

Insights into flood risk misperceptions of homeowners

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Introduction

Detailed information about flood risk beliefs may be used to improve individual decisions with regards to disaster risk insurance and private mitigation investments, and to support towards public risk reduction investments.

The aim of this paper is to assess possible flood risk misperceptions of floodplain residents in the Netherlands, and to offer insights into factors that are related with under- or overestimations of perceived flood risk.

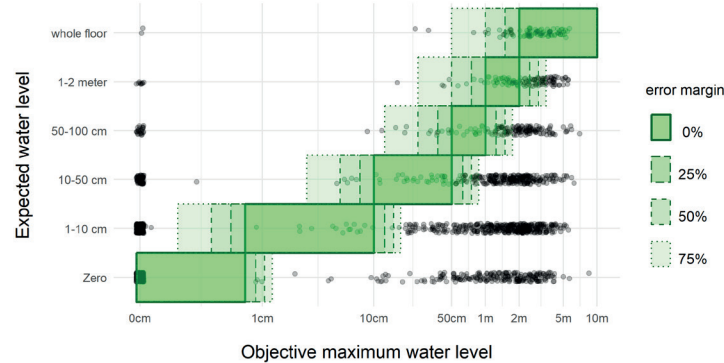


Fig. 2: Perceived versus objective maximum water levels; green bars indicate correct estimates.

Method

We administered an online survey (N = 1848) to collect data on risk perceptions of homeowners in the major river deltas in the Netherlands (see Figure 1). We use geographical information system (GIS) methods to find individual-level objective risks, including maximum water levels in a homeowner's neighborhood.

To classify our respondents into those that underestimate, those that correctly estimate and those that overestimate risk, we compared the perceived estimate (PE) of each respondent with the objective estimates (OE), allowing for different error margins (EM). Figure 2 shows a scatter plot of the perceived and the objective maximum water level. All data points above the green diagonal represent respondents who overestimate maximum water levels, while data points below the diagonal represent those who underestimate. Figure 3 gives an overview for the three different aspects of flood risk perception (probability, water level and damage).

We run probit regressions to explain these misperceptions by behavioral variables, such as coping responses, worry about flood, locus of control and trust in Dutch dike maintenance.

Results

- * Dutch floodplain inhabitants significantly overestimate the probability of experiencing a flood.
- * Dutch floodplain inhabitants underestimate maximum water levels during a flood.
- * We find evidence for availability heuristic in the flood context.
- * Previous flooding experience, awareness, age and education seem to decrease flood risk misperceptions.

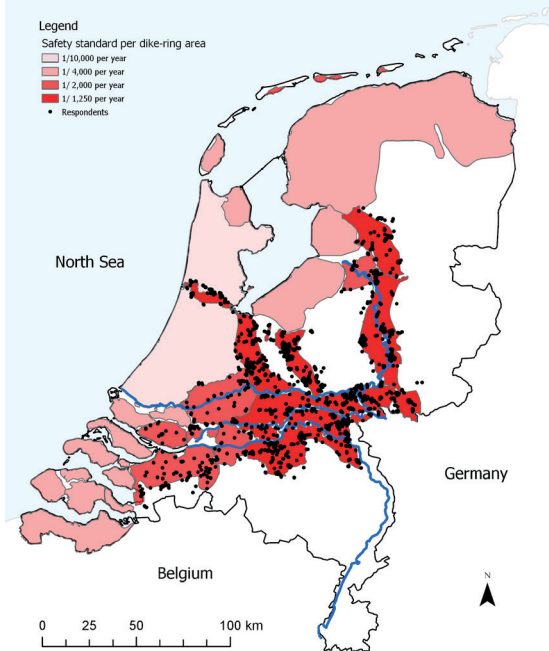


Fig. 1: Respondents on a map with safety standards of dike-ring areas.

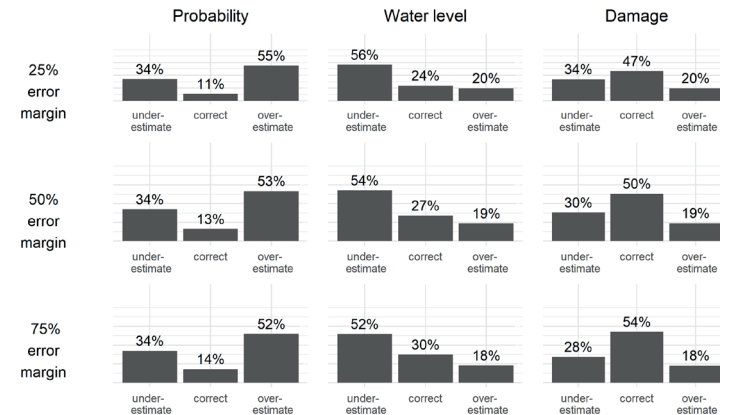


Fig. 3: Distribution of flood risk perceptions at different error margins.

Conclusion

Many Dutch homeowners underestimate the cost-effectiveness of damage reduction measures. It may hence be worthwhile for the Dutch government to proceed with information campaigns for homeowners in the river deltas, especially those who live further away from the river and dikes.