

Flood Hazards Impact on Neighborhood House Prices

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Summary

This study examined the effect of flood hazards on residential property values from 2007 to 2013 in North Dakota's Fargo-Moorhead Metropolitan Statistical Area. Through this investigation, the authors were able to estimate the changes in flood price discounts for houses located within a 100-year floodplain and in the areas adjacent to the flood plain following a series of major "100-year flood" events.

As expected, houses located in a 100-year flood plain sell at a lower price than otherwise similar houses located outside of the flood plain. However, this study revealed that houses outside of a flood plain but near to the flood plain also sold at a price discount. The price discounts were found to be higher following two back-to-back flood events, but prices rebounded and were less affected by major flooding that occurred in subsequent years. Results suggest that while floods impact property values, housing markets can adjust to changing expectations of flood risk and heightened price discounts following major flood events might have only a brief duration.

Among the findings

- **Housing values decrease following repeat flood events, but that decrease is often temporary.** The closer a home was to a floodplain, the more its value was likely to decrease. Typically, the market value of a house within a floodplain was 3.5 to 12.2 percent lower than an otherwise similar house located outside the floodplain. This amount further increased by 14 to 16 percent when residence experienced a major flood followed by a second, non-major flood. However, this additional price drop was not permanent and prices rebounded despite additional flood events.

- **Homebuyers’ consideration of the risks for buying houses in floodplains is influenced by recent flood events.** However, in this study it was found that a single flood was not enough to trigger changes in risk perceptions. Only after a major flood was later followed by a smaller flood did we see homebuyers’ risk assessments adjusting upward. Leonard and her co-author surmise that “this combination of flood events may have been necessary for market participants to re-assess their flood risk.” However, as time passed, homebuyers’ estimation of flood risk returned to it’s prior levels.
- **Homebuyers often misunderstand the term “100-year floodplain.”** Leonard says “the 100-year flood plain designates areas that have a one percent chance of flooding in each year. Because most people aren’t great at interpreting statistics, the definition has often been simplified to say that the floodplain is likely to flood once every 100 years. However, this over-simplification leads people to believe that if an area flooded last year, then it might be unlikely to flood this year. This is not correct. Every year, there is a one percent chance of flood.”
- **Policy measures that increase flood insurance premiums would likely cause the price discount to increase and hit existing homeowners hard.** For new homebuyers looking to buy in a flood plain this means they will pay less for a house and more for insurance premiums, resulting in no net financial loss. However, homeowners located in a flood plain, would likely see property values drop and have to pay more in flood insurance premiums. These homeowners would be the hardest hit by any policy move to increase premiums associated with the National Flood Insurance Program. However, there are flexible policy alternatives that may be considered such as phasing in of premium changes over time.
- **These findings have implications for the National Flood Insurance Program.** Last year’s hurricanes and the resulting increase in insurance claims have prompted policy discussions about increasing premiums for the National Flood Insurance Program. This study’s results suggest that raising premiums could affect housing markets in two possible ways:

 - The baseline flood price discount would likely increase because the cost of the insurance would increase. Study results show that the typical flood price discount is approximately equal to the present value of anticipated future flood insurance premiums.
 - The flood price discount for homes would likely increase more significantly in the year following a premium rate change if that rate change is very important to prospective homebuyers. This would be especially true if the rate change was coupled with significant political attention and/or with a major flood – however, that effect could be short lived.

About Tammy Leonard

As an economist, Leonard specializes in interdisciplinary applications of public, urban and behavioral economics along with advanced spatial and econometric analytic methods. She also has three years of experience in the petrochemical industry managing large-scale projects spanning complex technical statistical analysis and large-scale engineering design and implementation. Leonard has over 30 academic peer-reviewed publications related to her expertise in geospatial analysis of urban housing, health, and household outcomes. Additionally, she serves as assistant director of the Economics Research Group at UNT, is founder and co-director of the Community Assistant Research initiative and is a research fellow with the Texas Hunger Initiative.