

THE EFFECTS OF TULSA'S PRE-K PROGRAM ON MIDDLE SCHOOL OUTCOMES

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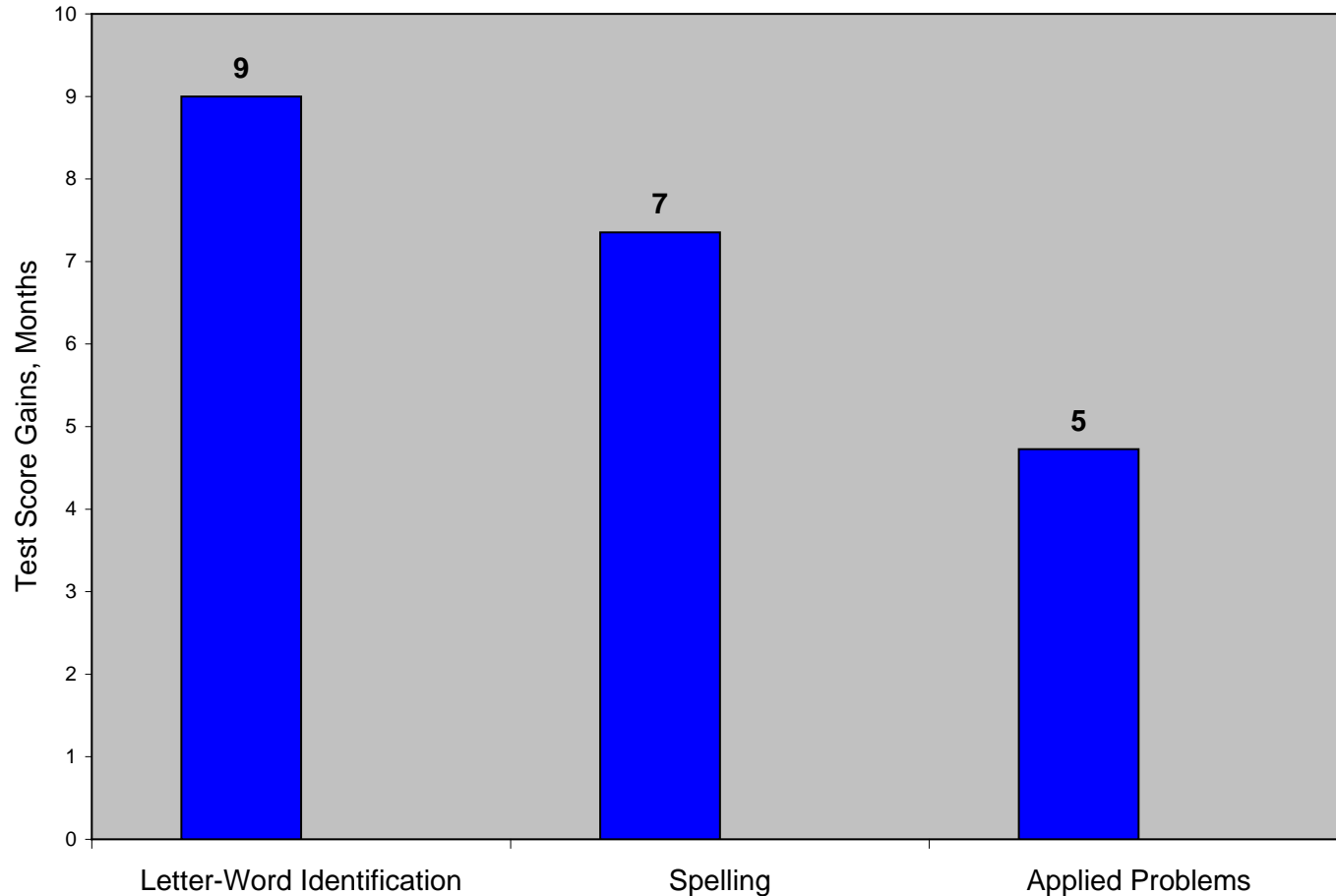
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GEORGETOWN UNIVERSITY

The Tulsa Public Schools Pre-K Program Boosts School Readiness

Effects of TPS Pre-K on Cognitive Development, in Months



William Gormley, Jr., Deborah Phillips, and Ted Gayer, *"Preschool Programs Can Boost School Readiness,"* Science 320 (June 27, 2008), pp.1723-24

Research Question

Can a strong school-based pre-K program produce lasting beneficial effects for program participants? If so, for whom?

Two Possibilities

- **FADE-OUT** – Short term impacts disappear over time
- **FADE-OUT PLUS PERSISTENCE** – Short-term impacts diminish but do not disappear over time

Fragile Scaffolding



Durable Scaffolding



NEW FOCUS: EFFECTS ON 7th GRADE SCHOOL OUTCOMES

- Cohort – kindergarten students in Tulsa Public Schools, 2006-07
 - 7th & 6th graders combined
 - Include special ed students
 - Students in TPS and three surrounding districts
 - State data for Oklahoma standardized test scores
 - A wide range of outcomes

DEPENDENT VARIABLES: Academic Achievement

- Standardized Math Test Scores
- Standardized Reading Test Scores
- GPA
- Enrollment in Honors Classes
- Gifted and Talented Status

DEPENDENT VARIABLES: School Progress & Behavior

- Special education services
- Repeat a grade by 8th grade
- Days absent
- Chronic absenteeism (> 10% days absent)
- Suspensions
 - In school
 - Out of school

CONTROL VARIABLES

Categorized By Data Source

- **Administrative Data** (enrollments, gender, race/ethnicity, school lunch eligibility, academic success, overage at Kindergarten entry (redshirting), school site, district, etc.)
- **Parent Surveys** (mother's education, presence of biological father at home, Internet access at home, etc.)
- **Census Bureau Data** (neighborhood median income)

SUMMARY OF FINAL SAMPLE

- Approximately 58% of original sample from 2006 (identified in 2014)
 - Original sample and analytic sample have similar gender and school lunch eligibility percentages; differences in race/ethnicity
- Approximately 75% of original sample for state test score data

ESTIMATION

Propensity score weighting

- Goal: identify comparison group members most similar to treatment group members
- Use boosted regression to obtain propensity scores
- Using propensity scores, construct analytic weights to estimate ATT
- Estimate weighted regression (with covariates) to obtain treatment effect
- Missing data (parent survey) with 40 imputed datasets

Pre-K Results

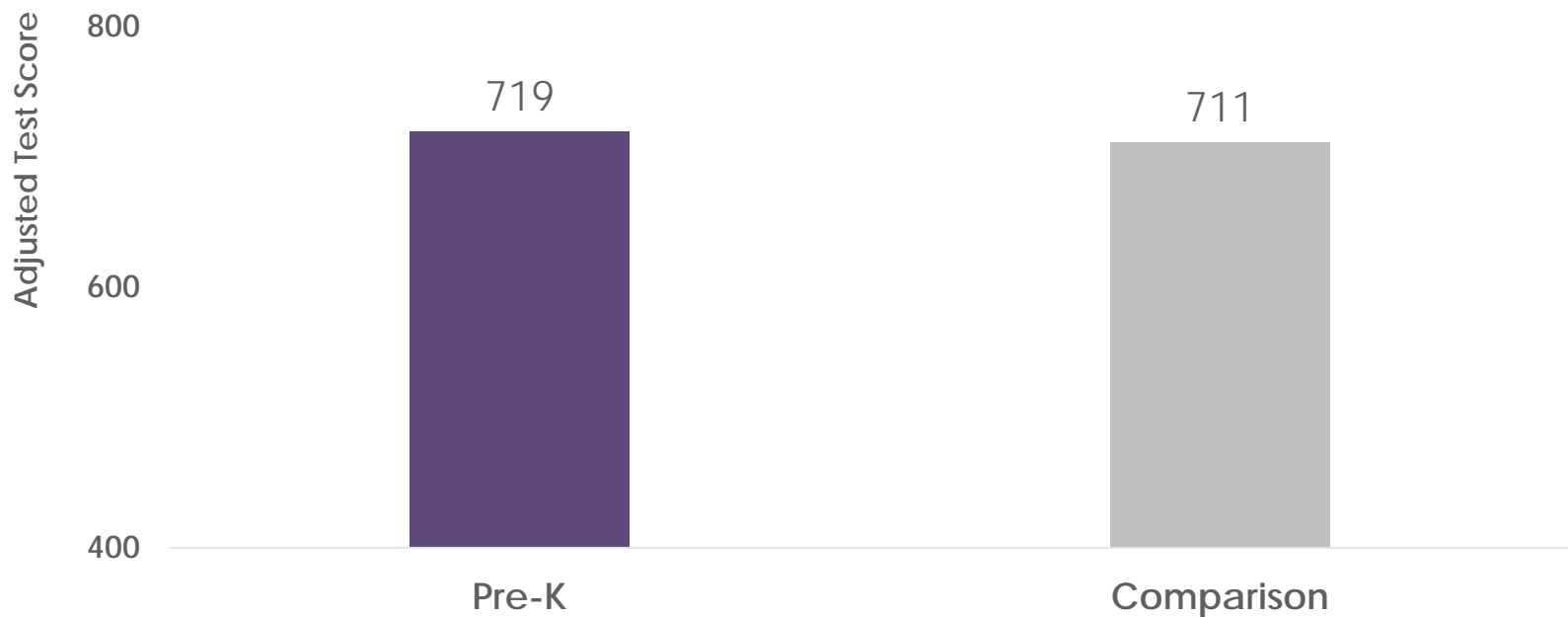
PATTERN OF RESULTS

Outcome	Overall	Boys	Girls	Free	Reduced	Paid
Math Test	Yes	No	<i>Marginal</i>	Yes	No	<i>Marginal</i>
Read Test	No	No	No	No	No	No
GPA	No	No	No	No	No	No
Honors	Yes	Yes	No	Yes	No	No
Gifted	No	No	No	No	No	No

All reported associations were favorable and in the anticipated direction.

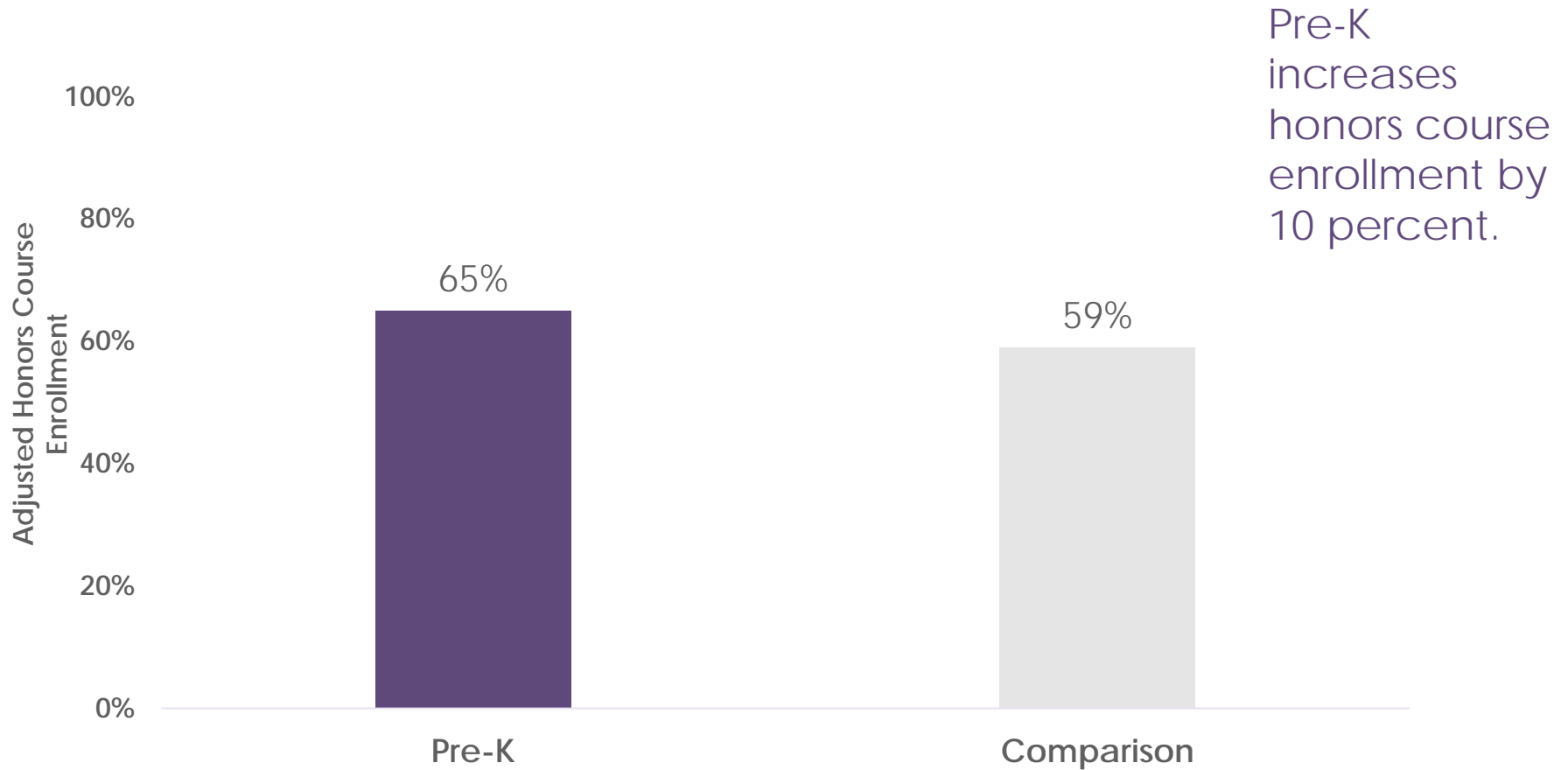
Standardized Math Test Results

For students as a whole, we see a modest statistically significant positive relationship between pre-K enrollment and standardized math test scores, for the equivalent **effect size of 0.10**.



Honors Courses

We also see a statistically significant positive relationship between pre-K enrollment and enrollment in an honors course eight years later.



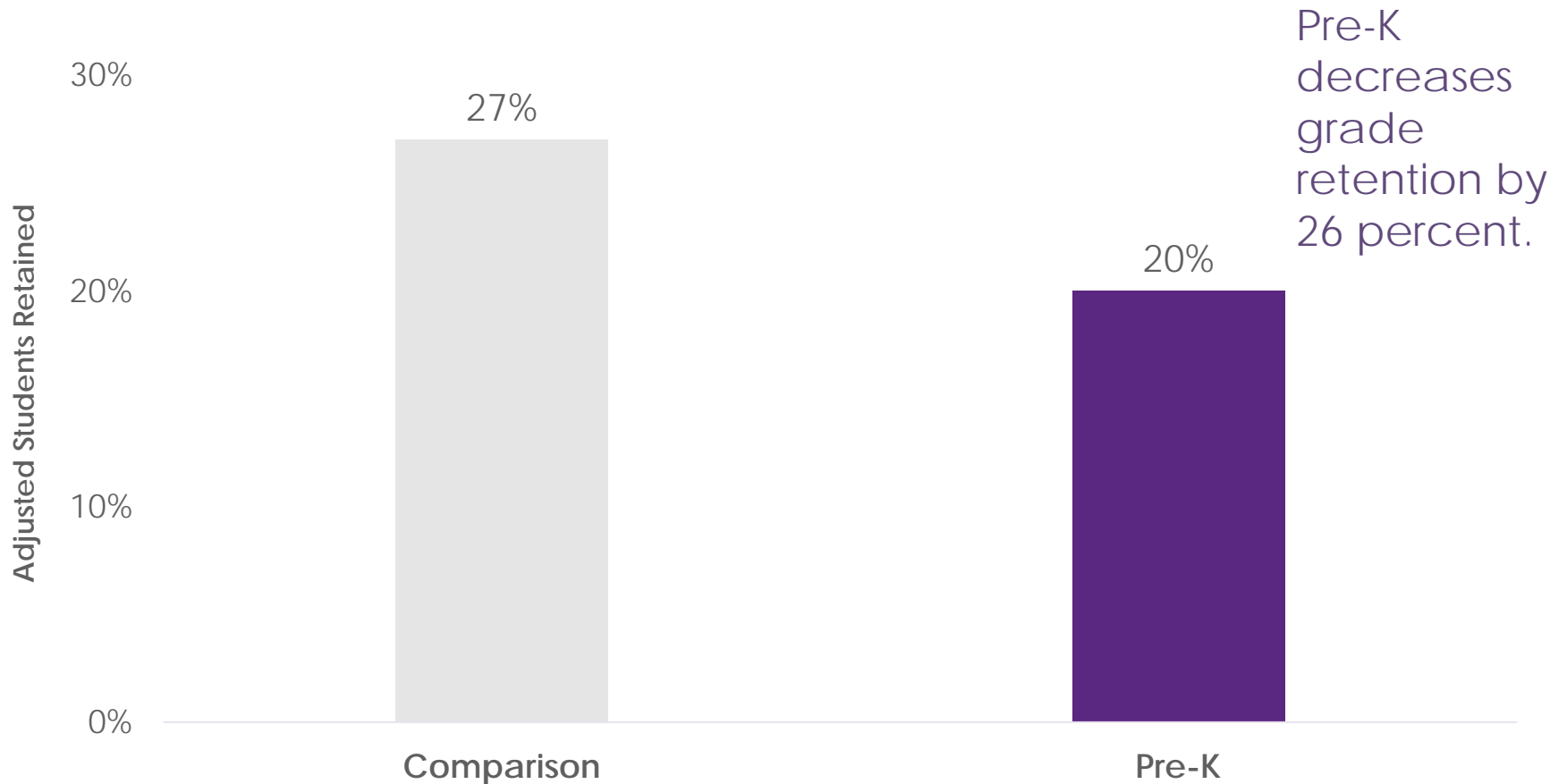
PATTERN OF RESULTS

Outcome	Overall	Boys	Girls	Free	Reduced	Paid
Special ed	No	No	<i>Marginal</i>	No	No	<i>Marginal</i>
Repeat	Yes	Yes	Yes	Yes	Yes	No
Days absent	No	No	No	No	No	No
Chronic absenteeism	No	No	No	No	No	<i>Marginal</i>
Susp: In sch.	No	No	No	No	No	<i>Marginal</i>
Susp: Out sch.	No	No	No	No	No	No

All reported associations were favorable and in the anticipated direction.

Grade Retention

Pre-K is associated with a 7 percentage point reduction in grade retention.



CONCLUSIONS

- The strong positive effects of the Tulsa pre-K program on academic success diminish over time but do not disappear
- Math effects are more durable, reading effects are more fragile
- Grade retention effects are substantial and extend to all key subgroups
- Both disadvantaged and middle class students experience longer term benefits from pre-K