

Tornado Damage Mitigation: A Look at Homeowner Willingness to Pay for Mitigation and Support for Building Codes

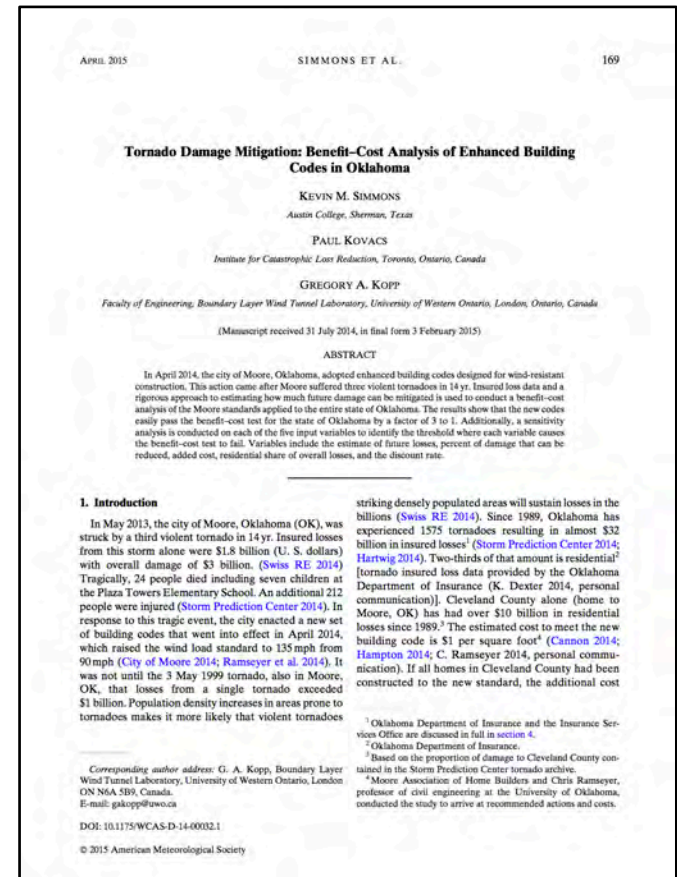
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NATIONAL INSTITUTE
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Motivation

- Between 1989 and 2013 Oklahoma experienced 1,597 tornadoes that produced roughly \$31.7 billion in insured losses (\$1.27 billion per year)
- Estimates suggest that Oklahoma will experience \$107.4 billion in insured losses over the next 50 years
- Improving the wind resistance of residential structures could reduce insured losses by 30%
- Building codes (like Moore, OK) represent one way to improve the construction of new homes
 - Benefits exceed the costs ($\sim \$1 \text{ ft}^2$) by a ratio of 3:1
- Retrofits represent another way to improve the construction of existing homes
 - Benefits to cost ratio is unknown, but likely positive

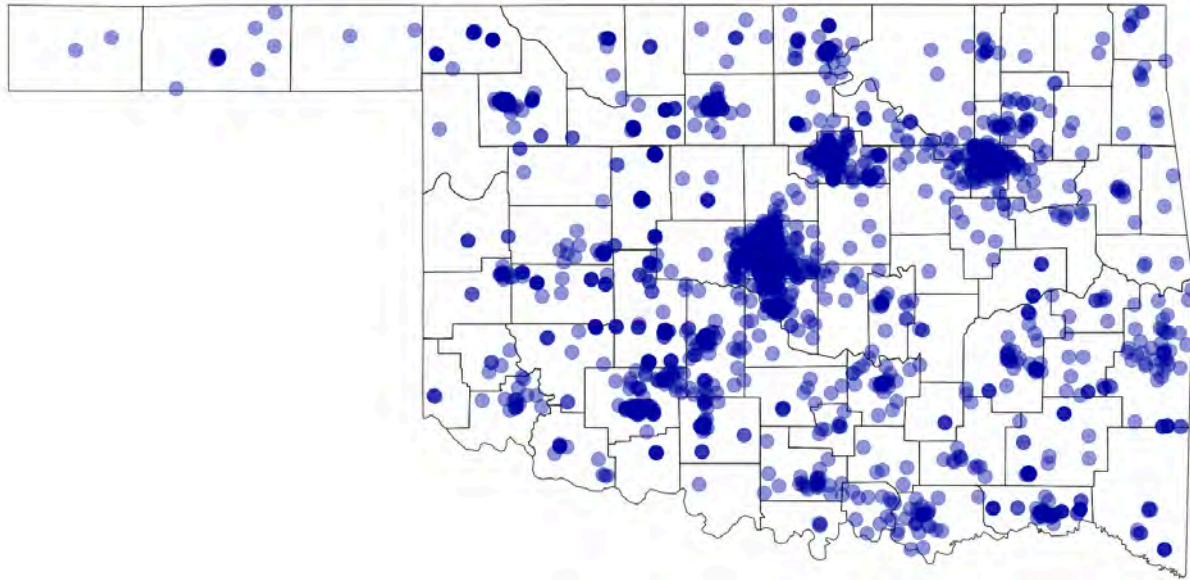


Research Puzzle

- Despite the availability of these “technical” solutions to a costly problem, we have done little to limit the losses caused by tornadoes
 - Relatively few policies exist that encourage homeowners to install retrofits
 - Even fewer building codes have been adopted (except for Moore, OK)
- Why is this the case?
 - Economics—mitigation and regulation are expensive and Oklahoma residents (consumers) are not willing to pay for retrofits and resist the idea of building codes
 - Is this true?

Data Collection

- To answer this question, we surveyed an address-based random sample of 2,212 homeowners in Oklahoma (June 4th – July 22nd, 2015)



Survey Questions

- **Willing to Pay for Retrofits**

Suppose that an engineer inspected your home and told you that you could install a set of components that would protect the structure of your home from the majority of high-wind events that occur in Oklahoma, including most EF0, EF1, and EF2 tornadoes. Would you install this set of components?

1. Definitely No
2. Probably No
3. Not Sure
4. Probably Yes
5. Definitely Yes

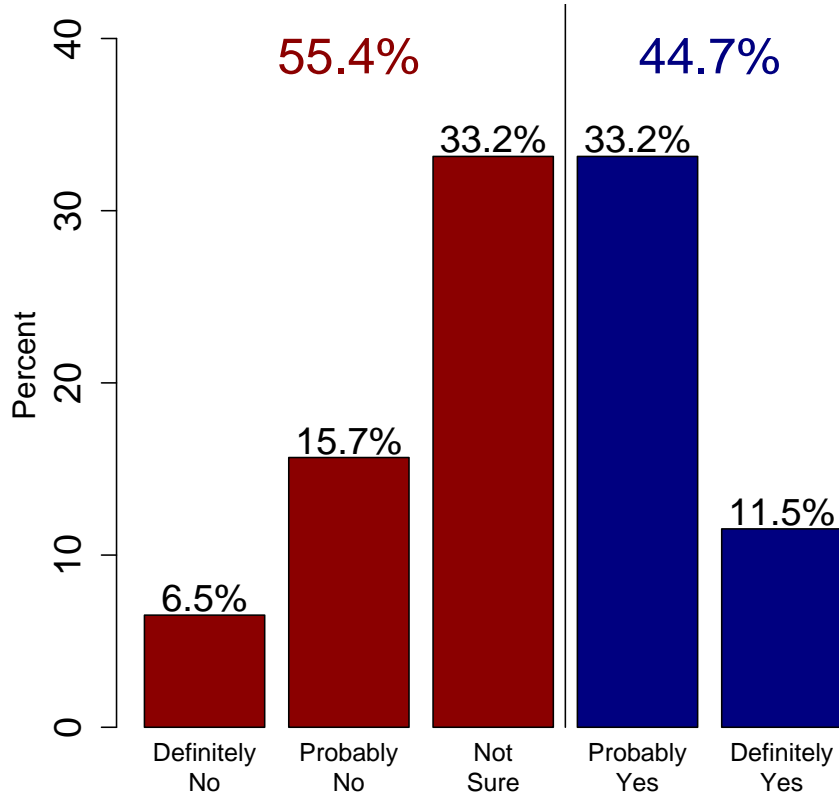
- **Support Building Codes**

In hurricane-prone regions of the U.S., building codes often require that new homes are equipped with wind-protective components when they are constructed. Suppose that Oklahoma was considering a law that would mandate similar building codes. Would you vote for or against this law?

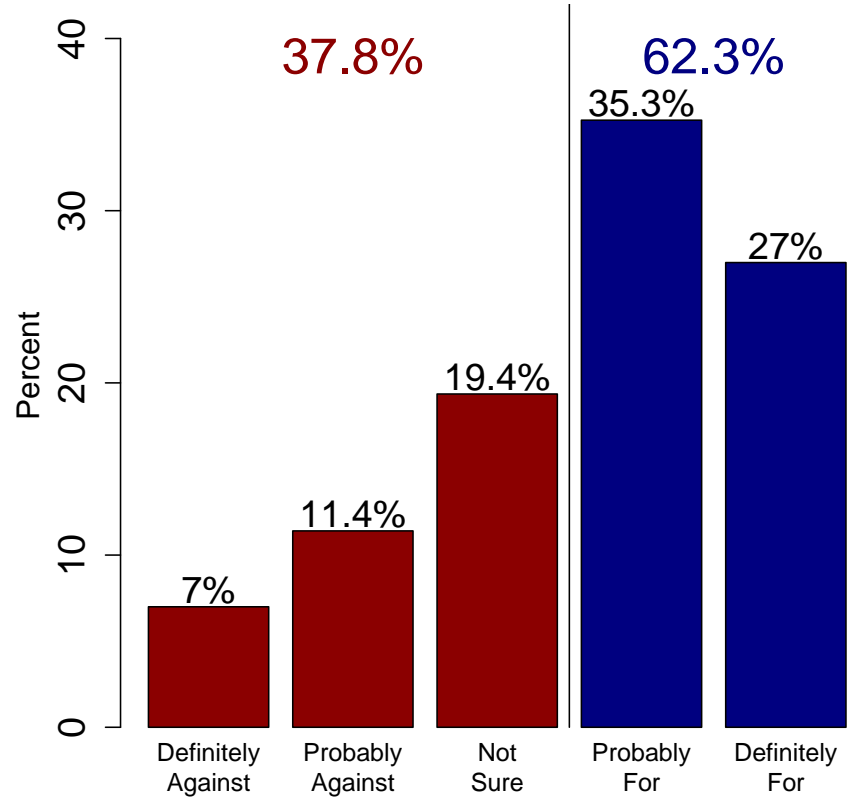
1. Definitely Against
2. Probably Against
3. Not sure
4. Probably For
5. Definitely For

Results

Willing to Pay for Retrofits



Support Building Codes



Conclusions and Questions

- Most homeowners in Oklahoma are not willing to pay for retrofits that would protect the structure of their home from tornadoes
 - Considerable uncertainty (33%)—would willingness to pay increase if homeowners were...
 - encouraged to mitigate (reduced insurance premiums, low-interest loans, etc.) and/or
 - provided more information about the benefits of mitigation?
- Most homeowners in Oklahoma are supportive of building codes that would protect new homes from less significant tornadoes
 - Why don't more cities adopt building codes?
 - the engineers know what to do,
 - the policy analysts say it is cost effective,
 - and the people support it...so why don't we do it?
 - What are the additional barriers to adoption?

Thanks!

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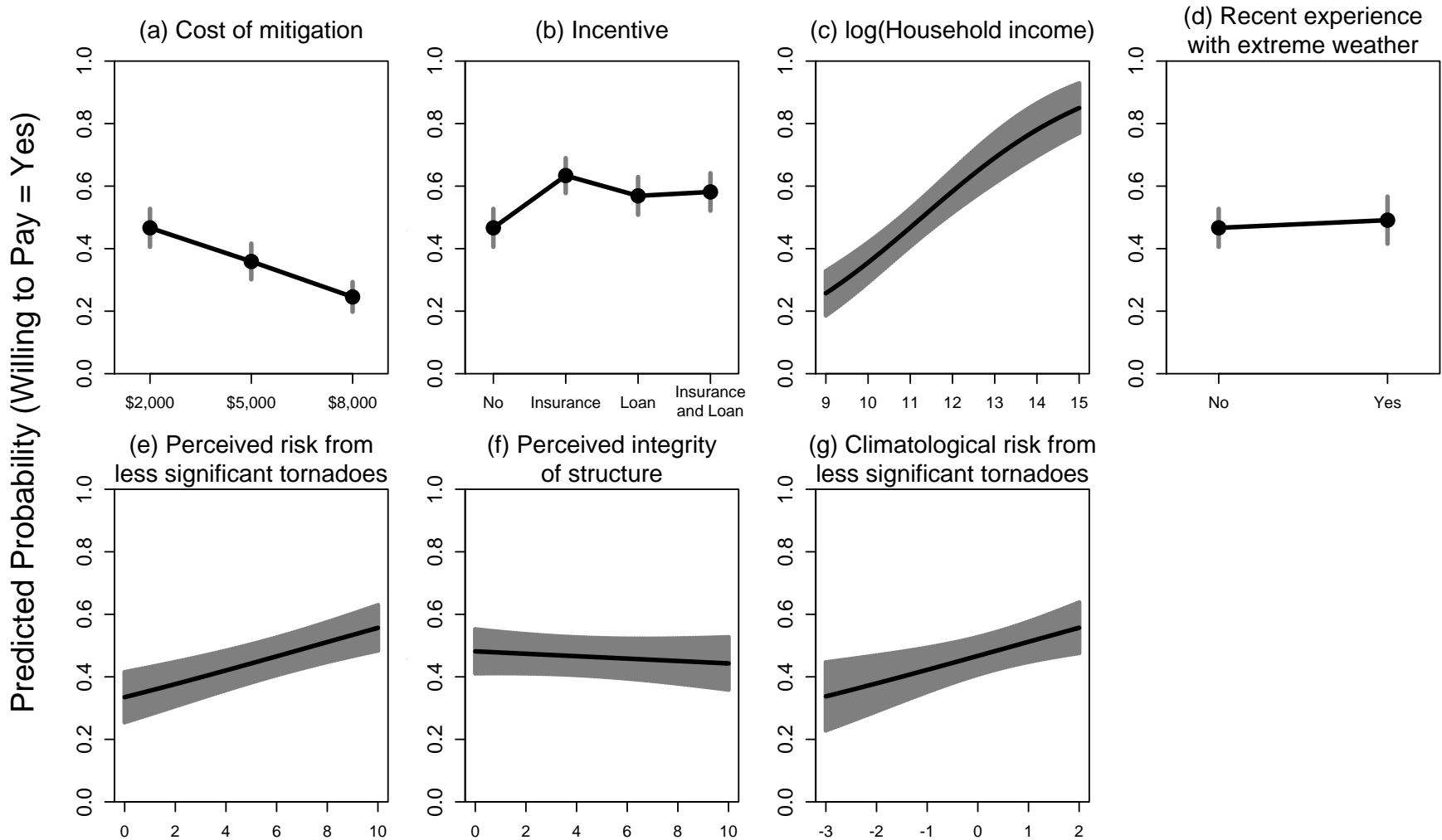
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Model Results

Willing to Pay for Retrofits



Model Results

Support Building Codes

