

# The Generational Gap: Children, Adults, and Protective Actions in Response to Earthquakes

# Theoretical Background

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- Protective Action Decision Model (Lindell & Perry, 2012)
- Emergent Norm Theory (Turner, 1964)
- Milling

# Research Questions

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*1) What protective actions do children and adults take during an earthquake?*

*1) Is there a generational gap in earthquake protective actions and preparedness education between children and adults?*

# Findings

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1) In earthquake prone regions of the U.S., students are taught to *Drop*, *Cover*, and *Hold On* and, for the most part, that is what they did.



*I will say from experience that everything from my own son, everything that was taught by his teachers, by his classroom, he did. If they couldn't get under [a desk], they found a wall. If they couldn't find a wall, they found a chair. They found something to protect themselves. They reacted and responded so appropriately, whether they were kindergarten or sixth grade. (Parent, Anchorage, Alaska)*

# Findings

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2) Adults, however, did not *Drop, Cover, and Hold On* as frequently as children and often took actions that are not currently recommended.



*If you watch the videos from Anchorage, every adult was running outside, which is the last thing you're supposed to do when it's shaking. As a community we got lucky that no one got hurt because every single adult ran outside. All my friends ran outside. I mean despite how much we talk about drop, cover, hold on...still people didn't do it. So even looking at that more so than the kids, because they all knew exactly what to do...and it's sad when you see kids that are at home and they have a home video and the mom is like running down the stairs, grabbing the kid, pulling him outside. The kid's not going to [say], "No Mom, we're supposed to get under the table." So that to me is also a big part of it. If it happened on a Saturday or a Sunday, who knows?*  
(Emergency Manager, Anchorage School District)

# Conclusions

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## 1) Drills do work

- a) Even non-earthquake drills contributed to protective action for students

## 2) A generational gap does exist

### a) Constructive reasons for why adults did not DCHO:

- i) Caring for others
- ii) Turning off gas/water to prevent further damage
- iii) Roles that required them to assess the situation and take immediate action

### b) Problematic reasons for why adults did not DCHO:

- i) Panicking
- ii) Freezing
- iii) Too much EQ experience
- iv) Lack of EQ experience
- v) Reverting to what they were taught as children
- vi) Acting based on flight or fight instincts

# Conclusions

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- 3) Pros and cons of milling behavior for children
- 4) Drills and training need to target adults both at school and at home for consistency across age groups
- 5) Gaps exist in earthquake drill schedules, such as during summer sessions where children and staff still occupy buildings
- 6) Earthquake training and education should be part of the onboarding process for new staff
- 7) More guidance is needed for what to do in schools once the shaking



# Schools, Earthquakes, and Early Warning Systems

*Study Phase 2: Survey*

# Study Design

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- **Goal:** To assess awareness, willingness, opportunities, and barriers to adopt ShakeAlert in K-12 schools in the four state region of Alaska, California, Oregon, and Washington in the western U.S.
- **Mode and Length:** 10-15 minute online survey (predominantly closed-ended questions, with perhaps a few open-ended questions)

# Study Design

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- **Sample:** One school superintendent from each school district in Alaska, California, Oregon, and Washington
  - The invitation letter to participate will also ask if there is an emergency manager for the district or other personnel in charge of emergency management activities.
  - We will ask for their contact information so that we can also invite them to participate in the survey.
- **Unit of Analysis:** Organizational level - School district

# Survey Constructs

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- ❖ Earthquake Experience
- ❖ Earthquake Drills and Warnings in Schools
- ❖ Knowledge and Current Use of ShakeAlert
- ❖ Perceived Opportunities of EEW in Schools
- ❖ Perceived Barriers of EEW in schools
- ❖ EEW Delivery Channels
- ❖ Preferences for alert messaging and tolerance for false alerts
- ❖ EEW Funding
- ❖ Respondent and School District Characteristics

# Survey Measures

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- Survey constructs were guided by qualitative results and the Ready, Willing, and Able framework
- Survey measures adapted from:
  - 2021 ShakeAlert Baseline Survey (U.S. Geological Survey)
  - 2014 Building Owners and Managers Association Survey (University of Washington School of Public Affairs)
  - 2001 Survey of Potential Early Warning System Users (University of California Los Angeles Center for Public Health and Disasters)

## Earthquake Early Warning and Schools Survey

### Introduction

This survey aims to learn from school district superintendents about integrating earthquake early warning (EEW) systems in schools in Alaska, California, Oregon, and Washington. This is part a larger collaborative project—funded by and in partnership with the United States Geological Survey—to explore the advancement of Earthquake Early Warning (EEW) Systems. The survey is designed by researchers at the Natural Hazards Center at the University of Colorado Boulder.

The survey will take approximately 10-15 minutes to complete.

We ask that this survey be filled out by the superintendent of your school district. If your school district also has an emergency manager or other personnel in charge of emergency management activities, then we would also like them to fill out this survey. If you have someone in this role, will you please enter their email below?

If you are not the superintendent or involved in emergency management for the school district, will you please send this link [\[Insert Questionnaire Link\]](#) to the survey to the appropriate person?

You must complete all questions during one session; your responses cannot be partially saved. If you exit the survey before completing it, you will need to revisit the survey and start from the beginning.

Your individual responses are confidential. The data collected from the survey will be analyzed at the regional/state level before being presented to any others, so you or your facility will not be identified.

If you have any questions about this survey, please email Dr. Rachel Adams at [Rachel.Adams1@colorado.edu](mailto:Rachel.Adams1@colorado.edu).

Thank you for your time and participation!

# Timeline

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- First draft of survey complete ✓
- Final draft of survey to be complete by mid-June
- IRB amendment submitted by the end of June
- Launch of survey in Fall 2021

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Gracias

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