

# Long-term Impacts of Early Childhood Investments: Lessons from Preschool and Welfare Programs

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# Two Types of Early Life Investments

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## Increasing household incomes

- Food stamps -> modest (~15%) increase in resources that can be used for food
- 1 in 8 Americans participate

## Improving early childhood education

- Pre-school expansion
- Education quality

*Made possible by new analysis techniques, data availability*

*Giving my highlights here – much more out there*

# What is impact of alleviating poverty during early life?

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## Introduction of Food Stamp Program (now SNAP)

- Vouchers that can be used to purchase most grocery store foods
- Increased spending power by 15-20%
- Debate within economics whether impacts of vouchers for food different from cash

## Rollout design allows us to measure causal impact of reducing poverty

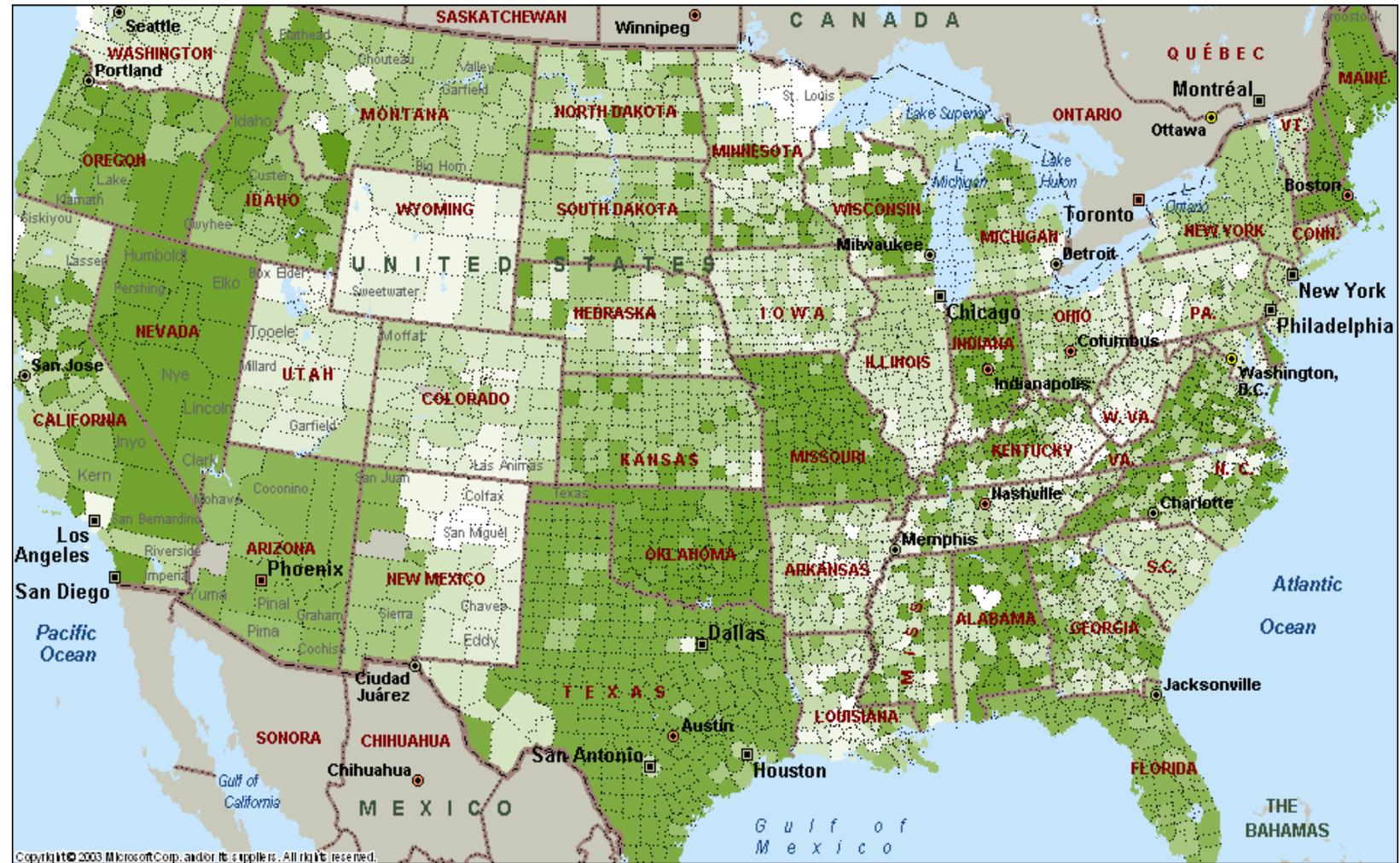
- Compare children born in different counties in same state
- Compare children born at different times in same counties

# Impacts of Food Stamp Program

Original introduction 1963-1975

Use cross-county variation in access at different ages

Use design to look at variety of outcomes: spending, labor supply, birth outcomes, and long-term health & economic outcomes



# Food Stamps during Pregnancy Improve Birth Outcomes

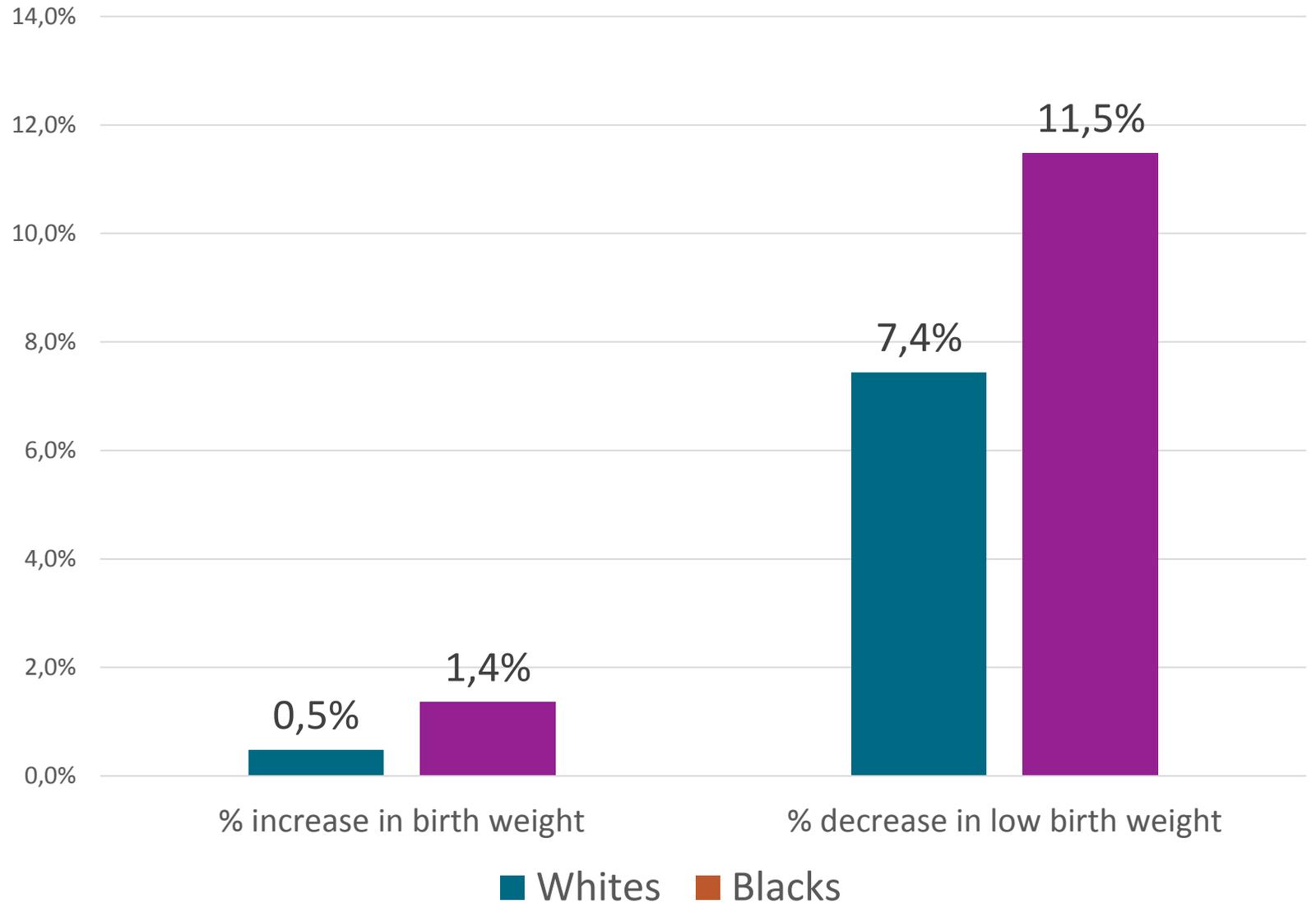
Availability of food stamps in the county leads to an increase in birth weight and a reduction in the incidence of low birth weight

Larger effects on children born to African American mothers

Effects concentrated at the bottom of the birth weight distribution

Figure shows reduction in likelihood born with birth weight < X

## Impacts of Food Stamps on Birth Outcomes



# Measuring Long-run Effects

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Need multiple pieces to come together:

Longitudinal data (childhood & adult circumstances)

Credible research design

Time to pass

Childhood Access -  
> Large improvements in adult health, economic outcomes – especially for women

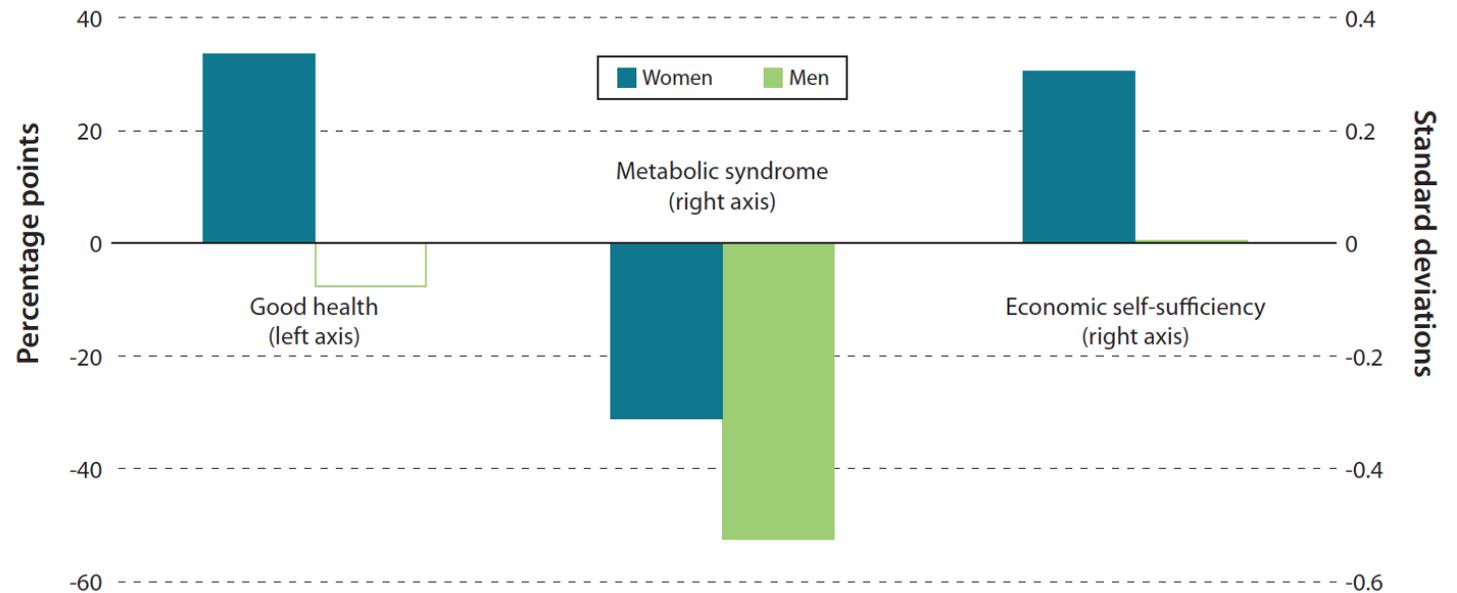
More good health (women)

Fewer biomarkers of bad health

More economic self-sufficiency (women)

### Impact of access to food stamps during early life on adult health and economic outcomes

Access to food stamps in early life improves health outcomes in men and women and economic self-sufficiency in women later in life.



Sources: Hoynes, Schanzenbach, and Almond 2016.

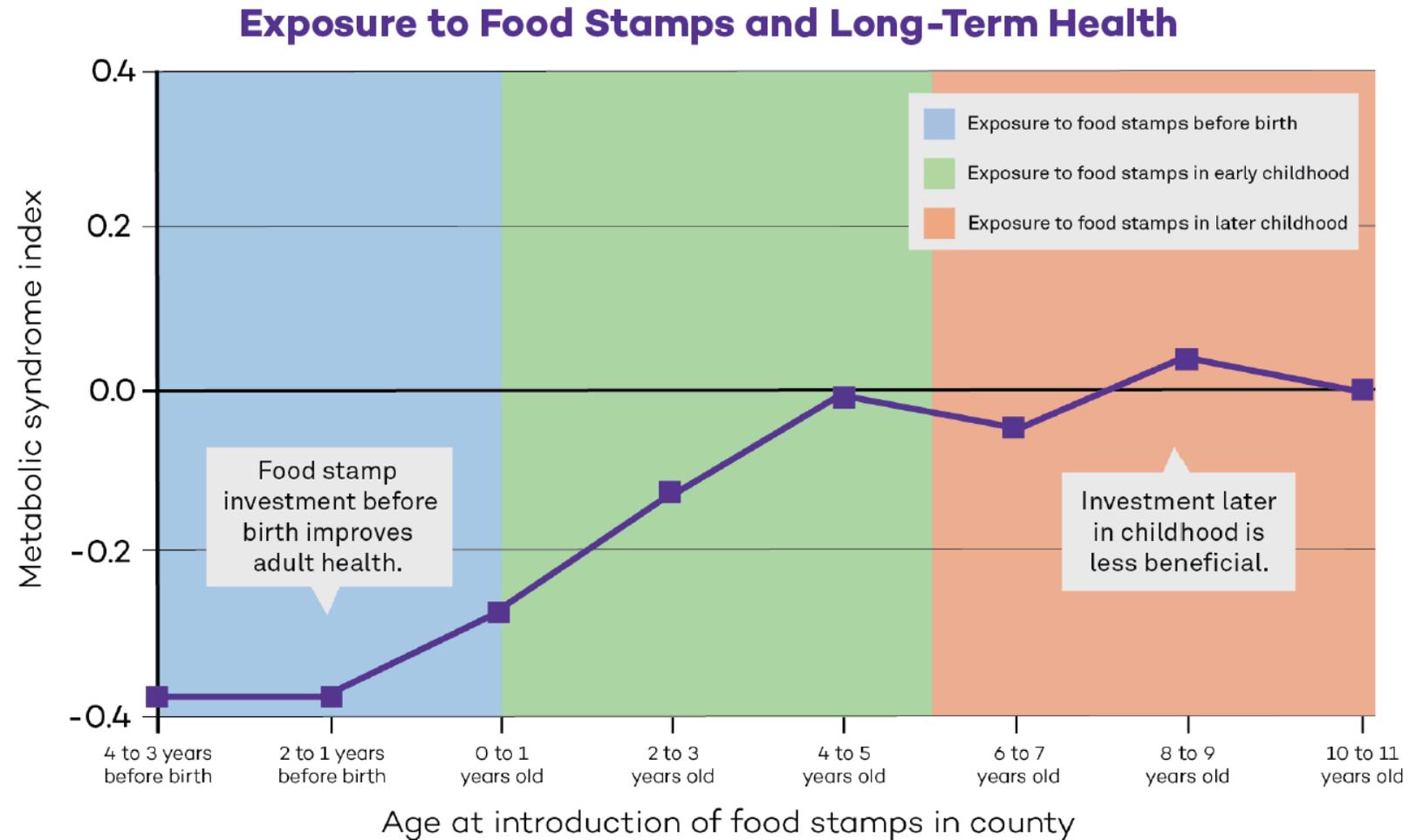
Note: Hollowed bars are not statistically significant.

Timing matters:  
Early investments  
have larger health  
payoff

Largest impacts when had  
resources prior to birth

Important impacts during  
first 4 years of life

Economic impacts: positive  
at all ages, but largest from  
conception through age 1



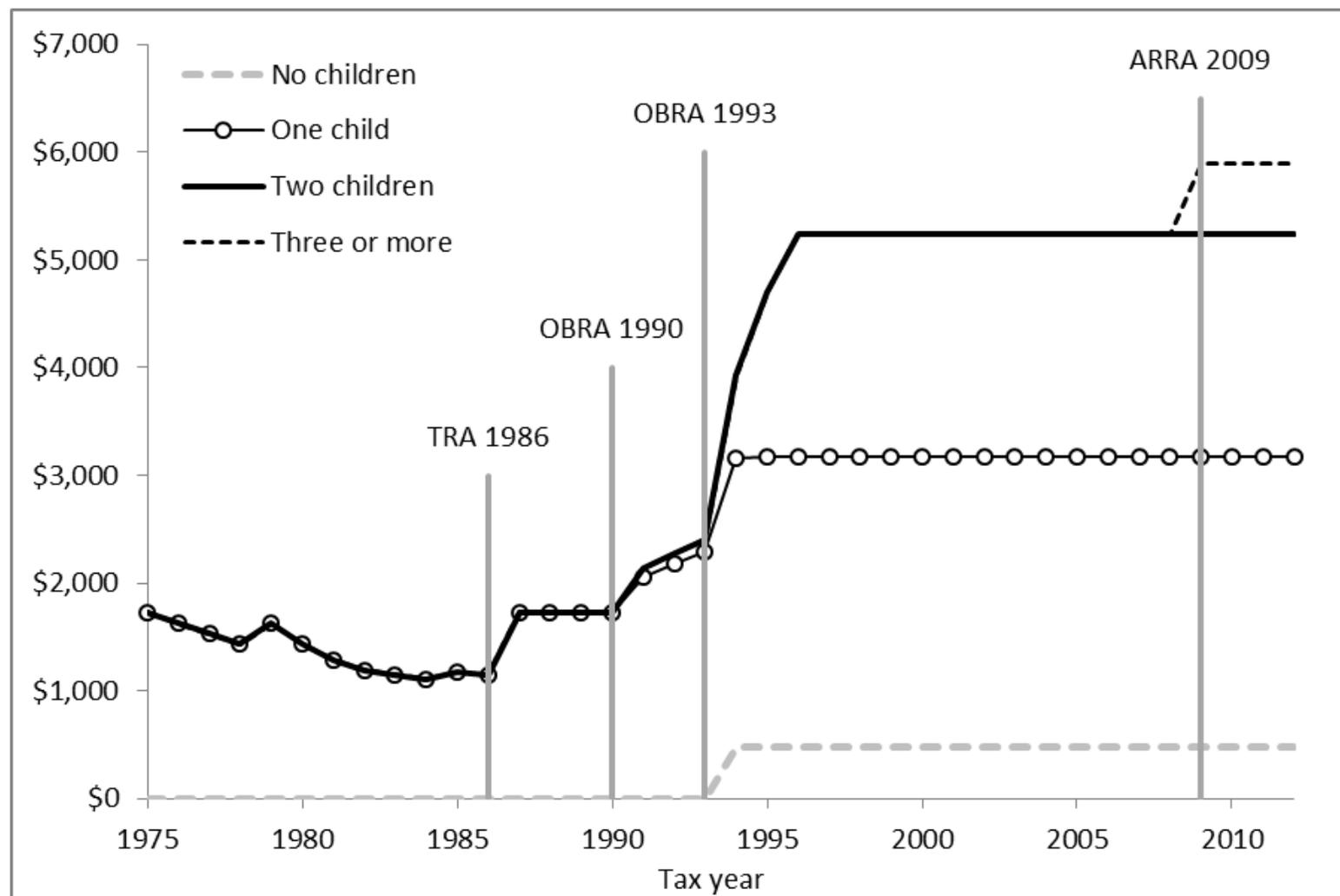
Similar findings for tax credits linked to paid work (Earned Income Tax Credit)

EITC : largest anti-poverty program for children in the U.S.

~20% of all tax filers ; 44% of filers with children receive the credit.

Increases likelihood of maternal employment

Large expansions in EITC over time & family size used for estimating impacts



# EITC impacts

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## HEALTH

- EITC expansions lead to reductions in low birth weight births (Hoynes, Miller & Simon 2015, Strully et al. 2010)
- Expansion of the EITC is associated with a reduction in risky biomarkers in mothers (Evans & Garthwaite 2014).

## HUMAN CAPITAL

- Increases in children's test scores (Dahl & Lochner 2012, Chetty, Friedman & Rockoff 2011)
- Increases in educational attainment and college-going Bastian & Michelmore (2015), Maxfield (2013) and Manoli & Turner (2014)

# What is causal impact of expanding early childhood education?

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## Expansion of preschool programs

- High or middle quality, targeted to some of most needy
- High or middle quality, targeted to most/all of needy in area
- High or middle quality, broadly available to needy and higher income
- Low quality, targeted to most needy

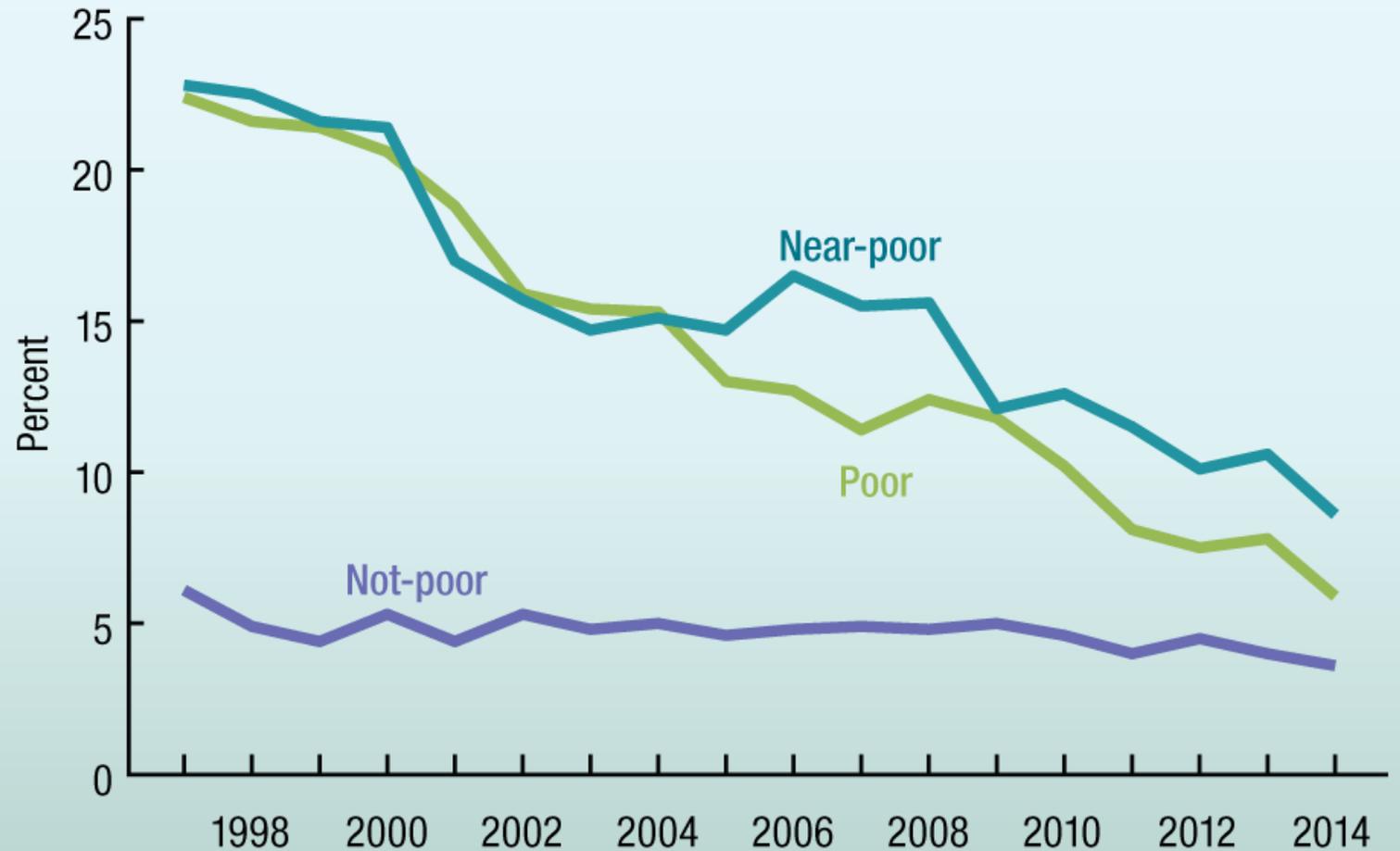
## Variety of designs

- Randomized experiments
- Comparing siblings
- Comparing variation in access

# Public health insurance: Medicaid

Major increase in public health insurance among children in the 1980s and 1990s.

Children who were uninsured at the time of interview, by poverty status:  
United States, 1997–2014



SOURCE: CDC/NCHS, National Health Interview Survey, 1997–2014.

# Long-run Effects of Medicaid

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Expansion in childhood health insurance in 1980s-1990s leads to:

- TEEN HEALTH: Improvement in self-reported health (Currie et al. 2008); reduction in mortality, particularly for blacks (Wherry & Meyer 2015)
- EARLY ADULT HEALTH: Reductions in mortality (Brown et al. 2014), reductions in hospital admissions for chronic conditions (Wherry et al. 2015), lower obesity and hospitalization (Miller & Wherry 2016)
- EARLY ADULT HUMAN CAPITAL: Increases in test scores (Levine and Schanzenbach, 2005) educational attainment (Cohodes et al. 2016, Miller & Wherry 2017), earnings, and tax payments (Brown et al. 2014)

# Improving access to high-quality preschool programs

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Strong evidence on high-quality early education from model randomized controlled trials

More high school graduation

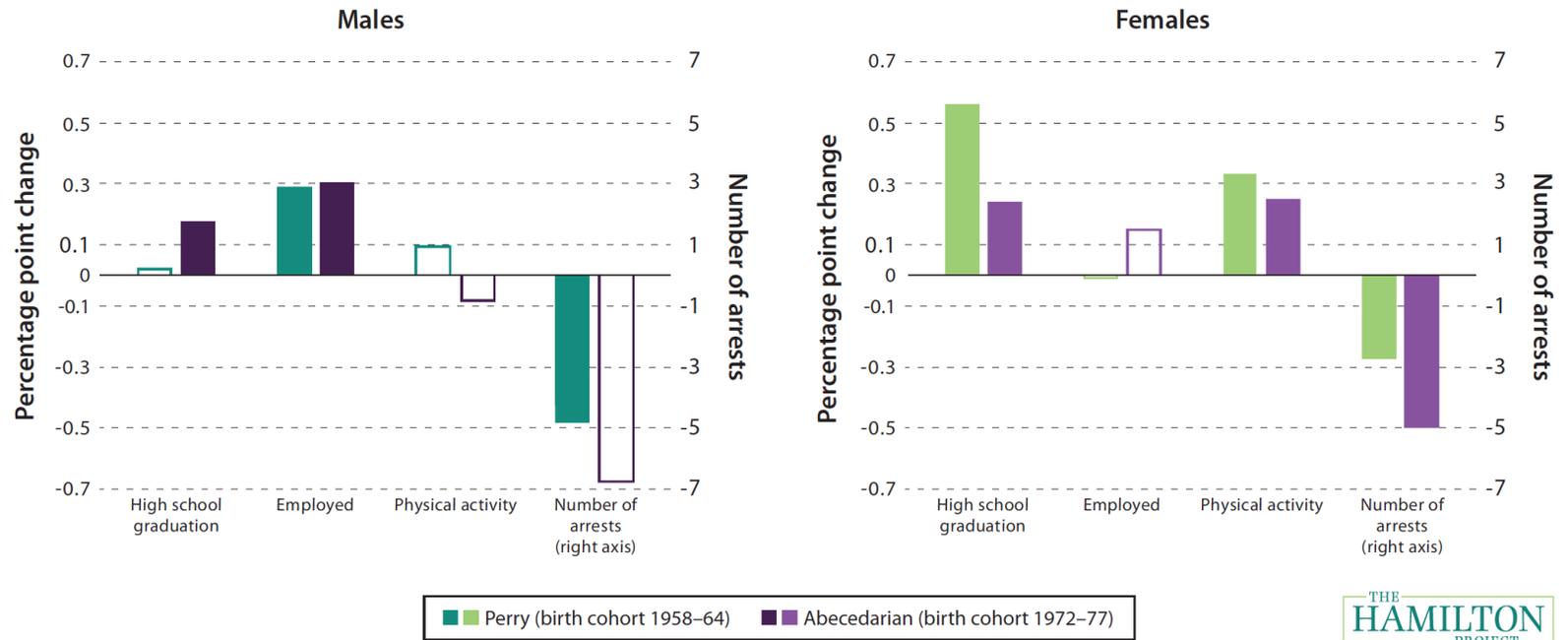
More employment (men)

Physical activity in adulthood improved (women)

Fewer criminal arrests

### Impacts of Preschool Projects on Long-run Economic and Social Outcomes

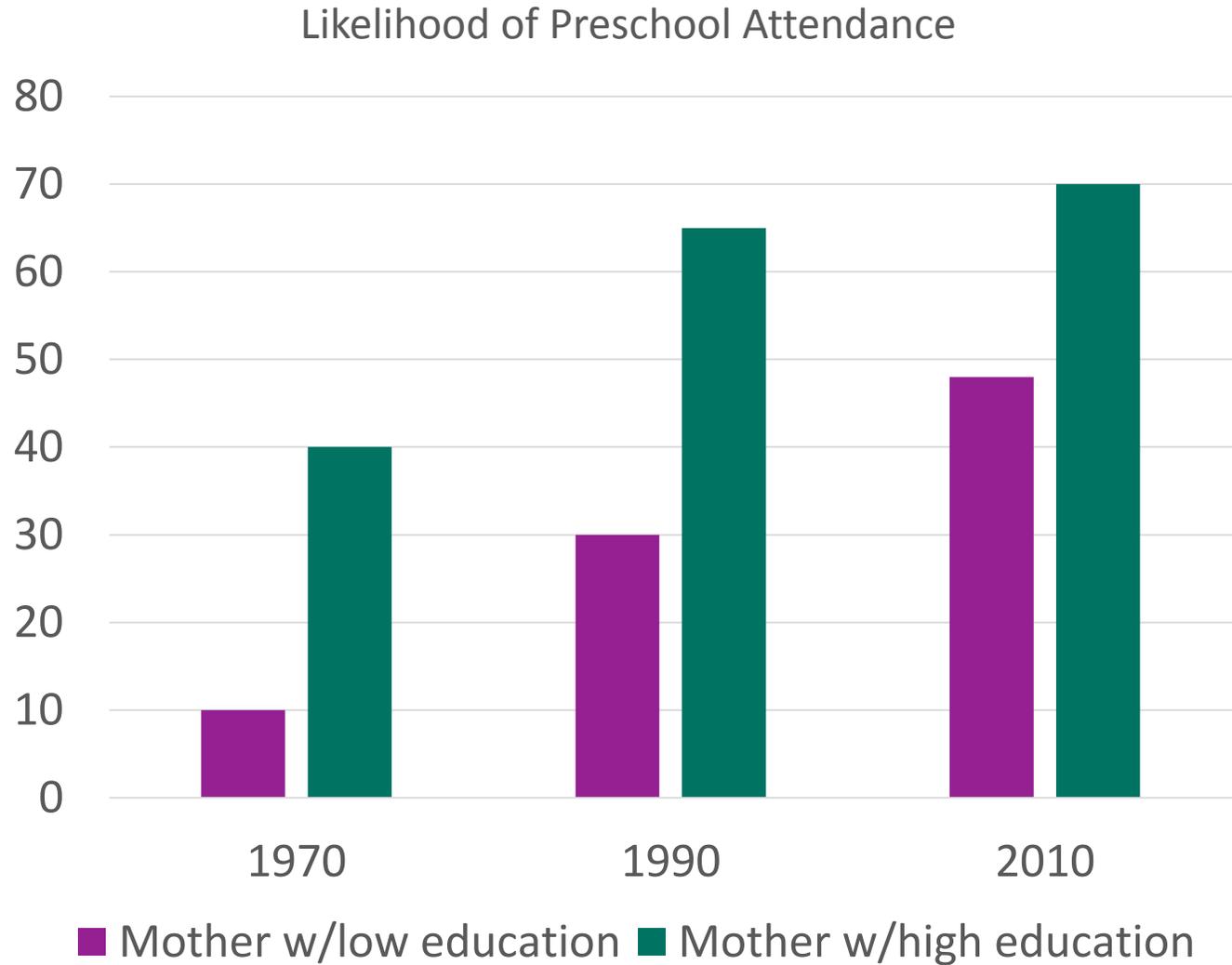
Both Perry and Abecedarian increased employment and decreased arrests for men while increasing high school graduation and physical activity for women.



Source: Elango et al. 2016.  
 Note: Hollow bars are not statistically significant at the 10 percent level.

Children of high income mothers more likely to attend preschool, majority private programs

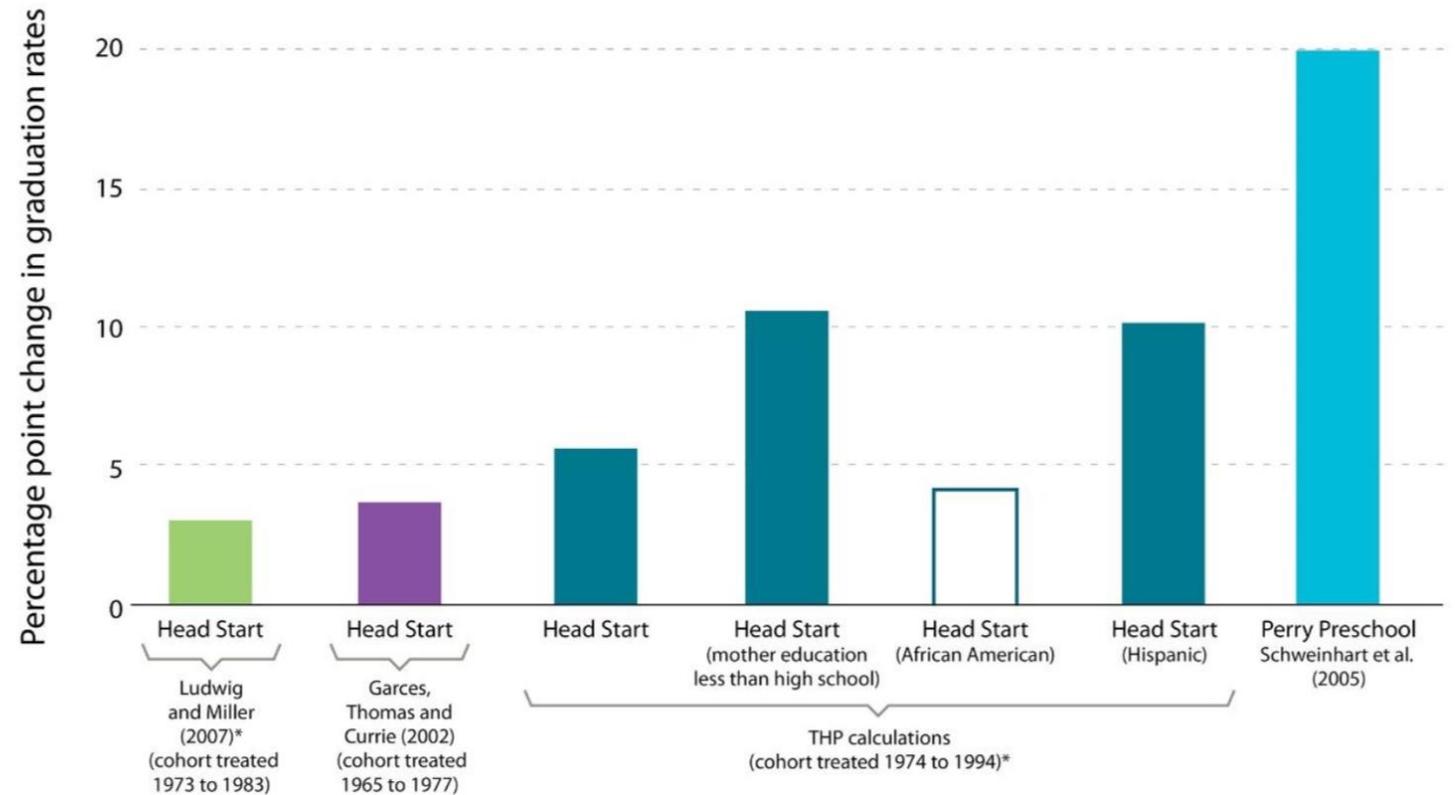
Fewer than half of children of low-income mothers attend, overwhelmingly public programs, Head Start



Head Start has long-term impacts, improving high school graduation

Also college attendance, emotional outcomes (self-control, self-esteem), own practices as parents

Effect of Early Education on High School Graduation Rates



Note: Hollowed bars are not statistically significant at the 10 percent level. \*Estimate for Ludwig and Miller (2007) may include and THP calculations do include some GED completers, but authors estimate their contribution to the total is small. There is no differential effect for white students. See the technical appendix.

In response, states have expanded public preschool offerings

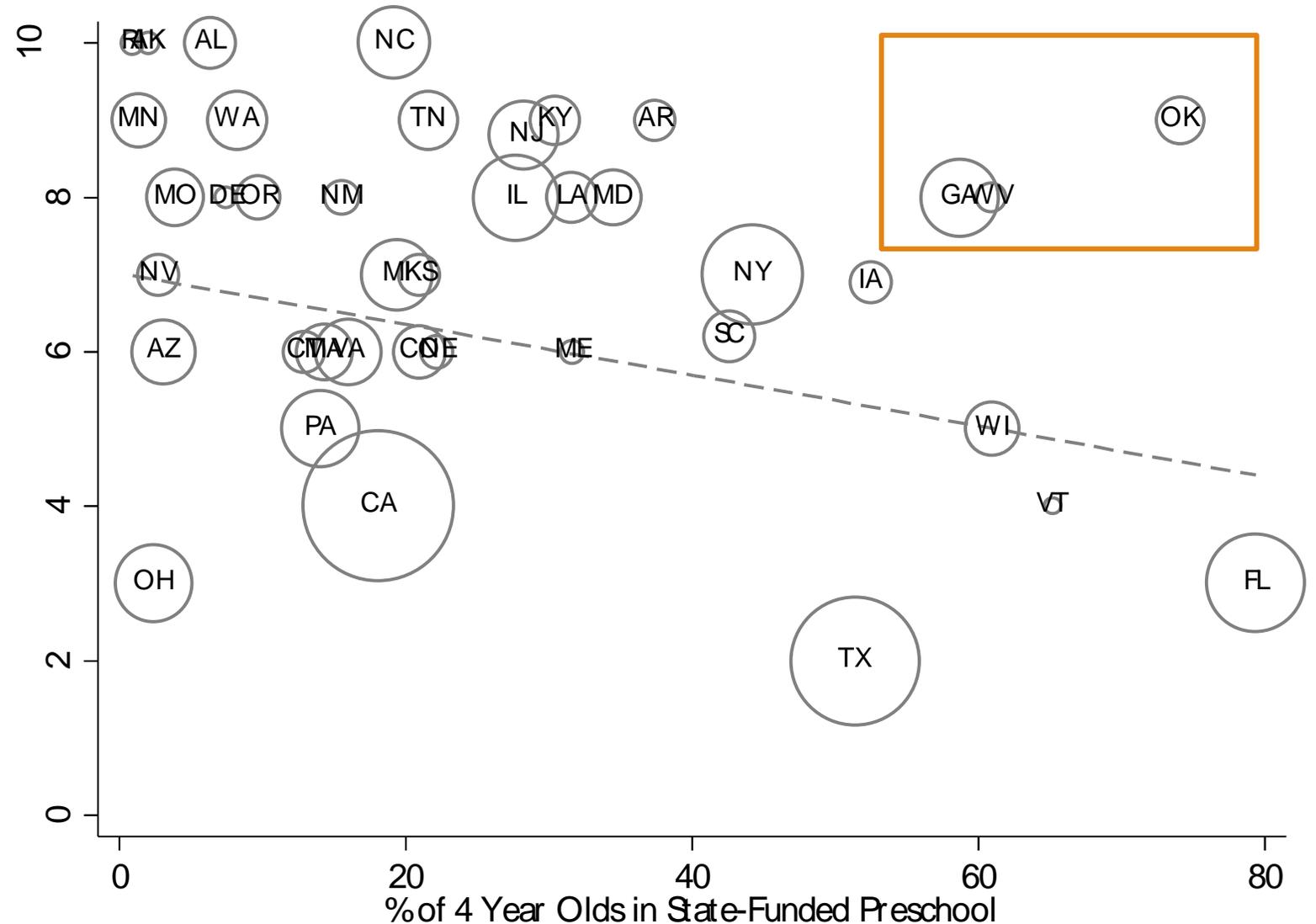
Differ widely by “quality” measured by inputs (class size, teacher education)

Access varies as well

Tradeoff between access and quality: more enrollment slots for less expensive, lower quality programs

A few states different

Access & Quality in State-Funded Preschools, 2011-2012



# Today's expansions: Statewide, high-quality pre-k

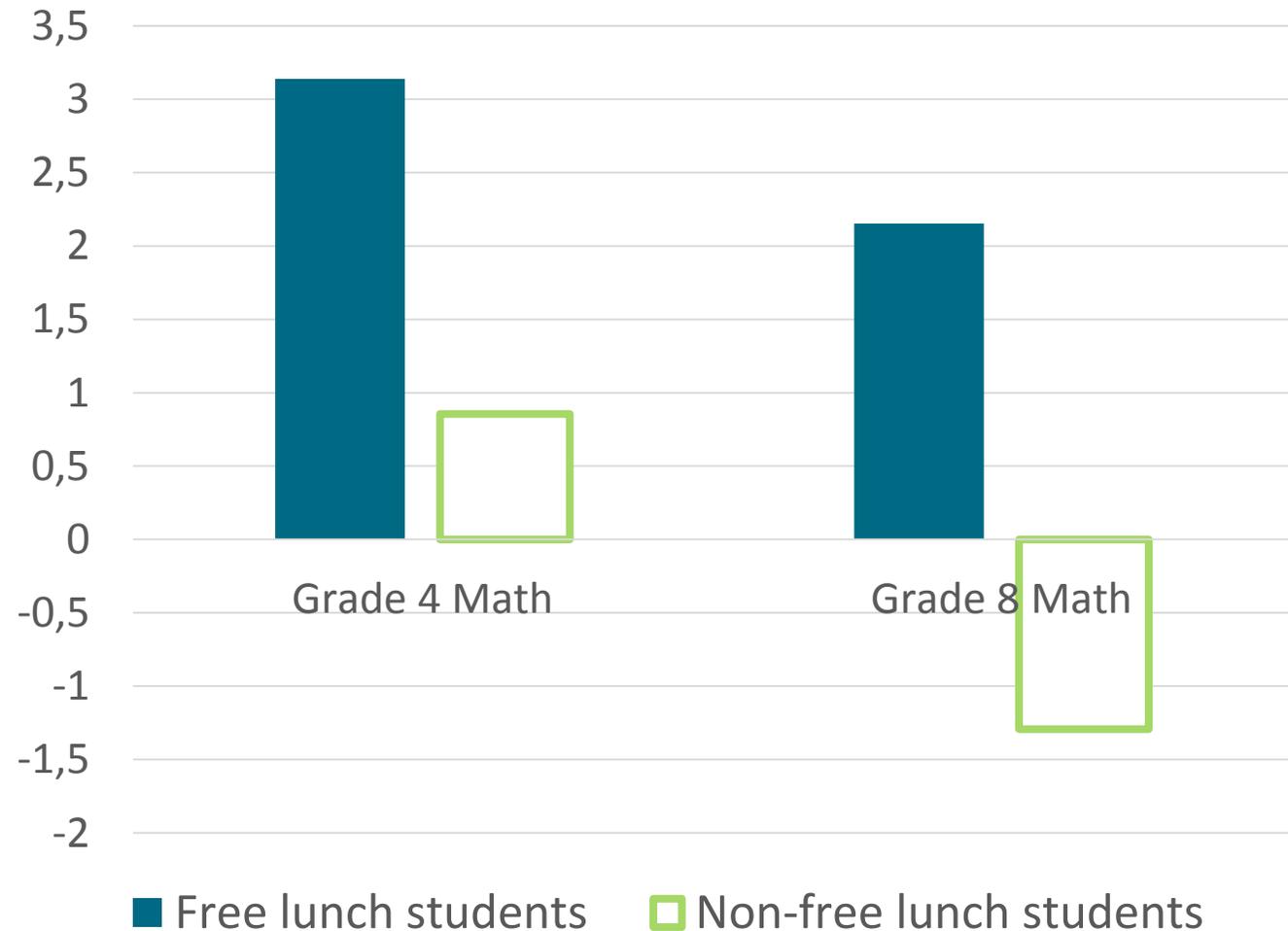
Compare cohorts before & after state-wide program

Who attends? Low-income shift from no pre-K to pre-K. High-income shift from private pre-K to public pre-K

Persistent, strong, significant impacts on low-income students

Small, statistically insignificant impacts on higher-income students – possibly because small change in likelihood of attending

Impacts of state-wide programs in GA and OK



# Conclusions

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# What we know 1: These Investments have Large, Long-Lasting Returns

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## Mature literature: **Returns on Investment Large**

- "Model" programs (Perry, Abecedarian)
- Head Start
- Growing literature on state programs
- Related literature on non-education interventions
  - Food Stamp Program
  - Medicaid

Long-term impacts on real life outcomes: earnings, education, criminal activity, welfare use

- Initial positive impacts on learning
- Academic interest in "fade-out" in middle years

# What We Know 2: Impact Depends on *What Child Would Otherwise Be Doing*

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Landscape has changed:

- Earlier literature: preschool or not
- Today: quality of preschool
  - Measures still developing

# What We Need to Know: How do Children's Interactions Help or Hinder Impacts?

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After preschool, children still educated in classrooms

- If preparation for early grades differs, ECE can be working for or against more productive elementary schools
- If bringing up worst performers: can make later grades more successful for entire class
- If ECE moves some children to top of class, but teacher still must teach remedial skills to others, ECE children may get bored, regress

How to allocate spaces when not all children can be enrolled

- Randomly assign individuals: best for evaluation, not necessarily best for education
- Understand how to target groups, neighborhoods—and reform later education

# High-priority Research Questions to Inform Policy & Practice

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## Quality

- Lower-cost way to measure program/classroom quality
- Training programs, practices support quality improvement

## Design

- Targeted or universal?
  - How approach cost-sharing for higher-income families?
  - How start rollout?
- Cost-tradeoff for dosage: multiple years? Full day?

## System

- Impacts on broader child-care market
- Interactions with later schools, parent employment
- Interactions with other policies that increase household financial resources

# Early Childhood is time for Investment

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Ensuring family resources are adequate for healthy development

Enriching environments that promote social & intellectual growth

-> both shown to have strong, important improvements in later-life economic and health outcomes