the possibility of your (Wife/ friend) working? Are you very much in favor of it, somewhat in favor of it, neither for or against it, somewhat against it, or very much against it?" The sample consists of married women in male-headed households, having her first child at the age between 20 and 45. Income and wage adjusted by inflation index (1960 price) and transformed by inverse hyperbolic sine. Source: Panel Study of Income Dynamics, 1967 to 2017.

## 5. Conclusion

This study shows striking differences in child penalties between black and white women in the US. This paper largely rules out the main explanation of single parenthood, family structure, and homeownership. Furthermore, most economic, demographic, and work-related gender attitude variables do not explain most of the racial gap in child penalty. At most, husband labor income can explain 24 percent of the racial gap in employment penalty (extensive margin), and household non-labor income can explain 11 percent of the racial gap in annual hours worked penalty (intensive margin). Although the child penalties literature considers gender norms as one of the lead candidates to explain the child penalties, I find that it is unlikely to explain the racial gap in the child penalties.

Heterogeneity analysis shows that the racial gap is primarily driven by women in the South with high wages and low household non-labor income. Therefore, further distinguishing preference and labor market discrimination for women with high wages is a promising avenue to understand the cause of child penalties and the racial gap.

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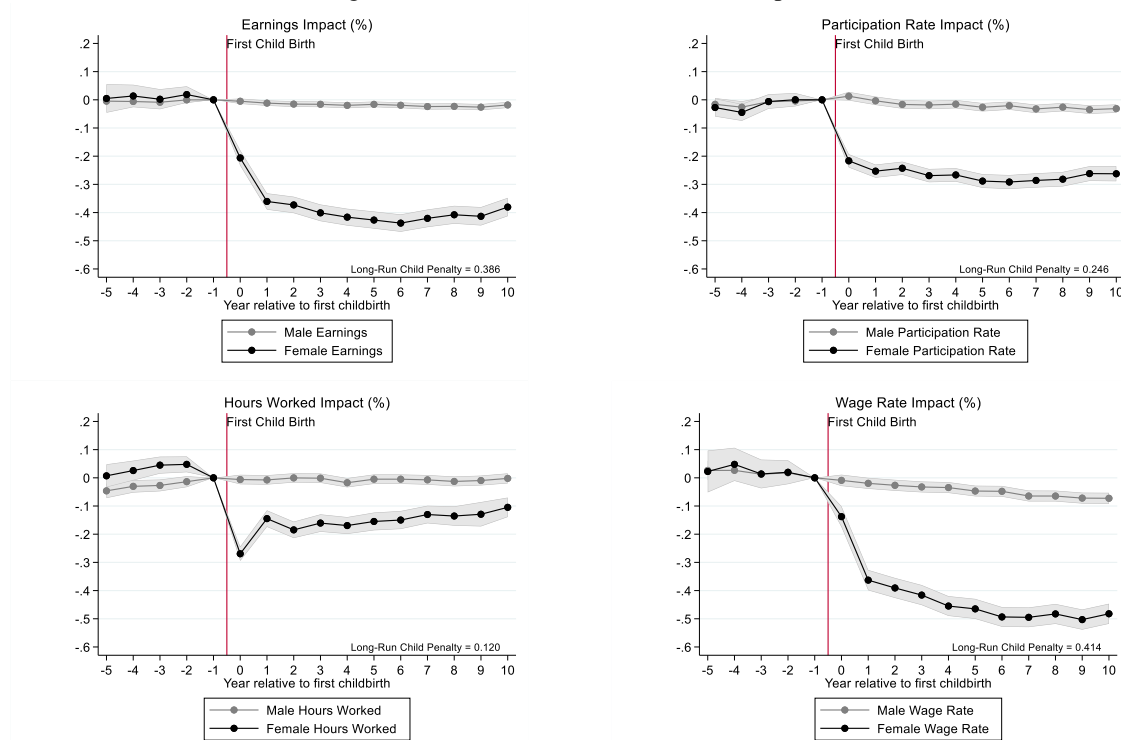
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## Appendix A.

### A1. Child penalties using PSID 1967-2018 without race comparison.

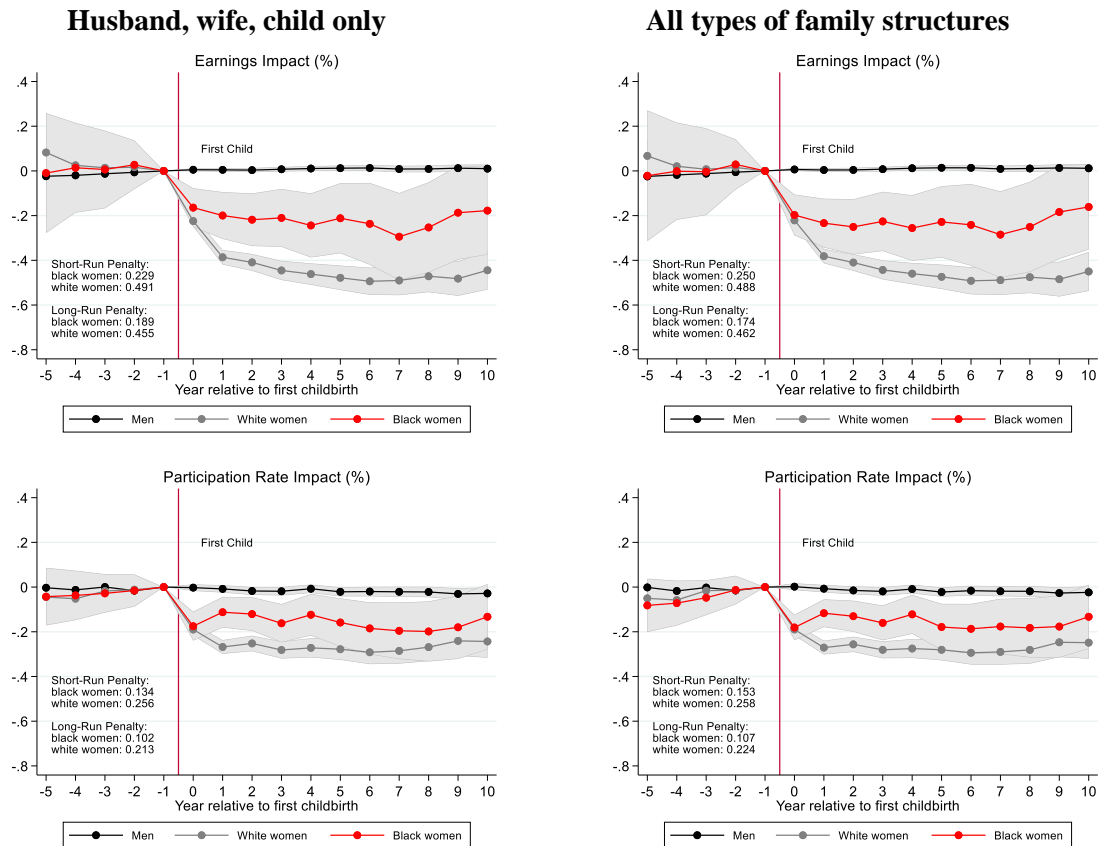
Figure A1. Racial differences in the child penalties



Note: The sample consists of married women in male-headed households having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Wage and income are transformed by inverse hyperbolic sine. Annual hours worked are conditional on being employed. Source: Panel Study of Income Dynamics, 1967 to 2017.

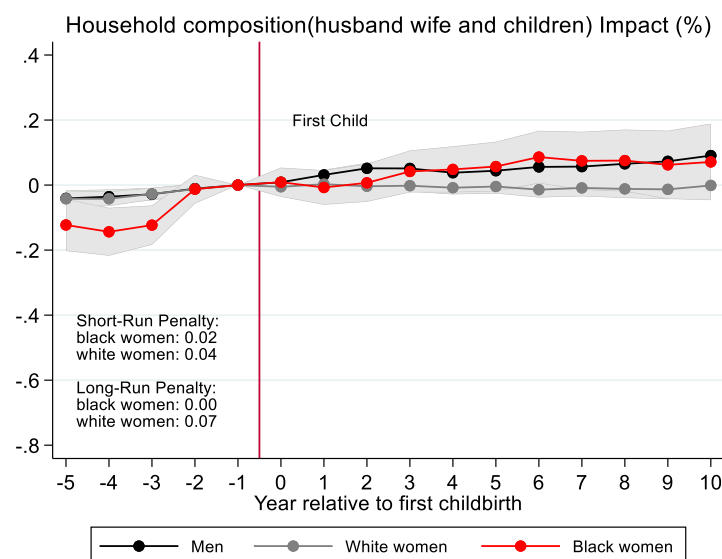
## A2. Child penalties by family composition

**Figure A2. Racial differences in the child penalties by family structure**



Note: The sample consists of married women in male-headed households having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Wage and income are transformed by inverse hyperbolic sine. Annual hours worked are conditional on being employed. Source: Panel Study of Income Dynamics, 1967 to 2017.

**Figure A3. The impact of parenthood on family composition (outcome variable is being the family structure of husband, wife, children family only)**

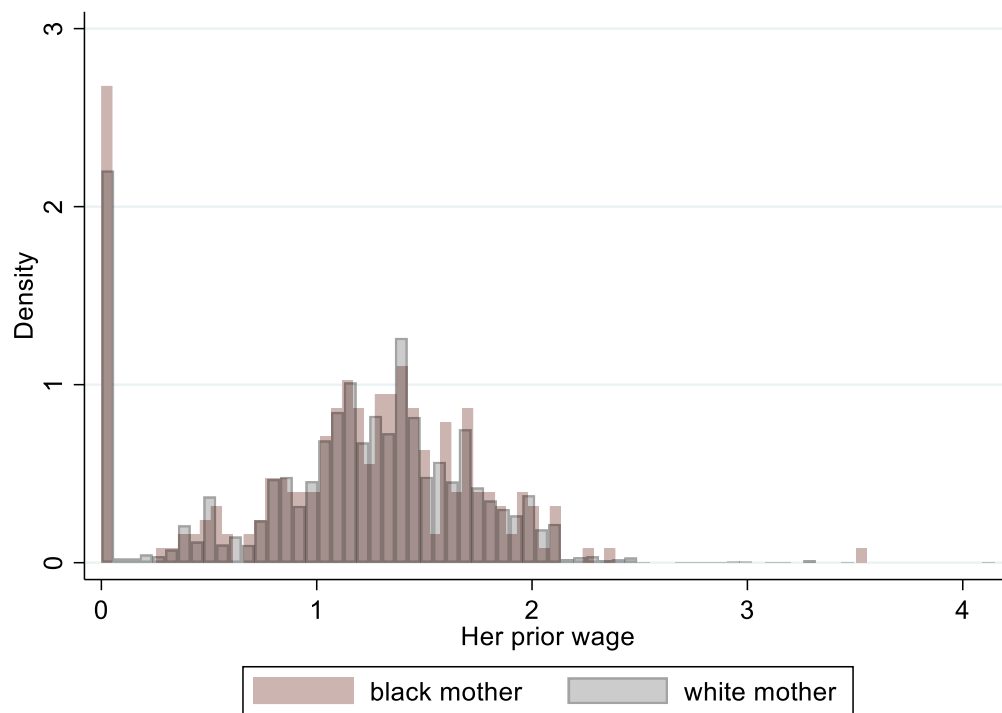


## Appendix B. Reweighting the distribution of covariates

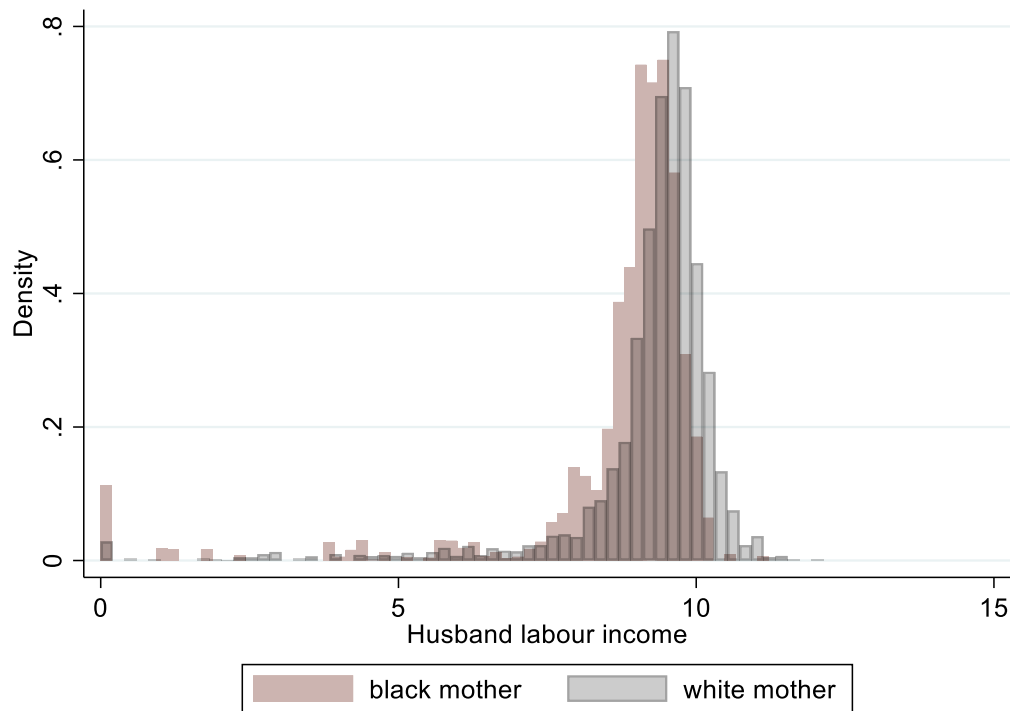
**B1. Prior female wage  
Without IPW**



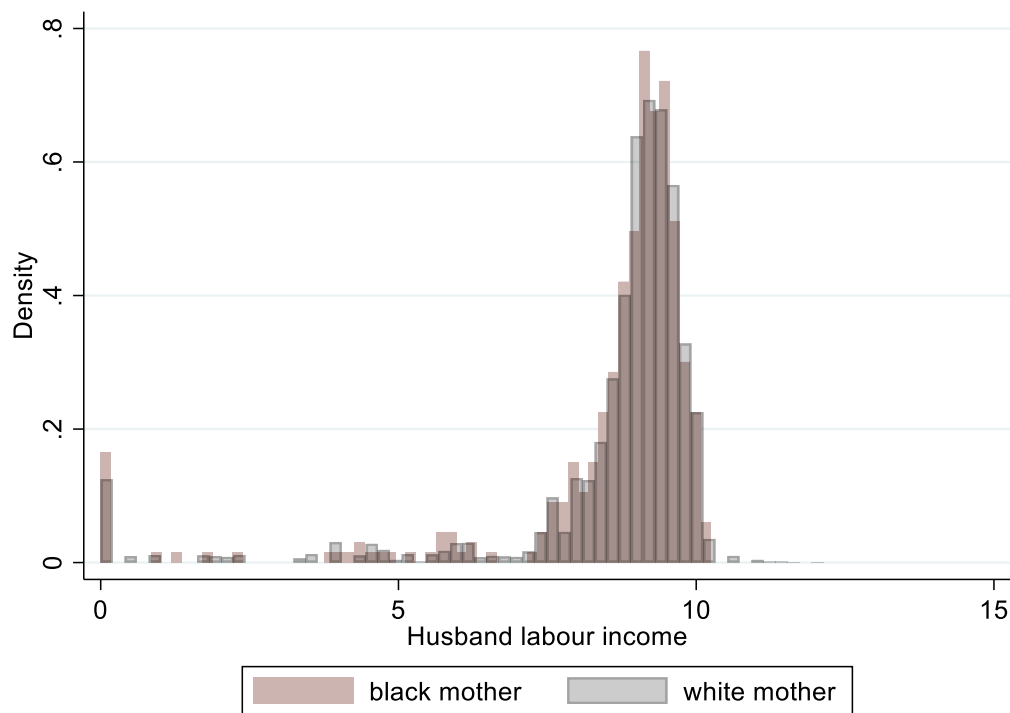
**With IPW**



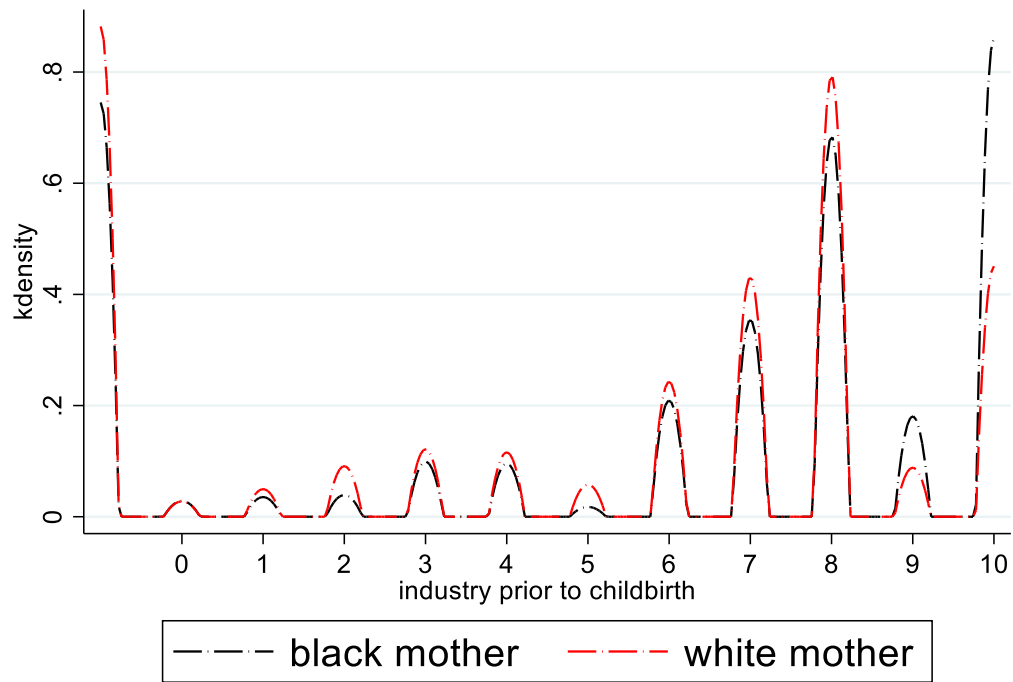
**B2. Husband labor income**  
**Without IPW**



**With IPW**

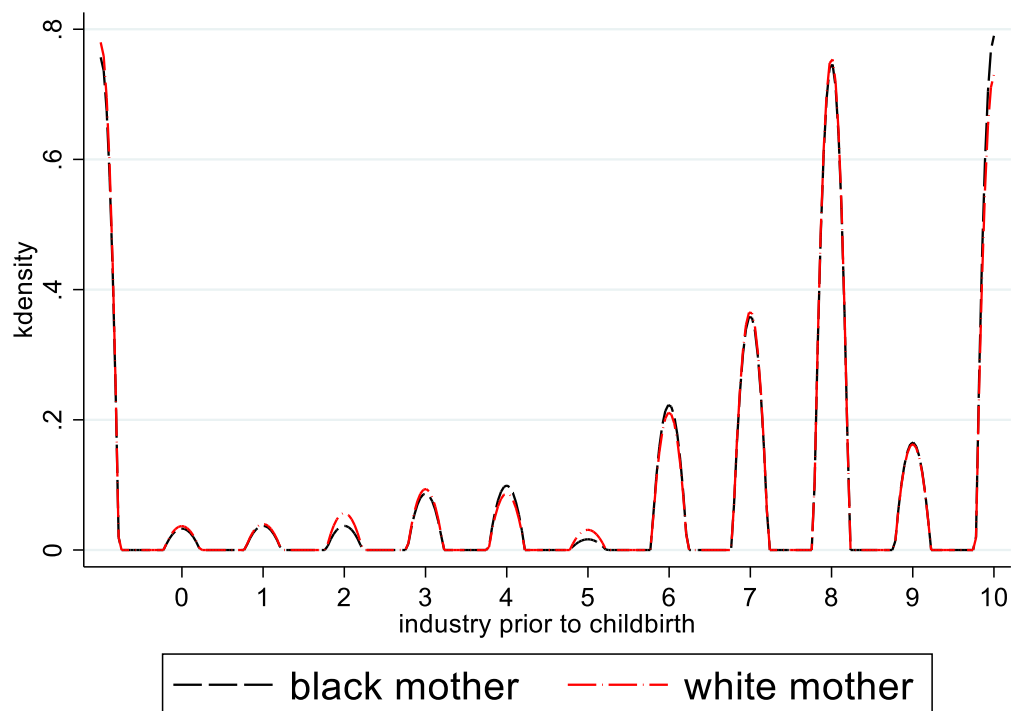


### B3. Prior her industry Without IPW

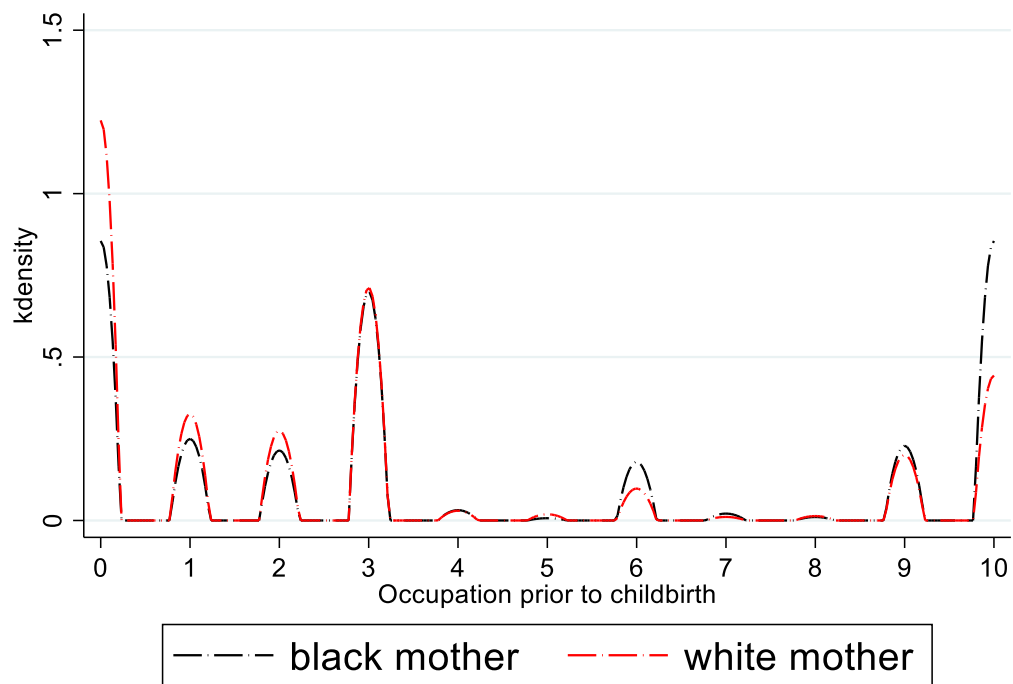


Note: 1-digit industry. 10 is unemployment.

### With IPW

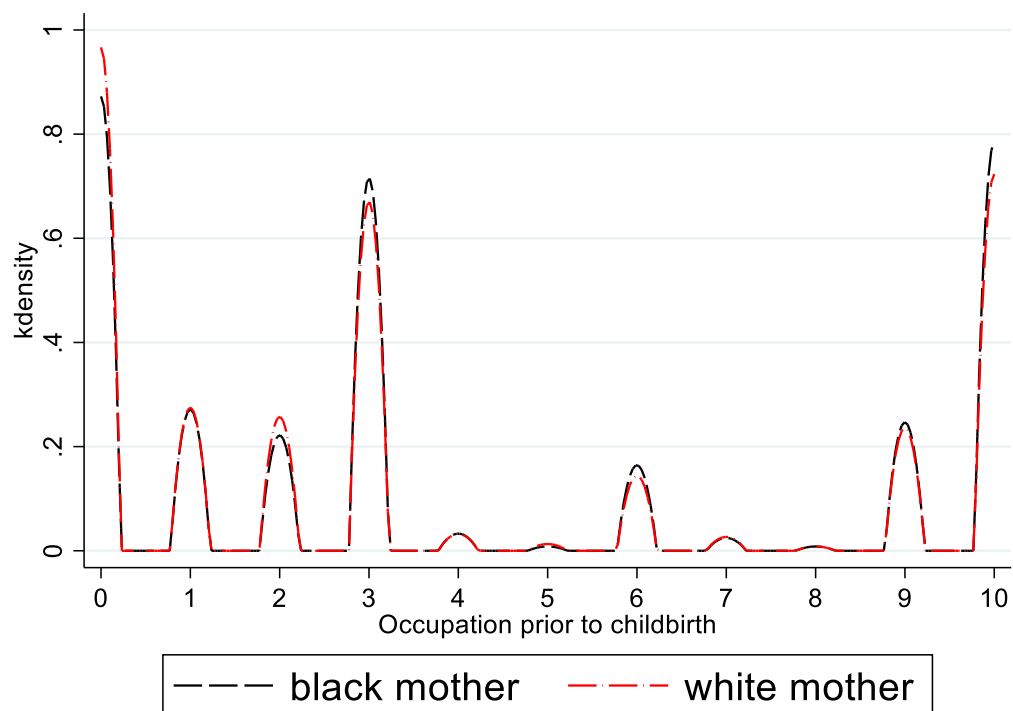


#### B4. Prior her occupation Without IPW

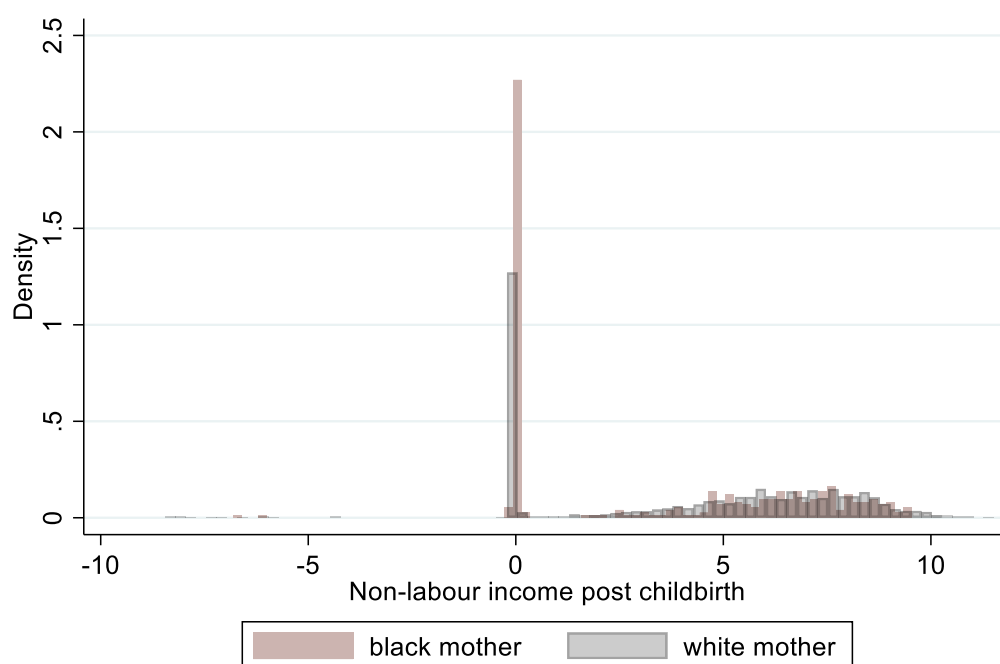


Note: 1-digit occupation. 10 is unemployment.

#### With IPW

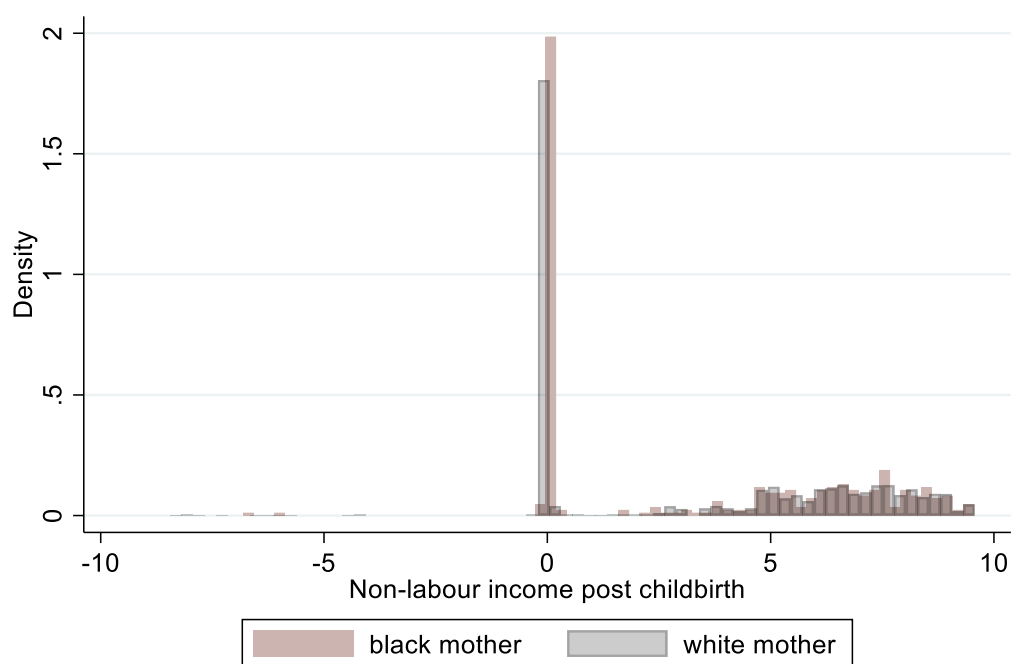


### B5. Prior family non-labor income Without IPW



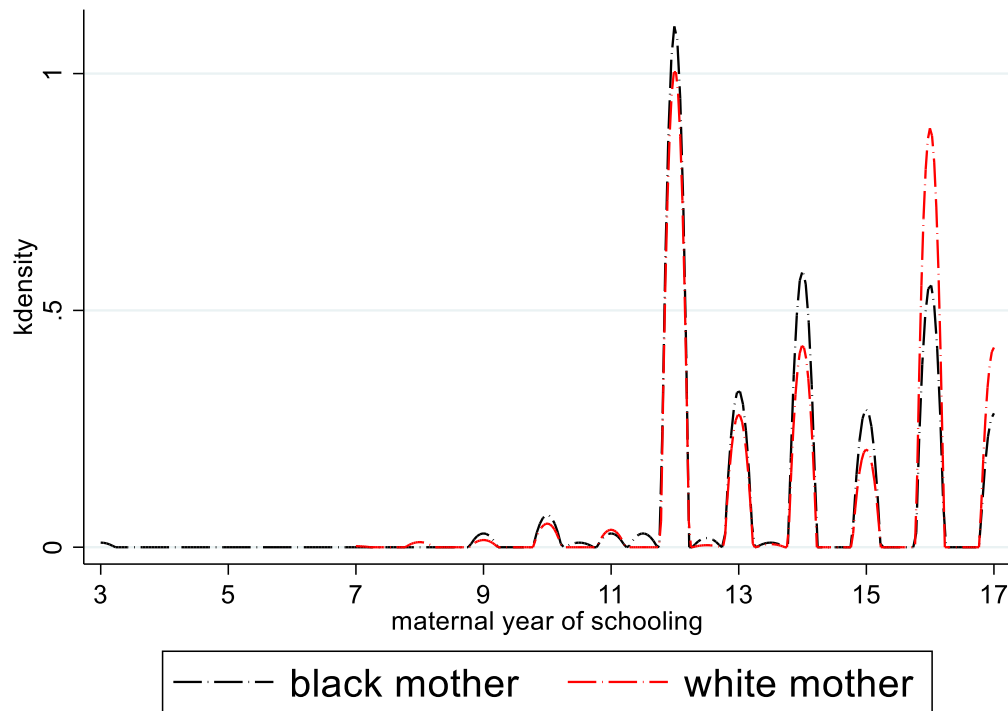
Note: The variable is transformed with inverse hyperbolic sine.  
1 or 2 year after childbirth

### With IPW

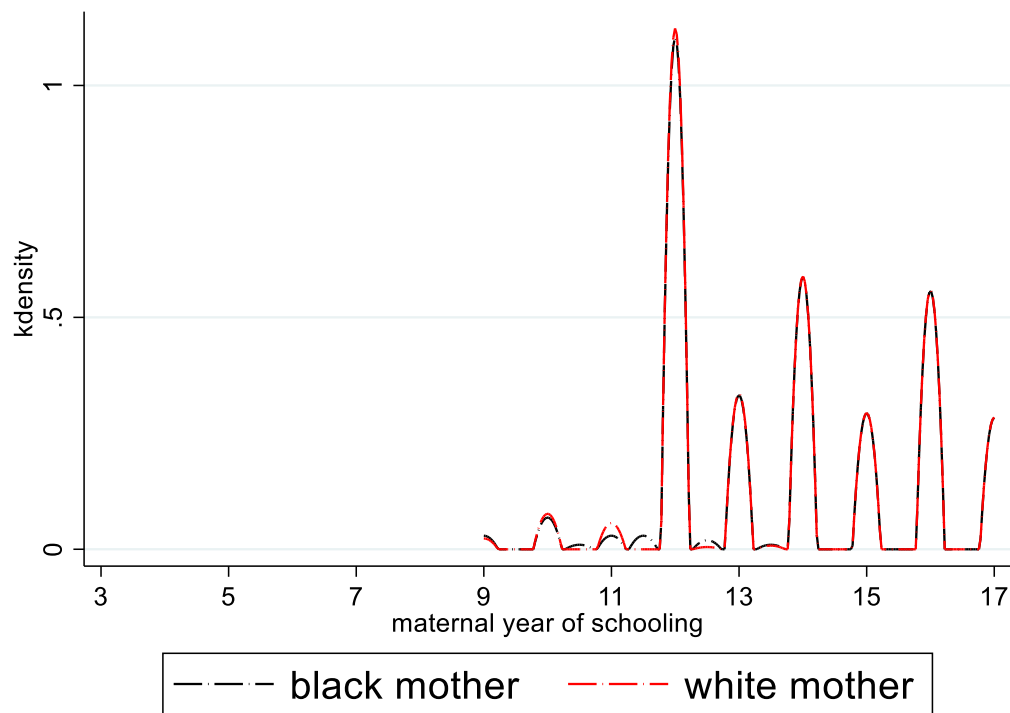


Note: The variable is transformed with inverse hyperbolic sine.  
1 year after childbirth

**B6. Her year of schooling**  
**Without IPW**

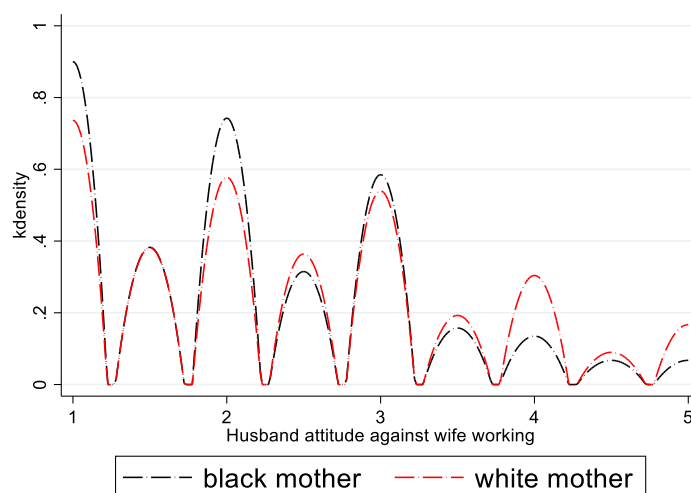


**With IPW**

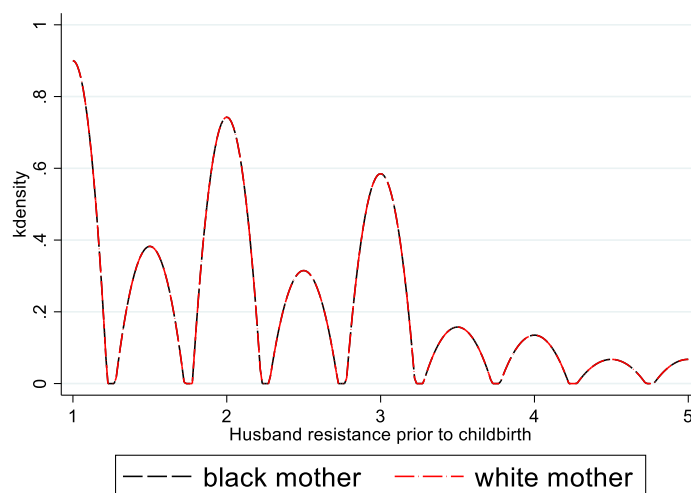




**B7. Husband attitude about wife working (collected in 1976 and 1977 only)**  
**Without IPW**



**With IPW**



**Husband attitude (survey question in 1976 and 1977)**

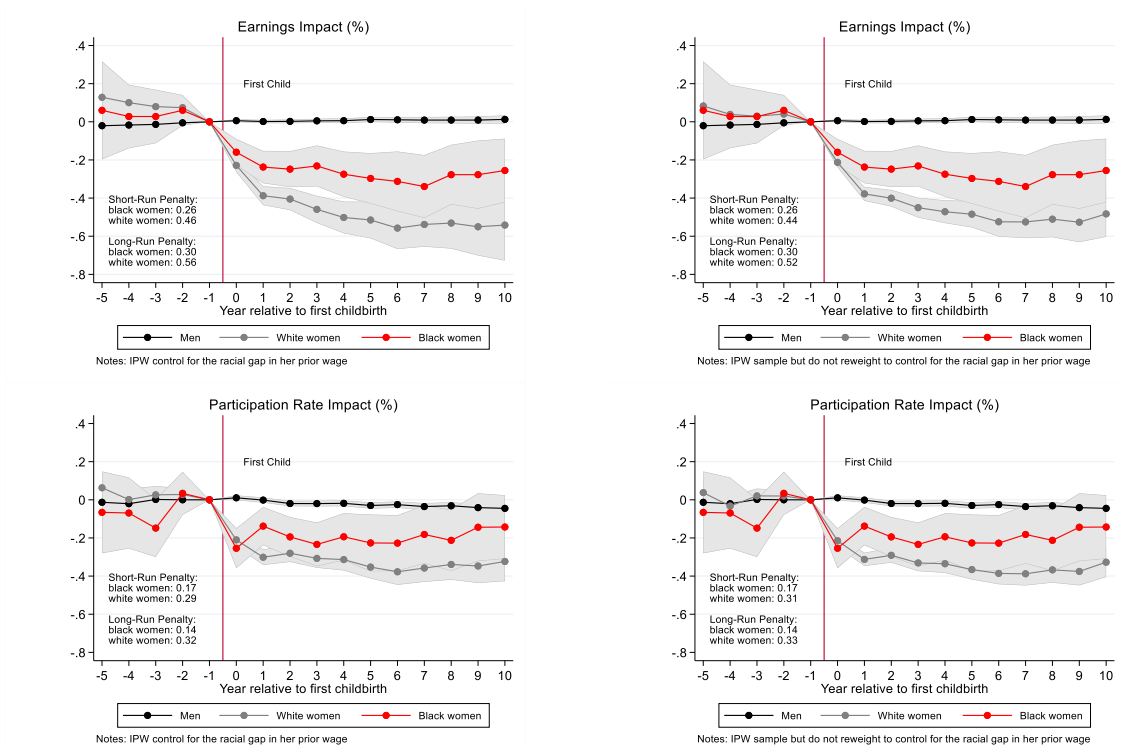
Survey question in 1976, "How does your husband feel about (your working/the possibility of your working)? Is he very much in favor of it, somewhat in favor of it, neither for nor against it, somewhat against it, or very much against it?"

Survey question in 1977, "How do you feel about your (Wife/friend) working/the possibility of your (Wife/ friend) working? Are you very much in favor of it, somewhat in favor of it, neither for or against it, somewhat against it, or very much against it?"

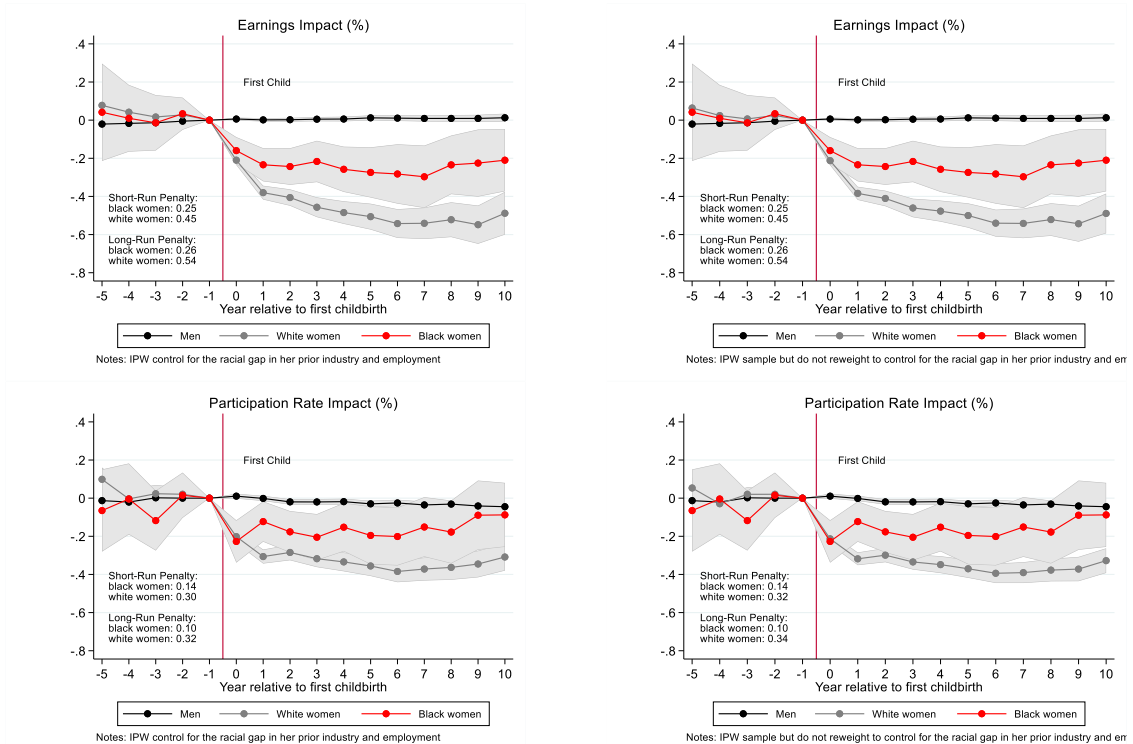
Answer range is (Very much in favor, Somewhat in favor Neither for nor against, Somewhat against, Very much against)

## Appendix C. Event study figure with and without IPW

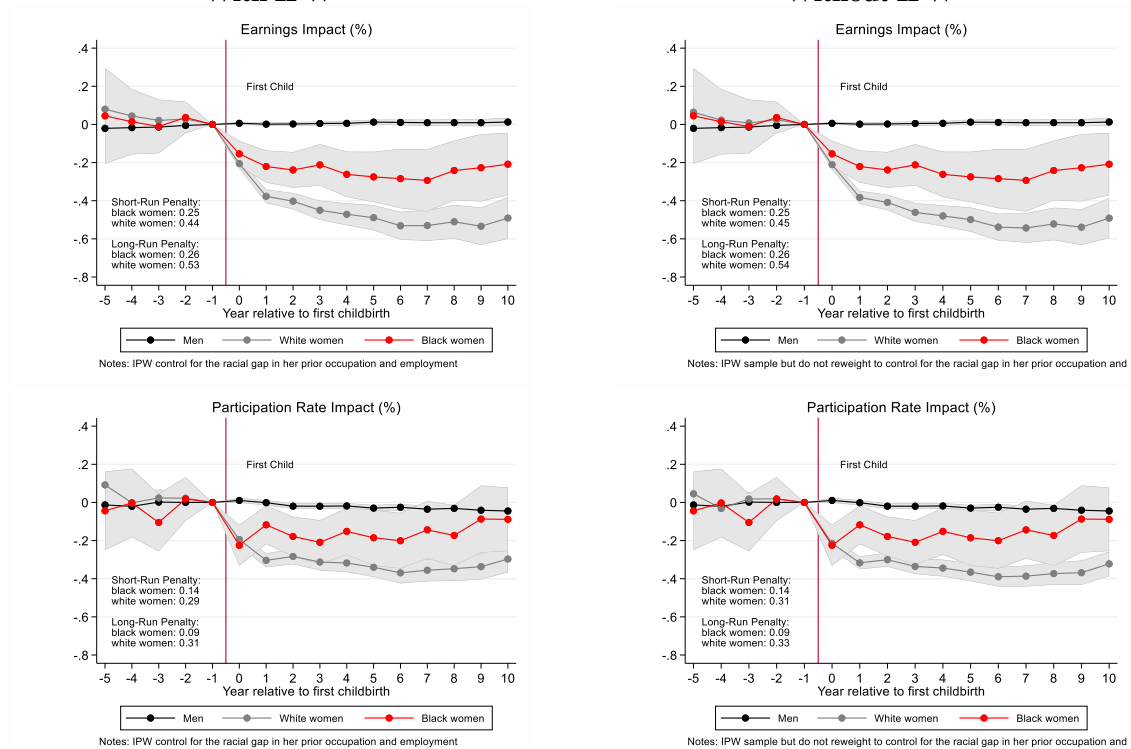
**Figure C1. Child penalty without and with IPW to control for her prior wage**



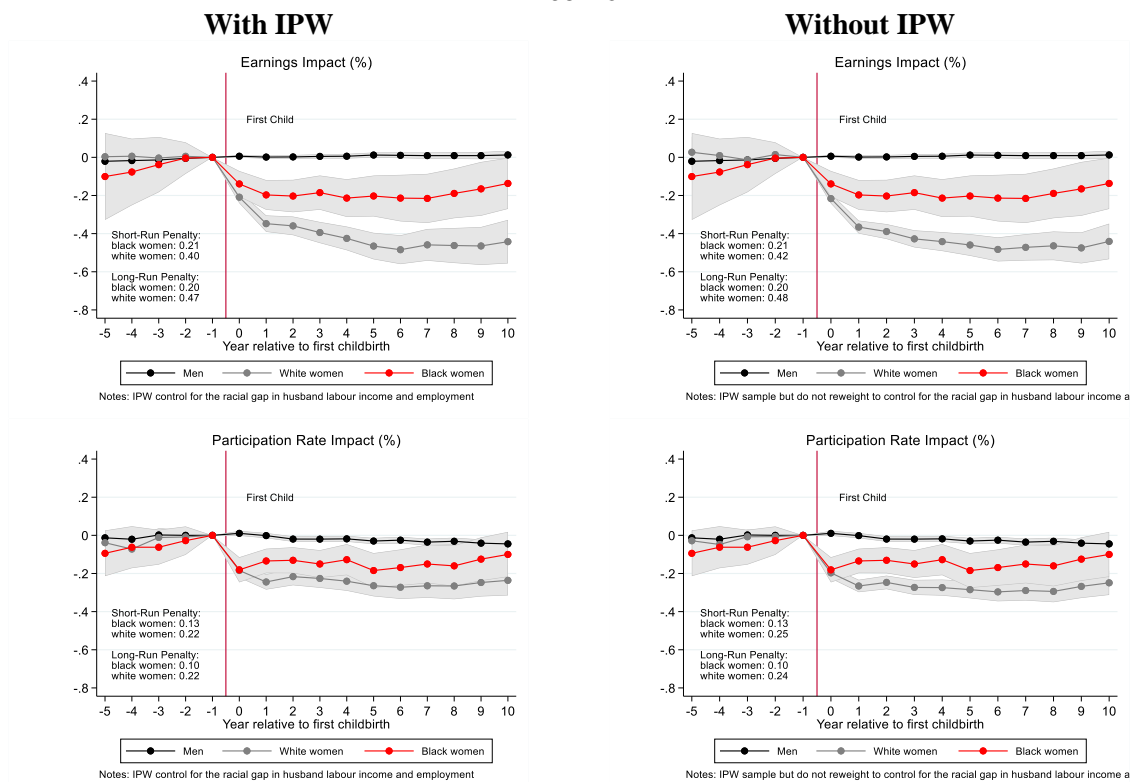
**Figure C2. Child penalty without and with IPW to control for her prior industry**



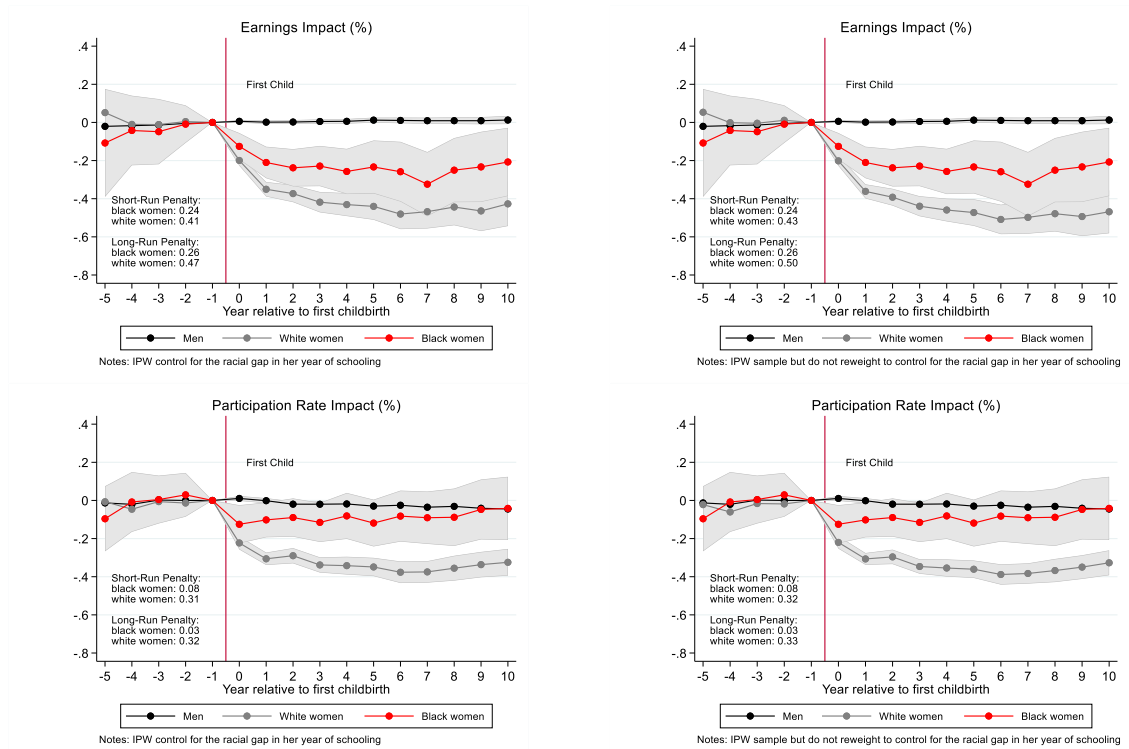
**Figure C3. Child penalty without and with IPW to control for her prior occupation**



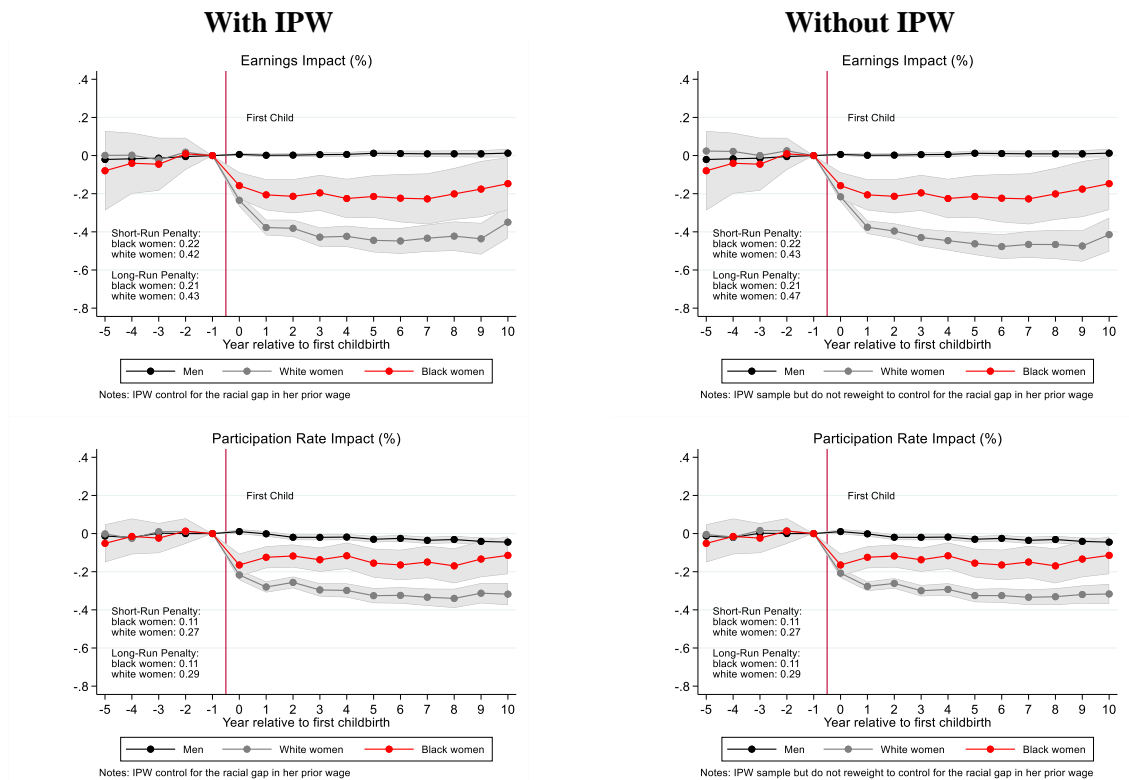
**Figure C4. Child penalty without and with IPW to control for the husband's labor income**



**Figure C5. Child penalty without and with IPW to control for her year of schooling**



**Figure C6. Child penalty without and with IPW to control for family non-labor income**



**Figure C7. Child penalty without and with IPW to control for her husband's attitude about wife working**

