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Pressure to Prepare:

Emergency Operations Plans in 10 American Schools

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RTI INTERNATIONAL

Pressure to Prepare:

Emergency Operations Plans in 10 American Schools

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Funding from the National Institute of Justice's Comprehensive School Safety Initiative (CSSI) made possible a unique opportunity to work closely with 10 American schools. The overarching purpose was to build the knowledge base on school emergency operations plans (EOPs) and to inform where additional efforts may be needed to ensure students and staff are ready to respond to emergency situations. Prior to summarizing the study, we want to recognize the schools and their commitment to creating safe learning spaces. Participation in this study was entirely voluntary and under no circumstances were schools required to cooperate with our many requests. They participated, which undoubtedly was demanding at times, because each was committed to continuous improvement and to making their school, and schools throughout the nation, as safe as possible. Top administrators allowed us into their schools because they wanted objective feedback and to uncover areas in which they could improve. They wanted to know whether staff and students were knowledgeable about the concepts and protocols described in their EOP and whether there were gaps in knowledge that could inform future training needs. And they wanted to know what ideas their students and staff had for making their school less vulnerable and more prepared to manage a critical incident. Stated otherwise, they were open to learning, even if that meant receiving constructive criticism about their plans or recommendations that ultimately would necessitate devoting even more time and resources to emergency planning. Trusting the project team and being open to this feedback took great courage and signifies an exemplary commitment to safety and the wellbeing of their students and staff. Allowing us access to each of their schools ultimately produced a wealth of timely and actionable information that practitioners and policymakers can use to inform what resources are needed to help schools better insulate themselves from violence and other threats.

It is also imperative to acknowledge that although we make several recommendations in this report that are predicated on the findings of each data collection activity—emergency preparedness—and safety, more broadly—was a top priority in each school throughout the study period. Granted, these efforts did not look entirely the same, but each school has taken substantial action over the years to prepare and protect themselves while simultaneously ensuring core educational needs were being met. They built safety and emergency planning committees to develop, review, and refine safety procedures according to best practices. They navigated, and often reconciled, an extraordinary amount of federal, state, and local guidance and mandates to develop their EOPs—an activity in which few educators have received formal training or possess relevant background experience. In many cases, they had consulted with law

enforcement officials, local emergency managers, or other external stakeholders to develop protocols for exceedingly complex events or receive feedback on their written procedures.

Additionally, they each built a system for disseminating EOPs, or at least critical components of them, to their staffs, and devised creative ways to educate students on their responsibilities during a variety of emergency situations. This included keeping flip charts or displaying quick-reference guides in classrooms, reviewing emergency protocols during tabletop exercises, assemblies, or intercom announcements, and conducting an assortment of emergency drills to help students and staff build muscle memory. In other words, each of these schools engaged with the topics of school safety and emergency preparedness in enduring ways that were also innovative and flexible because they intended for their emergency management system to be as robust as possible. They have demonstrated this commitment to safety concurrently with limited staffing resources and countless competing demands—many of which, in addition to emergency preparedness, are relatively new expectations for educational settings that require a significant amount of school resources (e.g., student learning objectives, social and emotional and trauma-informed learning, individualized education plan compliance). Given all of this, our appreciation for, and admiration of these 10 schools, and all schools throughout the country committed to the challenge of creating safe and secure environments, cannot be understated.

We would also like to acknowledge our two project consultants, Michael Dorn and Linda Kanan, for sharing their boundless wisdom and expertise in school violence prevention and emergency preparedness. The insights they brought to the project were invaluable and it was truly a pleasure working with them over the years.

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1. Study Overview

A series of horrific school shootings in the past two and a half decades have created unprecedented demands on American schools to prevent and prepare for violent incidents and other emergencies, including armed intruder and active shooter scenarios. In response to changes in state statutory and regulatory requirements around safety and crisis preparedness, new district mandates, or mounting pressure from their communities, schools across the nation have increasingly invested in security technologies, established threat assessment teams, implementing anonymous reporting tip lines, and intensified the frequency and nature of their lockdown and active shooter drills. More than ever before, they are also expected to have emergency operations plans (EOPs, also known as emergency response plans, crisis response plans, disaster plans, or school safety plans) (Centers for Disease Control and Prevention, 2016; National Center for Education Statistics, 2020) that document protocols for responding to a wide range of natural and human-caused emergency situations and describe staff and students roles and expectations. Despite the fact that school shootings and other large-scale emergencies are exceedingly rare and that, in many ways, schools have become safer in the last 25 years (Fox & Fridel, 2018; Modzeleski et al., 2008; Muschert, 2007; National Center for Education Statistics (NCES), 2019a, 2019b), these incidents can have devastating impacts on schools and communities at large (Palinkas et al., 2004). Thus, it is imperative that schools engage in ongoing efforts to secure their campuses, identify warning signs, develop intervention strategies for threatening situations, and prepare students and staff for emergency response.

With funding from the National Institute of Justice under the 2017 Comprehensive School Safety Initiative (CSSI), RTI International aimed to contribute to the school safety and emergency preparedness research literature by focusing on the understudied area of school EOPs. Although some foundational work over the past several years has answered essential questions about the percentage of schools in the United States that have an EOP (Centers for Disease Control and Prevention, 2016; National Center for Education Statistics, 2020) and the extent to which they are required by state or district mandates to have such plans in place (Silvia et al., 2019; United States Government Accountability Office, 2016), several important questions remain. At the most basic level, researchers know little about what school EOPs look like; how they are developed, organized, and disseminated to staff; and how they are used to promote the safety of school communities. Because school EOPs contain critical information that could potentially be leveraged by someone planning an attack, schools typically do not share them with outside entities or make their plans public. Thus, researchers have had few opportunities to study school EOPs firsthand; examine the information they contain; identify best practices or gaps in EOP development, internal dissemination, and training; and create recommendations for improvements to better serve the overarching mission of school safety. Likewise, much remains to be known about how these plans are actually used to support emergency preparedness and,

critically, the extent to which staff and students understand their school's emergency procedures.

Recent analyses of school shootings and other emergency events has indicated that a school's response to dangerous threats and the actions of individual students and staff members can have a significant impact on the outcomes of the incident, including whether there are (and the number of) injuries and fatalities (Dorn et al., 2013; Dorn et al., 2014; MSDHS Public Safety Commission, 2019; Safe Havens International, 2012; Sandy Hook Advisory Commission, 2015; Trump, 2013; United States Attorney's Office District of Minnesota & Heffelfinger, 2006; United States Department of Education, 2007, 2012). Thus, the question of emergency operations comprehension is both timely and critically important and has the potential to uncover specific areas in which schools may need to enhance their training efforts to ensure students and staff have the information they need to respond to a crisis. Our project addressed several vital questions by studying EOPs in a purposive sample of 10 schools using a phased, mixed-methods study design. The four primary goals of the study were to:

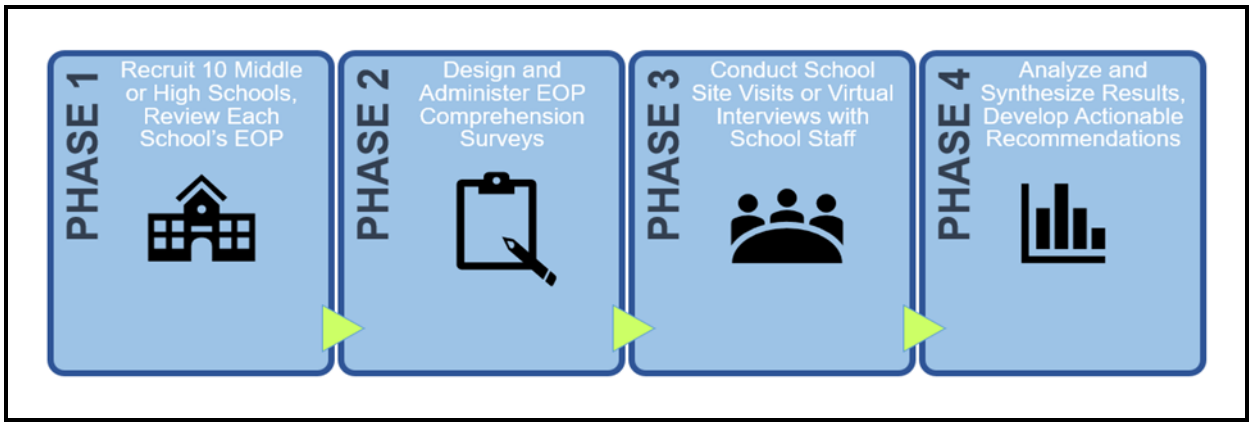
- gain access to EOPs for 10 schools and examine their appearance, layout, and content, and empirically document the comprehensiveness of EOP materials according to federal guidelines;
- assess access to emergency planning efforts and perceptions of emergency preparedness, including to what extent different types of staff members have read and received training on their school's EOP, serve on emergency planning or school crisis response teams, and believe that their school has prepared them for a violent event (e.g., an armed intruder incident);
- assess staff and student comprehension of emergency concepts and protocols and identify areas of high and low comprehension and respondent- and school-level correlates of comprehension; and
- understand from the perspectives of staff, students, district representatives, local law enforcement officials, and other key stakeholders how EOPs and school emergency preparedness more broadly could be improved and what are the most pervasive challenges and vulnerabilities in school emergency preparedness efforts.

Study Phases

The study was conducted in four phases (see ***Exhibit 1-1***). In Phase 1, we recruited 10 schools and gained privileged access to their EOPs. A comprehensive rubric was developed based largely on guidance put forth in 2013 by six federal agencies, including the United States Department of Education, Department of Health and Human Services, Department of Homeland Security, Department of Justice, Federal Bureau of Investigation, and the Federal Emergency Management Agency. Each EOP was systematically reviewed using this rubric; school-specific and aggregated analyses were conducted to identify common strengths and limitations of the plans. In Phase 2, leveraging insights gained from school-specific analyses of EOPs, we developed and administered comprehension surveys for staff and students to evaluate the extent to which each school

community was knowledgeable of the concepts, protocols, and other details described in their plans. Following survey data collection, we conducted extensive analyses to identify areas with high and low levels of comprehension and uncover statistical associations between comprehension and respondent characteristics (e.g., staff type, years employed at the school, perceptions of preparedness). This analysis was crucial for identifying areas of emergency preparedness in which specific types of staff and students or the entire school community may need additional support.

Exhibit 1-1. Study Phases



In Phase 3, we conducted site visits and group interviews with a subset of schools to hear directly from students and different types of staff about their perceptions of their school's EOP, their school's vulnerability to extreme violence, and how emergency planning and preparedness could be improved to better protect the safety of the entire school community. Finally, in Phase 4, we analyzed and synthesized the results from each data collection activity to draw meaningful conclusions about EOP development and emergency preparedness and develop actionable recommendations that can be used to enhance safety efforts in K–12 educational settings. Collectively, the data collection activities and our corresponding analyses produced a wealth of critical information about how these 10 American schools prepare for emergency situations, the nature and utility of school EOPs, and gaps in knowledge around emergency protocols and where additional supports may be needed to improve safety.

The Power of EOPs, the Importance of Comprehension, and the Logic of Our Study

Emergency preparedness is a considerable undertaking for any school in the 21st century. For any given emergency response, schools must proactively consider numerous details and possible scenarios to be prepared to mitigate and recover from the potentially harmful effects of a threatening event. What actions will the school take on an ongoing basis to prevent emergencies, what will it do to minimize the impacts of a threat once it has started, and how will it help students and staff recover from an emergency after it has occurred? Who has the authority to initiate and oversee emergency responses, and what are the roles and

responsibilities of students and staff in implementing emergency protocols? How will the school coordinate with local emergency responders? Which procedures will be used in response to specific threats, and how will they be implemented? How will students and staff be accounted for, and what procedures will be used to safely reunify students with their parents? What protocols will be put in place to assist students with special needs? These are but a few of the many questions schools must grapple with as they work to prepare for different situations.

Emergencies require immediate action from the school community and there is typically very little time to work out these details and develop survival strategies in the moment (United States Department of Education, 2007). Moreover, it can take several minutes for law enforcement to arrive on the scene after being notified of an emergency—which makes staff and students the true first responders, who must be prepared to immediately implement a coordinated and effective response. Thus, the EOP is a critical part of any school's emergency management system (U.S. Department of Education, 2013). Developing such a plan presents an opportunity for head administrators and emergency planning teams, ideally in collaboration with local partners (e.g., district officials, law enforcement, fire department, emergency management teams), to think through and document the essential details of their emergency management system, including planned responses to a variety of potential threats and hazards. Engaging in a comprehensive and collaborative process to develop an EOP can help planning teams identify gaps and inform areas that need additional consideration. The process of formalizing all of these details in a document that is organized, user-friendly, and clearly written can help to ensure that the school's emergency management system can be sustained even if there is turnover in school leadership or among other staff who were key players in developing and implementing the plan. The EOP also has potential as a training resource for new staff who may have little knowledge of their school's emergency management system when they first are employed, as well as for tenured staff who may need a refresher or update on existing or newly modified policies and procedures. If the school has effectively documented the many components necessary for a quality EOP, all staff should be able to review it and become familiar with up-to-date policies, procedures, and other details about how the school prevents, responds to, and recovers from a variety of threats and hazards.

Access to the EOP and expectations for knowing its material should never be limited to head administrators or others within the school who have the most decision-making power. Emergency situations, especially those involving armed intruders, can be highly unpredictable and there is no guarantee that administrators or those most knowledgeable of the school's emergency management system will be available to direct the rest of the school on how to respond (for an example, see (Dorn et al., 2013)). Theoretically, any staff person—or student, for that matter—could be in a position in which they have to rapidly make key decisions that could affect their or others' survival without head administrators, law enforcement officials, or other authority figures to tell them what to do. Ideally, every staff member should possess fundamental knowledge about their school's emergency management system. Furthermore, drills, exercises, and other trainings should align with the EOP and help students (who typically

do not have access to the EOP) and staff habitually put into practice the protocols described in the plan. Taken together, these efforts can help the school community develop muscle memory for responding to sudden crisis situations (Dorn et al., 2014). In addition, knowing what the school's plans are and that the school will implement a coordinated response as it has been practiced and discussed multiple times throughout each school year may help students and staff feel confident and in control even in highly stressful emergency situations. Having a regularly reviewed and practiced unified plan can also help prevent individuals from taking actions that might put themselves or others at risk or in other ways undermine the school's response.

The logic of our study, which reviewed EOPs for 10 schools and evaluated the extent to which nearly 2,000 students and staff members were knowledgeable of the concepts, protocols, and other details written into their school's plan, was as follows:

- A school's response to a crisis situation, including the rapid decisions made by staff and students, can have a significant effect on the outcome of the event, including whether or not people are injured or killed, the overall number of casualties, and extent of damage to the school (Safe Havens International, 2012).
- Documenting details of the school's emergency management system in an EOP is essential because it creates a structure than can be sustained even through staff turnover, and because it provides a channel through which staff have access to critical information both during emergencies and throughout the school year. Access to the EOP also means that staff do not have to rely completely on in-person trainings to develop knowledge.
- There is value in all staff having access to the EOP for the purpose of learning the school's emergency procedures and being knowledgeable of their school's emergency protocols and concepts. Emergencies are unpredictable and any one staff person could potentially be in a position where that knowledge will empower them to save lives. Likewise, knowledge of procedures could be especially vital in situations in which there is no time to reference the EOP.
- There is also value in students being knowledgeable of their school's emergency procedures. Although rare, there is always the possibility that students will be outside of direct adult supervision when an emergency occurs—which makes it vital that they have at least rudimentary knowledge of how to protect themselves. Likewise, rapid and coordinated responses may be likelier when students do not have to rely on the directives of teachers and other authority figures to enact basic protocols.

We recognize that understanding emergency operations concepts and procedures does not guarantee a student or staff member is better protected during an emergency situation. After all, there are few, if any, universally accepted standards in school emergency preparedness and schools and districts exercise a considerable amount of discretion when it comes to devising their emergency response strategies (Jonson et al., 2020; Safe Havens International, 2012). Moreover, it is never certain that a school's response will be effective during an unpredictable crisis situation. Even if a school has developed a robust emergency management system based

on best practices in the field and ensured that every staff person and student completely understood the procedures described in a clearly documented EOP, it is not certain that students and staff will remember or be capable of enacting those procedures during highly stressful, chaotic events. Nonetheless, developing sound emergency protocols, practicing core procedures, and devising strategies to ensure everyone knows what to do during different emergency situations remains one of the best lines of defense that schools have. Thus, despite different orientations toward emergency preparedness, we advocate for strong emergency operations comprehension among all students and staff for the purpose of facilitating a coordinated school response and helping reduce stress and anxiety that often arises when people feel uninformed and unprepared. When student and staff are knowledgeable of the same procedures, we believe they are empowered to work together as an interconnected unit.

Summary of Key Project Findings

- A few individuals were responsible for leading emergency planning activities for each school. These included assistant principals, school resource officers, safety officers from the district office, or a regular staff member (i.e., a teacher) acting as leaders of the emergency planning team. They developed EOPs to satisfy requirements in their state (e.g., statutes and regulations, mandates, or recommendations from state agencies, such as departments of emergency management or Homeland Security), align with templates or direction from their district, and sometimes also incorporated feedback from external community partners such as local law enforcement.
- The EOPs varied significantly in format, length, organization, presentation, and breadth and depth of topics covered. When assessed according to federal guidelines, most included sufficient levels of basic documentation (e.g., a cover page, introduction to the plan) and information related to concept of operations, roles and responsibilities, and core emergency procedures (e.g., lockdown, evacuation, shelter in place). Few of the plans strongly satisfied federal recommendations for including information on basic security practices, threat assessment protocols, or post-incident procedures (e.g., family reunification).
- Many of the EOPs could be improved by incorporating a hyperlinked table of contents, consolidating materials into one document, removing redundancies and conflicting guidance, adapting district language to school- and building level, using charts or diagrams to communicate complicated concepts or procedures, providing specialized protocols for staff or locations on campus, and conducting thorough reviews to ensure there is a logical flow and consistent and accurate use of terminology. Developing and documenting emergency scenarios (including responses for different circumstances) may enhance the value of EOPs and help staff better understand emergency procedures, while also boosting their confidence and sense of preparedness. Staff-specific quick-reference guides can then be developed from the larger EOP to ensure staff have access to a resource that can be quickly reviewed to find relevant information for their job.

- Access to and engagement with the school's emergency management system is critical for understanding emergency procedures and feeling safe at school. Staff who serve on an emergency planning or crisis response team are more likely to have read their school's EOP and to receive EOP training. In turn, staff who have read the EOP are more likely to believe their school has prepared them for a violent event and exhibit relatively high levels of EOP comprehension. Additionally, higher EOP comprehension among students was associated with higher perceptions of safety and membership to the school.
- Most staff members reported that they had read at least parts of their school's EOP and had also received training on the EOP. However, there was not always agreement or understanding about what materials constituted the EOP, where to find it, how it should be used, or even why it was useful. In some cases, the EOP was perceived as necessary for documenting the details of the emergency management system and as a resource that can be leveraged in high-stress emergencies, but not for training or preparing people to respond to emergencies throughout the school year (largely because staff do not have time to read EOPs). Rather, attending in-person trainings was often viewed as more realistic and effective than expecting staff to review the EOP on their own time. Moreover, the information contained within EOPs was not always consistent with the language or directives used in in-person trainings; thus, reviewing a school's EOP does not guarantee that a staff member will be up-to-date on the school's actual policies and procedures.
- Staff demonstrated strong comprehension of basic information from their EOP and lower comprehension of advanced information that applies only to certain staff or that goes beyond rudimentary actions for different emergency situations. Students exhibited much lower comprehension of emergency concepts and protocols than staff members. Results suggest that training and education activities may need to be modified or new ones added to accommodate different levels or modes of learning.
- Access to the school's emergency management system was not equally distributed across staff members. Teaching assistants, paraeducators, food service staff, and newly employed staff all showed signs of being less connected to emergency planning efforts at their school (e.g., serving on a planning team, reading the EOP or receiving EOP training, having knowledge of their school's emergency concepts and protocols). A subset of staff showed extreme disengagement with the system—exhibiting very low levels of understanding of EOP concepts and procedures and having no history of serving on safety teams, receiving EOP training, or reviewing the school's written protocols. However, many staff expressed a desire to be more integrated into the system, despite some logistical challenges of doing so. Creating an inclusive environment in which staff and students are recognized as vital parts of the school's emergency operations will help build investment in the entire process, leading to a more cohesive and coordinated system downstream.
- Despite the schools implementing numerous initiatives over the years to ensure students and staff were well positioned to respond to different emergency situations, and notwithstanding the fact that most of the staff felt adequately prepared to

respond to a violent event, there remains a need for more specialized training activities and resources. For example, many staff members and students had concerns about their lack of knowledge about how emergency responses would function under various circumstances and insinuated a need for more scenario-based education and training.

- Students and staff represent a wealth of information about gaps in safety or what works in emergency planning, and those insights should be leveraged to strengthen the school's emergency management system on an ongoing basis.

2. Methodology

School Recruitment

A recruitment strategy pursuing a purposive sample of 10 schools was initiated in early 2018. Although we recognized that studying EOPs in any educational setting would have value, our intention was to structure the recruitment process so that our final sample reflected different types of schools approaching emergency preparedness in possibly unique ways—with potentially varying implications. Thus, our recruitment strategy entailed enrolling 10 schools that collectively represented diversity across several broad characteristics. First, we pursued a sample of schools that would allow for participation from both middle (i.e., grades 6 through 8) and high school students (i.e., grades 9 through 12), but not elementary school students. The decision to exclude schools that only serve elementary school-aged children (i.e., grades K–5) was based on the reasoning that surveying and speaking directly with young children about emergency preparedness and violent situations would be inappropriate (i.e., potentially harmful) and also less informative than speaking with older students who are likely more aware of both the potential for violence and their school's emergency protocols.

Second, to ensure we were not studying the same types of schools (e.g., all small and rural schools), we pursued schools with different enrollment sizes and levels of urbanicity (e.g., town, suburban). Third, because there are varying requirements and norms for emergency planning and preparedness by state (Education Commission of the States, 2022; United States Government Accountability Office, 2016), we tried to ensure that we achieved some variation in the states in which the schools were located and that not all schools were located in a single region of the country. Fourth, we intended for at least half of the schools to have a reputation for having comprehensive EOPs in place. This criterion was chosen so that we could provide a "best-case" scenario regarding EOP comprehension among staff and students. Moreover, should we identify schools that exhibited high levels of EOP comprehension, it would afford an opportunity to learn from them regarding practices and strategies that facilitate mastery of emergency concepts and protocols. Fifth, we intended for some of the schools to have conducted a lockdown, lockout, or evacuation in the past few years in response to a real or perceived threat within or outside of the school, to understand how these types of incidents affect the school community; whether they influence planning, training, and staff comprehension of emergency concepts and procedures; and to identify lessons learned from the way the school and local law enforcement handled the incident.

Our recruitment strategy leveraged a prior study conducted by the same project team at RTI International, also funded by the National Institute of Justice. Under that project (NIJ Award Number 2016-CK-BX-0016) (see (Silvia et al., 2019)), safety and security directors and superintendents representing nearly 2,700 school districts were surveyed in 2017 to collect information about district emergency planning mandates and recommendations for schools. Districts were scored based on the extent to which they encouraged or required schools to

employ best practices in emergency planning and response as suggested by leading federal agencies (e.g., Department of Education, Federal Emergency Management Agency). For example, high-scoring districts might require schools to have an EOP and an emergency planning team, conduct a threat and hazard identification assessment to inform the incorporation of specific threat- and hazard-specific annexes in the plan, and have a system in place for regularly reviewing and updating their EOPs. All respondents were also asked whether there were schools in their district with model EOPs. Although an imperfect measure based on perception, it offered a mechanism for recruiting schools with strong EOPs and possibly high levels of EOP comprehension (based on an assumption that schools that had developed a high-quality EOP would also invest in processes to educate their students and staff on the details in that plan), and thus set the stage to learn about promising strategies within exemplary schools.

Hundreds of respondents from high-scoring districts who reported schools with model EOPs were contacted and asked to provide contact information for head administrators at those schools. Dozens of principals and other top school administrators from those schools were sent an introductory email with information about the study and asking whether their school would be interested in participating. The letter also explained that participating schools would be compensated with a $250 check and that individual staff members and students who participated in surveys and group interviews would also be compensated (i.e., a $250 gift card to Walmart or Amazon for a staff member who could act as a liaison between the school and the project team and coordinate the administering of surveys and the site visits; a $20 gift card for each staff member that completed the survey; a $30 gift card for each staff member that participated in an interview or group interview; and a $10 gift card for each student that participated in a group interview along with a $1 token incentive for students if the school chose to implement active parental consent for research activities).

When administrators expressed interest, we set up a screening call to collect background information on the school and ensure that their participation would contribute to a diverse final sample. This initial effort led to the successful recruitment of seven schools– all of whom had been identified as having a model EOP by a representative from their district, and three of which had also enacted an emergency protocol in response to real or perceived danger within the past 2 years (the other three schools had not experienced such an event). To recruit the final three schools, we emailed a recruitment letter to respondents representing districts that were not classified as high-scoring to ask for their help recruiting a school to participate in the study. We also sent recruitment letters to a random sample of 500 district representatives who did not respond to the district survey. These letters, which also requested assistance in recruiting schools for study participation, were sent via email in batches of approximately 100 and prioritized districts in which one or more schools had recently enacted an emergency protocol (identified through Internet searches) until we successfully recruited three additional schools. Two of these schools had recently enacted an emergency protocol in response to a threat.

The final sample consisted of 10 schools nested within eight school districts, nine school campuses, and nine separate EOPs. Two schools were located in the same district but on different campuses, each with their own EOP, while another two schools shared a campus and a common EOP. Enrolling two schools located on different campuses within one district offered an opportunity to study within-district variations in emergency planning processes and procedures, as well as differences in EOP comprehension and perceptions of school vulnerabilities. Likewise, we enrolled one middle school and one high school sharing a campus because it was an opportunity to learn about schools in which different sets of head administrators and emergency planning teams must navigate how to develop a common EOP and conduct drills and other training exercises while considering multiple student bodies with different developmental and social and emotional needs and two different sets of staff. Working with these two schools presented a chance to gain distinct but constructive insights relevant for many other schools throughout the country that exist under similar co-located circumstances.

Collectively, the final sample of schools are located in seven states: Washington, West Virginia, California, New York, Colorado, Ohio, and Georgia (see ***Exhibit 2-1***). Five schools serve only high school students (i.e., grades 9 to 12 or grades 10 to 12), four schools serve only middle school students (i.e., grades 6 to 8), and one school serves both elementary and middle school students (i.e., kindergarten to grade 8 and pre-kindergarten to grade 8). Our study focused only on middle school students and staff in the school that also served elementary students. According to the NCES, all of the schools are non-magnet, non-charter, regular public schools and are located in rural remote, rural fringe, distant town, distant rural, midsized suburban, or large suburban locales. Four of the schools enroll more than 1,000 students, three enroll between 500 and 1,000, two enroll between 150 and 500, and one enrolls fewer than 150 students. On average, the schools educate a student body that is 78% White (range=45% to 95%).

Exhibit 2-1. School Characteristics (N = 10)

School ID Number	State	Type of School	NCES Locale	Number of Students	Identified as a Having Model EOP	Enacted an Emergency Protocol Prior to Recruitment
1	WA	High school serving grades 10 to 12	Town distant	1,000–1,500	No	Yes
2	WV	Middle school serving grades 6 to 8	Rural fringe	250–500	Yes	Yes
3	CA	Elementary and middle school serving grades kindergarten through 8	Rural remote	< 250 total, 50 middle school students	No	No
4	NY	Middle school serving grades 6 to 8	Rural distant	500–1,000	Yes	No

(continued)

Exhibit 2-1. School Characteristics (N = 10) (continued)

School ID number	State	Type of School	NCES Locale	Number of Students	Identified as a Having Model EOP	Enacted an Emergency Protocol Prior to Recruitment
5	NY	High school serving grades 9 to 12	Rural distant	500–1,000	Yes	No
6	WA	Middle school serving grades 6 to 8	Suburb midsize	1,000–1,500	No	Yes
7	CO	High school serving grades 10 to 12	Suburb midsize	1,000–1,500	Yes	Yes
8	OH	Middle school serving grades 6 to 8	Town distant	250–500	Yes	No
9	OH	High school serving grades 9 to 12	Town distant	500–1,000	Yes	Yes
10	GA	High school serving grades 9 to 12	Suburb large	1,500–2,000	Yes	No

As noted, five of the schools had enacted an emergency protocol in the 2 years prior to recruitment. Three of these incidents involved student and staff evacuations from the school buildings and two involved full lockdowns. Incidents that led to evacuations included one instance in which a device resembling a bomb was found in a student's locker and two instances in which a threat to bomb or shoot up the school on that day was written on an interior wall. Incidents that led to schoolwide lockdowns included one instance in which a student brought a firearm to a neighboring school and another instance in which a school received notice that an armed and dangerous individual was in close proximity.

EOP Reviews

In early 2018, we established a secure file transfer protocol (FTP) so each school could provide the project team with all district- and school-level documents and supporting materials they considered to be a part of their EOP and that are disseminated to staff to educate them about the school's emergency management system and crisis situation protocols. Simultaneously, the project team developed a rubric that could be used to systematically review and provide feedback on each school's EOP, based largely on the extent to which they resembled or were consistent with guidelines for developing EOPs put forth in 2013 by the United States Department of Education (with collaboration from several other federal agencies) in *Guide for Developing High-Quality School Emergency Operations Plans* (hereafter referred to as the *Guide*). After early discussions with our project consultants, we decided to develop the rubric based on federal guidance because there are significant differences in how states approach school emergency preparedness (e.g., statutes, regulations, guidance or mandates from state school safety centers, departments of education, Homeland Security, emergency management). See (Education Commission of the States, 2022; United States Government Accountability Office,

2016). Relying on a comprehensive federal resource that was the final deliverable of a multi-federal agency collaboration allowed for the development of a standardized rubric that could be adapted and generalized to apply to all schools. The use of a single rubric also made it possible to systematically compare the EOPs and draw conclusions about the types of information that were typically included (or not) in the plans.

The project team conducted a comprehensive, line-by-line review of the *Guide* and extracted hundreds of instances in which the authors offered specific recommendations for how to develop an EOP and the types of information it should include. For example, according to the *Guide*, school EOPs should include a section that describes why an EOP is necessary, the threats and hazards that pose a risk to the school, and dependencies on external parties for critical resources (p. 24). A review of other resources for emergency planning disseminated by several state school safety centers and other agencies was also conducted to support federal recommendations or to provide supplementary details or clarifications when needed (see the list of resources used in ***Appendix A***). A preliminary draft rubric was developed and circulated to project consultants Michael Dorn of Safe Havens International and Dr. Linda Kanan to solicit their expert feedback on its comprehensiveness (i.e., did any additional components or sections need to be added) and its accuracy and usability (i.e., should any components or sections be removed because it is unlikely or unnecessary for this type of information to be included in a school EOP).

The project team engaged in an iterative process to refine and finalize the rubric, which included more than 300 individual components (i.e., 85 core components, 217 corresponding subcomponents) organized into 12 sections (e.g., roles and responsibilities, core emergency protocols, communications). Given the controversy around the "run, hide, fight" approach in schools (Safe Havens International, 2012) and, more broadly, significant variation in school responses to active shooter scenarios (e.g., "traditional" lockdown; options-based lockdown; run, hide, fight approach), we excluded from the rubric all components related to recommendations for run, hide, fight (p. 64–66). A condensed rubric (with a subset of the items from the full rubric) was later developed to streamline reporting by focusing more narrowly on the sections most critical to a school EOP, including threat- and hazard-specific annexes that represent violent events or situations that have a potential to be violent or malicious (e.g., fire/arson, armed intruder, suspicious packages, bomb threats). The condensed rubric (see ***Appendix B***) included 80 components nested within nine discrete sections (see ***Exhibit 2-2***).

A lead analyst with extensive experience in school safety research, qualitative coding, and document reviews conducted primary reviews of each EOP. The analyst reviewed all documents as one "EOP." For each school, core components were marked as *not satisfied* and assigned a score of zero when there was no evidence the EOP contained the recommended information; when the EOP contained information that partially or completely aligned with federal guidelines, they were marked as *partially satisfied* or *satisfied* and assigned a score of 1. Components were marked as *partially satisfied* or *satisfied* regardless of their locations within the EOP. For example, basic security components need not be in a specific section entitled "Basic Security" to

receive points. Following the primary review, the study's Principal Investigator conducted a secondary evaluation of each EOP to verify the results from the primary review (i.e., rechecked all materials to find evidence to support a particular component when the primary reviewer had marked it as "not satisfied" and reviewed relevant EOP sections to confirm evidence to support a particular component when the primary reviewer had marked it as "partially satisfied" or "satisfied"). Final scores for all components were then summed for each section and for the entire rubric, divided by the total number of points possible, and multiplied by 100 to provide each school with section-specific and overall percentages of the rubric that was satisfied. Each school received a comprehensive EOP review report that displayed how they scored for each individual component, section, and overall, with written explanations for scores assigned to each section. Results and recommendations were discussed in detail during a virtual "reporting back" session led by the Principal Investigator and attended by top administrators and other staff responsible for emergency planning at the school (principals, assistant principals, emergency planning team leaders, school resource officers, district safety officers).

Exhibit 2-2. EOP Rubric Sections and Example Components

EOP Rubric Sections	Example of Components
Section 1: Basic Documentation	• cover page, record of changes and distribution, introduction to the plan • functional table of contents
Section 2: Concept of Operations	• overall picture of how the school will protect students, staff, and visitors • list of those with authority to activate the EOP
Section 3: Roles and Responsibilities	• overview of staff, families, and community partner roles and responsibilities during emergencies • description of the incident command system and emergency planning teams
Section 4: Basic Security	• description of visitor management and access control policies and procedures
Section 5: Threat Assessment	• description of the school's threat assessment process and standardized assessment forms
Section 6: Core Emergency Procedures	• description of evacuation, lockdown, and shelter-in-place procedures
Section 7: Threat- and Hazard-Specific Annexes	• description of the threat and hazard identification assessment used to inform which threat- and hazard-specific annexes are included in the plan • describes protocols for an "all-hazards" list of specific threats and hazards
Section 8: Post-Incident Procedures and Communications	• information on how the school will account for all persons during and after an emergency and implement family reunification procedures
Section 9: Supporting Information	• descriptions of evacuation sites and shelter-in-place zones • maps and floor and site plans • description of drills and other training exercises to be conducted each schoolyear

Staff Surveys

Upon completion of each school's EOP review, the project team immediately developed surveys for staff at each school to assess their knowledge of a wide range of emergency management concepts, protocols, and other details provided in their school's EOP. The original

study design involved developing surveys with the same questions for all staff members across all schools, with different answer choices that corresponded to specific EOP information for each school. However, substantial variation in the types of information covered in the EOPs and the use of different terminology made it impossible to develop a single set of questions that could apply to each school. Thus, we developed nine customized surveys, one for each EOP we reviewed. Whenever possible, we used similar questions across multiple schools while altering the set of answer options to accommodate the procedures documented in each school's plan. Additionally, when it was practical, we prioritized the development of questions that corresponded to areas that crosscut all EOPs (e.g., lockdown, evacuation, shelter in place).

We developed a rigorous process for ensuring that difficulty levels were relatively the same across school surveys so that any between-school variation in comprehension levels could not be attributed to differences in survey complexity. Specifically, after developing a draft survey for each school, each question was coded according to two criteria—the difficulty of the question based on content and the difficulty of the question based on format (i.e., true/false, multiple choice with a single correct answer, "select all that apply," and open-ended). Each question was assigned a score of "1" if it was designed to measure comprehension of a basic procedure or concept that applies to all staff in the school or that, theoretically, every staff member should know (e.g., basic actions to take during a lockdown, the location of the school's onsite evacuation site, the types of emergencies that might activate a schoolwide evacuation) and a "2" if the question was designed to measure comprehension of advanced or specialized knowledge that is most applicable to only a subset of staff or that goes beyond basic knowledge of a specific concept or procedure (e.g., the types of emergency protocols that require teachers to take student attendance, procedures that must be followed during a family reunification event by leaders of the reunification team, how to perform emergency procedures under atypical circumstances such as an afterschool event).

For question format, questions were assigned a score of "1" if they included a true/false question format, a "2" if they provided a multiple choice with a single answer format, a "3" if they provided a "select all that apply" format, and a "4" if they provided an open-ended format in which the respondent was asked to write in or type their response to the question. A total difficulty score was then calculated for each question by multiplying the question content difficulty score by the question format difficulty score, with plausible scores ranging from 1 (a question measuring basic knowledge using a true/false format) to 8 (an open-ended question measuring advanced or specialized knowledge). Total difficulty scores were then averaged for each school. On average, the initial round of reviews indicated that eight out of 10 schools had average difficulty scores, ranging between 3.18 and 3.24; the other two schools had scores between 3.5 and 4. We made survey adjustments for the latter two schools by changing a small subset of questions to include a less difficult format (e.g., changing "select all that apply" to multiple choice with a single correct answer) or by switching out questions that measured advanced knowledge with questions that measured basic knowledge. After these adjustments, all surveys had an average difficulty score that fell between 3.18 and 3.24.

The final staff surveys included approximately 37 EOP comprehension questions and 10 questions related to respondent background characteristics. Each survey began with two open-ended questions that asked staff to describe the courses of action that are specified in their school's EOP for a specific emergency procedure. One asked staff in all 10 schools to describe the actions that staff members should take according to their school's EOP if a lockdown is announced. It was possible to ask all staff this question in some form because each EOP described explicit, bulleted steps that should be taken under these circumstances (e.g., lock doors, turn off lights, cover windows, hide in a blind spot). Moreover, the EOPs typically included one standard set of instructions for all staff, rather than providing separate instructions for different types of staff (e.g., lockdown protocols for teachers versus lockdown protocols for food service staff) or based on different locations on campus when lockdown is initiated. The text of the questions was modified as necessary to reflect the precise terminology used in each school for an emergency lockdown (e.g., "level 3" lockdown). The other open-ended question typically related to courses of action for either evacuation or shelter in place, depending on which topic was more suitable for an open-ended question format (i.e., a school's EOP described one set of clear and explicit actions that need to be taken for that type of emergency situation). For four schools, the second open-ended question asked staff to describe actions that should be taken if an evacuation is announced; for the four other schools, it asked them to describe what actions should be taken if a shelter-in-place protocol is announced. The other two EOPs did not list explicit steps to take during an evacuation or shelter in place, therefore, staff in these schools were asked an additional question about their active shooter response protocols because their EOPs described details about this situation that were conducive to an open-ended question.

The remaining EOP comprehension questions (approximately 35 questions) also related to policies, protocols, or concepts associated with various emergency management topics (see *Exhibit 2-3* for sample questions), but they used true/false, multiple choice with a single correct answer, or "select all that apply" formats. The goal was to present questions that collectively represented the material covered in each school's EOP (prioritizing crosscutting areas), with the most appropriate answer response format based on the information in each school's EOP. For example, if a school's EOP described a threat as activating one specific response (e.g., active shooter threat will activate a schoolwide lockdown), the question was developed using a multiple choice with a single answer format. Alternatively, if it described multiple procedures that might be activated for a single threat (e.g., lockdown and evacuation are each possible responses to an active shooter scenario), the "select all that apply" format was used. True/false formats were most commonly used to measure comprehension of a specific school "fact" that was presented as a directive within an EOP (e.g., "Do not turn off the lights during a lockdown"). As noted, in a few instances, question formats were altered to ensure overall levels of survey difficulty were similar across schools. The resulting surveys included varying proportions of each question format across schools, which provided an opportunity to assess the extent to which comprehension depended on how questions were asked.

Exhibit 2-3. Sample Survey Questions

All staff were asked the same questions related to their demographics and experiences at the school. They indicated their gender (*female, male*), number of years employed at the school and

in their current position, and position (teacher, teaching assistant or paraeducator, food service staff, counselor, nurse, or psychologist, custodian, front office administrator, principal or assistant principal). Four questions captured their experiences with and perceptions of emergency planning and preparedness. First, they were asked whether they had read their school's EOP with three possible answer choices (1=*has not read the plan at all;* 2=*has read parts of the EOP*; 3=*has read the entire EOP*). Second, they were asked whether they had received training on their school's EOP, with four possible answer choices (1=*yes, in the past six months*; 2=*yes, more than 6 months ago but less than one year ago*; 3=*yes, one year or more ago;* and 4=*no* [i.e., staff member has not received training on the EOP]). Third, respondents indicated whether they serve on any of the school's emergency planning or crisis response teams listed in the school's EOP (0=*no;* 1=*yes for each team described in the EOP*). Finally, staff were asked whether they believed their school has prepared them for a violent event, such as an armed intruder situation, with four possible answer choices (1=*not at all;* 2=*somewhat*; 3=*mostly;* 4=*completely*).

Surveys were programmed and administered as web surveys to all staff in the schools (N=878). Links to the survey and three survey reminders over the course of 2 weeks were emailed to each staff member. School coordinators and top administrators at each school were asked to also send emails requesting all staff members' participation in the survey and post a flyer at the school promoting the survey. Participating staff completed an informed consent form prior to taking the survey, and we requested that they refrain from referencing any EOP materials during the survey administration. Some respondents in each school submitted a survey without answering any or most questions—these respondents were dropped from the sample, along with any staff who did not agree to the terms of informed consent. Ultimately, 585 staff members completed the survey, for a total response rate of 63% (see ***Exhibit 2-4***).

Exhibit 2-4. Administration of Staff Comprehension Survey

School ID	Number of		Initial Response Rate, %	Number of Completed Surveys	Final Response Rate, %
	Total Staff	Surveys Received			
1	178	147	83	117	66
2	50	50	100	36	72
3	20	16	80	13	65
4	70	69	99	48	69
5	82	70	85	57	70
6	71	53	75	38	54
7	131	84	64	66	50
8	72	62	86	46	64
9	88	81	92	58	66
10	160	153	96	106	66
Total	922	785	85	585	63

Measuring Staff Comprehension

The project team processed surveys and assigned a total comprehension grade for each respondent. Open-ended questions were worth a variable number of points, depending on the number of actions described for the procedure in the school's EOP. For example, if a plan described six actions that should be taken during a lockdown (i.e., "sweep" the hallways, lock the doors, cover the windows, turn off the lights, hide in a "blind spot" of the room, wait for the "all clear" signal), the question asking staff to type in these actions would be worth six possible points. Two members of the project team analyzed and scored each open-ended response and met weekly to discuss and resolve any discrepancies in how answers were coded and scored. On average, the interrater reliability for the coding of open-ended responses exceeded.90 in any given week. Our coding scheme did not require the respondent to write in verbatim text corresponding to the EOP. Rather, reviewers erred on the side of assigning points if a reasonable judgment could be made that they were describing the same actions as those in the EOP, even if they did not use the same language. For instance, a respondent who typed in "hit the lights" or "go dark" would be given a point for the action described in the plan as "turn off all lights."

Respondents who did not type in a response to open-ended questions were given a score of zero, as were respondents who provided generic answers that did not answer the question (typically about 15% of all responses for each open-ended question), such as "keep all kids safe" or "do what is necessary to save lives." However, we recognized that instances in which respondents did not provide any answer to an open-ended question did not necessarily mean they did not possess knowledge that would address the question (i.e., they may have opted to skip those questions because open-ended questions required more time and effort). Accordingly, we created a new variable that coded respondents as "nonrespondents" when they left open-ended answers blank so that we could conduct supplementary analysis and assess the effects of independent variables with those respondents removed from the sample.

Multiple choice, "select all that apply," and true/false questions, all worth one point, were coded as "correct" (and the respondent was given a point) if their answer was consistent with their school's EOP or "incorrect" (and the respondent was not given a point) if their answer was not consistent with the EOP. Next, a total comprehension grade was calculated for each respondent such that:

$$\text{Comprehension Grade (\%)} = (\text{Points Earned} / \text{Points Possible}) * 100$$

We also created a subgrade for each respondent based on the extent to which they answered 10 basic knowledge multiple-choice questions consistently with information from their school's EOP. Six of the school surveys had a total of 10 basic knowledge multiple-choice questions, so all of them were used to calculate the subgrade. The other four school surveys had more than 10 basic knowledge multiple-choice questions, so a random sample of 10 was taken to calculate subgrades for staff in those schools. The purpose of creating the subgrade was based on our recognition that the total comprehension grade measured knowledge of a vast

range of protocols, concepts, and details not necessarily applicable to all staff, and therefore underestimates the extent to which staff understand the most core, critical components of their school's EOP. Likewise, the subgrade represents a comprehension measure that is more standardized across schools by keeping consistent the number of items the grade is calculated from and the format and level of difficulty of those questions.

Sample Weights

Descriptive statistics are presented in the results section for staff characteristics and comprehension grades, along with results from a series of random intercepts models predicting outcomes by respondent- and school-level characteristics. Our preliminary analysis of this data highlighted notable differences in comprehension grades across different types of staff positions (e.g., teachers, teaching assistants). This phenomenon has implications for average comprehension grades by school, which we present later in this report. Specifically, if certain types of staff tend to exhibit higher comprehension than others, then comprehension grades averaged within schools can be affected by the distribution of different types of staff who completed the survey. In other words, if a higher proportion of teachers (who tend to exhibit higher comprehension) in one school completed the survey than in other schools, we might expect that school's average comprehension grade to be higher than the others.

Moreover, our preliminary descriptive analysis indicated that our staff sample overrepresented teachers, teaching assistants and paraeducators, front office administrators, and head administrators (i.e., principals, assistant principals) when the sample was compared to the entire roster of staff who were sent a survey invitation (i.e., our sample consisted of 67% teachers, compared to 54% teachers in the roster; 12% teaching assistants and paraeducators, compared to 10% in the roster; 9% front office administrators, compared to 5% in the roster; and 5% principals, compared to 3% in the roster). Conversely, the sample underrepresented counselors, nurses, and psychologists, food service, and custodial staff. Therefore, raking ratio estimation was used to create weights to adjust for these differences by assigning a weight value to each respondent so that marginal totals of the adjusted weights on relevant characteristics (i.e., staff position) mirrored the corresponding totals of the population. That is, responses and comprehension grades were "weighted down" for teachers, teaching assistants and paraeducators, front office administrators, and principals, and "weighted up" for other types of staff to minimize the effects of school-specific sampling bias and so that resulting estimates from each set of analysis better reflected the population of staff to whom we administered the survey. All descriptive and inferential analyses were conducted both with and without sample weights so that we could assess the impact of weighting on descriptive findings and statistical associations between staff and school characteristics on a variety of outcomes. Ultimately, the weights had a negligible impact on study results.

Student Surveys

Staff surveys were leveraged to develop unique student EOP comprehension surveys using a subset of staff comprehension questions for each school. The project team conducted a thorough review of each school's staff survey and coded each question as either "relates to information that is applicable to students or that students should know" (e.g., basic lockdown procedures, primary evacuation location, the purpose of shelter in place, the types of threats or hazards that would active an evacuation) or "relates to information that is only applicable to staff" (e.g., what procedures must be followed in order to release a child to a guardian during family reunification, the role of block captains during an evacuation, how to handle a bomb threat received via telephone).

Questions that were coded as being applicable to students were modified as necessary (i.e., made more accessible to younger audiences) and included in the student survey. Overall, these questions (approximately 25 per school) collectively assessed comprehension of evacuation, shelter in place, lockdown and other armed intruder protocols, as well as the types of threats and hazards that will activate specific emergency responses at their school (e.g., a bomb threat activates an evacuation). Each survey began with three open-ended questions assessing students' knowledge of actions to take during various emergency scenarios (i.e., lockdown/armed intruder response, evacuation, and/or shelter in place, depending on whether documentation of each area had information applicable to students that was amenable to an open-ended format). One of these open-ended questions asked students in all schools to describe the actions that must be taken if a lockdown is called. As with staff, the remaining comprehension questions used a variety of true/false, multiple choice with a single answer, and "select all that apply" formats.

All student surveys contained the same 15 close-ended questions related to demographics; academic backgrounds; and perceptions of safety, violence, and sense of membership at their school. Questions were designed to gather information about the student's gender (female, male); age (12, 13, 14, 15, 16, 17, 18 or older); grade (6th, 7th, 8th, 9th, 10th, 11th, 12th); ethnicity (Hispanic, non-Hispanic); race (American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White); language spoken at home (English, Spanish, other language); and academic grades received at school that year (mostly As, mostly Bs, mostly Cs, mostly Ds, mostly Fs). Three questions were designed to collect data on the extent to which certain statements about safety and violence were true (definitely true, sometimes true, hardly ever true, definitely not true): I feel safe at my school; Violence (e.g., fighting, bullying) is a problem at this school; A serious violent incident will probably happen at this school. Finally, five questions were designed to collect information on the extent to which certain statements about school membership were true (completely true, mostly true, sometimes true, hardly ever true, not at all true): I feel proud of belonging to my school; I am treated with as much respect as other students; I feel very different from most of the other

students at my school; the teachers at my school respect me; there's at least one teacher or other adult in this school I can talk to if I have a problem (Goodenow, 1993).

Student Sampling

Power analysis suggested that with a total sample size of 1,000 students, the margin of error would be no worse than 3% on key outcome variables and indicated that a sample of this size (approximately 100 randomly selected students per school) would provide sufficient statistic power for any outcome. Thus, we worked with a coordinator from each school to randomly select six to eight distinct classrooms (i.e., classrooms with unique compositions of students such homeroom) that would collectively provide at least a sample of 100 students per school to participate in the study. Schools were given the option of implementing passive (i.e., distributing a letter to the child's parents or legal guardians that explained the nature of the study and asking them to sign and return the form if they refused to allow their child to participate in the study) or active parental permission forms (i.e., asking parents to sign and return the form if they consented for their child to participate). All 10 schools chose to implement passive parental permission forms. In each school, we oversampled the number of classrooms to account for both student absences on the day parental forms were sent or on the day of the survey and also in case a sizable number of parents refused permission. The aforementioned strategy was used for all but one school, in which only 50 students were enrolled as middle school students (i.e., grades six to eight). For that school, we developed a strategy with the assistance of the school coordinator to survey all middle school students after obtaining passive parental consent. RTI field data collectors visited each school on a date prearranged with the principal and school coordinator to administer surveys in person to students using paper and pencil bubble sheets. After dropping a small handful of students from each school who had left most questions blank, 1,326 completed surveys were retained, for a total response rate of 79% (see ***Exhibit 2-5***).

Exhibit 2-5. Administration of Student Comprehension Survey

School ID	Number of		Initial Response Rate, %	Number of Completed Surveys	Final Response Rate, %
	Total Students	Surveys Received			
1	164	130	79	130	79
2	185	152	82	152	82
3	50	49	98	36	72
4	201	175	87	157	78
5	200	192	96	156	78
6	156	153	88	139	89
7	204	103	50	101	50
8	162	138	85	138	85
9	163	146	90	146	90
10	199	178	89	171	86
Total	1684	1416	84	1,326	79

Measuring Student Comprehension

The project team assigned a total comprehension grade for each student respondent using an identical strategy as was used with staff. Open-ended questions were scored with a variable number of points, depending on how many actions were described for various procedures in the school's EOP and were also relevant for students (e.g., locking doors, hiding out of sight). As before, our scoring scheme did not require respondents to write answers verbatim to what was written in the EOP—answers were assigned points as long as a reasonable judgment could be made by two project team reviewers that the student was describing information consistent with their school's EOP. Multiple choice, "select all that apply," and true/false questions, all worth 1 point, were coded as "correct" (and the student was given a point) if their answer was consistent with their school's EOP or "incorrect" (and the student was given zero points) if the answer was not aligned with the school's EOP. A total comprehension grade was calculated for each student identically to how it was calculated for staff: (Points Earned/Points Possible *100). A subgrade was also calculated for students based on the extent to which they answered seven basic knowledge multiple-choice questions correctly. Four of the student surveys had a total of seven basic knowledge multiple-choice questions and all of them were used to calculate the subgrade. The other six school surveys had more than seven basic knowledge multiple-choice questions; a random sample of seven was taken to calculate the subgrade.

To varying degree, there was missing data for several staff and student background characteristics due to respondents skipping or choosing not to provide responses to certain questions (e.g., race, ethnicity, number of years employed at the school). To account for this while retaining respondents in the sample, we conducted multiple imputations with a series of five imputations to predict the missing values. The procedure generated five possible substitutions for each missing value; we combined results into one unbiased parameter estimate. Imputed variables were used for all descriptive statistics and inferential analysis.

In-Person Site Visits and Group Interviews

Our original study design conceived of an in-person site visit with each school, the purpose of which was to learn about perceptions of each school's emergency planning and preparedness efforts and their vulnerability to extreme violence by conducting group interviews with students and single-respondent or group interviews with different types of district and school employees (e.g., school resource officers, head administrators, teachers, counselors, food service staff), as well as with local first responders who would respond to the school in the event of an emergency (e.g., local police or sheriff's department, fire department). If possible, we would also systematically observe evacuation or lockdown drills, relying on the Department of Education's Evacuation and Lockdown Drill Observation Checklists to structure the observations (Readiness and Emergency Management System, n.d.).

In 2019 and early 2020, two staff from RTI's project team conducted 1- to 2-day site visits with four of the 10 schools and scheduled visits with nearly all remaining schools for upcoming

months in 2020. Group interviews with students were organized according to grade level (e.g., one session with seventh graders and another with eighth graders within the same middle school). Other group interviews were organized by staff position (e.g., one session for teachers, one session for emergency planning staff). Semi-structured interview guides were developed and used for each type of session (one protocol for students, one for emergency planning staff, one for head administrators, one for teachers, one for counselors, psychologists, and nurses, one for food service and custodial staff, and one for local first responders). *Exhibit 2-6* displays examples of topics addressed with different types of respondents. A school coordinator helped schedule times and locations for 45- to 60-minute interview sessions. All interviews took place in private rooms provided by the school or a first responder agency. Interviews were audio recorded with respondents' permission; all recordings were transcribed and analyzed after the site visit.

Exhibit 2-6. Sample Topics Addressed with Respondents during Interviews

Respondent Type	Interview Topics
Students	• Perceptions of safety, security, and emergency planning at their school • Experiences being included in emergency planning efforts at schools • Which emergency preparedness activities are most valuable and what the school could do better prepare students and staff • Which protocols are the most challenging to perform • How prepared students and staff are to respond to emergencies
Teachers and Teaching Assistants, Food Service and Custodial Staff, Front Office Administrative Assistants and Support Staff	• Involvement in emergency planning at the school and perceptions of whether they should be more involved • Perceptions of the school's emergency planning and preparedness efforts and how prepared students and staff are to respond to a crisis • Access to the school EOP and recency of last review • Strengths and limitations of their school's EOP • Effectiveness of emergency response trainings and exercises • Challenges conducting drills, trainings, and other exercises • Whether student feedback is solicited to improve safety and readiness • Lessons learned from emergency situations in the past few years
Counselors, Psychologists, Nurses	• Experiences managing threats against the school reported by students, parents, or staff • Experiences managing and responding to concerns about the psychological impact of lockdown drills expressed by parents, students, or staff • Perceptions of the psychological impact of lockdowns and other emergency drills and training activities on students and staff
Principals	• How emergency planning and violence prevention in schools has changed • Pressure they feel to prepare the school for emergencies • Importance of student and staff comprehension of EOP protocols • Areas of emergency planning and preparedness the school does well and areas • Core challenges in school emergency preparedness • Resources needed to better prepare for emergency situations • Insights on results from EOP comprehension surveys

(continued)

Exhibit 2-6. Sample Topics Addressed with Respondents during Interviews (continued)

Respondent Type	Interview Topics
Emergency Planning Staff	• Role in developing the school's EOP • Process of how the EOP was developed, reviewed, and updated • How access to the plan is given to staff • Challenges developing an effective EOP • How staff are trained on the EOP itself and the protocols in the EOP • Lessons learned from emergencies at schools throughout the country
Local Emergency Responders	• Experiences assisting with schools on emergency preparedness and planning activities (e.g., drills, trainings, EOP development) • Perceptions of what the school is doing well to prepare for emergencies • Importance of staff and student protocol comprehension • Lessons learned working with schools on emergency planning and preparedness efforts

The onset of the COVID-19 pandemic in early 2020 disrupted our plans to travel to the remaining schools. Travel restrictions for the project team, in addition to the implementation of no-visitor policies in schools, made it impossible to complete the remaining visits that year. Moreover, like those throughout the country, the schools in our study were overwhelmed trying to meet basic educational needs for their students under unprecedented circumstances. Each had to rapidly shift to virtual learning platforms in the first several months of the pandemic and then navigate the arduous task of safely returning students to onsite learning toward the end of 2020. In 2021, RTI obtained official approval from NIJ to modify the study design and offer virtual interviews with school staff in lieu of an in-person site visit. Despite providing them this option, three schools were unable to accommodate either option, each one citing a lack of capacity due to the challenges presented by COVID-19 (e.g., no longer having a staff person who could serve as school coordinator and schedule and arrange interviews) and requested to terminate their study participation. One school was under especially extraordinary circumstances—local wildfires had caused extensive damage to homes and land in the area, displacing a substantial proportion of students and staff from their homes at the same time that a global public health crisis was upending nearly every other facet of their lives. Ultimately, one school agreed to accommodate virtual interviews with their staff over the course of a 2-week period. Virtual interviews were attended by two members of the RTI project team (one interviewer, one notetaker). All interviews were audio recorded and the notes from each session were transcribed. We also conducted two one-on-one interviews with a district safety officer and a school resource officer, both representing a middle school and a high school belonging to the same school district.

The project team ultimately conducted 40 separate interview sessions (32 in-person and eight virtual sessions). Overall, eight sessions were conducted with students, and the other 32 with district, school, or local first responder staff. Of the 40 interview sessions, 29 were group

sessions and 11 involved a single respondent. In total, we collected data from 162 respondents, including:

- 58 students (32 middle school students, 26 high school students),
- six district-level safety officers or safety and security directors,
- five school resource officers,
- six staff from local police departments,
- 12 staff from local fire departments, and
- 75 school staff (teachers and teaching assistants, counselors, psychologists, nurses, food service staff, custodians, librarians, principals and assistant principals, front office secretaries and administrative assistants, and athletic directors).

We also observed one evacuation drill and one lockdown drill.

Study Results, Implications of Findings, and Recommendations for Schools

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RTI INTERNATIONAL

3. Goal 1

Gain access to EOPs for 10 schools and examine their appearance, layout, and content, and empirically document the comprehensiveness of those EOP materials.

In early 2018, each participating school submitted via a secure FTP server all documents that head administrators and the emergency planning team considered to be a part of the school's EOP and that are disseminated to staff as part of a larger emergency management system. We received a variety of EOPs based on the types, number, and size of documents submitted (see ***Exhibit 3-1***). Each plan consisted of one or more portable document formats (PDFs), and three plans also included Microsoft Word documents or PowerPoint slides. In all but one case, the plans included multiple separate documents (ranging from two to 12 in number). Eight of nine EOPs included separate district-level and school-specific materials. One EOP was written at the school level but consistently integrated district-level guidance throughout the plan, rather than keeping that information in a separate document. The plans varied significantly in terms of the breadth and depth of topics covered. At the low end, one plan included 12 separate documents and 33 pages of material, consisting of 5,223 words. Alternatively, at the high end, one plan written in a single document included more than 400 pages of material consisting of nearly 100,000 words. The other plans ranged from 59 to 256 pages, and between approximately 23,000 and 68,000 words.

Exhibit 3-1. EOP Characteristics

School ID	Types of Documents	Number of					Percentage of Plan that is School Specific, %
		Documents			Total		
		Combined	District	School	Pages	Word Count	
1	PDF	2	1	1	256	56,984	8
2	PDF	9	8	1	141	67,896	6
3	PDF	2	1	1	124	28,860	95
4	PDF	4	3	1	74	22,849	65
5	PDF	4	3	1	59	22,501	62
6	PDF, Word, PowerPoint	12	8	4	33	5223	53
7	PDF, Word, PowerPoint	12	9	3	147	32,364	2
8, 9	PDF	1	0	1	407	98,599	100
10	PDF, Word	2	1	1	94	30,580	46

EOPs varied substantially on the extent to which the material represented district-wide guidance or school-specific information. The last column of ***Exhibit 3-1*** is a percentage calculated by dividing the number of words in school-specific materials by the number of words in the entire plan (i.e., number of words in both district- and school-specific documents). As shown, three EOPs contained less than 10% school-specific information and more than 90% district-wide

guidance. Two plans contained approximately equal percentages of district-wide guidance and school-specific information (Schools 6 and 10). Two EOPs included approximately two-thirds school-specific information to one-third district-level guidance (Schools 4 and 5), and two EOPs contained more than 90% school-specific information (Schools 3, 8, 9). Taken together, the nine EOPs we received can be classified into a five-category taxonomy based on the aforementioned characteristics:

- few documents (i.e., 2) with a relatively large amount of information (approximately 57,000 words), mostly consisting of district-level guidance (School 1)
- few documents (i.e., 1–4) with relatively moderate to large amounts of information (i.e., 23,000 to 99,000 words), mostly consisting of school-specific information (Schools 3, 4, 5, 8, 9)
- few documents (i.e., 2) with a relatively moderate amount of information (approximately 31,000 words), consisting of relatively equal parts district-level guidance and school-specific information (School 10)
- several documents (i.e., 9–12) with a relatively large amount of information (i.e., 32,000 to 68,000 words), mostly consisting of district-level guidance (Schools 2, 7)
- several documents (i.e., 12) with relatively little information (i.e., 5,223 words), consisting of equal parts district-level guidance and school-specific information (School 6)

Each EOP was reviewed by an experienced qualitative analyst and the Principal Investigator using an 80-component rubric derived from the Department of Education's *Guide for Developing High Quality EOPs.* ***Exhibit 3-2*** displays how many points each school received overall and for each section of the rubric, in addition to a percentage of total points possible (i.e., Points Assigned/Points Possible*100). The final column presents the average number of points received overall and for each section across schools.

On average, EOPs were assigned 39.6 points out of 80, indicating that they satisfied approximately half of the criteria from the 80-component rubric. The number of components satisfied ranged from 19 (24% of all possible points satisfied) to 55 (69% of all possible points satisfied). To draw conclusions about the most common deficiencies in the EOPs, percentages assigned to each school for each section were coded according to a five-category classification system: 1=*section was inadequately satisfied* (i.e., 0% to 20% of all components were satisfied); 2=*section was weakly satisfied* (i.e., 21% to 49% of all components were satisfied); 3=*section was moderately satisfied* (i.e., 50% to 60% of all components were satisfied); 4=*section was strongly satisfied* (i.e., 61% to 69% of all components were satisfied); and 5=*section was very strongly or completely satisfied* (i.e., 70% to 100% of all components were satisfied). Using this system, our recommendations for the EOPs can be summarized by assigning them into one of three groups: 1=*EOP needs significant development* (i.e., approximately half of all sections were inadequately satisfied and very few sections were strongly or very strongly satisfied; see scores for schools

Exhibit 3-2. Results of EOP Reviews

School ID	1	2	3	4	5	6	7	8, 9	10	Points Possible	Average
Total Points Assigned (Percentage Satisfied)	53 (66%)	35 (44%)	35 (44%)	40 (50%)	44 (55%)	19 (24%)	39 (49%)	55 (69%)	36 (45%)	80	39.6 (49%)
(1) Basic Documentation	6 (86%)	0 (0%)	5 (71%)	6 (86%)	6 (86%)	0 (0%)	4 (57%)	7 (100%)	5 (71%)	7	4.3 (62%)
(2) Concept of Operations	6 (75%)	2 (25%)	2 (25%)	5 (63%)	5 (63%)	2 (25%)	3 (38%)	6 (75%)	1 (13%)	8	3.6 (44%)
(3) Roles and Responsibilities	4 (67%)	3 (50%)	3 (50%)	5 (83%)	5 (83%)	1 (17%)	2 (33%)	4 (67%)	3 (50%)	6	3.3 (56%)
(4) Basic Security	0 (0%)	3 (43%)	3 (43%)	2 (29%)	2 (29%)	1 (14%)	4 (57%)	5 (71%)	5 (71%)	7	2.8 (40%)
(5) Threat Assessment	1 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	2 (100%)	0 (0%)	2	0.4 (22%)
(6) Core Emergency Procedures	12 (86%)	8 (57%)	9 (64%)	9 (64%)	9 (64%)	7 (50%)	5 (36%)	7 (50%)	7 (50%)	14	8.1 (58%)
(7) Threat- and Hazard-Specific Annexes	14 (61%)	14 (61%)	9 (39%)	3 (13%)	6 (26%)	3 (13%)	16 (70%)	16 (70%)	13 (57%)	23	10.4 (45%)
(8) Post-Incident Procedures and Communications	3 (50%)	2 (33%)	1 (17%)	4 (67%)	5 (83%)	0 (0%)	1 (17%)	4 (67%)	1 (17%)	6	2.3 (39%)
(9) Supporting Information	7 (100%)	3 (43%)	3 (43%)	6 (86%)	6 (86%)	4 (57%)	4 (57%)	4 (57%)	1 (14%)	7	4.2 (60%)

6 and 10); 2=*EOP needs intermediate development* (i.e., the majority of sections were moderately or weakly satisfied, few sections were strongly/very strongly or inadequately satisfied; see scores for schools 2, 3, 7); and 3=*EOP needs minor development* (i.e., the majority of sections were strongly or very strongly satisfied, few sections were moderately, weakly, or insufficiently satisfied; see scores for Schools 1, 4, 5, 8, 9). Taken together, based on the results of the assessment, we recommended minor development for four EOPs (44%), intermediate development for three EOPs (33%), and significant development for two EOPs (22%).

Examining scores within each section across the schools indicates that the EOPs are most likely to have satisfied all components of Section 1: Basic Documentation (i.e., six of the EOPs strongly or very strongly satisfied all of the components of Section 1). Most EOPs included a cover page with a title, date, and name of the school relevant to the plan; an introduction to the plan; a functional table of contents, and page numbers on each page of the plan, but were less likely to include promulgation signatures or records of changes and distribution (see ***Appendix C*** for a breakdown of scores by component within each section). About half the EOPs strongly or very strongly satisfied all components of Section 2: Concept of Operations; Section 3: Roles and Responsibilities; Section 6: Core Emergency Procedures; and Section 7: Threat- and Hazard-Specific Annexes. Within Section 2: Concept of Operations, most EOPs provided an overall picture of how the school would protect students, staff, and visitors and listed individuals with authority to activate the plan, but were highly unlikely to describe other local agencies that support the school's EOP. Most EOPs contained information in Section 3 that was dedicated to describing direction, control, and coordination efforts and provided details around how their school emergency planning or crisis response team developed the EOP, but were less likely to describe the relationship between the school and the district or other local emergency management systems or document representation from local emergency management teams on the school's emergency planning or crisis response teams.

Within Section 6: Core Emergency Procedures, all EOPs included dedicated sections for evacuation, lockdown, and shelter-in-place protocols, often with critical information about how to safely move students (including students with disabilities) to designated assembly areas, what actions to take if a dangerous threat materializes inside the school, and when and how to use different lockdown variations (e.g., lockout). However, the EOPs were highly unlikely to provide information about how students should evacuate when they are not with a teacher or other staff member; describe procedures for reverse evacuation (i.e., when students and staff must rapidly and safely move inside the school because it is too dangerous to remain outside); describe how staff members should lock the school's exterior and interior doors; list supplies and resources needed to seal rooms and provide for basic needs of students and staff during a shelter in place; or highlight particular locations within the school that impact basic lockdown actions (e.g., a room with many windows or doors that do not lock).

Within Section 7: Threat- and Hazard-Specific Annexes, almost all EOPs included an annex for bomb threats; active shooter or armed intruder; and self-injury or suicide threat or attempt.

Many EOPs included annexes for explosions, schoolbus accidents, kidnapped or missing person, hostage scenarios, suspicious packages, and assaults or fights. A minority of EOPs included annexes for incidents involving weapon possession, civil unrest, child abuse, sexual assault, medical emergencies, cyberattacks, or stabbing or gunshot wounds (possibly because their threat and hazard identification assessment determined these annexes were not needed, or because the protocols corresponding to these threats and hazards were already covered under an existing annex). Fewer than half of EOPs included information on whether and how a systematic threat and hazard identification assessment had been conducted to determine which threat- and hazard-specific annexes should be included in the plan.

Very few EOPs strongly or very strongly satisfied all of the components of Section 4: Basic Security; Section 5: Threat Assessment; Section 8: Post-Incident Procedures and Communications; or Section 9: Supporting Information. For example, for Section 4: Basic Security, although we found no evidence that most schools posted building plans or emergency plans and procedures online in an unsecure web-accessible manner and most EOPs provided details about visitor sign-in procedures, few EOPs had a dedicated section for security practices at the school. Additionally, few contained any information about their school's access control policy other than basic visitor sign-in procedures or described basic strategies used to ensure the building is physically secure or keep prohibited items out of the school. For Section 5: Threat Assessment, just three EOPs provided any information about threat assessment procedures at the school, and only one provided information about a standardized threat assessment form that staff at the school uses to respond to threats posed by students.

For Section 8: Post-Incident Procedures and Communications, nearly all EOPs described a National Incident Management System (NIMS) protocol and an Incident Command System (ICS), and most provided information about how students would be reunited with family members after an emergency. However, few described a formal accounting for all persons procedure that would be used during or after emergency situations or contained a dedicated section that described functional protocols for how the school would recover from an emergency (academic, physical, fiscal, psychological, and emotional recovery). They were also unlikely to have a section that identified information to facilitate the successful implementation of activities before, during, and after an emergency, such as law enforcement alerts or weather reports (e.g., Information, Collection, Analysis, and Dissemination).

For Section 9: Supporting Information, most EOPs included maps and floor and site plans and also provided information about school or classroom "go kits" that contain essential pre-packed survival supplies that can be used inside or outside of the school as necessary during or following an emergency. Most EOPs also described the frequency with which various drills and exercise would be conducted at the school, guidelines for conducting drills and exercises, and described or listed on- and offsite evacuation locations and shelter-in-place zones. However, few plans had a dedicated section for emergency training (e.g., Training, Exercises, and Education section). Moreover, only three EOPs provided information about emergency protocols that were

customized at the building level (beyond listing evacuation locations and shelter-in-place zones); for example, information that referred to specific evacuation routes only relevant to that school or location, classrooms or other rooms on campus that do not have functioning locks and must be barricaded, or the location of ventilation systems that need to be shut off during a shelter in place for a threat posed by a biological or chemical agent outside the school.

Qualitative Observations of EOPs

Our reviews of nine school EOPs showed that there is no one way to devise an informative EOP. Although they each differed significantly from one another, each one effectively communicated critical information about how the school prevents, protects against, responds to, and recovers from emergency situations. For example, each plan included information on core emergency protocols for evacuation, lockdown, and shelter in place and described the types of threats and hazards that activate specific protocols. Each plan had adopted an "all-hazards approach" and addressed a wide range of potential threats and hazards (e.g., armed intruder, bomb threat, fire, hostage scenarios, suspicious packages). Quite often, the EOPs documented the names and contact information for key individuals responsible for leading or assisting with the execution of specific protocols. In almost all cases, the plans included concepts and procedures written in clear, succinct language that could be easily understood by anyone, including new staff and those without an emergency management background.

Nonetheless, organization, consistency, and comprehensiveness were common issues identified throughout the reviews. Many of these shortcomings lend themselves to actionable, low-burden recommendations that schools can use to improve their plans, and in many instances, relatively minor adjustments that would significantly enhance the usefulness of the EOPs. For instance, including a thoughtful introduction that provides context on the purpose of the entire plan and individual sections (e.g., what it is and when and how it should be used) would make EOPs more user-friendly. Likewise, some of the plans were difficult to navigate because they contained so much material. Implementing a hyperlinked (i.e., "clickable") table of contents will allow users to quickly find and review information most relevant to them and their position at the school. Several plans consisted of multiple, separate documents that sometimes contained slightly different or even contradictory information about the same protocol. Not only does this format make it more challenging for the user to locate specific pieces of information but it also creates a risk of presenting inconsistent information that might confuse or misdirect staff on key protocols during an emergency (e.g., one document describing lockdown protocols directs staff to turn off the lights, another document in the same EOP package explicitly tells staff not to turn off the lights). It also runs the risk of specific documents being left out of the EOP package when it is shared internally with staff or externally (e.g., with local first responder agencies or emergency management teams), simply because there are more documents to keep track of and recognize as part of the larger plan.

To varying degrees, EOPs could in many cases also be enhanced by customizing district-level information to the school level. Often, the schools considered district-level documents as part of

their school EOP or included district-level guidance into their school EOP without adapting it to their campus. For instance, some school EOPs cataloged all schools in their district and the law enforcement agencies that would respond to each in an emergency, but customizing this information to the school level to list only the name and contact information of the responding law enforcement agency for that school would make it easier and quicker for a user to find that information. Similar issues arise when a plan includes generic district-level guidance on family reunification without school-specific information to explain where the family reunification sites are, which staff members are responsible for implementing reunification procedures, and how staff will ensure that students are released to a school-approved parent or legal guardian following an emergency. Customizing district-level information to the school will help reduce confusion around specific protocols (especially in instances in which district- and school-level information is not entirely consistent) and in the end may facilitate a more orderly emergency response.

Based on these observations, we recommend that schools create one customized, comprehensive plan that consolidates all material into one easy to navigate electronic document. This strategy will ensure that all critical information about the school's emergency management system is documented in a central location that can easily be stored and shared with internal and outside stakeholders as necessary. We recognize that the use of this approach, which was utilized in one of the EOPs we reviewed, can result in an EOP consisting of hundreds of pages. Because many school staff are extremely busy and stretched thin across multiple obligations, it is crucial that efforts are made to facilitate efficient communication of key concepts and protocols. As mentioned, a hyperlinked table of contents is essential to allow for quick navigation throughout the document. Many of the EOPs we reviewed also used effective strategies to bring attention to critical concepts and directives by bolding, underlining, or highlighting text or using graphics, pictures, charts, or diagrams to facilitate learning. After combining all materials into one central EOP, it is vital that the emergency planning team and top administrators conduct a thorough review of the document to ensure there is a logical flow of content, there is consistent use of terminology (e.g., a few EOPs interchanged the terms "shelter in place" and "lockdown"), that guidance on specific protocols is consistent throughout the document, and that a user can find all needed information on a topic in a single section rather than having to review multiple sections (which helps ensure the user does not miss critical information).

Regardless of strategy for responding to different emergencies (especially armed intruder situations), EOPs often included protocols that were most applicable to instructional staff (i.e., teachers and teaching assistants) and often assumed that these staff would always be in a classroom when an emergency protocol was initiated. For example, plans that endorsed a traditional lockdown approach usually did not cover how staff should respond to a lockdown announcement if they were in a hallway, the cafeteria, the media center, outside the school building, or other locations that might be difficult to secure or make it impossible to hide (e.g., a multipurpose room or gymnasium with multiple windows and access points). Likewise, with very

few exceptions, protocols were the same for instructional, food service, custodial, front office, and all other staff, even though an emergency might necessitate different actions and responsibilities based on where that staff member is located at the time of the emergency and whether they have students in their custody. In other words, protocols could be more comprehensive and useful if they were tailored to address specific staff positions and locations on campus. For some schools, it may be worthwhile to create a matrix for each procedure in which various staff positions are positioned on one axis (e.g., teacher, custodian) and their location on campus is on the other axis (e.g., classroom, cafeteria) and the cells are populated with specific instructions and responsibilities based on the overlap of those characteristics (see *Exhibit 3-3* for an example). This method may help communicate tailored instructions and roles and responsibilities to different staff. The practice of developing the matrix may also uncover gaps in plans and areas that warrant further consideration and development.

Exhibit 3-3. Sample Lockdown Response Matrix

Staff/Student Position	Location on Campus					
	Classroom	**Hallway**	**Cafeteria**	**Gymnasium**	**Outside**	**Front Office**
Teachers and Teaching Assistants						
Food Service Staff						
Counselors, Psychologists, and School Nurses						
Custodians						
Front Office Administrators						
Principal						
Assistant Principal						
Paraeducators						
Students						

We also observed several instances in which there was a lack of clarity around a shelter-in-place procedure or the use of shelter-in place terminology. A few EOPs used the terms “shelter in place” and “lockdown” interchangeably or described shelter in place as the appropriate

protocol corresponding to an armed intruder but elsewhere described lockdown as the appropriate procedure. This approach is potentially dangerous, given that shelter-in-place procedures for a severe weather event are very different from lockdown procedures (e.g., lockdown necessitates hiding out of plain sight whereas sheltering in place does not). It is imperative that EOP terminology is specific and intentional so that staff have a clear understanding of which procedures are necessary for different events (e.g., finding a hiding place during lockdown, but not during shelter in place).

Many of the EOPs we reviewed could be enhanced by documenting different types of shelter-in-place procedures based on whether the threat is severe weather (e.g., a tornado) or a biological or chemical agent released outside the school (e.g., a chemical spill). The protocols that should be followed are different depending on which kind of threat is posed, yet few EOPs effectively distinguished between these two types of situations by using distinct terminology and separate sets of protocols (e.g., Shelter in Place for Severe Weather, Shelter in Place for a Biological or Chemical Agent). For instance, a shelter in place for severe weather would typically warrant students and staff sheltering in a bathroom, hallway, or other location that is as far away from windows and doors as possible in curled, seated positions with their heads tucked to their chests and their arms positioned to defend from falling debris or objects. Alternatively, a shelter in place for a chemical spill would advise students and staff to take actions to ensure windows and doors leading to the outside are properly sealed and that ventilation systems are turned off to prevent contaminated outside air from breaching the school building. However, most EOPs listed only one set of instructions in their shelter-in-place section, typically aligned with the severe weather procedure (although some had a threat- and hazard-specific annex for a chemical or biological threat later in the EOP). To avoid confusion among students and staff, our recommendation is that schools do not use “shelter in place” interchangeably with “lockdown” but rather make clear distinctions between those two protocols. Moreover, they should clearly distinguish between the two types of shelter in place by using unique terminology and devising separate protocols for each (e.g., severe weather response or shelter in place for severe weather versus biological or chemical agent response or shelter in place for biological or chemical agent). Having clear, distinguishable terminology and different sets of protocols will help ensure that the school community knows what to do during different incidents and does not confuse protocols because of inconsistent or ineffective use of terminology or organization of protocols in the EOP.

Once all EOP materials have been customized to the school level and consolidated into a single, comprehensive document, schools may also consider creating customized, position-specific “mini EOPs” or quick-reference guides that are derived directly from the larger EOP (i.e., contain a subset of information that corresponds to what is documented in the larger plan and describes concepts and protocols relevant to different staff positions and various locations on campus, which may affect roles and responsibilities during particular situations). Many schools already have generic flipcharts or quick-reference guides that are kept in classrooms and other locations on campus to provide succinct reminders about what actions to take for various protocols or specific threats and hazards. In addition to these, staff-specific mini EOPs may help

fill in details that clarify how roles and responsibilities change depending on one's job and physical location in the school when an emergency occurs. Schools may also consider creating abbreviated student-focused EOPs that communicate need-to-know information and are available to students on a regular basis to use as a refresher or supplement to drills and other training exercises at the school.

Recommendations

Our analysis and synthesis of information from activities conducted to address Goal 1 lend themselves to several actionable recommendations for schools as they develop EOPs:

- Emergency planning teams should conduct a thorough review of all emergency operations materials provided by their school districts and identify which components are required and which components are not necessarily compulsory but are deemed important for inclusion in the school-level EOP. Collaborating with district safety officers, safety and security directors, and others knowledgeable on district-level emergency operations guidelines and mandates, the **planning team should engage in a process to apply district-level material and customize the plan to the school and building levels** by considering and documenting how school-specific conditions and characteristics impact and shape various school emergency responses and practices. This process should include adapting—but not copying—boilerplate district-level guidance into the EOP.
- **Planning teams should take a critical look at their existing EOP and determine whether important sections or details are missing from their plan**. Our reviews suggest that many EOPs could be enhanced by including sections that describe or expand upon concept of operations, special or unique circumstances around core emergency protocols, threat and hazard identification assessments, security practices to protect against violence on an ongoing basis, threat assessment processes, accounting for all persons protocols, and emergency recovery. Conducting a threat and hazard identification assessment and documenting the results in the EOP is critical for determining which threat- and hazard-specific annexes should be included in the plan.
- Likewise, planning teams should **ensure the EOP appropriately defines key terminology or concepts that are used throughout the document**. For instance, under lockdown protocols, some EOPs prescribed moving to a "safe area of the classroom" but did not define what a "safe area" is. In this case, the lockdown protocol could be enhanced by adding additional language to identify the safe area as a section of the room that is away from windows or doors and allows students and staff to hide out of the view from people looking in. Including a diagram of a sample classroom that highlights the safe area is another mechanism to promote quick comprehension of this critical step. Another example was found in EOPs that promoted an options-based active shooter response approach, suggesting that staff use discretion to determine whether evacuation or lockdown is the best approach, but without providing details that would help guide staff on what information should be used to

make that decision (e.g., the location of the intruder, sounds of gunfire, staff person's location on campus, etc.). Additionally, EOPs typically did not describe where students and staff should evacuate to if evacuation was chosen as the appropriate response. Providing this guidance may help staff proactively think through various scenarios and be more prepared to make the safest decisions possible should these situations come to pass.

- Teams should work on an ongoing basis to document lessons learned, facilitators, and challenges of drills and other training exercises conducted throughout the school year (in addition to any real-life emergency situations) to establish whether additional information needs to be added to the EOP to account for atypical situations or circumstances (e.g., conducting a lockdown with special needs students; initiating a reverse evacuation during a sports event or other outdoor activity; announcing an emergency procedure during an afterschool event). Conducting regular tabletop exercises with a variety of staff members throughout the school year and creating opportunities to talk through various emergency scenarios in informal settings can also help planning teams identify gaps in the EOP and where additional development is warranted.
- Planning teams should ensure that written steps for various emergency protocols and threat- and hazard-specific annexes contain specific information and instructions for different types of staff. Most protocols we reviewed were written with classroom teachers as the intended audience and did not address what actions food service, custodial, front officer administrators, and other support staff should take during an emergency situation. Considering various circumstances and documenting specific details could be vital in instances in which a staff member's location or likelihood of having students in their presence might necessitate variations in emergency protocols. Including staff-specific protocols not only facilitates a coordinated emergency response plan, but it also ensures all staff are included in the process by formalizing expectations around their roles and responsibilities during emergencies. It also helps prevent situations in which staff do not learn key protocols because the language used in the EOP does not appear to apply to them or their job.
- To avoid confusion among students and staff, schools should not use shelter in place terminology interchangeably with lockdown terminology and instead make clear distinctions between those two protocols. Moreover, they should clearly distinguish between the two types of shelter in place by using unique terminology and devising separate protocols for each (e.g., severe weather response or shelter in place for severe weather versus biological or chemical agent response or shelter in place for biological or chemical agent). Having clear, distinguishable terminology and different sets of protocols will help ensure that school communities know what to do during different incidents and do not confuse protocols because of inconsistent or ineffective use of terminology or organization of protocols in the EOP.
- Schools should develop one customized, comprehensive plan that consolidates and reconciles all emergency operations and management material into one easy to navigate document, which will ensure that all critical information is housed in a

central location that can easily be stored and shared with internal and external stakeholders as necessary.

- EOPs should be developed using basic learning principles to efficiently and effectively communicate important information. This includes implementing a functional, clickable table of contents that enables users to quickly navigate through the document; including introductory language at the beginning of the EOP and of specific sections to explain what the plan/section is, why it is necessary, and how it should be used; using bolded, underlined, or highlighted text to bring awareness to critical concepts, procedures, and other details; and including charts, diagrams, infographics, and pictures throughout the document to help users organize and comprehend complex information. For example, emergency planning teams should consider developing a matrix that succinctly details roles and responsibilities based on one's job and location at the school when an emergency occurs. Once a comprehensive and consolidated EOP has been developed, it may also be worthwhile to develop mini EOPs or quick-reference guides that are derived explicitly from the larger EOP and that describe staff- and location-specific protocols for a variety of emergency situations. Because students do not have access to EOPs for security reasons, schools should also consider developing student-focused mini EOPs that include essential information about what is expected of students during different types of emergency scenarios.
- After consolidating all material into a single, comprehensive EOP, the planning team should conduct a rigorous review of the entire document to ensure there is a logical flow of content, a consistent use of terminology, no unnecessary duplication of sections or details, consistent guidance throughout the document, and that a user can find all the information they need about a given topic in a single section, rather than having to review multiple sections and patchwork bits of information together. Once any inconsistencies or unnecessary duplication are removed from the document, the EOP should be formatted into a PDF format to be disseminated to appropriate audiences, which will prevent internal and external stakeholders from making unapproved or accidental changes to the document. An editable, Word document version of the plan should be retained to allow for future modifications following regular reviews of the EOP by the emergency planning team, the school board, school district, state agencies, or other stakeholders.
- EOPs can look very different from one another, but still be effective and useful documents that help staff become knowledgeable of their school's emergency protocols and general orientation toward emergency preparedness. In other words, there is not one way to create an effective school EOP. Emergency planning teams should solicit feedback from staff members about their perceptions of the strengths and limitations of the plan so that the format, layout, and other details of the plan are responsive to those who will ultimately use the plan. For example, it may be worthwhile to develop and administer a survey regularly to staff to assess how many staff members had reviewed it and whether any areas were confusing or needed additional clarification. That feedback can then be used to make necessary revisions

to the plan so that it is as comprehensive and clearly and effectively communicated as possible. Soliciting feedback may help to promote buy-in and investment into the larger emergency planning process among staff members, which ultimately could increase their willingness to engage with the EOP regularly throughout the school year.

4. Goal 2

Assess access to emergency planning efforts and perceptions of emergency preparedness, including to what extent different types of staff members have read and received training on their school's EOP, serve on emergency planning or crisis response teams, and believe that their school has prepared them for a violent event.

Five hundred and eighty-five staff members completed surveys in late 2018 and early 2019. *Exhibit 4-1* displays weighted descriptive statistics for the sample. The majority of the sample is represented by White, non-Hispanic female teachers or other staff who have been employed at their school for an average of 9 years.

Exhibit 4-1. Descriptive Statistics for Staff Sample (N = 585)

Respondent Background Characteristics	%
Staff Position	
Teachers	54
Teaching assistants and paraeducators	10
Principals and assistant principals	3
Front office administrators	5
Counselors, psychologists, and school nurses	15
Food service staff	9
Custodial	4
Years Employed in Same Position	
Less than 1 year	3
1 to 5 years	43
6 to 10 years	28
11 to 20 years	20
21 or more years	6

Respondent Background Characteristics	%
Years Employed at This School	
Less than 1 year	2
1 to 5 years	39
6 to 10 years	27
11 to 20 years	23
21 or more years	9
Gender	
Female	72
Male	28
Race	
White	97
Non-White	3
Hispanic Ethnicity	
Non-Hispanic	99
Hispanic	1

All staff members (N=585) were asked the same set of questions related to their experiences with and perceptions of emergency planning and preparedness:

- the extent to which they had read their school's EOP (if at all);
- how recently, if at all, they had received training on their school's EOP;
- whether they serve on any of their school's emergency planning or crisis response teams; and
- their perceptions of whether their school has prepared them for a violent event, such as an armed intruder situation.

Each of these survey items was cleaned and processed and some were recoded to facilitate clearer interpretation of the findings. Items were analyzed as separate outcomes for the purpose of identifying respondent- and school-level correlates. In the following subsections, we present

descriptive statistics for each outcome and results from a series of random-intercept regression models that identify staff characteristics associated with each outcome, while accounting for respondent clustering within schools and within districts and simultaneously observing school-level effects (585 staff members nested within 10 schools and eight school districts).

Weighted descriptive statistics (see ***Exhibit 4-2***) indicate that 41% of staff reported they had read the entire EOP, 53% had read parts of the EOP, and 6% had never read any of the EOP. About 69% had been trained on their school's EOP in the past 6 months, whereas just 4% reported no training. More than one-third of staff served on at least one emergency planning or crisis response team. Sixty-seven percent of staff believed that their school had mostly or completely prepared them for a violent event. Descriptive statistics showed significant between-school differences on these measures. For example, the percentage of staff who had read the entire EOP ranged from 18% in School 3 to 69% in School 5, and the percentage who had never read any of the EOP ranged from 0% in School 8 to 29% in School 3.

Exhibit 4-2. Staff Experiences with and Perceptions of Emergency Planning and Preparedness at Their School (N = 585)

Have you read your school's emergency operations plan/school safety plan?		
	%	**Range across Schools**
No	5.6	0% to 28.6%
Yes, I've read parts of the plan	53.2	29.5% to 74.1%
Yes, I've read the entire plan	41.2	17.6% to 68.9%
Have you received training on your school's emergency operations plan/school safety plan (not including emergency drills conducted at the school)?		
	%	**Range across Schools**
No	4.1	0% to 24.1%
Yes, 1 year or more ago	9.6	< 1% to 37.2%
Yes, more than 6 months but less than 1 year ago	17.6	3.1% to 37.9%
Yes, in the past 6 months	68.7	11.1% to 91.1%
Are you on any of your school's teams related to safety planning or crisis response? *(select all that apply)*		
	%	**Range across Schools**
Number of teams staff belong to (recoded into 4 groups)		
Zero	62.5	18.0% to 90.7%
One	32.7	4.6% to 79.1%
Two	2.6	0% to 17.2%
Three or more	2.2	0% to 11.1%
	%	**Range across Schools**
Staff member belongs to at least one team	37.5	9.3% to 82.0%
Do you feel like your school has prepared you for a violent emergency at your school (e.g., an armed intruder)?		
	%	**Range across Schools**
Not at all	1.7	0% to 11.2%
Somewhat	31.7	6.6% to 82.4%
Mostly	48.2	6.5% to 57.4%
Completely	18.5	0% to 35.9%

Exhibit4-3 displays the results from random-intercept logistic regression models predicting the odds that staff have read parts of or the entire EOP (Model 1) and the odds that staff have read the entire EOP (Model 2). Models include both respondent- (i.e., staff position, years employed at the school, and membership on at least one emergency planning or crisis response team) and school-level predictors. School-level predictors include student enrollment number divided into three groups (0=120 to 551 students; 1=558 to 1000 students; 2=1071 to 1679 students); urbanicity (i.e., an indicator for rural schools compared to suburban and town schools); and school type (i.e., an indicator for high schools versus middle schools). Supplementary models (not tabled) replace the aforementioned school-level variables with three alternative school-level variables (i.e., they could not be entered at the same time due to variable collinearity): EOP word count (a proxy for size of the EOP, assigned into three groups: 1=5,000 to 29,000 words; 2=30,000 to 32,000 words; 3=57,000 to 99,000 words); an indicator representing schools identified as model schools; and an indicator representing schools that enacted an emergency protocol in the 2 years leading up to the study.

Exhibit 4-3. Random-Intercept Logistic Regression Models Predicting the Odds That Staff Have Read Parts or All of Their School's EOP (N = 585)

	Predicting the Odds That Staff Have Read			
	Model 1: Parts of or the entire EOP (versus never read the EOP)		Model 2: Entire EOP (versus read none or parts of the EOP)	
	Odds Ratio (SE)	95% Confidence Interval	Odds Ratio (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics				
Staff position				
Teachers (reference category)	—	—	—	—
Teaching assistants and paraeducators	0.34*(0.16)	[0.13, 0.87]	0.64 (0.20)	[0.35, 1.17]
Principals and assistant principals	1.45 (1.57)	[0.17, 12.15]	2.45* (1.07)	[1.03, 5.79]
Front office administrators	0.39 (0.21)	[0.13, 1.15]	1.10 (0.34)	[0.60, 2.01]
Counselors, psychologists, nurses	1.13 (1.22)	[0.14, 9.27]	0.51 (0.24)	[0.21, 1.26]
Food service staff	0.44 (0.48)	[0.05, 3.83]	0.86 (0.47)	[0.29, 2.53]
Custodians	0.21 (0.24)	[0.02, 2.03]	1.16 (1.01)	[0.21, 6.44]
Years employed at school (five categories)	1.23 (0.25)	[0.84, 1.82]	1.29** (0.12)	[1.08, 1.53]
Serves on at least one emergency planning or crisis response team (versus no membership)	0.81 (0.34)	[0.35, 1.86]	1.80* (0.41)	[1.14, 2.81]
School (Level 2) Characteristics				
Student enrollment number (three categories)	0.66 (0.30)	[0.27, 1.62]	0.79* (0.19)	[0.49, 1.27]
Rural schools (versus town and suburban schools)	0.47 (0.39)	[0.09, 2.35]	1.19 (0.60)	[0.44, 3.19]
High school (versus middle schools)	1.98 (1.29)	[0.55, 7.12]	1.72* (0.46)	[1.02, 2.91]

Model 1 shows that the odds that teaching assistants and paraeducators have read at least some of the EOP are 66% lower than the odds for teachers. Stated otherwise, the odds of never reading any of the EOP are 2.96 times greater for teaching assistants and paraeducators than for teachers. Supplementary models show a statistically significant positive effect of EOP word count (OR=1.80**, SE=0.44), which suggests that the odds that staff have read at least some of their EOP are higher at schools with longer plans. Indicators representing schools identified as model schools (versus those not identified as model schools) and schools that enacted an emergency lockdown in the years prior to the study (versus those that did not) did not show statistically significant effects on the odds of staff having read the EOP.

Model 2 shows that the odds that principals and assistant principals have read the entire EOP are 2.45 times higher than the odds for teachers. Staff who have been employed at their school for many years are more likely to have read the entire EOP than newer staff, and the odds that staff have read the entire EOP are 1.8 times higher among staff who serve on at least one emergency planning or crisis response team than staff who do not. High school staff are more likely to have read the entire plan than middle school staff, and staff from large schools are more likely to have read the entire EOP than staff from smaller schools. Supplementary models show the odds that staff have read the entire EOP are higher among staff employed at schools identified as model schools (OR=2.26**, SE=0.64), and lower among staff employed at schools with relatively long EOPs (OR=0.72*, SE=0.09).

Exhibit 4-4 shows the results from a random-intercept logistic regression model predicting the odds that staff have received EOP training in the past 6 months. This model indicates that the odds of teaching assistants and paraeducators receiving EOP training in the past 6 months are 62% lower than the odds for teachers, and the odds for food service staff are 92% lower. The odds of training in the past 6 months are 4.3 times greater for staff who serve on at least one emergency planning or crisis response team than the odds for staff who do not. The model also shows a positive effect of number of years employed at the school, indicating that staff with more years of experience working at the school are more likely to have received EOP training in the past six months than newer staff. Supplementary models that enter in dummy variables representing staff grouped based on the number of years worked at the school (e.g., 5 years or less, 6 to 10 years, 11 to 20 years, 21 or more years) show that the foremost difference is between staff who have worked at their school a very long time (i.e., 21 years or more) compared to new staff (i.e., worked at the school less than 6 years). The odds of staff who have worked at the school 21 years or more (N=55) are 2.7 times greater than the odds for staff who have worked at the school fewer than 6 years. Additional models explored do not show statistically significant effects of EOP size or being identified as a model school or a school that enacted an emergency protocol in the years leading up to the study.

Exhibit 4-4. Random-Intercept Logistic Regression Model Predicting the Odds That Staff Have Received EOP Training in the Past 6 Months (N = 585)

	Model 1: Predicting the Odds That Staff Have Received EOP Training in the Past 6 Months (versus longer than 6 months ago or never at all)	
	Odds Ratio (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics		
Staff Position		
Teachers (reference category)	—	—
Teaching assistants and paraeducators	0.38** (0.13)	[0.20, 0.73]
Principals and assistant principals	0.57 (0.29)	[0.21, 1.57]
Front office administrators	0.52 (0.19)	[0.25, 1.07]
Counselors, psychologists, nurses	0.60 (0.32)	[0.21, 1.69]
Food service staff	0.08** (0.06)	[0.02, 0.34]
Custodians	0.17 (0.16)	[0.03, 1.11]
Years employed at school (five categories)	1.27* (0.14)	[1.02, 1.59]
Serves on at least one emergency planning or crisis response team (versus no membership)	4.28*** (1.27)	[2.40, 7.65]
School (Level 2) Characteristics		
Student enrollment number (three categories)	1.21 (0.52)	[0.51, 2.83]
Rural schools (versus town and suburban schools)	1.04 (0.68)	[0.29, 3.76]
High school (versus middle schools)	1.64 (1.03)	[0.48, 5.59]

Exhibit 4-5 presents the results from a random-intercept linear regression model predicting the number of emergency planning or crisis response teams that staff belong to (zero, one, two, three or more) by staff position, number of years worked at the school, and school-level characteristics. On average, principals and assistant principals, front office administrators, and counselors, psychologists, and nurses serve on more teams than teachers (coefficients = 1.03***. 0.33***, and 0.36**, respectively). A supplementary model predicting the odds that staff serve on at least one team showed that the odds were 64% lower for teaching assistants and paraeducators than teachers, whereas the odds were at least two times greater for principals and assistant principals, front office administrators, counselors, nurses, and psychologists than for teachers. Additionally, staff who have been employed at the school the longest (21 or more years) had more than 4 times the odds of serving on at least one team than staff who have worked at the school for less than one year.

Exhibit 4-6 presents the results from a random-intercept logistic regression model predicting the odds that staff feel like their school has mostly or completely prepared them for a violent event. The odds are 70% smaller for food service staff than the odds for teachers. The odds are two times greater for staff who have received EOP training in the past 6 months (compared to staff who have not have training in the past 6 months), and 2.2 times greater for staff who have read their school's entire EOP (compared to those who have not). Staff from rural schools are less likely to feel that their school has mostly or completely prepared them than staff from suburban or town schools. Supplementary models indicate that the odds are nearly 6 times higher among staff who have read at least some of their school's EOP compared to those who

have not. Moreover, models that entered in additional school characteristics (i.e., indicators for model schools and schools that have enacted an emergency protocol in the years leading up the study, EOP assessment score, and number of days since the school's last lockdown drill at the time of the survey) showed that staff from schools with higher school-level EOP assessment scores (i.e., the percentage of all rubric components satisfied) were more likely to feel like their school had mostly or completely prepared them for a violent event (OR=1.03*, SE=.01).

Exhibit 4-5. Random-Intercept Linear Regression Model Predicting the Number of Emergency Planning or Crisis Response Teams to Which Staff Belong (N = 585)

	Model 1: Predicting the Number of Emergency Planning or Crisis Response Teams to Which Staff Belong (zero, one, two, three or more)	
	Coefficient (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics		
Staff position		
Teachers (reference category)	—	—
Teaching assistants and paraeducators	-0.15 (0.08)	[-0.30, 0.00]
Principals and assistant principals	1.03*** (0.11)	[0.81, 1.24]
Front office administrators	0.33*** (0.08)	[0.17, 0.50]
Counselors, psychologists, nurses	0.36** (0.12)	[0.13, 0.58]
Food service staff	-0.13 (0.15)	[-0.43, 0.16]
Custodians	0.09 (0.23)	[-0.37, 0.55]
Years employed at school (five categories)	0.04 (0.02)	[-0.01, 0.09]
School (Level 2) Characteristics		
Student enrollment number (three categories)	-0.10 (0.07)	[-0.24, 0.05]
Rural schools (versus town and suburban schools)	-0.16 (0.24)	[-0.63, 0.31]
High school (versus middle schools)	0.00 (0.08)	[-0.15, 0.15]

Exhibit 4-6. Random-Intercept Logistic Regression Model Predicting the Odds That Staff Feel Like Their School Has Mostly or Completely Prepared Them for a Violent Emergency such as an Armed Intruder (N = 585)

	Model 1: Predicting the Odds that Staff Feel Like Their School Has Mostly or Completely Prepared Them for a Violent Event (versus somewhat or not at all)	
	Odds Ratio (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics		
Staff position		
Teachers (reference category)	-	-
Teaching assistants and paraeducators	1.14 (0.35)	[0.62, 2.09]
Principals and assistant principals	1.53 (0.74)	[0.59, 3.96]
Front office administrators	1.09 (0.37)	[0.55, 2.14]
Counselors, psychologists, nurses	1.44 (0.69)	[0.57, 3.66]
Food service staff	0.30* (0.17)	[0.09, 0.92]
Custodians	0.51 (0.44)	[0.10, 2.75]

(continued)

Exhibit 4-6. Random-Intercept Logistic Regression Model Predicting the Odds That Staff Feel Like Their School Has Mostly or Completely Prepared Them for a Violent Emergency such as an Armed Intruder (N = 585) (continued)

	Model 1: Predicting the Odds that Staff Feel Like Their School Has Mostly or Completely Prepared Them for a Violent Event (versus somewhat or not at all)	
	Odds Ratio (SE)	95% Confidence Interval
Years employed at school (five categories)	1.12 (0.12)	[0.91, 1.38]
Serves on at least one emergency planning or crisis response team (versus no membership)	0.84 (0.21)	[0.51, 1.37]
Received EOP training in the past 6 months (versus did not)	2.02** (0.46)	[1.30, 3.15]
Has read the entire EOP (versus has not)	2.21*** (0.46)	[1.47, 3.33]
School (Level 2) Characteristics		
Student enrollment number (three categories)	0.87 (0.21)	[0.54, 1.39]
Rural schools (versus town and suburban schools)	0.25** (0.13)	[0.09, 0.69]
High school (versus middle schools)	0.65 (0.23)	[0.32, 1.30]

Summary of Findings

Almost all staff (94%) had read at least some of their school's EOP, and a sizable proportion (41%) had read the entire EOP. Although we identified variation across schools, at least 71% of staff in all schools had read at least some of the EOP. In seven schools, the percentage of staff who had read parts of or the entire EOP exceeded 90%. Likewise, the majority of staff reported that they had received EOP training in the past 6 months.

A minority of staff (6% of the sample, or 33 staff members) had never read any of their school's EOP. Moreover, nine staff members (1.5% of all staff) representing seven schools reported never having read the school's EOP, never having received EOP training, and not serving on any emergency planning or crisis response teams. This means that for all but three schools, there was at least one staff person employed at the school who, based on these three measures, had little or no exposure to their school's written emergency protocols. Moreover, these nine staff comprised people in food service, front office administrators, teachers and teaching assistants, and even top administrators (e.g., an assistant principal). Six staff members had been at the school fewer than 5 years, but two staff had been employed at their schools for at least 6 years, and one front office administrator had been employed at their school for 15 years.

Experiences with and perceptions of emergency preparedness vary substantially across different types of staff. Our results suggest that many types of staff, but especially teaching assistants and paraeducators, are at a disadvantage when it comes to emergency planning and preparedness at their schools. Teaching assistants and paraeducators are significantly less likely than other staff members to have read their school's EOP and, along with food service staff, are

less likely to have received recent EOP training. Conversely, principals and assistant principals, front office administrators, counselors, psychologists, and nurses are much more likely to serve on emergency planning or crisis response teams than teachers, teaching assistants and paraeducators, food service staff, and custodial staff. Although the majority overall feel that their school has mostly or completely prepared them for a violent event, food service staff are less likely than others to feel adequately prepared. Newer staff members may be less connected to emergency planning and preparedness efforts than staff who have employed at their school for many years. Receiving recent EOP training or serving on an emergency planning or crisis response team is much less likely among newer staff than those who have been employed at the school for many years.

Serving on one or more emergency planning or crisis response teams is associated with a higher likelihood of reading the entire EOP and receiving recent EOP training. The odds that staff have read the entire EOP are 1.8 times higher among staff who serve on at least one emergency planning or crisis response team than staff who do not, and the odds of recent training are 4 times larger among staff who serve on at least one team.

Staff who have read at least parts of their EOP and received EOP training are more likely to believe their school has adequately prepared them for a violent event. The odds of staff believing their school has mostly or completely prepared them for a violent event are two times greater for staff who have received EOP training in the past 6 months (compared to staff who have not), and 2.2 times greater for staff who have read their school's entire EOP (compared to those who have not).

Preliminary evidence suggests that the size and comprehensiveness of an EOP impacts the extent to which staff read the EOP and feel that their school has prepared them for a violent event. Staff at schools with longer EOPs are more likely to have read at least some of the EOP than staff at schools with shorter EOPs; however, they are less likely to have read the entire EOP. Staff employed at schools assigned with relatively high scores from our EOP assessment in Phase I were more likely to feel their school had mostly or completely prepared them for a violent event (compared to staff employed at schools with relatively low EOP assessment scores).

Recommendations

The following details recommendations for head administrators and emergency planning staff.

Make the school's EOP accessible to all staff and emphasize the importance of all staff being familiar with emergency procedures and concepts. Establish mechanisms to regularly assess staff members' access to the EOP and to what extent they are reviewing the entire document, or at least relevant sections on a regular basis. For example, this may include informal discussions during tabletop exercises that include representation from many different types of staff or quick surveys administered to all staff that ask them to indicate how they access the EOP, when the last time they reviewed it was, and which parts of the plan they reviewed. Although our results

highlighted only a very small minority of staff who have never read any of their school's EOP, it is plausible that any of these individuals could at some point be in a position of decision-making during an emergency situation. Thus, a lack of knowledge can be counterproductive no matter who the staff person is, and efforts must be made to ensure that all staff members have at least basic knowledge of emergency responses.

Discuss whether certain types of staff have less access to the school's emergency management system. The results of the staff survey show that teaching assistants, paraeducators, and food service staff are in many ways less connected to emergency planning efforts than other staff—especially head and front office administrators and health staff (e.g., counselors, psychologists). Explicit efforts must be made to communicate the importance of emergency preparedness for all types of staff, and to include and engage different types of staff in the school's emergency management system. For example, this should include inviting more staff members, especially underrepresented staff (e.g., teaching assistants, newer staff) to serve on planning and response teams. Serving on one of these teams (which only a minority of staff currently do) should expose the staff members to the basic protocols the school intends to use for various situations, and help them become familiar with terminology, understand unique circumstances that require variations of basic responses, and even create an opportunity to read the plan in real time. This participation may also build a sense of inclusiveness and overall investment in the school's larger mission of protecting the safety of students and staff and make staff members feel like valuable parts of that process. As our data show, it may also increase their confidence in the school's ability to handle an emergency situation. Efforts may also include establishing additional EOP training sessions on different days and timeslots so that all staff members have a chance to learn about how they should access the EOP, when and how it should be reviewed, and which parts are most relevant for their roles. If certain types of staff are less likely to be familiar with the plan, special efforts should be made to identify the barriers to those staff reviewing the EOP and devising actionable solutions to increase their engagement with the material.

Consider how the size and structure of an EOP will impact the extent to which staff will engage with the written plan. Our results show some evidence that staff are less likely to read the entire plan when it is especially lengthy. Thus, although documenting the school's system and approach comprehensively is critical, efforts may also need to be made to ensure staff have access to the parts of the plan that are most relevant to them at the school. This may include hosting special EOP training sessions customized for different staff positions or developing quick-reference guides tailored to staff positions and locations on campus.

5. Goal 3

Assess staff and student comprehension of concepts and protocols described in their school's EOP and identify areas of high and low comprehension and respondent- and school-level correlates of comprehension.

Staff Comprehension

All staff members were asked to complete a survey with approximately 37 questions designed to assess their understanding of numerous concepts, protocols, and other details from their school's EOP, and an additional 10 questions to gather background information about each respondent (e.g., number of years employed at the school). Responses were assigned points based on whether they were consistent with information provided in each school's EOP. A total comprehension grade and standardized subgrade were calculated and assigned to each respondent. Staff comprehension grades and background characteristics were then appended into a master file. In this section, we present descriptive statistics on comprehension grades in addition to results from random-intercept regression models, which predict comprehension grades by staff and school characteristics while accounting for staff clustering within schools and school districts.

Exhibit 5-1 displays staff comprehension grades overall and within specific areas of interest. On average, staff received about half (49.7%) of all possible points (i.e., their responses were consistent with the information in their school's EOP nearly 50% of the time). Average total comprehension grades varied significantly between schools, from 35% in School 3 to about 60% in Schools 6 and 7. Average grades were 50% or above in five schools, and below 50% in the other five. Subgrades were also calculated to show comprehension within four areas that all comprehension surveys had in common (i.e., they all contained multiple questions about lockdown, evacuation, and shelter in place) and that asked staff to match emergency protocols to specific threats and hazards as described in their school's EOP (see Exhibit 2-4). On average, staff showed the strongest comprehension for questions that asked them to match emergency protocols to specific threats or circumstances (e.g., "What emergency procedure is most likely to be used in response to an armed intruder?"). On average, 65% of staff answers to these questions were consistent with the information in their school's EOP, compared to 51% of lockdown questions, 41% of evacuation questions, and 36% of shelter in place questions. Although these results must be interpreted with caution as the number of items, question formats, and question content varied across surveys in these areas, they offer preliminary support that staff may need additional training in all areas of emergency preparedness and response, but especially for shelter in place and evacuation procedures.

Exhibit 5-1. Weighted Descriptive Statistics for Staff EOP Comprehension Grades (N = 585)

Comprehension Areas	Mean %	Standard Deviation	Average Mean Across Schools	Range Across Respondents
Total Comprehension Grade	49.68	14.35	34.74 to 60.00	0 to 95.24
Matching Protocols to Threats Subgrade	65.48	22.57	44.87 to 78.56	0 to 100.00
Lockdown Subgrade	51.47	20.80	28.45 to 63.40	0 to 100.00
Shelter-in-Place Subgrade	36.32	34.81	6.15 to 65.45	0 to 100.00
Evacuation Subgrade	41.06	25.43	27.37 to 77.44	0 to 100.00
Standardized Subgrade	70.64	19.37	44.88 to 87.69	0 to 100.00
Open-Ended Lockdown Grade	40.07	28.14	17.01 to 64.60	0 to 100.00

Staff showed much stronger comprehension of multiple-choice questions measuring basic knowledge of EOP protocols and concepts. On average, 71% of staff answers to those questions were consistent with the material from their school's EOP (see standardized subgrade in Exhibit 2-17). As with the overall comprehension grade, there were signicant differences on average scores across schools. Specifically, the average grade was 45% in School 3, compared to 88% in school 6.

Staff in each school were asked one open-ended question about the actions that staff should take if a lockdown is announced. Collectively, the EOPs listed a total of 17 distinct lockdown actions (an average of seven actions per school). *Exhibit 5-2* displays the number of schools that described each one as a critical action for staff to take during a lockdown. As shown, locking doors was a prescribed action for all 10 schools. The next most common actions were: hide (eight schools), wait for the "all clear" signal (seven), sweep the hallways when the lockdown is first announced and prior to locking the doors (six), turn off the lights (six), cover the windows (six), and stay silent (five). On average, staff described 40% of all the lockdown actions listed in their school's EOP. Importantly, most staff described locking doors (72% of all staff). Among staff to whom it applied, 53% correctly described hiding as a critical action (N=481), and 50% described turning off the lights (N=376). Fewer than 40% of staff identified covering the windows (34%, N=308), sweeping the halls (31%, N=358), remaining silent (37%, N=192), or waiting for the all clear signal (24%, N=430) in schools in which those actions were prescribed.

Exhibit 5-3 presents the results of a random-intercept linear regression model predicting staff total and standardized comprehension grades by several staff- and school-level characteristics. Model 1 shows that teaching assistants, paraeducators, and food service staff scored an average of 9 percentage points lower than teachers. Staff who serve on at least one emergency planning or crisis response team scored an average of 5 percentage points higher than staff who do not. Additionally, staff who have read at least some of their school's EOP scored an average of 3.5 percentage points higher than staff who have never read their plan (whereas staff who have read the entire plan scored an average of 7 percentage points higher than staff who have never read any of the EOP). Model 1 also identifies two school-level effects: staff employed at rural schools scored an average of 10 percentage points lower than staff from

town and suburban schools, and high school staff scored an average of 4 percentage points lower than middle school staff.

Exhibit 5-2. Number of Schools That Listed Each Lockdown Action in Their EOP

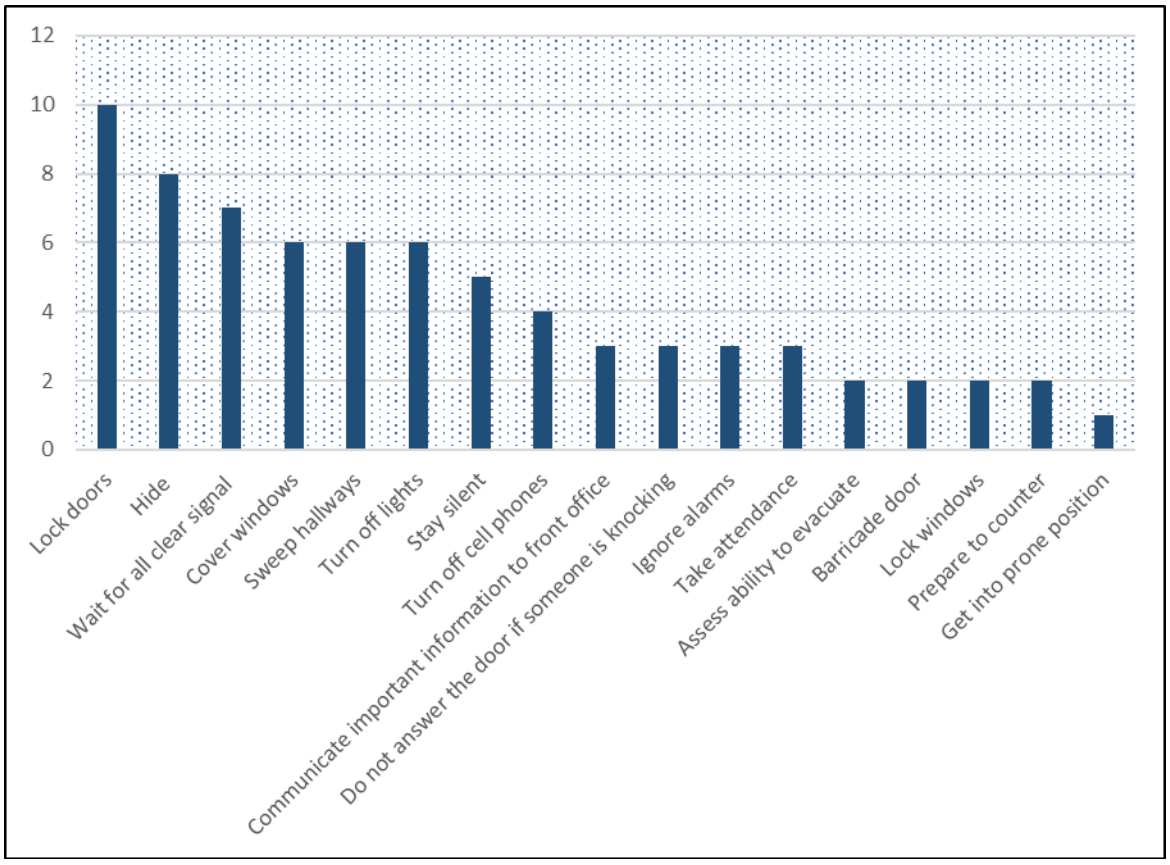

Exhibit 5-3. Random-Intercept Linear Regression Model Predicting Staff Comprehension Grades (N = 585)

	Model 1: Predicting Total Comprehension Grades		Model 2: Predicting Standardized Subgrades	
	Coefficient (SE)	95% Confidence Interval	Coefficient (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics				
Staff position				
Teachers (reference category)	—	—		
Teaching assistants and paraeducators	-9.35*** (1.70)	[-12.69, -6.02]	-7.58** (2.27)	[-12.03, -3.13]
Principals and assistant principals	-3.78 (2.47)	[-8.63, 1.06]	-2.52 (3.32)	[-9.03, 3.99]
Front office administrators	0.36 (1.84)	[-3.25, 3.97]	2.20 (2.48)	[-2.66, 7.06]
Counselors, psychologists, nurses	-3.06 (2.55)	[-8.05, 1.93]	-3.94 (3.42)	[-10.65, 2.77]
Food service staff	-9.36** (3.38)	[-15.98, -2.73]	8.06 (4.54)	[-0.84, 16.96]
Custodians	-3.75 (5.14)	[-13.82, 6.32]	5.28 (6.91)	[-8.27, 18.82]

(continued)

Exhibit 5-3. Random-Intercept Linear Regression Model Predicting Staff Comprehension Grades (N = 585) (continued)

	Model 1: Predicting Total Comprehension Grades		Model 2: Predicting Standardized Subgrades	
	Coefficient (SE)	95% Confidence Interval	Coefficient (SE)	95% Confidence Interval
Years employed at school (five categories)	0.40 (0.54)	[-0.66, 1.46]	0.29 (.72)	[-1.12, 1.69]
Serves on at least one emergency planning or crisis response team (versus no membership)	5.05*** (1.34)	[2.42, 7.68]	6.87*** (1.73)	[3.47, 10.26]
Recency of EOP training (four categories)	0.01 (0.74)	[-1.44, 1.46]	-0.87 (0.99)	[-2.80, 1.06]
Read the EOP (three categories)	3.47*** (0.97)	[1.57, 5.37]	3.24* (1.30)	[0.69, 5.79]
Prepared for violent event (four categories)	1.22 (0.77)	[-0.29, 2.73]	1.36 (1.03)	[-0.67, 3.39]
School (Level 2) Characteristics				
Student enrollment number (three categories)	2.13 (1.53)	[-0.87, 5.12]	4.75** (1.74)	[1.33, 8.17]
Rural schools (versus town and suburban schools)	-10.02* (3.96)	[-17.78, -2.26]	-16.35*** (3.57)	[-23.35, -9.37]
High school (versus middle schools)	-3.61* (1.64)	[-6.82, -0.39]	-7.60*** (2.80)	[-11.68, -3.52]

Additional models were explored with other school-level characteristics as predictors, including EOP assessment score, EOP size, percentage of the survey that comprised "select all that apply," multiple choice, and true/false questions, and indicators for model schools and schools that recently enacted an emergency protocol in response to a real or perceived dangerous threat. The aforementioned effects were not significantly impacted by the inclusion of these characteristics but did show statistically significant effects for the model school indicator (Beta = 3.34*, SE = 1.67) and the indicator for schools that had recently enacted an emergency protocol (Beta = 4.82***, SE = 1.31) even while controlling for school enrollment size, urbanicity, and school type (i.e., middle or high school). Model 2, which predicts the subgrade calculated from 10 basic knowledge multiple-choice questions, is highly similar to Model 1. The only exception is that the coefficient for food service staff is positive in direction and not statistically significant. Thus, food service staff do not show deficiencies compared to teachers when questions are limited to multiple-choice formats measuring basic EOP knowledge.

Results were remarkably similar to the model predicting overall comprehension when subgrades for evacuation and lockdown questions were regressed on the same set of respondent- and school-level characteristics. For example, teaching assistants and paraeducators scored 6 percentage points lower than teachers on evacuation questions, and 13 percentage points lower on lockdown questions. Food service staff scored 24 percentage points lower than teachers on evacuation questions and 17 percentage points lower on lockdown questions. As with overall comprehension, staff who had read at least some of the EOP and served on at least

one emergency planning or crisis response team had higher scores on average than their counterparts. However, there were no statistically significant differences between different types of staff members on questions that asked staff to match emergency protocols to specific threats and hazards. These main effects persisted even with the inclusion of numerous school-level variables that might impact comprehension, including number of days since the school's last evacuation drill and number of days since the last lockdown drill at the time of the survey.

Results were also highly similar when scores for the open-ended question that asked staff to describe the actions that should be taken when a lockdown is called (asked in some form of all staff) were regressed on the same set of respondent- and school-level characteristics. Specifically, teaching assistants and paraeducators scored an average of 9 percentage points lower than teachers, and food service staff scored an average of 37 percentage points lower. These findings did not change in any meaningful way when non-respondents were removed from the sample (i.e., respondents who left the question blank) (N=10), or when additional school-level variables were controlled for—including total number of lockdown actions listed in the school's EOP, number of days since the school's last lockdown drill at the time of survey administration, or overall size of the school's EOP.

We conducted additional sensitivity analyses to address potential weaknesses of our analytical approach. First, there is debate among researchers about whether it is appropriate to operationalize a dependent variable as a percentage, namely because the regression model can predict impossible values (i.e., values below 0 or 1) (Grace-Martin, n.d). To address this, we ran logistic regression models predicting the odds that staff scored at least 50% and found highly similar effects as the linear regression model. For instance, the odds of staff receiving a 50% or higher grade are 3.5 times higher among staff who have read parts of or the entire EOP than those who have not (OR = 3.52*, SE=1.79), and 3.3 times higher among staff who serve on at least one safety team compared to those who do not (OR=3.29***, SE=0.89). The odds of teaching assistants and paraeducators earning a 50% or higher score are 57% lower than the odds for teachers, and 79% lower among food service staff. We found similar effects for additional logit models that predicted the odds of scoring at least 60% or 70% comprehension grades. We also regressed respondents' raw scores on staff and school characteristics, controlling for the number of questions in each survey or number of possible points that could have been earned within each school and found similar effects.

Second, respondents are nested within 10 schools, which offers limited variation at Level 2. Although no hard consensus exists regarding the number of units necessary for multilevel modeling, a small sample size at Level 2 can produce biased estimates of Level 2 standard errors (Maas & Hox, 2005). To address this, we reran all models as Ordinary Least Squares regression models with robust standard errors and a cluster correction to account for the grouping of respondents within schools. This approach ensures that the estimates of the coefficients are the same as they would be in a standard model, but standard errors are typically larger because they account for observations being non-independently nested within groups. Running these models

helped build additional confidence in the aforementioned model effects because they were highly comparable.

Summary of Findings: Staff EOP Comprehension

- Staff demonstrated strong comprehension of basic EOP information (average score = 71%), but weaker understanding of advanced information that applies only to certain staff or goes beyond rudimentary actions or concepts for different emergency situations.
- Staff exhibited the strongest comprehension for questions that asked them to identify which emergency protocols correspond to specific threats or circumstances, and struggled more with specific questions on policies or procedures for lockdown, evacuation, and—especially—shelter in place.
- Average comprehension levels varied significantly across the schools.
- When asked to report their school's lockdown procedures, staff were most likely to recall locking doors (72%), hiding out of sight (53%), and turning off the lights (50%). They were less likely to recall other actions, including covering windows (34%), sweeping the halls (31%), remaining silent (37%), or waiting for the school's all clear signal (24%).
- Teaching assistants, paraeducators, and food service staff exhibited lower levels of EOP comprehension across several domains in comparison to teachers, front office and head administrators, health staff, and custodians. For example, these staff members were significantly less likely to recall critical actions required for a school lockdown.
- Reading the EOP and serving on one or more emergency planning or crisis response teams were each associated with higher EOP comprehension levels. Although important, we might have expected effect sizes for these characteristics to be larger than they were. For example, staff who had read at least some of their school's EOP scored an average of just 3.5 percentage points higher than staff who had never read the plan.
- Staff perceptions of the extent to which the school has prepared them for a violent event, number of years employed at the school, and recency of training showed no statistically significant effects on comprehension.
- Staff from town and suburban schools exhibited higher levels of EOP comprehension than staff from rural schools. Middle school staff on average exhibited higher levels of comprehension than high school staff.

Student Comprehension

In late 2018 and early 2019, 1,326 students completed comprehension surveys. ***Exhibit 5-4*** displays descriptive statistics for the student sample. The sample is evenly split between male and female students, with a relatively equal distribution of students by grade (with the exception of an underrepresentation of ninth graders). The majority of students identified as White and

non-Hispanic, and most students reported speaking English at home (93%). About 83% of students reported that they mostly earned As or Bs that school year.

Exhibit 5-4. Descriptive Statistics for Student Sample (N = 1,326)

Student Background Characteristics	%
Gender	
Girl	49.47
Boy	50.53
Grade	
6th	15.61
7th	15.46
8th	16.59
9th	7.54
10th	15.61
11th	13.65
12th	15.54
Hispanic Ethnicity	
Hispanic	14.40
Non-Hispanic	85.60

Student Background Characteristics	%
Race	
Non-White	31.83
White	68.17
Language Spoken at Home	
Language other than English	7.32
English	92.68
Academic Grades	
Mostly Fs	1.36
Mostly Ds	2.19
Mostly Cs	13.57
Mostly Bs	39.29
Mostly As	43.59

Exhibits 5-5 and *5-6* presents descriptive statistics for questions measuring perceptions of safety and violence at school and sense of membership at school. Nearly half of all students reported that it was definitely true that they feel safe at school, whereas only 7% reported that it was definitely not true or hardly ever true. A minority of students (7%) reported that it was definitely true that violence is a problem at their school, and about 10% believed it to be definitely true that a serious violent incident would probably happen at their school. Students were highly likely (at least 68% of students) to believe the following statements about school membership were mostly or completely true: I feel proud to belong to my school; I am treated with as much respect as other students; the teachers at my school respect me; and there's at least one teacher or other adult in this school I can talk to if I have a problem. Conversely, only 40.5% of students reported that the following statement was not at all true or hardly ever true: I feel very different from most of the other students at my school. Exploratory factor analysis was conducted with all eight items to inform the creation of a unified index measuring perceptions of safety and school membership. Three items were reverse-coded so that, collectively, all the items measured a greater sense of safety or membership at school (i.e., Violence is a problem at this school; A serious violent incident will probably happen at this school; I feel very different from most of the other students at my school). The items loaded on one factor (Eigen value=2.80), with individual loadings exceeding .50, with the exception of one item: I feel very different from most of the other students at my school. That item was dropped, and a factor score was calculated for each student using the remaining seven items (alpha reliability=.80). The factor score was then recoded into three equal groups representing low sense, medium sense, and strong sense of safety and school membership.

Exhibit 5-5. Student Perceptions of Safety and Violence at School (N = 1,326)

Perceptions of Safety and Violence at School	True (%)			
	Definitely Not	Hardly Ever	Sometimes	Definitely
I feel safe at my school.	3.32	4.00	44.34	48.34
Violence is a problem at this school.	21.87	45.17	26.24	6.71
A serious violent incident will probably happen at this school.	24.28	46.53	19.31	9.88

Exhibit 5-6. Student Perceptions of School Membership (N = 1,326)

Perceptions of School Membership	True (%)				
	Not at All	Hardly Ever	Sometimes	Mostly	Completely
I feel proud to belong to my school.	4.83	6.33	17.42	32.50	38.91
I am treated with as much respect as other students.	4.15	7.16	20.44	35.75	32.50
I feel very different from most of the other students at my school.	17.50	23.00	22.32	19.61	17.57
The teachers at my school respect me.	2.79	3.47	13.57	34.31	45.85
There's at least one teacher or other adult in this school I can talk to if I have a problem.	6.33	4.07	7.92	20.59	61.09

Exhibit 5-7. Descriptive Statistics for Student EOP Comprehension Grades (N = 585)

Comprehension Areas	Mean %	Standard Deviation	Average Mean across Schools	Range across Respondents
Total Comprehension Grade	36.22	14.26	23.46 to 52.03	0 to 82.14
Matching Protocols to Threats Subgrade	50.84	27.96	30.51 to 78.06	0 to 100.00
Lockdown Subgrade	30.01	18.91	18.57 to 42.05	0 to 83.33
Shelter-in-Place Subgrade	19.34	15.38	5.80 to 48.02	0 to 100.00
Evacuation Subgrade	37.81	35.50	9.42 to 71.54	0 to 100.00
Standardized Subgrade	49.27	23.67	26.28 to 72.46	0 to 100.00
Open-Ended Lockdown Grade	27.50	24.25	10.86 to 41.78	0 to 100.00

Exhibit 5-7 displays student comprehension grades overall and within specific areas. As would be expected (given that students are not provided with physical copies of their school's EOP), students exhibited much lower average levels of comprehension than staff (see *Exhibit 5-8*). On average, students received about one-third (36.2%) of all possible points. As with staff, average total student comprehension grades varied significantly between schools, from 23.5% in School 3 to 52.03 in School 6. Also, like staff, students showed the strongest comprehension on questions that asked them to match emergency protocols to specific threats and circumstances; 51% of answers were consistent with the information in their school's EOP, compared to 30% for lockdown questions, 38% for evacuation questions, and 19% for shelter-in-

place questions. Thus, these results mirror those of staff and suggest that students may need additional training in all areas of emergency preparedness and response. Whereas—on average—student answers to about one-third of all comprehension questions were consistent with their school's EOP, they showed stronger comprehension of multiple-choice questions measuring basic knowledge of EOP protocols and concepts. On average, student answers to almost half of those questions were consistent with the material from their school's EOP (see standardized subgrade in Exhibit 5-7).

Exhibit 5-8. Descriptive Statistics for Average Staff and Student Comprehension Grades (N = 585 staff, 1,326 students)

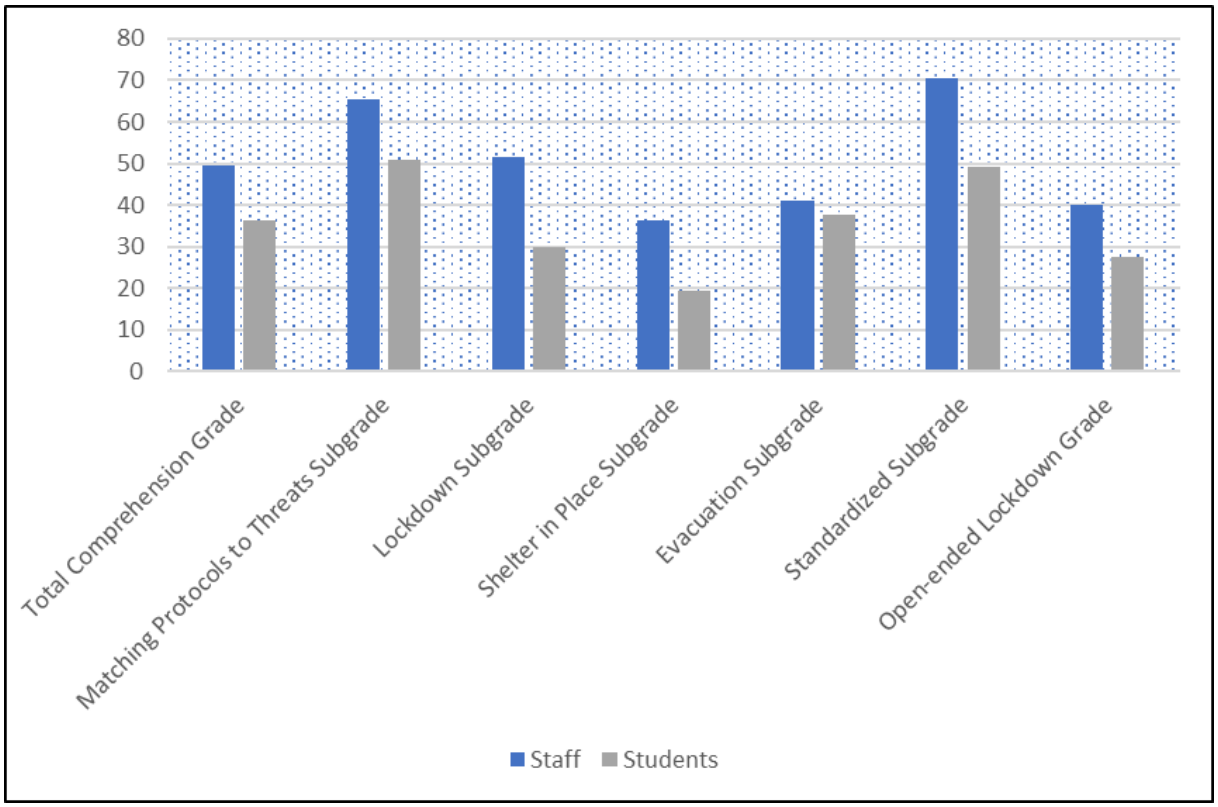

Exhibit 5-9 presents the results of a random-intercept linear regression model predicting student total and standardized comprehension grades by several student- and school-level characteristics. Student-level predictors included:

- an indicator for students that primarily speak English at home (versus students who do not, a proxy for English as a second language or ESL students);
- a variable with five categories for self-reported academic grades that school year (1=*mostly Fs*, 2=*Mostly Ds*, 3=*Mostly Cs*, 4=*Mostly Bs*, 5=*Mostly As*);
- an indicator for students who identify as White (versus students who identify as a race other than White); an indicator for male students (versus female students); and

- a variable with three categories for sense of safety and membership at school (0=low sense of safety and membership at school; 1=medium sense of safety and membership at school; and 2=strong sense of safety and school membership at school).

Exhibit 5-9. Random-Intercept Linear Regression Model Predicting Student Comprehension Grades (N = 1,326)

	Model 1: Predicting Total Comprehension Grades		Model 2: Predicting Standardized Subgrades	
	Coefficient (SE)	95% Confidence Interval	Coefficient (SE)	95% Confidence Interval
Respondent (Level 1) Characteristics				
Staff position				
Primarily speak English at home (versus do not)	3.38** (1.22)	[0.99, 5.78]	5.61** (2.04)	[1.62, 9.60]
Academic grades (5 categories)	2.72*** (0.38)	[1.98, 3.47]	2.50*** (0.64)	[1.25, 3.75]
White students (versus non-White students)	3.46*** (0.84)	[1.80, 5.12]	3.18* (1.42)	[0.39, 5.97]
Male students (versus Female Students)	-1.26* (0.62)	[-2.48, -0.05]	1.52 (1.03)	[-0.51, 3.55]
Sense of safety and school membership (3 categories)	1.51*** (0.40)	[0.73, 2.29]	1.75** (0.66)	[0.45, 3.06]
School (Level 2) Characteristics				
Student enrollment number (3 categories)	-1.41 (2.14)	[-5.61, 2.79)	-7.77*** (1.66)	[-11.03, -4.51]
Rural schools (versus town & suburban schools)	-7.10* (2.98)	[-12.93, 1.27]	-5.84 (10.21)	[-25.85, 14.17]
High school (versus middle schools)	0.35 (2.77)	[-5.08, 5.79]	11.82*** (1.66)	[8.56, 15.09]
Average staff EOP comprehension grade	0.84*** (0.19)	[0.46, 1.22]	1.36* (0.62)	[0.15, 2.58]

School-level predictors included: student enrollment number (0=*120 to 551 students*; 1=*558 to 1,000 students*; 2=*1,071 to 1,679 students*); urbanicity (i.e., an indicator for rural schools compared to suburban and town schools); school type (i.e., an indicator for high schools versus middle schools); and a continuous variable for each school's average staff EOP comprehension grade.

Model 1 indicates interesting variation in comprehension grades based on student background characteristics. Primarily English-speaking students scored an average of 3.4 percentage points higher than students who speak another language at home. Higher academic grades were also statistically associated with higher levels of comprehension (beta=2.72***, SE=0.38). For instance, students who reported earning mostly As and Bs that school year scored an average of 5 percentage points higher than students who earn mostly Cs, Ds, or Fs. White students scored an average of 4 percentage points higher than non-White students. Male

students scored an average of 1.3 percentage points lower than female students. Additionally, for each one-level increase in sense of safety and school membership, comprehension grades increased by 1.5 percentage points (i.e., students with a strong sense of safety and school membership would be predicted to earn an average of 3 percentage points higher than students with a low sense of safety and school membership).

Model 1 also indicates that students from rural schools scored an average of 7.1 percentage points lower than students from town and suburban schools, and also indicated a positive relationship between average staff comprehension grades and student comprehension grades. Specifically, a 1 percentage point increase in staff comprehension grades was associated with a 0.84 percentage point increase in student comprehension grades. We also explored supplementary models that included additional school-level predictors, such as number of days since each school had conducted various types of emergency drills at the time of the student survey and a three-category variable for EOP word count (conceiving of it as a proxy for the comprehensiveness of the school's emergency management system, or in other words, the amount of emergency management information there is for students and staff to know: 1=5,000 to 29,000 words; 2=30,000 to 32,000 words; 3=57,000 to 99,000 words). These models did not have a noteworthy impact on the aforementioned effects, but did show a statistically significant effect of EOP word count (beta=-5.82***, SE=1.30). Specifically, while controlling for enrollment size, urbanicity, and school type, this model indicated that for each level increase in EOP size, student comprehension grades can be predicted to decrease by nearly 6 percentage points.

Results from Model 2, which predicts student comprehension based on seven multiple-choice questions measuring basic knowledge of emergency protocols and concepts, show highly similar respondent-level effects to Model 1. The most notable respondent-level difference between the models is that there was no statistical difference in grades between male and female students. Thus, although female students exhibited higher levels of total comprehension than males, female and male students exhibited similar levels of basic EOP knowledge. Model 2 also shows different school-level effects. Specifically, students from larger schools (based on the number of enrolled students) scored lower on basic knowledge questions than students from smaller schools, and students from high schools scored higher than students from middle schools (the finding that older students scored higher than younger students was also identified when student grade was entered as a continuous respondent-level variable rather than controlling for school type at level 2: beta=2.20***, SE=0.44). Additionally, unlike with total comprehension, scores were not statistically different between students from rural or town and suburban schools. Supplementary models showed no statistically significant effects of the number of days elapsed since the last evacuation, shelter in place, or lockdown drill, but did show that students from schools with relatively lengthy EOPs scored lower on average than students from schools with relatively small EOPs (beta=10.62**, SE=3.88). Results were also highly similar when subgrades for evacuation and lockdown questions were regressed on the same set of student- and school-level characteristics. They were also highly similar for regression models predicting lockdown protocols comprehension from the open-ended question posed to all students.

Summary of Findings: Student EOP Comprehension

- Students exhibited much lower levels of EOP comprehension than staff, answering about half of basic knowledge questions consistently with their school's EOP, and about one-third of questions consistently when questions addressed both basic and advanced knowledge.
- Like staff, students exhibited the strongest comprehension for questions that asked them to identify which emergency protocols correspond to specific threats or circumstances and lower levels of comprehension of policies and procedures for lockdown, evacuation, and shelter in place.
- Average student comprehension levels varied significantly across the schools.
- Numerous student demographic and other background characteristics were associated with higher comprehension levels. For example, students who feel a great sense of safety and membership at school exhibited relatively higher levels of EOP comprehension. This finding may reflect that students who feel safer and more connected to school are more trusting of school authority figures and in turn are more engaged with and responsive to efforts to educate them on emergency procedures. Alternatively, it may also suggest that being more knowledgeable of the school's procedures actually leads students to feel safer and more connected to the school. Earning high academic grades, being older, and primarily speaking English were each associated with higher EOP comprehension levels.

Reporting Back Sessions and Additional Themes Uncovered from Staff and Student Comprehension Surveys

After the project team reviewed all EOPs and analyzed comprehension surveys for each school, a virtual "reporting back" session was conducted with top administrators and other staff responsible for emergency planning and management from each school. The purpose of these meetings was to discuss and solicit feedback on aggregate and school-specific results of the EOP assessments and comprehension surveys. In preparation for these sessions, the project team developed reports for each school that overviewed the findings from the study's first two phases. The process used to develop these reports and synthesize feedback provided to the schools helped to uncover important additional themes related to EOP comprehension:

- Most staff members in most schools exhibited strong comprehension when it came to understanding the general logic or purpose of evacuation and lockdown; identifying their school's primary evacuation location; the signals for when a lockdown or evacuation is initiated and when it has concluded (e.g., physical release by law enforcement following lockdown); which emergency protocols require teachers or other staff to take student attendance; the importance of locking doors or ensuring doors are locked and hiding out of plain sight during a lockdown (although they exhibited weaker comprehension of secondary actions, including turning off lights and covering windows); ignoring alarms during lockdowns; and general policies around cellphone use during emergencies.

- In almost all schools, in answers to open-ended questions, a subset of staff and students described actions that should be taken for lockdown, evacuation, or shelter in place that were not listed in their school's EOP (e.g., turning off all lights and light-emitting technology, using placards to signify safety statuses, getting into prone position, barricading the door, collecting all cellphones). Sometimes these extra actions were logical and might have been learned through in-person trainings but they had not been appropriately documented in the school's EOP. Other times, these actions contradicted the EOP (e.g., staff described the importance of turning off lights during a lockdown when the EOP explicitly prescribed not turning off lights; using cellphones to text critical information to the front office despite the EOP directing staff to immediately turn off their cellphones during a lockdown). On a few occasions, staff described actions that were both not listed in their school's EOP and could potentially put students in harm's way (e.g., gather students in the hallway during a lockdown, use green placards in classroom windows to signal that everyone in the room is accounted for and safe during a lockdown—which can inadvertently notify armed intruders that the room is occupied).
- In all but two schools, a subset of staff provided generic answers when asked to describe actions that should be taken during a lockdown or evacuation (e.g., "keep everyone safe," "follow the appropriate school policy," "care for the students") or reported "I don't know." In a few cases, staff said they would reference a classroom flipchart to identify the best course of action to take for a specific type of threat (during the emergency).
- Responses to close-ended questions in many schools indicated a lack of understanding about actions to take if a lockdown is called when students or staff are not in a classroom (e.g., when students are gathered in a common area or during lunch).
- A subset of staff and students were confused about the differences between evacuation and lockdown, or between lockdown and shelter in place and the basic actions that should be taken for each of these events. For example, in one school, 11 staff members (primarily newer staff not employed as teachers or head administrators) described common lockdown protocols when asked to describe evacuation protocols. In at least three schools, staff responses indicated that they believed shelter in place and lockdown were the same procedure and that the terms could be used synonymously. For example, when asked to describe the actions appropriate for lockdown, a handful of staff wrote the same responses that they had provided for the same question for the shelter-in-place procedure or they simply wrote "same as shelter in place." Several staff believed that hiding was an important action that should be taken for a shelter-in-place procedure.
- In a few schools, there was confusion about terminology, or a wide range of terminology was used to describe the same procedure or concept. For example, staff in one school collectively used four different terms to refer to the school's onsite evacuation location (staging area, evacuation site, rally point, rally location). In another school, in response to a question about shelter in place, a few staff indicated

they were not familiar with the term "shelter in place" but were familiar with protocols for severe weather. The principal informed us that the use of "shelter in place" in the EOP was a formality and was written that way in the plan because it is consistent with guidance from various agencies in their state (e.g., the Department of Education) even though it was not used during drills or other in-person trainings. In another school that partitioned lockdown protocols into three levels in their EOP (level 1, level 2, level 3 lockdowns), some staff indicated that their school does not use level 1, 2, or 3 terminologies but instead use "lockdown intruder alert." Likewise, despite the EOP's use of "code red" and other coded language to signify various threats and the need for specific emergency responses, a considerable proportion of staff and students exhibited weak comprehension when asked about these codes in close-ended questions. During the reporting back session with this school, the safety officer informed us that despite what it says in the EOP, codes are never used in emergency communications or trainings at the school.

- Staff and students in most schools exhibited confusion about the shelter-in-place procedure, including the types of threats and hazards it should be used for. Most prominently, our reviews uncovered confusion about the use of the shelter-in-place procedure for chemical spills or incidents involving biological or chemical weapons outside of the school, including the protocols that should be followed for these types of events (e.g., shelter in place rather than evacuation).
- In schools that promoted an "options-based" approach for responding to an armed intruder, a subset of staff only mentioned the necessity of evacuating rather than discussing any actions related to lockdown while others simply reported "run, hide, fight" or "utilize ALICE training." In a handful of cases, students indicated that they would arm themselves in order to fight the intruder or retrieve a firearm from their home or car and return to the school.

Recommendations

Based on the aforementioned findings from staff and student EOP comprehension assessments, our recommendations for school and district officials are as follows:

- Our analysis showed substantial variation in student and staff EOP comprehension levels across schools. In many cases, when staff comprehension levels were high relative to other schools, student comprehension levels were also relatively high (e.g., Schools 6, 7, and 1) whereas the opposite was also true (i.e., when staff comprehension levels were relatively low, so were student comprehension levels, such as for Schools 5, 6, and 3). The correspondence between student and staff comprehension levels might suggest that systems and mechanisms that schools use to promote EOP comprehension (e.g., trainings, exercises, EOP reviews) can have a tangible impact on students and staff and create a culture in which the school community feels invested in and accountable for fostering a robust emergency management system. The variability across schools identified in this study makes it critical that head administrators and safety teams not assume that their students and staff are familiar with and understand the school's emergency procedures and

concepts. Given that our data do not show a statistical relationship between perceptions of preparedness and EOP comprehension, it is also important that they not assume that confidence is a proxy for knowledge. Rather, they should **make it a priority to regularly assess what the school community knows about the school's emergency procedures and identify gaps in knowledge to inform future training efforts or EOP modifications**. This might include developing and administering EOP comprehension surveys once or twice per school year, analyzing results, and drawing conclusions about where educational and training resources should be devoted to enhance comprehension. Conducting regular comprehension assessments with staff and students will help to identify areas in which there are conflicting notions about roles, responsibilities, and appropriate responses to different emergency situations. Regularly "checking the pulse" on EOP comprehension will also help to create a culture of accountability and send the message that emergency preparedness is everyone's responsibility. Additionally, schools should carefully document strengths and weaknesses demonstrated by the school community during drills and identify gaps in knowledge or understanding of protocols during tabletop exercises regularly conducted with representative groups of staff members.

- Reading the EOP and serving on at least one emergency planning or crisis response team were consistently associated with higher EOP comprehension among staff. These findings further support efforts by top administrators and emergency planning teams to **ensure all staff have access to the EOP and that they understand the importance of regularly reviewing it, and that mechanisms are put in place to ensure staff review the EOP regularly throughout the school year**. This might include creating designated times during which all staff review the plan, holding staff meetings in which EOP training is provided, and administering regular comprehension assessment surveys to assess staff knowledge of critical protocols and concepts. Likewise, **involving more staff members (e.g., on a rotating schedule) on emergency planning and crisis response teams may help to give more staff exposure to the EOP itself, as well as the details within the plan**. At the same time, the small effect sizes of reading the EOP and serving on a team suggest that these efforts alone are not enough to promote strong comprehension. Rather, schools must also invest in effective in-person trainings that complement EOP materials and allow staff to practice what they have reviewed.
- Schools should make special efforts to **provide more focused training to teaching assistants, paraeducators, and food service staff**. These staff members showed consistent deficiencies in comprehension levels across multiple domains. This may include holding special training sessions for these staff members in which basic EOP protocols are discussed along with responsibilities that are more specific to their position (e.g., leading a lockdown during lunch). Dedicating special times and resources for training these staff members may help signify that their involvement and knowledge of core emergency procedures and concepts are critical to the success of the overall emergency management system.

- Schools may consider enhancing the system used to train and educate students on the school's emergency procedures and concepts. Because students typically do not have access to the EOP, top administrators should consider creative ways to disseminate critical information to students outside regular lockdown, evacuation, and shelter-in-place drills. For example, this may include creating mini EOPs tailored to include "need-to-know" information for students, utilizing basic learning principles to promote comprehension of core materials (e.g., quick-reference charts, diagrams). These efforts might also include making emergency preparedness a more perennial part of their curriculum by reserving special times to involve students in discussions about safety and emergency response (e.g., during homeroom) and discuss various emergency scenarios, or simply debriefing with students after drills to discuss the strengths and weaknesses of the class's response.
- Head administrators, emergency planning staff, teachers, and other staff responsible for educating and training students on emergency procedures should recognize that not all students are equally likely to understand various emergency procedures and concepts, but that efforts should be made to ensure all students are prepared to respond to emergency situations. Our analysis found differences in comprehension across gender, perceptions of safety and school membership, grade levels, academic grades, race, and primary language spoken. Thus, trainers must recognize that students learn at different paces and that emergency operations materials may need to be adapted to be accessible to all types of students.
- Ensure that the information students and staff are taught during in-person trainings is consistent with what is written in the EOP. This includes actions that must be followed for specific protocols, as well as the terminology that is used across these platforms. Ensuring this consistency will safeguard against confusion when emergency situations arise and will help to promote a coordinated school-level response.

6. Goal 4

Use the perspectives of staff, students, district representatives, local law enforcement officials, and other key stakeholders to understand how EOPs—and school emergency more broadly—could be improved and what the most pervasive challenges and vulnerabilities in school emergency preparedness efforts are.

Immediately following site visits and virtual interviews, audio recordings from each interview session were transcribed and then coded by a team of analysts with extensive experience in school safety and qualitative research using ATLAS.ti qualitative data analysis software. Qualitative data was analyzed using a framework analysis approach for the purpose of gathering specific types of information with potential to create actionable outcomes (Srivastava & Thompson, 2009). Specifically, a structured process was used to analyze the data, beginning with a stage of familiarization in which analysts read all transcriptions and notes compiled by the designated notetaker and discussed initial thoughts about the data and its interplay with data collected from earlier phases of the study (i.e., the EOP assessments and comprehension surveys). The team then identified a thematic framework by developing a preliminary code list derived from the project's core research goals, interview protocols, and initial readings of the data. Next, the team coded the data to capture critical patterns, expanded and refined codes as necessary to ensure that important nuances were captured, and then organized data segments into thematic clusters. Finally, the Principal Investigator synthesized and analyzed data from thematic clusters to inform data collected at earlier stages in the project or to yield substantive findings about school safety and emergency preparedness more broadly.

The interviews were invaluable for contextualizing and better understanding the reality of emergency planning and preparedness efforts in schools. Speaking directly with different types of staff members uncovered several themes that supported key findings from the comprehension assessments. However, in many cases it also revealed that the study of EOPs, what they represent to staff, and how they are used is different and more complex than what we initially understood. In some instances, these insights had direct implications for interpreting the results of the comprehension assessments. Below, we describe the most pertinent themes uncovered from the qualitative analysis of interview data.

The Value of the EOP and EOP Comprehension

Head administrators, district safety officers, SROs, and leading members of school emergency planning teams recognized the importance of the EOP for emergency preparedness

and school safety more broadly. As one principal described it, the EOP is the "touchstone" they can always refer back to, even in highly complex, stressful situations in which it is easy to get overwhelmed and feel like things are out of control. It represents all of the work the school has put into thinking through the ins and outs of their emergency management system over the years, and it acts as the standard against which the outcomes of emergency drills and other training exercises can be evaluated. Working cooperatively with internal and external stakeholders, EOPs were designed to provide clear guidance during unpredictable situations, but with the understanding that predetermined protocols will not always apply neatly in real life as they do on paper. But the beauty of the EOP is that it can be continuously revised and enhanced to account for new information and to better reflect the strengths and needs of a school. Moreover, documenting details of the emergency management system ensures that there is a plan in place that can be passed on and activated in times of need and that the wellbeing of the school does not depend on the presence of one or two people who champion emergency preparedness.

> *"In a real emergency we are going to be in heightened stress and most importantly I want everybody to know the parts of it they need to execute. I want them to know who's in charge and where to find that person. I want them to know the basics so that it is easy to ground ourselves in a moment of stress. They've seen it beforehand, we've drilled, and now stress happens, but we know where to go to find our touchstone materials."*
>
> *— Principal, on the value of EOPs*

There was also consensus among most of these top safety officials that basic knowledge of the protocols described in the EOP is paramount for protecting the school against dangerous threats. After all, even the most comprehensive, high-quality EOP is of limited value if the school community is not empowered with that knowledge and prepared to activate their training should the need arise. They believed it was critical to educate staff *and* students on their responsibilities during different situations—like staff, students should know where to hide, how to improve their position, barricade the door, and what to do if an intruder gains access to the classroom. At the same time, they realized that emergencies are highly stressful, which impacts how people process information and their ability to enact what they have been trained upon. But for many staff and students, the most stressful situations are those in which they do not have the information they need to make an informed decision—either because they are not relayed critical information about the threat in real time or because they have not received the training they need to handle specific situations. In general, most of the staff we talked to desired higher-quality training and education on emergency preparedness. One teacher's statement underscored this anxiety and the pressure to prepare: "What if I get myself and the entire class killed? Or what if the entire front office is taken out and teachers have no directions?"

Dissemination of Emergency Operations Protocols

Safety officials viewed access to the EOP as an important priority and described a number of strategies they use to disseminate it to staff. Staff received hard or electronic copies of the plan

at the beginning of each school year. Classrooms and other locations on campus were equipped with flipcharts or quick-reference posters that succinctly described the main actions for lockdown and other emergencies. One school also delivered key information through an online training module, and another outfitted staff with wearable lanyards displaying a "Cliff's Notes" version of the school's active shooter protocols so that information was always available. At least one school used a secure school safety app to make their electronic EOP accessible to staff via their smartphones.

Additionally, our interviews uncovered a vast range of additional activities the schools engage in to ensure people are well positioned to respond should an emergency situation arise. Those included communicating protocols during safety summits for parents, staff, and students, presentations from local law enforcement or a school resource officer on active shooter responses, school assemblies, posting active shooter response videos on school or district websites, reviewing basic emergency protocols via intercom announcements or weekly news videos, conducting tabletop exercises with staff or groups of students to discuss scenarios, and having teachers or law enforcement officers debrief with students after drills to discuss what went well and which areas need improvement. A few schools had also recently shifted their overall orientation toward active shooter response from "traditional" lockdown (i.e., hiding in secured room out of sight and waiting for law enforcement release) to a more options-based approach, such as run, hide, fight (with one school promoting evacuation rather than lockdown as the first line of response). They also eliminated the use of code words from their EOP and any emergency protocol announcements, replacing that system with the use of plain language in all communications with students and staff during drills and emergencies.

And of course, efforts also included a variety of emergency drills—scheduled lockdown, evacuation, and shelter-in-place drills; surprise drills (i.e., students and staff do not know about them ahead of time); and drills during irregular times or under varying circumstances, such as during a class change when most students are in the hallways or when students are gathered in the gym or another common area. One school had even conducted live simulation active shooter drills, complete with participation from local law enforcement and the use of air-soft guns, actors posing as gunshot victims or students banging on classroom doors, barricades, tourniquets, and opportunities for students and staff to practice defensive "fight back" strategies. Another had recently conducted a full-scale, off-campus evacuation drill to see how long it would take to bus students and staff to the site.

Creating an Inclusive Culture Around Emergency Preparedness

A prominent theme emerging from the interviews ultimately tied back to the importance of engaging as many staff as possible in the emergency management system. Involving staff in efforts to plan for emergencies built an investment and sense of buy-in into the system and helped staff feel confident that their school was ready for anything. Serving on one or more of the school's safety teams gave staff the opportunity to observe drills with other members of the team or to discuss various emergency scenarios at tabletop exercises, apply their knowledge,

and evaluate whether the EOP was set up to inform different types of threats. Importantly, it gave them a voice in the larger conversation while providing supplementary exposure to the school's protocols.

Efforts to build an inclusive culture around emergency preparedness also included designating different types of staff to serve on teams or lead the school's emergency drills on a rotating basis. One month it might be the office secretary, whereas the next it might be the custodian, a kitchen staff member, or a teacher. Challenging staff members to take on a leadership role during drills fostered a culture of accountability and a collective conscience around emergency preparedness because everyone was expected to understand the procedures well enough to lead others. Likewise, this kind of inclusiveness created a safety net in the event a head administrator or top safety official was not available to direct the school during a threat, by creating a wider cast of staff with the knowledge to lead. For one school, this strategy paid off when a power outage occurred when head administrators were off campus. According to the custodian, the sense of responsibility for emergency preparedness was well distributed among staff, as were opportunities to take on leadership roles during drills and other activities—thus, several staff had the confidence to step up and lead the school's response.

The Power of People

The importance of engaging and including staff and students in the larger emergency management system was also apparent in light of the substantial insights that our respondents shared regarding areas of vulnerability at their school, weaknesses in their plans, the effectiveness of training and dissemination strategies, and the school's greatest needs for becoming more prepared. If utilized appropriately, the wealth of knowledge possessed by staff and students could be leveraged to inform revisions to the EOP, enhancements in emergency protocols and security systems, and improvements to existing operations and trainings. They described numerous insights about gaps or vulnerabilities in their school's security and emergency protocols.

> *"By including the student perspective on safety protocols, the school would be a safer place."*
>
> *—Principal, on the importance of getting student perspectives on safety*

- There were areas around campus in which a dangerous individual could easily gain access to the building or individual rooms, and common practices that undermine quality access control (e.g., staff in one school identified multiple exterior and side entrance doors that are left unlocked throughout the schoolday).
- Various lockdown procedures prescribed by a school can have unintended consequences by alerting an intruder that classrooms are occupied. Teachers worried about opening their classroom door and "sweeping" hallways prior to locking down and about the noise caused by barricading doors.

- Various procedures prescribed by the school were not possible or realistic. For example, teachers mentioned that their school directed them to barricade the door during a lockdown, but the school had not provided them with any materials to do so. Instead, they had attempted to move the teacher's desk in front of the door or tie it shut with a belt, which was noisy and caused permanent damage to the doors. In one school, teachers were instructed to turn off the lights in the classroom during a lockdown, but emergency safety lights remained on even when the overhead lights went off and could only be terminated by manually unscrewing the light bulbs. Respondents also called out specific locations on campus in which hiding out of plain site was not possible because the room was surrounded by windows or because there was no blind spot in the room, and described not knowing what to do if they were in one of those rooms when a lockdown was announced. Cafeteria staff in one school explained that although they were told to lockdown in the staff bathroom within the cafeteria, there was not enough space to fit all staff members. Others questioned how substitute teachers or students (in the absence of a teacher) would lock doors during a lockdown, since they are not provided with keys or keycards.
- There is a lack of planning for atypical situations or special circumstances. For example, custodial staff worried about having to lockdown or evacuate the school if an incident were to occur during an afterschool event, when staff who are most knowledgeable of emergency procedures have left for the day. Students wondered what to do if an armed intruder entered the school while they were in the restroom, or what offensive and defensive strategies they could use to thwart an attack were they to directly encounter a dangerous individual within the school.
- There is a lack of training on options-based responses. Although many appreciated having freedom to choose the best response depending on the situation (rather than rigidly following the school's EOP protocols), they also recognized that they had not been given enough guidance or opportunities to practice so that they know when to choose different courses of action (e.g., evacuation versus lockdown).
- Students were confused about where to evacuate to (i.e., the onsite evacuation location), how to find their teacher, and knowing which teacher to find (e.g., their homeroom teacher or their teacher for the current class period). Many students described evacuations as chaotic and disorganized, but thought that they could be improved if they better understood what they were supposed to do.
- There is conflicting guidance from state and federal agencies, local law enforcement, and school safety experts on the best practices for active shooter response in schools; respondents questioned whether their endorsement of the run, hide, fight approach for armed intruders would help save lives or expose students and staff to more danger if they tried to flee in the middle of a violent incident. Likewise, there was some concern that run, hide, fight, and other options-based approaches may be difficult for students to enact in real emergencies—they questioned whether adhering to a traditional lockdown approach would be more doable, effective, and age-appropriate.

- There were concerns about not being able to hear emergency announcements via the PA system in certain places on campus (e.g., meeting rooms, the band room).
- There are unintended consequence of conducting drills with students—they never believe it is a real threat and therefore do not take drills seriously, instead using the time to play on their phones and socialize.
- Students are unable to lead a lockdown without a teacher to direct them, because schools don't practice student-led lockdowns; there were also questions about whether teachers and other staff could lead without the guidance of top administrators.
- Certain staff are especially undertrained and lack knowledge on what to do during emergencies (especially substitute teachers).
- There are various different terminologies used in the EOP or in in-person trainings (i.e., partial or soft lockdown, lockout, shelter in place).

In addition to critiquing their schools' emergency management system, they also endorsed multiple, actionable ideas about how operations could be improved (examples below).

- Continuing, increasing the frequency of, or enhancing training exercises and drills to consider different types of circumstances—this includes student-led drills, drills without the help of top administrators or SROs, and drills at varying times of the day (especially passing periods) or executed in different locations (e.g., on the football field). They often wanted more involvement from local law enforcement in these efforts and more opportunities to practice options-based responses and other protocols that are described in their plan but rarely featured during drills. Likewise, they wanted access to more scenario-based training and opportunities to discuss how the school would respond to different types of emergency situations (e.g., what students would do if a lockdown was announced and the teacher was not in the room or was injured or killed by the intruder; what to do if a gun is spotted in a student's backpack; how to respond to an ex-spouse demanding to see a teacher). They believed these discussions would help to fill in the gaps and enable them to feel more confident. Staff from one school promoted their school's approach of presenting staff members with several different scenarios prior to their next drill, not knowing which one would come into play during the drill. This approach gave staff members a chance to proactively think through how they would respond under these scenarios, and if needed, seek answers from head administrators or the emergency planning team prior to the drill date. They could then apply this information when the drill was announced, which they believed enhanced the overall level of coordination and effectiveness of these exercises.
- Rating drills—using a more structured system to rate the effectiveness of drills, convening tabletops or debriefings with staff members to discuss how the response could have been improved, and creating a more formal system to relay that information to the rest of the school.

- Debriefs with students after drills—teacher-student debriefs were not required in any of the schools, rather, it was up to the discretion of teachers. However, multiple teachers and students reported that talking with students after drills was time well spent. During debriefs, the class could talk about what went well, what didn't, and how they would have responded under different circumstances (e.g., if an intruder tried to gain access to the classroom). A member of the emergency planning team at one school wanted teachers to recognize students as a source of information that can be used to improve emergency operations, encouraging them to "Ask students for feedback after a drill – What did you see? What have you seen before that we didn't look?" One teacher noted that students are often very engaged during debriefs because "they want to know what they should do" in different situations, and they "feel better talking about it." Students believed that the simple practice of debriefing would help them feel more involved in the planning process and would encourage them to take drills more seriously. Many students and staff also viewed debriefing as essential for calming students down and reducing anxieties that arise during drills—especially surprise drills. One principal summarized the importance of regular dialogue with students in addition to a normal drilling regimen, noting "To do that in conjunction with a drill sets the scene and tone for a more serious conversation, turns it into a lesson."
- Discussions—holding discussions among the emergency planning team immediately after school shootings that have occurred elsewhere and assess whether any lessons learned should affect their emergency protocols.
- Guides for substitute teachers—creating quick-reference guides specifically for substitute teachers and requiring them to pass a basic comprehension assessment of those protocols prior to being eligible to teach classes.
- Accessible protocols—making written protocols accessible for different types of readers by communicating as succinctly as possible with explicit, bulleted actions that must be followed and making EOPs easier to navigate and find the information that is needed.

Although schools did not always have formal channels through which student and staff insights on safety and emergency operations could be communicated and leveraged, principals and other safety leaders within schools often recognized that soliciting feedback from the school community is critical for understanding vulnerabilities and devising actionable solutions.

Unequal Access to the Emergency Management System

Not all staff members have equal access to the emergency management system, nor is the same premium placed on EOP access or EOP comprehension for different types of staff members. The opportunity to speak with custodial and food service staff was one of the most insightful and valuable activities of the project. The insights they provided were highly consistent with, and also informative of, key results from the staff comprehension surveys. With few exceptions, food service staff across the schools believed that they were not recognized as a crucial part of their school's emergency management system, that they did not get the same

training as others, and as a result did not know how to lead core emergency procedures (although they trusted teachers and others with more training to lead the school). Rather, they often felt like they had to "figure it out" on their own. One food service staff member expressed frustration with constantly feeling out of the loop when it comes to emergency planning. From his perspective, when a lockdown is announced, staff in the cafeteria don't always know if it was an unannounced "surprise" drill (in which nobody knew it was coming) or whether those in the kitchen were simply the last to know. His suspicion was that everybody else in the school usually knew when a drill was coming, but nobody thought to tell the cafeteria staff until the administrators were doing walkthroughs and realized, as he put it, "Oh right! you guys exist!" Food service and custodial staff described other examples of feeling left out—for example, having to rely on a faulty PA system that could not be heard in the cafeteria or finding out about a school safety application the rest of the school was already using for emergency planning but that they did not know about.

> *"Knowing about all the drills is nice, because sometimes we don't hear about it. The PA will go off, 'lockdown, lockdown!' but we don't know if it's a drill or not. Being in the loop would be nice because sometimes it's like, 'oh right!, you guys exist!'"*
>
> *— Cafeteria staff member, on feeling left out of emergency planning*

At the same time, food service and custodial staff expressed a desire to be more integrated into the system. They wanted to be informed of upcoming lockdown drills like other staff, to have specific responsibilities under different procedures, and to get regular feedback about what they did well and where they needed to improve. They also advocated for conducting lockdown drills before school and during lunch so that they would have the chance to lead and learn ways to improve their responses. They also wanted the chance to take specialized active shooter trainings that were available to other types of staff. At the end of the day, they wanted the confidence to know that they could protect students, themselves, and one another just as well as anybody else on campus by having access to the same resources. Although they believed that their school's administrators would be receptive to this feedback, they had doubts about whether any policies would ever change or if any real efforts would be made to get them better prepared.

A range of respondent types from principals, leaders of crisis response teams, teachers, and school resource officers agreed that food service and custodial staff and substitute teachers do not get the same training as other staff, largely because they are part-time or contract staff who cannot be compelled to attend safety meetings or trainings or serve on emergency planning or crisis response teams. In other words, these staff members were not intentionally marginalized, but they were different categories of employees and quite often were not even on campus when most emergency operations activities took place. In many instances, administrators and SROs also recognized the cafeteria itself as a significant blind spot in their EOPs because they had never conducted drills during a lunch period or fully thought through how students and staff should conduct a lockdown in the cafeteria. Although most of these respondents recognized the

need for more focused training efforts with food service and custodial staff and in the cafeteria more generally (despite the challenges of doing so), top officials from one school believed it was a moot point because there would always be a top administrator on campus to lead the school through a crisis and staff in the cafeteria would never be charged with that responsibility.

The Truth about EOPs and the Reality of School Emergency Preparedness

Ultimately, qualitative research conducted under this project was crucial because it unveiled that the reality of school EOPs and emergency planning efforts is not entirely aligned with our perceptions going into the project (in a way that the survey component could not). At the beginning of the project, we viewed the EOP as a clearly defined, revered document made accessible to (and only to) staff within the school, in addition to a few entrusted local partners (e.g., local law enforcement). We did not consider the possibility that there might be confusion or variability around what exactly constitutes the plan. The wide variety of materials we received during the collection of EOPs hinted at the possibility that what constitutes the EOP varies across schools and also according to who is sending it. However, conducting interviews with various staff members explicitly uncovered that a subset of staff within some schools were not familiar with the materials we were told represented their EOP; believed that their room flipchart or quick-reference poster was the entire EOP; had never seen the school's EOP (but in some cases expressed that they would like to); knew about the EOP but did not know where to find it (or in some cases, even feel a need to access it); or did not know how to use it because they had never received any specific training. Thus, our survey questions that asked staff whether they had read their school's "EOP" and how recently they had received training on the EOP were obviously problematic because it is not clear exactly which materials staff referred to when they read those questions (e.g., a classroom flipchart versus the entire written plan).

In a few cases, interviews uncovered that the EOP was not exactly accurate, because it had not been updated recently enough to account for new or modified emergency protocols (as we also discovered in the analysis of open-ended survey questions and during reporting back sessions). In some schools, new procedures (e.g., run, hide, fight; stop, look, listen protocols) had been practiced during drills and discussed during trainings but not yet documented in the EOP (because nobody at the school had time to update it). Accordingly, in some instances our survey questions, which were derived explicitly from the EOPs that schools provided us, were sometimes assessing comprehension of procedures or concepts that were outdated or that in other ways conflicted with what they hear during in-person trainings. Staff and students also have access to a wide variety of perspectives on emergency preparedness, especially active shooter response, outside of what their school teaches them to do. Some staff members directly

> *"In person trainings are much more important than the written plan because nobody has time to read it; they have five other things to think about and people learn by practicing and being taught. You are taught and then can go back and reference it."*
>
> *—Principal, on the importance of in-person trainings and the role of the EOP*

acknowledged that their beliefs on the best ways (and how they intended) to respond to an active shooter differed from the school's formal protocols.

Likewise, staff are given considerable discretion when it comes to how often and how much of an EOP plan they review—or whether they review it at all. In all but a few schools, there were very few mechanisms in place to ensure staff had reviewed at least relevant parts of the plan on a regular basis or as part of their safety training. Counselors and psychologists in one school were not sure they had ever reviewed the plan or even how to access it if they needed it, with one noting that they thought they had received a copy of it at one point but that realistically they would never have time to sit down and read a document like that. One teacher at a school with an especially long EOP (i.e., hundreds of pages) realized the importance of being familiar with the plan and knowing how to navigate it, but indicated it had taken her 10 years to read it in its entirety and understand its contents. Although one principal believed in the necessity of having a written plan, he viewed them as a less important tool for training people to respond. To him, in-person trainings were more critical because that is how people learn: "by practicing and being taught."

Some staff saw relatively little, if any, value in reading the plan at all because they believed it to be highly unlikely for anyone to follow protocols should an emergency actually occur. They also believed that it was unrealistic to think there was anything a school could do if someone has an intention to harm people ("If someone wants to do something, you can't stop them"). Although they generally believed their schools do well enough jobs of preparing for emergencies, they also described emergencies as virtually "unpreparable" because the tendency for people to panic would undermine any efforts the school made to prepare. One counselor noted that trying to prepare for an active shooter situation was like "chasing a moving target" because no matter how much you practice, no matter how much people know about their protocols, the reality of the situation will be something completely different from what the school has prepared for. One SRO in another school also questioned the importance of the school's written protocols and instead believed that it was more essential to teach a survivor's mentality in which students and staff become adept at making effective, in-the-moment decisions based on the information at hand—regardless of what the school's EOP says they should do. In his perspective, the burden should be on the individual to assess the situation and make the decision most optimal for their survival.

The Impact of Threatening Events on Emergency Operations

Our purposive sampling approach explicitly prioritized the recruitment of some schools that had enacted an emergency evacuation or lockdown in response to a real or perceived human-caused threat in the years leading up the study. We recruited these schools because we viewed it as opportunity to learn about how these experiences impact the school's engagement with emergency planning efforts and uncover lessons learned that emerge when students and staff

must execute emergency procedures in real time and outside of the training environment. Interestingly, in general, interviews did not yield much information about lessons learned from enacting emergency protocols or about whether those experiences had a genuine impact on emergency planning or the extent to which students and staff engage with the topics of school safety and emergency preparedness. Quite often, staff did not recall those events at all—sometimes because they were not employed at the school when the incident occurred or because it had been too many years and they had simply forgotten about it or at least could not recall the details about how the school responded or whether their response was effective. In many cases, even if they did remember, they could not pinpoint specific impacts that the event had on the school. These findings indicate that, in order to learn about the impacts of emergency incidents, it is critical to speak with staff and students immediately after an incident has taken place.

> *"I don't think it's good policy to lock people into a mindset, I don't want it to be muscle memory, because no crisis is going to be muscle memory…who am i to tell you, and dictate what you should do in a specific crisis situation?"*
>
> *— SRO, on the usefulness of written protocols*

One exception to this pattern was that some head administrators believed that comprehension of emergency protocols was high in their school in part because the school had recently experienced a dangerous event that made people realize that "violence can happen here" and that emergency preparedness must be taken seriously and is everyone's responsibility. Some of the regression models predicting staff comprehension levels provided preliminary support for this idea, as staff from schools who had recently enacted an emergency protocol scored higher on average than staff employed in schools that had not even after controlling for school enrollment size, urbanicity, and school type.

Another school's experience reacting to a firearm incident at the high school across the street was learning that staff and students cannot and do not always follow the protocols described in their EOP when a real event occurs. For instance, as the school went into lockdown, teachers unlocked the main doors to let students from the nearby high school into the building even though their protocols directed them not to and even though those students could have been among those perpetrating violence. They learned that even though the EOP is an important resource, sometimes breaking protocol is what is needed in the moment and people must have the freedom to use their judgment about how to keep each other safe. A custodian at another school described as eye-opening an experience when a dangerous individual was known to be in close proximity to the school, which initiated a schoolwide lockdown, but students—rather than following lockdown procedures they had practiced all year—used the time to joke around, socialize, and play on their phones. For him, the key lesson learned was that the school's efforts to become prepared might ultimately be futile if the key players do not recognize the seriousness of the situation and do not enact the procedures in they have been trained.

Rather than pointing to specific lessons learned about incidents at their own schools, some staff pointed to the importance of learning from high-profile school shootings that occur

throughout the country and incorporating lessons learned from those events into their own planning efforts. For instance, one school implemented a "stop-look-listen" protocol to supplement their regular evacuation procedures in addition to a system for staff to receive emergency notifications via text, phone, email, and the PA system in response to lessons learned from the shooting at Marjory Stoneman Douglas High School. Others described that shooting, in addition to others, such as at Sandy Hook Elementary, as inspiration for adding covers to classroom windows, incorporating ALICE active shooter trainings, and installing bullet-resistant glass on windows and doors and a two-stage buzz-in system for visitors.

Recommendations

Based on these findings, we make the following recommendations for schools and leaders of safety planning:

- Clearly define what materials constitute the EOP and then train staff to understand what it is, why it is valuable, and how they are expected to use it (e.g., regular reviews of the entire document; partial reviews of areas relevant for each position, only as needed). Likewise, trainings should cover expectations for how room flipcharts and other quick-reference guides should be used. If there is an understanding and acceptance that those materials will be used in lieu of the entire plan, flipcharts and quick-reference guides should be compiled very carefully and thoughtfully to ensure they effectively communicate the most important information in a way that is consistent with the larger EOP but also relevant to the staff who need the information (e.g., customizing quick-reference guides to staff roles and location on campus). During trainings, communicate the importance of all staff having basic knowledge of their options for responding to different emergency situations—because it can never be guaranteed that there will be someone more knowledgeable around to call the shots. Moreover, explain that emergency preparedness is everyone's responsibility—a system only as good as its weakest link. Ensure that staff understand the importance of drills, documented protocols, and other efforts to get buy-in to these activities, reiterating that these procedures (while far from infallible) are currently the most actionable lines of defense that schools have for responding to unpredictable emergency situations. Even if the school advocates an options-based approach to active shooters or promotes students and staff adopting a "survivor's mindset," educate staff that learning the basics of the procedures is a necessary building block before other options can be considered viable.
- Consider EOP development to be an ongoing process rather than treating it as a static document that gets shelved. Schools must adopt a model of continuous improvement and remain committed to uncovering and incorporating new information that can make the EOP more accurate and effective. This information might come from talking with students and staff, learning from emergency situations at schools elsewhere in the country, or incorporating insights learned from recent drills.
- Update EOPs immediately after protocols change or new ones are added. Not updating the plan minimizes its usefulness because it cannot be used by staff to

review current procedures and does not work toward establishing a sustainable emergency management system that can be passed down along with changes in leadership or staff turnover. Additionally, efforts must be made on an ongoing basis to ensure that the prescribed protocols are realistic and possible and when they are not, indicate how and when modifications should be made.

- Create an inclusive culture around emergency preparedness. Involving more staff in leadership roles and providing opportunities to serve on safety teams, develop plans and policies, and learn additional skills will help build investment in school safety, increase exposure to core procedures, foster confidence, and better prepare individual actors within the system. Take a critical look at the entire system, determine whether certain types of staff are less connected to that system, and identify ways to get them more involved. Discuss whether part-time, contract, and other support staff could benefit from focused training efforts.
- Talk about safety issues with students and staff. Solicit their feedback about what helps them feel informed and prepared. Whether it is drills, tabletop or other exercises, or quick-reference guides—they have a lot to say about what works. They have information about unsafe spaces on campus, gaps in security, or problems with specific procedures. Create formal channels of communication that students and staff can use to express their thoughts and ideas about safety and emergency planning. Those insights can be used to improve security and enhance the usefulness of EOP materials, drills, and other training efforts. Consider making short debriefing sessions with students mandatory immediately after drills to ensure there is a safe space where students can ask questions (especially those who may need extra support).
- Consider incorporating more scenario-based training opportunities for all staff and students, because many believe this is what they need to feel fully prepared. If possible, manipulate the circumstances of drills (e.g., the timing of a drill or the location of students at that moment) to assess where gaps are and where more support is needed. Schools might also consider developing scenarios during tabletop exercises and documenting them in the EOP or in a "emergency scenario handbook" that staff can reference and utilize as a training resource.

7. Concluding Remarks

The National Institute of Justice's Comprehensive School Safety Initiative afforded RTI International an extraordinary opportunity to take an intimate look at how 10 American schools prepare for violent events and other emergency situations. Through four project phases, the study has helped to demystify the reality of emergency operations plans—including what they look like, what information they contain, and how they are perceived and actually used in schools. Obtaining access to school EOPs demonstrated several different approaches to developing written plans and a significant amount of variation across them—so much so that comprehension assessments had to be customized for each school.

Some of the schools kept short, concise EOPs that covered a fraction of the material recommended at the federal level. After reviewing the plans and getting the chance to talk with staff, it became obvious that the benefit of plans like this is that they present an amount of information with which is reasonable for staff to actually engage. They may not come close to covering all of the areas that might be important for preventing, responding to, and recovering from emergencies, but they represent something that staff might actually use. Conversely, other schools kept extremely comprehensive, lengthy EOPs that document their emergency management system in extensive detail. Here, the advantage is that the emergency planning team has devoted a substantial amount of time to thinking through the nuances of their system; by documenting this level of detail, they have created a sustainable emergency system that can easily be passed down through changes in leadership or significant staff turnover. The downside is that plans of this size lose value as a training resource because staff who are already strapped for time will likely never engage with all of it.

Moreover, we learned that in many schools, despite its potential as a reference guide and training resource, the EOP is not always disseminated to staff with the expectation that they will regularly refer to it as a means of mastering emergency concepts and protocols. Rather, a more common viewpoint was that people learn by participating in in-person drills, tabletop exercises, and other activities better than they do by reading protocols from a document, and that the EOP itself is more of a way for top administrators to document the many details of the emergency management system or even use as a resource to reference during emergencies. Visiting schools and talking with staff also uncovered that it is not always entirely clear what constitutes an EOP; in fact, a nontrivial number of staff we spoke to believed that handouts, protocols printed on classroom posters, or other supplementary materials represented their school's entire EOP. Some were not sure if they had ever seen the entire EOP, but doubted that they would engage with it even if they were to see it.

In retrospect, it makes sense that staff comprehension levels were strong when questions measured knowledge of basic concepts and procedures (e.g., those listed in handouts and classroom charts or that are more likely to be covered during drills and other in-person training activities) but lower regarding questions about more advanced or specialized procedures that

are documented in the larger EOP but not in quick-reference materials. Likewise, learning that EOPs do not always reflect the terminology and procedures that schools actually use in day-to-day emergency planning and operations also highlighted a disconnect when the EOP is used to develop questions measuring knowledge of a school's emergency operations. We encourage all schools to take a critical look at their EOP and engage in a collaborative process to transform it into something that staff can use in their training. Drills and other in-person activities are important for learning and managing protocols, but they are also time-consuming, require a great deal of planning and coordination, and can be highly disruptive to the schoolday and psychologically impactful on students and staff. Treating the EOP as a training resource is a low-cost, low-burden strategy that schools can use in addition to drills, tabletop exercises, regular debriefing, and other activities to create a well-rounded system for helping people learn and stay up-to-date on emergency operations.

Although the school community holds a wealth of information and has great potential as a resource, it is a challenge for schools to confer with its members and devise effective dissemination strategies so that materials are user-friendly, relevant, and help people feel more prepared. For example, given the concerns students and staff have about needing more guidance for different scenarios and circumstances (in other words, how the school's procedures are impacted under different scenarios), schools should consider developing scenarios for a wide range of events, customizing them to their campus and school community, and incorporating them into the EOP or into an "emergency scenario" handbook that staff can review on a predetermined schedule and refer back to in times of need. This type of strategy, if enacted effectively, could help staff and students internalize the purpose of and nature of core emergency procedures—this opportunity to review different scenarios and think about how various responses could impact the outcomes of the event could also help build up what some respondents referred to as a "survivor's mindset" that is capable of quickly assessing the available information, weighing different options, and making a well-informed decision.

Despite the reality of how EOPs are actually used in schools (e.g., as a mechanism for documenting procedures rather than as a training and education resource), the results of the project's EOP comprehension assessments—and the value of these assessments more broadly—remain highly informative. Ideally, EOPs document core emergency procedures and concepts that are also used in trainings and quick-reference materials. Therefore, comprehension assessments based on EOPs reveal important information about what the school community knows about its emergency procedures (although to varying extents). However, top administrators and leaders of emergency planning teams are in the best position possible to conduct their own assessments of their staff and students—because only they have the necessary knowledge of what and how protocols are communicated, which staff should be knowledgeable of which concepts and procedures, and what students are expected to know.

Undoubtedly, creating a regular, more formal mechanism for assessing a school community on comprehension of emergency procedures and access to important resources is worthwhile

because it can reveal critical insights about the school's strengths and needs. The current study showed that staff and students are proficient at knowing which threats and circumstances correspond to different emergency procedures, but that they may need additional and higher-quality training for enacting core emergency procedures or access to different types of resources (e.g., scenario-based training) to feel confident in their abilities to respond. It revealed that certain types of staff are considerably less engaged with the larger emergency management system, highlighting the need for a more inclusive system and more focused training efforts for those staff. It also uncovered that reading the EOP and receiving EOP training helps people feel more prepared.

At the same time, results suggest that although reading the EOP, receiving EOP training, and serving on emergency planning or crisis response teams are important, these activities alone are not sufficient for ensuring people feel confident and fully understand roles, responsibilities, and actions to follow during all emergency situations. Rather, these efforts must be combined with regular in-person opportunities to practice and discuss the complexities of various emergency responses. Alternatively, findings also indicate that in-person trainings alone are not enough to prepare the entire school community and that all staff should be given opportunities to read the plan and become directly involved in planning efforts. Specifically, attending in-person trainings is not always feasible for all staff—which makes it critical to have a written resource they can reference at any time, regardless of the school's training schedule. Additionally, the EOP covers many details that cannot always be a focus of drills or other in-person trainings (e.g., the location of the family reunification site and family reunification procedures). In fact, if drills and other in-person training activities accurately and effectively covered all of the details written in the EOP, we might not expect to see significant differences in EOP comprehension based on whether people had read the plan or served on a planning committee. However, we did find those differences, because the reality is that the EOP provides the school community with additional critical information about their school's emergency procedures beyond what is typically possible in drills or training exercises.

The process of creating comprehension assessments will require time and effort, because top safety officials will have to first determine which parts of the plan are relevant for all staff, versus only select types of staff members. However, if conducted on a regular basis, these assessments have important potential for gaining insights into the effectiveness of trainings, gaps in knowledge around procedures, and which members of the school community might need additional supports. Additionally, that process can be leveraged to create staff-specific mini EOPs that will often be more useful than the full EOP and more informative than generic protocols often included in classroom flipcharts or quick-reference guides.

8. Future Directions

The findings from this study are by no means representative of all schools and the nature of their emergency management systems. The results presented in this report are based on a small study of just 10 middle and high schools within eight rural, town, or suburban school districts. The staff in the schools were overwhelmingly White and non-Hispanic. Moreover, seven of the schools were identified by district officials as schools with model emergency plans in place. Thus, not only do these results not speak to emergency operations in urban, inner-city schools (in which violence is often more likely) or elementary settings, the study's focus on model schools and those that have recently enacted emergency procedures means the results do not necessarily reflect the strengths and needs of other schools in the United States. Future research should explore issues of emergency operations and comprehension in a larger and more representative sample—although, as we experienced, researchers will likely face considerable challenges accessing EOPs in urban schools that may be less willing to share materials with outside parties. It would also be worthwhile to develop comprehension assessments based on a variety of data sources in addition to EOPs, including interviews with top safety officials and observations of drill, tabletop exercises, and other activities to gain a more holistic understanding of emergency operations within specific schools and to ensure that the questions that are asked and how they are asked reflect the procedures and concepts that students and staff practice and are expected to know. Additionally, along with future research that takes a similar interest in exploring how various behaviors impact mastery of emergency procedures (e.g., serving on a planning team, receiving EOP training, reading the EOP), there is a need for evaluation research to study the effect that creating a more inclusive emergency management system and incorporating staff and student insights on gaps in security and training needs has on school emergency preparedness and whether regular comprehension assessments can help improve trainings and inform the effective targeting of school resources.

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Appendix A: List of Resources Used to Inform the EOP Assessment Rubric

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Appendix B: Condensed EOP Rubric (80 items within 9 Discrete Sections)

	Section (1)	Basic documentation
1		Cover Page with title, date, and schools covered by the plan
2		Promulgation Document/Signatures (i.e., a signed statement formally recognizing and adopting the school EOP; gives both the authority and responsibility to school officials to perform their tasks before, during, and after an incident, and should be signed by the school administrator or other authorizing official)
3		Record of Changes (e.g., includes change number, date of the change, name of the person who made the change, summary of the change)
4		Record of Distribution (e.g., includes title and name of the person receiving the plan, agency to which the recipient belongs, date of the delivery, and number of copies delivered)
5		Introduction/Approval and Implementation (e.g., introduces the plan, indicates that it supersedes all previous plans, includes a delegation of authority for specific modifications that can be made to the plan and by whom they can be made without the school administrator's signature, includes a date and is signed by the authorized school administrators, includes a description of the purpose of the EOP, includes a situation overview that describes why the EOP is necessary, threats and hazards that pose a risk to the school and would result in the use of the plan, dependencies on parties outside of the school for critical resources)
6		A page number provided on each page
7		One table of contents that provides a layout of the major sections and subsections of the plan that makes finding information easier (i.e., links specific sections to page numbers)
	Section (2)	**CONOPS**
8		A section called "Concept of Operations" (also known as the "CONOPS" section) (or something similar), a written or graphic statement that explains in broad terms the school administrator's intent with regard to an operation
9		Gives an overall picture of how the school will protect students, staff, and visitors
10		Identifies those with authority to activate the plan
11		Describes how plans consider the architectural, programmatic, and communication rights of individuals with disabilities and others with access and functional needs
12		Identifies other response and support agency plans that directly support the implementation of the school's EOP (e.g., city or county EOP, school EOPs from schools co-located on the campus)
13		Explains the primary purpose of actions taken before an emergency is to prevent, protect from, and mitigate the impact on life or property
14		Explains that the primary purpose of actions taken during an emergency is to respond to the emergency and minimize its impact on life or property
15		Explains that the primary purpose of actions taken after an emergency is to recover from its impact on life or property

	Section (3)	Roles and responsibilities
16		A section called “Organization and Assignment of Responsibilities” (or something similar). This section provides an overview of the broad roles and responsibilities of school staff, families, guardians, and community partners, and of organizational functions during all emergencies. It should describe the broad roles and responsibilities of individuals that apply during emergencies (e.g., principals and other school administrators, teachers, support personnel, parents and guardians, community-based organizations) and informal and formal agreements in place for the quick activation and sharing of resources (e.g., fire department, police department, neighboring schools)
17		A section called “Direction, Control, and Coordination” (or something similar) This section describes the framework for all direction, control, and coordination activities. It should explain the and/or a description of the ICS structure as used by the school
18		Relationship between the EOP and the district or community emergency management system
19		Who has control of the equipment, resources, and supplies needed to support the school EOP
20		A description of the planning team (i.e., a diverse group of members that collectively represent multiple perspectives, as opposed to a single individual or a small handful of individuals in similar roles) developed the EOP (the planning team may go by different names, such as the incident response team, crisis response team, crisis intervention team, crisis management team, safety team, etc.)
21		The collaborative planning team includes representation from community emergency management (e.g., local law enforcement, fire officials, or public health practitioners)
	Section (4)	**Basic security**
22		A section called “Security” (or something similar) that describes functional protocols for the courses of action that schools will implement on a routine, ongoing basis to secure the school from criminal threats originating from both inside and outside the school. This includes efforts done in conjunction with law enforcement personnel. The planning team should consider the following when developing its goals, objectives, and courses of action:
23		How to make sure the building is physically secure (including implementation of Crime Prevention Through Environmental Design [CPTED])
24		How to keep prohibited items out of school
25		The school has a formal and standardized access control policy that requires exterior doors to be locked during the schoolday with some form of controlled access for a single point of entry.
26		The school has a formal and standardized visitor management procedure that requires all visitors to sign in and receive badges based on their government-issued photo identification cards before visiting the school buildings.
27		The school does not post building plans for the school in an unsecure web-accessible manner.
28		The school does not post emergency plans and procedures in an unsecure web-accessible manner.
	Section (5)	**Threat assessment**
29		The EOP discusses threat assessment.
30		The school’s written threat assessment process includes a standardized assessment form that specifies the types of actions the school will take to respond to specific types/levels of threats posed by students or staff.

	Section (6)	Emergency procedures
		Evacuation
31		A section called “Evacuation” (or something similar) that describes functional protocols for courses of action that schools will execute to evacuate school buildings and grounds. The planning team should consider the following for this section:
32		How to safely move students and visitors to designated assembly areas from classrooms outside areas, cafeterias, and other school locations
33		How to evacuate when the primary evacuation route is unusable
34		How to evacuate students who are not with a teacher or staff member
35		How to evacuate individuals with disabilities and others with access and functional needs including language, transportation, and medical needs
36		A section that describes functional protocols for reverse evacuation. This section should focus on courses of action that schools will execute to reenter school buildings and grounds following an evacuation
		Lockdown
37		A section called “Lockdown” (or something similar) that describes functional protocols for preventive (i.e., all exterior and classroom doors locked; hallways clear of students but learning continues) and emergency lockdown. This section focuses on the courses of action schools will execute to secure school buildings and grounds during incidents that pose an immediate threat of violence in or around the school. The primary objective of a lockdown is to quickly ensure all school staff, students, and visitors are secured in the rooms away from immediate danger. The planning team should consider the following:
38		How to lock all exterior doors and when it may or may not be safe to do so
39		How to lock all interior doors and when it may or may not be safe to do so
40		How particular classroom and building characteristics (e.g., windows, doors) impact possible lockdown courses of action
41		What to do when a threat materializes inside the school
42		When to use the different variations of a lockdown
		Shelter in Place
43		A section called “Shelter in Place” (or something similar) that describes functional protocols for courses of action when students and staff are required to remain indoors, perhaps for an extended period of time, because it is safer inside the building or a room than outside. Depending on the threat or hazard, students and staff may be required to move to rooms that can be sealed (such as in the event of a chemical or biological hazard) or without windows, or to a weather shelter (such as in the event of a tornado)
44		What supplies will be needed to seal the room and to provide for the needs of students and staff (e.g., water)
	Section (7)	**Threat and hazard specific annexes that describe the courses of action that the school will implement during the following adversarial and human caused threats/hazards:**
		School assessment
45		The EOP discusses a school threat and hazard identification assessment to identify a list of current and historical threats and hazards in the school and surrounding community, typically informed by threats and hazards the school or surrounding community has faced in the past including those outside of the schoolday and at off campus events
46		The threat and hazard identification assessment process utilizes a standardized assessment instrument that is identified in the policy
		Specific threats and hazards
47		Fire
48		Explosion
49		Bomb threats
50		Schoolbus/motor vehicle crashes/accidents

51		Suspicious packages
52		Cyberattacks/security breach
53		Possession of a weapon
54		Assault/fights
55		Active/armed intruder/assailant
56		Hostage situation
57		Missing person/kidnapping
58		Civil unrest/demonstration/riot
59		Gang violence
60		Domestic violence and abuse
61		Child abuse
62		Sexual assault/rape
63		Restraint/physical intervention procedures
64		Angry parent
65		Medical emergencies/severe injury
66		Stabbing or gunshot wound
67		Self-injury or suicide threat or attempt
	Section (8)	**Post incident procedures and communication**
68		A section called "Accounting for all persons" (or something similar) that describes functional protocols for developing courses of action for accounting for the whereabouts and wellbeing of students, staff, and visitors, and identifying those who may be missing (e.g., how staff will determine who is in attendance at the assembly area, what to do when someone cannot be located, how staff will report to the assembly supervisor)
69		A section called "Information, Collection, Analysis, and Dissemination" (or something similar) that addresses the role of information in the successful implementation of the activities that occur before, during, and after an emergency. It should identify the type of information that will be helpful in the successful implementation of the activities that occur before, during, and after an emergency, such as weather reports, law enforcement alerts, radio alerts, and crime reports in addition to mental health agency website and hotlines, emergency management and relief agency websites and hotlines. Ideally, each identified type of information should describe the source of the information, how the information is collected and shared, format for providing the information to those who will use it, and when the information should be collected and shared.
70		A section that describes functional protocols for family reunification/the EOP contains a section called "Family Reunification." This section details how students will be reunited with their families or guardians. Information might include how to inform families about the reunification process in advance, a description of roles and responsibilities of staff members during reunification, how to verify that an adult is authorized to take custody of a student, how to facilitate communication between the parent check-in and the student assembly and reunion areas, how to ensure students do not leave on their own, how to protect the privacy of students and parents from the media, how to reduce confusion during the reunification process, how frequently families will be updated, and how to account for technology barriers faced by students, parents, or staff.
71		K–12 schools are not used as reunification centers (unless no other viable facility is available).
72		A section called "Recovery" (or something similar) that describes functional protocols for how schools will recover from an emergency. The four most fundamental kinds of recovery are academic recovery (e.g., describes when the school should be closed and reopened, and who has the authority to do so; what temporary spaces the school may use if school buildings cannot immediately reopen, and how to provide alternate educational programming if students cannot physically reconvene), physical and fiscal recovery (e.g., describes how to document school assets, which personnel have knowledge of the schools assets, how they

		will access records to verify current assets after a disaster, where they will access records to verify current assets, how the school will work with utility and insurance companies before an emergency to support a quicker recovery, how district leadership will be included, how staff will receive timely and factual information regarding returning to work, and what sources the school may access for emergency relief funding) and psychological and emotional recover (e.g., describes who will serve as the team leader, where counseling and psychological first aid will be provided, and how teachers will create a calm and supportive environment for students, share basic information about the incident, provide psychological first aid if trained to do so, and identify students who may need counseling, who will provide trained counselors, how to address the counseling needs of students, etc.).
73		The school has a written NIMS protocol and documented ICS.
	Section (9)	**Supporting information**
74		A section called "Training, Exercises, and Education" (or something similar) that describes critical training and exercise activities the school will use in support of the plan, including core training objectives for each one
75		Establishes the expected frequency of exercises to be conducted by the school; content may be influenced based on similar requirements at the district and/or local jurisdiction level(s)
76		The EOP has plans and guidelines for conducting emergency drills, tabletop exercises, functional exercises, or full-scale exercises.
77		Emergency plans and procedures are customized at the building level (planners considered each building's unique conditions and circumstances and developed emergency procedures and course of actions that make sense for those conditions and circumstances).
78		Maps and floor and site plans
79		Descriptions of key operational locations of on- and off-campus evacuation sites and shelter-in-place zones
80		EOP describes "go kits" (also called "emergency evacuation kits" or "go-bags") that will help prepare students/staff for an evacuation or shelter in place emergency. The contents of these kits should be determined by the planning team or administrators responsible for making decisions about emergency preparedness plans. Examples of the types of items that may be considered include a current class roster for each classroom with home and emergency phone numbers, emergency medical information for students, copy of emergency procedures, a map of the school, crisis response equipment (two-way radios, cellular telephones, fully charged batter operated bullhorn), maps of the surrounding community, maps with evacuation routes, first aid supplies, flashlights and batteries, activities for students, papers and pens, a clipboard, names and contact information for crisis intervention team members, lists of assigned roles for school personnel and division personnel, staff roster that identifies those with CPR and EMT training, snacks, a whistle, blankets, toilet paper, safety vests and helmets, sample statements or letters for communicating with parents, and information on fire alarm turn-off procedures and utility shutoff valves.

Appendix C: School Scores for Each Component of the EOP Assessment

Section of the EOP Assessment Rubric	School ID									# of EOPs that Satisfied Each Component
	1	2	3	4	5	6	7	8, 9	10	
(1) Basic documentation Raw score for section:	6	0	5	6	6	0	4	7	5	
Cover Page with title, date, and schools covered by the plan	✓		✓	✓	✓		✓	✓	✓	7
Promulgation Document/Signatures	✓		✓					✓	✓	4
Record of Changes	✓			✓	✓			✓		4
Record of Distribution	✓			✓	✓			✓		4
Introduction/Approval and Implementation	✓		✓	✓	✓		✓	✓	✓	7
A page number on each page	✓		✓	✓	✓		✓	✓	✓	7
One table of contents that links specific sections to page numbers			✓	✓	✓		✓	✓	✓	6
(2) CONOPS Raw score for section:	6	2	2	5	5	2	3	6	1	
A section called "Concept of Operations" (or something similar)	✓			✓	✓		✓			4
Give an overall picture of how the school will protect students, staff, and visitors	✓			✓	✓		✓	✓	✓	6
Identify those with authority to activate the plan	✓	✓	✓	✓	✓	✓	✓	✓		8
Describes how plans account for the architectural, programmatic, and communication rights of individuals with disabilities and others with access and functional needs	✓	✓						✓		3
Identifies other response and support agency plans that directly support the implementation of the school's plan			✓			✓				2
Explain the primary purpose of actions taken before an emergency	✓			✓	✓			✓		4
Explain the primary purpose of actions taken during an emergency	✓			✓	✓			✓		4
Explain the primary purpose of actions taken after an emergency								✓		1
(3) Roles and responsibilities Raw score for section:	4	3	3	5	5	1	2	4	3	
A section called "Organization and Assignment of Responsibilities" (or something similar)			✓	✓	✓			✓		4
A section called "Direction, Control, and Coordination"	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Describes relationship between the EOP and the district or community emergency management system				✓	✓				✓	3
Describes who has control of the equipment, resources, and supplies needed to support the school plan	✓			✓	✓				✓	4
Describes how the planning team developed the plan	✓	✓	✓	✓	✓		✓	✓		7

Section of the EOP Assessment Rubric	School ID									# of EOPs that Satisfied Each Component
	1	2	3	4	5	6	7	8, 9	10	
The collaborative planning team includes representation from community emergency management	✓	✓						✓		3
(4) Basic security Raw score for section:	1	5	3	2	2	1	5	7	5	
A section called "Security" (or something similar)			✓				✓	✓	✓	4
Describes how to make sure the building is physically secure										0
Describes how to keep prohibited items out of school										0
Has a formal and standardized access control policy							✓	✓	✓	3
Requires all visitors to sign in and receive badges based on their government-issued photo Identification cards		✓	✓			✓	✓	✓	✓	6
Does not post building plans for the school in an unsecure web-accessible manner		✓	✓	✓	✓			✓	✓	6
Does not post emergency plans and procedures in an unsecure web-accessible manner		✓		✓	✓		✓	✓	✓	6
(5) Threat assessment Raw score for section:	1	0	0	0	0	1	0	2	0	
The EOP discusses threat assessment	✓					✓		✓		3
The school's written threat assessment process includes a standardized assessment form that specifies the types of actions the school will take to respond to specific types/levels of threats posed by students or staff								✓		1
(6) Emergency procedures Raw score for section:	12	8	9	9	9	7	5	7	7	
Evacuation										
A section called "Evacuation" (or something similar)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Describes how to safely move students and visitors to designated assembly areas from classrooms outside areas, cafeterias, and other school locations	✓			✓	✓	✓		✓	✓	6
Describes how to evacuate when the primary evacuation route is unusable	✓	✓		✓	✓	✓				5
Describes how to evacuate students who are not with a teacher or staff member				✓	✓				✓	3
Describes how to evacuate individuals with disabilities and others with access and functional needs including language, transportation, and medical needs	✓	✓		✓	✓		✓	✓		6
Describes functional protocols for reverse evacuation	✓							✓		2
Lockdown										
A section called "Lockdown" (or something similar)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9

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Section of the EOP Assessment Rubric	School ID									# of EOPs that Satisfied Each Component
	1	2	3	4	5	6	7	8, 9	10	
Describes how to lock all exterior doors and when it may or may not be safe to do so			✓							1
Describes how to lock all interior doors and when it may or may not be safe to do so	✓	✓	✓							3
Describes how particular classroom and building characteristics impact possible lockdown courses of action	✓		✓				✓			3
Describes what to do when a threat materializes inside the school	✓	✓	✓	✓	✓	✓		✓	✓	8
Describes when to use the different variations of a lockdown	✓	✓	✓	✓	✓	✓			✓	7
Shelter in Place										
A section called “Shelter in Place” (or something similar)	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Describes what supplies will be needed to seal the room and to provide for the needs of students and staff (e.g., water)	✓		✓							2
(7) Threat/hazard-specific sections	14	14	9	3	6	3	16	16	13	
School assessment										
The EOP discusses a school threat and hazard identification assessment	✓	✓					✓	✓		4
The threat and hazard identification assessment process utilizes a standardized assessment instrument that is identified in the policy		✓						✓		2
Specific threats and hazards										
Fire	✓	✓	✓			✓	✓	✓	✓	7
Explosion	✓	✓	✓				✓	✓	✓	6
Bomb threat	✓	✓	✓	✓	✓	✓	✓	✓	✓	9
Schoolbus/motor vehicle crashes/Accident	✓	✓	✓				✓	✓	✓	6
Suspicious package	✓		✓				✓	✓	✓	5
Cyberattacks/security breach										0
Possession of a weapon	✓						✓	✓	✓	4
Assault/Fights	✓	✓					✓	✓	✓	5
Active/armed intruder/assailant		✓	✓	✓	✓	✓	✓	✓	✓	8
Hostage situation		✓			✓		✓	✓	✓	5
Missing person/kidnapping	✓	✓			✓		✓	✓	✓	6
Civil unrest/demonstration/riot			✓		✓			✓	✓	4
Gang violence		✓					✓			2
Domestic violence and abuse		✓								1
Child abuse	✓		✓				✓			3

Section of the EOP Assessment Rubric	School ID									# of EOPs that Satisfied Each Component
	1	2	3	4	5	6	7	8, 9	10	
Sexual assault/rape	✓	✓					✓	✓		4
Restraint/physical intervention procedure										0
Angry parent									✓	1
Medical emergencies/severe Injury	✓		✓				✓	✓		4
Stabbing or gunshot wound	✓									1
Self-injury or suicide threat or attempt	✓	✓		✓	✓		✓	✓	✓	7
(8) Post-incident procedures and communication	3	2	1	4	5	0	1	4	1	
A section called “Accounting for All Persons” (or something similar)	✓			✓	✓					3
A section called “Information, Collection, Analysis, and Dissemination” (or something similar)				✓	✓					2
A section that describes functional protocols for family reunification		✓		✓	✓		✓	✓		5
States that K–12 schools are not to be used as reunification centers					✓			✓		2
A section called “Recovery” (or something similar)	✓							✓		2
Has a written NIMS protocol and documented ICS	✓	✓	✓	✓	✓			✓	✓	7
(9) Supporting information	7	3	3	6	6	4	4	4	1	
A section called “Training, Exercises, and Education” (or something similar)	✓			✓	✓			✓		4
Establishes the expected frequency of exercises to be conducted by the school	✓	✓	✓	✓	✓			✓		6
Plans and guidelines for conducting emergency drills, tabletop exercises, functional exercises, or full-scale exercises	✓		✓	✓	✓		✓			5
Emergency plans and procedures are customized at the building level	✓					✓	✓			3
Includes maps and floor and site plans	✓	✓		✓	✓	✓	✓	✓		7
Describes key operational locations of evacuation sites and/or shelter-in-place zones	✓	✓		✓	✓	✓				5
Describes “go kits”	✓		✓	✓	✓	✓	✓	✓	✓	8