

The Wildfire Research (WiRē) Team: Infusing social science into wildfire education programs through collaboration and systematic data collection

Patricia Champ (U.S. Forest Service, Rocky Mountain Research Station)
Lilia Falk (West Region Wildfire Council)

Mission Statement

2

We have a massive wildfire problem. Wildfires now cost billions of dollars to fight annually, yet still devastate lives, communities, and ecosystems. While wildfire is a natural phenomenon, learning to live with wildfire is a social issue – so we need a social solution. Our unique approach unites **research and practice**, collecting and using **community-specific data** to tailor programs that support local solutions, allowing communities to get in front of the problem.

Who We Are

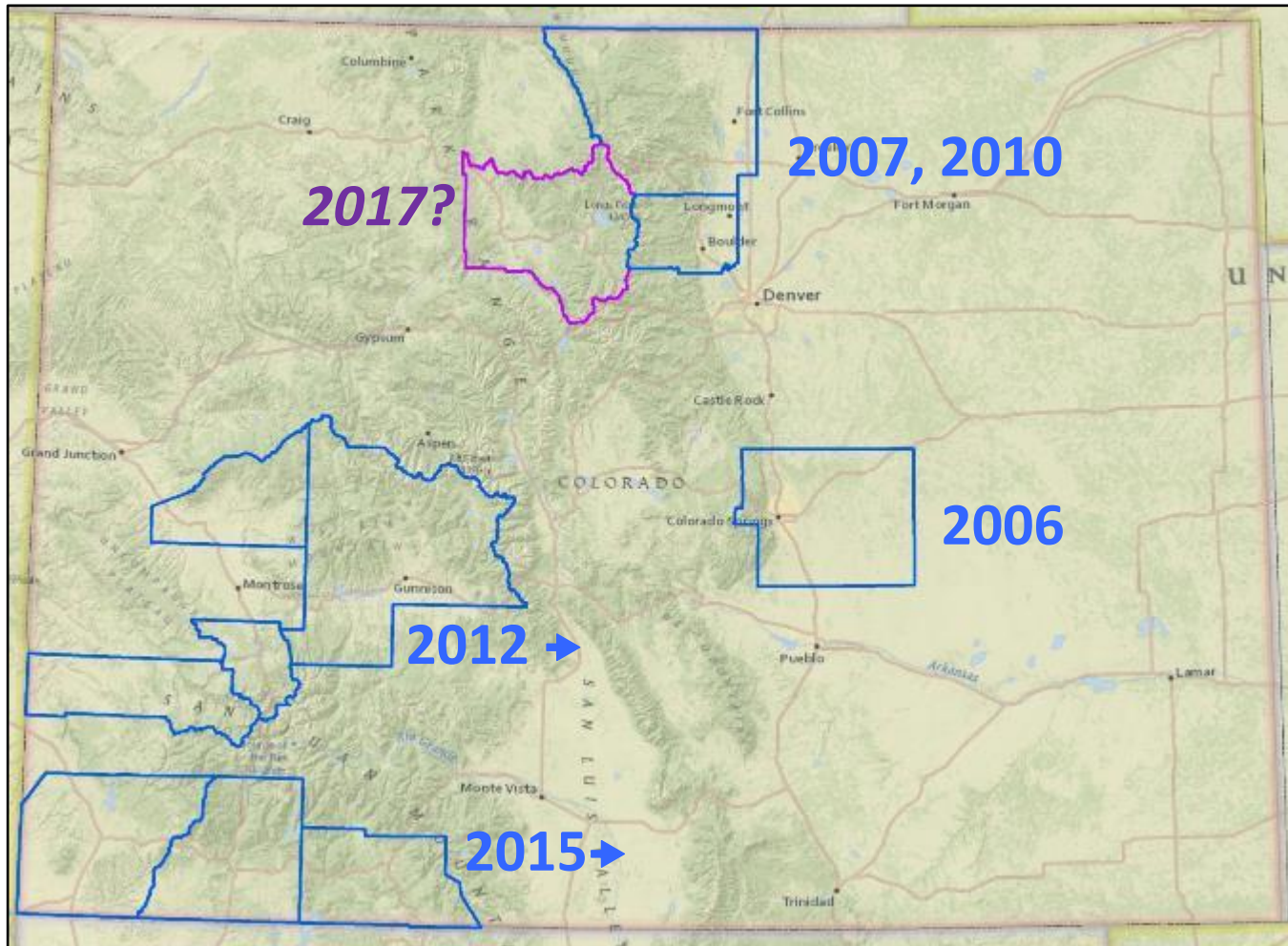
3

WiRē (WildfireResearch): an interdisciplinary research collaboration focused on homeowner wildfire risk mitigation and community wildfire adaptedness.



Practitioner-Researcher Collaboration

4



www.wildfireresearchcenter.org

Wildfire Councils

5

□ **West Region Wildfire Council**

- The WRWC mission is to mitigate loss due to wildfire in wildland urban interface communities while fostering interagency partnerships to help prepare counties, fire protection districts, communities and agencies to plan for and mitigate potential threats from wildfire.



□ **Firewise of Southwest Colorado**

- The FireWise Council of Southwest Colorado strives to keep lives, homes, and property from being damaged by wildfire. They provide education, planning and mitigation support to encourage wildfire preparedness.
- Volunteer ambassadors lead by example and serve as catalysts within their neighborhoods, encouraging their neighbors to become more aware, active, and prepared for wildfires.

Lots of activity around fire adaptation...

6



WiRē approach is a **COMPLEMENT** (not a substitute)

Our sense of the situation...

7

- Generally, WUI residents understand they live in an area at risk of wildfire
- Many WUI homeowners report taking action to mitigate risk
- These reports are not always consistent with the view of a wildfire professional
- Moving homeowners to take some/more or maintain action is complex (not an information deficit problem)

Taking Action



Community Context

SOCIETY & NATURAL RESOURCES
2015, VOL. 43, NO. 1, 1-16
<http://dx.doi.org/10.1080/03641501.2015.1032551>



Developing Fire Adapted Communities: The importance of Interactions Among Elements of Local Context

Travis B. Paveglio^a, Jesse Abrams^b, and Autumn Ellison^b

^aDepartment of Natural Resources and Society, University of Idaho, Moscow, Idaho, USA; ^bEcosystem Workforce Program, Institute for a Sustainable Environment, University of Oregon, Eugene, Oregon, USA

ABSTRACT

Resident perceptions and actions related to wildfire management are influenced by a complex set of factors that are often tied to a specific local context. We conducted in-depth case studies in two diverse communities to better illustrate how elements of local social context collectively influence wildfire perspectives and behaviors in a given locality. Our results suggest that the influence of commonly cited predictors for wildfire mitigation actions, including homeowners' associations, vegetation preferences, and previous experience with wildfire, can vary based on their interaction with other elements of local context such as residents' desire for privacy, preferences for wildland or ornamental vegetation, identification as "suburbanites" or "country residents," and willingness to collectively organize. We compare our results to existing wildfire social science findings and argue for a more holistic view of local social context as a way to design tailored strategies for increasing resident responsibility for wildfire.

ARTICLE HISTORY

Received 2 November 2014
Accepted 1 November 2015

KEYWORDS

Wildland-urban interface;
wildfire; fire adapted
community; local context

Taking Action

9



www.cwildfire.org

www.cwildfire.org/homeignition.php

Home About Us Register Take Action CIPs Resources

West Slope Wildfire Council
Rapid Wildfire Risk Assessment

Welcome to **your** Rapid Wildfire Risk Assessment rating page

In 2015, the West Slope Wildfire Council (WSWC) conducted a Rapid Wildfire Risk Assessment of over 5000 homes in the West Slope (WS) dealing with your fire district. This page shows results for:

**21932 2225 RD
CEDAREDGE, CO**



Properties were assessed for public roads, and/or fire escapes. Each home was assessed in three categories, dependent on theme:

- Background Risk Factors
- Home Hardening
- Defensible Space
- Emergency Access

Results shown are specific to your home and property. Photos are for general information only and do not show your specific property. A summary of the cumulative risk factors is shown at the bottom of this page, followed by contacts for information on taking action to reduce your wildfire risk.

20°58'22.4"N 107°58'46.1"W
View on map

THEME A: Background Risk Factors

Background Risk	Light	Moderate	Heavy
	Consists mostly of grass, and/or trees less available to fire.	Consists mostly of light brush and/or medium trees that are available to fire. Fuel loading and distribution will moderately contribute to adverse wildfire behavior.	Consists mostly of dense brush and/or medium trees that are available to fire. Fuel loading and distribution will significantly contribute to adverse wildfire behavior.
Your property is rating:			
Distance to dangerous topography:	The proximity of a home to certain topographic features may significantly impact that home's survivability during a wildfire. Such features include overhanging slopes, cliff edges, steep slopes, and/or exposed eaves, etc. These features are shown.		



Specific
Information

Taking Action

10

Multiple Interactions



Overview of WiRē Approach:

11

Understand the unique characteristics of a community and the residents of the community to develop *effective* wildfire education programs

- ▣ Systematic data collection

- Space (identify key similarities and differences across many communities)
- Time (monitoring)

- ▣ Data Use

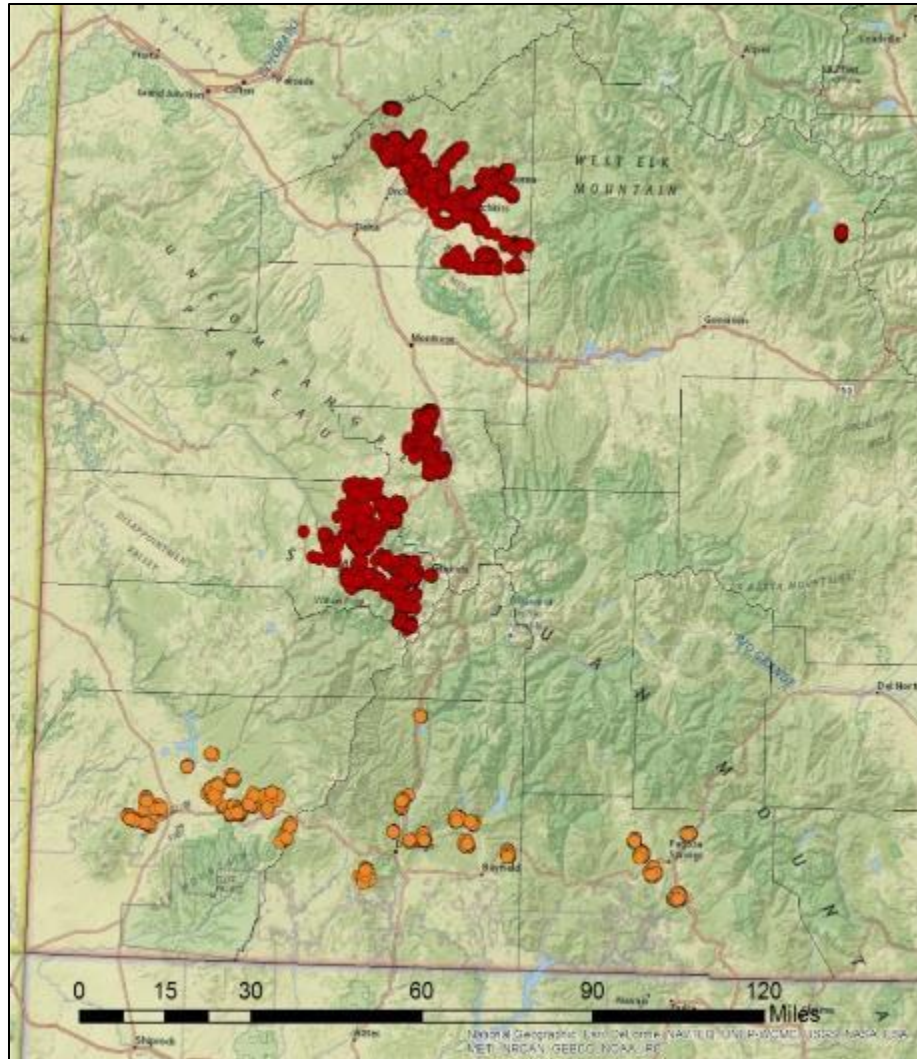
- Inform program
- Infuse it into programs

- ▣ Learn as we go (adaptive)

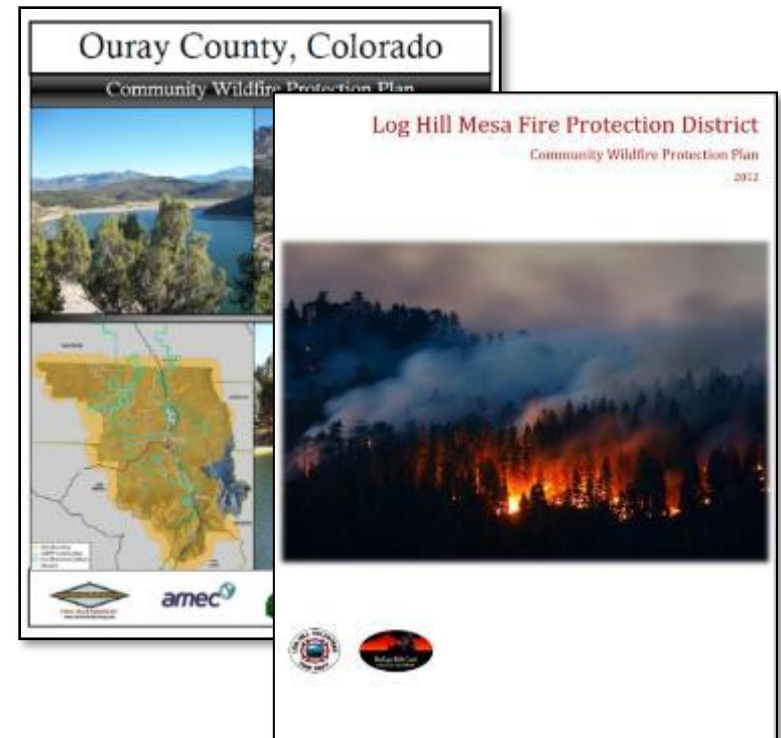
Data collection efforts

Paired Data

13



- Rapid assessment
- Household survey



Rapid Assessment

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

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

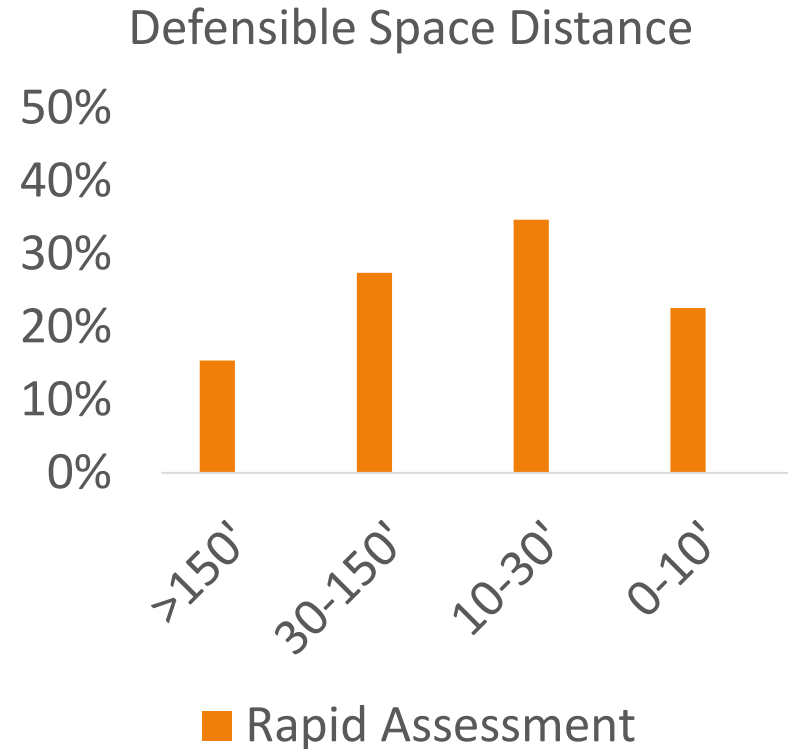
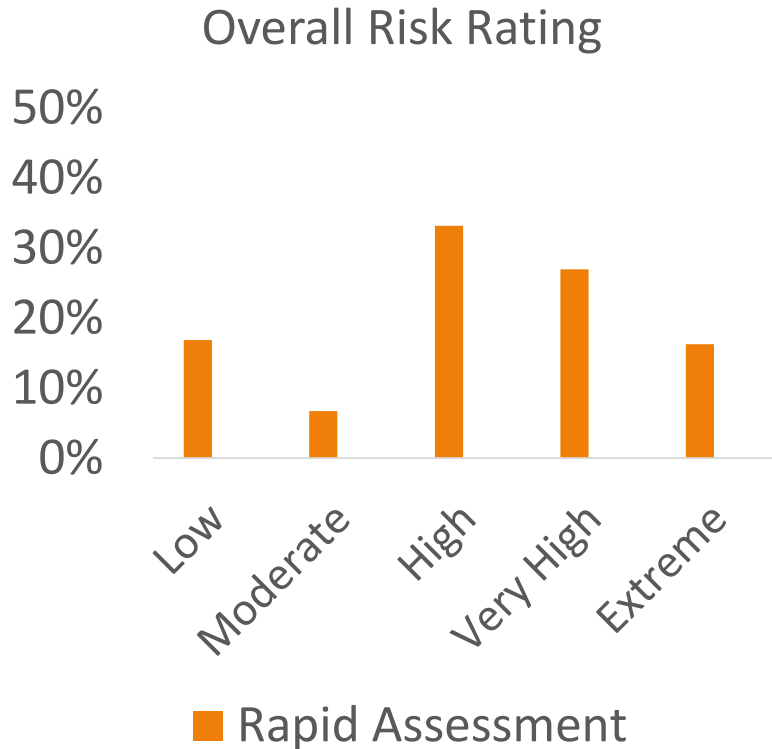
Decks & Fencing	None	0
	Non-Combustible Deck/Fence attached to Structure	20
	Combustible Deck/Fence attached to Structure	50

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

Rapid Assessment Ratings



Many rated at very high/extreme risk
Most have minimal defensible space

Household Surveys

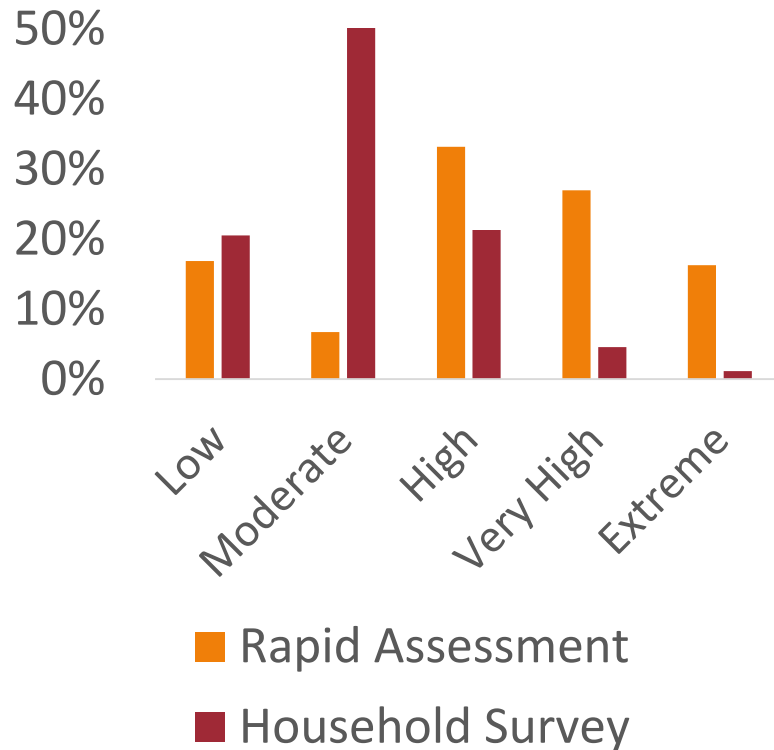
16



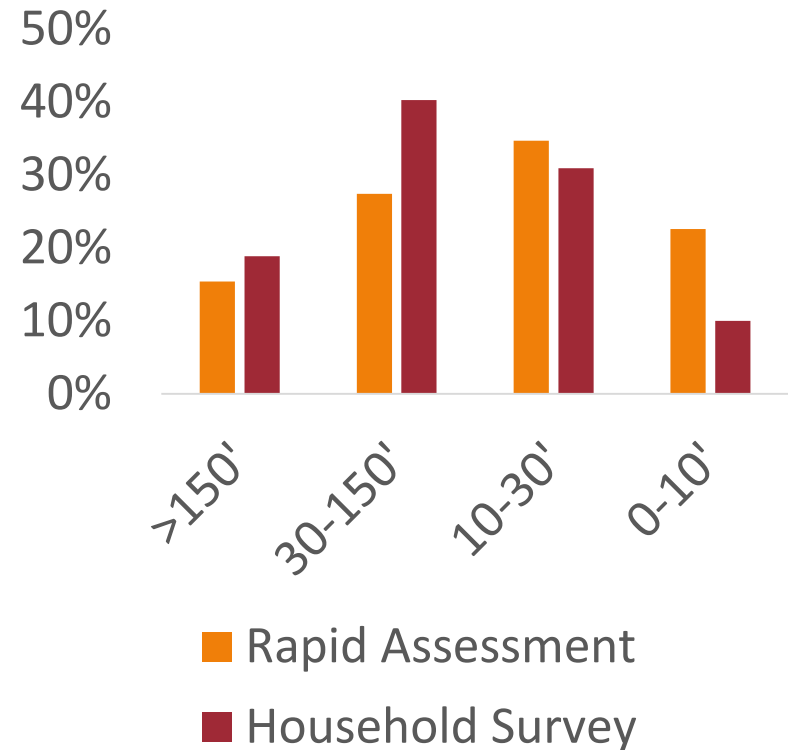
County	Ouray	Delta	San Miguel	Archuleta	La Plata	Montezuma
Survey year	2012	2013	2014	2015	2015	2015
n	291	681	713	201	340	183
Response Rate	62%	58%	41%	29%	45%	44%

Assessment and Survey Risk Ratings

Overall Risk Rating



Defensible Space Distance

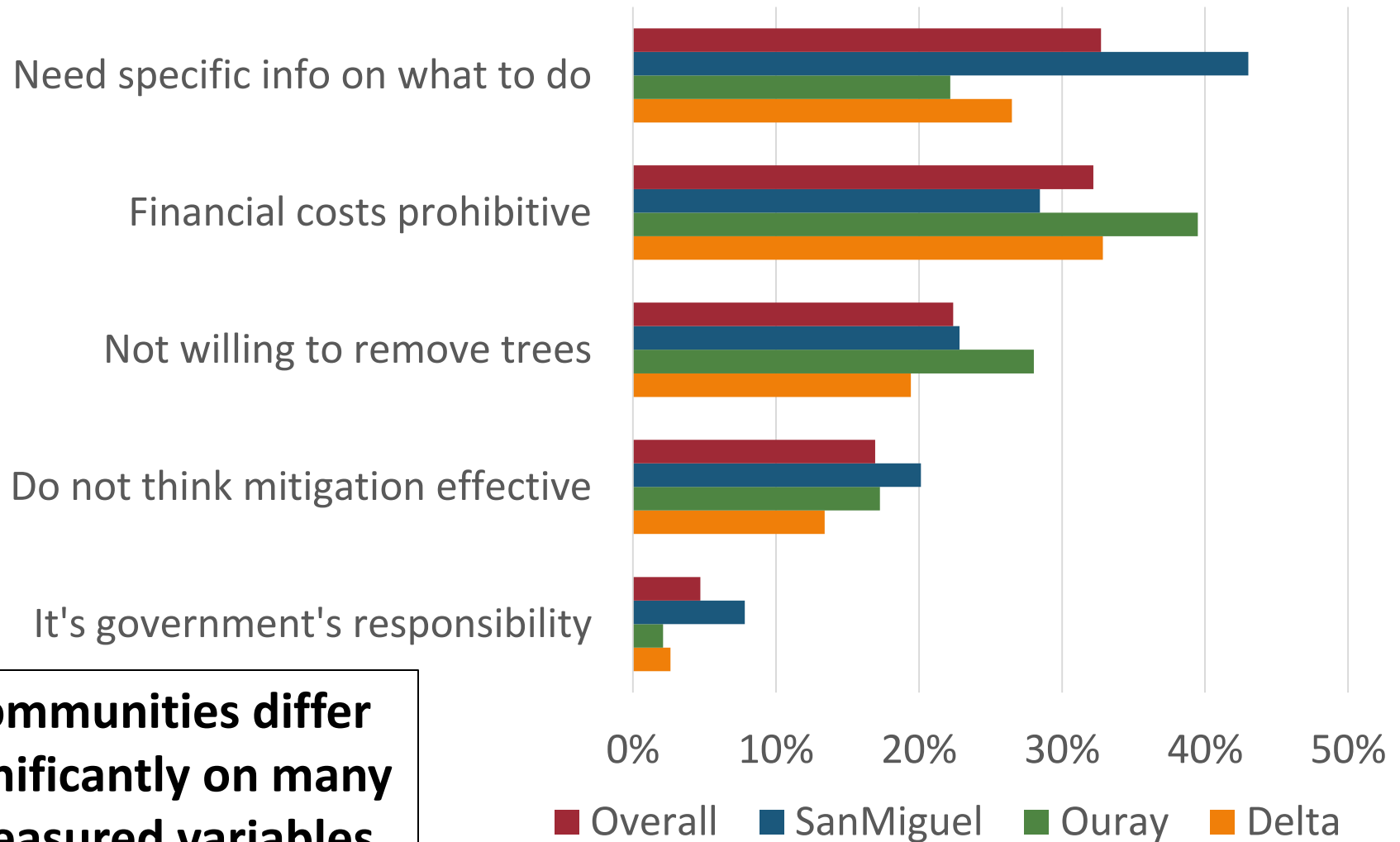


People tend to rate their overall risk lower than the pro
They also rate individual attributes differently

(Based on) Meldrum, Champ, Brenkert-Smith, Warziniack, Barth, and Falk. (2015). Understanding gaps between the risk perceptions of wildland-urban interface (WUI) residents and wildfire professionals. *Risk Analysis* 35(9).

Stated reasons to not mitigate

18



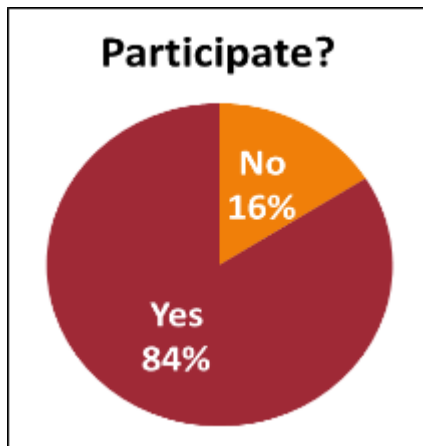
Communities differ significantly on many measured variables

(Based on) Meldrum, Brenkert-Smith, Champ, Falk, and Barth. A quantitative examination of social complexity across wildland urban interface communities. (In Preparation).

Resources: cost share for mitigation

19

- Does cost sharing influence risk mitigation?
 - ▣ Asked people if they would participate in a cost share up to \$1000/acre to remove vegetation
 - ▣ Asked how much (out of \$1000) they would pay



- ▣ Mean: ~\$400/acre
- ▣ Income, age, and property size affect WTP
- ▣ Participation not related to concerns about changing how their property looks
- ▣ MORE participation if higher *perceived* risk
- ▣ LESS participation if higher *assessed* risk

**Incentive programs useful,
but may not motivate those with highest risk**

What have we learned?

- ❑ Moving away from anecdotes-changing the conversation
- ❑ Understanding and breaking down mitigation barriers
- ❑ Infusing the research into programs
- ❑ Measuring outcomes

Changing the conversation

21

TOMV Residents are Willing to Remove Trees...



77%

Would be willing to remove trees to reduce wildfire risk.



46%

46%

Viewed HOA restrictions on cutting trees as a barrier to reducing wildfire risk.

Learn more: wildfireresearch.wordpress.com or COwildfire.org

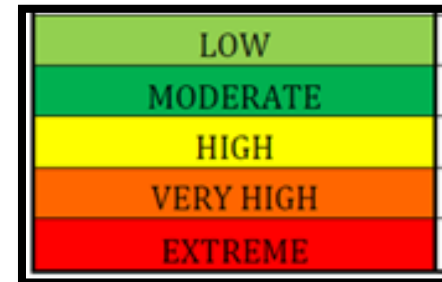
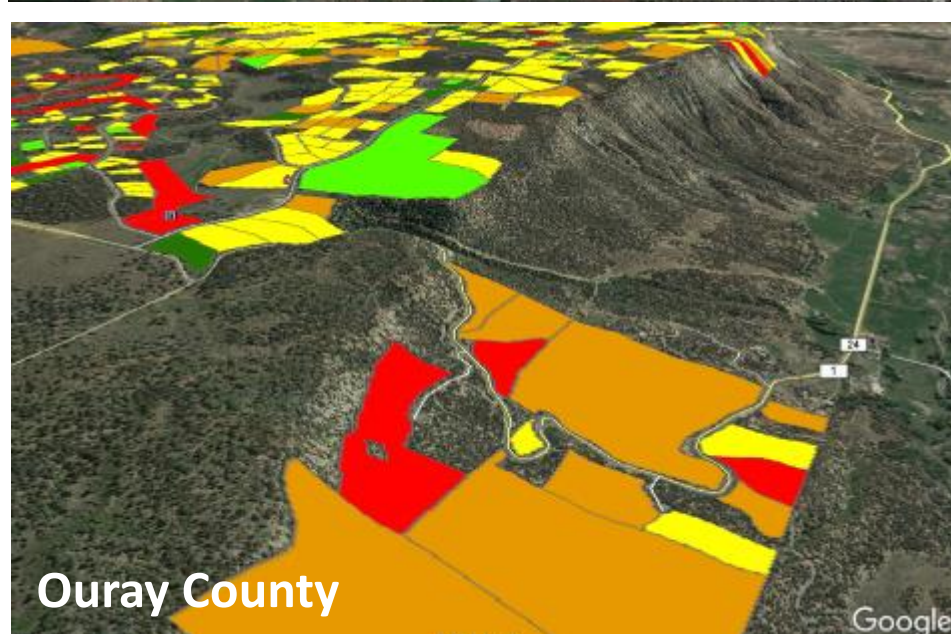
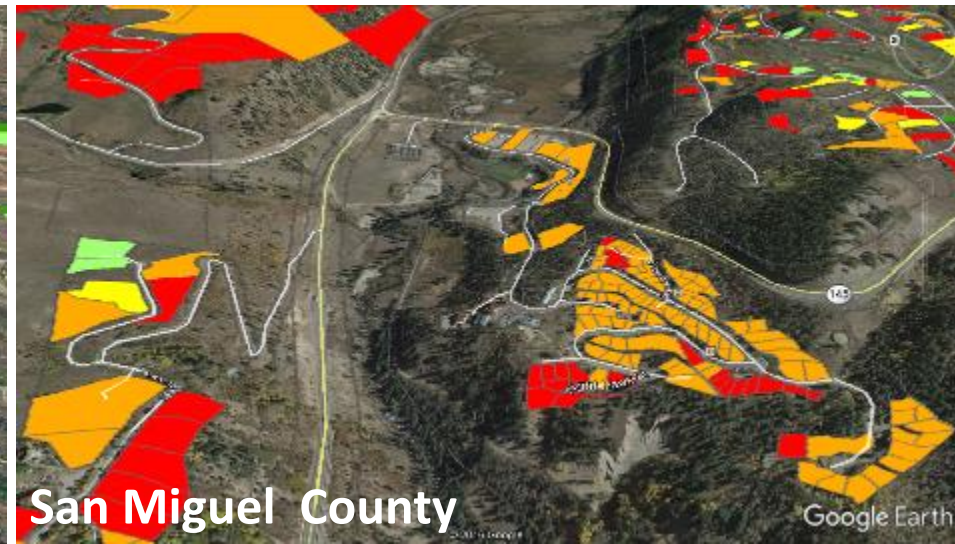
Data Informed Programmatic Influences

22

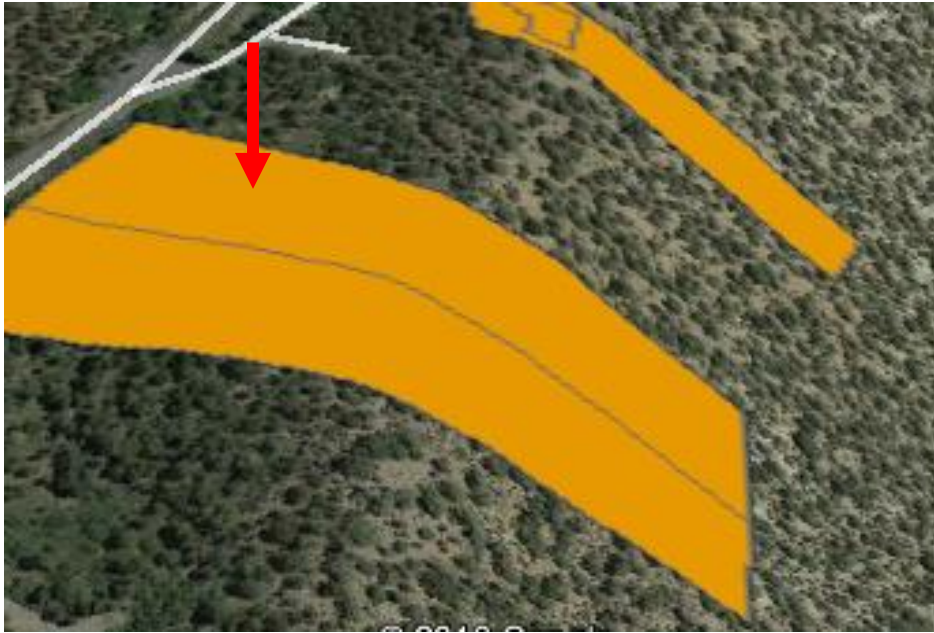


We Were Data Rich, but....

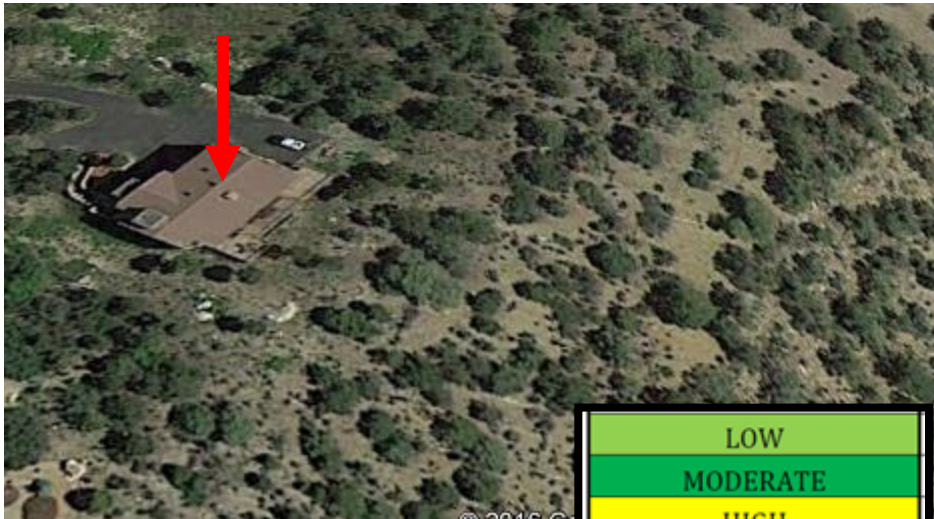
23



How do we get from this...



To This!?





LOW
MODERATE
HIGH
VERY HIGH
EXTREME



Getting the Information to Homeowners

25



Working Together to Reduce Wildfire Risk

October, 2016

Dear Cedaredge Resident,

We recently sent you a letter about wildfire risk. We are reaching out again to encourage you to learn more. Our outreach is part of a shared effort between the Cedaredge Volunteer Fire Department and the West Region Wildfire Council (WRWC) to help residents reduce the risk of losing their homes to a wildfire. We all need to work together to reduce our risk from wildfire.

As part of the 2014 Community Wildfire Protection Plan, WRWC conducted a wildfire risk analysis in your area to determine how residents can be better prepared in the event of a wildfire. We thought you might be interested in the following information about your wildfire risk:

Your community's overall wildfire risk is rated as: **HIGH**

Your own property's wildfire risk rating is: **VERY HIGH**

The average wildfire risk rating of your ten closest neighbors: **HIGH**

LOW

MODERATE

HIGH

VERY HIGH

EXTREME


West Region Wildfire Council has additional information about your property's wildfire risk and what you can do about it. To learn more, you can visit a website built and maintained by WRWC that is specific to your home.


Go to (www.COwildfire.org/myhome) and type in this code when asked: **AA123**

To learn more about programs and funding available to assist you in your efforts to reduce your wildfire risk, please contact Jamie Gomez, Mitigation & Education Coordinator for Delta County at (970) 615-7300.

This is the second letter that we have sent out related to wildfire risk. If you received the first letter, have already viewed your property specific website and do not have any further questions you may disregard this letter. Thank you for your time.

Sincerely,


Jamie Gomez
Mitigation & Education Coordinator
West Region Wildfire Council


Bob Starr
Fire Chief
Cedaredge Volunteer Fire Department

The Blue Mesa Recreation Association Community has a **HIGH** Wildfire Risk. The West Region Wildfire Council recently assessed the wildfire risk of individual parcels within your community. Properties were rated low to extreme. The wildfire risk on **YOUR** Blue Mesa Subdivision parcel is:

YOU

LOW

MODERATE

HIGH

VERY HIGH


EXTREME

Please join us at the **Blue Mesa Community Clubhouse on June 24th at 4 p.m.** to learn more about **YOUR** specific wildfire risk, and ways to mitigate **YOUR** risk.

If you would like additional information about wildfire risk and mitigation, please contact the West Region Wildfire Council at: (970) 615-7300 or www.COwildfire.org



*****INDEXED AADC 800
WRWC TEAM
OR CURRENT RESIDENT
102 Pine Pl
Montrose CO 81401-4144



Home About Us Mitigation Education CO Wildfire Resources

Welcome to **your** Rapid Wildfire Risk Assessment rating page

Thank you for visiting this page! Please enter the code for your property below and click "Submit".

You can find this code in the red box on the letter you received from WRWC. If you have trouble with this page, or are having trouble finding your property code, please contact Jamie Gomez at jamie.gomez@wrwc.org or 970-615-7300.

Copyright © 2015 West Region Wildfire Council
100 Pine Street, Suite 101, Montrose, CO 81401 | P: 970-615-7300 | Email: info@wrwc.org

Providing Specific Information

26

www.COwildfire.org/myhome

Access Code: TEST01

The screenshot shows a web browser window displaying the website www.cowildfire.org/myhome/parcel.php. The page features a navigation bar with links: Home, About Us, Mitigation, Take Action, CWPPs, and Resources. The main heading reads "Welcome to *your* Rapid Wildfire Risk Assessment rating page". Below this, a text block states: "In 2013, the West Region Wildfire Council (WRWC) conducted a Rapid Wildfire Risk Assessment of every Wildland Urban Interface (WUI) dwelling within your fire district. This page shows results for:".

The address **21932 2225 RD CEDAREGE, CO** is highlighted in a red box. Below the address, a list of risk factors is provided:

- Background Risk Factors
- Home Hardening
- Defensible Space
- Emergency Access

A map on the right shows the location of the property with a red pin. The map coordinates are 39°50'22.4"N 107°56'45".... A "Sign in" button is visible in the top right corner of the map area.

Below the map, the section "THEME A: Background Risk Factors" is displayed. It contains a table with four columns: "Background fuels", "Light", "Moderate", and "Heavy". The "Background fuels" column includes a photograph of a forest. The "Light" column describes fuel conditions: "Consists mainly of grasses and/or fuels less available to fire." The "Moderate" column describes fuel conditions: "Consists mainly of light brush and/or isolated trees that are available to fire. Fuel loading and distribution will moderately contribute to extreme wildfire behavior." The "Heavy" column describes fuel conditions: "Consists mainly of dense brush and/or dense trees that are available to fire. Fuel loading and distribution will significantly contribute to extreme wildfire behavior."

Below the table, the "Your property's rating:" is shown, with a red triangle icon indicating a "Heavy" rating.

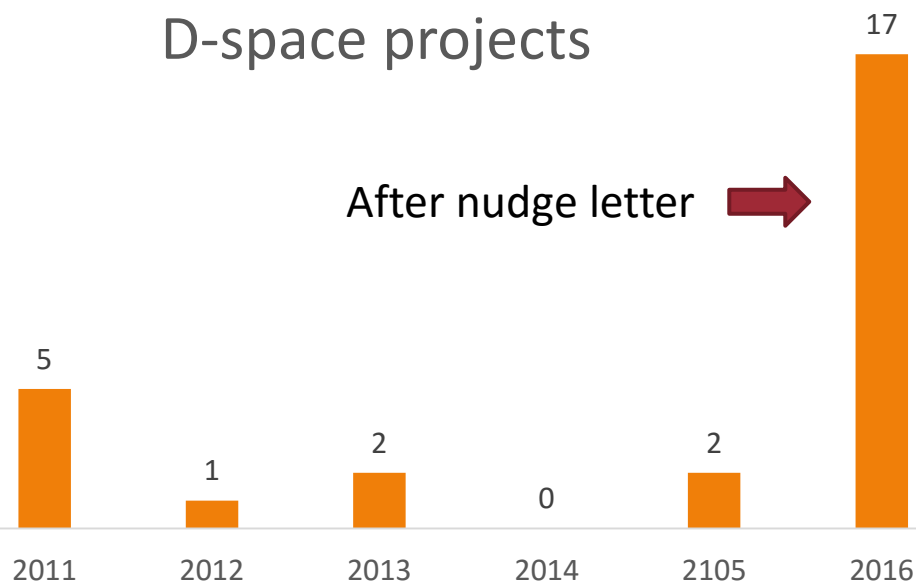
The bottom section, "Distance to dangerous topography", includes a photograph of a house and text explaining that the proximity of a home to certain topographic features may significantly impact that home's survivability during a wildfire. Such features include over-steepened slopes, chimneys, drainages, gullies, narrow canyons, ridges, etc. These features are areas where wildfires can move quickly, increase in wildfire intensity and impact wildfire behavior. This is as an approximate measure of the proximity of your home to any such topographic feature.

Results

27

D-space projects

After nudge letter →



+ 45 site visits (and counting)...



The Future of WiRē

28

- Continue to expand our perspective.
 - ▣ Homeowner-> Neighbors -> Community -> Wildfire Council
 - > Landscape (cross-boundary issues/public land)



- New locations
 - ▣ Grand County, CO



- Re-examine an active community
 - ▣ Log Hill Mesa, CO



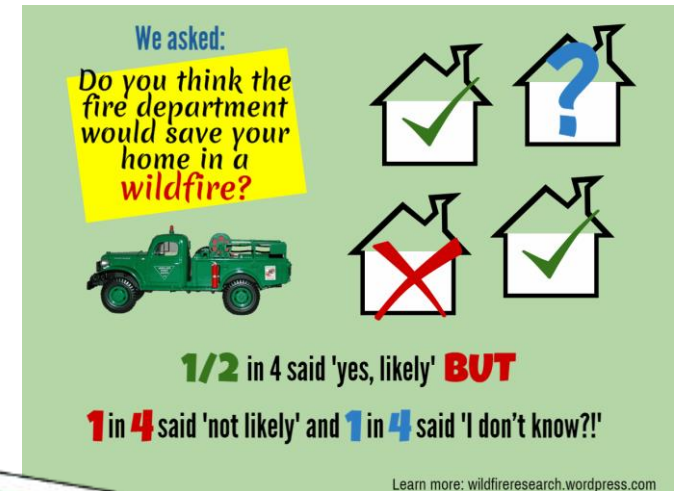
Outreach

29



wildfireresearch.wordpress.com

- White Board Video & Story Map
- Infographics
- Community reports
- Research Notes
- Outlets for wildfire professionals



The WiRē Center

30

- Social science informed wildfire programs
 - ▣ Local residents and parcel characteristics
 - ▣ Community context (institutions, cross-boundary wildfire risk, history)
- Consistent approach to data collection and integration
 - ▣ Standardize approach while allow for local flexibility
- Monitoring (social and biophysical change)
- Accessible geo-referenced database

