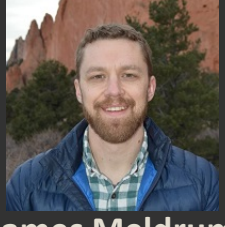
Using the WiRē approach to better understand WUI residents' relationships with wildfire: variation within and across communities



James Meldrum
U.S. Geological Survey
Fort Collins Science Center

Chris Barth
Bureau of Land Management
Montana/Dakotas

April 4, 2019
Webinar by the WiRē Team *for the* JFSP Fire Science Exchange Network
California Fire Science Consortium & Southwest Fire Science Consortium

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Wildland–Urban Interface Residents' Relationships with Wildfire: Variation Within and Across Communities

James R. Meldrum[a], Hannah Brenkert-Smith[b], Patricia A. Champ[c], Lilia Falk[d], Pamela Wilson[e], and Christopher M. Barth[f]

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Community variation; hazards; multi-scale analysis; quantitative models; wildfire; wildland–urban interface

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Routledge
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Check for updates

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Environmental Hazards, 2015
http://dx.doi.org/10.1080/17477891.2015.1080656

Taylor & Francis

Climate change beliefs and hazard mitigation behaviors: homeowners and wildfire risk

Hannah Brenkert-Smith[a]*, James R. Meldrum[a] and Patricia A. Champ[b]

CSIRO PUBLISHING

International Journal of Wildland Fire
http://dx.doi.org/10.1071/WF13130

Cost shared wildfire risk mitigation in Log Hill Mesa, Colorado: survey evidence on participation and willingness to pay

F&S

Research

Where you stand depends on where you sit: qualitative inquiry into notions of fire adaptation

Hannah Brenkert-Smith[1], James R. Meldrum[2], Patricia A. Champ[3] and Christopher M. Barth[4]

Risk Analysis, Vol. 36, No. 4, 2016 DOI: 10.1111/risa.12465

Is Seeing Believing? Perceptions of Wildfire Risk Over Time

Environmental and Resource Economics
https://doi.org/10.1007/s10640-018-0286-0

CrossMark

Responding to Risky Neighbors: Testing for Spatial Spillover Effects for Defensible Space in a Fire-Prone WUI Community

Travis Warziniack[1] · Patricia Champ[1] · James Meldrum[2] · Hannah Brenkert-Smith[3] · Christopher M. Barth[4] · Lilia C. Falk[5]

WiRē
wildfire research

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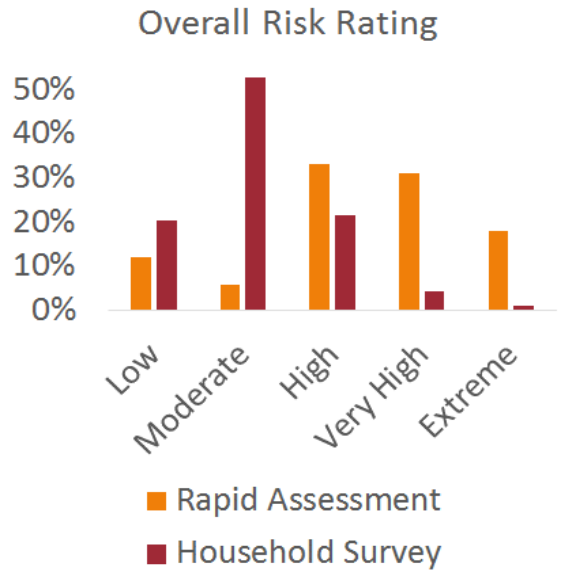
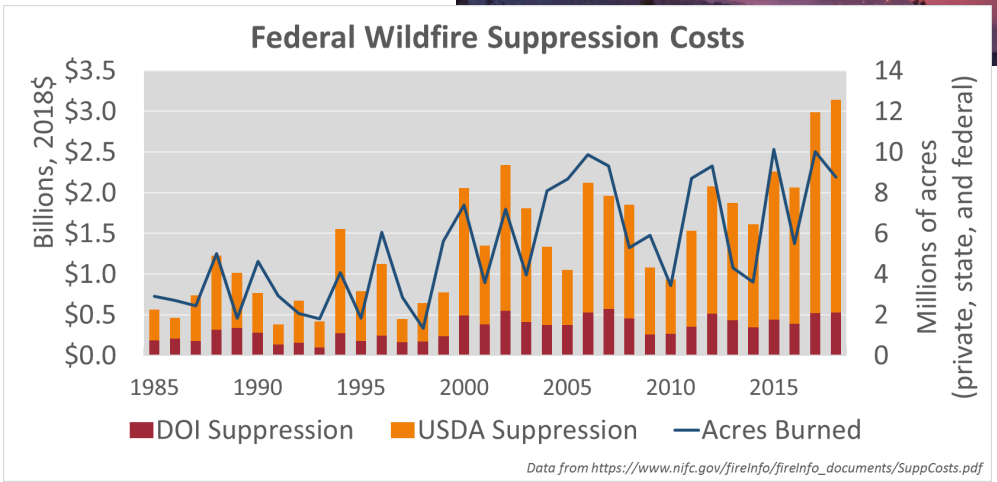


WiRē
wildfire research

The Wildfire Problem

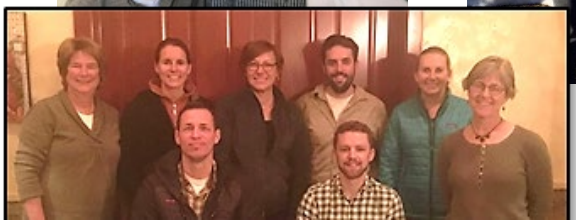
Challenges and risks associated with wildland fire management are increasing both in complexity and extent.



WiRē wildfire research

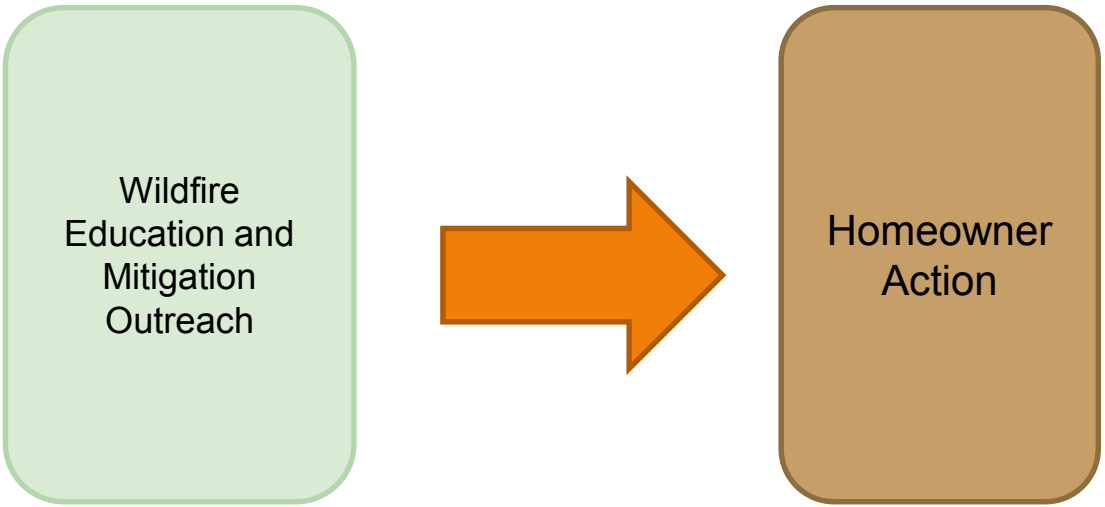
The Wildfire Research (WiRē) Team

The Wildfire Research (WiRē) Team brings diverse expertise in economics, sociology, and wildfire risk mitigation to a multiyear research project on homeowner wildfire risk mitigation and community wildfire adaptedness.

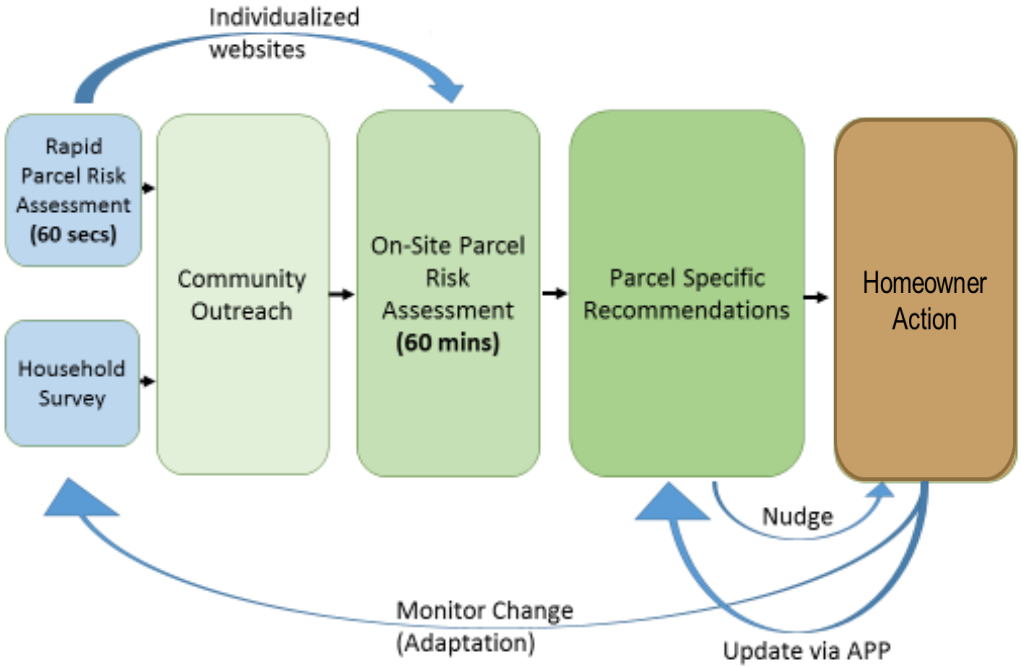


WiRē wildfire research

Naïve Model of Behavioral Change

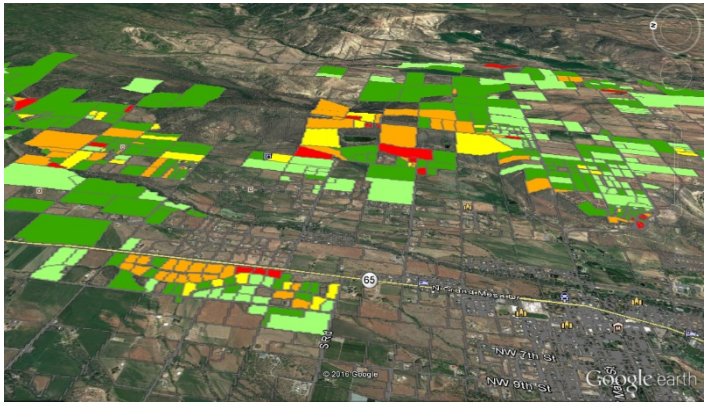


WiRē (Wildfire Research) Conceptual Model

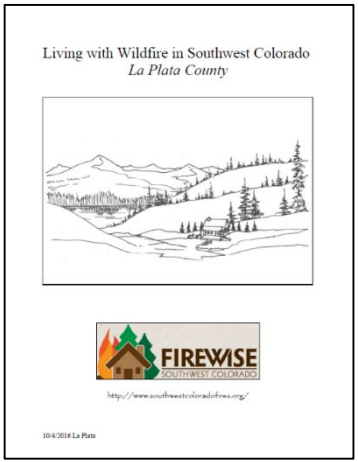


Cornerstone of Our Approach: Paired, Parcel-Level Data

rapid wildfire risk assessment



household survey



**All data are collected and owned by practitioner stakeholders*

WiRē wildfire research

Rapid Wildfire Risk Assessment

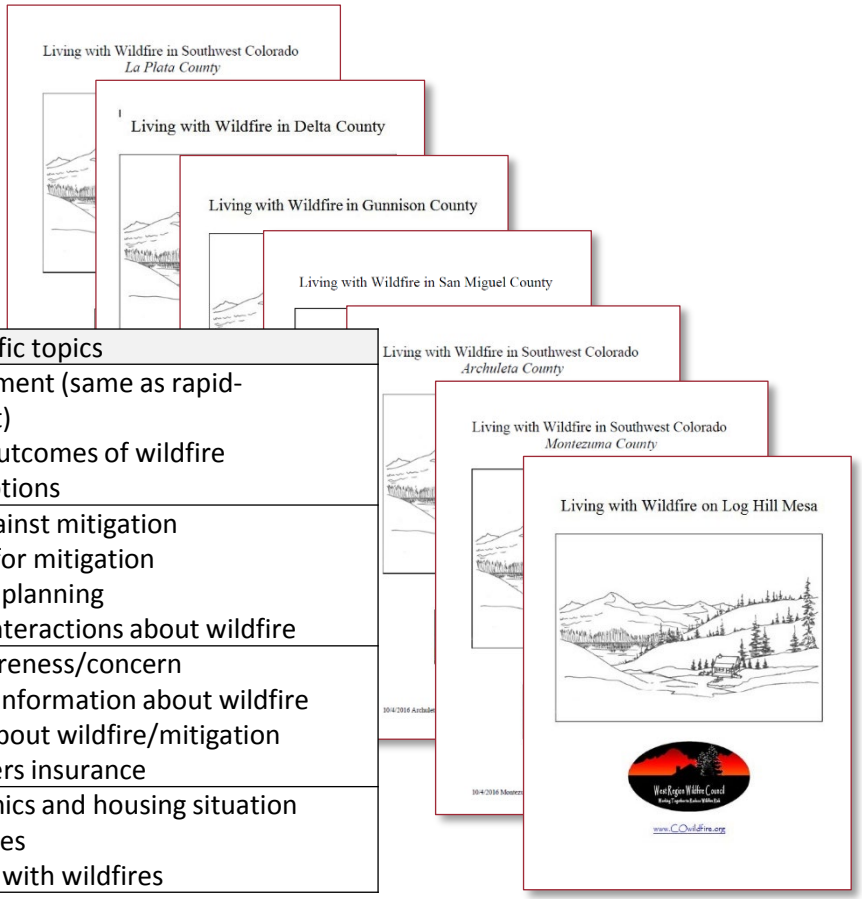
CATEGORY	OBSERVED CONDITION	POINTS
Distance to Dangerous Topography	Greater than 150'	0
	Between 50' - 150'	30
	Less than 50'	75
Slope	Less than 20%	0
	Between 20% - 45%	20
	Greater than 45%	40
Background Fuels	Light	25
	Moderate	50
	Heavy	75
Defensible Space	Greater than 150'	0
	Between 30' - 150'	50
	Between 10' - 30'	75
	Less than 10'	100
Other Combustibles	None/Greater than 30' from structure	0
	Between 10' - 30' from structure	10
	Less than 10' from structure	30

CATEGORY	OBSERVED CONDITION	POINTS
Roofing Material	Class A	0
	Class B or Class C	200
Building Exterior	Non-Combustible	0
	Log, Heavy Timbers	20
	Wood, Vinyl	60
Decks & Fencing	None	0
	Non-Combustible Deck/Fence attached to Structure	20
	Combustible Deck/Fence	50
Address Visible	Posted and Reflective	0
	Posted, NOT Reflective	5
	Not Visible from the Road	15
Ingress / Egress	Two or More Roads In/Out	0
	One Road In/Out	10
Driveway Clearance	Greater than 24'	0
	Between 20' -24'	5
	Less than 20'	10

Overall Rating	Min	Max
Low	25	150
Moderate	151	175
High	176	270
Very High	271	365
Extreme	366	665

WiRē wildfire research

Household Surveys

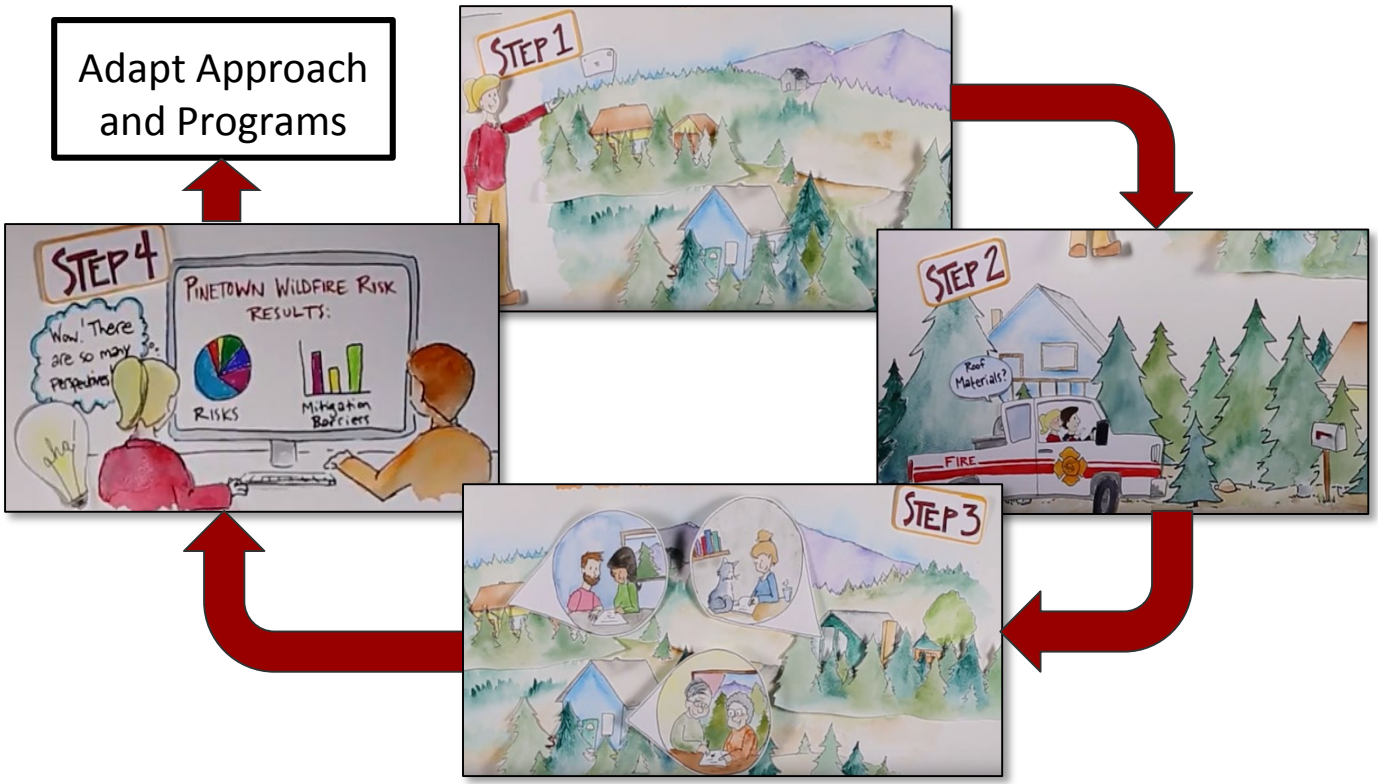


General categories	More specific topics
Perceived risk characteristics	Self-assessment (same as rapid-assessment) Expected outcomes of wildfire Risk perceptions
Mitigation decisions	Barriers against mitigation Incentives for mitigation Evacuation planning Neighbor interactions about wildfire
Thoughts about wildfire	Stated awareness/concern Sources of information about wildfire Attitudes about wildfire/mitigation Homeowners insurance
Background	Demographics and housing situation Risk attitudes Experience with wildfires

~120 questions

WiRē
wildfire research

The WiRē Approach



Images from video by Karina Branson (www.ConverSketch.com)
View the full series at https://wildfireresearchcenter.org/approach/

WiRē wildfire research

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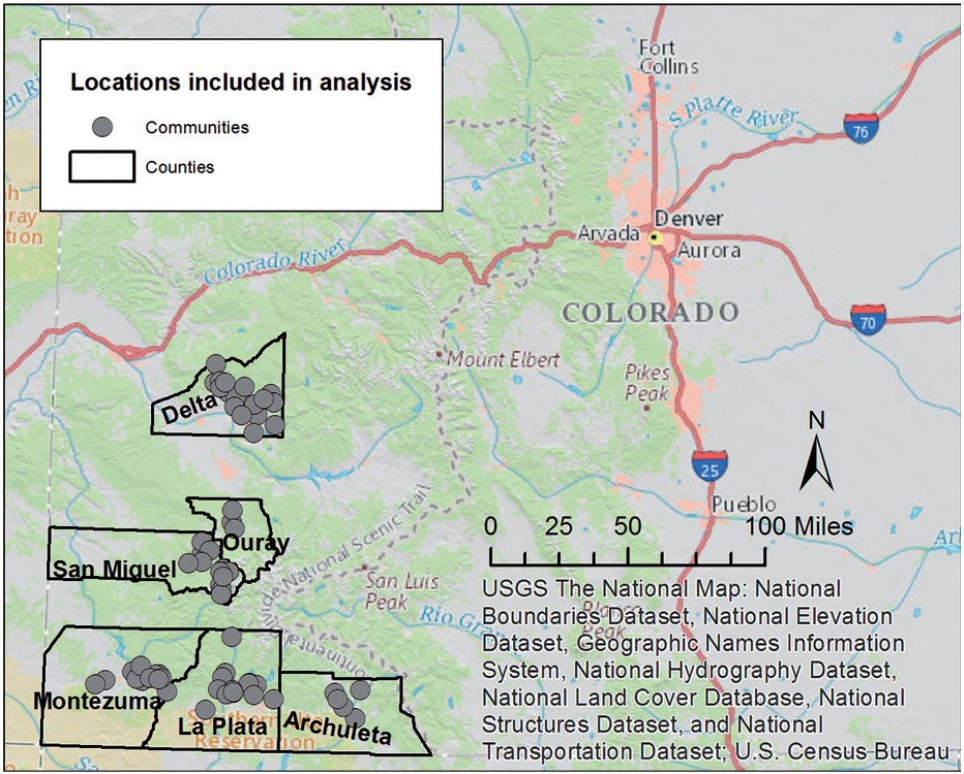
Study location

West Region Wildfire Council

www.cowildfire.org



WILDFIRE ADAPTED PARTNERSHIP

https://www.wildfireadapted.org/

*previously FireWise of Southwest Colorado

WiRē wildfire research

Descriptive statistics

	Full sample	County-level	Community-level
(denominator)	1	6	68
n (survey responses)	2234	372 (182-656)	32 (5-188)
N (assessed parcels)	6506	1084 (462-1911)	91 (9-492)
Coverage (n/N)	34%	36% (28-47%)	39% (22-70%)

("County-level" statistics show the average and range of county-level averages, and similar for community-level averages)

WiRē wildfire research

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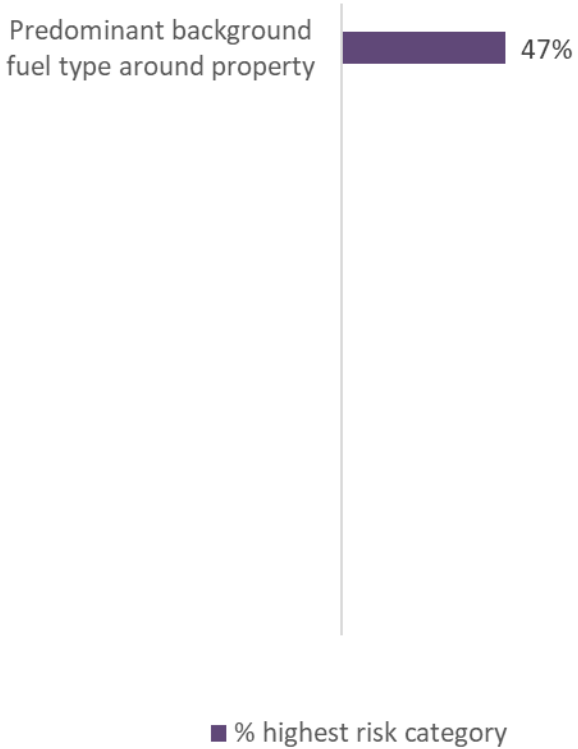
Age (years)	62	63 (60-65)	62 (46-74)
Retired (%)	47	49 (32-59)	48 (0-100)
Part-time residents (%)	33	33 (16-55)	30 (0-100)
Years at this home	13	12 (9-16)	13 (5-28)

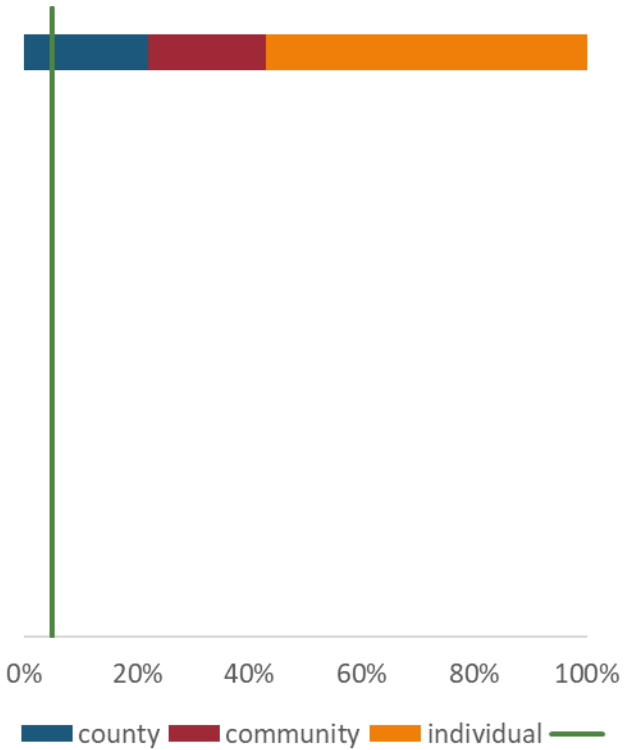
("County-level" statistics show the average and range of county-level averages, and similar for community-level averages)

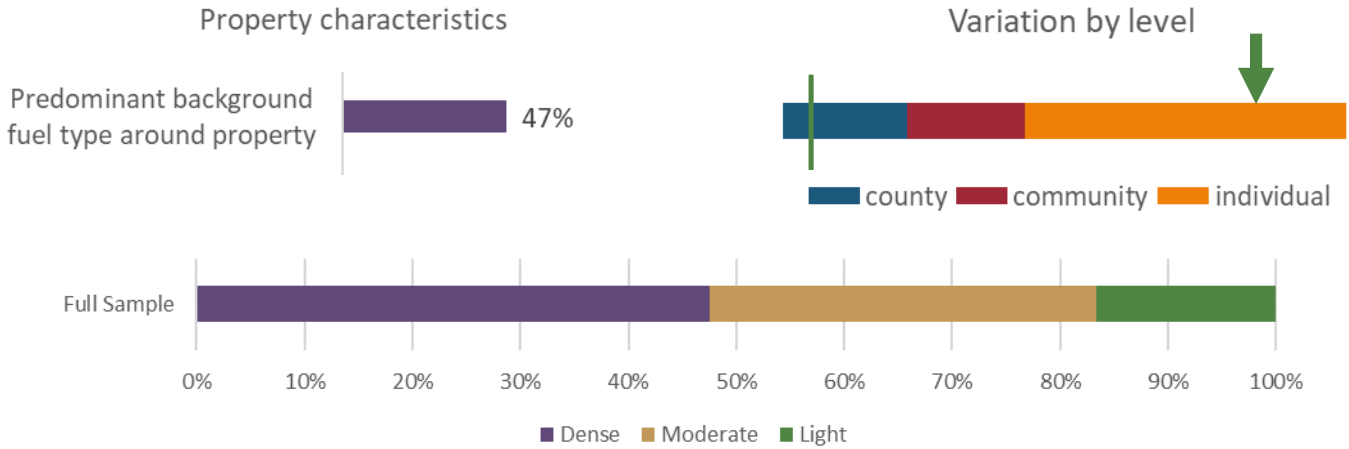
WiRē wildfire research

Property characteristics



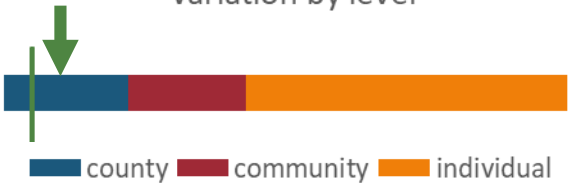
Variation by level

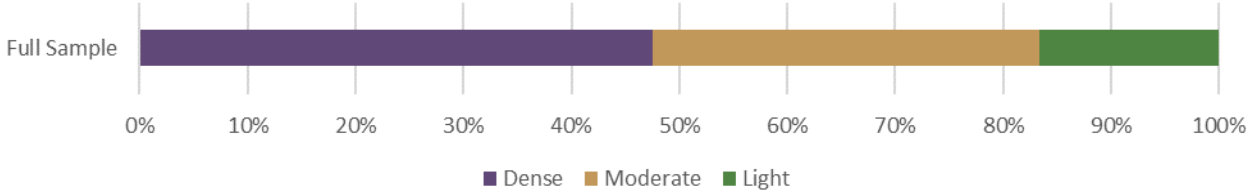


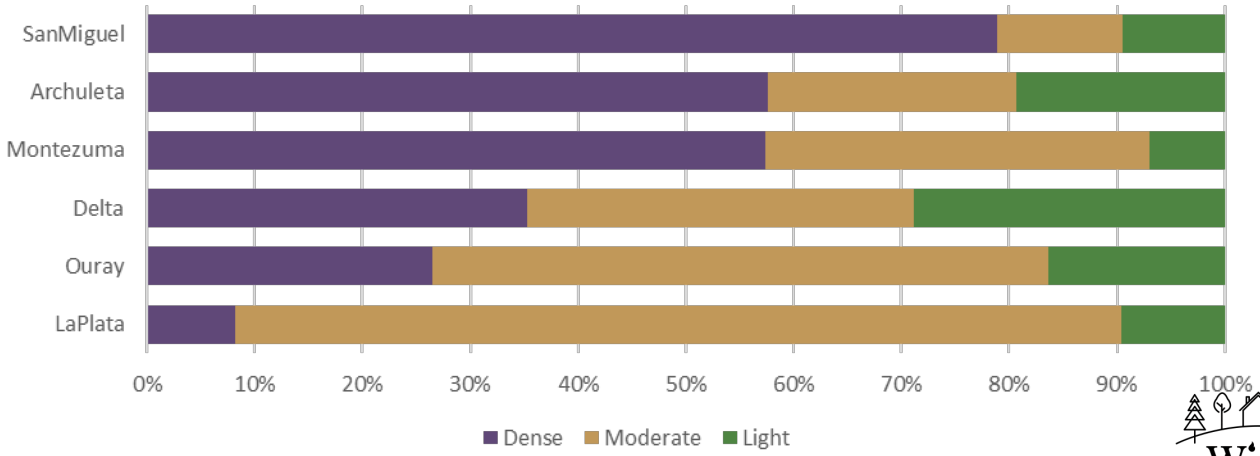

Property characteristics
Predominant background fuel type around property
47%
Variation by level
county
community
individual
Full Sample
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Dense
Moderate
Light

Property characteristics

Variation by level







WiRē wildfire research

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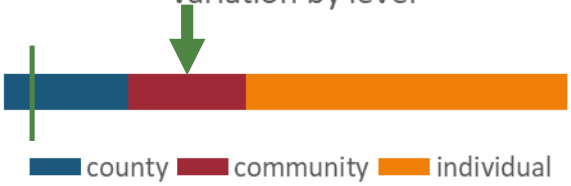

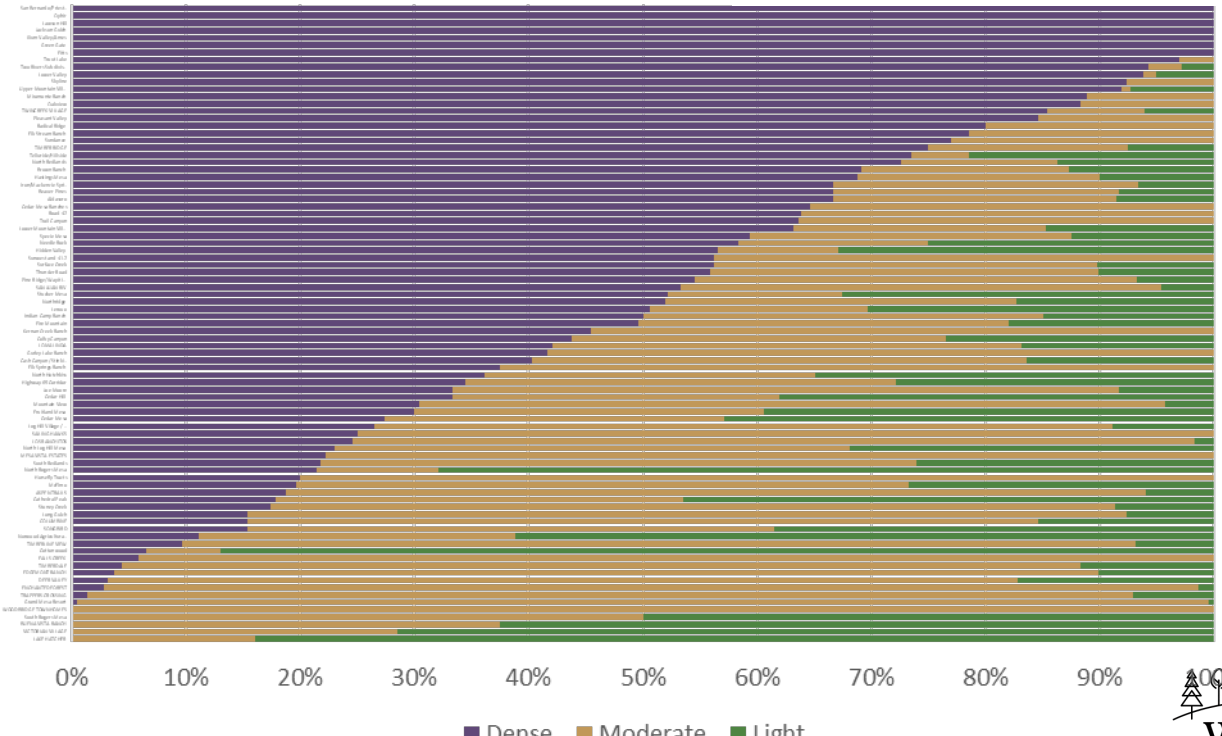

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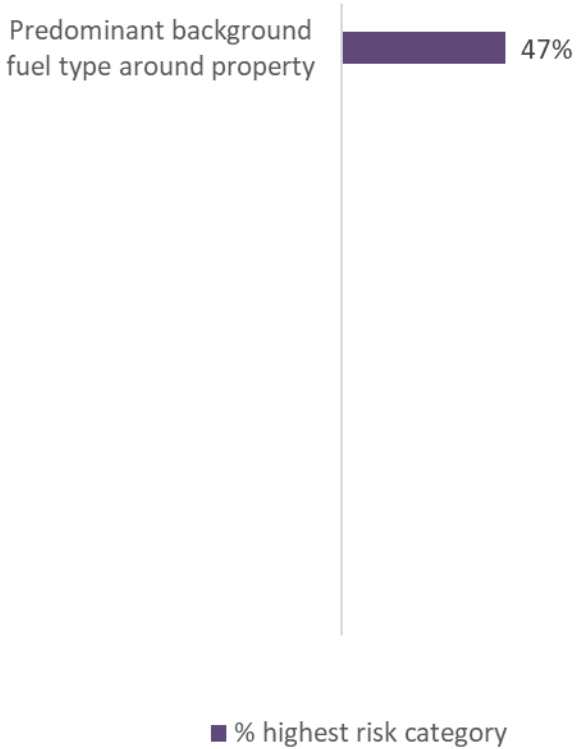

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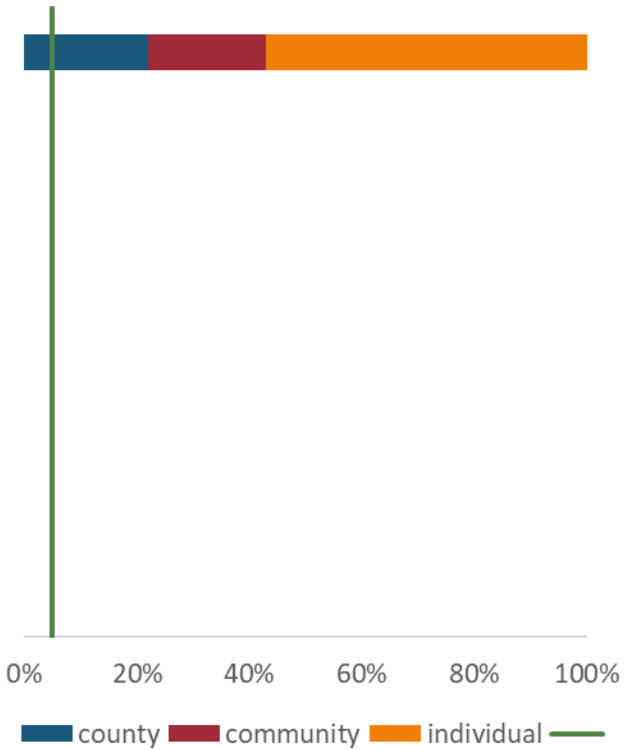
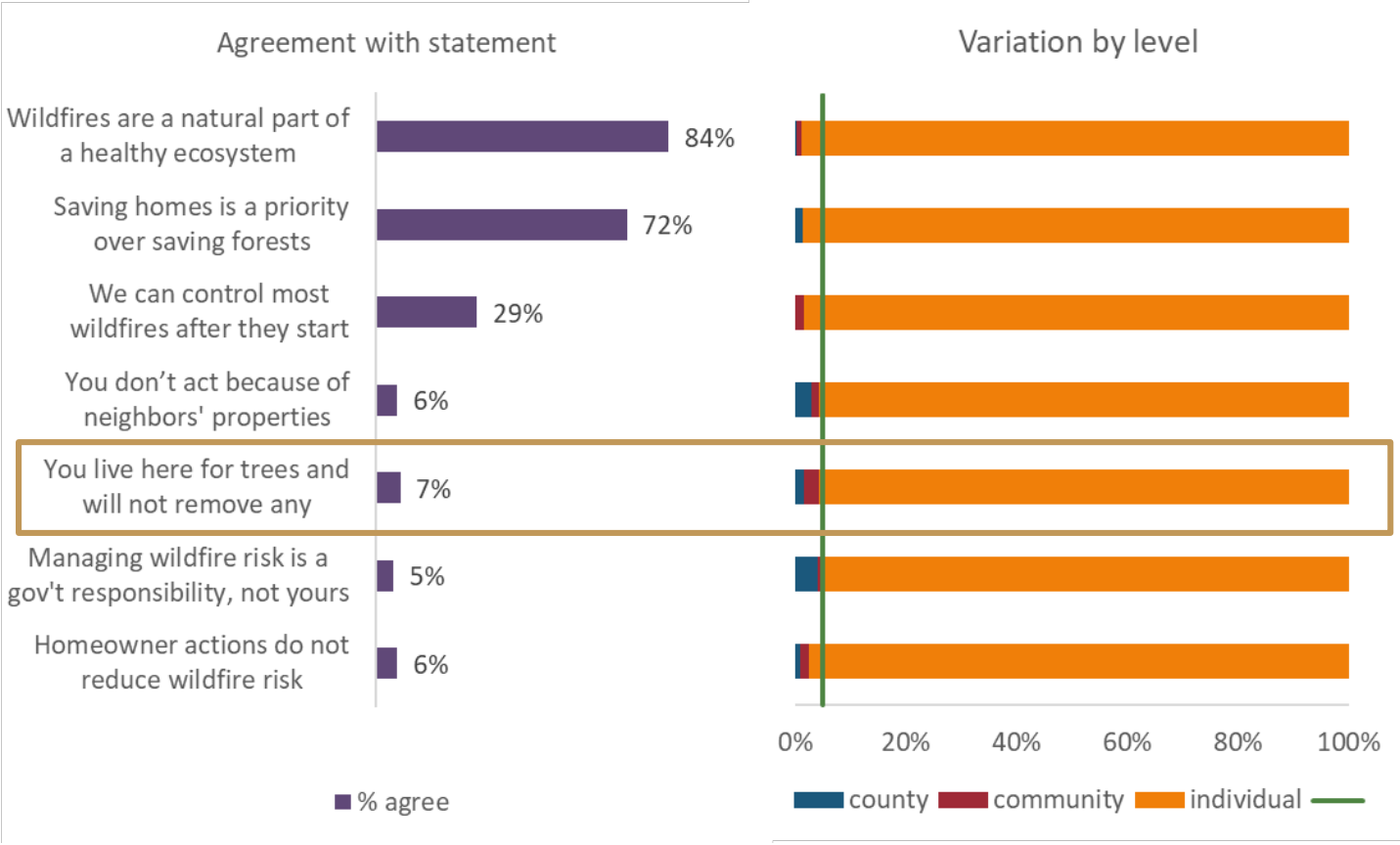
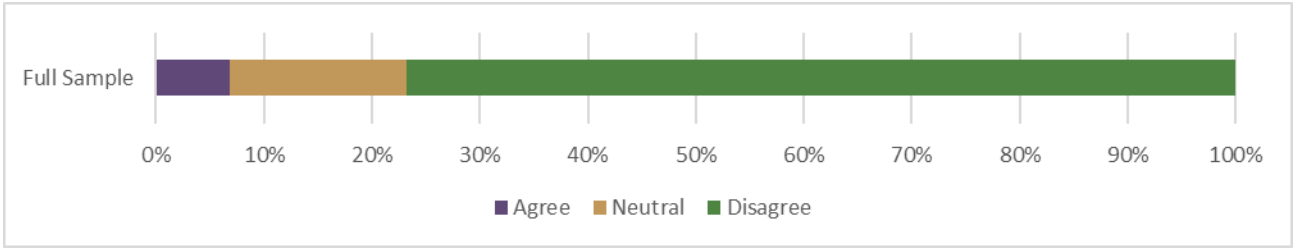


Attitudes



WiRē wildfire research


You live here for trees and will not remove any
7%


Full Sample
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Agree
Neutral
Disagree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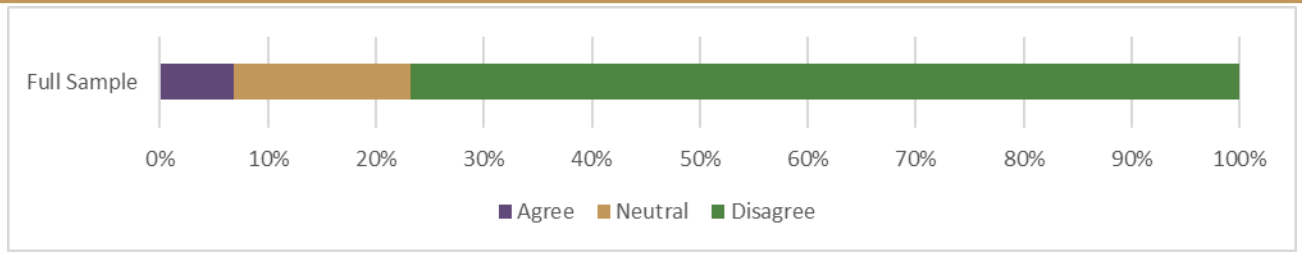
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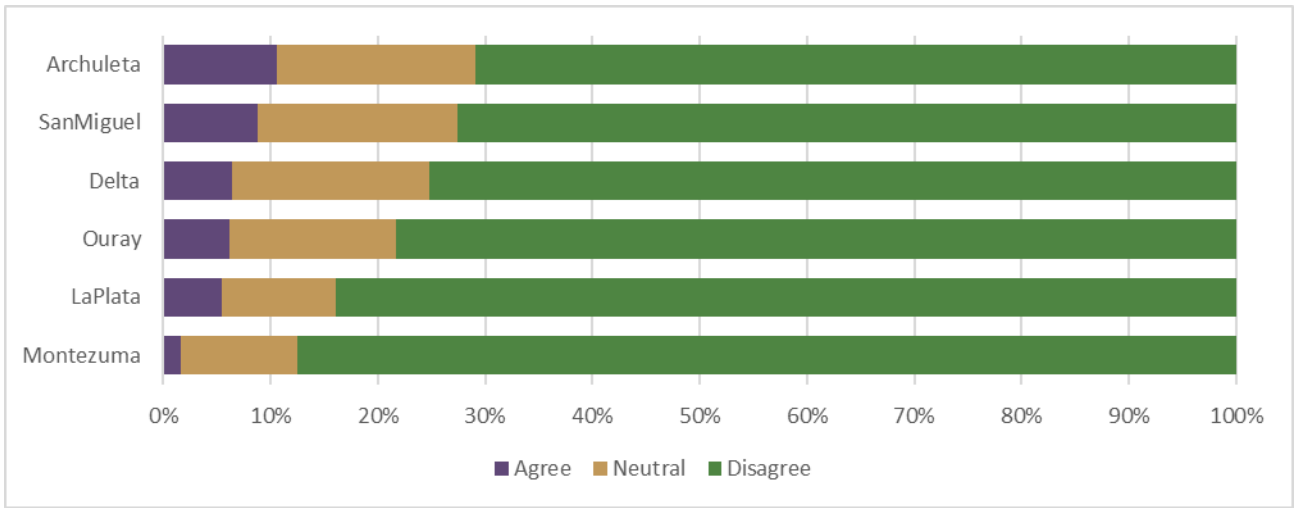
Archuleta
SanMiguel
Delta
Ouray
LaPlata
Montezuma
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Agree
Neutral
Disagree

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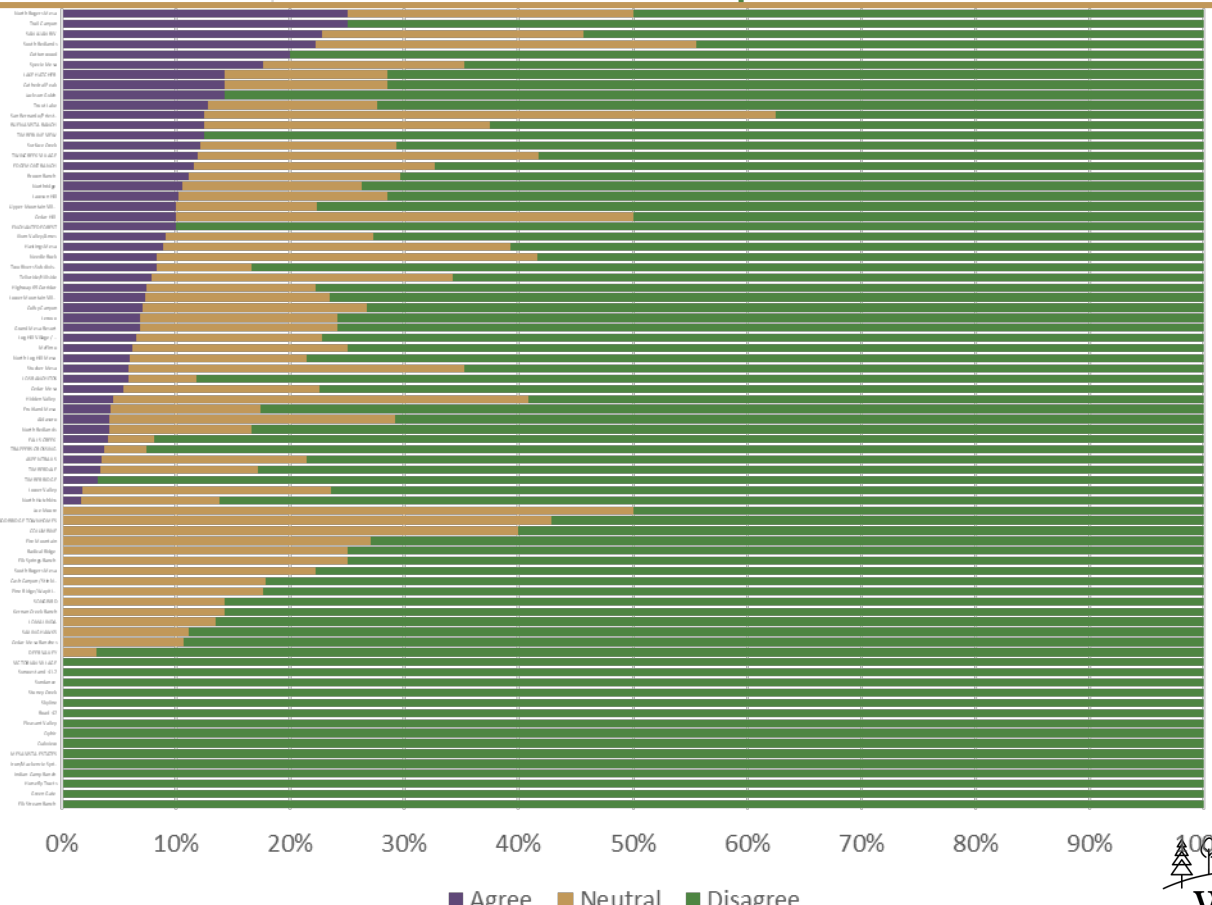
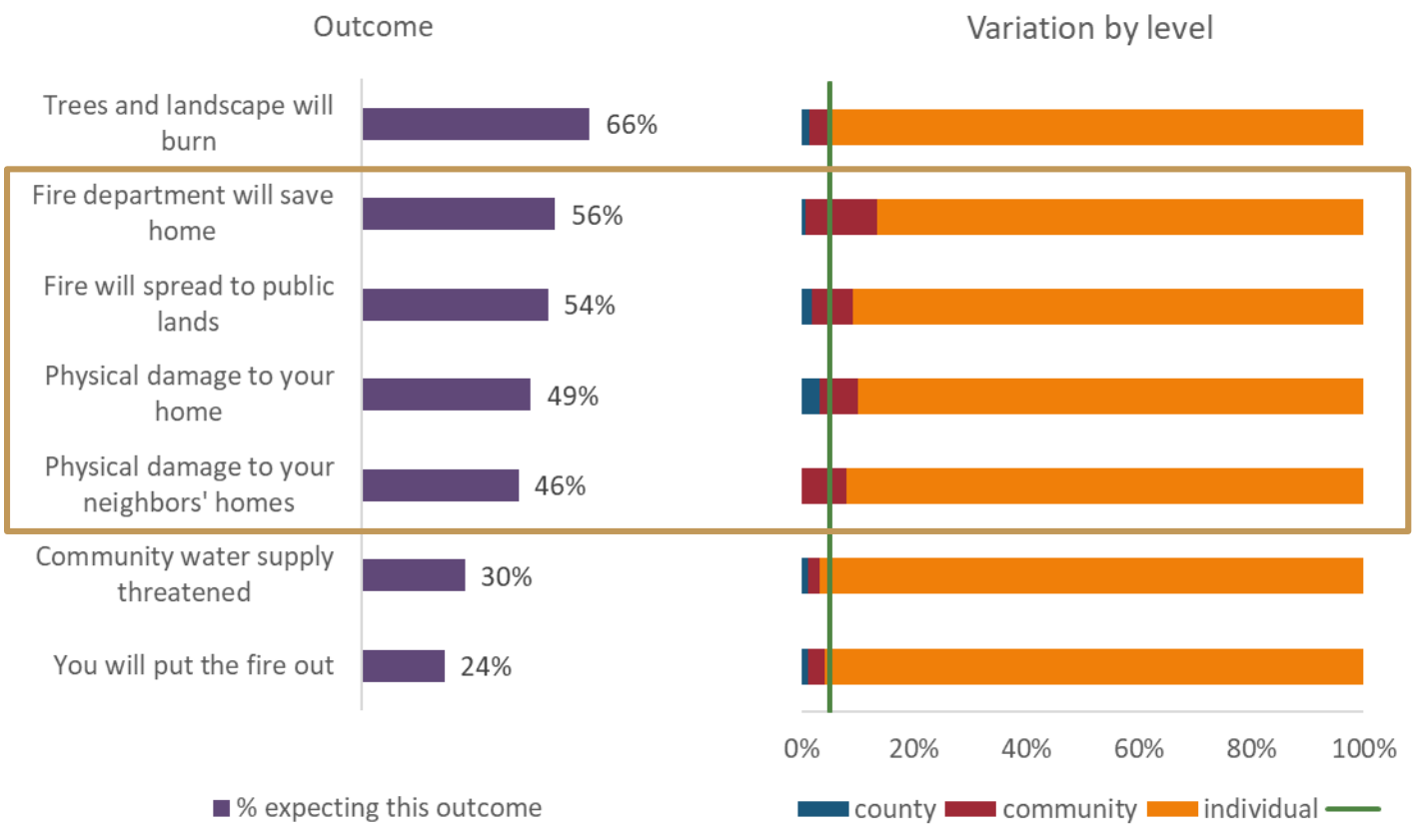
7%



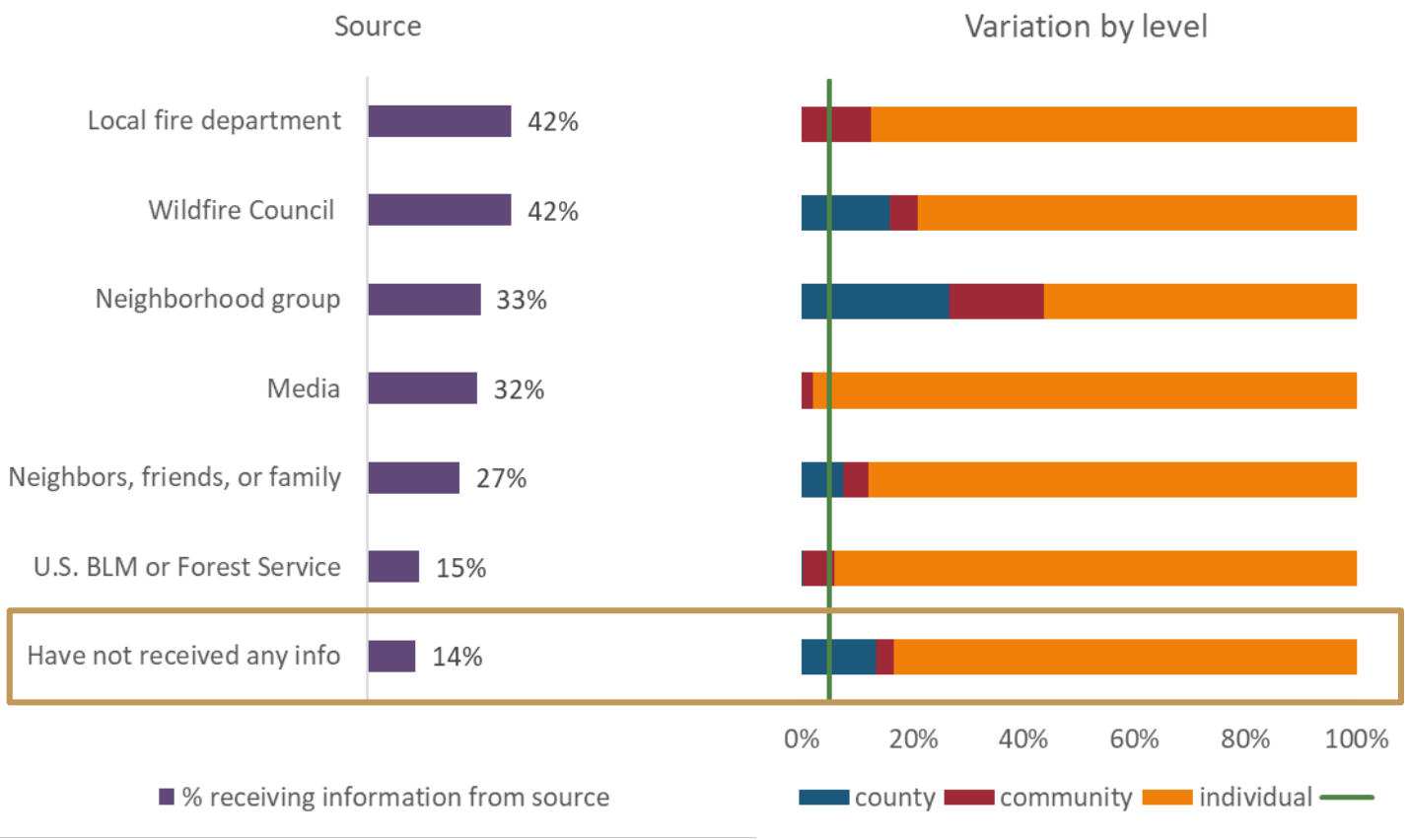
WiRē wildfire research

Expected outcomes of fire on property

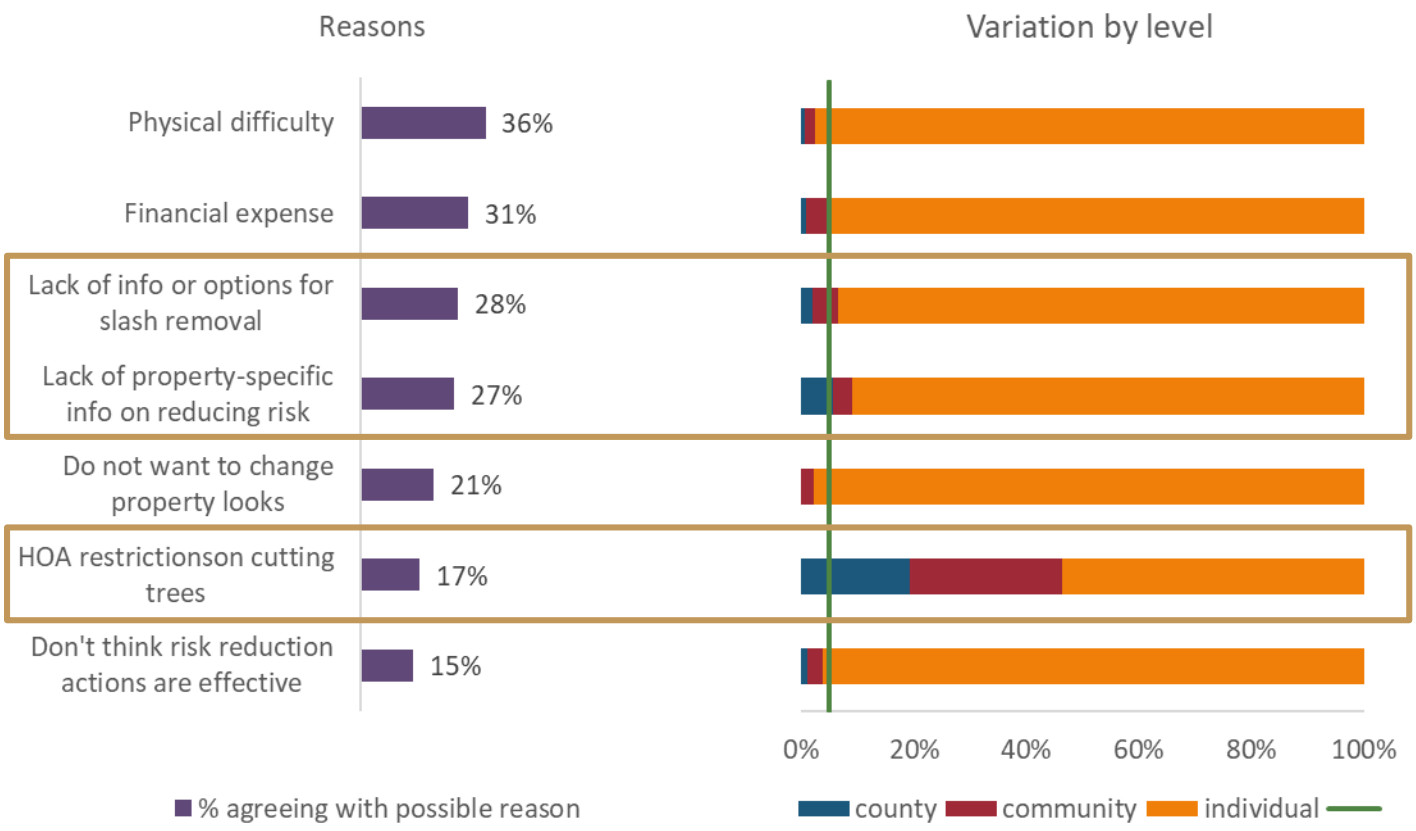


WiRē wildfire research

Sources for information about wildfire



Reasons for not taking action to reduce wildfire risk



WiRē wildfire research

Key results

- Communities are made up of individuals with a wide array of perspectives related to wildfire and wildfire risk mitigation

  Be cautious in generalizing within a community!

- Some variables relatively consistent across communities…
  - Especially general attitudes
- …others change more across locations, including:
  - Expectations of what would happen during a wildfire
  - Where residents go to get information about wildfire
  - Types of barriers to risk reduction experienced

  Be cautious in generalizing from different places!

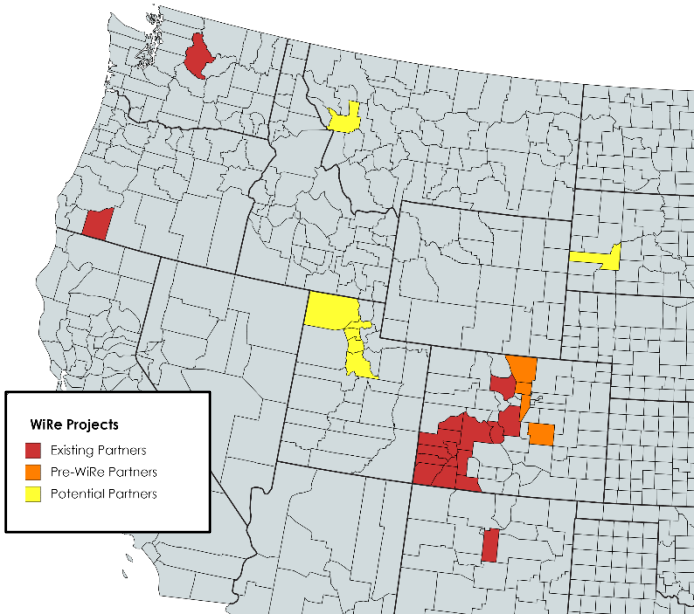
Overall, we believe this type of information helps tailor approaches for different communities and contexts

WiRē wildfire research

The WiRē Center and Next Steps

WiRē
wildfire research

WiRe + Partners



- West Region Wildfire Council – CO
- Wildfire Adapted Partnership (*formerly Firewise of Southwest Colorado*) – CO
- Grand County Wildfire Council – CO
- Fire Adapted Bailey – CO
- Chaffee County – CO
- Chelan County Fire District 1 – WA
- Ashland Fire Rescue – OR
- Santa Fe Fire Department – NM
- Colorado Springs Fire Department – CO
- Boulder County – CO
- Jefferson County – CO
- Larimer County - CO
- *Missoula County CSWG - MT*
- *Rapid City Fire Department – SD*
- *Wasatch Front - UT*

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Testimonials…

"We've learned a ton. The perception of the public and access to information was different from what was originally thought. With the addition of a social science component we recognized a need for change in how we communicate, educate and participate."

~District Chief, John Bennett- Telluride Fire Protection District, Colorado

"As a result of the household surveys being conducted by the WiRē team, we are able to connect with landowners and spread the message regarding the risk of wildfire and the programs available to help landowners mitigate the risk."

~Jon Riley, the Community Wildfire Liaison with the Chelan County Fire District 1 in Wenatchee, Washington

WiRē wildfire research

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USGS science for a changing world

West Region Wildfire Council

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