

## Do Middle-Class Families Benefit from High-Quality Pre-K?

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We explore the effects of state-funded pre-K programs in Tulsa, Oklahoma, on different population groups to understand if middle-class families benefit from the program.

Many empirical studies confirm that high-quality pre-K programs improve the school readiness of children. But most of these studies, including the Perry Preschool Project, the Abecedarian Project, and the Chicago Child-Parent Centers Study, focus on disadvantaged children. What about middle-income children? And what about the children of well-educated parents? Do they also benefit from pre-K or are we simply gilding the lily when we provide publicly funded pre-K to these children?

Oklahoma's universal pre-K program provides an excellent opportunity to answer these questions. Established in 1998, it is the second-oldest UPK program in the U.S. (Georgia was the first, 1997). It is also a high-quality program, in terms of both structure and process. Every teacher has a B.A. degree, is early-childhood-certified, and is paid a regular public school wage. The quality of instruction, as measured by the CLASS instrument, is higher than that for school-based pre-K programs in other states; time on task is also higher. Over the past decade, our research team at Georgetown University has produced a series of reports on Tulsa's pre-K program. Tulsa is the second-largest school district in OK, with approximately 41,000 students, just behind Oklahoma City. It is also a strikingly diverse school district. In this policy brief, we focus explicitly on an important question that we have discussed only in passing in our previous papers: do ALL students benefit from a high-quality pre-K program or only some students?

### DATA AND METHODS

To answer this question, we use data from our latest cohort of students: students who were tested in

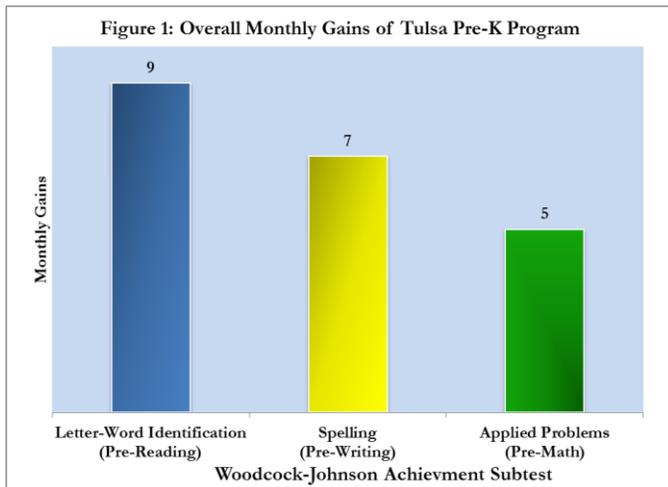
August 2006. We combine test score data from three Woodcock-Johnson tests with administrative data from TPS, plus a parent survey administered to the parent who accompanied the child to the test at the beginning of the school year. This information from the parent surveys permits us to examine not just school lunch eligibility and race/ethnicity but maternal education as well.

Our methodology, as documented in previous reports, is known as a "regression discontinuity design." It is a powerful technique for controlling for "selection bias" because it compares two groups of children, both of whom participated in the same pre-K program, though one year apart. It works if, as in Tulsa, there is strict adherence to a birthday cutoff (in this instance, September 1) when determining whether a given child is ineligible to enroll in pre-K in a given year. In effect, we compare incoming kindergarten students who just completed the pre-K program (the treatment group) with incoming pre-K students who are about to begin the pre-K program (the control group). We control for each student's exact date of birth, to equalize scores for older and younger students, within and across groups. We also control for a host of other variables, including gender, race/ethnicity, school lunch eligibility, maternal education, and the presence of the biological father at home. When looking at a particular subgroup, of course, we control for these variables in different ways. For example, when examining students from different racial/ethnic categories, we control for race by disaggregating our data by race, while controlling for other variables in a regression model.

One way to report program impacts is through effect sizes, a ratio with the regression coefficient for program participation in the numerator and the standard deviation of the control group in the denominator. We report effect sizes in our peer-reviewed articles. In this policy brief, we report something that is a little easier to understand: a monthly gains measure that recalibrates test scores for the treatment group and the control group at the regression discontinuity point (children born on September 1 or September 2 of the relevant year) so that they are expressed not as raw numbers but rather as the average age associated with a particular test score for a nationally normed sample. If, for example, the treatment group's test score at the regression discontinuity point corresponds to 5 years and 2 months and the control group's test score at the regression discontinuity point

corresponds to 4 years and 6 months, then the monthly gains score would be 8 months (5 years 2 months minus 4 years 6 months). That number tells you how many months ahead the treatment group is, compared to the control group, because they participated in the program.

For students as a whole, pre-K participants are well ahead of non-participants in all three cognitive domains (see Figure 1). They are 9 months ahead of their peers in pre-reading skills (the Letter Word ID Test), 7 months ahead of their peers in pre-writing skills (the Spelling Test), and 5 months ahead of their peers in pre-math skills (the Applied Problems Test). The corresponding effect sizes are: 0.978, 0.739, and 0.359, respectively and all are statistically significant at the one percent level. Based on customary metrics, these effect sizes would be considered moderate to large. They fall just short of those found for the legendary Perry Preschool Project, but they substantially exceed average pre-K program effects. Clearly, the Tulsa pre-K program is very effective for students as a whole. But what about subgroups?

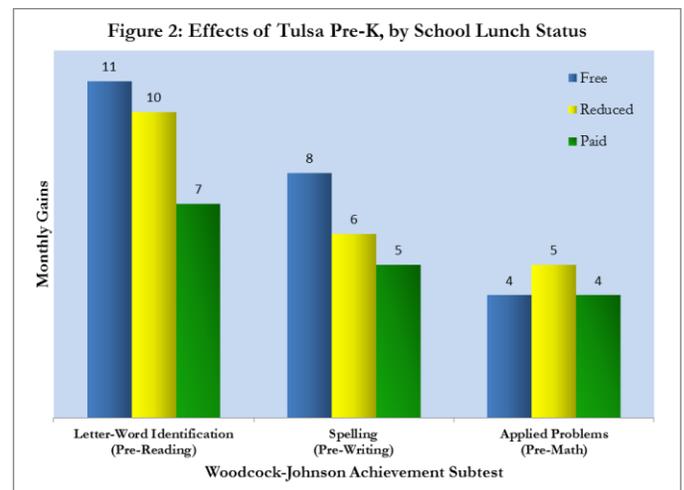


**KEY FINDINGS**

The first key question to examine is whether middle-class children benefit from participating in a high-quality pre-K program. Although we do not have household income data, we do know which children were eligible for a free or reduced price lunch, which is highly correlated with income levels. At the time of testing, 75.3 percent of pre-K alumni and 74.6 percent of pre-k entrants were eligible for some kind of school lunch subsidy. The qualification threshold for a family of four was \$26,000 for a free lunch, \$37,000 for a reduced price lunch. As Figure 2 indicates, students in all three categories (free lunch, reduced lunch, ineligible for either) benefit from pre-K.

Although disadvantaged children generally benefit more, the impacts for the other two groups are quite substantial in all three testing areas

But can we be sure that children who are ineligible for a subsidized lunch are broadly representative of the middle-class? Or, to put it differently, is it possible that they come disproportionately from the middle quintile of household income categories rather than the upper two quintiles? Certainly, it is true that students in the Tulsa school district, like other Oklahoma school children, are poorer than average. Oklahoma, with a median household income of \$44,287, is a relatively poor state (the national median is \$52,762).

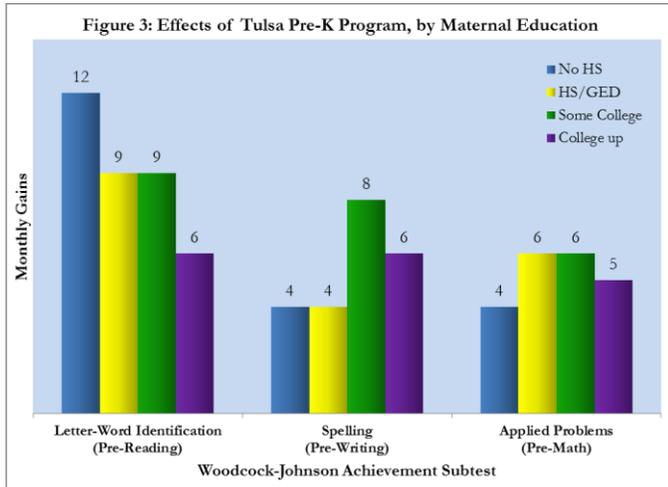


While lower-income students benefit the most, students in all categories show gains in all three testing subjects.

To zero in on well-off children, we can isolate a group of children who are clearly advantaged in one key respect: maternal education. Many studies confirm a very high correlation between maternal education and household income. Also, it is reasonable to assert that children whose mothers have a college degree are advantaged, not just generally but especially as they compete to succeed in school. Of those students for whom we have information on maternal education, 18.8 percent of the mothers have no high school degree, 27.4 percent have a high school degree (or GED), 40.3 percent have some college education, and 13.5 percent have a college degree or higher.

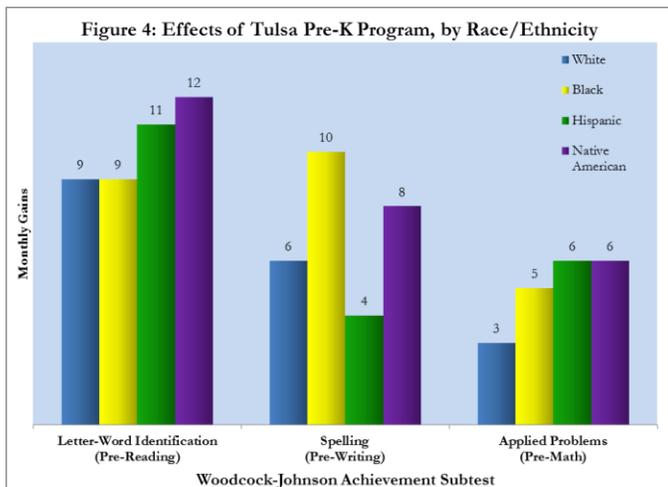
Do children whose mothers have a college degree benefit from participating in a high-quality pre-K program? As Figure 3 indicates, students in all four categories of maternal education (less than high school, high school or

GED, some college, a college degree or better) benefit from pre-K. In fact, it is difficult to specify which students benefit more because gains are strong across the board. Children whose maternal education is less than high school or high school/GED have the greatest increase in letter word recognition. Children whose mothers have some college or a college degree see the greatest gains in spelling and applied problems.



Children whose mothers have at least some college education show the greatest gains in Spelling and Applied Problems.

Many of the earliest studies of early childhood education, including the Perry Preschool study, the Abecedarian project, and the Chicago Child-Parent Centers project, focused exclusively or primarily on African American children. But what about children from other racial and ethnic groups?



In Figure 4, we see that children from diverse racial/ethnic backgrounds benefit substantially from participating in a high-quality pre-K program. These include blacks (33.0 percent), whites (34.9 percent), Hispanics (20.7 percent), and Native Americans (10.2 percent). The number of Asian American students in Tulsa was too small to analyze.

### DISCUSSION

In principle, less advantaged children should benefit more from participating in a high-quality pre-K program than more advantaged children, because less advantaged children begin from a lower starting point. Also, family support, peer group support, and community support are likely to be weaker for less advantaged children, thus heightening the potential compensatory value of strong schooling at an early age.

In some respects, our findings support this interpretation. For both Letter-Word Identification (pre-reading skills) and Spelling (pre-writing skills), students eligible for a free lunch benefit the most and students ineligible for any school lunch subsidy benefit the least, with students eligible for a reduced price lunch falling somewhere in between. For math, however, students with different household incomes, as measured by school lunch eligibility, benefit roughly the same.

This difference could reflect the fact that middle-class families provide daily reinforcement for emerging verbal skills but not as much for emerging math skills, which often lie outside the boundary of routine family interactions. If so, a strong preschool program’s emphasis on verbal skills could benefit less advantaged students the most because their relative deficits are more striking in that area.

The Letter-Word Identification results for different maternal education categories also support the proposition that less advantaged students benefit the most. On the other hand, for Spelling and Applied Problems, the pattern is more complex. In these two areas, students whose mothers have had some college benefit a bit more than students whose mothers have lower or higher amounts of education.

This suggests, as one possibility, that the students who benefit the most in some subject areas are those whose baselines are not extremely high but whose mothers have conferred sufficient skills for them to take advantage of what preschool has to offer. To put it another way, big gains depend on both lower baselines and stronger skills.

Children from all racial/ ethnic groups benefit from a high-quality pre-K programs.

If we focus on race and ethnicity, it is difficult to say whether Hispanics or African Americans or Native Americans benefit the most. But we can say that children of color generally benefit more than white children. In this respect, less advantaged children benefit more.

In contrast to our findings on differences across subgroups, which both support and challenge the conventional wisdom that less advantaged children benefit more, our findings are clear and unequivocal on one key point: children from all subgroups benefit from participation in a high-quality pre-K program. This is true whether we dissect our sample based on school lunch eligibility or maternal education or race/ethnicity. In every instance, children from every subgroup benefit substantially from participation, for pre-reading, pre-writing, and pre-math skills.

### POLICY IMPLICATIONS

Children from all backgrounds benefit from a high-quality pre-K program. Costs of a universal program should be taken into account in evaluating the need for universal pre-K.

In his State of the Union address, President Obama proposed a federally funded universal preschool program. He later made it clear that he envisions a high-quality program, with the states as partners. Do we need or want a high-quality, federal, universal preschool program? A definitive answer to that question is beyond the scope of this policy brief.

One argument for a *high-quality* program, with well-paid and well-educated teachers, is that the best results have come from high-quality programs. The case for a *universal* program is that children with diverse demographic characteristics benefit from such a program. An argument for a *federal partnership* is that early childhood education has become vital to our economic growth, our international competitiveness, and our national security.

Alongside these arguments must be considered the costs of such a program and the possibility that some students will switch from privately-funded to publicly-funded preschool (of course, they may also switch from mediocre to high-quality preschool).

Historically, the costs of the Tulsa pre-K program have been surprisingly low, considering the substantial

positive impacts the program has achieved. In fact, we have estimated that, in current dollars, the program cost all governments combined (federal, state, and local) \$10,000 per student for a full-day slot, \$5,000 for a half-day slot. In contrast, the Perry Preschool Project cost approximately \$22,000 per student (in current dollars). We have consistently found that both full-day and half-day versions of the program are highly effective.

### CONCLUSION

Tulsa is not a microcosm of the nation, and the Tulsa pre-K program is not a typical program. We have emphasized that Tulsa public school students are poorer than average and that the Tulsa preschool program is better than average. Tulsa students ineligible for a school lunch subsidy are probably less advantaged, in terms of household income and perhaps other attributes, than their counterparts in many other jurisdictions.

But we have successfully identified a segment of the Tulsa student body that is highly advantaged – namely, children whose mothers have a college degree. Even those students benefit from participating in Tulsa's high-quality pre-K program, as do ALL the student subgroups we have examined.

Reasonable people will disagree on whether a federally-funded universal pre-K program is good public policy. What we can say with certainty is that Tulsa's version of such a program benefits children from different social classes, children whose mothers have weak and strong educational backgrounds, and children from diverse racial and ethnic groups.

### ACKNOWLEDGEMENTS

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