

Research Note

Understanding Change: Wildfire in Boulder County, Colorado

Hannah Brenkert-Smith, Patricia A. Champ, and Amy L. Telligman

Introduction

Wildfire activity continues to plague communities in the American West. Three causes are often identified as key contributors to the wildfire problem: accumulated fuels on public lands due to a history of suppressing wildfires; climate change; and an influx of residents into fire prone areas referred to as the wildland-urban interface (WUI). The latter of these contributors is the focus of much attention. Encouraging homeowners to mitigate wildfire risk on private land has been identified as essential to reducing the devastating effects of wildfires. However, little is known about WUI residents' attitudes toward wildfire and what actions homeowners are taking to mitigate wildfire risk. This report presents the results of a unique homeowner survey administered twice over a three-year period. As such, we are able to provide some insight into changes in attitudes and beliefs about wildfire and concern about existing risk, as well as reported behavioral changes over time.

Boulder County, located along the front range of the Colorado Rockies, was ranked as the county with the highest wildfire risk in the state and the 10th highest county in the United States with respect to existing wildfire risk based on the number of square miles of developed land within the WUI, the place where fuels transition from wildland sources to human-made sources (Gude and others 2008; Headwaters Economics 2010; Radeloff and others 2005). In recent years the area has experienced many devastating wildfires. The Fourmile Canyon Fire in Boulder County in 2010 destroyed 169 homes and was at that time the most destructive wildfire, in terms of total losses, in Colorado's history. For more than 10 years, counties such as Boulder

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Authors:

Hannah Brenkert-Smith, Research Associate, University of Colorado at Boulder.

Patricia A. Champ, Research Economist, Rocky Mountain Research Station, USDA Forest Service, Fort Collins, Colorado.

Amy L. Telligman, Post Doctoral Fellow, University of Auburn.

County have implemented wildfire education programs to encourage homeowners to mitigate the risk of losing their homes during a wildfire event. In 2007, WUI residents in Boulder County were surveyed about living with wildfire (see Champ and others 2011 for details). In 2010, the respondents to the 2007 survey were surveyed again to assess any changes in experience with wildfire, perceptions of risk, wildfire risk information sources, and mitigation efforts. In this report we look specifically at the panel data set created by pairing respondents to the two surveys and compare the 2007 and 2010 survey results.

Key Findings

Overall, we see relatively stable attitudes about wildfire; however, there are some notable changes between 2007 and 2010 related to wildfire experience, concern about wildfire, perceived factors contributing to wildfire risk, and likely outcomes if a fire were to occur.

First, we see significant increases in the proportion of participants reporting fire-related experiences themselves and knowing others who have had fire-related experiences. This is not unexpected, as the 2010 survey was conducted in the months following the Fourmile Canyon Fire. Importantly, however, we see significant increases in concern about participants' own homes, properties, pets, and health, as well as increased concern about wildfire affecting public lands. Consistent with these findings, we see significant increases in the proportion of respondents who identify both human activity and property characteristics (vegetation on own property, physical characteristics of own property other than vegetation (slope), and structural characteristics) as major contributors to the chances of a wildfire damaging respondents' properties within the next five years. The increased focus on property-related vegetation and structural characteristics is notable because these are characteristics that homeowners can proactively alter to reduce fire risk. Further, we see a significant increase in those identifying roads for access/egress as a major concern, likely because of the role roads can play in fire suppression efforts and in providing evacuation options.

Similarly, participants also indicate that they believed it was more likely that they would experience fire-related losses in 2010 compared to 2007. The data indicate significant increases in expectations that wildfire would result in losses of trees/landscape, physical or smoke damage to their home, or the destruction of their home. Compared to 2007, in 2010 participants expressed higher expectations of financial losses or that pets, including non-income generating livestock, may be harmed.

In terms of responding to wildfire, we see that reports of completed mitigation actions increase in 2010 relative to 2007 and overall the mitigation levels increase significantly with those indicating a high level of mitigation (10 or more actions) increasing 11%. In particular, we see significant increases in fuel reduction within the 30-foot perimeter of the home by way of thinning trees and cutting overhanging branches in that area; as well as fuel reduction in the area 30-100 feet from the home by way of cutting overhanging branches and limbing trees so that the lowest is 6-10 feet from the ground in this area. We also see a significant increase in the less labor-intensive action of clearing pine needles and leaves from the ground and off the roof.

Methods

The Surveys

In 2007, a survey sponsored by Boulder County and the University of Colorado, was developed to gather information on WUI homeowners and their efforts to reduce the risk of loss related to wildfires, providing a snapshot of wildfire-related attitudes and behaviors (Champ and others 2011). In 2010, two months after the Fourmile Canyon Fire burned in Boulder County and the Reservoir Road Fire burned in adjacent Larimer County, a survey was administered to households that had previously participated in the wildfire study in 2007. The 2010 follow-up survey, sponsored by the National Center for Atmospheric Research and the Colorado State Forest Service, had sections designed to collect information on where respondents live, their experience with wildfire, their actions to reduce wildfire risk, attitudes about wildfire, social interactions (two sections), and demographic characteristics. The structure was largely consistent with the 2007 survey. One substantial change in the 2010 survey was the inclusion of an additional section with attitude statements about climate change and wildfire risk (see Appendix A for the 2010 survey and frequency report for the panel respondents).

Data Collection: Target Population and Sampling

In 2007, geo-coded data from the Boulder County Assessor's Office, GIS software, and Boulder County fire hazard maps were used to generate a sample frame of all of the privately owned residential parcels with a structure in the county's fire-prone areas ($n = 8,300$). A random sample of 1,750 households was sent an invitation to complete either a paper survey by mail or an electronic survey online. There were 316 online responses and 105 mail responses for an overall response rate of 36% and a total of 421 observations (see http://www.fs.fed.us/rm/pubs/rmrs_rn047.pdf for full details).

The initial sample for the 2010 survey consisted of the 421 Boulder County households that had responded to the 2007 survey. In the fall of 2010, potential participants were mailed a package with a letter of invitation to participate in the survey, the survey, and a postage paid return envelope. Participants were also given a choice of completing a web-based version of the survey. To participate online, respondents went to a web address provided in the letter of invitation. A second mailing was sent to non-respondents approximately one week after the first mailing. A third and final mailing was sent to non-respondents approximately one week after the second mailing.

Participants who logged onto the website were able to complete the survey at their leisure. It took between 15 and 20 minutes for most participants to complete the survey. The survey log was checked regularly, and the addresses of those who had completed the survey were removed from the mailing list for the second and/or third mailings.

Of the 421 initial letters that were mailed, 26 were not deliverable¹. Two hundred fifty-nine (38 online and 221 paper) were received for an overall response rate of 65.56%.²

Pairing completed 2010 surveys with completed 2007 surveys resulted in usable data for 218 respondents. The responses to all of the survey questions were statistically similar between web and paper surveys.

The results presented here are based on the panel data set comprised of the subset of 2007 survey respondents who also responded in 2010. Since we cannot know for certain that the same household member responded to both surveys, any household survey participant for which a different sex was reported in 2010 compared to 2007 was excluded from the analyses here. Twenty-three of the 218 surveys demonstrated this inconsistency and were excluded, resulting in a total of $n = 195$. As such, the number of 2007 respondents, response frequencies, and the relationships between variables may differ from the reports published on the complete 2007 dataset (Champ and others 2011).

In this report, we use two types of analyses to report our findings. First, we report simple frequencies for the 2010 survey responses. Second, we use contingency table analyses to compare 2007 and 2010 responses and report the results of the McNemar test for each comparison.³ We report change over time highlighting both statistically significant changes as well as examples for which the study participants demonstrate consistency in attitude, belief, or behavior.

Descriptive Results

Characteristics of Survey Respondents

Very few of the respondents are less than 35 years old (<1%) in 2010. The average age of the respondent is 59 years old. Slightly more males responded (53%) than females (47%) and almost all of the survey respondents identified “White” as their racial group (95%). Sixty-eight percent of the respondents are married. The respondents are well educated with 44% having advanced degrees.

¹ From public records regarding property losses from the Fourmile Canyon Fire, we know that nine of the 2007 respondents lost their homes and two others suffered significant structural damage and expect that these surveys were undeliverable. Of the 26 items returned, 18 were marked “vacant,” one was marked “undeliverable,” and one was marked “seasonal” by the mail carrier. The remaining six did not have any notation.

² 259 responses / 395 delivered surveys [421 sent - 26 undeliverable] = 65.56%

³ For the purposes of this report we use: $p \leq .10^*$, $p \leq .05^{**}$, $p \leq .01^{***}$.

Place of Residence

All of the 2010 survey respondents are full-time residents. Few of the respondents (16%) expect to move within the next five years. Among those reporting intent to move, approximately 36% indicate that wildfire was an important or very important factor driving that decision while 29% report it is not important at all. All of the respondents own their home and almost all of the survey respondents say they have homeowner's insurance (99%). Most of the respondents report having household pets (66%). Approximately half (51%) of respondents' parcels are one quarter to two acres and 40% are larger than two acres with an average of 11 acres. Only 9% of respondents are on parcels less than a quarter acre. On average, respondents have lived in their homes for 19 years.

Compared to 2007 there is little change in the measures described above except for a slight decrease from the frequency of respondents (20%) indicating that they expect to move within the next five years; however, the difference is not statistically significant.

Neighbors

In the survey section that asked about social interactions, respondents were asked about the density of vegetation on their property and neighboring properties two different points in time: when they moved in and currently (Table 1). In 2010, approximately 44% of the survey respondents indicated the vegetation on their property was dense when they moved in, compared to 8% who indicate that the current vegetation is dense. Likewise in 2010, 55% of the respondents indicated that the vegetation on neighboring properties was dense when they moved in compared to 34% that indicate that those properties currently have dense vegetation. In other words, survey respondents report a reduction in the vegetation density on their property and on their neighbor's property, but they report a smaller reduction in vegetation density on neighboring properties.

Table 1—Vegetation density.^a

	Percent reporting "dense" or "very dense" (4 or 5 on a 5 point scale: 1 = very sparse; 5 = very dense)		<i>p</i> -value for McNemar's test
	2007	2010	
When you first moved into your house, the vegetation on your property was...	50	44	0.152
Currently the vegetation on your property is...	14	8	0.064
When you first moved in, the vegetation on most of the properties neighboring yours was...	52	55	0.488
Currently, the vegetation on most of the properties neighboring yours is...	38	34	0.289

^aThe complete survey, including the response frequencies for each question can be found in Appendix A.

Reporting on current vegetation density on their own properties changed in a statistically significant manner between the two reporting periods with only 8% of 2010 respondents indicating that they currently have dense vegetation on their properties. In other words, respondents describe their own vegetation as being sparser in the 2010 survey than they did in 2007. Reporting on vegetation on neighbors' properties at time of moving in and currently did not change significantly between the two reporting periods. We anticipate that in most cases this is a result of property owners taking action to reduce risk rather than as a result of fire on their properties; however, we know that 70 of respondents in the panel data set described here were within the Fourmile Canyon Fire perimeter so it is possible that a portion of those reporting less dense vegetation experienced a fire on their property.

While not significant, we still see that respondents report a similar trajectory for their own and neighbors' vegetation: toward sparser vegetation.

Experience with Wildfire

Considering the fact that the Fourmile Canyon Fire occurred in 2010, it is not surprising that we see some significant change in wildfire-related experiences between the 2007 and 2010 surveys. While relatively few respondents report experiencing wildfire on their properties (10% in 2010), 84% report wildfire within 10 miles of their properties, a 14% increase from 2007 (Table 2). Compared to 2007, there are also significant changes in evacuation experience. The frequency of respondents that were evacuated from their home due to a wildfire or threat of wildfire increases from 23% in 2007 to 62% in 2010.

Almost all of the 2010 respondents (93%) know someone who had been evacuated in the last five years and over half (61%) know someone whose residence was damaged or destroyed in the last five years, a 48% increase.

Table 2—Wildfire-related experiences.

	Percent reporting "Yes"		<i>p</i> -value for McNemar's test
	2007	2010	
First-hand experience with wildfire at current residence	6	10	0.035
Experience with wildfire less than 10 miles from their property	70	84	0.000
Evacuated from current residence due to a wildfire or threat of wildfire	23	62	0.000
Know someone evacuated in last 5 years.	51	93	0.000
Know someone whose residence was damaged/destroyed in last 5 years.	13	61	0.000

Despite these significant increases in wildfire-related experiences, we see that almost half (49%) reported being somewhat aware of wildfire risk when they bought their current residence and another 37% reported being very aware (Table 3). We see interesting and significant changes in reported awareness of wildfire risk at time of purchase when comparing 2007 to 2010 results. We see that 37% of 2010 respondents report being very aware of wildfire risk at time of purchase compared to 46% in 2007. We see no change in those reporting that they were not aware of wildfire risk. We speculate that the increase in those reporting being somewhat aware of wildfire risk when they purchased their home, as well as the decrease in those reporting being very aware, may be the result of respondents reflecting on what they knew in 2007 compared to what they knew in 2010 after a bad wildfire season in Colorado. In other words, we may be observing a realization by respondents that they knew a lot less about wildfire than they initially thought.

Attitudes Toward Wildfire

We examined attitudes toward wildfire by considering respondents' levels of concern about what might be damaged by a wildfire (Table 4). The highest level of concern is expressed about wildfire damaging respondents' homes and their property/landscape with 60% and 54%, respectively. Fifty percent of survey respondents also express concern that a wildfire would damage public land near their homes. There is also a fair bit of concern regarding the safety of pets in the event of a wildfire with over 40% reporting a high level of concern. Respondents are least concerned about a wildfire impacting their health (36% report a high level of concern), local water resources (28% report high level of concern), or their ability to earn an income (16% report high level of concern).

Table 3—Wildfire risk awareness.

How aware of wildfire risk when you bought/decided to rent your current residence or property?	2007	2010
	---- Percent ----	
Not aware	11	11
Somewhat aware	42	49
Very aware	46	37

McNemar-Bowker test = 11.366; *p*-value = 0.078

Table 4—Wildfire concerns.

How concerned are you about wildfire damaging or affecting the items listed below?	Percent reporting 4 or 5 (1 = not concerned at all; 5 = very concerned)		<i>p</i> -value for McNemar's test
	2007	2010	
Your house or other buildings on your property	47	60	0.002
Your property/landscape	44	54	0.017
Public lands near your home	43	50	0.092
Your pets	27	42	0.000
Your health or your family's health	28	36	0.032
Local water sources	22	28	0.193
Your ability to earn income	11	16	0.150

Compared to 2007, survey respondents express increased concern about all items and a statistically significant increase in all but two items. The most significant increases are in concern for pets, which increased by 15%, concern for homes increased by 13%, and concern for property/landscape increased by 10%.

Attitudes were also measured with 17 statements about wildfire. Respondents were asked to rate how strongly they agree or disagree with each statement. Here we report the four statements with the most support along with the statements for which there was the lowest support (Table 5; see Appendix B for full set of 17 attitude statements). We find the most support for the three statements that advocate suppression when wildfires threaten human life, property, and homes alongside similarly high support for a fourth statement that appears to indicate a contrasting view. The fourth most supported statement reads: Wildfires are a natural part of the balance of a healthy forest/ecosystem. These seemingly contradictory statements lie at the root of the challenges associated with managing wildfire and wildfire risk at the wildland-urban interface: how can a fire-prone and populated landscape be managed?

Table 5—Attitudes about wildfire.

	Percent reporting 4 or 5 (1 = strongly disagree; 5 = strongly agree)		<i>p</i> -value for McNemar's test
	2007	2010	
Most support			
Wildfires that threaten human life should be put out.	91	92	0.664
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	89	90	0.856
Wildfires that threaten property should be put out.	81	82	1.000
During a wildfire, saving homes should be a priority over saving forests.	79	81	0.743
Least support			
You do not need to act to reduce the risk of loss due to wildfire because you have insurance.	2	5	0.267
Actions to reduce the risk of loss due to wildfire are not effective.	4	4	1.000
Your property is not at risk of wildfire.	3	5	0.549
You don't take action to reduce the risk of loss due to wildfire because if a wildfire reaches your property firefighters will protect your home.	2	4	0.344
Managing the wildfire danger is a government responsibility, not yours.	1	3	0.289
You do not need to action to reduce the risk of loss due to wildfire because the risk is not that great.	5	3	0.227

The statements receiving the least support indicate that there is widespread agreement that participants believe their properties are at risk of wildfire, wildfire risk reduction actions are effective, that respondents do not believe that having insurance is a substitute for reducing risk, and that respondents do not believe that the possibility of firefighter protection is not a substitute for taking action to reduce risk. Further, it is apparent that very few respondents believe that fire management rests with the government and not homeowners.

All but one of the survey responses to the 17 attitude statements are statistically similar between 2007 and 2010 reflecting relatively stable attitudes about wildfire (see Appendix B). We see a 17% increase in those who agree that they do not have the money required to reduce risk. This finding appears to be reflecting the economic downturn after 2007; however, this change may also be attributed to respondents developing a fuller understanding of the actions and expense required to mitigate.

Perceptions of Wildfire Risk

In assessing perceptions of risk, we asked respondents about the extent to which a number of factors contribute to the chances of a wildfire damaging their property in the next five years. Here we examine the items that are perceived as major contributors to wildfire risk (Table 6). As in 2007, 2010 respondents focus primarily on ignitions: human activity (79%) and weather-related natural starts such as lightning (72%) as the greatest contributors.

In assessing the characteristics of their own and neighboring properties, 59% of respondents indicate that they think their own vegetation and 61% thought neighboring vegetation is a major contributor to the chances of a wildfire damaging their property.

Table 6—Contributors to chances of wildfire damaging property in the next 5 years.

	Percent reporting 4 or 5 (1 = does not contribute; 5 = major contributor)		<i>p</i> -value for McNemar's test
	2007	2010	
Human activity	68	79	0.011
Weather-related natural starts (e.g., lightning)	71	72	0.890
Vegetation on your neighbors' properties	53	61	0.081
Vegetation on your property	38	59	0.000
Vegetation on nearby National Forest or National Park	50	50	1.000
Physical characteristics of your property other than vegetation (e.g., steep inclines)	37	48	0.018
Vegetation on other nearby public land (e.g., Open Space or greenbelt)	43	45	0.644
Physical characteristics of your house or other buildings (e.g., roofing or siding)	25	43	0.000
Availability of roads for you to exit community and emergency vehicles to enter community	26	37	0.009

Compared to 2007, survey respondents' perceptions of wildfire risk show statistically significant increases on six of the nine assessed factors (listed here in order of the size of change): (1) vegetation on their property, (2) physical characteristics of their homes, (3) availability of access/egress from their community, (4) human activity, (5) physical characteristics of their property other than vegetation (e.g., steep incline), and (6) vegetation on neighbors' properties. Twenty-one percent more survey respondents (from 38% in 2007 to 59% in 2010) report they think vegetation on their property is a major contributor to the chances of a wildfire damaging their property in the next five years. Eighteen percent more survey respondents feel that the physical characteristics of their homes are a major contributor to their wildfire risk. Eleven percent more respondents identify access/egress as a major contributor. While access and egress do not necessarily affect the likelihood of an ignition (though arguably more traffic could increase risk from exhaust fires) it is an important factor in suppression response as well as evacuation. We see an 11% increase in the percent of respondents who identify human activity as a major contributor to wildfire risk.

Finally, there is a 11% increase in the percentage of respondents (from 37% in 2007 to 48% in 2010) that report that the physical characteristics of their property other than vegetation (e.g., steep inclines) is a major contributor to the chances of a wildfire damaging their property in the next five years. While non-vegetative parcel characteristics, such as steep incline, are not features that are easily altered the significantly higher attention to respondents' own vegetation is an increase that is promising for forest and fire managers who are interested in seeing property owners reduce vegetation on their parcels. Further, vegetative reduction can be used to decrease the extent to which non-alterable factors, such as how a structure is sited on a parcel, affects wildfire risk (i.e., targeting more intensive fuel reduction on the downhill side of a structure).

Eight percent more respondents report that neighboring vegetation contributes a lot to their chances of wildfire risk is only marginally significant. This finding suggests that in 2010 the survey respondents might be considering the risks they face with a slightly broader lens than they did when they completed the 2007 survey. Their attention to the extent to which neighboring properties may affect their own risk may be an understanding critical to galvanizing community-level planning.

To better understand how respondents think might be affected by wildfire, we asked them to rate the likelihood of a series of outcomes if there is a wildfire on their property. Here we present the frequency of those reporting the queried outcomes were likely or very likely (Table 7). We see that that in 2010, the outcome thought to be most likely if a wildfire were to occur on their own property is that their trees and landscape would burn (82%). Similarly, 73% of respondents believe that there is a high likelihood that there would be smoke damage. Well over half of the respondents believe that there is a high likelihood that the fire department would save their home (55%). Though 64% of respondents believe that there is a high likelihood that a fire would result in some physical damage to their home, only 40% believe their home would be destroyed.

In comparing 2010 to 2007, we see that expectations that a wildfire would result in damage to trees and landscape increase while remaining at the top of the list.

Table 7—Likelihood of outcomes if there is a wildfire on your property.

	Percent reporting 4 or 5 (1 = not at all likely; 5 = very likely)		<i>p</i> -value for McNemar's test
	2007	2010	
Your trees and landscape would burn.	74	82	0.044
There would be some smoke damage to your home.	58	73	0.002
There would be some physical damage to your home.	50	64	0.001
The fire department would save your home.	48	55	0.134
You would suffer financial losses due to the loss of business/income on your property.	23	41	0.000
Your home would be destroyed.	31	39	0.040
Your pets would be harmed (include non-income generating livestock).	18	26	0.029
You would put the fire out.	16	21	0.164

Eighty-two percent of 2010 respondents believe that there is a high likelihood that a wildfire would result in such losses compared to 74% in 2007. Between 2007 and 2010, we see an increase in the reported likelihood of several other possible fire-related outcomes. In 2010, 73% of respondents believe there is a high likelihood that a fire could result in smoke damage compared to 58% of 2007 respondents. We also see a significant increase (50% to 64%) in those who believe there is a high likelihood that a fire on their property would result in their homes being damaged and marginally significant increase (31% to 39%) of those who believe that there is a high likelihood that a fire would result in destruction of their home. We also see a significant increase in those believing that a wildfire would result in their pets being harmed with 26% believing their pets would likely be harmed in 2010 compared to 18% in 2007. It is notable that the two items where there is no significant increase in perceptions of likely outcomes were related to firefighting. We see a slight increase in those who believe it is likely that the fire department would save their home and an even smaller increase in those who believe they would be able to put the fire out.

Wildfire Risk Information Sources

Respondents were asked about two dimensions of wildfire risk information. They were asked about sources from which they had received wildfire risk information and confidence in the accuracy of each information source (Table 8). In 2010, the local fire department (78%) was the most frequently reported source of information about wildfire risk and, at 86% reporting a lot of confidence, it was one of the two information sources with the highest rating with respect to confidence in the accuracy of the information. The Boulder County wildfire specialist was the other most highly rated information source with respect to confidence in accuracy of information (78% reporting confidence). The second most commonly reported information source was the media (51%), but it was the least highly rated information source with respect to

Table 8—Information sources and confidence in accuracy ($p \leq 0.10^*$, $p \leq 0.05^{**}$, $p \leq 0.01^{***}$).^a

Source	Information		Accuracy	
	Percent reporting having received information from each source		Percent reporting 4 or 5 on 5 point scale (1 = no confidence; 5 = high confidence)	
	2007	2010	2007	2010
Volunteer fire department	73	78	83	86
Media	55	51	34	34
Neighbors, friends, family	43	46	43	42
Neighborhood group	36	43*	46	50
County wildfire specialist	36	42	61	78***
Colorado State Forest Service	34	37	73	77
U.S. Forest Service	25	30	69	75
National Park Service	8	5	59	69**
None	10	3***	-	-

^aThis table is sorted from high to low based on reporting of the accuracy question.

confidence in accuracy of information (34%). Neighborhood groups were reported as an information source by 43% of the survey respondents; neighbors, family, and friends were reported to provide information to 46% of the survey respondents. Survey respondents expressed similar levels of confidence in both neighborhood groups (50%) and neighbors and friends (42%). About a third of respondents said they received information about reducing the risk of wildfire from the Colorado State Forest Service (37%), U.S. Forest Service (30%), or Boulder County wildfire specialist (42%). All three of these sources had high ratings in terms of confidence in the accuracy of information provided (ranging from 75% to 78%).

Compared to 2007, survey respondents express a statistically significant greater level of confidence in the Boulder County wildfire specialist (a 17% increase) as an accurate information source. It is clear that the use and confidence in local expert sources of information, specifically local volunteer fire departments and the county wildfire specialist, highlights the importance of local programs that engage in education and outreach efforts. There is also a 10% increase in those reporting high confidence in the National Park Service as an accurate information source. Finally, we also find a statistically significant decrease in those reporting that they had not received any wildfire risk information (a 7% decrease) indicating that outreach efforts are reaching more people over time.

Taking Action

There are many actions a homeowner can take to mitigate the risk of wildfire, from thinning vegetation to installing a fire resistant roof. Based on Firewise⁴ recommendations and consultation with the Boulder County wildfire specialist, a list of 12 wildfire risk-reducing actions was included in the survey (Table 9). Respondents were

⁴ http://www.firewise.org/-/media/Firewise/Files/Pdfs/Toolkit/FW_TK_Tips.pdf

Table 9—Reported mitigation actions.^a

Mitigation actions	Percent reporting completion/maintenance of each action		p-value for McNemar's test
	2007	2010	
Remove dead or overhanging branches within 30 feet of home	77	85	0.044
Install visible house number	75	80	0.211
Thin trees and shrubs within 30 feet of home	68	80	0.003
Mowed long grasses within 30 feet of home	74	79	0.071
Clear leaves and needles from roof and/or yard within 30 feet of home	69	79	0.030
Prune limbs 6-10 feet from ground within 30 feet of home	65	71	0.126
Install fire resistant roof	59	62	0.377
Thin trees and shrubs 30-100 feet of home	57	62	0.193
Remove dead or overhanging branches 30-100 feet of home	51	62	0.021
Prune limbs 6-10 feet from ground 30-100 feet of home	48	57	0.052
Install screens over roof vents	25	30	0.262
Install fire resistant siding	22	23	0.678

^a Participants were allowed several options related to each possible mitigation action including whether or not the previous owner had completed the action as well as whether or not the action was applicable to their property. Further, in the 2010 survey we added several mitigation actions that had not been asked in 2007. Here we present the data for which comparisons can be made. For reporting on the additional items please see Appendix A.

asked to indicate which actions they had undertaken on their property. As in 2007, we see that wildfire risk mitigation is a matter of degree, not an all-or-nothing proposition. The action taken by the highest number of respondents (85%) is “Removed dead or overhanging branches in area within a 30 foot perimeter around your house or other buildings.” Removing branches, thinning trees and shrubs within a 30 foot perimeter around their house or other structures and installing a visible house number (both 80%) constitutes the next most common actions. These actions are followed closely by mowing grasses and raking leaves (both 79%), which represent two of the least costly and least physically challenging actions homeowners can take to reduce risk within the home ignition zone (Cohen 2000). In terms of structural changes, installing fire resistant roofing is the most common action (62%). Installing fire resistant siding on their home or other buildings and installing screening over roof vents are the two measures implemented least frequently (30% and 23%, respectively). One shortcoming of these data is that we do not know the actual wildfire risk on each parcel. Therefore we cannot make any assessment of whether there is a relationship between mitigation level and wildfire risk ratings. In other words, we do not know if residents with the highest wildfire risk are the most active at taking action to mitigate that risk.

While the levels of completion for every mitigation action increase from 2007 to 2010, six of these increases are statistically significant. There is an increase in the frequency of survey respondents reporting they had taken action to remove dead or overhanging branches within a 30 foot perimeter around the house or other buildings (an 8% increase) as well as in the area 30-100 feet from the home or other structures (an 11% increase). There is also a significant increase in reported thinning of trees and shrubs within a 30-foot perimeter around the house or other buildings (a 12% increase); as well as a significant increase in reported pruning limbs so the lowest is 6-10 feet from the ground in the area 30-100 feet from the home or other structures (an 9% increase). It is notable that these four items require more effort than mowing or clearing leaves or needles indicating that participants are exerting more effort in their mitigation actions. Finally, there is a significant 10% increase in raking and removing leaves from the roof and/or yard within a 30 foot perimeter of the home to reduce wildfire risk and a significant 5% increase in mowing long grasses in the same area.

Respondents were asked how much of a consideration expense, time, physical difficulty, lack of information and likelihood of a fire on their property are in their decision to take action to reduce wildfire risk (Table 10). While the likelihood of wildfire being on a respondent's property remains among the strongest considerations (with 52% in 2007 and 55% in 2010 of respondents indicating it is a strong consideration), we see a significant and dramatic increase in the portion of respondents indicating that the cost of taking action is a strong consideration. In 2007 only 25% indicated this was a strong consideration compared to 60% of 2010 respondents indicating as much only three years later. We suspect that the economic downturn after the 2007 survey is largely responsible for this change, rather than market changes to the costs associated with fuel reduction or structural improvements in the time period between the surveys; however, this change may also be attributed to respondents developing a fuller understanding of the actions and expense required to mitigate.

Along with a higher percentage indicating financial costs are a consideration, we find significant increases in those reporting that the physical difficulty of doing the work and time requirements are strong considerations for taking action.

Table 10—Considerations for taking action.

	Percent reporting 4 or 5 (1 = not a consideration; 5 = strong consideration)		<i>p</i> -value for McNemar's test
	2007	2010	
Financial expense/ cost of taking action	25%	60%	0.000
The likelihood of a wildfire being on your property	52%	55%	0.615
Physical difficulty of doing the work	25%	43%	0.000
Time it takes to implement actions	24%	43%	0.000
Lack of specific information about how to reduce risk	11%	17%	0.111

Determinants of Mitigation Actions

To better understand who adopts different mitigation strategies, we categorized respondents into groups based on the number of mitigation actions they reported implementing: low mitigators (implemented 0 to 4 measures), mid-level mitigators (5 to 9 measures), and high mitigators (10 or more measures). We see significant differences in mitigation level between the two surveys and an increase from 21% in 2007 to 33% in 2010 of those who fall into the category of high mitigators, or those who have implemented 10 or more mitigation actions (Table 11).

We then conducted contingency table analyses using 2010 mitigation responses to look at the relationship between mitigation levels and other survey measures. Here we report the Pearson's chi-square value and the p-values. The results of these analyses shed light on relationships between mitigation levels and other variables but do not allow for attribution of causal effects.

Table 11—Mitigation level by year.

	2007	2010
	--- Percent ---	
Low (0–4 actions taken)	19	15
Mid (5–9 actions taken)	60	52
High (10+ actions taken)	21	33

McNemar-Bowker test = 12.662; *p*-value = 0.005

Characteristics of Survey Respondents And Mitigation

With respect to age, we do not find a significant relationship between age quartiles and 2010 level of mitigation (Pearson's chi-square = 10.132; *p* = 0.119). We do not find a statistically significant relationship between age and mitigation level in 2007.

Gender is not found to be significantly related to the level of mitigation (Pearson's chi-square = 2.762; *p* = 0.251). The lack of a relationship between gender and mitigation level is consistent with the 2007 data. Based on an earlier qualitative study that included Boulder County WUI residents, we speculate that this may be due to the fact that mitigation actions tend to be household decisions that reflect negotiated decisions (Brenkert-Smith and others 2006). Similarly, we find no significant relationships between race, employment, education, income, or marital status and mitigation levels.

Place of Residence and Mitigation

We do not find evidence of a statistically significant relationship between mitigations levels or between level of mitigation and lot size or plans to move in the next five years.

Neighbors and Mitigation

We see significant associations between perceived density on respondent's own property and neighbors' properties and mitigation level. Fifty percent of high mitigators report that the vegetation on their property was dense at the time of move-in compared to only 25% of low mitigators (Pearson's chi-square = 5.095; $p = 0.078$). In contrast, only 2% of high mitigators report that the vegetation on their property is currently dense compared to 18% of low mitigators (Pearson's chi-square = 7.227; $p = 0.027$).

When respondents report on vegetation density on their neighbors' properties, 67% of high mitigators report that their neighbors had dense vegetation at the time of move-in compared to 36% of low mitigators (Pearson's chi-square = 7.595; $p = 0.022$). These results may indicate that high mitigators are more aware of or attuned to the vegetation on their neighbors' properties due to the conditions, the proximity of homes to parcel boundaries, or other reasons not captured in the existing data. We do not, however, see significant differences between mitigation level and respondents' reports on the current vegetation density on their neighbors' properties (Pearson's chi-square = 1.725; $p = 0.422$).

The data suggest the importance of social interactions and mitigation behaviors. We see a significant relationship between mitigation level and talking with a neighbor about wildfire with 95% of high mitigators report talking with a neighbor compared to 75% of low mitigators (Pearson's chi-square 8.042; $p = 0.018$). We also see a significant relationship between respondents reporting that their neighbors reduced risk and respondents taking action themselves with 87% of high mitigators reporting having active neighbors compared to only 54% of low mitigators (Pearson's chi-square = 12.423; $p = 0.014$).

Experience with Wildfire and Mitigation

We see a significant relationship between fire experience and wildfire mitigation activity. Of the respondents reporting having had a fire on their property (10% of respondents), 32% are high mitigators and 63% are mid-level mitigators compared to only 5% being low mitigators. Of the 84% of respondents who experienced fire within 10 miles of their properties, 35% are high mitigators and 52% are mid-level mitigators compared to only 13% being low mitigators (Pearson's chi-square = 20.350; $p = 0.000$). In contrast, we see that 58% of those who have had fire more than 10 miles away are low mitigators compared to 33% who are mid-level and 8% who are high mitigators.

We also see a significant relationship between evacuation experience and mitigation level with 70% of high mitigators reporting having evacuated while 55% of low mitigators do not report experience with evacuation or preparing to evacuate (Pearson's chi-square: 14.508; $p = 0.006$). We do not see a significant relationship between having suffered wildfire-related damages, wildfire experience at a previous residence, or knowing someone who had evacuated or suffered wildfire-related losses and mitigation level.

We see a significant relationship between reported awareness of wildfire risk at time of moving into their current residence and mitigation activity (Pearson's chi-square = 16.770; $p = 0.010$). Of those reporting being very aware, 56% were high mitigators compared to only 30% of mid-level mitigators and 21% of low mitigators – indicating that those knowingly moving into a fire-prone area may be more willing to act on that known risk.

Attitudes Toward Wildfire and Mitigation

Despite seeing significant increases in respondents reporting financial expense, physical efforts, and time required as important considerations when deciding to take action (Table 6) we find little association between these considerations and mitigation outcomes. For example, financial cost, physical difficulty, lack of specific information, and the likelihood of a wildfire being on their property are not significantly related to mitigation outcomes. The only significant association found is between the time required to implement risk reduction measures and mitigation level. Of those indicating that the time it takes to implement actions is a consideration, 56% are mid-level mitigators compared to 20% low and 24% high mitigators (Pearson's chi-square = 7.202; $p = 0.027$).

When we asked survey respondents to indicate their strength of agreement with 17 statements about wildfire risk we find statistically significant relationships between six of the items and mitigation levels. Mid-level and high mitigators are more likely to agree with the following statement than low mitigators: “During a wildfire, saving homes should be a priority over saving forests.” Eighty-nine percent of mid-level and 79% of high mitigators agree with the statement compared with 62% of low mitigators (Pearson's chi-square = 10.777; $p = 0.005$).

In contrast, we see that low mitigators are more likely to agree with the statement: “You don't take action to reduce the risk of loss due to a wildfire because if a wildfire reaches your property firefighters will protect your home” than mid-level or high mitigators. (Pearson's chi-square = 9.725; $p = 0.008$). In these data, only 2% of mid-level and high level mitigators (compared to 14% of low mitigators) agree with this statement. These results may indicate that respondents are using mitigation activity as a way to bolster the likelihood that firefighters will evaluate their homes defensible.

In some cases, high and low mitigators have more in common. For example, 40% of high and 40% of low mitigators agree with the statement: “Naturally occurring wildfire is not the problem; people who choose to live in fire prone areas are the problem.” Whereas only 21% of mid-level mitigators agreed (Pearson's chi-square = 8.777; $p = 0.012$).

Finally and interestingly, we see that compared to low and high mitigators, mid-level mitigators were *more* likely to agree with the statements:

- Your property is not at risk of wildfire. (Pearson's chi-square = 5.789; $p = 0.055$)
- Wildfires are a natural part of the balance of a healthy forest/ecosystem. (Pearson's chi-square = 6.318; $p = 0.042$)
- Wildfires that threaten human life should be put out. (Pearson's chi-square = 5.016; $p = 0.081$).

Perceptions of Wildfire Risk and Mitigation

When considering the relationship between likely outcomes given a wildfire burning on their property and mitigation outcomes, we see remarkable consistency across mitigation level in regards to expected fire outcomes. We find no statistical differences between mitigation level and perceived likelihood of being able to put out the fire themselves with less than a quarter of each group reporting thinking that outcome is very likely (Pearson's chi-square = 2.022; $p = 0.364$).

The respondents are fairly confident in the likelihood that the fire department would save their home with over 50% of each group indicating they think that this outcome is likely or very likely (Pearson's chi-square = 0.458; $p = 0.795$). Despite confidence in the ability of a fire department to save their homes, about 70% of each group indicate that they think there is a high likelihood that their home would suffer smoke damage (Pearson's chi-square = 1.253; $p = 0.534$) and 63% of mid-level and high compared to 70% of low mitigators believe there is a high likelihood that their home would suffer damage (Pearson's chi-square = 0.504; $p = 0.777$). About 40% of each group think that there is a high likelihood that their home would be destroyed (Pearson's chi-square = 0.674; $p = 0.714$).

Finally, we see no significant differences across mitigation level in beliefs regarding likelihood of suffering financial losses (Pearson's chi-square = 0.714; $p = 0.700$). Similarly, we see no significant differences in perceived likelihood of landscape burning, pets being harmed, or neighbors' homes being damaged. Over 75% of each group believe that their landscape would burn (Pearson's chi-square = 1.972; $p = 0.373$) while most believe that their pets would not be harmed (Pearson's chi-square = 1.057; $p = 0.589$). The groups are almost evenly split with at least 55% of each group believing their neighbors' homes would experience damage and those that believed otherwise (Pearson's chi-square = 0.652; $p = 0.722$).

We did find a significant relationship between perceived contributors to wildfire risk and wildfire risk mitigation levels (Pearson's chi-square = 5.812; $p = 0.055$). Forty-eight percent of participants believe that the physical characteristics of their properties, other than vegetation (such as slope), contribute to the chances that wildfire risk will damage their property. Within this group, 41% of high mitigators and 50% are mid-level mitigators whereas 10% are low mitigators.

Fifty percent of the respondents believe that their neighbors' vegetation contributes to the chances that wildfire risk will damage their property. Within this group, the majority are mid-level mitigators (48%) and high-level mitigators (41%). Only 11% of low-mitigators believe that vegetation on their neighbors' properties contributes to the chances that wildfire risk will damage their property (Pearson's chi-square = 9.012; $p = 0.011$). In contrast, there are no significant associations between mitigation level and vegetation on one's own property, physical characteristics of participants' homes or other buildings, vegetation on nearby National Forest or National Park lands or on other public lands, human activity, weather-related natural starts, or availability of access/egress roads.

Despite seeing significant increases in reported concern between 2007 and 2010 surveys, there are no significant associations between reported concern in 2010 and mitigation level (see Table 4 for items queried).

Wildfire Risk Information Sources and Mitigation

Compared to low mitigators, both mid-level and high mitigators are more likely to have received information from a variety of information sources. There is a significant relationship between the percent of respondents that received information from the volunteer fire department (VFD) and their level of mitigation. Fifty percent of those who received information from the VFD are mid-level mitigators, 38% are high-level mitigators, whereas only 12% are low mitigators (Pearson's chi-square = 9.506; $p = 0.009$). Among the 42% of respondents who received information from the county wildfire specialist, 49% are mid-level, 42% are high-level mitigators, and only 9% are low mitigators (Pearson's chi-square = 6.389; $p = 0.041$). Among the 37% of respondents who received information from the Colorado State Forest Service, 43% are mid-level and high level mitigators and only 14% are low mitigators (Pearson's chi-square = 4.979; $p = 0.083$).

There is no significant difference between mitigation levels for receiving information from neighborhood groups, neighbors, friends, and family; media; USFS; NPS; and for those reporting receiving no information. Likewise, there are no significant difference between mitigation level and reported confidence in wildfire risk information sources.

Climate and Wildfire

As the scientific evidence documenting the links between climate change and wildfire activity is being strengthened (Westerling 2006; Climate Central 2012), we were interested in understanding how those living in fire-prone areas understand the link. As such, in 2010 we added a series of questions that specifically addressed climate and wildfire to the survey. Since we did not ask these questions in 2007, we cannot examine change over time. However, our data allow us to examine the portion of survey respondents agreeing with a series of climate-related statements as well as the relationship with their stated climate beliefs and their reported wildfire mitigation behaviors.

Overall, we see widespread agreement that climate change is real and little support for the assertion that climate change is a hoax (Table 12). We also see that the majority of respondents believe that there is scientific consensus on the existence of climate change and almost half believe there is scientific consensus on the anthropogenic nature of climate change. Importantly, we see that over half (55%) of respondents feel that they are knowledgeable about climate change.

With regard to the climate-wildfire link we see that over half (59%) of respondents believe that climate change has already increased the risk but less than 20% believe that climate change will increase future risk. Importantly, only 9% of survey respondents believe that climate change and wildfire risk are *not* related, indicating that, on

Table 12—Climate change beliefs and mitigation level.

	Percent reporting 4 or 5 (1 = strongly disagree; 5 = strongly agree)	Test of association between climate change beliefs and level of wildfire mitigation	
		Pearson's chi-square	<i>p</i> -value
Climate change is real	87	0.863	0.930
Most scientists agree that climate change exists	84	2.250	0.690
Most scientists agree climate change is caused by humans	74	0.510	0.982
Humans are largely responsible for climate change	72	0.943	0.918
Climate change has increased the risk of wildfires in Boulder and Larimer counties	59	4.121	0.390
I know a lot about climate change	55	2.196	0.700
Climate change has not yet increased wildfire risk in Larimer and Boulder counties but it will in the future	19	1.667	0.797
I am skeptical about the existence of climate change	11	2.087	0.720
Climate change is a hoax	9	1.530	0.821
Climate change and wildfire risk are not related	9	2.189	0.701

the whole, survey respondents recognize the climate/wildfire link that is consistently being documented in research on the American West.

Despite the relatively strong demonstration of belief in climate change, the anthropogenic nature of climate change, and the link to wildfire risk we do not find a statistical relationship between these beliefs and wildfire mitigation activity. This reflects gaps apparent in the research world that until recently has treated global climate modeling and hazard management separately. While the effects of climate change will be felt in this county in the future there is much to be learned about how those who will feel those effects most directly understand and respond to the risks.

Summary

This data set provides the unique ability to examine changes in attitudes, beliefs, and behaviors over time by presenting a paired household data set from surveys conducted in 2007 and 2010. Overall, we see significant increases in overall concern about wildfire risk and changes in perceptions of likely outcomes associated with wildfire events.

What is particularly unique for this data set is that the surveys were conducted before and after a major wildfire event in Boulder County. While we are unable to determine the extent to which the events of the Fourmile Canyon Fire specifically had on attitudes, beliefs, and behaviors among study respondents, it is apparent that the

Boulder County respondents demonstrated change over time in different ways than the respondents in the adjacent Larimer County (See RN ## TBA).

The data from this survey, along with the companion data from Larimer County (See RN ## TBA) demonstrate the value of collecting data beyond the community case-study scale. While we see some consistency across the two counties over the two survey periods, we also see some differences in trajectory in the responses from the two counties; the extent to which the differences are related to policy-level differences between the counties, the unfolding of major wildfire events in one county and not the other, or a combination of these and other factors remains to be seen but provides interesting avenues for future inquiry.

Most notable, perhaps, is that we see that survey respondents are aware of wildfire risk and are continuing to take action to reduce risk and are not simply passive in the face of escalating risk.

Acknowledgments

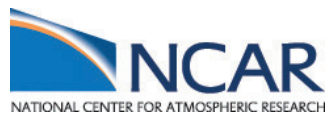
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Appendix A: Boulder County 2010 Survey

Living with Wildfire in Colorado



University of Colorado at Boulder

Panel subset: N=195**Mode of response:** Paper 162 (83.1%); Web 33 (16.9%)1.1. Do you recall completing the 2007 survey? (*Circle one number*) 2007 (n=193)

- 1 No (51.8%)
- 2 Yes (48.2%)

Section 1: In the first section, we ask questions about where you live. If you own multiple homes, please answer the following questions with respect to the home located in the fire prone area of Boulder or Larimer County. We refer to this home as your *current residence*.

1.2. Do you own or rent your current residence? (*Circle one number*) OWNRENT (n=195)

- 1 Own (100%)
- 2 Rent (0%)

1.3. In what year did you move to your residence? (*Fill in the blank*)

_____ FULLTIME _____ Year moved in (n= 188) Mean tenure= 19.48 years

1.4. In what year was your current residence originally built? (*Fill in the blank*)

_____ YRBUILD _____ Year current residence was built (n=195) Mean age of structure= 36.74 years

1.5. Do you have homeowner's or renter's insurance? (*Circle one number*) INSURE (n=195)

- 1 No (1%)
- 2 Yes (99%) →

1.6. Including yourself, how many people live in your current residence? *(Fill in the blanks)*

(n=192) Mean = 1.81

OVER18 Number of people *over* the age of 18 living in your current residence

(n=107) Mean = .36

UNDER18 Number of people *under* the age of 18 living in your current residence

1.7. Do you have pets or non-income generating livestock at your residence? *(Circle one number)* PETS

(n=195)

- 1 No (33.8%)
- 2 Yes (66.2%)

1.8. What size is your parcel? *(Circle one number)* LOTSIZE (n=195)

- 1 Around ¼ acre or less (¼ acre = 10,890 square feet) (9.2%)
- 2 ¼ acre to 2 acres (50.8%)
- 3 Larger than 2 acres → (40.0%)

How many acres is your lot? *(Fill in the blank)*

(n=75) Mean= 10.87 acres ACRES Number of acres

1.9. Do you expect to move away and/or sell your current residence in the next five years? *(Circle one number)*

MOVE1 (n=192)

- 1 No → Skip to Section 2 (84.4%)
- 2 Yes, move and sell current residence (15.1%)

3 Yes, move but keep current residence (.5%)

1.10. How important were each of the following reasons in your decision to move away from your current residence in the next five years? (*Circle one number for each item*)

	Not Important				Very Important
Concern about wildfire	1	2	3	4	5
MOVEWHY1 (n=31) Mean = 2.81	29.0%	16.1%	19.4%	16.1%	19.4%
Traumatic experience at the current location	1	2	3	4	5
MOVEWHY2 (n=30) Mean = 1.73	63.3%	10.0%	20.0%	3.3%	3.3%
Change in aesthetic features of the landscape (e.g. burned trees)	1	2	3	4	5
MOVEWHY3 (n=31) Mean = 2.00	61.3%	0%	16.1%	22.6%	0%
Loss or damage to house	1	2	3	4	5
MOVEWHY4 (n=31) Mean = 1.65	64.5%	12.9%	16.1%	6.5%	0%
Long distance to commute to work place	1	2	3	4	5
MOVEWHY5 (n=32) Mean=2.28	46.9%	12.5%	15.6%	15.6%	9.4%
Logistical challenges of having school-aged children	1	2	3	4	5
MOVEWHY6 (n=29) Mean = 1.34	86.2%	3.4%	3.4%	3.4%	3.4%
Other (<i>please specify</i>):	1	2	3	4	5
MOVEWHY7 (n=20) Mean = 3.90	20.0%	0%	0%	30.0%	50.0%

Section 2: We would like to know about your experience with wildfire. Even if you have not ever experienced a wildfire, please answer the following questions.

2.1. Since you have lived at your current residence, what is the closest a wildfire has come to your property? (*Circle one number*) FIRE (n=195)

1 There has been a wildfire on your property (10.3%)

- 2 Less than 10 miles (83.6%)
- 3 More than 10 miles away (6.2%)
- 4 Not sure (0%)

2.2. Has your current residence ever been damaged by a wildfire or smoke from wildfire? (*Circle one number*)

DAMAGE (n=194)

- 1 No (92.3%)
- 2 Yes, my current residence suffered fire and smoke damage (3.6%)
- 3 Yes, my current residence suffered only smoke damage (4.1%)

2.3. Have you ever been evacuated from your current residence due to a wildfire or threat of a wildfire or received a reverse 911 call to prepare to evacuate? (*Circle one number*) EVACUATE (n=195)

- 1 No (27.2%)
- 2 Yes, evacuated (62.1%)
- 3 Yes, prepared to evacuate (10.8%)

2.4. Have you ever faced a wildfire threat at a previous residence (in Colorado or elsewhere)? (*Circle one number*) PREVIOUS (n=195)

- 1 No (84.6%)
- 2 Yes (15.4%)

2.5. Do you personally know anyone who has been evacuated from her/his residence due to a wildfire? (*Circle all that apply*) (n=195)

- 1 No, you don't know anyone who was ever evacuated KNOW1 (5.66.8%)

- 2 Yes, you know someone who was evacuated in the last 5 years KNOW2 (93.3%)
- 3 Yes, you know someone who was evacuated more than 5 years ago KNOW3 (19.0%)

2.6. Do you personally know anyone whose residence has been damaged or lost due to a wildfire?
(Circle all that apply) (n=195)

- 1 No, you don't know anyone whose residence has been damaged or lost due to a wildfire LOST1
(34.4%)
- 2 Yes, you know someone whose residence has been damaged or lost in the last 5 years LOST2
(61.0%)
- 3 Yes, you know someone whose residence has been damaged or lost more than 5 years ago LOST3
(13.8%)

2.7. How aware of wildfire risk were you when you bought or decided to rent your current residence or property? (Circle one number) RISKAWAR (n=195)

- 1 Not aware (11.3%)
- 2 Somewhat aware (49.2%)
- 3 Very aware (37.4%)
- 4 Don't remember (2.1%)

2.8. Are there characteristics or features on your property that you think make it particularly susceptible to wildfire? (Circle one number) PROPRIISK (n=194)

- 1 No (44.8%)
- 2 Yes (55.2%) → (please specify): _____ PROPWHAT

In the following questions, *vegetation* means any kind of plant, such as grasses, shrubs, or trees.

2.9. How much do you think each of the following factors contributes to the chances of a wildfire damaging your property **in the next 5 years?** (Circle one number for each item)

	Does not contribute			Contributes a lot	
	1	2	3	4	5
Vegetation on your property					
CONTRIB1 (n=194) Mean= 3.72	3.6%	14.9%	22.2%	24.7%	34.5%
Physical characteristics of your property other than vegetation (e.g., steep inclines)					
CONTRIB2 (n=190) Mean = 3.31	14.2%	13.7%	24.2%	23.2%	24.7%
Physical characteristics of your house or other buildings (e.g., roofing or siding)					
CONTRIB3 (n=192) Mean= 3.21	9.4%	25.5%	21.9%	21.4%	21.9%
Vegetation on your neighbors' properties					
CONTRIB4 (n=192) Mean= 3.70	7.3%	14.1%	18.2%	21.9%	38.5%
Vegetation on nearby National Forest or National Park					
CONTRIB5 (n=186) Mean= 3.17	25.3%	13.4%	11.8%	18.3%	31.2%
Vegetation on other nearby public land (e.g., Open Space or greenbelt)					
CONTRIB6 (n=179) Mean= 3.04	27.4%	12.3%	16.2%	16.8%	27.4%
Human activity					
CONTRIB7 (n=190) Mean= 4.22	4.2%	5.8%	11.1%	21.6%	57.4%
Weather-related natural wildfire starts (e.g., lightning)					
CONTRIB8 (n=191) Mean= 4.02	1.6%	4.7%	22.0%	33.5%	38.2%
Availability of roads to exit community and emergency vehicles to enter community					
	1	2	3	4	5

3.1. Have any of the following actions been completed on your property? (Check one box for each action) n=195

	Completed by previous owner	Completed/ Maintained regularly by you	Plan to Complete	Not applicable
Within a 30 foot perimeter from your house or other buildings:				
Pruned limbs so lowest is 6-10 feet from the ground	LIMB30C 2.1%	LIMB30M 71.0%	LIMBCP 18.7%	LIMB30NA 4.7%
Removed dead or overhanging branches	BR30C .5%	BR30M 84.5%	BR30P 12.4%	BR30NA 2.1%
Thinned trees and shrubs	THIN30C 1.6%	THIN30M 79.8%	THIN30P 9.8%	THIN30NA 6.7%
Cleared leaves and pine needles from the roof and/or yard	LEAF30C 1.0%	LEAF30M 78.8%	LEAF30P 7.3%	LEAF30NA 10.9%
Mowed long grasses	MOW30C 0%	MOW30M 79.3%	MOWCOP 7.3%	MOW30NA 11.4%
In area 30-100 feet from your house or other buildings:				
Pruned limbs so lowest is 6-10 feet from the ground	LIMBGT30C .5%	LIMBGT30M 56.5%	LIMBGT30P 18.1%	LIMBGT30NA 15.0%
Removed dead or overhanging branches	BRGT30C .5%	BRGT30M 61.7%	BRGT30P 14.0%	BRGT30NA 14.0%
Thinned trees and shrubs	THINGT30C 0%	THINGT30M 62.2%	THINGT30P 16.1%	THINGT30NA 14.0%
Cleared leaves and pine needles from the yard	LEAFGT30C 0%	LEAFGT30M 34.2%	LEAFGT30P 18.7%	LEAFGT30NA 27.5%
Mowed long grasses	MOWFT30C 0%	MOWGT30M 50.8%	MOWGT30P 12.4%	MOWGT30NA 22.8%
To your house:				
Installed a fire resistant roof	ROOFC 11.4%	ROOFM 62.2%	ROOFP 6.2%	ROOFNA 9.8%
Installed fire resistant siding on house or other buildings	SIDEC 5.2%	SIDEM 23.3%	SIDEP 11.9%	SIDENA 33.2%
Installed fire resistant decking	DECKC 2.6%	DECKM 21.2%	DECKP 19.7%	DECKNA 30.1%
Replaced exterior wood stairs and balconies	STAIRC .5%	STAIRM 15.0%	STAIRP 16.1%	STAIRNA 40.9%
Installed screening over roof vents	SCREENC 5.2%	SCREENM 29.5%	SCREENP 13.5%	SCREENNA 28.0%
Installed fire resistant landscaping (ex. rock) within 3	ROCKC	ROCKM	ROCKP	ROCKNA

to 5 feet of the house or other buildings 4.7% 38.3% 13.0% 20.7%

	NUMBERC	NUMBERM	NUMBERP	NUMBERNA
Installed house number in clearly visible place	8.3%	79.8%	8.3%	2.6%

3.2. Assume there are grants available to encourage homeowners to complete wildfire risk reduction actions. What is the smallest amount of money you would accept to complete any actions listed below that **have not already been completed** on your property? (Check one box for each action that has not been completed)

	Less than \$500	\$500-\$999	\$1000-\$1499	\$1500-\$1999	\$2000-\$2499	\$2500-\$2999	More than \$3000	Would NOT
Within a 30 foot perimeter from your house or other buildings:								
Prune limbs so lowest is 6-10 feet from the ground	1	2	3	4	5	6	7	8
LIMB30PAY (n=121) Mean= 2.07	62.8%	16.5%	8.3%	2.5%	0%	.8%	.8%	8.3%
Remove dead or overhanging branches	1	2	3	4	5	6	7	8
BR30PAY (n=116) Mean= 1.1.54	62.9%	18.1%	9.5%	2.6%	0%	.9%	.9%	5.2%
Thin trees and shrubs	1	2	3	4	5	6	7	8
THIN30PAY (n=120) Mean= 1.57	51.7%	20.8%	11.7%	1.7%	.8%	2.5%	2.5%	8.3%
In area 30-100 feet from your house or other buildings:								
Prune limbs so lowest is 6-10 feet from the ground	1	2	3	4	5	6	7	8
LIMB100PAY (n=126) Mean= 1.87	46.0%	22.2%	12.7%	4%	4.0%	0%	2.4%	8.7%
Remove dead or overhanging branches	1	2	3	4	5	6	7	8
BR100PAY (n=120) Mean= 1.93	50.0%	21.7%	11.7%	2.5%	3.3%	0%	3.3%	7.5%
Thin trees and shrubs	1	2	3	4	5	6	7	8
THIN100PAY (n=131) Mean= 2.34	39.7%	22.1%	12.2%	5.3%	4.6%	.8%	6.1%	9.2%
To your house:								
Install a fire resistant roof	1	2	3	4	5	6	7	8
ROOFPAY (n=103) Mean= 5.50	10.7%	3.9%	3.9%	6.8%	3.9%	6.8%	53.4%	10.7%
Install fire resistant siding on house or other buildings	1	2	3	4	5	6	7	8
SIDEPAY (n=146) Mean= 5.83	4.8%	3.4%	3.4%	5.5%	6.8%	7.5%	51.4%	17.1%
Install fire resistant decking	1	2	3	4	5	6	7	8

DECKPAY (n=143) Mean= 5.08	5.6%	6.3%	11.2%	7.7%	9.1%	9.1%	34.3%	16.8%
Replace exterior wood stairs and balconies	1	2	3	4	5	6	7	8
STAIRPAY (n=129) Mean= 4.83	8.5%	6.2%	9.3%	7.8%	12.4%	7.8%	28.7%	19.4%
Install fire resistant landscaping (ex. rock) within a 3-5 ft perimeter of house or other buildings	1	2	3	4	5	6	7	8
ROCKPAY (n=129) Mean= 3.50	17.1%	14.7%	15.5%	5.4%	9.3%	3.9%	13.2%	20.9%

3.3. Do you currently have an evacuation plan in the event of a wildfire threatening your home or property? (Circle one number) EVACPLAN (n= 192)

1 No (18.8%)

2 Yes (81.3%)

3.4. Do you currently have any emergency plan for reducing the risk of losing your home due to a wildfire that you would implement in the event of a wildfire threatening your home? (e.g., cutting trees, mowing lawn, using fire retardant) (Circle one number) EMERPLAN (n=187)

1 No (53.5%)

2 Yes (46.5%) → Please explain: _____ PLANWHAT _____

3.5. When deciding whether to take action to reduce the risk of loss due to wildfire on your property, how much of a consideration is each of the following items? (Circle one number for each item)

	Not a Consideration		Strong Consideration		
	1	2	3	4	5
Financial expense/ Cost of action					
CONSID1 (n= 185) Mean = 3.71	9.2%	11.4%	19.5%	18.9%	41.1%
Time it takes to implement actions	1	2	3	4	5

CONSID2 (n=184) Mean = 3.12	17.4%	15.2%	24.5%	23.9%	19.0%
Physical difficulty of doing the work	1	2	3	4	5
CONSID3 (n=185) Mean = 3.11	18.9%	15.7%	22.2%	22.2%	21.1%
Lack of specific information about how to reduce risk	1	2	3	4	5
CONSID4 (n= 185) Mean = 2.12	43.2%	22.2%	17.8%	12.4%	4.3%
The likelihood of a wildfire being on your property	1	2	3	4	5
CONSID5 (n=184) Mean = 3.53	13.0%	8.7%	23.4%	22.3%	32.6%
Efficacy of mitigation actions	1	2	3	4	5
CONSID6 (n=182) Mean = 3.37	12.6%	10.4%	29.1%	22.5%	25.3%

3.6. From which of the following sources have you received information from about reducing the risk of wildfire? (*Circle all that apply*) (n=195)

- 1 Local Fire Department SOURCE1 78.4%
- 2 Neighborhood group (homeowners group, local board, etc.) SOURCE2 43.2%
- 3 Neighbors, friends, or family members SOURCE3 46.3%
- 4 Media (newspaper, TV, radio, internet) SOURCE4 51.1%
- 5 County wildfire specialist SOURCE5 41.6%
- 6 Colorado State Forest Service SOURCE6 36.8%
- 7 US Forest Service SOURCE7 30.0%
- 8 National Park Service SOURCE8 5.3%
- 9 Other →Please describe: _____ SOURCE9 10.0%
- 10 None of the above, you have not received any information about wildfire risk. SOURCE10 3.1%

3.7. How much confidence do you have in the accuracy of wildfire risk information provided by the following sources? (Circle one number for each source)

	No Confidence		A lot of Confidence		
	1	2	3	4	5
Local fire department	1	2	3	4	5
SCON1 (n=187) Mean 4.42	.5%	2.1%	11.8%	25.7%	59.9%
Neighborhood group (homeowners group, local board, etc.)	1	2	3	4	5
SCON2 (n=161) Mean = 3.40	11.2%	9.9%	28.6%	28.6%	21.7%
Neighbors, friends, or family members	1	2	3	4	5
SCON3 (n=177) Mean = 3.35	4.5%	14.1%	39.5%	25.4%	16.4%
Media (newspaper, TV, radio, internet)	1	2	3	4	5
SCON4 (n= 174) Mean= 3.05	8.6%	18.4%	39.1%	27.6%	6.3%
County wildfire specialist	1	2	3	4	5
SCON5 (n=168) Mean = 4.23	2.4%	3.0%	16.7%	25.0%	53.0%
Colorado State Forest Service	1	2	3	4	5
SCON6 (n=167) Mean = 4.19	1.8%	3.6%	18.0%	27.5%	49.1%
U.S. Forest Service	1	2	3	4	5
SCON7 (n=162) Mean = 4.07	4.3%	4.9%	16.0%	29.0%	45.7%
National Park Service	1	2	3	4	5
SCON8 (n=146) Mean = 3.90	5.5%	10.3%	16.4%	24.7%	43.2%
Other: ____ (SCONWHO)_____	1	2	3	4	5
SCON 9 (n=20) Mean = 3.44	18.8%	0.0%	25.0%	31.3%	25.0%

Section 4: In this section, we are interested in your perspectives and opinions about issues such as wildfire, wildfire management, and the environment. There are no correct or incorrect answers.

4.1. If there is a wildfire on your property, how likely do you think it is that the following would occur?
(Circle one number for each item)

	Not Likely				Very Likely	Not Applicable
	1	2	3	4	5	6
You would put the fire out.	1	2	3	4	5	6
LACT1 (n=184) Mean=2.22	44.0%	21.2%	13.6%	10.9%	10.3%	.5%
The fire department would save your home.	1	2	3	4	5	6
LACT2 (n=184) Mean= 3.58	5.4%	12.5%	27.2%	28.3%	26.6%	.5%
There would be some smoke damage to your home.	1	2	3	4	5	6
LACT3 (n=184) Mean= 4.14	2.7%	2.7%	21.7%	23.4%	49.5%	1.5%
There would be some physical damage to your home.	1	2	3	4	5	6
LACT4 (n=185) Mean= 3.91	1.6%	7.0%	27.0%	27.6%	36.8%	1.5%
Your home would be destroyed.	1	2	3	4	5	6
LACT5 (n=186) Mean= 3.27	7.0%	16.7%	37.1%	20.4%	18.8%	1.0%
You would suffer financial losses due to the loss of business/income on your property.	1	2	3	4	5	6
LACT6 (n=168) Mean= 2.87	34.5%	14.3%	10.7%	10.7%	29.8%	9.7%
Your trees and landscape would burn.	1	2	3	4	5	6
LACT7 (n=182) Mean= 4.37	1.6%	3.8%	12.6%	19.2%	62.6%	2.6%
Your pets would be harmed (include non-income generating livestock).	1	2	3	4	5	6
LACT8 (n=152) Mean= 2.63	28.3%	18.4%	27.6%	13.2%	12.5%	14.9%

Your neighbors' homes would be damaged or destroyed.	1	2	3	4	5	6
LACT9 (n=183) Mean= 3.72	4.9%	7.1%	29.5%	28.4%	30.1%	1.5%
Your community water supply would be threatened.	1	2	3	4	5	6
LACT10 (n= 166) Mean= 2.51	33.7%	22.9%	16.9%	11.4%	15.1%	9.2%
The fire would spread to nearby public lands.	1	2	3	4	5	6
LACT11 (n=178) 3.98	5.6%	9.6%	14.0%	22.5%	48.3%	4.1%

4.2. How much do you agree or disagree with the following statements about wildfire? (*Circle one number for each statement*)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Naturally occurring wildfire is not the problem; people who choose to live in fire prone areas are the problem.	1	2	3	4	5
STATE1(n=186) Mean = 3.25	7.5%	21.5%	27.4%	25.8%	17.7%
With proper technology, we can control most wildfires after they have started.	1	2	3	4	5
STATE2 (n=187) Mean = 3.44	1.1%	19.3%	26.7%	40.1%	12.8%
Wildfires that threaten human life should be put out.	1	2	3	4	5
STATE3 (n=188) Mean = 1.57	55.9%	35.6%	5.9%	1.1%	1.6%
Wildfires that threaten property should be put out.	1	2	3	4	5
STATE4 (n=185) Mean = 1.92	32.4%	49.7%	11.9%	4.9%	1.1%
During a wildfire, saving homes should be a priority over saving forests.	1	2	3	4	5
STATE5 (n=187) Mean = 1.90	35.3%	46.0%	13.9%	3.2%	1.6%
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	1	2	3	4	5

STATE6 (n=191) Mean = 1.63	50.8%	38.7%	7.9%	1.6%	1.0%
You do not need to take action to reduce the risk of loss due to wildfire because the risk is not that great.	1	2	3	4	5
STATE7 (n=189) Mean = 4.41	1.1%	1.6%	4.8%	40.7%	51.9%
You do not have the time to implement wildfire risk reduction actions.	1	2	3	4	5
STATE8 (n=188) Mean = 3.98	1.1%	5.9%	19.1%	41.5%	32.4%
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
You do not have the money for wildfire risk reduction actions.	1	2	3	4	5
STATE9 (n=187) Mean = 3.24	8.6%	21.9%	23.5%	28.9%	17.1%
You do not need to act to reduce the risk of loss due to wildfire because you have insurance.	1	2	3	4	5
STATE10 (n=188) Mean = 4.28	1.1%	3.7%	8.06%	41.0%	46.3%
You live here for the trees and will not remove any of them to reduce fire risk.	1	2	3	4	5
STATE11 (n=188) Mean = 4.11	1.6%	4.3%	12.8%	44.7%	36.7%
A wildfire is unlikely to happen within the time period you expect to live here.	1	2	3	4	5
STATE12 (n=188) Mean = 3.91	4.8%	5.9%	17.0%	37.8%	34.6%
Managing the wildfire danger is a government responsibility, not yours.	1	2	3	4	5
STATE13 (n=187) Mean = 4.12	1.6%	2.1%	17.1%	41.2%	38.0%
Actions to reduce the risk of loss due to wildfire are not effective.	1	2	3	4	5
STATE14 (n=189) Mean = 4.09	0.0%	4.2%	18.0%	42.3%	33.4%
Your property is not at risk of wildfire.	1	2	3	4	5
STATE15 (n=190) Mean = 4.30	0%	4.7%	6.3%	43.2%	45.8%

You don't take action to reduce the risk of loss due to wildfire because if a wildfire reaches your property firefighters will protect your home.	1	2	3	4	5
STATE16 (n=188) Mean = 4.25	.5%	3.2%	8.0%	47.3%	41.0%
You don't take action because adjacent properties are not treated leaving your actions ineffective.	1	2	3	4	5
STATE17 (n=189) Mean = 3.97	2.1%	7.4%	17.5%	37.0%	36.0%

Section 5: In this section, please think about the properties directly across the road or alley and those that share a property line with yours. The following questions refer to these properties or to those who live there as your **neighbors**.

5.1. Have you ever talked about wildfire issues with a neighbor? (*Circle one number*)

TALKFIRE (n=189)

- 1 No (14.3%)
- 2 Yes (85.7%)

5.2. Have any of your neighbors done anything to reduce the risk of wildfire on their property? (*Circle one number*) NACTION (n=189)

- 1 No 15.9% → Skip to Question 5.5
- 2 Yes 73.5% → Please describe: _____ ACTIONWHAT _____
- 3 Don't know 10.6% → Skip to Question 5.5

5.3. When did your neighbors undertake action(s) to reduce risk of wildfire on their property in relation to any actions you have undertaken? (*Circle one number*) WHENACT (n=137)

- 1 You have not taken any action .7%
- 2 They took action before you did 10.2%

- 3 They took action after you did 34.3%
- 4 They plan to take action .7%
- 5 We took action around the same time 40.9%
- 6 Don't know 13.1%

5.4. Have you ever worked with any of your neighbors to reduce the risk of wildfire on your property or that of your neighbors? *(Circle one number)* WORKN (n=140)

- 1 No 43.6%
- 2 Yes, on your property 5.0%
- 3 Yes, on your neighbors' properties 11.4%
- 4 Yes, on both 40.0%

5.5. Do you have any neighbors who are **not** taking action to address what you would consider sources of wildfire risk in the event of a wildfire (*e.g.*, dense vegetation) on their property? *(Circle one number)* SLACKER (n=188)

- 1 No 19.1%
- 2 Yes 67.0%
- 3 Don't know 13.8%

5.6. How would you describe the vegetation on your property and your neighbors' properties? *(Circle one number for each)*

	Very Sparse				Very Dense
	1	2	3	4	5
When you first moved into your house, the vegetation on <i>your</i> property was...					
VEG1 (n=189) Mean = 3.33	7.9%	12.7%	35.4%	26.5%	17.5%
Currently, the vegetation on <i>your</i> property is...	1	2	3	4	5

Build up of vegetation on public land.		1	2	3	4	5
DANGER1 (n=188) Mean = 3.81	5.3%	5.9%	27.1%	25.5%	36.2%	
The number of houses being built in your community.		1	2	3	4	5
DANGER2 (n=186) Mean = 2.49	21.5%	31.2%	30.1%	10.8%	6.5%	
Timber cutting practices.		1	2	3	4	5
DANGER3(n=185) Mean = 2.63	25.9%	20.0%	28.1%	16.8%	9.2%	
Vandalism and/or arson.		1	2	3	4	5
DANGER4 (n=187) Mean = 2.67	23.0%	27.3%	24.1%	10.7%	15.0%	
Recreational use on public lands.		1	2	3	4	5
DANGER5 (n=186) Mean = 3.45	7.5%	12.4%	31.7%	24.7%	23.7%	
Natural processes (droughts, changes in vegetation over time, lightning, etc.).		1	2	3	4	5
DANGER6 (n=189) Mean = 4.22	0.0%	2.6%	16.9%	36.5%	43.9%	
Larger environmental changes such as global warming.		1	2	3	4	5
DANGER7 (n= 186) Mean = 3.31	14.0%	10.8%	28.5%	23.7%	23.1%	
Diseases and pests (bark beetle, dwarf mistletoe)		1	2	3	4	5
DANGER8 (n=188) Mean = 4.16	1.1%	4.8%	13.8%	37.8%	42.6%	
Accidental ignitions		1	2	3	4	5
DANGER10 (n=189) Mean = 4.21	0.0%	3.7%	16.0%	32.3%	46.0%	
Other (<i>please specify</i>): __ (DANGERWHY)_____		1	2	3	4	5
DANGER9 (n=20) Mean = 4.00		10.0%	5.0%	10.0%	25.0%	50.0%

Section 7: In this section, we are interested in your perspectives on climate change.

7.1. How much to you agree or disagree with the following statements? (*Circle one number for each*)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Climate change is real	1	2	3	4	5
CLIMATE1 (n=190) Mean = 1.51	61.6%	25.3%	6.8%	3.2%	3.2%
Humans are largely responsible for climate change	1	2	3	4	5
CLIMATE2 (n=188) Mean = 2.12	41.0%	30.9%	12.8%	6.4%	9.0%
Climate change is a hoax	1	2	3	4	5
CLIMATE3 (n=188) Mean= 4.38	3.2%	5.9%	5.9%	19.7%	65.4%
I am skeptical about the existence of climate change	1	2	3	4	5
CLIMATE4 (n=186) mean = 4.25	4.3%	6.5%	9.1%	20.4%	59.7%
I know a lot about climate change	1	2	3	4	5
CLIMATE5 (n=187) Mean 2.38	16.0%	38.5%	38.5%	5.3%	1.6%
Climate change has increased the risk of wildfires in Boulder and Larimer counties	1	2	3	4	5
CLIMATE6 (n= 189) Mean = 2.38	22.2%	37.0%	27.0%	7.9%	5.8%
Climate change has <i>not</i> yet increased wildfire risk in Larimer and Boulder counties but it will in the future	1	2	3	4	5
CLIMATE7 (n=185) Mean = 3.39	5.4%	14.1%	34.1%	28.6%	17.8%
Most scientists agree that climate change exists	1	2	3	4	5
CLIMATE8 (n=189) Mean = 1.85	42.3%	41.3%	9.0%	4.2%	3.2%
Most scientists agree that climate change is caused by humans	1	2	3	4	5
CLIMATE9 (n=187) Mean = 2.11	30.5%	43.3%	15.5%	5.9%	4.8%
Climate change and wildfire risk are not related	1	2	3	4	5
CLIMATE10 (n=188) Mean = 4.07	5.3%	3.2%	13.8%	34.0%	43.6%

Section 8: In this section, we ask about personal and household characteristics. As with all questions in this survey, your responses are completely confidential.

8.1. What is your age? (*Fill in the blank*)

___ AGE ___ Years old (n=188) Mean = 59.41

8.2. Are you? (*Circle one number*) GENDER (n=184)

- 1 Male 53.3%
- 2 Female 46.7%

8.3. What is your racial or ethnic group? (*Circle all that apply*) (n=193)

- 1 White RACE1 94.8%
- 2 Black or African American RACE2 0.0%
- 3 Hispanic RACE3 1.0%
- 4 American Indian or Alaskan Native RACE3 1.0%
- 5 Asian RACE4 0.5%
- 6 Other RACE5 2.6%

8.4. What best describes your current marital status? (*Circle one number*) MARRY (n=187)

- 1 Now Married 67.9%
- 2 Widowed 7.0%
- 3 Divorced 13.9%
- 4 Never Married 11.2%

8.5. What is the highest grade or year of school you completed? (*Circle one number*) EDUC (n=190)

- 1 Eighth grade or less 0 %
- 2 Some high school 0%
- 3 High school graduate 2.1%
- 4 Some college or technical school 8.9%
- 5 Technical or trade school 2.6%
- 6 College graduate 32.6%
- 7 Some graduate work 10.0%
- 8 Advanced Degree (M.D., M.A., M.S., Ph.D., etc.) 43.7%

8.6. Which of the following best describes your current employment situation? (*Circle one number*) EMPLOY (n=192)

- 1 Employed full time 35.4%
- 2 Employed part time 12.5%
- 3 Unemployed 1.6%
- 4 Self-employed 18.2%
- 5 Retired 32.3%

8.7. Which of the following categories describes your household income? (*Circle one number*) INCOME (n=171)

- 1 Less than \$25,000 5.3%
- 2 \$25,000 - \$34,999 5.3%
- 3 \$35,000 – \$49,999 12.9%
- 4 \$50,000 - \$74,999 16.4%
- 5 \$75,000 - \$99,999 17.0%

- 6 \$100,000 - \$124,999 17.5%
- 7 \$125,000 - \$200,000 19.9%
- 8 More than \$200,000 5.8%

Thank you for your help. Use the space below to write any comments.

Please return the survey in the enclosed envelope or if you lost the envelope, please return to:

Hannah Brenkert-Smith
National Center for Atmospheric Research
P.O. Box 3000
Boulder, CO 80307-3000

Appendix B

Percent agreeing/strongly agreeing with the following statements	2007 subset	2010	McNemar test (<i>p</i> -value)
	---Percent---		
Wildfires that threaten human life should be put out.	91	92	0.664
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	89	90	0.856
Wildfires that threaten property should be put out.	81	82	1.000
During a wildfire, saving homes should be a priority over saving forests.	79	81	0.743
You do not have the money for wildfire risk reduction actions.	14	31	0.000
Naturally occurring wildfire is not the problem; people who choose to live in fire prone areas are the problem.	30	29	1.000
With proper technology, we can control most wildfires after they have started.	24	20	0.322
A wildfire is unlikely to happen within the time period you expect to live here.	8	11	0.503
You don't take action because adjacent properties are not treated leaving your actions ineffective.	7	10	0.238
You do not have the time to implement wildfire risk reduction actions.	7	7	1.000
You live here for the trees and will not remove any of them to reduce fire risk.	7	6	0.824
You do not need to act to reduce the risk of loss due to wildfire because you have insurance.	2	5	0.267
Actions to reduce the risk of loss due to wildfire are not effective.	4	4	1.000
Your property is not at risk of wildfire.	3	5	0.549
You don't take action to reduce the risk of loss due to wildfire because if a wildfire reaches your property firefighters will protect your home.	2	4	0.344
Managing the wildfire danger is a government responsibility, not yours.	1	3	0.289
You do not need to take action to reduce the risk of loss due to wildfire because the risk is not that great.	5	3	0.227



Rocky Mountain Research Station



The Rocky Mountain Research Station develops scientific information and technology to improve management, protection, and use of the forests and rangelands. Research is designed to meet the needs of the National Forest managers, Federal and State agencies, public and private organizations, academic institutions, industry, and individuals. Studies accelerate solutions to problems involving ecosystems, range, forests, water, recreation, fire, resource inventory, land reclamation, community sustainability, forest engineering technology, multiple use economics, wildlife and fish habitat, and forest insects and diseases. Studies are conducted cooperatively, and applications may be found worldwide. For more information, please visit the RMRS web site at: www.fs.fed.us/rmrs.

Station Headquarters

Rocky Mountain Research Station
240 W Prospect Road
Fort Collins, CO 80526
(970) 498-1100

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