"Prep School for Poor Kids"

The Long-Run Impact of Head Start on Human Capital and Self-Sufficiency

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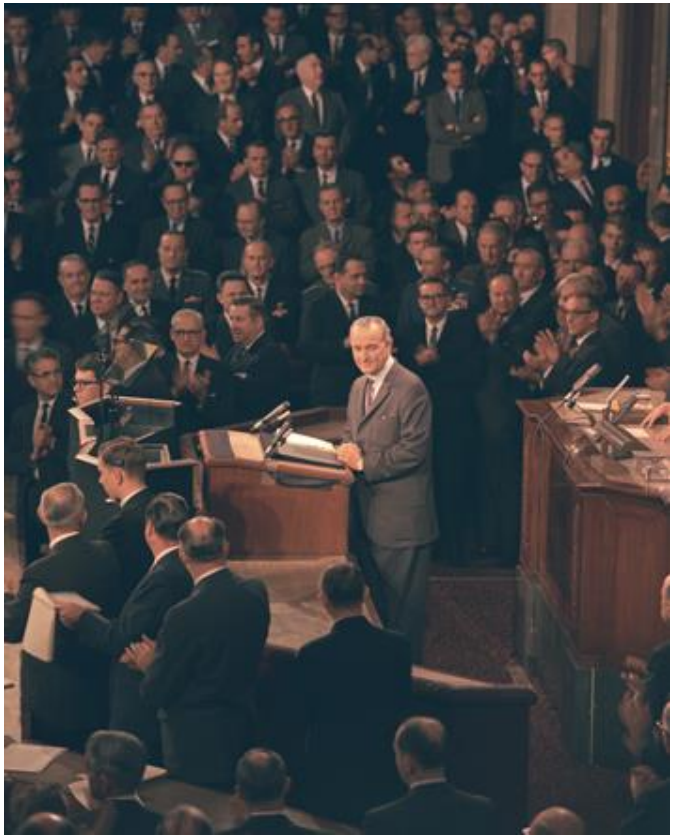
Why Study Head Start?

- Head Start was about prevention—a "hand up not a hand out"
- Began in 1965 as a public pre-school program for 3-5 year olds

  "…overcome the handicaps of experience and feeling which flow from poverty and permit them to receive the full advantages of school experience"
  ~ Johnson's letter to Congress, Feb 1965
- Remains a popular program, serving >1M children in 2019 (~$10 billion)



Head Start's Long-Run Effects?

- Evidence that *model* preschool had lasting effects
  - Currie (2001), Cunha and Heckman (2007), Heckman et al. (2010), Almond and Currie (2011), Cascio and Schanzenbach (2013), Duncan and Magnuson (2013), Phillips et al. (2017)

- Sparse evidence on effects of *scaled-up* preschool

Brookings Pre-Kindergarten Task Force

Convincing evidence on the longer-term impacts of scaled-up pre-k programs on academic outcomes and school progress is sparse, precluding broad conclusions. The evidence that does exist often shows that pre-k-induced improvements in learning are detectable during elementary school, but studies also reveal null or negative longer-term impacts for some programs.

~Deborah A. Phillips, Mark W. Lipsey, Kenneth A. Dodge, Ron Haskins, Daphna Bassok, Margaret R. Burchinal, Greg J. Duncan, Mark Dynarski, Katherine A. Magnuson, and Christina Weiland (April 2017)

Open Questions

1. Can large-scale preschool have long-term effects? If so, how large?
   - Rich but small longitudinal samples
     - PSID: Garces et al. (2002), Johnson and Jackson (2017), Miller et al. (2017)
     - NLSY: Deming (2008), Carneiro and Ginja (2014), Thompson (2018), Barr and Gibbs (2017)
   - Measurement error in use/eligibility
     - Longitudinal studies tend to use retrospective reporting or self-reported income
     - Ludwig and Miller (2007) use noisy grant data or county of residence
   - Confounding variables
     - Head Start targeted to low-income families
2. Are outcomes from the 1960s/70s informative?

Our Approach

- We rely on a linkage between large-scale Census data and administrative data on place of birth
  - Sample *4 orders of magnitude > NSLY, PSID*
- We also link to records of Head Start grant funding from the National Archives
  - High-quality proxy for childhood access to Head Start
- Research design compares Head Start-eligible children to kids from *same county* who were just too old to benefit

Preview of Results

Head Start associated with an increase in

- Human capital index by 18% of a standard deviation
  - 0.65 years of education
  - 2.7% increase in high school/GED or more
  - 8.5% increase in some college or more
  - 39% increase in college completion
- Self-sufficiency index by 5% of a standard deviation
  - 23% decrease in adult poverty
  - 27% decrease in receipt of public program income
  - Men: significant rise in work and 42% decrease in public assistance income; no effects on incarceration
  - Women: significant increase in work, 32% decrease in poverty

The Launch of Head Start

Head Start's Popularity

- Head Start first began as an 8-week summer program in 1965
- Head Start became a full-year program for children ages 3 to 5 in the subsequent academic year
  - Public kindergarten was not universal in this period, so "pre-school" also included programs for five-year-olds
- OEO wrote 35,000 letters to public health directors, school superintendents, mayors and social services commissioners to encourage applications.
  - Special effort to generate applications in America's 300 poorest counties (Ludwig and Miller 2007)

Head Start's Mission

1. Early childhood education (40% budget)
   - Suggested pupil-to-teacher ratio of 15:1
2. Health services (immunizations, screening, medical services referrals) (12.5% of budget)
3. Nutrition (increased intake of healthy food)
4. Parent involvement
5. Social services (helping families cope with crises)
6. Mental health services

The First Head Start Grants

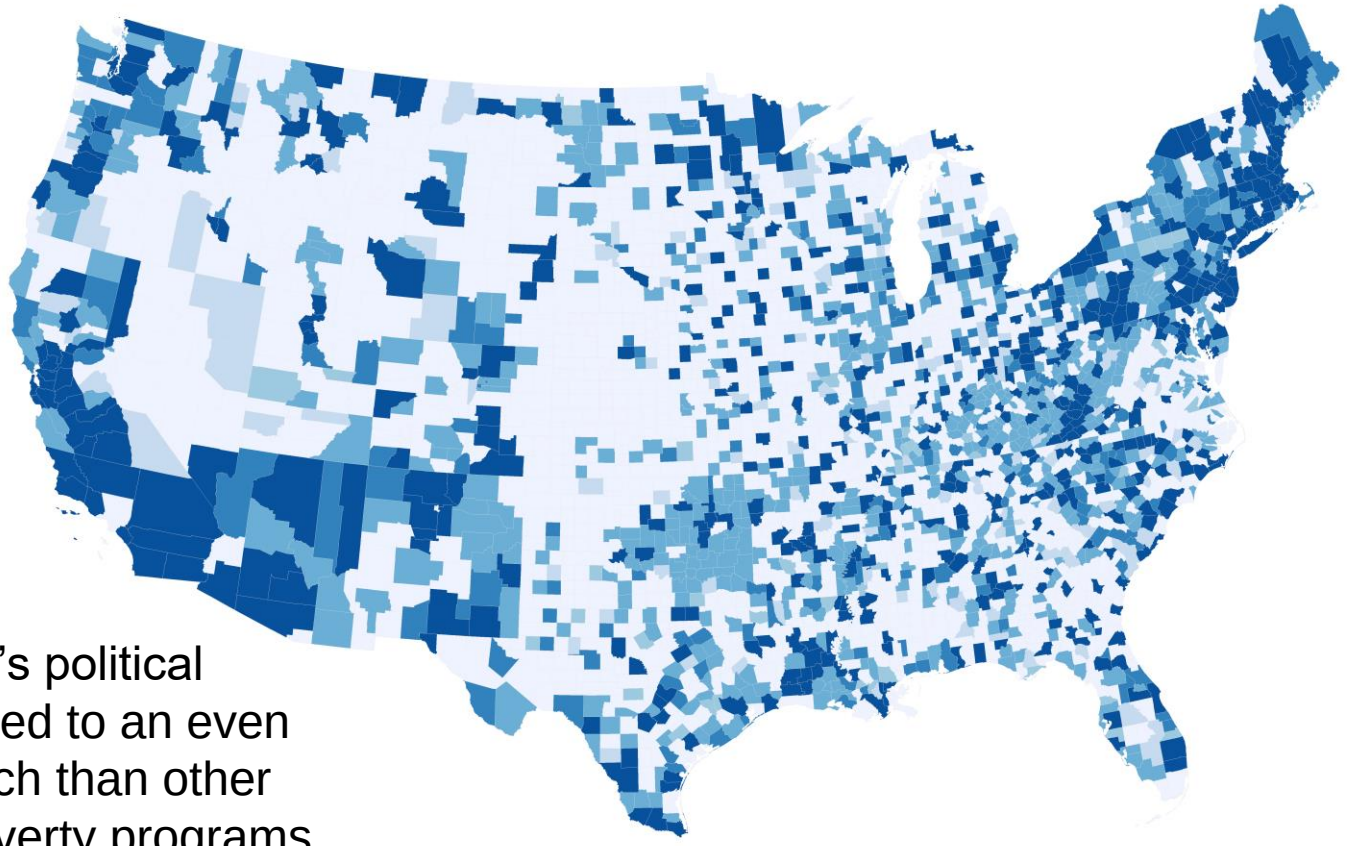
- Direct from federal gov. to local organizations
- Prioritized access over quality
  - Any organization could apply to the OEO
  - Applications from "various and sundry groups"

- No funding precedent; no guidelines

It was a wild sort of operation in those early days, making the first grants. We didn't have any guidelines and didn't have the time really to draft them to start out…

~Donald Baker, chief counsel for the OEO (Gillette 1996)

Roll-Out of Head Start



Head Start's political popularity led to an even faster launch than other War on Poverty programs

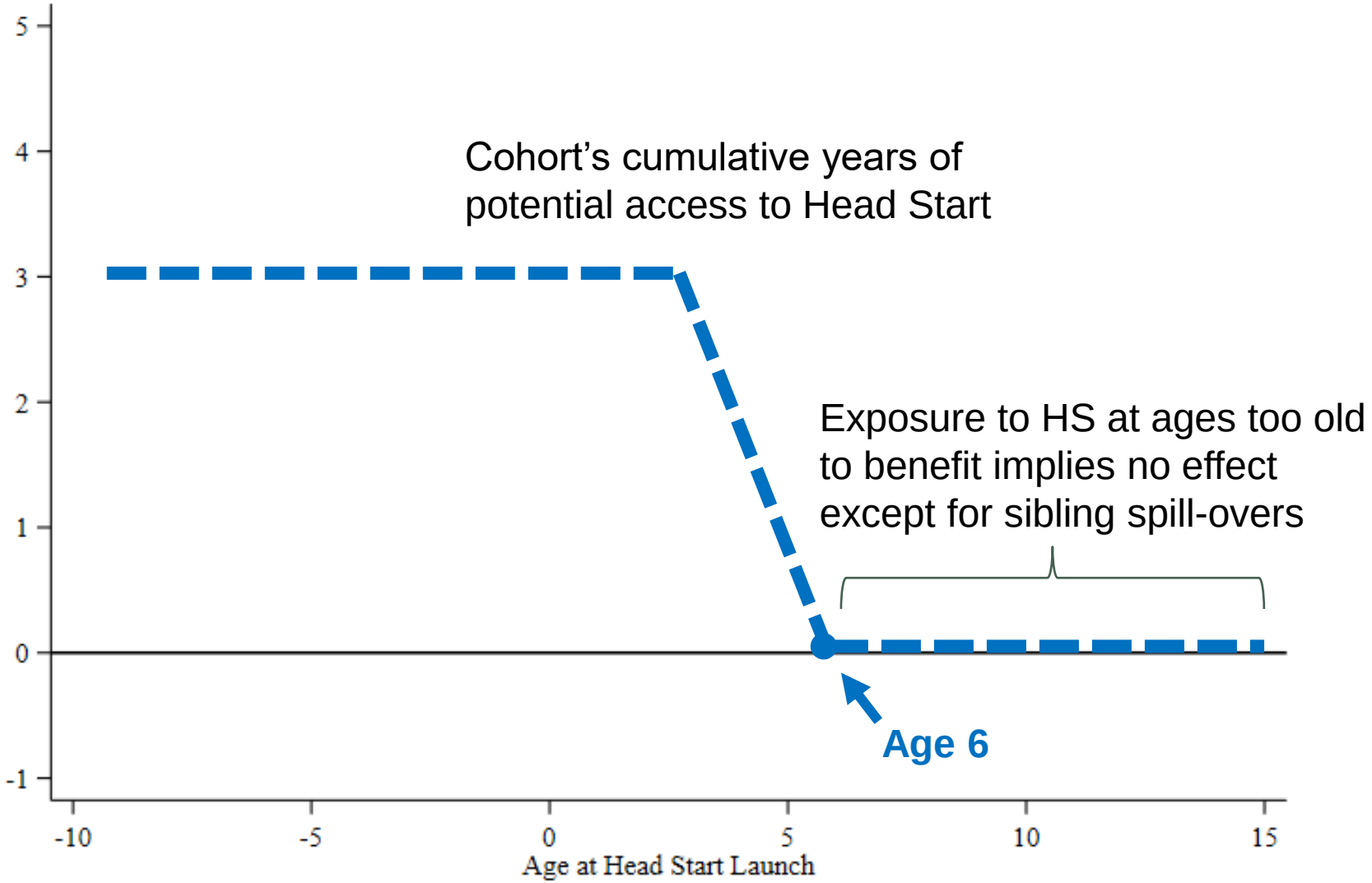
School year of first grant: 1965-66, 1966-67, 1967-68, 1968-69, 1969-1979, After 1979 or never

Data and Research Design

Restricted Data and Samples

- 2000 Census and 2001-2018 ACS linked to Numident
  - Sample: individuals ages 25 to 54 born in U.S. 1950-80
  - Attrition only with death or emigration or failure to PIK
  - Cleaned place of birth: linked to GNIS using code (see Taylor et al. 2016)
  - Represents ~25% of U.S. population (N=22,480,000)
- National Archives records of federal grants, 1965-1980
  - Use keyword searches to identify Head Start grants by county of recipient
- School-age cutoffs from various sources
  - Allows precise measurement of year of entry into first grade

Expected Effects



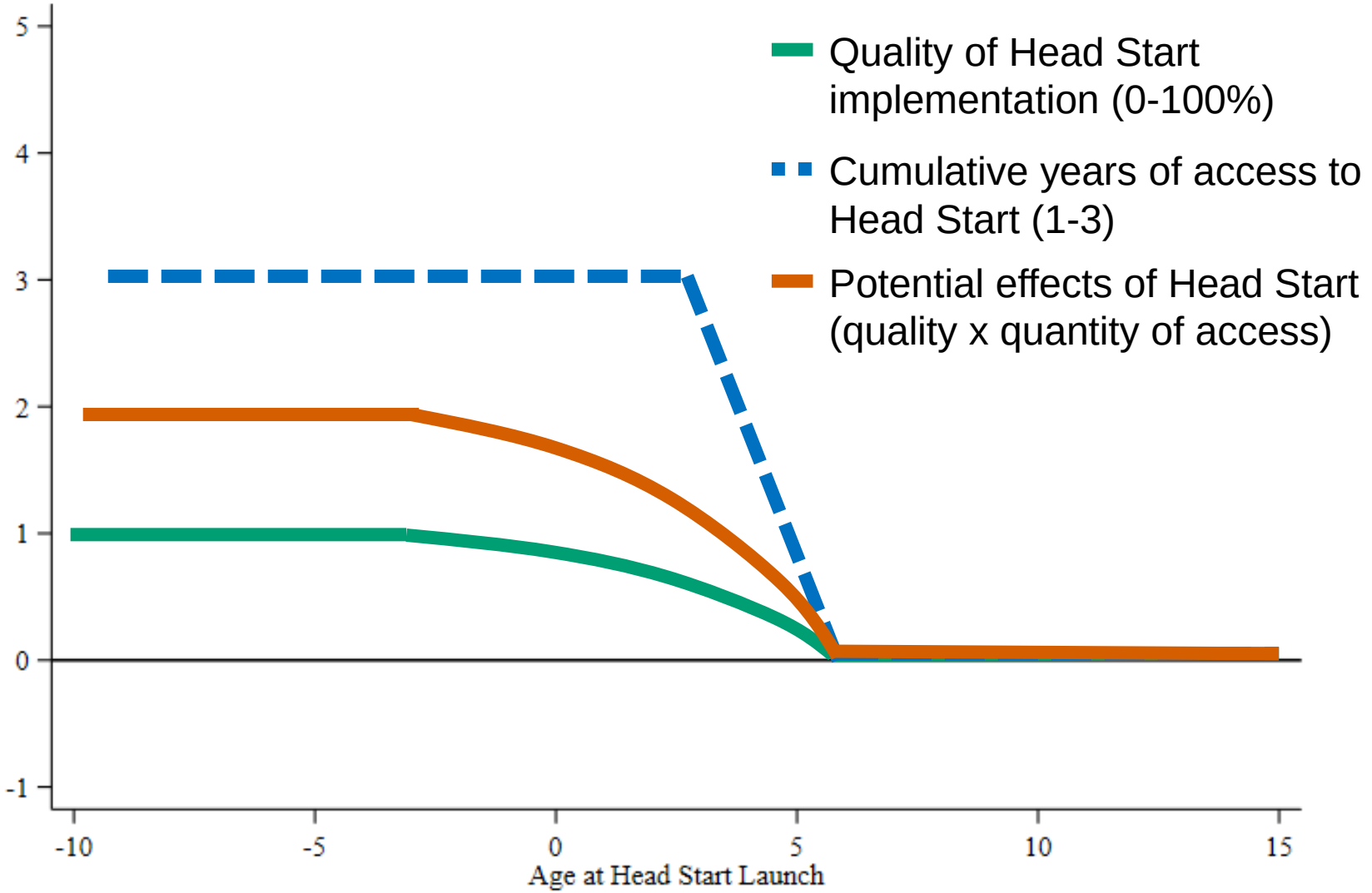
Implementation

OEO prioritized access over quality: challenges of *quickly* starting a new *national* program meant that

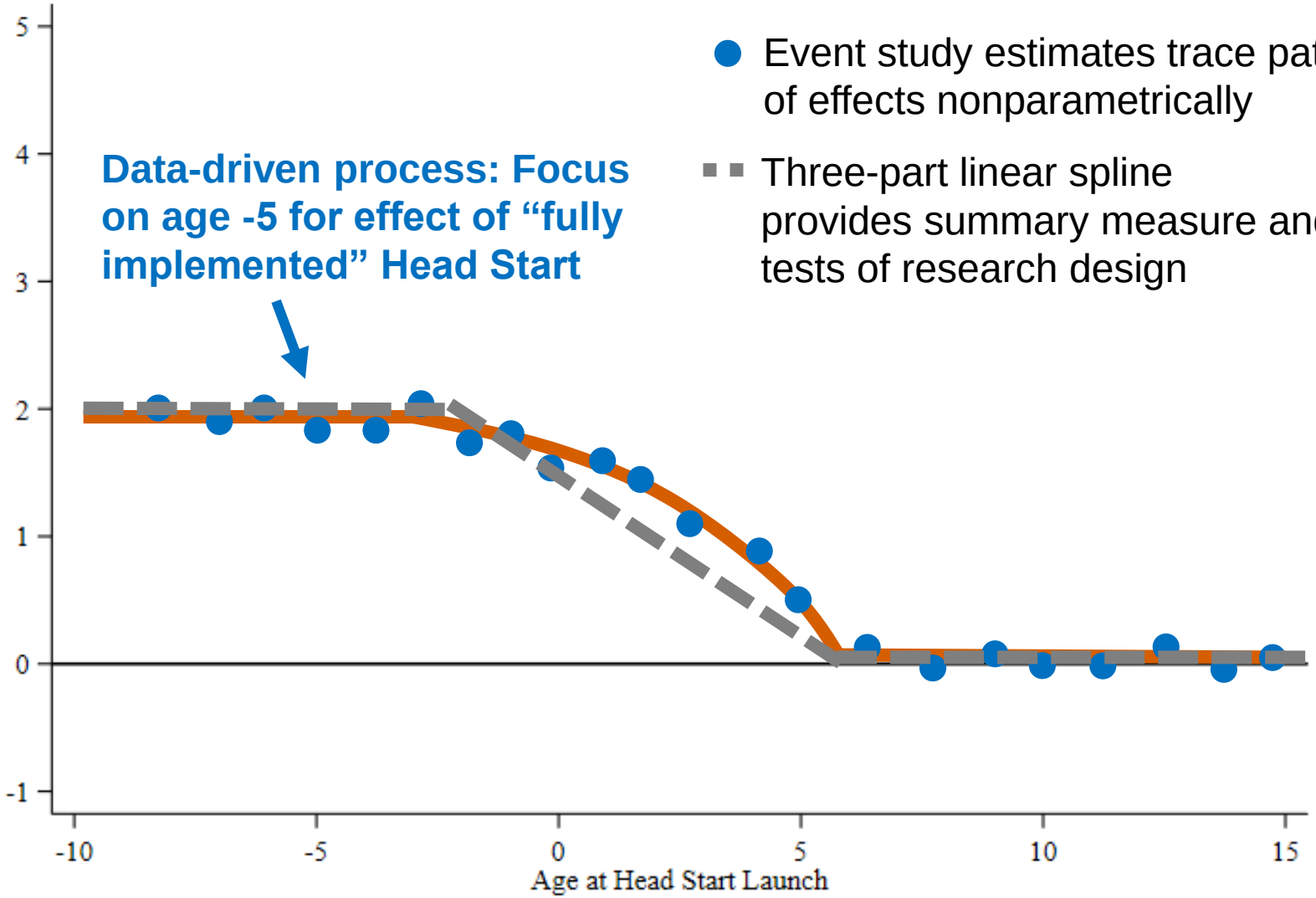
1. Capacity grew over time
2. Curriculum improved
3. Staffing problems (Hechinger 1966, Braun and Edwards 1972)
   - Most teachers lacked post-secondary education
   - 30% had not finished high school
4. Slow implementation of health and nutrition components

➔Sizable variation in pre-school quality

Expected Effects



Empirical Approach



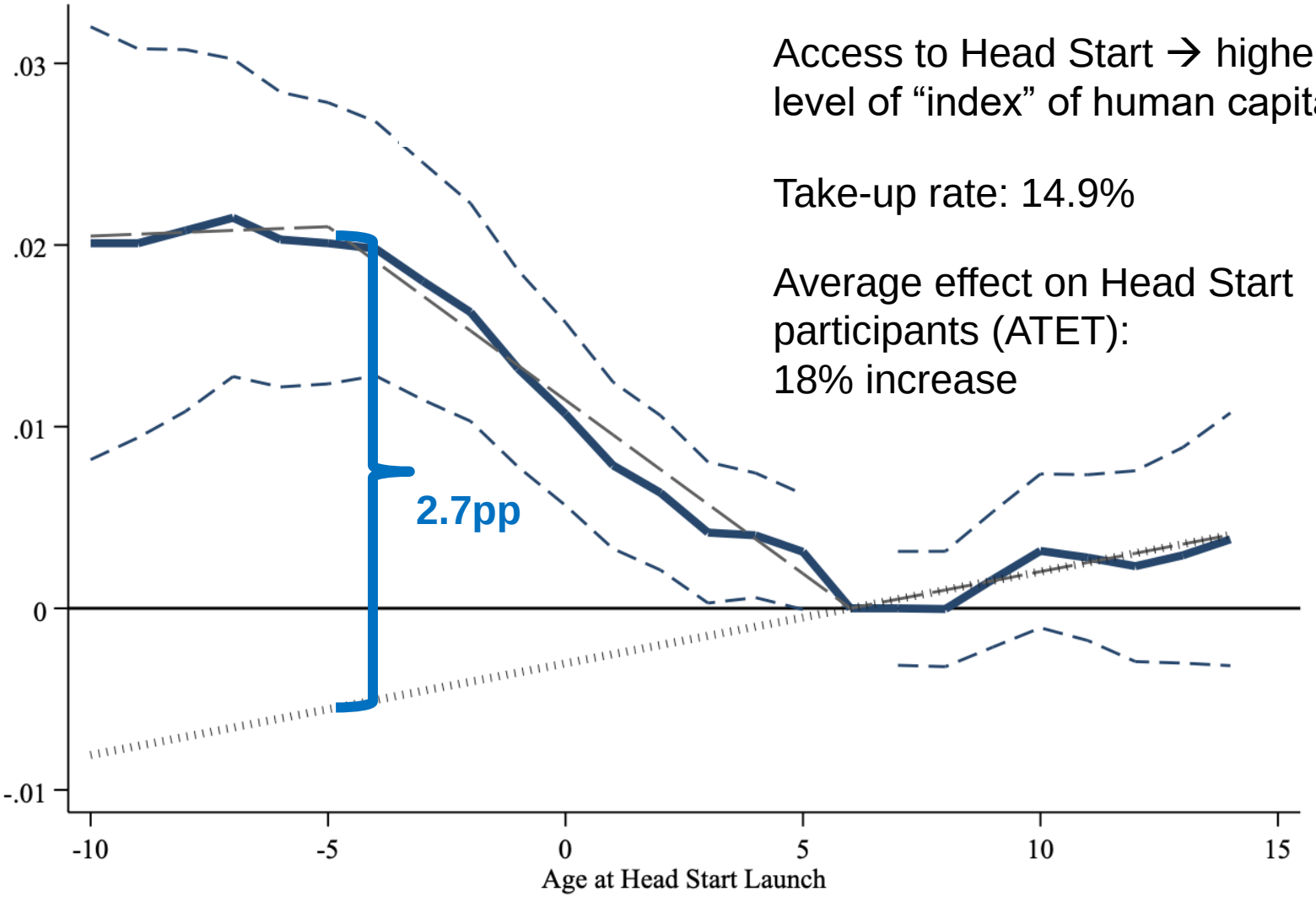
- Event study estimates trace pattern of effects nonparametrically
- Three-part linear spline provides summary measure and tests of research design

Human Capital

Pre-specified: Human capital index (see Kling et al. 2007)

- Years of education, high school/GED or more, any college or more, college completed or more, professional degree or higher, and professional occupation

Human Capital Index

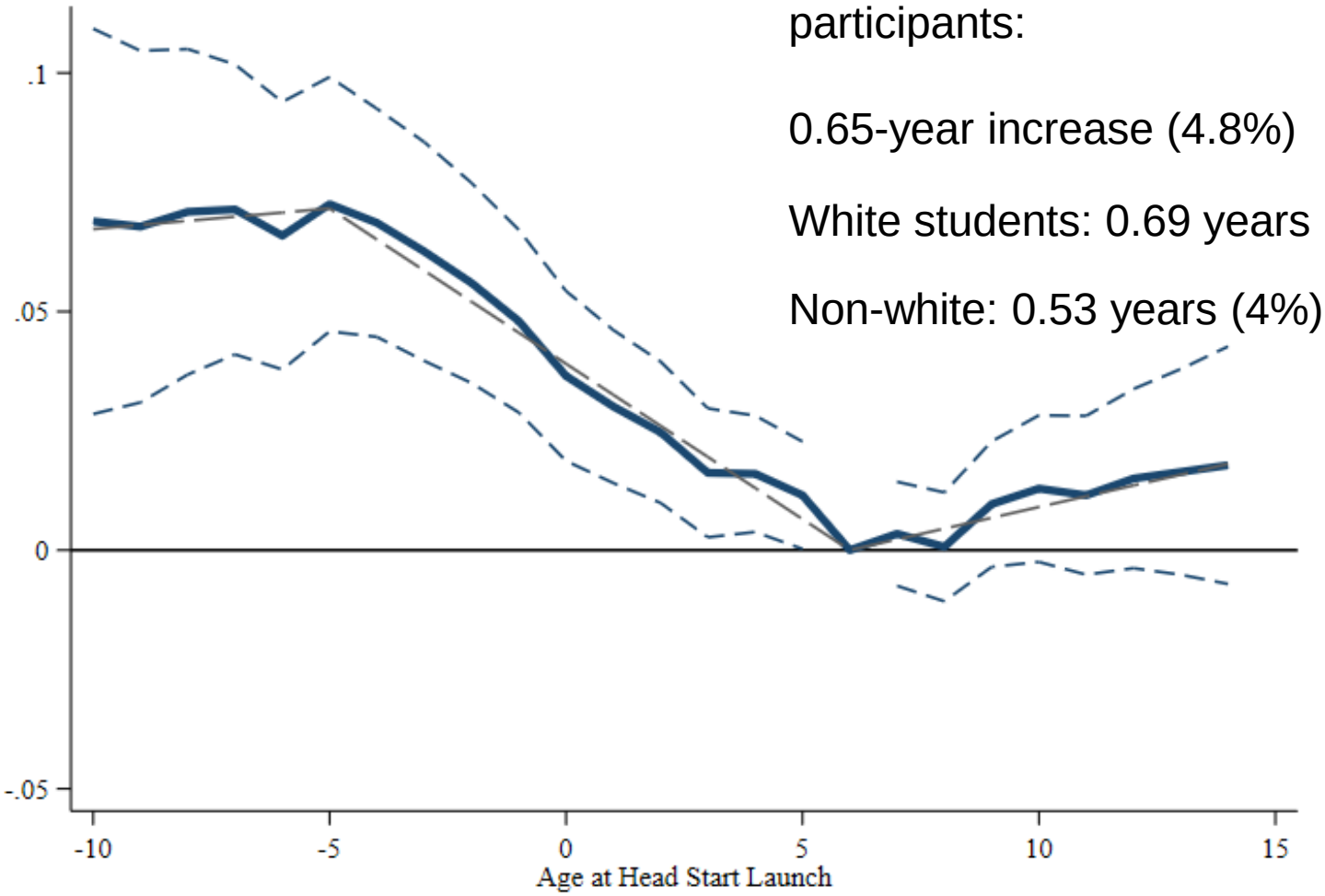


Access to Head Start → higher level of "index" of human capital

Take-up rate: 14.9%

Average effect on Head Start participants (ATET):
18% increase

Years of Schooling



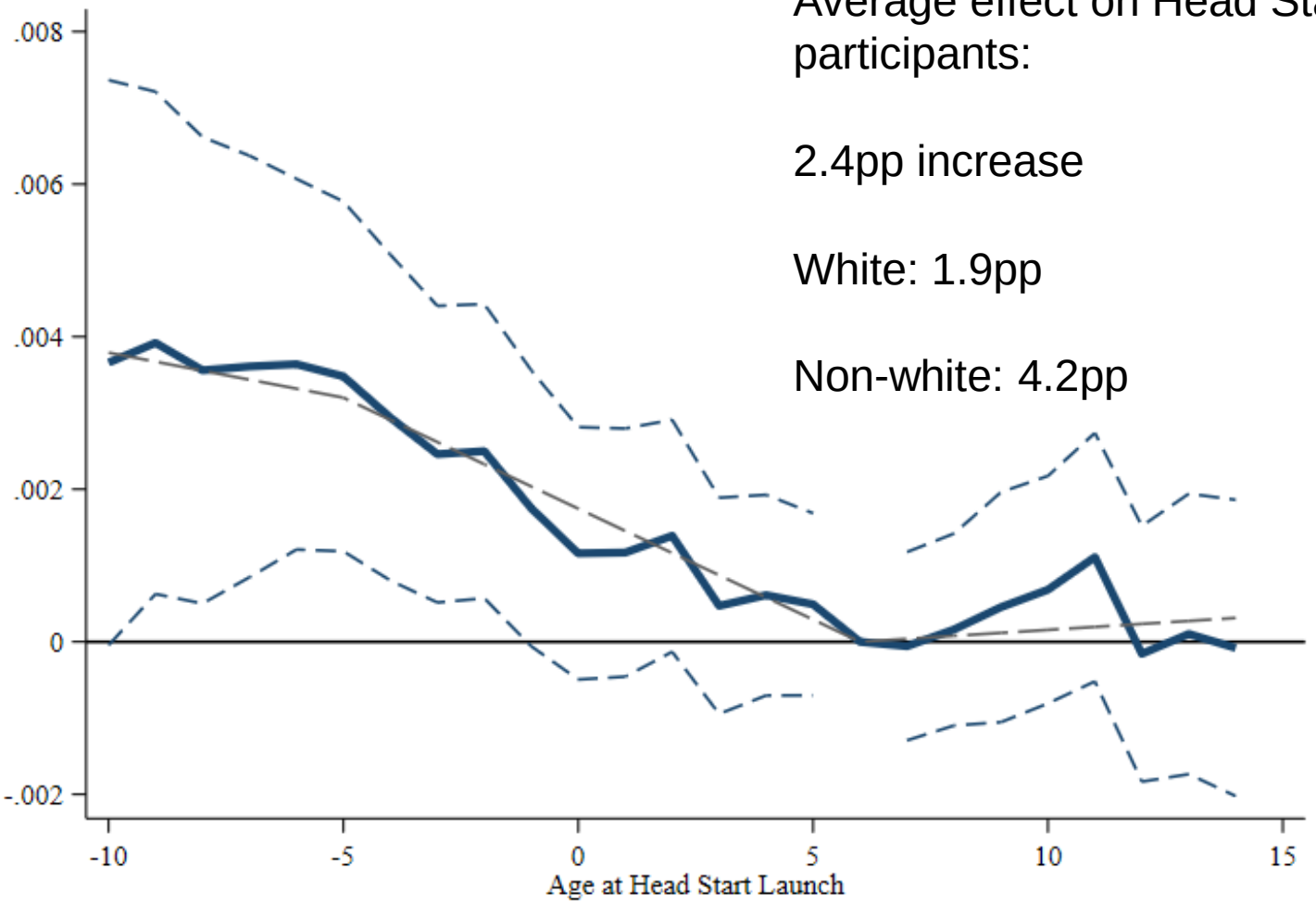
Average effect on Head Start participants:

0.65-year increase (4.8%)

White students: 0.69 years (5%)

Non-white: 0.53 years (4%)

High School Completion



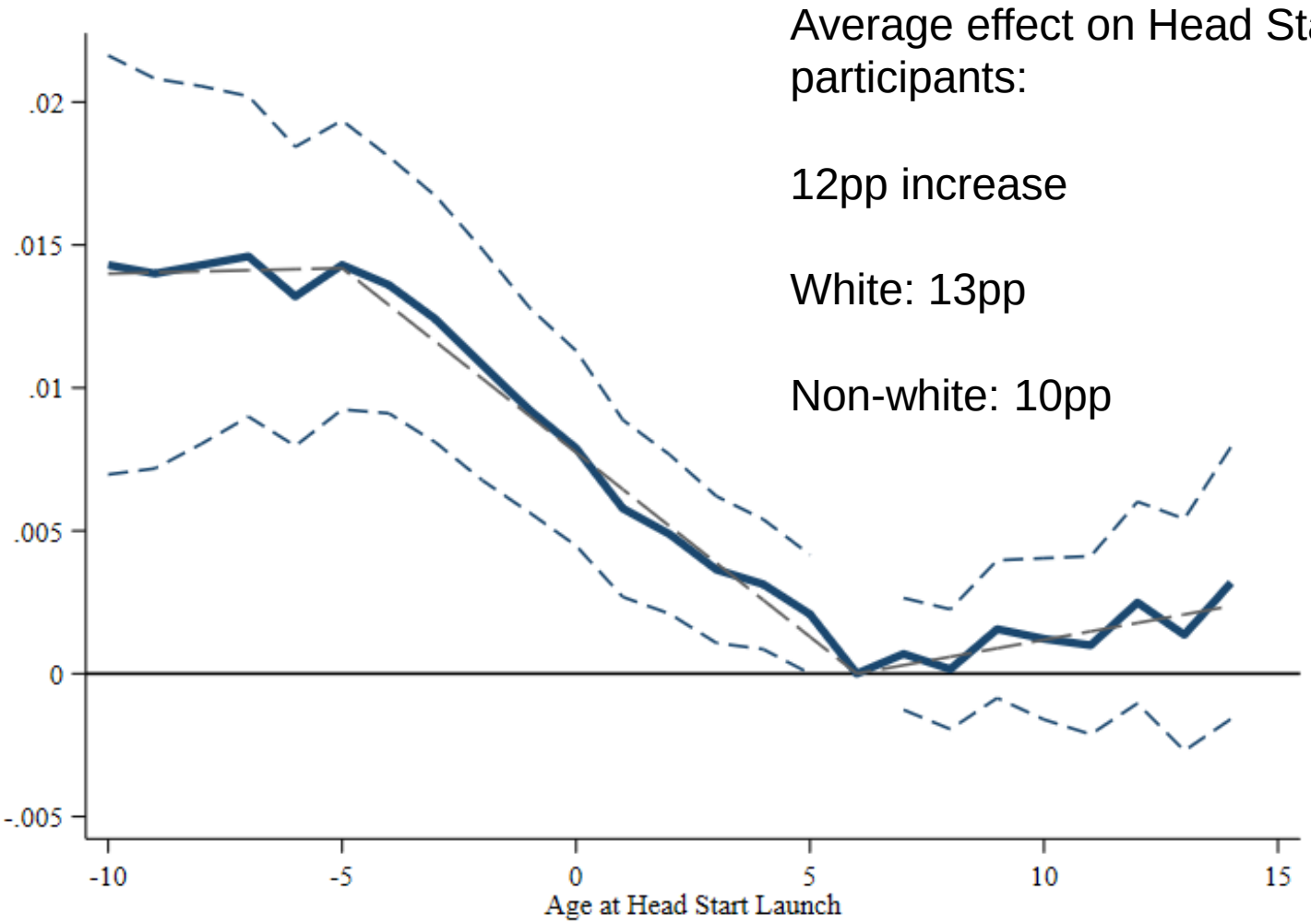
Average effect on Head Start participants:

2.4pp increase

White: 1.9pp

Non-white: 4.2pp

College Completion



Average effect on Head Start participants:

12pp increase

White: 13pp

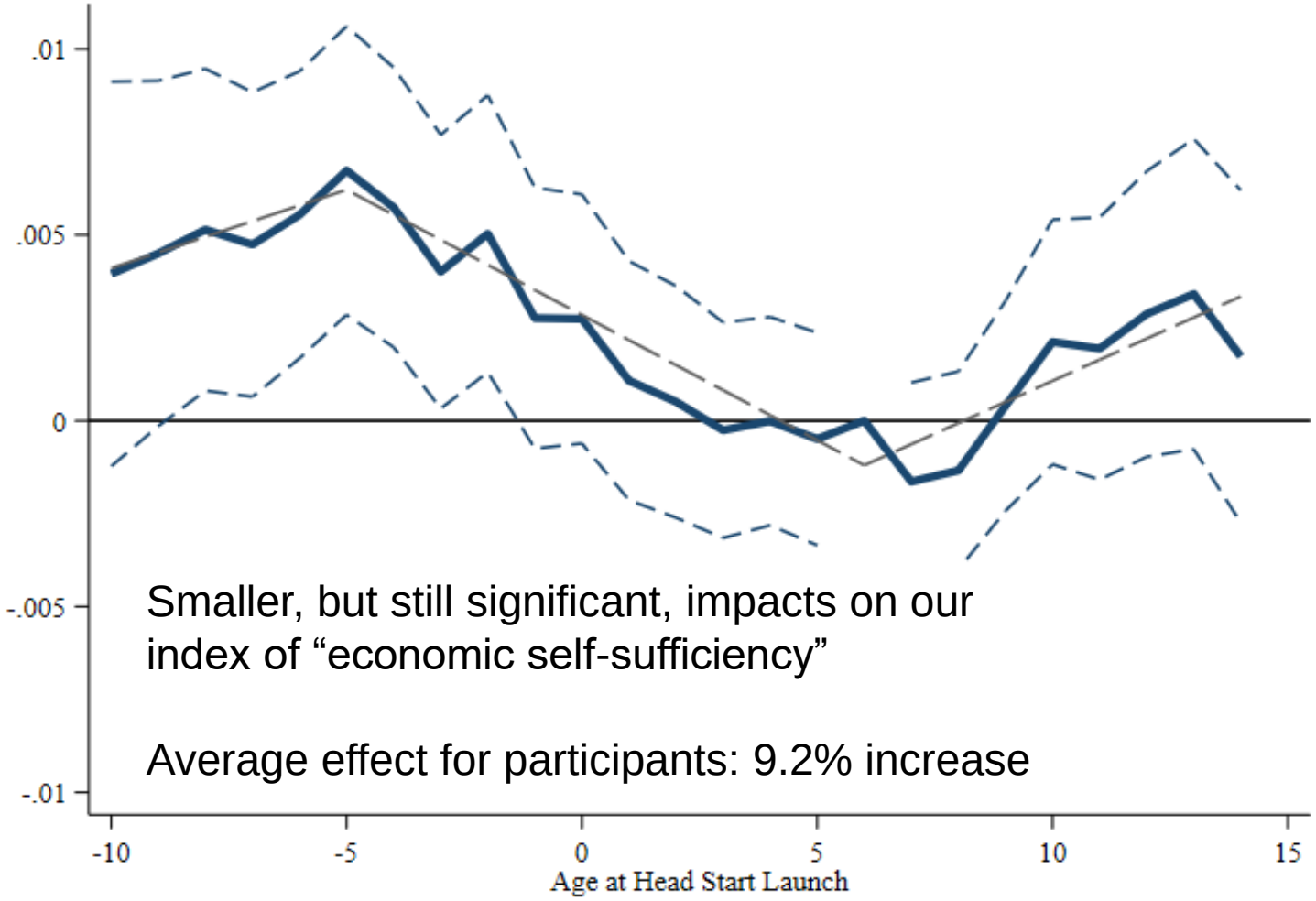
Non-white: 10pp

Economic Self-Sufficiency

Pre-specified: Economic self-sufficiency index

Worked last year, weeks worked, hours worked, log wages, log family income, in poverty, received public assistance income

Self-Sufficiency



Smaller, but still significant, impacts on our index of “economic self-sufficiency”

Average effect for participants: 9.2% increase

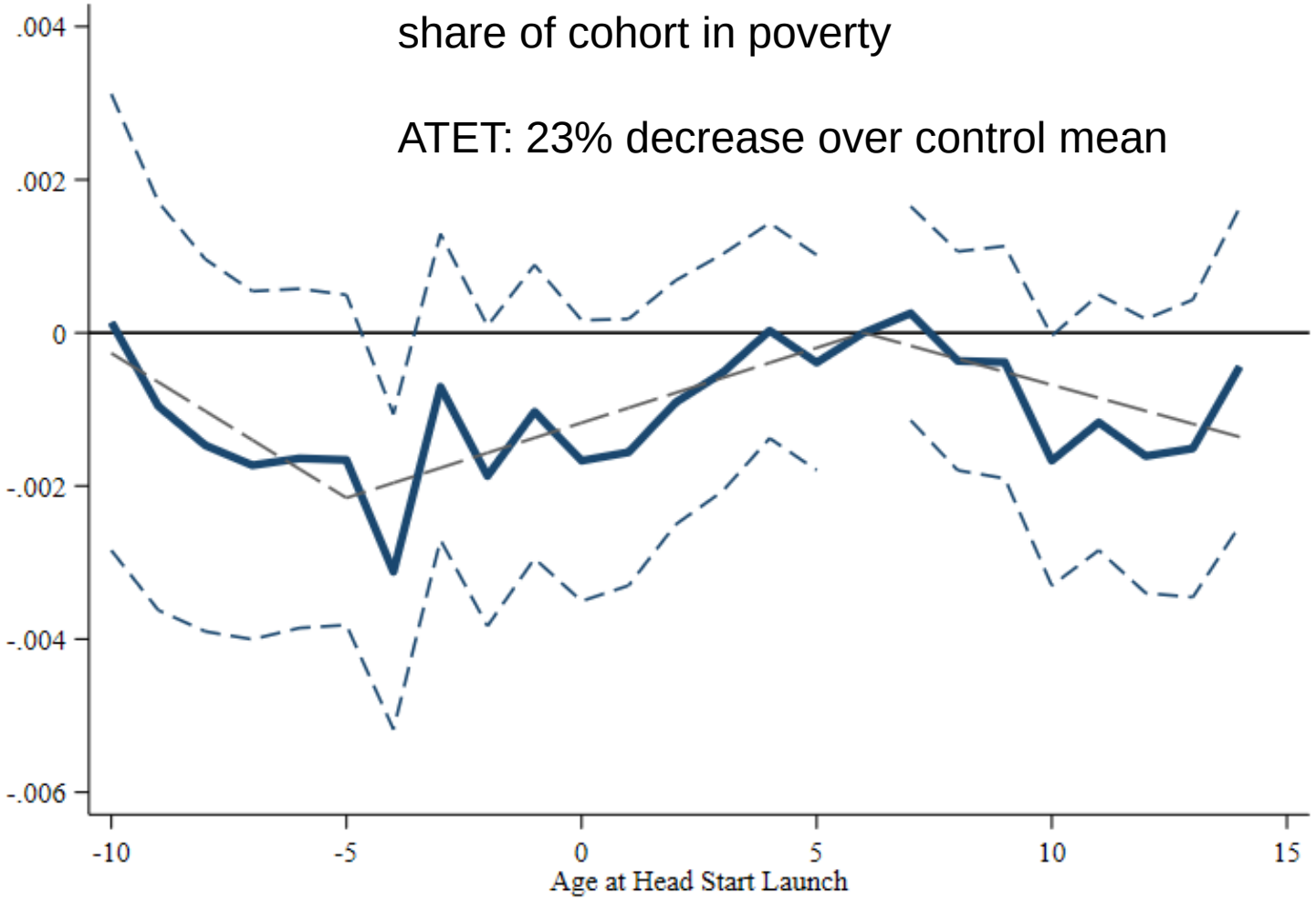
Labor-Market Activity

	(1) Control mean (s.d.)	(6) ATET [95% CI]	(7) ATET % change
Worked last year	84 (36)	4.4 [1.7,8.5]	5.3%
Weeks worked last year	40 (20)	2.3 [0.64,4.3]	5.6%
Usual hours works per week	35 (18)	3.0 [1.4,5.3]	8.7%
Log labor income	11 (0.98)	0.043 [-0.022,0.12]	
Log family income/poverty	5.8 (0.93)	0.071 [-0.017,0.16]	

Share In Poverty

Access to Head Start associated with smaller share of cohort in poverty

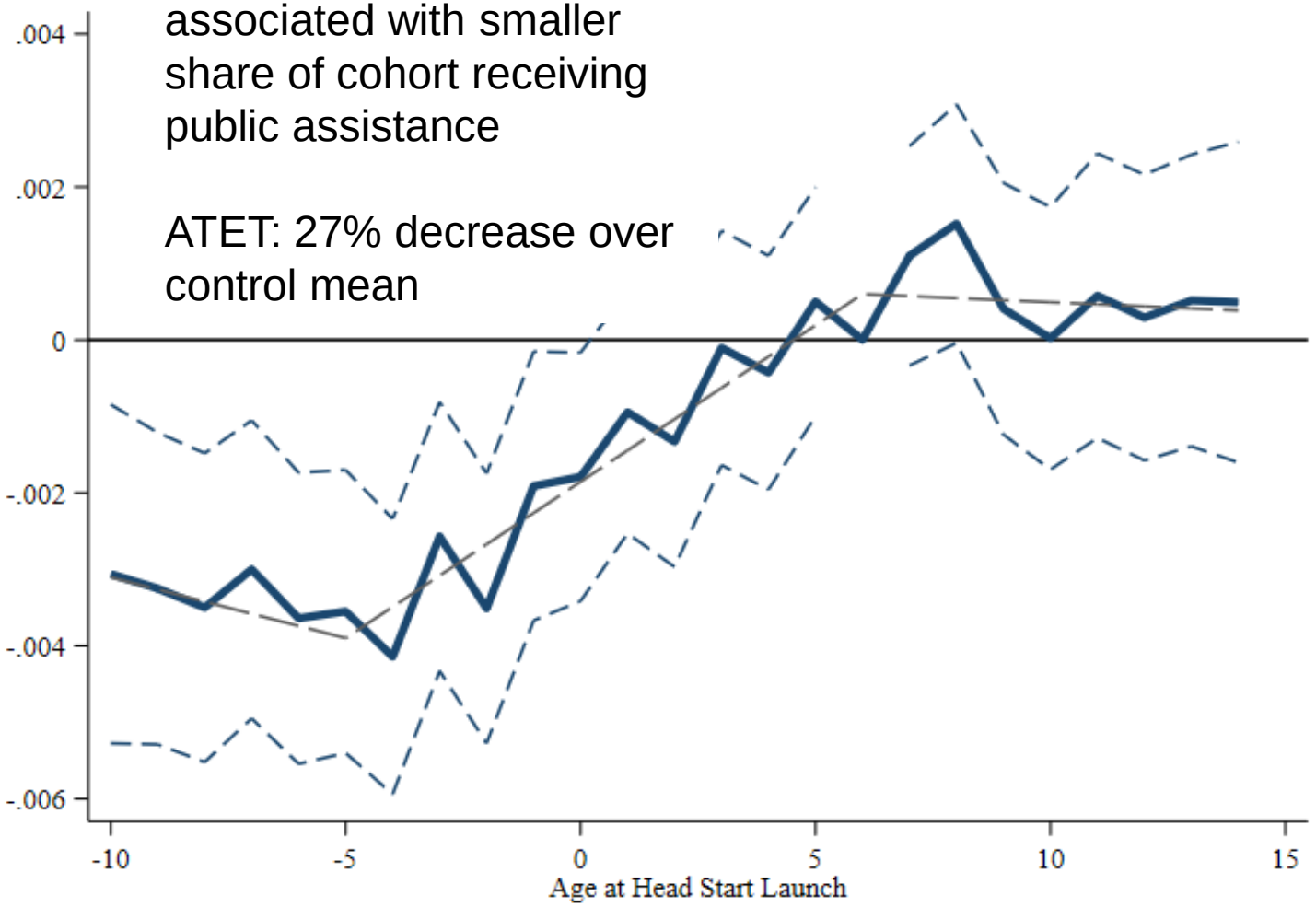
ATET: 23% decrease over control mean



Public Assistance Receipt

Access to Head Start associated with smaller share of cohort receiving public assistance

ATET: 27% decrease over control mean



Head Start's Long-Run Effects

1. Can large-scale programs have long-term effects on human capital and self-sufficiency? If so, how large?
   - Head Start attendance generated persistent gains in educational attainment, economic outcomes
   - Cost per student: $5,400 (2019$)
   - Internal rate of return to *students* from higher *potential* earnings: 13.7%
   - Internal rate of return to *government* from higher tax revenue, savings on public assistance: 5.4-9.1%
   - A full accounting of costs and benefits would require information about un-measured effects such as impacts on health, parental labor supply

Head Start's Long-Run Effects

2. Is evidence from the 1960s/70s informative?
   - Long-run outcomes appear to be more informative than test scores, other medium-run measures of skills
   - Many differences: (better) program, different counterfactual, and enrollees
   - External validity for today's programs: depends on specifics
   - Optimistic message:
     - Large scale programs can have large effects, even if not well targeted and designed
     - Mechanisms? Investigation of historical narrative and better data needed

Thank you!

Comments, questions welcome:
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Bonus Slides

Cross-Sectional Differences

VARIABLES	(1) First HS Grant in 1965-1966	(2) First HS Grant in 1967-1968	(3) First HS Grant in 1969-1980	(4) Ever Funded	(5) Never Funded
# of Counties	537	824	181	1542	1515
% urban 1960	79.44	61.4	42.35	72.21	31.02
% rural farm 1960	3.42	9.01	16.38	5.72	24.44
% nonwhite 1960	11.33	9.45	12.31	10.77	11.2
% population aged 0-4 (1960)	11.51	11.56	11.58	11.53	11.15
% population aged 65+ (1960)	8.74	9.29	9.66	8.95	10.89
Median family income, 1959	5984.64	5311.17	4550.95	5712.77	4145.36
Total Active MDs (per 1k)	0.96	0.23	0.04	0.69	0.02
AMR, All Ages (1960)	963.51	941.67	935.72	955.45	925.51
AMR 1960-1965 Change	-28.25	-27.83	-12.65	-27.49	-14.43
Infant Mortality Rate (1960)	25.36	25.77	28.01	25.6	27.28
White, Infant Mortality Rate (1960)	22.7	22.79	26.89	22.82	25.59
Nonwhite Infant Mortality Rate (1960)	39.34	46.08	49.24	40.99	50.74

Cross-Sectional Differences

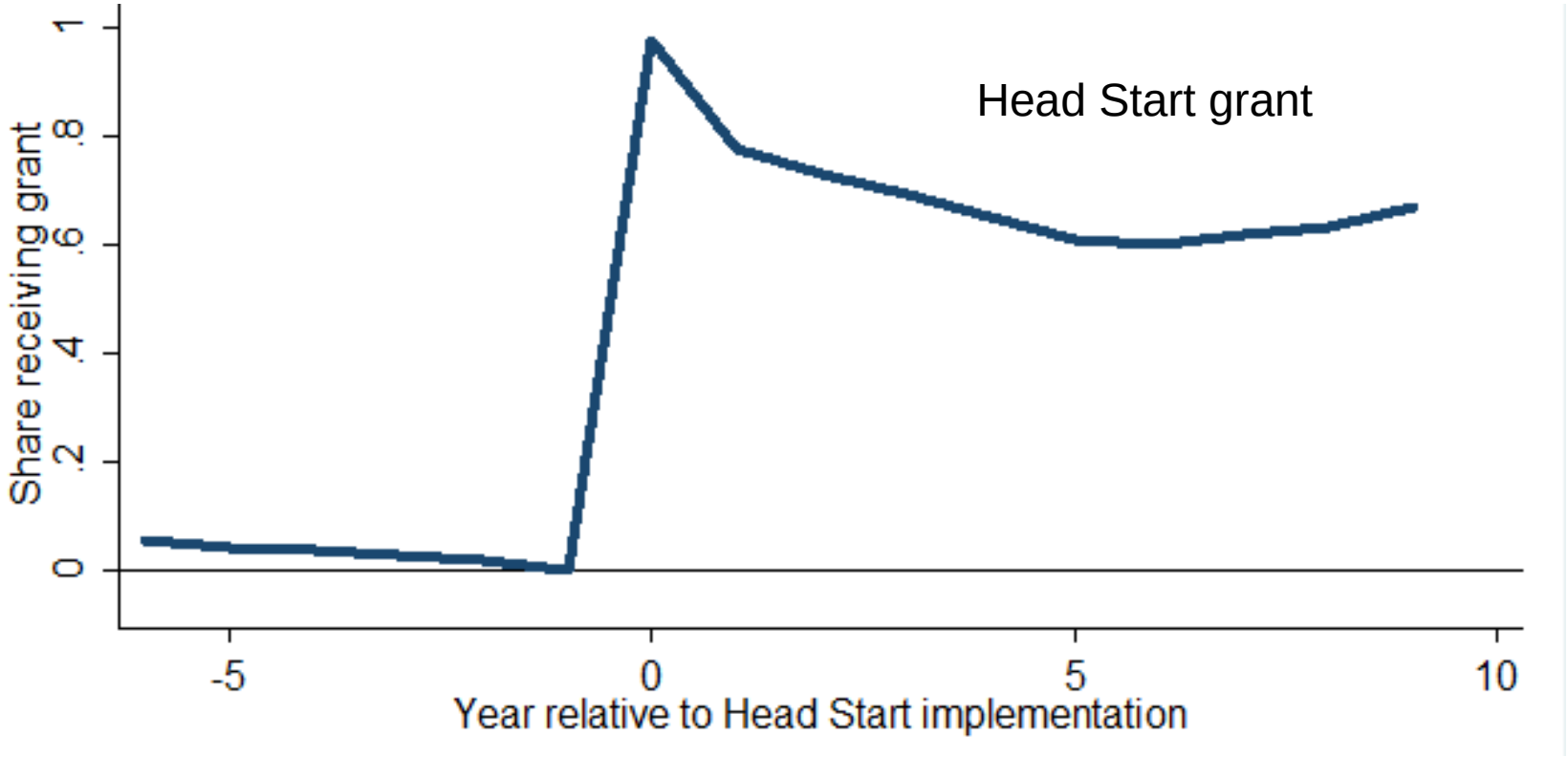
VARIABLES	(1) First HS Grant in 1965-1966	(2) First HS Grant in 1967-1968	(3) First HS Grant in 1969-1980	(4) Ever Funded	(5) Never Funded
# of Counties	537	824	181	1542	1515
% w/ 1959 family income <$3000 (1960)	18.02	23.85	31.39	20.41	35.85
% w/ 1959 family income $10,000+ (1960)	16.73	12.74	9.04	15.15	7.44
% persons 25+ w/ 12+ yrs schooling (1960)	43.04	40.01	36.37	41.81	34.18
% persons 25+ w/ <4 yrs schooling (1960)	7.79	8.74	10.94	8.22	10.8
Local gov'ts: total general expenditure ($000s) 1957 per 1000 population	152.01	128.96	117.34	143.29	128.68
% housing units sound w/ all plumbing facilities 196	77.88	70.5	61.47	74.87	56.98
Total civilian labor force 1960 per population	0.38	0.37	0.36	0.38	0.36
% civilian labor force unemployed 1960	5.38	5.21	5.24	5.32	4.8
% civilian labor force male 1960	66.71	68.15	69.27	67.27	70.64
Poverty Rate for Individuals, 1960 Putnam	0.19	0.24	0.31	0.21	0.34
Putnam < $3K income, share	0.18	0.23	0.31	0.2	0.35
Putnam < $2K income, share	0.11	0.15	0.2	0.13	0.23
Putnam < $1K income, share	0.05	0.07	0.1	0.06	0.11

All values are population-weighted means.

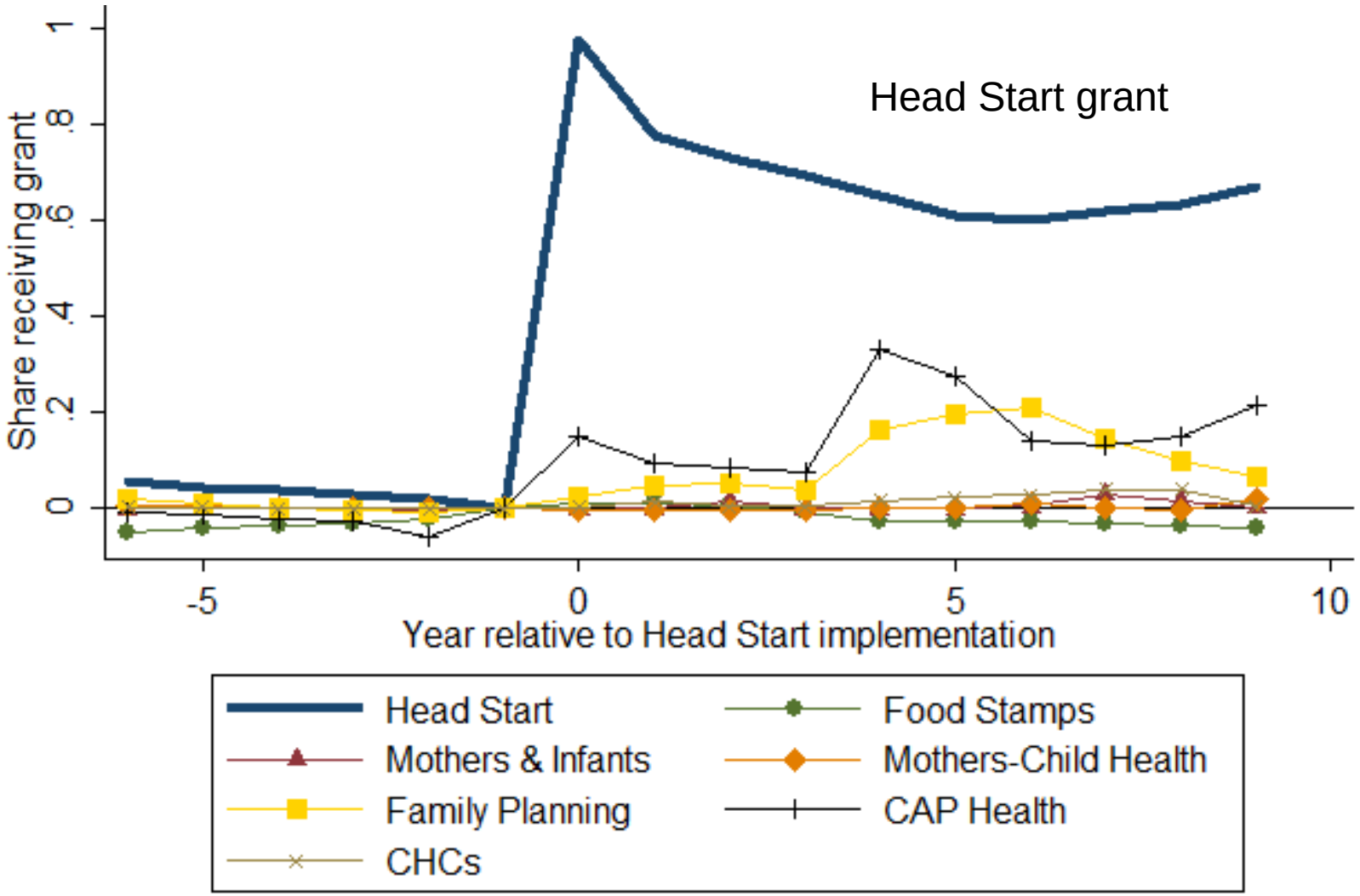
Roll-Out of Head Start Funding

Year HS Rollout	# of Counties	% of counties	Cumulative % of counties	% of kids age under 6 in 1970	Cumulative % of kids age under 6 in 1970
1966	536	17.53%	17.57%	54.71%	55.22%
1967	217	7.10%	24.66%	10.57%	65.79%
1968	607	19.86%	44.52%	16.06%	81.85%
1969	41	1.34%	45.86%	0.71%	82.56%
1970	45	1.47%	47.33%	0.87%	83.43%
1971	10	0.33%	47.66%	0.17%	83.61%
1972	30	0.98%	48.64%	0.51%	84.12%
1973	7	0.23%	48.87%	0.11%	84.23%
1974	9	0.29%	49.17%	0.15%	84.38%
1975	16	0.52%	49.69%	0.29%	84.67%
1976	7	0.23%	49.92%	0.08%	84.75%
1977	4	0.13%	50.05%	0.16%	84.90%
1978	9	0.29%	50.34%	0.31%	85.21%
1979	3	0.10%	50.44%	0.08%	85.29%
Never Funded	1515	49.56%	100.00%	14.71%	100.00%
Total	3057				

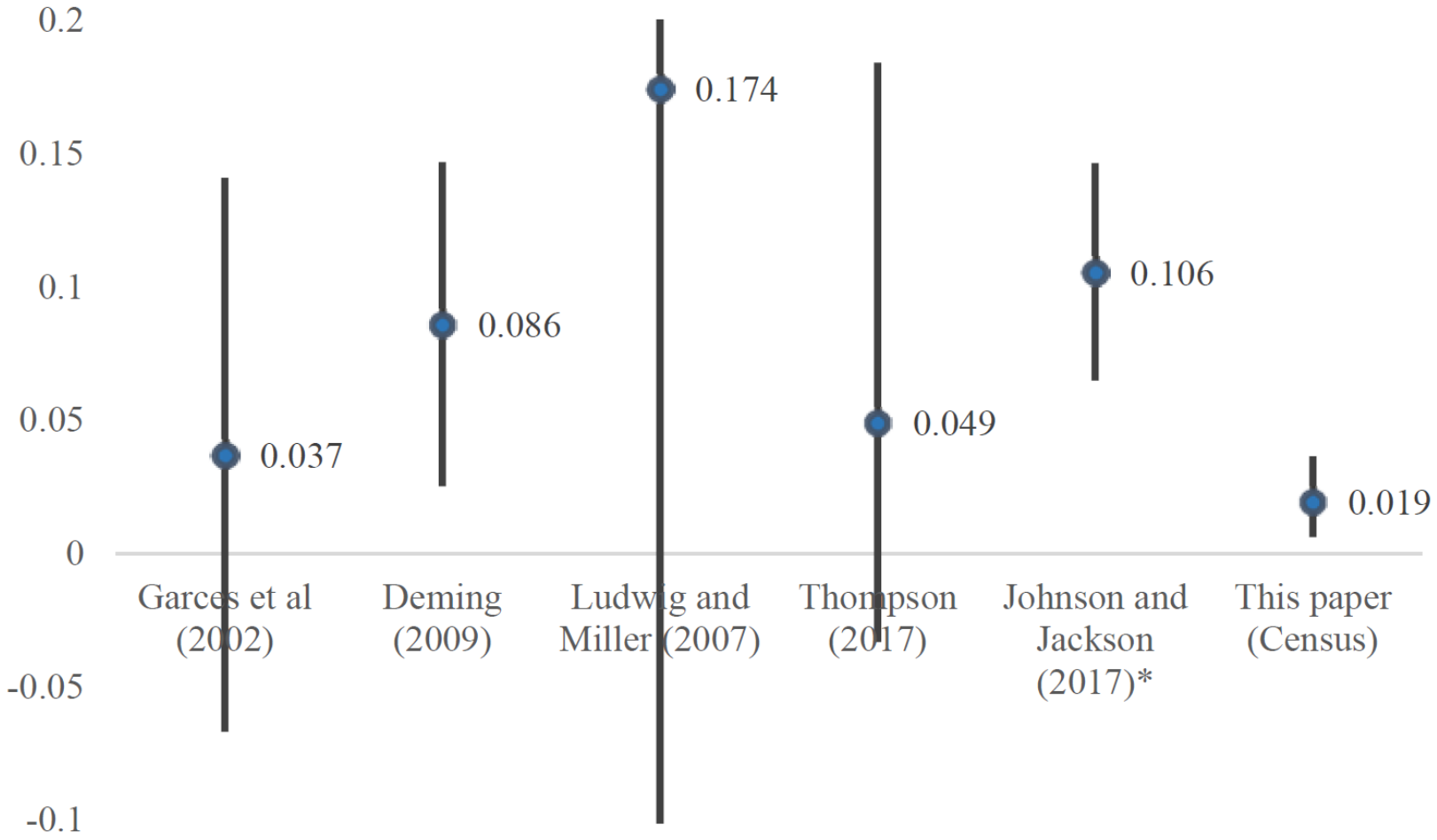
Roll-Out of OEO Programs



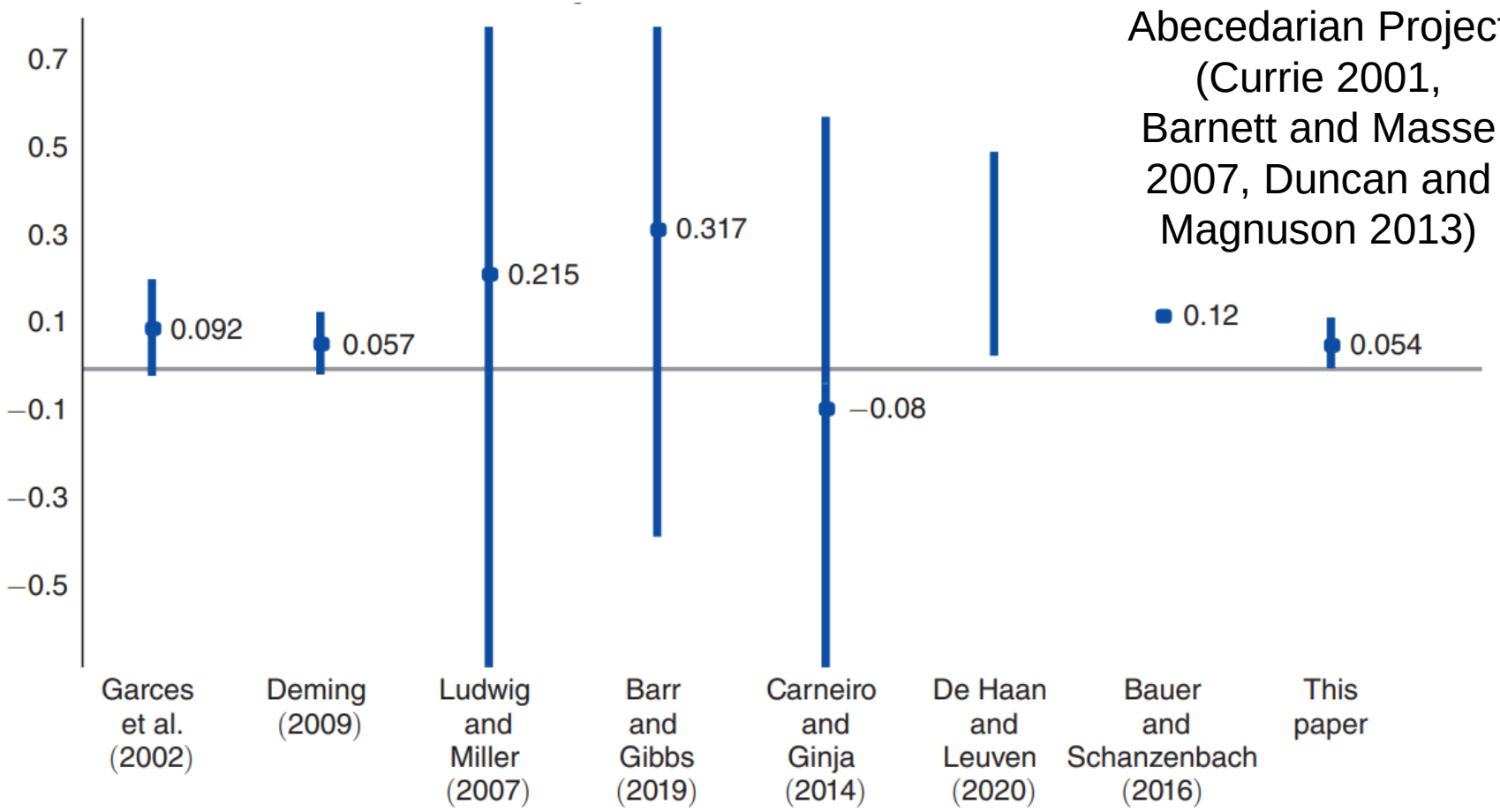
Roll-Out of OEO Programs



High School or More



Some College or More



20-25% of Abecedarian Project (Currie 2001, Barnett and Masse 2007, Duncan and Magnuson 2013)