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# Impact of the Teacher Advancement Program on Student Test Score Gains

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## Background

- Teacher Advancement Program (TAP) is a comprehensive school reform model designed to attract highly qualified teachers, improve instructional effectiveness, and elevate student achievement.
- TAP operates in more than 180 schools in 16 states and 50 districts. In the aggregate, there are about 5,000 teachers and 60,000 students in TAP schools across the country.
- Of the approximate \$240 million awarded during fall 2006 as part of the 2006 Teacher Incentive Fund, \$88.3 million (36.80 percent) went to districts and states that proposed to implement TAP.



## Previous Empirical Research

- Studies have found positive TAP effects on teachers' and school's value-added gains (Solmon, White, Cohen, and Woo, 2007).
- Studies have found positive TAP effects on student achievement gains (Schacter et al, 2002; Schacter, Thum, Reifsneider, and Schiff, 2004).
- Studies have found that an equal or higher percentage of TAP schools make Adequate Yearly Progress under NCLB than all other schools in their respective states, despite larger concentrations in TAP schools of students qualifying for free and reduced price lunch (Solmon, White, Cohen, and Woo, 2007).



## Critique of Prior Literature

- Strong likelihood that TAP schools are distinctive.

*Selection as a TAP school occurs via a competitive process.*

*Typically, a state department of education or district superintendent invites schools to learn about TAP and apply for the program. Candidate TAP schools also need to show an ability to provide financial support for the program.*

*Ultimately, selection as a TAP school depends on the ability of the schools to implement, fund, and sustain the program, as well as on demonstrated faculty support.*

*- Glazerman et. al., 2007, page 9.*



## Study Contribution

- First independent, third-party assessment of TAP.
- Unique panel data set to estimate a TAP treatment effect that includes roughly 1,200 schools from two states over a four-year period.
- 28 schools implemented TAP at some point during this period.
- Student test scores available in mathematics and reading two times per year in grades 2 through 10, allowing for a fall-to-spring gain score as the outcome of interest.



## Study Limitations

- Sample of TAP schools is small.
- Test scores in 2<sup>nd</sup>, 9<sup>th</sup>, and 10<sup>th</sup> grades available in only one of two states under study.
- Lack information on the fidelity of implementation.
- Lack information on variation in features of TAP programs at the school level, e.g.,
  - Minimum and maximum bonus sizes
  - Percent of teachers voting in favor of adoption.



## Data Source and Sample

- Northwest Evaluation Association's Growth Research Database (GRD).
- All scores reference a single cross-grade, equal-interval scale developed using a one-parameter Rasch model.
- Supplement GRD with publicly-available school report card data from state department websites and information from the National Center on Education Statistics' Common Core of Data.
- Number of TAP student observations with valid fall and spring test scores in mathematics increases from 663 in 2002-03 to 7,209 in 2005-06 school year.



## Analytic Strategies

1. *Ordinary least squares (OLS) regression* that includes a variety of school and student characteristics in the model.
2. *School-fixed effects estimator* to control for unobserved characteristics of schools that may explain selection into TAP as well as achievement.
3. *Two-stage selection correction model* to correct for selectivity bias and the magnitude and direction of the selection bias.



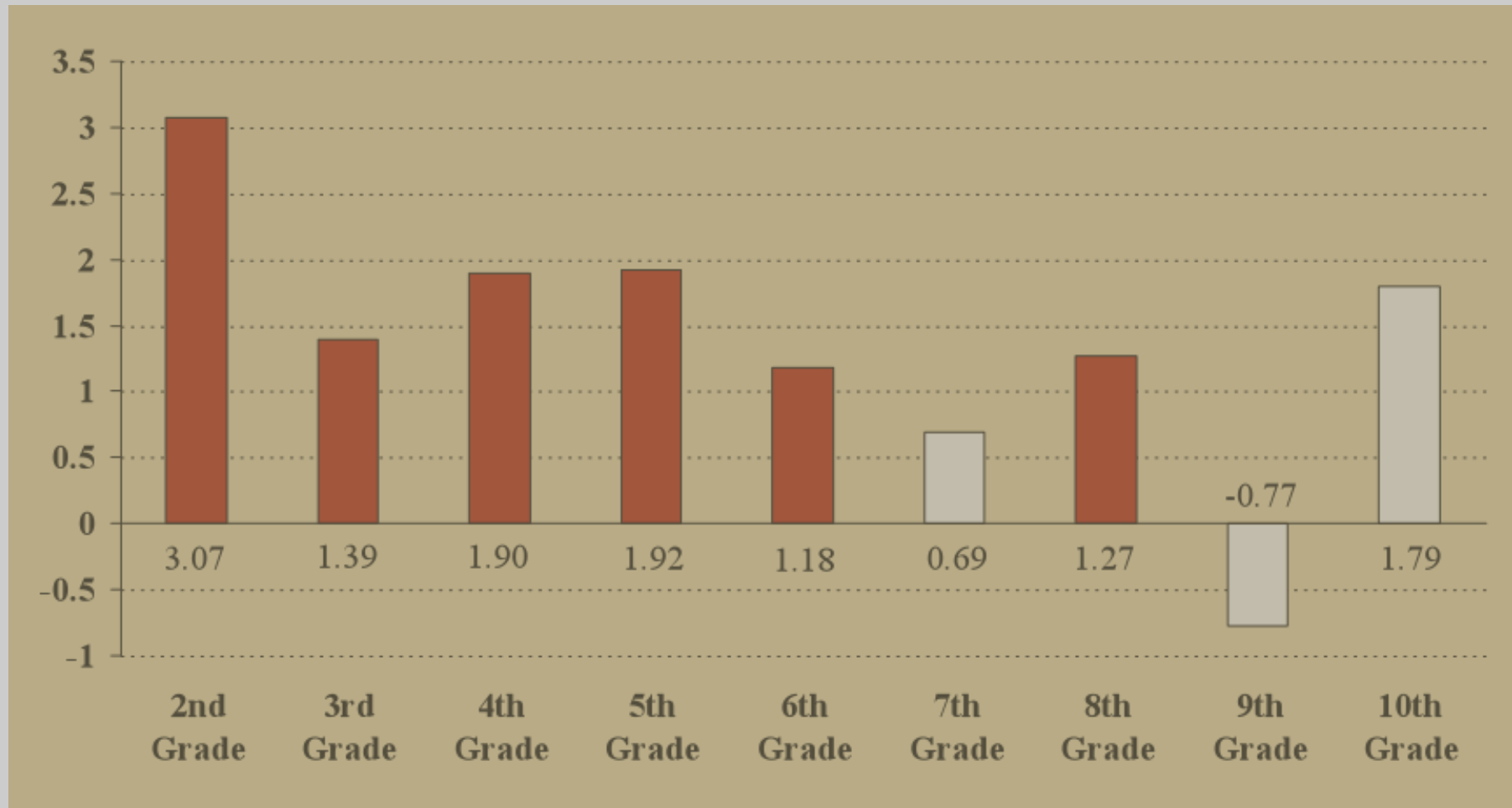


## Analytic Strategies

- Control for a vector of student and school demographic variables.
- Estimate a separate equation for each grade.
- All models include year effects.
- Control for number of days elapsed between fall and spring test administration.
- NWEA test exposure variable.

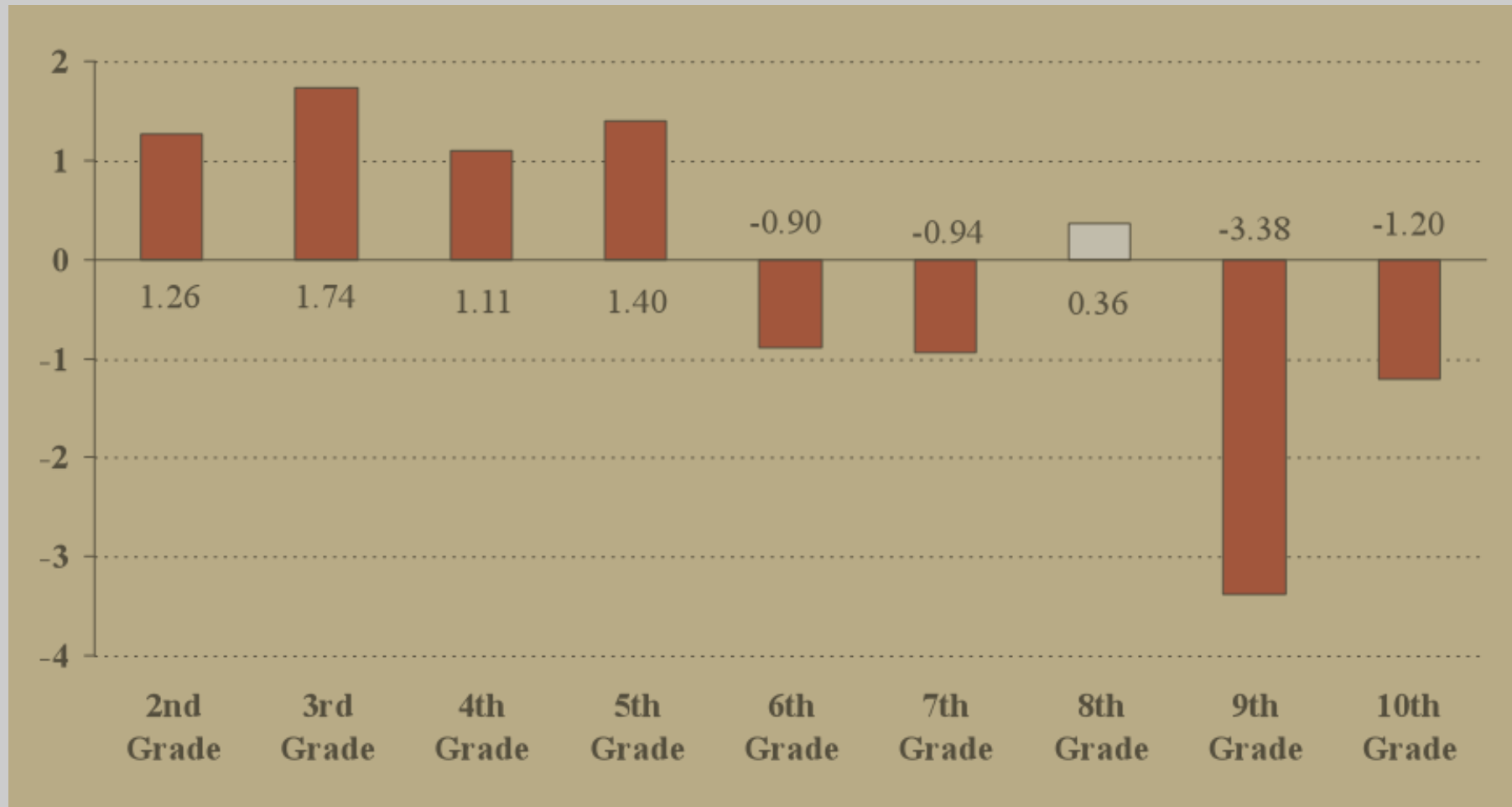


## Analytic Strategy #1 – OLS Regression



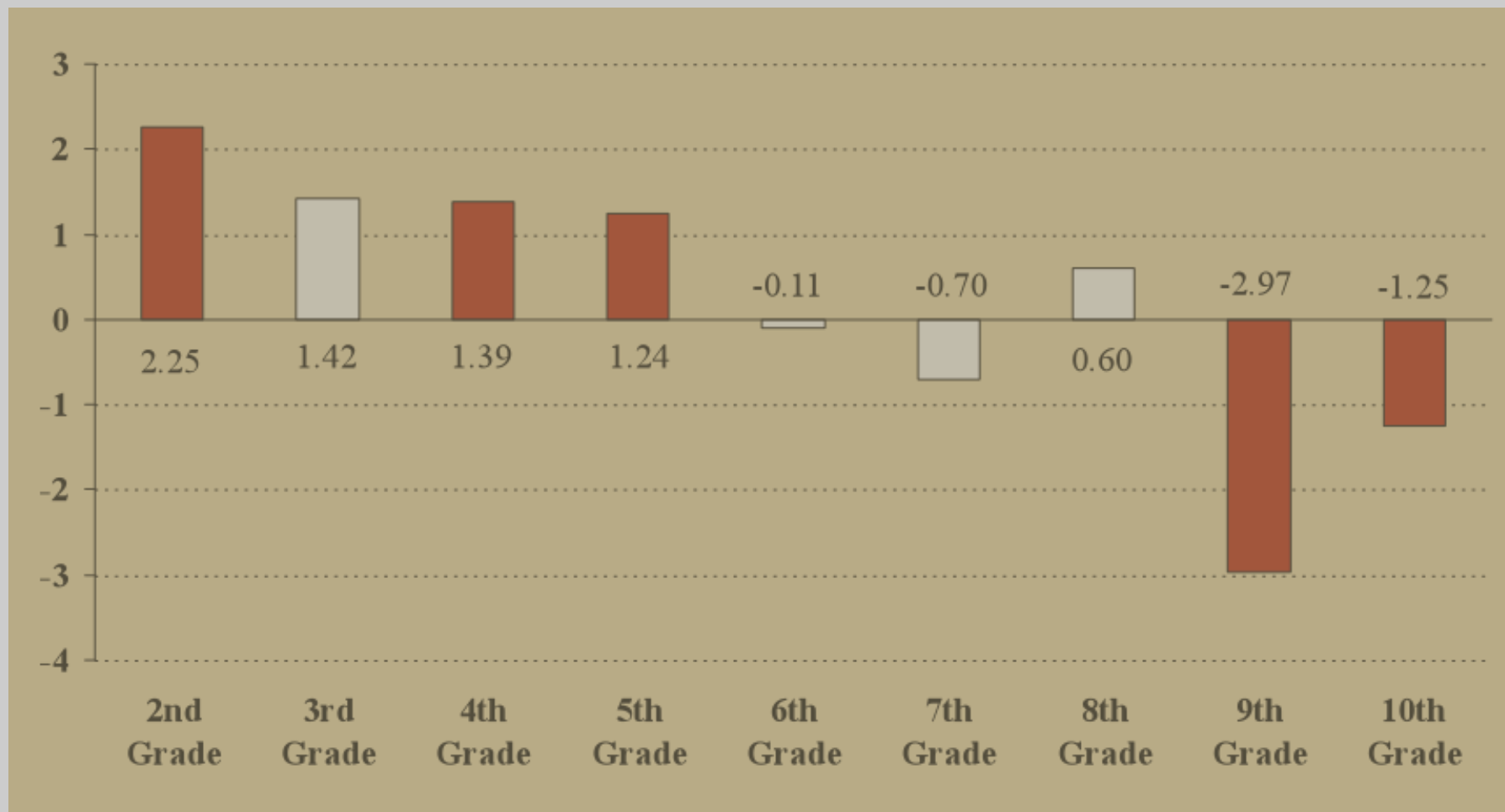


## Analytic Strategy #2 – School Fixed Effects





## Analytic Strategy #3 – Selection Correction Model





## Some Other Tests

1. Estimated OLS regression model with fixed-effect sample.
2. Estimated models with “New TAP” variable.
3. Estimated models with “Pre-TAP” variable.
4. Estimated models with different gain specification.



## Conclusion

- Basic OLS regression reveals a positive TAP treatment effect on student test score gains in elementary grades, with weaker but still positive point estimates in the secondary grades.
- When estimation methods control for selection bias, the positive effect remains at the elementary level, but most estimates for grades 6 through 10 turn negative.
- Lack information of the fidelity of implementation and on variation in features of TAP programs at the school level.
- We have only investigated one aspect of the TAP reform model – the impact of TAP on student achievement. While student achievement is ultimately the outcome of interest, we have not determined whether TAP has altered teacher recruitment and retention or instructional practices.