



# Natural Disaster Awareness in Japan and California: A Comparative Study

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# Outline

- Significance of the Study
- Research Questions
- Literature Review
- Research Method
- Research Findings
- Conclusion
- Limitations and Future of the Study
- Bibliography
- Acknowledgement

# Significance of the Study

- Jennifer participated in a natural disaster prep course as part of her orientation during her study abroad in Japan.
- Nataly was given the opportunity to learn from the local firefighters in Japan in what to do in case of an emergency.
- From our experiences, we noticed a large difference on natural disaster education between Japan and United States.
- Our goal in our research is to analyze the strengths and weaknesses of Japan's and California's natural disaster prep and education, and how media affects students' awareness and global warming.

# Research Questions

1. What are students' views on natural disasters and disaster preparation?
2. How does the media contribute to students' awareness of natural disasters?

# Literature Review Outline

- **Natural Disasters**
  - Categories
  - Effects and their Severity
  - Major Types and Frequency
    - Japan and California
- **Education**
  - Natural Disaster Preparation and Education
    - America
    - Japan
  - Preparation Guides
    - California
    - Japan
- **Media's Role in Natural Disasters**
- **Global Warming's Impact**
  - Media in Global Warming
- **Government in Global Warming**
  - The Paris Agreement
  - Kyoto Protocol

# Natural Disaster Categories

- There are six in total, but the most common three: **geophysical**, **hydrological**, and **climatological**

Category	Definition	Example
<b>Geophysical</b>	Events originating from solid earth.	Earthquakes, volcanic eruptions, mass movement (dry)
<b>Hydrological</b>	Events caused by vast changes in the normal water cycle and/or overflow of bodies of water caused by wind set-up.	Flood, mass movement (wet)
<b>Climatological</b>	Events caused by a large variability of climate change.	Extreme temperatures, droughts, wildfires



(Below, Wirtz, and Guha-Sapir, 2009)

# Top 5 Major Natural Disasters\*

Rank	Japan	California
1	Storms	Wildfires/ Forest fires
2	Floods	Floods
3	Earthquakes	Storms
4	Landslides	Landslides/Mudslides
5	Volcanic Eruptions	Earthquakes

(EM-DAT, 2016)

(FEMA, 2017)

\*measured by amount of damage and number of people affected

# Major Natural Disaster Frequency\*

## California

- 8 fires
- 2 land/mudslides
- 8 floods
- 3 earthquakes
- 5 storms

- 5 fires
- 5 land/mudslides
- 7 floods
- 3 earthquakes
- 6 storms

- 5 fires
- 5 land/mudslides
- 5 floods
- 3 earthquakes
- 4 storms

- 2 fires
- 2 earthquakes
- 4 floods
- 4 storms

(FEMA, 2017)

## Japan

- 8 storms
- 5 land/mudslides
- 5 floods
- 6 earthquakes
- 3 volcanic eruptions

- 10 storms
- 4 land/mudslides
- 5 floods
- 4 earthquakes
- 3 volcanic eruptions

- 9 storms
- 1 land/mudslides
- 9 floods
- 8 earthquakes
- 1 volcanic eruptions

- 6 storms
- 4 earthquakes
- 5 floods
- 1 landslide
- 1 volcanic eruption

(EM-DAT, 2016)

1980-1989

1990-1999

2000-2009

2010-2016

\*Numbers of Large-scale natural disasters



# Natural Disaster Preparation in American Education

- 95% of all school districts have safety plans, which include teachers teaching students how to respond to a natural disaster
  - However, it can be <sup>(American Academy of Pediatrics, 2008)</sup> difficult for teachers to take time to teach safety measures to their students because of schools' focus on examinations
  - After school activities can be used instead
    - e.g. playing educational board games such as "Riskland" or watching a music video on earthquakes called "Grandpa Quake"

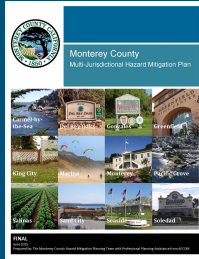


# Natural Disaster Preparation in Japanese Education

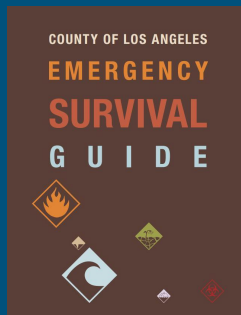
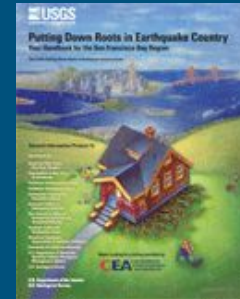
- Government promotes disaster education in schools for students as early as the third grade
  - Introduces specific lessons such as evacuation drills, community exploration and building safety inspections
- National Curriculum Standards want to include content on natural disasters through other school subjects
  - Teachers integrate disaster and geographic education to show students the relationship between natural disasters and the environment



# Natural Disaster Preparation Guide: California



- Monterey Guide
- Title: Monterey County Multi-Jurisdictional Hazard Mitigation Plan
- Published in 2015 (co.monterey.ca.us, 2017)
- San Francisco Guide
- Title: Putting Down Roots in Earthquake Country: Your Handbook for the San Francisco Bay Region
- Published in 2005 (usgs, 2005)



- Los Angeles Guide
- Title: County of Los Angeles Emergency Survival Guide
- Published in 2015 (ESP FOCUS, 2015)

# Preparation Guides: California

## Similarities

- Contains **maps, forms** and **other resources** for planning in the case of a natural disaster
- Emphasizes the importance of **being prepared** in any situation during a natural disaster

## Differences

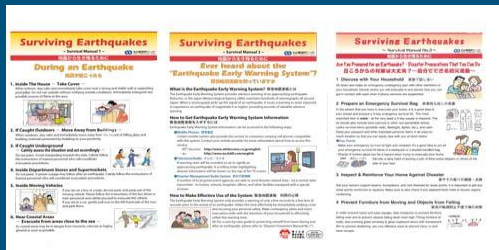
- **Monterey:** Guide is printed in **English only**; 20% of the full document discusses about natural disaster preparation
- **San Francisco:** Available in 5 languages; mainly focuses on earthquake preparation;
- **Los Angeles:** Colorful and easy to navigate; accessible through **internet only**

# Natural Disaster Preparation Guide: Japan



- Tokyo Prefecture Guide
- Title: Disaster Prevention Tokyo
- Published in 2013 (Tokyo Metropolitan Government, 2015)

- Ishikawa Prefecture Guide
- Title: Disaster Prevention Guidebook for Foreigners
- Published in 2008 (IFIE, 2008)



- Nagoya Prefecture Guide
- Title: Disaster Prevention Manual
- Published in 2008 (Nagoya International Center, 2017)

# Preparation Guides: Japan

## Similarities

- **Detailed information** and instructions for being prepared in any situation during a natural disaster
- Available in **multiple languages**
- Accessible through **different mediums** such as online or print

## Differences

- **Tokyo Metropolitan:** Evacuation location information = **available online** and in **Japanese only**
- **Ishikawa Prefecture:** Covers very **basic** natural disaster preparation.
- **Nagoya Prefecture:** Preparation guides are separated into **different pamphlets**
  - Most **outdated** of the three

(Tokyo Metropolitan Government, 2015; IFIE, 2008; Nagoya International Center, 2017)

# Media's Role in Natural Disasters

Media has been an **important tool** in society. From printed news to online social media, it has been a source of information to keep up with the advancements of the world.

(FEMA, 1999)

	Pros	Cons
Television news	Provides <b>more powerful and visual coverage</b> and <b>quicker</b> to relay information to the masses.	<b>Strict</b> on broadcast <b>times</b> and <b>schedules</b> ; and tempted to distort or bias reportage in effort to <b>"sell"</b> .
Radio	Focus on <b>the immediacy</b> to convey information to the public and get the authorities.	Tend to produce <b>short</b> reports.
Printed News (ex. Newspaper)	Provide <b>much more depth</b> information and <b>easy to access</b> to past articles and records.	<b>Highly dependent</b> on any <b>forms of communication</b> tool to inform the publishing companies.

(Miles and Morse, 2006)

# Media's Role in Natural Disasters (cont.)

## Positive

- Supplying **important and needed information** to the people.
- Disseminates information **on preparedness measures** for future similar disasters.
- **Inspire** volunteerism and variety of donations.
- Discloses **needs for improvement** in governmental response.

## Negative

- Providing **inaccurate information**.
- Not being able to receive information from the main source .
  - **Lacking the ability** to rely all of the information.
- Shift the information **to attract more viewers**.
- **Not being in neutral** position.

(Ali, 2013; FEMA, 1999)



# Media's Role in Natural Disasters (cont.)

## Media vs. Government

- Media restriction and limitation of freedom of the press
  - U.S – ranked 42; Japan – ranked 72 (Out of 180 countries) (rsf.org, 2017)

### Japan

- Heavily restricted information to the public in the 1980's
    - Japan's National Information Disclosure Law (2001): legally enforces the right to access and request government official information.
      - Government is not required to take any proactive steps to publish or make documents available publicly
- (Repeta and Schultz, 2002)

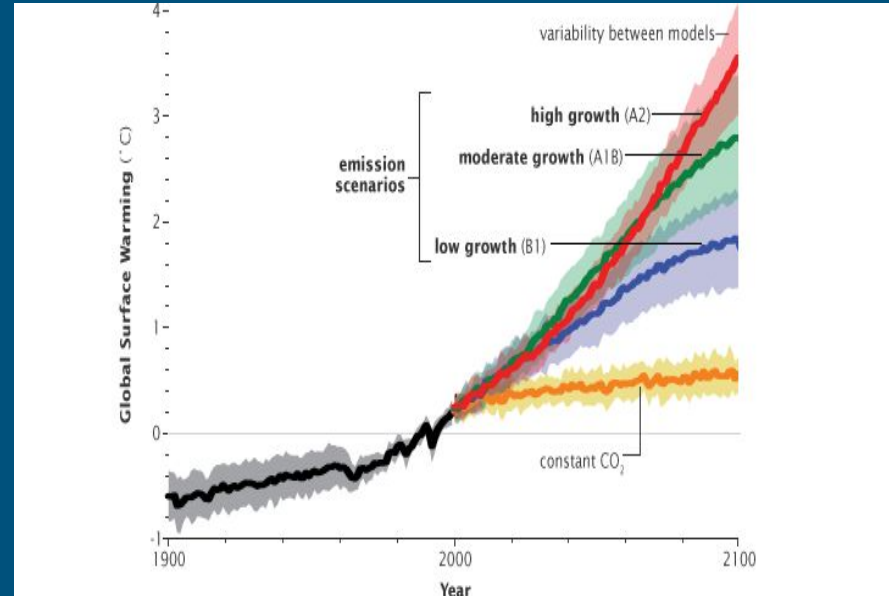
### USA

- Congressional laws protects media expression (Repeta and Schultz, 2002)
    - However, American journalists' right to protect their sources is not guaranteed
    - Recently, the media has been targeted by the new administration for their "false reporting"
      - Multiple media sources blocked, limiting information to public
- (rsf.org, 2017)

# Global Warming and Media (Cont.)

- Global warming: **rapid increase** in Earth's average surface temperature
  - Human emissions of **greenhouse gases** are largely to blame for increase in climate change
- Effects of global warming include:
  - Rising sea levels
  - Pressured co-existence in ecosystems for plant and animal life
  - Amplified coastal erosion
- **Temperatures** can **continue to increase** in the future, if government does not take action.

(Riebeek, 2010)



# Global Warming and Media

## America

- Media coverage **affects public opinion** on global warming
  - Conservative media outlets believe that global warming **does not exist**
  - Liberal media outlets **side with scientific evidence** of global warming's existence

## Japan

- **Influence from media coverage** – usually **short-term**
  - **International politics** get more media coverage **than global warming**
  - Although media coverage increases, news articles **can be neglected**, if not found on front page

(Hmielowski et al, 2013; Sampei & Aoyagi-Usui, 2008)

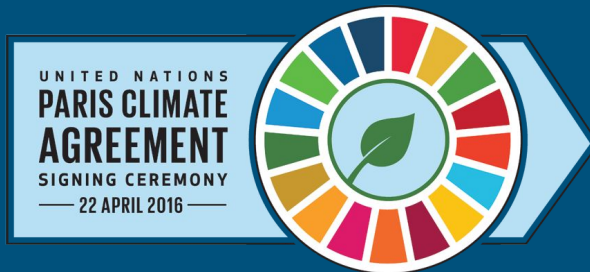
# Government in Global Warming

The following agreements were created by the United Nations Framework Convention on Climate Change:

(UNFCCC.int, 2017)



**The Kyoto Protocol (1992-2012):** a treaty that promised to **reduce greenhouse gases** in developing countries based on the premise that global warming exists due to manmade CO2 emissions.



**The Paris Agreement (2016~):** an agreement between countries that promises to **reduce greenhouse gas emissions by 2020**.

(United Nations, 2017)

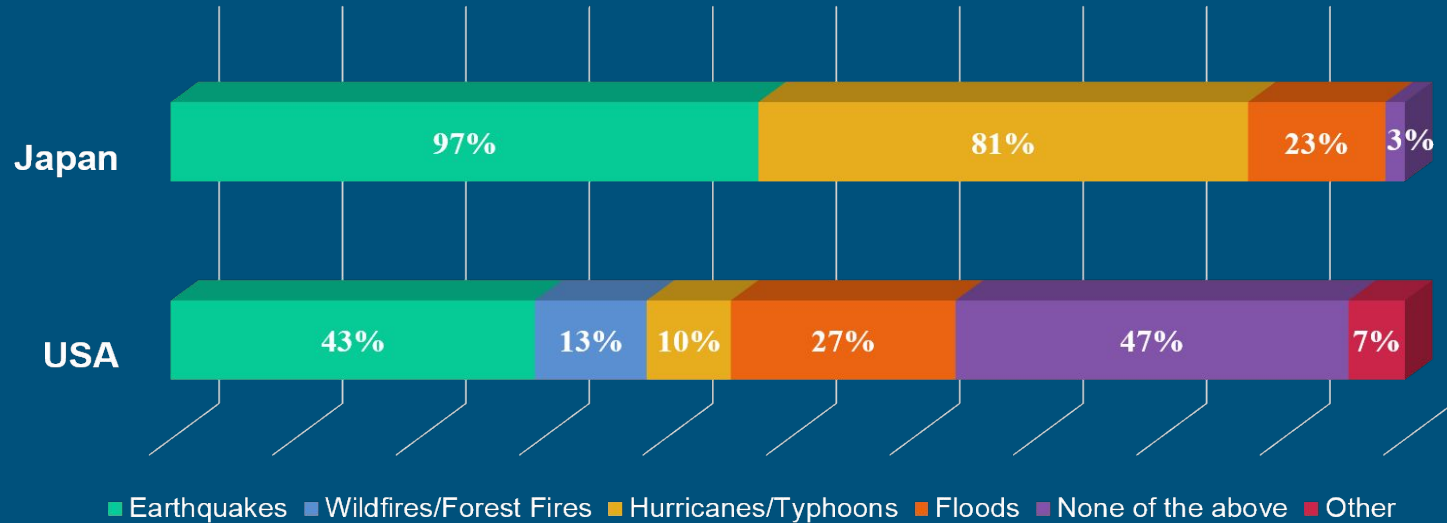
# Research Method

- Subject/Participants of the Study
  - Total of 61 University Students
  - Demographics
    - 31 Japanese University Students
      - 20 Female, 11 Male
      - Studying at various universities in Japan
    - 30 American University Students
      - 24 Female, 6 Male
  - Research Instruments:
    - Google Survey - [Japanese](#) and [English](#)

# Findings for Research Question 1:

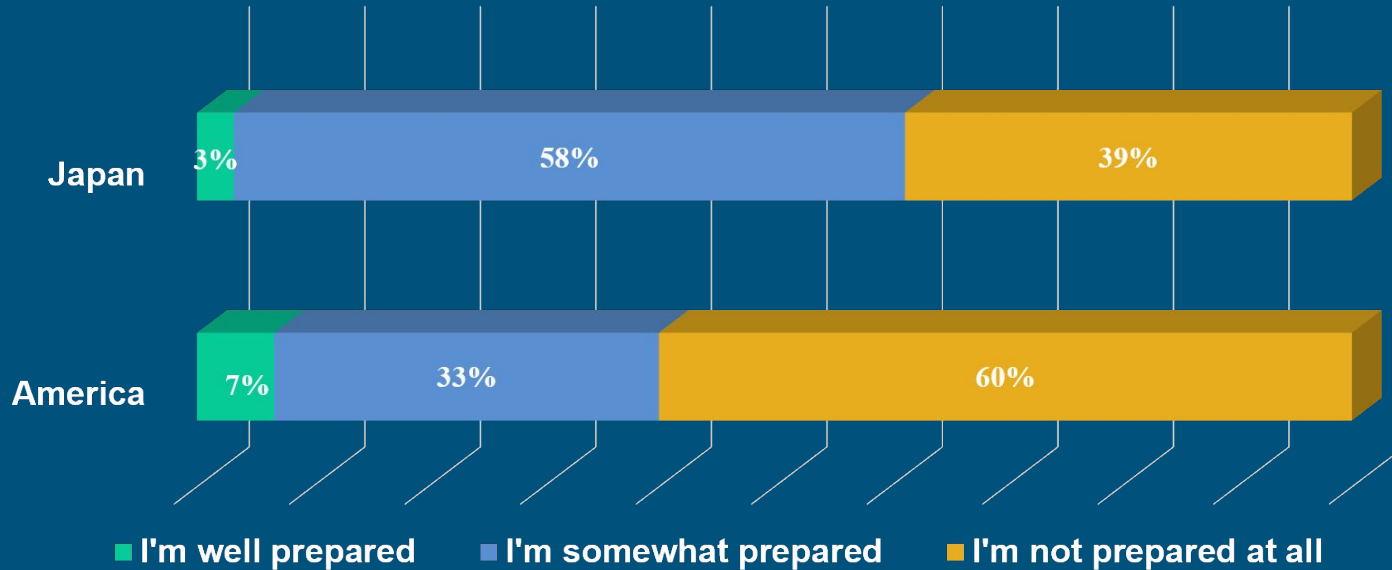
What are students'  
views on  
natural disasters and  
disaster preparation?

# Have you ever been affected by any of the following natural disasters?



While the majority of **Japanese** students **experienced** earthquakes and typhoons, about half of the **American** students have **not experienced** any natural disasters.

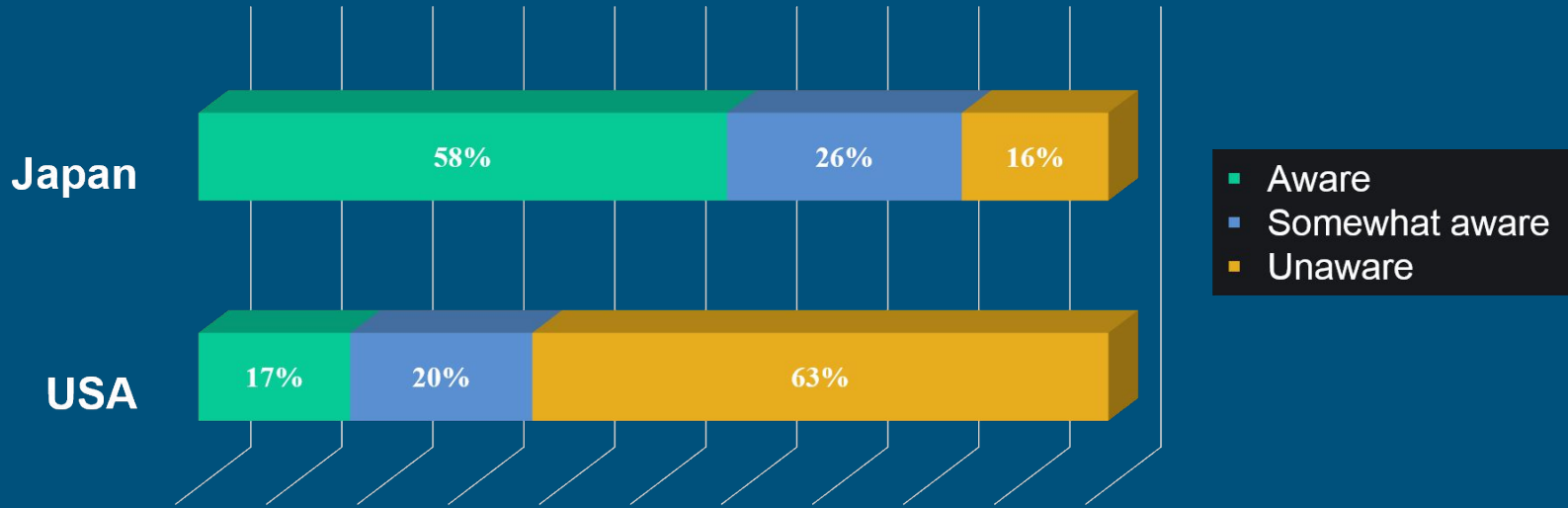
# How prepared do you think you are for natural disasters?



Japanese students are more prepared than American students for natural disasters; however, 40% of Japanese students believe they are not prepared at all.

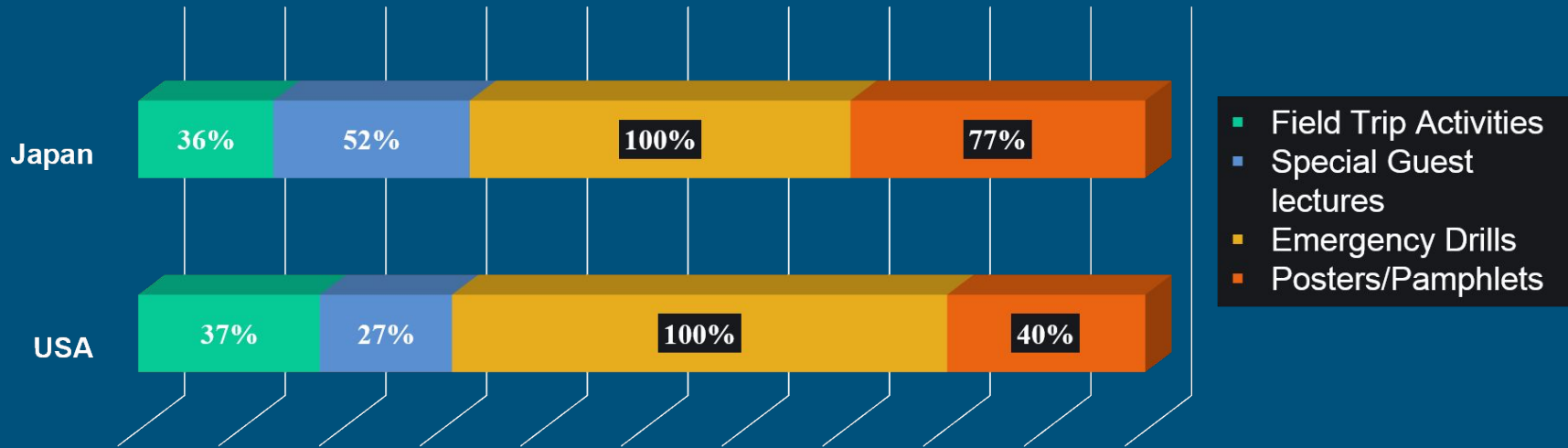


# In the case of a natural disaster, how aware are you of your nearest evacuation site?



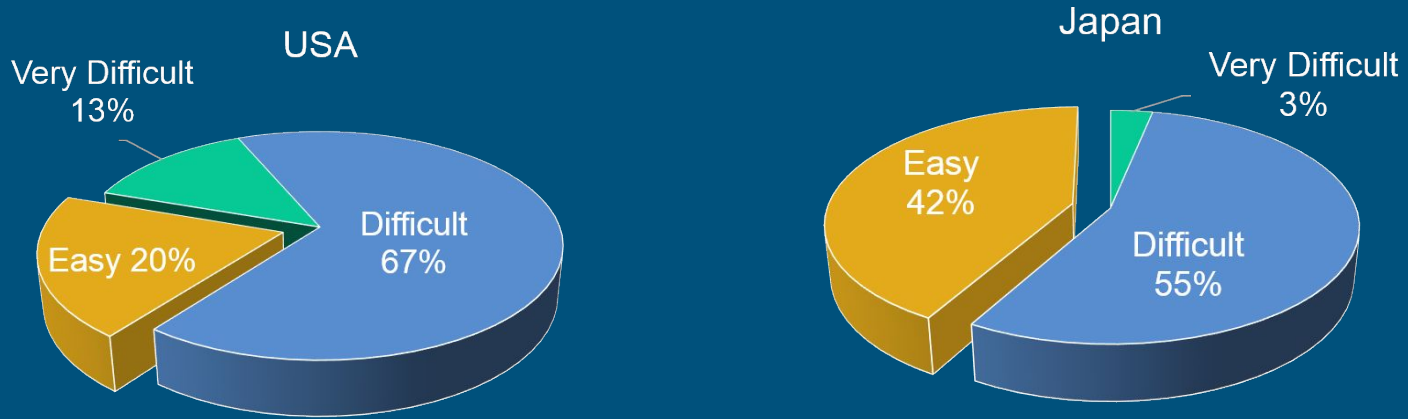
84% of Japanese students are aware of their nearest evacuation sites, compared to the 37% of American students.

# How did you learn about natural disasters in K-12 school?



Both groups mostly learned about natural disasters from emergency drills and posters/pamphlets.

# How difficult is it to find information about disaster preparation from your university?



Both groups thought it was difficult to find information about disaster preparation from their universities, especially American students.

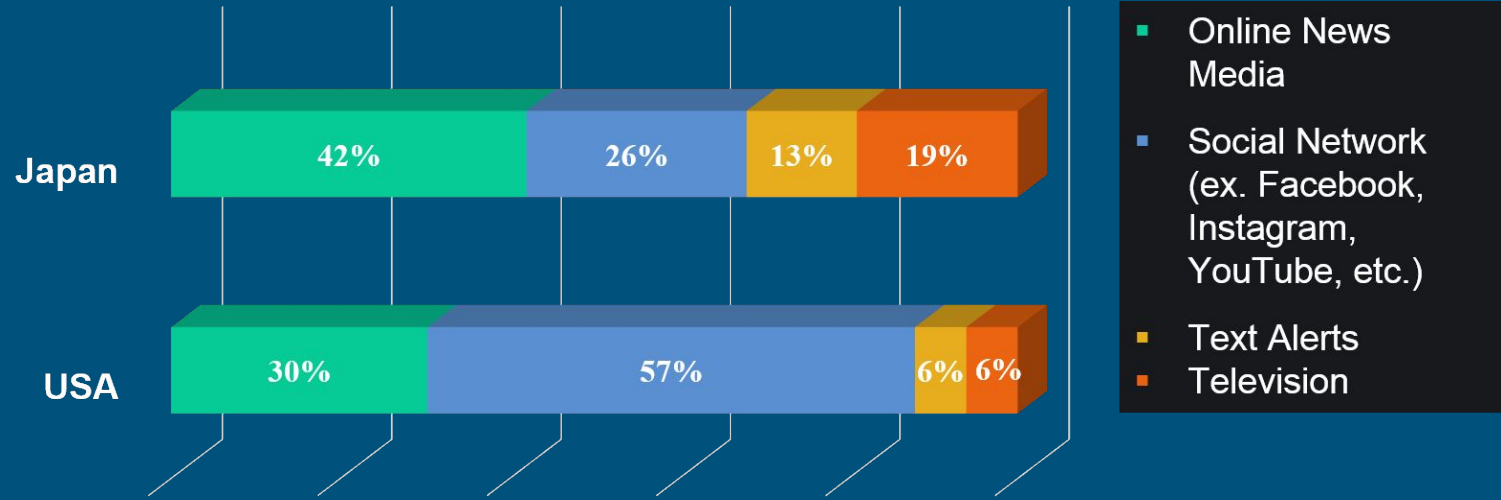
# Summary of the Findings RQ 1

- American students are not as prepared for natural disasters as Japanese students.
  - Most likely because they do not experience natural disasters as much as Japanese.
- Japanese students are more knowledgeable about their evacuation sites than American students
  - Possibly from the educational sources they received from their K-12 schools.
- Both groups reported that it is difficult to find information about natural disaster preparation from their university.
  - This may relate to the students' readiness for natural disasters

## Findings for Research Question 2:

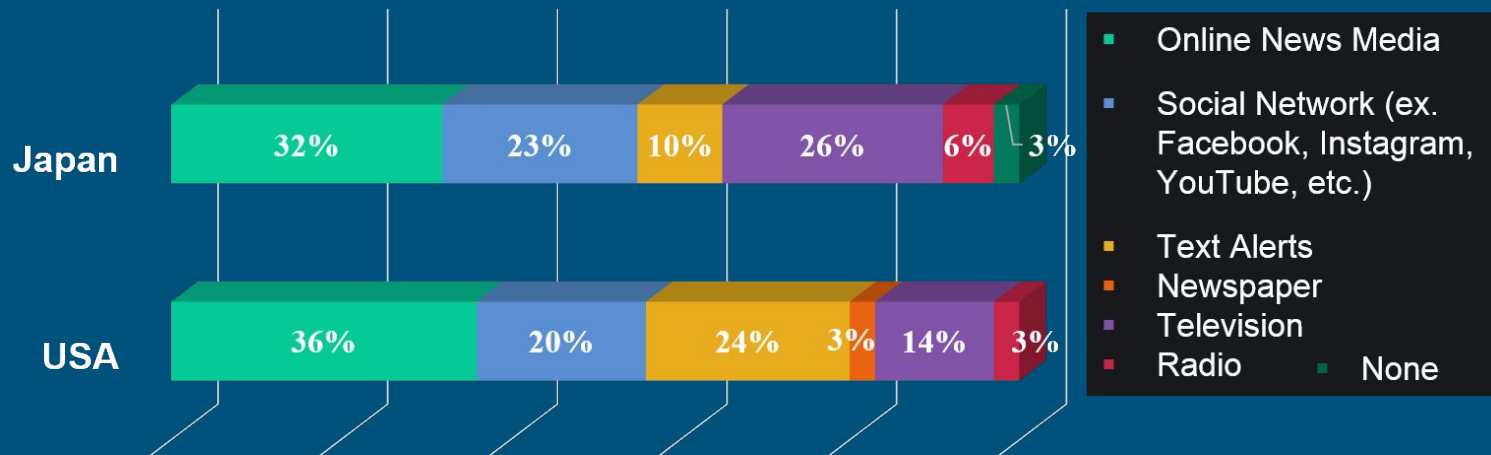
How does media  
contribute to  
students'  
awareness of  
natural disasters?

# Where do you get latest news about natural disasters?



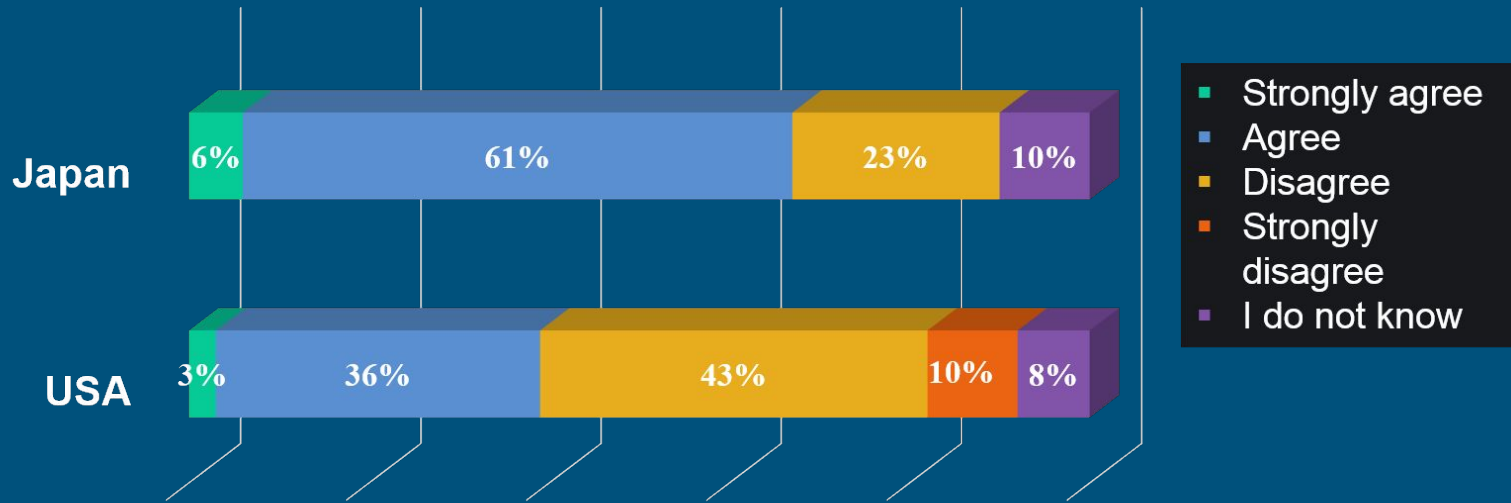
Japanese students use online news the most, while American students get the latest news from social networks.

# Which resource do you think best prepares you for a natural disaster?



Both groups use online news the most, but Japanese students also use TV, while American use text alerts as well.

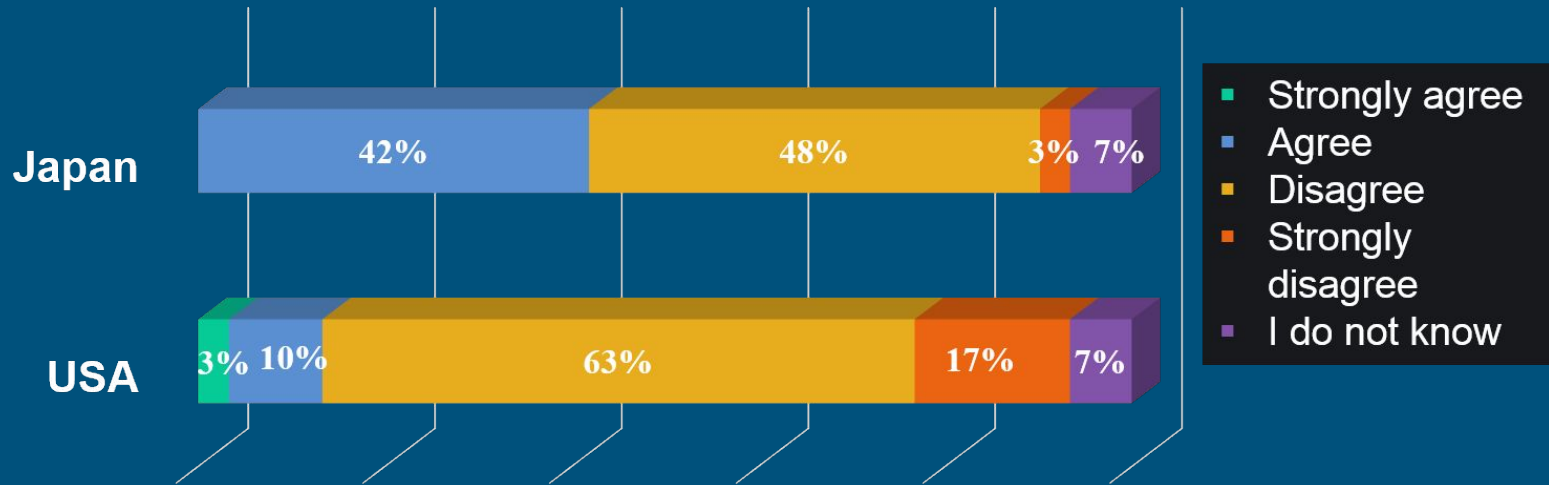
# Media provides enough INFORMATION about natural disasters.



About 70% Japanese students agree with the statement, however, an approximately 55% American students disagreed.

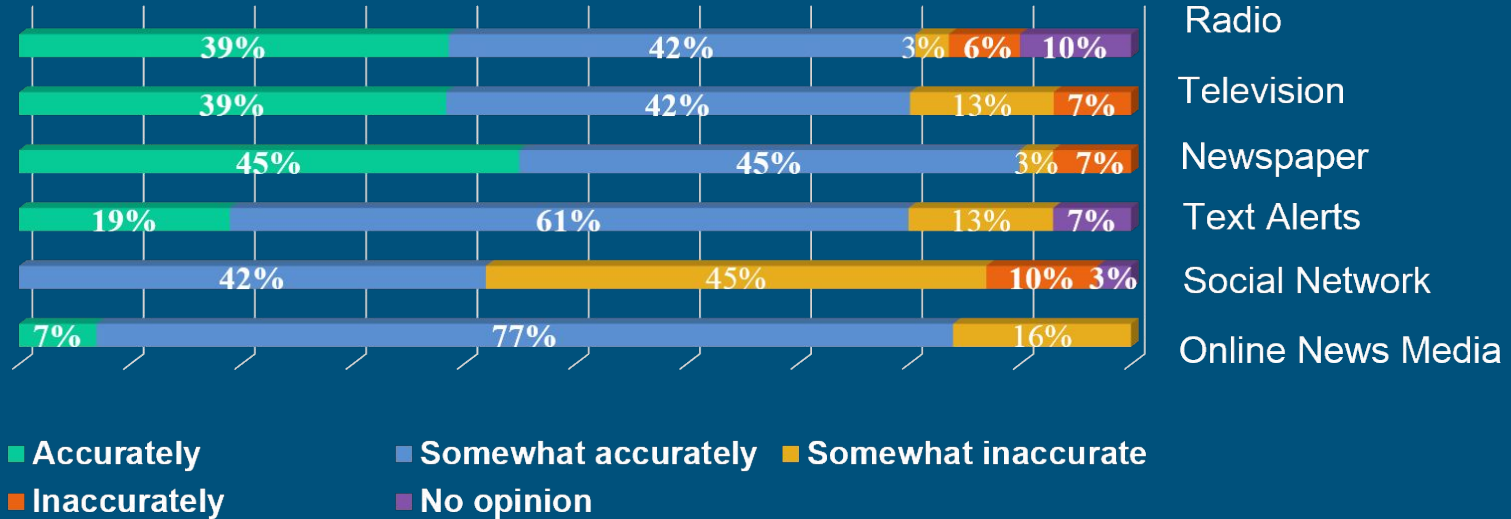


There is a sufficient amount of information from the media to PREPARE for a natural disaster.



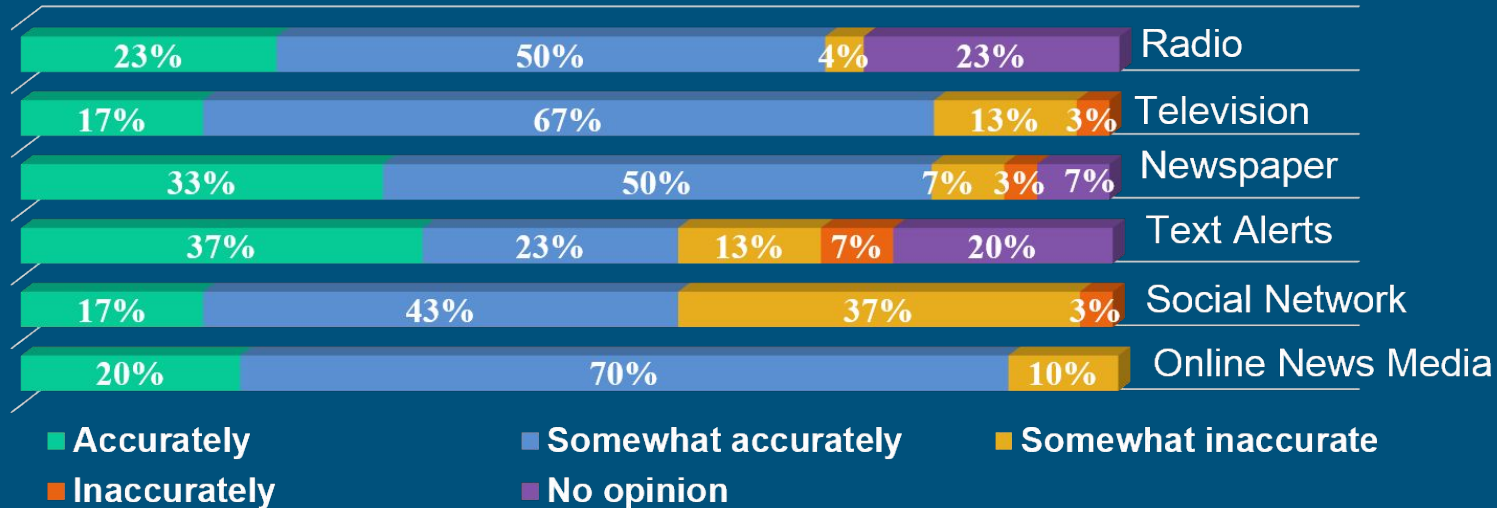
80% of American and 50% of Japanese students do not think media prepares them for a natural disaster.

# In your country, which of the following do you believe provides accurate disaster news coverage? (Japan)



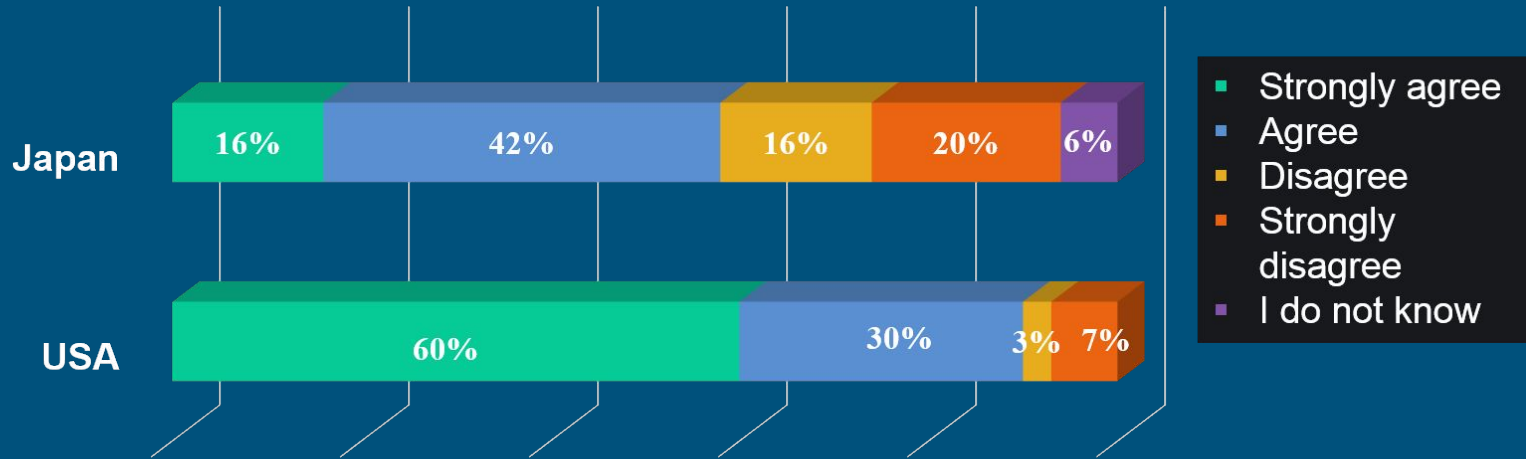
Japanese students believe that all media, **except** for **social network**, provide accurate news.

# In your country, which of the following do you believe provides accurate disaster news coverage? (USA)



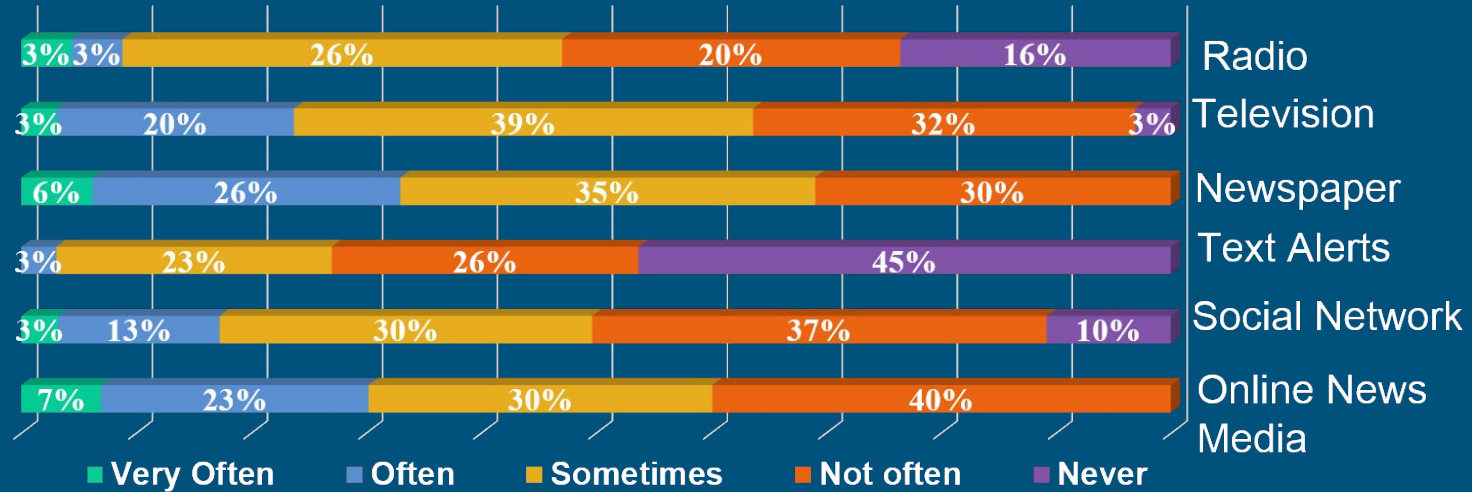
American students believe that all media provide accurate news, except for social networks and text alerts

# Global warming has a strong effect on natural disasters



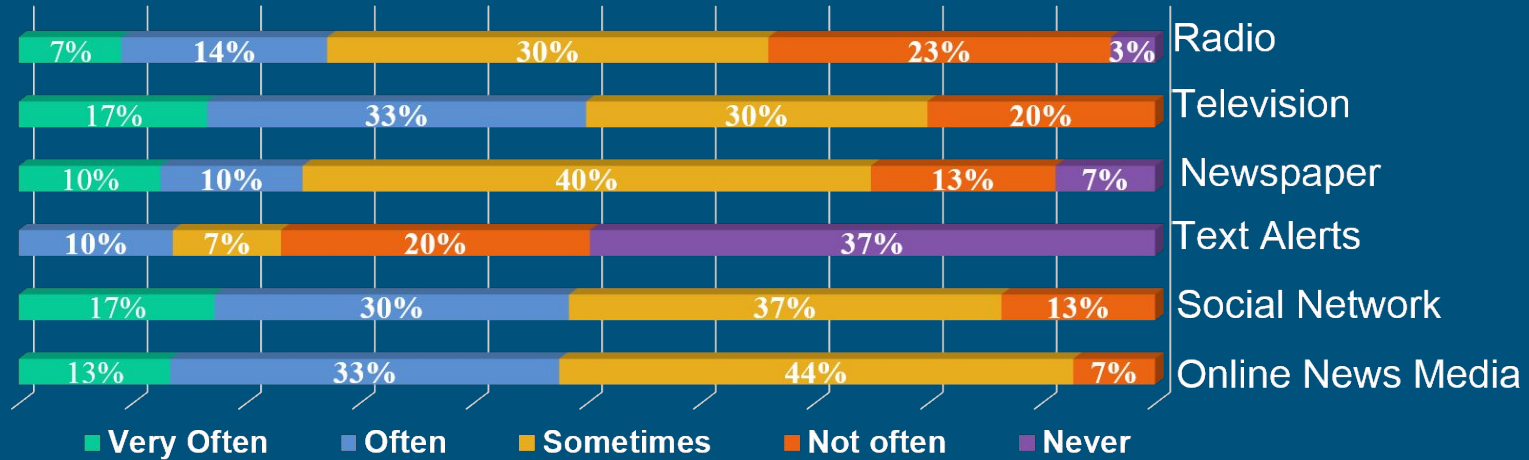
80% of American agreed with the statement, compared to about 60% of Japanese students.

# How often do these media outlets discuss global warming? (Japan)



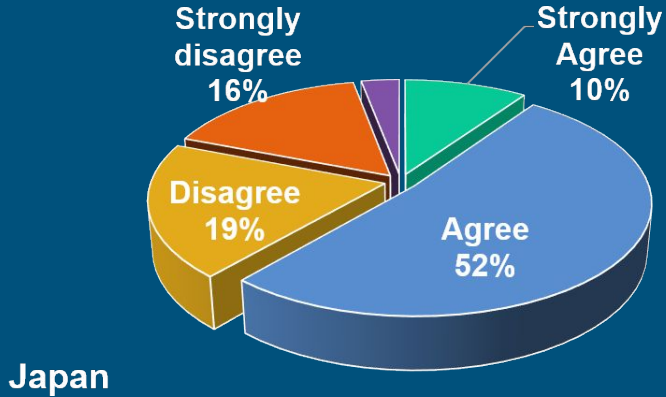
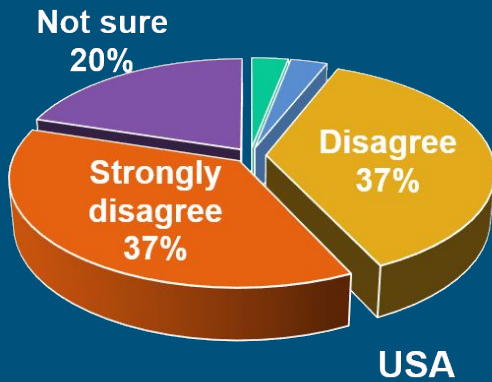
Japanese students believe newspapers and TV talk more about global warming.

# How often do these media outlets discuss global warming? (USA)



Except for text alerts, American students believe that a majority of the media often discuss global warming.

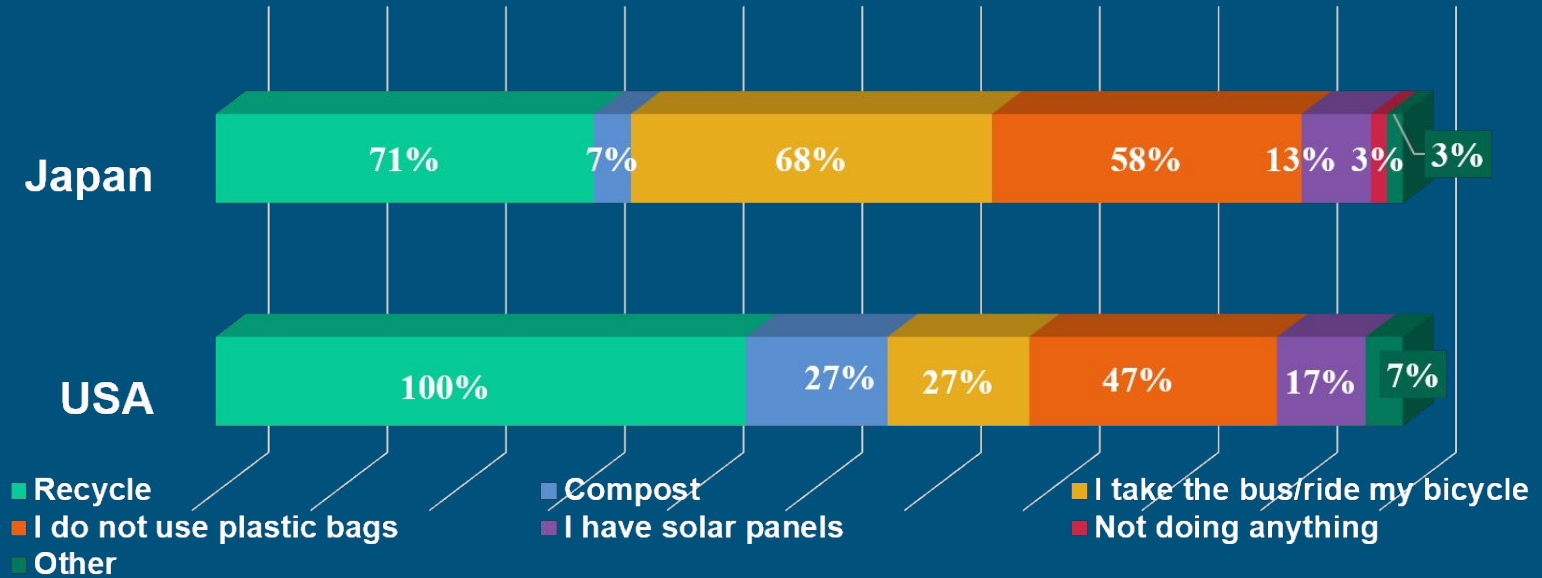
# Do you agree that the government is uphold the \*Paris Climate Agreement?



\*an agreement to lower greenhouse gases by 2020

American students believe that the **government** is not upholding the agreement, while **Japanese** students believe their government is.

# I am doing the following things to lessen my impact on global warming



Both groups responded highly on recycling and not using the plastic bags. About 70% of Japanese students ride the bus and bicycle.



## Summary of the Findings 2

- American and Japanese students agree that a majority of their media news is accurate; social networks are not accurate for Japanese.
- Japanese students agree that the media provides enough information about natural disasters, but both groups agree that there is not enough information to prepare for them.
- Japanese students rely and trust on the media more than American students, but Japanese feel that the media does not talk about global warming enough.
- While Japanese students trust their government when it comes to global warming, American students are skeptical of theirs; however they both feel the government can do more.

# Conclusion

- Both groups are aware of natural disasters, but Japanese students are more knowledgeable and more experienced than American students.
- Information on natural disaster preparation is limited for both American and Japanese students.
- American students are willing to learn more about preparing for natural disasters.
- Though both groups are aware of how global warming affects natural disasters, Japanese students feel that there isn't enough information from the media
- Even with the amount of effort that both groups are doing to help lessen global warming, they both feel that the government could do more.

# Limitations and Future of the Study

## Limitations:

- Mostly female respondents
- Our results could not be generalized because of the lack of a male perspective.

## Future Study:

- We would like to learn why countries would limit information about global warming and how universities would provide information on natural disaster preparation.

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Any Questions?