



The long-term welfare impacts of natural disasters: Evidence from Ugandan landslides

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- Natural disasters displace millions of people every year, but little is known about the economic impacts of displacement.
- We study landslides in Eastern Uganda, which have displaced 65,000 people in recent years. We combine household surveys with a geologic model of landslide risk to estimate the causal impact of landslides.
- Landslides create substantial long-run displacement, and affected households are considerably worse off in economic, financial, and psychological outcomes years after the event.
- Households forced to relocate multiple times fare the worst. Urban social networks and aid receipts appear to mitigate the harmful impacts of landslides.
- Our results indicate that natural disasters can have substantial negative long-run impacts on affected households. This may be due to insufficient humanitarian aid and the high rate of household displacement in this context.

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Introduction

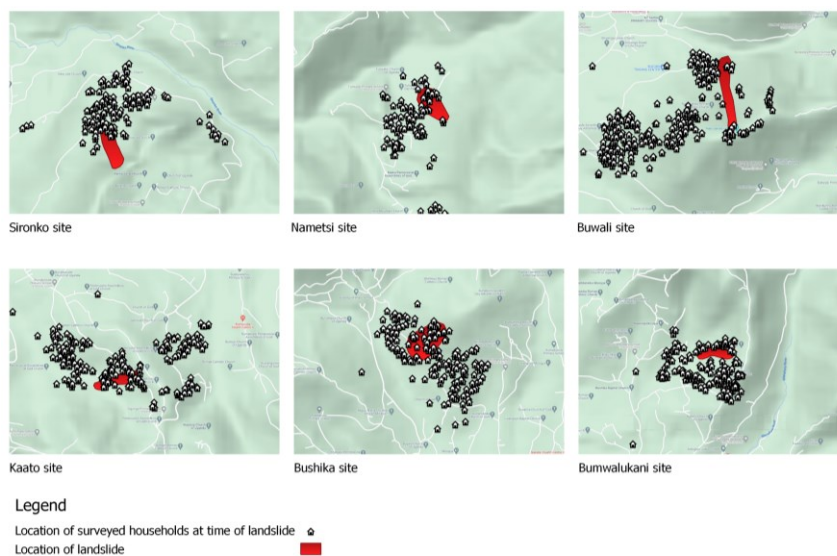
Natural disasters such as floods, storms, earthquakes, tsunamis, and landslides forcibly displace millions of people every year, and climate change threatens to increase the frequency and severity of these disasters (IDMC, 2019). There is a clear need to understand the economic impacts of displacement and the factors that contribute to successful resettlement, to better target humanitarian aid, inform the design of disaster response programs, and encourage the pre-emptive relocation of at-risk households.

The nature of displacement makes estimating these impacts difficult, especially in developing countries where most at-risk individuals reside. Therefore, little is known about the long-run economic impacts of natural disasters in low-income economies. While some studies in high-income countries have found small or even positive long-run impacts of displacement (e.g., Deryugina et al. 2018, Nakamura et al., 2021), it is not clear that these results port to low-income settings, where institutional capacity and social safety nets are typically limited.

Overview of the research

We study the long-run impacts of a series of landslides which occurred in Eastern Uganda between 2010 and 2020. We rely on household lists compiled by local leaders, which offer basic information about every household residing in affected areas at the time of the event, regardless of whether they later moved away. This makes it possible to study economic impacts on the full set of affected households, which is usually impossible with existing panel surveys.

Figure 1: Map of landslide sites including household locations and exact landslide path



We conduct an extensive tracking exercise to administer household surveys to around 1,000 households from affected regions, regardless of where they currently reside. To identify the causal impact of landslides, we compare households that were residing in the direct path of the landslide with others in the same area. We use a geologic risk model developed by Claessens et al. (2007) and information on the exact path of landslides to show that households in the landslides' paths did not differ systematically from those outside the paths before the landslides hit.

Key findings

The landslides we study were devastating, leading to substantial death and destruction of homes and land. The majority of affected households were forcibly displaced, though many eventually return to their home villages. Years after the landslides, affected households are substantially worse off along several measures of welfare. Displaced households experience the greatest welfare impacts, while aid receipts appear to mitigate the harmful impacts of landslides.

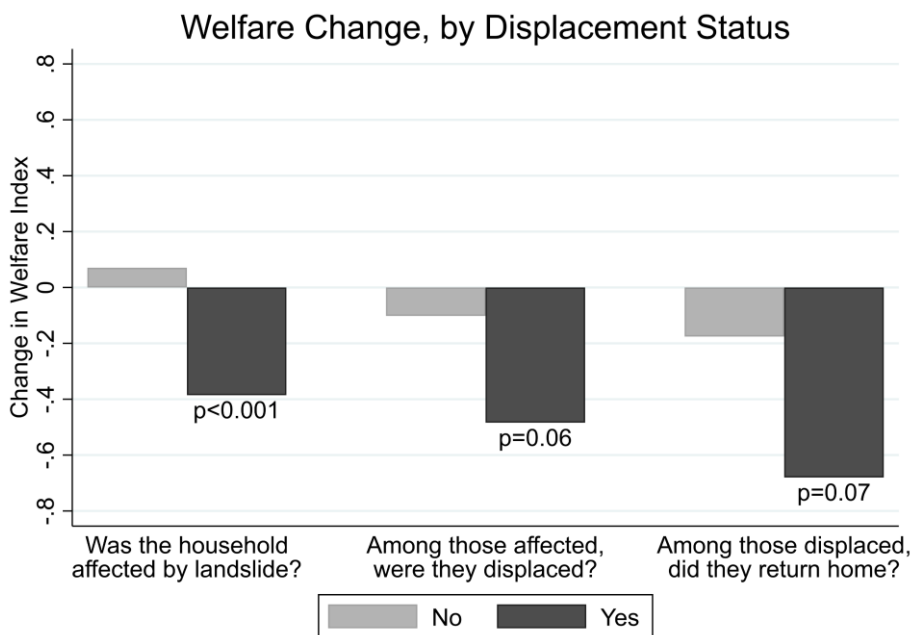
- **Destruction:** Households residing in the landslide path experience extreme rates of death and property destruction. Forty-five percent of households in the landslides' path were seriously damaged, and 27% experienced the death of a household member. Almost all households experience serious damage to land, livestock, and property: the average repair costs (excluding what was financed by aid) were \$485, representing more than 9 months' worth of total household income.
- **Displacement:** Two-thirds of affected households are displaced outside their home village after the landslide. Nearly every displaced household moved to another village in Eastern Uganda. Among the displaced, 40% remain outside their home village by the time of the survey.
- **Migration:** Although almost no households relocate to urban areas, many send migrants to cities. Urban migration after the landslide increases by 40%, and most migrants are still in the city at the time of the survey. New migration is pronounced among households with weak urban networks at the time of the landslide. This suggests that households use both existing urban networks and new urban migration to cope with the impact of the landslide, and substitute between them.
- **Welfare:** Two to twelve years after the landslides, affected households appear much worse off across several measures of welfare. To measure welfare impacts, we aggregate survey responses into indices representing financial health, mental health, housing amenities, income,

and overall welfare, and find negative impacts across every measure. The impact on overall welfare is 0.34 standard deviations.

Displacement matters for welfare impacts

Among those affected by a landslide, displaced households experience a significantly bigger drop in welfare compared to households that remained in their home village. Among those displaced, the drop in welfare is pronounced among households that returned to their home village (the majority of those who did not return remained in the destination to which they were displaced). The greater welfare drop among returnees is somewhat surprising, and is difficult to reconcile with the loss of origin-specific factors, such as social networks, as being the primary driver of welfare change. Indeed, only about one-third of returnees give a reason for returning that reflects a voluntary choice, such as to reclaim land, because they did not like life in the destination, or because others were also moving back. The rest move back because they can no longer afford living in the destination, or only had temporary arrangements.

Figure 2: Displaced households experienced greater declines in welfare



The role of urban networks and disaster aid

Urban networks and disaster aid can potentially help households cope with the impacts of the landslide. We find that households with family living in Kampala (the capital) at the time of the landslide send fewer migrants afterward, and that households whose damages were mostly covered by aid experienced mitigated welfare impacts.

Policy implications

Our study documents the substantial long-run economic and psychological harms of natural disasters. These findings imply that the neutral to positive long-run impacts of displacement documented in rich-country settings may not extend to low-income countries. And while some studies have documented positive economic impacts of natural disasters in low-income settings (e.g., Gignoux et al., 2016, Heger and Neumayer, 2019), the substantial external aid that followed those disasters may have played a significant role in helping affected communities cope.

Our study also highlights the role that displacement plays in mediating the negative impacts of natural disasters. These findings underline the importance of temporary, pre-emptive evacuations during periods of heavy rainfall, and make the argument for permanent relocation to stable ground more persuasive. We also find a role for disaster aid to affected households, as those whose damages were covered appear to recover to a greater degree than those with uncovered damages.

For further information

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References

- Claessens, L, Anke Knapen, MG Kitutu, Jean Poesen, and Jozef A Deckers, "Modelling landslide hazard, soil redistribution and sediment yield of landslides on the Ugandan footslopes of Mount Elgon," *Geomorphology*, 2007, 90 (1-2), 23–35.
- Deryugina, Tatyana, Laura Kawano, and Steven Levitt, "The Economic Impact of Hurricane Katrina on Its Victims: Evidence from Individual Tax Returns," *American Economic Journal: Applied Economics*, April 2018, 10 (2), 202–33.
- IDMC, "Disaster Displacement: A global review, 2008–2018.," Internal Displacement Monitoring Centre, 2019.
- Gignoux, Jeremie and Marta Menendez, "Benefit in the wake of disaster: Long-run effects of earthquakes on welfare in rural Indonesia," *Journal of Development Economics*, 2016, 118, 26–44.
- Heger, Martin Philipp and Eric Neumayer, "The impact of the Indian Ocean tsunami on Aceh's long-term economic growth," *Journal of Development Economics*, 2019, 141, 102365.
- Nakamura, Emi, Josef Sigurdsson, and Jon Steinsson, "The Gift of Moving: Intergenerational Consequences of a Mobility Shock," *The Review of Economic Studies*, 09 2021, 89 (3), 1557–1592.