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Earthquake Early Warning and Schools Survey: California

Between March 30 and June 15, 2022, our research team at the Natural Hazards Center at the University of Colorado Boulder invited superintendents from every public school district in **Alaska, California, Oregon, and Washington** (N=1,516) to participate in an online survey. This briefing sheet summarizes the preliminary results for the focal state of **California** from the portion of the survey that focused on the ShakeAlert® earthquake early warning system.

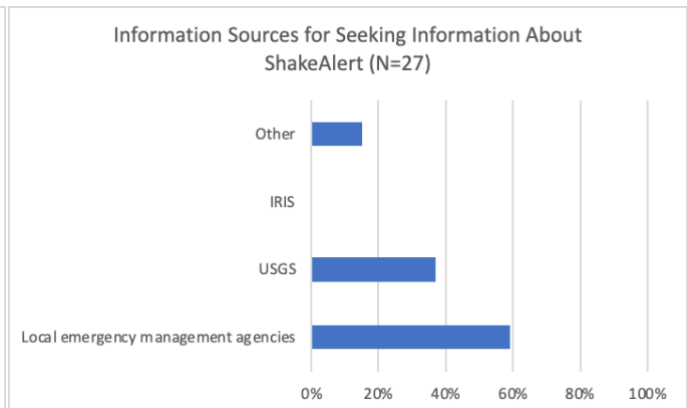
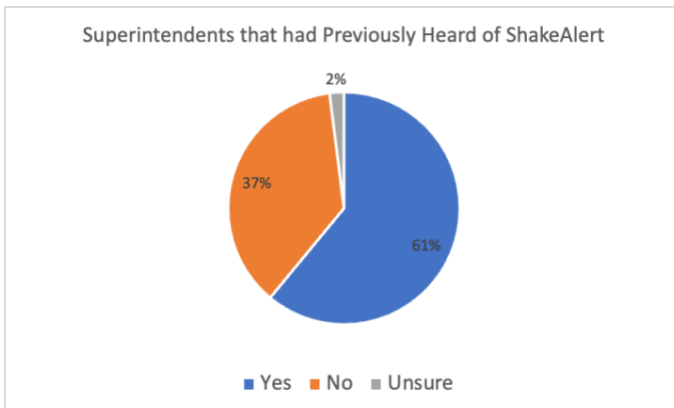
In total, **115** of the 987 school district superintendents in California completed the survey (11.7% response rate). California had the lowest response rate when compared to the other states in the four-state region included in this study.

Adoption and Funding of ShakeAlert

We found that only 37% of superintendents in California had heard of ShakeAlert. The most common source that superintendents turned to for more information was local emergency management agencies (59%) followed by the U.S. Geological Survey (37%).

Among those superintendents who knew about ShakeAlert, most had *not* yet considered incorporating it into district emergency preparedness or other operations plans (44%). However, 10% had started to consider it and 4% had taken steps to add it to plans. Most respondents (77%) indicated that the superintendent would be responsible for making the decision to adopt ShakeAlert.

In terms of the initial cost of installation, most respondents thought the state government (91%) should pay for it, followed by the federal government (49%), and the school district (20%). For the annual subscription option, most respondents thought that the state government should pay for it (77%), followed by the school district (42%) and the federal government (34%). If the school district were to assume the expense for the annual subscription, most respondents were willing to pay between \$100 and \$1500.



Potential Advantages of Incorporating ShakeAlert in Schools

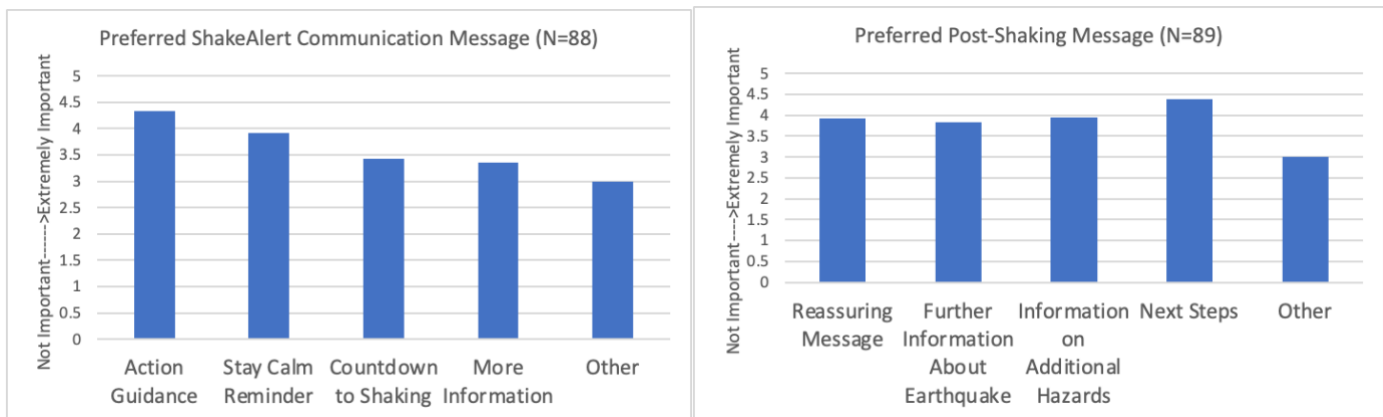
When asked about their level of agreement with opportunities that a 10-second alert could provide students, most superintendents strongly agreed that students would be able to drop, cover, and hold on (DCHO) and agreed that they could mentally prepare for shaking. Most respondents did *not* agree that a 10-second warning would allow students to evacuate. When asked about teachers and staff, most respondents strongly agreed that teachers and staff could DCHO and agreed it could allow them to mentally prepare for shaking, evacuate, and help students DCHO. Respondents were evenly split about agreement/disagreement with the ability for the alert to allow teachers and staff to communicate with school leadership. They also mostly did *not* agree that the alert could allow teachers and staff to communicate with parents.

Barriers to Incorporate ShakeAlert in Schools

When asked about barriers to adopting ShakeAlert in schools, most superintendents ranked financial costs of the system and diversion of funds from building maintenance/mitigation as major barriers and drill/warning confusion as a moderate barrier. Most respondents indicated that classroom disruption would not be a barrier.

Preferences for Alert Messaging

When asked about the preferred method to receive alerts, most respondents in California indicated SMS/text (77%), followed by siren/Public Address (PA) system (73%), smartphone app (49%), and computer alert (42%). In terms of the message provided in an alert, most respondents thought action guidance was extremely important, and that a reminder to stay calm and more information about the earthquake were moderately important. Most respondents were neutral about their ranking for a message with a countdown to shaking. For messaging after the shaking has stopped, most respondents thought a message about next steps, information on additional hazards, and a reassuring note were extremely important. Superintendents also ranked a message with further information about the earthquake as moderately important.



Tolerance for False Alerts

Most participants agreed that false alerts could moderately impact parent confidence in ShakeAlert, followed by parent confidence, student confidence, classroom instruction time, and warning/drill fatigue.

Next Steps and Additional Information

Our research team is currently analyzing the results of the survey by each focal state, as well as by comparing states across the region. We plan to publish and present the findings from this research to academic audiences as well as to educators and emergency managers. In addition, this research is designed to be useful and actionable for our partners at the U.S. Geological Survey (USGS), who are working to refine the messaging for ShakeAlert to ensure it reaches a broad and diverse userbase.

The project is led by a multi-disciplinary research team from the Natural Hazards Center at the University of Colorado Boulder in partnership with researchers at the USGS. More information about the study is available at: <https://hazards.colorado.edu/research-projects/nhc-usgs-earthquake-early-warning-and-schools-study>. Please visit the USGS website for more information on ShakeAlert and earthquake early warning: <https://www.usgs.gov/programs/earthquake-hazards/science/early-warning>. If you have additional questions, please contact Rachel Adams at Rachel.Adams-1@colorado.edu.