

Using Generalization to Improve the Accuracy of Education Studies

OVERVIEW

If research studies are not based on the right combination of people, places, and contexts, then they are not much help in supplying evidence to make good policy. How can researchers best choose the classroom, school, and school district samples to evaluate educational programs? IPR statistician **Elizabeth Tipton** studies how to improve research methods so that evidence is more generalizable and provides concrete help for designing accurate studies.

Randomized controlled trials (RCTs) are the gold standard method of conducting research, but they often do not contain generalizable school samples.

In RCTs, the effectiveness of a program or intervention is tested by randomly assigning part of the sample to receive the intervention while the other subjects, the control group, do not receive it. Tipton and her colleagues studied 37 education research trials funded by the Institute of Education Sciences (IES) in the U.S. Department of Education from 2011–15.

POLICY TAKEAWAYS

- Randomized trials offer the best evidence to measure intervention effects. Taking account of the population that will use trial results and providing detailed information on samples makes trials more useful to stakeholders.
- Investigators need to define the study population and recruit a broader sample that represents it.
- Funders should provide training and resources to researchers so that they can design studies with more representative samples.



IPR statistician **Elizabeth Tipton** is an expert on statistical methods for policy research with a focus on education research.

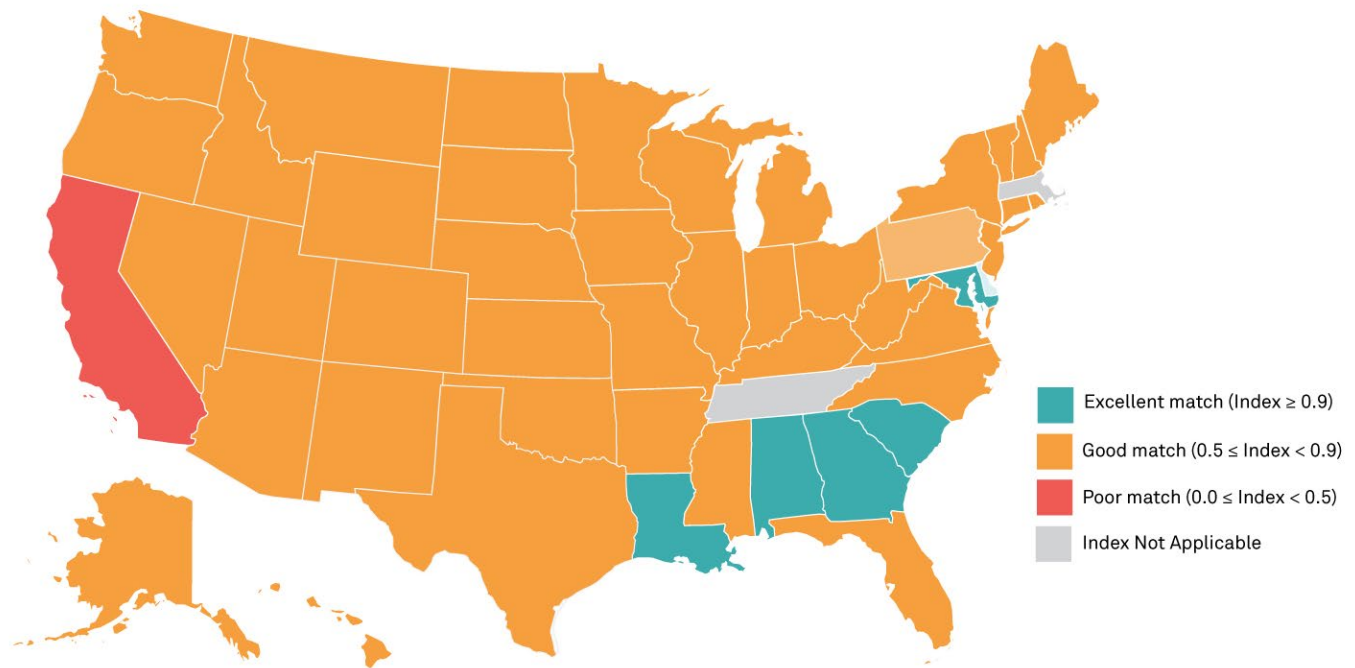
Limited resources tend to drive recruitment in education research studies, affecting the sample.

This results in some types of schools are represented more than others. The study found half of research trials took place in large schools in big urban districts. Small and rural districts were underrepresented, and districts within driving distance of researchers were overrepresented. Most education studies were conducted in just three states—Florida, California, and Texas—and many of the reviewed studies had no schools in 46% of the states.

The researchers who run these research trials have too little training in how to plan for or measure generalizability. Often, they are more concerned with recruiting large numbers of schools, resulting in a focus on larger school districts. They also lack the resources to travel far.

Tipton's free web tool, "The Generalizer," helps researchers recruit the best school samples for the population they wish to study. It was used to design a North Carolina study that complemented a Maine study, making it more representative of U.S. schools.

Do Research Samples Accurately Represent the Whole Population?



This Generalizer-generated map shows how well an RCT sample matches with the population in each U.S. state, indicating where researchers could use their sample population most effectively.

METHODOLOGY

Tipton and her colleagues analyzed 37 RCTs funded by IES from 2011–15. To better understand recruitment challenges, they interviewed the researchers about their procedures. They looked to see how similar the school features and student demographics of the sample schools in 34 of the randomized studies were to policy-relevant target populations. They were able to quantify how similar each study's sample was to relevant states and school districts with Tipton's generalizability index, used by the Generalizer web tool she designed.

REFERENCE

Tipton, E., J. Spybrook, K. Fitzgerald, Q. Wang, and C. Davidson. 2019. The Convenience of Large Urban School Districts: A Study of Recruitment Practices in 37 Randomized Trials. IPR Working Paper 19-27.

Find "The Generalizer" at www.thegeneralizer.org.

FACTS AND FIGURES

- Half of U.S. randomized controlled trials (RCTs) in education are conducted in large urban districts. Only 18% of studies looked at smaller districts of 11 or fewer schools, even though they make up 90% of all continental U.S. districts.
- Researchers favor nearby districts to study. Districts in three states (FL, CA, TX) were overrepresented, while not one study in the review included schools in 46% of states.
- Tipton and her colleagues find a mismatch in characteristics between schools in samples and U.S. schools: While 23% of very high-poverty elementary schools are in towns or rural areas, only 8% of sample schools were.



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