PISA SIB Outline

**Fifteen-Year-Old Students’ Science Career Perceptions in PISA 2015**

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* Introduction
* Data, Measures, and Methods
  + Definition of science careers broadly
  + Specifically, information about the ISCO-08 codes
  + Disaggregation of science careers into 1) engineering/technology and 2) medicine
  + How mother and father occupations are coded
  + Software used for analyses
  + Brief discussion about t-tests
* Study questions
  + What percentage of U.S. 15-year-olds is interested in pursuing a career in science by student background variables and a school level variable (school location)?
  + Are the careers of students’ parents associated with the careers students expect to have themselves? For example, if a parent has a career in science, is a student more likely to express interest in a science career?
* Key Findings
  + Study question 1
    - Gender
      * % of boys vs. girls envisioning science career
        + Within science, % of boys vs. girls envisioning career in 1) engineering/tech vs. 2) medicine
      * Careers for which there is the biggest score difference for boys vs. girls (i.e., which career category is associated with the largest score advantage)
        + Boys: Medicine vs. non-science (44 pts)
        + Girls: Engineering/tech vs. medicine (60 pts)
    - Race/ethnicity
      * % of students by race envisioning science career
        + Career category with greatest percentage difference by race

Engineering/tech

* + - * Scores by science career category
        + Cannot control for ESCS (n<62 in for all career cat comparisons)
    - ESCS
      * % of students interested in a science career by SES quartile
      * Students interested in science careers outperform non-science students at each ESCS quartile
    - Immigration status
      * % of students interested in science career by immig status
      * Score differences by immig status and career category
        + Account for ESCS

No difference between scores of lowest SES quartile students regardless of immig status and career category

* + - School location
      * No % difference between urban and non-urban students’ science career interests in science
      * Score differences of urban vs. non-urban students by career category
        + Small disparities (or no difference) when accounting from ESCS
    - Proficiency levels
      * Nearly 70% of lowest-performing students are non-science; 47% of students at highest proficiency level are non-science
      * % of students at top and bottom proficiency levels by career interests
        + 10 percentage-point difference at top and bottom levels

Greatest difference between non-science students and engineering/tech

* + Study question 2
    - % of students with at least one parent working a science career
      * No significant difference in student performance by parent career
    - % of students interested in science by parent career interest
    - Logistic regression
      * Significant positive relationship between parent having a science career and student science career interest
        + Odds ratio = 1.4

Explanation of odds ratio and null hypothesis

* Find Out More
* Technical Notes
  + Target population and exclusions
  + Sampling design and sample sizes
  + Participation rates
  + Science literacy assessment development
  + Weighting, scaling, and plausible values
  + Sampling and nonsampling error and variance estimation
  + Interpreting statistical significance
* References