

Oregon Science Festival: ShakeAlert® Booth

Evaluation Mini Report



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Background

The OMSI-sponsored 2023 Oregon Science Festival was a weeklong event celebrating science, technology, engineering, art, and math (STEAM) across the region. The festival included activities at multiple sites over the course of a week, culminating with a two-day “Science Extravaganza” hosted at OMSI. For this final event (Saturday and Sunday, September 16 and 17), a variety of STEAM enthusiasts—including the OMSI ShakeAlert® team—hosted booths with interactive learning activities for visitors of all ages.

The purpose of the ShakeAlert booth was to provide engaging learning experiences related to earthquake science and preparedness, to support overall community resilience for earthquake hazards in Oregon.

This report serves to summarize ShakeOut activities at the 2023 Oregon Science Festival, including lessons learned to inform similar outreach events in the future.

Event Activities

In determining the activities and content for the booth, the ShakeAlert team was motivated by lessons learned from previous educational efforts, including the creation and evaluation of the animated ShakeAlert video (Crayne et al., 2023). Through these efforts, we found that members of the public wanted more information about:

- How ShakeAlert and earthquakes work
- How to get alerts on mobile devices
- How to protect oneself during an earthquake, in a variety of settings/situations

We also knew that this event would attract families and other groups of visitors, and that activities should be appealing and accessible for learners of various ages. We also knew that Spanish is the most common language used in our area, after English.

With this in mind, we scheduled facilitators for the booth with high intermediate, advanced or native Spanish and English language conversational skills for each shift. We also planned a trio of activities within the booth, each addressing one of three learning goals. Supporting resources for each activity may be found in [Appendix A](#).

Understanding how ShakeAlert works: Earthquake Machine

In this activity, a facilitator engaged learners with a hands-on model to explore how earthquakes work. The model included a demonstration using the sensor feature on the MyShake app, which then prompted a discussion of how the ShakeAlert system detects earthquakes.



Understanding how to get alerts: Mobile device support

In this section of the booth, participants were provided with printable information (in Spanish and/or English) about how to receive alerts on their mobile devices. Additionally, staff were available to answer questions and help people set up their devices to receive alerts.



Understanding how to protect yourself: Dollhouse and Rocket Rules

In this activity, visitors were invited to explore protective actions in a variety of settings by manipulating a dollhouse on a shake table. The dollhouse included a variety of furniture pieces and figurines, which learners could move around. The furniture pieces also had velcro tabs which corresponded with velcro pieces on the dollhouse, so the furniture could be secured to the walls/floor. Learners experimented with shaking the dollhouse on the table, changing the configuration of the people and furniture, and then shaking it again. Facilitators provided information and suggestions emphasizing the importance of dropping, covering, and holding on to protect oneself from falling (or getting hit by falling objects) during an earthquake.



Additionally, learners were offered Rocket Rules Activity Books in Spanish and English which they could color onsite and/or take home. This book includes information about how to protect yourself in a variety of earthquake situations.



Evaluation Methods

We knew it would be valuable to incorporate evaluation into this event, to gauge the reach/impact of the event as well as suggest whether the activities we provided supported our learning goals for visitors. At the same time, we didn't want evaluation activities to be onerous for facilitators or visitors or detract from the activities themselves. To that end, we used the following methods to collect data:

- **Periodic participant counts (“click counts”)** - Facilitators were provided with a click counter and an observation form. Four times per day (Sat and Sun), facilitators observed the booth for a defined period of time, counting and recording the number of individuals actively engaged in the booth. For the purposes of the count, “actively engaged” meant the individual(s) were interacting with hands-on materials, talking with/listening to a facilitator or group member about the material, reading signs or printouts, or similarly occupied. These periodic participant counts were later extrapolated to estimate overall participant counts in the ShakeAlert booth and compared to overall admissions to the event itself.
- **Exit survey** - An exit survey, made available on an electronic tablet, invited participants to share their experiences and impressions about the booth activities. The short survey included just three questions (see [Appendix B](#)). The first asked respondents which of the three primary activities they participated in. The second asked them to reflect on their reaction to the activities. The third asked them how the activities supported their sense of safety during an earthquake.

Observational feedback from OMSI staff and volunteers who facilitated the ShakeAlert booth is also included as part of this report.

Results

Participation Counts

The following table summarizes participant counts at eight separate time intervals over the course of the two-day event; the counts were used to calculate the average number of participants per hour.

Table 1 - Participant counts

Day	Time	Length of time	Participants counted	Avg participants per hour
Saturday, Sep 16	9:45–10:15	.5 hr	14	28
	11:00–11:15	.25 hr	9	36
	2:00–2:15	.25 hr	15	60
	5:00–5:15	.25 hr	8	32
Sun, Sep 17	10:15–10:45	.5 hr	16	32
	12:30–12:45	.25 hr	17	68
	2:00–2:15	.25 hr	11	44
	4:00–4:15	.25 hr	4	16
Participants per hour (two-day average)				39.5

With an average of 39.5 participants per hour visiting the booth over the course of 16 hours, we estimate that we engaged a total of approximately **630 visitors at the ShakeAlert Booth at the Oregon Science Festival** two-day Science Extravaganza.

For context, ticket sales indicate that 3,417 people attended the two-day Science Festival at OMSI overall. This indicates that the ShakeAlert booth engaged approximately 18 percent of event attendees.

Exit Survey

A total of fourteen visitors who participated in the ShakeAlert booth responded and completed the survey, with the following results.

Participants' activities in the ShakeAlert booth

The majority of participants who engaged with the ShakeAlert booth reported that they participated in Activity 1: Understanding how ShakeAlert works. Ten out of fourteen participants reported doing that activity with their groups (see Figure 1). (Note: Because this question invited respondents to "select all that apply," results do not sum 14).

Which of the following activities did you do today at this booth?



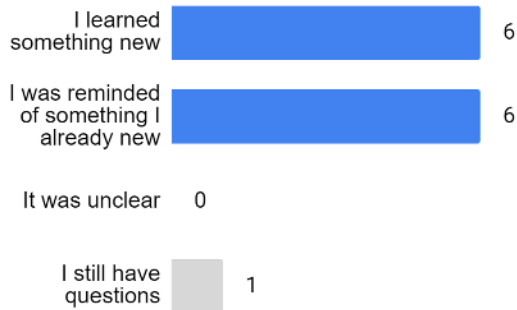
n=14

Figure 1. Participant responses to Survey Question 1.

Participants' reaction to their experience in the ShakeAlert booth

Regarding the impact of the booth on participants' learning, six out of fourteen participants reported that they learned something new; six participants reported that they were reminded of something they already knew (see Figure 2). (Note: Because this question invited respondents to "select all that apply" results do not sum 14; some participants selected multiple options and some selected none).

What was your reaction to your experience in the ShakeAlert booth?



n=14

Figure 1. Participant responses to Survey Question 2.

Participants' sense of safety

Participants were asked, "In what ways, if any, did your experience in the ShakeAlert booth support your sense of safety during an earthquake?" Five out of fourteen respondents provided a relevant response. For example:

- One survey respondent expressed that the experience supported their "Awareness of how to secure objects in my home" and another respondent noted that it "Reminded to drop cover and hold on." Both of these respondents participated in the preparedness activity, which included the dollhouse and Rocket Rules activity books.
- A participant who engaged with the activity about how to receive ShakeAlert-powered alerts on their phone indicated they "learned something new" and responded to the final question with, "App." This response, while brief, suggests that learning about app-based alerts contributed in some way to this participant's sense of safety.
- A participant who did not specify which activities they engaged in nonetheless reported that the booth experience "Made me feel that we are preparing more for an earthquake."

Facilitator Observations

In addition to collecting click counts and exit surveys, facilitators at the ShakeAlert booth also shared informal observations related to overall participant engagement and the effectiveness of different activities. For example, they noted that, overall, the popular activity seemed to be the dollhouse activity, which was consistently in use by visitors over the course of the weekend. Facilitators speculated on possible reasons for this activity's popularity, which included the bright colors, tactile components, and position near the front of the booth area. Facilitators also noted that the activity often spurred conversations about earthquake preparedness

between children and caregivers and/or between visitors and facilitators. For example, caregivers were observed asking their children questions like, “Which pieces of furniture tipped over and which stayed put? Where would you protect yourself in the kitchen?”

Conclusion

Although the number of survey responses was small, the ShakeAlert booth at the OMSI Science Festival was well attended, visitors engaged with the activities, and those who did complete the survey reported that the experience was valuable. Evidence provided from this evaluation report suggests that participants who engaged with the ShakeAlert booth learned something new or were reminded of something they already knew regarding earthquake safety and preparation.

Going forward, future tabling events (and similar outreach activities) for ShakeAlert can continue to implement and build on the strategies here, including:

- Provide learning opportunities appropriate for a variety of ages
- Provide learning opportunities and facilitation in at least the most common languages (in our case, Spanish and English)
- Include usable information specific to ShakeAlert (e.g. how to get an alert on various types of phones) *and* general information about earthquake science and safety
- Provide facilitation, by ensuring staff are available to engage with visitors and answer their unique, real-time questions

References

Crayne, J., Herrán, C., Sumy, D. F., Benne, M., Shagott, T., & Peek, L. (2023). Public education about ShakeAlert® earthquake early warning: evaluation of an animated video in English and Spanish. *International Journal of Science Education, Part B*, 1–25.

Appendices

Appendix A: Supporting resources for booth activities

Activity	Supporting Resources
Understanding how ShakeAlert works: Earthquake Machine	ShakeAlert Interactive Demos (see “Earthquake Machine”)
Understanding how to get alerts: Mobile device support	ShakeAlert Quick Facts Printables USGS information page : How do I sign up for the ShakeAlert® Earthquake Early Warning System?
Understanding how to protect yourself	Rocket Rules Earthquake Activity Books (available for free download or paperback purchase, in multiple languages). The dollhouse activity may be replicated using any style of dollhouse, figurines, and furniture. In the case of this event, we placed the dollhouse on a craft table that had been retrofitted so that the table surface could shift slightly when shaken.

Appendix B : Exit Survey

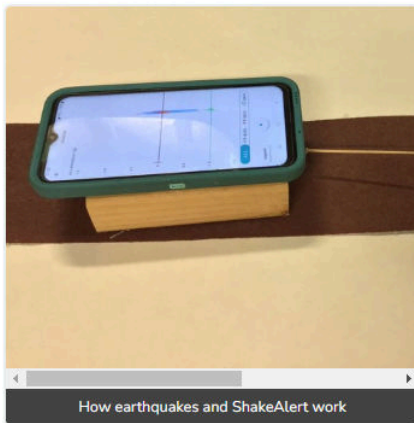
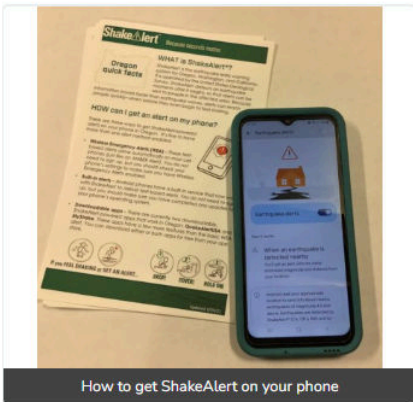
ShakeAlert Oregon Science Festival

Thank you for visiting the ShakeAlert booth. Please answer a few questions to help improve the quality of this experience.

Your response is anonymous, and the survey takes only a few minutes of your time.

Thank you for your feedback!

1. Which of the following activities did you do today at this booth? (select all that apply)



2. What was your reaction to your experience in the ShakeAlert booth? (Check all that apply)

- I learned something new
- I was reminded of something already knew
- It was unclear
- I still have questions
- Please comment your response:_____

3. In what ways, if any, did your experience in the ShakeAlert booth support your sense of safety during an earthquake?
