Colorado homeowners' willingness to pay (WTP) estimates for reducing wildfire risk: A comparison of survey methods

Objectives

- What factors influence homeowner decisions of whether or not to make investments in public or private wildfire risk mitigation programs?
- Is there a difference in willingness to pay (WTP) for wildfire risk mitigation programs between survey mode (mail vs online)?

Background: Wildfires and Endogenous Risk

- A paradigm shift has occurred in fire management.
- Wildfire risk is now viewed as endogenous, meaning that it can be influenced by actions taken by homeowners and communities.
- The increasing frequency and severity of wildfires in forested residential areas has caused fire managers and policy-makers to emphasize the role of homeowner and community mitigation activities to reduce the hazards associated with wildfires.

Firewise Programs

- A major initiative has been the creation of the National Firewise Communities program (NFCP) to help reduce wildfire risk.
- "The NFCP is a multi-agency effort to reach beyond the fire agencies by involving **homeowners**, community leaders, planners, developers, and others in the effort to protect people, property and natural resources from the **risk of wildland fire** – before a fire starts."

Methods and Data

- Choice Experiments involve having homeowners make trade-offs between risk of damage, amount of property damage, and the cost to them of two different programs.
- *Public Program*: Vegetation management techniques (e.g., prescribe fire & mechanical thinning) that fire managers use to reduce wildfire probabilities.
- *Private Program*: homeowners will remove highly flammable vegetation within 30 feet of home.
- Latent Class Model used to derive WTP estimates and factors that influence program participation.
- Colorado homeowners were recruited using random digit dialing.
- Participants were randomly selected to a mail or web-based survey.
- 323 completed web-based surveys
- 205 completed mail surveys

Experimental Design: 10-year Programs

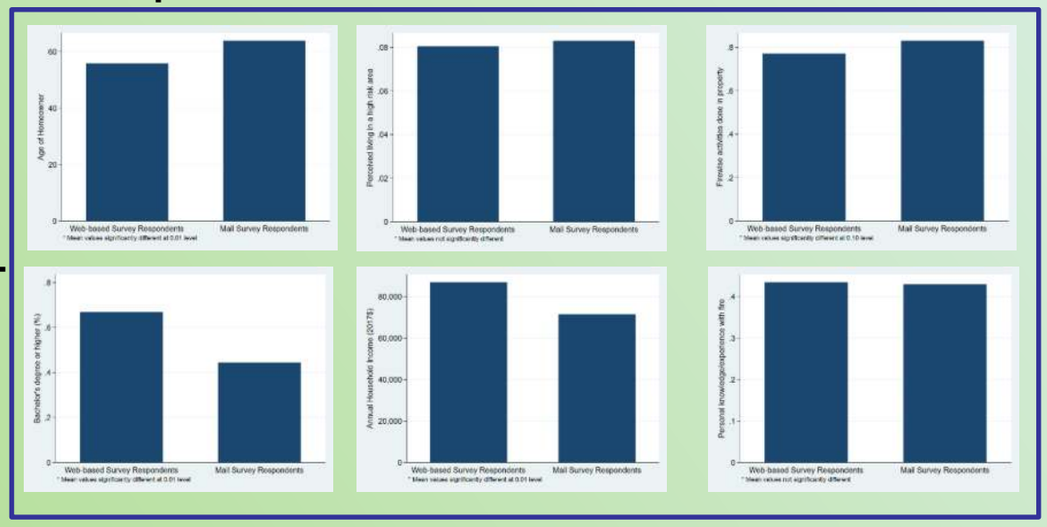
Attribute	Levels
Risk	10 in 1,000 (1%) 20 in 1,000 (2%) 30 in 1,000 (3%) 40 in 1,000 (4%) 50 in 1,000 (5%) = status quo level
Damage	$10,000; $20,000; $30,000; $40,000; $50,000; $60,000; $70,000; $80,000; $90,000; $100,000 = status quo level
Cost – public program	$25; $50; $100; $200; $400; $600; $800; $1,000; $1,300; $1,500
Cost – private program	$50; $100; $200; $400; $600; $800; $1,000; $1,300; $1,500

Example Choice Question

Question 20	Alternative #1	Alternative #2	Alternative #3
	Public Fire Prevention	Private Fire Prevention	Do nothing additional
Risk of your house being damaged in next 10 years	40 in 1,000 (4%)	10 in 1,000 (1%)	50 in 1,000 (5%)
Damage to property	$40,000	$80,000	$100,000
Expected 10 year loss = Risk x damage	$160 during 10 years	$800 during 10 years	$5,000 during 10 years
One-time cost to you for the ten-year program	$300	$100	$0
I would choose: Please check one box	☐	☐	☐

WTP Estimates

Descriptive Statistics



Conclusions

- Role played by age, education, household income and in participating in Firewise activities are significantly different by survey mode.
- Critical factors in expressing support for wildfire protecting programs are education and income.
- Risk and losses influence *Public* and *Private* programs participation in web-based survey, but only losses influences *Private* participation in mail survey.
- WTP to reduce risk and loss from baseline to lowest levels are substantial, except for homeowners with lower education levels (web-based survey respondents) which need to be compensated to participate.

Collaborators

José J. Sánchez, PhD, USDA Forest Service
John Loomis, PhD, Colorado State University
Armando González-Cabán, PhD, USDA Forest Service
Tom Holmes, PhD, USDA Forest Service