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Swanson, Elise	Harvard University	0000-0002-4529-9646

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NATIONAL CENTER FOR
Rural Education
Research Networks

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Improving Rural Attendance

Results from Six Pilots in NCRERN's New York and Ohio Rural Research Network

Elise Swanson

Center for Education Policy Research
HARVARD UNIVERSITY

[1] *This brief is an updated version of the attendance pilots results brief released in November 2022. We have updated the brief to include results through the end of the 2021-22 school year, while the prior version had results through the end of the third quarter of the 2021-22 school year, and to correct a sample size error for the 21-22 postcards pilot.*

NCRERN is led by Thomas Kane, Douglas Staiger, Christopher Avery, and Jennifer Ash. The NCRERN team consists of Kellie Solowski, Hayley Didriksen, Elise Swanson, Dean Kaplan, Sativa Thompson, and Mimi Tan. The pilots reported on in this brief were also supported by Katherine Kieninger, Andrea Cornejo and Lisa Sanbonmatsu. NCRERN would not exist without the participation of our districts in New York and Ohio, along with the Management Council and Regional Information Centers.

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The National Center for Rural Education Research Networks (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. For more information about NCRERN's work, see the report, **An Introduction to NCRERN's New York and Ohio Rural Research Network** (Kieninger, Ash, & Solowski, 2022).

This brief provides an overview of the attendance-focused interventions NCRERN districts implemented and evaluated in the 2020–21 and 2021–22 school years. Despite the pandemic, NCRERN districts piloted four attendance-focused interventions in the 2020–21 school year: personalized messaging, mentoring, family engagement, and postcards. Personalized messaging reduced student absences by a small and certain amount. Districts retested postcards and family engagement in the 2021–22 school year. Family engagement led to a moderate reduction in student absences, although a large effect is not certain. This brief describes the interventions, evaluation strategy, and findings from these pilots.

Introduction

Attendance is a critical outcome for school districts across the country. Higher rates of absences lead to lower test scores, lower grades, reduced likelihood of high school graduation, and a reduced likelihood of enrolling in college (Gottfried, 2010; Goodman, 2014; Aucejo & Romano, 2016; Liu et al., 2021). Additionally, chronic absenteeism (defined as missing more than 10% of the school year), has been incorporated into 37 states and Washington, D.C.'s Every Student Succeeds Act (ESSA) plans for the purposes of accountability or school improvement (Kostyo et al., 2018). Six states use average daily attendance to determine school funding (Education Commission of the States, 2021). For these reasons, reducing student absences is a priority for many school districts, including the rural districts participating in the National Center for Rural Education Research Network's (NCRERN) New York and Ohio Rural Research Network (RRN).

NCRERN supports districts through a continuous improvement cycle to identify challenges, develop solutions, and test the efficacy of those solutions. In the 2018–19 school year, average absence rates among NCRERN districts in both New York and Ohio were around 6%, with an average chronic absenteeism rate of roughly 17%. This is higher than the states' ESSA goals of chronic absenteeism rates of no more than 5% (U.S. Department of Education, 2020; 2022). NCRERN staff and districts worked together to examine patterns in student absenteeism, reflect on potential root causes for student absenteeism, and develop interventions to improve student attendance. Interventions were then piloted and tested in the 2020–21 and 2021–22 school years. All pilots were evaluated using randomized control trials.

All six pilots occurred during the Covid-19 pandemic. While most NCRERN schools remained open and in-person throughout both 2020–21 and 2021–22, 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 rural school staff, adding contact tracing and other duties on top of their existing responsibilities. Despite these challenges, NCRERN districts saw attendance as central to their mission and responsibility to students, and they moved forward with implementation and evaluation.

Attendance Interventions

Personalized Messaging (2020–21)

The personalized messaging intervention was implemented by eight districts[2] in the 2020–21 school year. Implementing districts sent reminders to families every 4 to 6 weeks with a) information about their student's attendance; b) a goal for that student's attendance over the next 4 to 6 weeks, or the average school-wide attendance rate as a point of comparison with the student's attendance; and c) an invitation to connect with the school to discuss the student's attendance and strategies for reducing absences. Messages were personalized with the student's name, and were sent via email, text, or a phone call, depending on the district and family. Districts sent these messages to families with students in 1st through 12th grade. Implementation varied by district, with some using messaging apps like KiNVO to automate messages and others sending them manually.

Mentoring (2020–21)

The mentoring intervention was implemented by five districts[3] in the 2020–21 school year. Implementing districts paired 5th- through 12th-grade students who had been absent 7.5% or more of the 2019–20 school year with an adult at the school. Mentors were to meet with students weekly to discuss academics, behavior, and attendance; to set goals and review progress towards those goals; problem-solve challenges, and celebrate successes. Students and mentors worked together to set goals and agree on incentives for goal attainment. Mentors were drawn from teachers, counselors, and administrators, depending on the district.

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2 Fourteen districts planned to test the personalized messaging intervention. Due to the challenges of the Covid-19 pandemic, six districts decided not to launch the intervention. Because randomization was conducted within district, this attrition does not affect our analysis.

3 Six districts planned to test the mentoring intervention. Due to the challenges of the Covid-19 pandemic, one district decided not to launch the intervention. Because randomization was conducted within district, this attrition does not affect our analysis.

Postcards (2020–21 and 2021–22)

The postcards intervention was implemented by nine districts in the 2020–21 school year and by four districts in the 2021–22 school year.[4] Each week, implementing districts sent postcards (paper or digital) to families whose student had missed a day of school. Postcards included the student's name, the content covered in class on the day the student was absent, the student's total number of absences so far in the quarter, a graphic contextualizing the student's total number of absences (on a heat map ranging from green at 0 days with an encouraging message to red at 4+ days with an urgent message to contact the school), and a phone number to contact the school to discuss further. Implementation varied by district, with some delegating responsibility for filling out and sending postcards to teachers and others relying on counselors or an administrator for implementation. In the 2020–21 school year, postcards were sent to students in kindergarten through fifth grade. In the 2021–22 school year, students in Grades K–2 were included in the pilot.

Family Engagement (2020–21 and 2021–22)

The family engagement intervention was implemented by six districts[5] in the 2020–21 school year and four districts in the 2021–22 school year. Implementing districts sent weekly text messages to families. Messages were positive, supportive, and encouraged bi-directional communication. Districts sent three types of messages throughout the year: a) informational, which included relevant school or class updates such as field trips or testing dates; b) individualized, which included student-specific attendance, discipline, or achievement information and collaboratively problem-solving or celebrating with caregivers; and c) pro-tips, which included resources, suggestions for at-home learning activities, and questions about students' interests. In 2020–21, students in Grades K–12 with 7.5% or higher prior-year absence rates were included in the pilot. In 2021–22, students in Grades K–8 (Grades 2–4 in one district) whose prior-year absence rate placed them in the top 20% of student absenteeism were included in the pilot. In both years, some districts used communication tools such as KiNVO and Remind to send messages, while others sent messages manually.

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4 Thirteen districts planned to test the postcards intervention in the 2020–21 school year and six districts planned to test the intervention in the 2021–22 school year. Due to the challenges of the Covid-19 pandemic, staff and leadership turnover, and changing priorities, four districts did not launch in 2020–21 and two districts did not launch in 2021–22. Because randomization occurred within district, this attrition does not affect our analysis.

5 Eleven districts planned to test the family engagement strategy. Due to the challenges of the Covid-19 pandemic, five districts decided not to launch the intervention. Because randomization occurred within district, this attrition does not affect our analysis.

Evaluation Strategy

All pilots were evaluated using within-district randomization. The 2020–21 personalized messaging intervention as well as the family engagement intervention in both 2020–21 and 2021–22 were randomized at the household level (e.g., half the households in a district with an eligible student received the intervention, and half received the district's business-as-usual caregiver communications). The family engagement pilot was restricted to students with high prior-year absences (>7.5% or top 20% of absences in the district). In 2020–21, the mentoring intervention was randomized at the student level (e.g., 50% of eligible students in the participating districts and grades received the intervention and 50% were assigned to receive business-as-usual attendance supports from the district). The 2020–21 postcards intervention was randomized at the grade level. Within each district, students in one grade of each grade band K–1, 2–3, and 4–5 received the postcards, while students in the other grade did not (e.g., a district could treat Grades K, 3, and 4, while students in Grades 1, 2, and 5 received business-as-usual attendance support). In 2021–22, the postcards intervention was randomized by teacher within school (e.g., half the kindergarten teachers in a district sent home postcards and the other half of kindergarten teachers provided business-as-usual attendance communication with families). Table 1 summarizes the pilots, sample sizes, and unit of randomization.

Estimating Effects

For all pilots, we estimate Poisson models regressing the students' cumulative number of days absent on their prior-year absence rate, demographics, grade level, and randomization block[6]. We include an exposure term for the number of days students were enrolled. For districts that had delayed intervention launches (e.g., after roughly the first month of school), we control for students' pre-launch absence rate. The unit of analysis in all pilots is the student. Standard errors are clustered at the level of randomization (student, household, grade level, or teacher).

We use Bayesian estimation to arrive at our final impact estimate and effect certainty. This allows us take into account heterogeneity in impact effects across districts and explicitly incorporate prior knowledge about the likely impact of the intervention. We use a prior mean of 0 in all estimates. For interventions districts and the program team identify as lower effort (e.g., require fewer resources, less staff time, and pose fewer logistical

6 For the personalized messaging, mentoring, and family engagement pilots, randomization blocks are determined by state, district, and grade level. For the postcards intervention, randomization blocks in 2020–21 are determined by state, district, and grade-level band (K–1, 2–3, 4–5). In 2021–22, randomization blocks are determined by state, district, and grade, except in cases where grades had a small number of teachers, in which case the block reverted to the state and district.

challenges), we use a prior standard deviation of .05. For interventions districts and the program team identify as higher effort (e.g., requires more resources and staff time and/or pose more logistical challenges), we use a prior standard deviation of .2. This reflects the understanding that lower-effort interventions are less likely to have large effects on student outcomes and are more likely to have relatively uniform effects across sites, while higher-effort interventions may have larger effects and more variability across sites.

TABLE 1: SUMMARY OF PILOTS

Pilot	Short description	Implementing districts	Unit of randomization	Number of students
Personalized messaging (2020–21)	Texts, emails, and/or calls sent to caregivers every 4–6 weeks information on their students' attendance, and a goal or comparison for attendance.	8 (3 OH, 5 NY)	Household	7,656
Mentoring (2020–21)	Students with higher prior-year absences meet weekly with a mentor to set goals, review progress, celebrate success; and to discuss attendance, achievement, and behavior.	5 (0 OH, 5 NY)	Student	649
Postcards (2020–21 and 2021–22)	Digital or paper postcard sent to families whose student was absent in the preceding week. Postcard includes the class content missed, total absences in the quarter, and contextualization of absences.	**2020–21**: 9 (3 OH, 6 NY) **2021–22:** 4 (1 OH, 3 NY)	**2020–21**: Grade level **2021–22**: Teacher	**2020–21**: 3,176 **2021–22**: 711
Family Engagement (2020–21 and 2021–22)	Caregivers of students with high prior-year absences receive weekly individualized, informational, or pro-tip messages encouraging communication with the school.	**2020–21**: 6 (4 OH, 2 NY) **2021–22**: 4 (2 OH, 2 NY)	**2020–21**: Household **2021–22**: Household	**2020–21**: 1,469 **2021–22**: 474

For the 2020–21 interventions, we estimate district-specific results and then pool those effects together into a single effect estimate. This allows us to see the across-site heterogeneity in effects, providing valuable information about what effects districts could see, depending on their context, implementation, and other factors. For the 2021–22 interventions, we estimate a single pooled effect across all implementing districts. Given the small number of implementing districts and the small number of students included in the pilots in some of the districts, estimating a single pooled estimate was more appropriate to the context of the 2021–22 interventions. Below, we report the pooled, network-wide results.

Results

Two interventions showed promise for reducing student absences. In providing guidance to districts for how to interpret and respond to pilot results, we consider the estimated impact, certainty of that estimate, and effort required for implementation. For lower-effort interventions, we test whether the intervention reduced absences by any amount with a certainty of at least 80%. For higher-effort interventions, we focus on whether the interventions reduced absences by at least 5% with a certainty of at least 90%. These guidelines help districts make decisions based on both a measure of cost (effort) and effectiveness (effect magnitude and certainty).

2020–21 Pilot Results

In the 2020–21 school year, we found that personalized messaging reduced student absences by 2.35% across the network, with 83% certainty that absences were reduced. We estimated that family engagement led to a reduction in absences of .91%, but with only 57% certainty that there was a decrease in absences. We estimated small increases in absences resulting from the postcards and mentoring interventions, although neither result had much certainty (47% chance that postcards reduced absences, 38% chance that mentoring reduced absences). Based on these results, we recommended that districts scale up or adopt personalized messaging. We recommended either discontinuing or revising and retesting mentoring, family engagement, and postcards, focusing on implementation quality. Districts chose to discontinue the mentoring intervention and to retest the family engagement and postcards interventions.

2021–22 Pilot Results

In the 2021–22 school year, we found that family engagement reduced absences by 6.8% with an 93% chance there was a reduction in absences and a 66% chance there was at least a 5% reduction in absences. Since family engagement was considered a higher-effort intervention, we would not recommend scaling up the intervention unless there

was at least a 90% chance it reduced absences by 5%. However, the intervention may have been lower-effort than anticipated given communication tools and caregiver take-up of offers to connect with the school, so schools may still view family engagement as being an effort-effective intervention to reduce absences.

The retest of the postcards intervention returned similar results as the original pilot year. We estimated the intervention led to a small decrease in absences (-0.5%), with a 56% chance that it reduced absences. Given two years of small and uncertain effects of postcards, we recommended that districts discontinue or substantially revise the intervention and retest.

Table 2 summarizes the results of NCRERN's six attendance pilots.

TABLE 2: SUMMARY OF ATTENDANCE PILOT RESULTS

Pilot	High/low effort	Impact estimate	Certainty absences reduced	Certainty absences reduced 5% or more (high effort)
Personalized Messaging	Low	-2.35%	83%	N/A
Mentoring	High	+2.5%	38%	18%
Postcards 2020–21	Low	+0.4%	47%	N/A
Postcards 2021–22	Low	-0.5%	56%	N/A
Family Engagement 2020–21	High	-0.9%	57%	25%
Family Engagement 2021–22	High	-6.8%	93%	66%

Conclusion

NCRERN districts in New York and Ohio piloted six interventions over the 2020–21 and 2021–22 school years in an effort to reduce student absences. Both years were challenging contexts in which to implement new initiatives, and the districts' efforts reflect their commitment to student outcomes, innovation, and rigorous evidence-based decision-making.

Using within-district randomization, we found that personalized messaging reduced student absences by a small but certain and meaningful amount (2.35% reduction in absences with 83% certainty of a reduction). We are currently working with rural districts across the country to replicate this finding. Additionally, our results suggest that family engagement meaningfully reduced student absences, although we have limited certainty of a large reduction (6.8% reduction in absences with 93% certainty of any reduction and 66% certainty of at least a 5% reduction). We did not find any certain evidence that postcards or mentoring reduced student absences.

Districts received support from the NCRERN team as well as other districts in the network throughout the implementation of these pilots. For example, districts shared tips for using mail merges to set up messages, discussed challenges with communication tools, talked about how students and families were reacting to the interventions, and came together as a network to make these pilots possible in two challenging years. Our results reflect what is possible when districts collaborate in this way towards a common goal.

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