



The Epicenter/El Epicentro Summative Evaluation Report

June 2019

Prepared by Brianna Spencer and Marsela Rojas-Salas

Engagement Research & Advancement (ER&A) Division

Acknowledgements

The OMSI Research & Evaluation (R&E) team would like to acknowledge the efforts and contributions of all who made this report possible, including the late Howard Hedinger for his commitment to funding *The Epicenter* evaluation, Kari Lawrence for providing feedback on observation, interview, and survey instruments, Patricia Brooke and Elaine Thatcher for coordinating participants from César Chávez School, Will Heffern for providing contact lists, and Marcie Benne and Chris Cardiel for providing feedback on drafts of the summative report.

About this Report

The Epicenter exhibit (formerly known as Shake House) includes an architectural structure in which visitors engage in earthquake simulations, selecting the magnitude of the earthquake in a specific context. *The Epicenter* includes 1) safe, dynamic earthquake simulations, and 2) three storylines to support visitors' personal meaning-making.

This report presents information pertaining to *The Epicenter* summative evaluation activities. The summative evaluation provides actionable evidence for this and other projects. This evaluation assessed *The Epicenter* exhibit for the following visitor impacts:

1. Engagement with the exhibit experience
2. Engagement with the storylines
3. Attitudes about and awareness of earthquake preparedness

Methods

The OMSI R&E team addressed evaluation objectives using a mixed-methods approach including unobtrusive observations, group interviews, and individual self-report questionnaires. All three methods were conducted during a one week period and took place around *The Epicenter* exhibition area, which included a map, seismograph, buttons, shaking floor, bench, hand rail, and light up posters.

Observations

Thirty-two observations were collected from visitor groups with at least one child between the ages of 9 and 14 — the target audience for this exhibit. Within the 32 groups, 52% of the individuals were between the ages of 9 and 17, 31% were between the ages 0 to 8, and 17% were 18 and above. Evaluators identified participants between the ages of 9 and 14 and observed their entire group. The observations focused on physical and verbal reactions and conversation within the participant groups.

Instrument: Evaluators created an observation sheet to document actions taken by participants — behaviors such as reading copy, reacting to audio, and commenting on the exhibit. See Appendix A.

Interviews

Interviews occurred with ten of the observed groups immediately after their experience. Within the 10 groups were 26 individuals. Fifty percent of the individuals were between the ages of 7 and 12, 8% were 13 to 18, 15% were 19 to 35, 23% were 36-55, and 4% were 56+. Seventy-seven percent of the individuals identified as white, while 23% identified as Hispanic/Latino. Fifty percent of the individuals identified as female, 42% identified as male, 4% identified as non-binary, and 4% preferred not to say. The interviews focused on earthquake preparation related to confidence, general experience, community awareness, and the goals of *The Epicenter*.

Instrument: The interview included questions about participants' experience in *The Epicenter*, the impact the exhibit had on their willingness to prepare for an earthquake, and where in their community they might learn about earthquake preparation. See Appendix B.

Questionnaires

Fifty questionnaires were collected from individuals who experienced *The Epicenter*, but did not participate in the observations or interviews. Forty-eight percent of participants identified as male and 52% identified as female. Seven percent of participants were between the ages 7 to 8, 84% were between the ages 9 to 14, and 9% between the ages 15 to 17. Fifty-seven percent of participants did not identify as Hispanic/Latino, 33% did identify as Hispanic/Latino, and 10% did not know. Sixty-two percent of participants identified as white, and 38% identified as a race other than white (19% multi-racial, 14% Asian, 3% Spanish, 3% Black or African-American, 11% preferred not to answer). Questionnaires asked participants about their experience in *The Epicenter*, their likelihood to prepare for an earthquake in the home after participation, their comfort with earthquakes and their feelings of safety in an earthquake situation.

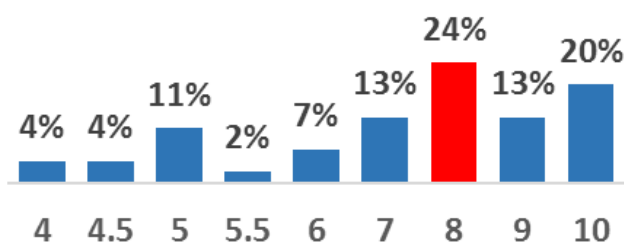
Instrument: The questionnaire included questions about participants' experience in *The Epicenter*, enjoyment, and preparedness. See Appendix C.

Engagement with Experience

The following section describes visitors' engagement with the exhibit experience based on data from observations, interviews, and questionnaires. The data are related to participants' enjoyment, actions within the exhibit, and feelings about earthquakes after experiencing the simulation.

According to questionnaire responses, **57%** of questionnaire participants rated *The Epicenter* as an 8, 9 or 10. **All 10** interview participants and their group members reported having fun. **80%** said it was the **shaking** that made their experience fun.

Participant enjoyment on a scale of 1 to 10



60% of interview participants chose to enter *The Epicenter* because it looked like **fun**, while **20%** were **curious** about the new exhibit.

According to observations **34%** of participants chose which earthquake to do together as a group. **66%** of participants focused on the **seismograph** once the earthquake began shaking.

During the week that data was collected, one visitor was observed using the wheelchair lift successfully.

What Participants Liked Most — Questionnaire Responses

"It was fun learning about earthquakes!"

"I liked that you could make it stop and it told you what to do in a real earthquake"

"It was fun to try and tie my shoe"

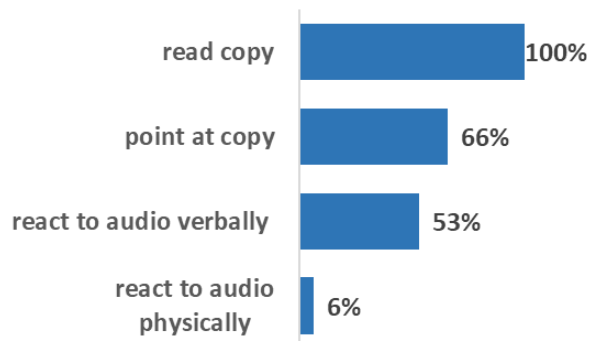
[I liked] "when my mom stopped and covered her head in the Los Angeles earthquake"

"It was just kinda interesting to feel what an earthquake is like"

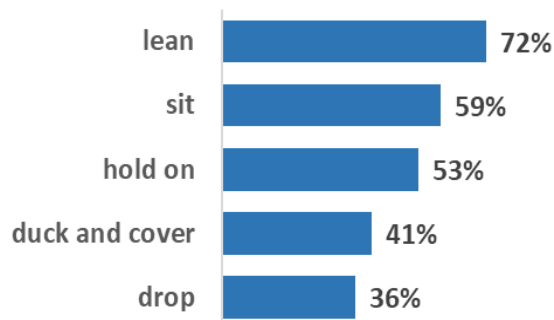
[I liked that] "it told facts about some earthquakes and what it would be like to be in one"

Engagement with Experience

53% of observed participants reacted verbally to audio recordings in *The Epicenter*, all of which were observed as **positive reactions**.



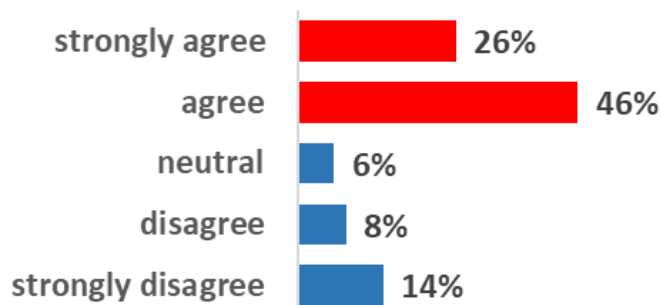
Observed participants were more likely to **lean**, **sit**, or **hold on**, than they were to **drop**, **duck**, and **cover**.



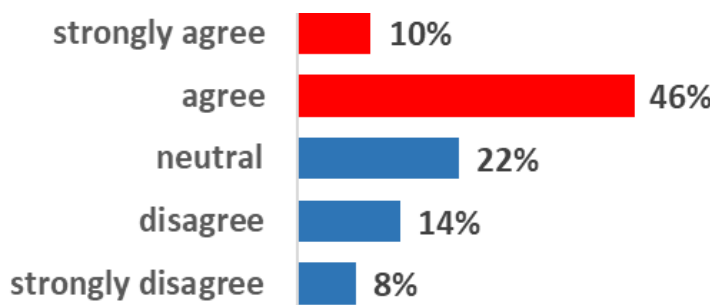
28% of observed participants **hit the kill switch**, most of whom were kids choosing a different earthquake simulation. **12%** of participants **abandoned the exhibit** before the end of an earthquake simulation. **Nine of the ten** interview participants **did not report feeling uncomfortable**. One participant reported it was the exits on both ends and the kill switch that made them feel safe. The **one** participant who reported feeling uneasy said **they felt “just a little weird, the shaking, is it real or what?!”**



72% of questionnaire participants **strongly agree or agree** that they are **more familiar** with **what an earthquake feels like**.



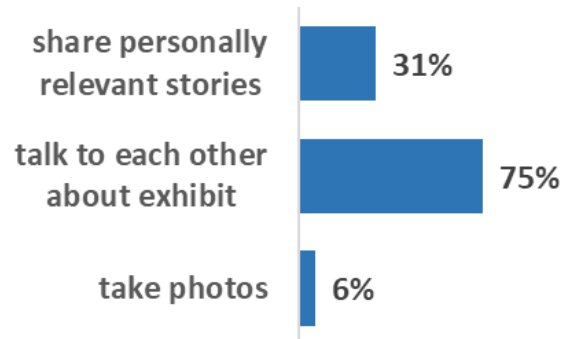
56% of questionnaire participants **strongly agree or agree** that they are **more familiar** with **what happens during an earthquake**.



Engagement with Storylines

The following data represent participants' engagement with *The Epicenter* storylines. Evaluators analyzed participants' connections to the three storylines through observations, questionnaires, and interviews by noting if participants shared stories about earthquakes with their group, listened to an exhibit story, or stated they would tell a friend or family member about the exhibit.

75% of observed participants **talked to their group about the exhibit**, with **31%** of participants **sharing stories** about real earthquakes they had experienced. One observed participant stated that their experience was *"worse in real life"* and one questionnaire respondent stated that the exhibit should *"feel more realistic."*



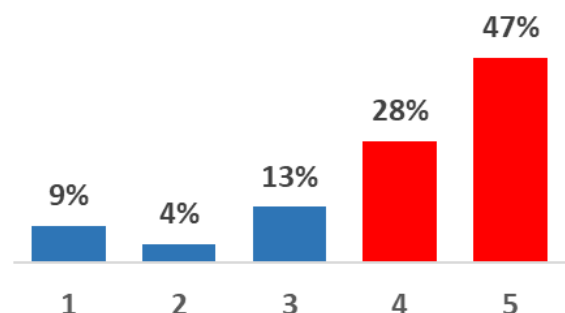
Half of interview participants said that the **exhibit encouraged them to prepare for an earthquake** in their home. Four participants said the **shaking** encouraged them. One participant identified the simulation of the **earthquake in Japan** as a catalyst to prepare.

80% of interview participants referenced **Drop, Take Cover and Hold On** when asked what they would do in an earthquake. *Drop, Take Cover and Hold On!* is prompted by the exhibit at the end of each storyline.



75% of questionnaire participants reported a **strong likelihood** of finding a safe place in home to take cover.

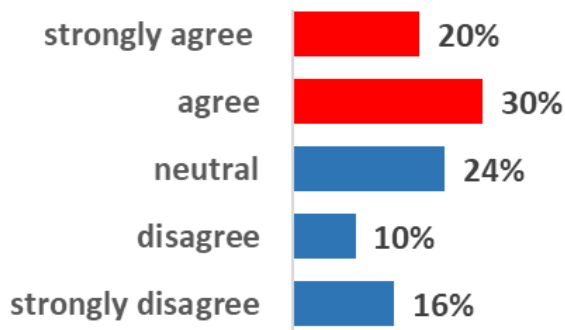
When asked what the participant would **share with a friend or family member**, **60%** of interview respondents provided relevant information **on earthquake preparation that tied to the exhibit features** (i.e. Drop, Take Cover and Hold On or "it shakes a lot").



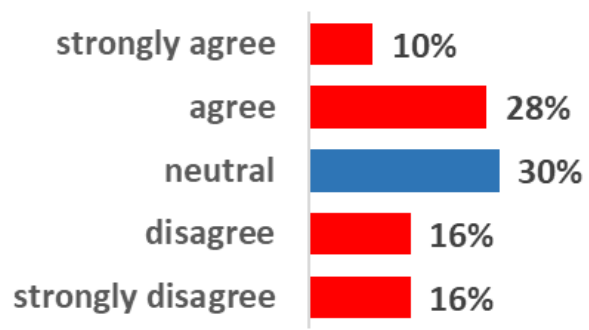
Attitudes about Preparedness

The following charts reflect questionnaire respondents' feelings toward preparedness and safety after experiencing *The Epicenter*. The data shows that half of participants feel as if they know what to do during an earthquake, yet only **38%** of participants feel safer when they think about earthquakes. The confidence levels are slightly higher (56%) when participants include their families in earthquake preparation, rather than solo preparation (52%).

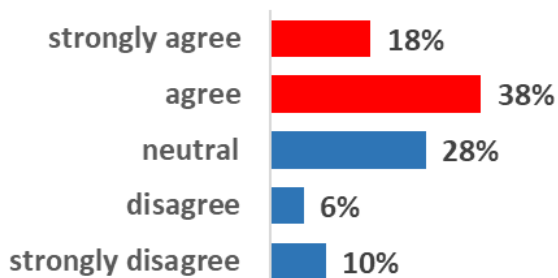
50% of participants **strongly agree or agree** that they **know what to do** during an earthquake.



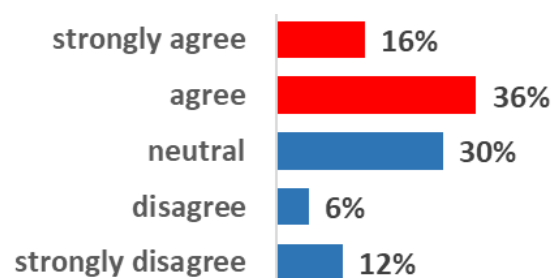
38% of participants **feel safer** when they think about earthquakes, however **32%** **do not feel safer**.



56% of participants **strongly agree or agree** they feel **more confident** in their **ability to guide their families through earthquake preparation**.



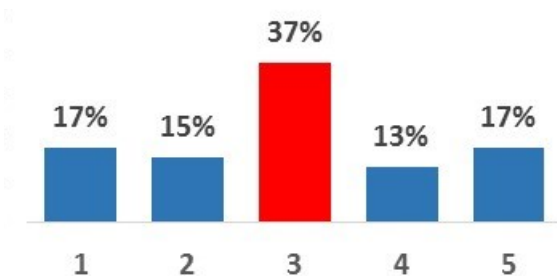
52% of visitors **strongly agree or agree** they feel **more confident** in their ability to **prepare for an earthquake**.



Awareness of Preparedness

The following charts reflect questionnaire respondents' awareness of preparedness after experiencing the exhibit. While the questionnaire asks what participants would be likely to do to prepare for an earthquake, including create an earthquake kit, secure things to the wall, and store food and water, *The Epicenter* only prompts and educates participants on the importance of Drop, Take Cover and Hold On. This is reflected in the data in that **75%** of questionnaire participants **reported a strong likelihood to take cover in a safe place at home**, yet fewer participants reported a likelihood to engage in other preparedness methods.

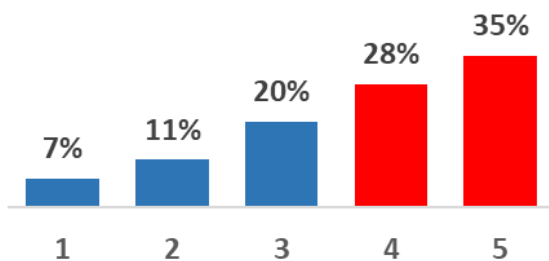
37% of participants reported feeling **neutral** about creating an **earthquake kit**.



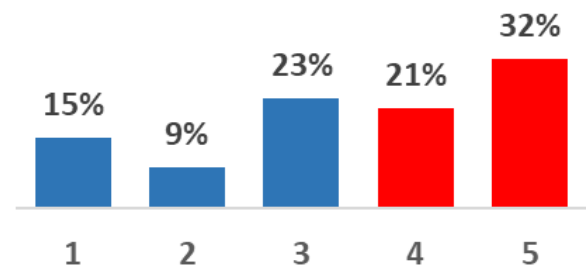
28% of participants reported a **strong** likelihood of **securing things to the wall**, however **28%** also show a very poor likelihood.



63% of participants show a **strong** likelihood of **storing food and water**.



53% of participants show a **strong** likelihood of **creating a safety plan with family**.



50% of interview participants referenced **school** as a place in their community where they could learn more about **earthquake preparation**. Others mentioned the Internet, library, and universities.

When asked what they thought *The Epicenter* was trying to get them to do, **80%** of interview participants said to **prepare for an earthquake**, while **20%** said to **learn about earthquakes**.

Executive Summary

While many visitors took away the value of experiencing an earthquake, the percentage of participants who reported they were likely to take actions such as creating an earthquake kit, securing things to the wall and storing food and water was lower than the percentage who reported they were likely to Drop, Take Cover, and Hold On. Placing an exhibit panel outside *The Epicenter* with additional suggestions and community resources on earthquakes and earthquake preparedness could engage visitors with more take home messages about earthquake preparedness.

Feedback from questionnaire and interview participants suggests that *The Epicenter* should look and feel more “realistic.” One interview participant suggested adding a “thing swinging from the roof.” Adding props, such as hanging objects from the ceiling, would allow visitors to see the effects an earthquake may have on their surroundings. Similarly, a questionnaire participant suggested adding “a video of each earthquake” to introduce realism.

Because OMSI serves a diverse population of visitors, aims to increase visitor diversity, and strives to engage all visitors, all will benefit if *The Epicenter* accessibility is improved. One questionnaire respondent suggested adding “closed captions for deaf/hard of hearing people,” and Spanish language audio and text.

Appendix A: Observation Tool

Epicenter/El epicentro observation tool

Group # _____ Time: _____ min. _____ sec _____ Date _____ Staff _____

Children (0-8): _____

Youth (9-17): _____

Adults (18+): _____

Activity	Y/N	Explain further
Read copy	Y/N	
Point at copy	Y/N	
React to audio verbally	Y/N	
React to audio physically	Y/N	
Demonstrate confusion	Y/N	
Hit the kill switch	Y/N	
Drop	Y/N	
Duck and cover	Y/N	
Hold on	Y/N	
Sit	Y/N	
Lean	Y/N	
Yell/cry out of fear	Y/N	
Abandoned exhibit before completion	Y/N	
Take photos	Y/N	
Talk to each other about exhibit	Y/N	
Share personally relevant stories	Y/N	
Wheelchair lift functions	Y/N/NA	

Describe how the group participates together:

Any interface difficulties? Describe.

Describe features they focus on:

Describe any conversation about earthquake awareness or preparation:

Unanticipated:

Appendix B: Questionnaire

The Epicenter Questionnaire

We're excited that you've agreed to provide feedback on this new *the Epicenter* exhibit! We would love to have you answer the following questions so that we can better understand your engagement with the exhibit.

1. How much did you like *the Epicenter* exhibition? Circle the number closest to your opinion.

DID NOT LIKE AT ALL

LIKED IT A LOT

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

2. What did you like most about *the Epicenter*?

3. What would you share from *the Epicenter* to teach a friend or family member about earthquakes?

4. After experiencing *the Epicenter* exhibition, how much do you agree or disagree with these ideas compared with how you felt before you visited the exhibition?

	STRONGLY	DISAGREE	NEUTRAL	AGREE	STRONGLY
I am more familiar with what an earthquake feels like.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more familiar with what happens during an earthquake.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I now feel safer when I think about earthquakes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know more about what to do during an earthquake.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more familiar with the Cascadia Subduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel more confident in my ability to prepare for an	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel more confident in my ability to guide my family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more aware of places to continue learning about earthquake preparation outside of OMSI (e.g.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B: Questionnaire

After experiencing *the Epicenter* exhibition, please rate the likelihood of you participating in the following (1- lowest and 5- highest)

	1	2	3	4	5
Create an earthquake kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Store food and water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secure things to the walls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find safe places in your home to take cover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Create a safety plan with your family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Is there anything that you can think of that would make your *Epicenter* experience better?

OMSI believes that it is important to know about our visitors' identities in order to better serve the people who visit OMSI.

7. How old are you? _____

8. With which gender do you identify? _____

9. Are you of Hispanic, Latino, or Spanish origin? ☐ Yes ☐ No ☐ I don't know

10. How would you describe yourself? *(Please select all that apply.)*

<input type="checkbox"/>	American Indian or Alaska Native	<input type="checkbox"/>	Asian	<input type="checkbox"/>	White
<input type="checkbox"/>	Black or African American	<input type="checkbox"/>	Middle Eastern	<input type="checkbox"/>	Multiracial
<input type="checkbox"/>	Native Hawaiian or Other Pacific Islander	<input type="checkbox"/>	Prefer not to answer	<input type="checkbox"/>	Other: _____

Thank you for participating. If you have any questions or concerns after leaving OMSI, don't hesitate to email Marsela Rojas, Junior Research & Evaluation Associate at mrojassalas@omsi.edu

Appendix C: Interview

MOVE Interview

We're excited that you've agreed to provide feedback on this new Shake house exhibit! We would love to have you answer the following questions so that we can better understand your engagement with the exhibit.

1. Can you tell me more about what made you want to enter the exhibit?
2. After experiencing the exhibit, what might you share with a family member or friend to teach them about earthquakes?
3. Was there a part of the exhibit that made you feel like going home to prepare for an earthquake?
 - Which part was it?
 - What is one thing you would do to prepare for an earthquake?
4. As a group, did you experience anything interesting or fun together? Yes No Not sure
 - If yes, what was it?
5. Did you experience anything uncomfortable? Yes No Not sure
 - If yes, what was it?
6. Other than OMSI, what are some places in your community where you can explore earthquake preparation? (Home, community organization, events)
7. What do you think the exhibit is trying to get you all to do?
 - Were you persuaded by OMSI's call?
 - Why or why not?

Appendix C: Interview

8. Including yourself, how many people in your group are in each of the following age groups?

Age	#
0-6	
7-12	
13-18	
19-35	
36-55	
56+	

9. Including yourself, how many people in your group identify with the following genders

Gender	#
Female	
Male	
Non-binary	
Prefer not to say	

10. Including yourself, how many people in your group identify with the following racial/ethnic categories?

Race/ethnicity	#
American Indian or Alaska Native	
Asian	
Native Hawaiian or other Pacific Islander	
Black or African-American	
Hispanic/Latina/o/x	
White	
Middle Eastern	
Multi-racial	
Other: _____	
Prefer not to say	