

# Mixed-Methods Analysis on Flooding Risks Behavior to Inform Survey Development

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## Flooding Health Risks and Perception of Risk

Flooding poses health risk concerns to communities:

- injuries
- increased exposure to pathogens, pollutants, and irritants
- damage and impediment of health systems and infrastructure

This poster highlights the utilization of MAXQDA to analyze mixed methods data used to inform the development of a survey about flood risk perceptions.



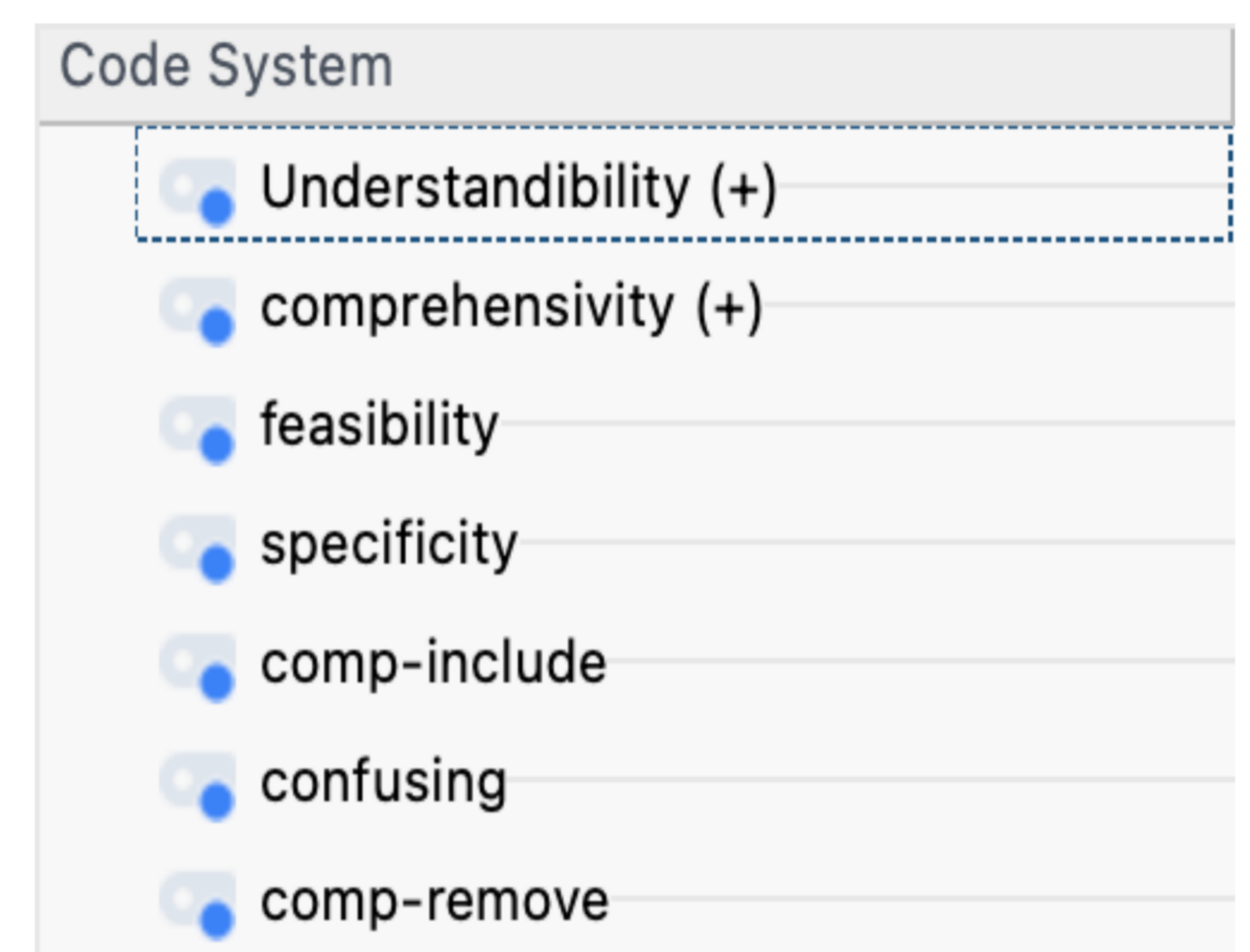
**Figure 1.** The Midwest is facing more severe flooding with the impacts of climate change.<sup>1</sup>

## Results: the Final Survey Product

This analysis produced a validated survey on flooding risk perception.

From conducting the cognitive interviews, additional items were added to the finalized survey:

- awareness of flood risk
- open-ended items on current flood plan components
- revision on estimated household income
- clarification on respondent's definition of a flooding event
- a provided study definition of a household flood plan



**Figure 3.** The code matrix browser used in MAXQDA.

## MAXQDA for Survey Development

The initial instrument was based on a review of the literature and existing surveys. From this, the Health Belief Model (HBM) was incorporated.

Revision and refinement consisted of the following:

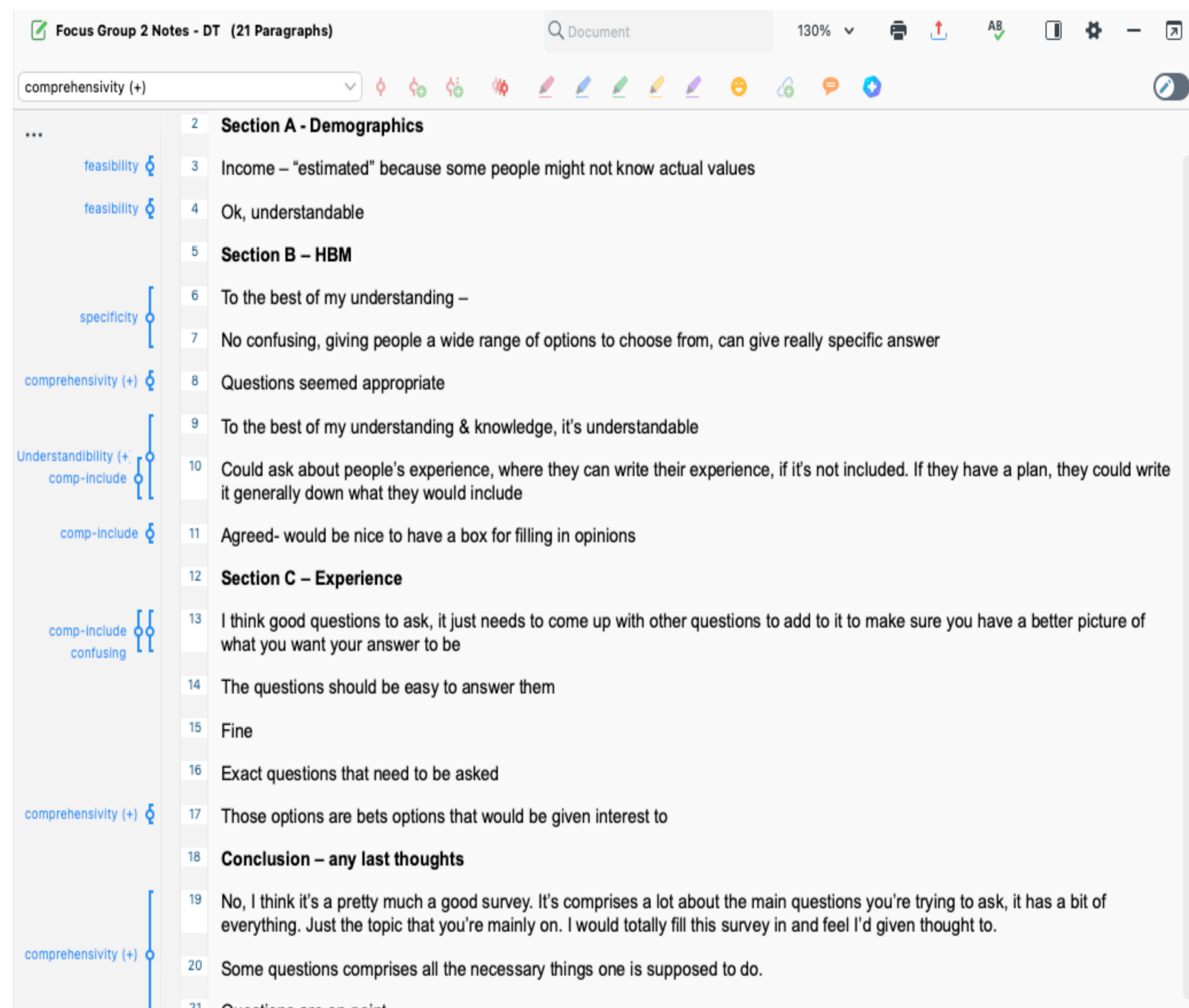
- Expert feedback
- Cognitive interviewing
- Focus groups

Two focus groups held via Zoom elicited feedback concerning understandability and comprehensibility in order to reduce threats to validity due to construct-irrelevant variance (CIV).

- Recruitment through flyers (each group n=5)
- Completed the major sections of the pilot survey in order
- After each section, paused for discussion of feedback
- Interview guide for facilitators for elaboration on feedback
- Audio recorded and transcribed (in addition to fieldnotes)

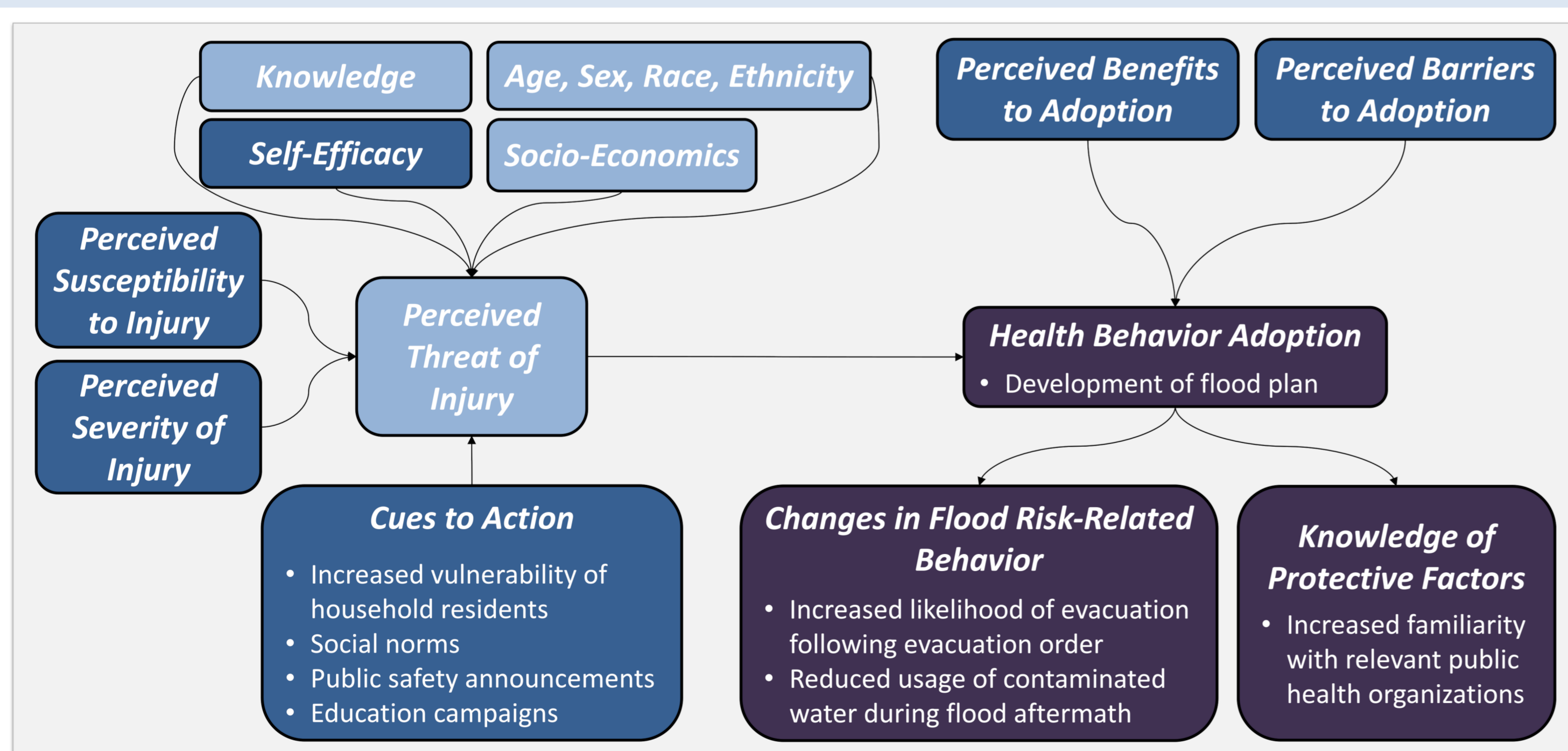
We uploaded emails from expert reviewers, focus group transcripts, and fieldnotes into MAXQDA 2022 for analysis.

- 1) Thematic text analysis approach beginning with open coding and refined codes throughout process
- 2) Code Matrix Browser and Code Relations Browser to examine patterns and identify themes
- 3) Segment Matrix (formerly Quote Matrix) to compare focus group speaker comments



**Figure 4.** Uploaded transcripts into MAXQDA 2022 on each of the sections of the flood risk perception survey.

## The Health Belief Model as a Framework



**Figure 2.** The Health Belief Model (HBM) is used to assess residents' flood risk perception and preparatory behaviors. Six components compose the HBM, used to predict likelihood of action (in dark blue).<sup>2</sup>

## Conclusion and Future Work

MAXQDA was a key tool for mixed methods integration using qualitative results to iteratively develop the quantitative survey.

- The final survey was informed by cognitive testing and expert review for content-related validity
- it was then administered to a large representative sample
- The results can inform risk communication about flooding, which is a major environmental health risk

## References

1. Flooding and Illness. braceillinois.gov. Updated 2023. <https://braceillinois.uic.edu/health-issues/flooding-and-illness/>
2. Edberg M. Introduction: Links between health and behavior. In: Riegelman R, ed. *Essentials of health behavior: Social and behavioral theory in public health*. Jones and Bartlett Learning; 2020:3-8.