Childhood Environment and Gender Gaps in Adulthood

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The opinions expressed in this paper are those of the authors alone and do not necessarily reflect the views of the Internal Revenue Service or the U.S. Treasury Department. This work is a component of a larger project examining the effects of eliminating tax expenditures on the budget deficit and economic activity. Results reported here are contained in the SOI Working Paper "The Economic Impacts of Tax Expenditures: Evidence from Spatial Variation across the U.S.," approved under IRS contract TIRNO-12-P-00374.

Introduction

- Differences between men and women in earnings, employment, and other outcomes in adulthood have been widely documented
  [e.g., Darity and Mason 1998, Altonji and Blank 1999, Blau and Kahn 2000, Goldin, Katz, and Kuziemko 2006, Goldin 2014]
  - Explanations for these gender gaps focus on labor market factors: e.g., occupational choice, fertility patterns, wage discrimination
- Recent work has shown that effects of family background and environment on child development also vary by gender
  [e.g., Entwisle, Alexander, and Olson 2007, Bertrand and Pan 2011, DiPrete and Jennings 2012, Autor et al. 2015, Mitnik et al. (2015)]
- We connect these two literatures by examining the role of childhood environment on gender gaps in adulthood

Overview

- We document three facts using tax data for the 1980-82 birth cohorts

1. Boys who grow up in poor families are *less* likely to work than girls

2. Gender gaps vary substantially across areas where children grow up
    - Studying families who move reveals that this variation is primarily due to causal effects of childhood environment [Chetty and Hendren 2015]

3. Spatial variation in gender gaps is highly correlated with proxies for neighborhood disadvantage
    - Low-income boys who grow up in high-poverty, high-minority areas work less than girls

→ Gender gaps observed in adulthood have roots in childhood, perhaps because poverty during childhood is particularly harmful for boys

Outline

1. Data
2. National Statistics on Gender Gaps by Parental Income
3. Local Area Variation in Gender Gaps by Where Kids Grow Up
4. Mechanisms and Discussion

Data

- Data source: de-identified data from 1996-2012 population tax returns
  [Chetty, Hendren, Kline, Saez 2014; Chetty and Hendren 2015]

- Children linked to parents based on dependent claiming

- Focus on children in 1980-1982 birth cohorts, who are age 30 when we examine outcomes in adulthood

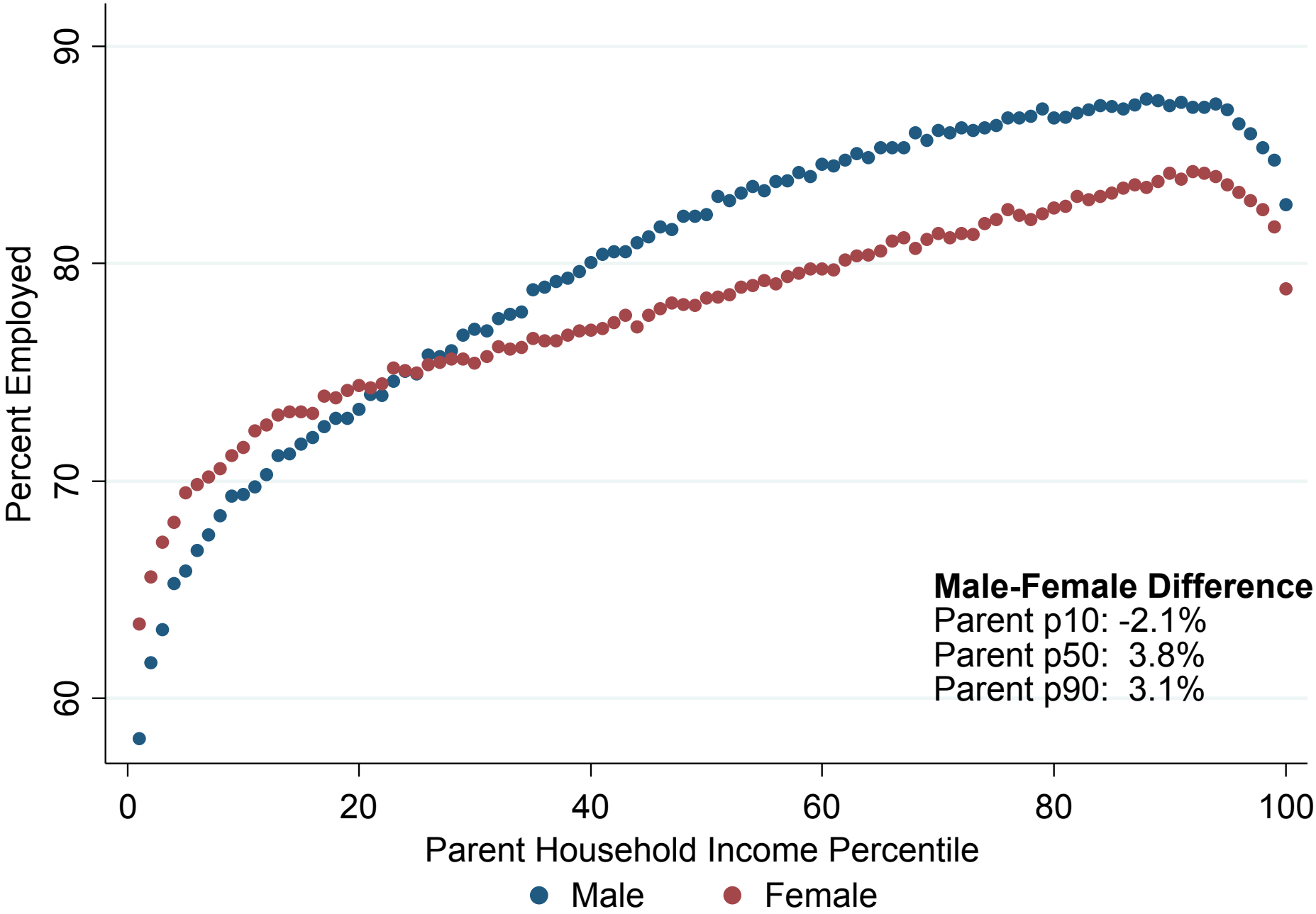
  - Approximately 10 million children

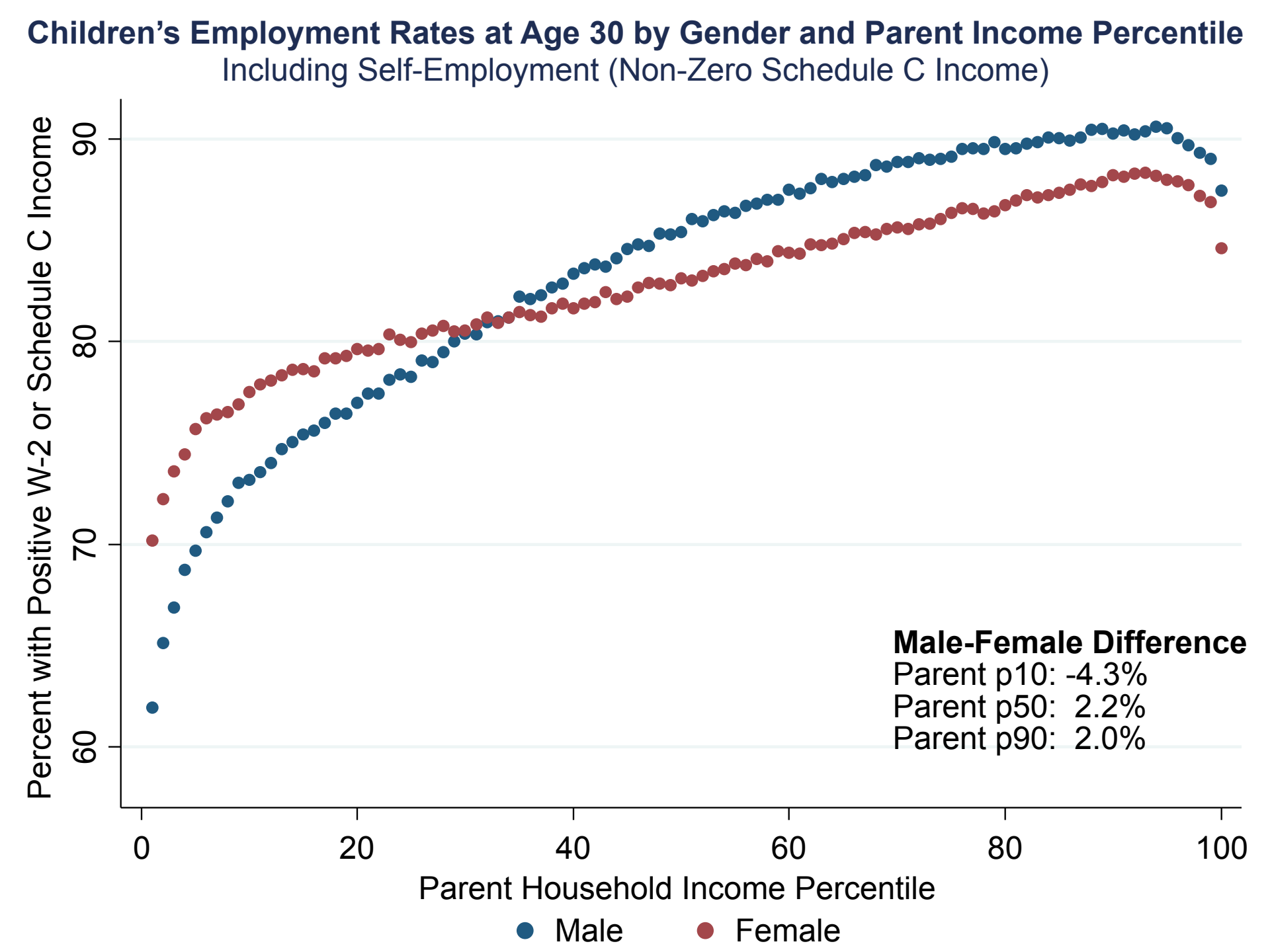
Variable Definitions

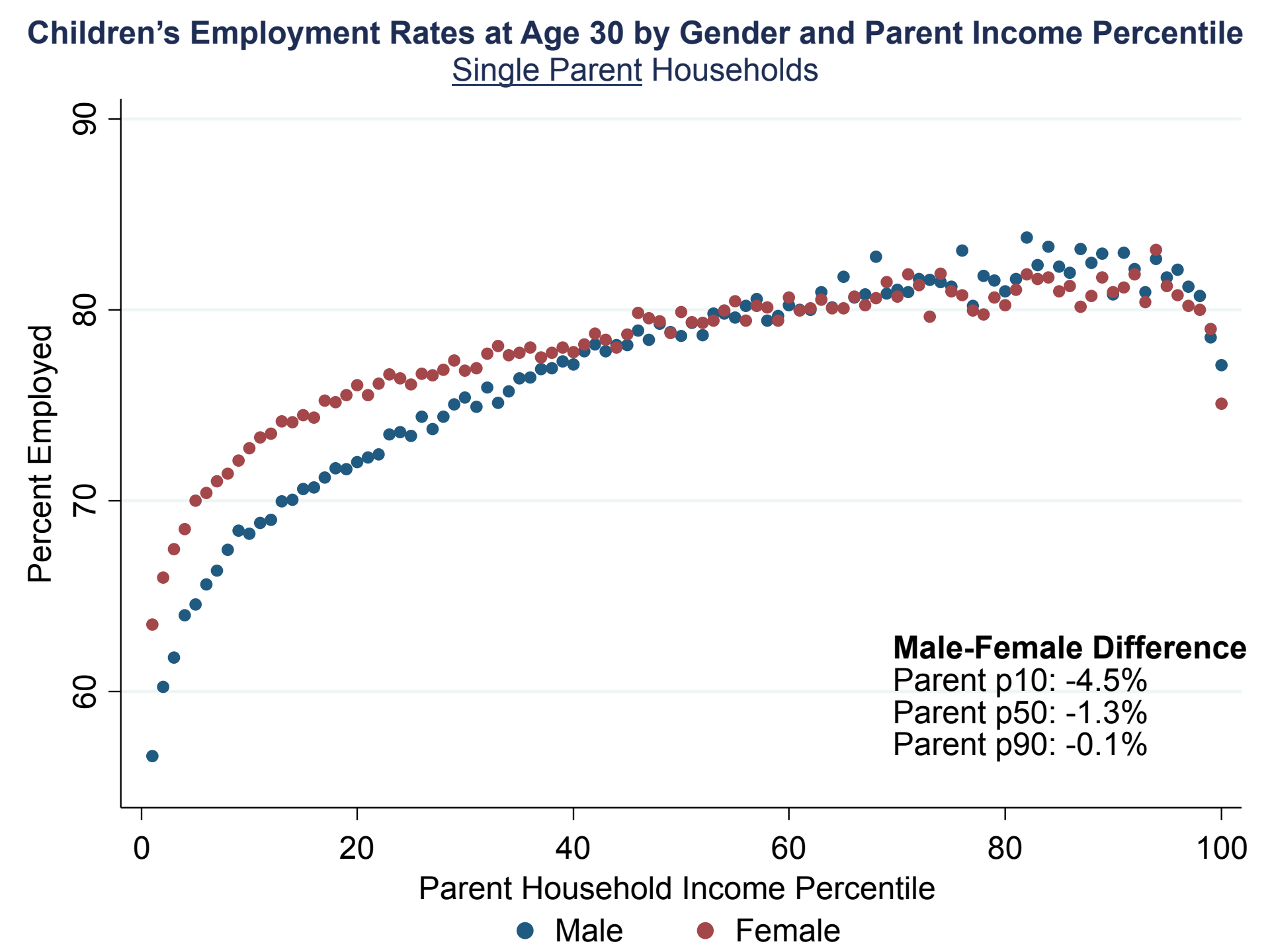
- Parent income: mean pre-tax household income between 1996-2000
  - For non-filers, use W-2 wage earnings + SSDI + UI income
- Children's outcomes:
  - Employment: presence of a W-2 form
  - Earnings: total wage earnings reported on W-2's
    - Robustness check: measure self-employment income using data from Schedule C (noting that SE income often misreported)

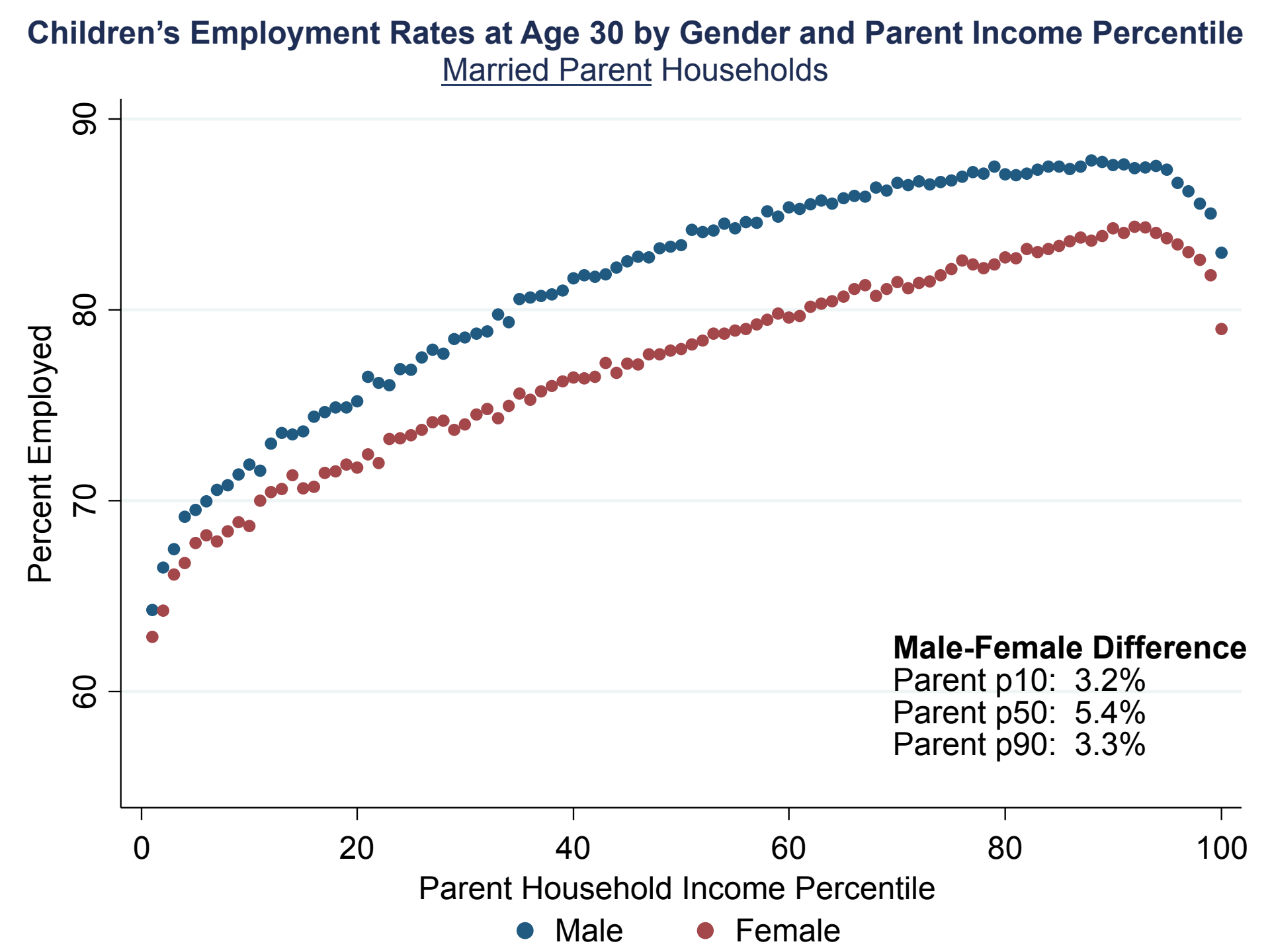
National Statistics on Gender Gaps by Parent Income

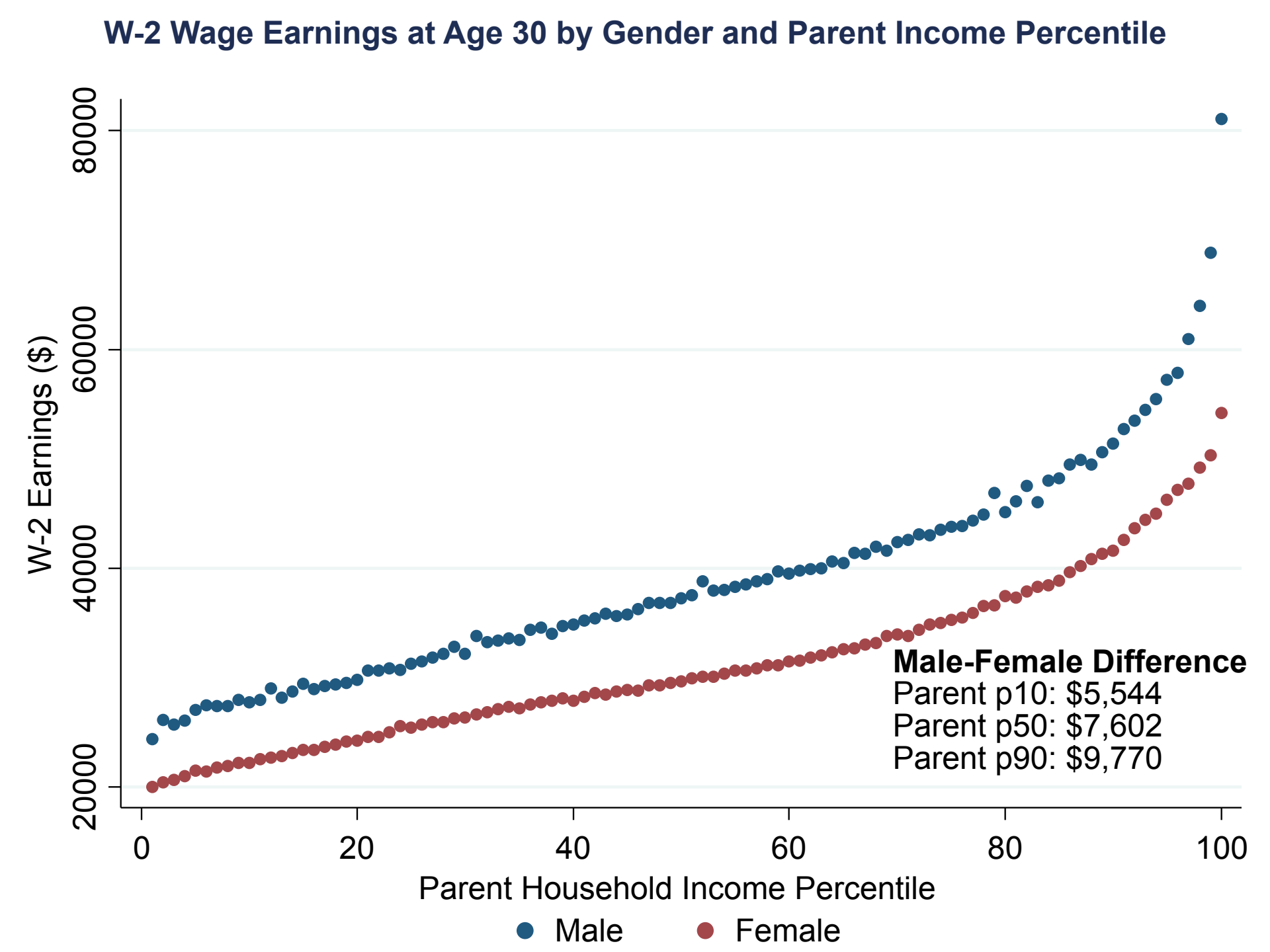
Children's Employment Rates at Age 30 by Gender and Parent Income Percentile




Children's Employment Rates at Age 30 by Gender and Parent Income Percentile
Including Self-Employment (Non-Zero Schedule C Income)
Percent with Positive W-2 or Schedule C Income
60
70
80
90
0
20
40
60
80
100
Parent Household Income Percentile
Male-Female Difference
Parent p10: -4.3%
Parent p50: 2.2%
Parent p90: 2.0%
Male
Female


Children's Employment Rates at Age 30 by Gender and Parent Income Percentile
Single Parent Households
Percent Employed
90
80
70
60
0
20
40
60
80
100
Parent Household Income Percentile
Male-Female Difference
Parent p10: -4.5%
Parent p50: -1.3%
Parent p90: -0.1%
Male
Female


Children's Employment Rates at Age 30 by Gender and Parent Income Percentile
Married Parent Households
Percent Employed
90
80
70
60
0
20
40
60
80
100
Parent Household Income Percentile
Male-Female Difference
Parent p10: 3.2%
Parent p50: 5.4%
Parent p90: 3.3%
Male
Female


W-2 Wage Earnings at Age 30 by Gender and Parent Income Percentile
W-2 Earnings ($)
20000
40000
60000
80000
0
20
40
60
80
100
Parent Household Income Percentile
Male
Female
Male-Female Difference
Parent p10: $5,544
Parent p50: $7,602
Parent p90: $9,770

Interpreting Gender Gaps by Parent Income

- Why is low parental income associated with particularly lower outcomes for boys relative to girls?
  - In particular, why do we see a “reversal” in employment rates
- One explanation: differential effects of childhood/family environment
  - Ex: poor boys substitute toward crime while girls do not
- Alternative explanation: other factors that are correlated with poverty and have differential effects by gender
  - Ex: Blacks more likely to grow up in poor families and black men are significantly more likely to be incarcerated than white men
  - Racial differences could be due to differences in childhood environment, but may also be due to factors such as discrimination in labor market

Interpreting Gender Gaps by Parent Income

- To isolate effects of childhood environment, analyze local area variation in gender gaps *based on where kids grew up*

- Motivation: substantial variation in children's outcomes across counties and commuting zones in the U.S.
  - Analysis of families who move reveals that this spatial variation primarily reflects causal effects of childhood environment [Chetty and Hendren 2015]
  - Childhood environment matters conditional on where kids live as adults

- Building on this approach, examine how gender gaps vary based on where children grow up

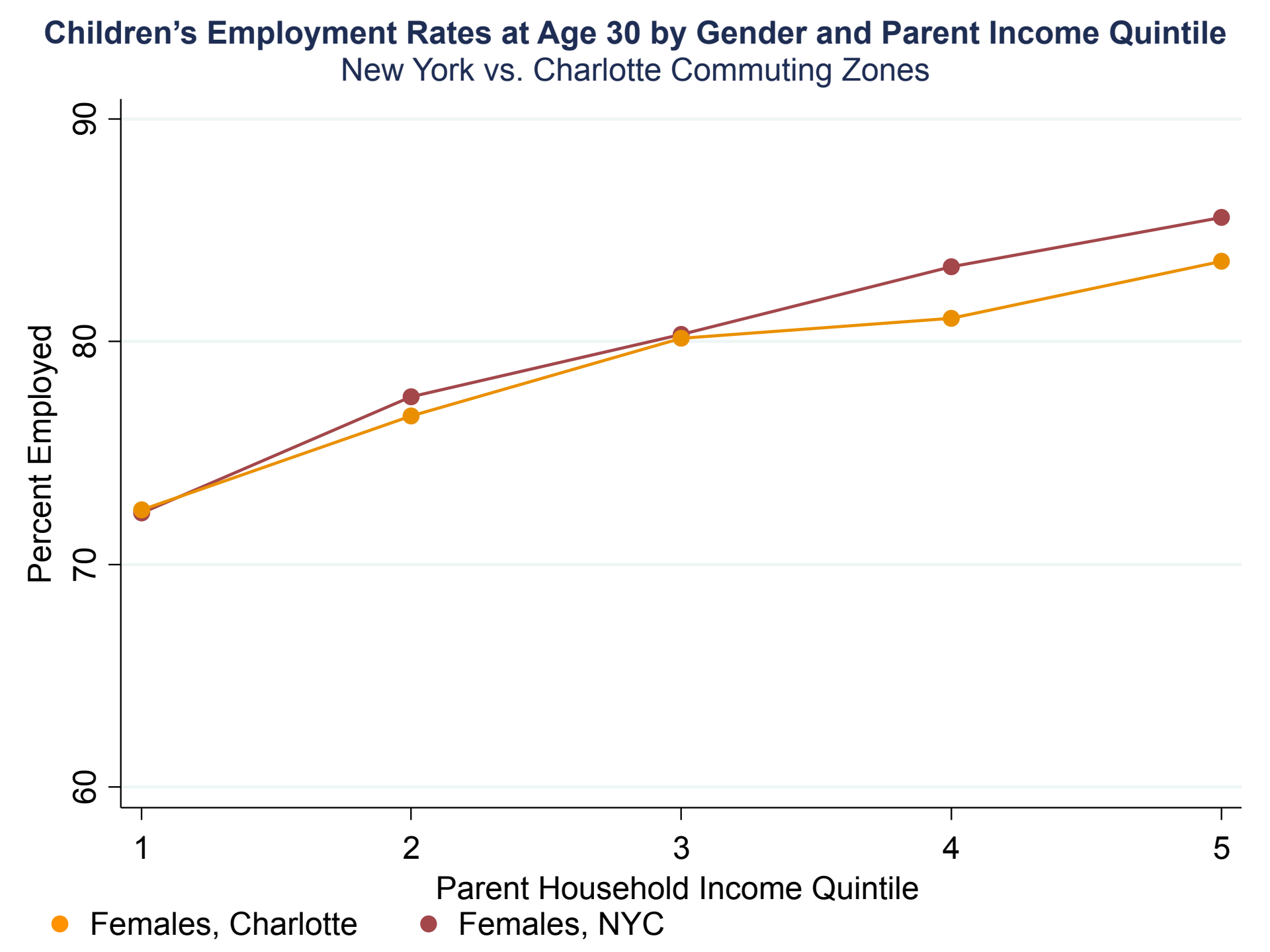
Local Area Variation in Gender Gaps by Where Kids Grow Up

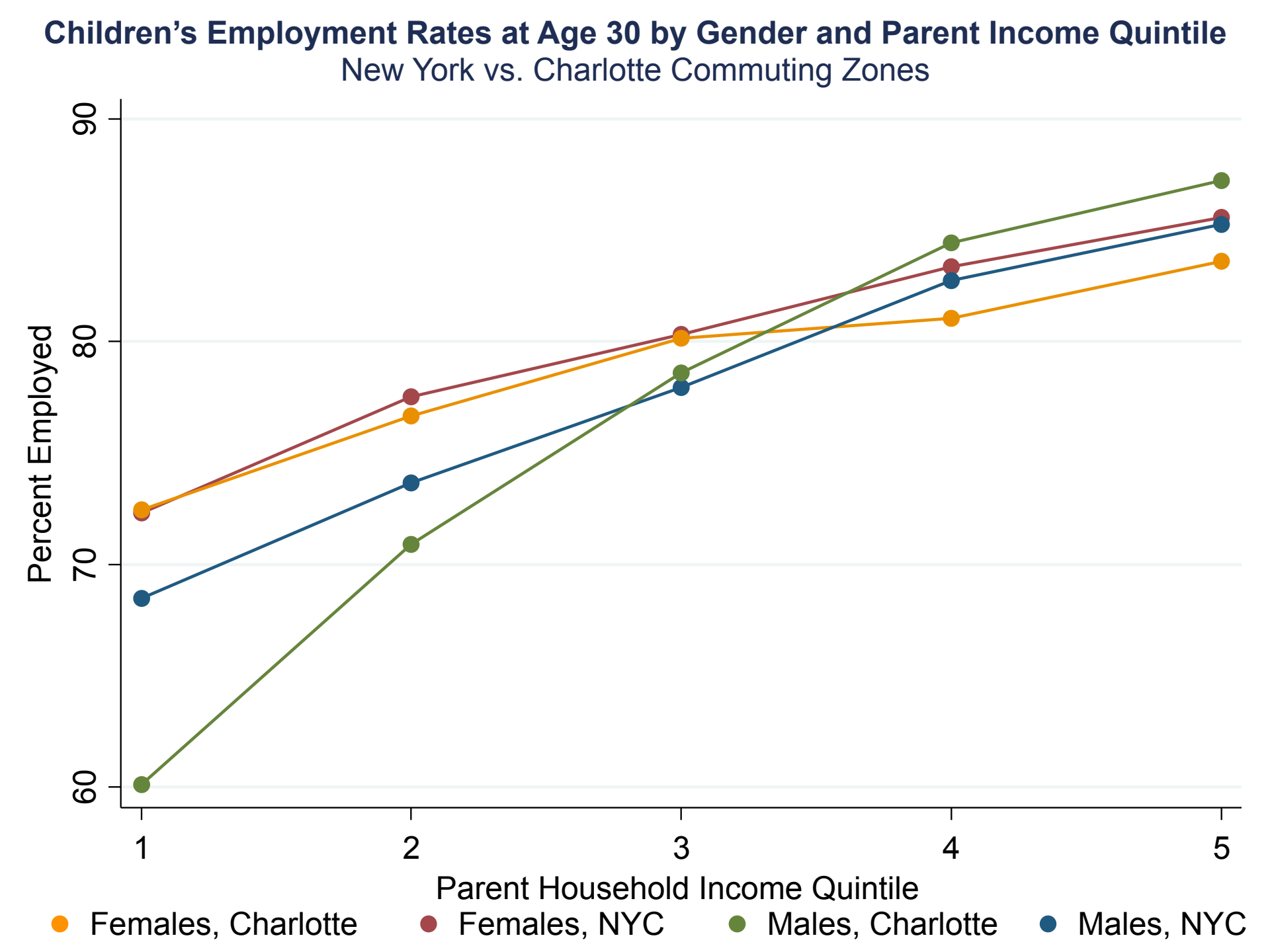
Local Area Variation

- Begin by estimating gender gap in employment rates for children by parent quintile in each commuting zone (labor market) and county

- Classify children into areas based on where they grew up
  - Where child was first claimed as a dependent by his/her parents

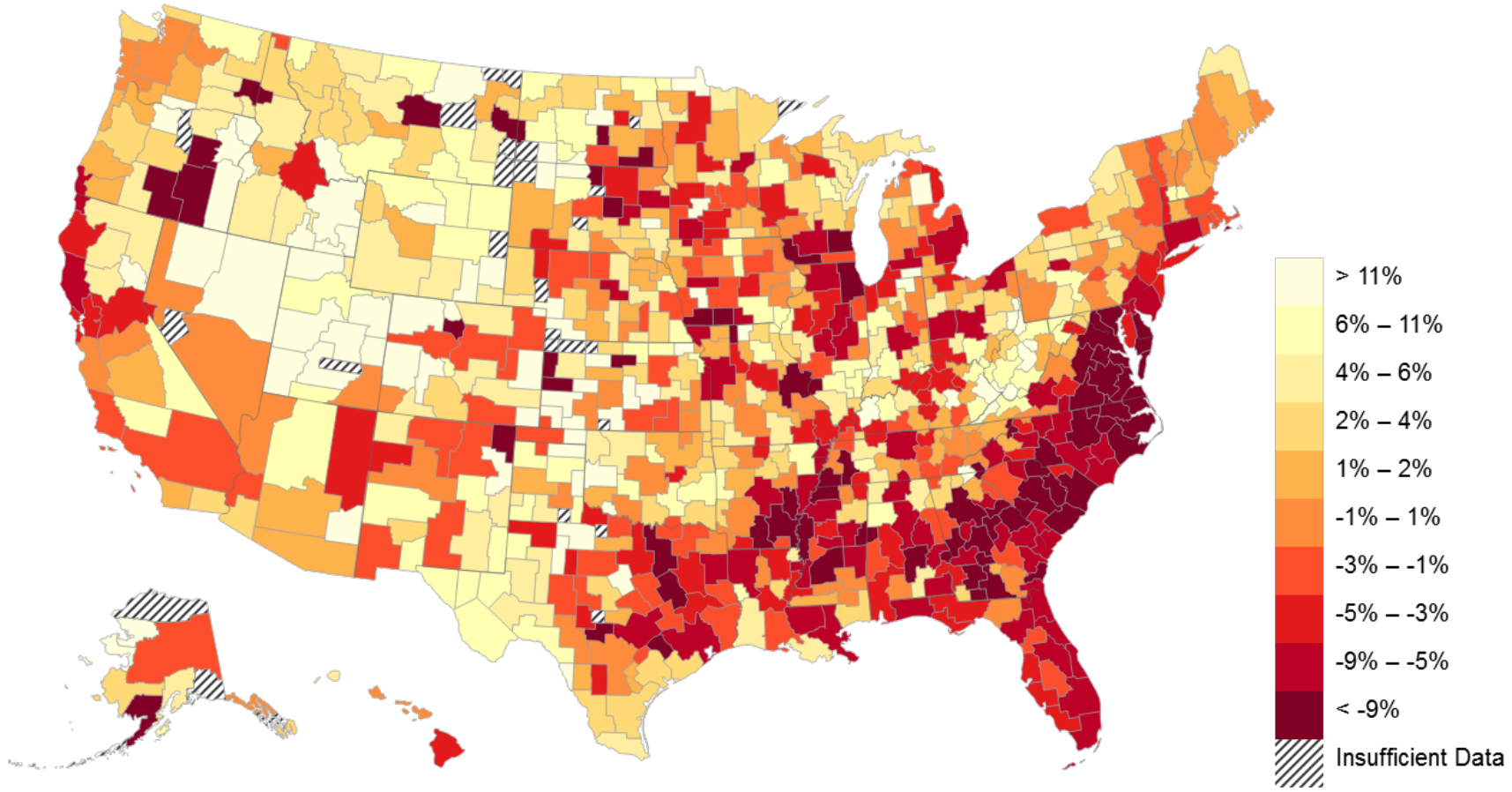
- First analyze “permanent residents” – children whose parents never move between 1996-2012 (later discuss movers)


Children's Employment Rates at Age 30 by Gender and Parent Income Quintile
New York vs. Charlotte Commuting Zones
Percent Employed
90
80
70
60
1
2
3
4
5
Parent Household Income Quintile
Females, Charlotte
Females, NYC


Children's Employment Rates at Age 30 by Gender and Parent Income Quintile
New York vs. Charlotte Commuting Zones
Percent Employed
60
70
80
90
1
2
3
4
5
Parent Household Income Quintile
Females, Charlotte
Females, NYC
Males, Charlotte
Males, NYC

Gender Gaps (M-F) in Employment Rates at Age 30 by Commuting Zone

For Children with Parents in Bottom Quintile of National Income Distribution



Note: Darker colors depict places where boys have lower employment rates than girls

Gender Gaps (M-F) in Employment in the Bottom Parent Income Quintile

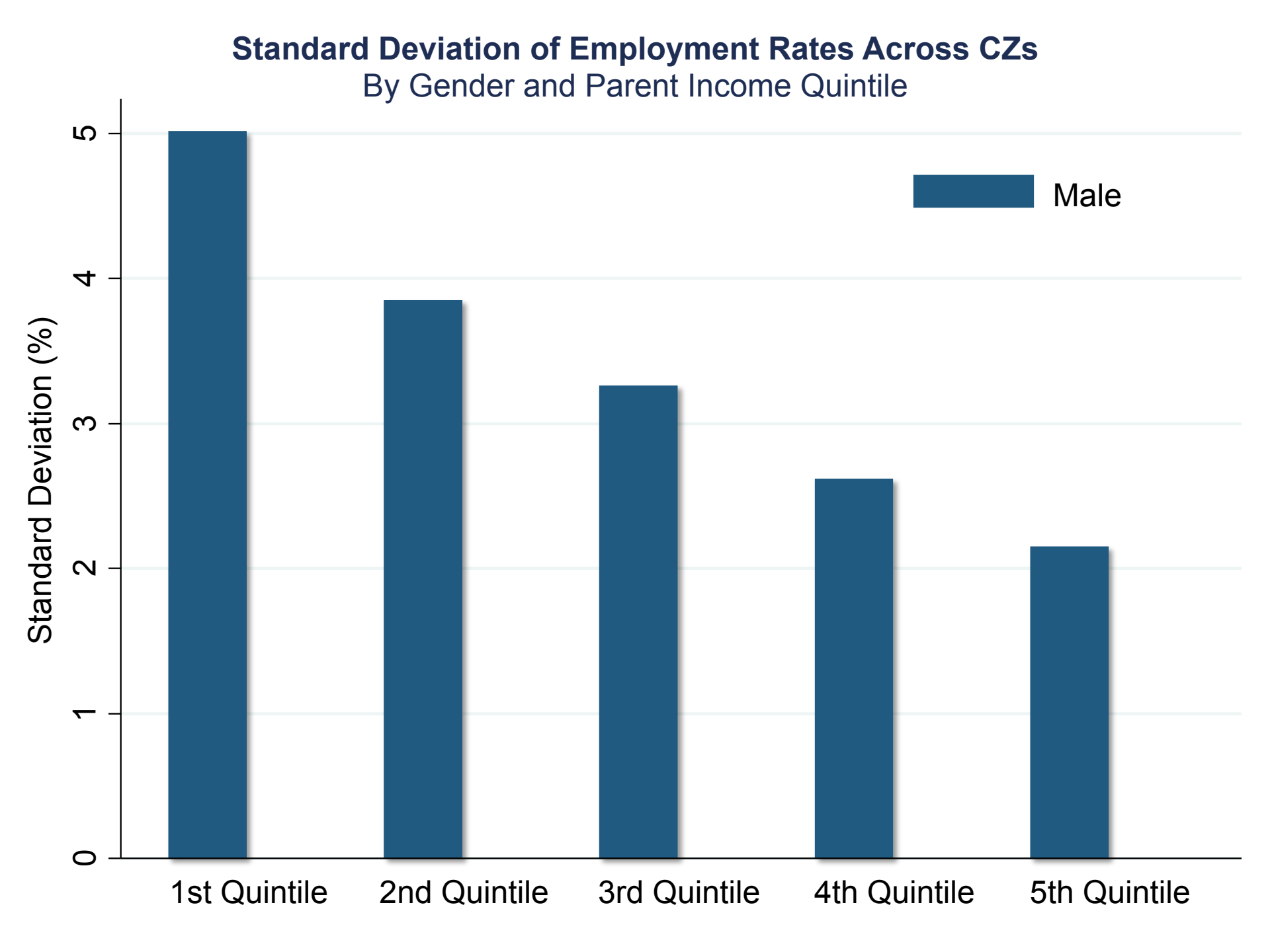
Top 10 and Bottom 10 CZs Among 100 Largest CZs

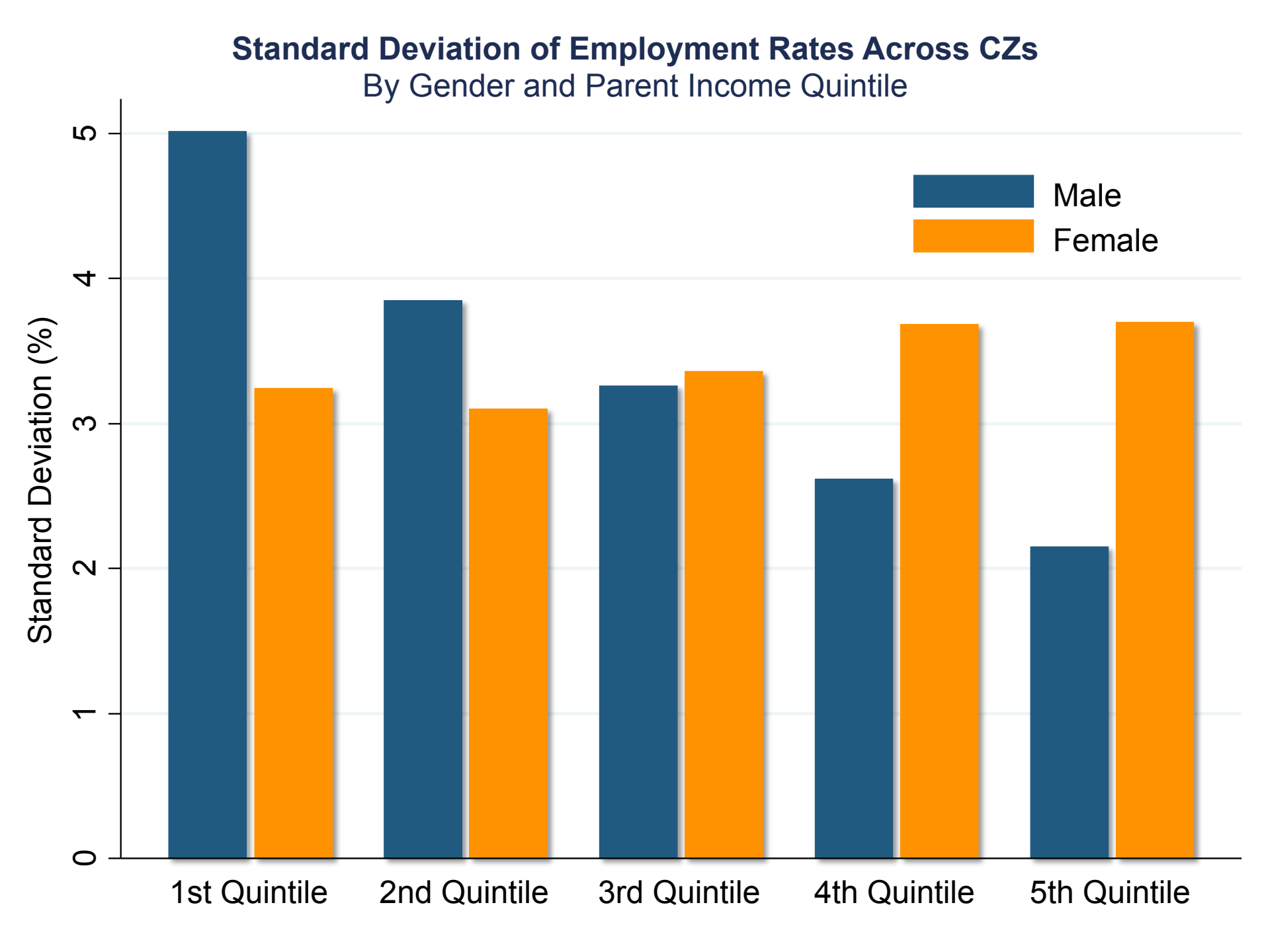
Top 10 CZs in Male-Female Diff.

Rank	CZ	Gap	Male	Female
1	Salt Lake City, UT	9.8	78.9	69.1
2	Bakersfield, CA	7.3	76.8	69.5
3	El Paso, TX	7.2	81.8	74.6
4	Brownsville, TX	5.8	82.6	76.8
5	Erie, PA	4.1	75.6	71.5
6	Eugene, OR	4.0	69.0	65.0
7	Canton, OH	3.7	69.0	65.3
8	Reading, PA	3.2	73.7	70.5
9	Spokane, WA	2.5	70.3	67.8
10	Syracuse, NY	2.4	74.2	71.8

Bottom 10 CZs in Male-Female Diff.

Rank	CZ	Gap	Male	Female
91	Milwaukee, WI	-9.2	65.0	74.2
92	Dallas, TX	-9.4	64.7	74.1
93	Washington DC	-9.7	66.6	76.3
94	St. Louis, MO	-11.0	65.0	76.0
95	Atlanta, GA	-11.1	59.3	70.4
96	Virginia Beach, VA	-11.6	65.0	76.6
97	Charlotte, NC	-12.4	60.1	72.5
98	Raleigh, NC	-13.6	59.9	73.5
99	Memphis, TN	-15.3	59.2	74.5
100	Richmond, VA	-16.0	62.3	78.3


Standard Deviation of Employment Rates Across CZs
By Gender and Parent Income Quintile
Male
Standard Deviation (%)
0
1
2
3
4
5
1st Quintile
2nd Quintile
3rd Quintile
4th Quintile
5th Quintile


Standard Deviation of Employment Rates Across CZs
By Gender and Parent Income Quintile
Male
Female
Standard Deviation (%)
0
1
2
3
4
5
1st Quintile
2nd Quintile
3rd Quintile
4th Quintile
5th Quintile

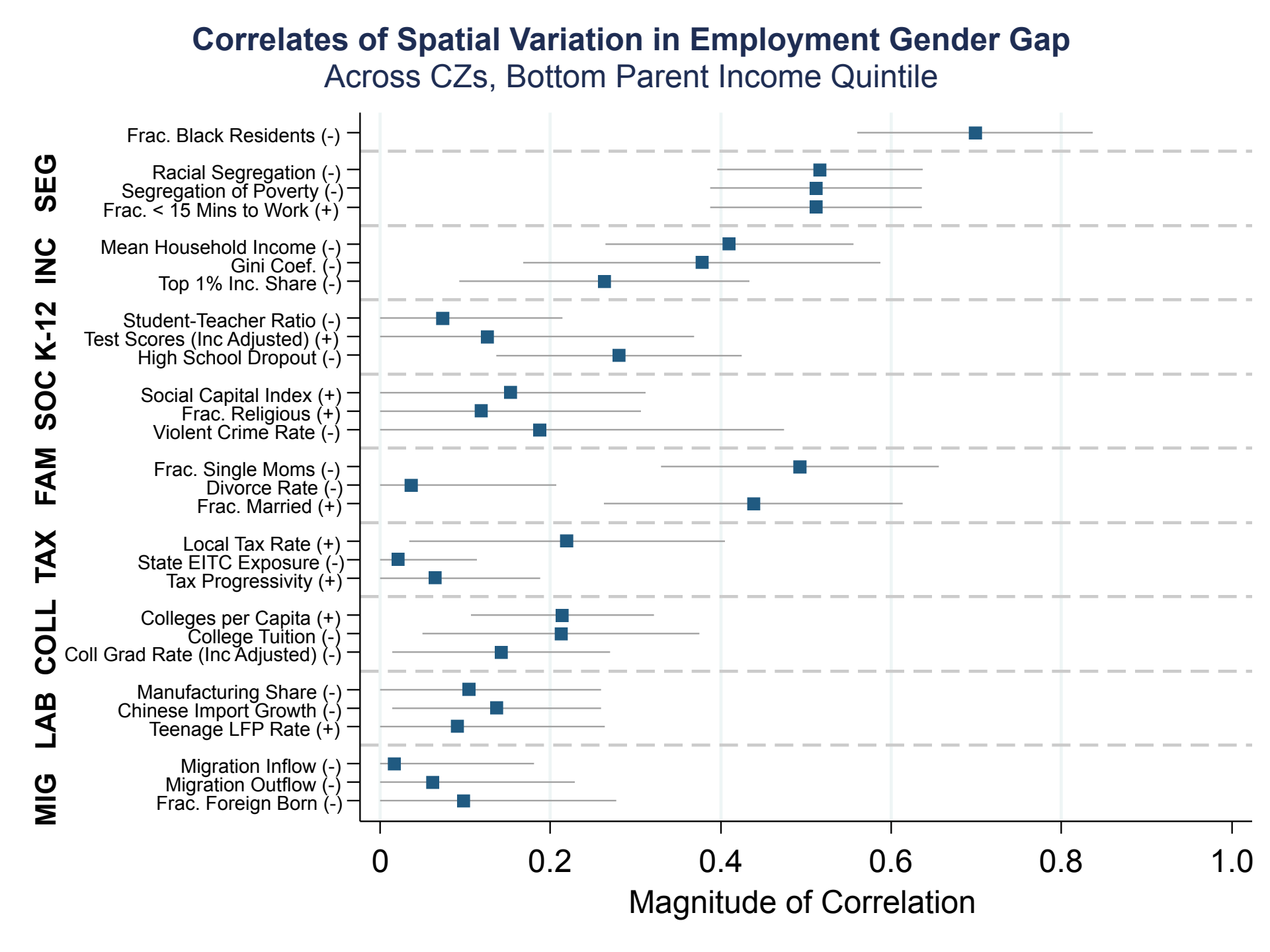
Causal Effects of Place on Gender Gap

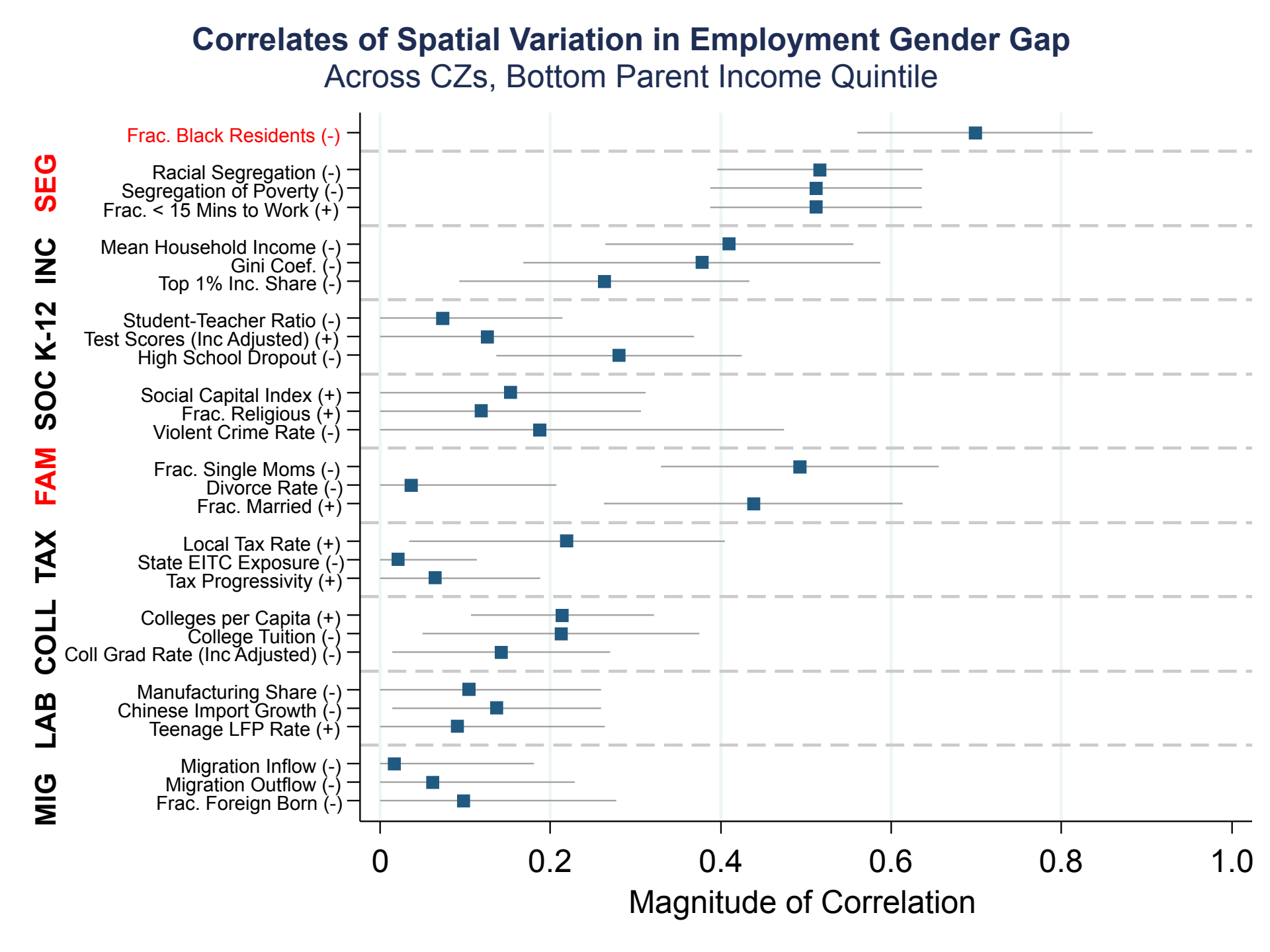
- Key lesson: where a child grows up matters most for poor boys
- Importantly, most of the variance across areas is driven by causal effects of place (rather than sorting)
- Chetty and Hendren (2015) identify causal effects of spending one more year growing up in each area by studying families who move
  - Find *gender-specific* convergence in children's outcomes
  - When a family with a daughter and son moves to a place where boys do well, son does better in proportion to exposure time but daughter does not
- Variation based on where children grow up implies that gender gaps in adulthood are shaped partly by childhood environment

Predictors of Spatial Variation in Gender Gaps

- Natural next question: what are the characteristics of areas for which exposure during childhood produces lower employment rates for low income boys relative to girls in adulthood?

- Correlate gender gap in employment rates for children with low-income parents with various CZ-level characteristics


Correlates of Spatial Variation in Employment Gender Gap
Across CZs, Bottom Parent Income Quintile
SEG
INC
K-12
SOC
FAM
TAX
COLL
LAB
MIG
Frac. Black Residents (-)
Racial Segregation (-)
Segregation of Poverty (-)
Frac. < 15 Mins to Work (+)
Mean Household Income (-)
Gini Coef. (-)
Top 1% Inc. Share (-)
Student-Teacher Ratio (-)
Test Scores (Inc Adjusted) (+)
High School Dropout (-)
Social Capital Index (+)
Frac. Religious (+)
Violent Crime Rate (-)
Frac. Single Moms (-)
Divorce Rate (-)
Frac. Married (+)
Local Tax Rate (+)
State EITC Exposure (-)
Tax Progressivity (+)
Colleges per Capita (+)
College Tuition (-)
Coll Grad Rate (Inc Adjusted) (-)
Manufacturing Share (-)
Chinese Import Growth (-)
Teenage LFP Rate (+)
Migration Inflow (-)
Migration Outflow (-)
Frac. Foreign Born (-)
0
0.2
0.4
0.6
0.8
1.0
Magnitude of Correlation


Correlates of Spatial Variation in Employment Gender Gap
Across CZs, Bottom Parent Income Quintile
SEG
INC
K-12
SOC
FAM
TAX
COLL
LAB
MIG
Frac. Black Residents (-)
Racial Segregation (-)
Segregation of Poverty (-)
Frac. < 15 Mins to Work (+)
Mean Household Income (-)
Gini Coef. (-)
Top 1% Inc. Share (-)
Student-Teacher Ratio (-)
Test Scores (Inc Adjusted) (+)
High School Dropout (-)
Social Capital Index (+)
Frac. Religious (+)
Violent Crime Rate (-)
Frac. Single Moms (-)
Divorce Rate (-)
Frac. Married (+)
Local Tax Rate (+)
State EITC Exposure (-)
Tax Progressivity (+)
Colleges per Capita (+)
College Tuition (-)
Coll Grad Rate (Inc Adjusted) (-)
Manufacturing Share (-)
Chinese Import Growth (-)
Teenage LFP Rate (+)
Migration Inflow (-)
Migration Outflow (-)
Frac. Foreign Born (-)
0
0.2
0.4
0.6
0.8
1.0
Magnitude of Correlation

Regression Estimates of Gender Gaps in Employment with Key Correlates

For Children with Parents in the Bottom Quintile of National Income Distribution

	Male-Female Employment Gap	
	(1)	(2)
Segregation of Poverty	-1.620	-1.948
	(0.323)	(0.197)
% Black	-3.552	-3.335
	(0.536)	(0.563)
% Single Mothers	0.404	0.526
	(0.666)	(0.413)
State FE		X

Notes: *Standard errors clustered by state.*
*Significance levels: * p<0.05, ** p<0.01, *** p<0.001*

Mechanisms

- Why do areas with concentrated poverty produce lower employment rates for poor boys relative to girls?

- One potential mechanism: growing up in poverty induces low-ability boys to select out of formal labor force

  - Growing up in poverty reduces perceived return of formal work relative to crime/other activities → more men drop out of labor force

  - Consistent with this explanation, more segregated areas have higher rates of crime (correlation = 0.27 across CZs)

Conclusion

- Gender gap in employment is now reversed for children who grow up in low-income families in the U.S.
  - Men who grow up in poor families work *less* than women
- Gender gaps vary substantially across areas, with lower employment rates for boys in high-poverty, high-minority neighborhoods
- Findings suggest that childhood disadvantage may have particularly detrimental long-term effects on boys
- More broadly, understanding of gender gaps in adulthood can be enriched by starting analysis from childhood
  - Can increasing segregation and inequality in America explain recent declines in male labor force participation rates?

Download County-Level Data on Social Mobility in the U.S.

www.equality-of-opportunity.org/data

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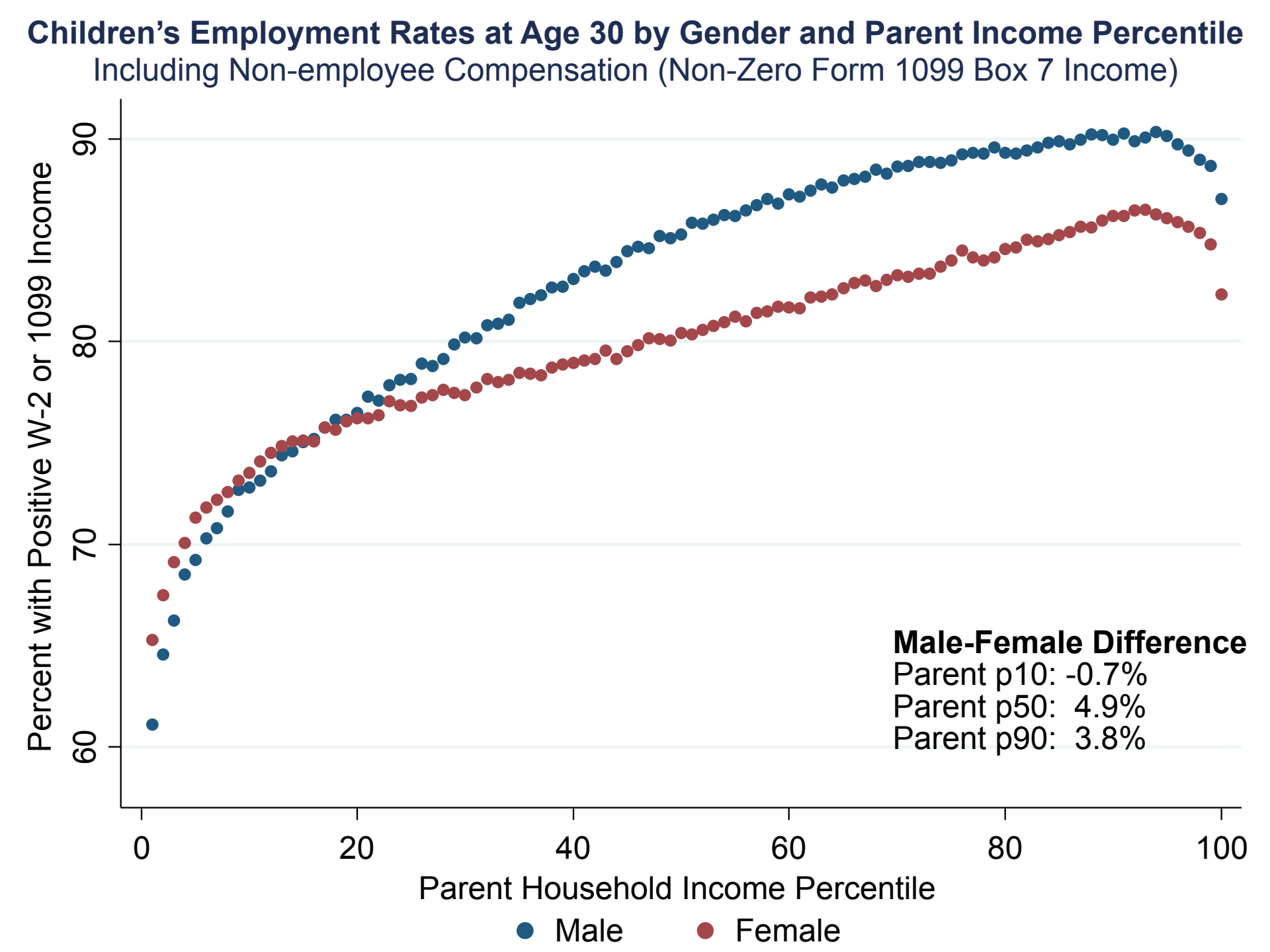
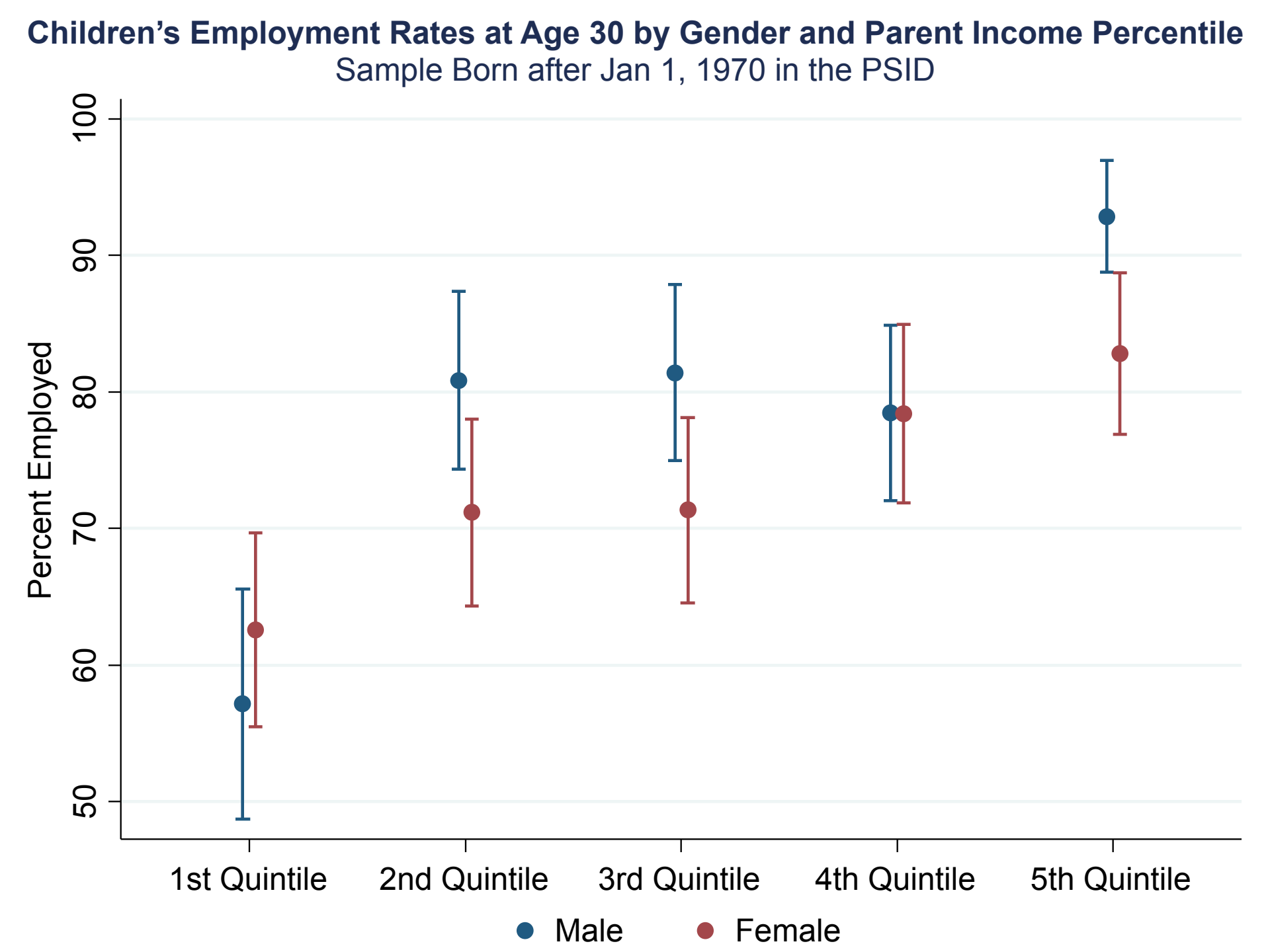
Downloadable Data

Data from Chetty and Hendren (2015): Causal Effects, Mobility Estimates and Covariates by County, CZ and Birth Cohort

Data Description			
Online Data Table 1: Preferred Estimates of Causal Place Effects by Commuting Zone	Stata file	Excel file	ReadMe
Online Data Table 2: Preferred Estimates of Causal Place Effects by County	Stata file	Excel file	ReadMe
Online Data Table 3: Complete CZ-Level Dataset: Causal Effects and Covariates	Stata file	Excel file	ReadMe
Online Data Table 4: Complete County-Level Dataset: Causal Effects and Covariates	Stata file	Excel file	ReadMe
Online Data Table 5: Pairwise Place Effects by Origin-Destination Pairs of Commuting Zones	Stata file	Excel file	ReadMe
Online Data Table 6: Parent Income Distribution by Child's Birth Cohort	Stata file	Excel file	ReadMe

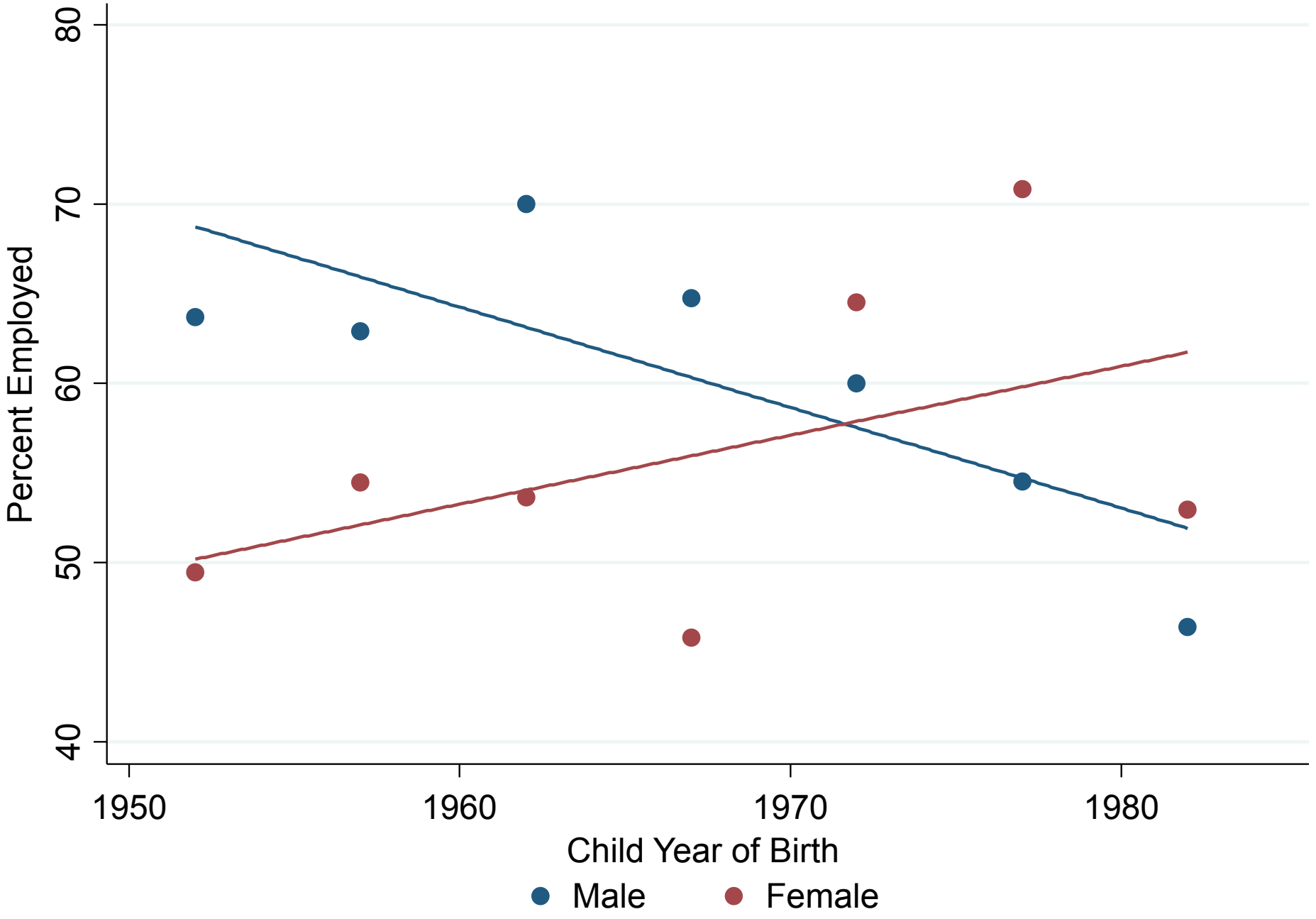
Appendix

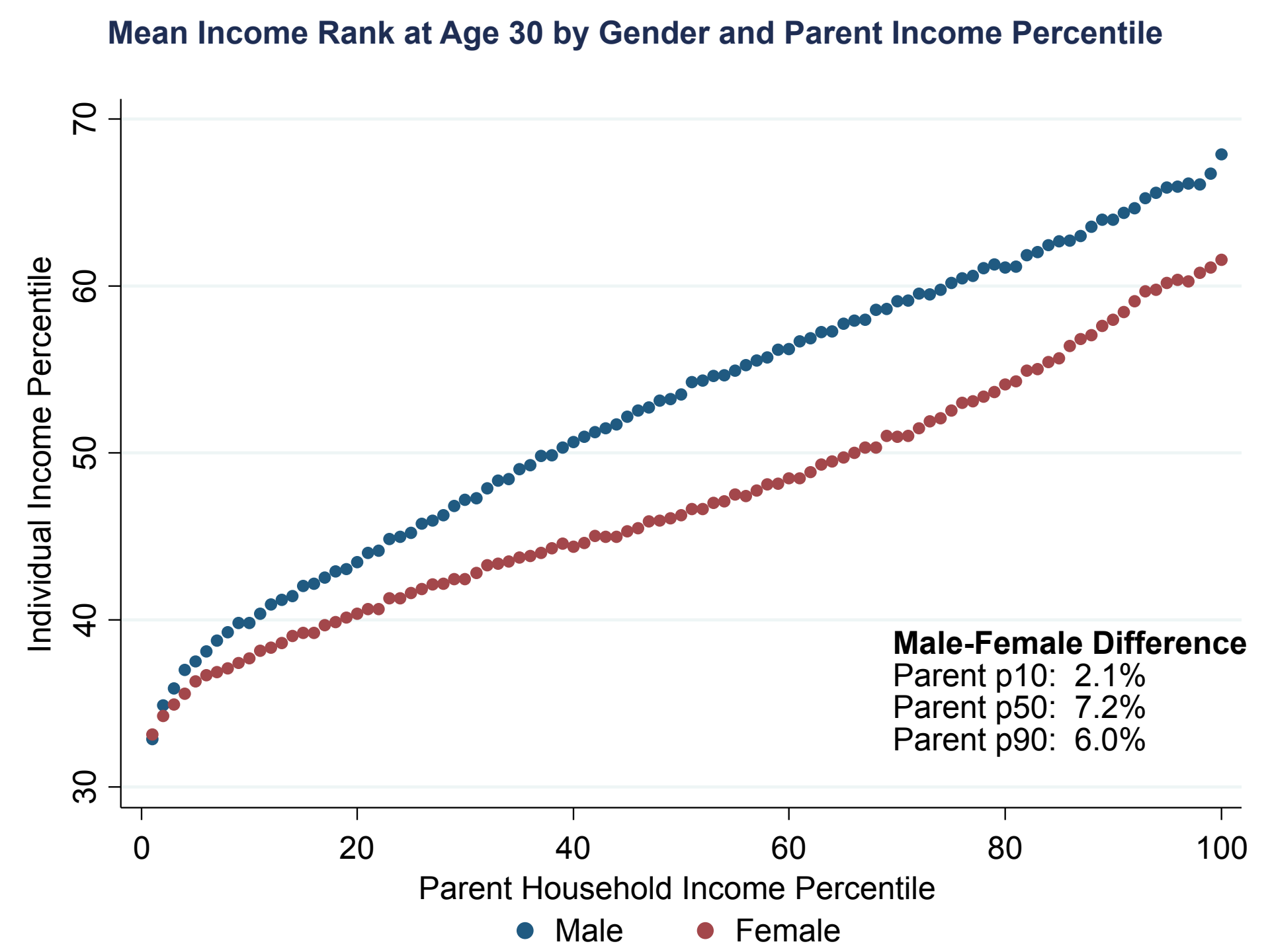

Children's Employment Rates at Age 30 by Gender and Parent Income Percentile
Including Non-employee Compensation (Non-Zero Form 1099 Box 7 Income)
Percent with Positive W-2 or 1099 Income
60
70
80
90
0
20
40
60
80
100
Parent Household Income Percentile
Male
Female
Male-Female Difference
Parent p10: -0.7%
Parent p50: 4.9%
Parent p90: 3.8%

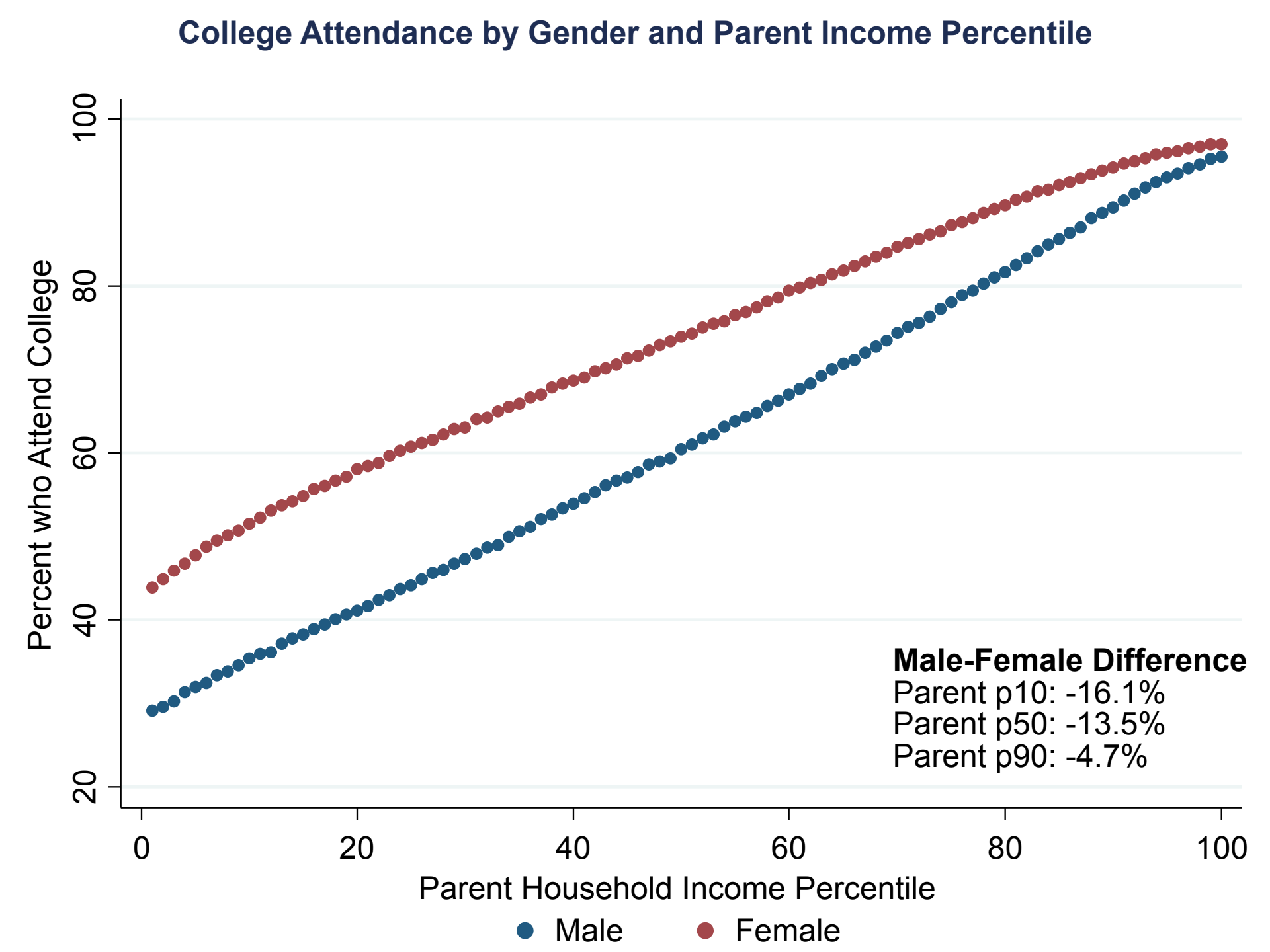

Children's Employment Rates at Age 30 by Gender and Parent Income Percentile
Sample Born after Jan 1, 1970 in the PSID
Percent Employed
100
90
80
70
60
50
1st Quintile
2nd Quintile
3rd Quintile
4th Quintile
5th Quintile
Male
Female

Children's Employment Rates at Age 30 by Gender and Parent Income Percentile

Trends for Children with Parents in the Bottom Income Quintile in the PSID, 1950-1984

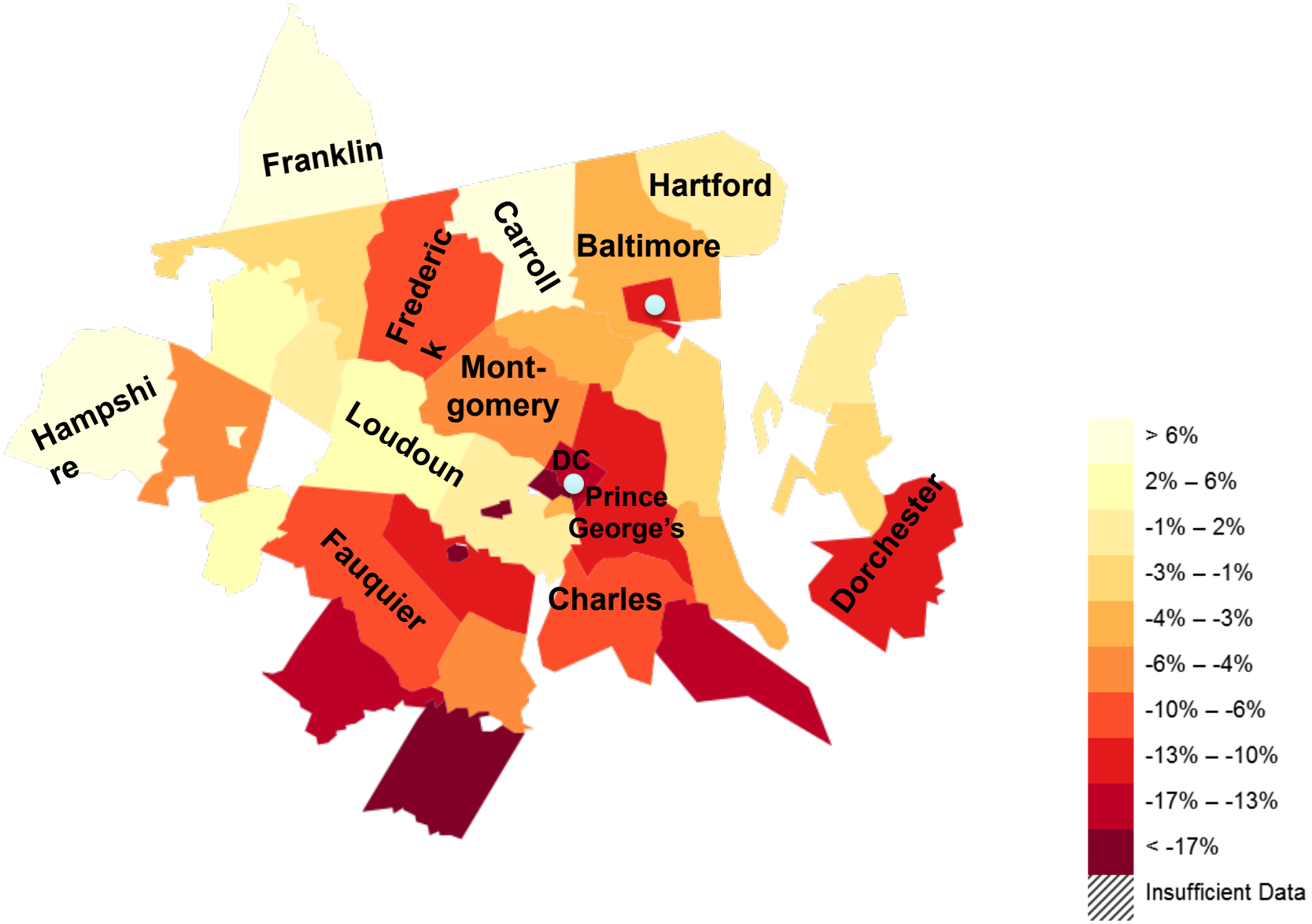



Mean Income Rank at Age 30 by Gender and Parent Income Percentile
Individual Income Percentile
30
40
50
60
70
0
20
40
60
80
100
Parent Household Income Percentile
Male-Female Difference
Parent p10: 2.1%
Parent p50: 7.2%
Parent p90: 6.0%
Male
Female


College Attendance by Gender and Parent Income Percentile
Percent who Attend College
20
40
60
80
100
0
20
40
60
80
100
Parent Household Income Percentile
Male
Female
Male-Female Difference
Parent p10: -16.1%
Parent p50: -13.5%
Parent p90: -4.7%

Gender Gap in Employment Rates: DC-Baltimore Combined Statistical Area

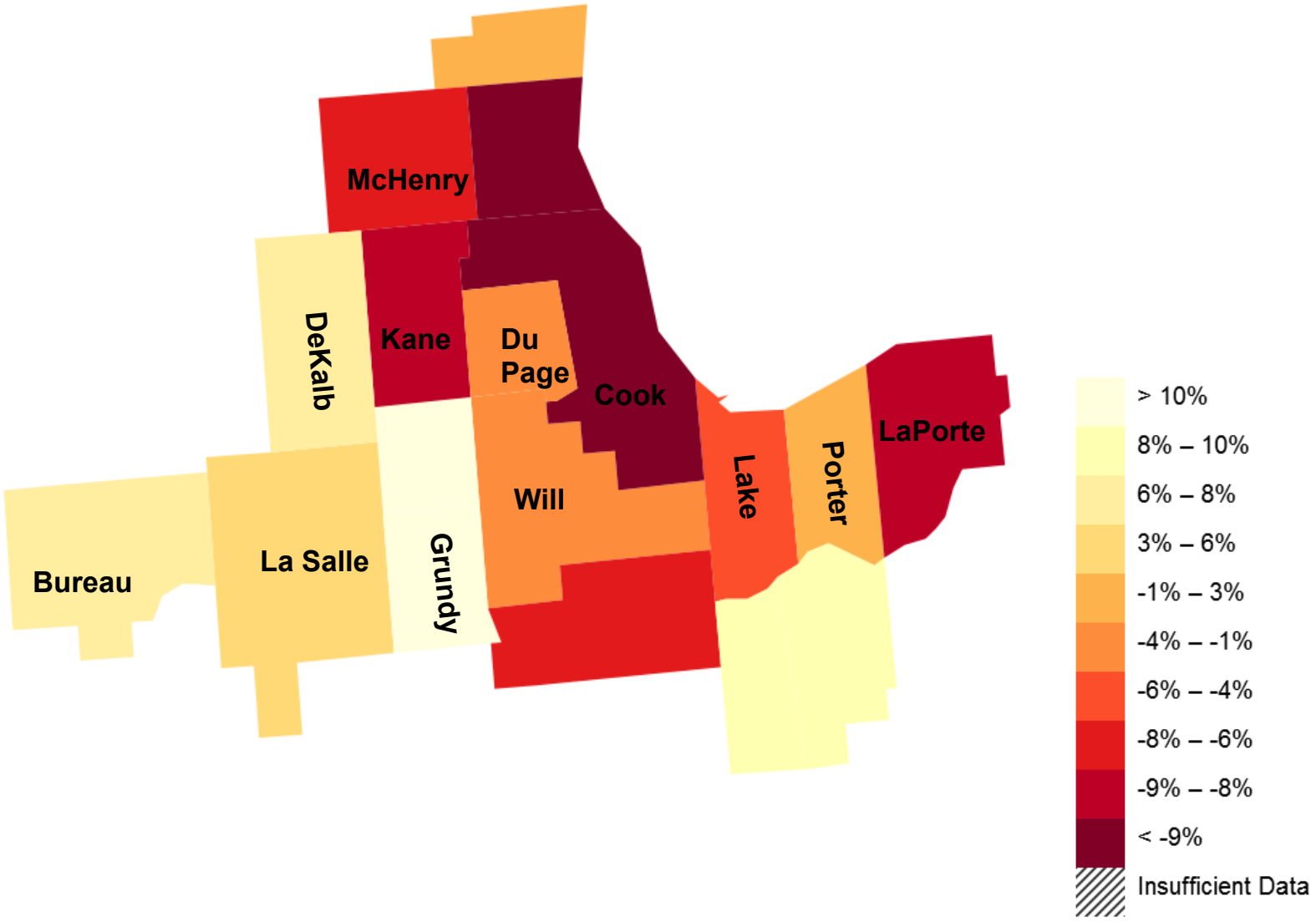
Children with Parents in Bottom Quintile of National Income Distribution



Note: Darker colors depict places where boys have lower employment rates than girls

Gender Gap in Employment Rates: Chicago Combined Statistical Area

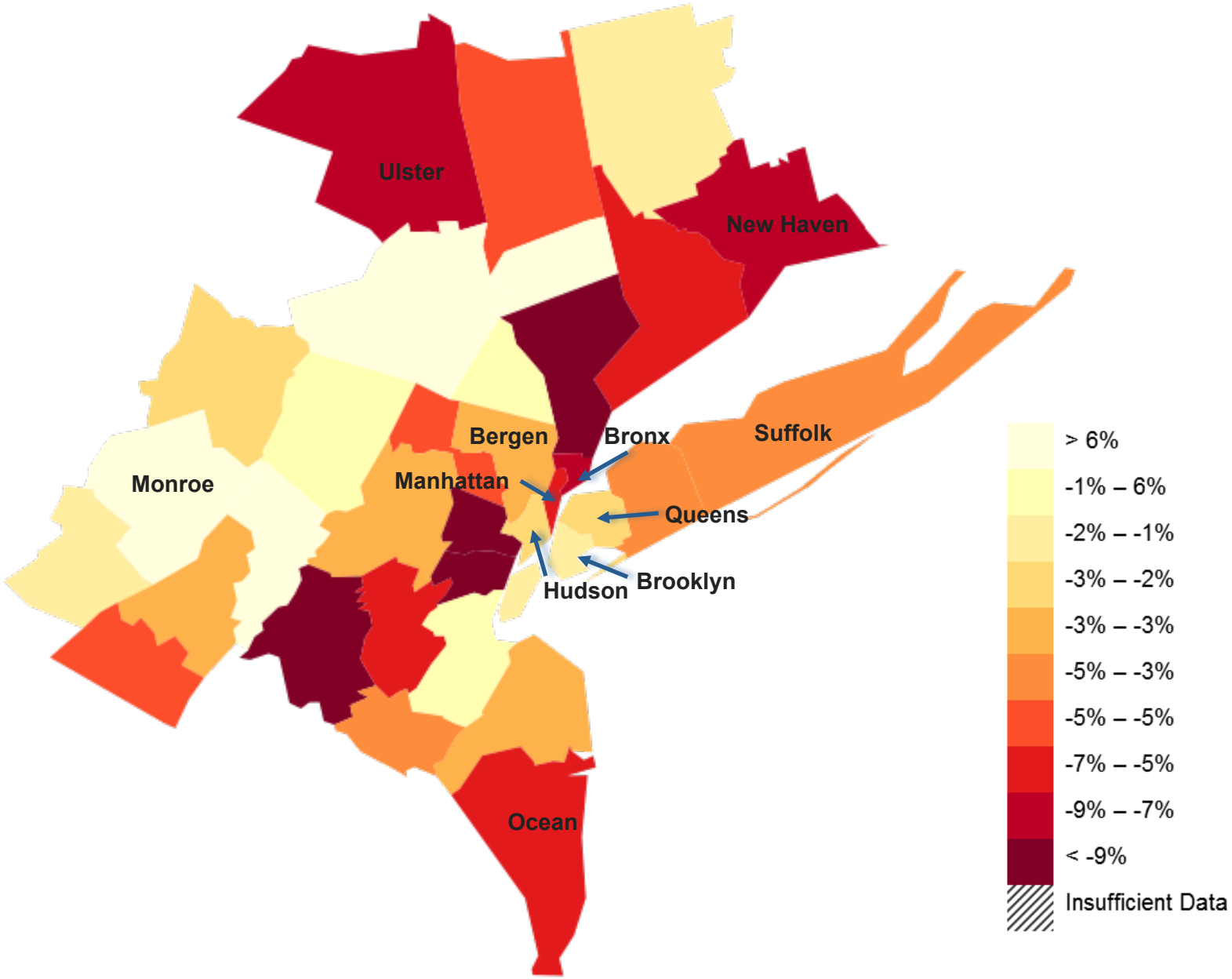
Children with Parents in Bottom Quintile of National Income Distribution



Note: Darker colors depict places where boys have lower employment rates than girls

Gender Gap in Employment Rates: New York Combined Statistical Area

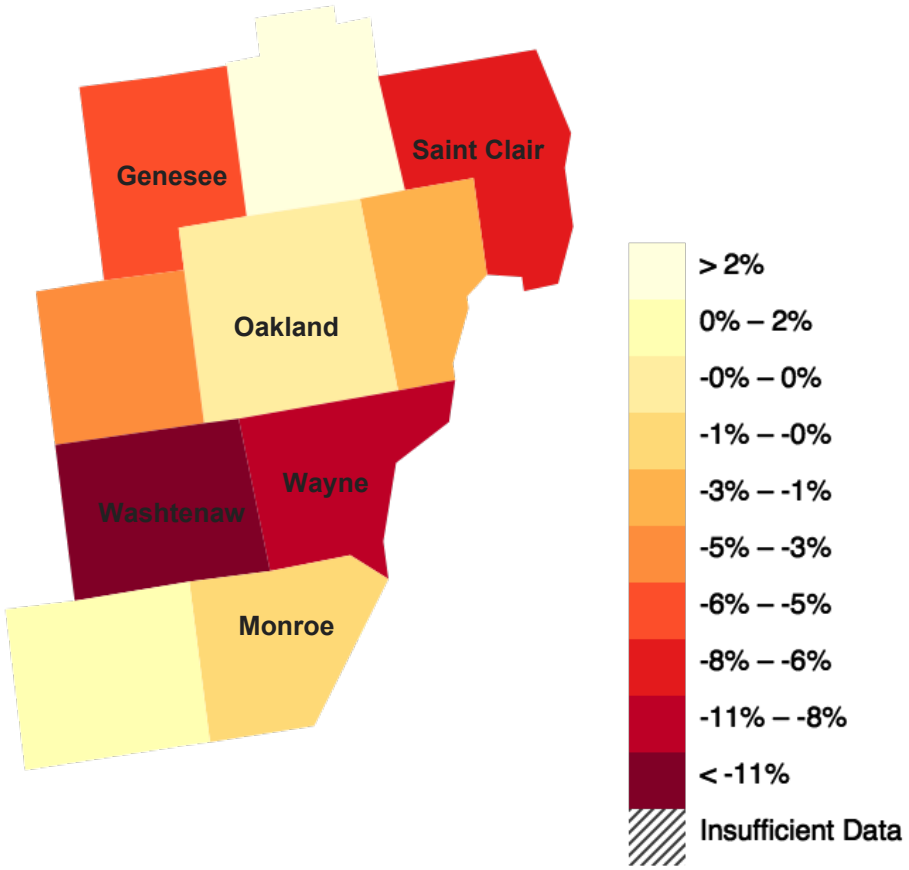
Children with Parents in Bottom Quintile of National Income Distribution



Note: Darker colors depict places where boys have lower employment rates than girls

Gender Gap in Employment Rates: Detroit Combined Statistical Area

Children with Parents in Bottom Quintile of National Income Distribution



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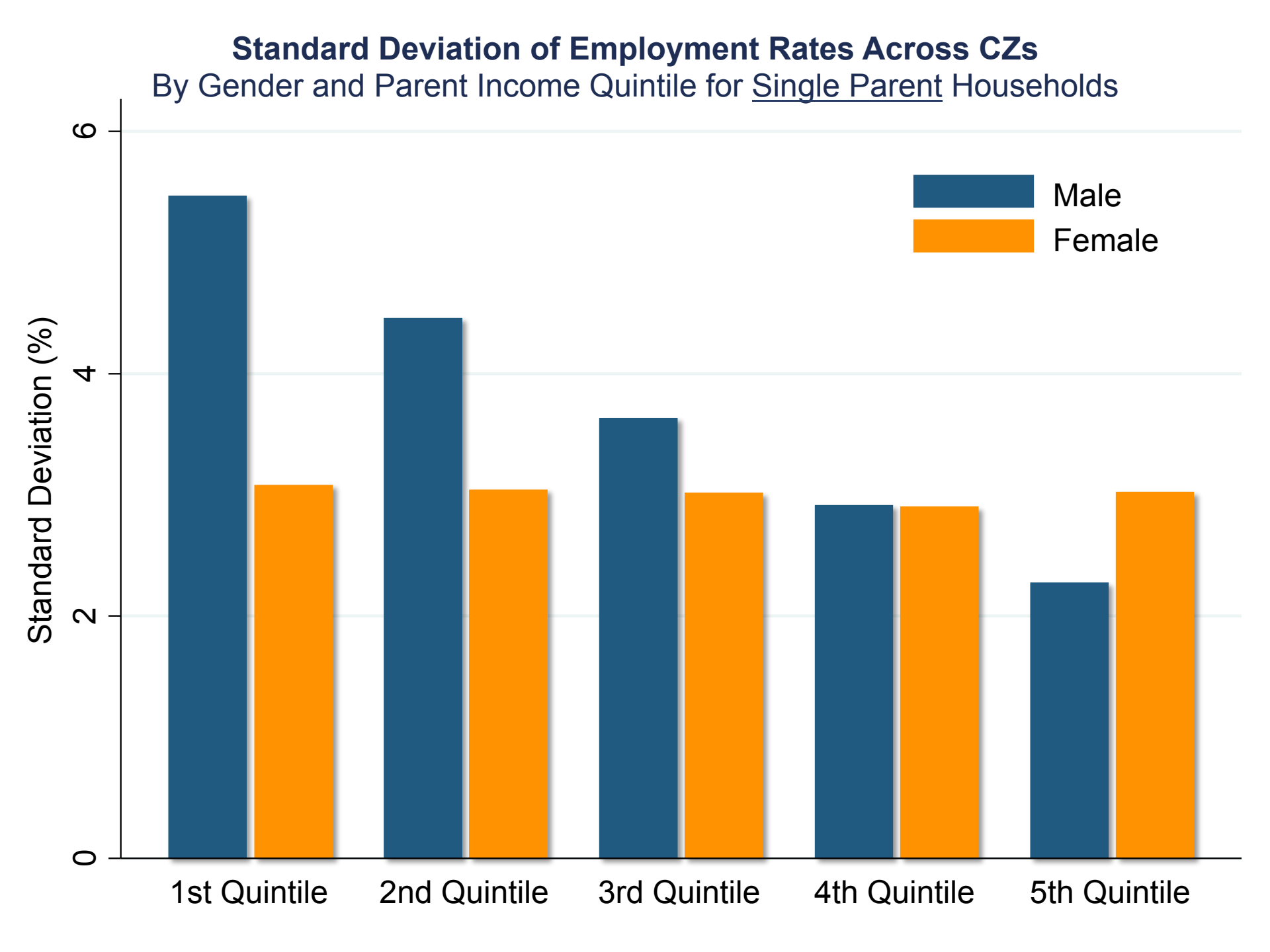
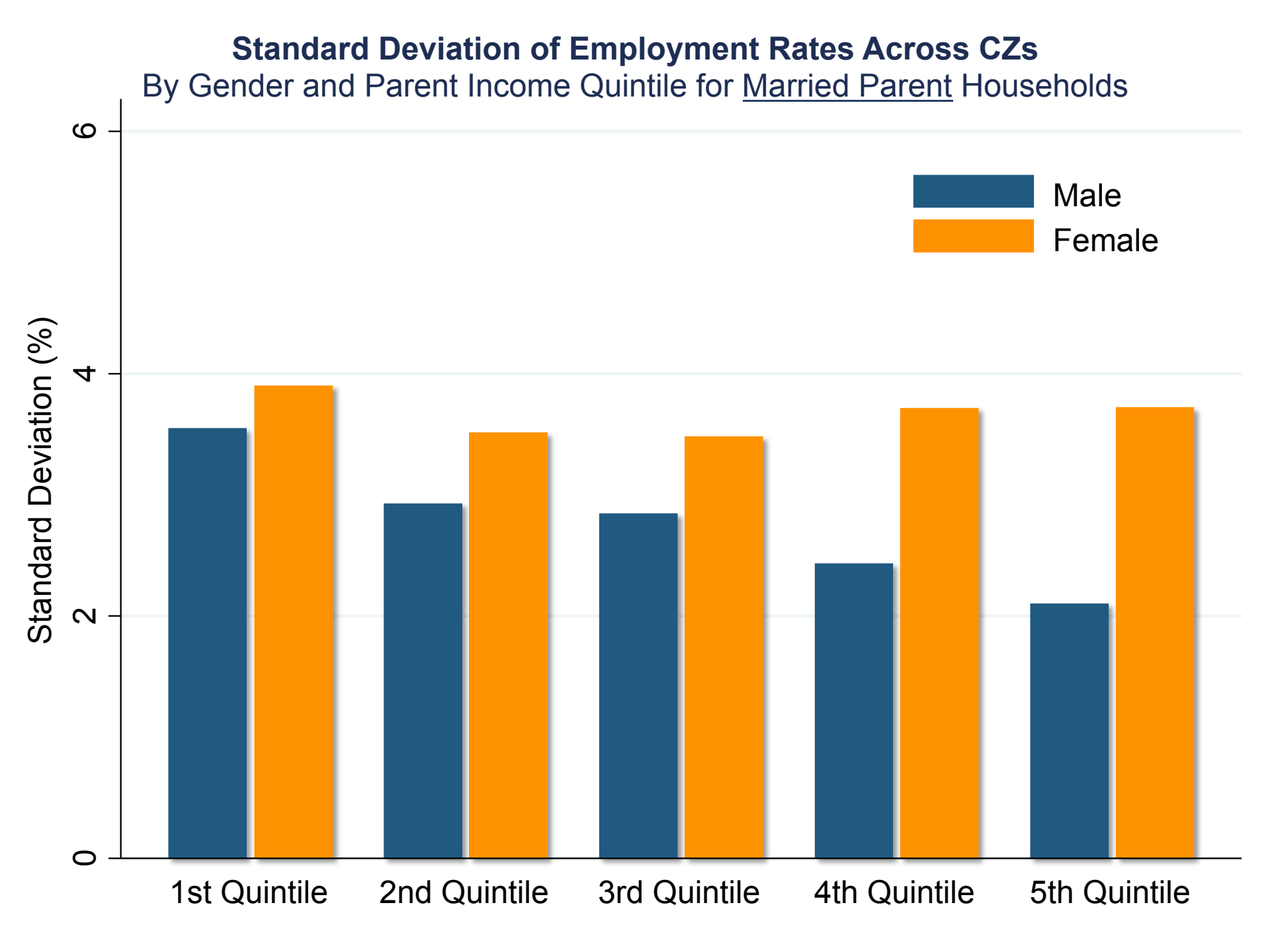

Standard Deviation of Employment Rates Across CZs
By Gender and Parent Income Quintile for Single Parent Households
Standard Deviation (%)
0
2
4
6
Male
Female
1st Quintile
2nd Quintile
3rd Quintile
4th Quintile
5th Quintile


Standard Deviation of Employment Rates Across CZs
By Gender and Parent Income Quintile for Married Parent Households
Male
Female
Standard Deviation (%)
0
2
4
6
1st Quintile
2nd Quintile
3rd Quintile
4th Quintile
5th Quintile

Regression Estimates of Gender Gaps in Income Rank with Key Correlates

For Children with Parents in the Bottom Quintile of National Income Distribution

	Male-Female Mean Income Rank Gap	
	(1)	(2)
Segregation of Poverty	-2.485	-2.231
	(0.246)	(0.186)
% Black	-1.311	-1.820
	(0.410)	(0.449)
% Single Mothers	-0.217	0.288
	(0.516)	(0.391)
State FE		X

Notes: *Standard errors clustered by state.*
*Significance levels: * p<0.05, ** p<0.01, *** p<0.001*

Regression Estimates of Gender Gaps in the Causal Effect on Income Rank

For Children with Parents in the Bottom Quintile of National Income Distribution

	Male-Female Income Rank Causal Effect Gap	
	(1)	(2)
Segregation of Poverty	-2.464	-2.780
	(0.576)	(0.556)
% Black	-0.452	1.389
	(0.777)	(1.326)
% Single Mothers	0.350	-0.300
	(0.743)	(0.866)
State FE		X

Notes: *Standard errors clustered by state.*
*Significance levels: * p<0.05, ** p<0.01, *** p<0.001*