

NATURAL HAZARDS PREPAREDNESS IN TAIWAN: A COMPARISON BETWEEN HOUSEHOLDS WITH AND WITHOUT DISABLED MEMBERS

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People with disabilities are one of the most vulnerable groups to natural hazards. Preparedness is critical to protect life and reduce disaster impact. This article discusses the knowledge of the disaster preparedness behaviors of people with disabilities using updated, representative data from Taiwan (2013 Taiwan Social Change Survey), with a comparison to households without disabled members. The adoption of 6 preparedness activities—relocating vehicles or valuable things to a safer place, purchasing insurance, securing furniture, preparing an emergency kit, planning evacuation, and participating in drills—are used separately as dependent variables. The unadjusted results from Logit regression models show that the households with disabled members are less likely to prepare emergency kits and to plan evacuation. But with the adjustment of risk perception (probability, consequence, worrisome) and other factors—experience of earthquake and typhoon hazards, home ownership status, whether there are children in the home, perceived social status, family income, gender, age, education attainment, and religious status—the differences in adopting all 6 preparedness activities between households with disabled members and households without disabled members become nonsignificant. Finally, the contribution, limitations, and practice implications of this article are discussed.

Keywords: Public health preparedness/response, Risk communication, Personal protective equipment, Policy, Citizen engagement

PEOPLE WITH DISABILITIES and special needs are one of the groups most vulnerable to disasters.¹ They could face greater risk of mortality and morbidity because of difficulties in responding rapidly or taking protective actions during emergencies.²⁻⁴ A 2013 global survey conducted by the United Nations (UN) found that 85.57% of the respondents who had disabilities had not participated in community disaster management and risk reduction processes, and 72.20% of them did not have a personal pre-

paredness plan for potential disasters. In contrast, 50.94% expressed a desire to participate in community disaster and risk management.⁵

Both the previous Hyogo Framework for Action and recent 2015-2030 Sendai Framework for Disaster Risk Reduction from the UN call for inclusive development and engagement of all society members, especially vulnerable groups like the poor, the elderly, and the disabled. Similar concepts are emerging in disaster and emergency management policies and

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practical fields globally in recent years. For example, to better include people with disabilities and special needs in the emergency management cycle from mitigation and preparedness to response and recovery, the US Federal Emergency Management Agency (FEMA) created an Office of Disability Integration and Coordination in their management structure after the 2005 Hurricane Katrina,⁶ which proposes the inclusive “whole community” concept nationally.⁷

Reducing the vulnerability of people with disabilities should start from predisaster planning—that is, with mitigation and preparedness.⁸ Moreover, nonstructural approaches, such as land use planning, warnings, and household preparedness are actually the most cost-effective forms of disaster risk reduction investment.⁹ Prior analysis from the United States has demonstrated that \$1 of investment in mitigation and preparedness could save the society \$4 in losses.¹⁰

Lack of personal preparedness is a key factor influencing the vulnerability of people with disabilities,¹¹ and thus investigating the individual and household preparedness behaviors of families with disabled members is necessary to better understand, serve, protect, and engage with people with disabilities in disaster and emergency management and ultimately increase the resilience of disabled people and society.

Most prior studies indicate that people with disabilities have lower levels of preparedness for disasters than the general population without disabilities.^{12–16} People with disabilities, especially those with severe conditions or who need special treatment or equipment, may be unwilling or unable to evacuate in real emergencies.¹⁷ Using the 2006–2012 Behavioral Risk Factor Surveillance System (BRFSS) data collected by the US Centers for Disease Control and Prevention (CDC), Smith and Notaro compared the preparedness behaviors of people with disabilities to those without disabilities. The results demonstrated that individuals with activity limitations and/or mental health conditions were significantly less prepared than were people who used specialized equipment or people without disabilities.¹² For elderly people in particular, the increase in the activities of daily living (ADL) and instrumental activities of daily living (IADL) scores is negatively associated with the level of preparedness.¹⁸ However, disability status is not always a significant predictor of lower disaster preparedness. For example, a study from the United States found no significant differences in preparedness between families with children with special healthcare needs compared to those without,¹⁹ while another study showed a positive association between being disabled and disaster preparedness.²⁰

The correlation between being disabled and being prepared for a disaster may vary according to different places, the types of disability, or the attributes of the preparedness activities. One study compared the public’s preparedness behaviors in North Carolina and Montana; being disabled was found to be positively associated with the level of preparedness in North Carolina, but not in Montana.²¹ In

another investigation of the variations of disaster preparedness by mental health, perceived general health, and disability status, using a sample from Los Angeles County, being disabled was positively correlated with preparing both disaster supplies and emergency communication plans, but perceived health and mental health scores were negatively associated with disaster preparedness.²² Spence and colleagues’ study on evacuees from Hurricane Katrina indicated that disabled people were more likely to prepare emergency supplies but less likely to have an evacuation plan.²³ Similarly, a detailed analysis using data collected in Pennsylvania demonstrated that households with special needs members had a greater likelihood of arranging a place to meet, locating a shelter, or packing a bag. But such differences were not identified with respect to awareness of evacuation routes, purchasing of food and water, or creation of an emergency plan.¹⁴ Moreover, though people with disabilities have lower levels of preparedness than the general public in terms of general preparedness activities, such as preparing an emergency kit, households with disabled members may be more likely to have medical preparedness than general preparedness activities.^{15,24}

Understanding the variations of preparedness between people with disabilities and the general public is important for developing more inclusive emergency management policies and reducing disaster risk. The inconsistent results, as revealed above, demonstrate the need for more investigation. Moreover, the existing literature predominantly reflects the experiences in Western societies—specifically, in the United States—and there is a lack of information from other cultures. As one of the most rapidly aging societies in the world, Taiwan’s percentage of people with disabilities reached 4.87% of the population in 2014.²⁵ In addition, Taiwan is widely known as a region with a high risk of natural hazards. Therefore, we hope to contribute to the narrowing of this gap by using representative survey data, the 2013 Taiwan Social Change Survey (risk society group),²⁶ with the basic hypothesis that the households with disabled members would have a lower level of preparedness for natural hazards.

METHODS

Data and Sampling

The 2013 Taiwan Social Change Survey (TSGS) data were used in this analysis. The TSGS project is a long-term large-scale survey in Taiwan that has been conducted since the 1980s. It is a member of the International Social Survey Programme, as well as a member of the East Asia Social Survey.²⁷ The population sampled in the 2013 survey were adult residents of Taiwan older than 18 years old. A stratified 3-stage probability proportional to size sampling (PPS) method was used. The primary sampling unit was townships, while the village was the secondary sampling

unit, and the individual was the third sampling unit. The systematic sampling method was adopted each time. Risk society was a main research theme of the 2013 survey; 4,082 individuals were sampled for the risk society group, and 2,005 valid questionnaires were obtained, yielding a crude response rate of about 49%.

The whole project lasted from June to December 2013. A pilot survey was conducted to test the reliability of the questionnaire and survey skills before the formal survey, and the formal survey lasted from September 22 to December 9. Tablets and the Computer Assisted Personal Interviewing (CAPI) method were used for the interviews, and all 48 interviewers involved in the risk society group were recruited and trained by the Institute of Sociology, Academia Sinica, the preeminent academic institution in Taiwan. Details of the research design, sampling method, and distribution of the variables can be found in the 2013 risk society survey codebook.²⁶

Measurements

Household Preparedness

In this survey, “household” means the concept of family or household as perceived by the respondent. “Household members” refers to other individuals living with the respondent who are perceived as family members. The question, “Have you ever done any of the following activities for natural disaster preparedness?” was used to inquire about the natural disaster preparedness behaviors of the respondents.

Six preparedness activities were proposed: (1) relocate vehicles or household valuable items to a safe place; (2) purchase insurance against natural disasters; (3) secure furniture at home; (4) prepare an emergency kit; (5) be aware of emergency evacuation procedures, routes, and shelters within the community; and (6) participate in emergency drills. Each of the preparedness activities was coded as a dummy variable, 1 meaning adopting that kind of activity and 0 meaning not adopting.

Disability

The original survey had 3 variables to capture the disability status of household members. The first was, “Does anyone of your household members (living with you) have mobility difficulties/cannot walk or move without help?” The second was, “Do you have any physical disability or mental disorder (having a disability certificate)?” And the third was, “Does anyone in your household (living with you) have any physical disability or mental disorder (having a disability certificate)?” If the answers to any of the 3 questions was “yes,” the generated disability variable was assigned a value of 1, meaning there was a disabled household member; otherwise, it was coded 0.

Risk Perception

Earthquakes and typhoons were used as the natural disaster agents in this survey because they are the most frequently

occurring disasters in Taiwan.²⁸ The risk perception of each kind of the 2 natural disasters included 3 dimensions—perceived probability, perceived consequence, and whether it was worrisome. For example, for the typhoon the perceived probability was obtained by the question, “How likely do you think it is that a typhoon disaster will happen to your home?” The answers ranged from 1 to 5, indicating an increase of the probability. The perceived consequence was determined by the question, “Do you think you have the ability to control or deal with the potential impact of a typhoon to your home if it occurred?” The answers again ranged from “lower consequence/can control [1]” to “large consequence/cannot control at all [5].” The worrisome variable was also measured by a 5-point Likert scale and obtained by the question, “How much do you worry that a potential typhoon would hit your home?” The answers represented an increasing degree of worrisomeness.

Other Control Variables

The disaster experience (both typhoon and earthquake), home ownership status, whether there were children in the household, perceived social status, household monthly income, gender, age, education attainment, and religious status were used as controlled variables in this analysis. Both the typhoon experience and earthquake experience were dummy variables, with 1 as having disaster experience. Home ownership, whether there were children in the household, religious status, and gender variables were also dummy variables, with 1 as the positive meaning (ie, owned their house/apartment, had at least 1 child, professed religious beliefs, and were male). The perceived social status variable was commonly used in the International General Social Survey Programme to measure the respondents’ perception of their overall social and economic ranking on the social ladders. It ranged from 1 to 10, indicating an increasing degree of socioeconomic status. The household income was a category variable ranging from 1 to 26, indicating an increase in monthly household income. Age was a continuous variable, while education attainment ranged from 1 to 4, representing “illiteracy or primary education,” “middle school education or equivalent,” “high school or equivalent,” and “college or above.”

Data Analysis Method

When the data were analyzed, the generated variables of preparedness activities and the disability status were coded as 1 if they were chosen, and the missing values were coded as 0. The limited missing values of the 5-point Likert scale risk perception variables were replaced by the median value (3). For the controlled variables, if the variables were continuous variables, the missing values were replaced by the mean value. For other dummy or category variables, the limited missing values were manually coded case by case by examining other socioeconomic and demographic variables of the same case.

The mean, standard deviation, and minimum and maximum values of each variable were reported with comparisons (*t*-test, χ^2 test, and ordinal regression) of the mean values between the households with and without disabled members in the descriptive analysis. Six Logit regression models were used to analyze the effects of predicting variables on the 6 kinds of proposed preparedness activities separately because they were dummy variables. The unadjusted results were reported first, and then the results adjusted by the controlled variables were presented. The statistical software Stata MP 13.1 version was employed to implement the analysis.

RESULTS

The descriptive analysis results are presented in Table 1. In this sample, 371 households have at least 1 family member who is either physically or mentally disabled, while the other 1,634 households have no disabled family members. In general, the households with disabled family members prepared less than households without disabled family members, but only the differences for preparing emergency kits and planning for evacuation are significant. In the households having no disabled family members, the percentage of adopting the 6 kinds of preparedness activities were: relocating vehicles (58%), purchasing insurance (12%), securing furniture (31%), preparing an emergency kit (19%), planning for evacuation (31%), and participating in drills (14%). The

adoption percentage of the 6 preparedness activities in the households having disabled family members were: relocating vehicles (55%), purchasing insurance (10%), securing furniture (30%), preparing an emergency kit (13%), planning for evacuation (25%), and participating in drills (13%).

Overall, households with disabled family members have higher risk perception than those without disabled family members. The mean values for households without disabled members were: perceived probability of typhoon (2.13), consequences of typhoon (3.06), how worrisome is typhoon (3.06), perceived probability of earthquake (2.76), consequences of earthquake (4.16), and how worrisome is an earthquake (3.69). In households with disabled family members group, the average values were: perceived probability of typhoon (2.23), consequences of typhoon (3.38), how worrisome is typhoon (3.23), perceived probability of earthquake (2.72), consequences of earthquake (4.25), and how worrisome is an earthquake (3.76).

The comparisons between the controlled socioeconomic and demographic variables indicate that the households with disabled members are more vulnerable than the households without disabled members. In the households without disabled family members, 42% have experienced a typhoon, 21% have experienced an earthquake, 82% own their house or apartment, 41% have at least 1 child, 50% are male, and 79% have religious beliefs. The respondents in this group have an average age of 46.35, with an average educational attainment above high school level (3.26), a perceived social status of 4.71 in the rank between 1 and 10,

Table 1. Descriptive Analysis

	<i>Disabled (371)</i>	<i>Nondisabled (1,634)</i>	<i>P*-Value</i>	<i>Min</i>	<i>Max</i>
	<i>Mean (SD)</i>	<i>Mean (SD)</i>			
Relocate vehicles	0.55 (0.50)	0.58 (0.49)	0.39	0	1
Purchase insurance	0.10 (0.30)	0.12 (0.33)	0.19	0	1
Secure furniture	0.30 (0.46)	0.31 (0.46)	0.85	0	1
Prepare kit	0.13 (0.34)	0.19 (0.39)	0.01	0	1
Plan evacuation	0.25 (0.43)	0.31 (0.46)	0.03	0	1
Participate in drill	0.13 (0.33)	0.14 (0.35)	0.57	0	1
Probability of typhoon	2.23 (1.12)	2.13 (1.09)	0.10	1	5
Consequence of typhoon	3.38 (1.46)	3.06 (1.44)	0.00	1	5
Worry about typhoon	3.23 (1.39)	3.06 (1.33)	0.02	1	5
Probability of earthquake	2.72 (1.17)	2.76 (1.13)	0.40	1	5
Consequence of earthquake	4.25 (1.16)	4.16 (1.16)	0.08	1	5
Worry about earthquake	3.76 (1.27)	3.69 (1.28)	0.33	1	5
Experience typhoon	0.42 (0.49)	0.42 (0.49)	0.93	0	1
Experience earthquake	0.24 (0.43)	0.21 (0.41)	0.18	0	1
Home ownership	0.75 (0.43)	0.82 (0.38)	0.00	0	1
Children	0.40 (0.49)	0.41 (0.49)	0.85	0	1
Status	4.31 (1.89)	4.71 (1.68)	0.00	1	10
Family income	8.24 (4.47)	9.29 (4.34)	0.00	1	26
Gender	0.55 (0.50)	0.50 (0.50)	0.07	0	1
Age	51.22 (18.43)	46.35 (16.78)	0.00	0	95
Education	2.81 (1.33)	3.26 (1.15)	0.00	1	4
Religion	0.85 (0.35)	0.79 (0.40)	0.01	0	1

*Mean comparison, disabled vs nondisabled; *t*-test for continuous variables, χ^2 test for dummy, ologit for ordinal variables.

Table 2. Unadjusted Logistic Regression on Preparedness Activities ($N=2,005$)

<i>Preparedness</i>	<i>Relocate</i>	<i>Insurance</i>	<i>Secure Furniture</i>	<i>Prepare Kit</i>	<i>Plan Evacuation</i>	<i>Participate in Drill</i>
Disabled	0.90 (0.72,1.14)	0.78 (0.53,1.13)	0.98 (0.76,1.25)	0.66* (0.47,0.91)	0.76* (0.58,0.98)	0.91 (0.65,1.27)

+Odds Ratio Reported; 95% confidence intervals in brackets.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

and an average of family monthly income of 9.29—that is, between 70,000 and 89,999 new Taiwan dollars (about US\$2,293-US\$2,948).

In households with disabled family members, 42% have experienced a typhoon, 24% have experienced an earthquake, 75% own their house or apartment, 40% have at least 1 child, 55% are male, and 85% have religious beliefs. On average, the respondents from households with disabled members perceive themselves as having lower social status (4.31), having lower family income (8.24, or between 60,000 and 79,000 Taiwan dollars) and lower education attainment (2.81, or between middle school and high school), and are older (51.29).

The unadjusted results of adopting preparedness activities between the disabled and nondisabled groups are reported in Table 2. The households with disabled family members have a lower probability of adopting all 6 kinds of preparedness activities, and such effects on the “prepare an emergency kit” and “plan for evacuation” are significant.

The adjusted results with controlled variables show that there are no significant differences in adopting all 6 preparedness activities between the households with disabled members and the households without disabled family members (Table 3).

Overall, the perceived consequence and worrisomeness are relatively significantly correlated with adopting preparedness activities. If the respondents perceived a higher

consequence of a typhoon (lower controllability), they would have a significantly lower probability of relocating their vehicles, securing their furniture, preparing an emergency kit, planning for evacuation, and participating in drills. The worrisomeness of typhoons is positively associated with relocating vehicles, securing furniture, and planning for evacuation. The perceived consequence of a potential earthquake’s negative effects is significant only for securing furniture and planning for evacuation, while the worrisomeness of an earthquake is a positive predictor of relocating vehicles, securing furniture, and planning for evacuation. The perceived probability of both a typhoon and an earthquake are not significant predictors of adopting preparedness activities, besides the effect of the perceived earthquake’s probability on relocating vehicles.

Typhoon experience is the strongest and most significant positive predictor of relocating vehicles, securing furniture, and participating in drills, but the earthquake experience’s effects are not significant on any of the 6 preparedness activities. Educational attainment is another significant influencing factor. With a higher education level, the respondents have a higher probability of purchasing insurance, preparing an emergency kit, planning for evacuation, and participating in drills. Home ownership, having children in the home, religious status, and perceived social status have no significant impacts on any of the 6 preparedness activities. The

Table 3. Adjusted Logit Regression Models on Preparedness Activities ($N=2,005$)

	<i>Relocate Vehicles</i>	<i>Purchase Insurance</i>	<i>Secure Furniture</i>	<i>Prepare Kit</i>	<i>Plan Evacuation</i>	<i>Participate in Drill</i>
Disabled	0.92 (0.73,1.17)	0.95 (0.64,1.40)	0.96 (0.74,1.24)	0.76 (0.54,1.06)	0.86 (0.65,1.12)	1.08 (0.76,1.54)
Probability of typhoon	1.09 (0.99,1.21)	0.99 (0.85,1.15)	1.05 (0.94,1.16)	1.12 (0.99,1.27)	1.07 (0.96,1.19)	1.15 (1.00,1.32)
Consequence of typhoon	0.92* (0.85,1.00)	0.89 (0.79,1.00)	0.91* (0.84,0.99)	0.83*** (0.75,0.92)	0.90* (0.83,0.98)	0.87* (0.77,0.98)
Worry about typhoon	1.10* (1.01,1.21)	0.97 (0.84,1.12)	1.19*** (1.08,1.32)	1.04 (0.92,1.18)	1.12* (1.01,1.24)	0.97 (0.84,1.11)
Probability of earthquake	1.12* (1.02,1.24)	1.09 (0.93,1.27)	1.05 (0.95,1.16)	1.01 (0.89,1.15)	1.09 (0.98,1.21)	1.04 (0.89,1.20)
Consequence of earthquake	0.94 (0.85,1.03)	0.91 (0.79,1.05)	0.90* (0.81,1.00)	0.94 (0.83,1.06)	0.86** (0.78,0.96)	0.93 (0.82,1.07)
Worry about earthquake	1.17** (1.06,1.29)	1.10 (0.95,1.29)	1.18** (1.06,1.31)	1.11 (0.98,1.27)	1.13* (1.01,1.26)	1.01 (0.87,1.16)
Experience typhoon	1.66*** (1.37,2.00)	1.30 (0.98,1.74)	1.31** (1.07,1.60)	1.24 (0.98,1.58)	1.16 (0.95,1.42)	1.70*** (1.30,2.22)
Experience earthquake	0.85 (0.67,1.06)	0.76 (0.53,1.08)	1.26 (1.00,1.59)	0.98 (0.74,1.31)	1.11 (0.87,1.41)	1.23 (0.91,1.68)
Home ownership	0.95 (0.74,1.20)	1.49 (0.98,2.27)	1.08 (0.83,1.39)	1.01 (0.74,1.38)	1.01 (0.78,1.32)	0.74 (0.53,1.03)
Children	1.17 (0.97,1.41)	1.05 (0.79,1.40)	1.04 (0.85,1.27)	1.04 (0.82,1.32)	1.16 (0.95,1.41)	0.96 (0.73,1.25)
Perceived social status	1.03 (0.98,1.09)	1.06 (0.97,1.16)	1.06 (1.00,1.12)	1.01 (0.94,1.09)	1.05 (0.99,1.12)	1.05 (0.97,1.15)
Family income	1.01 (0.99,1.03)	1.05** (1.02,1.08)	0.99 (0.97,1.02)	1.01 (0.98,1.04)	1.01 (0.99,1.04)	1.02 (0.99,1.06)
Gender	1.23* (1.02,1.48)	1.08 (0.81,1.45)	1.13 (0.92,1.37)	0.91 (0.71,1.15)	1.11 (0.91,1.36)	0.95 (0.73,1.24)
Age	1.00 (1.00,1.01)	1.01** (1.00,1.02)	1.01* (1.00,1.02)	1.00 (0.99,1.01)	1.00 (0.99,1.01)	1.00 (0.99,1.01)
Education	1.09 (0.98,1.21)	1.43*** (1.20,1.70)	1.05 (0.94,1.17)	1.36*** (1.18,1.58)	1.37*** (1.22,1.53)	1.45*** (1.21,1.73)
Religion	1.18 (0.93,1.50)	0.96 (0.68,1.36)	0.90 (0.70,1.16)	0.98 (0.73,1.32)	1.09 (0.84,1.40)	0.91 (0.66,1.26)

+Odds ratios reported; 95% confidence intervals in brackets.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

effects of family income, gender, and age on very limited preparedness activities are significant.

DISCUSSION AND CONCLUSION

In this article, we analyze the emergency preparedness variations between households with disabled members and households without disabled members, using a representative sample from Taiwan. Overall, having disabled family members is not a significant predictor of adopting emergency preparedness activities, such as relocating vehicles or valuable things, purchasing insurance, securing furniture, preparing an emergency kit, planning for evacuation, and participating in drills. Unlike most prior studies, which demonstrate that people with disabilities have a lower level of emergency preparedness than the people without disabilities,^{12,14-16} our data from Taiwan cannot support such a conclusion. Being disabled is negatively associated with adopting emergency preparedness activities, but these correlations become insignificant when the risk perception, prior disaster experience, and socioeconomic and demographic variables are controlled. The result of this analysis is not the only case; not all studies can support such negative correlation between being disabled and emergency preparedness activities.^{19,20,29}

The risk perception of natural hazards such as earthquakes and typhoons and prior experience with these 2 hazards' effects on adopting preparedness activities are also explored here. Unlike previous studies, which use the perceived likelihood dimension alone,^{19,30} we expand the risk perception to perceived likelihood, perceived consequence, and worrisomeness dimensions. As with other prior conclusions that perceived likelihood is not significantly associated with adoption of preparedness activities among disabled people,^{19,30} our analysis also demonstrates that the perceived consequence and worrisomeness are relatively stronger predictors of the level of preparedness, not the perceived likelihood.³¹ With higher degree of worrisomeness or a lower degree of perceived consequence (perceived controllability), the respondents would be more likely to adopt varied preparedness activities. We also confirmed that prior disaster experience is positively associated with adoption of varied preparedness activities.^{4,32}

In addition, our analysis shows that risk perception and experience of more controllable hazards, like a typhoon, affect the varied preparedness activities differently than uncontrollable hazards, like an earthquake. The worrisomeness dimension of both hazards have similar impact patterns, but the experience and perceived consequence of a typhoon can affect more kinds of preparedness activities. This finding may indicate that if a hazard is perceived as being more uncontrollable, people will not prepare for it, although they perceive the risk. This actually reveals one of our research limitations, which can be strengthened in future: We did not include efficacy or usefulness of the pre-

paredness activities in our models. Perceived efficacy of protective actions on the adoption of those actions, including both mitigation and preparedness, is needed,³³ and limited prior study indicated that self-efficacy is a significant positive predictor for preparedness activities such as planning, discussion with others, and preparing emergency supplies by families of children with special healthcare needs.³⁰

In sum, we contribute to the current knowledge of emergency preparedness of households with members with disabilities, using representative data from a non-Western society. Our results show that there are no significant differences in adopting varied preparedness activities between households with disabled members and households without disabled members. Also, the role of risk perception and prior disaster experience in adoption of emergency preparedness is explored. Within the socioeconomic and demographic variables adjusted in the analysis, educational attainment is the only one that has a consistent effect (positive) on the adoption of preparedness activities. In addition to the current studies, which use publicly available data like the CDC BRFSS or the TSCS data from Taiwan, investigations with specific designs, such as including more medical preparedness measures^{15,24} or barriers in the community⁴ targeted to people with disabilities should be conducted in the future to better protect, serve, and engage people with disabilities in disaster and emergency management.

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