Modeling household responses to coastal urban flooding

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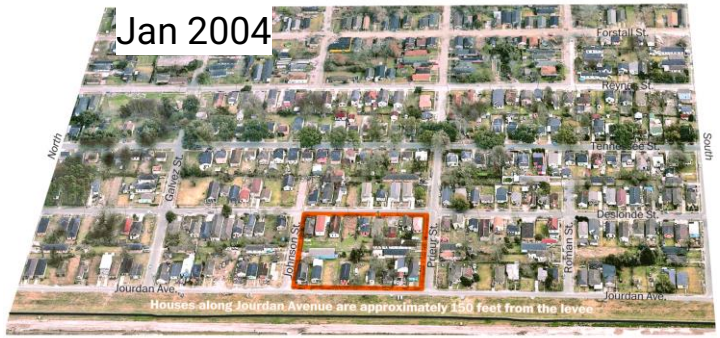
Coastal urban dynamics are complex and occur at fine scales.

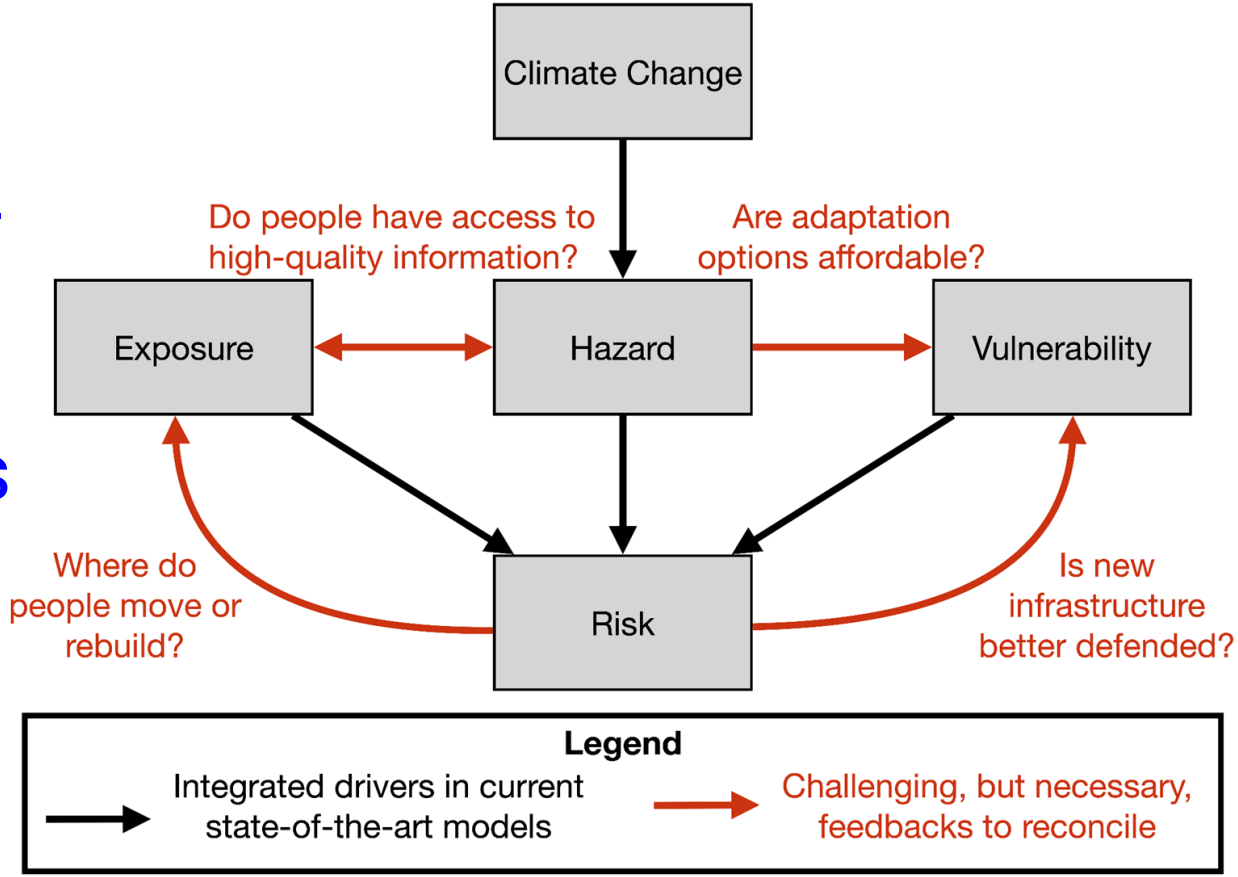
We need models that resolve this scale…



https://www.washingtonpost.com/graphics/national/katrina-one-block/

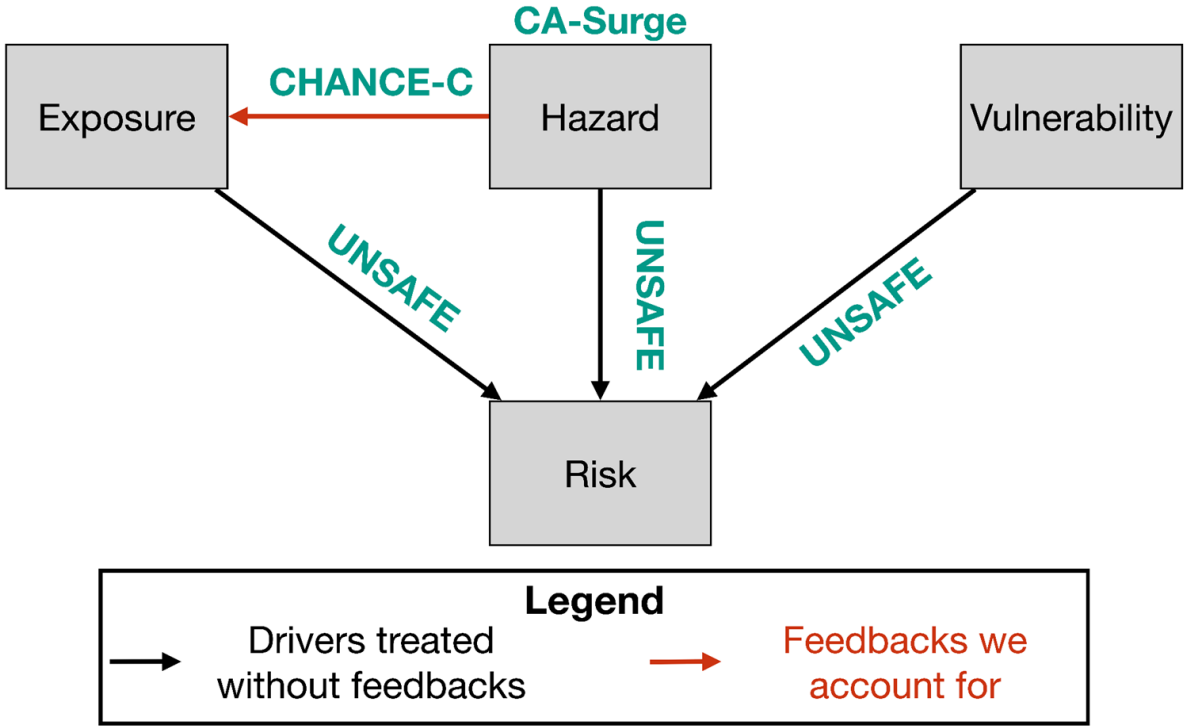
and can defensibly project the processes that drive these dynamics.

The EESM community is well-positioned to address many complex questions about how to represent these feedbacks.



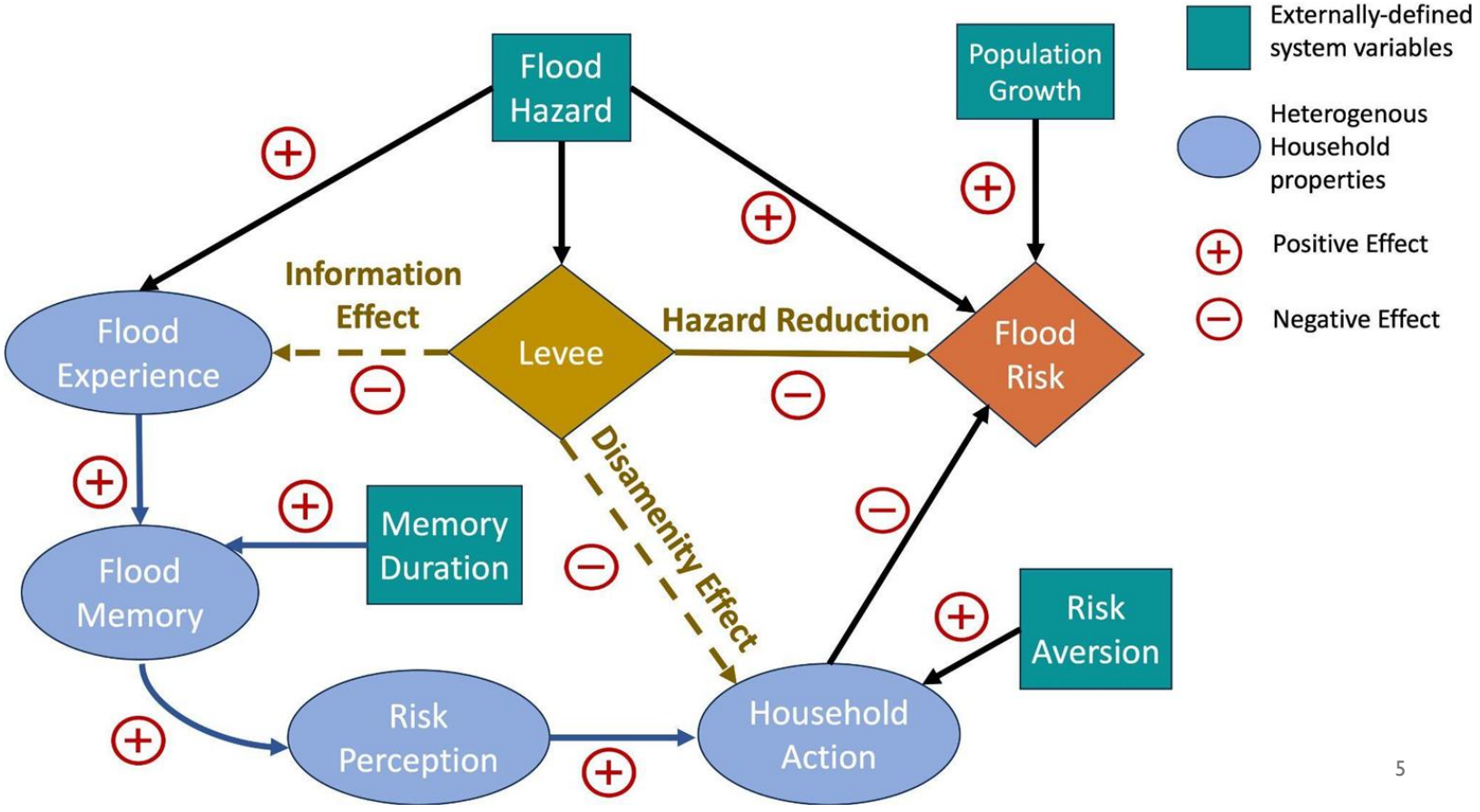
For example, we leveraged MSD tools to investigate the levee effect at census block group scale.

1) The CHANCE-C ABM translates flood memory into household decisions to relocate.
2) The UNSAFE framework synthesizes uncertainties in flood exposure and vulnerability to produce large ensembles of plausible flood-risk estimates.



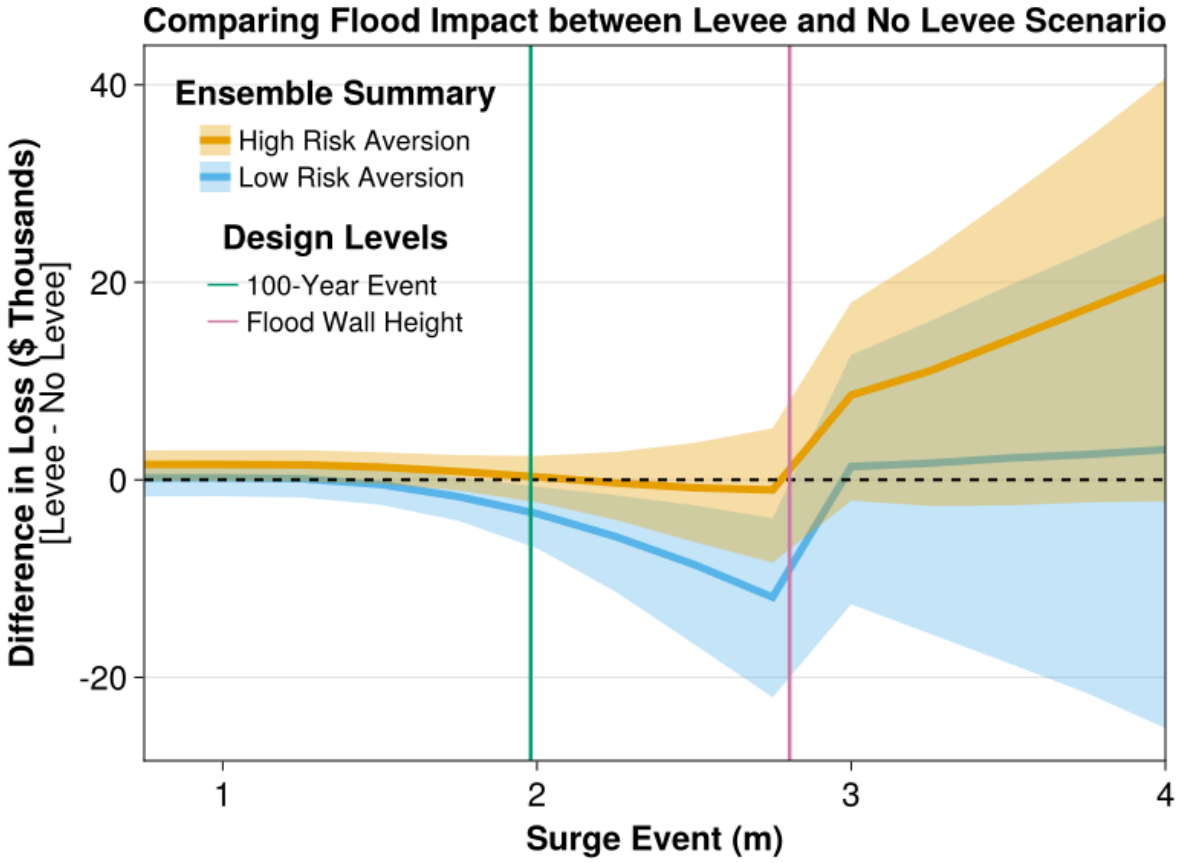
How do hazard feedbacks affect flood damage estimation?

Levee construction drives complex flood-risk evolution over time.



Even uncertainty in one factor, household risk aversion, has a major effect on the strength of the levee effect.

We assessed the impact on risk of levee construction in 17 block groups in Baltimore, MD.



Come to the Poster Session tomorrow in Salon D to learn more!

Improving coastal urban flood-risk modeling with more feedbacks

Example Research Questions:

1. How do zoning and insurance policy changes affect household and municipal default risks?

1. How do urban gentrification dynamics from green infrastructure affect the evolution of flood risk?