

# Panel data captured important dynamics in the precautionary behavior of flood-affected residents.

## The dynamics of individual precautionary behavior and intentions in response to experiencing a flood event

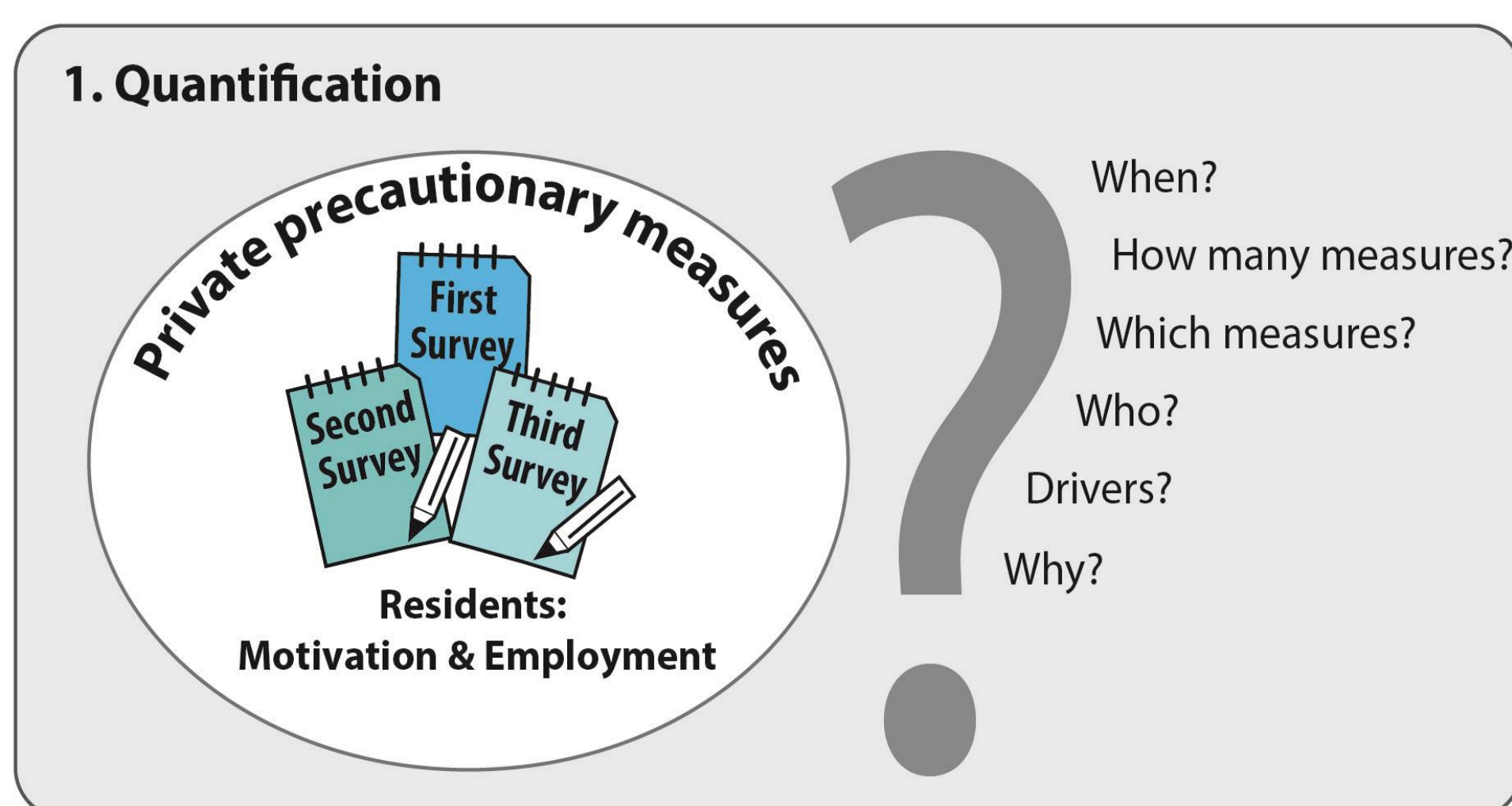
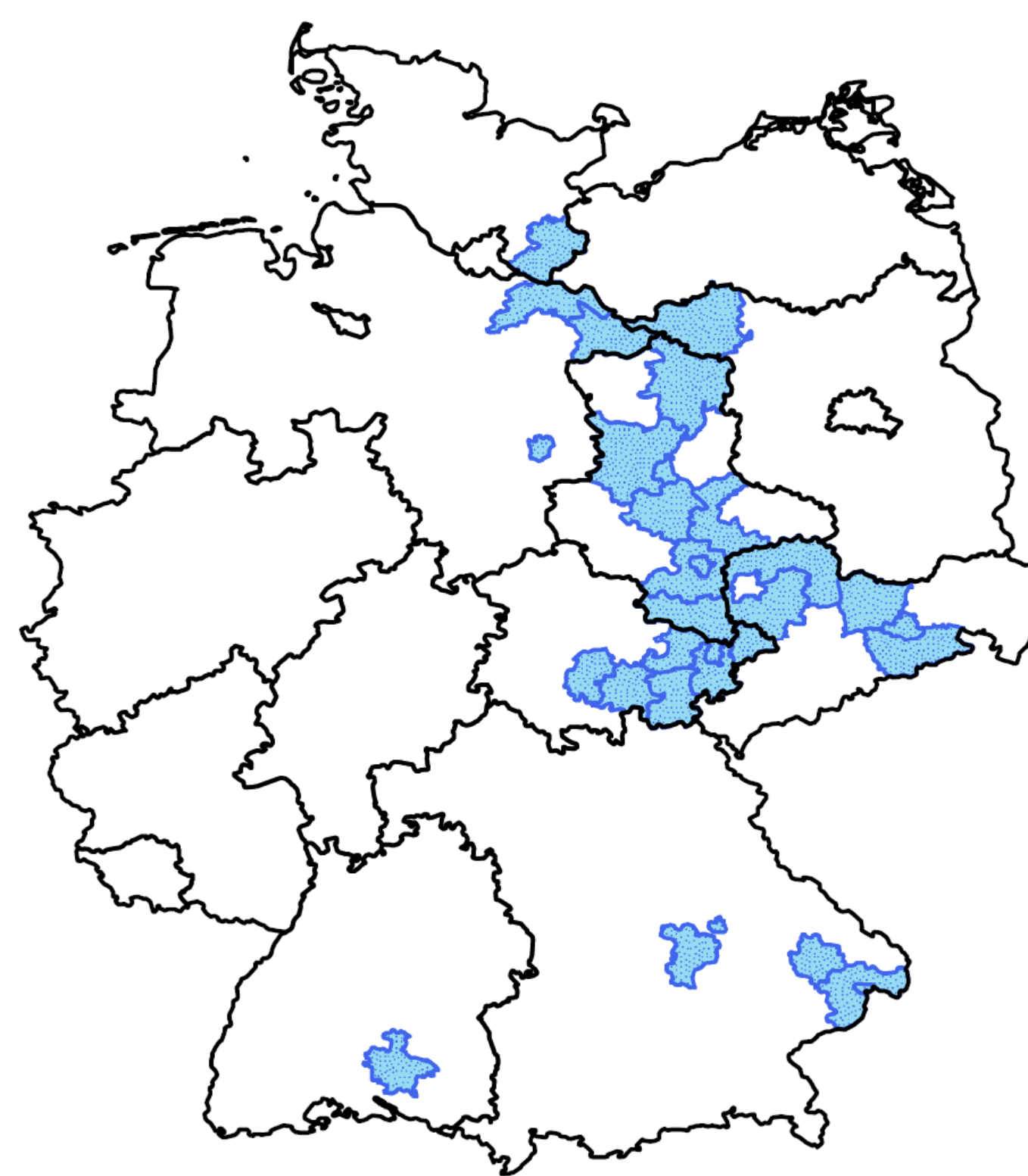
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### BACKGROUND

- Current predominance of the use of cross-sectional surveys in studies on precautionary behavior
- **Cross-sectional surveys provide limited temporal snapshots** of the variables of interest
- **Panel data could show temporal dynamics**

### PANEL DATA

Longitudinal survey after flood event May/June 2013 in **Germany** with **227 respondents** for **4 years (3 survey waves: 9, 18, 45 months after flood)**.



### RESULTS

- Precautionary measures are **differently implemented** regarding their **cost categories**:
  - **Low-cost measures** are the **most commonly implemented** measures
  - **High-cost measures** are the **least commonly implemented** measures
- **Motivation does not necessarily lead to implementation** of measures
- **High-cost measures** have the **highest implementation ratio**

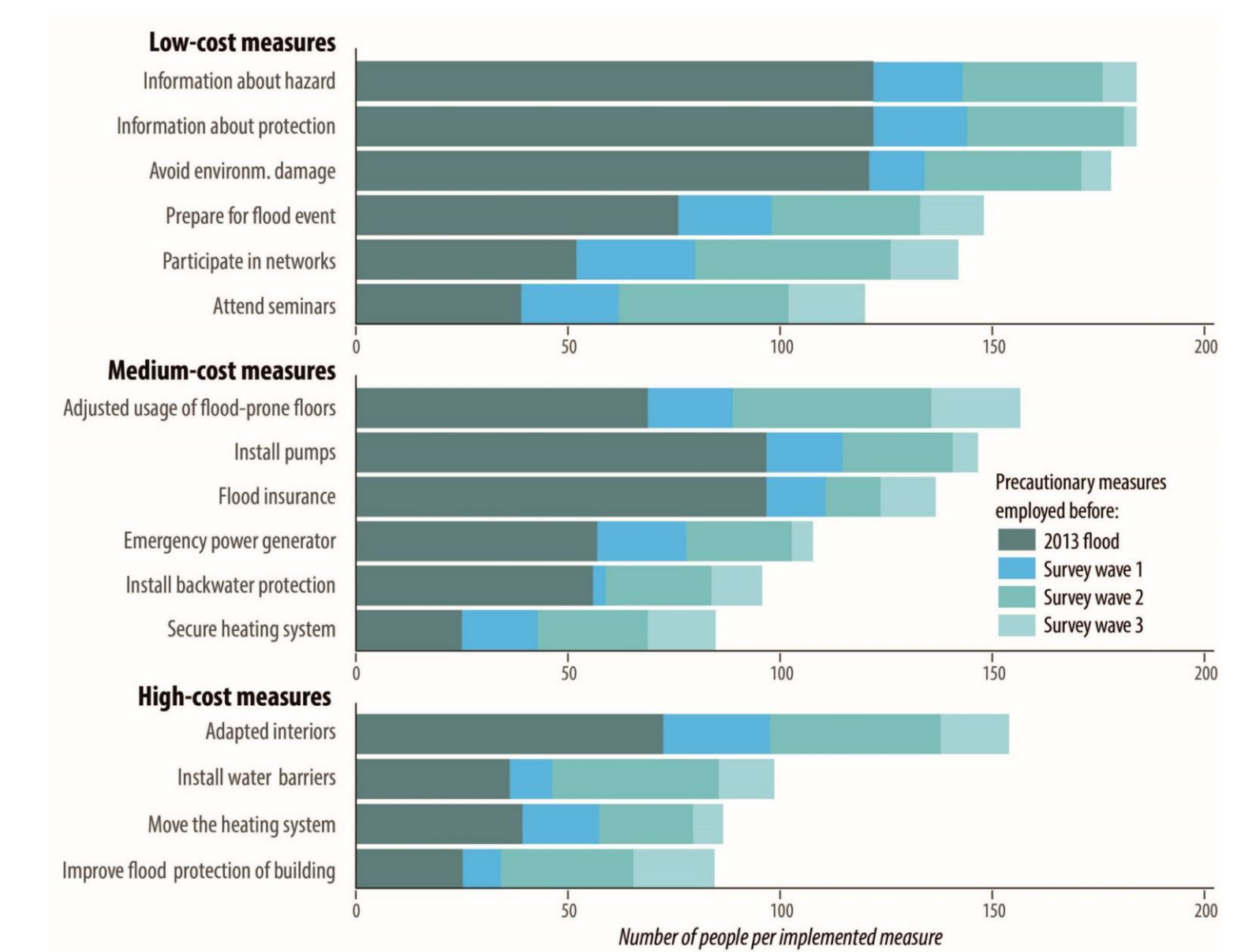


Fig. 1: Temporal development of the implementation of precautionary measures by cost category

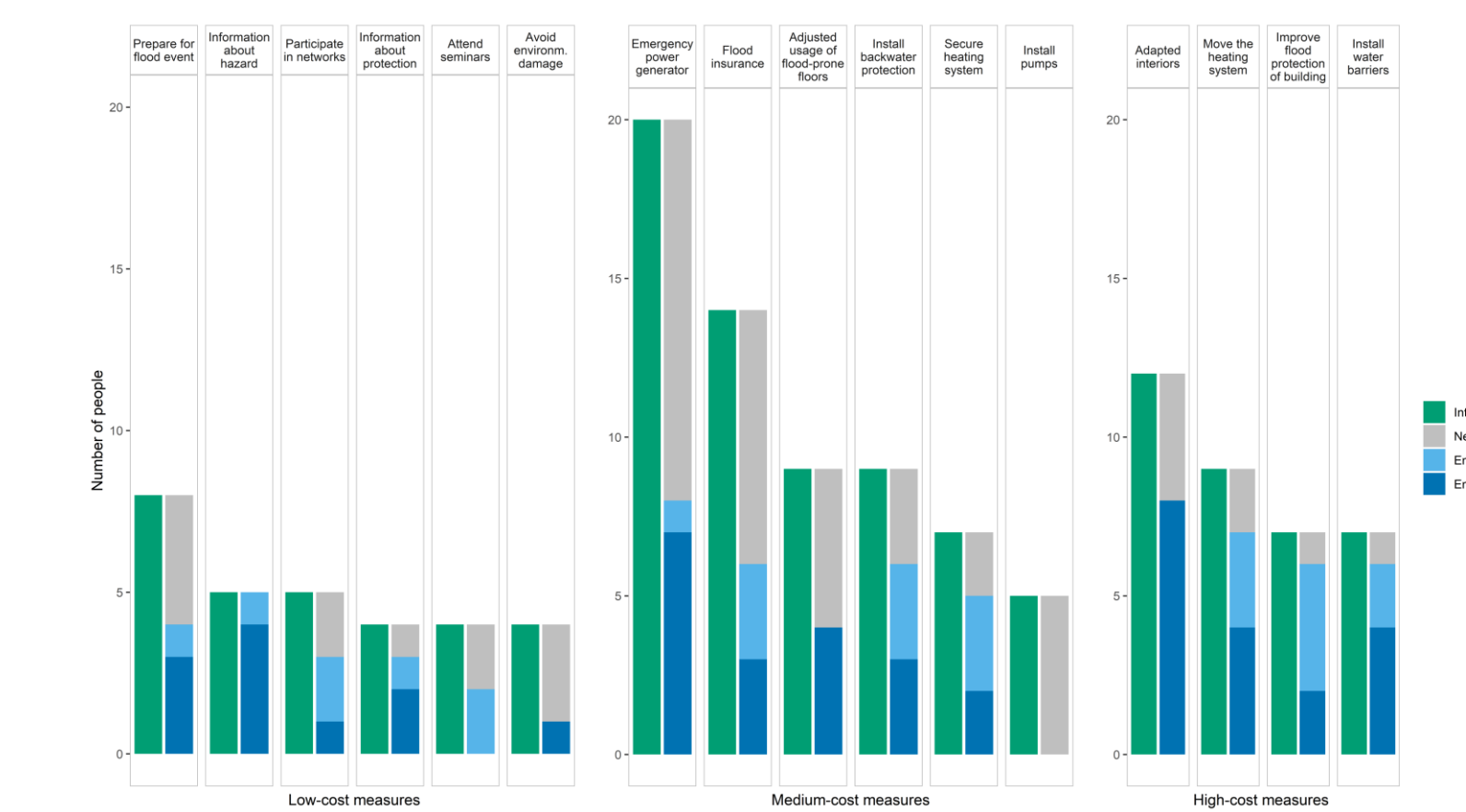


Fig. 2: Implementation ratios of each precautionary measure, sorted by its cost category.

Tab. 1: Precautionary measures in the questionnaire and their associated cost category.

Measure	Associated cost category
Prepare for flood event	Low-cost
Get information about hazard	Low-cost
Participate in networks	Low-cost
Get information about protection	Low-cost
Attend seminars	Low-cost
Avoid environm. damage	Low-cost
Create emergency power generator	Medium-cost
Flood insurance	Medium-cost
Use flood-prone floors	Medium-cost
Install backwater protection	Medium-cost
Flood-prone heating system	Medium-cost
Install pumps	Medium-cost
Use flood-prone interiors	High-cost
Move the heating system	High-cost
Improving flood protection of building	High-cost
Install water barriers	High-cost

### REFERENCES

Bubeck, P., Berghäuser, L., Hudson, P. & Thieken, A.H. (2019): *Using panel data to understand the dynamics of human behavior towards and in response to flooding* (Risk Analysis, under review)



### ACKNOWLEDGMENTS

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