

Health Benefits of the Non-Health Safety Net



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- We are once again debating the role of government; and in particular what the safety net should include.
- Often our evaluations of the costs and benefits of the safety net are limited to examinations of labor supply and poverty.
- My research program, joint with several co-authors, seeks to illustrate and quantify the potential for health impacts of non-health programs.

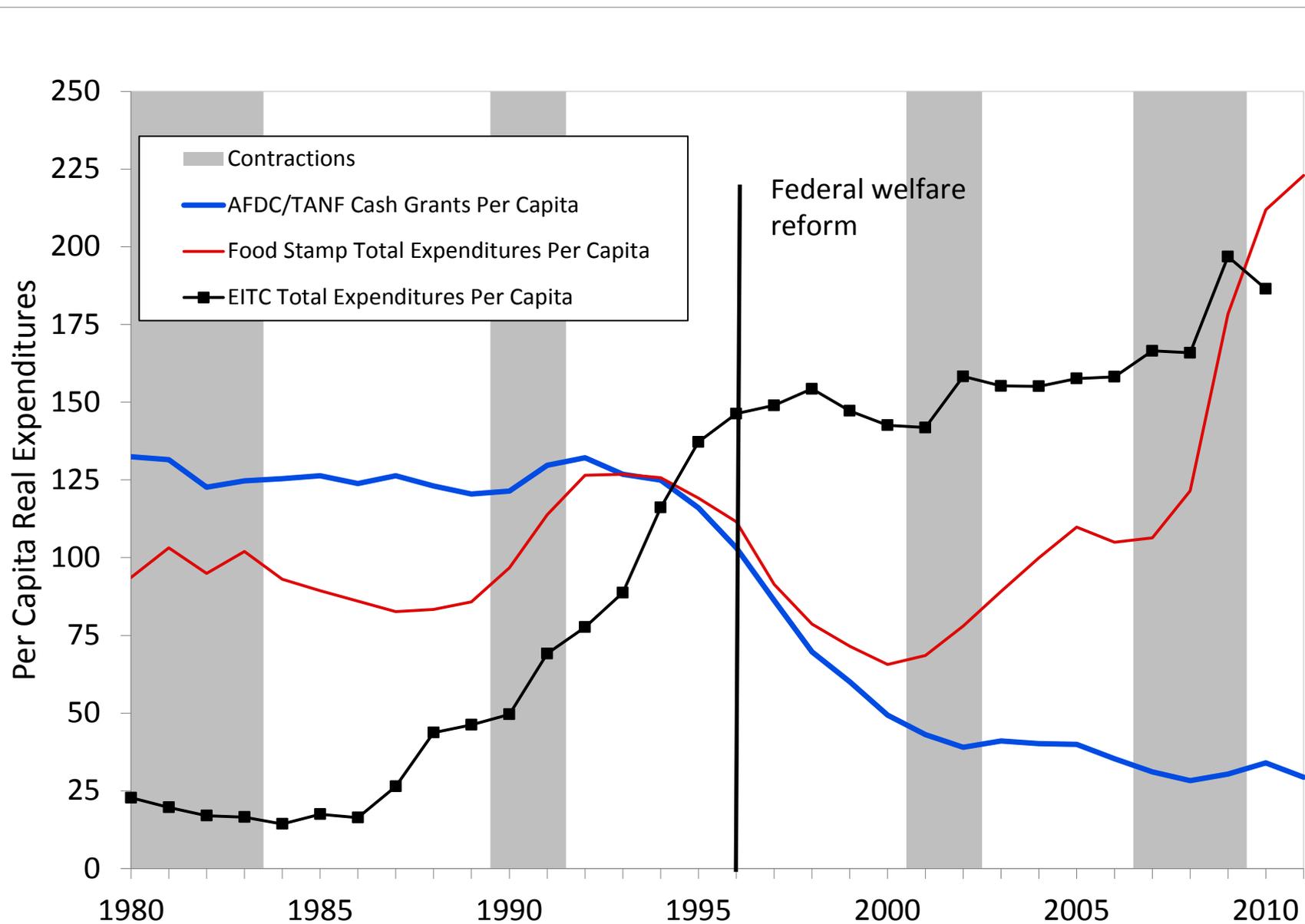


- We examine the two largest non-health safety net programs for low income families—the Earned Income Tax Credit and the Food Stamp Program—and find that additional resources leads to economically important improvements in health
- Demonstrates potential for positive benefits of social safety net programs that have, to date, not been quantified
- Further, the work speaks to the strong SES health gradient in the U.S., that appears to unfold in early life

The state of the safety-net in the U.S.



Per capita real expenditures (2009 \$)



Not the whole story ...



- My focus is on non-health programs that aid low income *families with children*
- This is, of course, only part of the total U.S. safety net

Federal Spending on Selected Means-Tested Programs and Tax Credits, 2012

(Billions of dollars)



Source: Congressional Budget Office.

Rounding out the safety net



- **Additionally, there are social insurance programs (not limited to low income families):**
 - Social Security
 - Medicare
 - Disability Income
 - Unemployment compensation
 - Workers Comp



- ... back to the Earned Income Tax Credit and Food Stamps ...
- I will review how these programs are structured and why they are important



What are Food Stamps?



- Vouchers can be used at grocery stores (now distributed through debit cards)
- Used to purchase almost any food
- Means tested: eligibility based on income and asset tests
- Federal program; no area variation and few reforms over time
→ *challenge for evaluation*
- Only element of U.S. safety net that is *universal*—not targeted to a particular group (female heads, elderly, disabled)
- Benefits phased out as income increases; benefits per person averaged \$134 per month (2011).

Why study Food Stamps?

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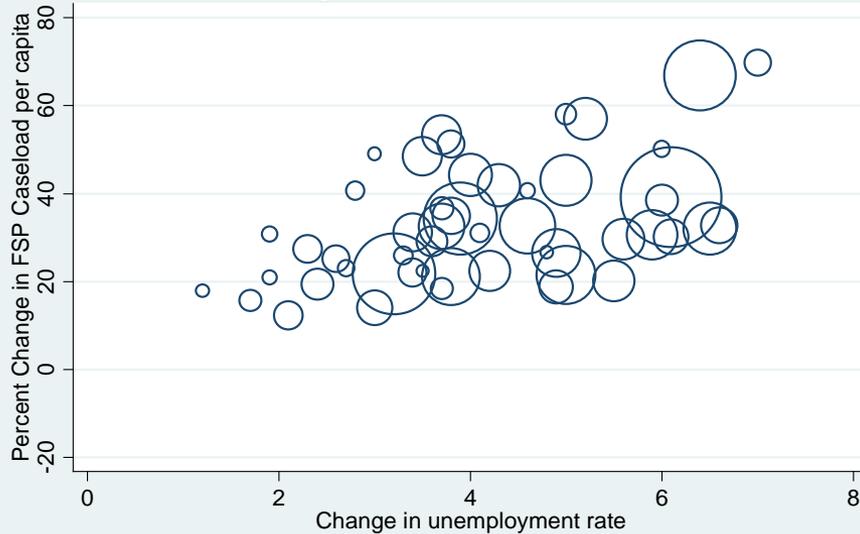
- **The food stamp program is currently the largest cash or near-cash anti-poverty program in the U.S.:**
 - In 2011 almost 1 in 7 persons received food stamps
 - Only U.S. universal safety net program – eligible based only on economic need.
- **Food stamps has been a big part of the safety net in Great Recession (rising in places with greatest need)**
- **New supplementary poverty measure shows that food stamps raised 4.6 million persons out of poverty in 2011.**

Food Stamps has become the fundamental safety net program

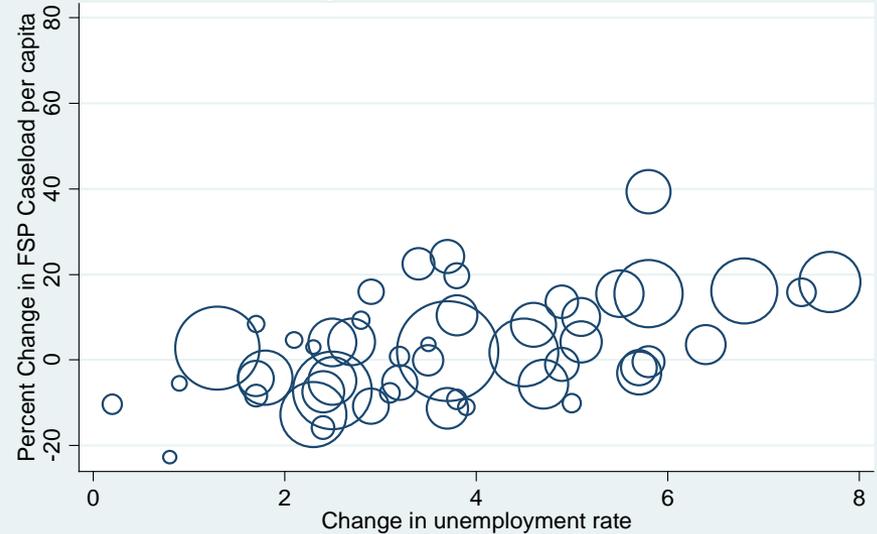
Comparison of current recession to early 1980s recession

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Food Stamps and Unemployment Rate
Change between 2007 and 2009



Food Stamps and Unemployment Rate
Change between 1979 and 1982



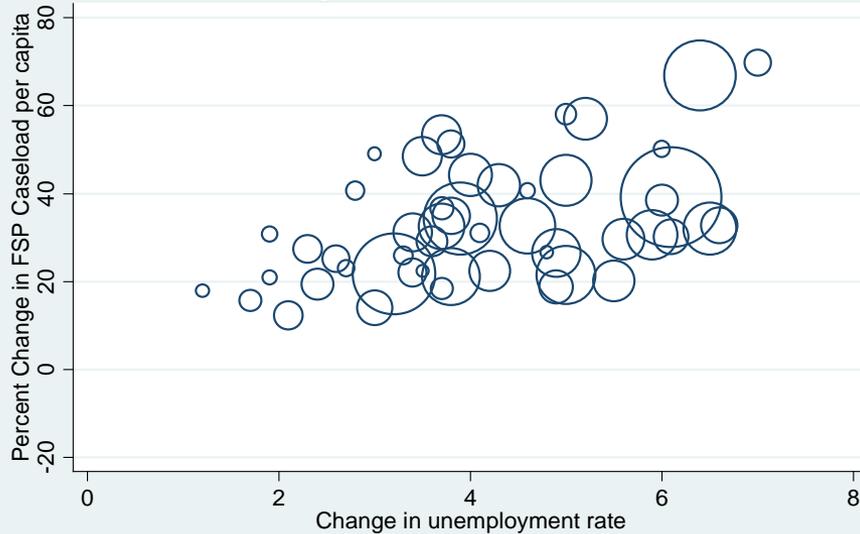
Source: Bitler and Hoynes, *Brookings Papers on Economic Activity* 2010.

Food Stamps has become the fundamental safety net program

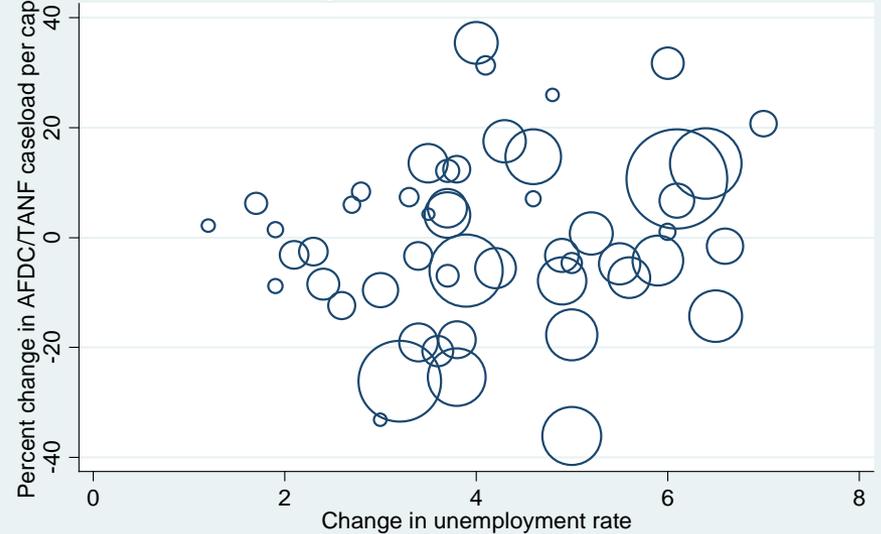
Comparison to TANF; current recession

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Food Stamps and Unemployment Rate
Change between 2007 and 2009



Cash Welfare (TANF) and Unemployment Rate
Change between 2007 and 2009



Source: Bitler and Hoynes, *Brookings Papers on Economic Activity* 2010.

What is the EITC?

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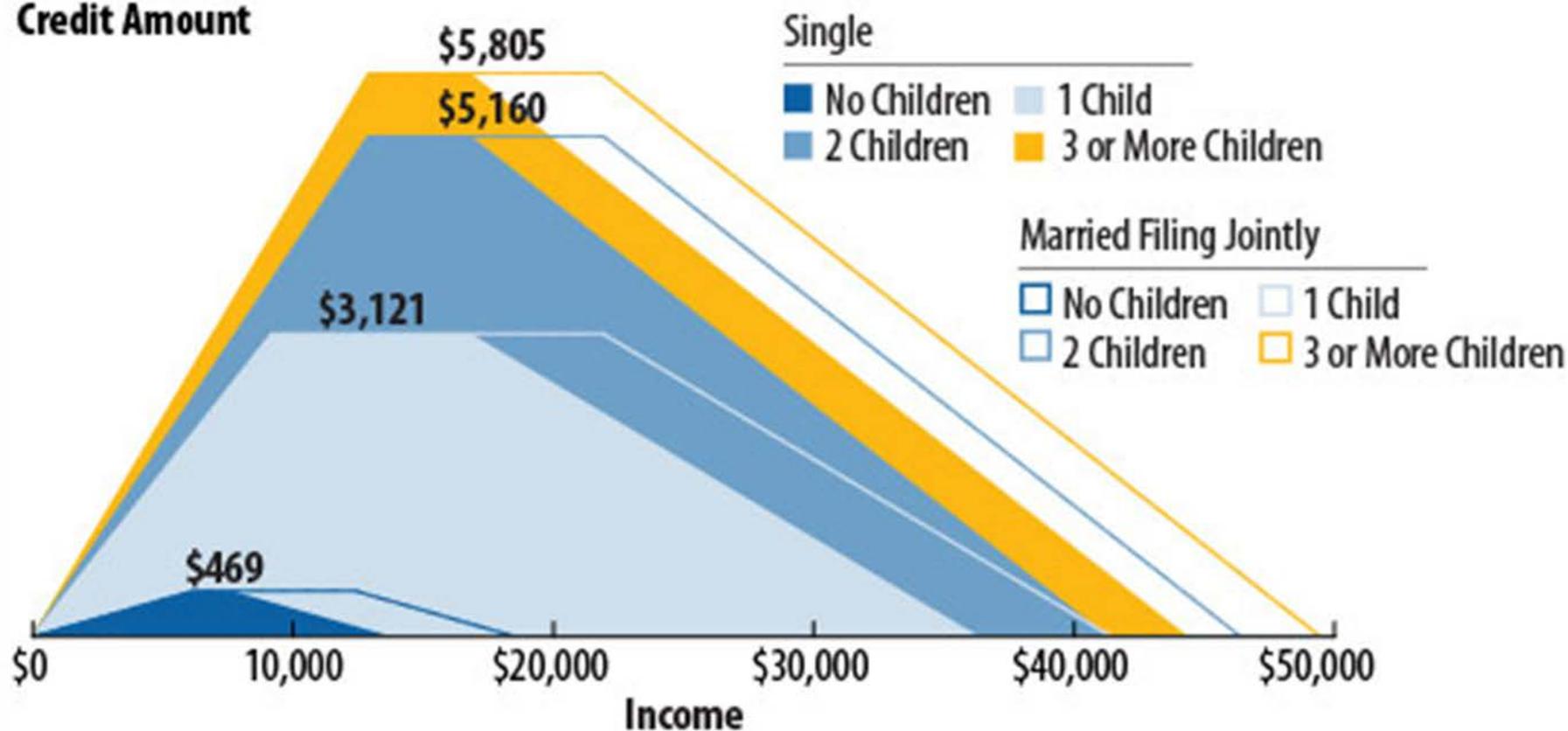
- Refundable tax credit for low income families
- Must have earned income to be eligible
- Credit varies by number of children (small credit for childless) and earnings
- In tax year 2010, the credit was received by almost 27 million filers at a cost of \$59.5 billion (average credit of about \$2200)
- In 2012, maximum credit amounts are:

0 kids	\$475	2 kids	\$5,236
1 kid	\$3,169	3+ kids	\$5,891

Figure 2:

Value of Federal Earned Income Tax Credit, 2011

Credit Amount



Note: Assumes extension of current EITC provisions.

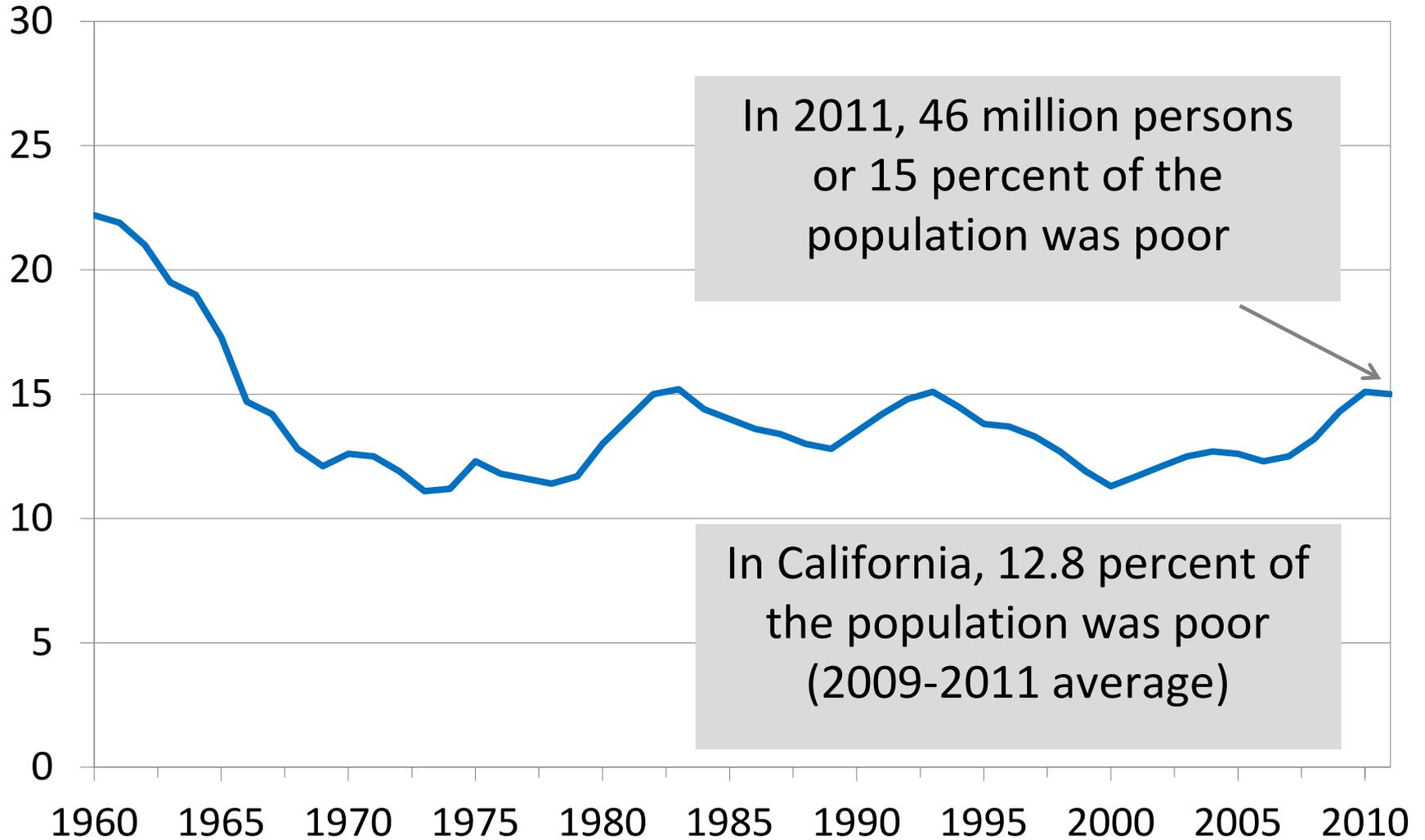
EITC, Income and Incentives

- EITC leads to increase in after-tax income through a tax refund.
- The structure of the credit leads to an increase in the incentive to work (extensive margin) for single earner families (but a reduction in intensive labor supply incentives)
- A large literature uses variation due to tax-reform and finds that the EITC leads to significant increases in employment of single mothers with children (Eissa and Liebman 1996, Meyer and Rosenbaum 2001, others)

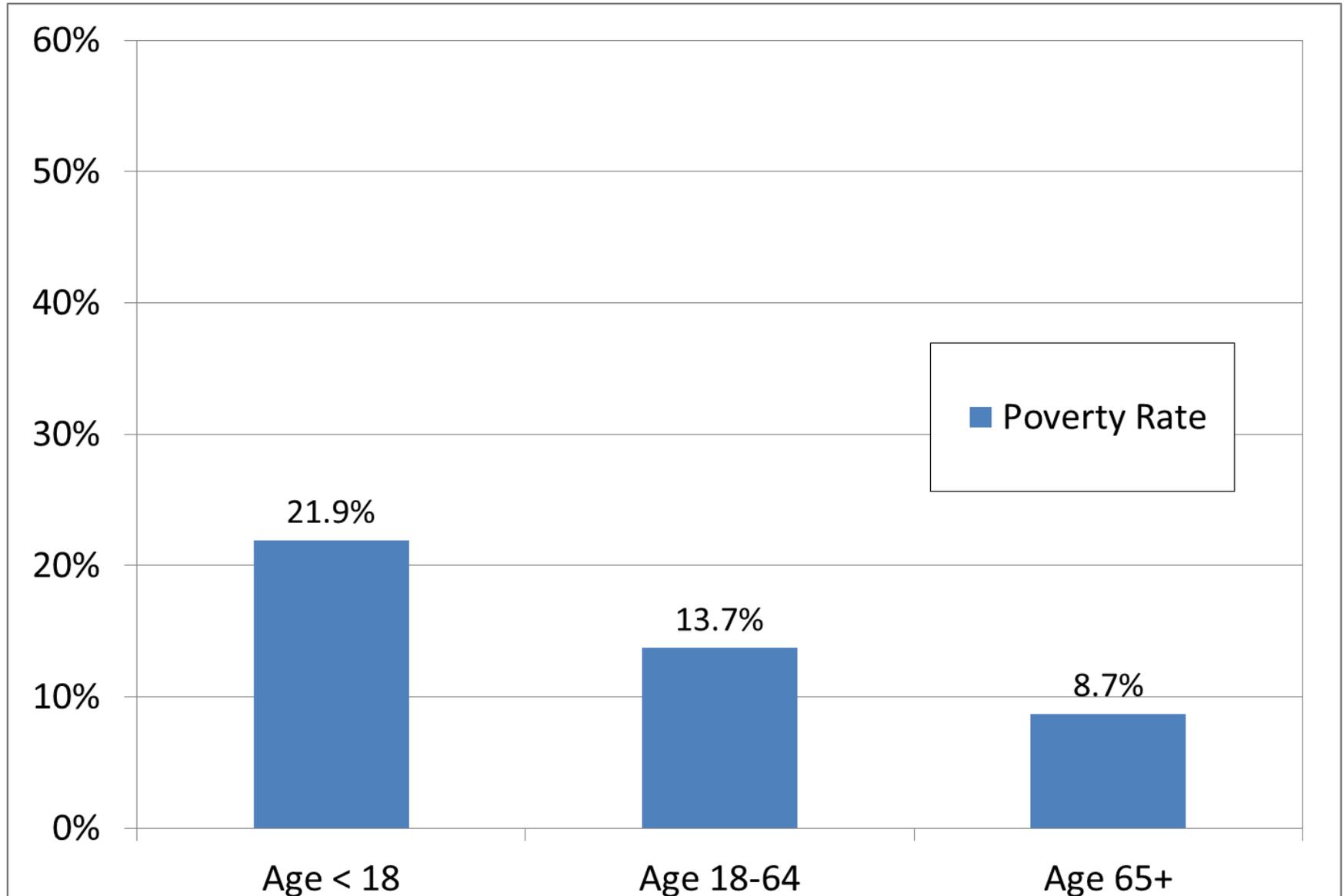


- Perhaps the most important measure of the importance of the EITC and Food Stamps is in their effectiveness in reducing poverty

Poverty Rate, All Persons



Children have the highest poverty rates

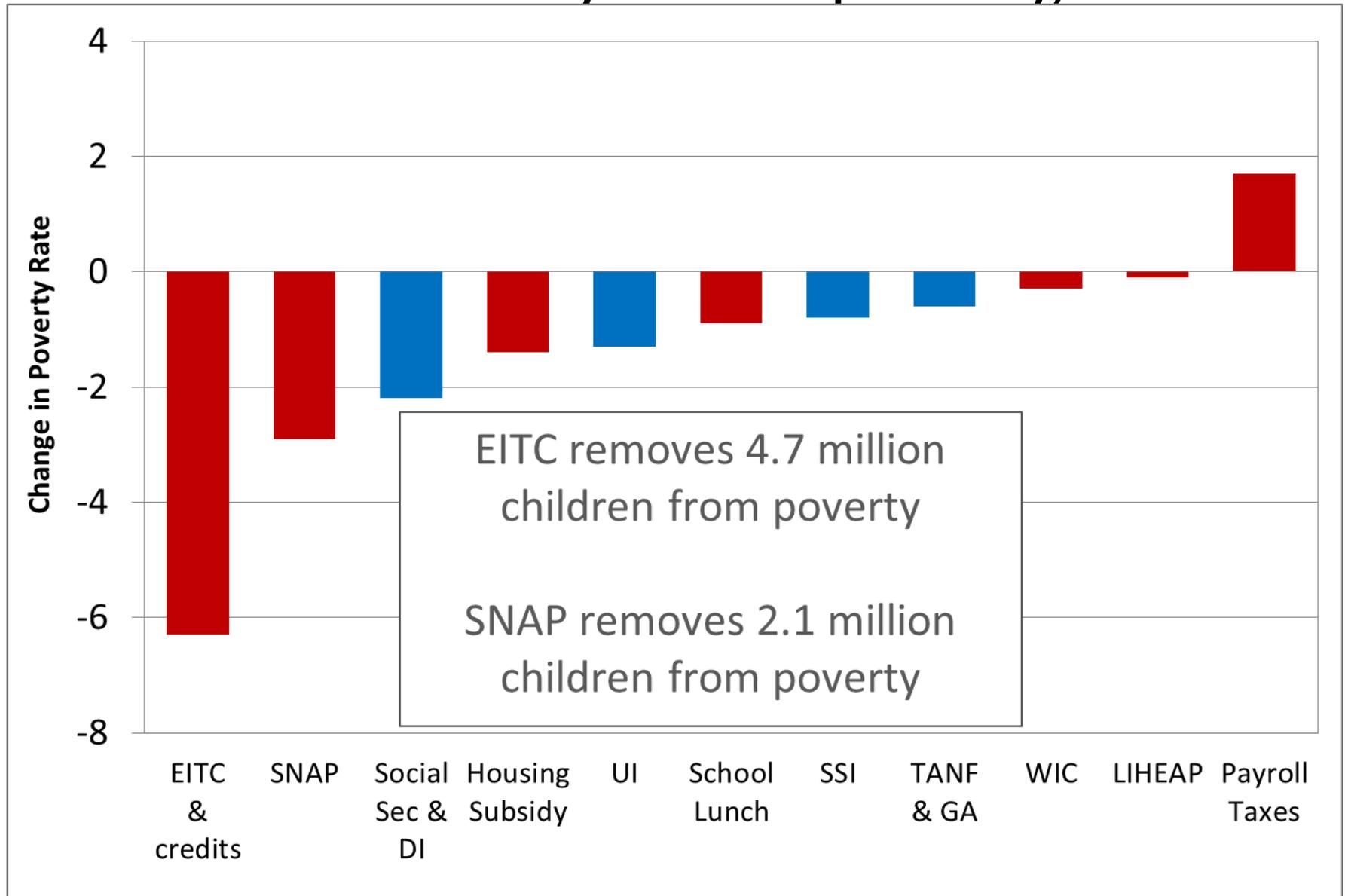


Supplemental Poverty Measure

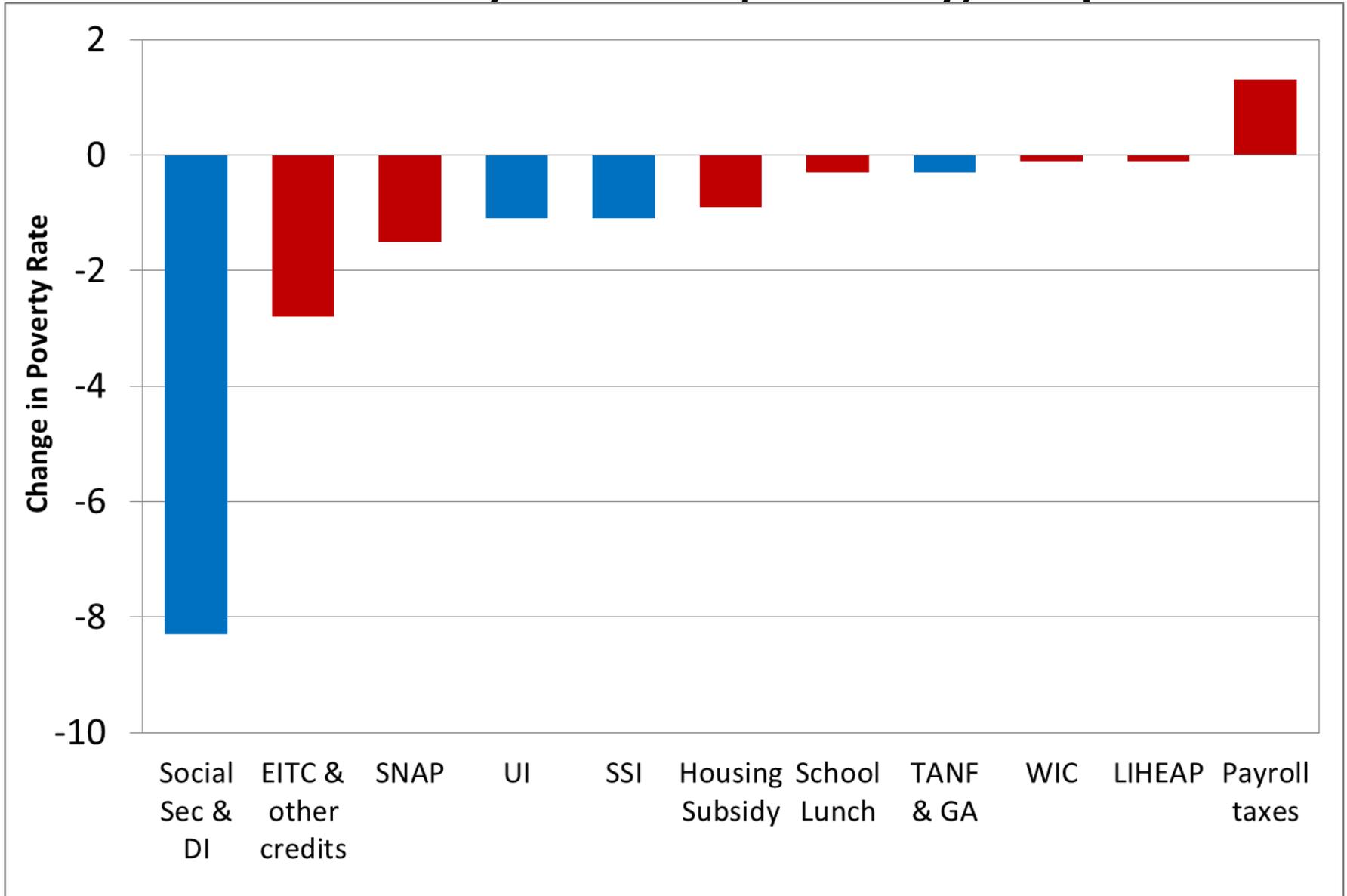


- In November 2011, the U.S. Census released an alternative poverty measure
- Uses post-tax family income including the value in-kind government benefits
- The OFFICIAL poverty measure includes only CASH income and cash government benefits and is PRE-TAX (no EITC).
- Other changes include geographic variation in poverty thresholds, expanding definition of family unit (cohabitators), and accounting for out of pocket medical expenses.

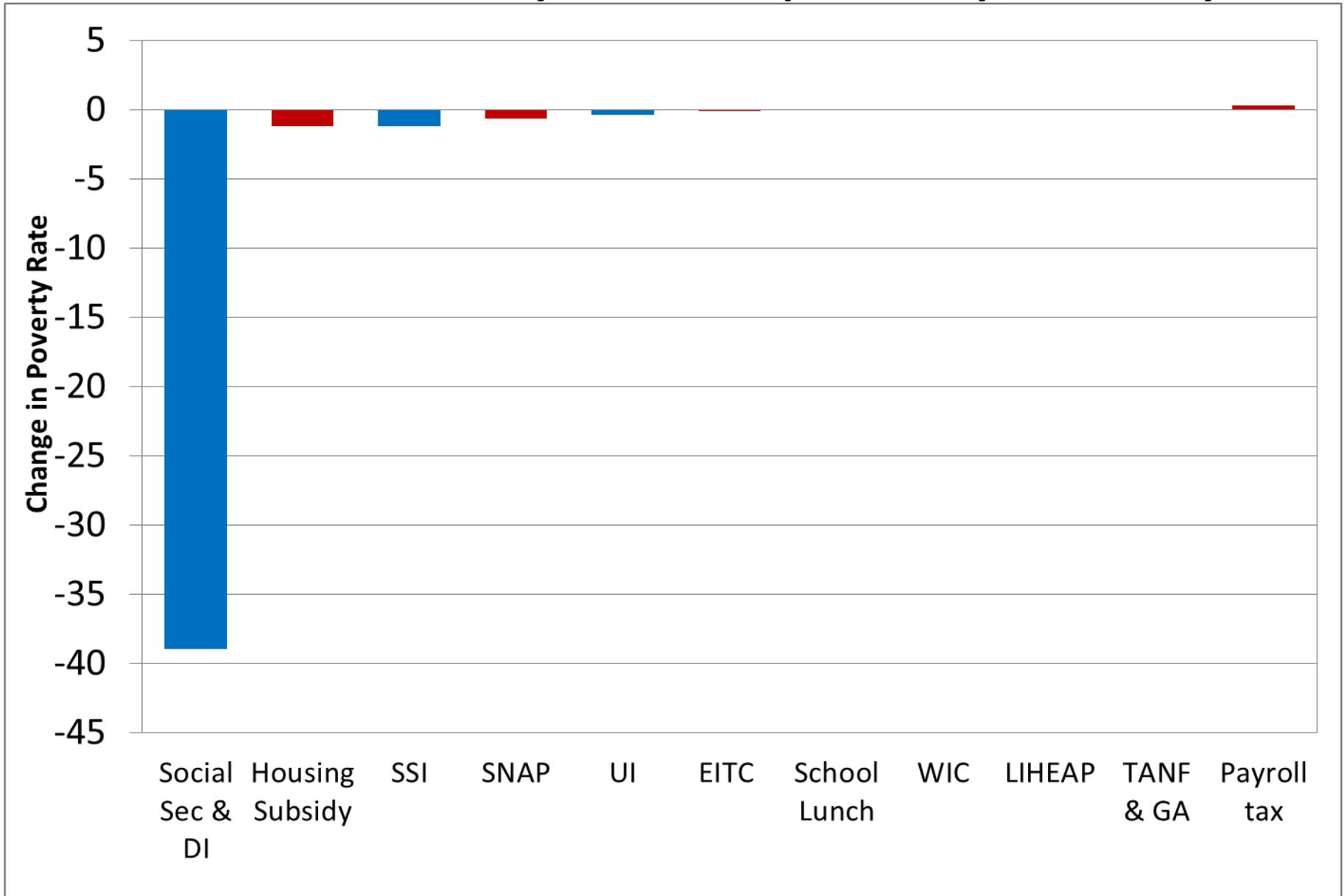
Effects of the safety net on poverty, children



Effects of safety net on poverty, all persons



Effects of safety net on poverty, elderly

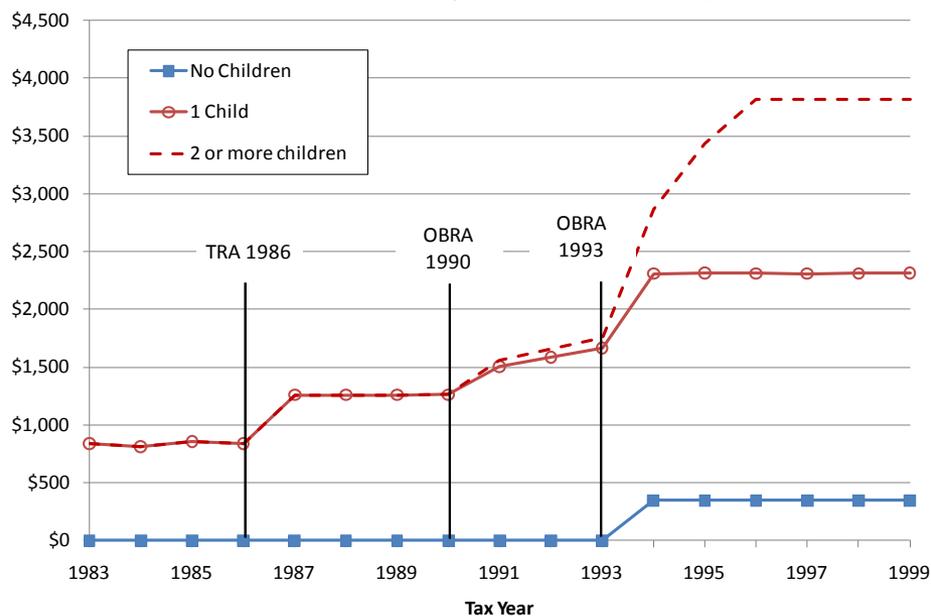




- The goal of safety net programs is to increase incomes at the bottom of the distribution and to smooth over shocks
- Of course, we need to balance the potential gains from these policies against the costs due to moral hazard
 - This has been the focus in the literature
- Our work focuses on quantifying other benefits to the safety net; in particular health benefits
 - Contemporaneous health effects – health at birth
 - Longer term benefits – adult health and economic outcomes

“Income, the Earned Income Tax Credit, and Infant Health,” by Hilary Hoynes, Douglas Miller, and David Simon

EITC Maximum Benefits by Number of Children (1999\$)



- Use tax reform to identify the effect of the an increase in after tax income (EITC) on infant health
- Mother is “treated” during pregnancy with varying EITC depending on year and birth parity
- Main outcome = low birth weight (<2,500 grams)
- Vital statistics data on full census of births
- Difference-in-difference (and event study)

Why infant health?



- Health at birth is an important predictor of later life economic and health outcomes
- Low birth weight measured and watched by most countries
- Excellent data in the U.S. (administrative vital statistics data)

Research Design – Leveraging tax reform



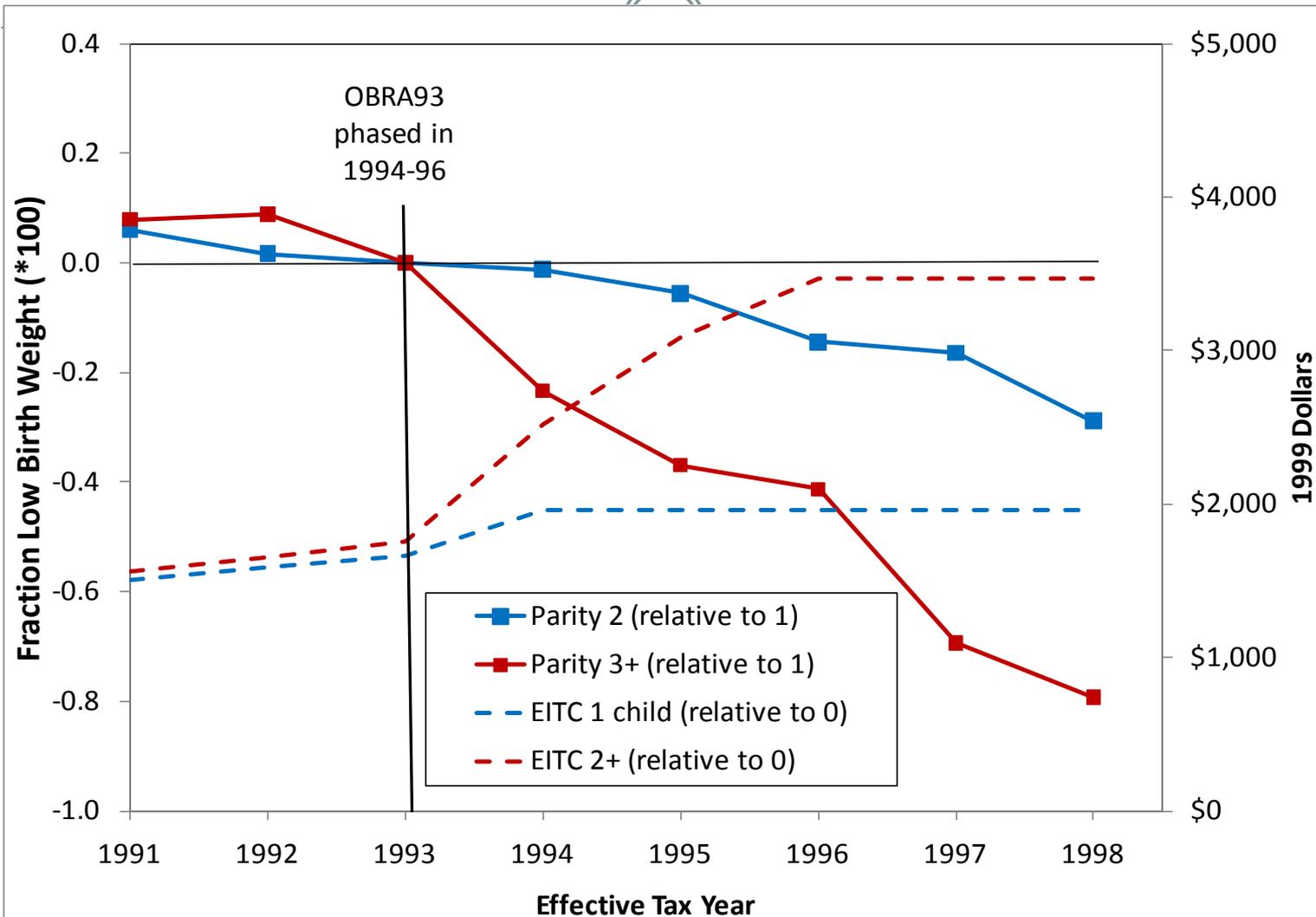
- Use before vs. after the 1993 expansion
- First births are the control group.
- We compare second births vs. first births, third and higher births vs. first births
- Event time analysis: replace pre/post analysis with year by year comparison of the treated vs. control group
 - Advantages: Estimate pre-trends; test for validity of the design
 - Examine over-time pattern of treatment effect
 - Practically: replace After and Parity dummies with full set of year dummies and year dummies interacted with Parity

Magnitudes OBRA93, Percent LBW Single Women Ed<=12

	All	White	Black
A. PARITY 2+ vs. PARITY 1			
Treatment Effect	-0.354	-0.132	-0.728
EITC increase (2009\$)	\$521	\$471	\$624
Treatment on Treated per \$1000 (2009\$)	-0.68	-0.28	-1.17
ToTper \$1000 (2009\$), % impact	-6.69%	-3.44%	-8.09%
Mean – share of births that are LBW	10.2	8.2	14.9

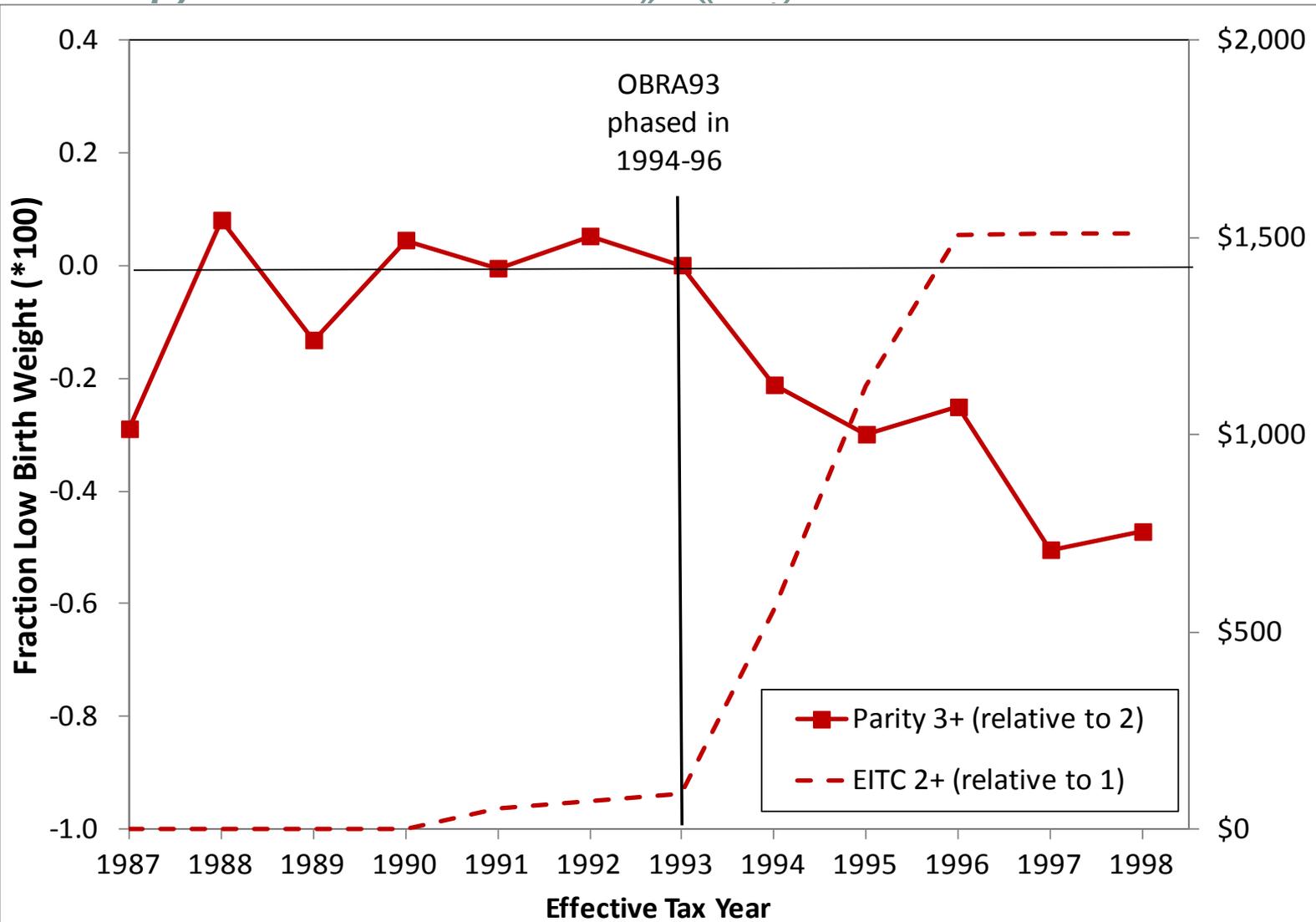
Effect of 1993 tax reform on low birth weight

Single women with ≤ 12 years of education

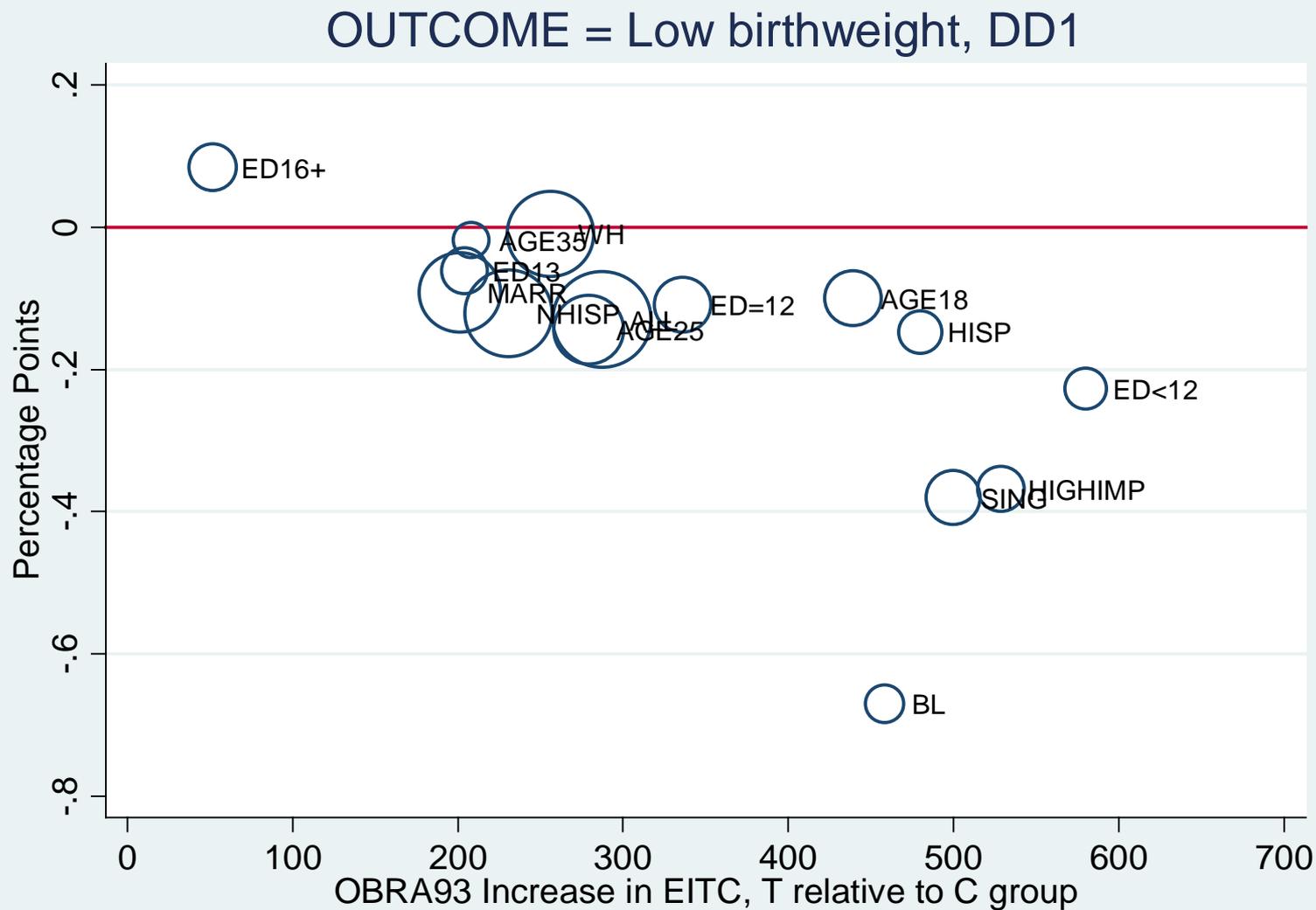


Extending to longer pre-period

Single women with ≤ 12 years of education



Magnitude of birth weight improvement lines up with predicted treatment



Mechanisms

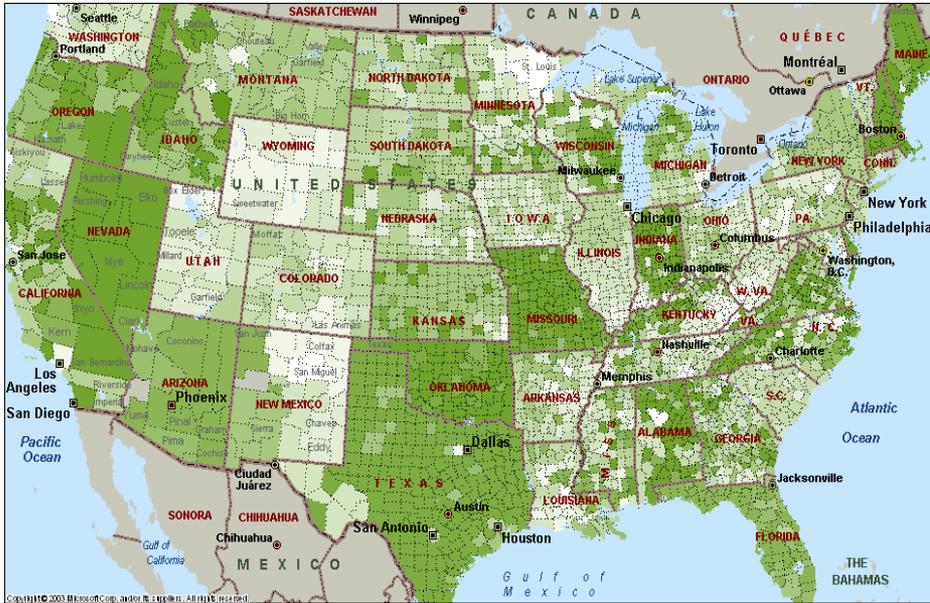
- Increases in prenatal care and reductions in smoking are part of the pathway for our results for improving infant health
- This could be generated by additional income (affordability of prenatal care), employment (less smoking)
- Overall health insurance, if anything, declines. But there could be an effect for some of an “upgrading” due to the increase in private insurance

Other evidence on EITC and health, well-being



- Increased income through the EITC leads to an increase in test scores (Dahl and Lochner, 2012)
- Additionally, expansion of the EITC is associated with a reduction in risky biomarkers in mothers (Evans and Garthwaite 2011).
 - This suggests that increases in income – through government policy – can reduce cortisol.
 - Chronic elevations of cortisol can lead to dysfunction in metabolic and immune systems

“Inside the War on Poverty: The Impact of Food Stamps on Health,” Douglas Almond, Hilary Hoynes and Diane Schanzenbach *Review of Economics and Statistics* 2011



- Use initial rollout of the FSP (1961-1975) to examine effects on infant health
- Main outcome = percent of births that are low birth weight
- Mother is “treated” during pregnancy with varying FSP depending on county and month-year of birth
- Vital statistics data on full census of births
- Event study model (difference-in-difference)

Prior Evidence on Food Stamps

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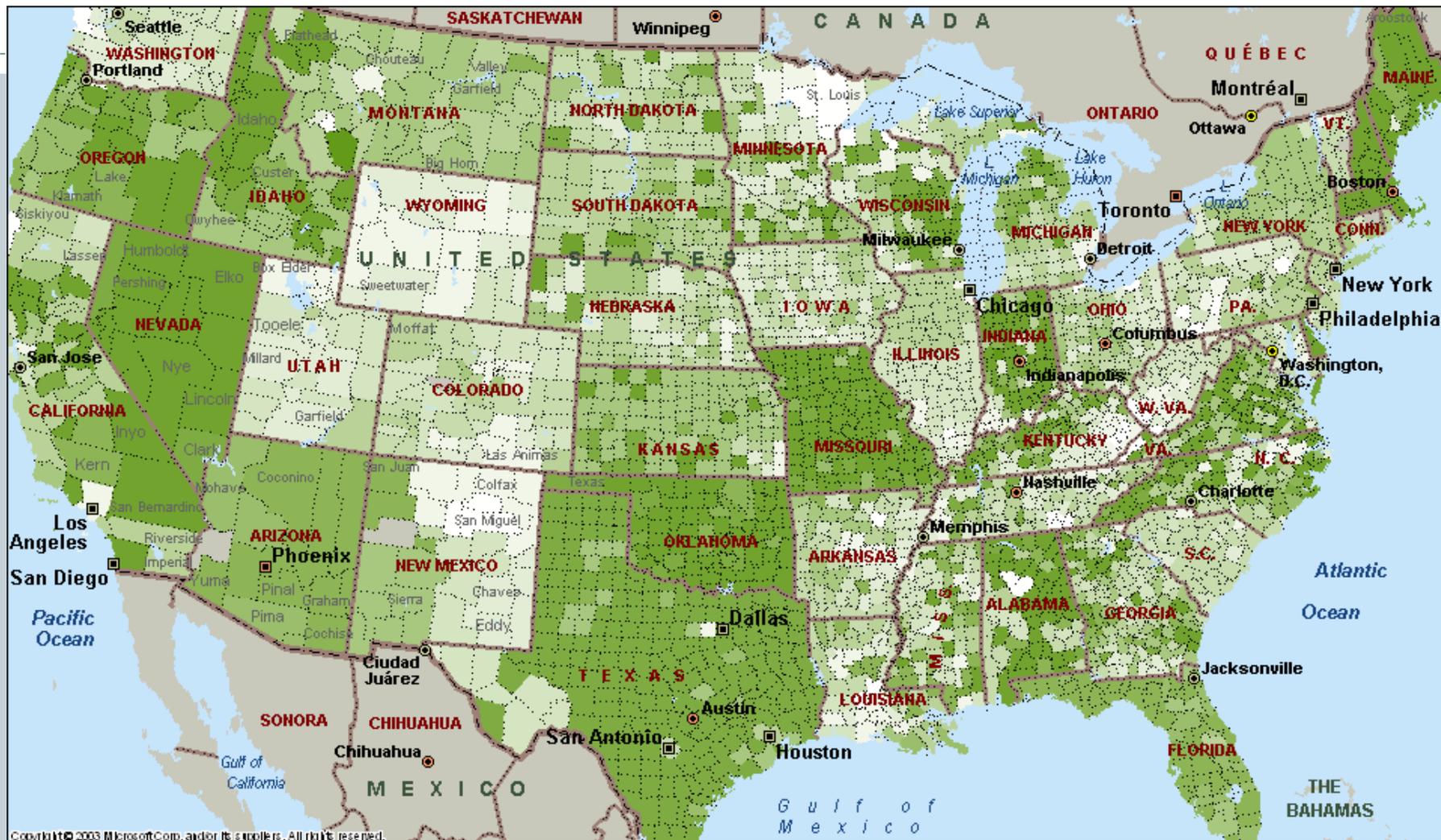
- **Given the importance of food stamps, it is surprising that so little is known about the program**
 - The lack of credible evidence on the impacts of FSP derives from the fact that the program is national
 - Little variation across space or time; no variation in program parameters that are typically exploited by researchers (Currie 2003)
 - Most prior studies compare recipients to non-recipients (or structural modeling; some experiments)
- **In our work, we identify the effect of the FSP using the county rollout of the program between 1961 and 1975**

A Short History of the (modern) Food Stamp Program



- **1961 Pres. Kennedy executive order; established 8 county-level pilot programs; 1962-1963 expanded to 43 counties**
- **Food Stamp Act of 1964:**
 - Gave local areas the authority to start up FSP in their county
 - Federally funded
 - Voluntary adoption by counties
- **Steady increases in county adoption; constrained somewhat by budgetary limits**
- **1973 amendments to Food stamp act: mandated that all counties offer FSP by 1975**
- **Result: rollout over 3,000 counties over 1961-1975.**

Food Stamp Start Date, by County



Research Design (program rollout)

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- Use variation across counties in difference-in-difference model:

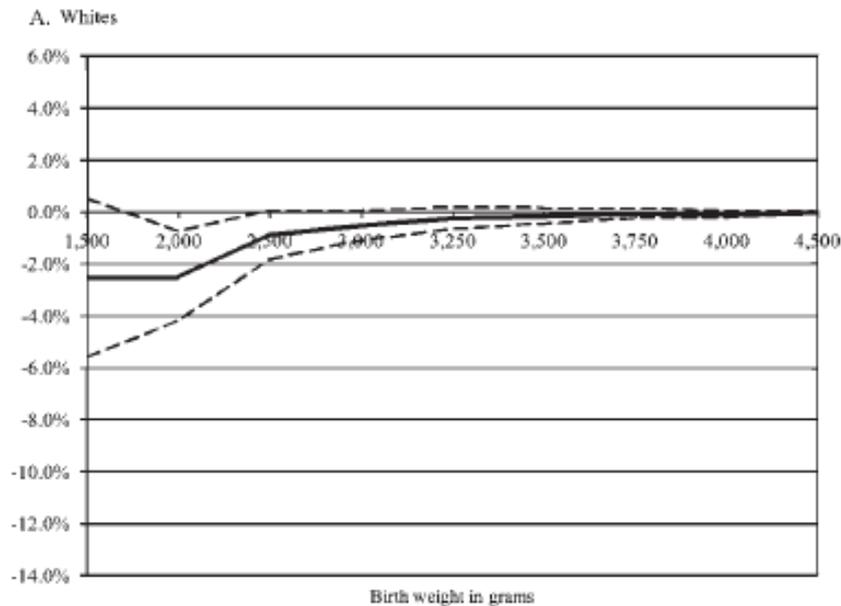
$$y_{ct} = \alpha + \delta FSP_{ct} + \eta_c + \lambda_t + \phi_{st} + \gamma_1 Z_{c60} * t + \gamma_2 TP_{ct} + \varepsilon_{ct}$$

- Observations are at the county (c), time (t) level
- Identification comes from variation across counties over time in adoption of FSP (FSP_{ct})
- Fixed effects for county, time and state*year (or county*linear time)
- We also control for possible confounders:
 - 1960 county characteristics interacted with linear time (Z_{c60})
 - Per capita annual county expenditures on other government transfer programs (TP_{ct})
- Standard errors clustered on county

Results: Food Stamps and Infant Health

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FIGURE 3.—EFFECTS OF FSP IMPLEMENTATION ON DISTRIBUTION OF BIRTH WEIGHT, PERCENTAGE IMPACTS (COEFFICIENT/MEAN)



- Availability of food stamps in the county leads to a statistically significant reduction in the incidence of low birth weight
- Overall improvement in infant health concentrated at the bottom of the birth weight distribution

Magnitudes: How do these safety net programs affect birth outcomes?



- Percent impacts on low birth weight, treatment-on-the-treated per \$1000 in 2009\$:
- Food stamps: 4% for whites, 2% for blacks [*Almond, Hoynes and Schanzenbach RESTAT 2011*]
- EITC: 7% for single low education women [*Hoynes, Miller and Simon 2012*]
- WIC: 10-20% [*Hoynes, Page and Stevens JPUBE 2011, and others*]

- This work has demonstrated that safety net programs may have important, quantifiable effects on health outcomes
- Analysis of infant health is a *contemporaneous* health effect
- We have also examined the longer term effects: whether access to food stamps in early childhood leads to improvements in adulthood
 - “Long Run Impacts of Childhood Access to the Safety Net,” joint with Diane Schanzenbach and Doug Almond

Early life “shocks” and later life outcomes



- Economic outcomes: Heckman and others argue that investment in early childhood leads to higher returns to human capital than investments later in life
- Health outcomes: “Fetal origins” hypothesis, from developmental biology and Barker (1990) argues that there is a connection between fetal development and early “critical” periods (nutrition in particular) and chronic conditions in adulthood.
- We contribute to this literature by examining a the effects of a moderate, policy induced expansion (rather than the severe negative shocks such as famines that are used in the literature)

What does this theory predict for FSP introduction?



- **Health**: FSP leads to better nutrition in childhood → lower metabolic syndrome in adulthood
 - Expect lower incidence of obesity, cardiovascular disease, high blood pressure, type 2 diabetes
 - Both pre- and post-natal nutrition may matter
- **Economic outcomes**: increase in human capital (education, earnings)

What we do



- Use variation in childhood exposure to FSP based on county and year of birth during the FSP rollout period
- Use Panel Study of Income Dynamics
 - Data on economic outcomes, health conditions, general health status, and disability. Allows for measurement of metabolic syndrome.
 - We can relate exposure during childhood (using county of birth) to adult health and economic outcomes.
- Explore when in childhood the intervention is most beneficial.
- Our sample includes heads and wives born between 1956-1981, measured at ages 18-53 (or 24-53 for economic outcomes) [→ still relatively young]

Methodology



- Because of our many outcome variables, we follow Kling, Liebman and Katz (2007) and Anderson (2008) and estimate standardized indices that aggregate information over multiple outcomes.
 - We use two indices: *metabolic syndrome* and *economic self sufficiency*
 - Each are an equal weighted average of the z-score of each component
- $$y_i = \frac{1}{J} \sum_j \frac{y_{ij} - \mu_j}{\sigma_j}$$
- We use the mean and SD of “untreated cohorts” (born before 1962) in constructing the z-scores

Metabolic
Syndrome

Obese (=1)
High blood pressure (=1)
Diabetes (=1)
Heart disease (=1)
Heart attack (=1)

Economic self-
sufficiency

High school graduate (=1)
Employed (=1)
Not poor (=1)
Not on TANF (=1)
Not on food stamps (=1)
Earnings
Family income

- Our main estimates are for a high impact sample.
- Those raised in families where the head was low education (less than high school). This uses family background.

Metabolic Syndrome for High Impact Sample



	Metabolic syndrome (index)
FS share IU-5	-0.294*** (0.107)
Mean of dep va	0.01
Observations	8,246
R-squared	0.26

Change from no exposure to full exposure (in utero to age 5) reduces metabolic syndrome by 0.3 standard deviations; significant at 1%

Economic Self Sufficiency Index, High Impact Sample



	Economic self sufficiency (index)
FS share IU-5	0.182 (0.124)
Y-mean	-0.25
Observations	20,115
R-squared	0.38

Access to food stamps leads to an insignificant 0.2 standard deviation increase in economic self-sufficiency.

Main Results for High Impact Sample, by Gender



	Women		Men	
	Metabolic syndrome (index)	Economic self sufficiency (index)	Metabolic syndrome (index)	Economic self sufficiency (index)
FS Share IU-5	-0.312** (0.130)	0.306* (0.164)	-0.526** (0.251)	0.005 (0.168)
Mean of Dependent Var	0.03	-0.37	-0.01	-0.11
Observations	5,062	12,208	3,184	7,907
R-squared	0.37	0.43	0.32	0.46

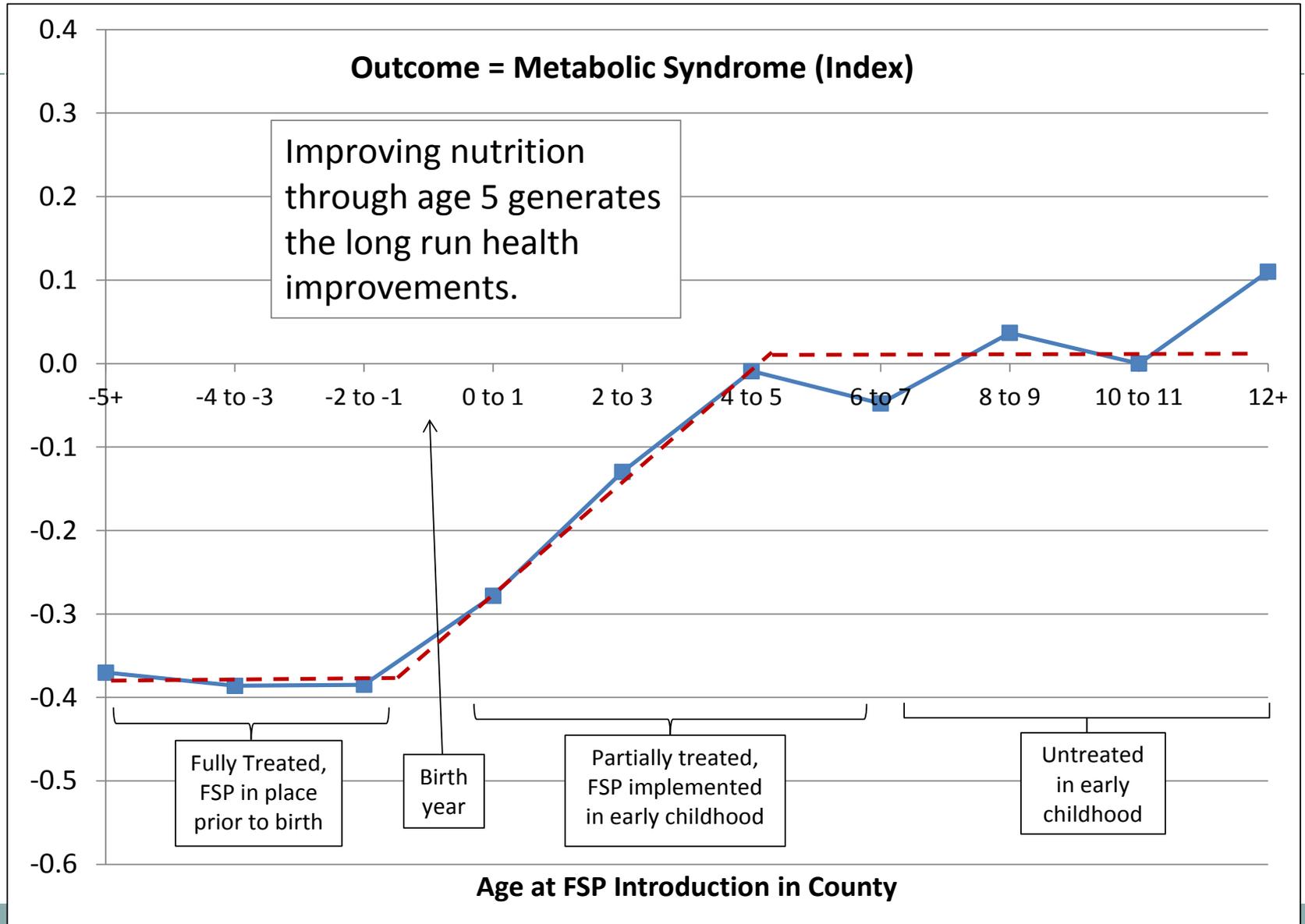
Economic impacts strong for women, nonexistent for men. Consistent with other studies finding stronger impacts for girls (Anderson 2008, Bleakley 2007, Dahl/Lochner 2012, Milligan/Stabile 2009, MTO; less evidence from fetal origins/nutritional studies)

Exploring the timing of treatment

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- Event study approach
- Traces out the treatment effect for years prior to and after the treatment
- Advantages: (1) can test for absence of pre-treatment trends, and (2) can examine impacts of treatment over time, and (3) can explore when in childhood the treatment matters
- The tricky thing about our treatment is that:
 - We do not have a strong prior about *when* treatment matters (and hence when to assign someone as treated)
 - Treatment turns on, and then never turns off
- Solution: make event time = age when food stamps introduced in your county

Event Study: by age when FSP introduced, high impact group



Conclusions



- Our primary evaluations on the efficacy of the safety net focus on labor supply and poverty
- Yet increasing incomes at bottom of the distribution may generate substantial benefits to children and families that, to date, have not been explored
- The work summarized here shows that there are economically important improvements in health, both contemporaneous and in the longer term
- It implies that benefits of safety net are broader than previously thought. Positive external benefits to taxpayers.
- This work is still in its infancy, and there is much more to learn