Discussion of "Flood Risk, Insurance, and Housing in the United States"

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This paper addresses a foundational question in the economic literature on flooding with an exceptional microdata infrastructure that the field has long lacked. By moving from aggregate approximations to household-level measurement, it significantly refines our understanding about the distribution of flood exposure. My discussion recontextualizes the paper's contributions within the existing literature and offers thoughts on directions for future work.

Who Is Exposed to Flood Risk?

This paper joins an extensive body of studies in answering a central question in the flood economics literature concerning the distributional impacts of climate risk: who bears the burden of flood exposure, and what economic mechanisms and policy interventions shape those outcomes? Much of what we know, however, rests on approximations. Existing studies, including Bakkensen and Ma (2020) and Wing et al. (2022), combine highly localized flood risk data with demographic data aggregated to the Census Tract level, which raises questions about the accuracy of their conclusions.

A key contribution of this paper lies in the nature of its findings. The core question it asks, "what is the household-level distribution of flood risk exposure?", is deceptively simple but remarkably understudied. By linking household-level microdata to parcel-level flood risk, the authors can speak to the distributional question with a precision the prior literature cannot match. This improvement is valuable even where the household-level results agree with existing work, as it puts those findings on considerably firmer empirical footing.

But the paper does not simply confirm past conclusions. Rather, it shows a more nuanced picture than the prior approximations suggested. The flood risk literature has long grappled with two narratives in uneasy tension. One narrative emphasizes low-income and minority exposure: marginalized populations are disproportionately exposed to flood risk because they are priced out of safer areas. This narrative has shaped the framing of flood risk as an environmental justice issue and informed federal policy discussions around disaster assistance and insurance affordability. A second narrative points in a different direction: higher-income households may actively sort into flood-prone areas because they can self-insure against financial losses and because floodplains often coincide with high-amenity locations like waterfronts (Graff Zivin et al., 2023; Druckenmiller et al., 2024). These two narratives have been difficult to reconcile, in part because they draw on different methodologies and operate at different scales of analysis.

What this paper does, essentially, is show that both narratives are capturing aspects of the true distribution and that the apparent contradiction between them is an artifact of aggregation. The authors show that the full income distribution at the household level is a non-monotonic relationship: flood exposure generally decreases with income for the most part of the income spectrum, consistent with the low-income exposure narrative, but rises sharply at the very top, consistent with the amenity-sorting story.

More broadly, the findings show that aggregate data systematically obscure patterns among small demographic groups. Beyond missing the elevated exposure of ultra-high-income households, past findings fail to capture that renters are more likely to live in floodplains than homeowners, and that the elevated flood exposure of minority households is partly explained by the concentration of these groups among lower-income renters. Both renters and residents of multiunit structures have been understudied in the literature, and the paper generates an important insight by examining them directly: the distribution of housing types across the landscape, and their differential physical exposure to flooding, is a key factor in understanding who bears flood risk. This has implications not only for disaster assistance targeting, but for land use and building policy more broadly.

The findings also reveal that aggregate data tend to understate the extent of migration and mask demographic changes over time. Researchers have long been puzzled by the limited behavioral response to floodplain information. The parcel-level data offer a resolution: aggregate data overstate the rate at which households move into floodplains while understating the rate at which they move away, with the two flows roughly offsetting each other in aggregate measures. Beneath this apparent inertia, however, lies meaningful differential sorting: high-income homeowners and renters are disproportionately moving toward riskier areas, while lower-income households are moving away. Migration as adaptation is occurring, but it is concentrated among those with the greatest capacity to bear risk.

Exposure vs. Vulnerability

When interpreting the results from this paper, it is important to note the difference between exposure and vulnerability. Exposure is about who is in the floodplain, while vulnerability is about who suffers when flooding occurs. This distinction matters because vulnerability can vary significantly across demographic groups even when exposure is similar. Across the income spectrum in particular, the steeper gradient likely lies in vulnerability, not exposure.

While this paper provides important new evidence regarding flood exposure, it is less well-positioned to assess vulnerability. Vulnerability is inherently difficult to measure because myriad factors shape a household's susceptibility to flood damage and its ability to recover,

and it is difficult to know their combined effect without a causal inference framework. The authors explore several dimensions, including income, structural adaptation, and liability for property damage as a function of ownership and insurance status, and these are meaningful starting points. Here I offer a few thoughts on some of the interpretations and on factors that remain underexplored.

On renters. The paper notes that renters, while more exposed to floodplains than homeowners, are insulated from the worst consequences of flooding because they bear no liability for structural damage. While technically correct, this conclusion may nevertheless be too optimistic. Renters, particularly low-income and minority ones, face a range of flood-related harms not captured by structural damage alone. Disruption to neighborhood infrastructure, deterioration of housing quality following repeated flood events, and outright displacement are serious risks that fall disproportionately on renters. Perhaps most importantly, renters are more likely to lack flood insurance for their contents, which is a separate coverage from standard renter's insurance and is not mandatory even for those living in the 100-year floodplain.

On access to post-disaster assistance. A further dimension of vulnerability not fully captured here is unequal access to public disaster assistance. Recent work by Billings et al. (2025) documents substantial disparities in the receipt of federal aid following flood events. If the households with the greatest flood exposure are also those least likely to receive post-disaster support, the welfare consequences of exposure are more severe than the raw exposure statistics suggest.

On post-disaster liquidity. Related to assistance access is the broader question of post-disaster liquidity. Liquidity constraints are likely correlated with income and insurance status, but are not directly observable. For low-income households, even a modest flood event can trigger a liquidity crisis that compounds the physical damage. This is a dimension of vulnerability where further data linkage, for instance to credit records or administrative tax data, could yield valuable new evidence.

Taken together, these considerations suggest fruitful avenues for extending the paper’s descriptive findings on exposure. A household's position in the floodplain is only the first step in a longer chain of risk that runs through insurance coverage, access to public assistance, liquidity, and neighborhood resilience.

Future Directions

The microdata infrastructure assembled for this paper opens up a rich agenda for future research. In particular, I find the following directions particularly promising.

Understanding sorting mechanisms. The descriptive patterns documented here call for a structural explanation. A model of households' joint decisions over rent vs. own and location would allow researchers to recover the underlying preferences and constraints that generate these patterns. On the equilibrium side, it would be valuable to understand how flood exposure is capitalized differently into rents versus property values, and how those effects vary across the income distribution.

Housing policy. The paper's finding suggests that building type and tenure are important determinants of flood exposure. Zoning regulations, building codes, and land use restrictions shape the local housing stock in ways that directly affect who ends up exposed to flood risk and in what type of structure. Understanding how these policies interact with flood exposure across demographic groups seems both tractable with these data and highly policy-relevant.

NFIP design. The National Flood Insurance Program's Risk Rating 2.0 reform introduced pricing more aligned with actuarial principles, but its effects on housing markets and household sorting remain poorly understood. The microdata are well-positioned to examine those effects and to inform ongoing policy discussions around a potential NFIP affordability program.

Other perils. The microdata infrastructure developed here need not be limited to flood risk. Extending it to wildfire exposure, extreme heat, or other climate-related perils would allow researchers to ask the same distributional questions in settings where the data infrastructure is similarly underdeveloped and the policy stakes are equally high.

In closing, this paper demonstrates the power of Census microdata in answering distributional questions about environmental hazards. I look forward to seeing where this research program goes.

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