

Abstract Title Page
Not included in page count.

Title: A Meta-Analysis of the Literature on the Effect of Charter Schools on Student Achievement

Authors and Affiliations: Julian R. Betts and Y. Emily Tang, UC San Diego Department of Economics

Abstract Body

Limit 4 pages single-spaced.

Background / Context:

Description of prior research and its intellectual context.

Charter schools represent an increasingly important form of school choice in the United States. Charter schools are public schools, with a difference. Compared to traditional public schools, they are exempted from some of the state laws and regulations that govern traditional public schools. In this way, parents come to have a greater number of choices among schools, and, due to deregulation, it is expected that the charter schools are distinct from traditional public schools. The intent is that charter schools can provide students with alternative curricula, teaching methods, and teachers who may differ in educational background and training from teachers in traditional public schools. This added freedom for charter schools to experiment and innovate comes with the threat that the charter authorizer may shut down charter schools should they fail to meet academic standards or to maintain financial viability.

Purpose / Objective / Research Question / Focus of Study:

Description of the focus of the research.

The study asks whether charter schools are producing higher achievement for students compared to traditional public schools.

Setting:

Description of the research location.

The study reviews research from across the United States.

Population / Participants / Subjects:

Description of the participants in the study: who, how many, key features, or characteristics.

The paper reviews research that examines the English Language Arts or mathematics achievement of students at charter schools, focusing on studies that use lotteries to create a control group, or studies that use a value-added approach to compare charter and traditional public schools while taking into account individuals students' past achievement.

Intervention / Program / Practice:

Description of the intervention, program, or practice, including details of administration and duration.

The practice studied in the meta-analysis is charter schools.

Research Design:

Description of the research design.

The research design consists of a random-effects meta-analysis of papers that fit the criteria listed above.

Data Collection and Analysis:

Description of the methods for collecting and analyzing data.

The researchers performed a search for papers on studies of charter schools and achievement, and also drew articles from some recent reviews.

Findings / Results:

Description of the main findings with specific details.

A meta-analysis is performed of the literature on charter schools and achievement, with a focus on lottery-based studies and rigorous value-added studies. Overall, for the limited set of charter schools, locations, and years that have been studied to date, charter schools are producing higher achievement gains in math relative to traditional public schools in most grade groupings. (See Appendix Figure 1.) No significant differences emerged for reading achievement. (See Appendix Figure 2.) However, for both math and reading the bulk of estimates are positive. Most of the variation in findings across studies is likely to reflect genuine variations rather than sampling error. For math, middle school studies tended to produce higher effect sizes than other grade groupings. Similarly, for math, studies that use lotteries or propensity score matching tend to find higher effects than other methods. There is not a statistically significant link between the years covered by a study and the estimated effect size, but for both math and reading the trend is positive. A tiny but growing literature on non-achievement outcomes suggests positive influences of charter schools on educational attainment and behavioral outcomes.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

Estimated charter school effects are highly variable, which likely reflects variations in the quality of education provided both at charter schools and at comparison schools, namely, local traditional public schools. In many cases the samples are small for certain areas, and thus as new studies emerge meta-analytic findings could change.

Appendices

Not included in page count.

Appendix A. References

- Abdulkadiroglu, Atila, Josh Angrist, Sarah Cohodes, Susan Dynarski, Jon Fullerton, Thomas Kane, and Parag Pathak. (2009). *Informing the debate: Comparing Boston's charter, pilot and traditional schools*. Boston, MA: The Boston Foundation.
- Angrist, Joshua D., Susan M. Dynarski, Thomas J. Kane, Parag A. Pathak, and Christopher R. Walters. (2010). *Who benefits from KIPP?* NBER Working Paper, 15740. Cambridge, MA: National Bureau of Economic Research.
- Angrist, Joshua D., Parag A. Pathak, and Christopher R. Walters. (2013). "Explaining charter school effectiveness." *American Economic Journal: Applied Economics*, American Economic Association, vol. 5(4), pp. 1-27.
- Angrist, Joshua D., Sarah R. Cohodes, Susan M. Dynarski, Parag A. Pathak, and Christopher R. Walters. (2013). "Stand and Deliver: Effects of Boston's Charter High Schools on College Preparation, Entry and Choice," Cambridge, MA: National Bureau of Economic Research Working Paper 19275.
- Ashenfelter, Orley. (1978). "Estimating the Effects of Training Programs on Earnings," *Review of Economics and Statistics*, **60**, pp. 47-57.
- Ballou, Dale, Bettie Teasley, and Tim Zeidner. 2006. "Charter Schools in Idaho." Nashville, TN: National Center on School Choice. Prepared for the National Conference on Charter School Research at Vanderbilt University on September 29, 2006.
http://www.vanderbilt.edu/schoolchoice/conference/papers/Ballouetal_2006-DRAFT.pdf
http://www.vanderbilt.edu/schoolchoice/conference/papers/Ballouetal_2006-DRAFT.pdf
- Betts, Julian R., "The Competitive Effects of Charter Schools on Traditional Public Schools", Chapter 11 in *Handbook of Research on School Choice*, Mark Berends, Matthew G. Springer, Dale Ballou, and Herbert Walberg (Eds.), New York: Routledge, (2009), pp. 195-208.
- Betts, Julian R. and Richard C. Atkinson. 2012. "Better Research Needed on the Impact of Charter Schools," *Science*, January 13: Volume 335 no. 6065 pp. 171-172.
- Betts, Julian R. Lorien A. Rice, Andrew C. Zau, Y. Emily Tang, and Cory R. Koedel. 2005. *Does School Choice Work? Effects on Student Integration and Achievement*. San Francisco: Public Policy Institute of California

- Betts, Julian R., Y. Emily Tang, and Andrew C. Zau. 2010. "Madness in the Method? A Critical Analysis of Popular Methods of Estimating the Effect of Charter Schools on Student Achievement." Chapter 2 in Paul T. Hill and Julian R. Betts (Eds.), **Taking Measure of Charter Schools: Better Assessments, Better Policymaking, Better Schools**, Lanham, MD: Rowman & Littlefield Publishers, Inc.
- Bifulco, Robert, and Helen F. Ladd. 2006. "The Impacts of Charter Schools on Student Achievement: Evidence from North Carolina." *Education Finance and Policy*, Vol. 1, No. 1, Winter 2006, 50-90.
<http://www.mitpressjournals.org/toc/edfp/1/1>
<http://www.mitpressjournals.org/toc/edfp/1/1>
- Booker, Kevin, Scott M. Gilpatric, Timothy Gronberg, and Dennis Jansen. 2004. "Charter School Performance in Texas." University of Tennessee, Knoxville.
- Booker, Kevin, Tim R. Sass, Brian Gill, and Ron Zimmer. 2011. "The Effects of Charter High Schools on Educational Attainment." *Journal of Labor Economics* 29:2, pp 377-415.
- Borenstein, Michael, Larry V. Hedges, Julian P.T. Higgins, and Hannah R. Rothstein. 2009. **Introduction to Meta-Analysis**, Chichester, United Kingdom: John Wiley and Sons Ltd.
- Charter School Achievement Consensus Panel, **Key Issues in Studying Charter Schools and Achievement: A Review and Suggestions for National Guidelines**, National Charter School Research Project White Paper Series, No. 2 (Seattle: Center on Reinventing Public Education, 2006).
- Clotfelter, Charles T., Helen F. Ladd and Jacob L. Vigdor. 2007. "How and Why Do Teacher Credentials Matter for Student Achievement?" National Bureau of Economic Research Working Paper 12828, <http://www.nber.org/papers/w12828>.
- CREDO. 2009a. Multiple Choice: Charter School Performance in 16 States, Stanford, CA: CREDO, downloaded from credo.stanford.edu.
- CREDO. 2009b. Fact vs. Fiction: An Analysis of Dr. Hoxby's Misrepresentation of CREDO's Research, Stanford, CA: CREDO, downloaded from credo.stanford.edu.
- CREDO. 2009c. CREDO Finale to Hoxby's Revised Memorandum, Stanford, CA: CREDO, downloaded from credo.stanford.edu.
- CREDO. 2011. Charter School Performance in Pennsylvania, Stanford, CA: CREDO, downloaded from credo.stanford.edu.
- CREDO. 2010. Charter School Performance in New York City, Stanford, CA: CREDO, downloaded from credo.stanford.edu.
- CREDO. 2012a. Charter School Performance in Indiana, Stanford, CA: CREDO, downloaded

from credo.stanford.edu.

CREDO. 2012b. Charter School Performance in New Jersey, Stanford, CA: CREDO, downloaded from credo.stanford.edu.

CREDO. 2013a. Charter School Performance in Massachusetts, Stanford, CA: CREDO, downloaded from credo.stanford.edu.

CREDO. 2013b. Charter School Performance in Michigan, Stanford, CA: CREDO, downloaded from credo.stanford.edu.

CREDO. 2013c. Charter School Performance in New York City, Stanford, CA: CREDO, downloaded from credo.stanford.edu.

Davis, Devora H. and Margaret E. Raymond. (2012). "Choices for Studying Choice: Assessing Charter School Effectiveness Using Two Quasi-Experimental Methods," *Economics of Education Review*, 31, pp. 225-236.

Dobbie, Will, and Fryer, Roland, Jr. (2009). Are high quality schools enough to close the achievement gap? Evidence from a social experiment in Harlem. National Bureau of Economic Research Working Paper 15473, Cambridge, MA: National Bureau of Economic Research.

Dobbie, Will, and Fryer, Roland, Jr. (2013). "The Medium-Term Impacts of High-Achieving Charter Schools on Non-Test Score Outcomes," National Bureau of Economic Research Working Paper 19581, Cambridge, MA: National Bureau of Economic Research.

Furgeson, Joshua, Brian Gill, Joshua Haimson, Alexandra Killewald, Moira McCullough, Ira Nichols-Barrer, Natalya Verbitsky-Savitz. (2012). "Charter-school management organizations: Diverse strategies and diverse student impacts." *Mathematica Policy Research*.

Gleason, Philip, Melissa Clark, Christina Clark Tuttle, and Emily Dwoyer. (2010). *The Evaluation of Charter School Impacts: Final Report (NCEE 2010-4029)*. Washington, D.C.: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Gronberg, Timothy J., and Dennis W. Jansen. 2005. *Texas Charter Schools: An Assessment In 2005*. Texas Public Policy Foundation. <http://www.texaspolicy.com/pdf/2005-09-charterschools-rr.pdf><http://www.texaspolicy.com/pdf/2005-09-charterschools-rr.pdf>

Hanushek, Eric A., John F. Kain, Steven G. Rivkin, and Gregory F. Branch. 2007. "Charter School Quality and Parental Decision Making with School Choice." *Journal of Public Economics*, Vol. 91, 823-848.

- Heckman, James Robert LaLonde, and Jeff Smith. (1999) "The Economics and Econometrics of Active Labor Market Programs," **Handbook of Labor Economics, Vol. 3A**, O. Ashenfelter and D. Card, eds. Amsterdam: North Holland, pp. 1865-2097.
- Hedges, Larry V. and Ingram Olkin. 1985. **Statistical Methods for Meta-Analysis**, London, United Kingdom: Academic Press, 1985.
- Higgins, J., Thompson, S.G., Deeks, J.J. and D.G. Altman. 2003. "Measuring Inconsistency in Meta-Analyses," *British Medical Journal*, Vol. 327, No. 7414, pp. 557-560.
- Hoxby, Caroline M. 2009. A Statistical Mistake in the CREDO Study of Charter Schools, Stanford University manuscript, downloaded from http://credo.stanford.edu/reports/memo_on_the_credostudy%20II.pdf
- Hoxby, Caroline M. and Sonali Murarka. 2007. "New York City's Charter Schools Overall Report." <http://www.nber.org/~schools/charterschoolseval/http://www.nber.org/~schools/charterschoolseval/>
- Hoxby, Caroline M., Sonali Murarka, and Jenny Kang. 2009. How New York City's charter schools affect achievement. Cambridge, MA: New York City Charter Schools Evaluation Project.
- Hoxby, Caroline M., and Jonah E. Rockoff. 2004. "The Impact of Charter Schools on Student Achievement." <http://www.educationnext.org/unabridged/20054/52.pdfhttp://www.educationnext.org/unabridged/20054/52.pdf>
- Imberman, Scott. 2007. "Achievement and Behavior in Charter Schools: Drawing a More Complete Picture." University of Houston. http://www.class.uh.edu/faculty/simberman/imberman2007a_oct.pdfhttp://www.class.uh.edu/faculty/simberman/imberman2007a_oct.pdf
- McClure, Larry, Betsy Strick, Rachel Jacob-Almeida, and Christopher Reicher. 2005. "The Preuss School at UCSD: School Characteristics and Students' Achievement." University of California, San Diego. The Center for Research on Educational Equity, Assessment and Teaching Excellence. http://create.ucsd.edu/Research_Evaluation/PreussReportDecember2005.pdfhttp://create.ucsd.edu/Research_Evaluation/PreussReportDecember2005.pdf

- Miron, Gary, Anne Cullen, Brooks Applegate, and Patricia Farrell. 2007. Evaluation of the Delaware Charter School Reform: Year One Report. The Evaluation Center, Western Michigan University.
http://www.doe.k12.de.us/files/pdf/sbe_decseval.pdfhttp://www.doe.k12.de.us/files/pdf/sbe_decseval.pdf
- Ni, Yongmei, and Andrea K. Rorrer. "Twice considered: Charter schools and student achievement in Utah." (2012). *Economics of Education Review* 31, no. 5: 835-849.
- Nichols, Austin and Umut Ozek. (2010). "Public School Choice and Student Achievement in the District of Columbia." National Center for Analysis of Longitudinal Data.
<http://www.edweek.org/media/publicschoolchoiceandstudentachievement-calder.pdf>
- Nicotera, Anna, Maria Mendiburo, and Mark Berends. (2009). Charter school effects in an urban school district: An analysis of student achievement gains in Indianapolis. Paper presented at the National Conference on Charter School Research at Vanderbilt University, Nashville, TN.
- Nisar, Hiren. (2012). "Do Charter Schools Improve Student Achievement?". National Center for the Study of Privatization in Education.
http://www.ncspe.org/publications_files/OP216.pdf
- Sass, Tim R. 2006. "Charter Schools and Student Achievement in Florida." *Education Finance and Policy*, Vol. 1, No. 1, Winter 2006, 91-122.
<http://www.mitpressjournals.org/toc/edfp/1/1><http://www.mitpressjournals.org/toc/edfp/1/1>
- Solmon, Lewis C., Kern Paark, and David Garcia. 2001. "Does Charter School Attendance Improve Test Scores? The Arizona Results." Goldwater Institute's Center for Market-Based Education.
<http://www.goldwaterinstitute.org/pdf/materials/111.pdf><http://www.goldwaterinstitute.org/pdf/materials/111.pdf>
- Tuttle, Christina Clark, Bing-ru Teh, Ira Nichols-Barrer, Brian P. Gill, and Philip Gleason. (2010). Student characteristics and achievement in 22 KIPP middle schools. Washington, D.C.: Mathematica Policy Research.
- Tuttle, Christina Clark, Brian Gill, Philip Gleason, Virginia Knechtel, Ira Nichols-Barrer, and Alexandra Resch. (2013). "KIPP Middle Schools: Impacts on Achievement and Other Outcomes. Final Report." Mathematica Policy Research.
- Witte, John F., Patrick J. Wolf, Alicia Dean, Deven Carlson (2011). "Milwaukee Independent Charter Schools Study: Report on Two- and Three-Year Achievement Gains." School Choice Demonstration Project. <http://files.eric.ed.gov/fulltext/ED518594.pdf>

Witte, John F., Patrick J. Wolf, Alicia Dean, Deven Carlson (2012). "Milwaukee Independent Charter Schools Study: Final Report on Four-Year Achievement Gains." School Choice Demonstration Project. <http://www.uaedreform.org/downloads/2012/02/report-31-milwaukee-independent-charter-schools-study-final-report-on-four-year-achievement-gains.pdf>

Woodworth, Katrina R., Jane L. David, Roneeta Guha, Haiwen Wang, and Alejandra Lopez-Torkos. (2008). San Francisco Bay Area KIPP schools: A study of early implementation and achievement: Final report. Menlo Park, CA: SRI International.

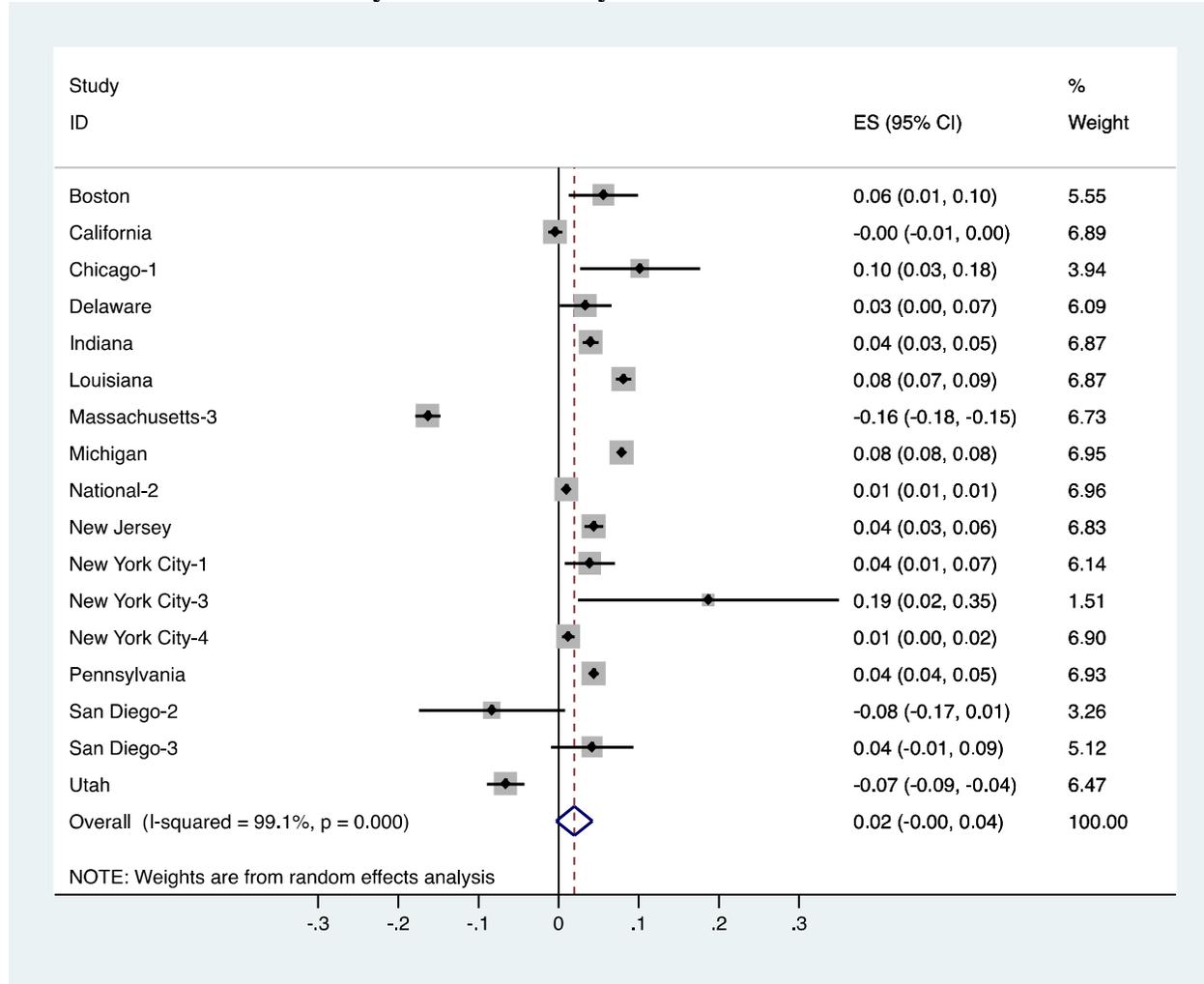
Zimmer, Ron, Richard Buddin, Derrick Chau, Glenn Daley, Brian Gill, Cassandra Guarino, Laura Hamilton, Cathy Krop, Dan McCaffrey, Melinda Sandler, and Dominic Brewer. 2003. "Charter School Operations and Performance: Evidence from California." Santa Monica: Rand. <http://www.rand.org/publications/MR/MR1700/http://www.rand.org/publications/MR/MR1700/>

Zimmer, Ron, Brian Gill, Kevin Booker, Stephane Lavertu, Tim R. Sass, and John Witte. (2009). Charter Schools in Eight States: Effects on Achievement, Attainment, Integration, and Competition. Santa Monica, CA: RAND.

Appendix B. Tables and Figures

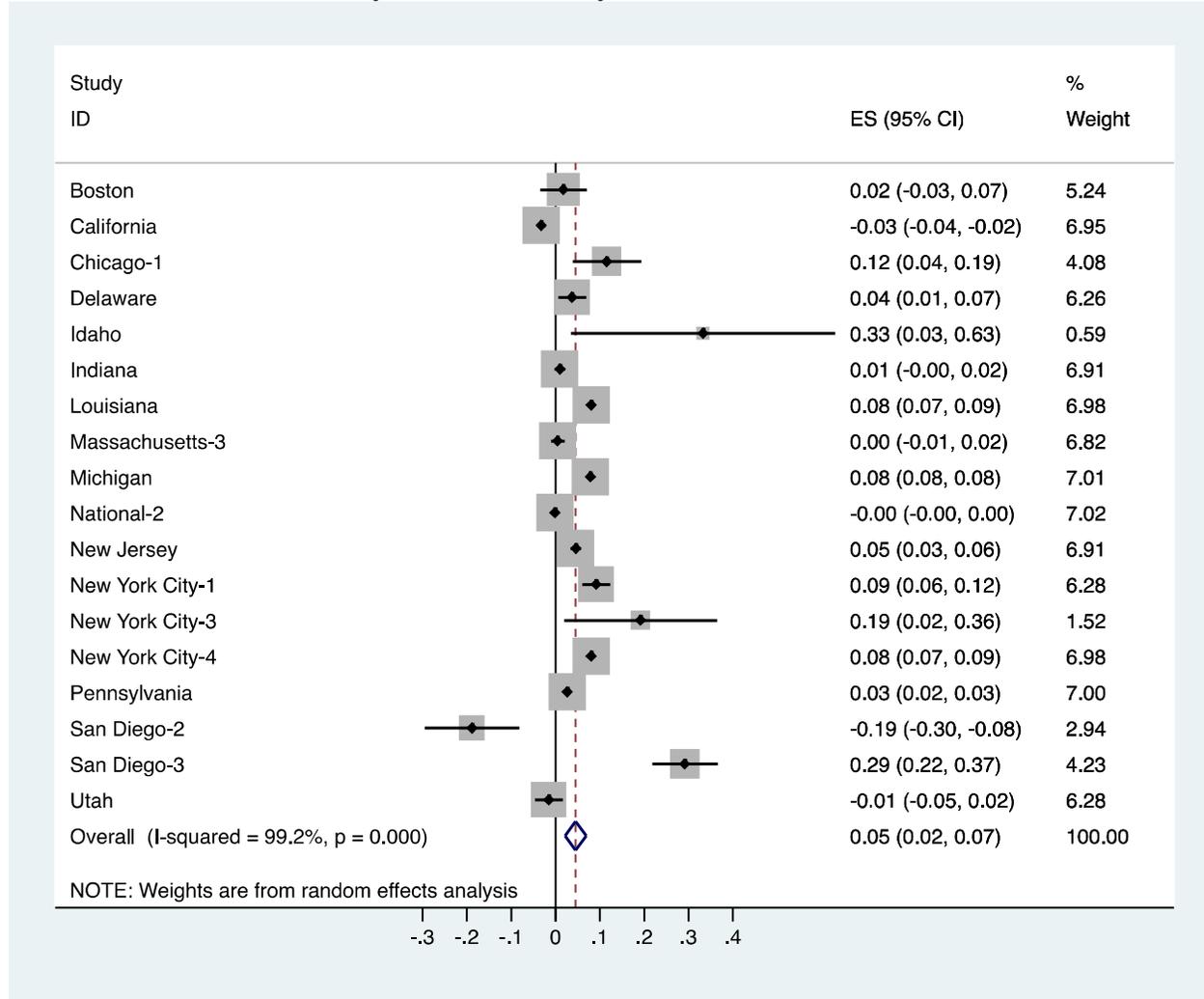
Not included in page count.

Figure 1 Elementary School Reading Effect Sizes by Study, Showing Weights Ascribed by Random-Effects Meta-Analysis to Each Study



Notes: The horizontal lines show the 95% confidence interval, which is also indicated in the second column from the right. The rightmost column shows the weight ascribed to each study, with the size of the square proportional to these weights. The overall effect size estimate is shown at the bottom. Geographic locations with estimates from multiple studies have unique numbers appended to their labels to distinguish between studies. Appendix Table 1 indicates the author and year of the study referenced by each Study ID label.

Figure 2 Elementary School Math Effect Sizes by Study, Showing Weights Ascribed by Random-Effects Meta-Analysis to Each Study



See notes to Figure 1.

Appendix Table 1 Author and Year of Study Referenced by Study ID Label

Study ID Label used in Figures	Author	Year Published
Chicago-1	Hoxby and Rockoff	2005
Chicago-2	Zimmer, et.al.	2009
Chicago-3	CREDO	2009a
Colorado (Denver)-1	Zimmer, et.al.	2009
Colorado (Denver)-2	CREDO	2009a

DC-1	Sass	2006
DC-2	Nichols and Ozek	2010
Florida-1	Sass	2006
Florida-2	CREDO	2009a
Massachusetts-1	CREDO	2009a
Massachusetts-2	Angrist, Pathak, and Walters	2013
Massachusetts-3	CREDO	2013
Milwaukee-1	Zimmer, et.al.	2009
Milwaukee-2	Nisar	2012
Milwaukee-3	Witte, et.al.	2012
National-1	Gleason et al.	2010
National-2	CREDO	2009a
National-3	CREDO	2013
New York City-1	Hoxby and Murarka	2007
New York City-2	Hoxby, Murarka, and Kang	2009
New York City-3	Dobbie and Fryer	2010
New York City-4	CREDO	2013
Ohio-1	Zimmer, et.al.	2009
Ohio-2	CREDO	2009a
San Diego-1	McClure, et.al.	2005
San Diego-2	Betts, et.al.	2005
San Diego-3	Betts, et.al.	2010
San Diego-4	Zimmer, et.al.	2009
Texas-1	Gronberg and Jansen	2005
Texas-2	Booker et al.	2005
Texas-3	Zimmer, et.al.	2009
Texas-4	CREDO	2009a