

The Rapid Cycle Evaluation Coach:

Building capacity and informing decisions

Presentation at the 2018 OPRE Methods Meeting
Washington, DC

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Agenda

- Background
- RCE Coach overview
- Research questions
- Methods
- Case study
- Lessons learned

Background

Background: The initial motivation

- Billions of dollars invested in educational technology
 - Little evidence of what works
- Schools and districts need timely and useful information to make decisions
 - Traditional evaluations: too long and too expensive

Rapid Cycle Evaluation (RCE)

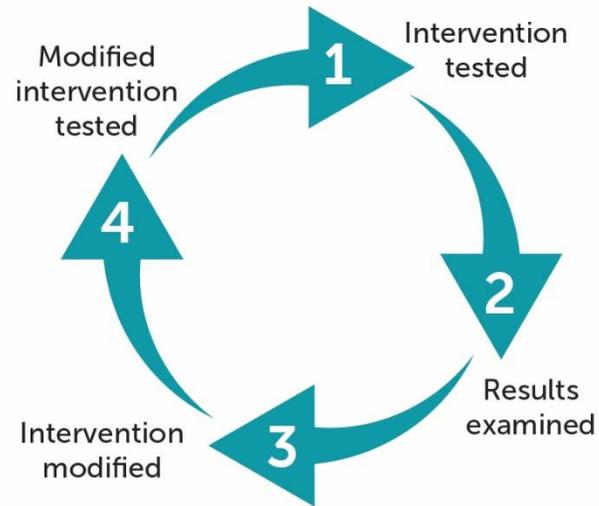
Rapid

Rapid identification
of results



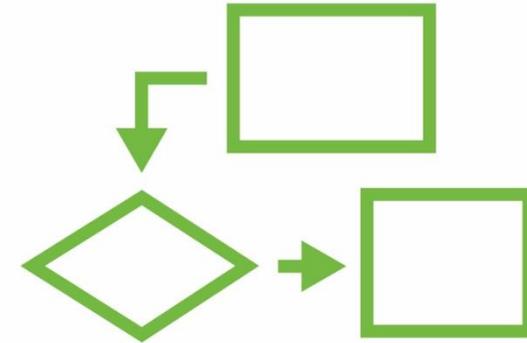
Cycle

Continuous
improvement model



Evaluation

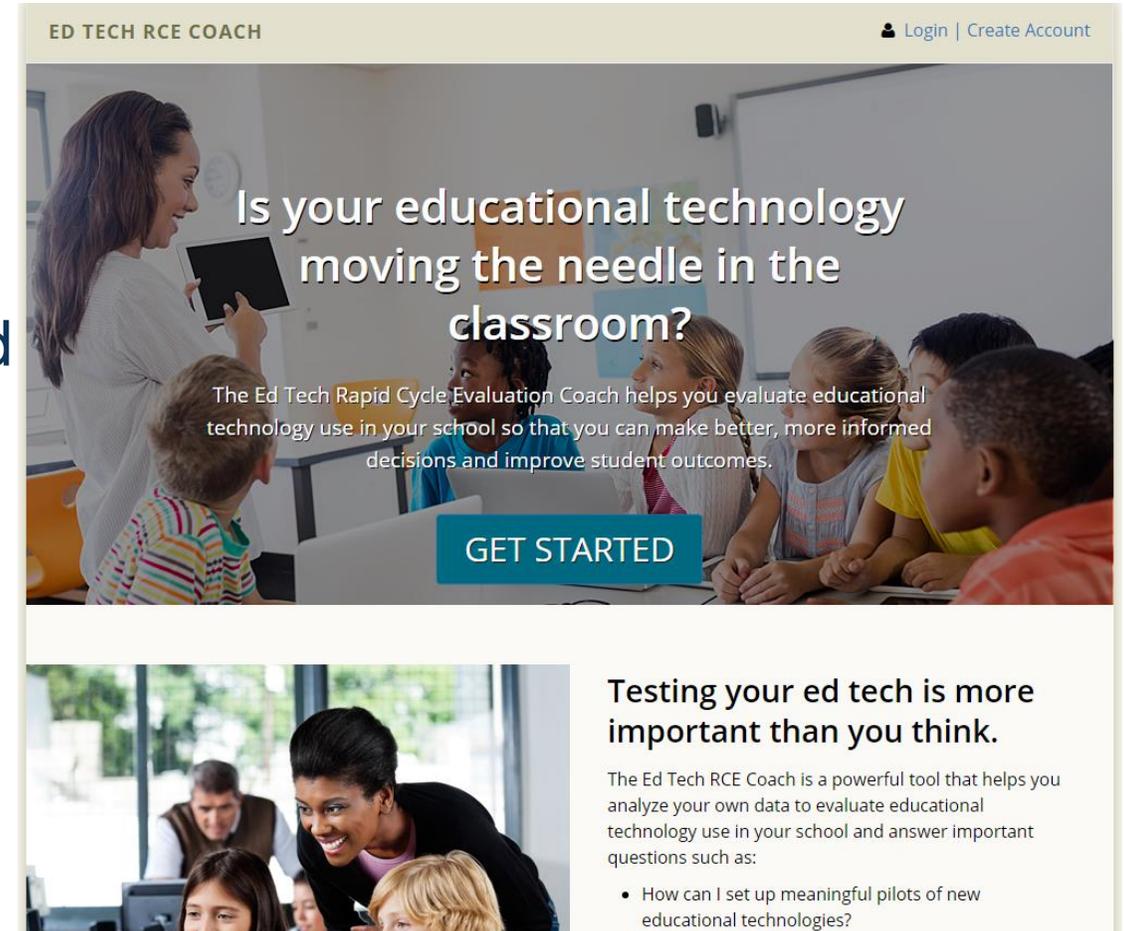
Rigorous experimental
techniques



RCE Coach overview

EdtechRCE.org

- Free, open-sourced, online toolkit
- Facilitates the use of rigorous evaluation to inform decisions
- Designed for users with little time, limited knowledge of statistics
- Funded by the Office of Educational Technology of the US Department of Education (2015-2018)



The screenshot shows the homepage of the Ed Tech RCE Coach website. At the top, there is a navigation bar with the text "ED TECH RCE COACH" on the left and "Login | Create Account" on the right. The main content area features a large background image of a teacher interacting with a group of students in a classroom. Overlaid on this image is the text: "Is your educational technology moving the needle in the classroom?" followed by a sub-headline: "The Ed Tech Rapid Cycle Evaluation Coach helps you evaluate educational technology use in your school so that you can make better, more informed decisions and improve student outcomes." Below this text is a prominent blue button labeled "GET STARTED".

Below the main image, there is a smaller image showing a group of people, including a woman, looking at a laptop screen. To the right of this image is a text block that reads: "Testing your ed tech is more important than you think." followed by a paragraph: "The Ed Tech RCE Coach is a powerful tool that helps you analyze your own data to evaluate educational technology use in your school and answer important questions such as:" and a bulleted list item: "• How can I set up meaningful pilots of new educational technologies?"

The RCE Coach steps



1

GETTING STARTED

The Coach will recommend an approach to evaluate your technology.

2

PLANNING YOUR RESEARCH

The Coach will help you design an evaluation based on the outcomes you are interested in and your unique context.

3

PREPARING YOUR DATA

The Coach will use your data to create two groups—a technology user group and a similar comparison group.

4

ANALYZING YOUR DATA

The Coach will automatically conduct the analysis and give you the results.

5

SUMMARIZING YOUR FINDINGS

The Coach will compile your results and all of the information you have entered into one succinct document or presentation.

Research questions

Research questions: Broad questions that districts and schools ask

- Is this program or product working?
- Is it worth expanding this pilot program to all students?
- What is the best way to implement this intervention?
- Which of two programs or products works better?

Research questions: Specific questions that guide their RCEs

- Narrow, specific research questions
- Craft Your Research Question is a tool in the Coach
 - The blue print: Does A do B among C compared to D?
 - **Example:** Does eZumi Learning increase student achievement on the benchmark English Language Arts assessment among 5th-grade English learners compared to similar students with no access to eZumi Learning?



Craft Your Research Question

Write a research question to guide your evaluation.

Status

COMPLETED

Last Visit

10/6/2018

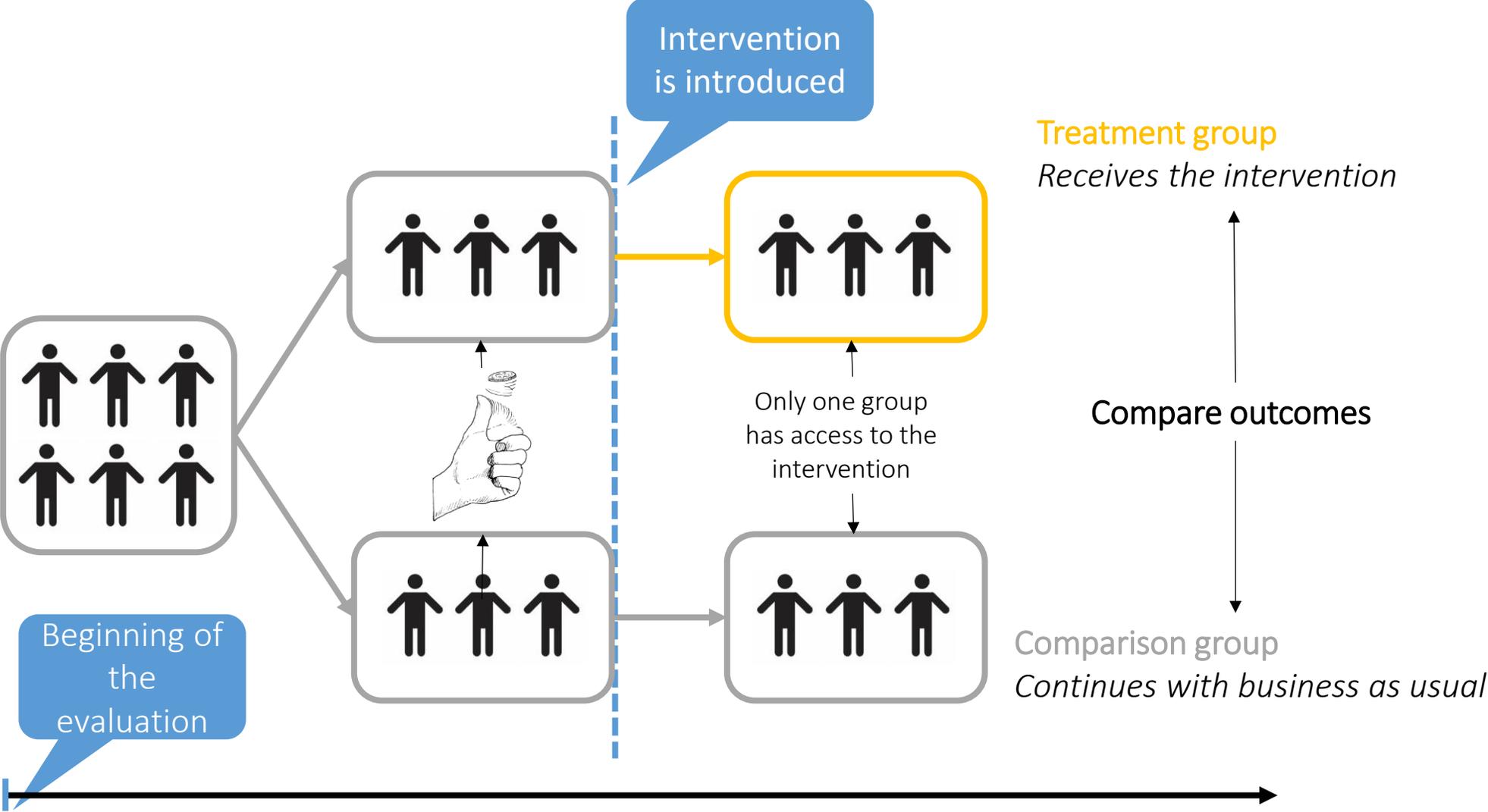
EDIT

The methods

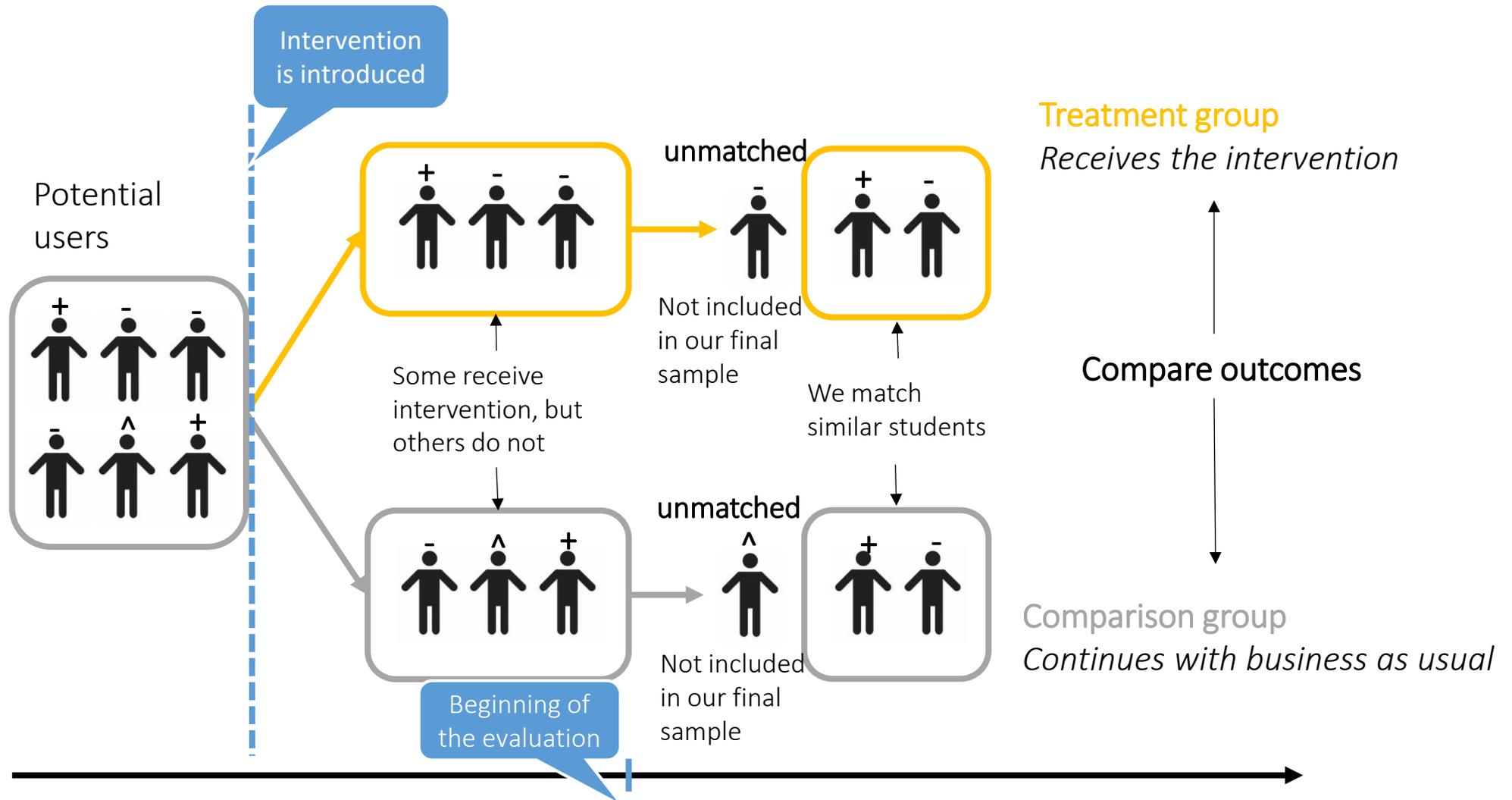
The methods: Behind the scenes statistics

- Supports random assignment and matched comparison designs
- Applies Bayesian methods to determine the effect of the intervention
- Uses R to do statistical analysis

The methods: Randomized pilots



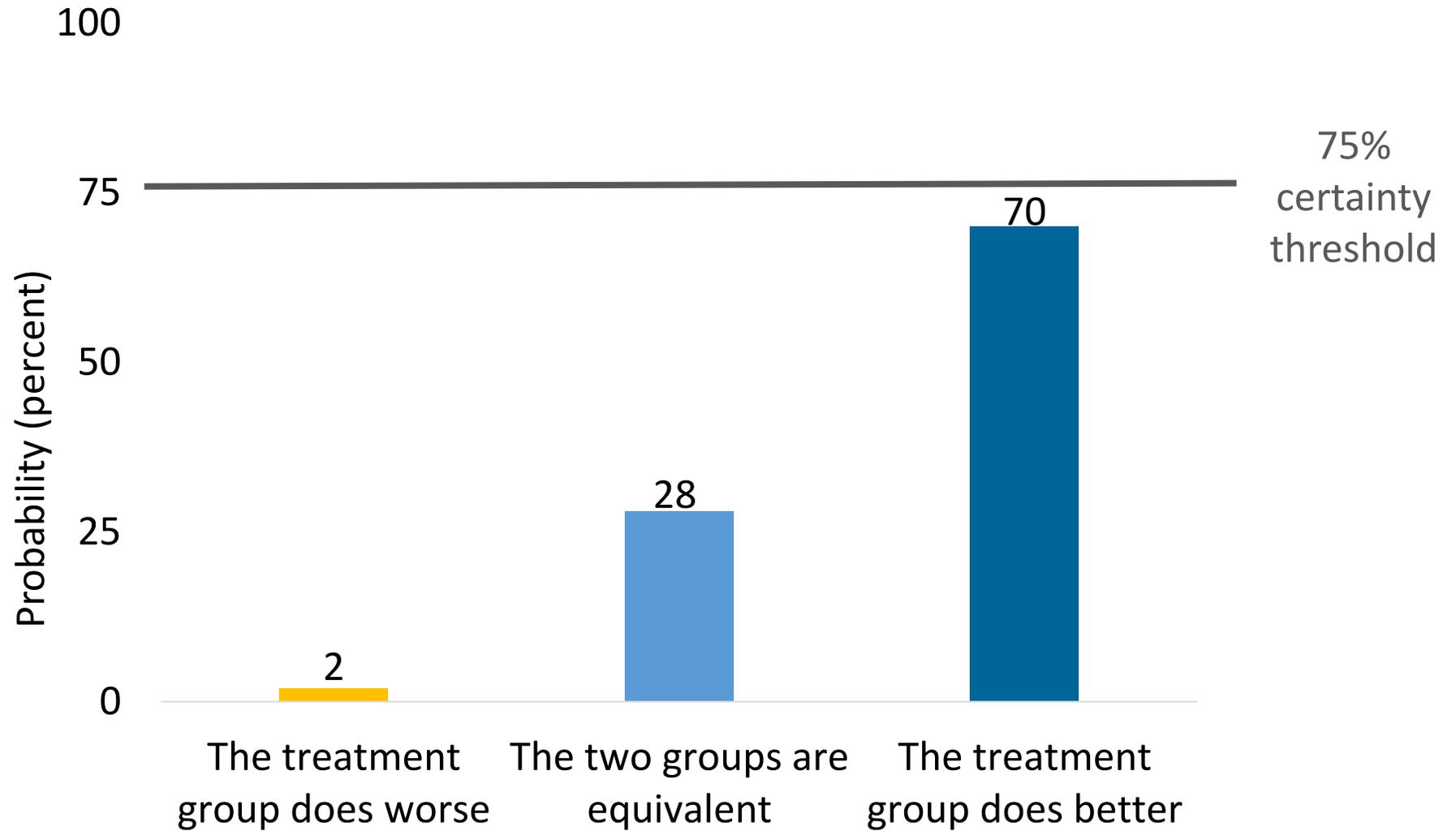
The methods: Matched comparison designs



The methods: Benefits of Bayesian

- Requires decision-making prior to evaluation & facilitates discussion
 - What does success look like? (minimal meaningful effect)
 - How confident do we need to be in the results? (certainty threshold)
- Provides more intuitive results for non-researchers
 - Probability rather than p-values (e.g. there is an 80% chance the intervention has a positive effect on student achievement)
 - Less likely to be misinterpreted (Chandler et al., 2017)
- Is more aligned with questions districts and schools want to answer

The methods: Presentation of Bayesian results



The methods: Frequentist vs. Bayesian results

Grade	Outcome	Impact estimate (standard error)	Effect size	p-value	95% confidence interval
All	MAP reading comprehension test	1.72 (1.33)	0.11	0.2	[-0.91, 4.35]

Grade	Meets goal?	Possible change in outcomes (treatment vs. comparison)	Probability of change	Estimated size of effect	Comparison group average	Number of students in treatment group	Number of students in comparison group
All	Not sure	↑ Increase ≥ 1	70%	1.7	217	58	58
		Between -1 and 1	28%				
		↓ Decrease ≥ 1	2%				

Case study: How does a district use the Coach?

Uplift Education Charter Schools

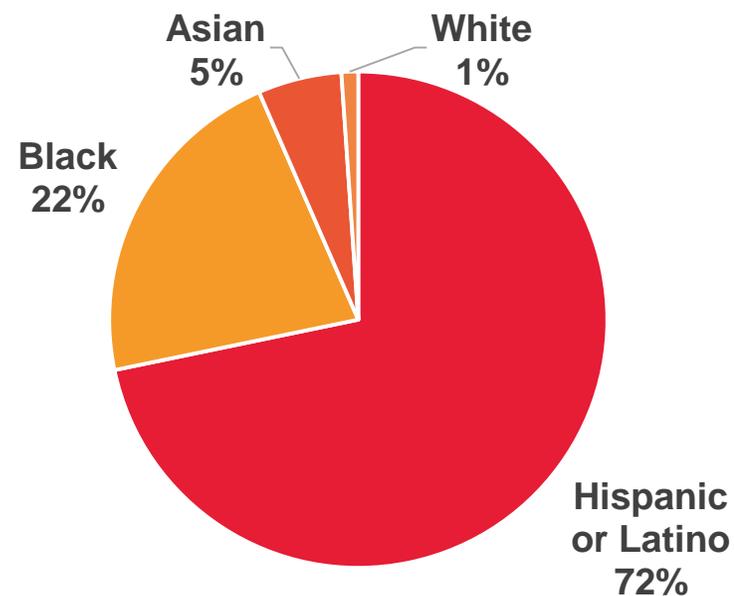
Uplift's schools

- Charter network of 37 schools
- Pre-K to 12th grade
- Data team of 11 full-time staff support schools
- Dallas/Forth Worth, Texas



Uplift's students

- About 19,000 students
- 74% economically disadvantaged
- Mostly minorities



“When you have a 2nd grader who can’t read, you don’t have the luxury of time.”
–Kim Lammers, Uplift Education

Evaluation details

THE READING PROGRAM



Students at least 6 months behind in reading assigned a volunteer tutor

Students are pulled out of class and work with tutor for 45 minutes, twice per week, following a structured curriculum

Reading scores improve by at least seven points on MAP reading assessment

INTENDED EFFECT

Only a 12 percent probability of any positive impact on MAP reading scores

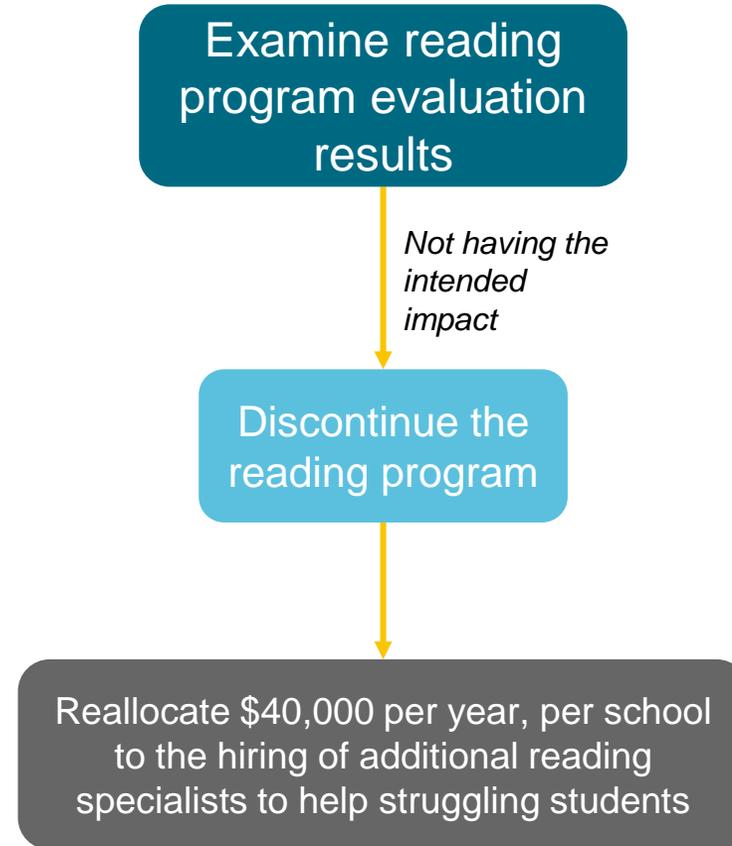
ACTUAL EFFECT

- **Research question:**
 - Did the reading intervention increase reading achievement among 2nd grade students compared to similar 2nd grade students with no access to the intervention?
- **Sample:**
 - 54 treatment, 54 comparison students
- **Evaluation method**
 - Backward-looking matched comparison design
- **Results**
 - 0% probability that reading scores increased by at least 7 points
 - 12% probability of any impact on reading scores

Using evidence for decision-making

- Data team and Uplift leaders reviewed the evaluation results
- Results given to schools
 - 2 schools discontinued the program and hired reading specialists
 - 1 school kept the program to look at another year of data
- Uplift conducted several other evaluations

EVIDENCE-BASED DECISION-MAKING PROCESS



Lessons learned

Lessons learned: Use of the Coach

- Toolkit developed to evaluate educational technology, but served broader need
- Districts and schools want evidence specific to their context
- Need to meet schools and districts where there are
 - Few are able/willing to conduct randomized controlled trials
 - Coach can build capacity, change mindsets about program evaluation
 - Process is as important as the product

Lessons learned: Sustainability

- Less sustainable in:
 - Very large districts—internal evaluation capacity, external research partners
 - Very small districts or schools—limited staff time and capacity for independent research, conflicting priorities
- More sustainable in:
 - Mid-sized districts with data teams, champions

References

- **Chandler, J., Finucane, M., Martinez, I., Resch, A., & Terziev, J. (2017). Speaking on the data's behalf: Different presentations of the same data lead to different decisions. Paper presented at Association for Public Policy Analysis & Management Conference, Chicago, IL.**

For more information

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