WWC Single Study Review

INSTITUTE OF EDUCATION SCIENCES

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WWC Review of the Report "Stand and Deliver: Effects of Boston's Charter High Schools on College Preparation, Entry, and Choice"[1,2]

The findings from this review do not reflect the full body of research evidence on charter schools.

What is this study about?

The study measures the effects of attending Boston's charter high schools on students' reading and math achievement, high school graduation, and college outcomes. Six Boston charter schools that include one or more high school grades participated in the study.

Researchers analyzed cohorts of students who applied to the study schools between 2002–09, a period when there were more applicants than the study schools could admit. When the number of applicants to a school exceeded enrollment limits, a lottery was used to randomly select students who would be offered admission. Students who were not selected were not offered admission to a charter school. Some students who were offered admission did not ultimately enroll in a charter school, and some students who were not initially offered admission through the lottery ultimately enrolled in a charter school.

Study authors used statistical techniques to estimate the differences in outcomes for students who would enroll in a charter school if offered admission but would not enroll if they were assigned to the comparison group. These students are referred to as compliers. These types of estimates are known as a complier average causal effect (CACE).[3]

The study measured the CACE of attending a charter school on student achievement in reading and math, eligibility for a scholarship that waives Massachusetts public university tuition, high school graduation, college enrollment, and college persistence.

Features of Boston Charter Schools

Charter schools are public schools that have been established on the basis of a contract, or charter, held by a private board of directors. They are exempt from many state and district regulations that govern traditional public schools, including those involving staffing, curriculum, and budget decisions. Charter schools are open to any student, and attendance is free of charge. If more students want to enroll in a charter school than the charter school can enroll, an admissions lottery must be held.

Massachusetts' urban charter schools typically use a *No Excuses* pedagogy, which emphasizes discipline, reading and math skills, extended instruction time, and selective teacher hiring.[4] Like most Boston charter schools, the Boston charter high schools included in this study largely utilize the *No Excuses* approach.

What did the study find?

None of the analyses presented in this study meet WWC standards, and therefore, the study findings are not presented in this WWC report.

WWC Rating

The research described in this report does not meet WWC group design standards

The study design is based on randomized offers of admission to charter schools. Using specialized statistical techniques, the study authors estimated the effects of enrollment in a charter school among students who would enroll in a charter school if offered admission and would not enroll in a charter school if they were not offered admission. These types of students are referred to as compliers, and these types of estimates are known as complier average causal effects (CACE).

This study has high attrition from the initial randomization to the analytic sample, so the WWC requires a demonstration of baseline equivalence in order for this study to meet WWC group design standards. However, CACE analyses cannot demonstrate baseline equivalence of compliers because compliers cannot be identified.[5] Because the study cannot demonstrate baseline equivalence, the study does not meet WWC group design standards. Therefore, the findings from this study are not presented in this WWC report.

Endnotes

[1] Angrist, J. D., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. R. (2014). *Stand and deliver: Effects of Boston's charter high schools on college preparation, entry, and choice.* Cambridge, MA: Department of Economics Working Paper, Massachusetts Institute of Technology. The authors also provided an updated version of the paper that has been accepted for publication in the *Journal of Labor Economics,* 2015. This review used sample sizes from the updated version of the paper. An earlier version was used to complete a quick review of this study in July 2013: Angrist, J. A., Cohodes, S. R., Dynarski, S. M., Pathak, P. A., & Walters, C. D. (2013). *Charter schools and the road to college readiness: The effects on college preparation, attendance and choice*. Boston, MA: The Boston Foundation and NewSchools Venture Fund.

[2] Single study reviews examine evidence published in a study (supplemented, if necessary, by information obtained directly from the authors) to assess whether the study design meets WWC design standards. The review reports the WWC's assessment of whether the study meets WWC design standards and summarizes the study findings following WWC conventions for reporting evidence on effectiveness. This study was reviewed using the single study review protocol (version 2.0). A quick review of this study was released in July 2013, and this report is the follow-up review that replaces that initial assessment.

[3] The CACE is the average effect of taking up the intervention among compliers—those who would take up the intervention if assigned to the intervention group and who would not take up the intervention if assigned to the comparison group. In some disciplines, the CACE is also referred to as the local average treatment effect (LATE). The estimate of the offer of the intervention is often referred to as the intent-to-treat (ITT) effect. In studies that present both a CACE estimate and an ITT estimate, the WWC will review both estimates. The authors did not analyze ITT estimates, and therefore, only the CACE estimates are reviewed in this report. More information on the WWC guidance to review CACE estimates is available here: http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=253.

[4] Thernstrom, A. M., & Thernstrom, S. (2003). *No excuses: Closing the racial gap in learning.* New York: Simon & Schuster.

[5] Compliers are defined based on what their behavior would be if they were assigned to the intervention group and what their behavior would be if they were assigned to the comparison group. Because students can only be assigned to one research condition, student behavior under the other research condition is not known. Specifically, the compliers in the intervention condition cannot be distinguished from individuals who would always take up the intervention (known as always-takers), and similarly, the compliers in the comparison condition cannot be distinguished from individuals who would never take up the intervention (known as never-takers). As a result, it is not possible to demonstrate the equivalence of compliers across condition, and therefore, any CACE estimate from a high-attrition randomized controlled trial cannot meet WWC group design standards. Only CACE estimates from low-attrition randomized controlled trials can meet WWC group design standards without reservations.

Recommended Citation

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Glossary of Terms

Attrition Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.

Clustering adjustment If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.

Confounding factor A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.

Design The design of a study is the method by which intervention and comparison groups were assigned.

Domain A domain is a group of closely related outcomes.

Effect size The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.

Eligibility A study is eligible for review if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.

Equivalence A demonstration that the analytic sample groups are similar on observed characteristics defined in the review area protocol.

Improvement index Along a percentile distribution of individuals, the improvement index represents the gain or loss of the average individual due to the intervention. As the average individual starts at the 50th percentile, the measure ranges from –50 to +50.

Multiple comparison adjustment When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.

Quasi-experimental design (QED) A quasi-experimental design (QED) is a research design in which study participants are assigned to intervention and comparison groups through a process that is not random.

Randomized controlled trial (RCT) A randomized controlled trial (RCT) is an experiment in which eligible study participants are randomly assigned to intervention and comparison groups.

Single-case design (SCD) A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.

Standard deviation The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample are spread out over a large range of values.

Statistical significance Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < .05$).

Substantively important A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the WWC Procedures and Standards Handbook (version 3.0) for additional details.