The Distribution of “Returns to Education”
for People with Early-Onset Disabilities

Andrew J. Houtenville, Ph.D.
Associate Professor of Economics
University of New Hampshire

Le Wang, Ph.D.
Assistant Professor of Economics
University of Alabama
### Overview

- **Returns to Education** = the change in salary resulting from an additional year of education.

- **Research Question**: are the returns to education of people with disabilities similar to the returns to education of people without disabilities?
  - Not just at the “mean” but the shape of the distribution.

- **Results**: Suggest that the distributions are quite similar.
Source of Positive Returns to Education

- **Human Capital Theory**: Education is an investment (hence “returns”).

- **Screening Theory**: Educational processes don’t add skills, but rather sort individuals by pre-existing productivity.

- **Job Search and Signaling Theory**: Expands quality of network and “signal.”

- **Spurious Correlation**: Family network is positively related to educational achievement and wages/salary.
Why Returns Would Differ for PWD?

- **Substitutes in Production**: Disability and education may be substitutes in production—education mitigates the impact of a disability—thus an additional year of education is more valuable to people with disabilities:

- **Greater Signal**: The value of the “signal” provided by additional education may be more valuable, perhaps overcoming stereotyping or signaling perseverance.
Why Investigate the “Distribution” of Returns?

• Conditional means (regression coefficients) carry very little information.

• Variation in returns exist in other subpopulations.

• For policy:
  - Individuals in the “left-hand tail” (with low returns) reflect challenges to the efficacy of education.
  - Individuals in the “right-hand tail” represent evidence of success that could potentially be replicated with interventions.
Methods

• **Survey of Income Program Participation (SIPP):**

• Regression coefficients are “conditional means”

• **Our Approach (Henderson, Polachek, & Wang, 2011):**
  - Calculate the returns for every individual in the sample with early onset-disabilities.
  - Draw the distributions of these individuals.
  - Do the same for the sample without disabilities.
  - Test if the distributions are different.
For people without disabilities, an additional year of education is associated with a 9.9% increase in annual wage/salary (consistent with the general literature).

For people with early-onset disabilities, an additional year of education is associated with a 8.3% increase in annual wage/salary.
Think of this as a very exact histogram.
Mapping out the probability of having up-to a certain return.
First-Order Stochastic Dominance

• **Definition:** The distribution of people without disabilities would be first-order dominant, if for any given return, people without disabilities have a lower (or equivalent) probability of having up to that return.

• The cumulative probability is always lower (i.e., to the right).
First-Order Dominance
Lines cross, so no First-Order Dominance.
Lines cross, so no First-Order Dominance.
Second-Order Dominance

• **Definition:** The sum of cumulative probabilities (the area under curve) is less for the dominant distribution.
  - Curves cross at least once.
  - Compare the areas underneath the CDFs.
  - It is like a horse race to see who is likely to have higher returns over all possible returns.
Compare these areas.
Some evidence of second-order dominance of PwoD
Quick Comments

• **Distributions**: quite similar.

• **Looking at the whole distribution and dominance**: is a more powerful measure than difference in conditional mean.

• **Policy Levers**: Identifying who is in the lower and upper tails help identify policy levers (challenges and opportunities).