

Informatics Institute of Technology



INFORMATICS
INSTITUTE OF
TECHNOLOGY

Foundation Certificate in Higher Education

Interim Project Report

Module: DOC330 Designing Innovative Solutions

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Assessment Type: Group Coursework

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Abstract

The company "4U solutions" is compelled to create the most effective and simple solution for reducing the number of people killed or injured because of natural disasters. They aspire to be the most reliable source of information and to get that knowledge to those who require it most urgently. This issue was brought to our attention because the majority of people died as a result of the tsunami in 2004 so because they were unsure of what to do.

People do not know what to do when there is a natural disaster and are left helpless after the disaster to act on their own. The news is the only place where people may learn about disasters and receive warnings. However, not everyone has access to this facility; in rural regions, individuals often receive warnings and news about the occurrence very late, making them victims of the disaster. When their houses fall, some people are unsure of where to go, who to contact, or what to do to save themselves and their families.

An application was designed to solve these problems. Through this application, people can get quick information from an alert before a natural disaster strikes and be prepared for the situation while minimizing damage.

Acknowledgement

Firstly, we would like to express our gratitude to all of our lecturers, (specially our module leader Mrs. Aniqah Zeezan and tutor Ms. Tharushi Sandamali) colleagues and our institute Informatics institute of Technology, for completing our Report.

And specially our loving parents and our family members for their unwavering support.

We would like to express our gratitude to all those who helped in many ways to complete this assignment.

Thank You!

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CHAPTER 1: Introduction and Description of the Project

The company “4U solutions” finds the urge to find the most effective and easiest solution to reduce the number of victims that die due to natural disasters. These unnecessary victims of natural disasters can be easily avoided if they get the right information at the right time. The "4U solutions" strive to become the most trustworthy source of information and to get that information to the people who need it direly.

Natural disasters kill an average of 60,000 people per year globally. That is almost 0.1 percent of our world’s population. Developers try their hardest to reduce these statistics by doing everything they can to avoid as many deaths as possible by informing when natural disasters may occur and what needs to be done while it's occurring. Our team also sees the urge of helping the victims of these natural disasters as much as possible. Developers give donating opportunities for the post-natural disaster victims. Our team also takes into consideration the people who become homeless because of the immense property damage that takes place due to these natural disasters. Daily weather forecasting is also something our team would like to keep everyone informed about since it's never bad to be properly informed and to prepare accordingly.

This problem was brought to our attention because most people who stood victim to the tsunami that took place in 2004 was because they were not sure what they were supposed to do. This resulted in many unnecessary deaths that we cannot simply look over. The solution is making an app to provide weather information and natural disaster alerts. Developers are trying their hardest to inform everyone what they are supposed to do when any natural disaster comes their way. This way even if an area is very prone to natural disasters, they will know exactly what to do and how to do it Being misinformed and not being informed can get people killed and that is what our team would like to avoid at 4U solutions.

CHAPTER 2: Problem Specification

2.1 What is a Disaster?

A natural disaster is an event that occurs unexpectedly and causes harm to society. Many natural catastrophes cause harm to the environment as well as the people who live there.

2.2 There are three types of disasters.

- Small scale disaster
- Medium-scale disaster
- Large scale disaster

2.2.1 Types of disasters

- Earthquakes.
- Volcanoes.
- Landslides.
- Famines & Droughts.
- Hurricanes, Tornados, and Cyclones.
- Extreme precipitation and flooding.
- Extreme Temperature (Heat & Cold)
- Wildfires

2.3 How people feel about natural disaster.

Occasionally, people keep on feeling restless, terrified, and risky for quite a long time after the disaster, despite being truly protected. This is a natural reaction to a terrifying occurrence, but it might exacerbate a person's distress. Some youngsters may likewise begin to feel unreliable about the future.

2.3.1 What is their real problem about the disaster?

Loss of utilities like electricity and water. Debris cleanup and waste management solutions. Problems with infrastructure, such as road closures and communication breakdowns. The impoverished are usually the hardest hit because they have the fewest resources to cope with and reconstruct.

2.4 Extra points

- If a natural disaster takes place people do not know what to do in an emergency because they do not have proper guidelines or instruction. People might get panicked or become nervous and they might take the wrong decision.
- Government news will be delayed to people who live in rural areas. This will lead to a bigger problem for poor people.

2.5 Types of People face due to disasters.

1. Late Warnings and News.

This has been one of the major problems for the people to tackle. The only source where people can receive news about disaster and their warnings are from the news. But not everyone has that facility, especially in rural areas, people receive warnings and news about the incident very lately which makes them the victim of the disaster.

2. People are unaware of what do to during a disaster.

Another problem for people is that they do not know what to do when there is a natural disaster and are left helpless after the disaster to act on their own. This is one thing that has no solution because, when there is unpredicted chaos in an area, people start panicking. When this happens, they fail to think properly about what to do next. Even after the chaos, when all their houses are collapsed, some people do not know where to go, whom to contact and what to do to rescue themselves and their family.



Figure 1-Flooded in the Sri Lanka

3. Other People's Donation and Charity.

When a disaster happens in a particular area, the rich people and the other people who wish to help them are unaware of how to help them. This happens because the news and social media only show which area was affected by which disaster. They do not tell how to help those affected people and what needs do these affected people require. So, these people who wish to donate are left clueless on to whom they must send their donation to and how they are affected so they can send their charities based on their level of damage.

CHAPTER 3: Solution Outline

Disaster Survivor is the application that is presented as the solution for this problem. The weather information and emergency disaster alerts publish through this app are collected from the government weather department of Sri Lanka. Information is collected with their permission by asking or accessing the servers of the department. Using these information by tracking real-time hazards, taking satellite images, and using AI to find the locations of users this app is developed to identify the users who are near those hazards. Before using the application, the user needs to give the address, location, and other required information. The user needs to update the location if he travels to another place, or the user can turn on the location. When the user installs this app, the user receives safety messages and alerts about emergency disaster situations (ex: earthquakes, tsunami, floods, landslides, heavy rain, violent wind) and daily weather forecasting related to his area. Not only his area but also user receive notifications about the nearest natural disasters from this application. Using the satellite images feature users can view disaster coverage of the real-time map. Not only alerts and safety messages but also with these features this app will become an information source which provides news to the public. If the user has to face an emergency disaster situation like an earthquake the app provides evacuation advice/instructions according to that situation. And also, in these kinds of situations, people cannot decide what safe places to protect their lives are. In this case, also the application provides which areas have the most impacts from this disaster and the app shows safety areas and the path to get away from that situation under the finding path feature. This app uses AI to identify the real locations of the users. Using this feature the application has the information of the people who need help and where they stay at that moment. These information are shared with the rescue operation team of the government to help the people. The application shares information about nearest hospitals and emergency contacts that people need in these kinds of situations. Besides these key features, this application gives opportunities to donate. This app shares information about the centers that collect donations to help the people. And also, this app provides all users to donate their money using an online payment method to the official collection of donations of this app. Disaster survivor is an application that creates using modern technology to help the people in the country. This app can be used as an alert provider, news provider and it consists of so many features that can help people who faced natural disasters. **"Refer the appendix for Gap analysis"**.

CHAPTER 4: Key Benefits

1. Real-time Updates.

It is important to have whether emergency or not news fast. Some information can be communicated via radio channels, tv channels of newspapers. But they are spreading slowly. Now, these days, smartphones are a very common device for people. The application can notify weather forecasting news, Emergency news, and some other main news of the country ("It's like putting a curfew in the country.") through our app. The application can real-time update the weather through it. Then users can simply find their information.

2. Practicality.

These days the modern world is highly connected. Leveraging mobile technology for emergency response simply makes sense. Most people likely take their smartphones, laptops, tablets nearly everywhere they go. During an emergency, these devices are the first place they will look for new information - making them an ideal fit for crisis planning.

3. Ease of Use.

These days mobile apps/software are on the complex and high technology and its' first priority is ease-of-use. Nowadays society is talking about Emergency planning apps, there is no difference, but they are simple, fast, and also easy to use when consumer in during the fast-paced and panicked moments during the fast-paced and panicked moments of a disaster.

4. Speed of Delivery.

If want to keep people safe during emergency situations like disasters, time is most important. The emergency notification system will be enabled to send correct alert messages for the users. The messages will thin and fast.

5. Versatility.

This app has not only emergency alerts but also many other special features. With this app, users can find weather reports, Medicare information, emergency numbers. As well as this app shows the way to escape in case of an accident. In this case, this is a versatile tool.

6. Strict Security.

Developers take great responsibility for security. Because our crew is bound to protect all the personal details of our users. Their address, location for things like this.

The application has a lot of security because of the data-saving server. Users can further enhance the security of their accounts through two-factor authentication.

7. All-Hazards Communication.

Especially during natural disasters, these emergency apps have helped to who got in trouble from disasters people find evacuation routes, locate shelters, and even call for help. Also, these apps serve as an important resource to share information. Apps can connect with the government emergency response systems and assist. Some high-tech apps can even tap into radio and tv frequencies as an additional communication tool.

8. Formal Communication.

The interface of this app is user-friendly. It is also systematic. The crew has tailored this to suit anyone. Also, regular notifications and pushing alerts are sent through our app in the event of an accident. Also, through the news edition here, anyone can know about the major events that took place in the country and the major disasters that are happening in the world. Our systematization is done by using separate people for each of our missions. Personally, build up and train them to do their job well.

9. Targeted Audience.

When a natural disaster strikes, The information basically sends only to the people who target. That is, for example, if a tsunami occurs, the application will send a message/alert to the people in the coastal areas. The application can also send this alert to people if they are in a coastal area at that time, even if their place of residence is elsewhere. Our team then sends it as 'news' to people in other areas who use our app.

Conclusion

Natural disasters in the world as well as in Sri Lanka cause extensive damage to life and property. This is because most people are unaware of a natural disaster before it strikes. Also, people are misled by true and false news. This problem was brought to our attention because most people who stood victim to the tsunami that took place in 2004 was because they were not sure what they were supposed to do. This resulted in many unnecessary deaths that cannot simply look over.

The company "4U Solutions" started this project with the aim of preventing it. Our team made an app called "Disaster Survivor" to solve this problem. This app sends people an alert before a natural disaster strikes and lets them out.

It also provides weather forecasting, natural disaster news, and major events in Sri Lanka. Users can also donate here through the donate option. It also allows users to easily survive a natural disaster through options such as emergency numbers and finding paths.

4U solutions strive to become the most trustworthy source of information and to get that information to the people who need it direly. Our crew tries their best to reduce the damage of people and property by doing everything our crew tries their best to reduce the damage of people to avoid as many deaths as possible by informing us when natural disasters may occur and what needs to be done while it is occurring.

Time is of the essence the people want to be safe in emergencies like disasters. This will enable the emergency notification system to send accurate alert messages to users. When they talk about emergency planning apps, it makes no difference, but they are simple, fast, and easy to use when customers are panicked in times of disaster.

Finally, this is a very important tool that helps people in everyday life and saves a large number of lives due to natural disasters.

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Appendices

Workload Matrix	
Student ID/Name	Task
20200467 Heshan Nipuna	Key benefits, Conclusion, Abstract, Acknowledgement, Google form and Report editing.
20200490 Maneesha Shehara	Key benefits, Abstract
20200150 Shanjay Sharma	Problem specification
20200593 Abbas Sirajul	Problem specification
20200519 Jinithi Yasami	Solution outline
20200547 Kavindu Romel	Introduction

Table 1-Workload Matrix

Meeting Minutes & Meeting Agenda			
Date	Time	Duration	Meeting Minutes
2021.06.01	19:00pm	1 hour	Getting to know each other.
2021.06.10	19:30pm	2 ½ hour	Exploring the IPR specification and Dividing the Workload.
2021.06.12	4:00pm	1 ½ hour	Find out what works for each other's topics.
2021.06.16	20:00pm	2 hours	Talking about what information has been gathered so far for the topic field and handing over to the group leader.
2021.06.22	21:00pm	-	View the finalized report and submit.

Table 2-Meeting Minutes & Meeting Agenda

Idea Validation Survey

6/22/2021

Natural Disaster survey

Natural Disaster survey

This is a small survey for our project's Idea Validation. We are in the process of making an app for early warnings of Natural disasters. You can answer the below questions to help us.

* Required

1. How often do you watch the news? *

Mark only one oval.

- ☐ Daily
☐ Once or Twice a week
☐ Very rarely

2. How do you have been notified about previous natural disasters? *

Mark only one oval.

- ☐ Television
☐ Radio
☐ Social Media

3. What are the most common natural disasters in your area? *

4. Would you like if an application develop to provide early warnings for you, before a disaster? *

Mark only one oval.

- ☐ Yes
☐ No

5. How long does it take for the emergency services to come for help during disasters?

6. How prone is your area to natural disaster?

7. Do you know what to do when a natural disaster occurs? *

8. Do you know the hotlines to call in emergencies? *

Mark only one oval.

☐ Yes

☐ No

9. What is the safest place for you to evacuate to in a natural disaster? *

10. How long did it take for u to recover from the last disaster?

11. What do you think you should have done during the last natural disaster?

6/22/2021

Natural Disaster survey

12. Please share any additional comments or suggestions that you would expect natural disaster application?

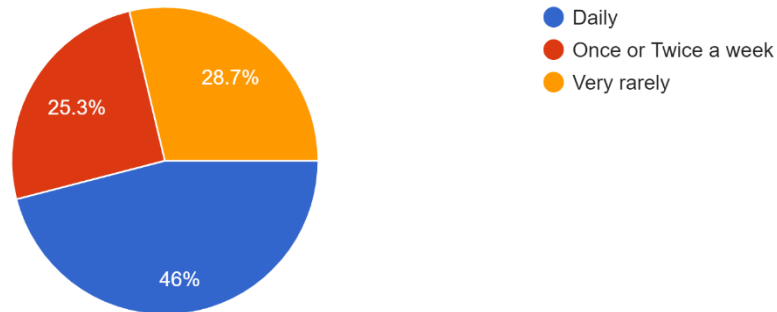
Thank You for Attending our survey

This content is neither created nor endorsed by Google.

Google Forms

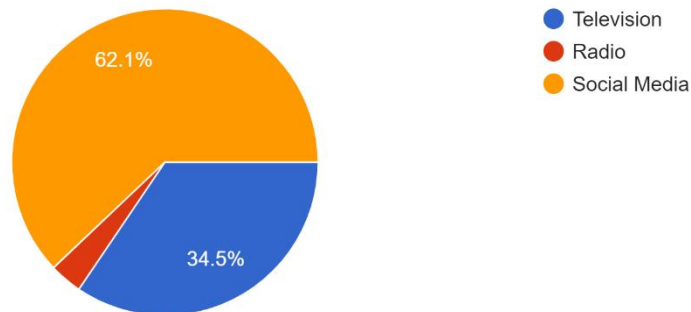
How often do you watch the news?

87 responses

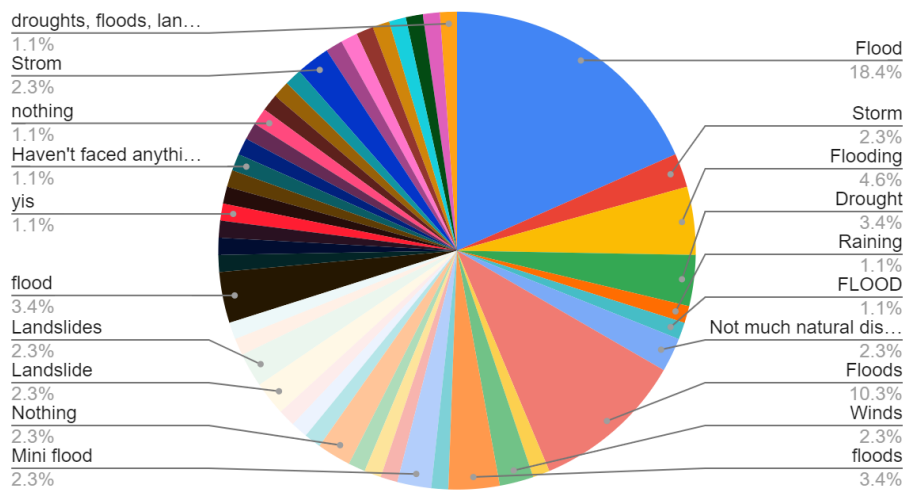


How do you have been notified about previous natural disasters?

87 responses

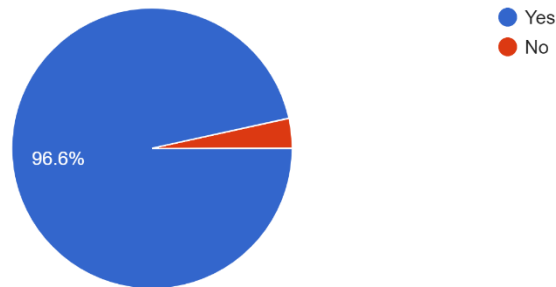


What are the most common natural disasters in your area?

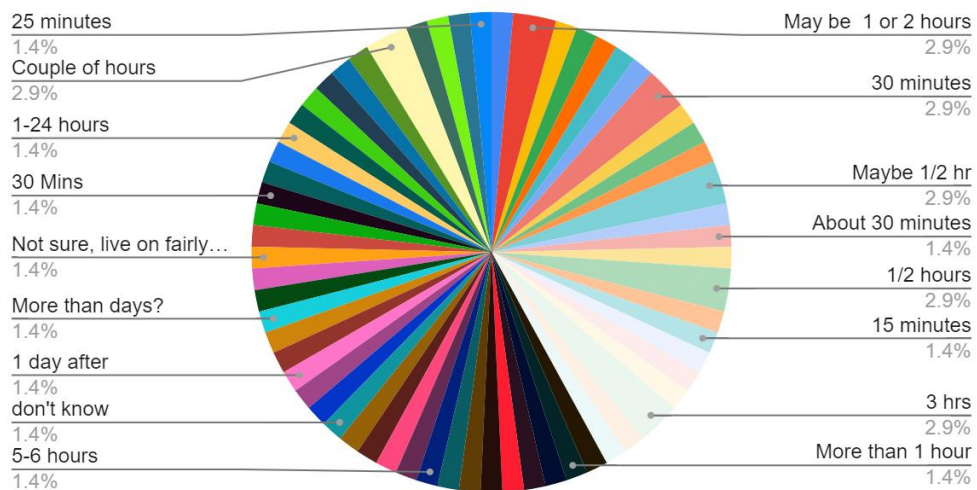


Would you like if an application develop to provide early warnings for you, before a disaster?

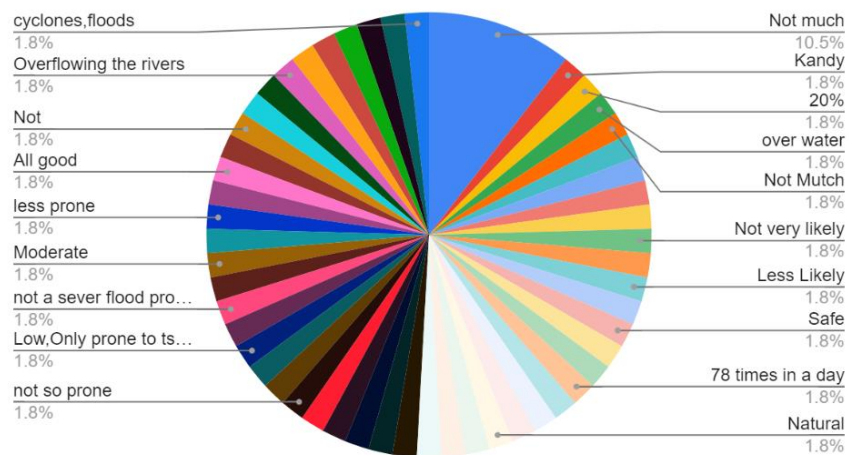
87 responses



How long does it take for the emergency services to come for help during disasters?

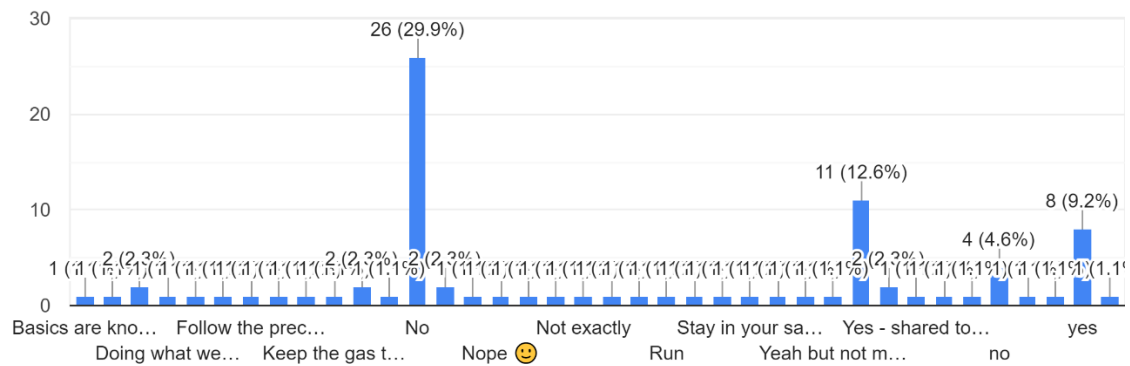


How prone is your area to natural disaster?



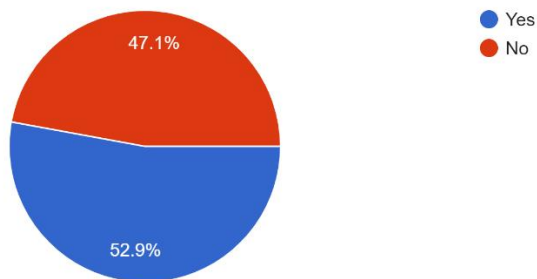
Do you know what to do when a natural disaster occurs?

87 responses

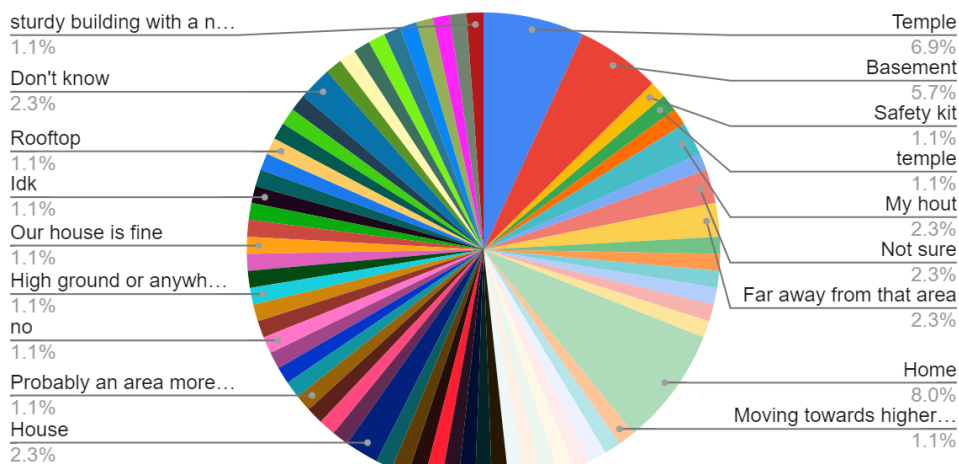


Do you know the hotlines to call in emergencies?

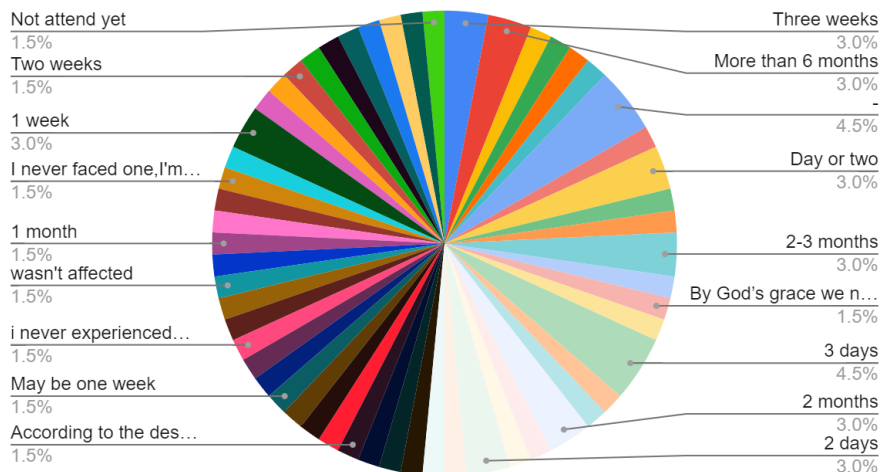
87 responses



What is the safest place for you to evacuate to in a natural disaster?

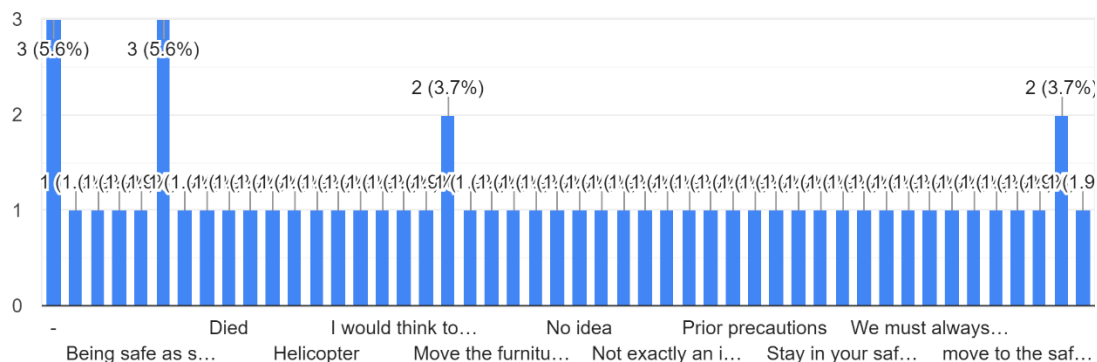


How long did it take for u to recover from the last disaster?



What do you think you should have done during the last natural disaster?

54 responses



Please share any additional comments or suggestions that you would expect natural disaster application?

