Collaborative Research and Development Project for Disaster Mitigation in Earthquake Prone Areas in Asia

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- Outline of the R &D Project
- Statue of Theme 3

A Joint R & D Project for Safer Housing against Earthquakes

- **Objectives**
  Technology development to make the conventional houses safer
- **Term**

Three years
(2006-2008)

- **Funds**

-The Asia S&T Strategic Cooperation Promotion Program prepared by MEXT
- Building Research Institute (BRI)

Why conventional houses in developing countries?

- Most of the victims due to earthquakes are killed by their own houses as the conventional houses are vulnerable all over the world.
- Therefore, securing safety of the conventional houses (both newly constructed and existing) is crucial to reduce seismic damage.

Three topics under the research

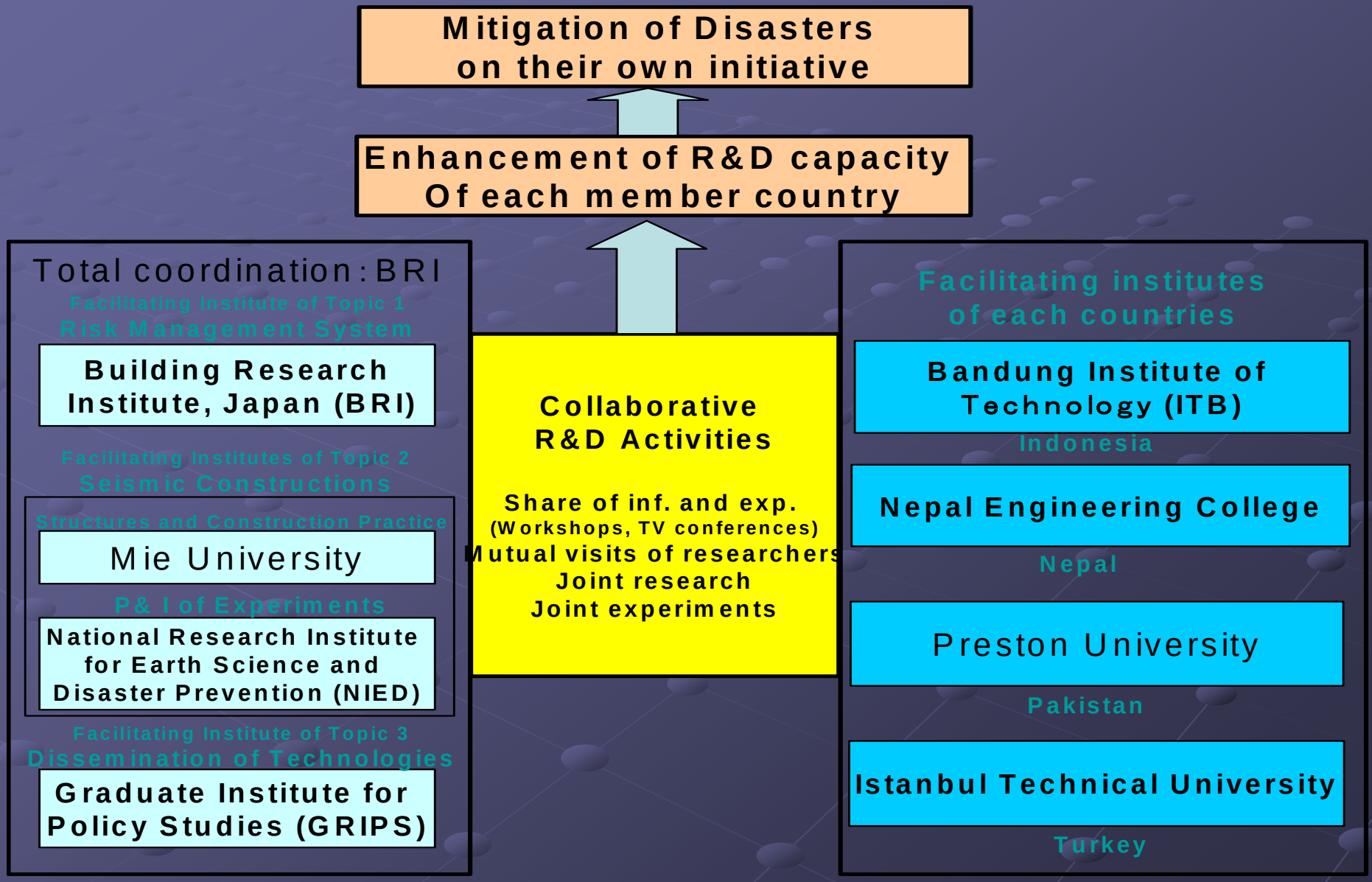
- **Theme1: Seismic Risk Assessment**

  To develop programs for seismic risk assessment of communities
- **Theme 2: Feasible and Affordable Technologies**

  To develop appropriate practical technologies for safer masonry (bricks, adobe, etc.) houses.
- **Theme 3: Strategies for Dissemination of Technologies to Communities**

  To develop guidelines for dissemination of technologies to people and communities

Collaboration among the research institutes



R & D Project in Nepal

- NEC (Nepal Engineering College) is the counterpart Institution in Nepal

  Cooperates in Theme 1 and 2

- NSET coordinates the activities in Nepal

  Cooperates in Theme 3

KTT Session 2006 15-28 Nov. 2006

- **Kobe, Tokyo and Tsukuba Sessions 2006 for Safer Housing**
- **Kick off events to launch the R&D Project**

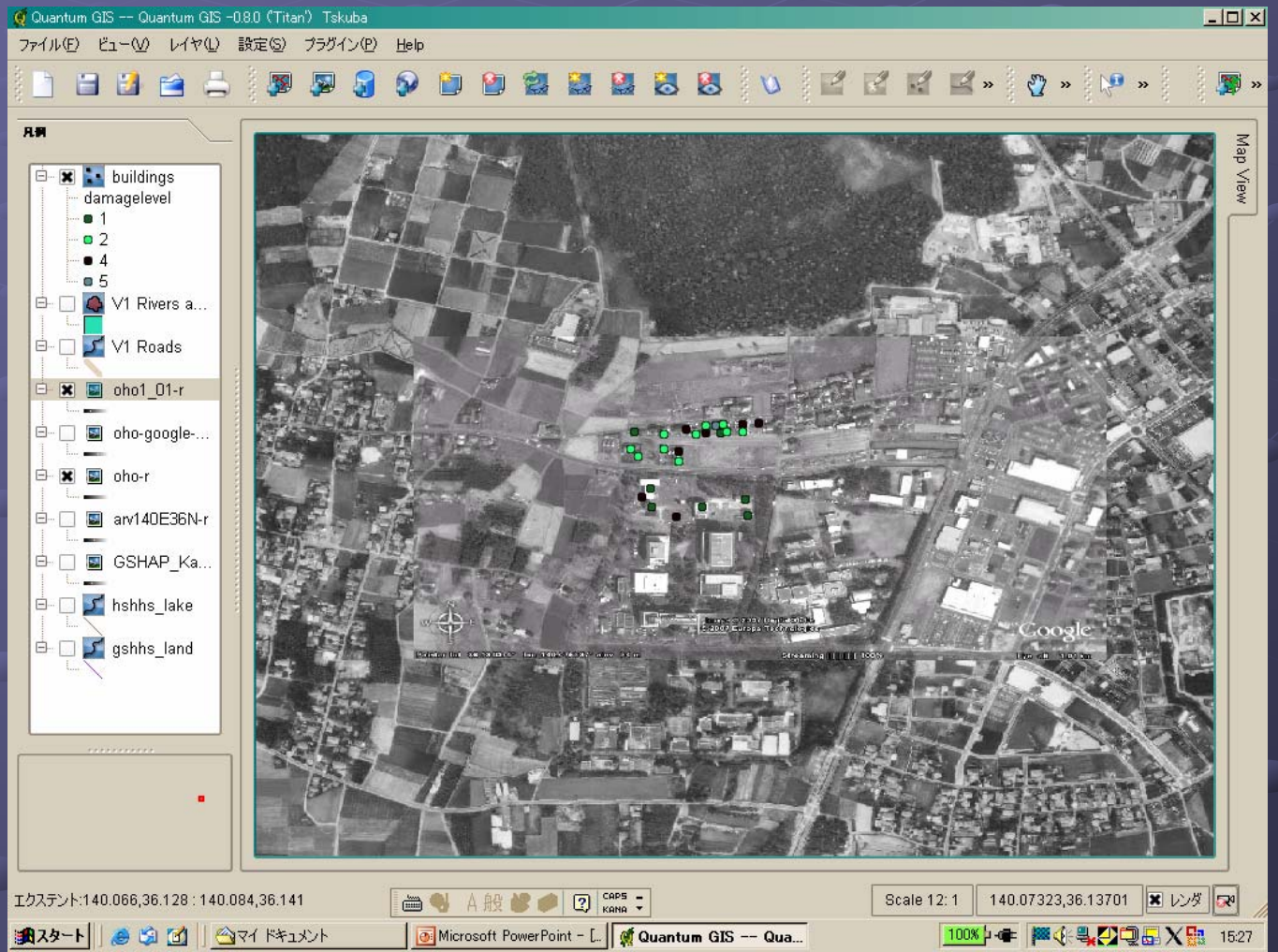
  - Plenary Meeting on Nov. 22
  - Group Discussion on Nov. 23 with Indonesia, Nepal, Pakistan, Turkey and Peru
  - connecting nine sub venues in the five countries

Activities in FY2007

- **Workshop on Theme 1 and Theme 3**
  Sep. 2007 in Nepal to discuss the activities in the past and in future in Nepal
- **Full scale shaking table experiment for Component 2-1**
  December 2007 at NIED in Tsukuba
- **Plenary Workshop for all the three topics**
  January 24, 2008 on VC system connecting five countries
- **Thematic Workshop on Theme 1 and Theme**
  Feb. 2008 in Japan to share the outcome of 2007 surveys
- **Group Discussion for Indonesia, Nepal, Pakistan, Turkey and Peru**
  Coordinator for each country will arrange the discussion on VC system connecting CP countries and Japan

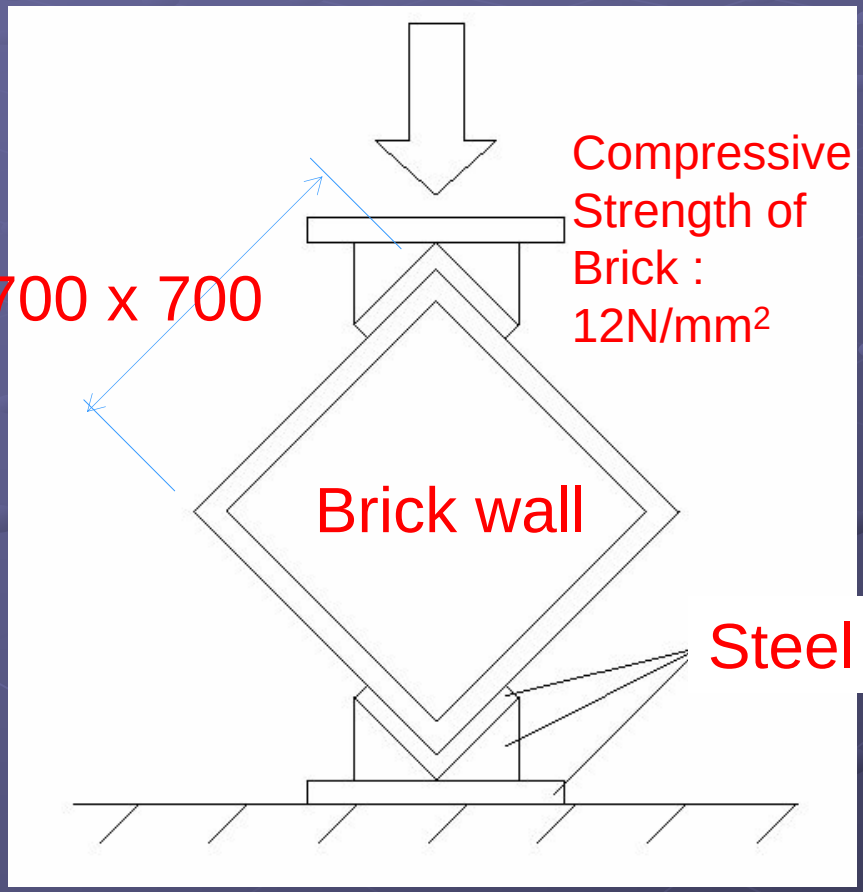
Theme 1: Seismic Risk Assessment Program

Development of GIS based user friendly program for seismic risk assessment for communities



Theme 2: Feasible and Affordable Technologies

Diagonal compression tests of brick walls (Mie University)

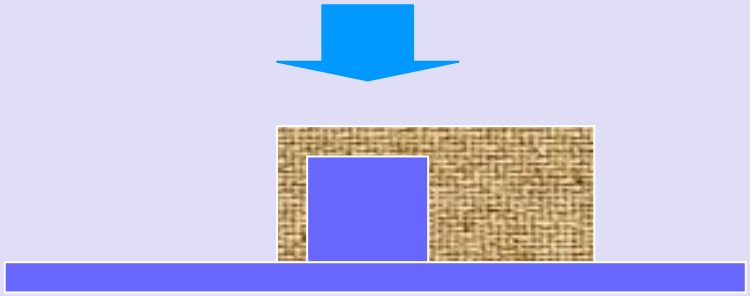


Parametric experimental study to examine effect of strengthening methods on improvement of in-plane behavior of confined brick masonry wall

Shaking Table Tests of Full-Scale Model

In 2007

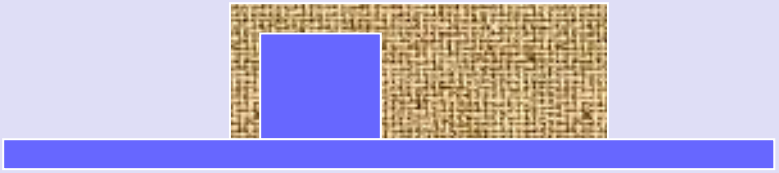
Preliminary laboratory tests and structural analyses in each country



Bench-mark tests at NIED in Japan

In 2008

Comprehensive study of appropriate technologies



In a counterpart country (expected : UET Peshawar)

Theme 3: Strategies for Dissemination of Technologies to Communities

- Technologies could be applied only when people/communities understand and accept them.
- Guidelines for effective dissemination strategies will be developed based on the surveys and pilot projects.
- Understanding of risk perception of the stakeholders is critical

Theme 3: Strategies for Dissemination of Technologies to Communities

Activities 2006-2008 FY (3 years)

2006 FY	2007 FY	2008 FY
- Data collection of good practices - Field survey on risk perception of people in 4 countries	- Survey on national and local government officers - Survey on builders/ masons - Options will be proposed	- Implementation of the pilot projects - Evaluation of the pilot projects - Development of the guidelines

Survey on Risk Perception of People

- A field social survey was conducted in January-February 2007 in 2 communities in the 4 countries (Indonesia, Nepal, Pakistan, and Turkey) respectively.
- It aimed to better understand the earthquake risk perception of people and identify factors to affect actions for housing safety.
- A pre-test was conducted by NSET Nepal in November 2006.

Field Survey Method

- Sample households

  Approx. 400 households per one community
- Targeted 2 communities in each country are;

  - Where some disaster management initiatives have been conducted and where not

  - Where a big earthquake took place recently and where not
- The same questionnaire on earthquake risk perception and safety/vulnerability of the houses was used to different communities in the 4 countries
- Each counterpart institute analyzes the characteristics of its own country
- GRIPS compares and analyzes the difference among the countries

Questions in the questionnaire

- Address, Sex, Age, Ethnic group, Family members living together , Household income, Occupation, etc.
- About the house

  - Ownership, Floor area, Type of houses, Major structure, Cost
- About risk

  - What do you think will most severely affect your life?

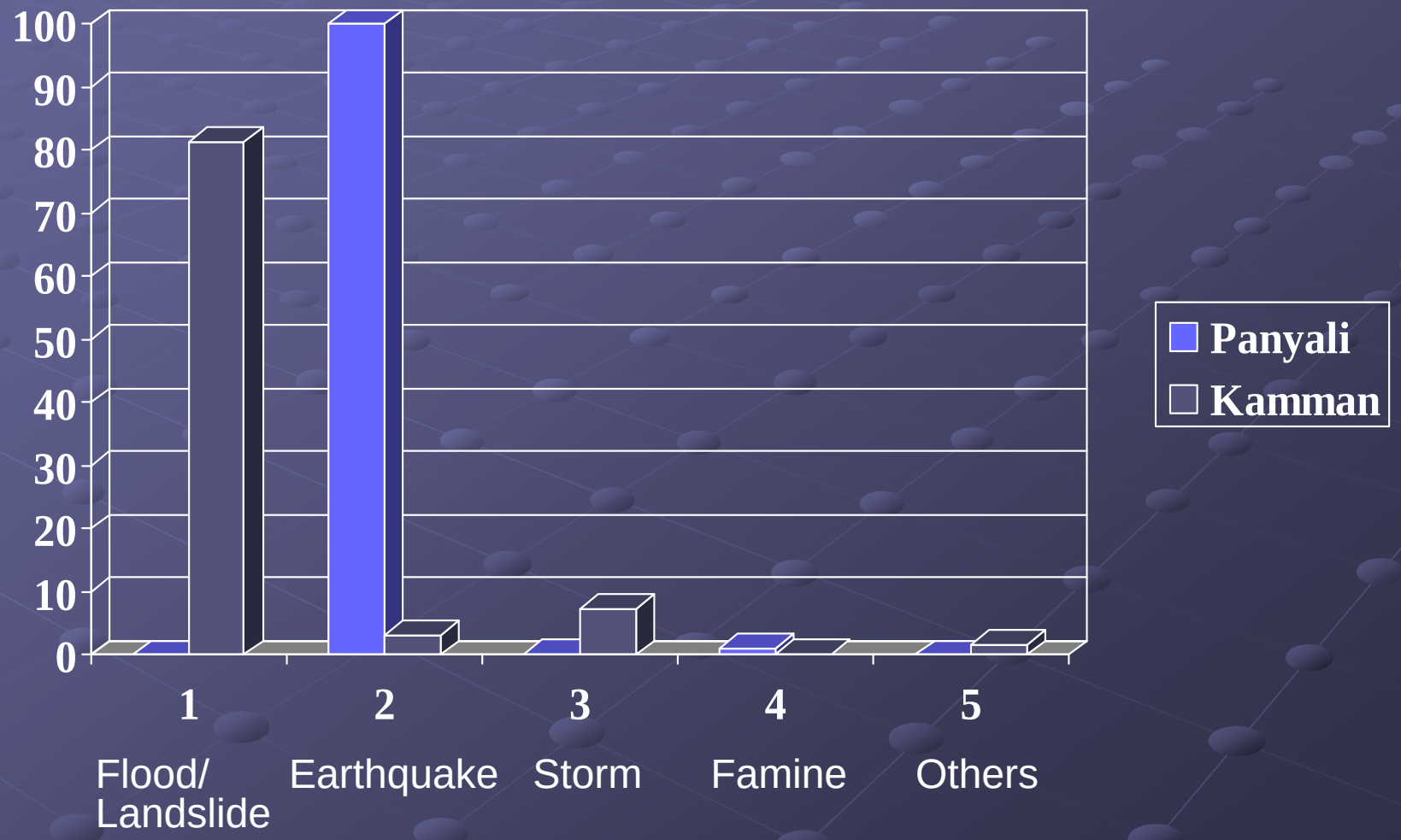
  - What kind of disaster risk do you think is the highest in this area within next 10 years?

  - What kinds of impacts do you anticipate due to a big earthquake? etc.
- About communities

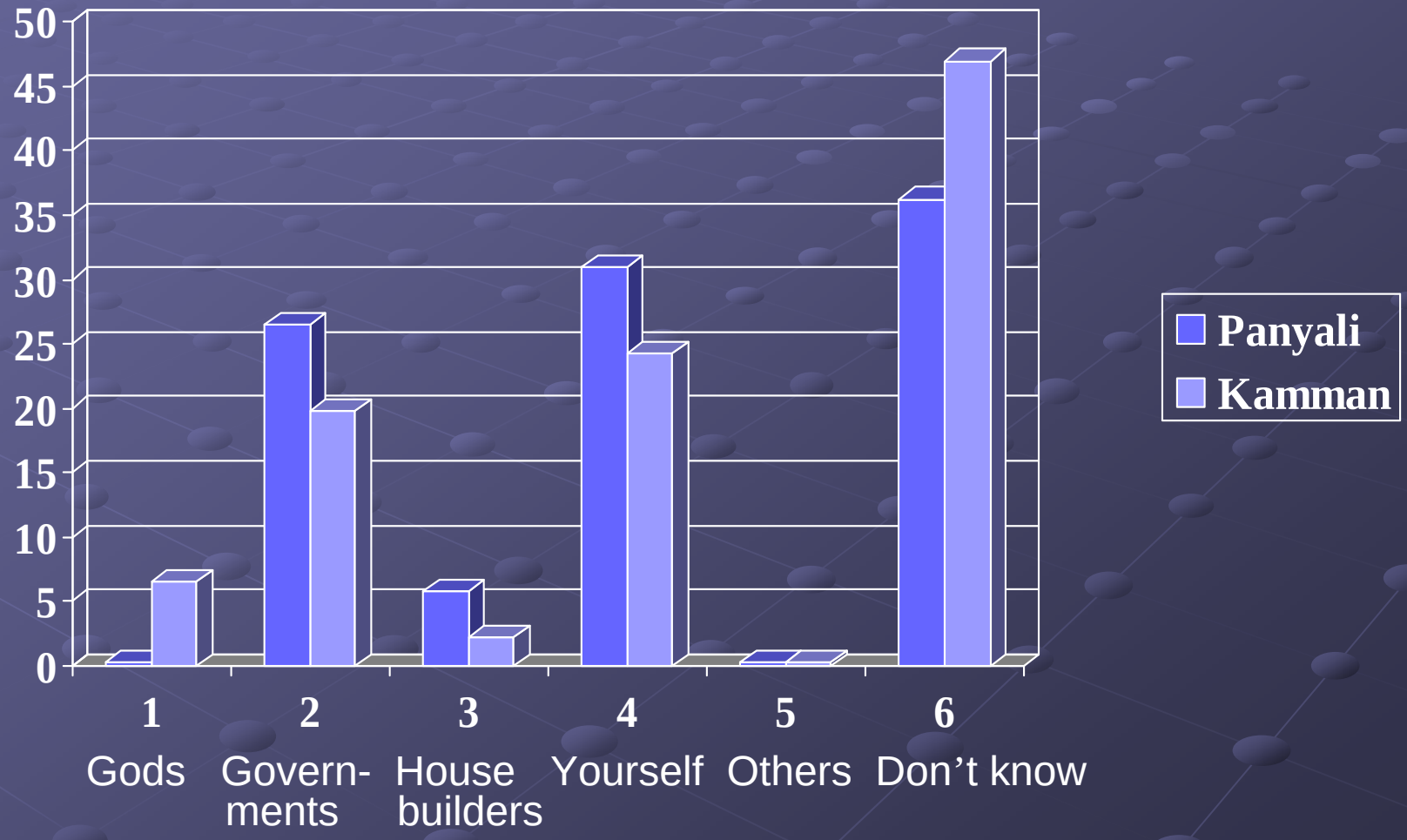
  - What facilities do you think should be protected with high priority

  - Any community based associations or organizations are working for disaster risk reduction in this area? etc.

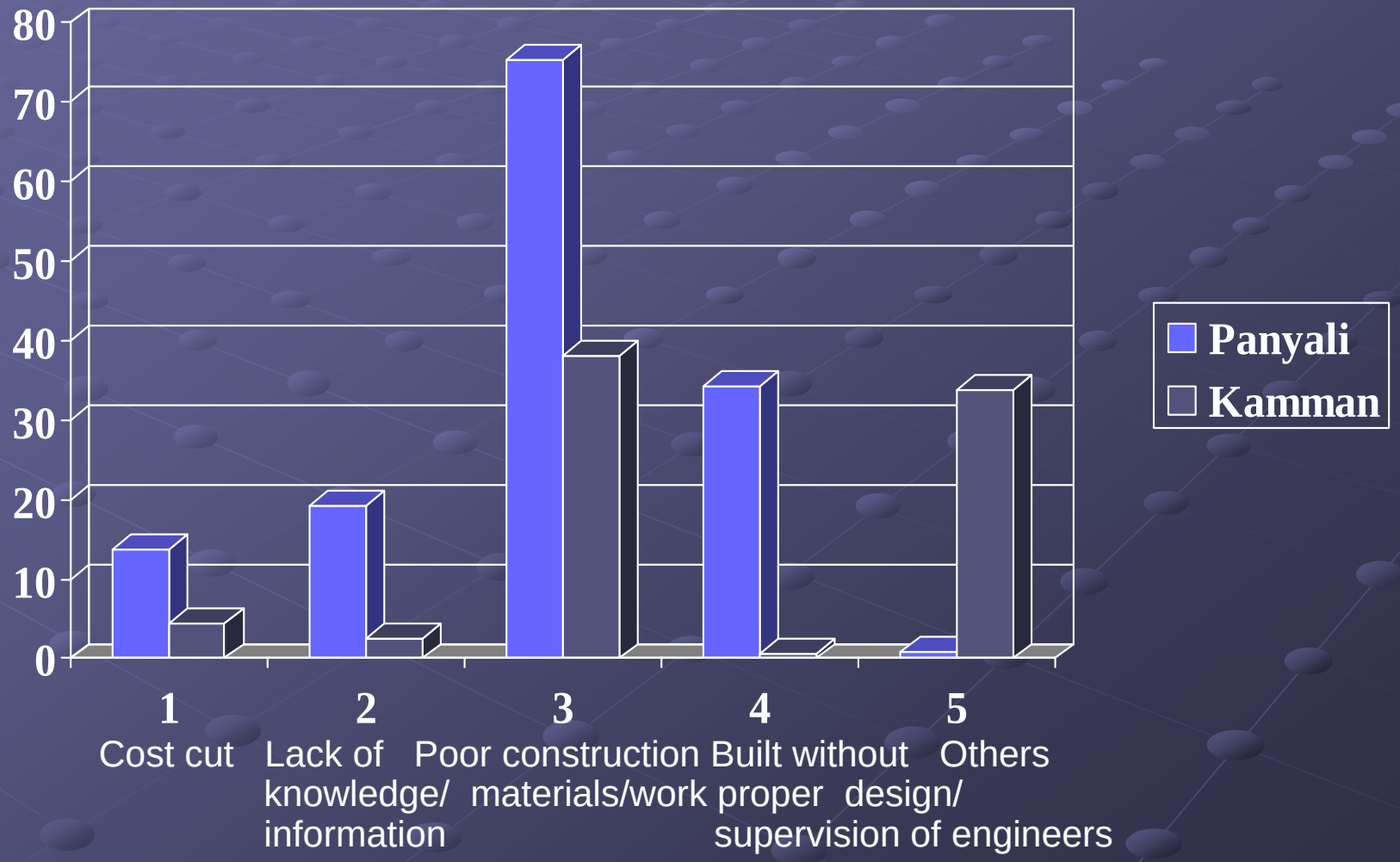
What kind of disaster do you think will most affect your life? (Pakistan)



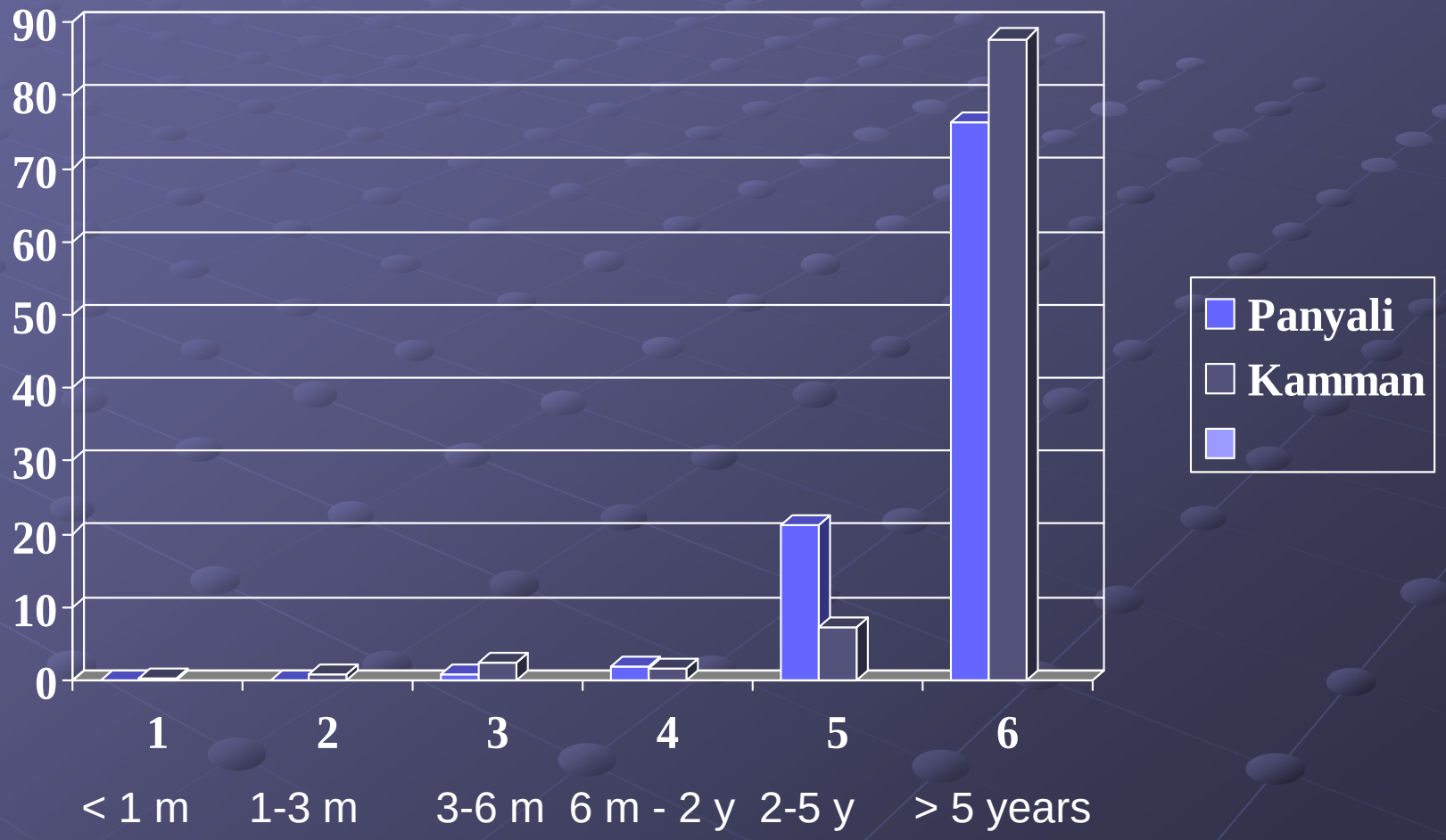
If your house would collapse and kill some of your family due to a big earthquake, whom would you blame?



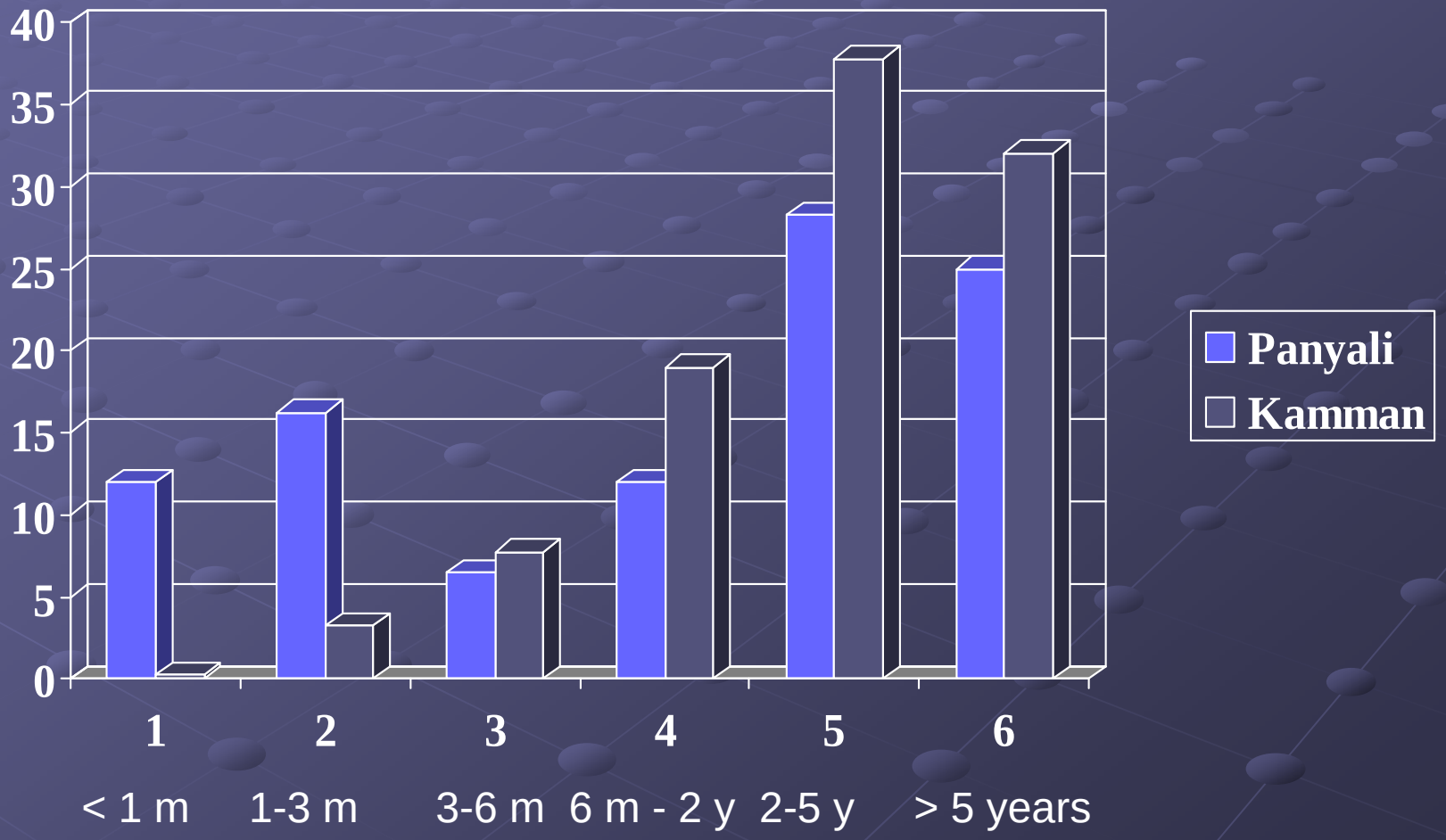
If your house would be severely damaged by an earthquake, what would be the causes for the weak house?



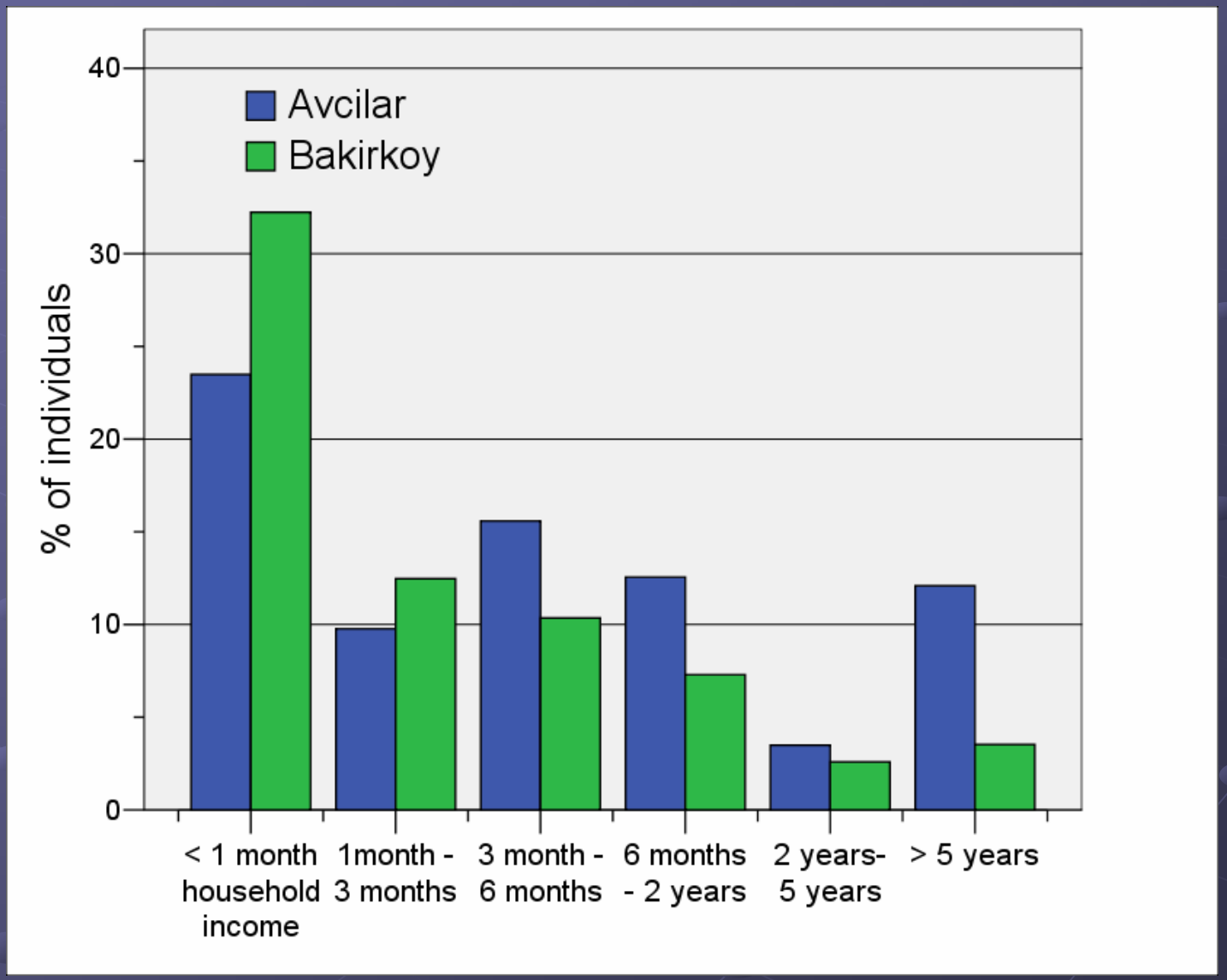
How much can you spend to protect your house/property from a big earthquake?



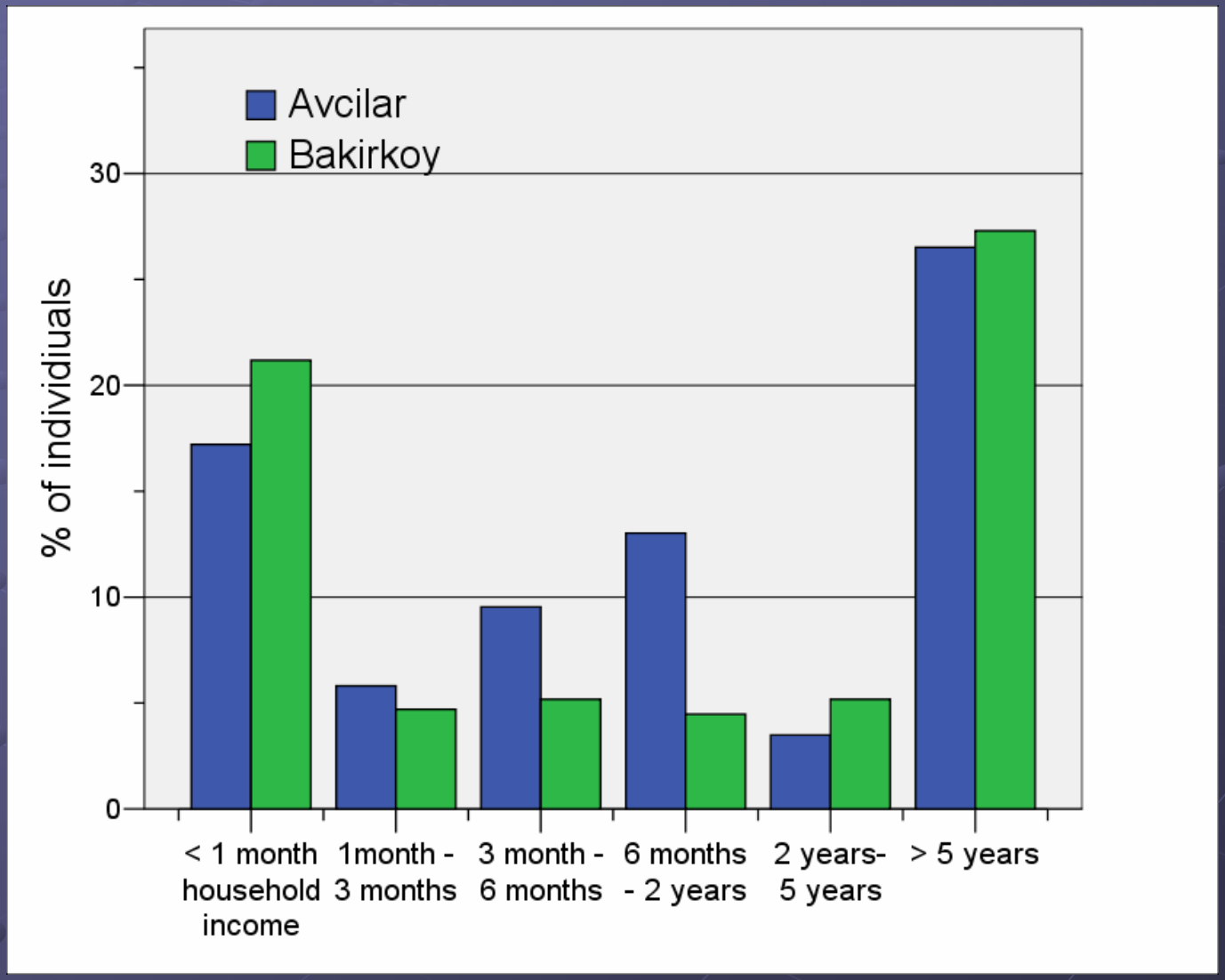
How much can you spend to protect your family members from a big earthquake?



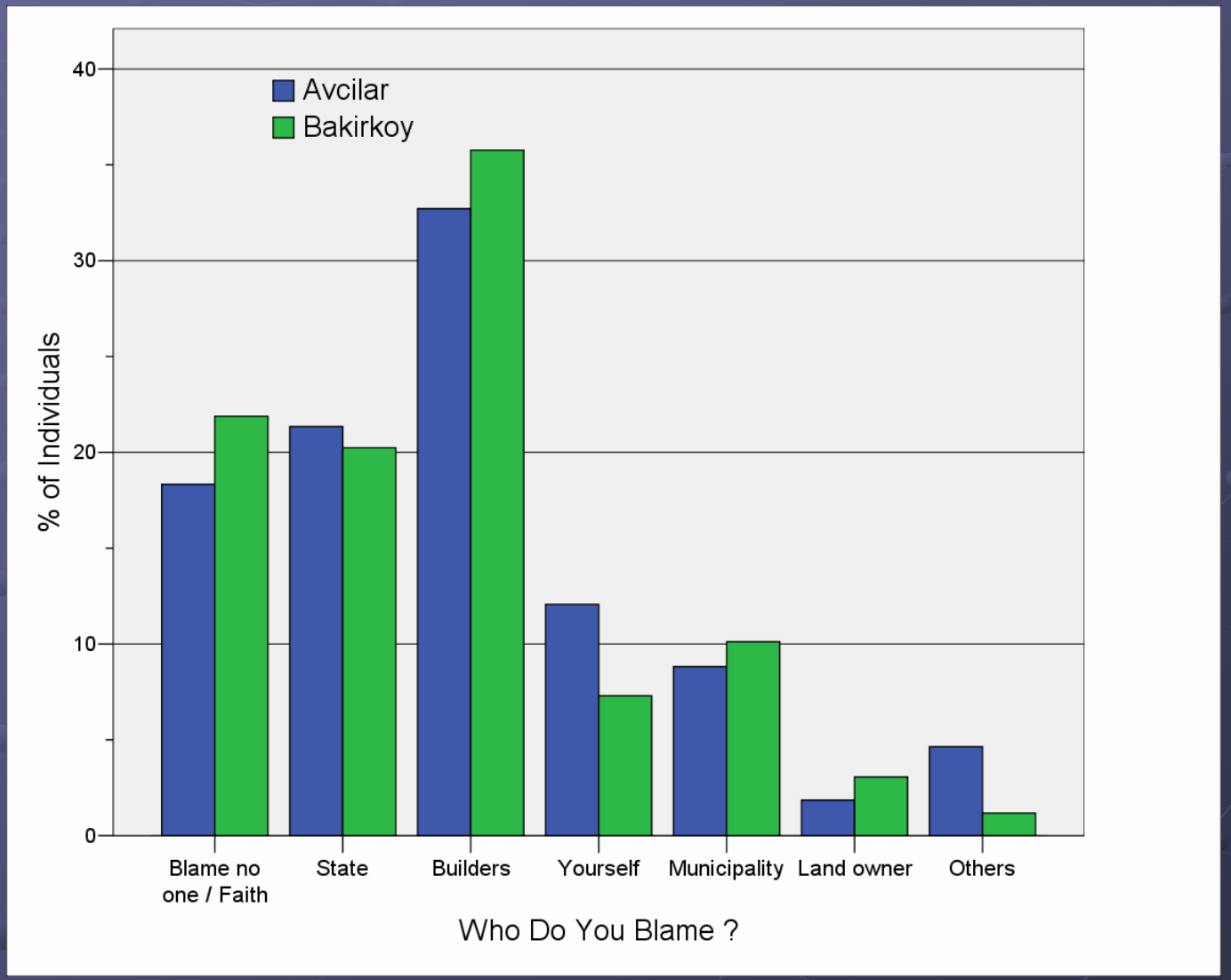
How much can you spend to protect your house/property from a big earthquake? (Turkey)



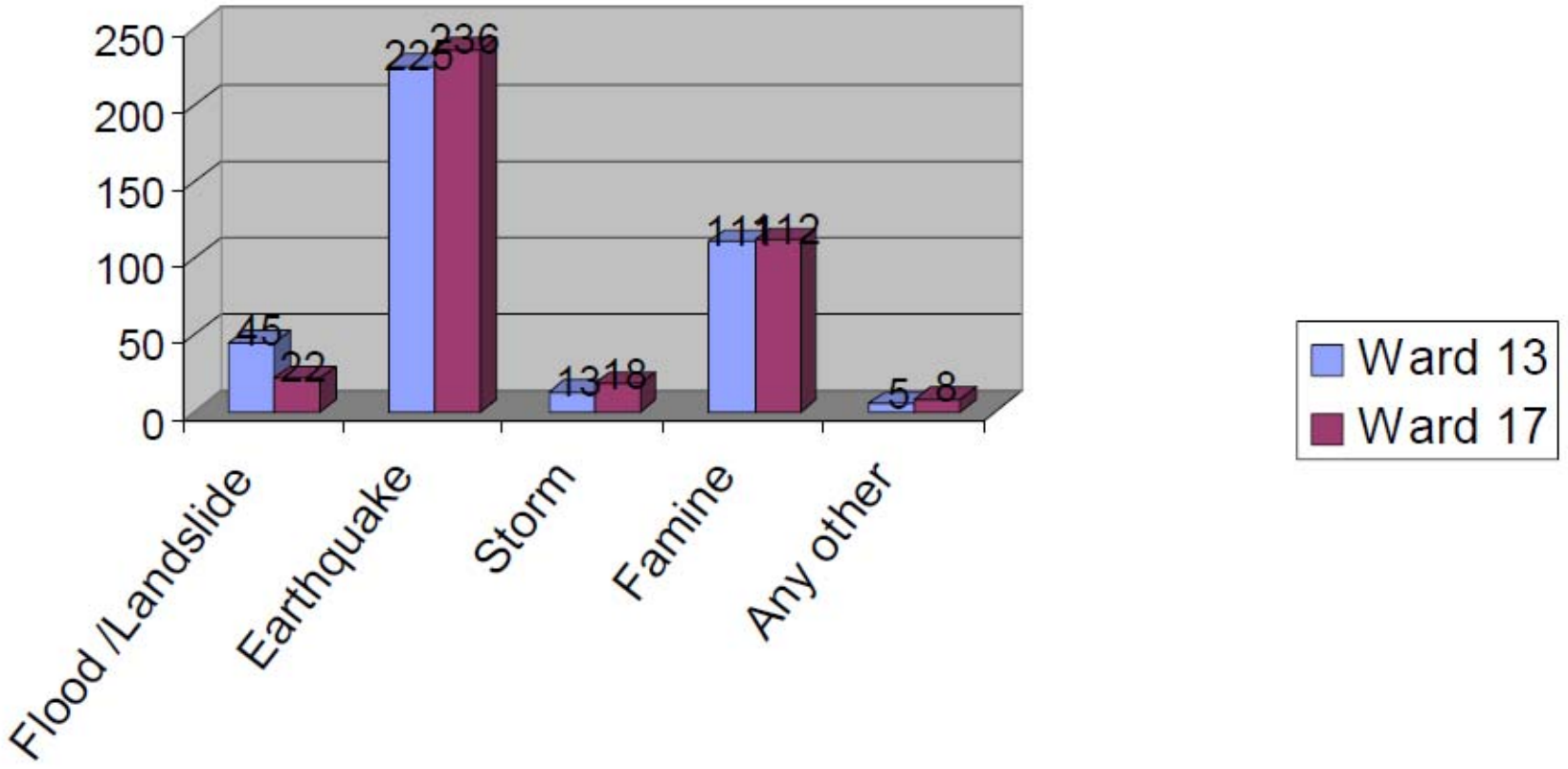
How much can you spend to protect your family members from a big earthquake? (Turkey)



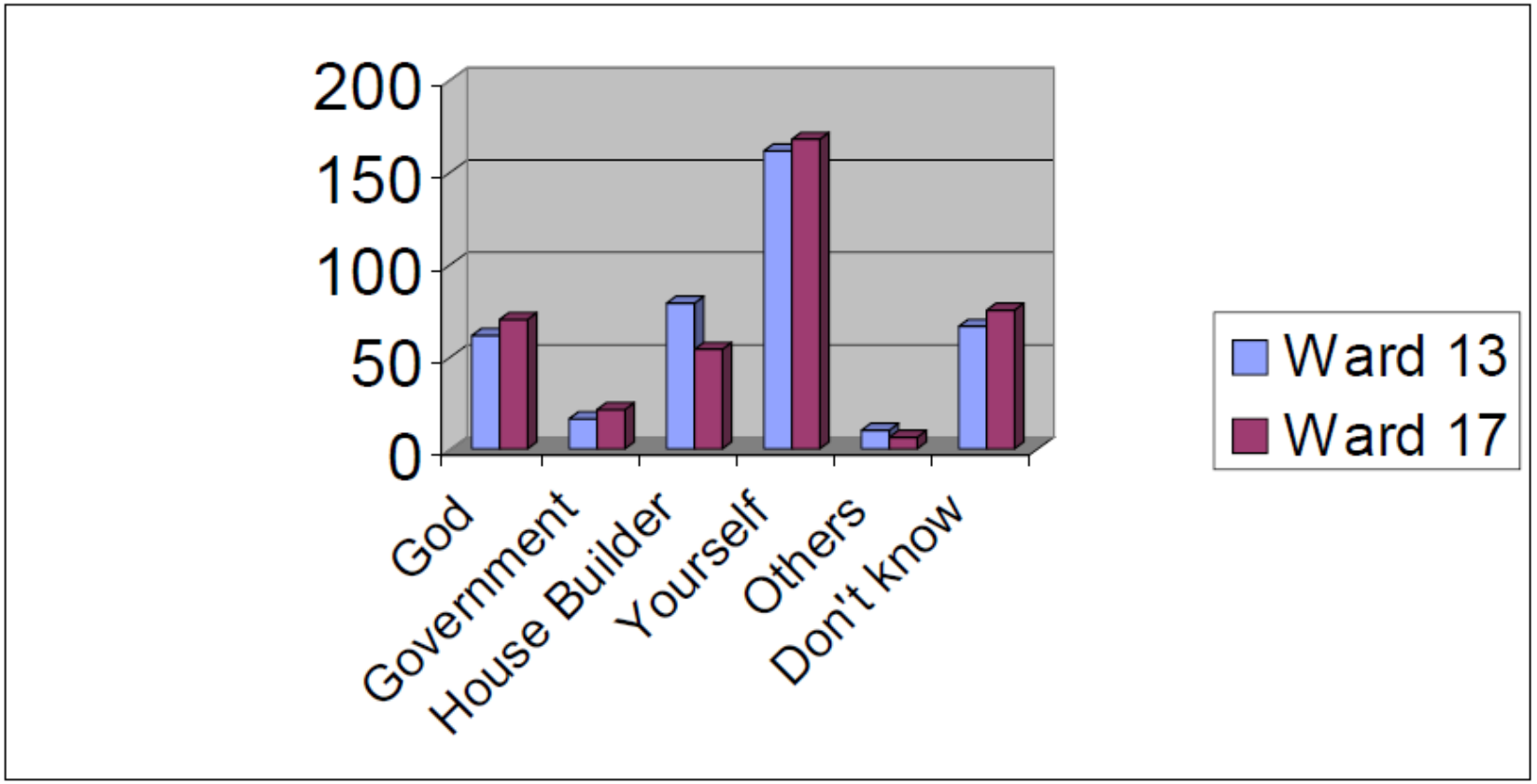
If your house would collapse and kill some of your family members due to a big earthquake, who would you blame? (Turkey)



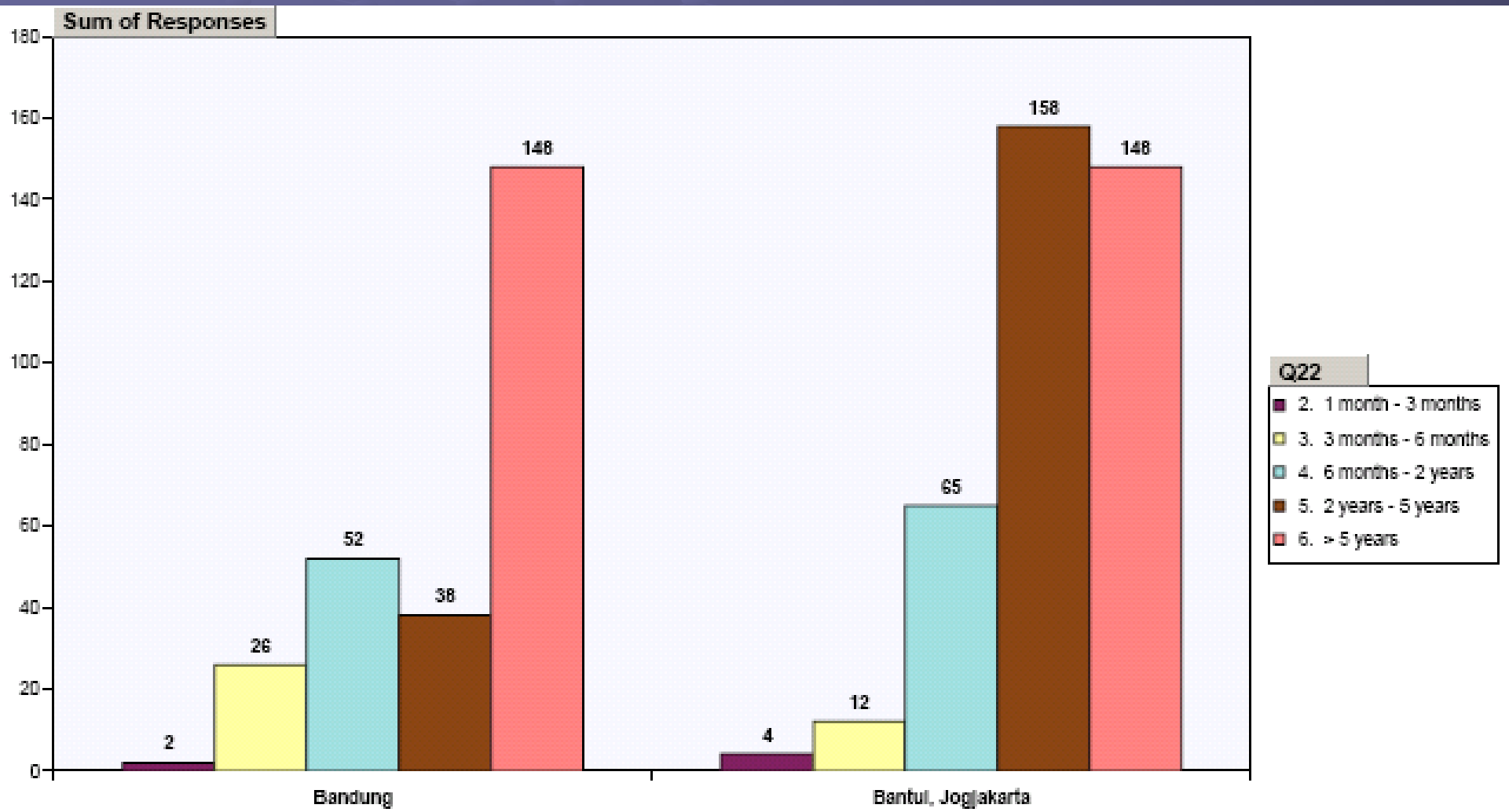
What Kind of Disaster do you think will most affect your life ? (Nepal)



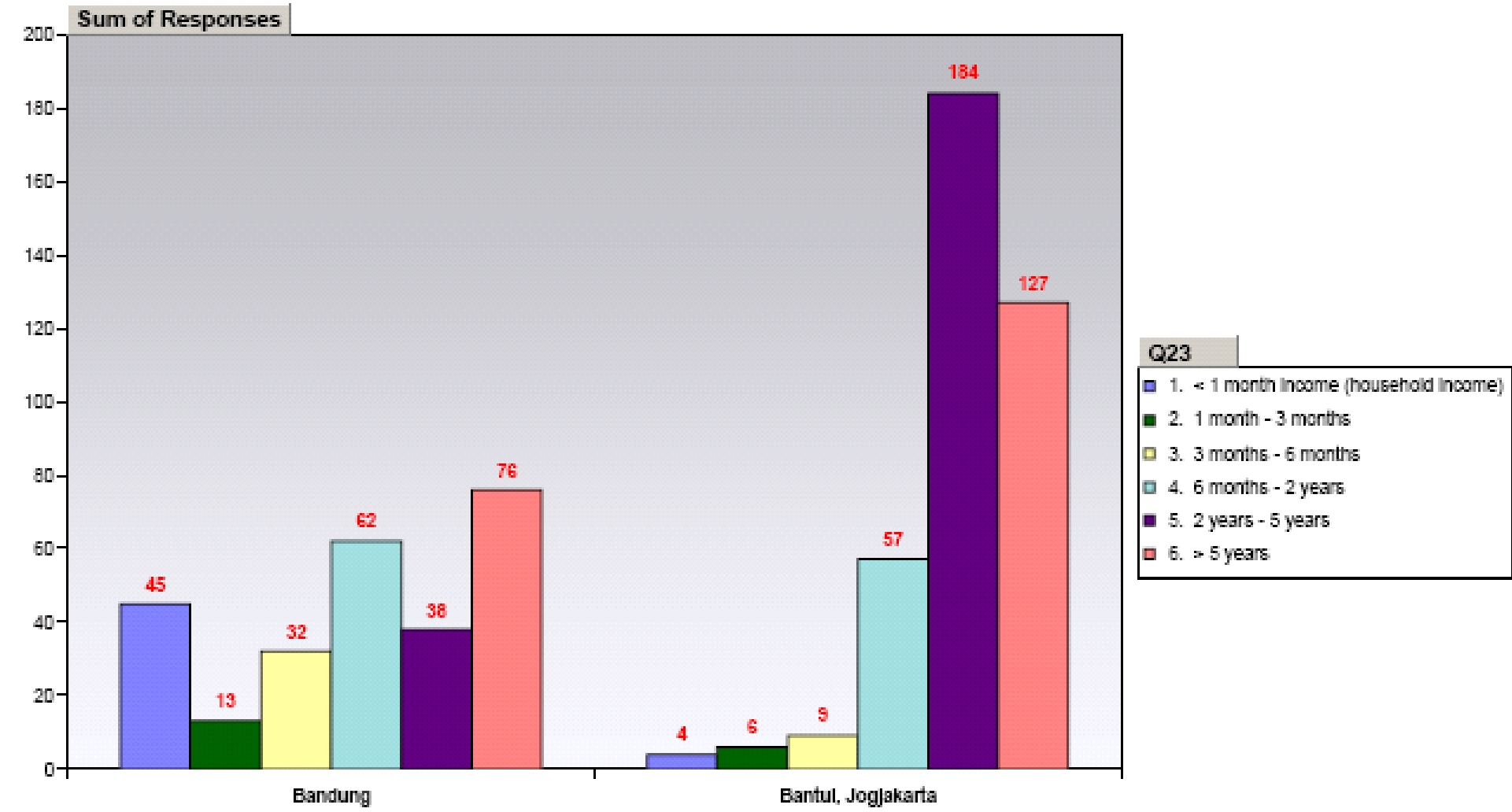
If your house would collapse and kill some of your family due to big earthquake, whom do you blame?



How much can you spend to protect your house from a big earthquake? (Indonesia)



How much can you spend to protect your family members from a big earthquake? (Indonesia)



If your house would collapse and kill some of your family members due to a big earthquake, who would you blame ?