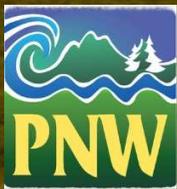


Public Perceptions of Smoke from Wildfire, Prescribed Fire, and Fire Use

Funders: Joint Fire Science Program and the PNW
Research Station



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Overview

- Background
- How acceptable is smoke?
- What influences smoke acceptance?
- What changes overtime?
- Implications

Public Opinions about Smoke from Wildfire and Land Management Activities



A Survey of Citizens in Northern California

This questionnaire was developed by researchers at The Ohio State University and Oregon State University. The findings will be summarized to help forest managers and scientists better understand citizens' opinions of smoke management from fires. We are asking for your help because you live near public and private lands where management practices may result in smoke.

The first set of questions is about general land and smoke management. These are followed by questions about your trust in and communication with land and air management agencies. Finally, we ask a few questions about you so that we can better understand who our respondents are. All responses are confidential.

Oregon State
UNIVERSITY

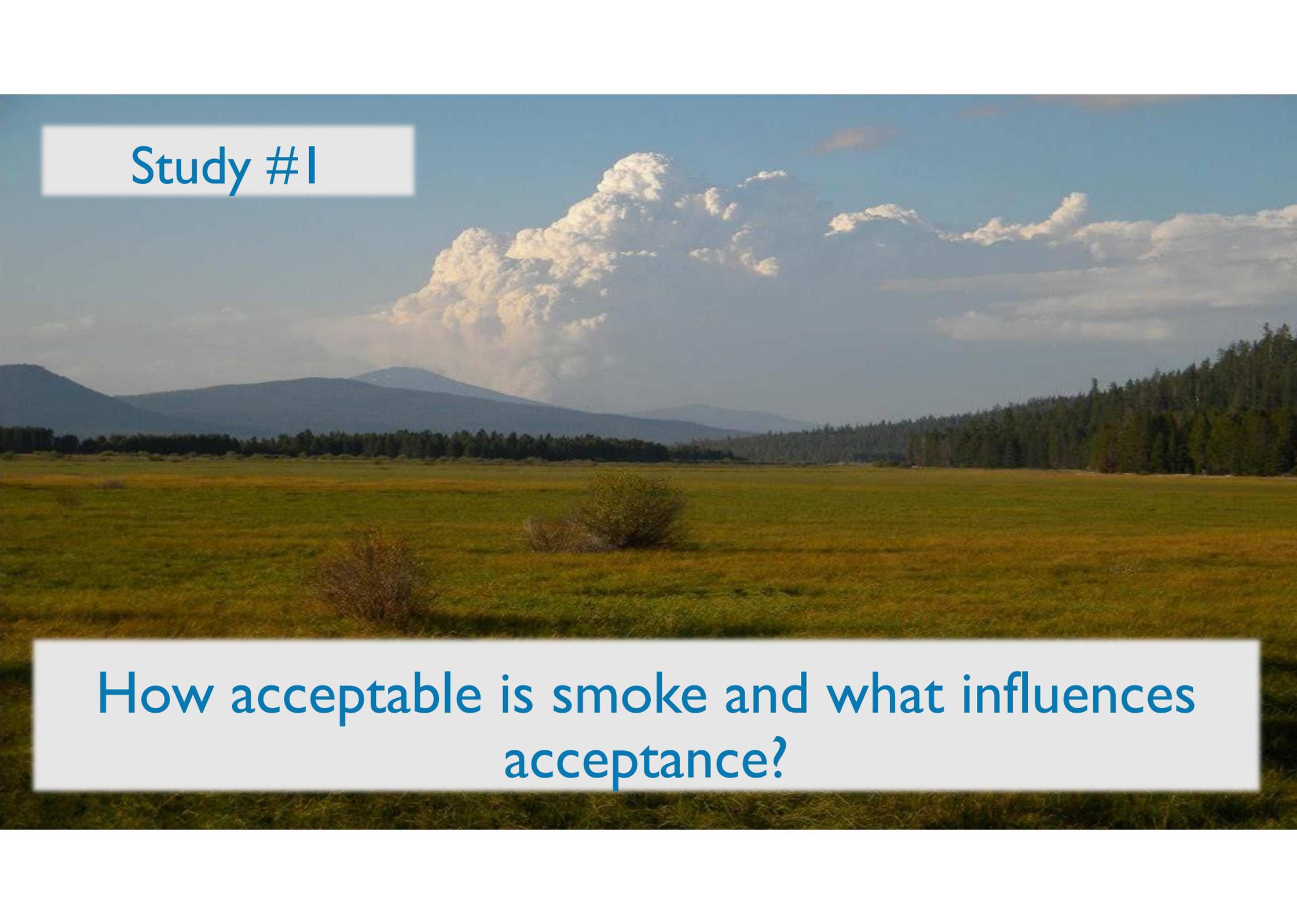
College of Forestry



Smoke Literature Major Findings

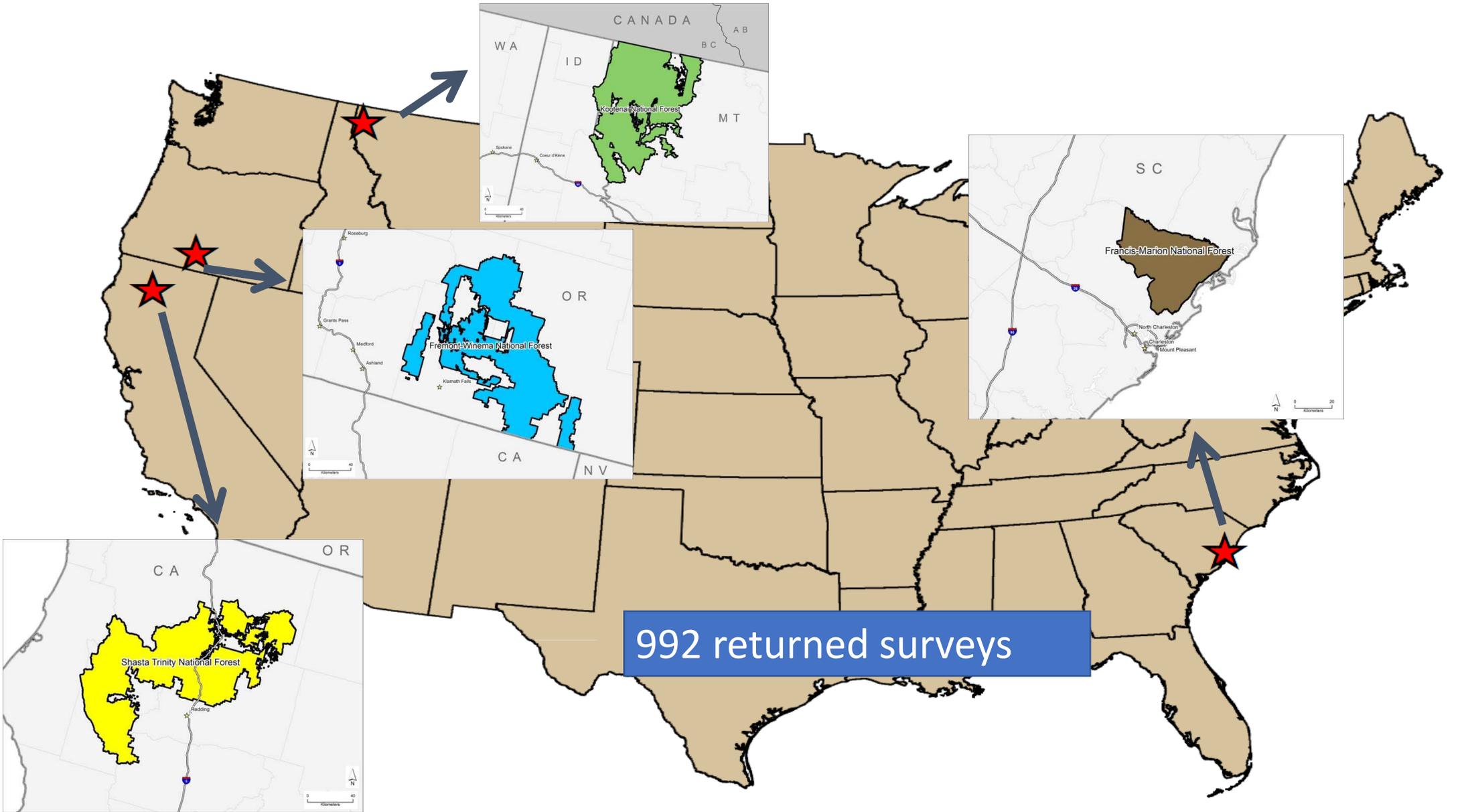
- Acceptance of prescribed fire is increasing
- Citizen concern and acceptance
- Smoke origin
- Respiratory ailments
- Prescribed fire smoke vs. wildfire smoke



A landscape photograph showing a wide, green field in the foreground. In the middle ground, there is a dense line of evergreen trees. In the background, there are several mountain ranges under a blue sky with a large, prominent white cumulus cloud. The text "Study #1" is overlaid in the top left corner.

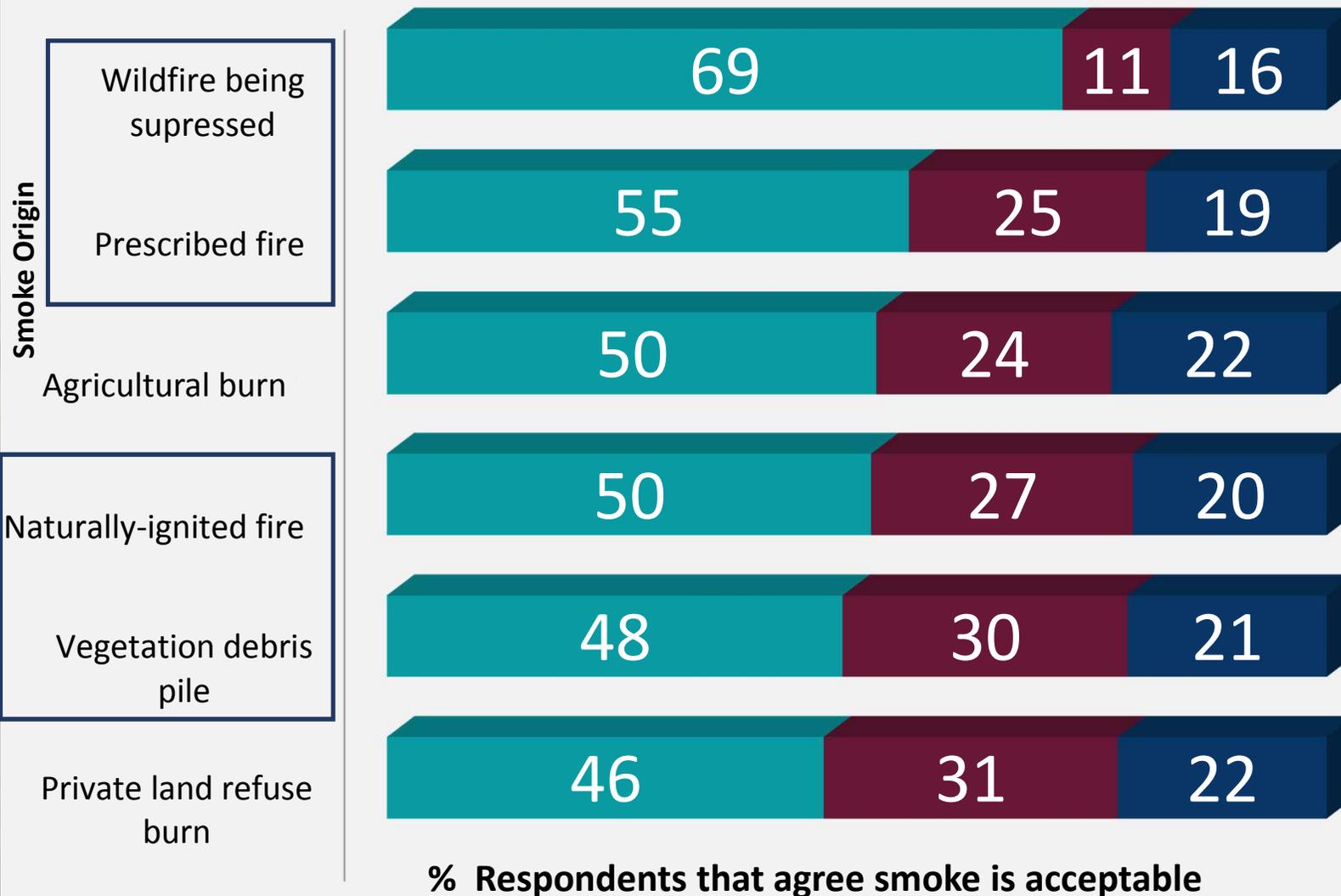
Study #1

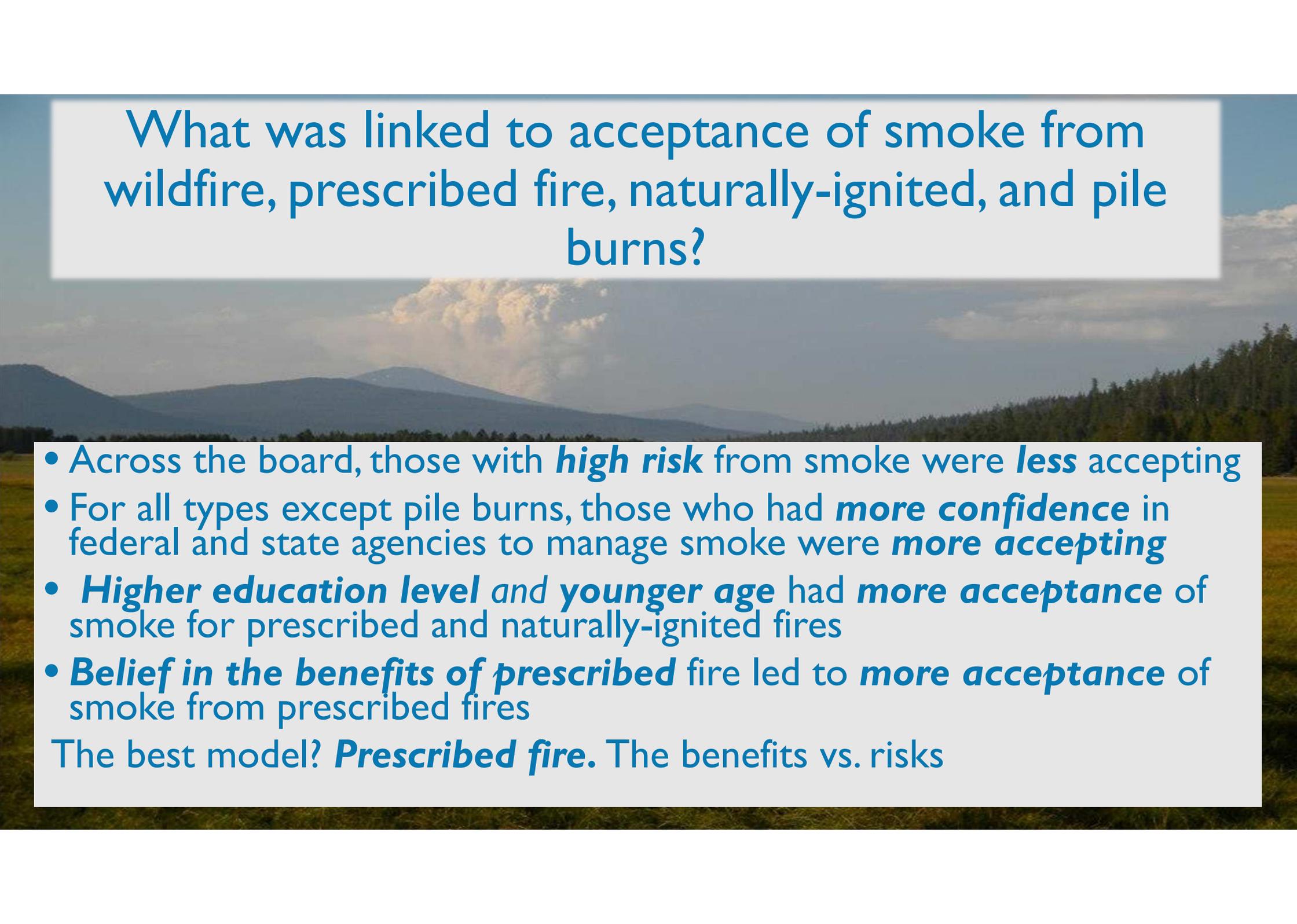
How acceptable is smoke and what influences acceptance?



Smoke Acceptability of Different Origins

■ Agree ■ Disagree ■ Neutral





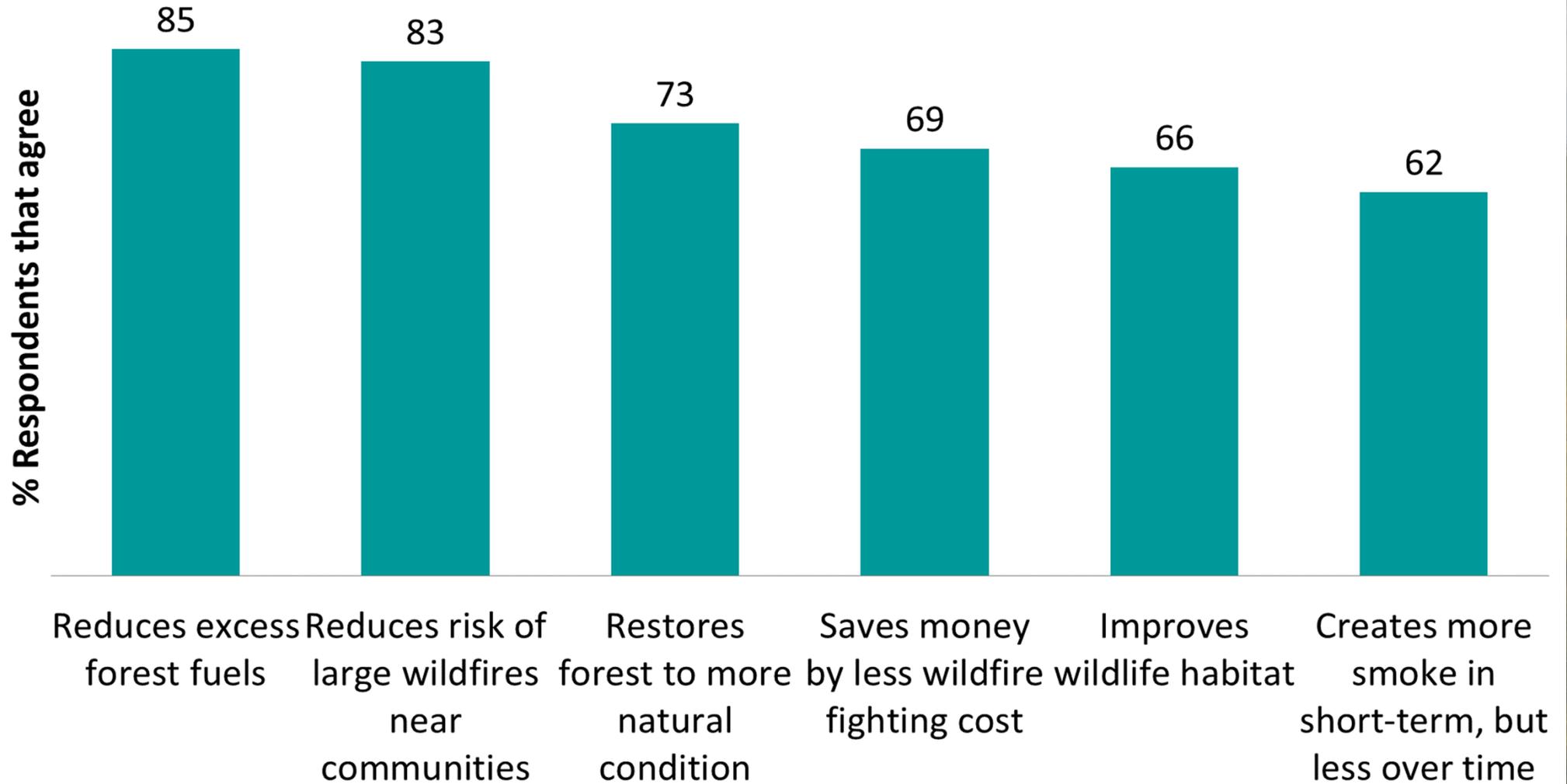
What was linked to acceptance of smoke from wildfire, prescribed fire, naturally-ignited, and pile burns?

- Across the board, those with **high risk** from smoke were **less** accepting
- For all types except pile burns, those who had **more confidence** in federal and state agencies to manage smoke were **more accepting**
- **Higher education level and younger age** had **more acceptance** of smoke for prescribed and naturally-ignited fires
- **Belief in the benefits of prescribed** fire led to **more acceptance** of smoke from prescribed fires

The best model? **Prescribed fire**. The benefits vs. risks

Prescribed fire

Benefits of Prescribed Fire



Agencies meeting information needs

Agency fire managers provide...	State Agency	Federal Agency
...enough smoke information so I can decide what actions I should take	4	3.8
...timely information regarding smoke	3.9	3.7
...the best available information on smoke issues	4.0	3.7

Useful Communication Sources for Smoke Information



A landscape photograph showing a wide, green field in the foreground. In the middle ground, there is a dense line of evergreen trees. In the background, there are several mountain ranges under a blue sky with a large, white, puffy cumulus cloud. The overall scene is bright and clear.

Study #2

What changed after an active fire season?

Methods

- Longitudinal panel study:

- Same individuals, same questions, different points in time

March 2012

●
Surveys sent



June-Sept 2012

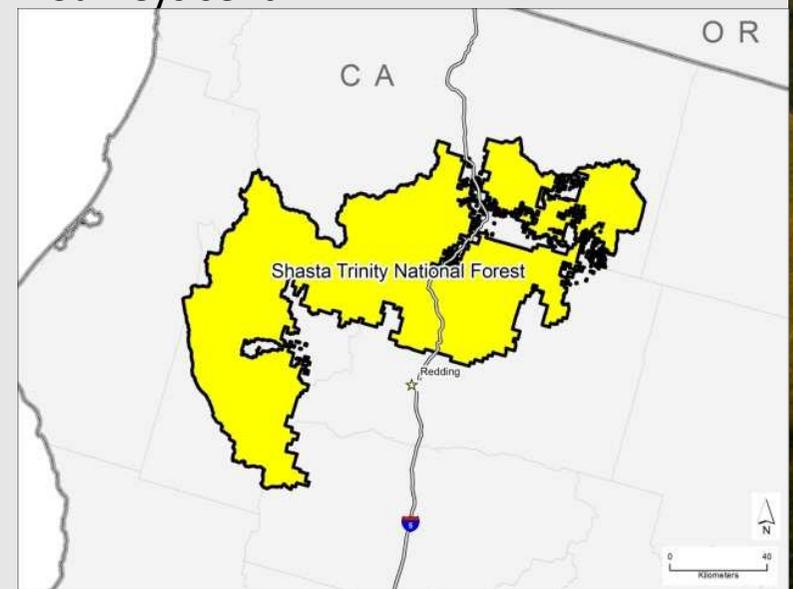
●
Fire season



March 2013

●
Follow-up
Surveys sent

- Compare answers to find change
- Only in Northern California
(146 respondents)

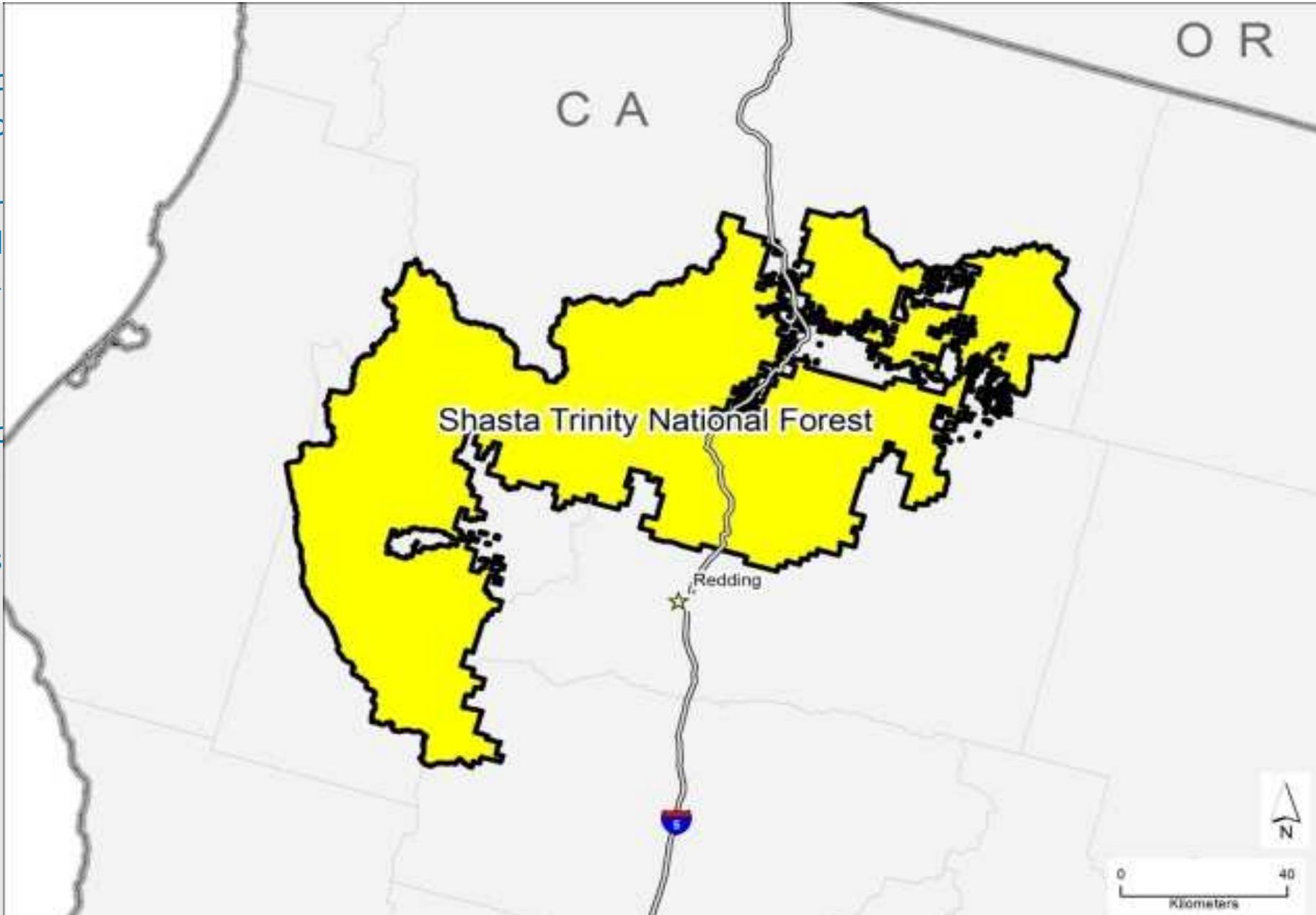


- Ponderosa Fire

- 27,676 acres burned
- High media coverage, multiple evacuations
- 1 residence and several outbuildings destroyed in survey area

- Bagley Fire

- 46,040 acres burned
- Campground, road closures
- Produced lots of smoke





Lassen NPS, Wildfiretoday.com

Reading Fire

- 28,079 acres
- Lassen National Park
- Naturally-ignited fire that went out of containment



The Intermountain News



Stafford Fire near Hayfork

Shasta-Trinity NF Fire

Numerous small fires (<5,000 acres)



Coal fire 20 miles from Redding

Experiences in 2012 Fire Season



Flickr: Shasta-Trinity NF Fire

- Most had experienced, heard of, or read about a fire in Northern California
 - ~half experienced an out-of-control prescribed fire
 - Few respondents had direct impacts from fires
- Most (80%) experienced smoke from fires
 - The smoke wasn't very severe



Shasta-Trinity NF

What didn't change?

- Smoke acceptance
(from any source)
- Agency trust

More Trusted

(4 sites)

1. *State Forestry Department/Division (avg: 4.6)*
2. *Local Forest Service Staff*
3. *Forestry Consultants*
4. *Local/State Air Quality Programs*
5. *Private Landowners*
6. *U.S. Federal Agencies*
7. *Environmental Protection Agency (avg: 3.3)*

What changed?

Agency Confidence

- **Ratings** of federal and state agencies **decreased**....
 - manage local public forests
 - specifically reduce fire risk
 - manage smoke (Federal only)

Other changes

- **Increase** in the **knowledge deficient** about smoke
- Communication Methods
 - **Increase** TV/radio usefulness
 - **Decrease** in usefulness for flyers/door-hangers and info brochures

Management Implications

- Knowing Acceptance of smoke
 - Smoke Acceptance is moderate but source/situation dependent
- Influencing acceptance
 - Acceptance may be resilient to actual fire events
 - Change the balance between perceived risks and benefits
 - Increasing knowledge, communication, and confidence in agencies to manage smoke (relationship!)
- Improvements in smoke communication by the agencies
- The remaining third?
 - Trade-off between prescribed fire smoke and wildfire smoke
 - Information pre-smoke production

Thanks so much!

Questions?

Please feel free to contact me in the future:
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For results and more information
4 states study and including results on interviews from many stakeholders

https://www.firescience.gov/JFSP_advanced_search_results_detail.cfm?jdbid=%24%26Z79VP%20%20%0A or search
by project ID **Project ID: 10-1-03-7**

The longitudinal study

https://www.firescience.gov/JFSP_advanced_search_results_detail.cfm?jdbid=%24%26J%2F%3ET0%20%20%0A
Project ID: 12-3-01-21

	Wildfire	Prescribed	Nat-ignited	Pile
Agency confidence	++	+++	+	
Smoke risk	---	---	---	---
Smoke impacts				
Fire type	+++			
Education		+	+++	
Age		-	-	
Comm experience				+
PF benefits		+++		
R ²	.13	.42	.18	.20
<i>+/- p < 0.05; ++/- p < 0.01; +++ p < 0.001</i>				

Key Points

- Prescribed Fire is acceptable to most
- Most agree with the benefits of prescribed fire
- Origin of smoke influences acceptability
 - Prescribed fire smoke may not be a major barrier to the use of fire as a management tool (needs further study)
- Improvements in communication and information providing by agencies still could be made
- Local entities remain more trusted and are rated higher than more removed entities

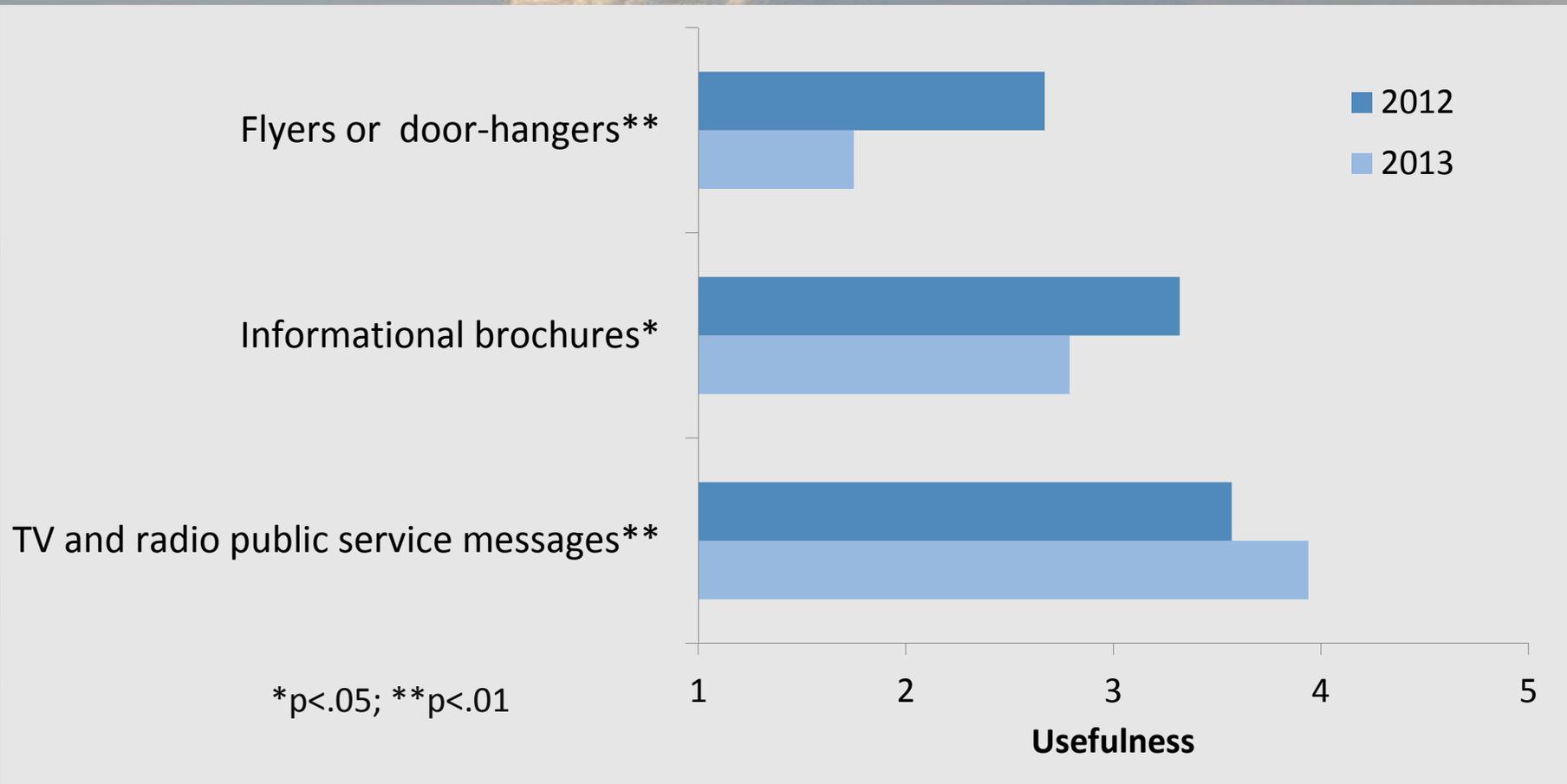
Discussion

- Smoke risk perceptions
 - Influencers of risk perceptions
- Prescribed fire benefits
 - Message received
 - Naturally-ignited fire?
- Agency confidence
 - Specific actions

A smoky day in southern Oregon



Communication Source Usefulness



Communication and knowledge

- **Communication Source Usefulness**

- Most had no change, but significant decreased in flyers/brochures and increase in TV/radio

- **Self-assessed knowledge**

- Significant decrease in the self-assessed knowledge
- No significant change in smoke information needed
=A larger deficient in the knowledge gap

Larger knowledge deficient =opportunity?

Social Acceptability

- Cognitive process
- Compare alternatives and select favorable ones



Why does it matter?

- Less time/money fighting the public

Agency fire managers provide...

	State Agency (mean)	Federal Agency (mean)
<i>...enough smoke information so I can decide what actions I should take</i>	4.0	3.8
<i>...timely information regarding smoke</i>	3.9	3.7
<i>...the best available information on smoke issues</i>	4.0 †	3.7

Risk Perceptions



What risks didn't change?

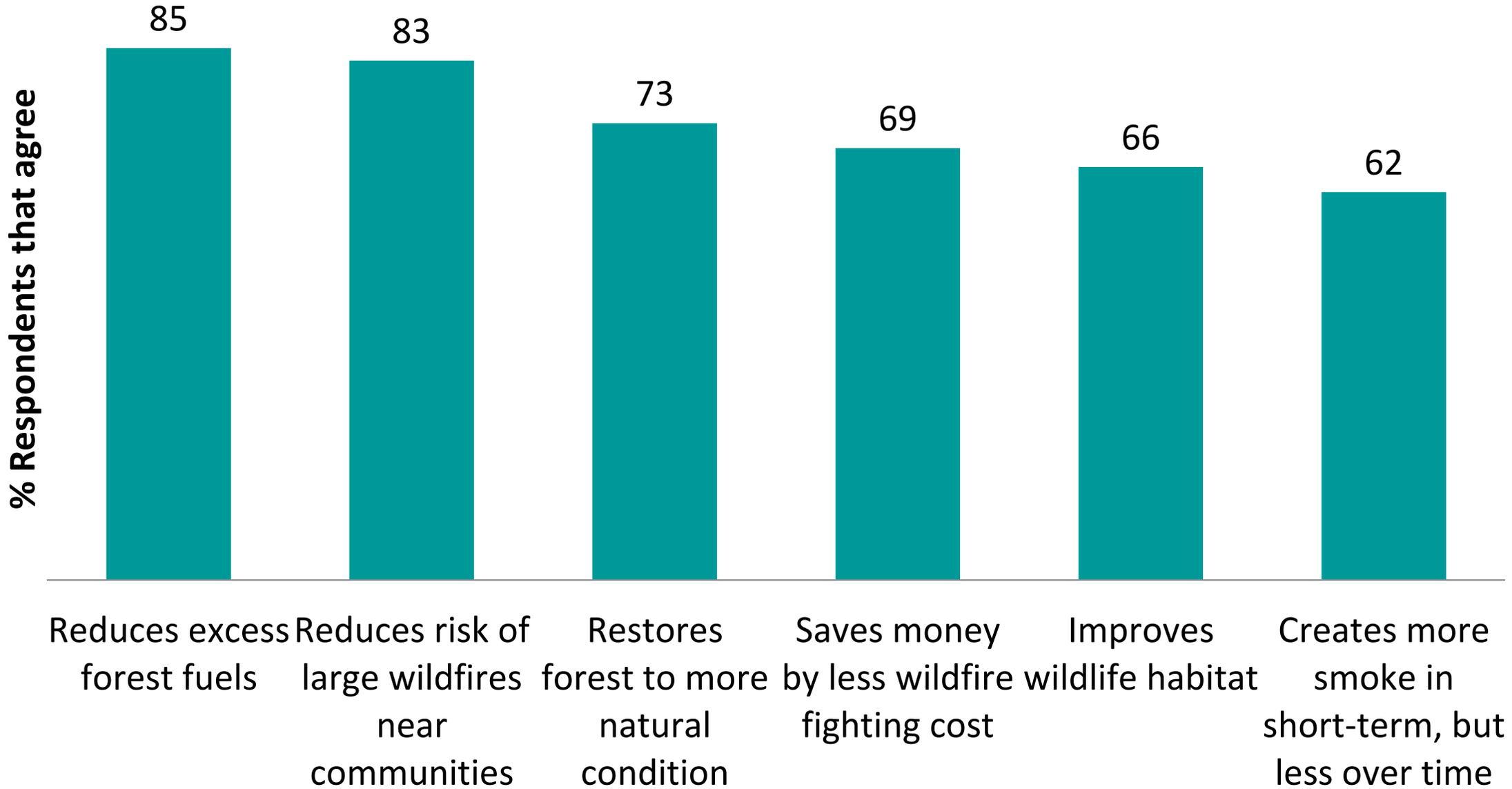
Negative impact to my family's and personal health

Reduced ability to accomplish activities on my property

Negative impacts to my ability to work

Negative impacts to my travel - road closures and/or car accidents

Benefits of Prescribed Fire



Summary and Conclusions Longitudinal Survey

- Fire and smoke in the area
- Significant changes
 - Risk perceptions increasing/agency ability rating decreasing = related?
- No change is also important:
 - Agency trust
 - Smoke acceptance