



Research Within Reach, Ep. 2: Head Start and K-12 Funding

How much does K-12 funding matter to Head Start?

Introduction

It might not surprise you to know that a child who attends Head Start and then goes on to a well-funded K-12 system will likely have better outcomes than a child who attends Head Start and then goes on to a poorly-funded K-12 system. While the Head Start advantage has a positive impact on children all on its own, K-12 experiences are also critically important to a child's future.

For the first time, research has been able to tease out the impact of Head Start and K-12 depending on the extent to which each is funded. What the research found is revolutionary: the positive impact of each program depends partially on how well the other is funded.

The Basics:

Rucker C. Johnson (University of California, Berkeley) and C. Kirabo Jackson (Northwestern University) [analyzed adult outcomes of children born between 1950 and 1968 to measure the impact of varying funding levels in Head Start and K-12 education](#). They found that the existence of Head Start has a bigger impact on a community when the children in the area go on to attend well-funded K-12 schools, and that increased funding for K-12 schools has a greater impact when there is Head Start available.

Johnson and Jackson were able to exploit a unique time in history to do this study. In the 1960s-1970s, two distinct things happened: Head Start was created and court-ordered school funding reforms were enacted. Each rollout occurred at a different time for each school district across the country. Johnson and Jackson were able to use this fact to tease out how each change improved adult outcomes in the context of the other. First they measured the impact of the Head Start rollout and the impact of the school finance reform rollout independently. Then they measured whether K-12 funding reforms had a different impact in communities where Head Start existed and in communities where it didn't. They also measured whether Head Start had a different impact in communities where K-12 funding reforms had already been enacted and in communities where it hadn't. This relationship is called dynamic complementarity.

It is important to note that Johnson and Jackson did not measure the impact of Head Start on only children who attended. They looked at whether Head Start existed in a community at all and what the funding levels were per low-income child, rather than per enrolled child. This allows them to measure the impact Head Start has on a whole community rather than only those children who were able to attend.

The Results:

Base effects: In a district with average K-12 spending, having Head Start is associated with...

- a 7.6 percentage point increase in a low-income child's likelihood of graduating high school.
- a 7.75 percent increase in a low-income child's adult wages.
- a 3 percentage point decrease in a low-income child's likelihood of being incarcerated.

Base effects: In a district with average Head Start spending, increasing K-12 spending by 10% (across all years) is associated with...

- a 5.9 percentage point increase in a low-income child's likelihood of graduating high school.
- a 9.3 percent increase in a low-income child's adult wages.
- a 12 percentage point decrease in a low-income child's likelihood of being incarcerated.

Dynamic effects: Increasing Head Start spending by \$1,000 per low-income four-year-old...

- increases the likelihood of graduating high school by 4.7 percentage points in a K-12 district at the 75th percentile of spending, but not at all at the 25th percentile of spending.
- increases adult wages by 5.6 percent in a K-12 district at the 75th percentile, by 2.5 percent at the 50th percentile, and not at all at the 25th percentile.
- decreases the likelihood of being incarcerated by 2.2 percentage points in a K-12 district at the 75th percentile, by 1.6 percentage points at the 50th percentile, and not at all at the 25th percentile.

Dynamic effects: Increasing K-12 spending by 10% across all years...

- increases the likelihood of graduating from high school by 8.5 percentage points at the 75th percentile of Head Start spending, by 6 percentage points at the 50th percentile, and by 4.5 percentage points at the 25th percentile.
- increases adult wages by 13 percent in a K-12 district at the 75th percentile, 8.5 percent at the 50th percentile, and 7 percent at the 25th percentile.
- decreases the likelihood of being incarcerated by 15 percentage points at the 75th percentile of Head Start spending, by 13 percentage points at the 50th percentile, and by 10 percentage points with no Head Start spending.

The Implications:

- Funding increases for Head Start and K-12 are both associated with improved adult outcomes for low-income children. When both programs are funded amply, the associated impact is even larger. The schools that children go into after attending Head Start have a significant impact on the benefits they gain both from Head Start and K-12.
- Based on the cost of Head Start versus a K-12 funding increase, in a school district with above average per-pupil funding, redistributing resources from K-12 to Head Start could both improve average outcomes and increase equality.
- Between 1965 and 1980, in districts with average spending levels on both Head Start and K-12 education, an extra dollar spent on Head Start had a larger impact than an extra dollar spent on K-12. When K-12 spending is above average, this ratio grows from 1.5 to 1.9.
- In the authors' words, "Human capital investments made in, and sustained throughout, child developmental stages...may yield greater returns than separate, isolated, short-lived reforms not sustained beyond the year in which they are implemented. The findings point to the critical role early-life investments can play in narrowing long-run gaps in well-being, but they also highlight the importance of sustained investments in the skills of disadvantaged youth." (p. 38)

The Limitations:

- The education landscape is significantly different today than it was in the 1960s-1970s. Average K-12 per-pupil spending is much higher and there are many other high-quality childcare options than Head Start. Both suggest that we would see smaller effects if we ran this analysis today.
- If school spending has diminishing returns, we would also likely see smaller effects today.
- The authors have estimated the effects of Head Start spending on all low-income children in a community rather than just on Head Start children. Their calculations are thus based on estimations of the participation rate in Head Start in each community. There are also limitations to determining a family's income at age four, participation in a summer or full-year program, etc.

The Methodology:

The Sample:

- Adults born between 1950 and 1976 tracked in the Panel Study of Income Dynamics. This encompasses 13,381 adults (from 4,684 families) in 1,431 school districts and 1,070 counties.
- The Panel Study of Income Dynamics is a longitudinal household survey that began in 1968 and continues today. It collects vast information on the original sample and their descendants, including employment, income, education, and wealth. Additional details can be found [here](#).

The Measures:

- Head Start spending per low-income 4-year-old by county from 1965-1980
- Education attainment, measured by years of education completed and high school graduation
- Economic status from ages 20-50, measured by wages, family income, and incidence of poverty
- Incarceration, both whether ever incarcerated and annual incarceration incidence
- K-12 public school spending per student by district
- Covariates such as child/family characteristics, county/district characteristics, and birth year

The Analysis:

- The authors used a difference-in-difference strategy to test for the impact of Head Start spending on adult outcomes. They compared outcomes of pre-Head Start cohorts with post-Head Start cohorts and cohorts with small increases in Head Start funding with cohorts with large increases in Head Start funding.
- The authors used a 2SLS (two-stage least squares) model to test for the impact of K-12 spending on adult outcomes. The first stage model concerned public school spending in a district based on an exogenous variable of dosage that they constructed. They then used the spending variable in the second stage analysis to estimate the relationship between adult outcomes and changes in K-12 spending based on the court-ordered reforms.
- After these models, they measured the marginal effect of funding increases for both Head Start and K-12 spending by running a model that included an interaction of the two terms.

Do you have any questions, comments, or new ideas? E-mail vjones@nhsa.org

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