



*Supplement of*

## **Organizing an Earthquake Learning Exhibition for transferring geoscience knowledge to the public: the example from Nepal**

**Shiba Subedi et al.**

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This file contains

- Table S1
- Figures S1-S25
- Pre-exhibition survey form
- Post-exhibition survey form

Table S1: Summary of questions and corresponding calculated and tabulated chi-square values, p-values at 0.05 significance level. Single-entry option questions which asked for both prior and post exhibition surveys are only included here.

Q.N.	Questions	Observed $\chi^2$ Value	Threshold $\chi^2$ Value	p-value	Remarks
Q2	Did you feel the earthquake that happened in 2015 or/and in 2023?	7.21	3.84	0.0072	H <sub>0</sub> rejected
Q3	What do you believe is the cause of earthquakes?	11.05	9.49	0.02600	H <sub>0</sub> rejected
Q4	In the event of an earthquake of Mw>8, what do you think could happen to you?	7.05	11.07	0.2169	H0 accepted
Q5	How likely do you think it is that an earthquake larger than the Gorkha earthquake will occur in Nepal during your lifetime?	30.83	12.59	0.00002	H0 rejected
Q6	Would your house resist a major (Mw≥7) earthquake?	29.0	5.99	0.00000054	H0 rejected
Q7	Do all the members of your family know what to do and where to go during an earthquake?	4.92	5.99	0.0854	H0 accepted
Q8	How do you plan on communicating with family/friends after a large earthquake?	0.16	5.99	0.923	H0 accepted
Q9	What do you think the level of risk for an earthquake is in your city?	12.88	5.99	0.00156	H0 rejected
Q10	The preparedness for a major earthquake is the most important thing. Are you regularly discussing this topic with your family?	1.92	3.84	0.165	H0 accepted
Q11	Have you ever discussed the topic of earthquakes in school?	6.78	3.84	0.0092	H0 rejected

## Module index:

- M1: Plate Tectonics
- M2: Magnitude and Intensity
- M3: Why we can not predict earthquake
- M4: What to do before, during, after earthquake
- M 5: BOSS model
- M6: Earthquake Artwork Competition
- M7: Liquefaction
- M8: Seismic Waves
- M9: Earthquake Game
- M10: Earthquake Emergency Bag (GO Bag)
- M11: Seismometer and Jumping Test
- M12: Earthquake Quiz Contest
- M13: Earthquake Awareness Song
- M14: Earthquake Evacuation Drills
- R1: Prior-Survey Room
- R2: First Aid Room
- R3: M14, Post-Survey Room

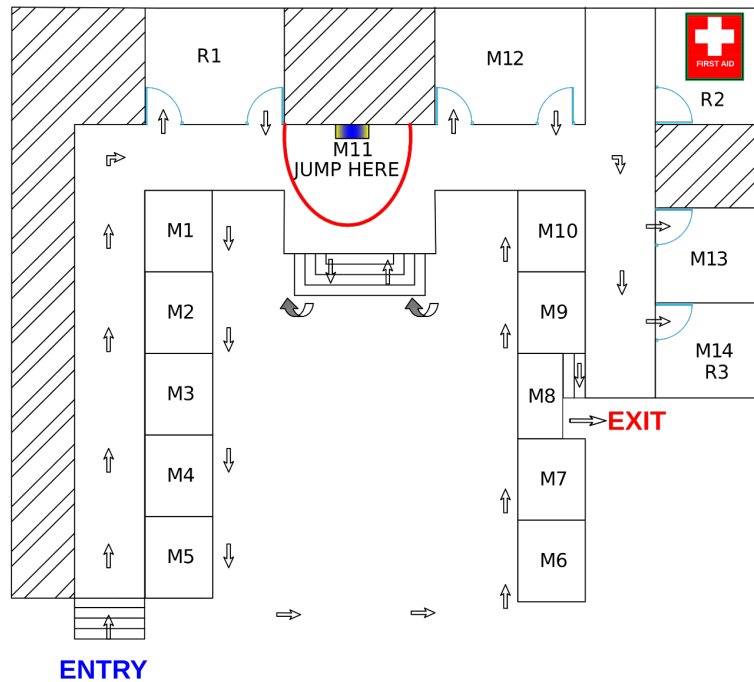


Figure S1: Exhibition Road Map plot.

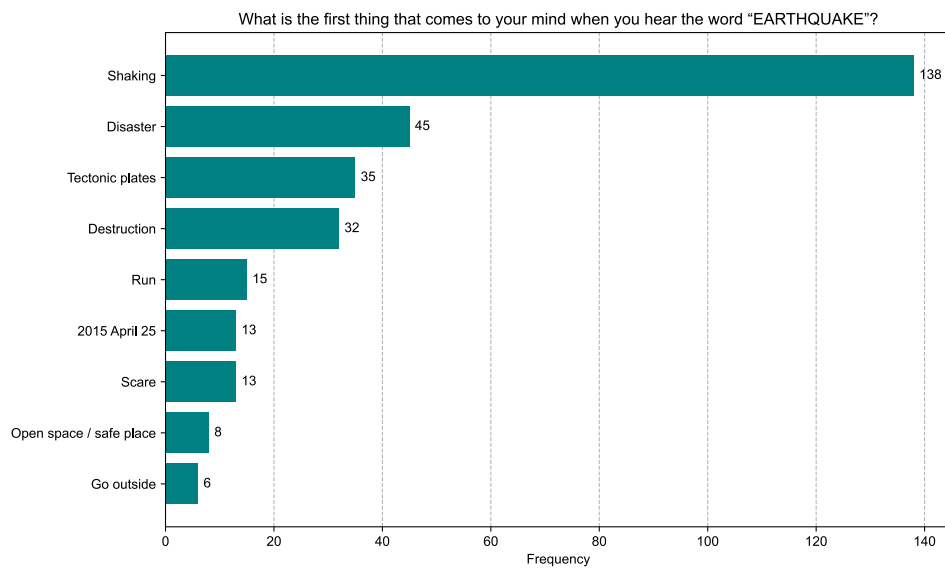
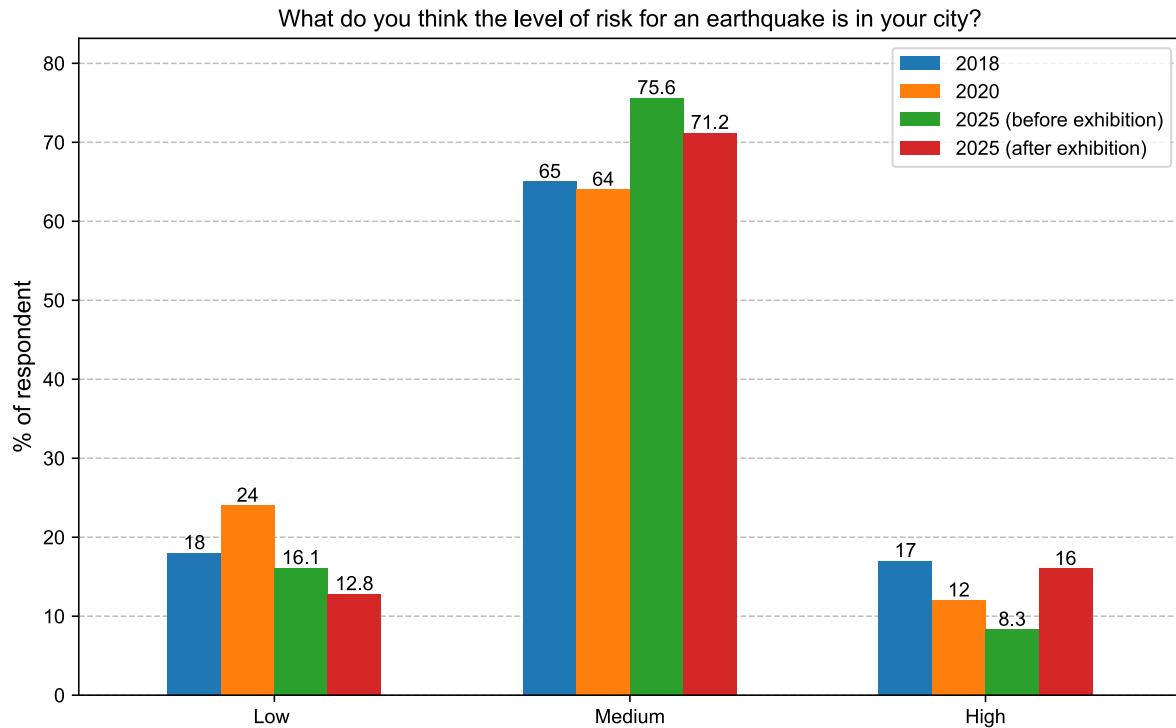
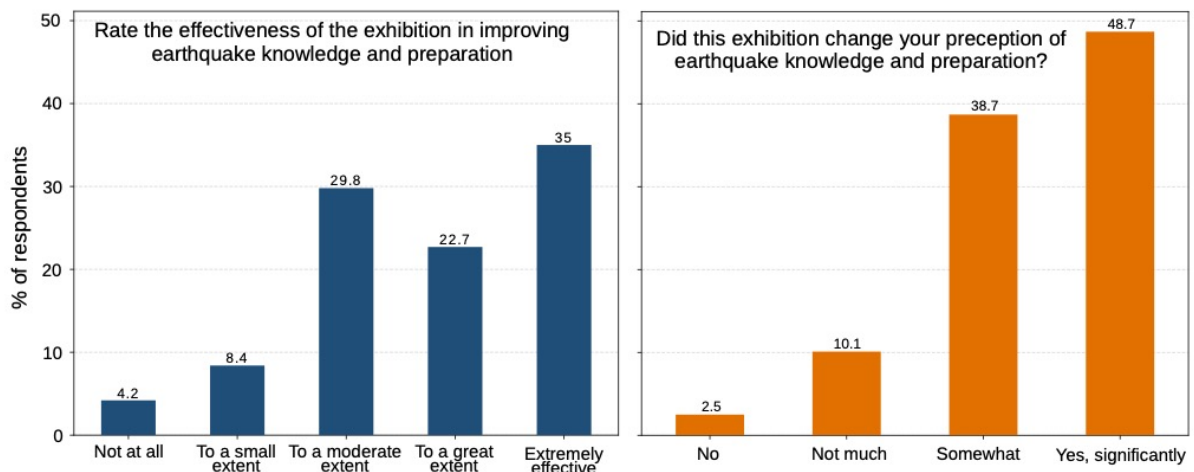


Figure S2: Student answers to what is the first thing that comes to their mind when they hear the word 'EARTHQUAKE' (question 1).



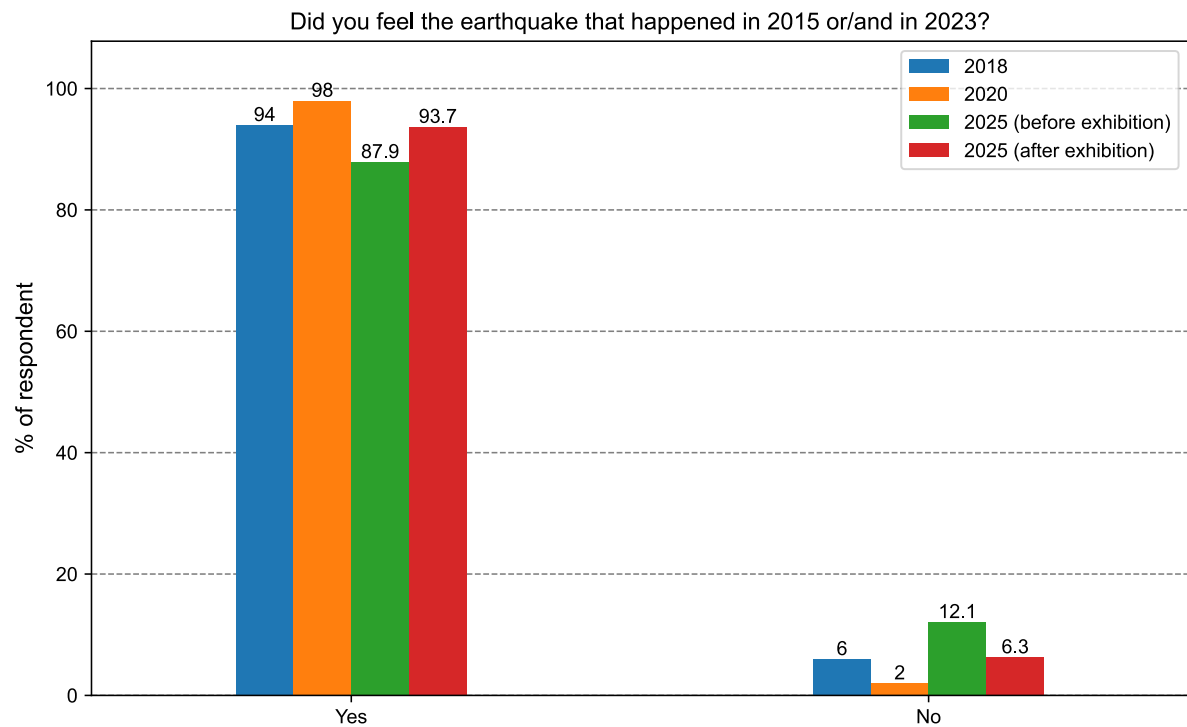


**Figure S3: Students' earthquake risk perception before and after the exhibition (question 9).** ( $\chi^2=12.88$ ,  $p$  value = 0.00156; the change is significant). The answers from the 2018 and 2020 surveys are also plotted for comparison purposes.

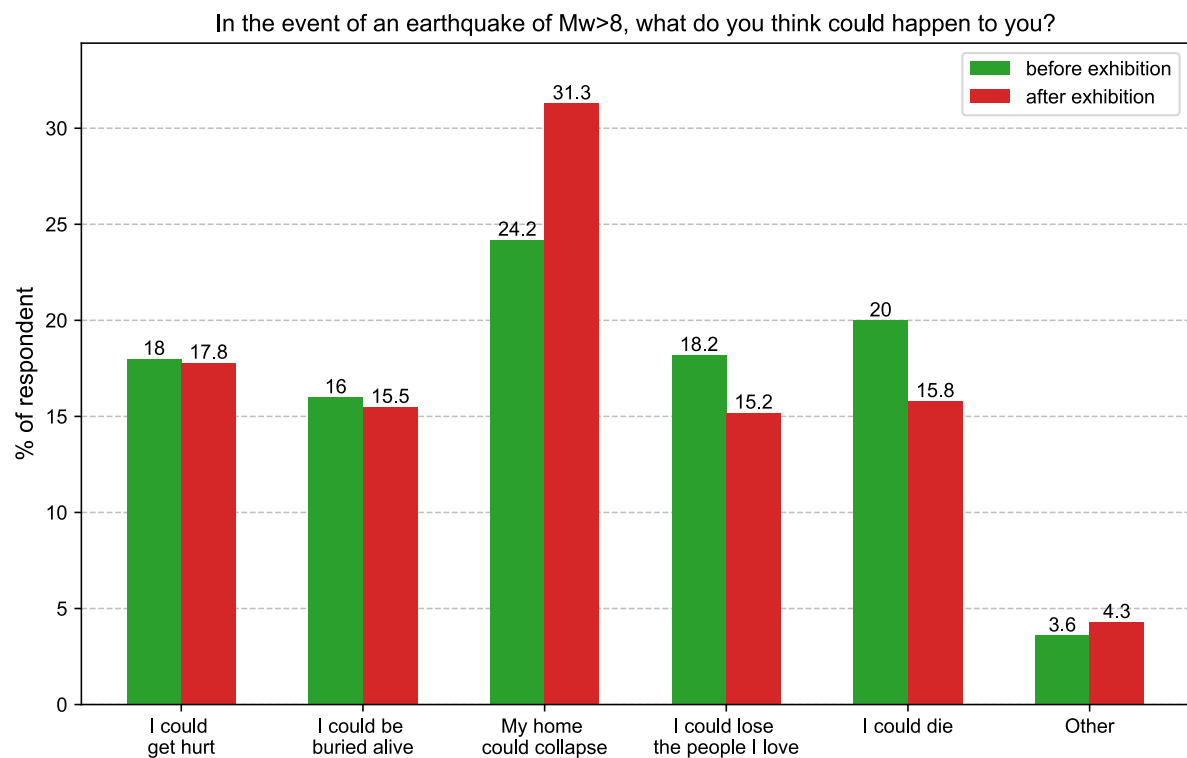


**Figure S4: Impact of the exhibition.** (left) Students' satisfaction statistics after the exhibition (question 18). (right) Students' change in perception regarding earthquake knowledge and preparedness (question 19).





**Figure S7.** Responses to the question 2: “Did you feel the earthquake that happened in 2015 and/or 2023?” The plot shows the distribution of participants’ experiences, indicating the proportion of respondents who felt each earthquake or both.



**Figure S8.** Distribution of participants’ responses to question 4: “In the event of an earthquake of  $M_w > 8$ , what do you think could happen to you?”

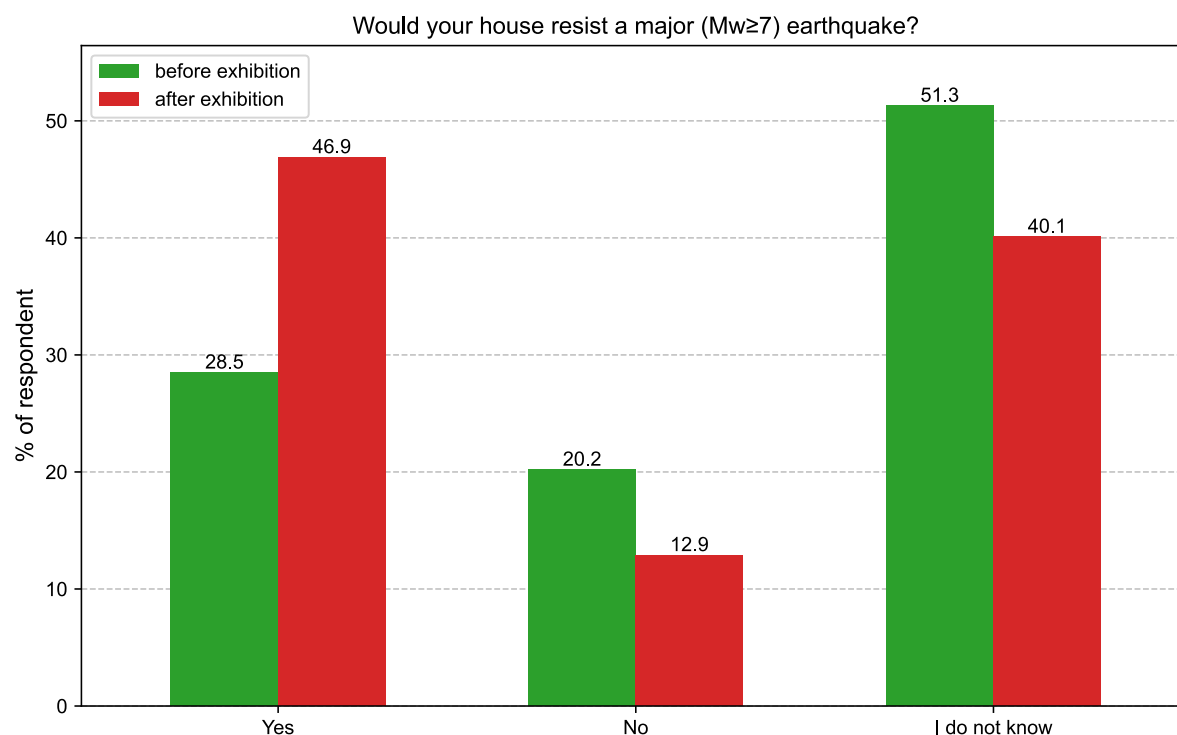


Figure S9. Distribution of participants' responses to question 6: "Would your house resist a major ( $M_w \geq 7$ ) earthquake?"

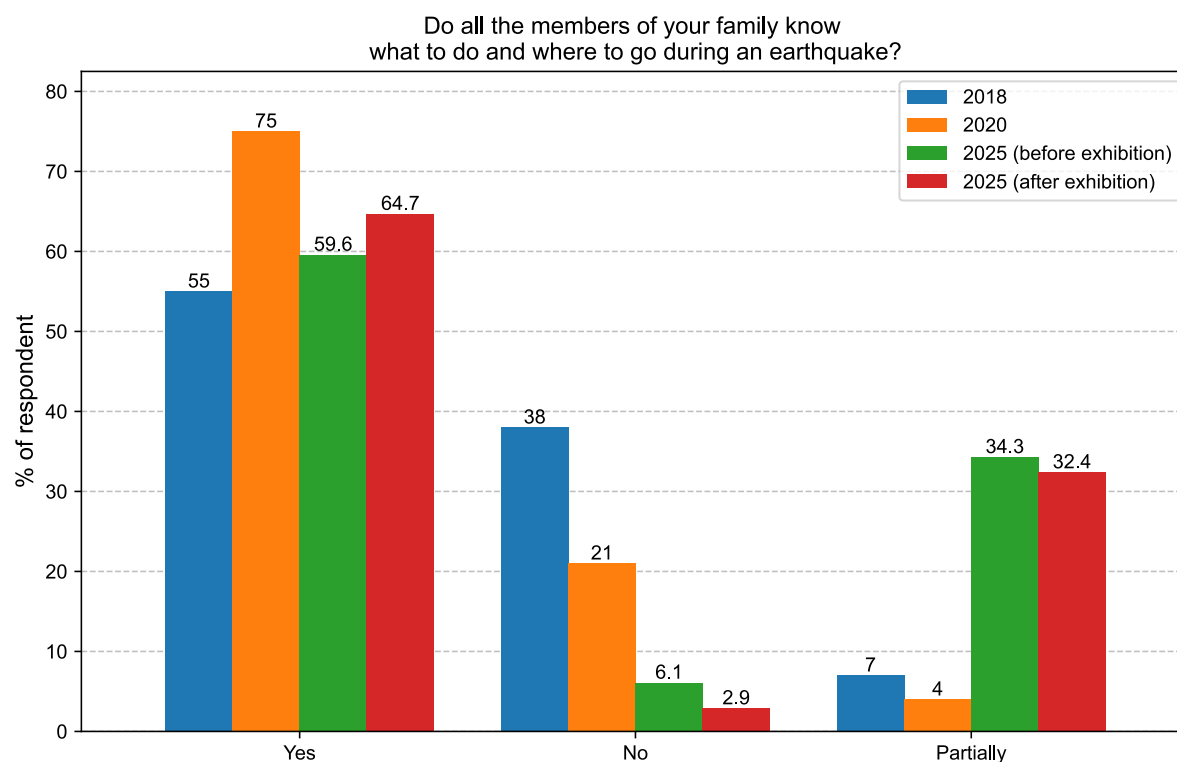
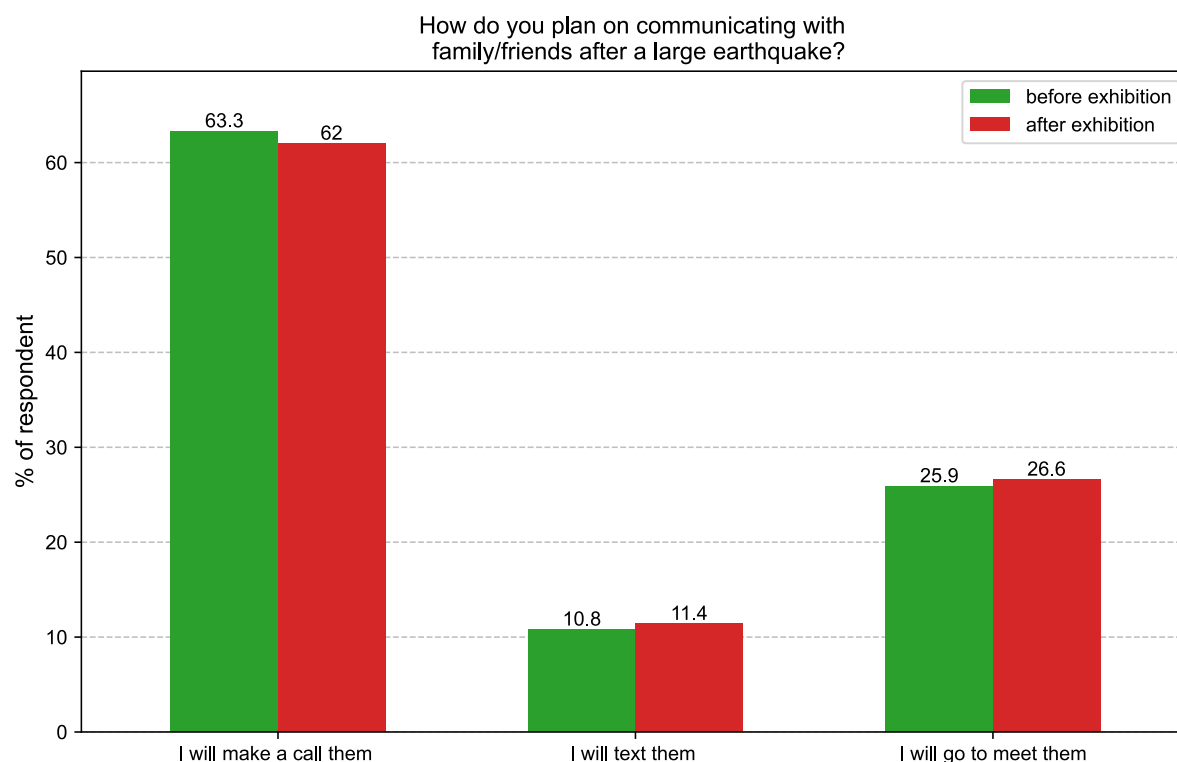
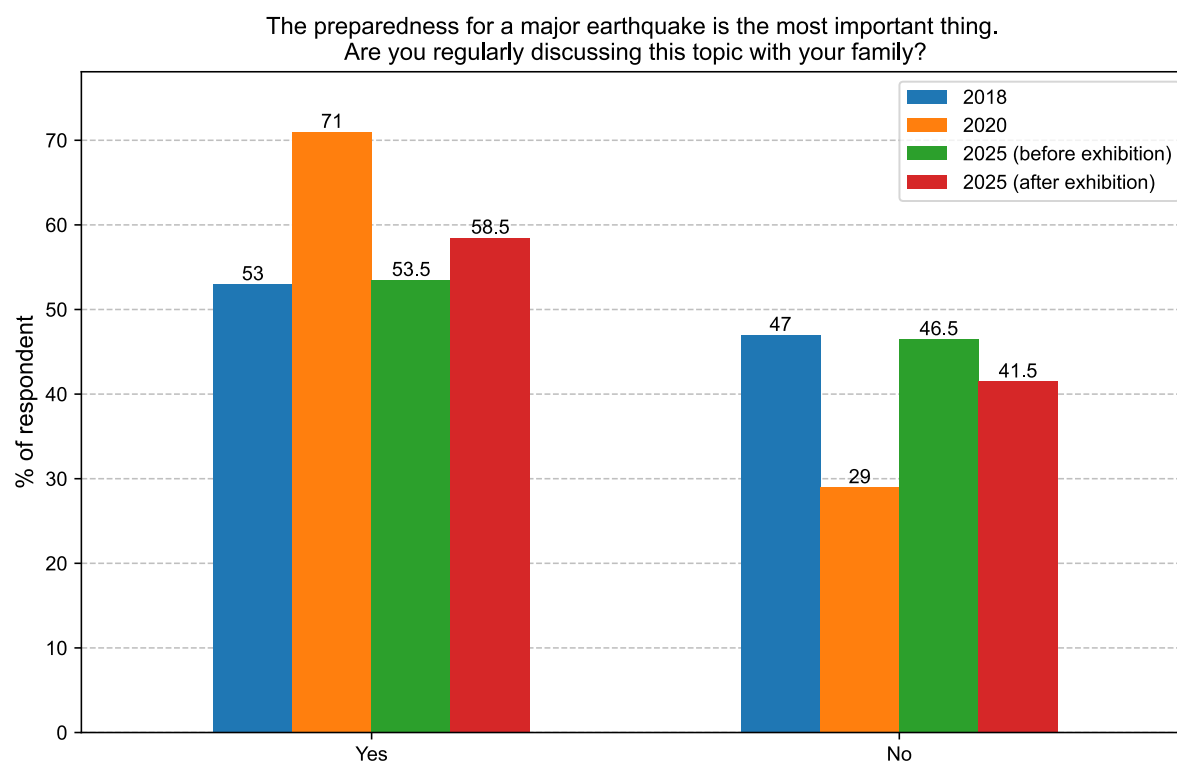


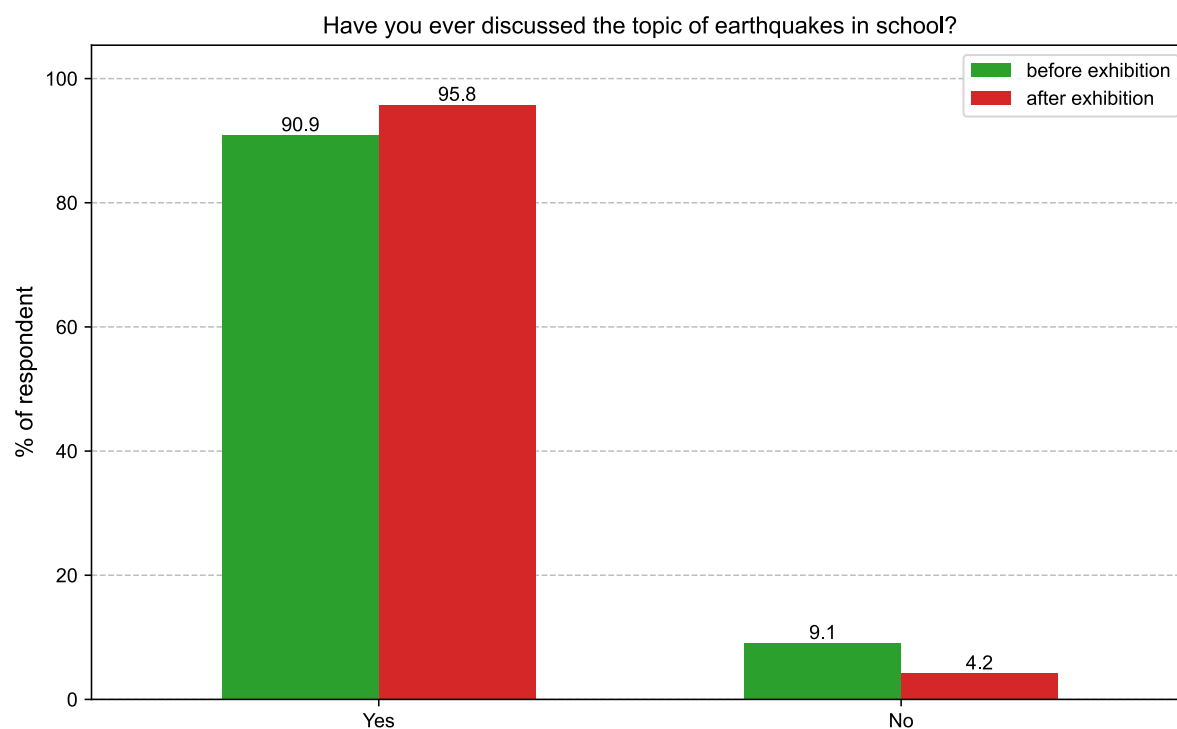
Figure S10. Distribution of participants' responses to question 7: "Do all the members of your family know what to do and where to go during an earthquake?"



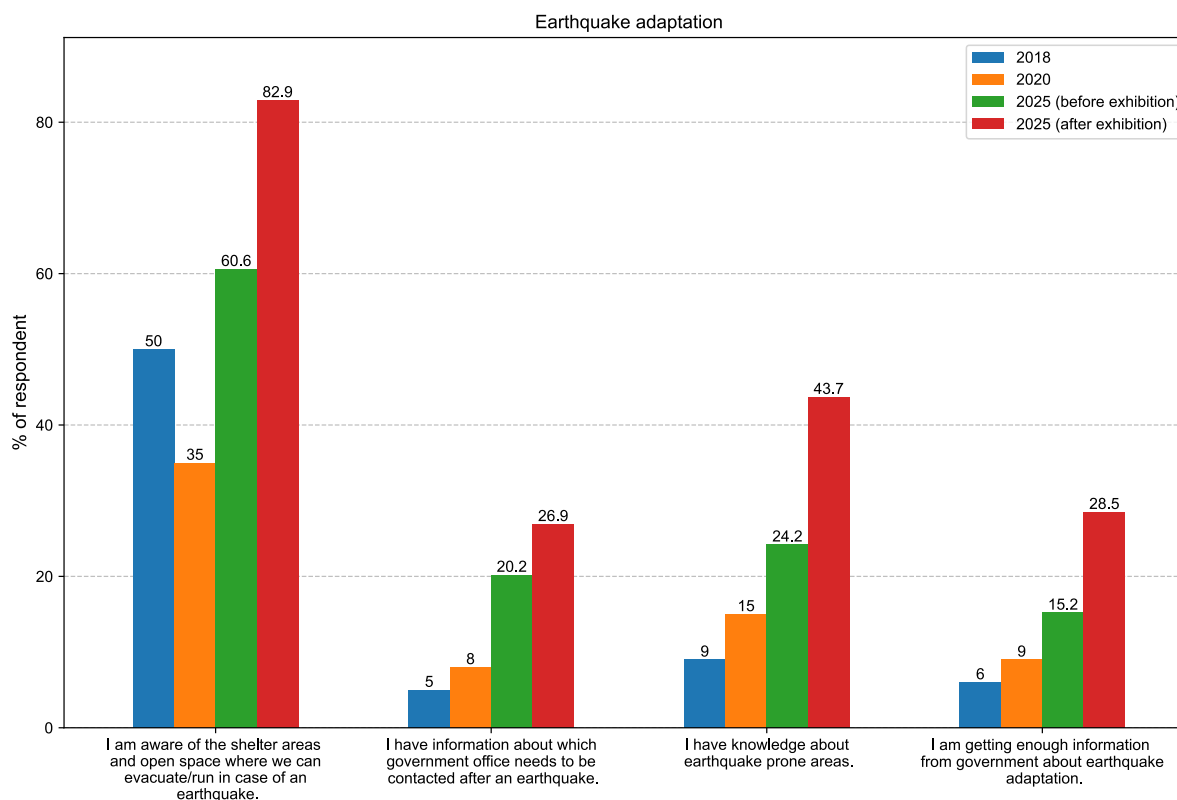
**Figure S11.** Distribution of participants' responses to question 8: "How do you plan on communicating with family/friends after a large earthquake?"



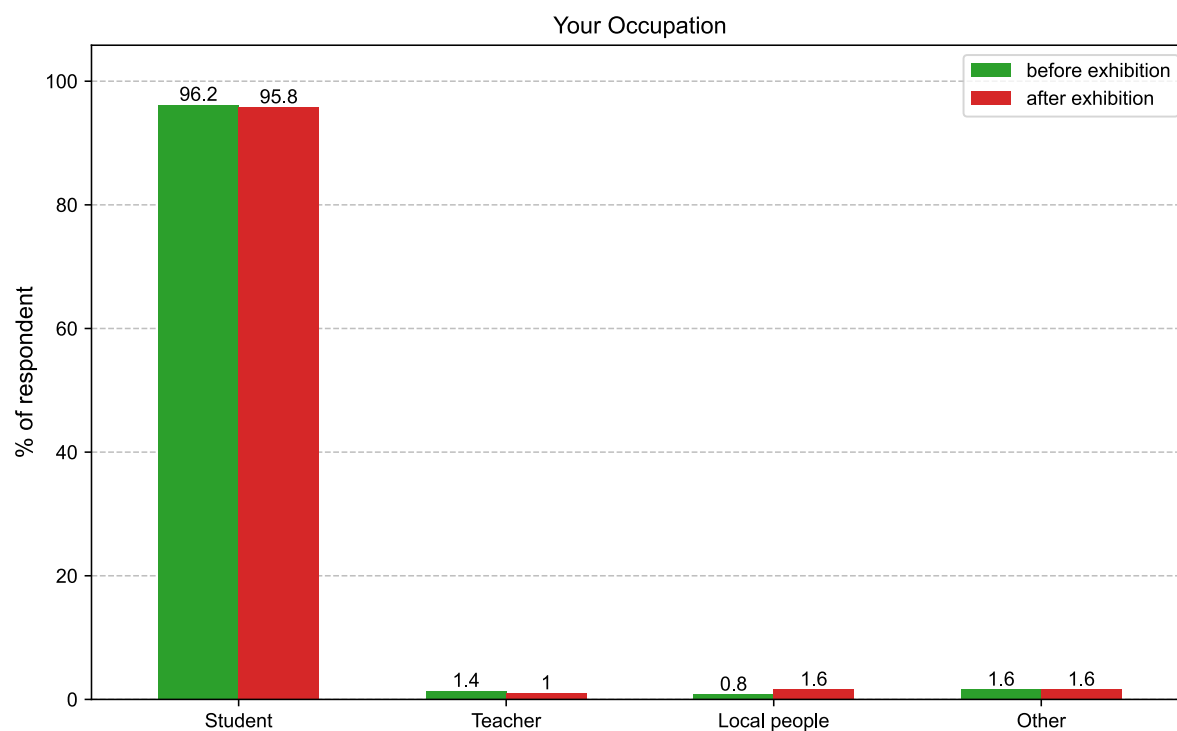
**Figure S12.** Distribution of participants' responses to question 10: "The preparedness for a major earthquake is the most important thing. Are you regularly discussing this topic with your family?"



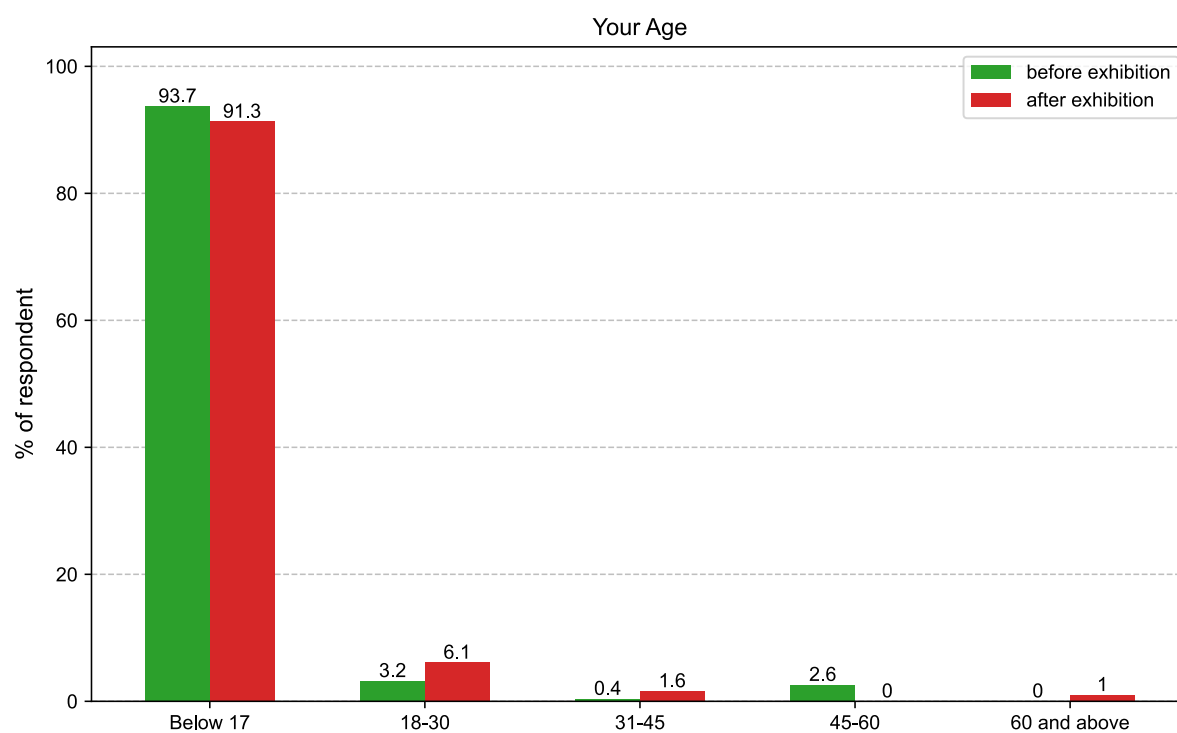
**Figure S13.** Distribution of participants' responses to question 11: *"Have you ever discussed the topic of earthquake in school?"*



**Figure S14.** Distribution of participants' responses to question 14: *"Earthquake adaptation"*. Multiple answers are allowed for this question.



**Figure S15.** Plot of participants' statistics question 15: *"Your Occupation"*.



**Figure S16.** Plot of participants' statistics question 16: *"Your Age"*.





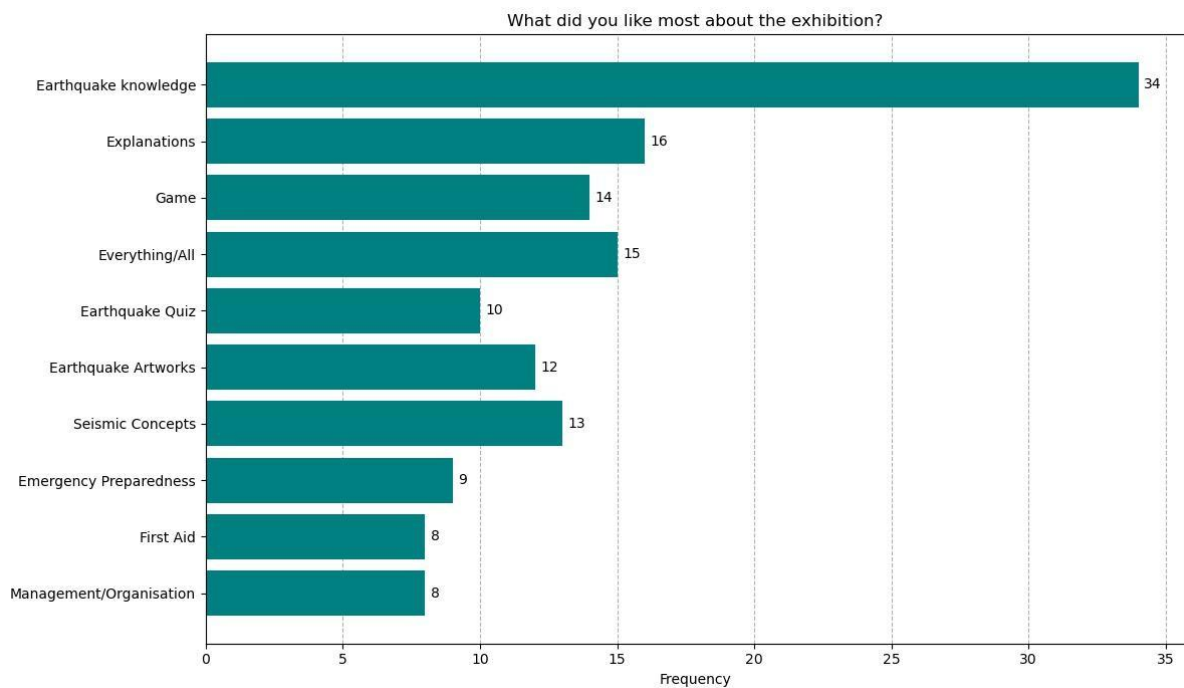
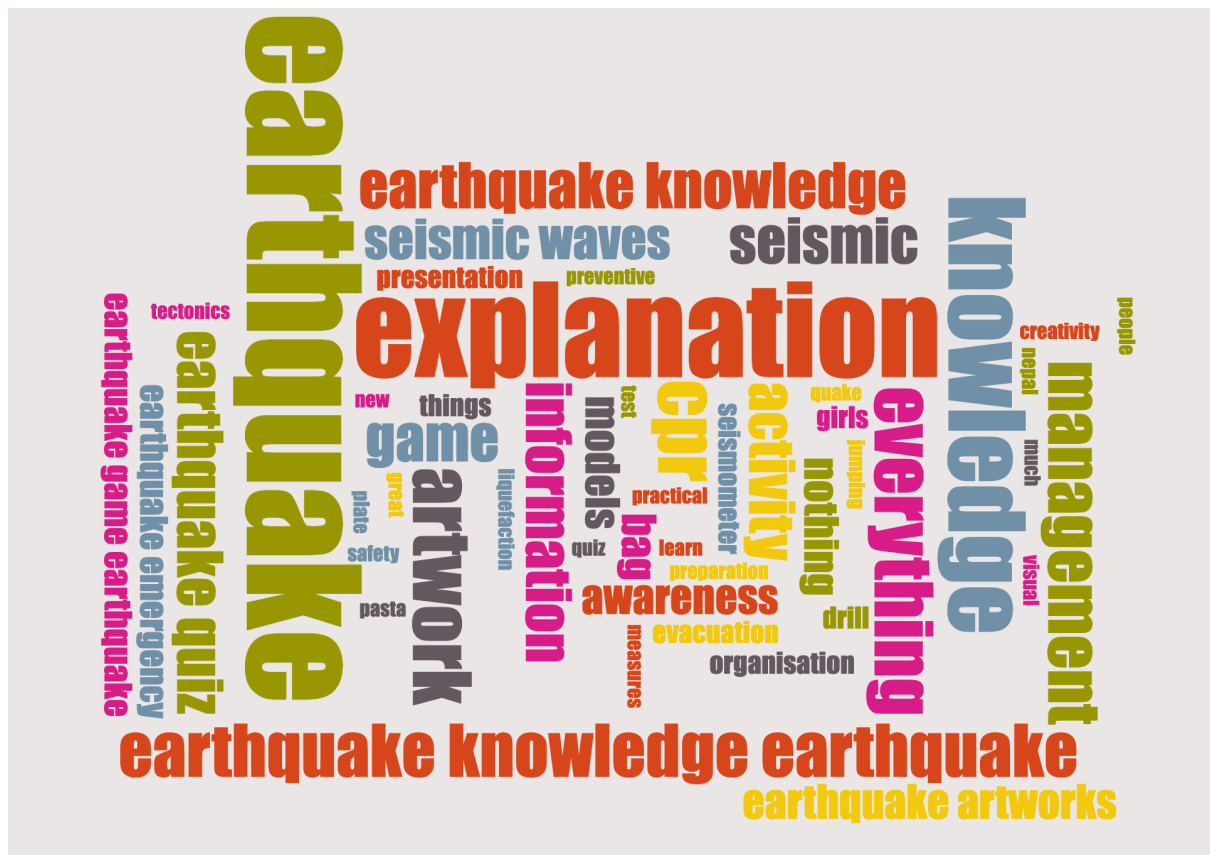


Figure S19: Word cloud (top) and frequency (bottom) plot of question 22: “What did you like most about the exhibition?”

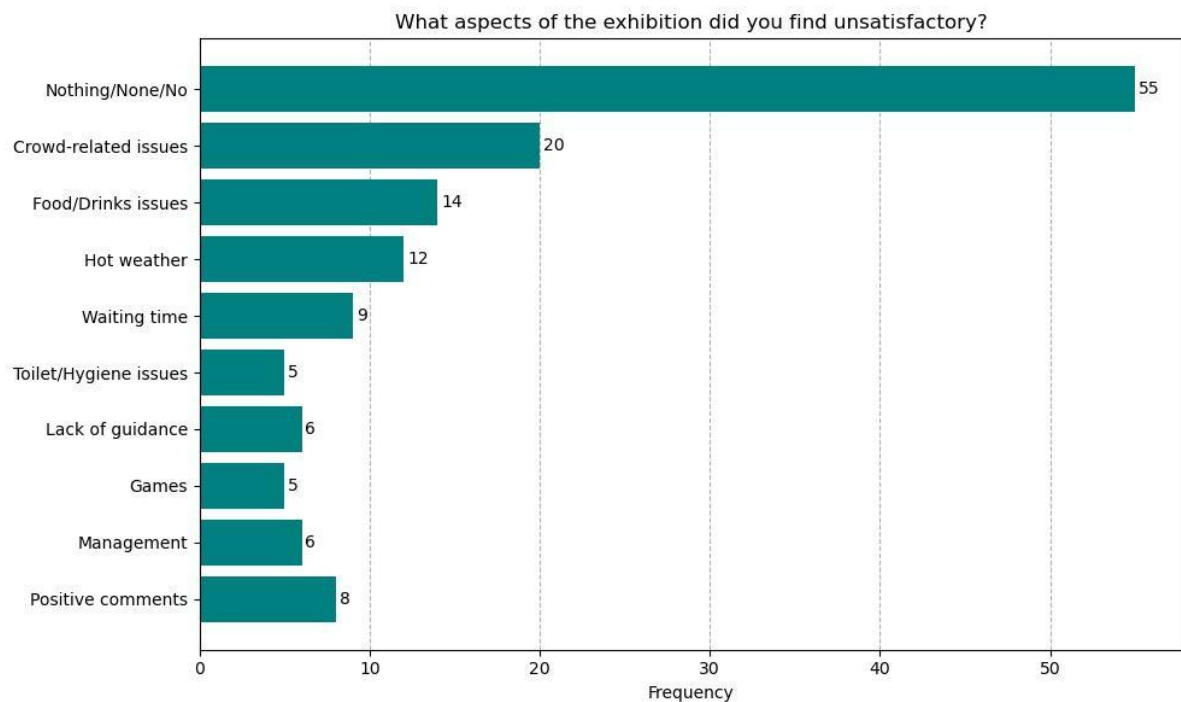
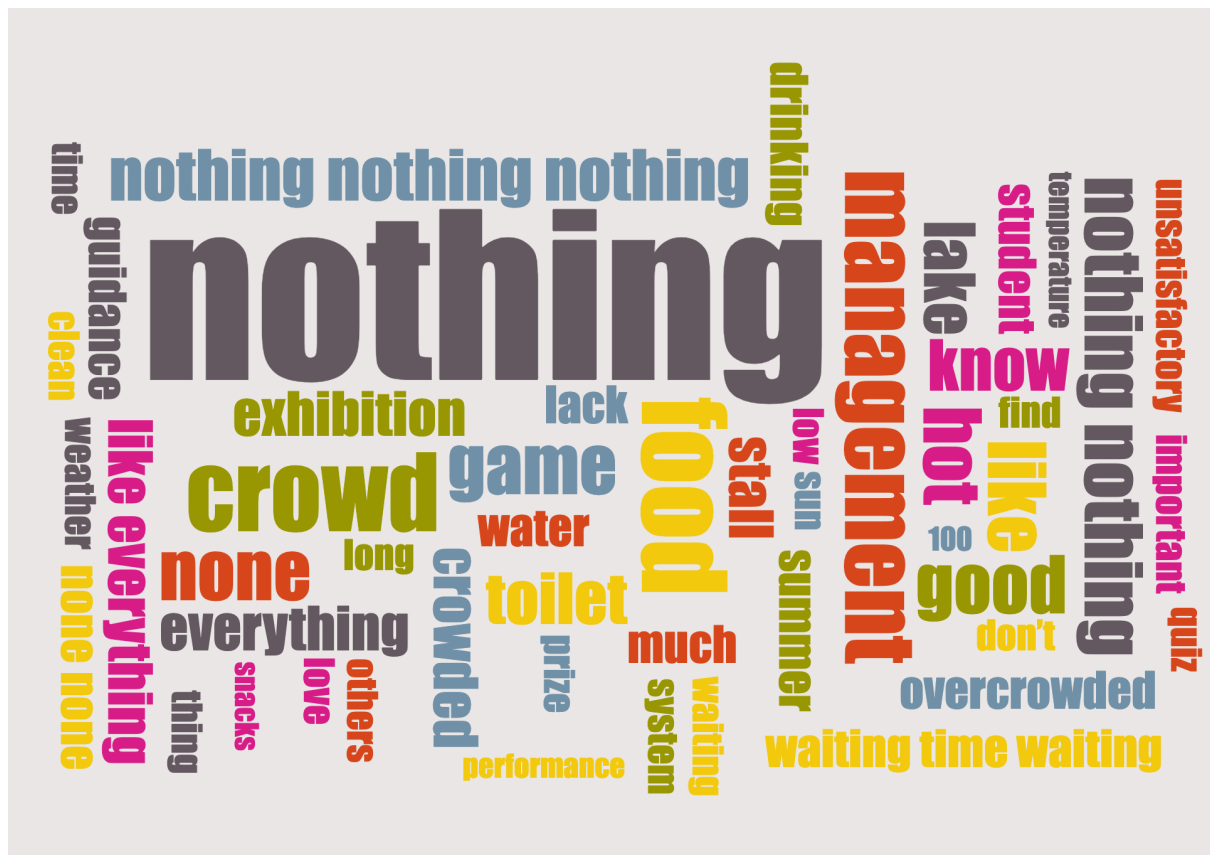
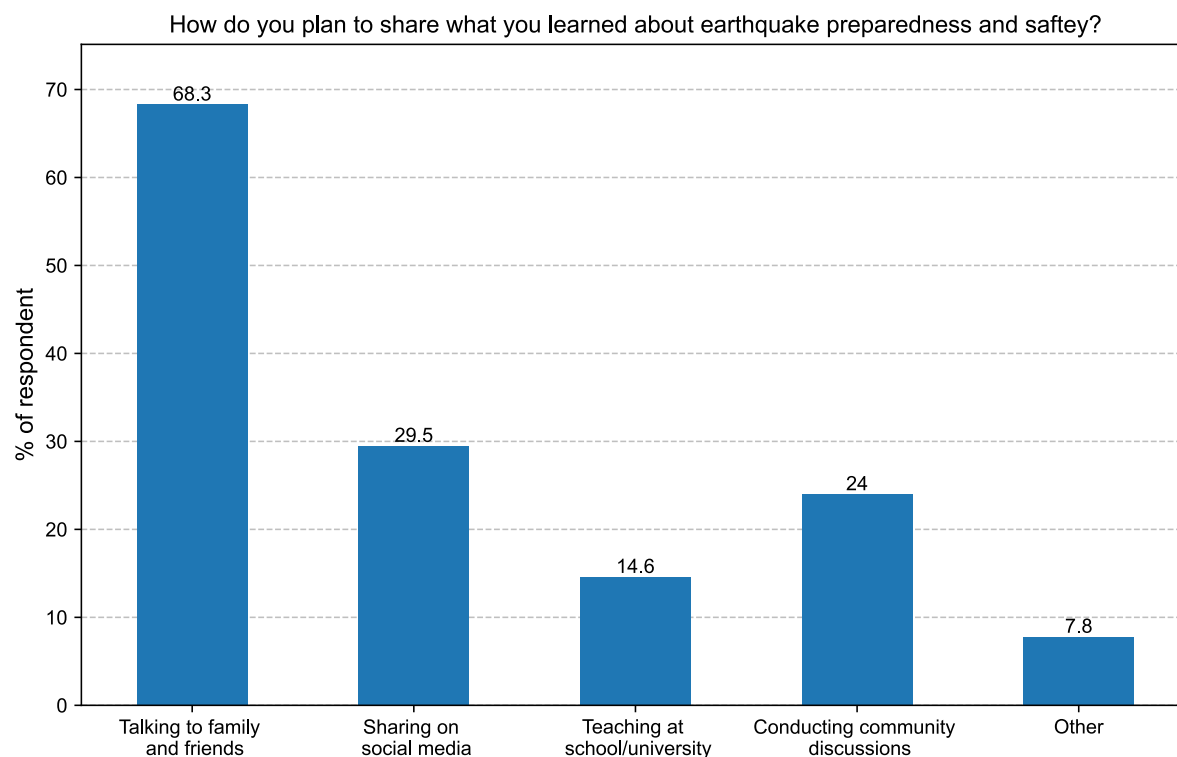
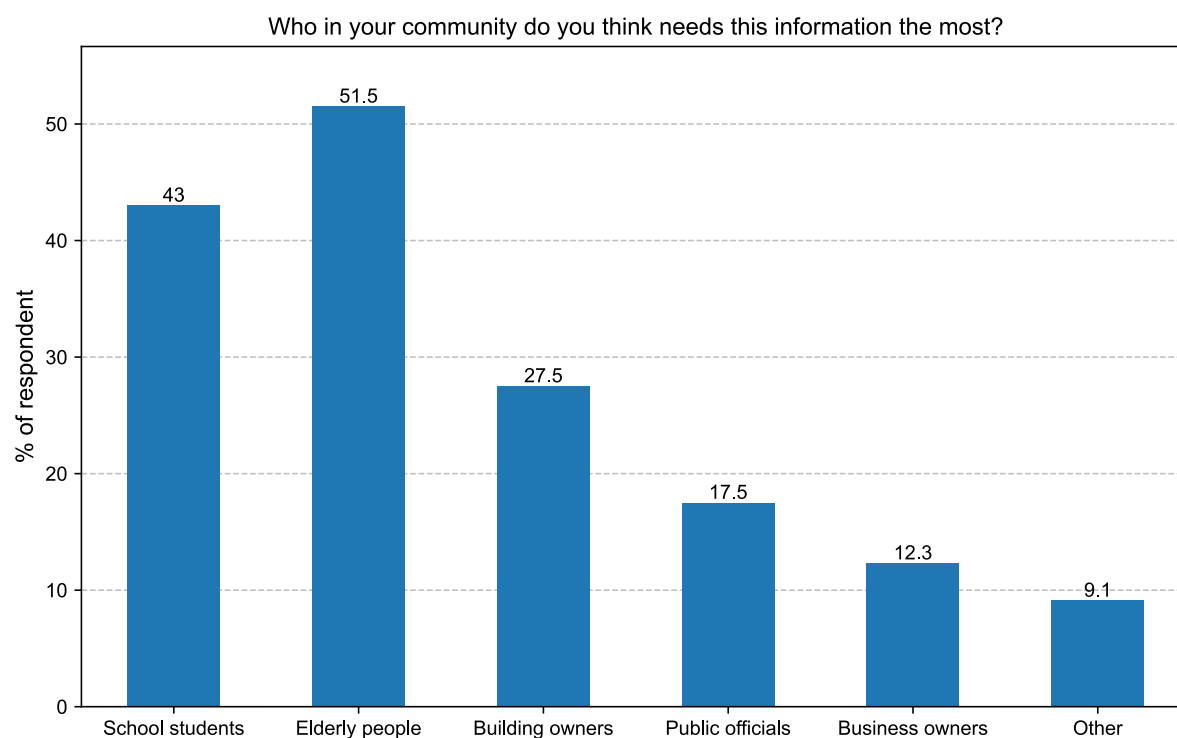


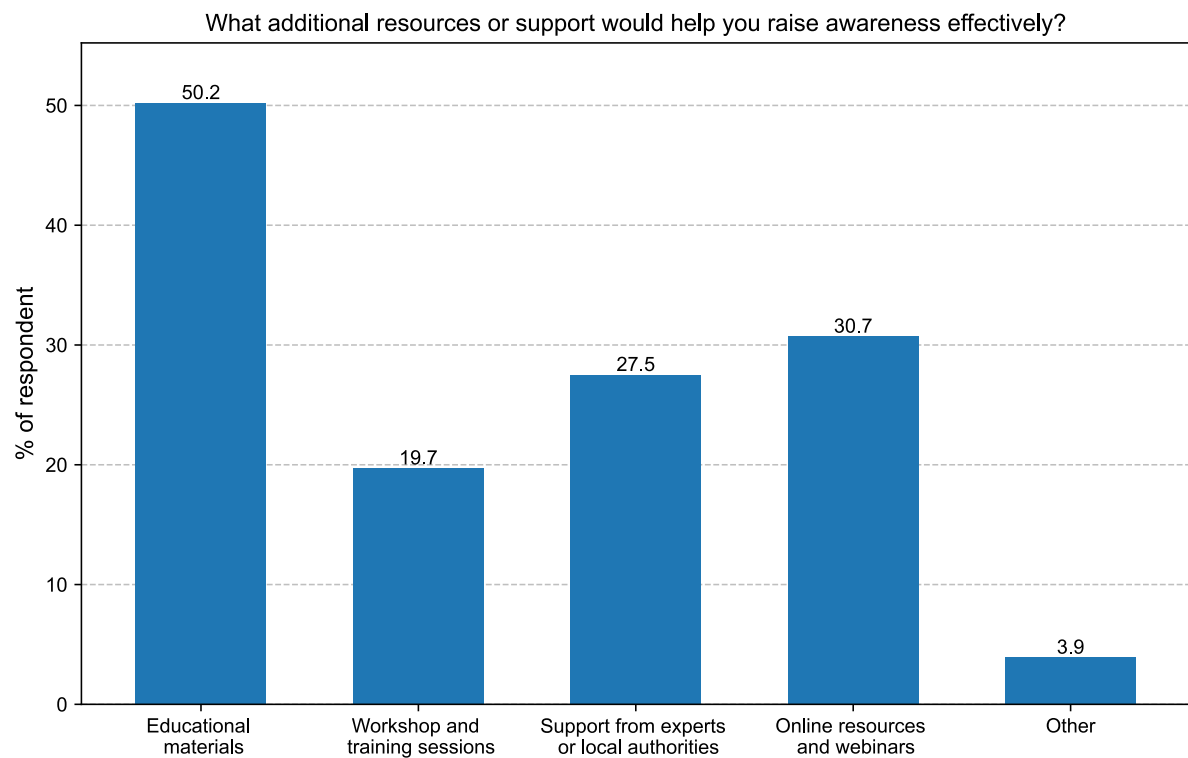
Figure S20: Word cloud (top) and frequency (bottom) plot of question 23: “What aspects of the exhibition did you find unsatisfactory?”



**Figure S21.** Participants' responses to question 26: *"How do you plan to share what you learned about earthquake preparedness and safety?"*. Multiple answers are allowed for this question.

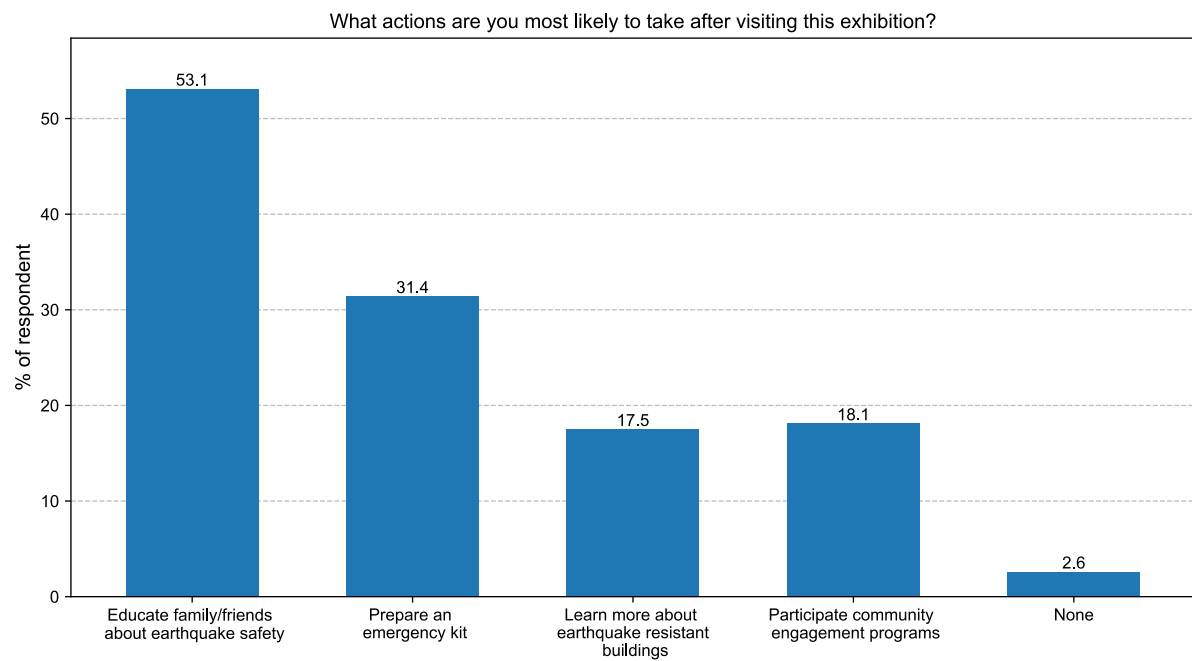


**Figure S22.** Participants' responses to question 27: *"How do you plan to share what you learned about earthquake preparedness and safety?"*. Multiple answers are allowed for this question.



**Figure S23.** Participants' responses to question 28: *"What additional resources or support would help you raise awareness effectively?"*. Multiple answers are allowed for this question.





**Figure S25:** Participant’s responses to question 31: *“What actions are you most likely to take after visiting this exhibition?”*

The goal of this survey is to understand local people's awareness regarding earthquakes and to further assess the impact of our program.

Survey: 1/2

### Section 1: Visitor Information

1. What is the first thing that comes to your mind when you hear the word "EARTHQUAKE"? Without thinking too much, write down your first thought. "भूकम्प" भन्ने शब्द सुन्ने बित्तिकै तपाईंको दिमाखमा के आउँछ ? तपाईंको पहिलो सोचाई लेख्नुहोस् ।

.....

2. Did you feel the earthquake that happened in 2015 or/and in 2023? वि.स. २०७२ वा २०८० सालमा गएको भूकम्प तपाईंले महशुस गर्नुभयो ?

☐ Yes ☐ No

3. What do you believe is the cause of earthquakes? तपाईंको विचारमा भूकम्पको कारण के हुन सक्छ ?

- ☐ Earth rotation पृथ्वीको घुमाई ☐ Tectonic plates' movement जमिनमुनिको चट्टान सर्नु ☐ Underground energy पृथ्वीभित्रको शक्ति  
☐ Earth carrying fish changes arm माछाले काध फेर्नु ☐ Other, please specify अन्य.....

4. In the event of an earthquake of  $M_w > 8$ , what do you think could happen to you? यदी  $\geq$  रेक्टर स्केल भन्दा माथीको भूकम्प आए तपाईंको अवस्था के हुन सक्छ ?

- ☐ I could get hurt घाईते हुन सक्छु ☐ I could be buried alive जिउँदै पुरिन सक्छु ☐ My home could collapse मेरो घर भत्किएको हुन सक्छ  
☐ I could lose the people I love मलाई माया गर्ने मान्छे गुमाउन सक्छु ☐ I could die मृत्यु हुन सक्छ ☐ Other, अन्य .....

5. How likely do you think it is that an earthquake larger than the Gorkha earthquake will occur in Nepal during your lifetime? तपाईंले आफ्नो जीवनमा वि.स. २०७२ सालको भूकम्प भन्दा ठूलो भूकम्प आउने सम्भावना कतिको देख्नुहुन्छ ?

- ☐ Impossible (0%) ☐ Very unlikely (10%) ☐ Unlikely (30%)  
☐ Equally likely or unlikely (50%) ☐ Likely (70%) ☐ Most likely (90%) ☐ I don't know

6. Would your house resist a major ( $M_w \geq 7$ ) earthquake? तपाईंको घरले विनाशकारी भूकम्प धेग्न सक्छ ?

☐ Yes ☐ No ☐ I don't know

7. Do all the members of your family know what to do and where to go during an earthquake? के तपाईंको परिवारको सदस्यलाई भूकम्पको समयमा के गर्ने र कहाँ जाने भन्ने कुरा थाहा छ ?

☐ Yes थाहा छ ☐ No थाहा छैन ☐ Partially अलि अलि थाहा छ

8. How do you plan on communicating with your family/friends after a large earthquake? भूकम्पलगत्तै साथी परिवारसँग कसरी कुरा गर्नुहुन्छ ?

☐ I will make a call them ☐ I will text them ☐ I will go to meet them

9. What do you think the level of risk for an earthquake is in your city? तपाईंको शहरमा भूकम्पको जोखिम कतिको छ भन्ने ठान्नुहुन्छ ?

☐ High धेरै ☐ Medium मध्यम ☐ Low थोरै

10. The preparedness for a major earthquake is the most important thing. Are you regularly discussing this topic with your family? ठूलो भूकम्पको पूर्व तयारी अति महत्वपूर्ण छ । के तपाईं यस विषयमा परिवारसँग नियमित छलफल गर्नुहुन्छ ?

☐ Yes ☐ No

11. Have you ever discussed the topic of earthquakes in school? के तपाईले कहिल्यै स्कूलमा भूकम्पको विषयमा छलफल गर्नुभएको छ ?

☐ Yes

☐ No

12. Earthquake-related knowledge (Tick all that apply) भूकम्प सम्बन्धी ज्ञान

☐ I know exactly when an earthquake will occur. मलाई भूकम्प कहिले आउँछ भन्ने थाहा छ ।

☐ I know earthquake cannot be prevented. भूकम्पको रोकथाम गर्न सकिदैन भन्ने कुरा मलाई थाहा छ ।

☐ I have participated in disaster risk education training or workshop. मैले विपद व्यवस्थापन सम्बन्धी शिक्षा-तालिममा भाग लिएको छु ।

13. Earthquake preparedness (Tick all that apply) भूकम्पको तयारी

☐ I think to come across an earthquake and remain alive depends on our luck. भूकम्पमा पर्नु र बाँच्नु हाम्रो भाग्यमा भरपर्छ ।

☐ I know it is important to share experiences and knowledge about earthquakes. भूकम्पको अनुभव ज्ञान बाँड्नु महत्वपूर्ण छ भन्ने थाहा छ ।

☐ I know the government will provide enough facilities after an earthquake and we will not face problems to survive.

भूकम्पको विपद् पछि सरकारले प्रशस्त सुविधा प्रदान गर्छ र हामीलाई बच्न कुनै समस्या हुँदैन भन्ने कुरा मलाई थाहा छ ।

☐ I trust in the government's reconstruction activities after a disaster. भूकम्पपछि सरकारको पुनर्निर्माण गतिविधिरूमा मलाई विश्वास छ ।

☐ It's important to talk about natural hazards with neighbors, friends and colleagues.

भूकम्पको बारेमा छिमेकी र साथीभाईसँग छलफल गर्नुको महत्व मलाई थाहा छ ।

14. Earthquake adaptation (Tick all that apply) भूकम्प अनुकूलता

☐ I am aware of the shelter areas and open space where you can evacuate/run in case of an earthquake.

भूकम्पको बेलामा जान सकिने खुला सुरक्षित ठाउँ कहाँ छन् भन्ने कुरा मलाई थाहा छ ।

☐ I have information about which government office needs to be contacted after an earthquake.

भूकम्पपछि कुन सरकारी निकायसँग सम्पर्क गर्ने भन्ने कुरा मलाई थाहा छ ।

☐ I have knowledge about earthquake prone areas. मलाई भूकम्पिय जोखिमयुक्त क्षेत्रको बारेमा ज्ञान छ ।

☐ I am getting enough information from government about earthquake adaptation.

मैले सरकारबाट भूकम्पसम्बन्धी प्रशस्त जानकारी पाइरहेको छु ।

15. Your Occupation: ☐ Student ☐ Teacher ☐ Local person ☐ Other.....

16. Your Age: ☐ १७ वर्षसम्म ☐ १८ देखि ३० वर्षसम्म ☐ ३१ देखि ४५ वर्षसम्म ☐ ४६ देखि ६० वर्षसम्म ☐ ६० वर्षभन्दा माथी



The goal of this survey is to understand local people's awareness regarding earthquakes and to further assess the impact of our program.  
Survey: 2/2

### Section 1: Visitor Information

1. What is the first thing that comes to your mind when you hear the word "EARTHQUAKE"? Without thinking too much, write down your first thought. "भूकम्प" भन्ने शब्द सुन्ने वित्तिकै तपाईंको दिमाखमा के आउँछ ? तपाईंको पहिलो सोचाई लेख्नुहोस् ।
2. Did you feel the earthquake that happened in 2015 or/and in 2023? वि.स. २०७२ वा २०८० सालमा गएको भूकम्प तपाईंले महशुस गर्नुभयो ?  
☐ Yes ☐ No
3. What do you believe is the cause of earthquakes? तपाईंको विचारमा भूकम्पको कारण के हुन सक्छ ?  
☐ Earth rotation पृथ्वीको घुमाई ☐ Tectonic plates' movement जमिनमुनिको चट्टान सन्नु ☐ Underground energy पृथ्वीभित्रको शक्ति  
☐ Earth carrying fish changes arm माछाले काध फेर्नु ☐ Other, please specify अन्य.....
4. In the event of an earthquake of  $M_w > 8$ , what do you think could happen to you?  
यदी ८ रेक्टर स्केल भन्दा माथीको भूकम्प आए तपाईंको अवस्था के हुन सक्छ ?  
☐ I could get hurt घाईते हुन सक्छु ☐ I could be buried alive जिउँदै पुरिन सक्छु ☐ My home could collapse मेरो घर भत्किएको हुन सक्छ  
☐ I could lose the people I love मलाई माया गर्ने मान्छे गुमाउन सक्छु ☐ I could die मृत्यु हुन सक्छ ☐ Other, अन्य .....
5. How likely do you think it is that an earthquake larger than the Gorkha earthquake will occur in Nepal during your lifetime?  
तपाईंले आफ्नो जीवनमा वि.स. २०७२ सालको भूकम्प भन्दा ठूलो भूकम्प आउने सम्भावना कतिको देख्नुहुन्छ ?  
☐ Impossible (0%) ☐ Very unlikely (10%) ☐ Unlikely (30%)  
☐ Equally likely or unlikely (50%) ☐ Likely (70%) ☐ Most likely (90%) ☐ I don't know
6. Would your house resist a major ( $M_w \geq 7$ ) earthquake? तपाईंको घरले विनाशकारी भूकम्प धेग्न सक्छ ?  
☐ Yes ☐ No ☐ I don't know
7. Do all the members of your family know what to do and where to go during an earthquake?  
के तपाईंको परिवारको सदस्यलाई भूकम्पको समयमा के गर्ने र कहाँ जाने भन्ने कुरा थाहा छ ?  
☐ Yes थाहा छ ☐ No थाहा छैन ☐ Partially अलि अलि थाहा छ
8. How do you plan on communicating with family/friends after a large earthquake? भूकम्पलगत्तै साथी र परिवारसँग कसरी कुरा गर्नुहुन्छ ?  
☐ I will make a call them ☐ I will text them ☐ I will go to meet them
9. What do you think the level of risk for an earthquake is in your city? तपाईंको शहरमा भूकम्पको जोखिम कतिको छ भन्ने ठान्नुहुन्छ ?  
☐ High धेरै ☐ Medium मध्यम ☐ Low थोरै
10. The preparedness for a major earthquake is the most important thing. Are you regularly discussing this topic with your family?  
ठूलो भूकम्पको पूर्व तयारी अति महत्वपूर्ण छ । के तपाईं यस विषयमा परिवारसँग नियमित छलफल गर्नुहुन्छ ?  
☐ Yes ☐ No
11. Have you ever discussed the topic of earthquakes in school? के तपाईंले कहिल्यै स्कूलमा भूकम्पको विषयमा छलफल गर्नुभएको छ ?  
☐ Yes ☐ No
12. Earthquake-related knowledge (Tick all that apply) भूकम्प सम्बन्धी ज्ञान  
☐ I know exactly when an earthquake will occur. मलाई भूकम्प कहिले आउँछ भन्ने थाहा छ ।  
☐ I know earthquake cannot be prevented. भूकम्पको रोकथाम गर्न सकिदैन भन्ने कुरा मलाई थाहा छ ।  
☐ I have participated in disaster risk education training or workshop. मैले विपद व्यवस्थापन सम्बन्धी शिक्षा-तालिममा भाग लिएको छु ।
13. Earthquake preparedness (Tick all that apply) भूकम्पको तयारी  
☐ I think to come across an earthquake and remain alive depends on our luck. भूकम्पमा पर्नु र बाँच्नु हाम्रो भाग्यमा भरपर्छ ।  
☐ I know it is important to share experiences and knowledge about earthquakes. भूकम्प अनुभव र ज्ञान बाँड्नु महत्वपूर्ण छ भन्ने थाहा छ ।  
☐ I know the government will provide enough facilities after an earthquake and we will not face problems to survive.  
भूकम्पको विपद् पछि सरकारले प्रशस्त सुविधा प्रदान गर्छ र हामीलाई वाञ्छ कुनै समस्या हुँदैन भन्ने कुरा मलाई थाहा छ ।  
☐ I trust in the government's reconstruction activities after a disaster. भूकम्पपछि सरकारको पुनर्निर्माण गतिविधिहरूमा मलाई विश्वास छ ।  
☐ It's important to talk about natural hazards with neighbors, friends and colleagues.  
भूकम्पको बारेमा छिमेकी र साथीभाईसँग छलफल गर्नुको महत्व मलाई थाहा छ ।
14. Earthquake adaptation (Tick all that apply) भूकम्प अनुकूलता  
☐ I am aware of the shelter areas and open space where you can evacuate/run in case of an earthquake.  
भूकम्पको बेलासा जान सकिने खुल्ला सुरक्षित ठाउँ कहाँ छन् भन्ने कुरा मलाई थाहा छ ।  
☐ I have information about which government office needs to be contacted after an earthquake.  
भूकम्पपछि कुन सरकारी निकायसँग सम्पर्क गर्ने भन्ने कुरा मलाई थाहा छ ।  
☐ I have knowledge about earthquake prone areas. मलाई भूकम्पय जोखिमयुक्त क्षेत्रको बारेमा ज्ञान छ ।  
☐ I am getting enough information from government about earthquake adaptation.  
मैले सरकारबाट भूकम्पसम्बन्धी प्रशस्त जानकारी पाइरहेको छु ।

15. Your Occupation: ☐ Student ☐ Teacher ☐ Local person ☐ Other.....

16. Your Age: ☐ १७ वर्षसम्म ☐ १८ देखी ३० वर्षसम्म ☐ ३१ देखी ४५ वर्षसम्म ☐ ४६ देखी ६० वर्षसम्म ☐ ६० वर्षभन्दा माथी

## Section 2: Exhibition Experience प्रदर्शनी अनुभव

17. What aspects of the exhibition did you find most useful? (Select all that apply.) प्रदर्शनीको कुन पक्ष तपाईंलाई सबैभन्दा उपयोगी लाग्यो ?

- ☐ Causes of earthquakes ☐ Seismic activities in Nepal  
☐ Earthquake knowledge ☐ What to do before, during, and after an earthquake

18. Rate the effectiveness of the exhibition in improving earthquake knowledge and preparation (1=Not at all, 5=Extremely effective): भूकम्पको ज्ञान र भूकम्प तयारीमा सुधार गर्न प्रदर्शनीको प्रभावकारिताको मूल्याङ्कन गर्नुहोस् ( १ = प्रभावकारी छैन, ५ = अत्यन्तै प्रभावकारी ):

- ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

19. Did the exhibition change your perception of earthquake risks and preparedness?

के प्रदर्शनीले भूकम्प जोखिम र तयारीको बारेमा तपाईंको सोचाई परिवर्तन गर्‍यो ?

- ☐ Yes, significantly ☐ Somewhat ☐ Not much ☐ No

20. Which new information or skills did you learn from this exhibition? यस प्रदर्शनीबाट तपाईंले कुन नयाँ कुरा थाहा पाउनुभयो ?

.....

21. After attending the exhibition, do you feel more prepared to handle an earthquake?

प्रदर्शनीमा भाग लिएपछि तपाईं भूकम्पको सामना गर्न अब तयार महशुस गर्नुभयो ?

- ☐ Yes ☐ Somewhat ☐ No

22. What did you like most about the exhibition? प्रदर्शनीमा तपाईंलाई सबैभन्दा धेरै के मन पर्यो ?

.....

23. What aspects of the exhibition did you find unsatisfactory? प्रदर्शनीको बारेमा तपाईंलाई के मन परेन ?

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24. Would you recommend this exhibition to others? के तपाईं यो प्रदर्शनी अवलोकन गर्न अरुलाई सिफारिश गर्नुहुन्छ ?

- ☐ Yes ☐ Maybe ☐ No

25. Will you share the earthquake knowledge you learned today with people in your community?

के तपाईं आज सिकेको भूकम्पसम्बन्धी ज्ञान समुदायमा बाड्नुहुन्छ ?

- ☐ Yes, with many people (n>10) ☐ Yes, with some people (n>5) ☐ Yes, only with parent ☐ No at all

26. How do you plan to share what you learned about earthquake preparedness and safety? (Select all that apply.)

भूकम्पको तयारी र भूकम्प सुरक्षाको बारेमा सिकेका कुराहरू अरुलाई कसरी बताउनुहुन्छ ?

- ☐ Talking to family and friends ☐ Sharing on social media ☐ Teaching at school/university  
☐ Conducting community discussions ☐ Other (please specify) .....

27. Who in your community do you think needs this information the most? (Select all that apply.)

तपाईंको समुदायमा कसलाई भूकम्पसम्बन्धी जानकारी सबैभन्दा बढी आवश्यक छ जस्तो लाग्छ ?

- ☐ School students ☐ Elderly people ☐ Homeowners/building owners  
☐ Public officials ☐ Business owners ☐ Other (please specify) .....

28. What additional resources or support would help you raise awareness effectively?

भूकम्पसम्बन्धी चेतनास्तर बढाउन तपाईंलाई कुन थप थोतले सहयोग गर्छ ?

- ☐ Educational materials (brochures, posters, videos) ☐ Workshops and training sessions  
☐ Support from experts or local authorities ☐ Online resources and webinars ☐ Other.....

29. Do you have additional comment or feedback? प्रदर्शनीको बारेमा तपाईंसँग थप प्रतिक्रिया छ ?

.....

30. After attending this exhibition, are you more likely to take steps for earthquake preparedness (e.g., creating an emergency plan, securing household items, spreading awareness)? यस प्रदर्शनीमा भाग लिएपछि तपाईंले भूकम्पको तयारीको लागि काम गर्नुहुन्छ ?

- ☐ Yes, definitely ☐ Maybe ☐ Not really ☐ No

31. What actions are you most likely to take after visiting this exhibition? यो प्रदर्शनीको भ्रमण पछि तपाईंले के गर्ने सम्भावना बढी छ ?

- ☐ Educate family/friends about earthquake safety ☐ Prepare an emergency kit  
☐ Learn more about earthquake-resistant buildings ☐ Participate community awareness programs  
☐ None ☐ Others, please specify: .....