

# Older Adults, Loneliness, and Earthquake Preparedness

Mihoka Fukurai, MPH & Lisa Grant Ludwig, PhD

Department of Population Health & Disease Prevention, Wen School of Population & Public Health

## Introduction

### Background:

In the context of an aging population and increasing natural disasters, loneliness is a critical factor that may undermine individuals' capacity to prepare for emergencies effectively. Drawing on the theoretical framework of the Japanese Older Adult Preparedness Model (JOAPM), informed by the Protective Action Decision Model (PADM) and the Japanese cultural context, we examined whether loneliness influences risk perception of earthquakes and, in turn, protective actions.

### Objectives:

This study **investigates the role of loneliness in shaping disaster risk perception and preparedness behaviors among older adults**, specifically focusing on earthquake hazards in Japan.

## Method

### Participants:

**Study participants were Japanese individuals over 55 years of age**, living in one of four prefectures (Tokyo, Kanagawa, Okayama, Kochi). The four prefectures were chosen to observe rural-urban differences in older adults across various socio-structural environments with similar earthquake risk.

### Measure:

#### Individual Characteristics/socio-environmental variables:

Age, homeownership (rent/own single standing home/own apartment unit/other), biological sex, area of residence, and marriage status (single, married, divorced, or widowed), number of people living with, rural-urban, having trouble walking.

**Psychosocial variable (Predictor):** Perceived loneliness

**Psychological processes (Predictor):** risk perception

**Protective behavior (Outcome variable):** number of preparedness behaviors engaged in

### Statistical Analysis

Bivariate analyses were conducted using t- and chi-square tests to explore the relationship between protective behavior, risk perception, and various demographic variables.

ANOVA to test the relationship between demographic variables and loneliness.

Mediation model to test the relationship between loneliness, risk perception, and protective behavior.

## Japanese Older Adult Protection Model

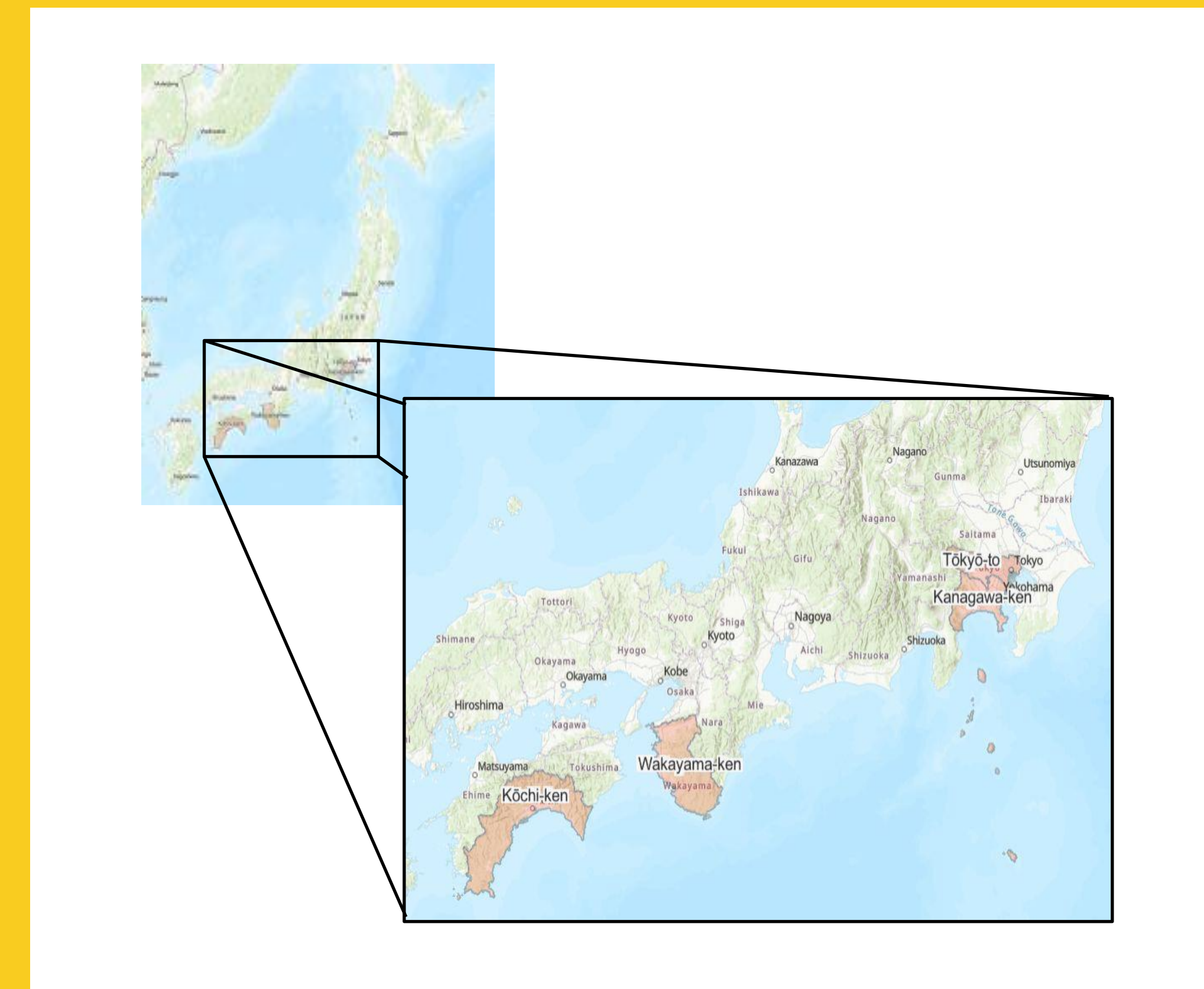
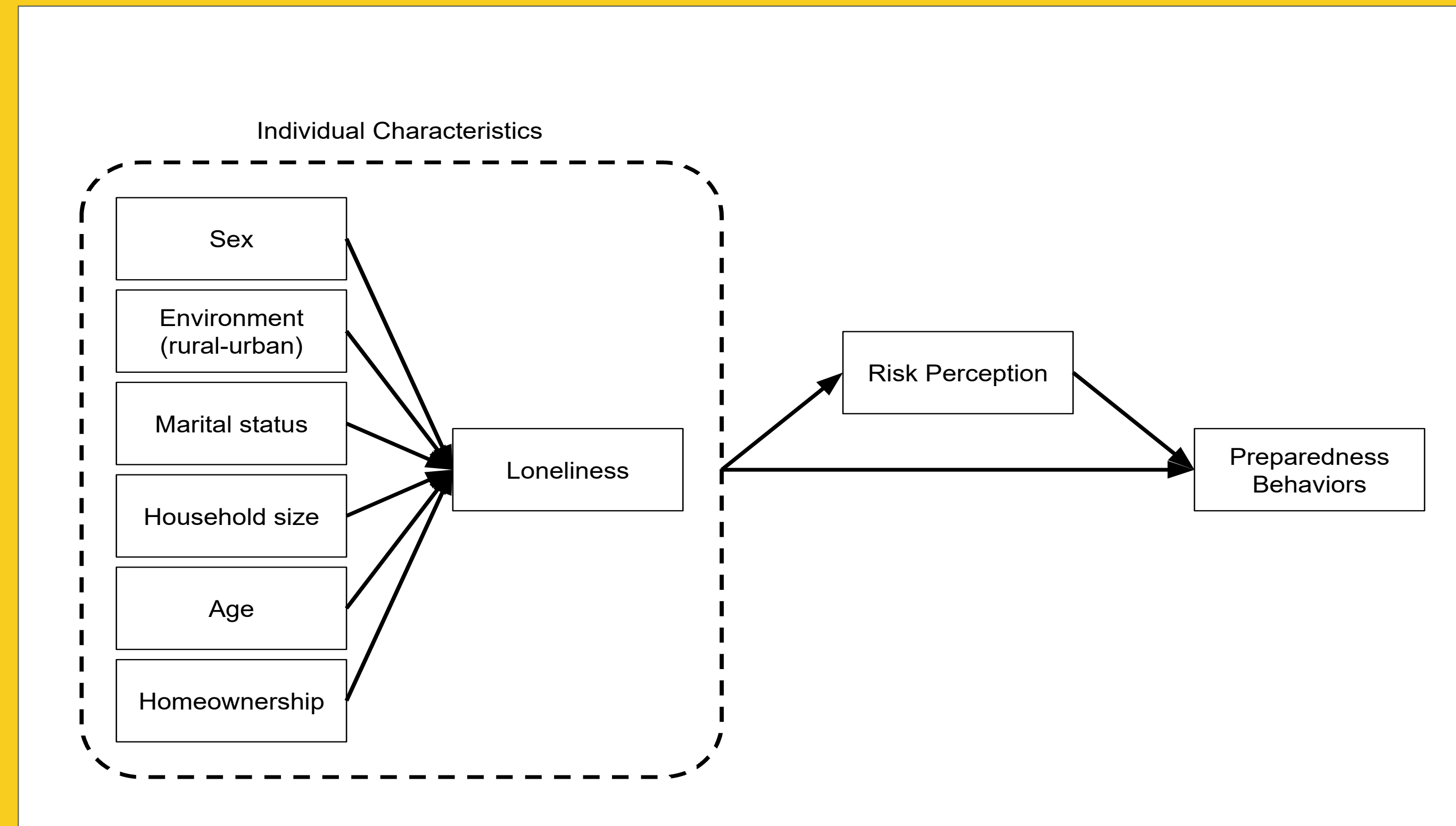
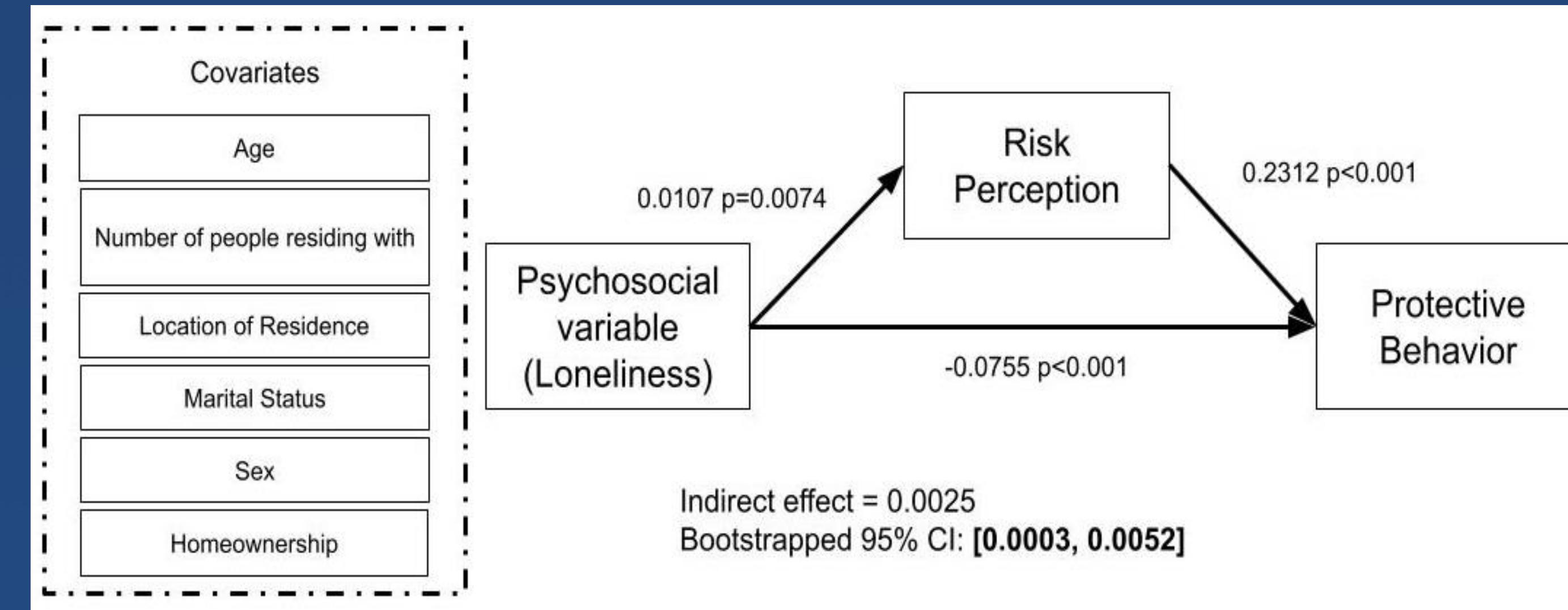


Figure 2: Map of the prefectures sampled



	N	%
<b>Stockpiling food and water</b>		
No	515	32.20%
Yes	1085	67.80%
<b>Knowledge of the evacuation shelter</b>		
No	397	24.80%
Yes	1203	75.10%
<b>Have an emergency pack</b>		
No	840	52.50%
Yes	760	47.50%
<b>Discussion with family about emergency situations</b>		
No	830	51.80%
Yes	770	48.10%
<b>Can help and rely on neighbors</b>		
No	1160	72.50%
Yes	440	27.50%
<b>sum of 5 prep activities</b>		
0	188	11.70%
1	251	15.70%
2	287	17.90%
3	309	19.30%
4	319	19.90%
5	246	15.40%

	N	%
<b>Gender</b>		
Male	769	48.00%
Female	831	51.90%
<b>Age</b>		
55-59	374	23.40%
60-64	364	22.70%
65-69	329	20.50%
70-74	297	18.60%
75-79	236	14.70%
<b>Residing environment</b>		
Urban	576	36.00%
Suburban	323	20.20%
Rural	701	43.80%
<b>Have trouble walking</b>		
Yes	140	8.70%
No	1460	91.20%
<b>How many people you live with</b>		
0 (Alone)	289	18.10%
1	773	48.30%
2	312	19.50%
3	147	9.20%
4	53	3.30%
5+	26	1.60%
<b>Marital status</b>		
Single	203	12.70%
Married	1134	70.80%
Widowed/Divorced	263	16.40%
<b>Living situation</b>		
Rental	283	17.70%
Own House (Single standing)	986	61.60%
Own Apartment	331	20.70%



## Results

### Loneliness

**Loneliness was negatively associated with disaster preparedness.** Individuals reporting higher levels of perceived loneliness were less likely to prepare (coef: -0.0755,  $p<0.001$ ).

**Loneliness was positively related to risk perception.** People who experienced greater symptoms of loneliness had higher risk perceptions for earthquakes (coef: 0.0107,  $p=0.0074$ ).

### Risk Perception

**Risk perception was significantly associated with disaster preparedness activities.** This confirms what has been observed in the literature.

**Risk perception significantly mediated the relationship between loneliness and protective behaviors.** Meaning that loneliness significantly affected protective measures through risk perception, resulting in a positive association.

### What does this mean?

Despite the slight positive association of loneliness and preparedness through risk perception, the direct effect of loneliness was a stronger predictor of preparedness action.

This might suggest that although lonelier individuals may feel more at risk, they remain less likely to translate this concern into preparedness actions (likely determinants for action may be self-efficacy, lack of motivation, learned helplessness, or diminished social resources).