Researchers reveal that homes in floodplains are overvalued by nearly $44 billion

April 26 2021

A real estate sign on flooded land in Carteret County, North Carolina. Credit: Miyuki Hino

Buyer beware: single-family homes in floodplains—almost 4 million U.S. homes—are overvalued by nearly $44 billion collectively or

$11,526 per house on average, according to a new Stanford University-led study. The study, published in Proceedings of the National Academies of Science, suggests that unaware buyers and inadequate disclosure laws drive up financial risks that could destabilize the real estate market. The threat is likely to grow as climate change drives more frequent extreme weather.

"The overvaluation we find is really concerning, especially given the increases in climate risk that are coming our way," said study lead author Miyuki Hino, who was a Ph.D. student in the Emmett Interdisciplinary Program in Environment and Resources in Stanford's School of Earth, Energy & Environmental Sciences (Stanford Earth) at the time of the research and is now an assistant professor in the University of North Carolina at Chapel Hill's department of city and regional planning. "Improving how we communicate about flooding is an important step in the right direction."

Water hazard

In some states, such as Florida, as many as one in six homes are in floodplains. As more people have built more homes in areas exposed to cyclones, sea-level rise and other inundation hazards, flooding damage costs have skyrocketed. Since 2000, overall flood damages have quadrupled in the U.S.

More frequent extreme weather could magnify the trend. In the next 30 years, flood damages to U.S. homes are projected to rise more than 60 percent, from $20 billion to nearly $32.2 billion a year, according to nonprofit research group First Street Foundation.

While some states, such as Louisiana, require detailed flood risk disclosures, others require no risk disclosures of any kind. Only two states require that sellers disclose the cost of their insurance policy—an additional cost burden for the buyer. Most states only require disclosures by the time the contract is signed, making them unlikely to inform buyers' decisions.

Unlike many past studies, which focused on single counties or cities in only a few states, the new analysis casts a nationwide net to paint a clearer picture of whether markets effectively account for publicly available information about flood risk. Hino and study senior author Marshall Burke, an associate professor of Earth system science in Stanford Earth, pored over historical and current floodplain maps as well as detailed real estate transaction data to estimate the effect of regulatory floodplain maps on property values or what the researchers call the flood zone discount.

To better understand the drivers of flood zone discount, the researchers examined what happened to property values when floodplain maps were updated, causing some houses to be rezoned from outside to inside the floodplain.

Getting soaked

The analysis revealed that single-family homes zoned into a floodplain lose roughly 2% percent of their value, which works out to $10,500 for a $500,000 home or $21,000 for a $1 million home. In contrast, had buyers factored in the cost of fully insuring the floodplain home against damage, it should have pushed prices down 4.7 percent to 10.6 percent—as much as $53,000 for a $500,000 home or $106,000 for a $1 million home, according to the researchers.

"We like to think that markets work efficiently and incorporate all known information about risk," said Burke. "But here we find clear evidence, in an incredibly valuable market, that the market is underpricing flood risk."

Perhaps unsurprisingly, the results suggest that a buyer's flood risk awareness shapes the value they perceive in a property. This awareness is likely informed by a combination of disclosure laws and the extent of flood risk within the community measured by the percentage of homes located in floodplains. More sophisticated commercial buyers, such as corporations that rent out single-family homes, discount flood zone properties by about 5 percentage points more than other buyers.

The urgency of informing homebuyers about hazards from floods and other climate change-driven hazards will only grow. This past year was the tenth in a row with eight or more billion-dollar disasters in the U.S.

Policymakers can help by passing legislation that promotes access to information about the extent of past flood events and strengthens real estate disclosure requirements, according to the researchers. Broader risk communication efforts—requiring sellers to disclose flood risks and insurance costs before buyers make offers, for example—could help rebalance real estate markets and significantly increase buy-in for flood insurance coverage, something the National Flood Insurance Program has failed to do.

"We spend a lot of time and energy trying to map climate hazards and how they are changing, and we need to make sure that people can access and understand that information when they need it," said Hino.

More information: Miyuki Hino et al, The effect of information about climate risk on property values, *Proceedings of the National Academy of Sciences* (2021). DOI: 10.1073/pnas.2003374118

Provided by Stanford University