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Using Continuous Improvement Cycles to Improve Attendance

Lessons from New York and Ohio's Rural Research Networks

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Overview

During the 2020–21 academic year, over 40 rural districts in New York and Ohio embarked on a continuous improvement process, in partnership with researchers at the National Center for Rural Education Research Networks (NCRERN), focused on increasing attendance rates in their schools. NCRERN was founded to expand the use of evidence-based decision-making in rural education. NCRERN partners with networks of rural school districts to generate and evaluate strategies for improving student outcomes. NCRERN's continuous improvement model aims to build the capacity of rural districts, engage district staff as key decision makers throughout the process, and foster collaboration and cross-district learning, while generating evidence about what works in rural education. The duality of NCRERN's process—which tries to balance the needs of districts and practitioners with the requirements for conducting causal, quantitative research—has both benefits and constraints. This brief provides a case study of NCRERN's continuous improvement process as implemented in New York and Ohio, including outlining steps to implement a pilot-and-test model in a rural context, as well as summarizing key takeaways and lessons learned.

Introduction

The National Center for Rural Education Research Networks (NCRERN) is a continuous improvement network comprised of over 40 rural districts across New York and Ohio committed to partnering with researchers to expand the use of evidence-based decision-making in rural education. This case study is part of a collection of briefs focused on the attendance interventions piloted by NCRERN's partner districts in New York and Ohio during the 2020–21 school year. In this brief, we detail the sequence of steps districts used to identify, select, implement, and test promising attendance interventions in their schools, as well as highlight lessons learned from engaging in this process.

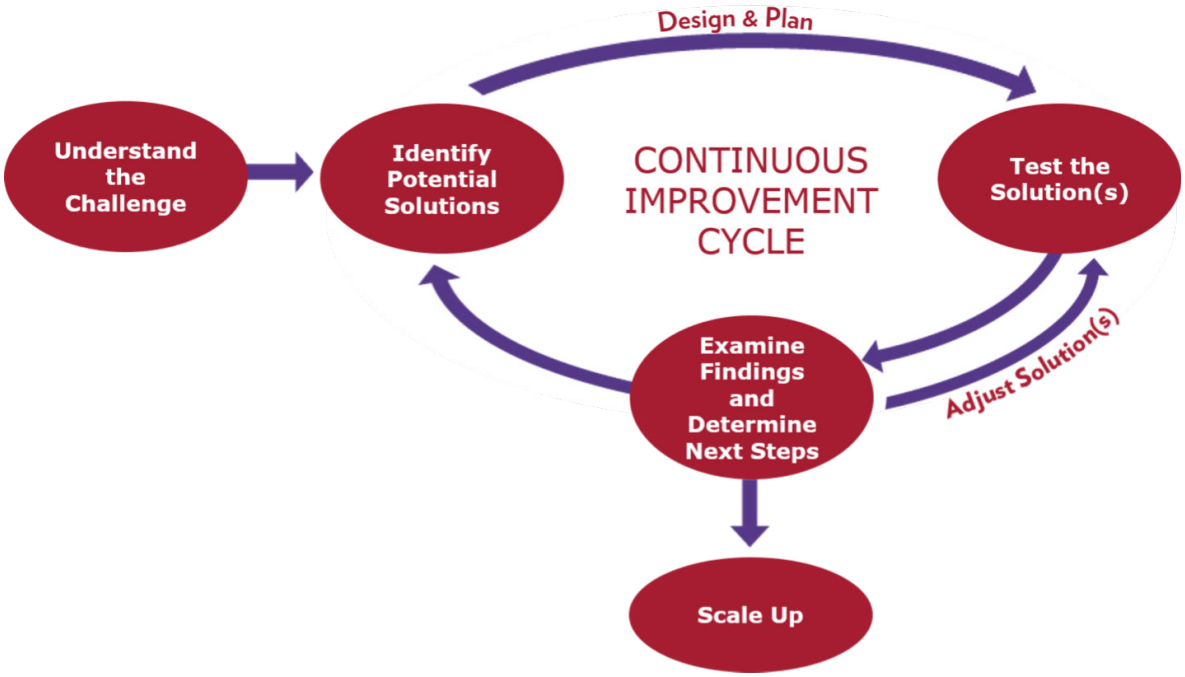
Who should use this case study?

This case study is intended for educators, school and district administrators, and state education agencies who want to learn about how continuous improvement cycles have been used to tackle a complex challenge such as absenteeism. This brief is also intended for researchers interested in NCRERN's rural research network model, which aims to support districts' continuous improvement efforts while simultaneously conducting an impact evaluation and contributing to rural education research more broadly.

Process Overview

NCRERN uses a continuous improvement cycle (see Exhibit 1) to support district partners as they identify obstacles to their students' success, select evidence-based solutions to address these challenges, and test out innovative solutions. NCRERN's continuous improvement model is grounded in data and is designed to ensure districts use high-quality evidence to inform decisions about the solutions they implement.

EXHIBIT 1. NCRERN'S CONTINUOUS IMPROVEMENT PROCESS



Note. NCRERN's Continuous Improvement Process was adapted from a model developed by Proving Ground, an affiliate research group at Harvard University that partners with urban and suburban districts to identify and test evidence-based solutions. More information available here: ***https://provingground.cepr.harvard.edu/approach***

In winter 2020, NCRERN's research team met with district staff in New York and Ohio to initiate the continuous improvement process, which would include pilot testing promising solutions during the 2020–21 academic year. District teams were comprised of three to five staff members from a mix of roles, including superintendents and central office staff, building leaders, and student support staff.

All the pilot tests occurred during the COVID-19 pandemic. During this time, districts offered a variety of learning modes, such as fully remote, hybrid, or fully in-person, depending on the level of COVID cases in their local community and in accordance state guidelines.

COVID-19 affected the environment in which these interventions were implemented and how families, schools, and students thought about attendance. The pandemic also placed heavy burdens on school staff, adding contact tracing and other pandemic-related duties on top of their existing responsibilities. Despite these challenges, NCRERN districts saw attendance as central to their mission and moved forward with implementation and evaluation. Below, we describe the specific activities in which districts engaged during each step of the process.

STEP 1: UNDERSTANDING THE CHALLENGE

In winter 2020, network districts reviewed their own historical data trends and data diagnostics reports generated by the NCRERN team (see Improving Rural Attendance: Trends in Student Absenteeism in NCRERN's New York and Ohio Rural Research Network brief) this data dive helped districts identify patterns in their students' attendance on which they would focus improvement efforts during the 2020–21 academic year.

Reviewing data diagnostics revealed two common patterns in attendance across network districts in New York and Ohio: (a) non-chronically absent students account for a larger share of absences in districts than chronically absent students, and (b) that absenteeism rates are higher in early elementary and late high school grades. To appropriately align possible solutions to these challenges, districts engaged in a root cause analysis process intended to explore and unpack possible underlying causes of their students' absenteeism.

Common root causes identified for student absences in NCRERN districts

Students may…

- Have limited transportation options for getting to school;
- Stay home due to personal illness or to care for younger siblings who are sick;
- Lack meaningful relationships with peers and/or staff at school;
- Have caregivers who may not see the relationship between attendance and future educational success;
- Need to work instead of attend school to provide additional income for family; and
- Not see relevance or necessity of school to their future.

The root cause analysis resulted in districts identifying a range of possible explanations for why their students across different grade levels may be missing school, with attention to non-chronically absent students. Broadly speaking, districts' staff identified several common reasons why students across grade levels may

miss school: transportation, illness, and school climate and culture. For example, students may have limited transportation options, and students who miss the bus may not have another way to get to school. Students also missed school due to personal illness, or to stay home to provide care for younger siblings who were sick. Finally, students who lacked meaningful peer and staff relationships may not want to attend school.

NCRERN districts also discussed why absence levels were higher among students in specific grades, notably in their early elementary and late high school grades. In early elementary school, districts believed caregivers may not see the relationship between attendance at school and future educational success. In the upper high school grades, districts hypothesized absenteeism was more prevalent because students needed to work to provide additional income for their families. Districts also thought students may not see the relevance of school to their future.

Many of the root causes identified stemmed from external influences outside districts' locus of control. Districts acknowledged that it would be unlikely they could realistically address these within a single academic year, and therefore needed to select interventions focused on areas within their control. Engaging in root cause analysis focused the conversation on understanding underlying issues of attendance problems and helped to ensure alignment between the solutions tested and the challenges they sought to address.

STEP 2: IDENTIFYING POTENTIAL SOLUTIONS

Intervention Brainstorming

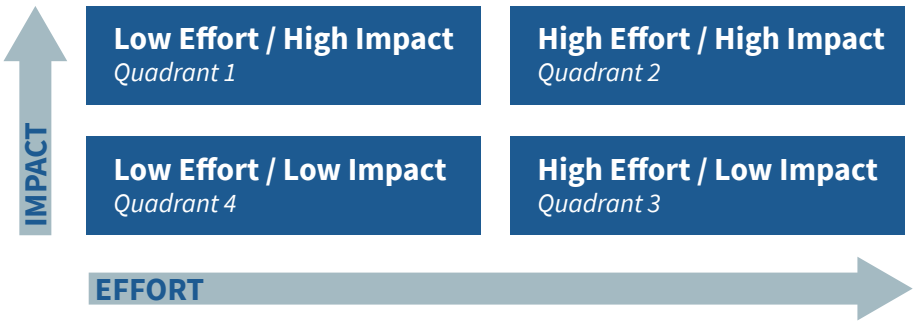
Following the root cause analysis process, districts brainstormed potential solutions to target specific root causes of absenteeism. Districts were also encouraged to focus on interventions that could address challenges that were within their locus of control and could be tested during a single academic year. Based on this guidance, each district brainstormed six to eight possible solutions. Across the NCRERN network, districts generated a total of 289 possible intervention ideas during this phase.

Intervention Prioritization

After brainstorming a range of solutions, districts moved into the prioritization process with support from the NCRERN team. For the six to eight ideas generated during brainstorming, each district ranked their own intervention options using an impact-effort analysis. This activity asked districts to consider the anticipated impact a particular intervention might have and compare that to how much effort would be required to implement the intervention.

Districts sorted the intervention options into four quadrants (see Exhibit 2). Interventions sorted into Quadrant 1 were interventions identified as low effort to implement and high impact (i.e., likely to yield large, positive outcomes for students) if implemented with fidelity. Interventions sorted into Quadrant 2 were interventions districts believed would be high effort to implement and high impact if implemented with fidelity. Quadrant 3 included interventions that required a high effort to implement but would yield a low effect if implemented with fidelity. Finally, Quadrant 4 consisted of interventions that would be low effort to implement and low impact if implemented with fidelity.

EXHIBIT 2. IMPACT-EFFORT GRAPH



As districts considered their options, they were encouraged to focus on intervention options in Quadrants 1 and 2—that is, high-impact interventions—with the highest priority given to those that would also be low-effort (i.e., falls within Quadrant 1). For interventions that fell in Quadrant 2 (high impact, high effort), districts were encouraged to reflect on whether they would have the capacity to implement such a program with fidelity and whether this level of effort would be worth its impact within the district.

Using the quadrant tool, districts selected their most preferred interventions to submit to the NCRERN team. NCRERN then reviewed and categorized districts' top ranked interventions to create a shorter list of six network-wide intervention options from which districts would be able to select (see Exhibit 3).

NCRERN narrowed down the list of potential intervention ideas based on:

- Frequency with which districts suggested a given solution, with priority given to ideas that had been suggested by multiple districts;
- Whether the intervention could be evaluated using a random assignment evaluation model; and
- Whether the intervention had an existing research base and evidence of success in other contexts.

EXHIBIT 3. ATTENDANCE-FOCUSED INTERVENTION OPTIONS IDENTIFIED BY DISTRICTS

Intervention	Description
Adult-Student Mentoring[1]	Students and adult mentors develop relationships and meet weekly to problem-solve challenges.
Peer Mentoring[2]	Peer mentors provide students with a trusted peer advisor at school.
Family Engagement[3]	School staff engages with families in 2-way weekly communication to develop relationships and keep families informed about their students.
Personalized Messaging[4]	A digital, personalized attendance-related message is sent every four to six weeks to families regarding their student's attendance.
Postcards[5]	Teachers complete a postcard to send home every week to families of students who missed school that week.
Small-Group SEL Support[6]	Small groups of students engage in an SEL program led by a qualified staff member.

For each of the potential intervention options, districts received a short description and list of the program's core components. Districts would have flexibility to determine how best to implement their selected intervention and its core components in their context.

1 Maynard, B., Kjellstrand, E., & Thompson, A. (2013). Effects of check and connect on attendance, behavior, and academics: A randomized effectiveness trial. *Research on Social Work Practice, 24*(3), 296–309.

2 Rhodes, J. E., & DuBois, D. L. (2008). Mentoring relationships and programs for youth. Current Directions for *Psychological Science, 17*, 254–258.

3 Smythe-Leistico, K., & Page, L. (2018). Connect-text: Leveraging text-message communication to mitigate chronic absenteeism and improve parental engagement in the earliest years of schooling. *Journal of Education for Students Placed at Risk, 23*(1–2), 139–152.

4 Rogers, T., & Feller, A. (2018). Reducing student absences at scale by targeting parents' misbeliefs. *Nature Human Behaviour, 2*(5), 335–342. https://doi.org/10.1038/s41562-018-0328-1

5 Robinson, C., Lee, M., Dearing, E., & Rogers, T. (2018). Reducing student absenteeism in the early grades by targeting parental beliefs. *American Educational Research Journal, 55*(6), (1163–1192); and Rogers, T., Duncan, T., Wolford, T., Ternovski, J., Subramanyam, S., & Reitano, A. (2017). *A randomized experiment using absenteeism information to "nudge" attendance*. Institute for Education Sciences.

6 Green, J., Passarelli, R., Smith-Millman, M., Wagers, K., Kalomiris, A., & Scott, M. (2018). A study of an adapted social-emotional learning: Small group curriculum in a school setting. *Psychology in the Schools, 56*(4).

Intervention Selection Process

NCRERN relies on a consensus model to select interventions to test. Given the small student populations of rural districts, if multiple districts pilot the same intervention, their results can be pooled together to create a large enough sample size to evaluate a program's effectiveness. NCRERN provided districts with information about the minimum number of districts who needed to agree to test a given intervention.

With this information, districts participated in a voting process to select the interventions to test collectively as a network. Working from the list of six evidence-based interventions provided by the NCRERN team, network districts narrowed down the options to proceed with four unique attendance interventions. The final interventions selected for 2020–21 included: Adult-Student Mentoring, Family Engagement, Personalized Messaging, and Postcards. From there, districts were each able to select a single intervention they would like to pilot in their schools during the 2020–21 school year.

STEP 3: DESIGNING & PLANNING

Once districts selected their intervention to test in 2020–21, they planned how the intervention would be implemented within their context and created an action plan. District staff prepared to launch their new program by using a human-centered design process. This process centered the planning process on how individuals involved (i.e., student/families) will experience the program. Using a human-centered design approach helps ensure an intervention can be adopted with fidelity and that those involved understand both the benefits and expectations of participation.

To begin, districts reviewed core components and key events of their selected intervention, and how those components would be perceived and experienced by students and families. For example, the family engagement, personalized messaging, and postcard interventions all included recurring outreach and notifications to families over the course of the year. Districts considered how families would interact with and respond to these notifications, how best to notify students and families that they had been selected to receive this intervention, and what users would need from the district to get the most out of the intervention.

While planning out the key events, districts also considered what environment the intervention events would take place in, which people needed to be involved, and what tools the district would need to carry out the event. For example, adult-student mentoring would require training mentors and securing time during the school day for mentors to meet with their assigned students. Districts were asked to consider logistics such as how many students will each adult mentor, who will serve as mentors, and how frequently will mentors meet with students.

After thinking through the key events, districts constructed an action plan or a list of tasks to be completed before launching the intervention in fall 2021. The COVID-19 pandemic added an additional layer of complication to navigate as they planned to implement their attendance interventions. Districts grappled with how to balance their efforts to improve attendance with the realities of the public health crisis and a desire to keep their communities safe. These circumstances required districts to continually adjust their implementation plans throughout the summer and into the fall.

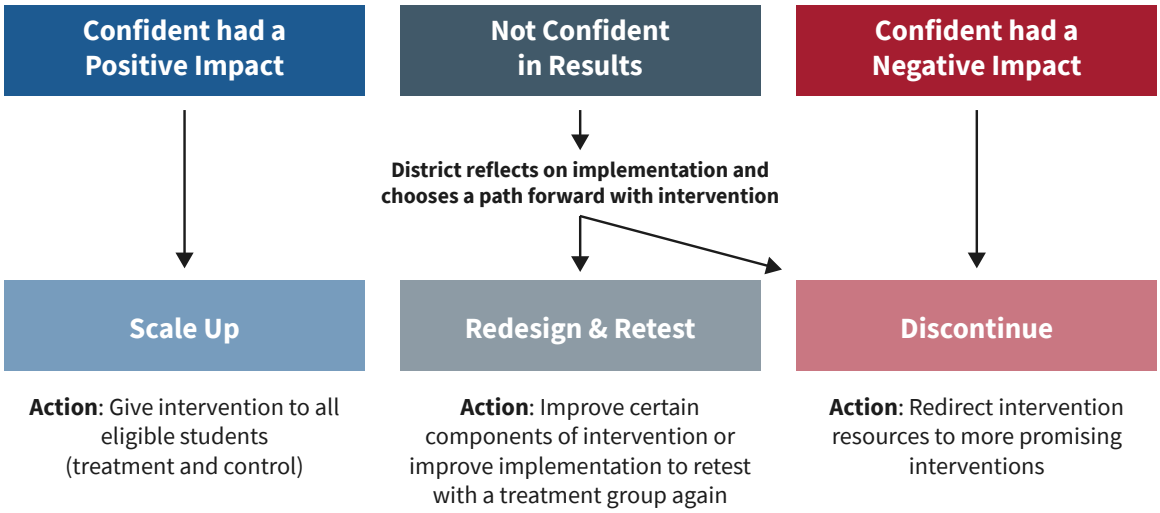
STEP 4: PILOTING & TESTING

In fall 2020, districts launched their pilot programs. Due to the disruption of the pandemic, the date on which districts launched their programs varied considerably, with some districts starting as late as January. Before launching, districts received a randomized list of students, grade level, or households who should participate in the intervention. By administering the intervention to a randomly selected portion of target audience rather than every participant in it, districts will have data to determine whether a strategy is having a positive impact on students' outcomes.

NCRERN's partner districts piloted and tested the four interventions. For each of the interventions tested, districts reviewed findings prepared by the NCRERN team, which summarized: Did the intervention reduce absences? If yes, by how much? How certain are we of this result?

Based on the findings, NCRERN provided one of three recommendations for next steps: scale-up, redesign and retest, or discontinue the program (see Exhibit 4). Recommendations took into consideration the impact of the program (to what degree did the program improve attendance rates?) and level of effort required to implement.

EXHIBIT 4. PILOT RECOMMENDATIONS DECISION TREE



For the personalized messaging intervention, where the results indicated the intervention had a positive impact on students' attendance (that is, intervention was found to reduce absenteeism), districts were advised to scale-up the program to all eligible students in the 2021–22 academic year. For the postcards and family engagement interventions, where the results did not definitely indicate the program improved attendance, but districts had continued interest in the program (e.g., they observed ancillary benefits of the program such as improved relationships with families), districts were advised to redesign the program and retest. For the adult-student mentoring intervention, which had a negative impact on student outcomes and required substantial effort for districts to implement, NCRERN recommended districts discontinue these interventions. This allowed districts to redirect resources to a more promising intervention.

EXHIBIT 5. NCRERN'S ATTENDANCE INTERVENTION RECOMMENDATIONS

Intervention	Did It Work?	Recommendation
Personalized Messaging	Yes	Scale-Up
Postcards	Unsure	Redesign & Retest
Family Engagement	Unsure	Redesign & Retest
Adult-Student Mentoring	No	Discontinue

Note: Detailed results for each of the interventions tested are available in NCRERN's Attendance Pilots Results (link) brief. NCRERN also published a How-To Guide (link) for districts interested in implementing the personalized messaging attendance program in their schools.

Based on recommendations provided by NCRERN, district teams reflected on their own experiences implementing their program and decided how they would proceed for the next year. Considering districts' implementation experiences alongside impact findings provided a more nuanced understanding of the viability of attendance programs piloted by NCRERN districts and enabled districts to make informed decisions about future programming to address absenteeism. Districts discussed how the pandemic, staff capacity, and other logistical challenges had made the interventions difficult to implement. Some districts reported that they were not surprised to see the impact findings, as their implementation challenges had foreshadowed the unsuccessful effort to improve student attendance.

Reflections & Key Takeaways

The 2020–21 academic year was NCRERN's first year running pilot studies in the New York and Ohio rural network, which offered numerous opportunities for learning. Both districts and research partners needed to adjust practice in real-time, especially as the COVID-19 pandemic added an additional layer of complication to executing the work as planned. The NCRERN team gathered input from participating districts throughout the year to provide responsive support and to inform planning for future pilot cycles. Based on the 2020–21 attendance pilots, NCRERN identified several key takeaways learned that will help inform adjustments in future cycles.

Key Takeaway #1: Processes must be adapted to be responsive to the unique needs of rural districts. NCRERN's continuous improvement cycle was adapted from a framework developed by Proving Ground, a research partner that works exclusively with urban and suburban districts to engage in similar pilot-and-test cycles. Because the continuous improvement process had not been specifically designed for rural districts, the model needed to be adjusted. For example, holding a voting process, where districts needed to come to consensus about strategies to test, was an innovation that enabled pilot data to be pooled and impact estimates generated. NCRERN has continued to adjust this framework in subsequent pilot cycles with the New York and Ohio networks.

Key Takeaway #2: The continuous improvement process can be enhanced by including input from a range of stakeholders. The root cause analysis process, for example, was informed by professional judgment and personal experiences of rural district and school staff participating. While staff considered their personal interactions with students and families in their community when exploring possible root causes for absenteeism in their district, this process may have benefited from more systematic gathering of input from various stakeholder groups. NCRERN will work to incorporate students' and families' voices more intentionally into the root cause analysis process in future cycles.

Key Takeaway #3: NCRERN's network model offers a unique opportunity for rural districts to connect with and learn from other districts. Districts reported an appreciation for the opportunity to connect with other rural districts in their state grappling with similar challenges and to work together to identify research-based solutions. By examining data trends across the network, for example, districts learned that many of the challenges related to attendance that they face in their own schools are common across rural schools in their state. That said, the COVID-19 pandemic greatly limited opportunities for districts to connect to, collaborate with, and learn from other rural districts in their region. NCRERN had originally planned to convene New York and Ohio districts for in-person events during 2020–21. Due to scheduling constraints and

the uncertainty of the pandemic, much of the work—including the voting process and intervention planning—instead had to be conducted asynchronously. The inability to meet synchronously, as well as in-person, made it more difficult to fulfill NCRERN's goal to support cross-district collaboration. Future improvement cycles will intentionally seek out opportunities for districts to connect in real time—both in-person and virtually—with other districts to problem-solve, learn, and reflect on the process together.

Key Takeaway #4: The duality of NCRERN's mission—which tries to balance the needs of districts and practitioners with the requirements for conducting causal quantitative research—has both benefits and constraints. For example, NCRERN's research team provided technical capacity to rural districts that they may not have otherwise—by generating data diagnostics and supporting program evaluation—that enabled them to test their solutions and engage in data-informed decision-making. On the other hand, some districts expressed reservations about needing to all test the same strategy. While districts recognized the need to pool their data to assess if a program worked, some staff expressed desires to prioritize testing their own ideas. Conducting experimental research in rural settings requires some degree of constrained choice for districts to achieve necessary sample size thresholds. While the rural research network model is focused on network-wide, not district-specific, causal impacts, NCRERN hopes to offer future capacity building opportunities to districts that focus on using data to inform decision-making more broadly, including reflecting critically on their own district-specific initiatives and programs.

Key Takeaway #5: When engaging in a continuous improvement cycle, a tension exists between the desire for rapid turnaround results and the realities of implementing a new program in real-world conditions. NCRERN had intended to provide districts with results approximately one month after concluding their 12-week pilot cycle. In theory, this rapid turnaround would ensure districts could act quickly to either scale-up, redesign and retest, or discontinue a given intervention. As a result of implementation delays and varied launch dates across districts, however, pilot results were not available until April 2021 once all districts had completed their pilot cycles. Looking ahead, NCRERN will work with districts to adjust the pilot-and-test timeline to ensure districts have sufficient time to plan for and prepare to implement pilot programs.

Key Takeaway #6: Generating evidence about what works in rural schools is just an initial step toward improving outcomes for students. Based on the results of the pilot studies, the NCRERN team recommended districts scale-up the personalized messaging program; however, despite this evidence, nearly all districts in the network chose not to implement this program in the 2021—22 academic year. In a continuous improvement process, it is not enough to provide evidence that something worked; districts also need

additional support to scale-up or start the recommended intervention. District capacity, including staff time to implement programs, poses a challenge to adopting and sustaining new initiatives. Other factors, such as shifting district priorities, may mean districts choose not to implement a particular intervention even if it has evidence of past success.

We believe that NCRERN's continuous improvement process serves as a model for other rural districts who are committed to testing innovative solutions. NCRERN's network model offers a strategy for conducting quantitative rural education research.

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