Who Bears the Burden of Climate Inaction?

Kimberly Clausing, Christopher Knittel, and Catherine Wolfram

discussion by Tatyana Deryugina
University of Illinois

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How much has climate change *already* cost US households and how is this burden distributed?

- We've been living with climate change for decades, and some costs have already materialized
- A backward-looking analysis *should* be easier than a forward-looking one but...
  - Which observed changes are attributable to climate change, especially for extreme events?
  - How much adaptation has occurred and at what cost?

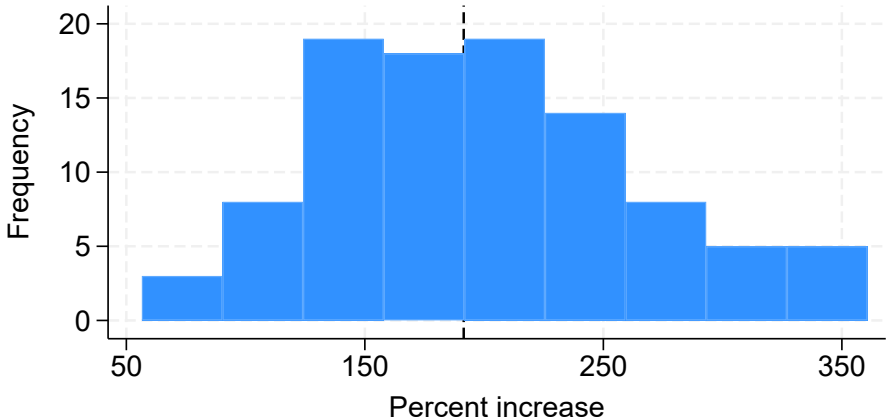
Ambitious and important paper that is both easy and hard to critique

- Each cost component could be a standalone paper
- Easy to critique because constructing each component requires strong assumptions
- Hard to critique because the authors are up front about the assumptions and present both more- and less-conservative estimates

What could *ex post* damage have been?

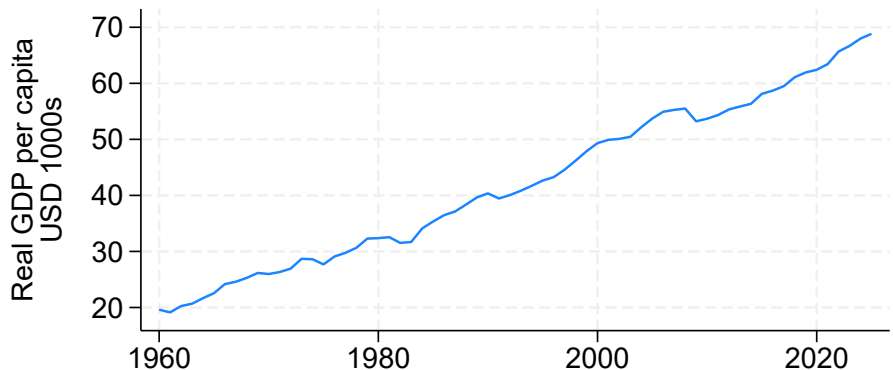
- Extreme weather events are a key component of the overall costs
- Floods and hurricanes are key drivers of extreme weather event damage, but...
  - What if the levees in New Orleans *hadn't* failed?
  - What if Hurricane Ian had hit Tampa Bay at full force?
- Bootstrap state-year observations from SHELDUS in 1960–1980 and 2000–2021 to get a sense of how different the conclusions about damage trends could have been

Quantifying uncertainty in the damage estimates



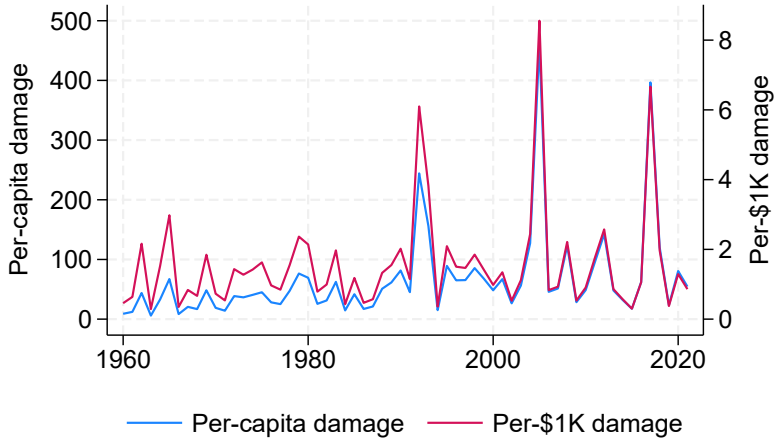
Source: Spatial Hazard Events and Losses Database for the United States (SHELDUS).

Real GDP growth means we'd expect disaster damage to grow with time, holding all else equal



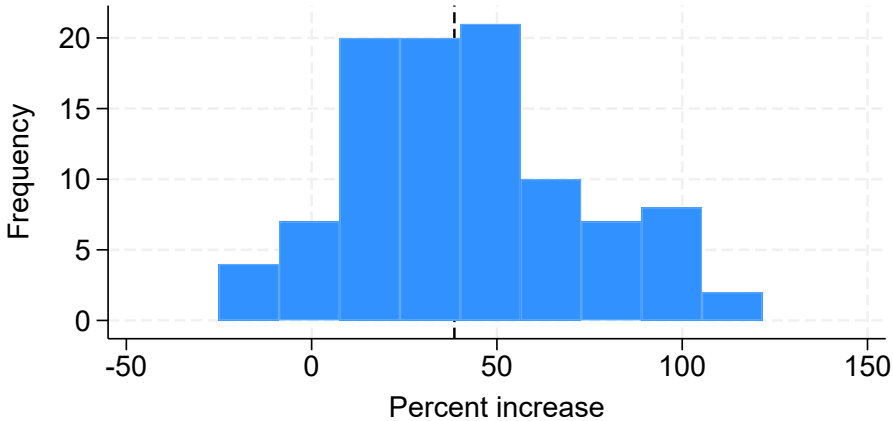
Source: U.S. Bureau of Economic Analysis.

Trends in damage per capita versus damage per dollar of GDP



Source: U.S. Bureau of Economic Analysis; SHELDUS.

Damage increases based on damage per dollar of GDP

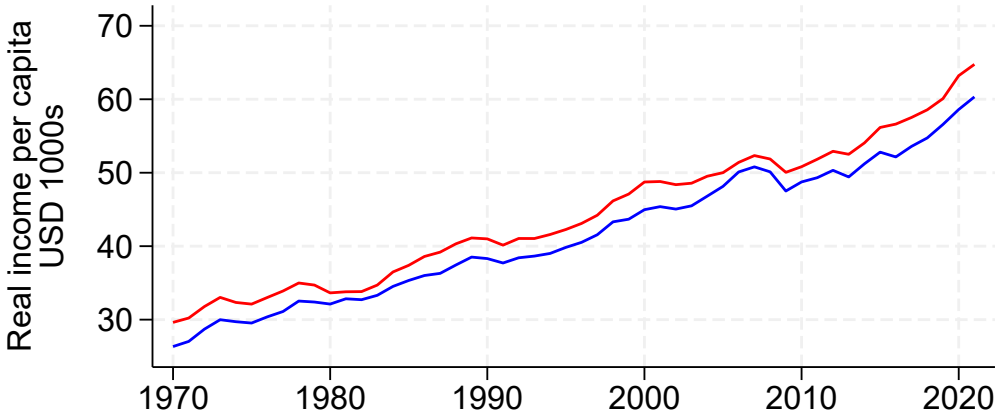


Source: U.S. Bureau of Economic Analysis; SHELDUS.

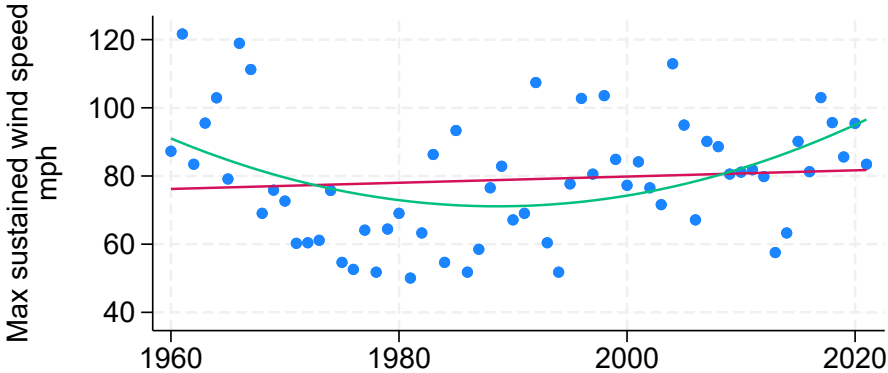
Accounting for uninsured losses and flood damage

- Insurance costs capture *insured* losses but there are many gaps in insurance coverage
  - Suggestion 1: add Small Business Administration's disaster-related loans ($\approx$ \$28 billion in 2016–2025)
  - Suggestion 2: add in firefighting costs (Baylis and Boomhower 2023)
- Cost of flood insurance is missing from the costs but flood damage is almost certainly rising as a result of climate change
  - Suggestion: add SHELDUS flood damage to insurance costs

Hurricane-affected areas have not experienced disproportionate growth in GDP per capita

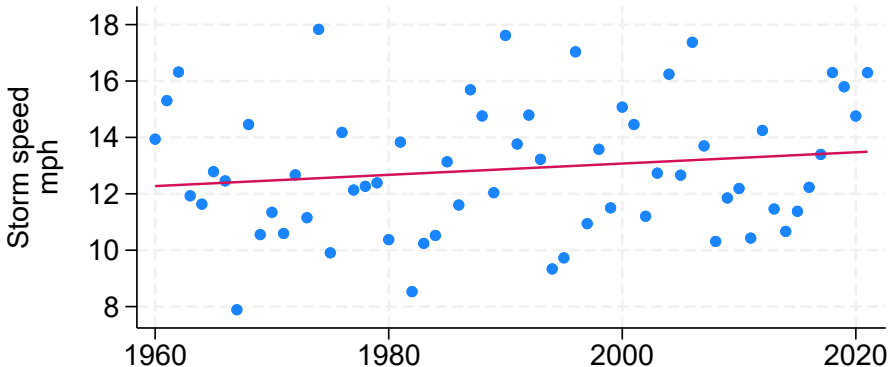


No trend in hurricane wind speeds



Source: The Tropical Cyclone Extended Best Track Dataset (EBTRK).

No trend in how quickly hurricanes move across land



Source: The Tropical Cyclone Extended Best Track Dataset (EBTRK).