

# **Race and Child Penalty: Evidence in the US**

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# Racial Difference in the Child Penalty

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# Motivation

- (Child Penalty) Following first childbirth, mothers experience a substantial reduction in labour market income, 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).
- Understanding the mechanism of child penalties is crucial to developing effective policies to reduce gender inequality in the labour market.
- However, the cause of the child penalty remains a puzzle.

# Literature

- 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).

# Literature

- 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 with hypothesis that the racial gap is driven by single parenthood and gender norms.

# Literature

- First, racial **discrimination** is substantial in the labor market in the US (Bertrand and Mullainathan, 2004; Kline et al., 2021).
- Scarborough et al. (2021) find that Black households have more progressive gender attitudes than white counterparts,
  - potentially due to slavery (Davis, 1981)
  - discrimination in masculinity identity construction (Bederman, 1993).

# Research questions

**[If]** there are racial differences in child penalty?  
**[Why]**

# Preview

- 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%.
- In summary, the paper large rules out **economic covariates**, **single parenthood**, **homeownership**, **gender norms**, and **family structure** as the main mechanisms for driving the gap
- This paper leave preference and discrimination as potential explanations for future research.

# Data and methods

- 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).

Follow Klevin et al. (2019a) and Klevin et al. (2019b)

$$Y_{ist}^g = \sum_{j \neq -1} \alpha_j^g \cdot 1[j = t] + \sum_k \beta_k^g \cdot 1[k = age_{is}] + \sum_y \gamma_y^g \cdot 1[y = s] + v_i + e_{ist}^g$$

• Relative year to first child birth
age fixed effect
year fixed effect

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

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

Where  $\tilde{Y}_{it}^g$  is the average predicted outcome excluding the contribution of the event time coefficients, as the counterfactual outcome absent children.

# PSID

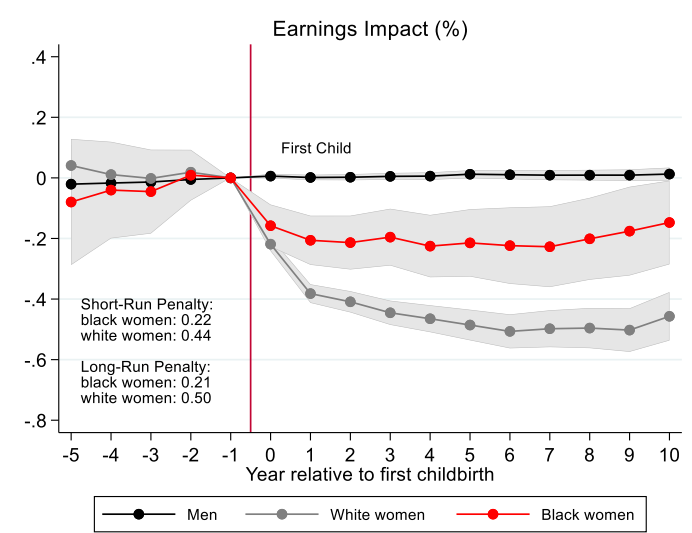
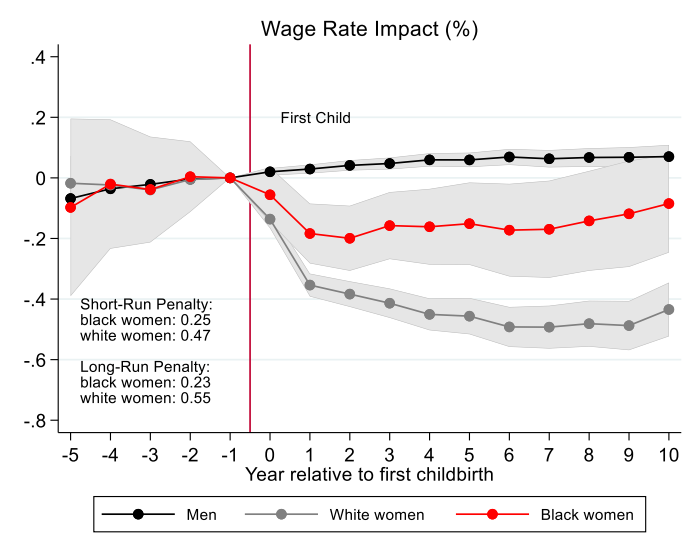
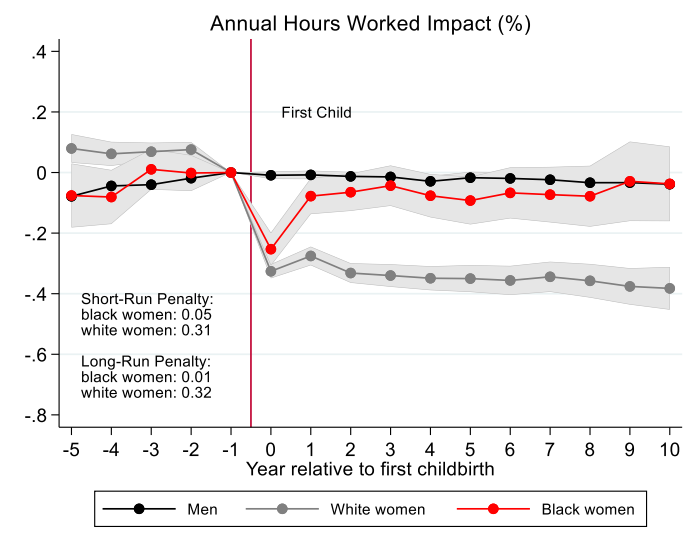
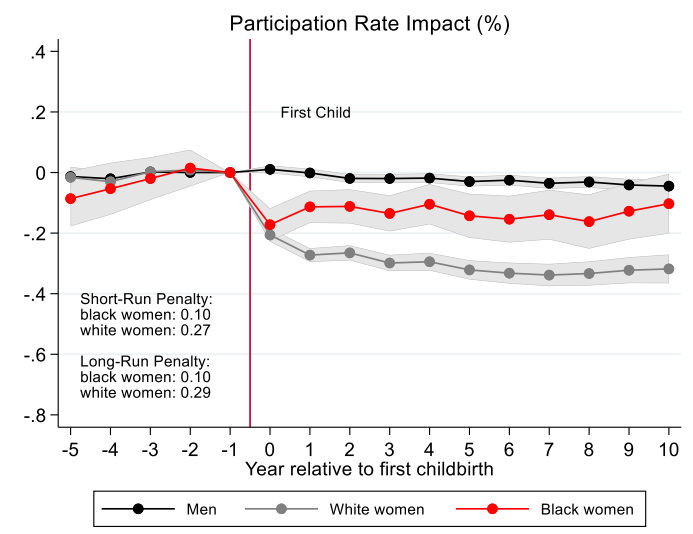
- The Panel Study of Income Dynamics (PSID)
  - Year [1967, 2019]
- Sample selection follows criteria of Kleven et al. (2019a) and Cortés and Pan (2020)
  - Age [20,45]
  - Having first child at age [20,45].
- Outcome variable (inflation adjusted and inverse hyperbolic sine transformed)
  - Annual Labour Income (Total)
  - Labour Market Participation (Extensive)
  - Annual hours worked (Intensive)
  - Hourly wage rate (Intensive)

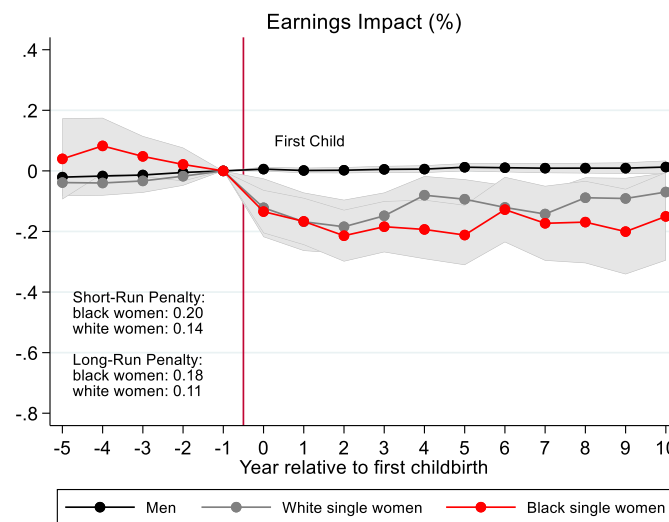
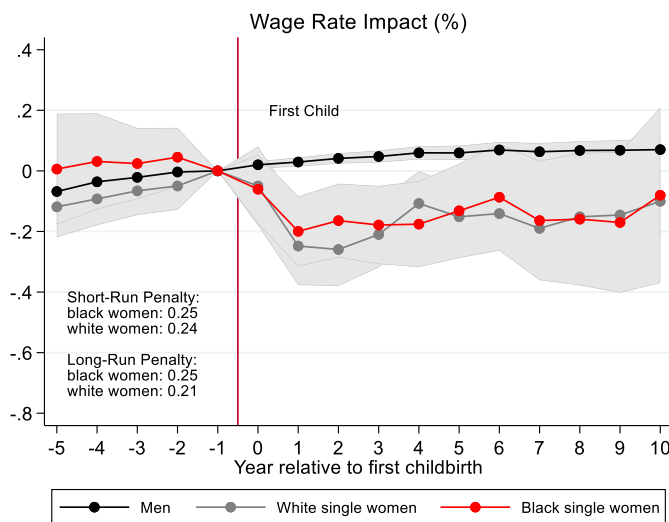
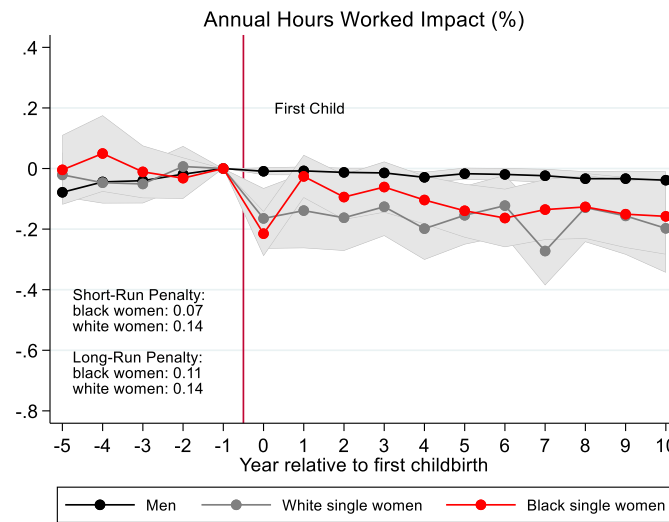
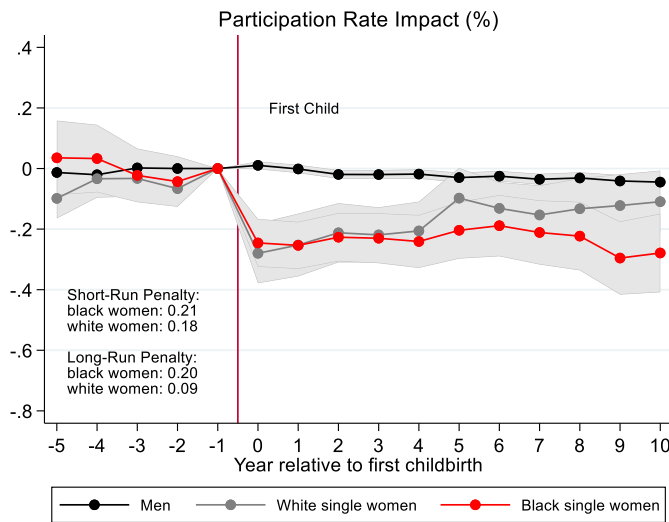
**Table1. Summary statistics between black and white mothers in male-headed households**

	White women	Black women
<i><b>One year before childbirth</b></i>		
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
<i><b>Five years after childbirth</b></i>		
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

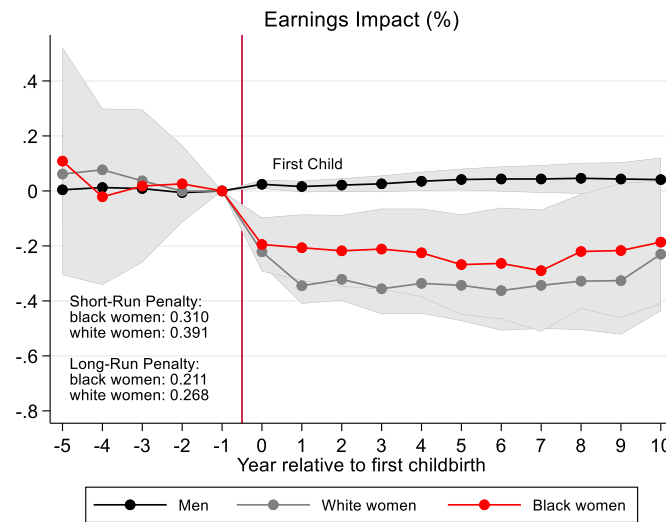
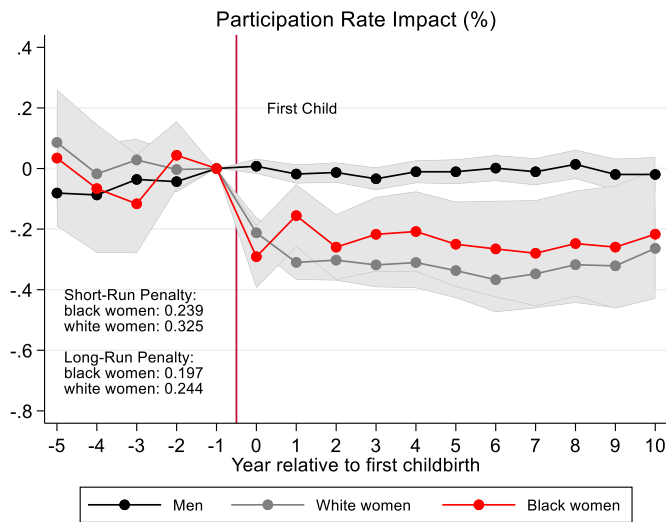
Note: The sample consists of married women in male-headed households only, having her first child at age between 20 and 45. Income and wage adjusted by inflation index (1960 price). Source: Panel Study of Income Dynamics, 1967 to 2017.

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



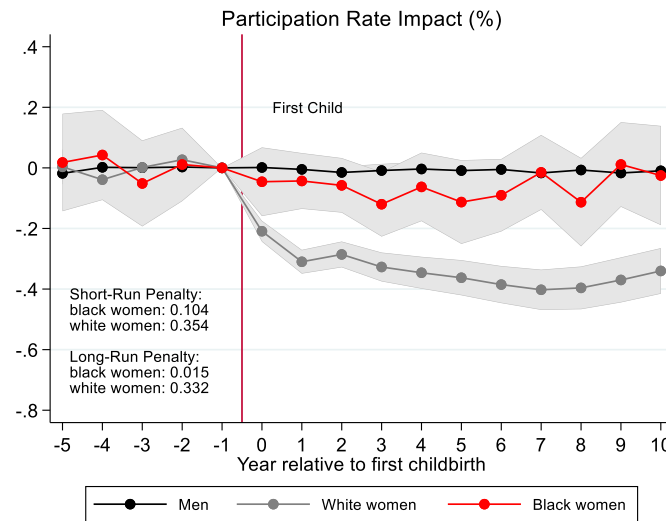
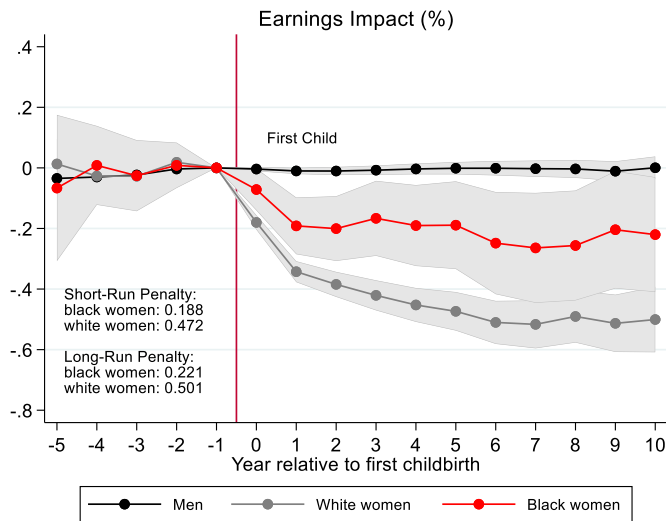


**Figure 1. Racial differences in the child penalties among single women**

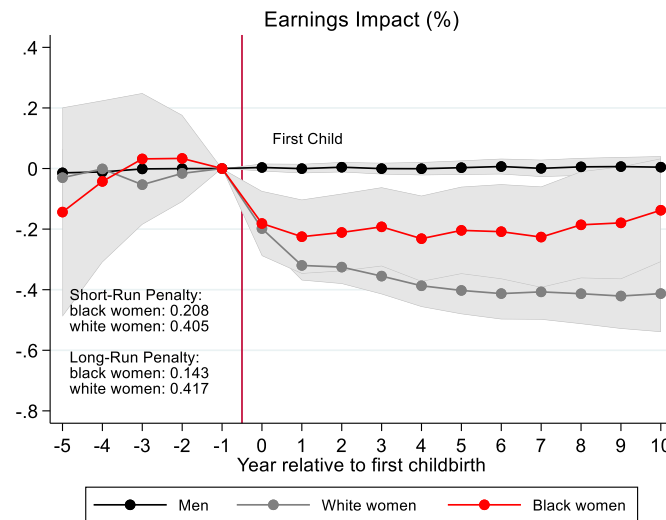
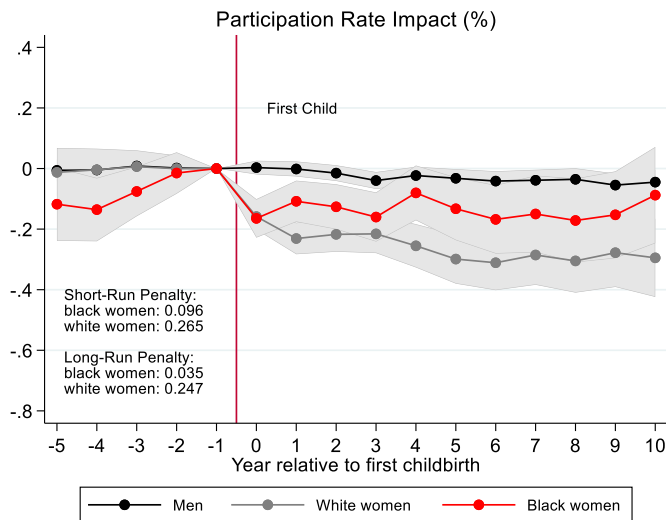


Below Median

Prior wage

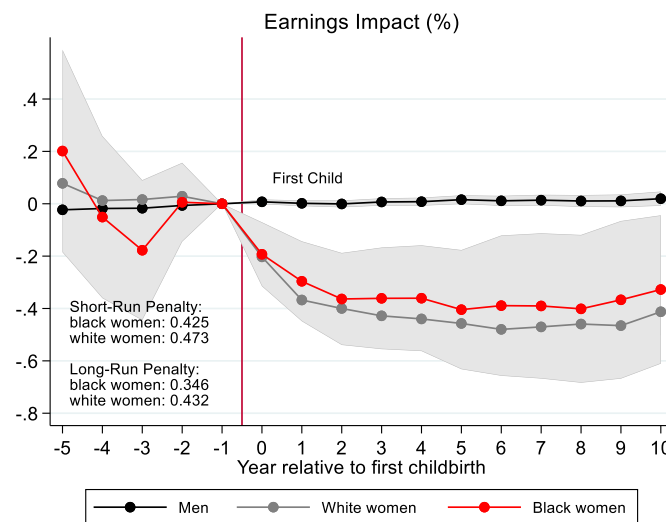
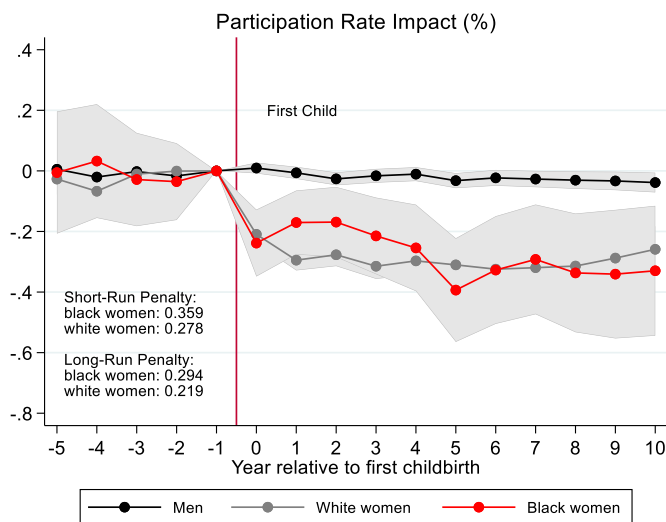


Above Median

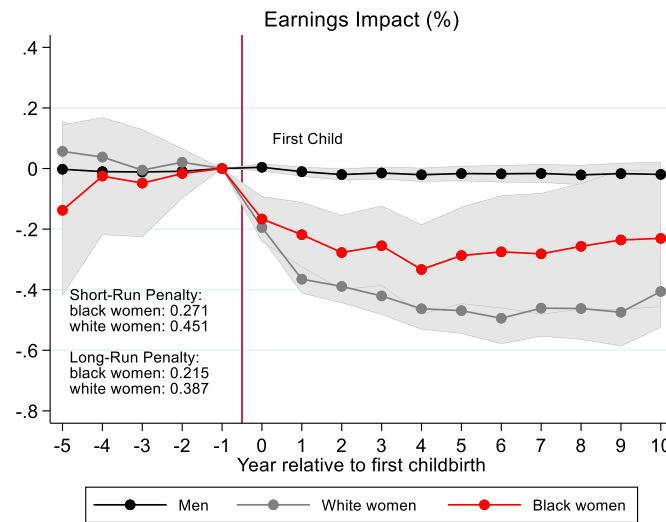
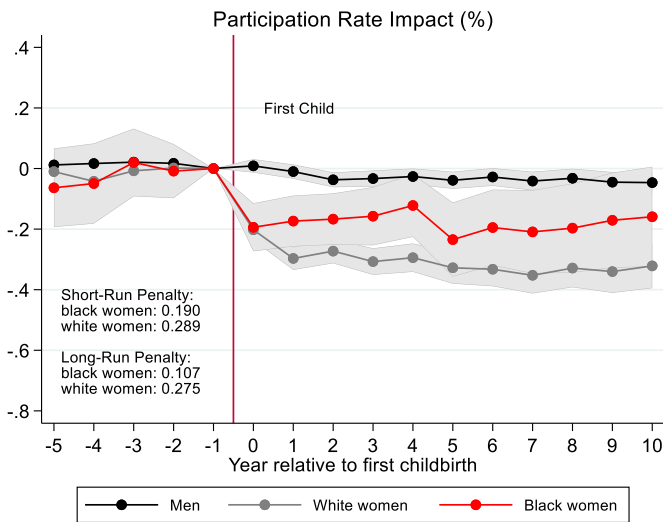


South

Region

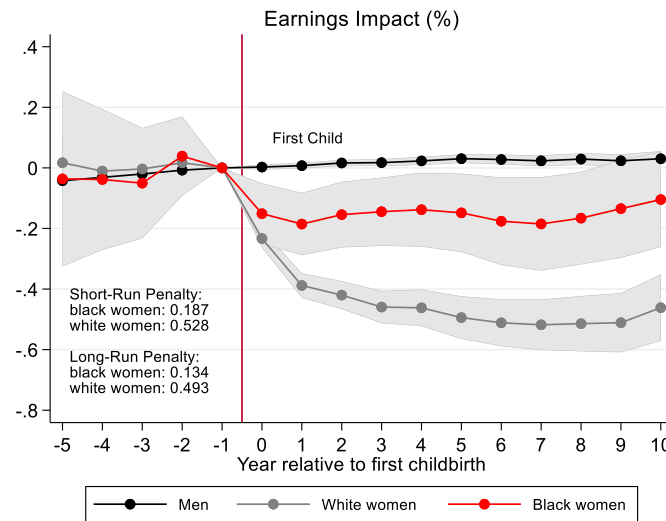
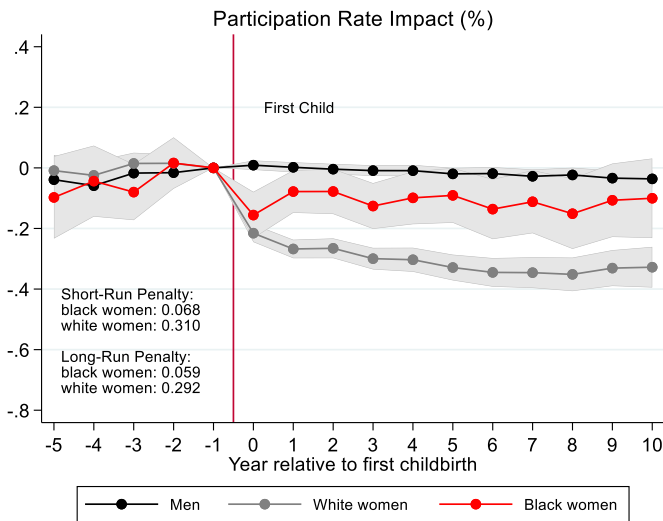


Non-South



Above median

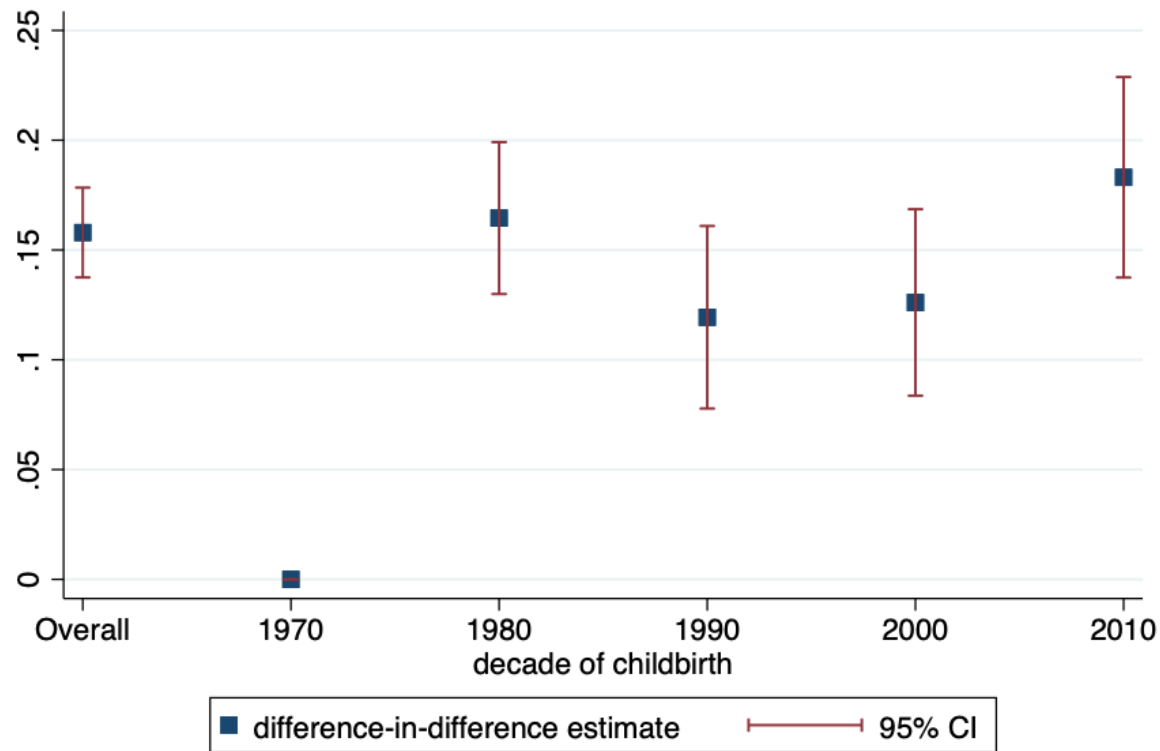
Family non-labour income



Below median

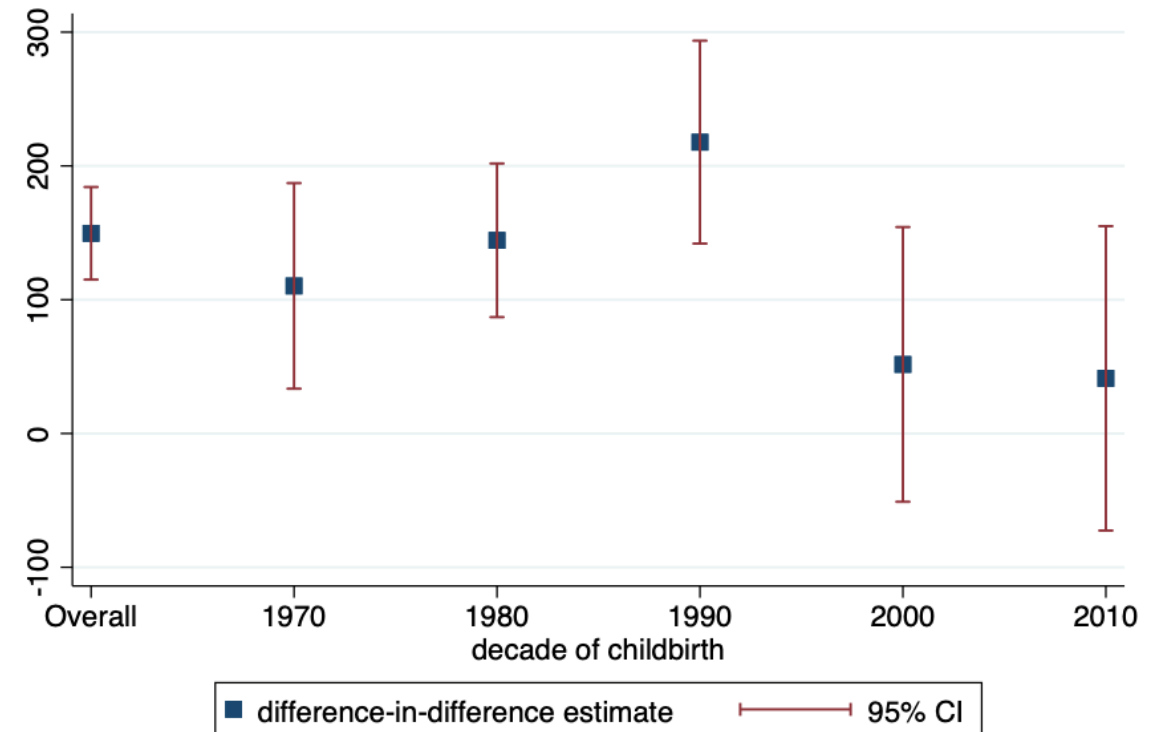
# Decades

(Black-White)  
Child Penalty in Participation  
(Extensive)



PSID, USA  
empdum

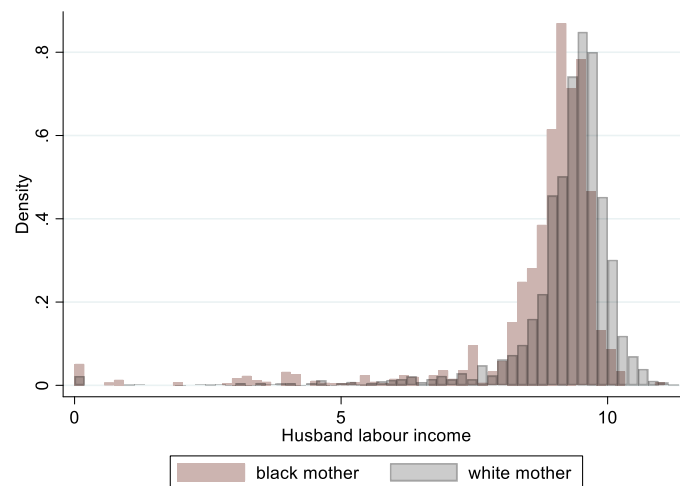
(Black - White)  
Child Penalty in Annual hours worked  
(Intensive)



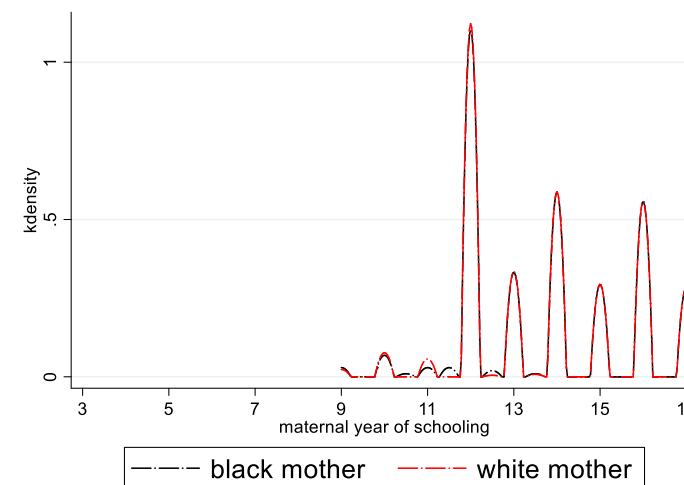
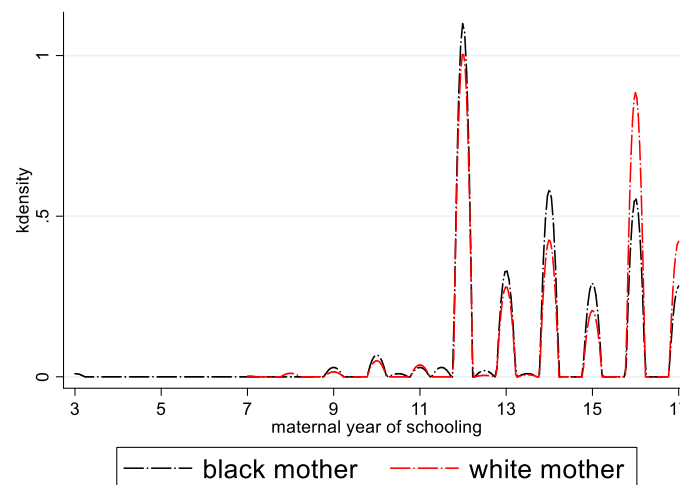
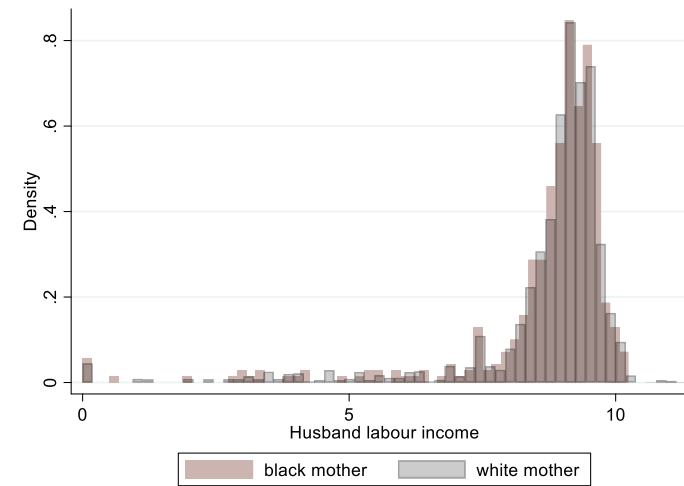
PSID, USA  
hr\_final

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

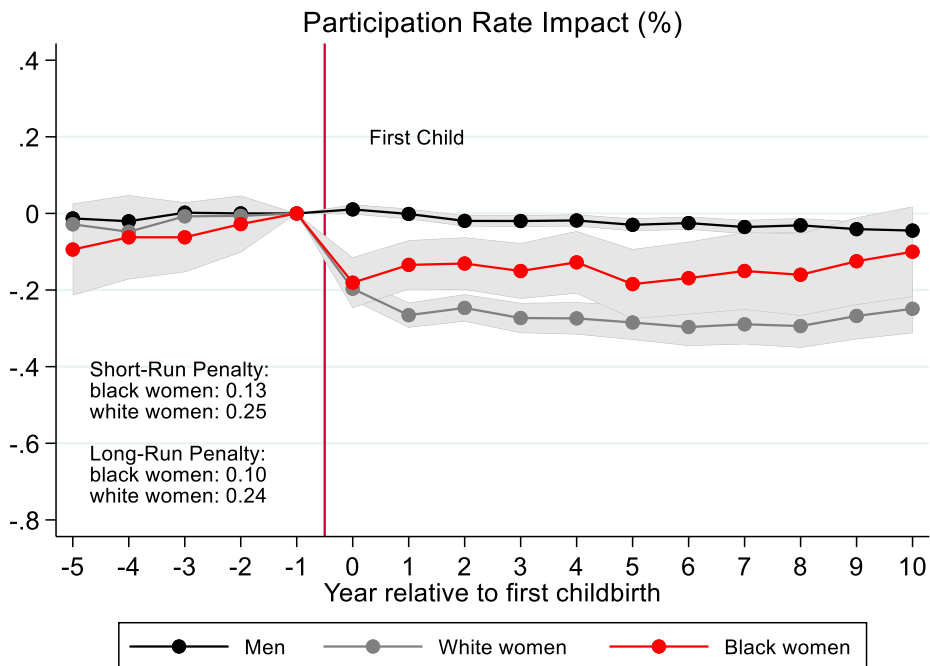
a. Without IPW



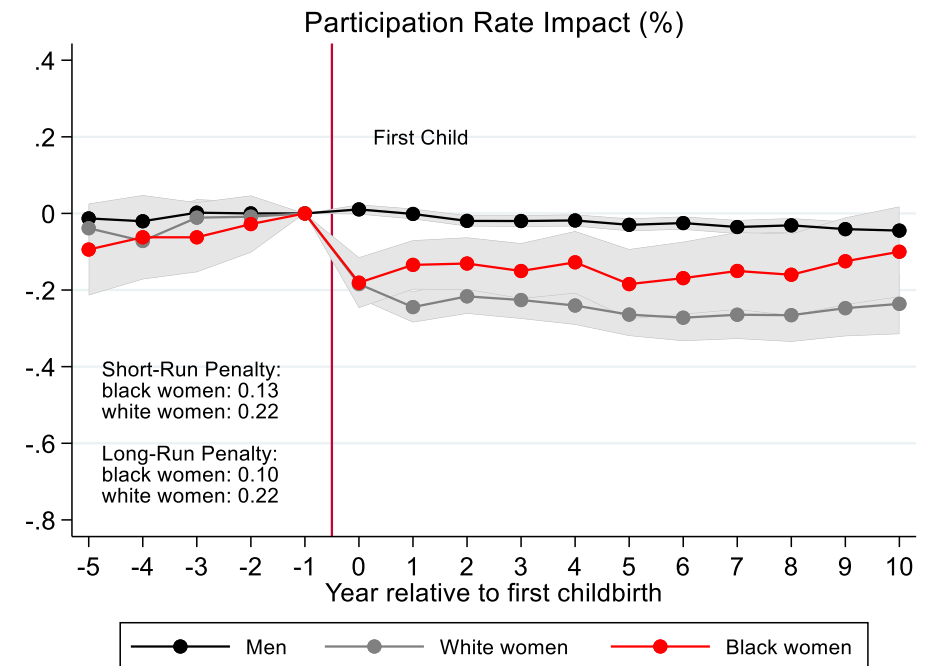
b. With IPW



# Racial gap with and without IPW



Notes: IPW sample but do not reweight to control for the racial gap in husband labour income a

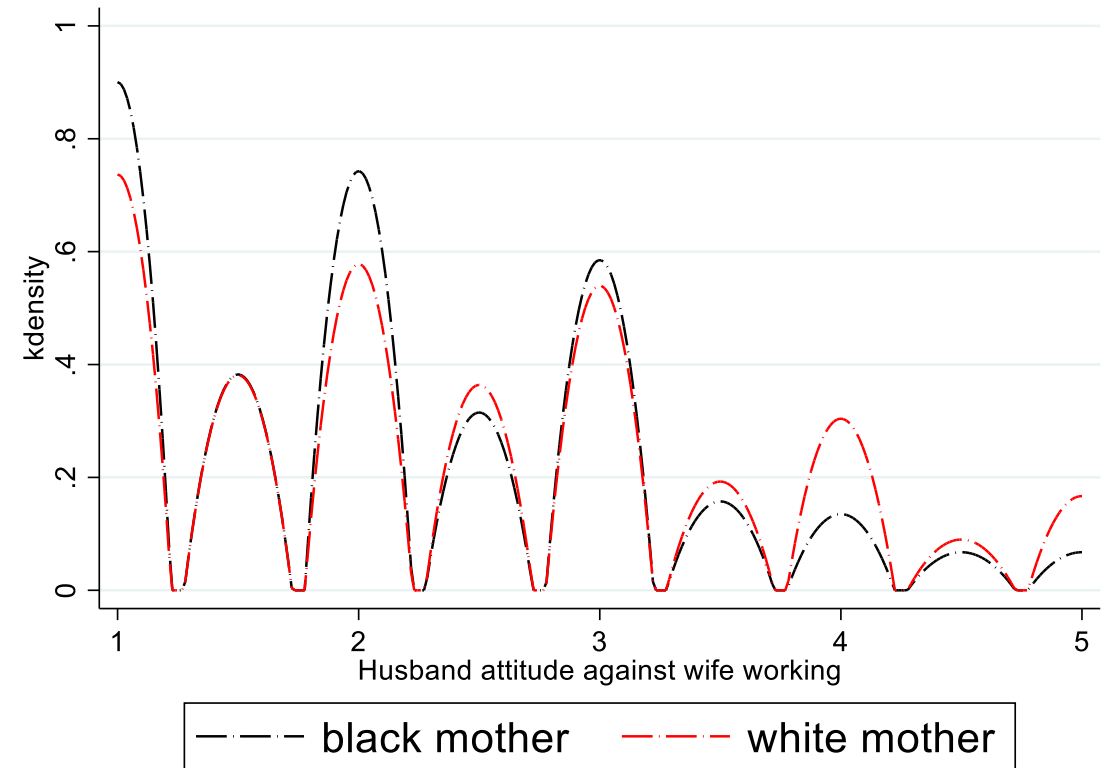
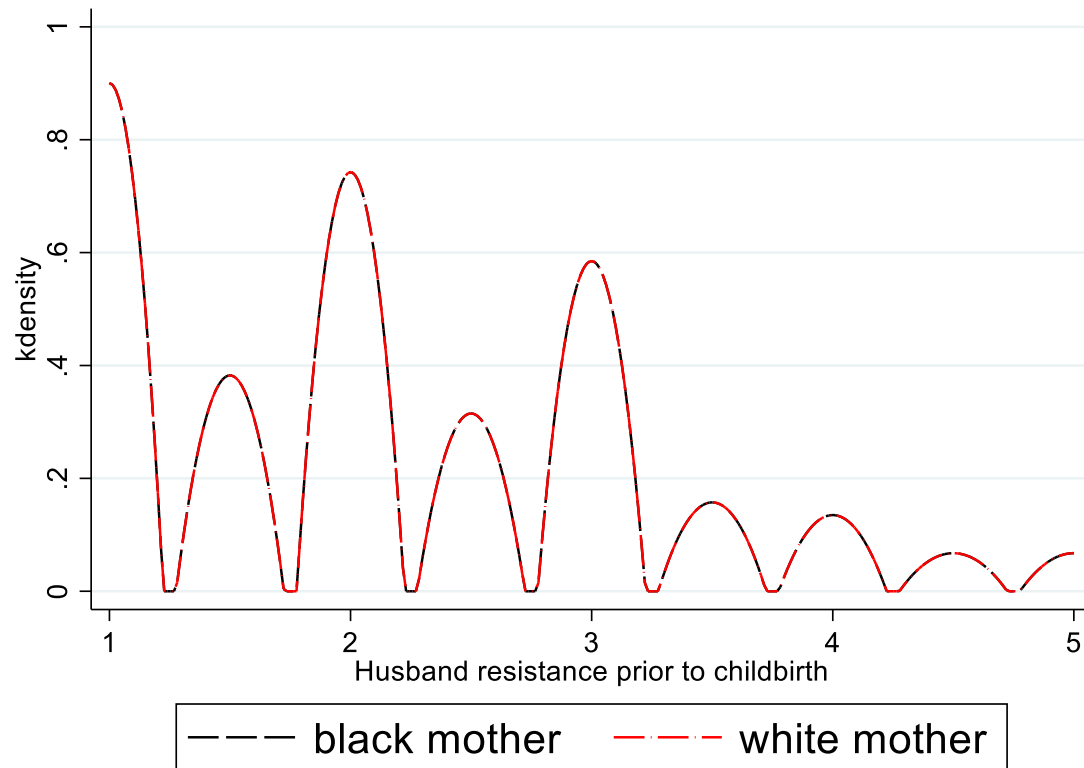


Notes: IPW control for the racial gap in husband labour income and employment

# Gender attitude

- 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".

# Gender attitude (before and after IPW)



**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	
<i>a. Short-run employment penalty</i>							
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>
<i>b. Long-run employment penalty</i>							
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>

**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	
<b><i>a. Short-run annual hours worked penalty</i></b>							
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>
<b><i>b. Long-run annual hours worked penalty</i></b>							
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.

# Conclusion

- This paper documents substantial racial differences in the child penalties in the US.
- Furthermore, the racial gap is driven by women with high wages in the South.
- Economic covariates have very limited contribution to the racial gap.
- Finally, the paper largely rules out **single parenthood, gender norms, homeownership, and family structure** as the main mechanisms for driving the gap, **leaving preference and discrimination as potential explanations.**

# Next step

- Geocoded PSID (Zip code address of households)
- Family support from people who do not exactly in the same household?  
(labour supply and living distance of grandparent and other family members.)
- County childcare price
- Structural modelling racial difference in marriage, fertility, and employment (shut down preference or job finding rate).