

# The Long-Term Effects of Universal Preschool in Boston

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High-quality early childhood education is increasingly viewed as an important and cost-effective intervention to address early-life deficits. New research from economists **Guthrie Gray-Lobe** (UChicago), **Parag Pathak** (MIT), and **Christopher Walters** (UC Berkeley) studies the short and long-run impacts of Boston Public Schools' universal public preschool program. It is the first study that uses a randomized research design to examine the long-term outcomes of children attending a large-scale program. The researchers find that attending a Boston public preschool led to positive long-term impacts on educational attainment as attendees were more likely to graduate from high school and enroll in college. The short-term effect of preschool on test scores was minimal, but there was a substantial impact on student behavior. Effects were larger for boys but did not differ by race or income. As policymakers consider increased public investment in universal preschool, the research findings suggest that preschool can lead to long-term educational attainment gains through improvements in behavior. Furthermore, the observed effects across demographic groups suggest that all students are likely to benefit from universal preschool.

## Setting

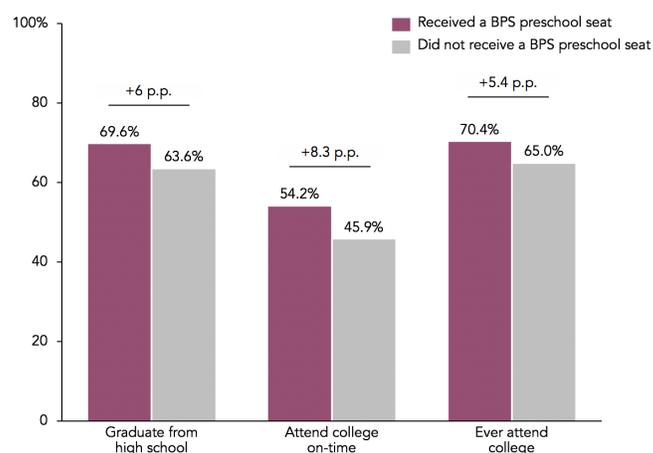
This work studies the impact of Boston Public Schools' (BPS) public preschool program using data on more than 4,000 preschool applicants from 1997 to 2003. The study leverages the randomization embedded in the BPS preschool lottery-based assignment process to compare the outcomes of students who won a preschool seat to students whose random lottery number was not high enough to win a seat. The study combines data from Boston Public Schools, the Massachusetts Department of Elementary and Secondary Education, and the National Student Clearinghouse.

### Key finding #1: Public preschool in Boston boosted educational attainment.

Students attending public preschool in Boston were more likely to graduate from high school and enroll in college. Enrolling in preschool increased the likelihood that a student would ever graduate from high school by 6 percentage points. Similar impacts are evident with respect to college going. Preschool attendees were 8 percentage points more likely to attend college on-time, an effect driven by increased enrollment at four-year colleges and Massachusetts colleges.

Preschool enrollment also increased the likelihood of taking the SAT by 9 percentage points. Taken together, this represents consistent and substantial evidence of the impact of Boston public preschool on long-term educational attainment.

**Figure 1.** Impact of Boston's public preschool program on educational attainment



**How to read this figure:** The figure compares students who randomly won a preschool seat to those who did not win a seat. For example, lottery-winners attending preschool had a 6 percentage point higher high school graduation rate than the 63.6% rate for students who did not receive a high enough lottery number to attend preschool.

**Table 1.** Impact of Boston Public Schools' preschool program

	Outcome	Impact of attending preschool	
Long-term educational attainment	Graduate high school	↑	6 percentage points <u>more</u> likely
	Take the SAT	↑	8.5 percentage points <u>more</u> likely
	Enroll in college on-time	↑	8.3 percentage points <u>more</u> likely
	Ever enroll in college	↑	5.4 percentage points <u>more</u> likely
Academic achievement	State standardized test scores	-	<i>No detectable impact</i>
	Repeat a grade	-	<i>No detectable impact</i>
Student behavior	Suspensions in high school	↓	0.24 <u>fewer</u> suspensions
	Juvenile incarceration	↓	0.8 percentage points <u>less</u> likely

**How to read this table:** The table compares students who randomly won a preschool seat to those who did not win a seat. For example, lottery-winners attending preschool had a 6 percentage point higher chance of graduating high school than students who did not receive a high enough lottery number to attend preschool.

**Key finding #2: The short-term impacts of preschool are evident in student behavior but not test scores.**

Boston public preschool had little detectable impact on elementary, middle, and high school state standardized test scores. Additionally, there was minimal effect on the likelihood that a student repeats a grade. This lack of short-term preschool effects contrasts with the findings on long-term educational attainment. However, the story evolves when the researchers analyze short-term behavioral outcomes. Findings indicate that attending Boston public preschool reduced total high school suspensions and decreased the likelihood of ever being in juvenile incarceration. Although the study detected no impact of preschool on short-term test scores, the positive effects on student behavior suggest ongoing skill formation that culminates in higher long-term educational attainment.

**Key finding #3: The benefits of preschool are larger for boys than girls but do not differ by race and income.**

As a policymaker weighs an expansion of public preschool against budgetary constraints, a likely consideration is whether to offer universal preschool or a more targeted program for disadvantaged students.

The researchers explore whether Boston public preschool has a differential impact by gender, race, or income. Both boys and girls attending preschool have a higher chance of attending college, but the preschool effect is larger for boys. In contrast, there are no differences in preschool impact by race and income (as proxied by whether a student receives a free or reduced-price lunch). Notwithstanding the gender difference, this study suggests that all students – regardless of race or income - are likely to benefit from a universal preschool program.

**Future research**

Future work will explore the impact of preschool later in the student lifecycle and quantify the effect of public preschool on employment, earnings, and adult criminal activity. As policymakers consider public investment in preschool in a variety of settings, future studies will also evaluate the benefits of public preschool in sites other than Boston with more recent cohorts.

**Source:** Gray-Lobe, G., Pathak, P. A., and C. R. Walters (2021): "The Long-Term Effects of Universal Preschool in Boston," *SEII Discussion Paper #2021.05*.