

# Investigating Public Perceptions Concerning the Acceptability and Effectiveness of Nudges for Disaster Risk Reduction Efforts in Japan

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## Appendix A

Questionnaire Survey about Nudge, Judge and Oblige in English (the original survey was in Japanese)

### Questionnaire survey on how to promote effective disaster prevention measures

\* It takes about 10 to 15 minutes to answer. \*

Thank you for your cooperation in this survey. This survey is conducted by the Disaster Prevention Research Institute of Kyoto University, the Giant Disaster Research Center, and the Yamori Laboratory, and asks for a wide range of opinions on various methods for disseminating disaster prevention measures to society. If no specific disaster is specified in each question, please think of general natural disasters such as earthquakes, tsunamis, typhoons, floods, and sediment-related disasters. All responses are collected and managed anonymously, and personal information is not identified. In addition, the results of this survey will be used for disaster prevention research and disaster prevention measures in a form that does not identify individuals.

If you are in the middle of answering, you can go back to the previous question and change the answer.

There are nine question items in this survey.

Questions 1 and 2 are questions about the "acceptability" of disaster prevention measures. To what extent are each counter measures acceptable in the light of your own values (ethics, morals, etc.)? Please answer about "acceptability".

Questions 3 to 9 are questions about the "magnitude of effect" of the countermeasure method. How effectively can each method change your feelings, attitudes, and behavior toward disaster prevention? Please tell us about the "magnitude of effect" in changing your feelings, attitudes, and behaviors.

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## Acceptability of different methods of disaster risk reduction

Some methods of disaster risk reduction might be more morally acceptable than others to be applied in Japan. In this part we want to know which methods are more ACCEPTABLE to you, regardless of how efficient each method is.

1. In some areas of Japan there are evacuation towers because a tsunami might come in the future. How acceptable is each option below to motivate people to visit evacuation towers on a normal day?

Completely acceptable	Slightly acceptable	Neutral	Slightly unacceptable	Completely unacceptable
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- The Japanese government makes a law that every household in towns where there are evacuation towers must visit the evacuation tower near them.
- There are free sightseeing binoculars on the top of the towers.
- A celebrity on TV is shown visiting evacuation towers.
- There are different stamps for stamp book on top of each tower.
- There is art produced by local volunteers such as paintings and sculptures on the top of each tower.
- A TV report is presented explaining why it is important to visit evacuation towers.
- An SNS is sent by the local government explaining why it is important to visit evacuation towers.
- The local government sends a brochure explaining why it is important to visit evacuation towers.

2. How acceptable is each option below to motivate people to evacuate fast when a big earthquake happened and a tsunami will arrive soon?

Completely acceptable	Slightly acceptable	Neutral	Slightly unacceptable	Completely unacceptable
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- In daily life, a national TV channel showed reports talking about the sadness and grief of families who lost family members to tsunami.
- There is mandatory evacuation issued and disseminated around the town. Only the first people that arrive at the evacuation shelter have the right to stay there.
- In order to influence people to evacuate, the government assigns leading evacuation roles to a few volunteers in the town that will evacuate first even if a tsunami arrival is not sure.
- There are big clocks on the streets showing how much time left before a Tsunami will hit the town.
- There are loud siren sounds in all towns where a tsunami warning is issued.

- There are flashing lights on the street that lead to a safe area.
- In daily life, the local government sent brochures explaining tsunamis can come really fast, that is why it is important to evacuate fast.
- An SNS is sent by the local government explaining why it is important to evacuate fast.
- In daily life, a national TV channel showed reports explaining that tsunamis can come really fast, that is why it is important to evacuate fast.

**Effectiveness of different methods of disaster risk reduction**

Some methods of disaster risk reduction might be more effective than others to ensure people's safety.

In this part we want to know which methods are more EFFECTIVE to influence YOU, regardless of how acceptable each method is.

3. Imagine you live in an area where a natural disaster might occur.

How effective each option below is to push you to have an evacuation bag?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You read a local government brochure explaining the reasons why you should have an evacuation bag.
- A law in Japan is created which says that every household must have an evacuation bag for each family member
- You learn that 90% of people in your town already have an evacuation bag.
- You watch a TV show that explains why you should have an evacuation bag
- You see evacuation bags being sold at the entrance of every big supermarket.
- You see options of evacuation bags in stores with interesting colors or popular manga characters.
- An SNS is sent by the local government explaining why it is important to have an evacuation bag.
- You are able to subscribe to a magazine that each month comes with an important evacuation item (such as canned food, radio, flashlight, etc).

4. Imagine you live in a town that has evacuation towers because a tsunami might come in the future. How effective each option below is to motivate you to visit an evacuation tower on a normal day?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You see your favorite celebrity on TV visiting evacuation towers.
- You read a local government brochure explaining why it is important to visit evacuation towers.
- You learn that there is a different stamp for the stamp book on the top of each tower.
- An SNS is sent by the local government explaining why it is important to visit evacuation towers.
- A law in Japan is created which says that every household in towns where there are evacuation towers must visit the evacuation tower near them.
- You learn that there is art produced by local volunteers such as paintings and sculptures on the top of the towers.
- You watch a TV report explaining why it is important to visit evacuation towers.
- You learn that there are free sightseeing binoculars on the top of the towers.

5. Imagine you live in an area where a natural disaster might occur.

How effective each option below is to motivate you to check the evacuation route map?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You receive a city map and colored pens by mail so you can decorate and make annotations of your own evacuation route.
- You watch a TV report explaining why it is important to attach an evacuation map in your house.
- You are offered to play a game for free with other people based on your city which includes a evacuation route map.
- An SNS is sent by the local government explaining why it is important to know the route to the evacuation shelter.
- A law in Japan is created which says that each household must hang the evacuation route map on the wall near the front door.
- You learn that 90% of people in your town already checked their evacuation route.
- You read a local government brochure explaining why it is important to check the evacuation route map.
- You see your favorite celebrity on TV checking their evacuation map.

6. Imagine you are in a town where a typhoon will probably arrive in 2 or 3 days. How effective each option below is to motivate you to you to pack and evacuate to a safe area before the typhoon comes?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You learn that if you evacuate early you can influence your neighbors to also evacuate early and you can maybe save their lives.
- You watch a TV report explaining why it is important to leave the house with a few days in advance.
- You learn that only the first people that arrive at the evacuation shelter have the right to stay there. Therefore those who arrive late will have to find another place to stay.
- An SNS is sent by the local government explaining why it is important to evacuate early.
- You see most of your neighbors evacuating from their homes in advance.
- You watch a video talking about the sadness and grief of families who lost family members to floods and landslides caused by typhoons.
- You read a local government brochure explaining why it is important to leave the house with a few days in advance.
- You hear periodic loud siren sounds to alert everyone about danger.

7. Imagine you are in a town where an earthquake has happened and maybe a tsunami will arrive soon.

How effective each option below is to motivate you to evacuate fast?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You see people running as fast as they can.
- You see flashing lights on the street that leads to a safe area.
- You see big clocks on the streets showing how much time left before a Tsunami will hit the town.
- There is mandatory evacuation issued and disseminated around the town. Only the first people that arrive at the evacuation shelter have the right to stay there.
- An SNS is sent by the local government explaining why it is important to evacuate fast.
- In the past you watched a TV report explaining why it is important to evacuate fast.
- You hear loud siren sounds.
- In the past you watched a video talking about the sadness and grief of families who lost family members to tsunami.
- In the past you read a local government brochure explaining why it is important to evacuate fast.

8. Imagine you live in an area where earthquakes might occur. How effective each option below is to motivate you to fixate the furniture in your house?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- You read a local government brochure explaining why it is important to fixate furniture.
- An SNS is sent by the local government explaining why it is important to fixate the furniture.
- A local government official visits you and gives you a score depending on how prepared your house is for earthquakes. 0 means really not prepared and 10 is well prepared. You received a bad score of 0.
- You watch a TV report explaining why it is important to fixate furniture.
- A law in Japan is created, which says that all tall furniture must be fixated.
- You learn that 90% of people in your city have already fixed the furniture.
- A law in Japan is created which says that it is mandatory to buy furniture fixation tools at the same time you buy tall furniture.
- You receive a free furniture fixation kit by mail from the local government with step by step instructions.
- You see your favorite celebrity on TV fixating their furniture.

9. Imagine you live in an area where a natural disaster might occur. How effective each option below is to motivate you to participate in evacuation drills?

Very effective	Somewhat effective	Neither effective nor ineffective	Somewhat ineffective	Very ineffective
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- A law in Japan is created which says that it is mandatory for adults to participate in evacuation drills, otherwise you lose the right to stay in an evacuation shelter when there is an emergency.
- You hear a loud bell sound that reminds everyone in the town that is time for the evacuation drill.
- You learn that 90% of people in your city are participating in evacuation drills.
- An SNS is sent by the local government explaining why it is important to participate in evacuation drills.
- You watch a TV report explaining why it is important to participate in evacuation drills.
- You see your favorite celebrity on TV participating in evacuation drills.
- You can get a discount ticket to be used at local shops at the end of the evacuation drill.

- You read a local government brochure explaining why it is important to participate in evacuation drills.
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### Final questions

Which natural disasters might happen in the area where you live? You can choose more than one answer.

- Earthquake
- Tsunami
- Volcano Eruption
- Flood
- Typhoon
- Heavy snow fall
- Landslides
- Other

In what year were you born?

\_\_\_\_\_

What is your gender?

- Male
- Female
- Other

What is the highest level of education you have completed?

Graduated from middle school

Graduated from high school

Graduated from college

Completed a graduate school

Which Japan prefecture do you live in?

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If you have any suggestion of things that can push people to prepare for a natural disaster or evacuate their houses, feel free to comment below (this question is not mandatory).

## Appendix B

Table listing and summarizing the questions of the survey presented in Appendix A alongside their reference numbers.

Question Number	Survey Part	Question		
Q1	2	1. In some areas of Japan there are evacuation towers because a tsunami might come in the future. How acceptable is each option below to motivate people to visit evacuation towers on a normal day?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>
		Q 1.1	Oblige	The Japanese government makes a law that every household in towns where there are evacuation towers must visit the evacuation tower near them.
		Q 1.2	Nudge	There are free sightseeing binoculars on the top of the towers.
		Q1.3	Nudge	A celebrity on TV is shown visiting evacuation towers.
		Q 1.4	Nudge	There are different stamps for stamp book on top of each tower.
		Q 1.5	Nudge	There is art produced by local volunteers such as paintings and sculptures on the top of each tower.
		Q 1.6	Judge	A TV report is presented explaining why it is important to visit evacuation towers.
		Q 1.7	Judge	An SNS is sent by the local government explaining why it is important to visit evacuation towers.
		Q 1.8	Judge	The local government sends a brochure explaining why it is important to visit evacuation towers.
Q2	2	2. How acceptable is each option below to motivate people to evacuate fast when a big earthquake happened and a tsunami will arrive soon?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>
		Q 2.1	Nudge	In daily life, a national TV channel showed reports talking about the sadness and grief of families who lost family members to tsunami.
		Q 2.2	Oblige	There is mandatory evacuation issued and disseminated around the town. Only the first people that arrive at the evacuation shelter have the right to stay there.
		Q 2.3	Nudge	In order to influence people to evacuate, the government assigns leading evacuation roles to a few volunteers in the town that will evacuate first even if a tsunami arrival is not sure.
		Q 2.4	Nudge/ Judge	There are big clocks on the streets showing how much time left before a Tsunami will hit the town.
		Q 2.5	Nudge/ Judge	There are loud siren sounds in all towns where a tsunami warning is issued.
		Q 2.6	Nudge/ Judge	There are flashing lights on the street that lead to a safe area.
		Q 2.7	Judge	In daily life, the local government sent brochures explaining tsunamis can come really fast, that is why it is important to evacuate fast.
		Q 2.8	Judge	An SNS is sent by the local government explaining why it is important to evacuate fast.
		Q 2.9	Judge	In daily life, a national TV channel showed reports explaining that tsunamis can come really fast, that is why it is important to evacuate fast.

Q3	3	3. Imagine you live in an area where a natural disaster might occur. How effective each option below is to push you to have an evacuation bag?	
		<b>Question Item Number</b>	<b>NJO type</b>
		<b>Question Item</b>	
		Q 3.1	Judge
		You read a local government brochure explaining the reasons why you should have an evacuation bag.	
		Q 3.2	Oblige
		A law in Japan is created which says that every household must have an evacuation bag for each family member	
		Q 3.3	Nudge
		You learn that 90% of people in your town already have an evacuation bag.	
		Q 3.4	Judge
		You watch a TV show that explains why you should have an evacuation bag	
		Q 3.5	Nudge
		You see evacuation bags being sold at the entrance of every big supermarket.	
		Q 3.6	Nudge
		You see options of evacuation bags in stores with interesting colors or popular manga characters.	
		Q 3.7	Judge
		An SNS is sent by the local government explaining why it is important to have an evacuation bag.	
		Q 3.8	Nudge
		You are able to subscribe to a magazine that each month comes with an important evacuation item (such as canned food, radio, flashlight, etc).	
Q4	3	4. Imagine you live in a town that has evacuation towers because a tsunami might come in the future. How effective each option below is to motivate you to visit an evacuation tower on a normal day?	
		<b>Question Item Number</b>	<b>NJO type</b>
		<b>Question Item</b>	
		Q 4.1	Nudge
		You see your favorite celebrity on TV visiting evacuation towers.	
		Q 4.2	Judge
		You read a local government brochure explaining why it is important to visit evacuation towers.	
		Q 4.3	Nudge
		You learn that there is a different stamp for the stamp book on the top of each tower.	
		Q 4.4	Judge
		An SNS is sent by the local government explaining why it is important to visit evacuation towers.	
		Q 4.5	Oblige
		A law in Japan is created which says that every household in towns where there are evacuation towers must visit the evacuation tower near them.	
		Q 4.6	Nudge
		You learn that there is art produced by local volunteers such as paintings and sculptures on the top of the towers.	
		Q 4.7	Judge
		You watch a TV report explaining why it is important to visit evacuation towers.	
		Q 4.8	Nudge
		You learn that there are free sightseeing binoculars on the top of the towers.	
Q5	3	5. Imagine you live in an area where a natural disaster might occur. How effective each option below is to motivate you to check the evacuation route map?	
		<b>Question Item Number</b>	<b>NJO type</b>
		<b>Question Item</b>	
		Q 5.1	Nudge
		You receive a city map and colored pens by mail so you can decorate and make annotations of your own evacuation route.	
		Q 5.2	Judge
		You watch a TV report explaining why it is important to attach an evacuation map in your house.	
		Q 5.3	Nudge
		You are offered to play a game for free with other people based on your city which includes a evacuation route map.	
		Q 5.4	Judge
		An SNS is sent by the local government explaining why it is important to know the route to the evacuation shelter.	
		Q 5.5	Oblige
		A law in Japan is created which says that each household must hang the evacuation route map on the wall near the front door.	

		Q 5.6	Nudge	You learn that 90% of people in your town already checked their evacuation route.
		Q 5.7	Judge	You read a local government brochure explaining why it is important to check the evacuation route map.
		Q 5.8	Nudge	You see your favorite celebrity on TV checking their evacuation map.
Q6	3	6. Imagine you are in a town where a typhoon will probably arrive in 2 or 3 days. How effective each option below is to motivate you to pack and evacuate to a safe area before the typhoon comes?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>
		Q 6.1	Nudge/Judge	You learn that if you evacuate early, you can influence your neighbors to also evacuate early and you can maybe save their lives.
		Q 6.2	Judge	You watch a TV report explaining why it is important to leave the house with a few days in advance.
		Q 6.3	Oblige	You learn that only the first people that arrive at the evacuation shelter have the right to stay there. Therefore those who arrive late will have to find another place to stay.
		Q 6.4	Judge	An SNS is sent by the local government explaining why it is important to evacuate early.
		Q 6.5	Nudge	You see most of your neighbors evacuating from their homes in advance.
		Q 6.6	Nudge	You watch a video talking about the sadness and grief of families who lost family members to floods and landslides caused by typhoons.
		Q 6.7	Judge	You read a local government brochure explaining why it is important to leave the house with a few days in advance.
		Q 6.8	Nudge/Judge	You hear periodic loud siren sounds to alert everyone about danger.
Q7	3	7. Imagine you are in a town where an earthquake has happened and maybe a tsunami will arrive soon. How effective each option below is to motivate you to evacuate fast?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>
		Q 7.1	Nudge	You see people running as fast as they can.
		Q 7.2	Nudge/Judge	You see flashing lights on the street that leads to a safe area.
		Q 7.3	Nudge/Judge	You see big clocks on the streets showing how much time left before a Tsunami will hit the town.
		Q 7.4	Oblige	There is mandatory evacuation issued and disseminated around the town. Only the first people that arrive at the evacuation shelter have the right to stay there.
		Q 7.5	Judge	An SNS is sent by the local government explaining why it is important to evacuate fast.
		Q 7.6	Judge	In the past you watched a TV report explaining why it is important to evacuate fast.
		Q 7.7	Nudge/Judge	You hear loud siren sounds.
		Q 7.8	Nudge	In the past you watched a video talking about the sadness and grief of families who lost family members to tsunami.
		Q 7.9	Judge	In the past you read a local government brochure explaining why it is important to evacuate fast.
Q8	3	8. Imagine you live in an area where earthquakes might occur. How effective each option below is to motivate you to fixate the furniture in your house?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>

		Q 8.1	Judge	You read a local government brochure explaining why it is important to fixate furniture.
		Q 8.2	Judge	An SNS is sent by the local government explaining why it is important to fixate the furniture.
		Q 8.3	Nudge	A local government official visits you and gives you a score depending on how prepared your house is for earthquakes. 0 means really not prepared and 10 is well prepared. You received a bad score of 0.
		Q 8.4	Judge	You watch a TV report explaining why it is important to fixate furniture.
		Q 8.5	Oblige	A law in Japan is created, which says that all tall furniture must be fixated.
		Q 8.6	Nudge	You learn that 90% of people in your city have already fixed the furniture.
		Q 8.7	Oblige	A law in Japan is created which says that it is mandatory to buy furniture fixation tools at the same time you buy tall furniture.
		Q 8.8	Nudge	You receive a free furniture fixation kit by mail from the local government with step-by-step instructions.
		Q 8.9	Nudge	You see your favorite celebrity on TV fixating their furniture.
Q9	3	9. Imagine you live in an area where a natural disaster might occur. How effective each option below is to motivate you to participate in evacuation drills?		
		<b>Question Item Number</b>	<b>NJO type</b>	<b>Question Item</b>
		Q 9.1	Oblige	A law in Japan is created which says that it is mandatory for adults to participate in evacuation drills, otherwise you lose the right to stay in an evacuation shelter when there is an emergency.
		Q 9.2	Nudge/ Judge	You hear a loud bell sound that reminds everyone in the town that is time for the evacuation drill.
		Q 9.3	Nudge	You learn that 90% of people in your city are participating in evacuation drills.
		Q 9.4	Judge	An SNS is sent by the local government explaining why it is important to participate in evacuation drills.
		Q 9.5	Judge	You watch a TV report explaining why it is important to participate in evacuation drills.
		Q 9.6	Nudge	You see your favorite celebrity on TV participating in evacuation drills.
		Q 9.7	Nudge	You can get a discount ticket to be used at local shops at the end of the evacuation drill.
		Q 9.8	Judge	You read a local government brochure explaining why it is important to participate in evacuation drills.