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Homeowner Acceptance of Fuel Treatments at the Wildland-Urban Interface

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Problem Statement

- To better understand residents' knowledge and acceptance of fuel reduction techniques
  - Prescribed burning
  - Mechanical thinning
  - Defensible space around structures

Purpose of Study

- To assess and model residents' acceptance of fuel treatment so fire managers can better design, target and implement fuel reduction programs
- To empower fire managers with research tools to collect reliable and valid information from residents and integrate with other planning and analytical techniques (i.e., GIS)
- To further improve on the level of public participation in land and resource issues and management plans

Theoretical Framework for Studying Human Acceptance of Fuel Reduction

Selected Theory of Reasoned Action to guide and structure our inquiry

Belief
Outcome Evaluation
Good/bad

Belief
Likelihood a fuel treatment will produce an outcome
Very likely/unlikely

Attitude toward fuel treatments
Positive/negative

Intent
Acceptance of fuel treatment
"Vote for"

Study Areas

- Northeastern Florida – Clay County
  - relatively little public land, many large pine plantations
  - an economy that relies heavily on the wood products industry
  - rapid population growth makes sprawl and associated WUI issues highly relevant to fire managers and residents
  - prescribed burning is an established practice and generally accepted

Study Areas

- Michigan's northern lower peninsula -**Oscoda County**
  - dominated by federal and state land
  - an economy that relies on wood products and tourism/recreation
  - rural area with a low-income resident population and high prevalence of seasonal homes (>50%)
  - featuring jack pine forests that are home to the endangered Kirtland's Warbler
  - site of the 1980 Mack Lake fire, an escaped prescribed burn that claimed one life and 44 structures
  - that event and other recent fires are factors in local residents' fuel treatment attitude formation

Study Areas

- Bay Area– Marin County, California
  - expansive state and federal land where the primary use is recreation and preservation
  - little, if any, extractive use of forest resources
  - population is relatively high-income and property values are very high (median home value countywide exceeds $600,000)

Study Areas

- Sierra foothills – Tuolumne County, California
  - dominated by large expanses of National Park and Forest
  - extractive uses, including timber production remain a significant contributor to the local economy
  - this rural site also includes a novel interagency initiative to work cooperatively with homeowner associations in an effort to create fire-safe landscapes in subdivisions along the main highway corridors

Study Approach

- **Phase 1 – Conduct fire manager and resident focus groups in each study area**
- Phase 2 – Design a survey instrument to assess acceptance of fuel treatments and test efficacy by administering in Clay County, FL and at a new site in CA (El Dorado and Placer counties, CA)
- Phase 3 – Modeling and spatial analyses of geo-referenced survey responses via integration with spatially referenced fuels, fire incidents, roads and demographic data

Recruiting of Focus Group Participants

- Obtained county tax assessors' databases
- Initial sample of several hundred to reach our goal of 2-4 focus groups in each area
- Sent personalized letter and response postcard to facilitate group size management
- Follow-up phone calls were made as reminders and to recruit additional participants if needed

Resident Focus Groups

Site	Groups	Participants
Tuolumne County, CA	4	26
Marin County, CA	3	21
Oscoda County, MI	2	12
Clay County, FL	3	19
Total	12	78

Focus group protocol

- What are some your likes and dislikes about living near the Forest/Park?
- Could you tell me all you know about fires/fire management?
- I'd like to hear more about your personal experiences with forest fires.
- How does the fire program, as you understand it, affect the health of the local forest? You and your community?
- As residents and property owners of this area, what are the pros and cons of this fire management strategy [prescribed burning, mechanical thinning, defensible space]?
- Tell us whether or not you support the land manager's use of each of these fire management strategies and why or why not?

Coding of Responses

- Example: "I don't care if they call it controlled or prescribed, you can't control it *[indicated nonacceptance of prescribed burning]* and the only thing that is really going to work is mechanical *[indicated acceptance of a treatment]*. Yes, it's more expensive *[belief outcome of mechanical]* but the other alternative is people can die and homes can burn *[belief outcome of prescribed burning]*. I'm not willing to take that chance." (Oscoda, MI)

Coding Results

- In total, 1,745 remarks were analyzed for:
  - Acceptance of the 3 fuel reductions (319 remarks)
  - Factors affecting acceptance:
    - Fuel treatment outcome beliefs (221 remarks)
    - Personal importance (16 remarks)
    - Situational specificity (22 remarks)
    - Agency trust (67 remarks)

Key Findings - Acceptance

- "I prefer the controlled burning because of the fact that it is controlled and generally speaking they do take precautions and make sure the fires don't get out of control" (Florida resident)
- "I support both [mechanical treatment and prescribed fire] if it's done under the right conditions -- if they get somebody that has some experience and not some greenhorn out there that starts to burn up the whole state." (California resident)
- "Personally, one of the reasons I live where I live is because I like the trees and I like the vegetation that is around my house. If I had to clear all that out of there, what would be the sense of living there? … I might as well live in the city, and that's why I pay insurance." (Michigan resident)

Key Findings – Outcome Beliefs

- **Air quality**
  - "when you have a lot of burns, you're going to have some air quality problems" (Florida resident)
  - "I think the smoke in the environment is the pits" (California resident)
- **Cost**
  - "Even though a burn sounds like it will be cheaper, if it got out of hand, it costs more, so there's a higher risk there" (California resident)
  - "think of clearing 40 acres with machines or by hand or whatever, getting all that brush out of there. You're talking a lot of money" (Michigan resident)

Key Findings – Outcome Beliefs

- **Escaped and catastrophic fire**
  - 'If somebody came to me and said, We're going to have a controlled burn out here, what do you think of that? Up until Los Alamos, I would have probably said, "Go for it." But now I would say, "Boy, I don't know, who is going to be in control there?"'(California resident)
- **Aesthetics**
  - [Referring to fire breaks as mechanical treatment] Us local guys never realized how wide that thing is until some flatlander came up here and said, "Hey, well look at that. That looks ugly." And then you stop and look at it and say, "Jeez, you know, you're right." (California resident)

Other Factors Mediating Acceptance and Belief Outcomes

- Personal importance
  - Vegetation amenity – desire to live with "all the trees"
  - Property rights – desire for not being told, privacy
  - Smoke impacts – subgroups that are smoke sensitive
- Situational specifics
  - Site-specific – acreage involved, level of planning, firefighting resources, proximity to developed areas
- Agency trust
  - Ability to control fire
  - Professional skills
  - Agency credibility and communication effort and/or effectiveness

Summary Points

- Support for fuel management appears to be related to perceived outcomes
- Fuel reduction techniques are <u>not supported</u> if they:
  - Lead to escaped and catastrophic fires
  - Are not cost-effective
  - Result in long-duration smoke events
  - Reduce the beauty of the area
- Fuel reduction techniques are <u>supported</u> if they:
  - Are known to be well-planned (master fire plan)
  - Include some citizen input
  - Are implemented by an agency with adequate resources to manage risks
  - Are applied to areas of manageable size
  - Achieve the desired outcomes