



# Crustal Faults: *Understanding the faults beneath our feet*

## Summative Evaluation Report

November 2025

Prepared by Carla Herrán, Scott Randol, Marcie Benne



This material is based upon work supported by Portland State University through the National Science Foundation grant Number 2145879. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of Portland State University nor the National Science Foundation.

# Table of contents

Project background	3
Evaluation objectives	3
Context	4
Methods	6
Data collection	7
Consent	7
Data analysis	8
Sample size	8
Age and gender	8
Survey	9
Observation	10
Time at the activity	10
Results	11
Activities visitors did at the demo	11
Information at the demo	12
Awareness of the content	13
Experience at the demo	14
Connections and patterns	15
Findings	16
References	18
Appendix A: Logic model	19
Appendix B: Observation instrument	20
Appendix C: Survey instrument	21

# Project background

The Crustal Faults project was part of an NSF CAREERS grant called “Slip rates and earthquake timing of distributed Quaternary crustal deformation to evaluate structural accommodation of clockwise rotation of the Pacific Northwest” (# 2145879), led by Principal Investigator, Dr. Ashley Streig of Portland State University (PSU). One of the components of this project was the collaboration between Dr. Streig and the OMSI exhibits team in the development of a hands-on activity that was facilitated by Dr. Streig and her students at four OMSI events. The goal of the activity is to help diverse visitors understand tectonics by connecting faulting and deformation to landscapes they see in their everyday lives. OMSI evaluation staff led a summative evaluation of the hands-on activity to assess the extent to which the facilitated activity aligned with the evaluation objectives and measures of success.

The hands-on activity, “Understanding the faults beneath our feet” from now on referred to as Crustal Faults facilitated demo or Crustal Faults demo, was developed to help visitors better understand that there are more faults and earthquake types than just a Cascadia Subduction Zone earthquake, or ‘the big one’; that different fault types exist across the Pacific Northwest causing different landforms; and that those faults have been deforming the surface of the Earth for a long time – creating the landscape we appreciate today.

## Evaluation objectives

The evaluation was designed to assess in what ways and to what extent the activity achieves its learning goals around cognitive and affective constructs. Evaluation questions were guided by expected outcomes proposed in the logic model (see Appendix A) and measures of success

Visitors will show:

- curiosity and interest toward the demonstration
- appreciation of and a connection to local landscapes

Visitors will show awareness:

- of what faults are and why they exist in Oregon
- that we live on an active plate boundary
- that active plate boundaries cause earthquakes and also shape the landscape
- that the type of faults/boundaries affect the landscape in different ways
- that tectonic movement is connected to visible features (ridges, valleys, lakes).

# Context

The Crustal Faults demo has three major components that consist of 1) an interactive map of tectonic blocks on the US West coast, 2) four different interactive fault models, and 3) four visual flip books that accompany the fault models. The map, also referred to as the block model (or Activity 1 for evaluation purposes; see the observation instrument in Appendix B), consisted of a large map that divides the Pacific Northwest into colored regions. Each of these regions experience specific types of faulting/deformation as a result of clockwise rotation of the faults that is demonstrated with the map. The interactive fault models, (Activities 2–5 for evaluation purposes; see the observation instrument in Appendix B), represented four different fault types, aligned with the map colors, and when manipulated illustrate how the different fault types influence the landscape. A flipbook accompanied each of the fault models and included images of maps, light detection and ranging (LiDAR) images and other pertinent illustrations of how those faults look and their location in the west coast. The demo was set up on an 8ft table.



Figure 1. Crustal Faults demo set up. The block model is at the center. Each block model (fault) area corresponds with a flip book and region of the same color.

Figure 1 shows how the activities were set up. In the middle is Activity 1, the Block Model (map). On the far right in the image is Activity 2: the Normal fault model (yellow). Immediately to the left of the Block model is Activity 3: the Reverse fault (green), and at the far left, Activity 4: the Strike-Slip fault (pink). Next to the Block model on the right is Activity 5: the Fold and Thrust fault (blue). Corresponding flip books for each fault model were set behind the interactive models themselves.

The Crustal Faults demo was facilitated by Dr. Streig and /or her students. Four events were selected based on a combination of engaging diverse audiences and the event theme (see Figure 2). This was to ensure that there were opportunities to capture diverse museum visitor groups that were more likely to visit events than general museum admission. Availability of the facilitators and data collectors, also influenced the selection of events. Brief descriptions of the events in which the Crustal Fault demo was facilitated to the public were:

### **OMSI After Dark (OAD) event on August 27, 2025**

The theme for this event was: OMSI After Dark: Survival Guide! A Disaster Preparedness Night at the Museum. OMSI After Dark is an event for guests ages 21 and over. During the event there were science demos, performances, DJs, artisan food and beverage vendors offering samples, and more. For this event, the Crustal Faults demo was set up in OMSI's Turbine Hall near the Epicenter shakehouse between 6 and 10 pm, and was facilitated by Dr. Streig and her student Daisy Briseno.

### **Oregon Science Festival (OSF) on September 13, 2025**

The two-day Oregon Science Festival aimed to attract groups and families of all ages. The total attendance for the weekend was over 5,000 visitors. This event filled OMSI's campus with hands-on activities, live demonstrations, community artmaking, and science demos from different organizations. Dr. Streig facilitated the Crustal Faults demo between 1:30 and 5 on Saturday, September 13.

### **OMSI First Sunday on September October 5, 2025**

On the first Sunday of each month, general admission to the museum is \$5 per person. Tickets for Empirical Theater and Kendall Planetarium shows, tours of the USS Blueback Submarine, as well as select special exhibitions, can also be purchased for \$5 per person on OMSI First Sundays. This event aims to make the museum offerings affordable for families and groups who otherwise would find it challenging to experience the museum from a financial standpoint. The Crustal Faults demo was facilitated by Dr. Streig at OMSI's Welcome Wall between 11 am and 3 pm.

### **Black Community Science Night (BCSN) on October 10, 2025**

Throughout the year, OMSI hosts a series of Community Science Nights (CSN), popular events in Portland that center culturally-specific audiences and host a wide-range of programming and vendors. The family-friendly evening is a museum-wide event providing exclusive access to OMSI with exhibits, entertainment, planetarium shows, science demos and more! For the Black Community Science Night event, Dr. Streig's student Obinna Ozioko led the facilitation between 6 and 9 pm.



Figure 2. Crustal Faults demo facilitated at one OMSI event.

The Crustal Faults demo provides various opportunities for entry. This means that interactions with the demonstration and the facilitator are flexible and adaptable to visitors' initial interest and willingness to extend their participation. The flexibility of the entry points is afforded by the demo characteristics and the set up on a long table which allows visitors to approach the demo from any public facing side and start their interactions with the facilitator at any model that piqued their attention. From the entry point, the facilitator usually invited visitors to explore the block model map and how the model related to the four fault models. Visitors who were interested, also explored the flip books that accompanied the fault models and engaged in conversations with the facilitator.

## Methods

The evaluation study design utilized a mixed-methods approach with observations and surveys. Data are reported in the form of descriptive statistics (counts and frequencies) as well as emergent themes from qualitative coding of open-ended responses.

Survey questions asked about the big idea of the activity, the novelty of the information (whether it was new to them) and emotions visitors felt during the interaction. The survey also asked the respondent their age and gender. Observations documented the levels of visitor engagement with the demonstration as direct indicators of the learning taking place (Stocklmayer and Gilbert, 2002, Rennie et al. 2003, and Barriault and Pearson 2010). Data collectors used an observation form (Appendix B) where they recorded their best guess as to the age and genders of group members, and used stopwatches to determine the total time groups spent with the activity. Observers also identified a focal individual within the group. Attention was focused on this person during the interaction, and if the group split, the observer would remain with the focal individual. In addition,

observers coded engagement indicators in three categories: Participation in the activity, Appreciation and Connections, and Sharing information. They also added notes about what people were saying, how they were engaging, interesting interactions or anything else that seemed relevant.

## Data collection

Data collection occurred at the four events described above in the late summer and fall of 2025 with OMSI visitors. The target audience for this evaluation was intergenerational groups with at least one person over the age of 10. Acknowledging that women and girls are underrepresented in, and under-engaged by, earthquake science, Dr. Streig hoped to make an impact on female audiences in particular, therefore, preference was given to groups that included girls and women.

Data collection included naturalistic observations of visitors engaging with the activity (facilitated by Dr. Streig and her students) followed by short exit surveys. A stopwatch was used to determine the total time that a group spent with the demonstration. This was followed by data collectors requesting an adult in the group to complete a short survey that they later put in a designated box (See Appendices B and C for instruments).

The target sample was initially set at 40 individuals/groups per data collection method. The number actually sampled per method were not identical because not all the participants observed agreed to complete a survey, multiple individuals from a group completed a survey, and some groups were offered the survey by the demo facilitator even if they had not been observed.

## Consent

Signage informing visitors of OMSI staff observations was posted in the demo area as the method of obtaining implied consent (Gutwill, 2003).

Data collectors approached visitors asking if they would be willing to give their feedback on the demo experience. Prior to distributing the survey, the data collectors outlined the purpose of the study and how visitor feedback would be used, then they asked an individual from their group if they consented to participate. Those who verbally agreed received the survey and were asked to write their answers, fold the survey and place it in a designated box once they were finished (see Appendix B and C). Participants had the option of skipping any questions they did not feel comfortable answering. As described above, age and gender information about the group was documented on the observation form based on best guesses by the observer, and asked specifically of the respondent on the survey. The name and address of the visitors were not collected.

# Data analysis

Observations and surveys were scanned and data entered in a Google spreadsheet by the OMSI staff who collected that data. Data entered in the spreadsheets were reviewed by other OMSI staff to ensure entry reflected what was collected in the paper instruments. Descriptive statistics, such as counts and frequencies, were run on the observation and survey data spreadsheets when pertinent. Survey notes written by participants and notes from the observations were analyzed using thematic analysis which allowed OMSI staff to identify themes and patterns associated with the objectives of this summative evaluation. Data are reported below by instrument as well as by evaluation objectives and measure of success.

## Sample size

Methods included observations and surveys. Both of these methods were conducted during the facilitated demo with an original target of 40 individuals/groups per method.

As depicted in Figure 3, there were 32 visitor groups observed engaging with the demo, and 42 individuals who completed the survey. This means that for some groups, more than one person from the group, or someone from a group that was not observed completed the survey.

Event/Method	Observation	Survey
OMSI after Dark	11	15
OMSI Science Festival	9	12
\$5 dollar Sunday	5	9
Black Community Science Night	7	6
Total participants	32	42

Figure 3. Sample by event and method

## Age and gender

This section provides an overview of participant demographics from the observation and survey. Gender and age of the survey respondent were self-reported, while data collectors' estimates of age and gender of the individuals in the groups were captured in the observation instrument.

## Survey

Of the 42 visitors who participated in the survey, about two thirds (28) self-identified as female and closer to a third (12) as male (Figure 4). These numbers were influenced by the data collection protocol which instructed evaluators to give priority to groups that include female participants, and to give the survey to a woman in the group if present.

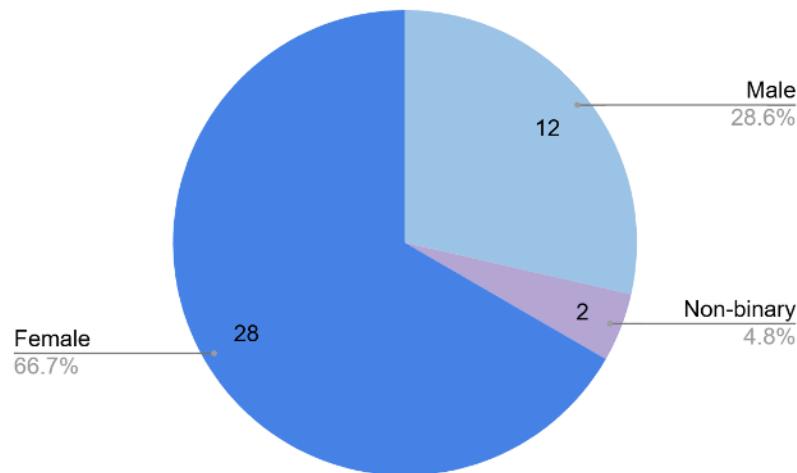


Figure 4. Self reported gender by survey respondents

Surveys were only collected from participants over the age of 18. The age group that was most frequently represented among survey respondents were between ages 35–44. This was followed by respondents in the age ranges of 45–54 and 25–34, respectively (Figure 5).

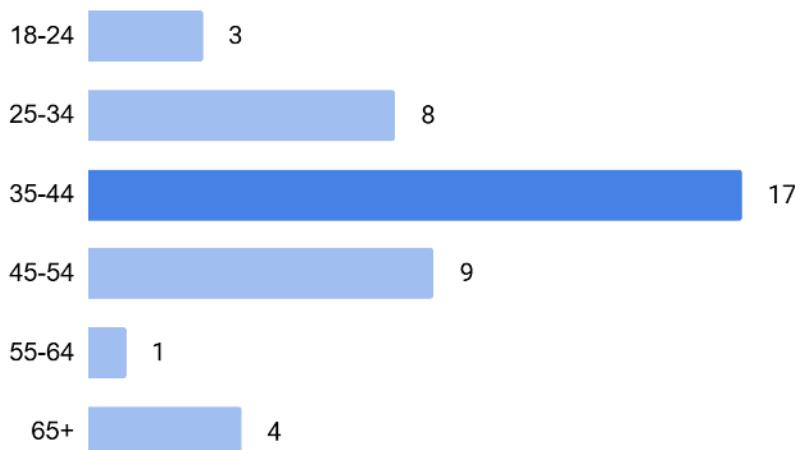


Figure 5. Self-reported age by survey respondents

## Observation

Among the 32 observed groups, a total of 72 people were counted by the data collectors. Groups of visitors who approached the demo ranged from 1 person to 4 people. On average, groups observed were composed of 2 people. The ages ranged from 0–5 to 50 or more years old. Most people (34 out 70) in the observed groups were perceived as ages 30–49 (see Figure 6). It is important to note that the OMSI After Dark event only included adults 21+ which has skewed data observed towards more adult participants; likewise, this age category spans the greatest interval (20 years).

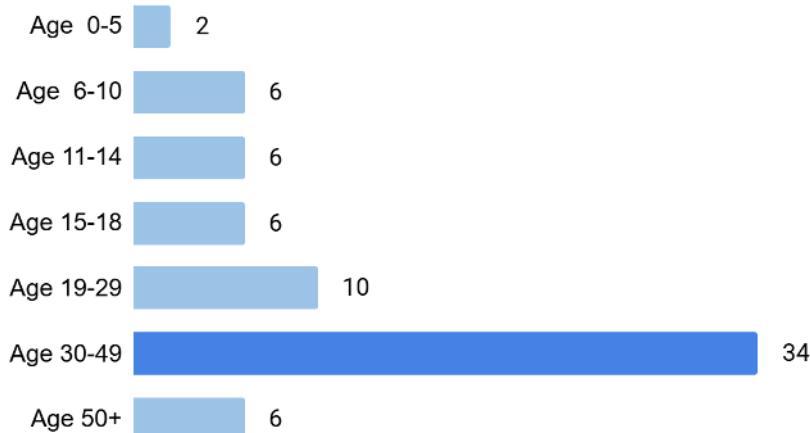


Figure 6. Perceived ages within observed groups

In terms of gender (Figure 7), about two thirds of the people (44 out of 72) of the groups observed were perceived as female and the rest were perceived as male (28 out of 72).

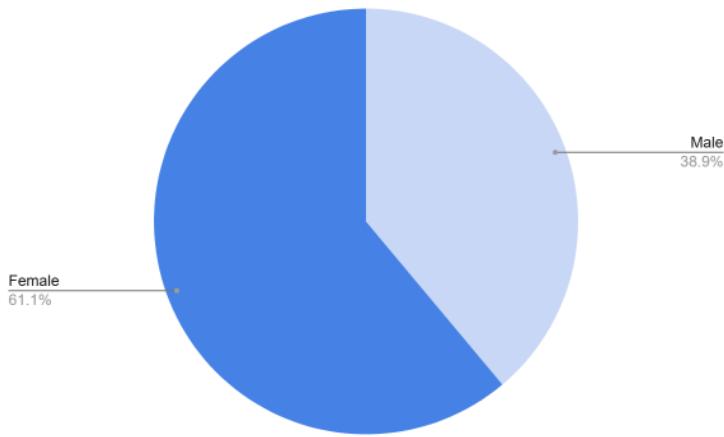


Figure 7. Perceived genders within observed groups

## Time at the activity

Observed groups spent an average of 9 minutes and 26 seconds at the activity. The minimum time noted by data collectors was 2 minutes and 37 seconds and the maximum amount of time was noted

as 22 minutes and 32 seconds. At all events there were at least one group that spent more than 15 minutes at the demo. A summary of time spent at the activity by event can be seen in Figure 8.

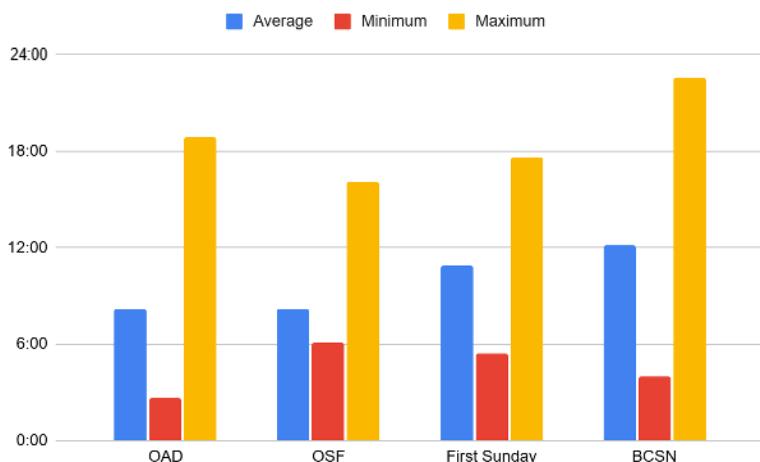


Figure 8. Time visitor groups spent at the demo by event

## Results

The results from the evaluation are organized by the evaluation objectives and measures of success that account for participants' awareness of the content, experience (curiosity, interest), and connections.

### Activities visitors did at the demo

On the observation instrument, data collectors captured the activities visitors engaged with, whether visitors engaged with the model, the flip book for activities 2 through 5, and what types of comments they made while at an activity (e.g. made connections, asked questions, identified patterns, etc.).

Interactions often began by looking at the block model and visitors frequently returned to it as they explored the other activities or models. Of the 32 visitors observed with their groups, 23 engaged with the block model (Figure 9); 14 participants returned to the block model after exploring one or more of the fault models as a reference to ask questions about the particular fault that was referred to during the facilitation or as a jumping-off point for another fault type.



Figure 9. Observed frequency of focal participants' engagement with block model activity

Most of the participants who explored the fault models both manipulated the model and looked at the related flip book (Figure 10). This was noted by data collectors regardless of whether the facilitator or the visitor manipulated the model or the flipbook. Usually what was observed was that visitors paid attention and asked questions when observing the facilitator manipulating the model.

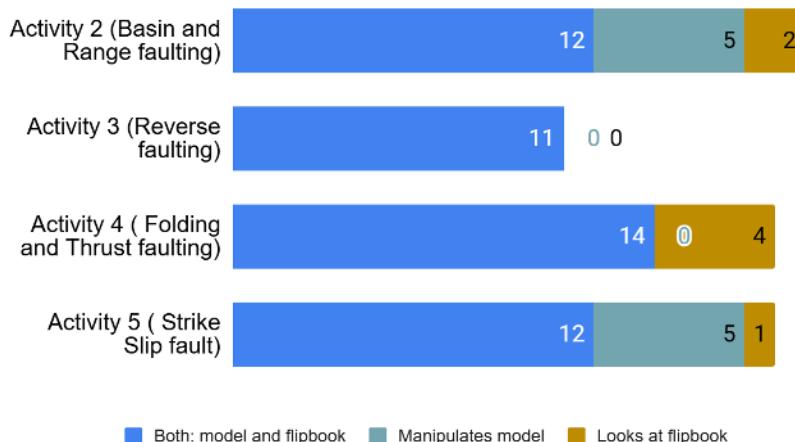


Figure 10. Number of focal individuals observed manipulating model and/or looking at flipbook at activities 2 - 5.

### Information at the demo

Data collectors observed participants' behaviors when they received information at the demo from other people. These were coded as "Respond to facilitator's questions and prompts", "Ask question(s) to facilitator", "Share observations with facilitator/group members", and "Explain concepts/ideas to group members."

The majority of the participants (27 out of 32) were observed answering the facilitator's questions and prompts offered at the demo (see Figure 11). Slightly more than half (18 out of 32) of the participants were observed asking questions of the facilitator. Questions asked by participants were usually about the nature of earthquakes, similarities between different types of quakes, chain reaction

effect, occurrence, and length of them among other similar questions. Some of the questions referred to the “big one,” the location of one of the faults on the maps, and the ways in which landscape is influenced by the movement of the faults.

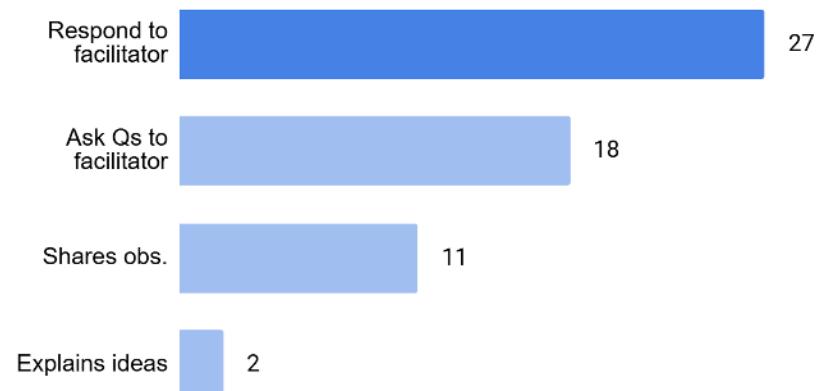


Figure 11. Observed behaviors with respect to information

## Awareness of the content

Visitors' awareness of what faults are and the ways in which they shape the landscape was captured in observations and the surveys. In the observations, data collectors captured the activities visitors and their group engaged with during the activity and if the comments they made demonstrated awareness about faults. From the surveys, visitors reported what they thought the activity was about and explained the extent to which the information provided was new to them.

One of the questions in the survey asked participants to rate the novelty of the information of the activity they did. Half of them (21 out of 42) responded that the information in the activity was mostly new and that they learned a lot (Figure 12). Only one respondent reported that they learned little or nothing.

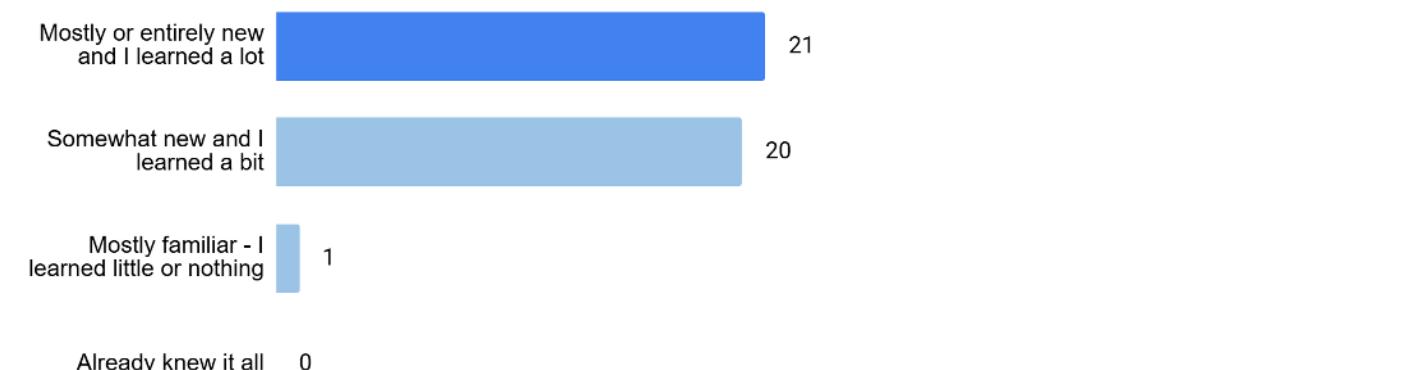


Figure 12. Self reported nature of the information at the demo

From the open-ended responses in the survey, some themes regarding what participants learned in the Crustal Fault hands-on demo were about the fault models in relation to the Pacific Northwest and local faults, the ways in which faults move, the big one, and the tectonic plates/movement. Some quotations from participants' open ended responses illustrate larger themes in relation to what they learned:

*"I learned about the different angles that the plates were moving. I also learned about the geology of the Yakima region."*

*"Fascinating history about the local faults right around our neighborhood. Great big picture view of faults from California to Seattle."*

*"The ground is moving and we can tell when there had been a big earthquake a long time ago."*

*"I learned how faults form and more about what goes into "the big one" and how hot springs occur from fault lines."*

Participants noted that the visuals (LIDAR) and interactive elements were supportive for them at the demo.

*"I had heard of tectonics but this visual truly illustrated the process and what is actually happening."*

*"...I didn't know about the new LIDAR visuals, very cool!"*

## Experience at the demo

To explore how the Crustal Faults demo elicited curiosity and interest, visitors were asked in the survey to select up to two options representing how they felt during the activity. However, 18 out of the 42 participants who responded to the survey listed more than two feelings.

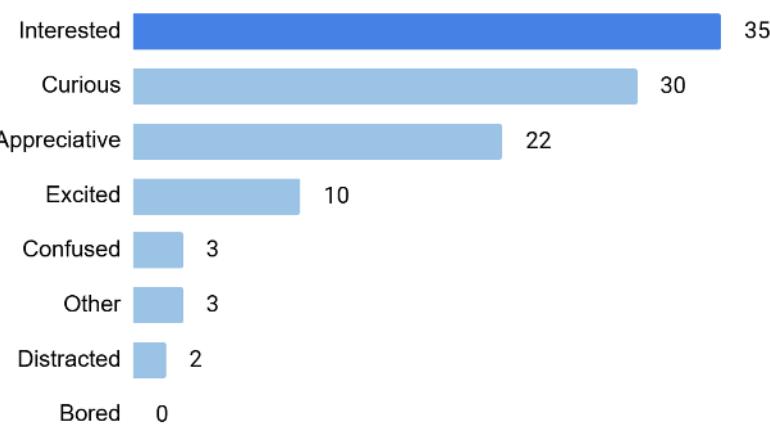


Figure 13. Self-reported feelings from participants after experiencing the demo

Interest and curiosity were the feelings that were most selected by participants in their responses (Figure 13). This was followed by appreciation and excitement. In the category for other feelings one participant noted feeling informed and the two other responses were related to the event environment rather than a feeling. In open-ended responses some participants mentioned that the information provided was interesting and they were appreciative for it. The following are two quotes from participants responses:

*“Very interesting and informative and attainable visual presentations of complex science!”*

*“It was very interesting to see the changes over time happening locally and zoomed in.”*

## Connections and patterns

The type of connections that participants made were captured through the observations (Figure 14), although some responses from the survey also provided information from participants. In observations, about three quarters of participants (24 out of 32) were observed making connections to prior knowledge or past experiences during their time at the demo. Some observed connections noted in this regard were participants mentioning they retrofitted their house, places they had visited, and something they heard or saw in school or media that relates to the earthquake's topic.



Figure 14. Observed connections participants made during their time at the demo

Patterns identified by participants included identifying how the subduction boundary between the North American and Juan de Fuca plates contributed to the Cascade mountain range, and talking about how the relative motion of the blocks create the different fault types. Connections to landscapes were usually observed when visitors referred to maps in the flipbooks and were shown how the landscape in the images was similar to what was seen in the fault models; comments included mentions of the Columbia river, Mt. St. Helens, and Seattle. Participants were heard mentioning familiar landscapes or areas that were formed because of block movement such as the dunes, the valleys in eastern Oregon, and Clackamas county.

Some relevant quotes include:

“... the way lakes and hot springs formed due to earthquakes.”

“...Oregon is spinning like a record. This spin causes lakes and mountains.”

“Everything is shifting and the PNW is rotating, creating fault lines and changing the landscape.”

“..the plate direction differences and numerous faults all across the PNW.”

“...about the relationship and physics of how tectonic plates interact with each other given their unique properties.”

“...about the movement of the faults and subduction zone.”

## Findings

The evaluation goal was to assess in what ways and to what extent the Crustal Faults demo achieved its learning goals around cognitive and affective constructs of awareness in the content and interest, curiosity and connection to the landscape. For this purpose the project team defined the following measures of success:

- At least 70% of the participants are aware of what are faults, the ways in which they exist and shape the region
- 70% of the participants express a sense of curiosity and connect landscape to their lives.

The facilitated demo was successful meeting both measures of success. Evidence suggests that the demo supported awareness of the content with more than 84% (27 out of 32) of the participants answering the facilitator questions and prompts. Moreover 97% reported learning something at the activity. Participants noted being aware of the types of faults that exist in the region, noticing that faults move in different ways, and made connections to local landscapes. The materials offered at the demo such as the hands-on fault models and the flipbooks containing LIDAR images supported participants' gaining awareness regarding the content. Over 70% of the participants expressed a sense of curiosity, and data show that participants found the facilitated demo interesting.

In the observations, the majority of participants explored both the fault models and the flipbook while they were at the demo. The Basin and Range fault and the Strike Slip fault were the ones with most interactions. The fact that the demo had no obvious entry point, and participants approached it from any activity, seemed to give participants a sense of “ownership” meaning that they could guide the sequence of the activities which in turn could have supported their awareness and interest.

The ways in which the information was conveyed visually (maps, LIDAR), through hands-on manipulatives (fault models), and facilitated, supported participants' sense of curiosity and interest in the topic. Connections to the local landscape emerged through observations and in participants'

responses. Participants mentioned the local landscapes and how they are shaped by seismic movements. In this regard, participants were able to refer to local landmarks in the region.

Finally, although the facilitation style was not evaluated as a way to influence the outcomes and measures of success, the facilitators' ability to stay nimble and both follow and guide participants through the demo activities seemed to have an influence in the participants' responses and reactions to the activity. In the end, since the evaluation was about the facilitated Crustal Faults demo, the combination of the content, activities and facilitation styles contributed to meeting the measures of success of this evaluation.

The Crustal Faults facilitated demo achieved the measures of success of awareness, curiosity, and connection to the landscape. Participants reported awareness of what faults are and the ways in which they exist and shape the region. It elicited connections with the PNW landscape, and supported participants in their curiosity about its content. Although not part of the evaluation, the facilitators' knowledge, ability to distill complex seismology science, and engage participants contributed to meeting the measures of success. Given such strengths of this demo, it would be ideal to keep this activity in rotation at future events at OMSI.

# References

Barriault, C., & Pearson, D. (2010). Assessing Exhibits for Learning in Science Centers: A Practical Tool. *Visitor Studies*, 13(1), 90–106. <https://doi.org/10.1080/10645571003618824>

Gutwill, J. P. (2003). Gaining Visitor Consent for Research II: Improving the Posted-Sign Method. *Curator: The Museum Journal*, 46: 228–235. <https://doi.org/10.1111/j.2151-6952.2003.tb00088.x>

Rennie, L. J., Feher, E., Deirking, L. D., & Falk, J. H. (2003). Toward an agenda for advancing research on science learning in out-of-school settings. *Journal of Research in Science Teaching*, 40(2), 112–120.

Stocklmayer, S., & Gilbert, J. K. (2002). New experiences and old knowledge: towards a model for the personal awareness of science and technology. *International Journal of Science Education*, 24, 835–858.

# Appendix A: Logic model

<b>Broader Impact</b> <i>What are the broader community needs we're trying to impact?</i>	<b>Audience(s)</b> <i>Who are the primary learners we hope to engage?</i>	<b>Learner Outcomes</b> <i>What will learners gain as a result of participating in this activity? E.g. knowledge, attitude, etc.</i>	<b>Activity Components</b> <i>What elements of the activity will promote the intended learner outcomes?</i>	
			<b>Exhibit components</b>	<b>Facilitation components</b>
<p>Women and girls are underrepresented in, and under-engaged by, earthquake science.</p> <p>Community members need earthquake learning experiences that are relevant, engaging, and scientifically accurate.</p> <p>More than just a pipeline problem, also a culture problem.</p> <p>Change how people are seeing geology.</p> <p>It would be awesome to see a diverse and creative group of people thinking about earthquakes.</p>	<p>Children</p> <p>Adults</p>	<p>Affective:</p> <ul style="list-style-type: none"> <li>- Curiosity/interest</li> <li>- Appreciation/connection to local landscape</li> </ul> <p>Understand content</p> <ul style="list-style-type: none"> <li>- We live on an active plate boundary</li> <li>- That active plate boundary causes earthquakes and also shapes the landscape</li> </ul>	<ul style="list-style-type: none"> <li>- Make it tangible!</li> <li>- Block model</li> <li>- Wood or 3-d print</li> <li>- Highlight key local features</li> <li>- Highlight sites of notable earthquakes?</li> <li>- Better articulate the wrinkling effect of the yakima fold and thrust belt</li> <li>- Flip books</li> <li>- Looking at same area using diff visualization techniques (sat, lidar, etc.)</li> <li>- Clay fault model</li> <li>- Main panel</li> <li>- Supporting panels, too?</li> </ul> <p>Possibly</p> <ul style="list-style-type: none"> <li>- Trench peel</li> <li>- Screen with click-throughs of images of specific regions? Or maps? To replace flip books?</li> </ul>	<ul style="list-style-type: none"> <li>- Comparing rate of plate movement to fingernail growth</li> <li>- Pointing to portland hills fault out the window</li> <li>- Pulling up terrain layer on google maps on phones</li> <li>- Stay away from shock and awe, scare tactics; focus on understanding and preparing for natural hazards</li> <li>- Layer cake analogy</li> </ul>

# Appendix B: Observation instrument

## Crustal Faults Observation

Group #:

Total time spent:

Date:	Observer:	Focal individual description: Total number in group: __
-------	-----------	--

Group ages: 0-5 \_\_\_\_\_ 6-10 \_\_\_\_\_ 11-14 \_\_\_\_\_ 15-18 \_\_\_\_\_ 19-29 \_\_\_\_\_ 30-49 \_\_\_\_\_ 50+ \_\_\_\_\_

(↑ Write M for each male, F for each female, X when no guess is made)

Group notes:

Engagement indicators	Description	Notes (Give examples of who says it (focal individual) what they say or do)
Appreciation and Connections	<p>____ Make connections to prior knowledge or past experiences (e.g. <i>I studied this at school; It heard about the tsunami this year, I've been there...etc</i>)</p> <p>____ Identify patterns or connections within the activity/content (e.g. <i>Makes references between the block model and fault models, stating that faults cause earthquakes</i>)</p> <p>____ Identify connections on the local landscape (e.g. <i>ways in which landscape in the region is shaped (crater lake is a volcano!), local faults</i>)</p>	
Participation in activities  (check all that apply at any point of the activity)	<p>(leave blank if didn't complete any activity)</p> <p><b>Activity 1- Block Model (map)</b> ____ Once ___ Repeated</p> <p><b>Activity 2 - Normal Fault (yellow)</b> ____ Manipulates model ___ Looks at flipbook</p> <p><b>Activity 3- Seattle Reverse Fault (green)</b> ____ Manipulates model ___ Looks at flipbook</p> <p><b>Activity 4- Strike Slip Fault (pink)</b> ____ Manipulates model ___ Looks at flipbook</p> <p><b>Activity 5-Fold and Thrust Fault (blue)</b> ____ Manipulates model ___ Looks at flipbook</p> <p><b>Other activities:</b> ____ Makes references between the block model and fault models</p>	(Note if hears from focal individual why faults exist in OR, plate boundaries cause of earthquakes, faults shape landscape type of faults visible features connected to tectonic movement; which flipbook materials they look at)
Sharing information about the topic(s)	<p>____ Respond to facilitator's questions and prompts</p> <p>____ Ask question(s) to facilitator</p> <p>____ Share observations with facilitator/group members</p> <p>____ Explain concepts/ideas to group members</p>	(Note in what activity happen)

# Appendix C: Survey instrument

## Questionnaire

### 1. What is your gender identity?

- Female
- Male
- Non-binary
- Prefer to self-describe:

---

- Prefer not to say

### 2. What is your age?

- 10-14
- 15-17
- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+
- Prefer not to say

Please write and select what best describes your experience with this activity.<sup>3</sup>

### 3. If you talked with a friend about this activity, what would you share about it? (What would you tell them it was about? What did you do?)

### 4. How would you describe the information in this activity?

- a. Mostly or entirely new and I learned a lot
- b. Somewhat new and I learned a bit
- c. Mostly familiar - I learned little or nothing
- d. Already knew it all

**Explain your answer above. (what did you learn and/or would like to learn more about?)**

### 5. How did you feel during the activity? (Select up to two)

- a. Distracted
- b. Appreciative
- c. Interested
- d. Confused
- e. Bored
- f. Curious
- g. Excited
- h. Other: \_\_\_\_\_

Thank you!