

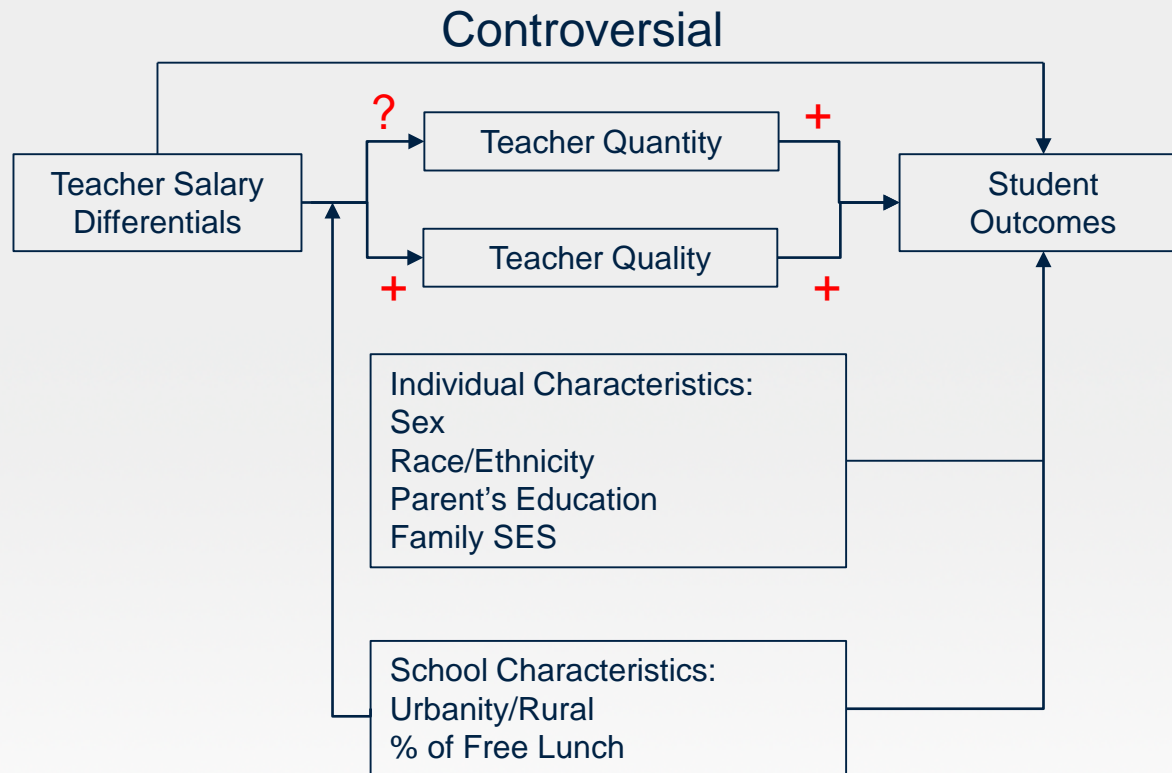
# The Relationship of Teacher Salary and Other Selected Variables to Student Outcomes

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# Framework



# Purpose of this study

- Examine effects of teacher salary differentials on student outcomes
  - Controls for individual and school characteristics
- Examine effects of teacher quantity and quality on student outcomes
  - Controls for individual and school characteristics

# Hypotheses

- I expect higher teacher salary leads to higher test scores-net of control variables.
- I expect higher teacher quantity and quality leads to higher test scores--net of control variables.
- I expect the effects of teacher salary are moderated by the effects of teacher quantity and quality.

# Data

- Public-used Educational Longitudinal Study of 2002
  - Base year (2002) data for 10<sup>th</sup> graders
- A representative sample of 16,197 participating students at a national level (complete cases: 4371)

# Variables

- **Dependent variable:**
  - Standardized Math score
  - Standardized Reading score
- **Explanatory variable:**
  - Teacher salary
  - Teacher quantity
  - Teacher quality
- **Control variables:**
  - Student (race/ethnicity, sex, family SES and parent edu)
  - School (urban/rural, % of students receiving free or reduced lunch)

# Independent Variables

- **Teacher salary**
  - Currently highest salary paid in a school
- **Teacher quantity**
  - % of math/reading teachers among full time teachers
- **Teacher quality**
  - % of excellent teachers among full time teachers
  - Degree & years of the subject teacher

# Statistical Methods

- Hierarchical linear regression model
  - Controlling for heterogeneity between schools
  - With corrections for complex survey design



# Regression Models

- Model1: Controlling variables
- Model2: Model1 + highest salary
- Model3: Model1 + % of math/reading teachers + % of excellent teachers+degree+experience
- Model4: Model1+ highest salary+ % of math/reading teachers + % of excellent teachers+degree+experience

# Results – For Math Scores

- An increase in salary to the highest-level of full-time teachers leads to higher math scores.
- Higher proportion of math teachers leads to higher math scores.
- Higher proportion of excellent teachers leads to higher math scores.

# Results – For Reading Scores

- An increase in salary to the highest-level of full-time teachers does not affect Reading scores.
- Higher proportion of Reading teachers does not affect Reading scores.
- Higher proportion of excellent teachers slightly leads to higher Reading scores.

# Conclusions

- The hypotheses proposed by this study were partially supported by the data analysis
- Highest salary level was significantly associated with Math scores, not with Reading scores.
- The number of teaching years is important for both Math and Reading, but the degree held by the teacher is more influential for Math than for Reading.
- Teacher quantity and teacher quality moderate the effects of salary.

# Discussion

- Confirm the significant positive effects of teacher salary on Math
- Differentiate the effects on Math and Reading
- Support studies about the effects of teacher experience
- Support the academic differences among sex and between racial/ethnic and socioeconomic groups.

# Limitations

- Not the real highest basement salary
- Need restrict data for student-teacher ratio

# Thank you!

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