#2 IN THE SERIES

The Pandemic Learning Project

The Challenges of Deploying Emergency Virtual Instruction During Unplanned School Closures

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Bellwether

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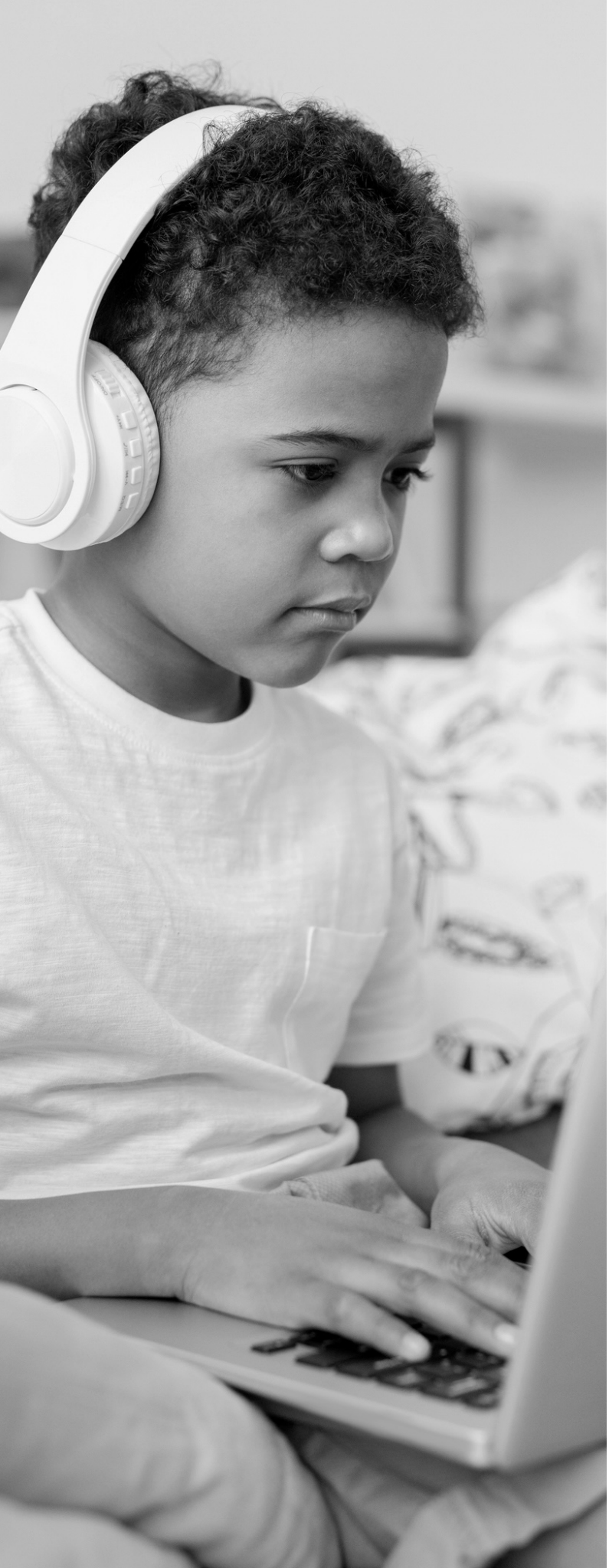

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***About This Series**: In partnership with the Center for Analysis of Longitudinal Data in Education Research (CALDER) at the American Institutes for Research, Bellwether examines how COVID-19 pandemic-era research can support state and local leaders in navigating K-12 policy challenges now and into the future.*

Executive Summary

The continued growth of online education in K-12 settings across the country has expanded students' access to coursework, learning opportunities, and academic support beyond the classroom. As part of this broader shift, **emergency virtual instruction** has become a common strategy that districts use to avoid losing instructional days when school buildings are forced to close for unplanned reasons.[1] With extreme weather events on the rise[2] and virtual learning infrastructure more established after the pandemic, emergency virtual instruction is expected to become a common alternative to making up lost instructional time in person. Policymakers are beginning to recognize this shift by defining when emergency virtual instruction can be used and count toward state-mandated instructional time requirements.[3]

While emergency virtual instruction can limit disruptions and help schools meet instructional time requirements without major calendar changes, it also carries significant risks for students. Key challenges include families' uneven access to devices and internet even in short-term emergency situations,[4] as well as inadequate supports for students with disabilities,[5] English learner students,[6] and younger students[7] in virtual settings. At the same time, poor attendance tracking leaves many students disengaged during emergency virtual instruction without prompt intervention by teachers or schools.[8] Most classroom teachers also lack the training or support needed to make a rapid, successful transition to teaching in a virtual setting.[9] These challenges and the absence of evidence-based guidance on its efficacy suggest that districts should avoid using emergency virtual instruction when possible, electing to make up instructional time later. In cases of prolonged unplanned school closures, though, deploying emergency virtual instruction is unavoidable.

District and state leaders must make real-time decisions about emergency virtual instruction while research continues to evolve. This report summarizes key takeaways and lessons learned from existing research, outlines the factors decision-makers should address in their emergency virtual instruction plans, and points to promising practices and available guidance where they exist.

Online education will continue to reshape K-12 education, and emergency virtual instruction will be part of that future. Leaders who act now to strengthen planning, address access barriers, and focus on instructional quality will lay the foundation for high-quality learning every time the school doors must close.

KEY TAKEAWAYS FROM RESEARCH ON K-12 EMERGENCY VIRTUAL INSTRUCTION

- The nature of the emergency should dictate whether and how emergency virtual instruction is deployed.
- High absenteeism rates in emergency virtual instruction disrupt learning for students and classrooms.
- Absenteeism in emergency virtual instruction is driven by disengagement and accessibility barriers.
- The most effective in-person teachers are not always the most effective virtual instructors.
- Better data on emergency virtual instruction can inform efforts to improve its quality and accessibility.

Introduction

Online education has moved from the margins toward the mainstream in K-12 education. In school year (SY) 2019-20, 10% of all K-12 students in the U.S. received some form of virtual instruction. That percentage doubled to 20% during SY23-24. In raw numbers, close to 10 million K-12 students experienced virtual instruction in SY23-24.[10]

The use cases for K-12 online education also appear to be growing. Online education ranges from fully online schools to hybrid schools where students receive some instruction virtually and some in person[11] to offering access to advanced courses for rural students without a face-to-face option[12] to providing students with targeted academic support through virtual tutoring.[13] Regardless of the approach, online education is here to stay and will be a common fixture in K-12 education for the foreseeable future.

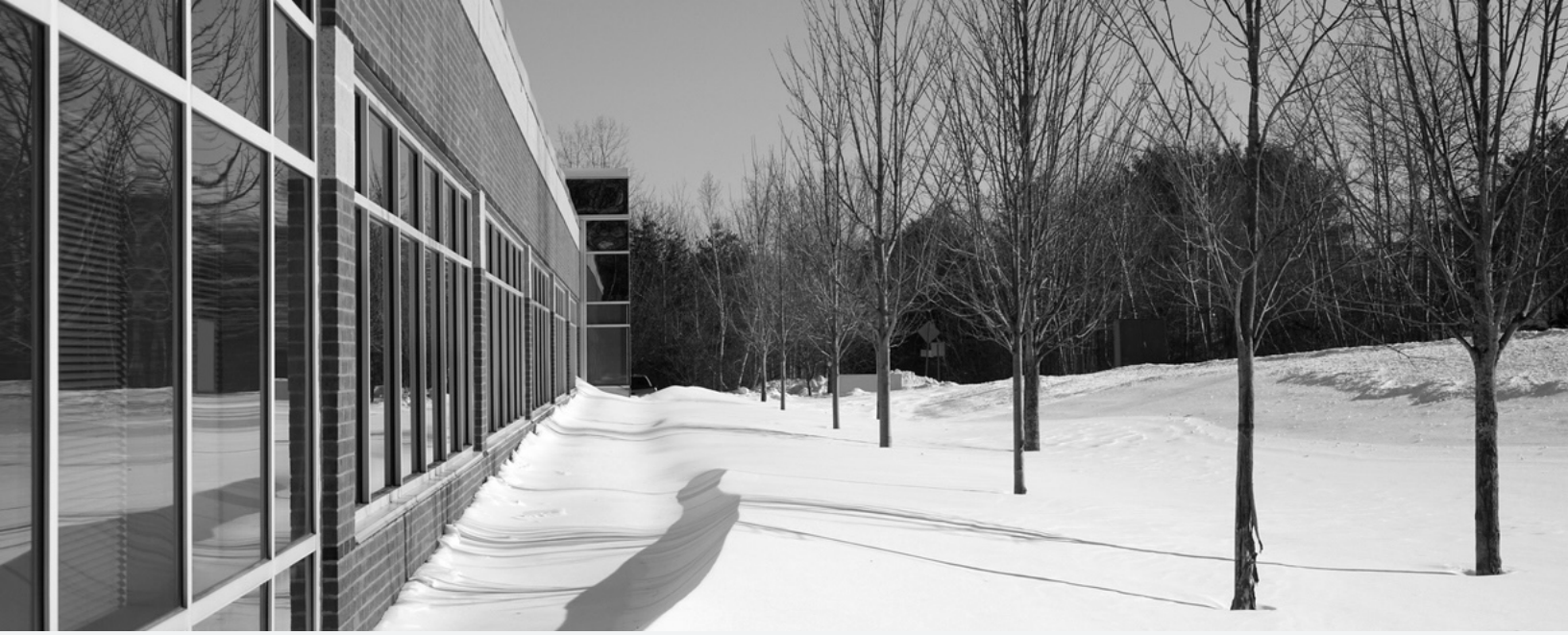
Online education offers enormous potential for expanding access to more educational opportunities for students, including those who need extra support and those furthest from opportunity. But before this potential can be realized in full, policymakers, school leaders, and families must understand accessibility issues, how effective this mode of instruction is for students, and how feasible it is to implement at scale. Unfortunately, in certain cases such as emergency virtual instruction, research is lacking.

Distinct from online schooling, where students receive routine, planned virtual instruction, emergency virtual instruction occurs when school buildings are forced to close with little notice, and all students and teachers shift from in-person to virtual instruction (Sidebar 1). Emergency virtual instruction has become more widespread for two reasons: 1) an increase in unplanned school closures due to extreme weather, and 2) a new precedent set amid pandemic-era school closures in which many schools in the country gained experience using virtual instruction at scale.

Emergency virtual instruction is also an active state policy issue, with some states proposing or passing laws allowing districts to use emergency virtual instruction more frequently, or in some cases, placing tighter limits on when it can be deployed as an alternative to making up instructional time later. The near-universal shift to emergency virtual instruction during the pandemic has afforded researchers an unparalleled opportunity to expand what the field knows about the practice. This growing body of research is crucial for district leaders and state policymakers who have long lacked a strong evidence base when making tough decisions about emergency virtual instruction.

The stakes for getting emergency virtual instruction right are high. The most recent National Assessment of Educational Progress shows that math and reading scores remain below pre-pandemic levels, and even more troublesome, reading scores continue to decline — a trend that started well before the pandemic.[14] **At its worst, poor implementation of emergency virtual instruction leads to lost instructional time, deepening learning loss, and widening existing achievement gaps**. At its best, emergency virtual instruction provides district and school leaders with a valuable tool for limiting learning losses during unplanned school closures. Effective implementation of emergency virtual instruction can also provide insights for how to provide high-quality online education at scale.

This report draws on available research to highlight the challenges posed by emergency virtual instruction related to implementation, accessibility for students, and maintaining instructional quality comparable to in-person teaching. While not exhaustive, it outlines key factors district and school leaders should consider when developing emergency virtual instruction plans. Where relevant, it also provides examples of promising practices, guidance, and other resources to support decision-making.



SIDEBAR 1

What Is Emergency Virtual Instruction?

Many terms are used to describe learning that does not occur on-site at a school, including but not limited to distance, remote, online, virtual, and blended learning, among others. One study found 46 different definitions of online learning in common use.[15] The definitions below, which researchers continue to refine and debate,[16] distinguish these other forms of education from the scope of this report: emergency virtual instruction.

Online Education: Refers to a form of instruction in which education programs and individual courses are delivered online. An estimated 19% of all schools in the U.S. — more than 19,000 schools — offered some type of online education in SY23-24.[17] Teachers in these schools and programs often receive specialized training to deliver effective virtual instruction. The study of online education encompasses an entire field of education research.[18]

Emergency Virtual Instruction: Takes place when a school closes with little notice and, as such, is distinct from online education. Classroom instruction shifts from being delivered in person to virtually. This shift most often occurs with less than 24 hours of warning for an entire school and emergency virtual instruction is delivered by teachers who may or may not have training in virtual instruction techniques or best practices. Schools also may or may not have adequate plans or infrastructure in place to support emergency virtual instruction or ensure students' access to reliable internet.[19] Emergency virtual instruction is also referred to as virtual learning days, alternative methods of instruction, and nontraditional instructional programs.

Distance Learning: Includes any form of education that occurs when students are not in a school building, such as virtual instruction that is asynchronous or synchronous.[20] It also includes instances where students are provided hard copy learning materials (e.g., textbooks, homework assignments) to complete remotely. Distance learning can be offered in times of emergency or during business-as-usual instructional situations.

A Nationwide Rise in Unplanned Closures and Emergency Virtual Instruction in K-12 Schools

Unplanned school closures affect millions of K-12 students each year — and they appear to be increasing. Although national longitudinal data is limited, one study identified 20,723 unplanned closures that lasted one or more days in SY11-12 and SY12-13, affecting more than 27 million K-12 students. Most of these unplanned school closures resulted from inclement weather (79%) or natural disasters (14%).[21] Another study found that more than 13 million K-12 students experienced a *prolonged* school closure — those lasting five or more days — from SY11-12 to SY18-19. Although there is year-to-year variation, data show there was a clear upward trend in both short- and long-term unplanned school closures even before the pandemic,[22] a trend expected to continue as hurricanes, wildfires, earthquakes, flooding, extreme heat and cold, and other destructive weather events attributed to climate change become more frequent.[23]

As unplanned school closures become more common, district and school leaders are tasked with deciding how to replace the lost instructional time to meet their state's minimum number of instructional hours or days,[24] also referred to as "seat time" laws. Making up lost instructional time is essential, as losing even a handful of school days can result in detrimental learning loss for students.[25]

Historically, districts have made up lost instructional time by adding days to the end of the school calendar (e.g., "snow makeup days"), holding school days on scheduled days off (e.g., holidays, teacher prep days), or lengthening the school day.[26] Even before the pandemic, at least one state[27] and several districts[28] adopted policies allowing emergency virtual instruction as an alternative to adding days to the end of the academic year, a practice often unpopular with teachers, families, and students.

The pandemic accelerated this shift.[29] When COVID-19 caused widespread school closures, many districts in the country stood up emergency virtual instructional programs at scale within days, normalizing the practice. National data on the use of emergency virtual instruction is scarce, but an EdWeek survey from November 2020 found that 39% of district and school leaders reported shifting to emergency virtual instruction during weather events as a result of their experience with remote learning during pandemic-era school closures. Another 32% said their district was considering moving to emergency virtual instruction in the future.[30] In a more recent survey of 1,651 public K-12 schools from the National Center for Education Statistics' School Pulse Survey, 17% of public schools reported shifting to emergency virtual instruction for at least one day because of an unplanned school closure in SY23-24.[31]

As emergency virtual instruction becomes more widespread, states are taking contrasting approaches by enacting policies that expand or limit its use in K-12 districts. For example, West Virginia's Senate Bill 646 would have expanded the number of "nontraditional instruction days" (including emergency virtual learning days) allowed under state law, but the bill died in the Senate during the 2025 legislative session.[32] In Arkansas, districts must build in seven school days in their academic calendars to make up for unplanned school closures in person. In addition, the state's House Bill 1370 would allow the Arkansas commissioner of elementary and secondary education to grant up to three "student attendance days … including without limitation virtual learning" after a school has used up all seven of its makeup days and if the district has an approved "alternative methods of instruction plan," but this bill also died in the Senate.[33] Other states and districts have also developed plans for instituting virtual instruction during emergencies (Sidebar 2).[34]

SIDEBAR 2

Pre-Pandemic Emergency Virtual Instruction in Kentucky

Kentucky experimented with emergency virtual instruction at scale perhaps longer than any other state prior to the pandemic. Kentucky's Non-Traditional Instruction Program began as a pilot in 2011, grew to a statewide program in SY14-15, and reached 83 participating districts (49% of all districts) by SY19-20.[35] All districts used the program on an emergency basis during the latter half of SY19-20 and almost all of SY20-21.[36]

Today, the program operates as it did before the pandemic, allowing the state's commissioner of education to grant up to 10 nontraditional instruction days, including emergency virtual instruction, as long as the district has a state-approved nontraditional instruction plan.[37]

A recent law in Kentucky in response to widespread flooding in the eastern part of the state allows its commissioner of education to grant districts up to five additional "disaster relief student attendance days for districts to provide instruction using alternative settings," allowing up to 15 days of emergency virtual instruction. The law also allows districts to extend the school day to make up lost instructional time and gives the commissioner of education the ability to waive up to five attendance days.[38]

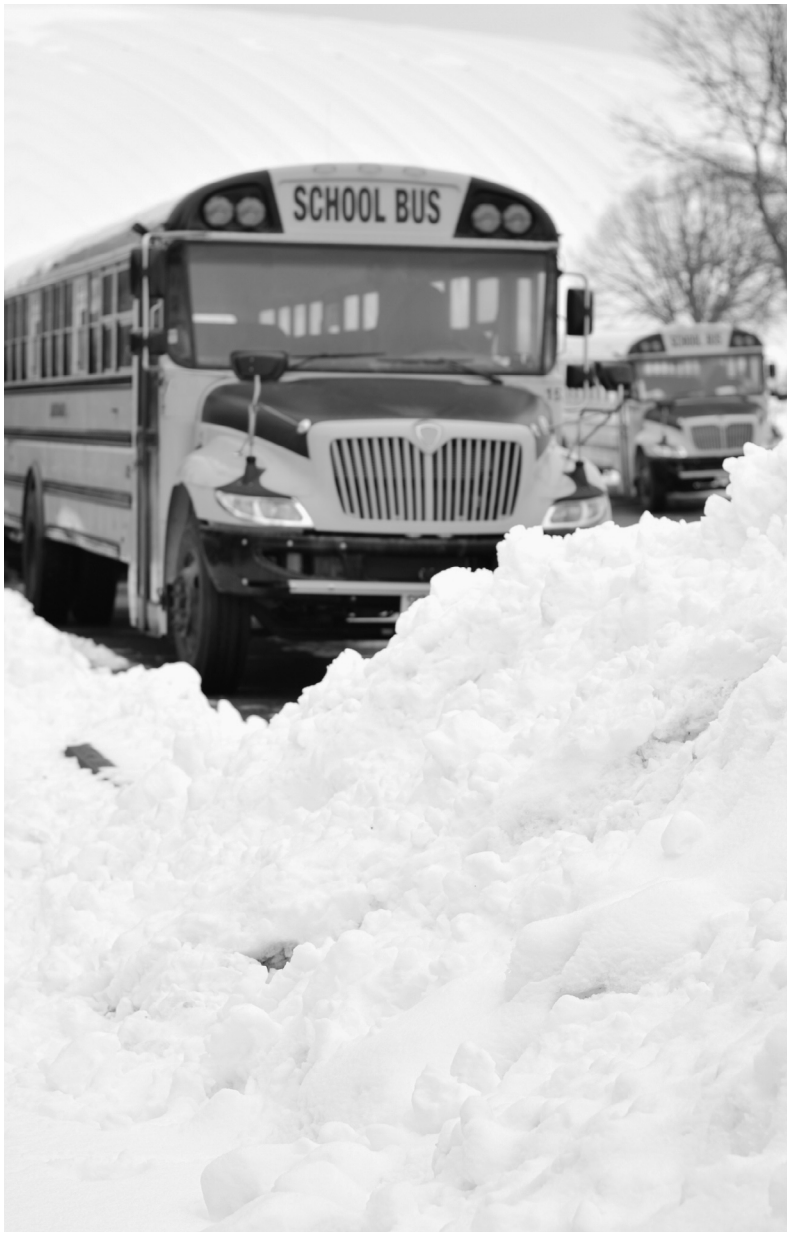
Other states are placing tighter limits on when K-12 virtual learning can count toward state-mandated minimum numbers of instructional days or minutes. Oklahoma's Senate Bill 758, signed into law in May 2025, limits schools to only two days or 12 hours of emergency virtual instruction if the state's superintendent of public instruction approves the district or charter school's use of emergency virtual instruction, or the district's school board or charter governing board approves. The law also requires the State Department of Education to publish data and submit a report to the governor and legislature on the use of emergency virtual instruction annually, along with the reason the school was closed.[39]

Although emergency virtual instruction is likely here to stay, **there is little evidence to indicate whether it is an effective strategy to mitigate lost learning time when school buildings have to close**, compared to making up seat time with in-person instruction at a later date. As the authors of a systematic literature review on online K-12 education noted, nationwide school closures during the pandemic "illuminated gaps in the knowledge base for transitioning to and implementing effective practices in K-12 online teaching and learning at the policy, infrastructure, administration, and teaching levels."[40] Emergencies are inevitable — and more frequent — forcing school, district, and state leaders to make critical decisions about emergency virtual instruction without clear evidence. While the short- and long-term effects on student outcomes and teacher effectiveness remain unclear, state and local policymakers must still act using the best available evidence.

What to Know: Key Takeaways From Research on Emergency Virtual Instruction

Although research on the effectiveness of emergency virtual instruction remains limited, studies from pre-pandemic, pandemic-era, and post-pandemic time periods provide valuable insights into the challenges it presents. This research points to a set of key takeaways for state and local policymakers as well as promising practices, guidance, and resources to support sound decision-making as future emergencies disrupt daily in-person classroom instruction.

- **The nature of the emergency should dictate whether and how emergency virtual instruction is deployed.**
- **High absenteeism rates in emergency virtual instruction disrupt learning for students and classrooms.**
- **Absenteeism in emergency virtual instruction is driven by disengagement and accessibility barriers.**
- **The most effective in-person teachers are not always the most effective virtual instructors.**
- **Better data on emergency virtual instruction can inform efforts to improve its quality and accessibility.**



The nature of the emergency should dictate whether and how emergency virtual instruction is deployed.

KEY TAKEAWAY

Although in-person strategies for making up lost instructional time are best for student learning, virtual instruction may be the best option to avoid detrimental learning loss during extended and/or destructive emergency events. In such cases, school system leaders and policymakers should pay particular attention to putting the necessary conditions in place to ensure implementation of emergency virtual instruction is high-quality and accessible for all students.

Emergencies vary in duration and impact on students, teachers, and the broader community. State and local policymakers should consider using different strategies depending on the type of emergency and the implications for student learning and well-being.

Some emergencies are low-impact and short in duration, creating minimal disruption to student learning and well-being. For example, events such as power outages, facility problems (e.g., plumbing issues), snow and ice, extreme temperatures, and public health emergencies (e.g., influenza outbreaks) tend to have minimal effects on students' and teachers' longer-term health and living circumstances. For emergencies that result in no more than several days of unplanned school closures, **it may be preferable to make up seat time in person at a later date rather than navigate the logistical, accessibility, and instructional challenges posed by emergency virtual instruction** described later in this report — challenges that could have a negative effect on student achievement for some students.

In contrast, prolonged and destructive emergencies — including extreme weather events such as hurricanes, wildfires, earthquakes, and floods — can cause significant damage to infrastructure, displace families, and inflict emotional trauma. School leaders are often left with no choice but to deploy emergency virtual instruction during prolonged school closures, even though establishing and maintaining student engagement in a virtual setting becomes more difficult the longer students go without face-to-face instruction.[41]

Closing school to in-person and virtual instruction for long periods creates serious risks for student learning and well-being. One study in California found that school closures from wildfires have had the strongest negative effects on student achievement, whereas closures due to facility issues or safety concerns had less of an impact on student outcomes.[42] Other studies show that after more destructive natural disasters, such as hurricanes, students lose *more than one day* of learning for every missed school day. For example, one estimate suggests students who lose one week of school due to hurricanes lose between two and four weeks of learning.[43] Extreme events such as hurricanes displace teachers, students, and families and generate emotional trauma that can make it difficult for students to concentrate on learning when they return to school.

Although learning loss worsens the longer schools stay closed, district and school leaders should be realistic about how effective virtual instruction can be during emergencies. For example, researchers at RAND who interviewed school leaders across the U.S. to study how schools use virtual instruction during emergencies found that these practitioners "agreed that distance learning is easier to implement in emergencies that do not harm physical infrastructure, do not significantly disrupt students' lives, and do not last long."[44] This research highlights that emergency virtual learning plans for prolonged school closures must be designed to maintain short-term instructional continuity while also addressing long-term student and teacher well-being.

High absenteeism rates in emergency virtual instruction disrupt learning for students and classrooms.

KEY TAKEAWAY

State and local policymakers should ensure that school leaders and teachers are provided with clear and comprehensive guidance for taking, recording, and analyzing attendance during emergency virtual instruction scenarios. This guidance should prepare teachers to anticipate higher rates of absenteeism and support them in adjusting instruction when many students miss class.

Absences tend to increase during emergency virtual instruction, disrupting learning for individual students and entire classrooms. Chronic absenteeism (i.e., a student missing 10% or more of instructional days during a school year) ballooned during the pandemic.[45] For example, one study found that chronic absenteeism was 6.9 percentage points higher in schools that were 100% virtual when compared to those that were 100% in-person during the pandemic.[46] Absences during emergency virtual instruction also have the potential to exacerbate existing inequities: Bellwether's "Missing in the Margins" showed that some of the nation's most marginalized youth — English learner students, students in foster care, students with disabilities, and students experiencing homelessness — faced the highest rates of chronic absenteeism during the pandemic.[47]

Student absences during virtual school days can disrupt the flow of instruction, with longer-term consequences. For example, a study in Massachusetts showed that a large number of student absences due to inclement weather (i.e., when schools remained open for in-person instruction, but some students could not attend because of bad conditions) had a negative impact on schoolwide average test scores, whereas closing school and making up the days later did not.[48] A large number of student absences creates logistical challenges for teachers, who must either delay the lesson's progress to ensure all students are caught up or proceed as planned even though some students missed content. Despite the importance of planning for this scenario, research shows that teachers receive little guidance on how to adjust lesson plans to account for high rates of absenteeism during emergency virtual instruction.[49]

Teachers and schools also need clear, consistent guidance on how to take and document attendance during emergency virtual learning. Yet districts and states vary in how they define attendance and what they require for recording and documentation.[50] Research from the pandemic showed that these differences become even more pronounced during virtual instruction, where traditional in-person definitions often do not apply.[51] Poor definitions lead to varying interpretations and inconsistent attendance recording across districts and schools, resulting in unreliable absenteeism data. **Without accurate data, it becomes much harder to identify students who are struggling to access or engage in virtual instruction and to provide real-time support to those students who need it**. Resources such as those from the National Forum on Education Statistics can help address these challenges by providing best practices for defining, collecting, and using attendance data in both in-person and virtual settings, including the range of attendance-related factors that must be taken into consideration when moving from in-person to emergency virtual instruction.[52]

Absenteeism in emergency virtual instruction is driven by disengagement and accessibility barriers.

KEY TAKEAWAY

Without careful planning and implementation to address absenteeism challenges, the switch to virtual instruction could worsen or introduce new inequities in the education system. It is important to note that many students experience these challenges simultaneously, making thoughtful, inclusive planning even more vital. Failing to address these issues will lead to increased absences or students falling behind academically.

Student disengagement is a key factor behind high rates of absenteeism during emergency virtual instruction.[53] Although the causes of chronic K-12 absenteeism are complex and multifold,[54] at least one study investigating the rise in absenteeism during pandemic-era school closures found that students reported they missed more school during virtual instruction due to "experiencing more anxiety … having trouble understanding what they're learning, and [the fact] that school has gotten more boring."[55] To avoid increases in student absences, district and school leaders must ensure that the nature of emergency virtual instruction does not lead to widespread disengagement.

The near-universal shift to virtual instruction during the pandemic also exposed several factors that make it challenging to ensure equal access to instruction across all groups of students, even when engagement levels are high. Below are key access challenges that leaders must address when developing emergency virtual instruction policies for future unplanned school closures.

Access to a reliable device and broadband internet is not universal. Not all students have access to reliable devices or the broadband internet needed to engage with course content and/or participate in online classes. Although the percentage of children aged 3-18 in the U.S. with internet access via a computer rose to 93% in 2021, socioeconomic disadvantage, race and ethnicity, and parental educational attainment are all associated with internet access. For example, the proportion with home internet access through a computer was lower among students who were in the bottom quarter of family income (85%); were Black (89%), Hispanic (90%), or Pacific Islander (89%); or had parents with less than a high school degree (78%).[56] Even when a household has one device, access to emergency virtual instruction can be limited when multiple students share a device or adults need the device for work or other responsibilities.

Inequitable access to devices during emergency virtual learning may worsen as devices funded by the Elementary and Secondary School Emergency Relief Fund (ESSER) approach the end of their lifecycle. For example, 77% of local education agencies in North Carolina told the State Department of Public Instruction they do not have funding to update or purchase new devices beyond ESSER funds.[57]

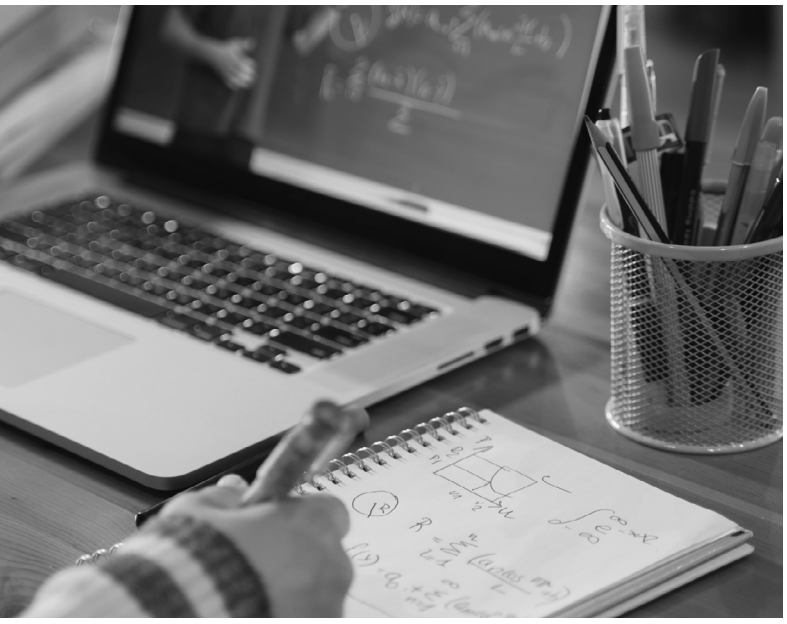
Access to an adequate device and internet does not guarantee reliable connectivity. One survey found that 22% of K-12 parents reported connectivity issues that made it difficult for students to access virtual instruction and keep up with schoolwork, issues felt most by students experiencing socioeconomic challenges and rural students.[58] Moreover, disparities in what technology students have access to and how effectively they can use it to learn — referred to as the digital divide[59] — likely contributed to widening academic disparities during pandemic-era emergency virtual instruction.[60]

States have adopted a variety of strategies aimed at closing the digital divide. A resource from the Education Commission of the States highlights various state and local approaches that attempt to do this,

including partnerships among cities, districts, internet providers, and funders to provide free high-speed access to households with students who qualify for free or reduced-price meals. Other strategies include allocating state funding to intermediaries that purchase devices and distribute them to schools, a procurement and logistical process that can be difficult for districts to manage, and incentive programs where the state offsets the cost of devices for districts.[61]

Similar resources from The Pew Charitable Trusts,[62] the Congressional Research Service,[63] and organizations like Digital Promise[64] offer additional strategies, policy approaches, and examples that will be useful for states and districts seeking to improve device and broadband access for students during emergency virtual instruction (and all types of virtual learning). Without long-term solutions in place, districts and schools must develop contingency plans to ensure students have access to the devices and broadband needed to succeed in emergency virtual settings.[65]

Students with disabilities face heightened accessibility barriers. Providing students with disabilities the resources, support, and individualized instruction they are entitled to under federal law poses significant challenges during emergency virtual instruction, most notably in situations where those services must be provided in-person and transportation of any kind is dangerous. Surveys during the early days of the pandemic showed that close to three-quarters of district leaders found it more difficult to provide adequate accommodations for students with disabilities during emergency virtual instruction,[66] and as a result, students with disabilities lost more learning during the pandemic than their peers, on average.[67]



Relying on emergency virtual instruction to make up lost instructional time from unplanned school closures can result in disproportionate learning losses for students with special needs, especially without an emergency plan in place tailored to the needs of this population. One study showed that many districts did not have an emergency plan for providing special education services during prolonged school closures, and that districts varied in how they approached providing pandemic-era special education services.[68]

The Center on Online Learning and Students with Disabilities offers several resources for state and district leaders, including considerations for district policies and procedures, guidance for preparing teachers to provide special education instruction online, and recommendations for engaging parents of students with special needs.[69] A toolkit created by the District of Columbia's Office of the State Superintendent of Education offers strategies and tools for district leaders to assess barriers to access and identify resources to better serve students with disabilities during remote instruction.[70] Special education policies and practices in state-mandated emergency virtual learning plans and guidance from New Jersey,[71] Rhode Island,[72] and Kentucky,[73] provide examples for other states and districts to learn from and adapt to their context.

English learner students miss opportunities to build language skills. English learner students also experienced significant learning loss during the pandemic.[74] The reasons are similar to challenges in providing adequate services to students with disabilities: It is more difficult to provide services and support to English learner students in emergency virtual settings. During pandemic-era virtual instruction, districts struggled to adapt course content and

intensive language support for English learner students to the virtual format; furthermore, students missed out on opportunities to build English language skills in the numerous informal ways that occur face-to-face during in-person instruction.[75] Parents whose first language was not English also experienced greater challenges supporting their children during emergency virtual instruction (e.g., having difficulty navigating technological issues and accessing complex virtual learning materials).[76]

A November 2020 report from the U.S. Government Accountability Office on K-12 district-level approaches to serving English learner students during emergency virtual instruction highlighted promising practices, including using "creative communication strategies" such as dedicated hotlines for translation services. Successful districts also used different methods for translating instructional materials, such as free subscriptions.[77] Guidance documents from New Jersey,[78] Rhode Island,[79] and Illinois[80] also include key questions and recommendations for district leaders to consider as they construct and implement emergency virtual learning plans for English learner students.

Younger students need engaged adults to be effective in virtual settings. Evidence suggests emergency virtual instruction has a more negative effect on elementary-aged students than on their older peers. For example, research from CALDER shows elementary-aged students experienced some of the largest test-score declines during the pandemic years, most notably in math.[81] One study that surveyed teachers during pandemic-era school closures found that emergency virtual instruction may pose greater challenges for elementary school teachers who found it more difficult than secondary teachers to adapt in-person lesson plans, which often rely on hands-on activities, to a virtual setting.[82] Teachers also have access to very little research or guidance in creating virtual learning environments for younger students.[83] As one research team pointed out, districts and schools have moved to emergency virtual instruction "without [the] time and capacity to consider students' developmental needs in spite of the vast difference between online learning for adult learners, adolescents, and young children."[84]

The limited research that does exist highlights the critical role of parental involvement in supporting younger students' success in online education[85] In general, adult learners and older adolescents have a greater capacity to self-direct their learning and have stronger self-regulated learning skills — both of which are essential for independent success in a virtual classroom setting.

By contrast, younger students need support from parents or other adults.[86] However, some research shows that teachers experienced challenges in connecting with parents during the pandemic, as many families were balancing work and other caregiving responsibilities at home.[87] In addition to these engagement challenges, parents are forced into the role of instructor without the necessary support, guidance, or an understanding of effective pedagogical practices in either face-to-face or virtual settings.[88] The situation is further complicated by guidance from the American Academy of Pediatrics, which advises limiting screen time for young children to protect their developmental health.[89] When followed, this guidance reduces the amount of time teachers can engage young learners virtually, reinforcing the need to better prepare and support parents in facilitating learning at home.

Although best practices on serving younger students during emergency virtual learning remain scarce, some guidance exists to support district and state leaders. The Illinois State Board of Education's remote learning guidance from March 2020 offers recommendations for planning and preparation, social-emotional supports, content and delivery options, and other considerations for early childhood (birth-Grade 2) and elementary school (Grades 3-5) students.[90] These recommendations are a useful starting point for district and state leaders seeking to develop emergency virtual instruction plans and guidance for younger students. A review of the research on online education also shows that district and school leaders should prioritize developmental appropriateness, structure frequent communication between schools and families, and equip parents with basic instructional strategies when designing virtual learning environments.[91]

The most effective in-person teachers are not always the most effective virtual instructors.

KEY TAKEAWAY

The best available evidence suggests that regular classroom teachers need more comprehensive, specialized training to provide virtual instruction. This training must move beyond simply transferring in-person practices to an online setting.

Anecdotal evidence suggests that switching from in-person to virtual instruction during the pandemic posed significant challenges for teachers. Many researchers, and teachers themselves, have pointed out that they lacked the training and support they needed to be successful in virtual instruction.[92] In one study, "[t]he most striking finding from the review of literature was the dearth of K-12 teacher preparation to deliver online instruction" and that "K-12 teachers are often thrust into the role of instructional designers without specific training in the nuanced differences between face-to-face and online modes of instruction."[93] Even fewer studies have investigated differences in the effectiveness of teachers in virtual and in-person settings. Recent research from CALDER represents some of the strongest empirical evidence to date on how effective teachers were in virtual settings during pandemic-related school closures.[94] The findings of its study suggest that many teachers will need substantial training and scaffolding to be effective in a virtual environment.

In CALDER's study, researchers used student- and teacher-level data in three Atlanta-area districts to measure teacher effectiveness during in-person and virtual instruction in SY20-21. Three findings stand out:[95]

- First, there was increased variation in teacher effectiveness during emergency virtual instruction relative to in-person instruction. In other words, the difference between the least and most effective teacher was larger during virtual instruction in comparison to in-person instruction.

- Second, the most effective in-person teachers were not always the most effective virtual instructors; some of the most effective in-person teachers declined in effectiveness during virtual instruction. This may be counterintuitive, as many district policymakers were likely inclined to select their most effective in-person teachers for emergency virtual instruction assignments.

- Third, CALDER found experience was a key factor in whether teachers made a successful transition to a virtual setting. The more experienced teachers pre-pandemic tended to maintain a similar level of effectiveness during virtual instruction, on average. CALDER researchers suggest that veteran teachers may have better developed lesson plans and classroom management skills, enabling a smoother transition to emergency virtual instruction for their students.

State and district policymakers have limited knowledge about the overall performance of teachers during emergency virtual instruction, what knowledge and skills make them most effective, and what training and support they need to be successful. It is unclear what, if any, training teachers currently receive, and if those trainings are aligned to recognized standards for virtual instruction, such as the National Standards for Quality Online Teaching.[96] One research team has advocated for "quick-start guides" to help parents and students adjust to emergency virtual instruction.[97] While providing a similar type of quick-start guide for teachers would be a useful first step, teachers also need, at a minimum, support in managing the logistics of virtual instruction, selecting from various technological tools, engaging parents, adapting course designs and lesson plans for virtual settings, creating communities of learners online, differentiating instruction based on student need and developmental stage, and creating a learning environment that is easy to navigate for everyone involved.[98]

Better data on emergency virtual instruction can inform efforts to improve its quality and accessibility.

KEY TAKEAWAY

Researchers, state policymakers, and district leaders should work together to explore better methods for determining the frequency and nature of unplanned school closures, so that in the future the field can better address many of the open questions on emergency virtual instruction. Comprehensive and reliable data on school mobility overall through data sources like SafeGraph also open possibilities to ask other critical questions, such as how alternative school calendars, teachers union strikes, other nonemergencies, and hybrid online education programs influence student outcomes. In all these cases, looking back is necessary to move forward with evidence.

In general, **researchers, state policymakers, and district leaders lack reliable data on unplanned school closures**. Without a reliable source of information documenting when schools close due to emergencies, researchers are limited in their ability to study the effects of past attempts at emergency virtual instruction. While the studies referenced in this report — along with a small but growing body of promising practices, guidance, and resources — offer important insights into key factors that policymakers must consider when implementing emergency virtual instruction at scale, the current evidence base remains limited and falls far short of what is needed to identify policies and practices that create effective and accessible virtual learning environments.

Pandemic-era research highlights the challenges posed by the lack of reliable data on unplanned school closures.[99] To date, most research on the effects of emergency virtual instruction during the pandemic has relied on self-reported data from districts to estimate when schools offered in-person, hybrid, or remote instruction. These trackers — notably, the Return to Learn Tracker[100] and COVID-19 School Data Hub[101] — do not contain data for all states and localities across the country, nor are they meant to be precise measures. They also fail to capture situations where schools were open, but school leaders allowed students to attend class online from a remote setting. As a result, existing methods offer researchers an incomplete picture of school closures during the pandemic.

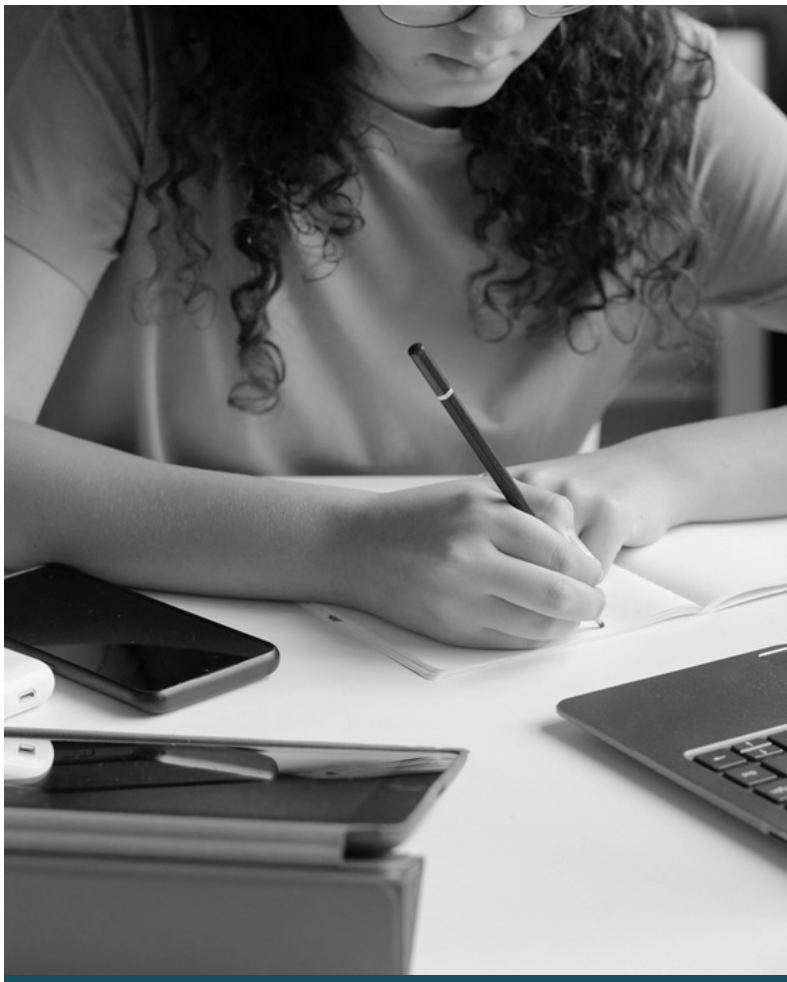
One recent study by CALDER points to a promising alternative data source for producing a more nuanced estimate of school modality (i.e., whether schools are remote, in-person, or somewhere in between): cell phone data from SafeGraph, a data location company.[102] The more cell phone pings that occur at a school's location, the higher the probability that the school is open for in-person instruction. CALDER researchers found that cell phone data was an excellent predictor of whether a school was in session or not — and in fact appeared to be a more accurate indicator than school self-reported data of whether students were in-person at school or learning in a virtual setting during the pandemic. For example, in September 2020 in Florida — where many schools were open for in-person instruction but students were given the option of attending class online — The Return to Learn Tracker estimated that 25% of K-12 students in the state were experiencing virtual instruction (based on school reports of whether they were open), whereas another approach using cell phone data estimated 50%, and SafeGraph data from CALDER's study estimated that 75% were attending school remotely.[103] This range in findings drives home how an inaccurate measure of school modality could lead to inaccurate conclusions about the effects of emergency virtual instruction.

Conclusion

State and district leaders will face more unplanned school closures as climate change drives more extreme weather events and as future public health crises or other emergencies arise. **Despite this growing inevitability, state and local policymakers still lack sufficient research on how emergency virtual instruction affects student learning as well as what policies can ensure it works for all students**. Research on pandemic-era school closures represents some of the first steps toward a better understanding of the effects of K-12 emergency virtual instruction.

Implementing virtual instruction that provides all students with access to high-quality learning during emergencies is a tall task. The best available evidence suggests that only some students — those with reliable internet, adequate devices, few academic or behavioral needs, and strong self-regulated learning skills — are best positioned to succeed in virtual settings. When only a subset of students can participate in an effective way, it creates logistical challenges for teachers once in-person instruction resumes, disrupting instruction for individual students and entire classrooms. If feasible, district and school leaders should avoid deploying emergency virtual instruction and instead make up in-person instructional time later.

At this point, state and district policymakers face more questions than answers — not only on emergency virtual instruction but also about quality and accessibility in online education more broadly. The contextual factors, accessibility challenges, and other considerations presented in this report are applicable in all virtual settings, raising questions about who online education is for and what policymakers must contemplate in the absence of rigorous evidence. To move forward, policymakers must look back — learning from recent disruptions to build more resilient and accessible virtual learning environments. ✦



SERIES OVERVIEW

The Pandemic Learning Project examines how COVID-era research can support local and state leaders in navigating K-12 policy challenges now and into the future. The three reports in this series provide a high-level overview of different approaches that states and districts have taken in each policy area, explore the trade-offs and contextual factors influencing those approaches, and highlight key considerations that can strengthen policy effectiveness.

Endnotes

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103 However, cell phone data is not without limitations. One limitation is that location companies, such as SafeGraph, do not disclose data for students under the age of 16, and these measures therefore rely more on data from older students and teachers, which can limit their applicability in middle and elementary schools. Moreover, teachers and other adults may be more likely to still be in school buildings during unplanned closures, making it appear that schools are open when in fact they are closed. Finally, many cell phones allow for users to turn off location settings, and some cell phones do not have location features at all.

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About Bellwether

Bellwether is a national nonprofit that exists to transform education to ensure systemically marginalized young people achieve outcomes that lead to fulfilling lives and flourishing communities. Founded in 2010, we work hand in hand with education leaders and organizations to accelerate their impact, inform and influence policy and program design, and share what we learn along the way. For more, visit **bellwether.org**.

About CALDER

CALDER is a joint project of the American Institutes for Research and scholars at 12 universities. CALDER's researchers and affiliated scholars are national experts on a range of critical issues — including educator labor markets, teacher education, and academic interventions. With data-sharing agreements in over 10 states, CALDER leverages statewide longitudinal data systems to develop systematic, quantitative evidence on how teachers and schools impact student learning and success. For more about CALDER and to read their latest publications, visit **caldercenter.org**.

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