



# Tots and teens: How does child's age influence maternal labor supply and childcare response to the Earned Income Tax Credit?

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# Introduction

- Shift in social policy over last 25 years, away from cash benefits (e.g. TANF), towards work-contingent tax credits (e.g. EITC, CTC)
- Lots of recent calls to expand tax credits for young children (e.g. Maag & Isaacs, 2017; Shaefer et al. 2016)
  - A few states have expanded their EITCs for families with young children (OR, CA)
  - American Rescue Plan Act (ARPA): increased Child Tax Credit benefits for children under 5 for 2021
- Interventions targeted at young children might be more effective than targeting older children (Carneiro and Heckman 2002; Chetty et al., 2016; Duncan, Magnuson, Votruba-Drzal 2014)
- Not much empirical evidence on how current tax policies affect young vs older children
  - Surprising, given the link between tax credits and employment, and employment and childcare

# Research Questions

- How do labor supply responses to the EITC vary according to the age of the youngest child?
  - Outcomes of interest:
    - Employment
    - Full-time employment
    - Number of hours worked
    - Family income
    - Poverty
- Who takes care of the children when moms go to work?
  - Outcomes of interest:
    - Use of any childcare
    - Hours spent in childcare
    - Costs of childcare
    - Types of arrangements (formal care, kinship care)

# Why might we expect differential effects of the EITC by child age?

- EITC is contingent on work
- Labor supply, while increasing, is still lower among mothers with young children
  - More likely to respond to incentives?
  - Less elastic labor supply due to childcare constraints?
- Mothers of older children not in the labor force may face more structural barriers (e.g. work-limiting disabilities)
  - Less likely to respond to incentives?

# Preview of Results

- Substantially larger labor supply responses to the EITC among mothers with infants (0-2), and young children (3-5)
- Much smaller labor supply responses to the EITC among mothers with children aged 6-17
- Large increase in childcare for infants and toddlers; no change among older children
  - Split between formal, center-based care, and informal, relative care
  - Increases in costs ~\$1,100 per year (approximately 40% of earnings gains due to the EITC)

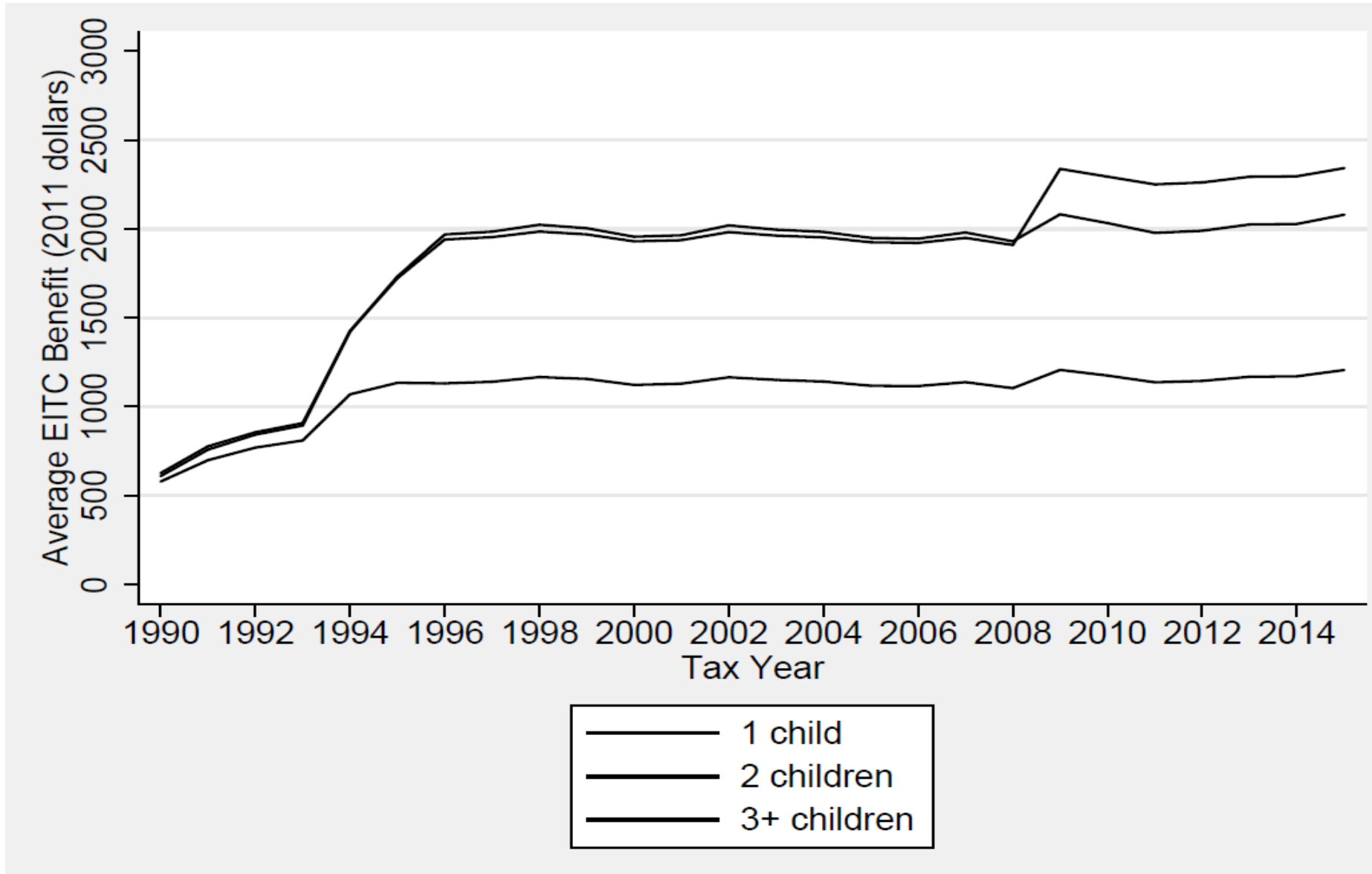
# Background: EITC

- Started in 1975
- One of our largest cash transfer programs in the U.S. In 2018:
  - 26 million households received the EITC
  - \$66 billion/year
  - Max EITC - \$6,431 for a family with 3 children
  - Average EITC among HH with children ~\$3,000
- Fully refundable tax credit, targeted at low-income households, no lifetime limits
  - Benefit based on prior calendar year's earnings, must have earnings to qualify
  - Taxpayers can get a refund, even if they have no tax liability
  - Households with income <225% FPL potentially eligible

# Expansions to the EITC

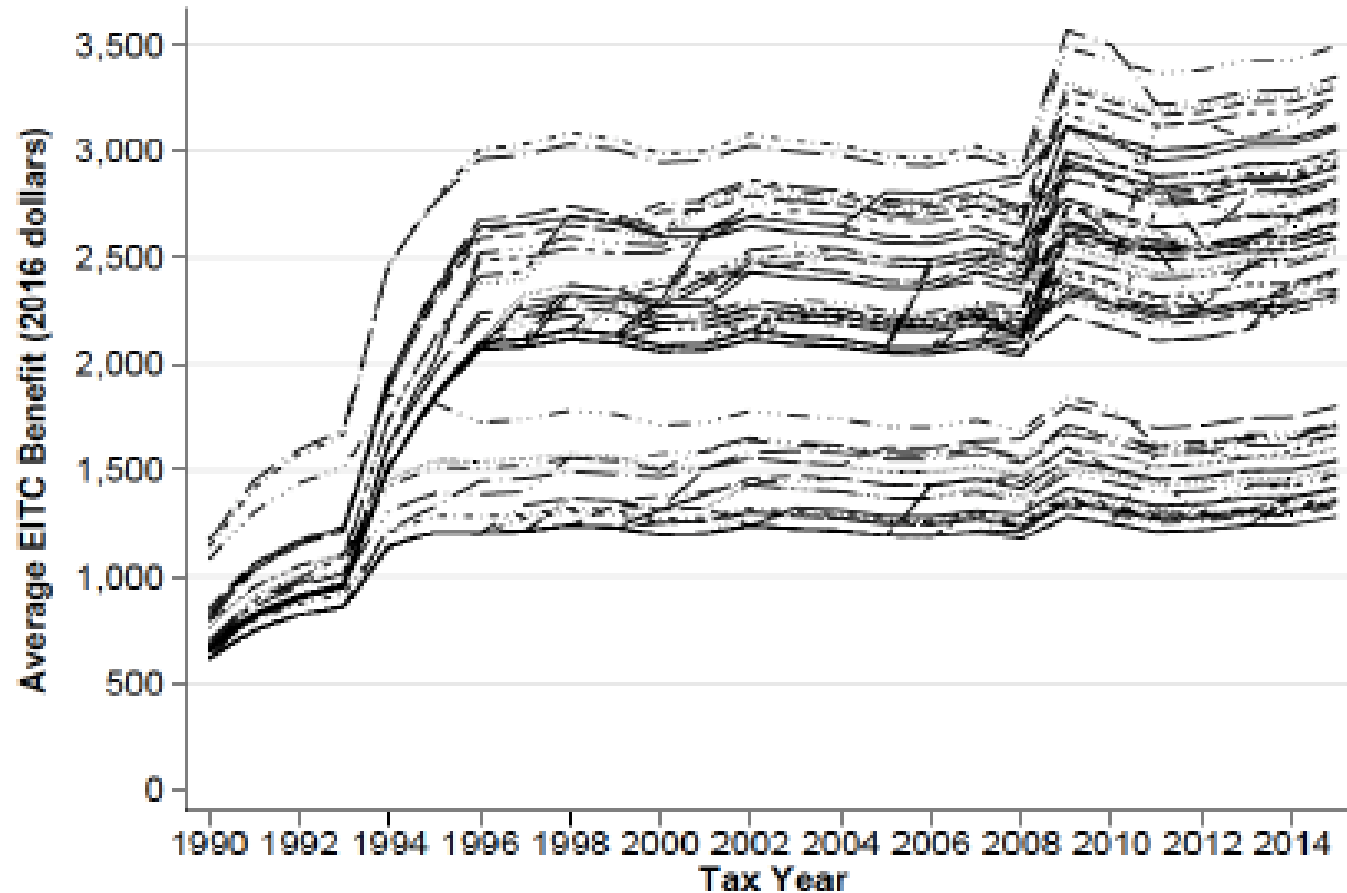
- Since its implementation in 1975, there have been several federal expansions:
  - Increased phase in rate (multiple), larger benefit for larger families
- 29 states have EITCs that are a % of the federal benefit
  - Range 3.5-85%
  - Variation in both timing and implementation and generosity of benefits

# Variation over time and by number of kids: federal EITC





# Variation over time and by number of kids: federal and state EITC



**B. Variation in Federal and State EITC combined, all households**

# Data – Current Population Survey March Supplement (ASEC)

- Nationally representative sample of ~60,000 HH each year
- Survey years 1990-2017 (Tax years 1989-2016)
- Analytical sample:
  - Single mothers with less than a college degree, who have at least one child under the age of 18 residing in the household (150,000 households)
  - Labor supply responses modeled based on age of youngest child
  - Ages of other children included as controls (presence of at least one child aged 3-5, 6-12, 13-17)

# Empirical Strategy

- Exploit variation in tax credit generosity over time, across and within states by family size
- Simulate the average household tax credit in each state and each year by family size
  - Variation driven by differences in policies over time differentially by family size, and states
  - Eliminates variation due to endogenous decisions about geographic location or income that may be related to labor supply decisions
  - Captures magnitude of policy changes over time

# Simulated Credit Construction

- Use a nationally-representative sample of single mothers
  - Adjust the sample's income by Consumer Price Index for each year of the study (1990-2017).
- Estimate tax liability and EITC benefits using family income information and NBER's TAXSIM for each year.
- Simulate state EITCs using state EITC rules each year.
- Calculate the average household tax credit in each state for each year for 1-child, 2-child and 3+ child households
- Merge simulated credit to CPS data by state-year-family size.

# Empirical Strategy

$$Y_{istc} = \beta_0 + \beta_1 EITC_{stc} + \beta_2 f(age) + \beta_3 EITC_{stc} * f(age) + \beta_4 X_{istc} + \beta_5 \alpha_{st} + \beta_6 \theta_c * \alpha_{st} + \delta_s + \gamma_t + \theta_c + \varepsilon_i$$

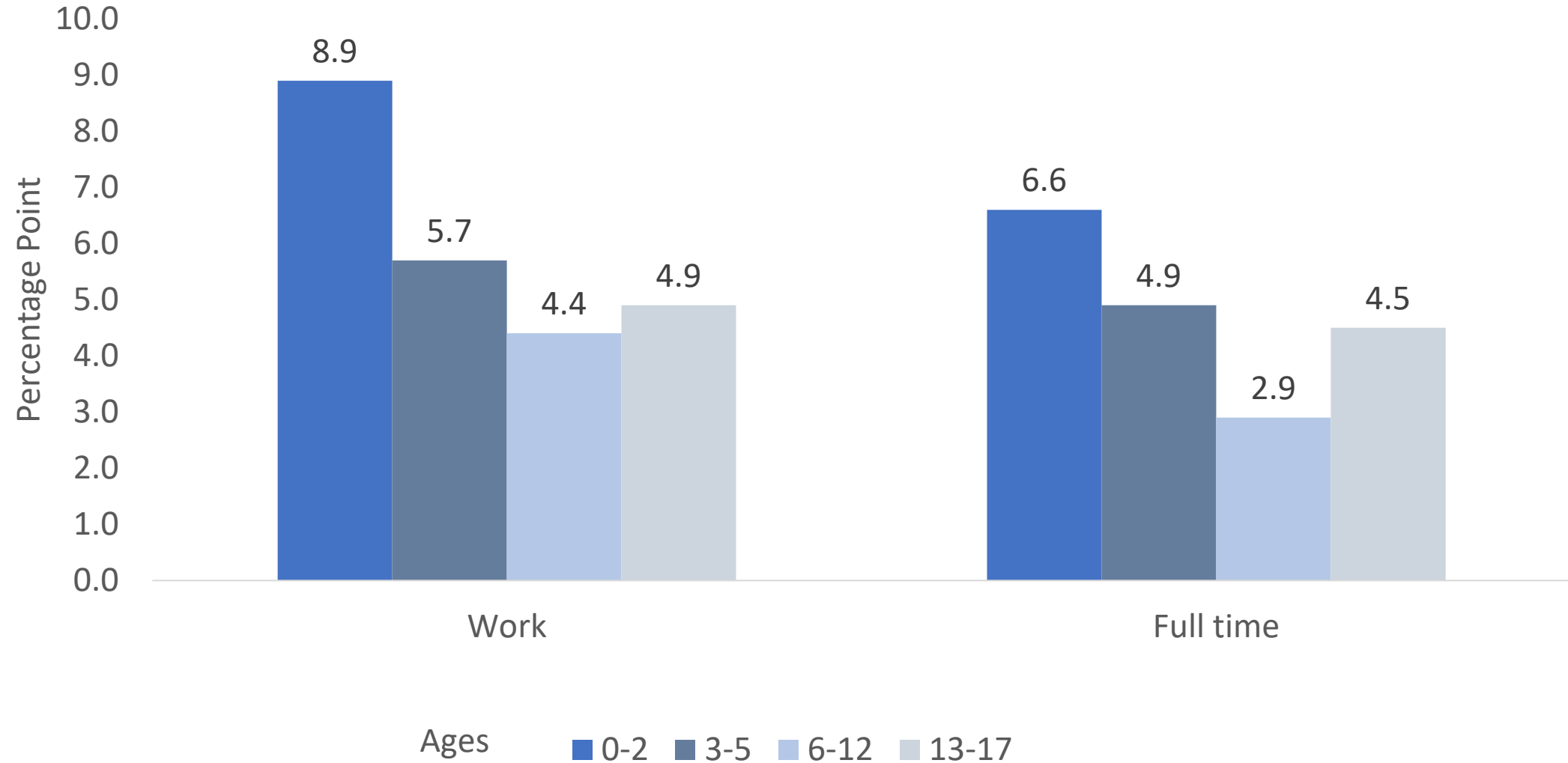
- $EITC_{stc}$ : Simulated EITC
- $f(age)$ : Age specification for youngest child in the household (modeled as mutually-exclusive categories: 0-2, 3-5, 6-12, 13-17 (ref))
- $X$ , demographic characteristics:
  - education, race/ethnicity, age, number of children in household
- $\alpha$ , state-year contextual factors from UKCPR data:
  - state unemployment rate, state gdp, top tax bracket, maximum monthly welfare benefit
- State ( $\delta$ ), year ( $\gamma$ ) and number of child ( $\theta$ ) fixed effects
- Coefficients of interest:  $\beta_1, \beta_3$

# Results by age of the youngest child

	Worked last week	Number of hours worked	Worked at least 35 hours	Pre-tax earnings (\$1,000s of 2016\$)	Above poverty
Simulated EITC	0.049 (0.015)	1.974 (0.624)	0.045 (0.015)	1.060 (0.622)	0.011 (0.012)
Simulated EITC*aged 0-2	0.040 (0.009)	1.466 (0.3)	0.021 (0.007)	1.383 (0.413)	0.041 (0.008)
Simulated EITC*aged 3-5	0.008 (0.009)	0.261 (0.394)	0.004 (0.01)	0.624 (0.461)	0.006 (0.01)
Simulated EITC*aged 6-12	-0.005 (0.008)	-0.392 (0.345)	-0.016 (0.009)	-0.071 (0.391)	0.001 (0.008)
Simulated EITC*aged 13-17 (reference)					

# Results: Employment and Full-time work

Effect of a \$1,000 increase in the EITC



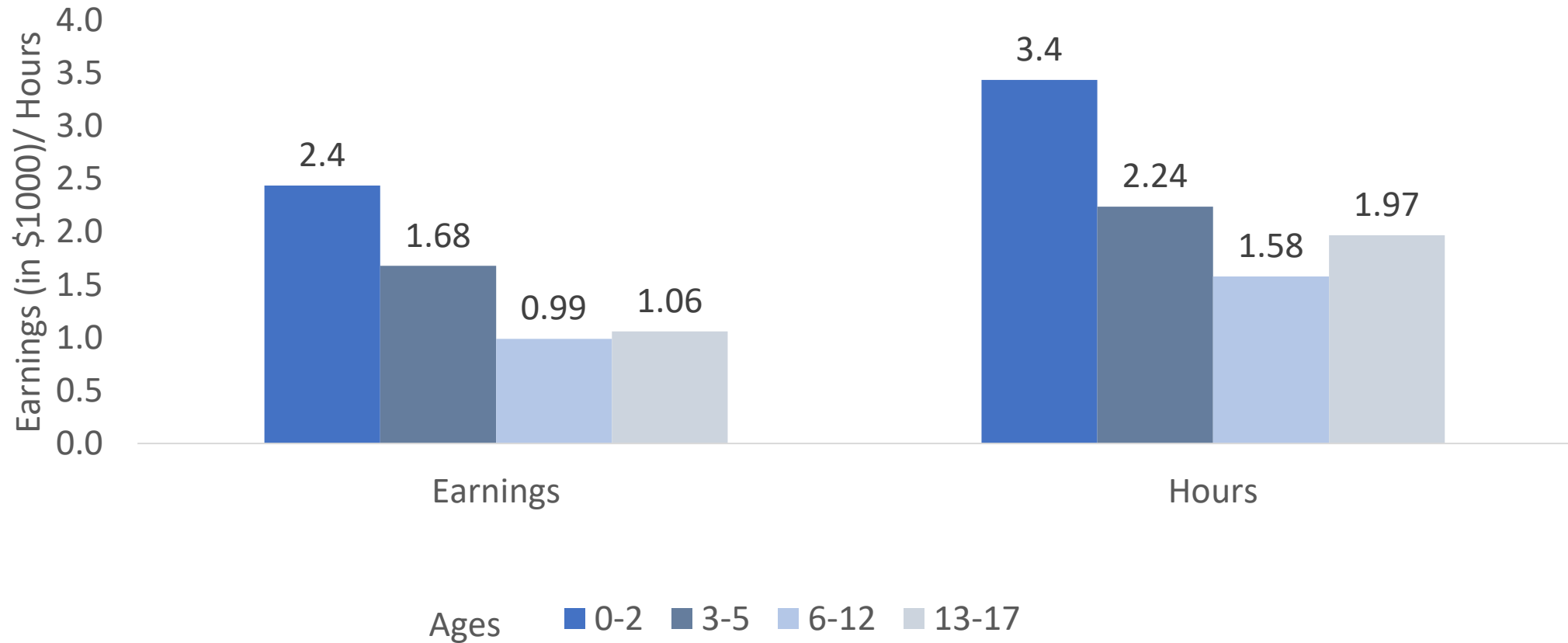
# Results: Interpretation

- A \$1,000 increase in the EITC moves many more mothers with infants/toddlers and preschoolers into the labor force than mothers of adolescents
- Average employment for mothers whose youngest child is 0-2 is 48%. A 9pp increase is a nearly 20% increase in employment among this group. (Implied elasticity of about 0.31).
- In comparison we estimate a 7% increase for mothers with adolescent aged children. (Implied elasticity of 0.10).

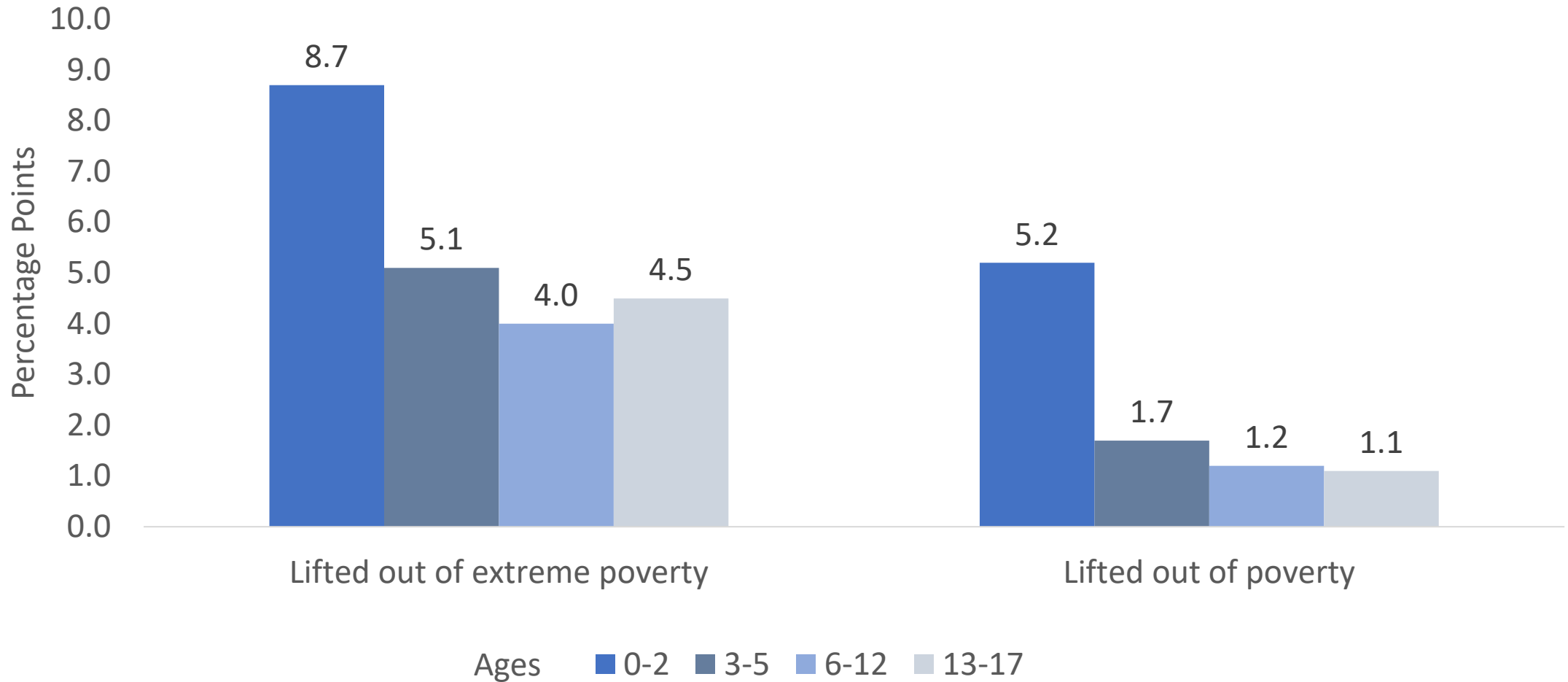


# Results: Earnings and Hours

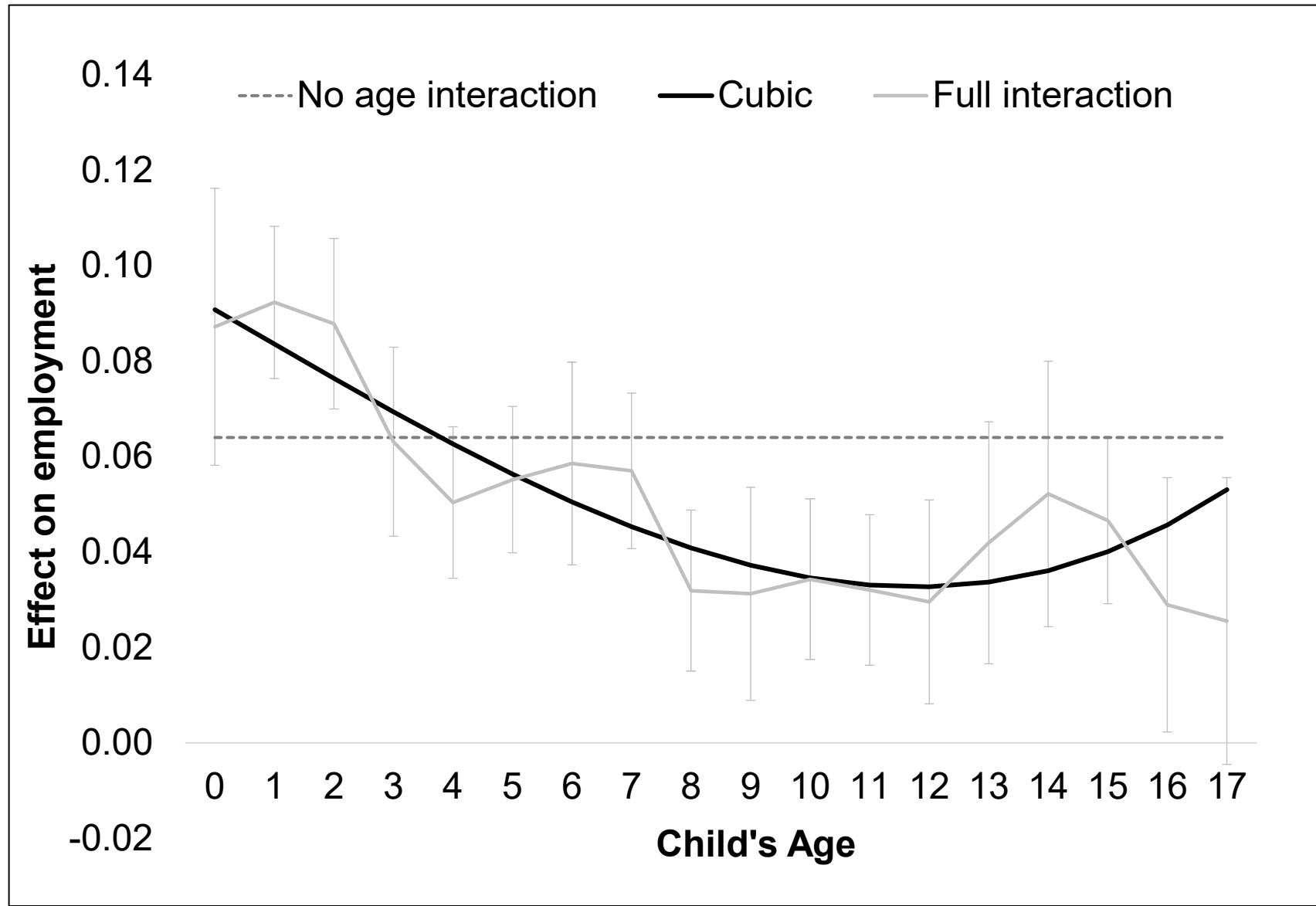
Effect of a \$1,000 increase in the EITC



# Results: Poverty



# Robustness check: Other age specifications for youngest child



# Robustness Checks

- Robust to stratifying models by age
- Robust to different specifications (time trends, different levels of controls, child fixed effect interactions, etc.)
- We do not find this pattern among college-educated mothers or married mothers
- Similar results from the ACS
- Robust to partitioning variation into federal and state components
- Similar findings when including all children in the HH (not just youngest)
- Robust to traditional diff-in-diff using OBRA/ARRA federal expansions

# Is this good for kids?

## Increases Income (Good!)

- Reduced poverty in early childhood can have especially long-term positive effects (Duncan, Magnuson, Kalil, & Ziol-Guest, 2012)

## Increases Employment (Mixed)

- Research on effects on kids mixed (reviews - Goldberg, Prause, Lucas-Thompson & Himsel, 2008; Lucas-Thompson, Goldberg & Prause, 2010; Angostinelli and Sorrenti 2018)

# Childcare results: SIPP 1996-2008 childcare topical modules

	Age 0-2	Age 3-5	Age 6-12
Working mom	0.246 (0.095) [0.44]	-0.019 (0.102) [0.57]	-0.009 (0.08) [0.66]
Any child care	0.228 (0.06) [0.66]	-0.03 (0.072) [0.71]	-0.116 (0.082) [0.65]
Total hours	9.487 (2.644) [21.98]	-3.624 (4.393) [23.97]	0.214 (3.148) [15.13]
Any payments	0.246 (0.064) [0.23]	-0.014 (0.087) [0.29]	0.034 (0.069) [0.20]
Log monthly payment	1.20 0.36 [1.23]	-0.04 0.49 [1.60]	0.24 0.34 [1.01]

# Childcare results: SIPP 1996-2008 childcare topical modules

	Aged 0-2	Aged 3-5	Aged 6-12
Type of arrangement			
Any center-based care	0.106 (0.048)	-0.049 (0.075)	0.057 (0.033)
Any Head Start	0.010 (0.013)	0.047 (0.029)	n/a
Any informal care	0.196 (0.074)	0.013 (0.089)	-0.136 (0.083)
Any parent care	0.011 (0.049)	-0.123 (0.054)	-0.034 (0.047)
Number of Observations	4,840	4,012	5,765

# Conclusion

- Significantly larger labor supply effects of the EITC for mothers with very young (0-2) children compared to mothers with older children
  - Much smaller, often insignificant effects among mothers with teenagers
- Implications for children?
  - More economic resources
    - Particularly among very young children
  - But likely spending less time with mom (Bastian and Lochner 2021)
    - Significant increases in use of any care, formal care, and relative care
  - And large increases in costs (~\$1,100 per year)
    - Implies about 40% of the increase in pre-tax earnings (\$2,400) is spent on child care expenses
  - Larger literature indicates positive effects for kids in longer-term (e.g. Dahl and Lochner 2017; Bastian and Michelmore 2018)



# Thank you!

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# Appendix

# Results: No child age specification

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Worked last week	0.064 (0.014)
Number of hours worked/week	2.518 (0.576)
Worked at least 35 hours/week	0.047 (0.012)
Pre-tax earnings (\$1,000s of 2016\$)	1.679 (0.393)
Above 100% of poverty	0.027 (0.007)
State characteristics	X
State FE	X
Year FE	X
Number of child FE	X
Number of observations	150,691

# Robustness check: stratify by age

	Age 0-2	Age 3-5	Age 6-12	Age 13-17
Worked last week	0.062 (0.014)	0.064 (0.018)	0.051 (0.019)	0.004 (0.014)
Elasticity	0.21	0.18	0.13	0.01
Number of Observations	35,730	30,056	53,186	31,719

# Robustness checks: Federal vs state variation

	Federal	State
Simulated EITC	0.065 (0.012)	0.022 (0.035)
Simulated EITC*aged 0-2	0.047 (0.011)	0.044 (0.027)
Simulated EITC*aged 3-5	0.007 (0.011)	0.023 (0.018)
Simulated EITC*aged 6-12	-0.01 (0.009)	0.016 (0.013)
Simulated EITC*aged 13-17 (reference)		
Total, aged 0-2	0.112	0.066
Total, aged 3-5	0.072	0.045
Total, aged 6-12	0.055	0.038
Total, aged 13-17	0.065	0.022
p(F-statistic), aged 0-2	0.000	0.013
p(F-statistic), aged 3-5	0.000	0.149
p(F-statistic), aged 6-12	0.000	0.224
p(F-statistic), aged 13-17	0.000	0.531

# Different model specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total, aged 0-2	0.035	0.073	0.085	0.092	0.080	0.063	0.052	0.056	0.127	0.040	0.066
Total, aged 3-5	0.011	0.038	0.051	0.060	0.048	0.031	0.020	0.026	0.098	0.010	0.037
Total, aged 6-12	0.006	0.011	0.037	0.046	0.035	0.018	0.008	0.015	0.087	0.000	0.026
Total, aged 13-17	0.009	0.002	0.041	0.052	0.041	0.023	0.013	0.021	0.094	0.006	0.032
F-statistic, aged 0-2	21.01	71.69	82.08	46.12	19.29	20.41	15.31	15.45	17.17	0.96	2.49
F-statistic, aged 3-5	3.14	19.01	32.99	15.26	5.85	4.23	1.92	2.69	9.84	0.06	0.73
F-statistic, aged 6-12	1.47	2.48	23.21	10.24	3.48	2.02	0.38	1.15	7.98	0	0.37
F-statistic, aged 13-17	1.46	0.32	5.99	4.76	2.18	1.54	0.94	1.28	2.96	0.15	0.76
Demographic controls		X	X	X	X	X	X	X	X	X	X
Number of child fixed effects			X	X	X	X	X	X	X	X	X
Year fixed effects				X	X	X	X	X	X	X	X
State fixed effects				X	X	X	X	X	X	X	X
State contextual variables*child fixed effects					X	X	X	X	X	X	X
State time trends						X	X	X	X	X	X
Number of child time trends							X	X	X	X	X
Demographics*EITC								X	X	X	X
State variables*EITC									X	X	X
Child*Year Fixed effects										X	X
Child*State Fixed effects											X
Number of observations	150,691										

# OBRA

Effect of the 1993 OBRA expansion of the EITC on maternal labor supply;  
moms age 20-50, 1991-1998 tax years

	(1)	(2)	(3)
post1993*2 or more kids	0.048 (0.011)	0.019 (0.016)	0.016 (0.017)
Simulated EITC	0.067 (0.015)	0.047 (0.021)	0.053 (0.026)
Demographics	X	X	X
Number of child indicators	X	X	X
State variables*Number of Child Fixed Effects		X	X
Exclude states with AFDC waivers			X
Number of Observations	59,785	59,785	39,553

# OBRA and ARRA

	Working	Number of hours worked	Working >35 hours	Pre-tax earnings	Above Poverty (earnings only)
CPS: OBRA (1989-1998)					
post1993*2kids	0.047 (0.021)	1.538 (0.82)	0.04 (0.018)	0.726 (0.957)	0.029 (0.016)
post1993*2kids*aged 0-2	0.033 (0.021)	1.235 (0.832)	0.015 (0.017)	1.456 (0.94)	0.032 (0.017)
post1993*2kids*aged 3-5	-0.015 (0.02)	-0.272 (0.859)	-0.009 (0.023)	0.415 (0.941)	-0.019 (0.018)
post1993*2kids*aged 6-12	-0.028 (0.025)	-0.952 (0.965)	-0.027 (0.021)	-0.314 (0.863)	-0.037 (0.017)
post1993*2kids*aged 13-17 (reference)					
Number of Observations	43,665				



# OBRA and ARRA

	Working	Number of hours worked	Working >35 hours	Pre-tax earnings	Above Poverty (earnings only)
CPS: ARRA (2000-2015)					
post2009*3kids	-0.018 (0.03)	-1.146 (1.167)	-0.019 (0.027)	0.542 (1.359)	0.015 (0.026)
post2009*3kids*aged 0-2	0.037 (0.035)	2.423 (1.336)	0.068 (0.03)	2.526 (1.482)	0.074 (0.027)
post2009*3kids*aged 3-5	-0.014 (0.033)	0.505 (1.261)	0.023 (0.029)	-0.339 (1.52)	-0.026 (0.027)
post2009*3kids*aged 6-12	0.008 (0.031)	0.69 (1.222)	0.015 (0.028)	-0.741 (1.227)	-0.019 (0.024)
post2009*3kids*aged 13-17 (reference)					
Number of Observations	103,148				