Discussion of "Wildfire Insurance Availability as a Risk Signal: Evidence from Home Loan Applications"

by You, Kousky, Atreya

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12 November 2024

Mounting concerns around insurance and climate-driven disasters

CLIMATE

How climate change could cause a home insurance meltdown

July 22, 2023 · 6:00 AM ET

By Michael Copley, Rebecca Hersher, Nathan Rott

The New York Times

Why California and Florida Have Become Almost Uninsurable

July 21, 2023

You, Kousky, Atreya

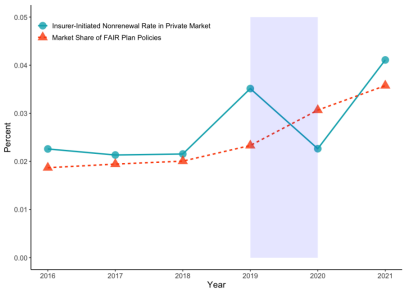
- How does insurance availability affect housing demand in wildfire-prone areas?
- Data:
  - Home loan applications (LPA).
  - Insurance premium, parcel-level (UCD).
  - Property characteristics (CoreLogic).
  - Insurance market data (CDI).
  - Wildfire hazard (USFS WHP, Cal Fire, USGS MTBS).

Regressions I: Intent to Move Out

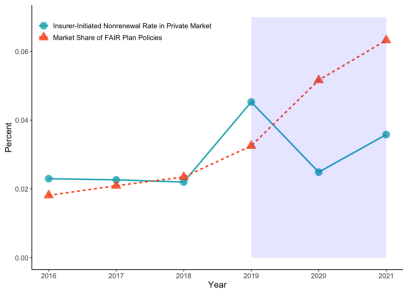
Quasi-random experiment: Timing of moratoriums on dropped policies (Taylor et al. 2024).

Figure 3: Insurance Conditions in ZIP Codes Protected by 2019 Moratoriums

Panel A: Protection Ended in Oct. 2020

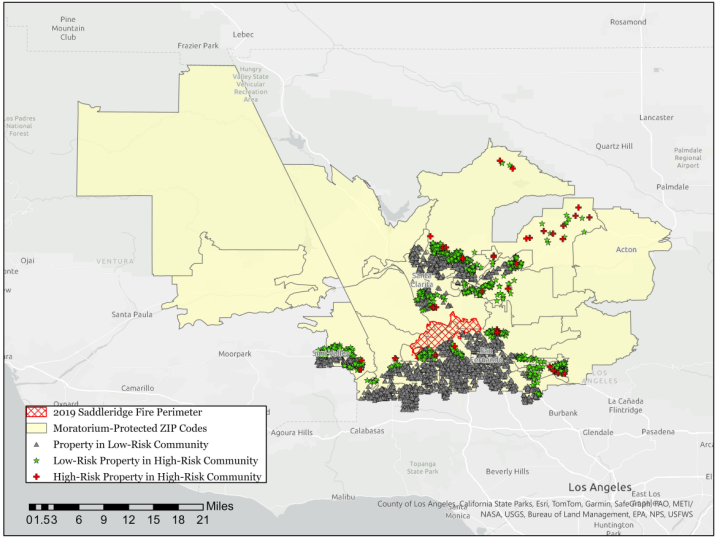


Panel B: Protection Ended in Aug./Sep. 2021



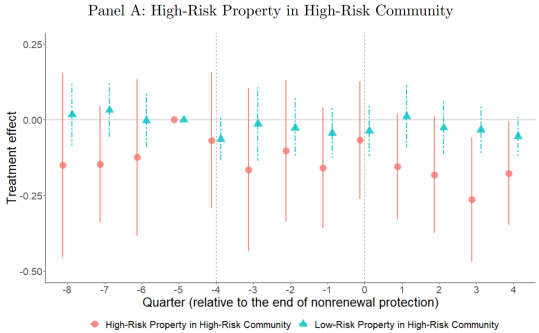
Regressions I: Intent to Move Out

Figure 4: Example of Sample Selection, Intent-to-Move-Out Sample



Regressions I: Intent to Move Out

Figure 5: Effect of Insurance Non-Renewals on Physical Characteristics of Subject Property



- Policy likely cancelled $\Rightarrow \mathbb{P}$(Apply for high hazard parcel) $\Downarrow$.
- Placebo: Moratorium extension areas.
- Alternative explanations: Rule out income and wildfire.

Regressions II: Intent to Move In

Trends since 2017-18 wildfires:

- $\Downarrow$ Loan applications for high risk properties.
- Applicants to high-risk parcels correlate w/ low county-level climate beliefs.
- Rule out income or insurance prices as strong explanations.
- Some evidence: $\Uparrow$ Mortgage denials in high-risk communities.

Contributions

- Sub-zip code granularity, descriptive power.
- Risk perceptions + housing (Bakkensen and Barrage 2022, Bakkensen and Ma 2020, Ma et al. 2024).
- Household mobility, consumer finance, and migration (An et al. 2023, Boustan et al. 2020, Deryugina et al. 2018, McConnell et al. 2021).
- Insurance and natural disasters (Boomhower et al. 2024, Keys and Mulder 2024, Oh et al. 2022, Taylor et al. 2024, You and Kousky 2024).

My assessment

- Lots of interesting results.
- Convinced by moratorium regressions and $\Downarrow$ loan applications regressions.
- Very clever identification.
- Well-written, pleasure to read.

Major comment 1: Interpretation of results as risk signal about wildfire

- The authors work hard to sell results as evidence of risk signal.
- Plausible alternative: Dropped insurees experienced a costly and salient shock, do not want to deal with this cost again in the future.
- Could attribute results to rational inattention about insurance, not the risk itself.
- Authors rule out *heterogeneity* by income. But it does not rule out that effects are due to high expected transactions costs common to all income groups.

Major comment 1: Interpretation of results as risk signal about wildfire

- Anecdata: Five UC professors (Berkeley: 2, Davis: 1, Santa Barbara: 2).
  - High-risk houses, had insurance issues.
  - Moved by transactions costs, not risk.
  - One professor: *"We know our house is going to burn down but we just need space for the dogs."*
- Main evidence for beliefs in You et al. (2024): Yale Climate Opinion Survey.
  - Issue: Ecological fallacy.
  - Robust to other variables in Yale Climate Opinion survey?
  - Do "high climate believers" look similar to "low climate believers" on observables?

Major comment 2: Fitted homeowners insurance premium

Authors use LPA data to regress:

$$y_{jpkt} = \text{stuff}_{jpkt} + \beta \widehat{\text{HOPremium}}_{pkt} + \varepsilon_{jpkt}, \quad (1)$$

where $\widehat{\text{HOPremium}}_{pkt}$ estimated using UCD data:

$$\text{HOPremium}^{\tau}_{pk} = \alpha \, \text{other\_stuff}^{\tau}_{pk} + \mu^{\tau}_{pk}. \quad (2)$$

Standard errors: If using a fitted value on the RHS, need to block bootstrap at a zip code level to preserve variation from first stage (Cameron and Miller 2015, Wooldridge 2015).

Major comment 2: Fitted homeowners insurance premium

Attenuation bias?

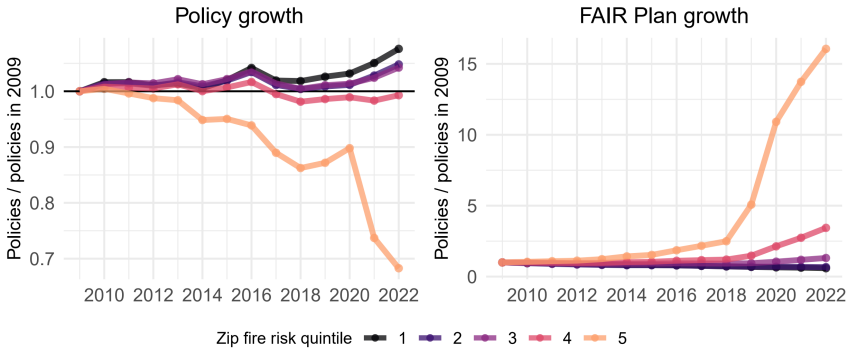
- Reassure that measurement error in $\widehat{\text{HOPremium}}_{pkt}$ not an issue (Pischke 2007).
- Adjusted R^2 from first stage is about 0.40.
- Out-of-sample performance?

What goes in the first stage?

- Other predictors: State Farm "location rating factors"; homeowner characteristics (age, marital status, employment); Census block groups; public protection class.
- Reconstruction cost rather than assessed value (issues with Prop 13 in California).
- Machine learning appropriate for prediction exercises.

Minor comment 1: Using 2018 as reference year

- Intent to Move In regressions interpret trends relative to 2018.
- But trends began prior to 2017-18 (Boomhower et al. 2024).
- Could elevate discussion of the losses regressions in Appendix B.



Minor comments 2: Where are people coming from and going to?

- Where is migration happening? How far? In/out of state? (Boustan et al. 2020.)
- Origin and destination fixed effects?
- How does wildfire hazard magnitude compare to other migration reasons (labor market, family considerations)?
- Sorting model: Data seem perfect for discrete choice setting w/ structural welfare parameters (Bakkensen and Ma 2020, Hamilton and Phaneuf 2015).

Minor comments 3: Data and empirics

Empirics:

- Issues with log(1+y) (Bellemare and Wichman 2020, Wooldridge 2012).
- Suggest extensive margin $\mathbb{1}\{\text{any applications}\}$, intensive margin log(applications).
- Or, Poisson model.

Data:

- Cal Fire FRAP instead of USGS MTBS wildfire perimeters.
- 30 m resolution WHP instead of 270 m resolution WHP.
- USFS Risk to Potential Structures (RPS): Can infer \$AAL (Boomhower et al. 2024).

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