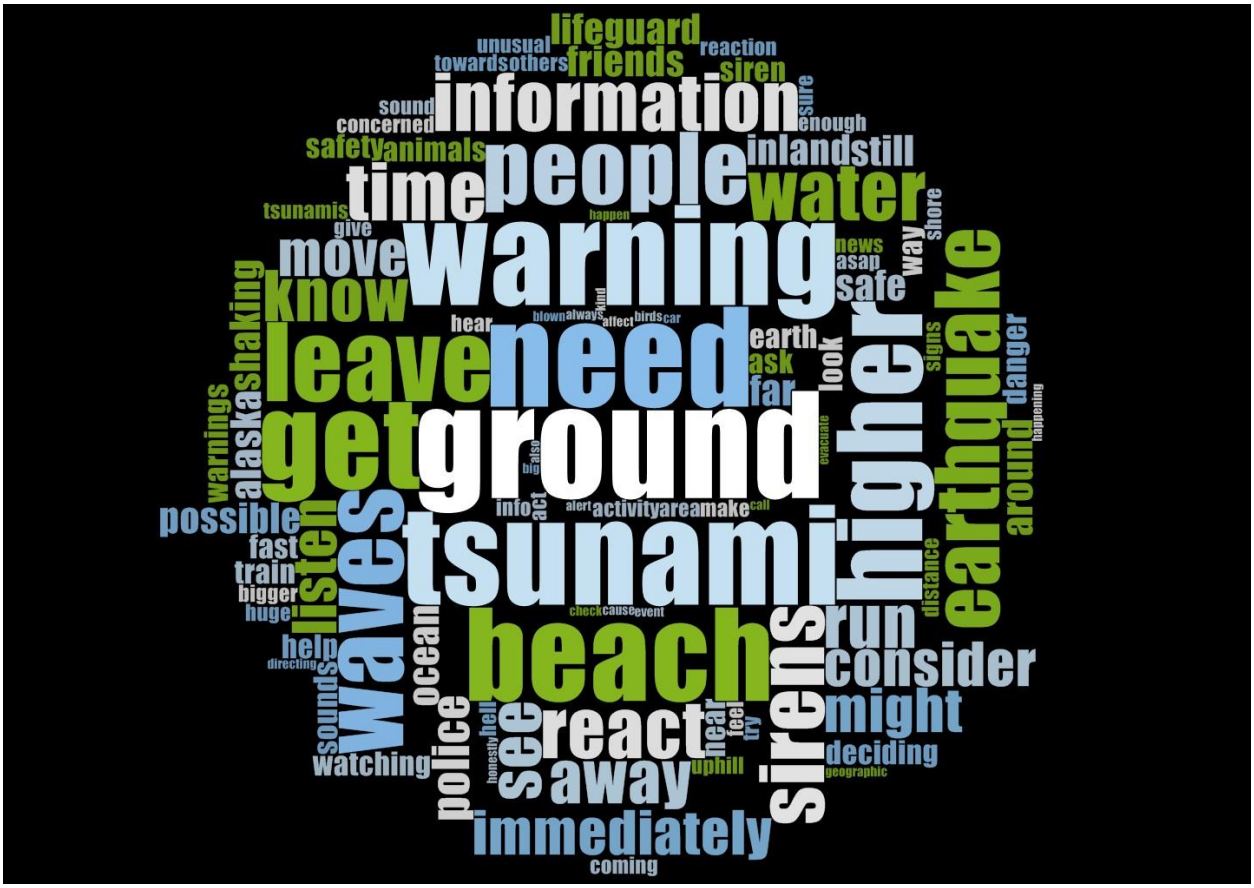
EVALUATION RESEARCH TO EXAMINE THE EFFECTIVENESS OF THE TSUNAMI AWARENESS SHORT VIDEO: "THE FIRST SUE NAMI"



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Report Prepared for the US Geological Survey (USGS)
Science Application for Risk Reduction (SAFRR) Leadership
by the
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https://hazards.colorado.edu/

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EVALUATION RESEARCH TO EXAMINE THE EFFECTIVENESS OF THE TSUNAMI AWARENESS SHORT VIDEO: "THE FIRST SUE NAMI"

1. INTRODUCTION AND PROJECT OVERVIEW

This report presents findings of exploratory research conducted by the University of Colorado's Natural Hazards Center (NHC) to examine the effectiveness of the tsunami awareness short video, "The First Sue Nami," created by the Art Center College of Design.[1] The project involved developing and implementing an evaluation approach to provide data to inform future messaging and communication strategies for tsunami awareness and protective actions in target populations. The results of this evaluation research have the potential to make tsunami risk communication both more relevant and applicable to society at large, and particularly in communities vulnerable to tsunamis.

2. METHODS

This project consisted of two phases. The first phase involved developing a research design to evaluate the effectiveness of the Sue Nami video and the second phase involved implementing the study. The components of each phase are summarized below.

2.1 Phase 1

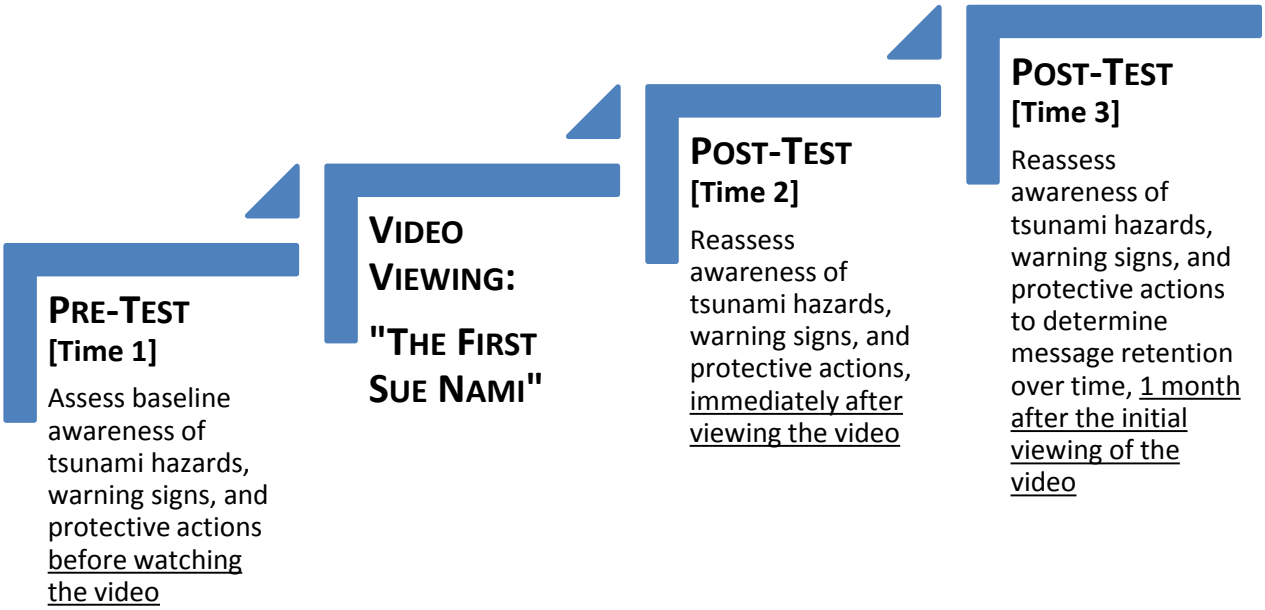
The NHC team developed the research design for this study in consultation with USGS scientists and tsunami awareness specialists. We began by developing and field testing questionnaires (also referred to in this report as surveys) to assess the effectiveness of the Sue Nami video in delivering and producing the intended awareness and educational outcomes. Primarily, these included questions about tsunami hazards, warning signs, and protective actions to take in the event of a tsunami (broadly referred to in this report as "tsunami awareness"). (See Table 2 for additional details regarding the intended outcomes.)

Ultimately, the team created a set of three questionnaires to assess tsunami awareness of study participants at three different points in time: prior to watching the video (Time 1); immediately after watching the video (Time 2); and one month after watching the video (Time 3). (See Figure 1.) The quantitative and open-ended qualitative items on the questionnaires were based on the content of the video and its intended educational messages. The post-test survey also included questions about the format and presentation approaches employed in the video itself.[2]

[1] The two-minute video was created for a target audience of 18-34 year olds. For more information and to view the video, see: https://www.youtube.com/watch?v=0Kh3iVvlnPg

[2] These questionnaires are available upon request. Please contact the project lead, Liesel Ritchie, for more information: liesel.ritchie@colorado.edu.

Figure 1. Overall Research Design



Next, we developed a focus group protocol and interview guide for use in gathering additional, qualitative data about the effectiveness of the video in delivering and producing the intended awareness and educational outcomes. For example, the protocols included discussion topics such as, what was most effective in delivering the intended messages, as well as what was least effective or ineffective about the video.[3]

The final component of this phase of the project involved developing a recruitment and sampling/screening strategy for study participants. Based upon the available resources and scope of the project, the study team decided on a criterion-based (purposeful) stratified sampling approach to include approximately 100 participants, with a geographic focus of Los Angeles, California.[4] This ensured the participation of individuals who were representative of what is considered to be the target population for the video (individuals of ages 18-34), but that also captured a broader range of demographic characteristics (e.g., sex, education, race/ethnicity, place of residence, as well as individuals aged 35+). Participants were also screened to ensure diversity among participants with respect to their self-reported knowledge about tsunamis prior to involvement in the research. Approval

[3] The focus group discussion guide is available upon request. Please contact the project lead, Liesel Ritchie, for more information: liesel.ritchie@colorado.edu.

[4] The NHC contracted with ADEPT marketing research to develop the sample and recruit study participants. The sample of participants was drawn from ADEPT's database in the targeted geographic region. Individuals who completed the first two phases of the study and the focus groups were compensated a total of $100 each. Those who completed the on-line follow up questionnaire were paid an additional $25 each. Members of the NHC team conducted the on-site work in California to show the video; administer the Time 1 and Time 2 questionnaires; facilitate the focus groups; and administer the Time 3 on-line follow up questionnaires.

to conduct human subjects research for this project was secured through the University of Colorado's Institutional Review Board.

2.2 Phase 2

To implement the finalized research design, we conducted face-to-face, facilitated sessions with a total of 96 individuals. Participants were divided into two viewing groups: one group (n=46) viewed the two minute Sue Nami video once and the second group (n=50) viewed the video three successive times. The purpose of this approach was to determine whether viewing the short video more than once produced better educational outcomes (i.e., increased awareness about tsunami hazards and protective actions) than watching the video only one time.

Prior to watching the video, the evaluation team administered a questionnaire to all study participants to assess baseline knowledge about tsunami hazards and protective actions (Time 1). Immediately after viewing the video, the team administered a post-test questionnaire to determine the extent of knowledge change reflected in respondents' answer choices (Time 2). Four weeks after the on-site video screening, participants completed the questionnaire a third time via on-line questionnaire so that the evaluation team could assess the degree of information retention and obtain additional feedback about the Sue Nami video (Time 3). Phase 2 of the study was conducted in August and September of 2014.

In addition to administering the questionnaires as described above, we conducted four focus groups with a subsample of study participants (n=32, 8 participants in each group) immediately after the video screening. Facilitated by members of the NHC team, the purpose of the focus groups was to gather more in-depth, qualitative information about different aspects of the video from individuals who saw the video once, as well as those who saw it three times. The selection process for focus group participants prioritized the inclusion of 18-34 year olds—the target audience for the video—but also sought to ensure representation from various demographic groups within that population to detect nuances in message effectiveness that may be associated with characteristics such as age, sex, race, and level of education.[5]

2.3 Limitations of the Study

Although our sample is representative of the target population for the video and includes a diverse range of participants with respect to other demographic characteristics in the Los Angeles, California area, it is not a random sample. Thus, the findings of this evaluation research are not necessarily generalizable to a broader general population. It is important to note that without a control group (i.e., a group that did not see the Sue Nami video or a group that was exposed to other tsunami educational materials), it is not feasible to control for differences in knowledge related to tsunami awareness other

[5] The premise of the Art Center College of Design group that developed the video was that it could include more information than might be absorbed in one viewing, because individuals would watch the video on-line and that those who saw it once would be compelled to watch it again—perhaps even several times. Although our research design is limited in its ability to replicate this type of viewing, the methodology employed provides important information for future outreach and awareness work.

than the Sue Nami video.[6] Finally, the small sample size limited the viability of performing more advanced data analysis techniques on the quantitative data.

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[6] The original study design included a third phase during which comparisons of other types of tsunami-related educational materials and control groups were to be incorporated. In the event that more resources become available, future studies should include a control group and should also expose participants to other educational materials, to ensure greater methodological rigor and to allow for a more firm basis of comparison regarding participants' knowledge of tsunami hazards, warning signs, and protective actions.

FINDINGS

3.1 Sample Characteristics

Our sample represents a range of demographic characteristics, including the target audience for the Sue Nami video. (See Table 1.) Furthermore, a descriptive analysis of the data revealed a balanced design between treatment groups prior to participating in the study. That is, a comparison of participants who saw the video once versus those who saw the video three times indicated no statistically significant differences between groups at baseline.[7] The two groups of participants were found to be equivalent with respect to mean reported tsunami awareness prior to watching the video. Further, an equal distribution of groups minimized the risk of selection bias and potential threat of confounding factors, such as demographics (e.g., age, gender, level of education, parent status) in explaining the variability among changes in participants' awareness prior to and after watching the Sue Nami video. (See Appendix A.)

Table 1. Demographic Characteristics of Study Participants

Characteristic	Total Sample*
Gender	(N=93)
Male	50.5%
Female	49.5%
Race/Ethnicity	(N=93)
White	37.5%
African American	6.3%
Asian	12.5%
Native American/American Indian	2.1%
Other	38.5%
Hispanic or Latino	(N=95)
Yes	49.5%
No	50.5%
Age**	(N=96)
18-34	50.5%
35+	49.5%

*Lower N's are a result of non responses to some questions. Percentages may not total 100 due to rounding.
**We present the 18-34 and 35+ age ranges because the target group for the video was 18-34. The detailed age breakdown for the study sample is: 18-25 (25.3%); 26-39 (35.8%); 40-54 (32.6%); and 55+ (6.3%).

[7] Put simply, "A *statistically significant* t-test result is one in which a difference between two groups is unlikely to have occurred because the sample happened to be atypical. Statistical significance is determined by the size of the difference between the group averages, the sample size, and the standard deviations of the groups. For practical purposes statistical significance suggests that the two larger populations from which we sample are "actually" different." (See http://docs.statwing.com/examples-and-definitions/t-test/statistical-significance/.) Using SPSS software, we calculated a "p value" for our comparisons. A p value of <.05, which is commonly used as a cutoff for statistical significance in social science research, means that there is a less than 5% chance that the difference is due to chance.

Table 1 (Continued). Demographic Characteristics of Study Participants

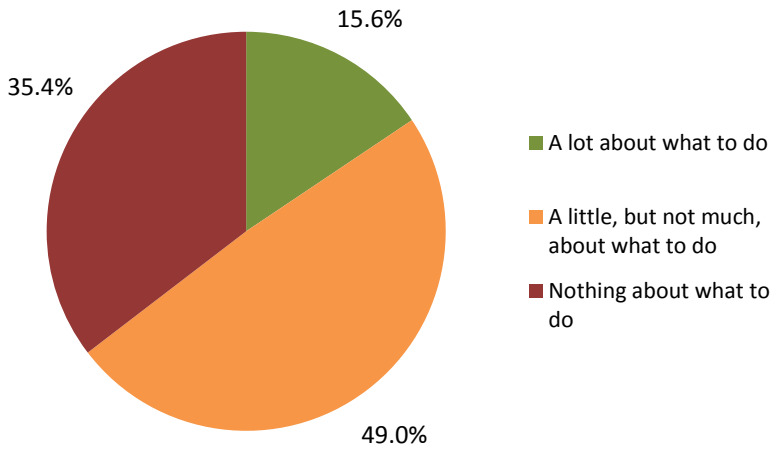
Characteristic	Total Sample
Education	(N=96)
Some High School	3.2%
High School Diploma	9.5%
Some College or Vocational School	37.9%
College Degree	44.2%
Some Graduate Work	1.1%
Advanced Degree	4.2%
Household Income	(N=92)
Under $30,000	16.3%
$30,000 to $49,999	16.4%
$50,000 to $69,999	26.1%
$70,000 to $89,999	15.2%
$90,000 or more	20.6%
Don't Know	4.3%
Employment Status	(N=86)
Student	16.5%
Employed full-time	48.4%
Employed part-time	11.6%
Seasonally employed	1.1%
Unemployed	8.4%
Other	9.5%
"Are you a parent?"	(N=96)
Yes	45.8%
No	54.2%
"Are you a grandparent?"	(N=96)
Yes	5.2%
No	94.8%
Children Living in Household	(N=95)
Yes	47.4%
No	52.6%

*Lower N's are a result of non responses to some questions. Percentages may not total 100 due to rounding.

3.2 Results: Time 1 (Before Watching the Sue Nami Video) Descriptive Baseline Data

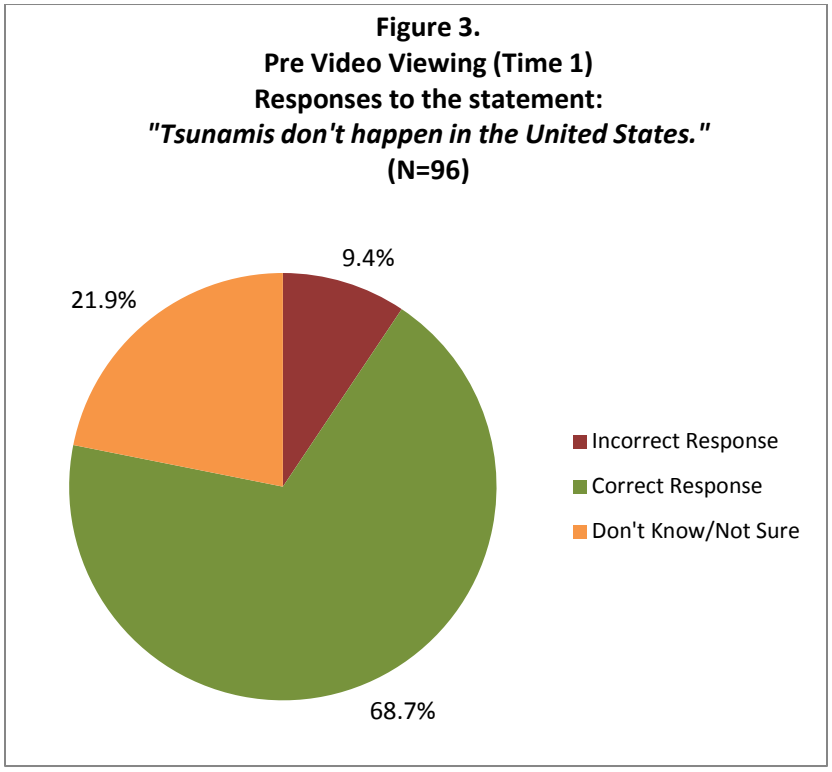
In this section, we present a brief overview of baseline awareness for our sample prior to viewing the Sue Nami video. Note that these are descriptive data, intended to provide a context for the reader and to situate the findings presented in the rest of the report.[8] As discussed earlier, individuals were screened during the recruitment process to ensure a range of knowledge among participants about tsunamis based on respondents' self-assessment of their own levels of knowledge. This question was asked again on site, before participants watched the video. Overall, as shown in Figure 2, almost half (49.0%) indicated that they knew 'a little, but not much' about what actions to take in the event of a tsunami. More than one-third (35.4%) reported that they knew 'nothing about what to do,' with the remainder (15.6%) responding that they knew 'a lot about what to do.'

Figure 2.
Pre Video Viewing (Time 1)
"*Which of the following best describes your level of knowledge about what actions to take in the event of a tsunami? Would you say that you know...*"
(N=96)



[8] For a statistical comparison of Time 1, Time 2, and Time 3 results for the core questions about tsunami awareness, see Appendix A.

Although most participants (68.7%) understood that tsunamis can happen in the United States, the remainder were not sure, or believed that tsunamis don't happen in the United States. (See Figure 3.)



Figures 4-7 present baseline findings for a series of true/false statements. As seen in Figure 4, a majority of participants provided the correct response to items about characteristics of a tsunami—specifically, what tsunamis look like. For example, three-quarters (75.0%) of respondents indicated, correctly, that "A tsunami may look like a wall of water as it approaches the shore." Similarly, 70.8 percent responded correctly ('true') to the statement *"A tsunami may look like a fast rising flood."* At the same time, there were a substantial number of incorrect and don't know/not sure responses and thus, room for improvement in awareness on this topic.

Notably, Figure 5 highlights less certainty (don't know/not sure answers) and more incorrect responses to another set of items about tsunami characteristics: how tsunamis behave. For example, fewer than one-third (30.2%) of participants provided the correct response to the item, *"The biggest tsunami wave is always the first wave,"* with almost half (47.9%) indicating they did not know or were not sure. One out of five (21.9%) answered this question incorrectly.[9]

[9] Only 19.8 percent of participants provided the correct response to the item, *"Tsunami waves last for about an hour."* We believe the uncertainty associated with this statement (75.0% indicated don't know/not sure) may be a result of the wording of the item.

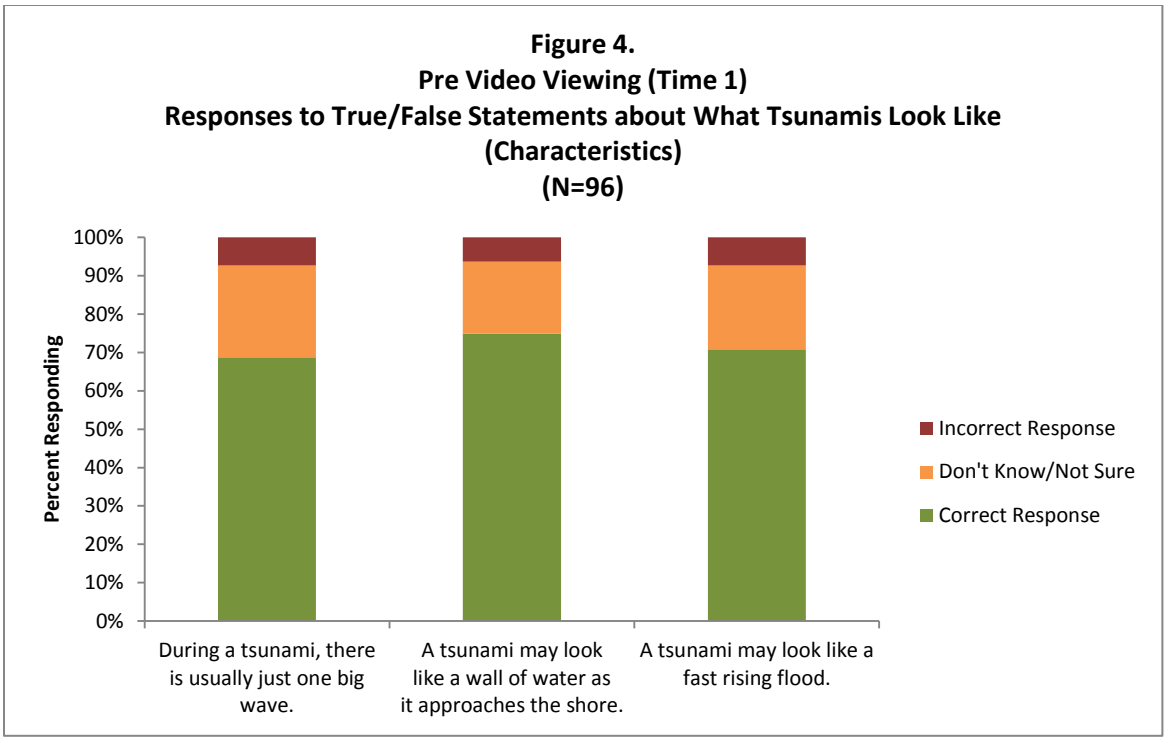


Figure 4.
Pre Video Viewing (Time 1)
Responses to True/False Statements about What Tsunamis Look Like
(Characteristics)
(N=96)
Percent Responding
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
During a tsunami, there is usually just one big wave.
A tsunami may look like a wall of water as it approaches the shore.
A tsunami may look like a fast rising flood.
Incorrect Response
Don't Know/Not Sure
Correct Response

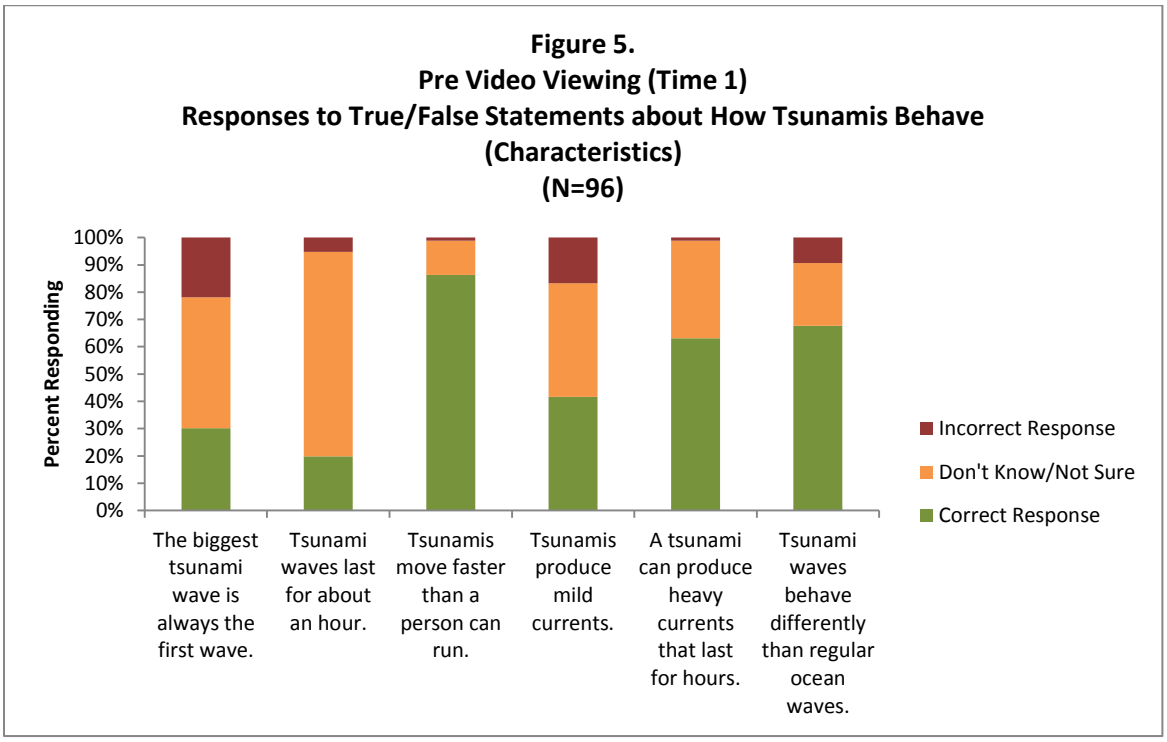
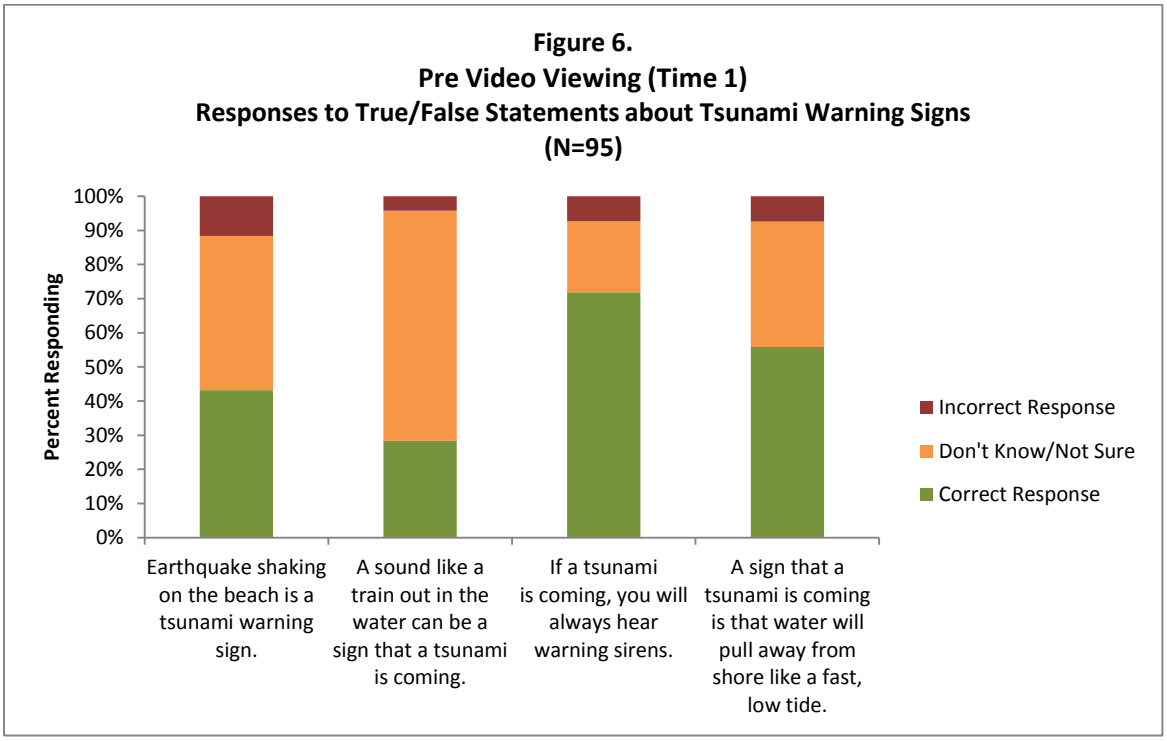
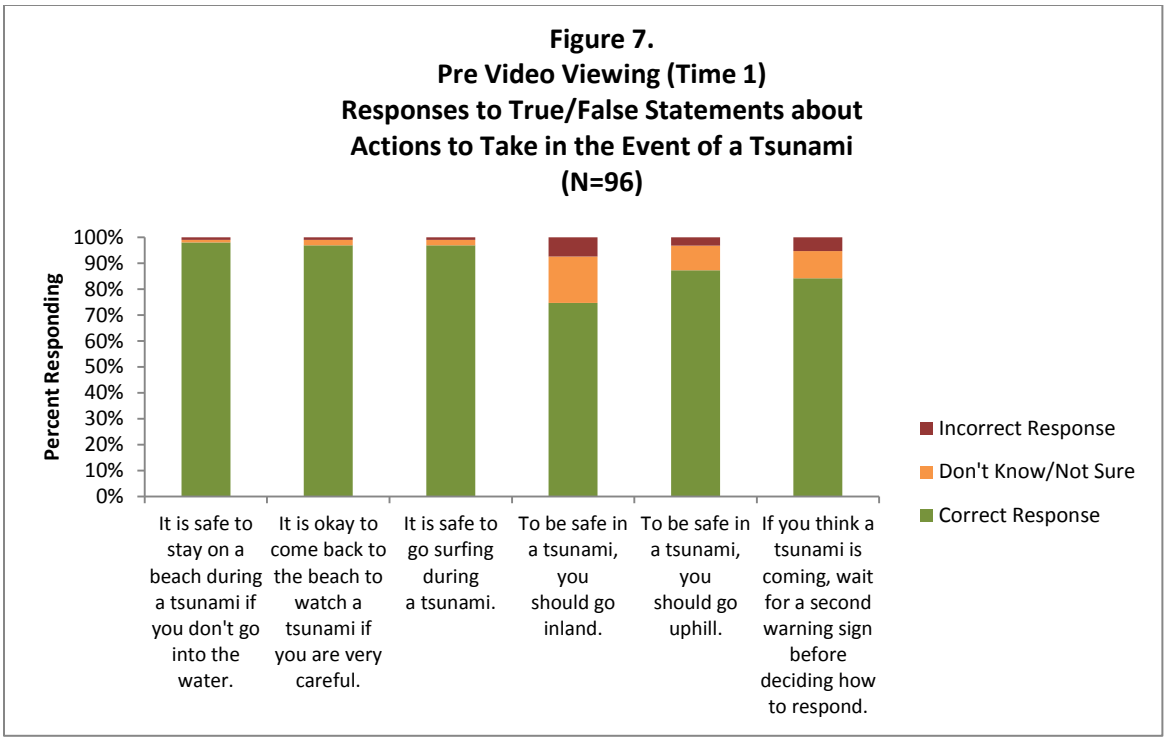


Figure 5.
Pre Video Viewing (Time 1)
Responses to True/False Statements about How Tsunamis Behave
(Characteristics)
(N=96)
Percent Responding
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
The biggest tsunami wave is always the first wave.
Tsunami waves last for about an hour.
Tsunamis move faster than a person can run.
Tsunamis produce mild currents.
A tsunami can produce heavy currents that last for hours.
Tsunami waves behave differently than regular ocean waves.
Incorrect Response
Don't Know/Not Sure
Correct Response

Statements about tsunami warning signs also generated a range of correct, incorrect, and don't know/not sure responses. (See Figure 6.) The fewest correct answers and highest level of uncertainty (28.4% and 67.4%, respectively) were associated with the item, *"A sound like a train out in the water can be a sign that a tsunami is coming."* Similarly, the other "natural" warning signs of a tsunami (earthquake shaking and water pulling away from the shore) garnered fewer correct responses and more don't know/not sure responses than the item about warning sirens.



The last set of awareness items focused on actions to take in the event of a tsunami. (See Figure 7.) A large majority of participants provided the correct response to each of these items, with only slight variations with respect to higher levels of uncertainty for the items about whether to go inland, waiting for a second sign, and whether to go uphill. Almost all respondents were aware that it is not safe to stay or to be on the beach if a tsunami occurs, and that they should not go into the water.



To summarize, the findings presented above provide a descriptive context for the remainder of the report. These data suggest that before watching the Sue Nami video, participants had a basic understanding of how tsunamis behave, tsunami warning signs, and actions to take in the event of a tsunami. However, as discussed in the next section, our analyses of data across Time 1, Time 2, and Time 3 reveals that participants in the study showed improvement in all three dimensions of tsunami awareness after watching the video and, further, retained this awareness one month after attending the on-site screening.

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3.3 Summary of Quantitative Results Across Time 1, Time 2, and Time 3

Each of the Sue Nami questionnaires for Time 1 (Pre or Baseline, before watching the video), Time 2 (Post, immediately after watching the video), and Time 3 (1 Month Post watching the video for the first time) data collection included a core set of 32 items (statements). The information presented below and in Appendix A focuses on data for 19 of these items, which were designed to capture three dimensions of tsunami awareness: characteristics of a tsunami (what tsunamis look like and how tsunamis behave); tsunami warning signs; and actions to take in the event of a tsunami. Each of these 19 items had a response scale that included three options: true, false, and not sure/don't know. Participant responses to these items were coded and scored as "1" if correct and "0" if incorrect, with not sure/don't know responses coded as incorrect. Next, scales were created to reflect each of the three dimensions of tsunami awareness. The *tsunami characteristics* scale included 9 items; the tsunami *warning signs* scale included 4 items; and the *tsunami actions* scale included 6 items. The items associated with each scale are listed in Table 2.

Table 2. Scales and Associated Items for Three Dimensions of Tsunami Awareness

Scales	Items in Each Scale
Tsunami Characteristics	- During a tsunami, there is usually just one big wave. - A tsunami may look like a wall of water as it approaches the shore. - The biggest tsunami wave is always the first wave. - A tsunami may look like a fast rising flood. - Tsunami waves last for about an hour. - Tsunamis move faster than a person can run. - Tsunamis produce mild currents. - Tsunami waves behave differently than regular ocean waves. - A tsunami can produce heavy currents that last for hours.
Tsunami Warning Signs	- A sign that a tsunami is coming is that water will pull away from shore like a fast, low tide. - Earthquake shaking on the beach is a tsunami warning sign. - A sound like a train out in the water can be a sign that a tsunami is coming. - If a tsunami is coming, you will always hear warning sirens.
Tsunami Actions	- To be safe during a tsunami, you should go uphill. - If you think a tsunami is coming, wait for a second warning sign before deciding how to respond. - It is safe to stay on a beach during a tsunami if you don't go into the water. - It is okay to come back to the beach to watch a tsunami if you are very careful. - It is safe to go surfing during a tsunami. - To be safe during a tsunami, you should go inland.

Overall, statistically significant (meaningful) differences were found in participants' awareness of tsunami hazards, warning signs, and protective actions prior to and following their viewing of the Sue

Nami video. These findings indicated that participants reported higher levels of tsunami awareness after watching the Sue Nami video. (See Figures 8-10, below, and Appendix A, Supplementary Tables 1 and 7.) Data also suggest that overall retention of this information was maintained four weeks after the initial viewing of the video.

Figure 8.
Improvement in Awareness of Tsunami Characteristics

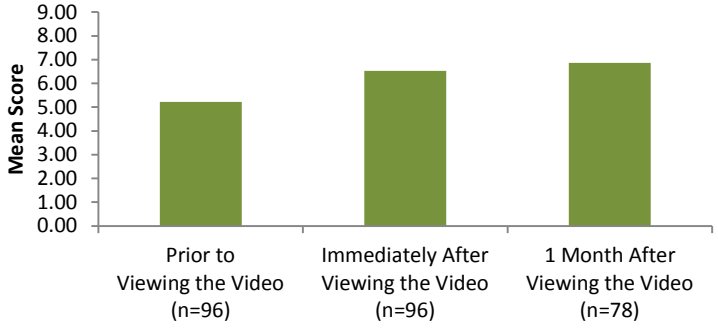


Figure 9.
Improvement in Awareness of Tsunami Warning Signs

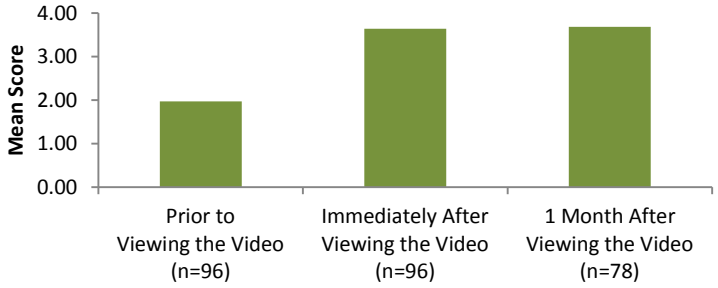
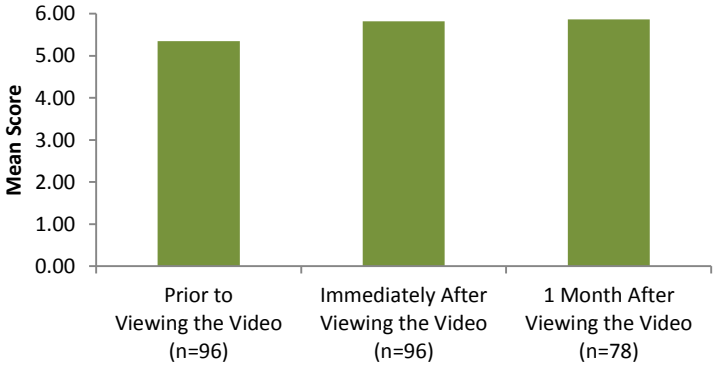
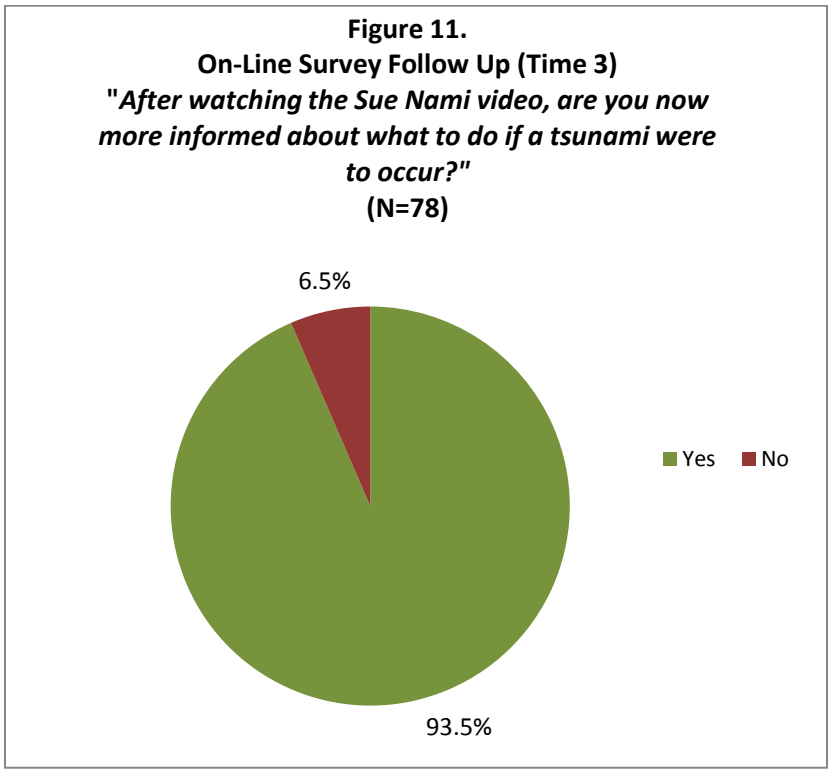


Figure 10.
Improvement in Awareness of Actions to Take in the Event of a Tsunami



In terms of participants' self-assessment of their knowledge after viewing the video, descriptive data are consistent with the statistically significant findings. When asked at Time 3 (four weeks following the initial screening of the film), *"After watching the Sue Nami video, are you now more informed about what to do if a tsunami were to occur?"* 93.5 percent of study participants responded 'yes.' (See Figure 11.)



Participants also indicated an increase in the importance of the issue of tsunami risk to them, personally, after having viewed the video. (See Figures 12 and 13.) Prior to watching the video, a total of 74.0 percent responded that the issue was either 'very important' (41.7%) or 'somewhat important' (32.3%) to them. The number of individuals indicating that the issue was 'very important' or 'somewhat important' increased to 85.9 percent (51.3% and 34.6%, respectively) in Time 3—with fewer participants (11.5%) than in Time 1 responding that the issue was 'not too important' to them.

Figure 12.
Pre Video Viewing (Time 1)
"*How important is the issue of tsunami risk to you personally?"*
(N=96)

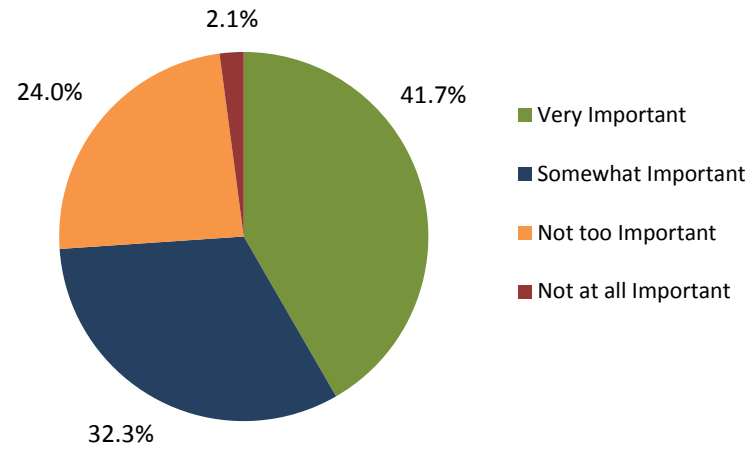
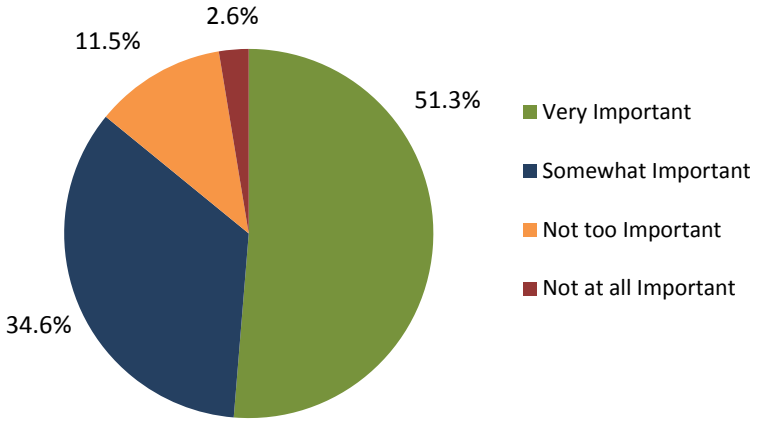


Figure 13.
On-Line Survey Follow Up (Time 3)
"*How important is the issue of tsunami risk to you personally?"*
(N=79)



Results further revealed the following (as detailed in Appendix A):

- There were no statistically significant differences in tsunami awareness between the study participants who watched the Sue Nami video three times as compared to participants who viewed the educational video only once. Thus, the number of times a participant viewed the Sue Nami educational video did not appear to have an impact on his or her levels of reported tsunami awareness as measured by the Sue Nami questionnaire in this study.

- There were no statistically significant differences in levels of tsunami awareness at any of the three points in time between study participants aged 18-34 (the target audience for the video) and those aged 35+. That is, the age of participants did not appear to have an impact on his or her levels of reported tsunami awareness as measured by the Sue Nami questionnaire in this study. We conducted a question by question comparison of the descriptive data for these groups, which is presented in Appendix B.

- There were no statistically significant differences in levels of tsunami awareness at any of the three points in time between Hispanic and Latino participants, and those who were not Hispanic or Latino. In other words, being Hispanic or Latino or not Hispanic or Latino did not appear to have an impact on participants' reported tsunami awareness as measured by the Sue Nami questionnaire in this study.

- There were some statistically significant differences in tsunami awareness that emerged during our analyses. Although these findings should be interpreted with caution due to our small sample size and other limitations of the study as described above, they provide a basis for further exploration and discussion. For example, at Time 3, men had higher levels of awareness of tsunami characteristics than women. (See Appendix A, Supplementary Table 17.) There were also statistically significant differences in awareness of tsunami warning signs at Time 2 and Time 3 between those with a college degree or higher, and those with less than a college degree. At both points in time, those with a college degree scored higher than those without on the questions about tsunami warning signs. (See Appendix A, Supplementary Tables 19 and 20.)

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3.4 Results: Time 3 (1 Month After Watching the Video) On-Line Questionnaire

The information presented in this section is based on selected results of our Time 3 on-line questionnaire, which was administered approximately one month after the on-site viewing of the Sue Nami video. Here, we focus on responses to questions about post-viewing actions, attitudes, and self-reported assessment of any changes in tsunami awareness and knowledge among participants.[10] This section also reports findings associated with participants' perspectives and feedback on the Sue Nami video itself.

Summary of Post Viewing Actions, Attitudes, and Self-Reported Knowledge

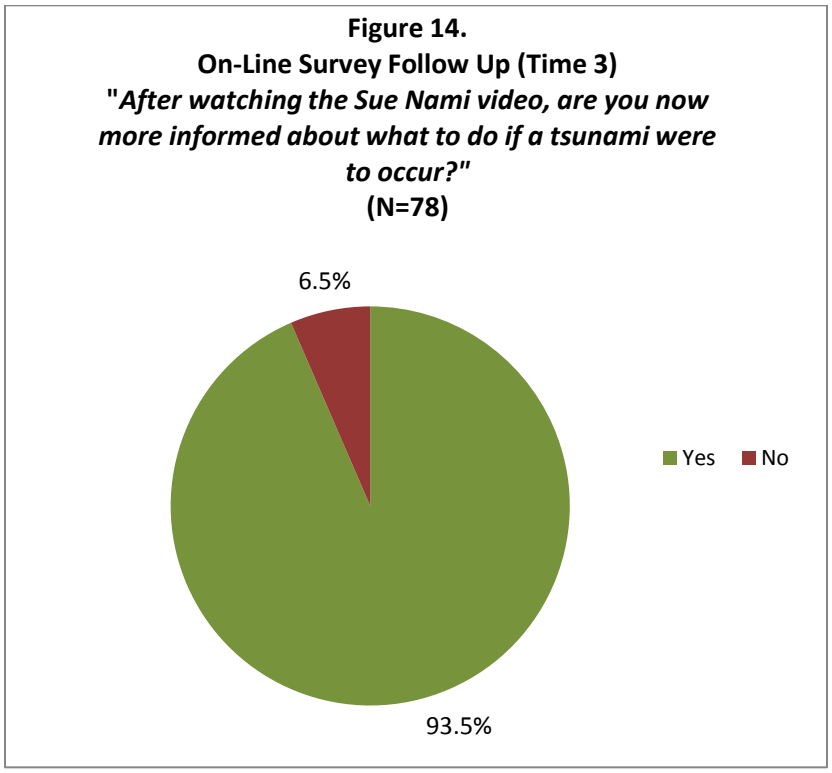
Table 3. Responses to Selected Time 3 On-Line Questionnaire Follow Up Questions (1 Month After Watching the Video)

	Total Sample
Were you a part of the group interview (after the showing of the video) at ADEPT?	(N=79)
Yes	48.7%
No	51.3%
Since the group showing of the Sue Nami video at the end of August, have you watched the video again?	(N=79)
Yes	29.5%
No	70.5%
If you answered "yes" [to having watched the video], how many times did you watch the video?	(n=20)
Once	40.0%
Twice	35.0%
3 or more times	25.0%
Since the group showing of the Sue Nami video at the end of August, have you shared the video with others?	(N=79)
Yes	25.6%
No	74.4%
If you answered "yes" [to having shared the video], with how many people did you share the video?	(n=19)
1-5 people	63.1%
6-10 people	26.3%
More than 10 people	10.5%

*Lower N's are a result of non responses to some questions. Percentages may not total 100 due to rounding.

[10] For a statistical comparison of Time 1, Time 2, and Time 3 results for the core questions about tsunami awareness, see Appendix A.

As shown in Table 3, an almost even number of those who responded to the Time 3 questionnaire were participants and non-participants in the post-video focus groups. (See Section 3.6 for a summary of the focus group findings.) A total of 79 individuals completed the Time 3 survey, for an 82.3 percent response rate after the Time 1 and Time 2 on-site data collection. Most respondents (70.5%) indicated that they did not re-watch the video after the on-site screening; approximately one-quarter (25.6%) reported that they had shared the video with others. A large majority (93.5%) responded 'yes' to the question, "*After watching the Sue Nami video, are you now more informed about what to do if a tsunami were to occur?*" (See Figure 14.) This self-assessment is consistent with the statistically significant findings across Time 1, Time 2, and Time 3 data analyses.



A few (n=7) open-ended comments at the end of the survey reflect some of the general ways in which study participants considered their new knowledge (see the remainder of this section for more qualitative findings):

- *Just that tsunami's are really dangerous and not to be underestimated.*
- *Be aware and alert of your surroundings and pay attention to the current.*
- *I'm more aware of my surroundings when I'm at the beach.*
- *I know a ton more now.*
- *I will look for more info on tsunami in the video.*
- *It is not a joke at all. Serious stuff.*
- *To just be careful on any beaches because it can happen at any beach.*

Slightly more than one-quarter of respondents (26.9%) indicated that they had researched or looked for more information about tsunamis since the on-site viewing of the video; of these, most had accessed Wikipedia (53.0%), with others also going to the NOAA (17.6%) and USGS (11.7%) web sites. (See Figures 15 and 16.) (See Section 3.6 for focus group feedback about participants' motivation to do additional research about tsunamis.)

Figure 15.
On-Line Survey Follow Up (Time 3)
"Since the group showing of the Sue Nami video at the end of August, have you researched or looked for more information about tsunamis?"
(N=79)

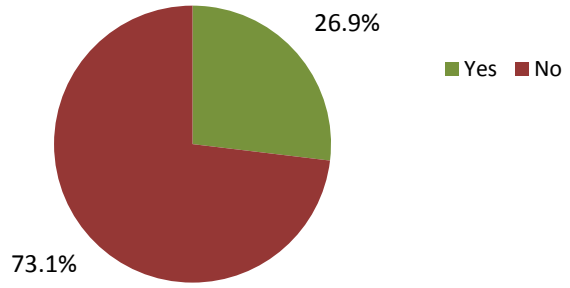
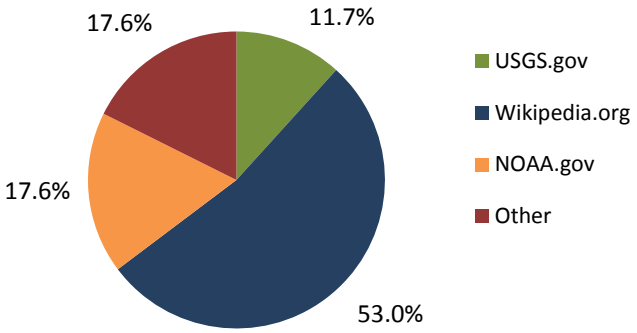


Figure 16.
On-Line Survey Follow Up (Time 3)
Where Respondents Looked for More Information about Tsunamis
(n=17)



Summary of Feedback Regarding the Sue Nami Video

As an additional part of Time 3 data collection, we asked participants to provide feedback regarding various aspects of the Sue Nami video. Again, this information was gathered via the on-line survey, one month after the initial on-site viewing. Responses to these open-ended questions are summarized below, with supporting quantitative data highlighted in Figures 17-21.

"What do you remember most about the Sue Nami video?"

When asked "*What do you remember most about the Sue Nami video?"* participants noted a number of different aspects—ranging from tsunami warning signs to what to do in the event of a tsunami to comments about the video itself. This qualitative information is presented below in a word cloud, generated using NVivo data analysis software, which presents key words or phrases used in responses to this question. Words used most often appear in large font size, with those appearing less frequently shown in smaller font size. (See Word Cloud 1.)

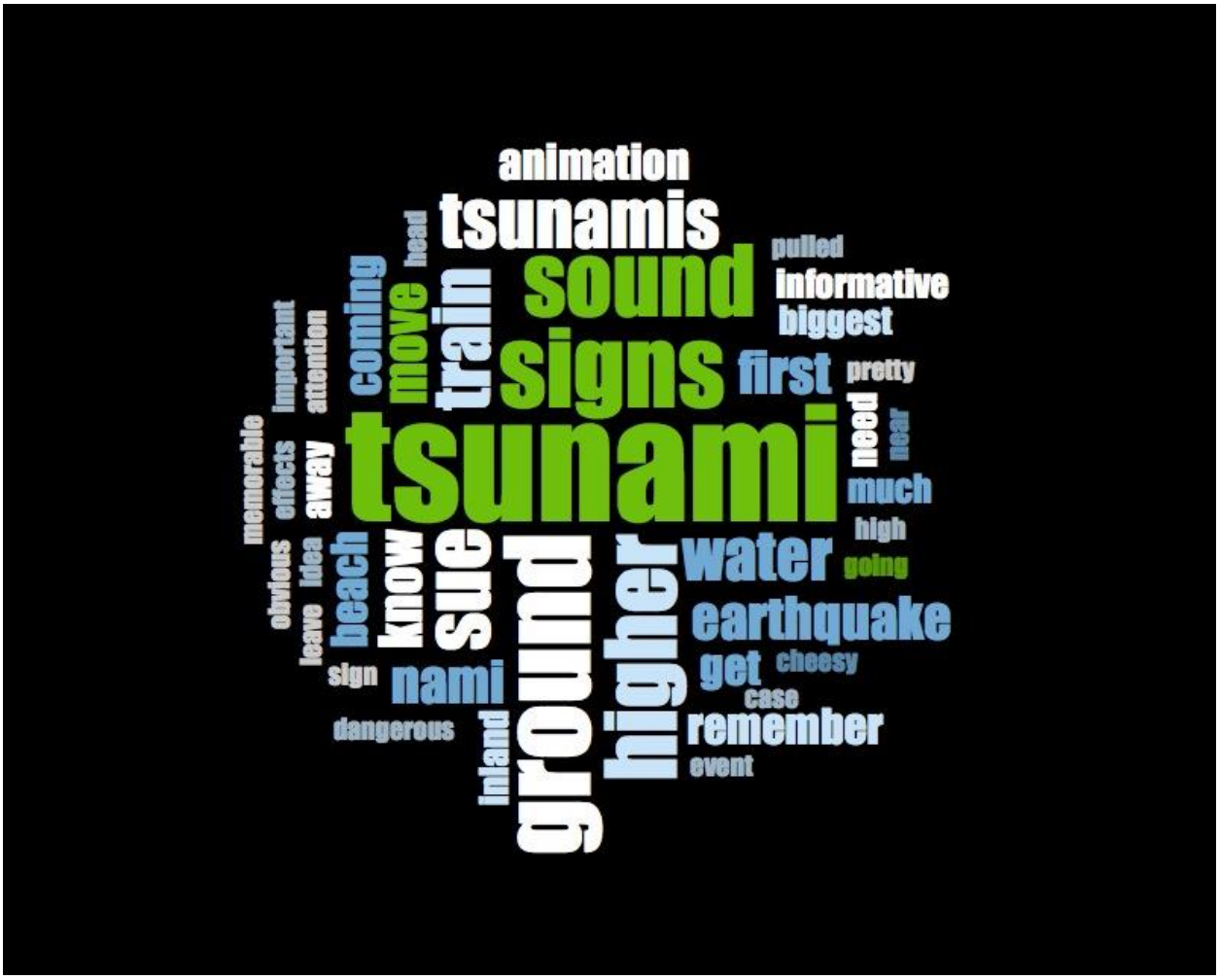
Of the 78 individuals who responded to this open-ended question, slightly more than one-third (n=28) wrote comments related to actions to take in the event of a tsunami. Most of these responses (n=23) mentioned going uphill, getting away from the water, or moving to higher ground. Examples of these included:

- *Get to high ground and away from the ocean.*
- *Always head inland.*
- *Get away as quick as one can.*
- *Go uphill.*
- *Move to higher ground.*
- *Get to higher ground in case of a tsunami.*
- *The part I remember the most is to move upland when a tsunami is coming.*
- *That it is not safe to hang around. We need to go inland or uphill.*
- *I had no idea how powerful and dangerous tsunamis are. I know now to go to higher ground.*
- *I remember that the biggest wave is not always the first wave and it is best to head inland or uphill to help be protected.*

A few participants (n=6) also offered more general comments about what they remembered about the video and what it presented regarding what to do if a tsunami occurs:

- *It gave me instructions on what I should do when a tsunami hits and more info on the tsunami as well as it challenged me to know more and how much I know about them.*
- *Directions about what to do.*
- *What signs there are to warn of a tsunami and what to do in the case of one.*
- *How to tell if a tsunami is coming and what to do if you are close to the event.*
- *What to do in the event of a tsunami.*

Word Cloud 1.
Key words associated with responses to the open-ended question:
"What do you remember most about the Sue Nami video?"



Other responses (n=24) to the question about what participants remembered most about the Sue Nami video focused on warning signs. Most were general statements, such as "*The warning signs of a tsunami."* Others were more specific in their answers, many of which included natural signs, such as a *"loud train sound"* and *"tsunamis may be signaled by a 'train-like' roar,"* an earthquake or ground shaking, and "*the water being very low and out.*" Responses also captured the notion that sirens might sound.

A number of people (n=24) indicated that they remembered various elements of the video itself, such as the Sue Nami character, the animation, other content-related aspects of the video (i.e. how a tsunami might behave or what it might look like), as well as more specific positive and negative feedback. These brief quotes are presented below in their entirety:

- *Sue walking with a tide behind her.*

- *The girl. And, a viewer-friendly synopsis of tsunamis.*
- *I didn't like the character "Sue Nami."*
- *The acting.*
- *The girl who was named "Sue Nami."*
- *Sue.*
- *[Sue's] voice, the visuals, the tips for looking out for a tsunami.*
- *Animation.*
- *When "Sue Nami" withers and melts into the concrete as it inclines. That part was pretty brutal.*
- *The quirky style of the video and the front lead woman. Other than that it's educational but a bit obvious with most things. For example I don't know anyone who thinks it's a good idea to hang out at the beach and watch a [tsunami].*
- *Animation.*
- *The animation.*
- *The creative animation and important information regarding tsunamis.*
- *The panning motion of the video.*
- *What Sue was saying was pretty memorable, like the fact that the first wave is not the biggest (news to me); most of the written stuff I didn't really pay attention to.*
- *Sound effects.*
- *How well it was done.*
- *How cheesy but informative it was.*
- *I liked that it was short and very informative and presented in a cute way.*
- *Cheesy and throws me off with what to pay attention to.*
- *The lightness of the video, maybe almost to the point of insincerity.*
- *I felt like it went too fast and didn't go into much detail on what to do other than the obvious of going to higher ground. I remember that it was cartoon like, fun and silly.*
- *I thought it wasn't as informative as I had hoped.*
- *I remember that the strongest wave may not always be the first.*
- *The people on the pier.*
- *The introduction when the girl mentions an earthquake.*
- *How rapidly the water traveled.*
- *Everything!*
- *A lot of misconception cleared.*
- *That tsunamis travel faster than airplanes.*
- *How important my safety is in these cases.*
- *I am a native of New Orleans, Louisiana and the most memorable to me is the similarities and effects of Sue Nami versus Hurricanes.*

Additional data about the effectiveness of the Sue Nami character in conveying the educational message of the video are presented in Figure 17, with a large majority of respondents reporting that it was either a 'very effective' (43.6%) or 'somewhat effective' (44.9%) approach. We also asked for participants' opinions regarding whether the video was serious enough that it caught participants' attention about tsunamis and tsunami warning signs. These responses were more mixed, with slightly less than two-thirds (62.8%) responding 'yes,' and almost one-third (32.1%) responding 'no.' (See Figure 18.)

Figure 17.
On-Line Survey Follow Up (Time 3)
"How effective was having a tsunami displayed as a person (Sue Nami) in gaining an understanding of what to do in the event of a tsunami?"
(N=79)

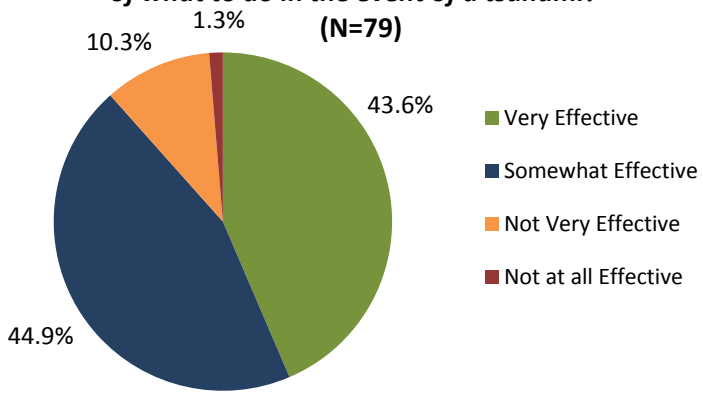
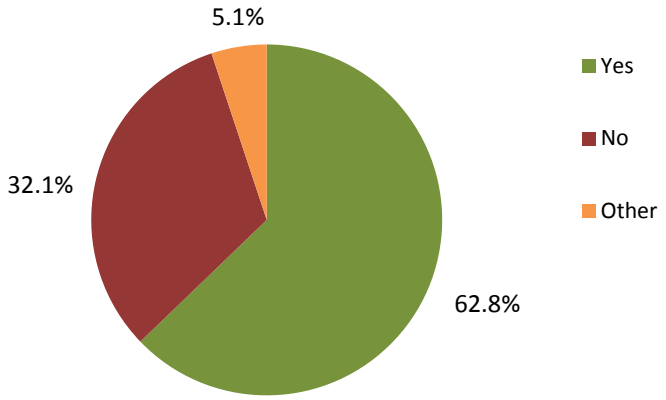
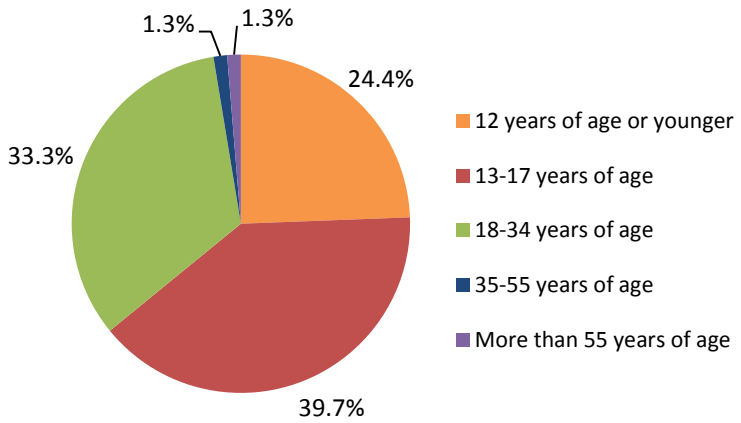


Figure 18.
On-Line Survey Follow Up (Time 3)
"Was the Sue Nami video, in your opinion, serious enough that it caught your attention about tsunamis and tsunami warning signs?"
(N=79)



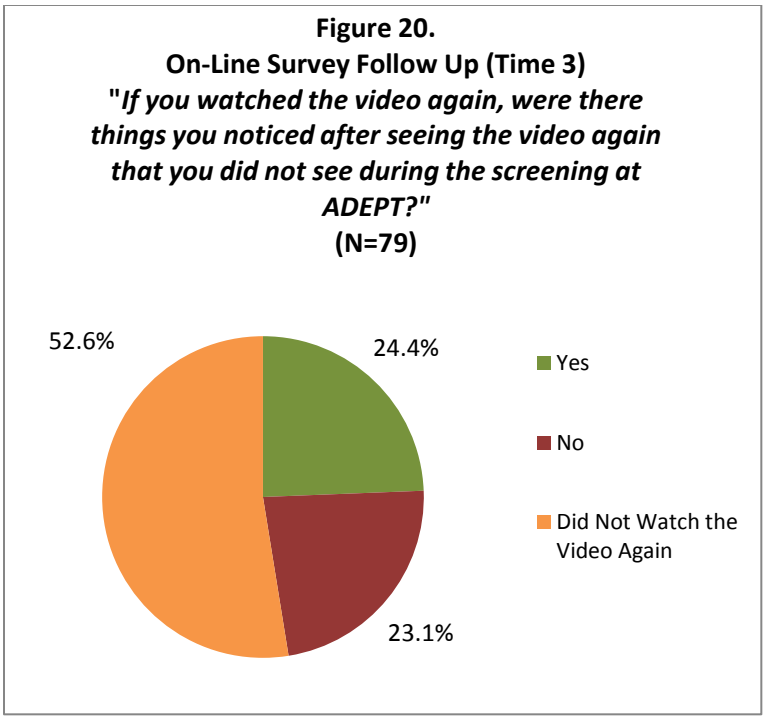
Interestingly, a large majority of study participants who responded to the Time 3 questionnaire believed that the Sue Nami video was most appropriate for audiences ranging from 13-17 years of age (39.7%) or 12 years of age or younger (24.4%), a much younger demographic than the target audience of 18-34 years of age. (See Figure 19.) Only about one-third (33.3%) indicated that the video was most appropriate for the intended audience of 18-34 year olds. These findings are consistent with the qualitative data from the focus groups, where participants thought that the video was more appropriate for an adolescent audience or younger. (See Section 3.6.)

Figure 19.
On-Line Survey Follow Up (Time 3)
***"For what age audience do you think this video is most appropriate?*(N=79)**



"***<u>If you watched the video again, were there things you noticed after seeing the video again that you did not see during the screening at ADEPT</u>?"***

Recognizing that the premise of the group that developed the video was that individuals would watch the video on-line and that those who saw it once would be compelled to watch it again—perhaps even several times—we incorporated this notion into our research protocol. At the end of the on-site sessions we provided participants with a card to take with them that included their personal ID code to log into the Time 3 survey, as well as a special link to the Sue Nami video so that we could monitor post-site access activity. Our verbal instructions also encouraged participants who were interested to watch the video again.



Slightly fewer than half (n=38, 47.5%) of those who responded to the Time 3 questionnaire indicated that they had watched the video again, after the on-site viewing. According to data that tracked the post-site views through the link we provided, 15 people accessed the video after the group screening. However, participants may have also accessed the video by searching the Web. Unfortunately, we do not have data associated with this type of viewing. As shown in Figure 20, of those who had re-watched the video, about half indicated that there were things they noticed when seeing the video again that they did not see when they initially viewed it (48.8%). Respondents who answered 'yes' to this question were asked to provide more detail about things they saw after re-watching the video. A total of 20 individuals replied to this question, with comments primarily focusing on the background texts and nonverbal messages within the video (n=12). For example:

- *The signs and the relevant writing on them. Also, the smaller details like writing in the sky, etc.*
- *I noticed details and clues throughout the video that if I would have watched more carefully the first time would have answered all of my questions to the survey.*
- *The printed signs.*
- *The signs in the video.*
- *The written stuff in the sand, the airplane and the trashcan.*
- *Visual markings along the landscape.*
- *Some of the signs posted on the pier.*
- *Clever signs in the background.*
- *The signs and notices.*
- *What was pointed out during our discussion such as the messages that popped out but were not noticeable due to the graphics.*

Other comments included the following:

- *How important is to stay away from the ocean and how the waves can become stronger.*
- *I already had knowledge of the protocol for what to do, but I did learn new things in terms of warning signs.*
- *The first wave is usually the smallest.*
- *I was listening more closely and watching for answers that might have missed.*
- *People want to stay and see.*
- *How the more you play it the faster it goes.*
- *That the girl was sitting while everyone else was moving uphill.*

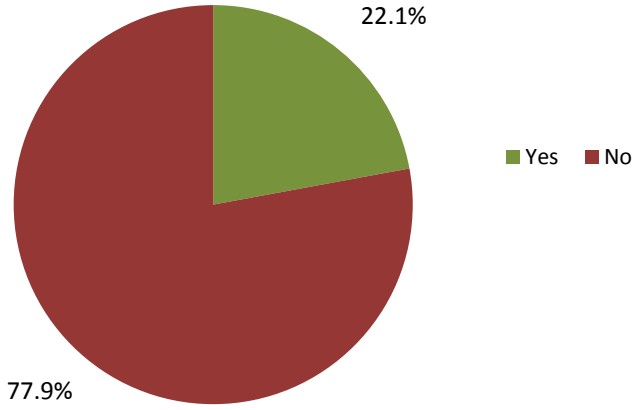
Word Cloud 2 highlights the most often used key words in participant responses to what they saw if they re-watched the video following the on-site screening.

Word Cloud 2.
Key words associated with responses to the open-ended question:
"*If you watched the video again, were there things you noticed after seeing the video again that you did not see during the screening at ADEPT?*"

"Now that you have had some time to think about the video, has your opinion about the video changed since you first saw it?"

Whether or not they re-watched the video, study participants were asked if their opinion about the video had changed in the month since the on-site screening. Roughly two out of ten (22.1%) indicated that their opinion had changed. (See Figure 21.)

Figure 21.
On-Line Survey Follow Up (Time 3)
"Now that you have had some time to think about the video, has your opinion about the video changed since you first saw it?"
(N=78)

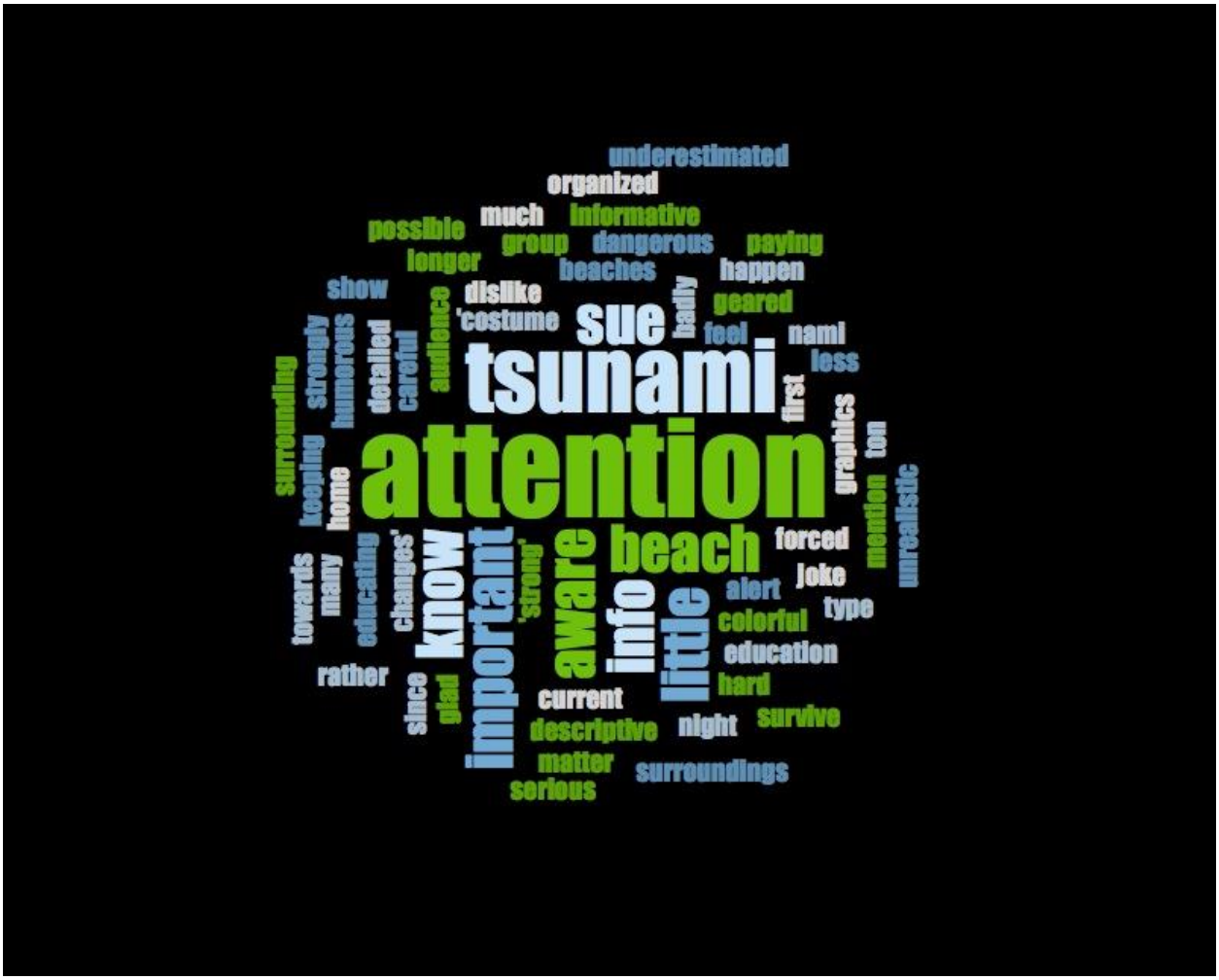


Of those who answered 'yes' to this question, 16 people offered additional feedback. (See Word Cloud 3.) Overall, the comments were positive and constructive, as seen in the quotes below:

- *The video was a very well organized video that was very detailed and descriptive to education everyone by keeping our attention through colorful graphics.*
- *I like even more it is a very good video on what to do if [some]one come here.*
- *I'm glad the video was made. I think it's important to show this to as many people as possible. (I feel more strongly now than when I first viewed the video.)*
- *It doesn't matter that it was unrealistic. It was very informative.*
- *I see how much more important and relevant the info in the video is.*
- *I think it should be longer and more information regarding what to do during and how to survive if caught in a Sue Nami.*
- *The type of audience the video is geared towards educating. Video could be a little less humorous.*
- *Just to have Sue mention the things that were only written in the video since people don't pay attention.*

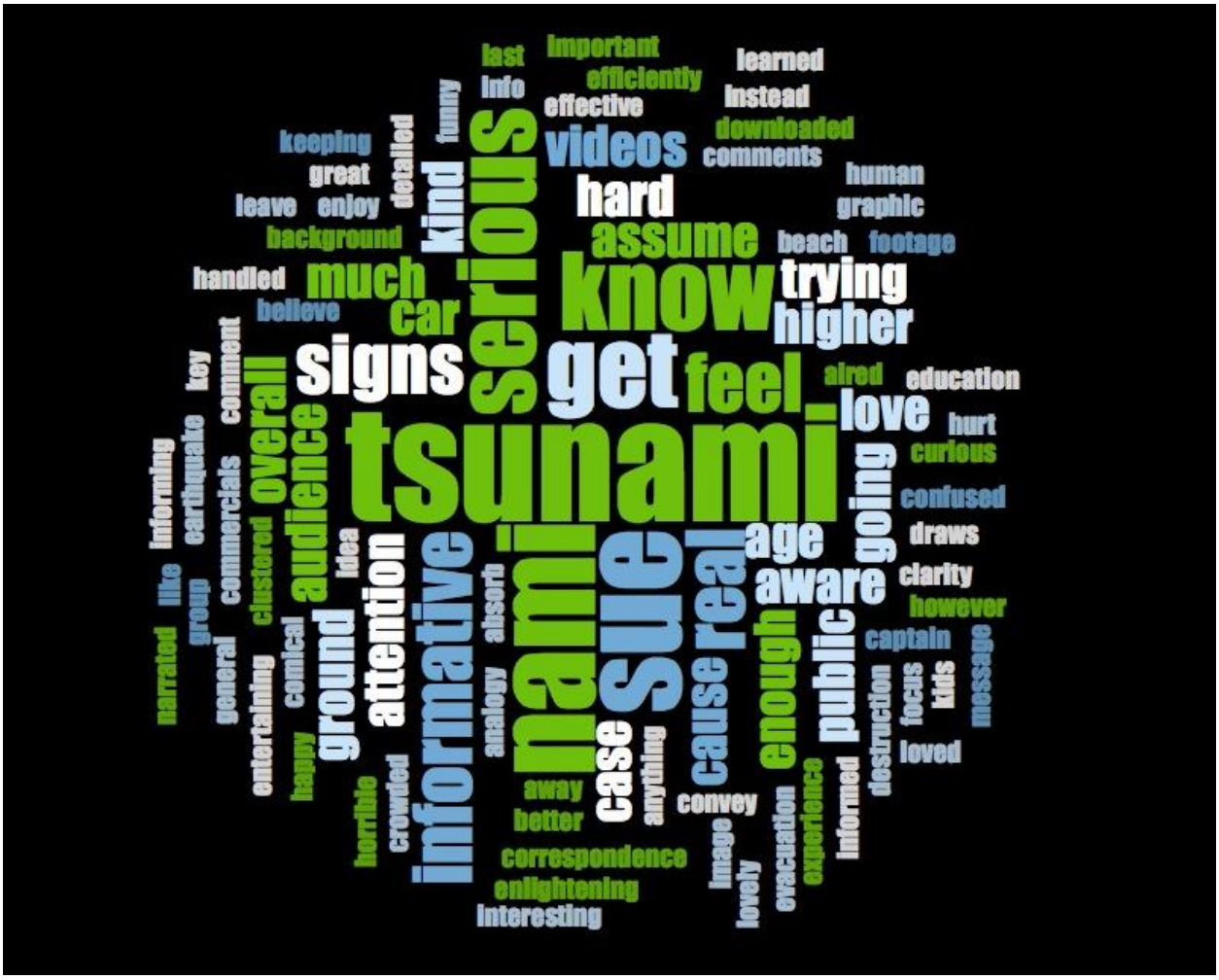
- *I THINK MY GROUP WAS A LITTLE 'STRONG' IN THEIR DISLIKE FOR THE VIDEO. When I went home that night, I felt badly. I know a lot of hard work went into making it. I just felt that I was forced to look at 'costume changes' rather than paying attention to detail of the Tsunami.*

Word Cloud 3.
Key words associated with responses to the open-ended question:
"Now that you have had some time to think about the video, has your opinion about the video changed since you first saw it?"



The final question on the Time 3 survey offered study participants an opportunity to share any further feedback about the video. This open-ended item garnered a total of 24 responses, ranging from constructive criticism and suggestions to more positive comments, as well as other questions and thoughts. These are presented in Word Cloud 4, as well as grouped thematically and listed below.

Word Cloud 4.
Key words associated with responses to the open-ended question:
"Is there anything else you would like to share with us about the Sue Nami video?"



<u>Critiques and/or Suggestions (n=10)</u>

Too much information or concerns about information delivery (n=5)

- *It gave information so quickly that it's hard to remember everything.*
- *There was too much information to absorb in such a short time. Maybe it was the seating and not being able to see all the signs, pay attention to the correspondence and trying to enjoy the video at the same time.*
- *Too much info in a short period of time; too clustered.*
- *Some information was not immediately noticeable—everything important should be narrated.*
- *The signs in the background were overshadowed by the person trying to be funny/cute.*

Suggestions for dissemination/video restructuring (n=3)

- *Captain Planet instead of Sue Nami, it would get shared, downloaded, and played by anyone age 18-35.*
- *Various videos and commercials should be aired so that the public is aware of what to do in case of a tsunami.*
- *I suggest keeping videos short and quick to the point in this A.D.D. world. I feel it's serious enough for kids but not for middle age and older.*

Lingering Questions (n=2)

- *I'm a visual learner and it was hard believe it using a human as an analogy to a tsunami. There were a lot of questions I still had after the video. I didn't feel like I would know what to do other than go to higher ground and stay away. I just saw the video to leave this last comment. Other than the obvious of going uphill, is there anything else we should do? Do landslides occur (I would assume) and what else can cause a tsunami other than an earthquake? I'm very curious and the video doesn't make me feel very informed.*
- *I'm still confused about evacuation at a crowded beach. Does one run to higher ground or get into their car? If we get into our car, do we run the risk of being trapped? What do studies show, if any?*

Positive Feedback (n=7)

Video was informative (n=5)

- *Thank you for enlightening me. I know more than ever about tsunamis!*
- *I loved it because it was very informative and I'd love for it to be shown again*
- *I love the fact that by informing general public on what to do in this case for own safety. It doesn't hurt to know these things.*
- *Overall I thought it gave me some good information on what to do during a tsunami. I liked it.*
- *It was interesting and informative.*

Other positive feedback (n=2)

- *That a Sue Nami is real and everyone should see this video.*
- *This was a good focus group that I was happy to be a part of because of the education I received about Sue Nami and how I can pass it on to others.*

Mixed Feedback (n=6)

- *Great idea. They should somehow get the audience attention to all the key information, more efficiently.*
- *Yes and no it was serious. Showing graphic real speed footage would also send a message. Thanks for a pleasurable and educational worthwhile experience!*
- *Yes and no. It was effective that the video was informative. But with the image of a lovely girl [it] doesn't help to convey the horrible destruction a real tsunami can cause. (in response to if it was serious enough)*

- *The video for me was kind of cartoon, there was a lot going on but overall it was really good information if you don't know about Sue Nami.*
- *Was it serious? Kind of. I assume it draws in a wider range of audience because it is made to be entertaining and comical. However, a bit of clarity in the tips and when and where we should be aware of tsunami signs could have been handled a bit better.*
- *It was a very detailed video.*

Miscellaneous (n= 1)

- *No [other comments]. I think I have learned about Sue Nami.*

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3.5 Summary of Qualitative Vignette Data: Time 1 and Time 2

In this section, we summarize the qualitative data (written responses) collected at Time 1 (before watching the Sue Nami video) and Time 2 (immediately after the first viewing of the video).[11] The evaluation team included in the survey instrument a pair of vignettes, or brief but realistic tsunami scenarios described in one paragraph each, to better understand how participants might assess a tsunami threat and what information they would use in deciding how to respond. (See Vignettes #1 and #2.) Case-based questions such as these require participants to apply a limited set of information and thus allow for greater insight into their decision-making process (International Training and Education Center for Health 2011). This exploratory method added further depth to our analysis by providing an additional means of evaluating the way participants processed information. The range of written answers to these items also highlights that this approach is challenging in that it requires careful development of the vignettes to ensure that they provide enough information for participants to evaluate and offer thoughtful responses.

The first vignette presented respondents with information based on the SAFRR Tsunami Scenario, describing key warning signs that would indicate tsunami hazard as well as the earthquake that would have triggered this event. (See Vignette #1.) Questions based on this vignette inquired about actions respondents would take, their ability to interpret tsunami warning signs, and what additional information they felt they would need in deciding how to react to the conditions with which they had been presented. This vignette helped to assess respondents' understanding of the various warning signs presented, and how their assessments of the situation changed after viewing the video.

Vignette #1

You have just settled in with some friends on a sunny patch of sand at the beach. It's a warm spring day, and your plan is to spend the afternoon close to the water. You hear some passersby discussing a big earthquake that occurred off the coast of Alaska this morning. After some time, you look up and notice that the water line seems to be quickly drawing back. Shells and clumps of seaweed that are normally underwater are visible, and the sand beneath them is still wet from having been submerged before the water pulled back. A few beachgoers have ventured out to take pictures, pick up shells, and to explore sea creatures on the newly exposed sand. You look out to the ocean, but see nothing unusual except for this very sudden low tide. A few of your friends are standing in the shallow water, calling for you to join them.

[11] To accommodate the inclusion of other questions, we did not collecte vignette data in Time 3 (1 month after watching the video).

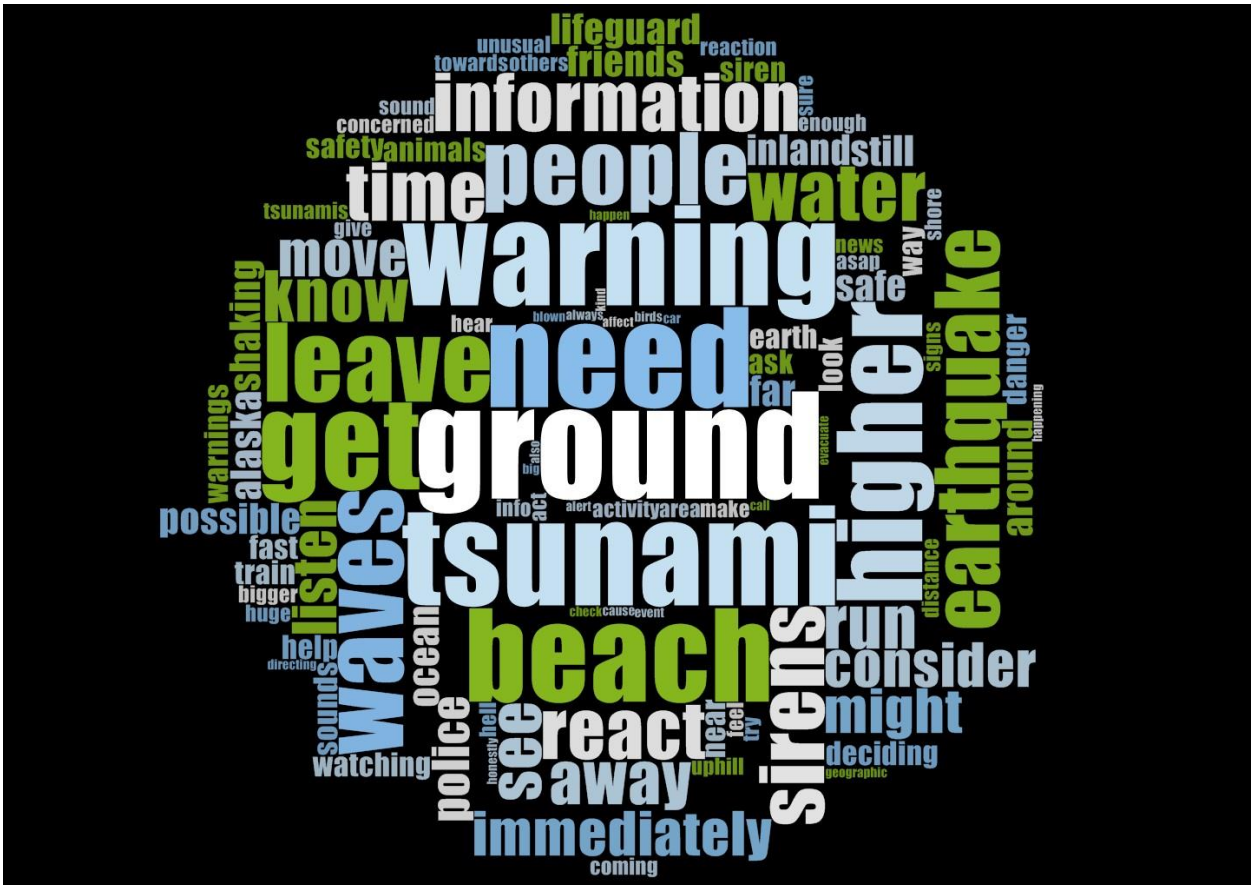
The second vignette presented respondents with a more concrete scenario wherein warnings had been issued by local officials. (See Vignette #2.) It drew from examples following the 2011 Tohoku Earthquake and tsunami, wherein spectators near Santa Cruz, California gathered to watch waves crash into local boat docks. This vignette again examined actions the respondent would take, how the individual assessed danger in the surrounding area, and what information would be used in deciding how to react. This vignette was intended to capture information about how participants weighed official directives about tsunami threats in light of competing lay messages, as well as how knowledge gained from watching the video might influence these responses.

Vignette #2

You and a friend have been waiting several weeks for reservations at a popular new waterfront restaurant on a Saturday. The weather is pleasant, and you are excited about this outing. Upon your arrival, you find traffic is heavily backed up and nearly at a stand-still. You ask a passerby what is causing the holdup. The person tells you that a tsunami warning has been issued and a tsunami is expected soon. The police up ahead are redirecting traffic and evacuating the waterfront. Frustrated, you turn around and consult with your friend about what to do next. A few moments later, you notice that people have begun walking back down to an unmonitored area near the water to see the tsunami approaching. It's safe, they say, because this area is elevated well above the water line. You and your friend follow, eager to record the event. After about 20 minutes of watching the choppy water, the water surges higher and someone says "there's the tsunami!" Lawn chairs and other objects get caught up in the churning water, spinning in whirlpools, but at your vantage point, the water remains below you except for a bit of splashing.

Word Cloud 5 highlights the most often used key words in participant responses to open ended questions about both of the vignettes, combined. More detailed analyses are present below.

Word Cloud 5.
Key words associated with responses to open-ended questions about the vignettes



Open-Ended Responses to Vignette Item #1

Study participants volunteered a total of 56 open-ended comments on the first vignette at Time 1 (before watching the video) and 25 at Time 2 (immediately after watching the video for the first time). (See Appendix C.) Their responses revealed shifts toward improvement in how respondents thought about tsunami characteristics and appropriate responses. Key findings are summarized below:

- While there were four “don’t know” responses at Time 1, there were none at Time 2.
- Respondents at Time 1 (before watching the video) made several references describing the need to see a single wave or large waves before deciding to take protective action. These and other perceived tsunami warning signs, such as animals fleeing and cloud behavior, reflected a lack of clarity about precisely what conditions would indicate tsunami danger.

- In comparison, responses for this theme at Time 2 (immediately after watching the viedeo) focused on the train sound and earthquake shaking described in the "Sue Nami" video as key signals. Post-viewing responses most frequently referenced unusual sounds and earthquake activity as tsunami hazard indicators, with references to seeing waves largely disappearing.
    - However, some misinformation about tsunami warning signs continued to factor into respondents' answers. Two individuals stated at Time 2 that they would need to assess animal behavior or items being brought in by the waves—indicators that were not recommended in the film and that are not reliable means of assessing tsunami danger—before deciding what to do next.
    - Future work may need to focus on better understanding myths and assumptions about tsunami warning signs to address them.
- Some participants did not seem to understand the role of a distant earthquake in local tsunami conditions. Responses indicated that proximity to the epicenter of the quake was being used to assess the likelihood of tsunami activity.
    - This information was not covered in the Sue Nami video, and inclusion of details in the vignette about the triggering event taking place off the coast of Alaska may have further confounded responses.
    - Care should be taken in future survey work to avoid the inclusion of detailed information about the location of a tsunami-generating earthquake in the absence of information explaining the possibility of a far-field tsunami.
- Despite overall improvements in ability to recognize tsunami warning signs as described above, responses still reflected a heavy reliance on and expectation of a formal warning system. A common refrain in both Time 1 and Time 2 responses was that warning sirens would help prompt protective action. Even at Time 2, after having seen the video, one respondent answered, "Listen for sirens/ not a second siren." While the message that one should not wait for a second warning sign was received, the expectation remained that this warning would be clearly communicated through a formal warning mechanism.
    - Statements coded under the theme "officials' instructions" further underscores these results. While at Time 1 six participants answered that they would look for additional instructions or information from lifeguards or police, no such responses were given at Time 2, In contrast, references to a warning system mostly remained salient to respondents after watching the video. These findings highlight participants' continued expectation of sirens or other formal warning mechanisms despite improvements in knowledge about how to recognize hazard indicators in the natural environment.

- Finally, the number of responses indicating that the behavior or others would factor into the participant's decision-making process decreased from five at Time 1 to one at Time 2, suggesting that respondents felt more certain that they would know how to react after watching the video.

Open-Ended Responses to Vignette Item #2

Overall, respondents provided less open-ended feedback for vignette #2, with 32 responses written in at Time 1 (before watching the video) and 16 at Time 2 (after watching the video for the first time). (See Appendix C.) However, qualitative data collected for both vignettes mirror the improvements from Time 1 to Time 2 in the closed-ended survey responses.

Key findings are summarized below:

- Participants provided more correct information about warning signs appeared in this set of responses compared to those in the first vignette; however, this may be attributable to the inclusion of official information in this scenario about an imminent tsunami hazard.

- "Don't know/not sure" responses again declined from four in Time 1 to none in Time 2, indicating that respondents felt more confident about how to assess and respond to the situation after watching the video.

- While respondents made no references to listening for tsunami warning signs in Time 1 (before watching the video), directives from the video to recognize a train-like sound in the ocean appears again to have prompted open-ended responses in Time 2 (after watching the video for the first time.

- Respondents suggested that hearing sirens would play a role in their decision about how to react to the situation at both Time 1 and Time 2, again demonstrating the strength of participants' expectation of a formal warning system.

- One respondent questioned the location of the earthquake, indicating again that proximity to this event was being used to assess the likelihood of a tsunami threat. However, this vignette did not prompt the same degree of confusion about the earthquake's location, as there was no attribution to a distant source.

- Comments provided at Time 1 indicated that respondents would seek additional information from officials about how to seek safety; however, as there were no references to such inquiries at Time 2, the data suggest that knowledge gained by watching the video left respondents feeling better equipped to independently respond to tsunami warnings.

- There were two references at Time 1 and no references at Time 2 about asking or observing others to determine what to do next, once again indicating that participants felt more certain after watching the video that they understood how to react to the tsunami threat independent of crowd behavior.

3.6 Focus Group Results: 18-34 Year Old Study Participants

This section summarizes the findings of four focus groups with a subsample of 32 study participants from the target audience for the video (8 participants in each focus group), conducted immediately after the video screening. As described in Section 2 of this report, the purpose of the focus groups was to gather more in-depth, qualitative information about different aspects of the video. The selection process for focus group participants focused on 18-34 year olds—the target audience for the video—as well as participants who viewed the video once versus multiple times. Our approach also sought to ensure representation from various demographic groups within that population to detect nuances in message effectiveness that may be associated with characteristics such as age, sex, race, and level of education.

Main Points/Themes

Effectiveness of the Video/Video Format

- Generally speaking, participants found the video to be "too distracting" with "too much going on."
  - For example, participants wondered why the main actress ("Sue Nami") changed clothes so many times. They stated that they paid more attention to her than the written cues/text/visuals.

- Participants also noted that the video goes too fast and that there is too much information to digest.
  - For example, many participants (especially those in the second set of breakout groups who watched the video once) mentioned that they didn't know the correct answer to all of the survey questions even after viewing the video.
  - Participants thought that the video tried to "squeeze" too much information into a short time frame.

- While participants indicated that some parts of the video were quite effective (e.g., Sue Nami not being able to run uphill), a majority of participants did not see the background text (words on the screen) when they first watched it.

- Regarding the technique of using both written and verbal cues, participants suggested this approach would be more effective if these were used in conjunction with one another to express the same idea (e.g., Sue Nami saying "get to higher ground" and there being a background message stating the same). If the messages are different, it is much harder for the audience to absorb. Despite this issue, some enjoyed the format of the video—especially as it flowed nicely from one frame to the next.

- Participants reported that even if they did not learn about all of the warning signs, becoming aware of any of the signs was important in advancing their knowledge of tsunamis.
    - As one person explained, "Overall, remembering at least one warning sign is good. If you catch any one, it's a useful thing and it makes you aware of tsunamis. There hasn't been a totally devastating tsunami in SoCal that I can remember. It puts it in people's heads to be aware."
    - Even if participants did not learn anything knew, they claimed that their knowledge of tsunamis was reinforced by this video.

- A number of participants found the Sue Nami character to be engaging.

- Several participants maintained that the video was not serious enough, thus making it not very likely that people viewing the video will take a tsunami threat seriously. This coincides with participants' one-word descriptions regarding the video—such as "silly," "goofy," "comical," "funny," "cheesy," and "not serious."
    - The video didn't stress the *critical effects* of a tsunami that may cause viewers to pay attention to the seriousness of the tsunami threat.
    - The video was *visually appealing*, but too "light." There needs to be a "happy medium" between light heartedness and seriousness, as one participant explained: "For us in SoCal, we don't need over the top fear factor—just put it in our heads. It's so rare [that it would happen] here. But that may make us NOT take it seriously."
    - Cultural awareness was also a concern that was brought up in two of the focus groups. These participants were from or had relatives/friends from south Asia and they explained that the video was very insensitive (by being to lighthearted about tsunamis)—and that it may be insensitive to others who were directly or indirectly affected by a tsunami.

- The target age range for the video was 18-34 years of age, but there were many focus group participants who claimed that the video seemed like it was meant more for a much younger audience—adolescent ages, for example.

<u>Differences Between Those Who Watched the Video Once Versus Three Times</u>

- There were not many substantive differences between participants in groups who watched the video once versus those who watched the video multiple times. The main difference between these participants was that those who only watched the video once did not see or pick up on as many written signs/text in the background as the group who viewed the video multiple times.

- Those who only watched the video once were also more inclined to mention that there was "too much going on" in the video. However, those participants in the "multiple views" group also mentioned that "too much information" was an issue.

Sharing the Video

- Most participants indicated that they would be unlikely to share the video with others.

- Although a majority of focus group participants mentioned that they would be unlikely to share the video with friends and family via email and social media, some mentioned that they might show the video directly (via their own tablet, phone, computer) or mention the video to others.

- Participants noted that they would only forward the video if it seemed relevant to particular friends/family members. According to the discussion, this would depend on whether or not they *perceive the threat of a tsunami to be serious* to particular individuals. This was as a key theme across each of the four the focus groups.

Watching the Video Again/Doing Additional Research

- Most participants reported that they were not likely to watch the video again.

- A majority of participants indicated they were not motivated to do additional research about tsunamis.

Suggestions About the Video

- The video itself needs to be more serious, not necessarily "fear mongering," but it needs to get people's attention and entice them to think about tsunamis and how they would respond if a tsunami were to occur. The video should be more realistic in order for people to be engaged.
  - For example, participants suggested that the end of the video should be a more serious tone—really reinforcing the threat of tsunamis into people's heads.
  - "Having something at the end to ground it more in the seriousness of the actual topic," as one participant explained, would be more likely to result in viewers being more engaged and sharing the video.

- A common theme that emerged several times in each of the focus groups was that there should be a "wrap up" message at the end of the video—either with bullet points explaining the main warning signs/actions one should take, or Sue Nami briefly going over what she explained.
  - Additionally, the "school of design" logo at the end should either be excluded or placed *after* the "visit noaa.gov for more information" frame.
  - For the final noaa.gov link, some explained that it was too buried at the end of the video, suggesting it needed to be differently placed or highlighted to entice people to look for more information. People were not engaged enough to look for more information about tsunamis.

- *Specific suggestions for delivery formats*:
  - YouTube advertisements
  - Creating and utilizing an info graphic about tsunamis may be more effective in getting the information out—specifically to the targeted age group. These infographics are easily seen on social media (Facebook, Twitter) and easily shared.

- People in the age range they are attempting to reach would be much more likely to watch the video via social media. [*visuals/memes/quick videos they can scroll by*]
  - TV would be better for some participants—again, this is dependent on age demographic (e.g., video better suited on kids programming, for example).

Other Notes/Themes

- Many did not think that a tsunami would affect them: "[the video] did not bring the tsunami threat close to home." This not only affected their concern about tsunamis, but whether or not they would watch or share the video. Participants explained that earthquake threats were more of a direct concern.

- Participants in all four groups expressed interest in having more information not included in the video. For example, the relationship between earthquakes and tsunamis was unclear—where would the earthquake have to occur? And what else could cause a tsunami? Focus group participants noted that this wasn't explained well in the video.

- Other information that was unclear to participants included:
  - "How far should I go? How long will it last? Can it go uphill to a certain point? Does the strength of the tsunami depend on how strong the trigger is?"

APPENDIX A

DATA ANALYSES FOR CORE TSUNAMI AWARENESS ITEMS: TIME 1-TIME 3

Each of the Sue Nami questionnaires for Time 1 (Pre or Baseline), Time 2 (Post), and Time 3 (1 Month Post) data collection included a core set of 32 items (statements). The information presented below focuses on data for 19 of these items, which were designed to capture three dimensions of tsunami awareness: characteristics of a tsunami (what tsunamis look like and how tsunamis behave); tsunami warning signs; and actions to take in the event of a tsunami. Each of these 19 items had a response scale that included three options: true, false, and not sure/don't know. Participant responses to these items were coded and scored as "1" if correct and "0" if incorrect, with not sure/don't know responses coded as incorrect. Next, scales were created to reflect each of the three dimensions of tsunami awareness. The *tsunami characteristics* scale included 9 items; the tsunami *warning signs* scale included 4 items; and the *tsunami actions* scale included 6 items. The items associated with each scale are listed in Supplementary Table 1.

Supplementary Table 1. Scales and associated items for three dimensions of tsunami awareness

Scales	Items in Each Scale
Tsunami Characteristics	- During a tsunami, there is usually just one big wave. - A tsunami may look like a wall of water as it approaches the shore. - The biggest tsunami wave is always the first wave. - A tsunami may look like a fast rising flood. - Tsunami waves last for about an hour. - Tsunamis move faster than a person can run. - Tsunamis produce mild currents. - Tsunami waves behave differently than regular ocean waves. - A tsunami can produce heavy currents that last for hours.
Tsunami Warning Signs	- A sign that a tsunami is coming is that water will pull away from shore like a fast, low tide. - Earthquake shaking on the beach is a tsunami warning sign. - A sound like a train out in the water can be a sign that a tsunami is coming. - If a tsunami is coming, you will always hear warning sirens.
Tsunami Actions	- To be safe during a tsunami, you should go uphill. - If you think a tsunami is coming, wait for a second warning sign before deciding how to respond. - It is safe to stay on a beach during a tsunami if you don't go into the water. - It is okay to come back to the beach to watch a tsunami if you are very careful. - It is safe to go surfing during a tsunami. - To be safe during a tsunami, you should go inland.

Results

A descriptive analysis of the data revealed a balanced design between treatment groups prior to intervention. That is, a comparison of participants who saw the video once versus those who saw the video indicated no statistically significant differences between groups at baseline (see Supplementary Table 2). The two groups of participants were found to be equivalent with respect to mean reported tsunami awareness prior to receiving the intervention. Overall, an equal distribution of groups minimized the risk of selection bias and potential threat of confounding factors, such as demographics (e.g., age, gender, level of education, ethnicity, parent status, etc.) in explaining the variability among changes in participants' awareness prior to and following the Sue Nami intervention. Most notably, there were no statistically significant differences in tsunami awareness between the target population for the video (individuals aged 18-34) and the older population (individuals aged 35+) at baseline (see Supplementary Table 3). There were also no statistically significant differences in tsunami awareness at baseline between women and men; between those with less than a college degree and those with a college degree or higher; or between Hispanic and Latino participants and those where were not Hispanic or Latino participants (see Supplementary Tables 4-6).

Supplementary Table 2. Summary of findings in descriptive analysis of treatment groups at baseline (Time 1) for three dimensions of tsunami awareness

	Treatment Group	***n***	***Mean***	***SD***
Tsunami Characteristics Scale	Viewed video 1x	50	5.34	1.975
	Viewed video 3x	46	5.09	2.229
Tsunami Warning Signs Scale	Viewed video 1x	50	2.06	1.058
	Viewed video 3x	46	1.87	1.108
Tsunami Actions Scale	Viewed video 1x	50	5.46	.788
	Viewed video 3x	46	5.24	1.058

Supplementary Table 3. Summary of findings in descriptive analysis of age groups at baseline (Time 1) for three dimensions of tsunami awareness

	Age Group	*n*	*Mean*	*SD*
Tsunami Characteristics Scale	18-34	48	5.17	2.137
	35+	48	5.27	2.070
Tsunami Warning Signs Scale	18-34	48	1.81	1.104
	35+	48	2.13	1.044
Tsunami Actions Scale	18-34	48	5.33	.907
	35+	48	5.38	.959

Supplementary Table 4. Summary of findings in descriptive analysis of gender at baseline (Time 1) for three dimensions of tsunami awareness

	Gender	*n*	*Mean*	*SD*
Tsunami Characteristics Scale	Women	46	5.17	2.111
	Men	47	5.28	2.164
Tsunami Warning Signs Scale	Women	46	1.80	1.088
	Men	47	2.09	1.080
Tsunami Actions Scale	Women	46	5.33	.944
	Men	47	5.36	.942

Supplementary Table 5. Summary of findings in descriptive analysis of education at baseline (Time 1) for three dimensions of tsunami awareness

	Level of Education	*n*	*Mean*	*SD*
Tsunami Characteristics Scale	Less than College Degree	48	5.21	1.890
	College Degree or Higher	47	5.19	2.309
Tsunami Warning Signs Scale	Less than College Degree	48	1.77	1.096
	College Degree or Higher	47	2.15	1.042
Tsunami Actions Scale	Less than College Degree	48	5.17	1.078
	College Degree or Higher	47	5.53	.718

Supplementary Table 6. Summary of findings in descriptive analysis of Hispanic or Latino and not Hispanic or Latino at baseline (Time 1) for three dimensions of tsunami awareness

	Hispanic or Latino	*n*	*Mean*	*SD*
Tsunami Characteristics Scale	Hispanic or Latino	47	5.38	2.080
	Not Hispanic or Latino	48	5.04	2.133
Tsunami Warning Signs Scale	Hispanic or Latino	47	1.87	1.115
	Not Hispanic or Latino	48	2.02	1.021
Tsunami Actions Scale	Hispanic or Latino	47	5.23	1.047
	Not Hispanic or Latino	48	5.46	.798

Next, a series of paired samples t tests were performed using SPSS (Statistical Package for the Social Sciences) to examine any potentially statistically significant differences in responses to the Sue Nami questionnaire across three time points: Time 1 (Pre or Baseline), Time 2 (Post), and Time 3 (1 Month Post). Findings revealed statistically significant differences in responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Table 7), with improvements associated with each dimension of tsunami awareness (tsunami characteristics, tsunami warning signs, and actions to take in the event of a tsunami).

Supplementary Table 7. Summary of paired samples t tests from pre to post and post to 1 month post for three dimensions of tsunami awareness

	Time Frame	*df*	*t*
Tsunami Characteristics Scale	Pre to Post	95	-5.840**
	Post to 1 Month Post	77	-2.057*
	Pre to 1 Month Post	77	-6.960**
Tsunami Warning Signs Scale	Pre to Post	95	-14.951**
	Post to 1 Month Post	77	-.323
	Pre to 1 Month Post	77	-14.293**
Tsunami Actions Scale	Pre to Post	95	-5.514**
	Post to 1 Month Post	77	-.241
	Pre to 1 Month Post	77	-5.114**

Levels of significance: *p<.05, **p<.001

Supplementary Table 8. Summary of means and standard deviations from pre to post, post to 1 month post, and pre to post 1 month for three dimensions of tsunami awareness

	Time Frame	*N*	*Mean*	*SD*
Tsunami Characteristics Scale	Pre to Post	96	5.22	2.094
	Post to 1 Month Post	96	6.53	1.869
	Pre to 1 Month Post	78	6.87	1.654
Tsunami Warning Signs Scale	Pre to Post	96	1.97	1.081
	Post to 1 Month Post	96	3.64	.545
	Pre to 1 Month Post	78	3.69	.517
Tsunami Actions Scale	Pre to Post	96	5.35	.929
	Post to 1 Month Post	96	5.82	.543
	Pre to 1 Month Post	78	5.87	.336

Findings revealed no statistically significant differences between treatment groups (those who watched the video once versus those who watched it three times), in responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Tables 9-11).

Supplementary Table 9. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between treatment groups at Time 1

	Treatment Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Viewed video 1x	50	5.34	1.975	.590
	Viewed video 3x	46	5.09	2.229	.587
Tsunami Warning Signs Scale	Viewed video 1x	50	2.06	1.058	.862
	Viewed video 3x	46	1.87	1.108	.860
Tsunami Actions Scale	Viewed video 1x	50	5.46	.788	1.166
	Viewed video 3x	46	5.24	1.058	1.152

*No statistically significant differences found.

Supplementary Table 10. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between treatment groups at Time 2

	Treatment Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Viewed video 1x	50	6.56	1.668	.156
	Viewed video 3x	46	6.50	2.084	.155
Tsunami Warning Signs Scale	Viewed video 1x	50	3.64	.563	.085
	Viewed video 3x	46	3.63	.532	.086
Tsunami Actions Scale	Viewed video 1x	50	5.86	.405	.696
	Viewed video 3x	46	5.78	.664	.683

*No statistically significant differences found.

Supplementary Table 11. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between treatment groups at Time 3

	Treatment Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Viewed video 1x	40	6.98	1.459	.563
	Viewed video 3x	38	6.76	1.852	.559
Tsunami Warning Signs Scale	Viewed video 1x	40	3.65	.580	-.739
	Viewed video 3x	38	3.74	.446	-.744
Tsunami Actions Scale	Viewed video 1x	40	5.90	.304	.757
	Viewed video 3x	38	5.84	.370	.754

*No statistically significant differences found.

Findings revealed no statistically significant differences between the target audience (aged 18-34) and those who were 35+, in responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Tables 12-14).

Supplementary Table 12. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between age groups at Time 1

	Age Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	18-34	48	5.17	2.137	-.243
	35+	48	5.27	2.070	-.243
Tsunami Warning Signs Scale	18-34	48	1.81	1.104	-1.425
	35+	48	2.12	1.044	-1.425
Tsunami Actions Scale	18-34	48	5.33	.907	-.219
	35+	48	5.38	.959	-.219

*No statistically significant differences found.

Supplementary Table 13. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between age groups at Time 2

	Age Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	18-34	48	6.58	1.668	.272
	35+	48	6.48	2.052	.272
Tsunami Warning Signs Scale	18-34	48	3.67	.476	.650
	35+	48	3.60	.610	.560
Tsunami Actions Scale	18-34	48	5.81	.445	-.187
	35+	48	5.83	.630	-.187

*No statistically significant differences found.

Supplementary Table 14. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between age groups at Time 3

	Age Group	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	18-34	38	7.16	1.462	1.501
	35+	40	6.63	1.795	1.509
Tsunami Warning Signs Scale	18-34	38	3.63	.589	-1.010
	35+	40	3.75	.439	-1.003
Tsunami Actions Scale	18-34	38	5.82	.392	-1.443
	35+	40	5.93	.267	-1.429

*No statistically significant differences found.

With one exception, there were no statistically significant differences between women and men in their responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Tables 15-17). The exception was for tsunami characteristics at Time 3, with men having higher levels of awareness than women (see Supplementary Table 17). Caution should be used when interpreting this finding, as it is possible that the smaller sample size in Time 3 affected these results (only 34 men responded to this item, as compared with 42 women). Further research would be required to discern the reason(s) for this difference.

Supplementary Table 15. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between women and men at Time 1

	Gender	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Women	46	5.17	2.111	-.232
	Men	47	5.27	2.164	-.232
Tsunami Warning Signs Scale	Women	46	1.80	1.088	-1.249
	Men	47	2.09	1.080	-1.249
Tsunami Actions Scale	Women	46	5.33	.944	-.182
	Men	47	5.36	.942	-.182

*No statistically significant differences found.

Supplementary Table 16. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between women and men at Time 2

	Gender	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Women	46	6.26	1.782	-1.403
	Men	47	6.81	1.974	-1.405
Tsunami Warning Signs Scale	Women	46	3.63	.572	-.069
	Men	47	3.64	.529	-.069
Tsunami Actions Scale	Women	46	5.87	.341	.906
	Men	47	5.77	.698	.912

*No statistically significant differences found.

Supplementary Table 17. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between women and men at Time 3

	Gender	*n*	*Mean*	*SD*	*t*
Tsunami Characteristics Scale	Women	42	6.48	1.671	-2.050*
	Men	34	7.24	1.519	-2.071*
Tsunami Warning Signs Scale	Women	42	3.71	.554	.315
	Men	34	3.68	.475	.320
Tsunami Actions Scale	Women	42	5.83	.377	-.999
	Men	34	5.91	.288	-1.028

Level of significance: *p<.05

With two exceptions, findings revealed no statistically significant differences between those with a college degree or higher and those with less than a college degree in responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Tables 18-20). The exceptions were for tsunami warning items, at Time 2 and Time 3, on which those with a college degree or higher had higher levels of awareness of tsunami warning signs than those without a college degree (see Supplementary Tables 19-20). Given the small sample size, further research is recommended to determine possible reasons for these differences.

Supplementary Table 18. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between education categories at Time 1

	Education	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Less than College Degree	48	5.21	1.890	.039
	College Degree or Higher	47	5.19	2.309	.039
Tsunami Warning Signs Scale	Less than College Degree	48	1.77	1.096	-1.722
	College Degree or Higher	47	2.15	1.042	-1.723
Tsunami Actions Scale	Less than College Degree	48	5.17	1.078	-1.939
	College Degree or Higher	47	5.53	.718	-1.947

*No statistically significant differences found.

Supplementary Table 19. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between education categories at Time 2

	Education	*n*	*Mean*	*SD*	*t*
Tsunami Characteristics Scale	Less than College Degree	48	6.52	1.821	-.029
	College Degree or Higher	47	6.53	1.954	-.029
Tsunami Warning Signs Scale	Less than College Degree	48	3.50	.545	-2.431*
	College Degree or Higher	47	3.77	.520	-2.433*
Tsunami Actions Scale	Less than College Degree	48	5.73	.707	-1.675
	College Degree or Higher	47	5.91	.282	-1.688

Level of significance: *p<.05

Supplementary Table 20. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between education categories at Time 3

	Education	*N*	*Mean*	*SD*	*t*
Tsunami Characteristics Scale	Less than College Degree	37	7.03	1.675	.936
	College Degree or Higher	40	6.68	1.623	.935
Tsunami Warning Signs Scale	Less than College Degree	37	3.51	.607	-2.983*
	College Degree or Higher	40	3.85	.362	-2.927*
Tsunami Actions Scale	Less than College Degree	37	5.84	.374	-.804
	College Degree or Higher	40	5.90	.304	-.797

Level of significance: *p<.05

Findings revealed no statistically significant differences between those who were Hispanic or Latino and those who were not, in responses to tsunami awareness as measured by the three scales from Pre to Post intervention (see Supplementary Tables 21-23).

Supplementary Table 21. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between Hispanic or Latino and not Hispanic or Latino participants at Time 1

	Hispanic or Latino	***n***	***Mean***	***SD***	***t****
Tsunami Characteristics Scale	Hispanic or Latino	47	5.38	2.080	.789
	Not Hispanic or Latino	48	5.04	2.133	.789
Tsunami Warning Signs Scale	Hispanic or Latino	47	1.87	1.115	-.677
	Not Hispanic or Latino	48	2.02	1.021	-.676
Tsunami Actions Scale	Hispanic or Latino	47	5.23	1.047	-1.176
	Not Hispanic or Latino	48	5.46	.798	-1.173

*No statistically significant differences found.

Supplementary Table 22. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between Hispanic or Latino and not Hispanic or Latino participants at Time 2

	Hispanic or Latino	***n***	***Mean***	***SD***	***t****
Tsunami Characteristics Scale	Hispanic or Latino	47	6.49	1.804	-.243
	Not Hispanic or Latino	48	6.58	1.966	-.243
Tsunami Warning Signs Scale	Hispanic or Latino	47	3.53	.504	-1.778
	Not Hispanic or Latino	48	3.73	.574	-1.780
Tsunami Actions Scale	Hispanic or Latino	47	5.74	.706	-1.357
	Not Hispanic or Latino	48	5.90	.309	-1.347

*No statistically significant differences found.

Supplementary Table 23. Summary of findings on independent samples t tests on three dimensions of tsunami awareness between Hispanic or Latino and not Hispanic or Latino participants at Time 3

	Hispanic or Latino	*n*	*Mean*	*SD*	*t**
Tsunami Characteristics Scale	Hispanic or Latino	35	6.69	1.778	-.895
	Not Hispanic or Latino	43	7.02	1.551	-.883
Tsunami Warning Signs Scale	Hispanic or Latino	35	3.57	.608	-1.892
	Not Hispanic or Latino	43	3.79	.412	-1.821
Tsunami Actions Scale	Hispanic or Latino	35	5.80	.406	-1.722
	Not Hispanic or Latino	43	5.93	.258	-1.647

*No statistically significant differences found.

APPENDIX B

DESCRIPTIVE DATA: ITEM BY ITEM COMPARISON BETWEEN AGE GROUPS FOR TIME 1-TIME 3

The tables below present data from each stage of audience testing relating to the "Next Sue Nami" video campaign. A total of 96 audience members were split into two viewing groups, one of which viewed the video once. The second group viewed the video three successive times. The evaluation team administered a pre-viewing questionnaire to audience members to assess baseline knowledge about tsunami hazards and protective actions. After viewing the video, the team administered the first post-test questionnaire to determine the extent of knowledge change reflected in respondents' answer choices. Four weeks after the film screening, audience members completed the questionnaire a third time via on-line survey so that the evaluation team could assess the degree of information retention.

The first cell in each table below contains a question included on the survey instrument as well as the accompanying answer choices. These cells also reflect the numerical values assigned to each answer choice. Underlined responses indicate correct answers. Questions marked with an asterisk reflect material that was not covered in the video.

Columns labeled "Responses" reflect data from each of the three stages of testing described above, including 1) the average (mean) response as calculated across each group using the numerical values listed in the first column; 2) the percentage of correct responses; and 3) the total number of respondents who answered each question. The column labeled "Improvement" provides an at-a-glance assessment of whether average post-test responses reflect increased knowledge as compared with average pre-test responses. In cases where improvement between pre- and post-test scores resulted in **both** less than one-tenth (.1) difference in mean scores **and** less than 5% difference in percentage of audience members responding correctly, improvement is noted as "Yes/marginal." All of the numbers listed above are separated into two rows to enable comparison of data from audience members aged 18-34 with that of those aged 35 and older. However, as discussed in Appendix C and in the body of the report, overall variation in responses from these two groups was not found to be statistically significant.

A tsunami is a series of waves Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.94 (Mean) 89.6% n=48	1.21 (Mean) 95.9% n=48	Yes	1.36 (Mean) 92.3% n=39
35+ Year Olds	1.83 (Mean) 93.4% n=46	1.23 (Mean) 97.9% n=48	Yes	1.20 (Mean) 97.5% n=40

Tsunami waves can last for hours Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.46 (Mean) 70.9% n=48	1.83 (Mean) 85.4% n=48	Yes	1.36 (Mean) 94.9% n=39
35+ Year Olds	2.52 (Mean) 64.6% n=48	2.45 (Mean) 68.1% n=47	Yes/marginal	1.83 (Mean) 80.0% n=40

The first tsunami wave is usually the biggest wave. Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	3.21 (Mean) 46.8% n=47	3.81 (Mean) 95.8% n=48	Yes	3.29 (Mean) 84.2% n=38
35+ Year Olds	3.54 (Mean) 27.1% n=48	3.69 (Mean) 87.5% n=48	Yes	2.78 (Mean) 52.5% n=40

*Tsunami waves behave similarly to regular ocean waves.** Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	3.44 (Mean) 70.9% n=48	3.00 (Mean) 61.7% n=47	No	3.08 (Mean) 76.9% n=39
35+ Year Olds	3.45 (Mean) 70.2% n=47	3.21 (Mean) 64.6% n=48	No	3.20 (Mean) 67.5% n=40

It is okay to go to the beach to watch a tsunami if you are very careful. Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	3.77 (Mean) 97.9% n=47	3.96 (Mean) 100% n=48	Yes	3.92 (Mean) 100% n=39
35+ Year Olds	3.81 (Mean) 89.6% n=48	3.88 (Mean) 95.8% n=48	Yes/marginal	3.88 (Mean) 90% n=40

To be safe in a tsunami, move to higher ground. Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.85 (Mean) 85.4% n=48	1.00 (Mean) 100% n=48	Yes	1.08 (Mean) 100% n=39
35+ Year Olds	1.40 (Mean) 97.9% n=48	1.02 (Mean) 100% n=48	Yes	1.13 (Mean) 97.5% n=40

If you think you see a sign that a tsunami could be coming, wait for a second warning sign to be sure Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	3.54 (Mean) 89.6% n=48	3.78 (Mean) 95.8% n=48	Yes	3.67 (Mean) 94.9% n=39
35+ Year Olds	3.58 (Mean) 89.6% n=48	3.81 (Mean) 97.9% n=48	Yes	3.85 (Mean) 92.5% n=40

If you are near the ocean and feel earthquake shaking, get away from the water. Answer: Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4, Don't Know=5	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.85 (Mean) 87.5% n=48	1.08 (Mean) 97.9% n=49	Yes	1.36 (Mean) 89.7% n=39
35+ Year Olds	1.64 (Mean) 87.2% n=47	1.04 (Mean) 100% n=48	Yes	1.18 (Mean) 95.0% n=40

During a tsunami, there is usually just one big wave. Answer: True=1, <u>False</u>=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.13 (Mean) 75.0% n=48	1.96 (Mean) 91.5% n=47	Yes	1.97 (Mean) 82.1% n=39
35+ Year Olds	2.21 (Mean) 62.5% n=48	1.98 (Mean) 93.6% n=47	Yes	1.95 (Mean) 85.0% n=40

A tsunami may look like a wall of water as it approaches the shore. Answer: <u>True</u>=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.40 (Mean) 75.0% n=48	1.17 (Mean) 87.2% n=47	Yes	1.10 (Mean) 92.3% n=39
35+ Year Olds	1.48 (Mean) 75.0% n=48	1.57 (Mean) 61.7% n=48	No	1.28 (Mean) 80.0% n=40

The biggest tsunami wave is always the first wave. Answer: True=1, <u>False</u>=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.21 (Mean) 41.7% n=48	1.98 (Mean) 93.8% n=48	Yes	2.05 (Mean) 84.6% n=39
35+ Year Olds	2.31 (Mean) 18.8% n=48	1.98 (Mean) 93.8% n=48	Yes	1.90 (Mean) 65.0% n=40

A tsunami may look like a fast rising flood. Answer: <u>True</u>=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.52 (Mean) 68.8% n=48	1.25 (Mean) 85.4% n=48	Yes	1.26 (Mean) 84.6% n=39
35+ Year Olds	1.50 (Mean) 72.9% n=48	1.33 (Mean) 79.2% n=48	Yes	1.15 (Mean) 87.5% n=40

A sign that a tsunami is coming is that water will pull away from shore like a fast, low tide. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.88 (Mean) 52.1% n=48	1.04 (Mean) 97.9.0% n=48	Yes	1.00 (Mean) 100% n=39
35+ Year Olds	1.74 (Mean) 59.6% n=47	1.06 (Mean) 93.8% n=48	Yes	1.00 (Mean) 100% n=40

Tsunami waves last for about an hour. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.81 (Mean) 14.6% n=48	2.48 (Mean) 31.3% n=48	Yes	2.13 (Mean) 51.3% n=39
35+ Year Olds	2.58 (Mean) 25.0% n=48	2.38 (Mean) 37.5% n=48	Yes	2.18 (Mean) 47.5% n=40

Tsunamis move faster than a person can run. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.33 (Mean) 83.3% n=48	1.29 (Mean) 85.4% n=48	Yes/marginal	1.05 (Mean) 97.4% n=39
35+ Year Olds	1.19 (Mean) 89.4% n=47	1.10 (Mean) 93.8% n=48	Yes/marginal	1.08 (Mean) 95.0% n=40

*Tsunamis produce mild currents.** Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.23 (Mean) 31.3% n=48	2.17 (Mean) 48.9% n=47	Yes	2.05 (Mean) 53.8% n=39
35+ Year Olds	2.27 (Mean) 52.1% n=48	2.19 (Mean) 52.1% n=48	Yes/marginal	2.03 (Mean) 52.5% n=40

*Tsunami waves behave differently than regular ocean waves.** Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.60 (Mean) 60.4% n=48	1.42 (Mean) 70.8% n=48	Yes	1.28 (Mean) 79.5% n=39
35+ Year Olds	1.50 (Mean) 75.0% n=48	1.52 (Mean) 70.8% n=48	No	1.35 (Mean) 77.5% n=40

A tsunami can produce heavy currents that last for hours. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.65 (Mean) 66.7% n=48	1.60 (Mean) 68.8% n=48	No	1.15 (Mean) 92.3% n=39
35+ Year Olds	1.81 (Mean) 59.6% n=47	1.60 (Mean) 68.8% n=48	Yes	1.55 (Mean) 70.0% n=40

Earthquake shaking on the beach is a tsunami warning sign. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.04 (Mean) 43.8% n=48	1.00 (Mean) 100% n=48	Yes	1.10 (Mean) 92.3% n=39
35+ Year Olds	2.00 (Mean) 42.6% n=47	1.02 (Mean) 97.9% n=48	Yes	1.18 (Mean) 87.5% n=40

*Earthquakes are the only cause of a tsunami.** Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.25 (Mean) 45.8% n=48	1.88 (Mean) 41.7% n=48	No	1.97 (Mean) 51.3% n=39
35+ Year Olds	2.17 (Mean) 44.7% n=47	1.64 (Mean) 34.0% n=47	No	1.75 (Mean) 50.0% n=40

A sound like a train out in the water can be a sign that a tsunami is coming. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.54 (Mean) 20.8% n=48	1.04 (Mean) 97.9% n=48	Yes	1.00 (Mean) 100% n=39
35+ Year Olds	2.23 (Mean) 36.2% n=47	1.02 (Mean) 97.9% n=48	Yes	1.03 (Mean) 97.5% n=40

To be safe during a tsunami, you should go uphill. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.29 (Mean) 83.3% n=48	1.00 (Mean) 100% n=48	Yes	1.00 (Mean) 100% n=39
35+ Year Olds	1.15 (Mean) 91.5% n=47	1.00 (Mean) 100% n=48	Yes	1.00 (Mean) 100% n=40

*If a tsunami is coming, you will always hear warning sirens.** Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.19 (Mean) 64.6% n=48	1.83 (Mean) 70.8% n=48	No	1.82(Mean) 71.8% n=39
35+ Year Olds	2.09 (Mean) 78.7% n=47	2.00 (Mean) 70.8% n=48	Yes	2.00 (Mean) 90.0% n=40

If you think a tsunami is coming, wait for a second warning sign before deciding how to respond. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.08 (Mean) 79.2% n=48	1.96 (Mean) 95.8% n=48	Yes	1.97 (Mean) 97.4% n=39
35+ Year Olds	2.02 (Mean) 89.4% n=47	1.98 (Mean) 97.9% n=48	Yes	1.98 (Mean) 97.5% n=40

It is safe to stay on a beach during a tsunami if you don't go into the water. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.02 (Mean) 97.9% n=48	2.00 (Mean) 100% n=48	Yes/marginal	2.00 (Mean) 100% n=39
35+ Year Olds	1.98 (Mean) 97.9% n=48	1.98 (Mean) 97.9% n=48	No	2.00 (Mean) 100% n=40

It is okay to come back to the beach to watch a tsunami if you are very careful. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.00 (Mean) 100% n=48	2.02 (Mean) 97.9% n=48	No	2.03 (Mean) 97.4% n=39
35+ Year Olds	2.02 (Mean) 93.8% n=48	1.98 (Mean) 97.9% n=48	No	2.00 (Mean) 100% n=40

*It is safe to go surfing during a tsunami.** Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.02 (Mean) 97.9% n=48	2.04 (Mean) 95.7% n=48	No	2.00 (Mean) 100% n=39
35+ Year Olds	2.00 (Mean) 95.8% n=48	1.98 (Mean) 97.9% n=48	No	2.00 (Mean) 100% n=40

To be safe during a tsunami, you should go inland. Answer: True=1, False=2, Don't know/Not sure=3	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.42 (Mean) 75.0% n=48	1.08 (Mean) 93.9% n=48	Yes	1.18 (Mean) 87.2% n=39
35+ Year Olds	1.45 (Mean) 74.5% n=47	1.08 (Mean) 91.7% n=48	Yes	1.10 (Mean) 95.0% n=40

APPENDIX C

RESPONSES TO VIGNETTE QUESTIONS

Vignette #1

You have just settled in with some friends on a sunny patch of sand at the beach. It's a warm spring day, and your plan is to spend the afternoon close to the water. You hear some passersby discussing a big earthquake that occurred off the coast of Alaska this morning. After some time, you look up and notice that the water line seems to be quickly drawing back. Shells and clumps of seaweed that are normally underwater are visible, and the sand beneath them is still wet from having been submerged before the water pulled back. A few beachgoers have ventured out to take pictures, pick up shells, and to explore sea creatures on the newly exposed sand. You look out to the ocean, but see nothing unusual except for this very sudden low tide. A few of your friends are standing in the shallow water, calling for you to join them.

Supplementary Table 23. Responses to Vignette #1 by Age Group

Which of the following actions should you take? Answer: 1= Wade out to the water and take a picture of the new landscape 2= Join your friends in the shallow water, avoiding going into water that is deeper than knee-height. 3= Place a hand on the ground to check for shaking. 4= Call out to those in the water that they should come with you and leave the beach.	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	3.56 (Mean) 68.8% n=48	3.90 (Mean) 91.7% n=48	Yes	3.95 (Mean) 94.9% n=39
35+ Year Olds	3.77 (Mean) 87.2% n=47	3.88 (Mean) 91.7% n=48	Yes	3.98 (Mean) 97.5% n=40
What dangerous conditions, if any, might the circumstances described above indicate? *1= Powerful currents near shore.* *2= An impending earthquake.* *3= An approaching tsunami.* *4= Low tide.*	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	2.85 (Mean) 76.6% n=47	3.00 (Mean) 75.5% n=48	Yes	2.97 (Mean) 74.4% n=39
35+ Year Olds	2.98 (Mean) 76.2% n=42	2.87 (Mean) 81.3% n=46	Yes	2.98 (Mean) 85.0% n=40

Supplementary Table 24. Open-ended Responses to Vignette #1

Theme	Time 1 Responses	Time 2 Responses
No additional Information needed	• *No, run.* • *The two listed are the main reasons I would react in a concerned manner.* • *No, if I were to observe the above stated scenario, I would immediately leave the beach.* • *No further information needed.* • *No I would react immediately.* • *No – I would probably be very concerned for my safety and those around me.* • *Hell no! If you see the tsunami out in the distance it's already too late.* • *No. Sounds like the Thailand stories.*	• *No, but some kind of warning system in place would help others.* • *No I would get out of there ASAP with just the slightest warning.*
Perceived tsunami warning signs	• *Look for multiple waves surges. Water draining back from shore. Earth trembles.* • *Seaweed, this would indicate the water is retracting which is not normal to do in such way.* • *Big waves.* • *Animal behavior at beach. Animals always act out when there is a natural disaster (birds, dogs, etc.)* • *I would say a huge wave forming.* • *I would need to see some waves approaching. They don't need to be huge, but some form of movement heading towards shore.* • *An earthquake on visual of huge waves or tsunami would make me act much quicker.* • *If you see a wall of water.* • *Are low tides common at the beach I am at?* • *Look out and see if there is shift in wave activity.* • *Earth shaking and hear sounds I wouldn't normally hear.* • *The speed of the waves would determine how I react.* • *The clouds on the people surrounding my friends and I.*	• *Earth shaking, odd noises, animals reaction* • *If the sound of a train in the distance is coming from the ocean, if the ground beneath you has shook.* • *Train sound, unusual waves.* • *Sounds you hear anything coming.*

	• *Consult local weather news.* • *Does the water have any unusual debris or animals that don't belong there? Example, unusual fish that tend to live in different parts of the ocean.*	
Warning system	• *Sirens, maybe a present lifeguard alerting visitors of an oncoming tsunami.* • *Some kind of warning system at the beach would be good for me.* • *Possibly tsunami warning signals.* • *Look for multiple waves surges. Water draining back from shore. Earth trembles. Listen for sirens. Move to higher ground.* • *Are any sirens being blown?* • *I would wait for an alarm or lifeguard to announce something.* • *Sirens.* • *A warning siren.* • *I might check Google alert from phone about any warnings being sent out, emergency announcements. Either way, I would alert people around me to evacuate. I think news confirmation would assist me in how rapid and urgent I react and share information with nearby strangers.*	• *No, but some kind of warning system in place would help others.* • *Sirens would be useful.* • *Listen for sirens/ not a second siren. Look for small waves. Go to higher ground. Feel for earthquakes.* • *If any sirens are being blown but most likely leave the beach ASAP.* • *Are there any warning sirens as well? (and all previously stated questions in part 1).* • *A warning siren.*
Earthquake information	• *I would need to feel an earthquake when I am at the beach to take a quick reaction.* • *How large was the earthquake and how deep?* • *I would call my friends so they too can check with their own hands if the ground is shaking.* • *An earthquake or visual of huge waves or tsunami would make me act much quicker.* • *How strong and if the epicenter is near beach.* • *Where the beach is. An earthquake in Alaska means not a lot to a Florida Beach.* • *Earth shaking and hear sounds I wouldn't normally hear.*	• *I would need to feel the earthquake and see other people to make sure it's an earthquake.* • *Earth shaking, odd noises, animals reaction.* • *If the sound of a train in the distance is coming from the ocean, if the ground beneath you has shook.* • *Listen for sirens/ not a second siren. Look for small waves. Go to higher ground. Feel for earthquakes.* • *Earthquake is warning enough.* • *Ground shaking.* • *Shaking and rumbling.* • *Am I in Alaska? Does Alaska have good beaches? Did I forget my*

	• *Where am I in relation to the coast of Alaska? Honestly, I'm not sure if an earthquake that far away would affect me in, say, Newport...*	*sunscreen? Has enough time passed from Alaska moving to California afternoon? Doesn't distance affect the effectiveness of a tsunami?*
Officials' instructions	• *A present lifeguard alerting visitors of an oncoming tsunami* • *I would probably ask the lifeguard nearby for more information just to be safe.* • *I would wait for an alarm or lifeguard to announce something.* • *Are there police around to help or give warnings?* • *Ask the lifeguard.* • *A lifeguard warning.*	
Behavior of others	• *Are other people leaving?* • *What others are doing and their reaction towards what's happening.* • *If there are locals in near proximity, what are their actions?* • *If a local resident was present, I'd ask him or her if they ever saw this happen before.* • *Might not even react much until someone else said something (someone with more knowledge).*	• *I would need to feel the earthquake and see other people to make sure it's an earthquake.*
Not sure/don't know	• *Don't know warning signs to ask.* • *I don't know much. Need lots of other info.* • *I honestly would not know what to do in those situations that, to me, don't seem too risky.* • *What are the main sights to look for?*	
Actions	• *Go to higher level.*	• *I would just leave and pull my friends (and strangers) out!* • *I would call friends to warn them of what I see in a non-reacting way, but with patience and grace and run to safety uphill.* • *Leave the beach fast.* • *I wouldn't waste too much time calling out people. Saving yourself saves a life.* • *Go to higher ground.* • *Try to get to higher ground.*

Miscellaneous	• *Specific information (geographic) of where to go in the event of a possible tsunami that is, specific to where I live. If I am visiting an area that is susceptible to possible tsunami activity (no matter how unlikely) this info would also be helpful.* • *Don't run away in street. Stay away from falling objects or go under a table or doorway.* • *What time of day – what time does tide normally go in or out? Location.*	• *I would consider what the water brought to shore.* • *Again, preparation when in the geographic area I am in.* • *Where the beach is located.*

Vignette #2

You and a friend have been waiting several weeks for reservations at a popular new waterfront restaurant on a Saturday. The weather is pleasant, and you are excited about this outing. Upon your arrival, you find traffic is heavily backed up and nearly at a stand-still. You ask a passerby what is causing the holdup. The person tells you that a tsunami warning has been issued and a tsunami is expected soon. The police up ahead are redirecting traffic and evacuating the waterfront. Frustrated, you turn around and consult with your friend about what to do next. A few moments later, you notice that people have begun walking back down to an unmonitored area near the water to see the tsunami approaching. It's safe, they say, because this area is elevated well above the water line. You and your friend follow, eager to record the event. After about 20 minutes of watching the choppy water, the water surges higher and someone says "there's the tsunami!" Lawn chairs and other objects get caught up in the churning water, spinning in whirlpools, but at your vantage point, the water remains below you except for a bit of splashing.

Supplementary Table 25. Responses to Vignette #2 by Age Group

Which of the following actions should you take? 1= Contact the restaurant about rescheduling your dinner, now that the tsunami is over. 2= Move to higher ground immediately. 3= Try to retrieve some of the objects in the water, which doesn't look very deep. 4= Get your surfboard and experience riding a tsunami.	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.98 (Mean) 97.9% n=48	2.00 (Mean) 100% n=48	Yes/marginal	2.00 (Mean) 100% n=39
35+ Year Olds	2.02 (Mean) 97.9% n=47	2.00 (Mean) 100% n=48	Yes/marginal	2.03 (Mean) 97.5% n=40
Is the area where you are standing dangerous? *1= Yes—you should expect more tsunami waves, and the next wave could be bigger.* *2= Yes—the tsunami activity might trigger a landslide.* *3= No—the entire area is safe now that the tsunami wave has passed.* *4= No—the water may be dangerous, but the land is safe.*	**Responses (Mean, Percent Correct, n's)**		**Improvement from Before to Immediately After Watching? (Yes/No)**	**Responses (Mean, Percent Correct, n's)**
	Before Watching the Video (On Site)	Immediately After Watching the Video (On Site)		4 Weeks After on Site Screening (Web Survey)
18-34 Year Olds	1.37 (Mean) 76.1% n=46	1.00 (Mean) 100% n=48	Yes	1.31 (Mean) 79.5% n=39
35+ Year Olds	1.32 (Mean) 72.7% n=44	1.11 (Mean) 93.6% n=47	Yes	1.13 (Mean) 87.5% n=40

Supplementary Table 26. Open-ended Responses to Vignette #2

Theme	Time 1 Responses	Time 2 Responses
No additional Information needed	• *No I would move to higher ground immediately.* • *I would have left at police redirecting and at the knowledge of a tsunami warning.* • *No. Get out of there!* • *Tsunami warning, I wouldn't stick around the area. I would immediately leave and stay out of harm's way.* • *No, just to be safe I would go inland.* • *No, I think that what I saw would convince me to leave for my safety.* • *No I would not go near the water if there was a warning in effect.* • *No. I'm out of there.* • *No, run.*	• *No - this is more than enough... I'd run!* • *Nope, run to higher ground.* • *None, I would act immediately, try to warn people that there might be bigger waves and they are in danger.* • *No I would immediately move to higher grounds (sic).*
Perceived tsunami warning signs	• *Are there people still in the water? How far is the tide/is the water still receding rapidly? If yes to the latter, then I am certain there is a need to evacuate.* • *What's happening around me, and if the waves are coming towards me.*	• *Need to know if the water is still receding, if the sound of a train is audible from the direction of the ocean, if there are more tsunami warning signals signing.* • *Move farther up to higher ground. Pay attention to waves rising. Listen for sirens. Listen for train sounds.* • *Yes the tsunami might cause landslides near the ocean but the waves will get bigger and that will cause danger.*
Warning system	• *Possibly a siren.* • *Don't try to record the event. Move to higher ground. Encouraging your friends to leave. Listen for sirens. Earth trembles.* • *Police to help? Warnings? What to do with children/pets.*	• *Need to know if the water is still receding, if the sound of a train is audible from the direction of the ocean, if there are more tsunami warning signals signing.* • *Move farther up to higher ground. Pay attention to waves rising. Listen for sirens. Listen for train sounds.*
Earthquake information	• *Don't try to record the event. Move to higher ground. Encouraging your friends to leave. Listen for sirens. Earth trembles.* • *Police allowing people to get closer,*	

	one would assume the danger is gone. If they were still directing people away then there might be danger. Also where was the earthquake to trigger the tsunami.	
Officials' instructions	• *Police to help? Warnings? What to do with children/pets.* • *Safety first - leave. If security/police give all clear it should be considered safe. I would still leave.* • *Police allowing people to get closer, one would assume the danger is gone. If they were still directing people away then there might be danger. Also where was the earthquake to trigger the tsunami.* • *If authorities are directing me away from somewhere I always listen. I don't like to question them.* • *The police or lifeguards can give me directions or instructions what to do*	• *Evacuation procedures... traffic, etc. Do I get in my car or run like hell?*
Behavior of others	• *Are there people still in the water? How far is the tide/is the water still receding rapidly? If yes to the latter, then I am certain there is a need to evacuate.* • *What the majority (natives in the land) are doing. They might have experienced tsunamis before so they know more of what to do.*	
Not sure/don't know	• *No idea about warning signs* • *I don't know much about tsunamis, so I would need lots more info.* • *What we should do when it hits.*	
Actions	• *I would consider to get too my family and make sure everyone is safe.* • *I will run as fast as I can to my car and go to the airport quickly! If I see the smallest thing wrong with the beach.* • *I would need to get the hell out!* • *Leave as fast as I can uphill.* • *Do not panic or run. Go up to higher level ground.*	• *Get to high ground as far as one can.* • *Move as far inland as possible and highest ground possible.* • *Keep calm and move inland.* • *Getting far away from the ocean ASAP.*
Miscellaneous	• *Let's go watch some tsunamis? Really?* • *I would say that both are true*	• *Same as part 1. How is the government going to help after the destruction*

	because not only will the next waves be bigger but depending where you are standing landslides can happen. • *What sort of cuisine does the restaurant serve? Will the main chef be there the next time I get a reservation?* • *Need better traffic roads to leave.*	• *Be careful and be cautious where you go* • *How long can a tsunami last?*