The Gap within the Gap: Using Longitudinal Data to Understand Income Differences in Educational Outcomes
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Motivation
- As of the 2012-13 school year, nearly half of all public school children were eligible for subsidized meals
- Free and reduced price lunch (FRPL) eligibility widely used as a proxy for poverty in measuring achievement gaps
- Achievement gaps by income are now 40% wider than they were 25 years ago
- 90/10 income gap is twice as wide as the black/white achievement gap (Reardon 2011)
- Most research relies on point-in-time measures of economic disadvantage

Current Study
- How do achievement gaps by income change when we incorporate measures of longitudinal disadvantage?
- Categorize individuals into three groups:
  - Persistently disadvantaged (always eligible for FRPL, K-8)
  - Transitorily disadvantaged (eligible at least once, but not every year)
  - Never disadvantaged (never eligible between kindergarten and 8th grade)
- Evaluate 8th grade math test score gaps
- Compare to contemporaneous measures
  - Eligible for FRPL in 8th grade
  - Not eligible for FRPL in 8th grade
- Evaluate test score gaps based on total number of years eligible for subsidized meals between kindergarten and 8th grade

Data
- Administrative student-level data from the Michigan Center for Educational Performance and Information (CEPI)
- Longitudinal data on universe of public-school students in the state
- Sample: 8th graders in the 2010-2011 through 2012-2013 school years (~300,000 students)
  - Must be present in at least 7th and 8th grade
- Outcome: 8th grade standardized math test scores
  - Standardized at the grade-year level, represent a student’s achievement relative to their peers in the public school system in each grade and year.

Summary of Results
- More than half of 8th graders experience economic disadvantage at least once between kindergarten and 8th grade
  - One in four 8th graders is disadvantaged every year
  - 15% of all 8th graders
  - One in five 8th graders who were not eligible for subsidized meals in 8th grade were eligible in a prior year
- Test score gaps are 40% wider using longitudinal measures compared to contemporaneous measures
- Differences in achievement are evident by 3rd grade, widen over time

Conclusions
- Contemporaneous measures of disadvantage mask considerable heterogeneity
  - Some currently disadvantaged students are always disadvantaged
  - Some currently disadvantaged students were disadvantaged in the past
- Gaps 40% wider when using persistence measure, robust to controls for student demographics, school fixed effects, geographic controls, prior achievement
- Gaps increase linearly with each additional year of disadvantage
- Gaps between the persistently disadvantaged and transitorily disadvantaged emerge by 3rd grade, widen over time
  - Implies that duration itself cannot fully explain differences in test scores
  - Duration of disadvantage may be a proxy for lower, permanent family income
- Does duration of disadvantage proxy permanent family income?

Policy Implications
- Focus efforts to close gaps on persistently disadvantaged
  - Those who are disadvantaged in K least likely to exit disadvantage
- Score almost a full standard deviation below students who are never disadvantaged
- Use persistence measure to more finely measure SES
  - As control in analyses
  - When stratifying in analyses of heterogeneous treatment effects