Homes Threatened by Rising Seas

Jeff Tucker, Economist, Zillow
Estimating the Costs of Climate Change

- Residential real estate is one of the biggest components of national wealth
  - And for most American homeowners, their biggest single asset
- Climate change will interact with housing in several ways
  - Changes in cooling and heating needs
  - Shifting desirability of markets
  - Growing wildfire risk at urban/forest interface
  - Sea level rise (today’s subject)
Sea Level Rise: An Exceptionally Clear Risk

- Experts can model sea level rise under different CO2 concentration pathways
- Climate Central has produced detailed interactive maps to show the areas expected to flood under different scenarios
Sea Level Rise in Norfolk, Va.
Sea Level Rise in Aberdeen, Wash.
Where Zillow Comes In

- Zillow has the most comprehensive database of U.S. home locations and estimated market values
- We combine our geocoded set of homes with Climate Central’s maps of risk zones
  - Areas expected to be inundated by a combination of sea-level rise and expected annual flooding
- Result: total property counts and values at risk from sea level rise, separately under three representative concentration pathways, and measured at 2050 and 2100 projected sea levels
Property Values at Risk in Norfolk, Va.
Property Values at Risk in Aberdeen, Wash.
National total home value at risk by 2100

- $372 billion under RCP 2.6 (deep emissions cuts)
- $715 billion under RCP 4.5 (Paris accord, moderate cuts)
- $1,328 billion under RCP 8.5 (unchecked emissions)
By 2100, Florida bears two fifths of all risk
Miami-Dade & Broward Counties Contain Half of Florida’s Homes at Risk

Total homes at risk of yearly coastal flooding by 2100
Number of homes at risk in Florida counties*

Number of homes at risk
- <310,000
- <230,000
- <90,000
- <60,000

*Housing data are for homes built through 2016. 50th percentile (mid-sensitivity) sea-level rise projections based on Kopp et al. 2017 assuming no cuts in heat-trapping pollution (RCP 8.5). Source: Elevation data, lidar; administrative boundaries, US Census. Zestimate home values and housing data provided by Zillow.
These Risk Assessments Are a Lower Bound

- Zillow used 2018 home values and locations
- More homes are built every year in coastal areas at risk
  - Since 2010, Florida has added 14,270 new homes which will likely flood by 2100, representing an additional 3% or $15.6 billion worth of homes at risk
  - New Jersey has added another 5% or $7.4 billion worth of homes in risk zones since 2010
Policy – What is Done Now?

- National Flood Insurance Program is current front-line policy
- Homeowners in FEMA’s 100-year flood zones are required to buy insurance
- Claims have outpaced premiums, requiring $16 billion in debt forgiveness recently
Policy – What Do Economists Recommend?

- Economists are broadly unhappy with current policy
  - Subsidized insurance for homes in risky areas incentivizes putting more homes and lives at risk
  - Current programs are often used to re-build in place
  - Most flood insurance claims are paid to owners of above-median-value homes, so the NFIP is effectively a regressive program
- Zillow asked our panel of housing economists about policies related to natural disasters, including flooding from sea level rise
Experts: Government should work to lessen natural disaster losses, not insure them

Most mortgage lenders currently require home buyers in high-risk areas to purchase and carry insurance against natural disaster losses – including losses from floods, fires, hurricanes, storms surges and mudslides. Please indicate whether you agree, or disagree, with each of the following statements.

The government should not underwrite or subsidize property loss insurance—especially not in high-risk areas.
- Agree: 68%
- Disagree: 19%
- Not sure: 14%

The government should not impose new property loss insurance mandates.
- Agree: 36%
- Disagree: 43%
- Not sure: 21%

State governments should require all homeowners in high-risk areas to purchase and carry insurance against these losses.
- Agree: 42%
- Disagree: 51%
- Not sure: 7%

The federal government should require all homeowners in high-risk areas to carry insurance against these losses.
- Agree: 42%
- Disagree: 54%
- Not sure: 4%

Homeowners in high-risk areas should be required to carry insurance against these losses only if the property is mortgaged.
- Agree: 54%
- Disagree: 40%
- Not sure: 6%
Policy – Zillow Survey Results, Part 2

Experts to homeowners who can't afford insurance in high-risk areas: Sell

Regarding homeowners living in high-risk areas who no longer can find property insurance coverage or afford significantly increased premiums, which one of the following choices best reflects your view?

- The homeowner should sell their home and move to a lower-risk, affordable location (35%)
- The government should offer affordable insurance coverage for a wider variety of natural disasters—not just floods (12%)
- The government should provide financial assistance to help these homeowners afford adequate insurance coverage (4%)
- The government should require that private insurers offer affordable insurance policies for these homeowners (4%)
- None of these/Not sure/No response (45%)
### Experts: Stop increasing homes at risk

Of the following policy proposals to prevent or significantly reduce recurring property losses in communities that are especially vulnerable to devastating hazards, which do you support? For those you support, please order them according to anticipated effectiveness.

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<tr>
<th>Policy</th>
<th>Score</th>
<th>Times Chosen</th>
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<tr>
<td>Strict building codes requiring new construction and refurbishing of older units to meet state-of-the-art resilience standards</td>
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<td>New construction moratoriums in zones most at-risk</td>
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<td>Public investment in defensive infrastructure (e.g., seawalls, jetties, artificial dunes, pumps, levees, de-forested zones, subterranean power lines, fire trenches, etc.)</td>
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<tr>
<td>Mandate insurance coverage for property losses resulting from natural disasters</td>
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<td>Demolition of homes repeatedly destroyed and rebuilt via federal insurance funds (after facilitating relocation of residents)</td>
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Source: Zillow Home Price Expectations Survey, 2019 Q1

[Note: 8 write-in responses omitted from 95 responses.]
Links

• Zillow research brief, Nov. 2018
  - https://www.zillow.com/research/ocean-at-the-door-21931/

• Climate Central research brief, Nov. 2018

• Climate Central-Zillow collaborative interactive maps
  - https://rzh.climatecentral.org/#12/46.9754/-123.8157?show=zillow_k17&projections=1&level=6&unit=feet&pois=hide

• Kopp et al. (2017) source for Climate Central’s sea level rise model
Questions?