

Strategic Behavior in the Homeowners Insurance Market

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As Insurers Around the U.S. Bleed Cash From Climate Shocks, Homeowners Lose

[Christopher Flavelle](#) reported from Iowa and spoke with more than 40 insurance experts, officials and homeowners in a dozen states. [Mira Rojanasaku](#) analyzed insurance market data for carriers across the country. Photography by Jamie Kelter Davis.

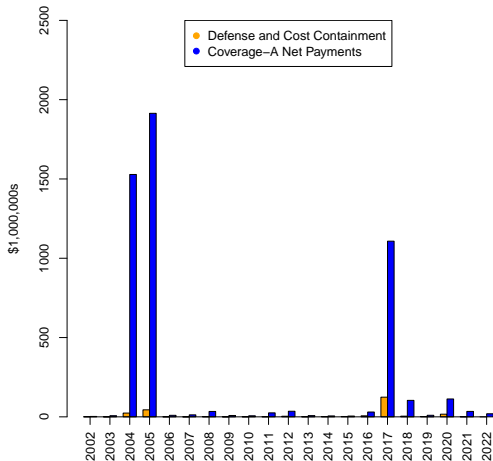
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- Climate change is increasing the frequency and strength of extreme weather events throughout the United States
 - Hurricanes in the southeast
 - Wildfires in the west
 - Growing frequency and geographic occurrence of tornadoes
 - Hail throughout the US
- These weather events are putting additional stress on the market for homeowners insurance
- Asymmetric information has always played an important role in home insurance markets - new or exacerbated problems due to climate change?
 - Deferred maintenance by homeowner
 - Fraud by homeowner and third party

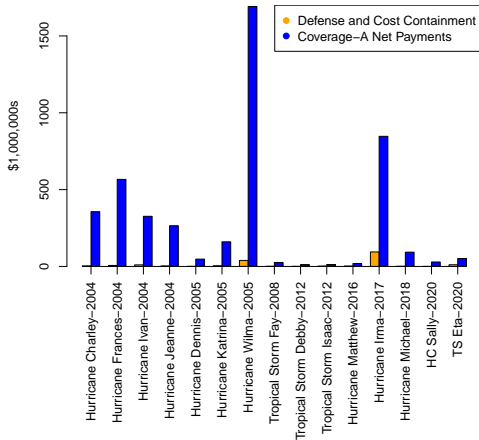
Motivation

- In 2022, six Florida property insurers declared insolvency
 - Farmer's Insurance and AAA left in July of 2023
- Those private insurers remaining are imposing restrictive underwriting guidelines such as:
 - Limits on new business/renewals based on location
 - Age of roof or home
- Because of this, homeowner's insurance premiums have skyrocketed
 - Ill reported premiums in Florida increased 102% from 2021 to 2023
 - Florida accounts for 9% of all home insurance claims but approximately 80% of all lawsuits
 - Since 2012, Florida insurers paid \$51b (71% to attorneys)
- Evidence that similar problems are beginning in Louisiana, Alabama, California and even Iowa

Annual Payments and Litigation



Catastrophe Payments and Litigation



Strategic Behavior by Homeowners

- Deferred maintenance - in a world where extreme weather events are becoming more frequent and extreme, why engage in preventative maintenance?
- Homeowners may have an incentive to attribute normal wear to storm in order to get needed upgrades for a reduced price
 - Specifically true as building standards improve to make homes more resistant to storms
 - Incentives may be even higher if there are discounts given by insurers when certain standards are met

How Could Third Parties Be Involved?

- 1 Roofers go door to door telling homeowners they have roof damage and that they can get them a new roof for free
- 2 Homeowners are then asked to sign an AOB so the roofer can manage, taking the homeowner completely out of the conversation
- 3 Roofer files an insurance claim on behalf of the homeowner
- 4 The insurance company sends out an adjuster and denies the claim or disputes the cost of the repair
- 5 The roofer completes the repairs, then teams up with an attorney to sue the insurance company for the amount of the repairs

- We examine the role of informational asymmetries on strategic behavior in the homeowners insurance market in Florida
- Data from Citizens Insurance, state-run insurer
- Starting in 2013, for all new policies, if the home is 30 years or older the home must have a four-point inspection
 - Existing policies may have an inspection if requested by the insurer
- Focus on original tile roofs which have a life expectancy of 50 years
- How does claiming behavior vary based on the age of the home and the four-point inspection policy?
 - What could be driving any differences in claiming behavior?

Key Findings

- Find evidence of systematic differences in claiming behavior based on age of the home following Hurricane Irma - specifically properties aged 26 to 29
- Tile roofs are not replaced systematically at age 30 in non-storm years
- No evidence of a change in building codes or methods driving findings
- Results suggest that third parties likely driving the results

- Dionne and Gagne (2001) - car insurance in Quebec, finds evidence of fraud (i.e. claim is less if there are witnesses present)
- Picard (1996) - examines decision by insurance to audit or not
- Crocker and Tennyson (2002) - insurer decision to underpay on claims
- Bourgeon and Picard (2014) - "nitpicky" insurers

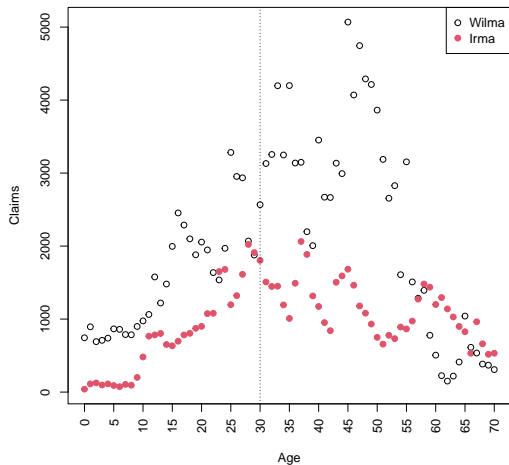
- Background Information on Florida
- Data
- Empirical Strategy
- Results
 - Probability of New Roof
 - Probability of Claim
 - Building Characteristics
 - Sample Selection Concerns
- Mechanisms - Deferred maintenance or fraud?
 - FBC Equivalent and claim behavior
 - Four-point inspection or 30-year mark?
 - Timing of claim filing

Florida's Four-Point Inspection

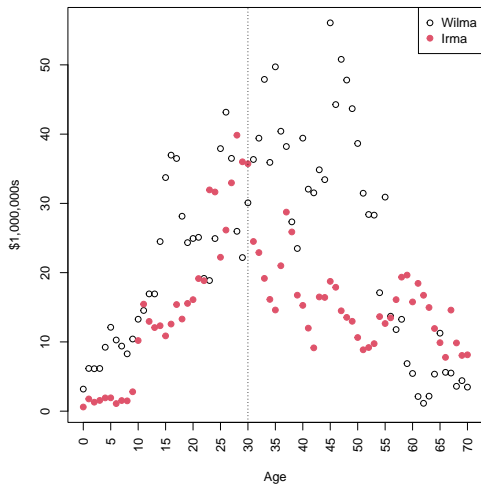
- Florida has a state-run insurance company - Citizens Insurance
 - Established after Hurricane Andrew
 - Citizens is intended to be “the insurer of last resort”
- Starting in 2013, Citizens Insurance required all new policies for homes that are 30 years or older to have a four-point inspection
- For currently insured policies over 30 years old, Citizens can request a four-point inspection
 - Extensive inspection on heating and cooling systems, plumbing, roof, and electrical systems
 - Documentation, including pictures, is required for this inspection
- When Irma hit in 2017, homes built in 1987 may have a four-point inspection, while those built in 1988 or more recently generally did not
- Policy created a difference in the likelihood that a given home *might have* a four-point inspection

- Obtained data from Citizen's Insurance for the entire state of Florida
- Extremely detailed data on policies including:
 - If an AOB was used
 - If a lawyer was involved
 - Amount filed in initial claim
 - Amount of payout
 - Type of damage (wind, water, fire, etc.)
- Also have extremely detailed information on the homes as it could relate to roof damage including:
 - Type of roof (gable)
 - Type of shingles (asphalt, composite, tile)
 - How the roof is connected to the structure (clips, single wrap, toe nail)

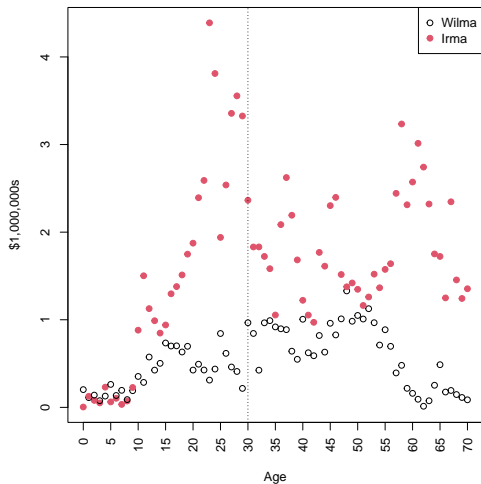
Claims by Age - Wilma and Irma



Net Coverage-A by Age - Wilma and Irma



Defense and Cost Containment - Wilma and Irma



Original Tile Roofs Only

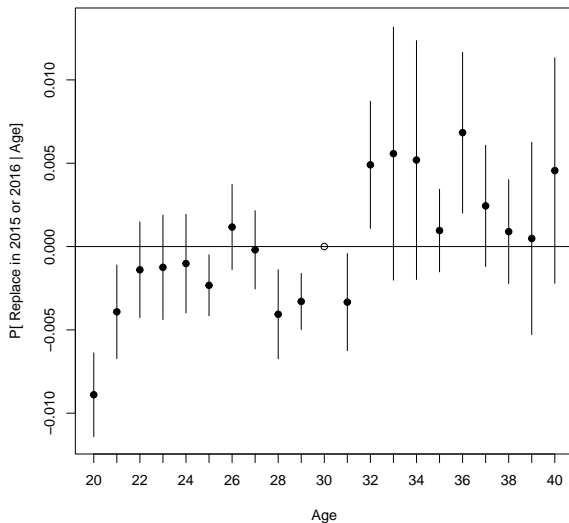
- Limit analysis to original tile roofs that were covered by Citizens when Hurricane Irma hit
 - Cannot examine 2004 or 2005 Hurricane seasons (i.e. Wilma) for pre-period because no tile roofs were insured by Citizens until 2009
- No roof replacement on record
- Minimal back dating observed in the data
- Expected life of tile roof in Florida is approximately 50 years
 - Average life of asphalt roof is 20 years
 - Asphalt roofs have inspection at 25 year mark of shingles

Estimation Strategy: Probability of New Roof

$$NewRoof_{n,t} = \sum_{t=0,1} \sum_{Age \in \mathcal{A}} I(Age(n) = Age) \times \delta_{Age,t} + \gamma X_{n,t} + \mu_{z(n),t} + u_{n,t}$$

- $NewRoof$ equals 1 if n has a roof replacement in 2015 or 2016
- $I(Age(n) = Age)$ equal to 1 if n is age Age at the start of the policy
- $\delta_{Age(n),t}$ is the age-specific effect on roof replacement at time t
- X_n are home specific control variables (roof attachment, gable, etc.)
- $\mu_{z(n)}$ are area fixed effects
- Identifying Assumption: Life expectancy does not change discontinuously at 30 and no other change in 1987 that could drive results
- Excluded house age is 30

Probability of New Tile Roof

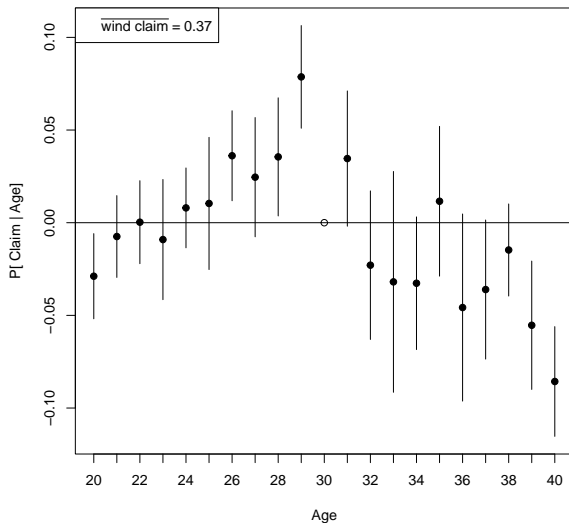


Estimation Strategy: Probability of Filing a Claim

$$Claim_{n,t} = \sum_{t=0,1} \sum_{Age \in \mathcal{A}} I(Age(n) = Age) \times \delta_{Age,t} + \gamma X_{n,t} + \mu_{z(n),t} + u_{n,t}$$

- $Claim$ equals 1 if n filed a Hurricane Irma related claim
- $I(Age(n) = Age)$ equal to 1 if n is age Age at the start of the policy
- $\delta_{Age(n),t}$ is the age-specific effect on roof replacement at time t
- X_n are home specific control variables (roof attachment, gable, etc.)
- $\mu_{z(n)}$ are area fixed effects
- Excluded house age is 30

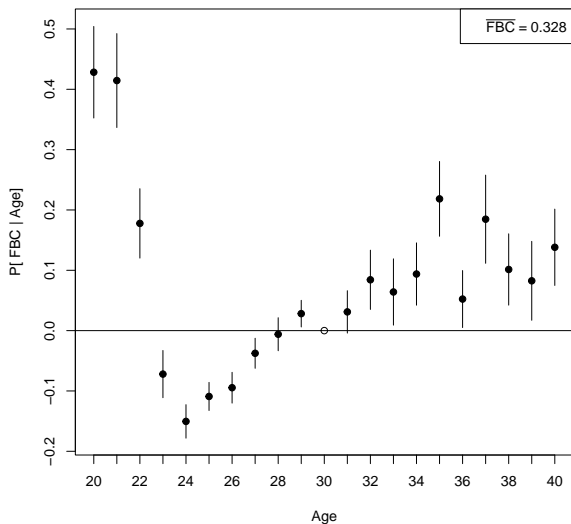
Irma Related Claim - Tile



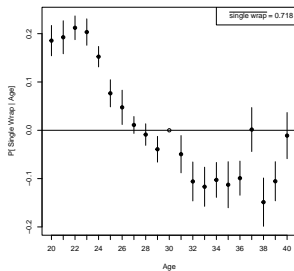
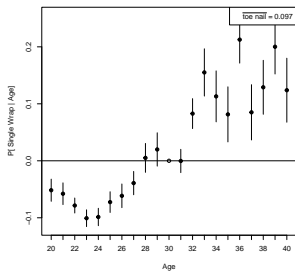
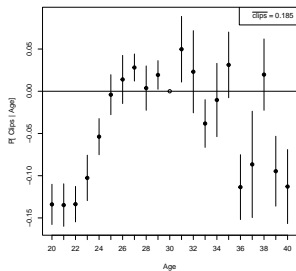
Did Building Codes Change?

- Did something change in 1987 regarding building codes?
 - If building codes changed in 1987, this could impact how much damage is experienced by these homes and the likelihood of a claim
 - In 1994, in response to Hurricane Andrew (1992), building codes were changed
- Preferences for building type could have changed
- Citizens has extensive data on different types of attributes of how the home was built, how the roof was built, and how the roof is attached

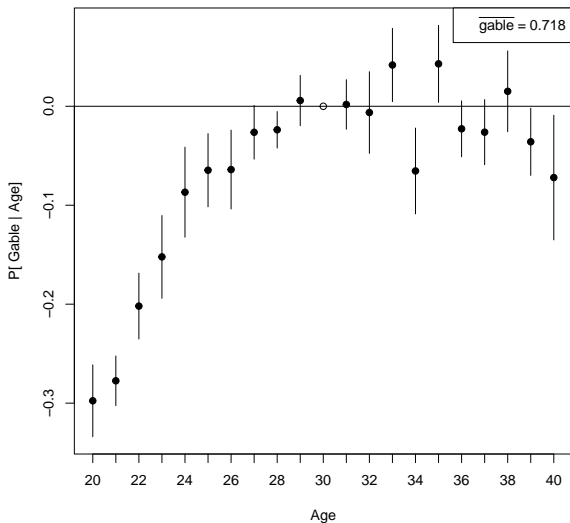
FBC Equivalence Relative to Age 30



Attachment Type Relative to Age 30



Shape Type Relative to Age 30



Sample Selection Concerns

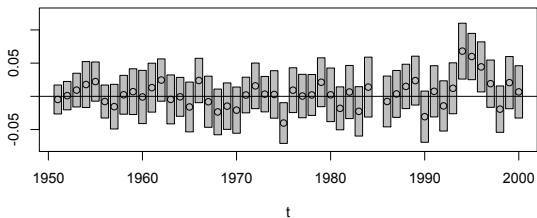
- Are lower quality homes selecting into Citizens Insurance?
- For this to explain our results, this selection must be correlated with the age of the house
- Variety of checks to see if present:
 - No difference in likelihood of assumption based on age
 - No difference in the sale price at the time of purchase between Citizens insured properties and privately insured (or not insured) properties
 - Within Citizens properties, no difference in sale price between properties that file and claim and those that do not file a claim
 - Within Miami-Dade county, do not find evidence of concentration geographically using the Duranton-Overman measure

Mechanisms - Deferred Maintenance?

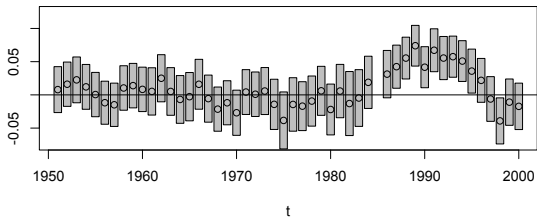
- Are individuals using the storm to replace a worn roof to avoid paying the full cost themselves in a few years? Or to pay for upgrades?
- Who is most likely to do this?
 - Households whose roof does not meet current FBC standards
 - Especially since many insurers give rates discounts based on if FBC standards are met
- Compare the likelihood of filing a claim based on age of the roof by whether or not roof meets FBC standards

FBC versus Non-FBC Equivalent Status

FBC Equivalent



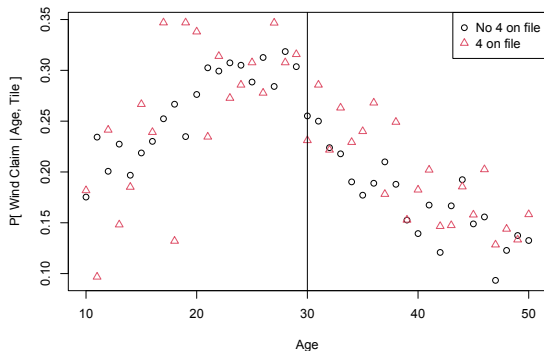
Non-FBC Equivalent



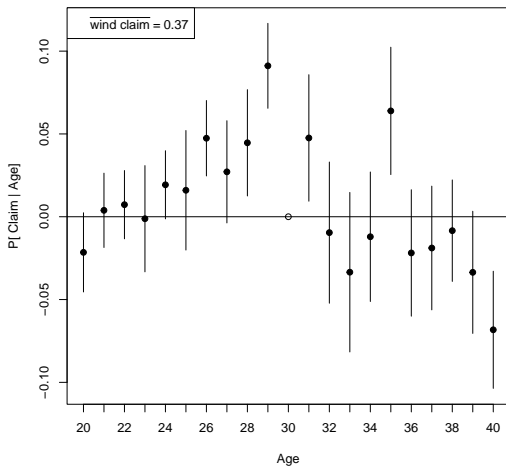
Mechanisms - What Information Matters?

- New policies for homes over 30 have a four-point inspection
 - Some existing policies for homes over 30 years have a four-point inspection
 - Few homes under 30 have a four-point inspection
- Homeowners have perfect information on if the house has a four-point inspection on file with Citizens insurance or not
- Third party individuals (i.e. roofers and lawyers) can easily tell via on-line search age of house but not four-point inspection status

Claiming Behavior for Hurricane Irma by Four-Point Inspection Status



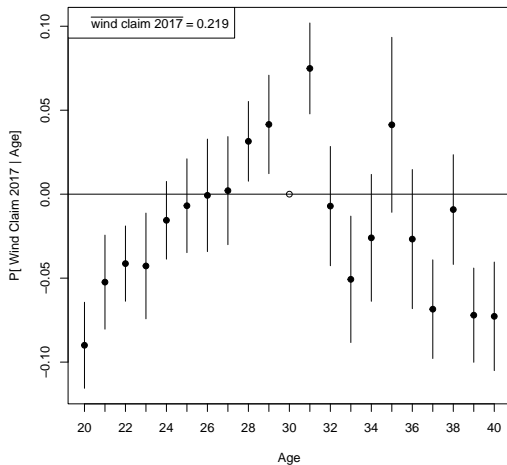
Likelihood of Filing a Claim, Excluding Homes with Four-Point Inspection



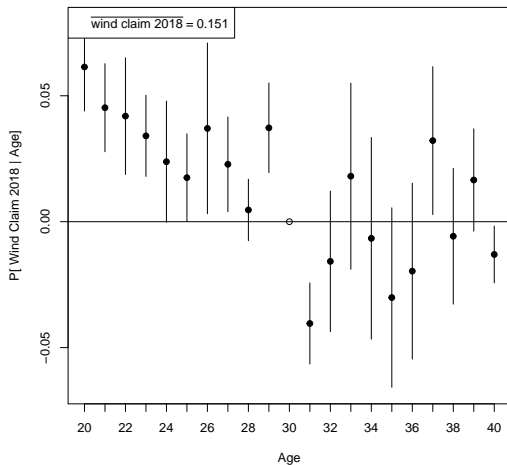
When is the Claim Filed?

- If home is damaged by storm, most will recognize immediately
- Florida has a three year statute of limitation to file a claim since some damage may not be immediately obvious
- No strong a priori reason to think recognizing delayed damage is negatively correlated with the age of the home
- Roofers are busy immediately after the storm, expect that the schemes described earlier are more likely to be delayed versus immediate

Claiming Behavior for Hurricane Irma in 2017



Claiming Behavior for Hurricane Irma in 2018 or Later



How Big Is the Impact?

- Focus on homes aged 26 to 29 years
- Average increase in the likelihood of filing a claim for these four age categories is 4 percentage points
- Total amount paid for coverage-A claims in this age range is approximately \$80 million - Additional cost of these claims is approximately \$3.2 million
- If we include lawyer fees, amount paid is \$90 million - Additional cost is approximately \$3.6 million
- Note this is only for Citizens insured properties with an original tile roof

Conclusion

- Examine the role of information and information asymmetries on strategic behavior in the homeowners insurance market in Florida
- Find likelihood of filing an Irma related claim is significantly more likely if the home is under 30 years old
 - No evidence that expected life of roof is 30
- Evidence suggests that strategic behavior by homeowners and third parties are driving results
 - Age pattern exists when focus on only non-FBC Equivalent roofs
 - Four-point inspection not systematically lowering likelihood of filing a claim
 - Delay in pattern of filing a claim