

Research Note

Understanding Change: Wildfire in Larimer County, Colorado

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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.

Larimer County, located along the front range of the Colorado Rockies, was ranked as having the second highest existing wildfire risk in Colorado and 19th in the United States 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 wildfires, some resulting in great destruction.

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The Fourmile Canyon Fire in neighboring 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. That same month in Larimer County, the Reservoir Road Fire burned 700 acres, destroyed two homes, and led to the evacuation of 400 residents. Subsequently, the High Park Fire burned through portions of the study area in June 2012 resulting in one fatality, the loss of 259 homes, and 87,284 acres burned. For more than 10 years, counties such as Larimer County have implemented wildfire outreach programs to encourage homeowners to mitigate the risk of losing their homes during a wildfire event. In 2007, WUI residents in Larimer 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 over time in experience with wildfire, perceptions of risk, wildfire risk information sources, and mitigation efforts. In this report we summarize the panel data set created by pairing responses to the two surveys allowing for a comparison of the 2007 and 2010 survey results.

Key Findings

Overall, we find relatively stable attitudes and beliefs about wildfire, but also find some notable changes between 2007 and 2010. First, we find significant increases in concern regarding wildfire damaging respondents' property/landscape, as well as increase in concern regarding the safety of pets, including non-income generating livestock.

Second, we find an increase in reported mitigation from 2007 to 2010. Specifically, we find significant increases in the implementation of three mitigation actions: thinning trees within a 30-foot perimeter of homes, thinning trees in the 30- to 100-foot zone from the home, and pruning branches so that the lowest is 6-10 feet from the ground in the same zone. Despite increases in the frequency of implementing several mitigation measures we find a decrease in confidence in perceived efficacy of mitigation actions in reducing risk; an increase in belief that neighbors' untreated fuels affect the efficacy of action taken; and increases in reported financial obstacles to implementing mitigation.

While perceptions of wildfire risk appear to be relatively stable, with sources of ignition (human activity and lightning) being identified as the biggest contributors to chances of sustaining wildfire damages in the next five years, we also see increases in respondents identifying the vegetation on their own parcels, vegetation on neighbors' parcels, and the physical characteristics of their own parcels (e.g. slope) as major contributors to the chances of wildfire damages in the next five years. The increased focus on property-related vegetation characteristics is notable because these are characteristics that homeowners can proactively alter to reduce fire risk.

Where we see particularly interesting changes is with expected outcomes related to wildfire with significant increases in respondents' believing that a fire would result in their landscape burning, smoke and physical damage to their home, as well as a significant increase in those believing their home would be destroyed. Likewise there are significant increases in believing a wildfire would result in financial losses and harm to their pets.

Finally, an area where there is little change is in the sources of wildfire risk information and the confidence in the information from those sources. Volunteer fire departments remain the most common as well as the most highly regarded information source. While county wildfire specialists and the Colorado State Forest Service are also highly regarded information sources, the portion of respondents reporting receiving information from these sources continues to be relatively low.

Methods

The Surveys

In 2007, a survey, sponsored by Larimer 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 in neighboring Boulder County and Reservoir Road Fire in Larimer County a survey was administered to households who had previously participated in the 2007 study. 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, 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 Larimer County Assessor's Office, GIS software, and Larimer 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 ($n = 13,880$). 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 205 online responses and 121 mail responses for an overall response rate of 36% (326 returned surveys; two were incomplete; a total of 324 observations) (see http://www.fs.fed.us/rm/pubs/rmrs_rn048.pdf for full details).

The initial sample for the 2010 survey consisted of the 324 Larimer County households who had completed the 2007 survey. In the fall of 2010, potential participants were mailed a package with a letter of invitation to participate in the survey, a survey booklet, 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 324 initial letters that were mailed, 24 were not deliverable.¹ One hundred eighty-five (17 on-line and 166 paper) were received for an overall response rate of 61.66%.²

Pairing completed 2010 surveys with completed 2007 surveys resulted in usable data for 160. The responses to all of the survey questions were statistically similar between web and paper surveys.

The results presented in this report are based on the paired 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 completed the survey in both years, any household survey participant for which a different sex in 2010 compared to 2007 was excluded from the analyses presented here. Twenty-two of the 160 surveys demonstrated this inconsistency and were excluded resulting in a total of $n = 138$. 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 61 years old. Slightly more males responded (57%) than females (43%) and almost all of the survey respondents identified “White” as their racial group (92%). Seventy-five percent of the respondents are married. The respondents are well educated with 30% having advanced degrees.

¹ We expect that the surveys were undeliverable because they were seasonal homes that do not receive mail delivery during the fall/winter months. Eleven of the 24 returned items were marked “vacant” or “seasonal” by the mail carrier. The remaining returns did not have any notation.

² $185 \text{ responses} / 300 \text{ delivered surveys} [324 \text{ sent} - 24 \text{ undeliverable}] = 61.66\%$

³ For the purposes of this report we use: $p \leq 0.10^*$, $p \leq 0.05^{**}$, $p \leq 0.01^{***}$.

Place of Residence

All of the 2010 survey respondents are full-time residents. Few of the respondents (14%) expect to move within the next five years. Among those reporting intent to move, approximately 20% indicate that wildfire is an important factor driving that decision while 57% report it is not important at all. Nearly all of the respondents (99%) own their home and almost all of the survey respondents indicate they had homeowner's insurance (97%). Most of the respondents report having household pets (72%). Land parcel sizes range from less than a quarter acre (7%) to 200 acres with an average of 21 acres. The majority of survey respondents (62%) say they live on land parcels that are larger than two acres in size. On average, respondents have lived in their homes for over 16 years.

Compared to 2007 there is little change in the measures described above except a slight decrease in the frequency of respondents with household pets (72% in 2010 compared to 77% in 2007); however, the difference is not statistically significant.

Neighbors

The survey included a section that asked about vegetation density on respondents' own properties and on their neighbors' properties at two different points in time: when they moved in and currently (Table 1). In 2010, approximately 35% of the survey respondents indicated the vegetation on their property was dense when they moved in, compared to 15% who indicated that the current vegetation is dense. Likewise in 2010, 39% of the respondents said that the vegetation on neighboring properties was dense when they moved in compared to 32% 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	39	35	0.557
Currently the vegetation on your property is...	19	15	0.424
When you first moved in, the vegetation on most of the properties neighboring yours was ...	35	39	0.428
Currently, the vegetation on most of the properties neighboring yours is ...	30	32	0.743

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

Reporting on vegetation density on their own and neighbors' properties at time of moving in and currently did not change significantly between 2007 and 2010. This means that (1) respondents' evaluations of vegetative conditions on their property at the time of moving in are consistent between the two survey periods; (2) their reporting of the change over time follows the same trajectory (toward sparser vegetation); and (3) respondents observe a comparable trend on neighbors' properties -- though the rate of vegetation reduction is less. While not significant, respondents' report higher vegetation on neighbors' parcels at move in compared to what they reported in 2007. This may reflect a recall issue or heightened awareness of vegetation density that led to respondents reporting denser vegetation in the past.

Experience with Wildfire

Despite the Reservoir Road Fire and numerous other smaller fires in the area between 2007 and 2010, we see little change in wildfire-related experiences (Table 2). Very few 2010 survey respondents report first-hand experience with a wildfire on their property (2%) or fire-related damages (4% reported smoke or fire damage). However, 75% of the survey respondents have experience with a wildfire less than 10 miles from their property. In contrast, a total of 44% of respondents have either evacuated their residence (17%) or prepared to evacuate (27%).

Compared to 2007, there is only one significant change in experience in terms of knowing someone who had evacuated, which had increased by 13%. While the percent of respondents reporting they were evacuated from their home due to a wildfire or threat of wildfire increased from 13% in 2007 to 17% in 2010, this difference is not statistically significant.

Table 2—Wildfire-related experiences.

	Percent reporting "Yes"		<i>p</i> -value for McNemar's test
	2007	2010	
First-hand experience with wildfire on their property	3	2	1.000
Smoke or fire damage to property	3	4	0.727
Experience with wildfire less than 10 miles from their property	75	75	1.000
Evacuated from current residence due to a wildfire or threat of wildfire	13	17	0.267
Prepared to evacuate	27	27	1.000
Know someone evacuated in last 5 years	45	58	0.003
Know someone whose residence was damaged or lost in last 5 years	20	24	0.500

Over half of the 2010 respondents (58%) know someone who had been evacuated in the last five years and almost a quarter (24%) know someone whose residence was damaged or destroyed in the last five years.

In 2010 most of the survey respondents (85%) indicate they were somewhat or very aware of wildfire risk when they bought their current residence (Table 3). While not significant, we see interesting changes in reported awareness of wildfire risk at time of purchase when comparing 2007 to 2010 results. Thirteen percent report not being aware of wildfire risk in 2010 compared to 9% in 2007. There is also a drop from 53% reporting being very aware of wildfire risk at time of purchase in 2007 compared to 41% reporting that level of awareness at time of purchase in 2010. We speculate that the increase in those reporting not being 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.

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	9	13
Somewhat aware	37	44
Very aware	53	41

McNemar-Bowker Test = 10.051; *p*-value = 0.123

Attitudes Toward Wildfire

We examined attitudes toward wildfire by considering respondents' levels of concern about what might be damaged by a wildfire (Table 4). In 2010, the highest level of concern is expressed about wildfire damaging respondents' homes and their property/landscape with 39% and 38% reporting a high level of concern, respectively. Thirty-four percent of survey respondents also express concern that a wildfire would damage public land. There is also a fair bit of concern regarding the safety of pets in the event of a wildfire. Respondents are least concerned about a wildfire impacting their health (22% report high level of concern), local water sources (22% report high level of concern), or their ability to earn an income (12% report high level of concern).

Compared to 2007, survey respondents express significantly higher levels of concern regarding a wildfire affecting two items. There is a 16% increase in those with a high level of concern about their pets and an 11% increase in those who express a high level of concern about wildfire affecting their property/landscape.

Attitudes were also measured with 17 statements about wildfire. Respondents were asked to rate how strongly they agreed or disagreed with each statement. Here we report the four statements with the most support along with the statements that had the least support (Table 5; see Appendix B for full set of 17 attitude statements).

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 = extremely concerned)		<i>p</i> -value for McNemar's test
	2007	2010	
Your house or other buildings on your property	37	39	0.720
Your property/landscape	27	38	0.032
Public lands near your home	32	34	0.749
Your pets	17	33	0.000
Your health or your family's health	17	22	0.248
Local water sources	15	22	0.136
Your ability to earn income	8	12	0.481

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.	95	90	0.302
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	88	84	0.238
Wildfires that threaten property should be put out.	81	75	0.265
During a wildfire, saving homes should be a priority over saving forests.	64	72	0.024
Least support			
Actions to reduce the risk of loss due to wildfire are not effective.	2	5	0.180
You do not need to act to reduce the risk of loss due to wildfire because you have insurance.	5	4	1.000
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.	3	4	1.000
Managing the wildfire danger is a government responsibility, not yours.	2	2	1.000

In both 2007 and 2010, we find the most support for three statements regarding suppression when wildfires threaten human life, property, and homes. In contrast, 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?

The statements receiving the least support indicate that there is widespread agreement that wildfire risk reduction actions are effective, that respondents do not believe that having insurance is 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 three of the survey responses to the 17 attitude statements are statistically similar between the 2007 and 2010 panel data reflecting relatively stable attitudes about wildfire (see Appendix B). First, we see an 8% increase in those agreeing/strongly agreeing that during a wildfire, saving homes should be a priority over saving forests. Second, we see a 14% increase in those agreeing/strongly agreeing that they don't 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. Further, we see a small but significant increase from 2007 in respondents agreeing/strongly agreeing that lack of mitigation action by neighbors makes their own actions not effective (a 6% increase). While this change is statistically significant it is worth noting that the level of agreement is very low in both years.

Perceptions of Wildfire Risk

In assessing perceptions of risk, respondents were asked 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 discuss the items that respondents perceive to be major contributors to wildfire risk (Table 6). In 2010, respondents focus primarily on ignitions: human activity (66%) and weather-related natural starts such as lightning (65%) as the greatest contributors. In assessing the characteristics of their own and neighboring properties, 53% of respondents report that their own vegetation and 52% report that vegetation on neighboring properties is a major contributor to the chances of wildfire damaging their property.

Compared to 2007, survey respondents' perceptions of wildfire risk in 2010 is statistically different on four of the nine assessed factors, each of which was specific to their property: (1) vegetation on their property, and (2) vegetation on their neighbors' properties, (3) physical characteristics of their property other than vegetation (e.g., steep incline) and (4) availability of roads for access and egress. Twenty-two percent more survey respondents 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.

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	62	66	0.337
Weather-related natural starts (e.g., lightening)	70	65	0.405
Vegetation on your property	31	53	0.000
Vegetation on your neighbors' properties	41	52	0.017
Vegetation on nearby National Forest or National Park	50	43	0.233
Physical characteristics of your property other than vegetation (e.g., steep inclines)	22	40	0.000
Availability of roads for you to exit community and emergency vehicles to enter community	31	40	0.065
Vegetation on other nearby public land (e.g., Open Space or greenbelt)	37	37	1.000
Physical characteristics of your house or other buildings (e.g., roofing or siding)	23	28	0.256

Eighteen percent more survey respondents believe that the physical characteristics of their property (e.g., steep inclines) are a major contributor to their wildfire risk. While non-vegetative parcel characteristics, such as steep incline, cannot largely be altered, this result suggests a better understanding of what contributes to wildfire risk. 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, affect wildfire risk (i.e., targeting more intensive fuel reduction on the downhill side of a structure).

Eleven percent more respondents report that neighboring vegetation is a major contributor to their chances of wildfire risk. This finding suggests that in 2010 the survey respondents might have been 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. In this vein, nine percent more respondents identified roads for access and egress as a major contributor indicating there may be increasing support for community-level efforts.

Somewhat surprisingly, we see little change in respondents' assessments of the contribution the physical characteristics of their structure may make to wildfire risk, with still less than one third of respondents (only a 5% increase) reporting that physical characteristics of their structures contribute a lot to wildfire risk. This represents an area in which additional education and outreach efforts may be needed.

Another interesting finding is the decrease in respondents identifying vegetation on public lands (National Forest/Park) as a major contributor to wildfire risk. Those identifying National Forest/Park land as a major contributor drops from 50% in 2007 to 43% in 2010 though this shift is not significant. Whether this change results from targeted fuel reduction efforts undertaken on public lands adjacent to WUI communities in Larimer County or other factors is unknown at this point, but constitutes an interesting shift that warrants further attention.

To better understand how respondents think they might be affected by a wildfire, we asked them to rate the likelihood of a series of outcomes if there was a wildfire on their property. Here we present the frequency of those reporting the queried outcomes are likely or very likely (Table 7). We see that in 2010, the outcome thought to be most likely if a wildfire were to occur on their own property is that their trees or landscape would burn (74%). Similarly, 70% of respondents believe that there is a high likelihood that there would be smoke damage. Over half of the respondents believe that there is a high likelihood that the fire department would save their home (58%). Though 57% of respondents believe that there is a high likelihood that a fire would result in some physical damage to their home, only 32% believe their home would be destroyed.

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.	62	74	0.014
There would be some smoke damage to your home.	55	70	0.007
The fire department would save your home.	53	58	0.360
There would be some physical damage to your home.	43	57	0.015
Your home would be destroyed.	24	32	0.043
You would suffer financial losses due to the loss of business/income on your property.	16	31	0.003
You would put the fire out.	26	26	1.000
Your pets would be harmed (include non-income generating livestock).	12	22	0.017

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. Seventy-four percent of 2010 respondents believe there is a high likelihood that a wildfire would result in such losses compared to 62% in 2007. Between 2007 and 2010, we see an increase in the reported likelihood of other several possible fire-related outcomes. In 2010, 70% of respondents believe there is a high likelihood that a fire could result in smoke damage compared to 55% of 2007 respondents. We also see a significant (14%) increase in those who believe that there is a high likelihood that a fire on their property would result in their homes being damaged and marginally significant increase (8%) 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 22% believing their pets could be harmed in 2010 compared to only 12% in 2007.

While likelihood of financial losses is one of three least likely outcomes, we do see a significant increase (15%) in those believing that there is a high likelihood that would result in financial losses. Finally, 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 (5%) in those that believe that there is a high likelihood that the fire department would save their home and no change in the percent in the perceived likelihood that respondents would put the fire out themselves.

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 (59%) is the most frequently reported source of information about wildfire risk, and at 81% reporting a lot of confidence it is one of the three information sources with the highest rating with respect to confidence in the accuracy of the information. The county wildfire specialist and the Colorado State Forest Service are the other most highly rated information sources with respect to confidence in accuracy of information (at 79% and 81% reporting a lot of confidence, respectively). The second most commonly reported information source is the media (52%), but it is the least highly rated information source with respect to confidence in accuracy of information (37%). Neighborhood groups are reported as an information source by 38% of the survey respondents; neighbors, family, and friends are reported to provide information to 33% of the survey respondents. Similar percentages of survey respondents express high confidence in both neighborhood groups (42%) and neighbor and friends (40%). About a fifth of respondents indicate they received information about reducing the risk of wildfire from expert sources including the Colorado State Forest Service (27%), U.S. Forest Service (21%), and the Larimer County wildfire specialist (20%). All three of these sources have high ratings in terms of confidence in the accuracy of information provided (ranging from 67% to 81%).

Table 8—Information sources and confidence in accuracy (McNemar test: $p \leq 0.10^*$, $p \leq 0.05^{**}$, $p \leq 0.01^{***}$).^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	51	59**	79	81
Media	52	52	30	37*
Neighborhood group	33	38	41	42
Neighbors, friends, family	27	33	36	40
County wildfire specialist	21	20	75	79
Colorado State Forest Service	25	27	67	81**
U.S. Forest Service	24	21	64	74
National Park Service	6	6	59	67
None	12	10	—	—

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

In 2010, survey respondents express statistically similar levels of both information sources used and confidence in the accuracy of most of the sources compared to 2007. There was a statistically significant (8%) increase in those reporting to have received information from their local volunteer fire department. The two statistically significant increases in reported accuracy are a 7% increase in those reporting high or very high confidence in Media and a 14% increase in those reporting a high or very high level of confidence in the Colorado State Forest Service. While we see the highest confidence level is in the accuracy of the information provided by the Colorado State Forest Service, only about a quarter of our respondents ever received information from this source. It appears that the high levels of 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.

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 Larimer County wildfire specialist, a list of 12 wildfire risk-reducing actions was included in the survey (Table 9). Respondents were 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. In 2010, the action taken by the highest number of respondents (79%) is “Mowed long grasses around the home to reduce wildfire risk.” Mowing grasses, along with clearing leaves (66% of 2010 respondents) represent two of the least costly and least physically challenging actions that homeowners can take to reduce risk within the home ignition zone (Cohen 2000). Similarly, 76% of respondents report having installed a visible house number.

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		<i>p</i> -value for McNemar's test
	2007	2010	
Mowed long grasses within 30 feet of home	72	79	0.136
Install visible house number	72	76	0.473
Remove dead or overhanging branches within 30 feet of home	61	69	0.193
Thin trees and shrubs within 30 feet of home	49	67	0.001
Clear leaves and needles from roof and/or yard within 30 feet of home	57	66	0.111
Prune limbs 6-10 feet from ground within 30 feet of home	50	59	0.096
Install fire resistant roof	50	58	0.090
Thin trees and shrubs 30-100 feet of home	40	54	0.008
Remove dead or overhanging branches 30-100 feet of home	51	51	1.000
Prune limbs 6-10 feet from ground 30-100 feet of home	38	49	0.036
Install screens over roof vents	25	39	0.003
Install fire resistant siding	18	20	0.815

^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.

Sixty-nine percent of the survey respondents report having removed dead or overhanging branches in areas within a 30-foot perimeter around their house or other buildings; 67% thinned trees or shrubs within a 30-foot perimeter around their house or other buildings; and 59% limbed trees up to about six feet in the 30-foot perimeter. In terms of structural changes, installing fire resistant siding on their house or other buildings and installing screening over roof vents are the two measures implemented least frequently (20% and 39%, 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 in 2010 compared to 2007, the increase is statistically significant for six of the 12 wildfire mitigation actions. Eighteen percent more survey respondents report they had taken action to thin trees and shrubs within a 30-foot perimeter around their house or other buildings in 2010 compared to 2007. Similarly, in the area 30-100 feet from homes or other buildings 14% more report thinning trees and shrubs and 11% more report limbing trees up to about six feet from the ground in 2010 compared to 2007. Interestingly,

even though screen installation is one of the least implemented measures in years, there is a 14% increase in screen installation between 2007 and 2010. It is notable that these items require more effort than mowing or clearing leaves or needles, which may indicate that participants are exerting more effort in their mitigation actions. Finally, 8% more respondents reported having installed a fire resistant roof, a significant and costly improvement.

Respondents were asked how important various factors were in their mitigation decisions (Table 10). Overall, the likelihood of wildfire being on their property (52%) and cost of action (49%) are the strongest considerations when deciding whether or not to take action to reduce risk. Notably, only 15% of respondents reported that lack of specific information is a strong consideration.

Compared to 2007, there is a statistically significant increase in respondents indicating that likelihood of fire being on their property is a strong consideration when deciding to take action to reduce the risk of loss due to wildfire from 40% in 2007 to 52% in 2010. The largest and most significant increases, however, are in the extent to which cost (20% increase), physical difficulty (20% increase), and time (18% increase) are strong considerations when deciding to take action on their property.

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	
The likelihood of a wildfire being on your property	40	52	0.023
Financial expense/ cost of taking action	29	49	0.000
Physical difficulty of doing the work	24	44	0.000
Time it takes to implement actions	19	37	0.001
Lack of specific information about how to reduce risk	18	15	0.523

Determinants of Mitigation Actions

To better understand who adopts different mitigation strategies, we first examined the relationship between demographic characteristics of respondents and mitigation. 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 a significant differences in mitigation levels between 2007 and 2010 (Table 11) and find an increase from 15% in 2007 to 26% in 2010 of those who fall into the category of high mitigators, or those reporting having implemented 10 or more mitigation actions.

Table 11—Mitigation level by year.

	2007	2010
	- - - Percent - - -	
Low (0–4 actions completed)	34	26
Mid (5–9 actions completed)	51	48
High (10+ actions completed)	15	26

McNemar-Bowker test = 9.733; *p*-value = 0.021.

We then conducted contingency table analyses using 2010 data to examine 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.

Characteristics of survey respondents and Mitigation

We do not find any significant relationships between characteristics of respondents in terms of gender, income, marital status, education, or employment status and mitigation level. The exception to this is the relationship between age and mitigation level for which we find that the relationship between age quartiles and 2010 level of mitigation are significant but not unidirectional (Pearson's chi-square = 13.338; *p* = 0.038). In other words, low mitigators tend to be the youngest and oldest responders while the mid-level and high mitigators fell into the middle two age categories.

Place of Residence and Mitigation

There is not a statistically significant relationship between mitigation level and lot size or intent to move in the next five years.

Neighbors and Mitigation

A statistically significant relationship is *not* found between perceptions of respondents own and neighbors' vegetation density, or talking with neighbors about wildfire risk and mitigation outcomes. We did find, however, significant differences in mitigation level and whether or not neighbors had taken action to reduce risk. We see that 70% of mid-level and 73% of high mitigators had neighbors taking action compared to only 30% of low mitigators (Pearson's chi-square = 18.594; *p* = 0.001). Interestingly, we see the converse and statistically significant relationships when asked whether or not respondents had neighbors who were not taking action to address sources of wildfire risk such as dense vegetation. We see that 82% of high mitigators and 52% of mid-level mitigators compared to only 39% of low mitigators report having neighbors were not taking action to address dense vegetation or other sources of wildfire risk (Pearson's chi-square = 14.512; *p* = 0.006).

Experiences with Wildfire and Mitigation

We do not see a significant relationship between any wildfire-related experience and mitigation including evacuation or preparing to evacuate, 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. Similarly, we find no relationship between risk awareness and mitigation activity.

Attitudes toward Wildfire and Mitigation

When we examined the relationships between the 17 statements about wildfire risk and mitigation levels, we find statistically significant relationships between three of the items and the mitigation levels. Interestingly, these relationships suggest that low and high mitigators are more alike compared to mid-level mitigators.

Compared to low and high mitigators, mid-level mitigators are *less* likely to agree with the statement: You do not need to take action to reduce the risk of loss due to wildfire because the risk is not that great (Pearson's chi-square = 11.017; $p = 0.004$).

In contrast, compared to low and high mitigators, mid-level mitigators are *more* likely to agree with the statements:

- Wildfires that threaten property should be put out. (Pearson's chi-square = 6.135; $p = 0.047$)
- Wildfires are a natural part of the balance of a healthy forest/ecosystem. (Pearson's chi-square = 9.004; $p = 0.011$)

While overall support for the statement: "You live here for the trees and will not remove any of them to reduce fire risk" is low in 2010, low and mid-level mitigators are more likely to agree (15% and 6% agreement, respectively) with the statement compared to high mitigators among whom there is no support (Pearson's chi-square = 5.844; $p = 0.054$).

Although we find significant changes related to factors considered when deciding to take action to reduce risk (presented in Table 10), we did not find a significant relationship between level of mitigation actions and the five factors presented in the survey as considerations (e.g., cost, time, etc.) when deciding to take action to reduce the risk of loss due to wildfire on their property.

Perceptions of Wildfire Risk and Mitigation

When considering the relationship between the expected outcomes of a wildfire (items in Table 7) and mitigation levels, it appears that low mitigators (55%) and mid-level (68%) mitigators were more likely to believe that it was likely or very likely that their homes would be damaged than high mitigators (only 36%). These differences are statistically significant (Pearson's chi-square = 8.808; $p = 0.012$). Further, 39% of low mitigators and mid-level mitigators believe that a fire on their property would likely result in their homes being destroyed compared to only 12% of high

mitigators. These differences are also statistically significant (Pearson's chi-square = 8.831; $p = 0.012$) and indicate that study participants who are high mitigators believe that their actions are protective. These findings may indicate that high mitigators feel they have effectively mitigated their risk.

We also see statistical differences among mitigation level based on the extent to which respondents believe that there is a high likelihood that a wildfire would result in financial losses due to the loss of business/income on their property. Twenty-seven percent of low mitigators and 13% of high mitigators believe it is likely or very likely compared to 42% of mid-level mitigators (Pearson's chi-square = 8.195; $p = 0.017$).

Finally, we see *no* significant differences across mitigation level in beliefs regarding likelihood of the landscape burning, pets being harmed, or neighbors' homes being damaged. At least 70% of each group believe that their landscape would burn (Pearson's chi-square = .329; $p = 0.848$) while most believe that their pets would not be harmed (Pearson's chi-square = 1.227; $p = 0.542$). The groups are almost evenly split between those who believe their neighbors' homes would experience damage and those that believe otherwise (Pearson's chi-square = 1.358; $p = 0.507$).

When we examined the relationship between perceived contributors to wildfire risk (items in Table 7) and the amount of mitigation action taken by survey respondents we see no significant relationships. Similarly, there are no significant associations between reported concern in 2010 and mitigation levels (items in Table 4).

Wildfire Risk Information Sources and Mitigation

In comparing mitigation levels and having received wildfire information from various sources we see some significant differences. Twenty-eight percent of low mitigators and 34% of mid-level mitigators compared to 54% of high mitigators report having received information from neighborhood groups (Pearson's chi-square = 5.934; $p = 0.051$). Only 17% of low mitigators and 29% of high mitigators compared to 43% of mid-level mitigators report receiving wildfire information from neighbors, friends, or family (Pearson's chi-square = 7.897; $p = 0.019$). Interestingly, we see that 34% of mid-level mitigators received information from the USFS compared to only 8% of low and 9% of high mitigators (Pearson's chi-square = 13.908; $p = 0.001$). And not surprisingly, we see that over 19% of low mitigators report not receiving any wildfire information from any sources compared to 6% of mid-level and 9% of high mitigators (Pearson's chi-square = 4.791; $p = 0.091$).

There are no significant differences between mitigation level and reported confidence in wildfire risk information sources.

Climate And Wildfire

Given the growing scientific evidence linking climate change and increased wildfire activity (Westerling 2006; Climate Central 2012), we were interested in understanding how those living in fire-prone areas understand the link. As such, in 2010 a series of questions was added that specifically address climate and wildfire to the survey.

Since these questions were not asked in 2007, we cannot examine change over time. However, the 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. Only 37% of respondents, however, feel that they are knowledgeable about climate change.

With regard to the climate-wildfire link we see that half of respondents believe that climate change has already increased the risk but less than 19% 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 the whole survey respondents recognize the climate/wildfire link that is consistently being documented in research on the American West.

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	67	6.559	0.161
Most scientists agree that climate change exists	64	0.790	0.674
Humans are largely responsible for climate change	51	5.600	0.061
Climate change has increased the risk of wildfires in Boulder and Larimer counties	50	5.070	0.079
Most scientists agree climate change is caused by humans	47	0.390	0.823
I know a lot about climate change	37	0.862	0.650
I am skeptical about the existence of climate change	21	5.356	0.069
Climate change has <i>not</i> yet increased wildfire risk in Larimer and Boulder counties but it will in the future	19	0.924	0.630
Climate change is a hoax	14	9.167	0.010
Climate change and wildfire risk are not related	9	0.962	0.618

As views on climate and wildfire relate to mitigation outcome, we see statistically significant relationships in four statements. We see the strongest relationship between agreement with the statement, “Climate change is a hoax” and mitigation level. Among those who agree, 50% are high mitigators, 44% are mid-level and only 6% are low mitigators. Demonstrating a similar pattern, among those agreeing with the statement, “I am skeptical about the existence of climate change,” 41% are high mitigators and 44% are mid-level but only 15% are low mitigators.

Demonstrating a different pattern, we see that among those who agree or strongly agree with the statement “Humans are largely responsible for climate change,” 31% are low mitigators, 52% are mid-level, and only 16% are high mitigators. The pattern is repeated with those agreeing with the statement, “Climate change has increased the risk of wildfires in Boulder and Larimer Counties,” among whom 32% are low mitigators, 51% are mid-level mitigators, and only 17% are high mitigators.

While the portion of respondents that may be characterized as “skeptics” by agreeing that climate change is a hoax and being skeptical about climate change (14% and 21%, respectively) is low, finding that skepticism is related to taking more action is surprising and suggests that further research into the relationship between environmental perceptions and taking action to reduce risk is warranted.

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.

The data from this survey, along with the companion data from Boulder 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.

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Appendix A: Larimer County 2010 Survey

Living with Wildfire in Colorado



University of Colorado at Boulder

Panel subset: N = 138

Mode of response: Paper 126 (91.3%); Web 12 (8.7%)

Percentage of Larimer respondents subsequently in High Park fire evacuation zone: 26.8% (37 of 138)

This survey is a follow-up to a 2007 survey conducted in the fire-prone areas of Boulder and Larimer Counties. Either you, someone in your residence, or the previous owner of your residence participated in the 2007 survey. Regardless of whether or not you completed the previous survey, we invite you to share your experiences and perspectives on living in a fire prone area

1.1. Do you recall completing the 2007 survey? (*Circle one number*) 2007 (n = 136)

- 1 No (30.9%)
- 2 Yes (69.1%)

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 = 137)

- 1 Own (99.3%)
- 2 Rent (.7%)

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

_____ FULLTIME _____ Year moved in (n = 130) Mean tenure = 16.85 years

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

_____ YRBUILD _____ Year current residence was built (n = 138) Mean age of structure = 28.40 years

1.5. Do you have homeowner's or renter's insurance? (*Circle one number*) INSURE (n = 138)

- 1 No (2.9%)
- 2 Yes (97.1%) →

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

(n = 137) Mean = 1.98

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

(n = 75) Mean = .41

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 = 137)

- 1 No (27.7%)
- 2 Yes (72.3%)

1.8. What size is your parcel? (*Circle one number*) LOTSIZE (n = 136)

- 1 Around ¼ acre or less (¼ acre = 10,890 square feet) (6.6%)
- 2 ¼ acre to 2 acres (31.6%)
- 3 Larger than 2 acres → (61.8%)

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

(n = 80) Mean = 20.94 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 = 133)

- 1 No → Skip to Section 2 (86.5%)
- 2 Yes, move and sell current residence (11.3%)
- 3 Yes, move but keep current residence (2.3%)

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		
	1	2	3	4	5
Concern about wildfire	1	2	3	4	5
MOVEWHY1 (n = 21) Mean = 2.05	57.1%	9.5%	14.3%	9.5%	9.5%
Traumatic experience at the current location	1	2	3	4	5
MOVEWHY2 (n = 20) Mean = 1.15	95.0%	0%	0%	5.0%	0.0%
Change in aesthetic features of the landscape (e.g. burned trees)	1	2	3	4	5
MOVEWHY3 (n = 20) Mean = 1.20	95.0%	0%	0%	0%	5.0%
Loss or damage to house	1	2	3	4	5
MOVEWHY4 (n = 20) Mean = 1.15	95.0%	0%	0%	5.0%	0%
Long distance to commute to work place	1	2	3	4	5
MOVEWHY5 (n = 19) Mean = 1.47	78.9%	5.3%	10.5%	0%	5.3%
Logistical challenges of having school-aged children	1	2	3	4	5
MOVEWHY6 (n = 20) Mean = 1.20	95.0%	0%	0%	0%	5.0%
Other (<i>please specify</i>):	1	2	3	4	5
MOVEWHY7 (n = 14) Mean = 3.86	14.3%	0%	14.3%	28.6%	42.9%

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 = 138)

- 1 There has been a wildfire on your property (2.2%)
- 2 Less than 10 miles (74.6%)
- 3 More than 10 miles away (21.7%)
- 4 Not sure (1.4%)

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

DAMAGE (n = 138)

- 1 No (95.7%)
- 2 Yes, my current residence suffered fire and smoke damage (0%)
- 3 Yes, my current residence suffered only smoke damage (4.3%)

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 = 137)

- 1 No (56.2%)
- 2 Yes, evacuated (16.8%)
- 3 Yes, prepared to evacuate (27.0%)

2.4. Have you ever faced a wildfire threat at a previous residence (in Colorado or elsewhere)? (*Circle one number*) PREVIOUS (n = 138)

- 1 No (87.0%)
- 2 Yes (13.0%)

2.5. Do you personally know anyone who has been evacuated from her/his residence due to a wildfire? (*Circle all that apply*) (n = 138)

- 1 No, you don't know anyone who was ever evacuated KNOW1 (29.0%)
- 2 Yes, you know someone who was evacuated in the last 5 years KNOW2 (58.4%)
- 3 Yes, you know someone who was evacuated more than 5 years ago KNOW3 (16.1%)

2.6. Do you personally know anyone whose residence has been damaged or lost due to a wildfire? (*Circle all that apply*) (n = 138)

- 1 No, you don't know anyone whose residence has been damaged or lost due to a wildfire LOST1 (68.6%)
- 2 Yes, you know someone whose residence has been damaged or lost in the last 5 years LOST2 (24.1%)
- 3 Yes, you know someone whose residence has been damaged or lost more than 5 years ago LOST3 (9.4%)

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 = 138)

- 1 Not aware (13.0%)
- 2 Somewhat aware (43.5%)

3 Very aware (40.6%)

4 Don't remember (2.9%)

2.8. Are there characteristics or features on your property that you think make it particularly susceptible to wildfire? (*Circle one number*) PROPRIISK (n = 138)

1 No (46.0%)

2 Yes (54.0%) → (*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 = 135) Mean = 3.51	8.9%	18.5%	19.3%	19.3%	34.1%
Physical characteristics of your property other than vegetation (<i>e.g.</i> , steep inclines)					
	1	2	3	4	5
					8

CONTRIB2 (n = 131) Mean = 3.02	22.9%	14.5%	22.1%	18.3%	22.1%
Physical characteristics of your house or other buildings (e.g., roofing or siding)	1	2	3	4	5
CONTRIB3 (n = 134) Mean = 2.82	17.2%	26.1%	28.4%	14.2%	14.2%
Vegetation on your neighbors' properties	1	2	3	4	5
CONTRIB4 (n = 134) Mean = 3.47	10.4%	15.7%	21.6%	20.9%	31.3%
Vegetation on nearby National Forest or National Park	1	2	3	4	5
CONTRIB5 (n = 131) Mean = 2.88	36.6%	8.4%	12.2%	16.0%	26.7%
Vegetation on other nearby public land (e.g., Open Space or greenbelt)	1	2	3	4	5
CONTRIB6 (n = 128) Mean = 2.80	35.2%	11.7%	17.2%	9.4%	26.6%
Human activity	1	2	3	4	5
CONTRIB7 (n = 131) Mean = 3.84	6.9%	12.2%	14.5%	22.9%	43.5%
Weather-related natural wildfire starts (e.g., lightning)	1	2	3	4	5
CONTRIB8 (n = 129) Mean = 3.90	2.3%	13.2%	19.4%	22.5%	42.6%
Availability of roads to exit community and emergency vehicles to enter community	1	2	3	4	5
CONTRIB9 (n = 133) Mean = 2.88	30.8%	15.0%	14.3%	15.0%	24.8%

2.10. How concerned are you about wildfire damaging or affecting the items listed below? (Circle one number for each item)

	Not at all concerned		Extremely concerned		
	1	2	3	4	5
Your house or other buildings on your property	1	2	3	4	5
CONCERN1 (n = 136) Mean = 3.20	7.4%	21.5%	32.6%	20.0%	18.5%
Your health or your family's health	1	2	3	4	5

CONCERN2 (n = 136) mean = 2.58	22.8%	27.9%	27.2%	12.5%	9.6%
Your ability to earn income	1	2	3	4	5
CONCERN3 (n = 134) Mean = 1.83	56.7%	20.1%	11.2%	7.5%	4.5%
Your pets	1	2	3	4	5
CONCERN4 (n = 135) Mean = 2.59	37.8%	14.8%	14.1%	17.8%	15.6%
Your property/landscape	1	2	3	4	5
CONCERN5 (n = 135) Mean = 3.06	14.8%	17.8%	29.6%	22.2%	15.6%
Local water sources	1	2	3	4	5
CONCERN6 (n = 136) Mean = 2.42	33.3%	21.5%	23.7%	11.9%	9.6%
Public lands near your home	1	2	3	4	5
CONCERN7 (n = 135) Mean = 2.87	22.2%	17.0%	26.7%	19.3%	14.8%

Section 3: In this section, we are interested in the kinds of changes you have made to your property or to your house and other buildings on your property. We are also interested in any changes you plan to complete in the future.

3.1. Have any of the following actions been completed on your property? (Check one box for each action) (n = 138)

	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	LIMB3OC 2.9%	LIMB3OM 58.7%	LIMBCP 15.9%	LIMB3ONA 15.2%
Removed dead or overhanging branches	BR3OC 2.2%	BR3OM 68.8%	BR3OP 12.3%	BR3ONA 15.9%
Thinned trees and shrubs	THIN3OC 2.2%	THIN3OM 66.7%	THIN3OP 7.2%	THIN3ONA 17.4%

Cleared leaves and pine needles from the roof and/or yard	LEAF30C .7%	LEAF30M 65.9%	LEAF30P 8.7%	LEAF30NA 19.6%
Mowed long grasses	MOW30C .7%	MOW30M 79.0%	MOWCOP 5.6%	MOW30NA 7.5%
In area 30-100 feet from your house or other buildings:				
Pruned limbs so lowest is 6-10 feet from the ground	LIMBGT30C 1.4%	LIMBGT30M 48.6%	LIMBGT30P 13.8%	LIMBGT30NA 23.9%
Removed dead or overhanging branches	BRGT30C 2.2%	BRGT30M 51.4%	BRGT30P 14.5%	BRGT30NA 24.6%
Thinned trees and shrubs	THINGT30C .7%	THINGT30M 53.6%	THINGT30P 10.1%	THINGT30NA 26.1%
Cleared leaves and pine needles from the yard	LEAFGT30C 0%	LEAFGT30M 48.6%	LEAFGT30P 11.6%	LEAFGT30NA 29.0%
Mowed long grasses	MOWFT30C 0.7%	MOWGT30M 60.9%	MOWGT30P 10.1%	MOWGT30NA 17.4%
To your house:				
Installed a fire resistant roof	ROOFC 6.5%	ROOFM 58.0%	ROOFP 10.1%	ROOFNA 15.9%
Installed fire resistant siding on house or other buildings	SIDEC 2.9%	SIDEM 19.6%	SIDEP 13.0%	SIDENA 42.8%
Installed fire resistant decking	DECKC 0%	DECKM 15.2%	DECKP 18.8%	DECKNA 42.8%
Replaced exterior wood stairs and balconies	STAIRC .7%	STAIRM 10.1%	STAIRP 16.7%	STAIRNA 46.4%
Installed screening over roof vents	SCREENC 5.8%	SCREENM 38.6%	SCREENP 12.3%	SCREENNA 27.5%
Installed fire resistant landscaping (ex. rock) within 3 to 5 feet of the house or other buildings	ROCKC 2.2%	ROCKM 39.1%	ROCKP 18.8%	ROCKNA 23.9%
Installed house number in clearly visible place	NUMBERC 7.2%	NUMBERM 76.1%	NUMBERP 8.7%	NUMBERNA 5.1%

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 = 88) Mean = 1.41	48.9%	18.2%	5.7%	0%	0%	0%	0%	27.3%
Remove dead or overhanging branches	1	2	3	4	5	6	7	8
BR30PAY (n = 89) Mean = 1.44	55.1%	15.7%	7.9%	1.1%	0%	0%	0%	20.2%
Thin trees and shrubs	1	2	3	4	5	6	7	8
THIN30PAY (n = 90) Mean = 1.54	51.1%	12.2%	7.8%	4.4%	0%	0%	0%	24.4%
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 = 92) Mean = 1.86	40.2%	21.7%	6.5%	5.4%	2.2%	0%	1.1%	22.8%
Remove dead or overhanging branches	1	2	3	4	5	6	7	8
BR100PAY (n = 91) Mean = 1.86	40.7%	23.1%	7.7%	3.3%	3.3%	0%	1.1%	20.9%
Thin trees and shrubs	1	2	3	4	5	6	7	8
THIN100PAY (n = 91) Mean = 1.93	41.8%	16.5%	7.7%	5.5%	2.2%	0%	2.2%	24.2%
To your house:								
Install a fire resistant roof	1	2	3	4	5	6	7	8
ROOFPAY (n = 86) Mean = 6.00	3.5%	2.3%	3.5%	2.3%	8.1%	7.0%	50.0%	23.3%
Install fire resistant siding on house or other buildings	1	2	3	4	5	6	7	8
SIDEPAY (n = 110) Mean = 6.6.07	.9%	4.5%	1.8%	4.5%	3.6%	1.8%	45.5%	37.3%
Install fire resistant decking	1	2	3	4	5	6	7	8
DECKPAY (n = 112) Mean = 5.57	2.7%	5.4%	5.4%	8.0%	5.4%	5.4%	41.1%	26.8%
Replace exterior wood stairs and balconies	1	2	3	4	5	6	7	8
STAIRPAY (n = 109) Mean = 4.83	7.3%	6.4%	7.3%	8.3%	8.3%	4.6%	27.5%	30.3%
Install fire resistant landscaping (ex. rock) within a 3-5 ft perimeter of house or other structures	1	2	3	4	5	6	7	8
ROCKPAY (n = 104) Mean = 3.55	15.4%	12.5%	14.4%	8.7%	4.8%	3.8%	13.5%	26.9%

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 = 136)

- 1 No (18.4%)
- 2 Yes (81.6%)

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 = 135)

- 1 No (47.4%)
- 2 Yes (52.6%) → 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 = 135) Mean = 3.43	12.6%	14.8%	22.2%	17.8%	32.6%
Time it takes to implement actions					
CONSID2 (n = 134) Mean = 3.02	21.6%	12.7%	28.4%	16.4%	20.9%
Physical difficulty of doing the work					
CONSID3 (n = 133) Mean = 3.23	21.1%	9.8%	24.8%	14.3%	30.1%
Lack of specific information about how to reduce risk					
CONSID4 (n = 135) Mean = 2.12	45.2%	20.7%	18.5%	8.1%	7.4%
The likelihood of a wildfire being on your property					
CONSID5 (n = 134) Mean = 3.46	7.5%	15.7%	25.4%	26.1%	25.4%

Efficacy of mitigation actions		2	3	4	5
CONSID6 (n = 129) Mean = 3.25	15.5%	8.5%	31.0%	25.6%	19.4%

3.6. From which of the following sources have you received information from about reducing the risk of wildfire? (*Circle all that apply*) (n = 138)

- 1 Local Fire Department SOURCE1 59.4%
- 2 Neighborhood group (homeowners group, local board, etc.) SOURCE2 37.7%
- 3 Neighbors, friends, or family members SOURCE3 32.6%
- 4 Media (newspaper, TV, radio, internet) SOURCE4 52.2%
- 5 County wildfire specialist SOURCE5 19.6%
- 6 Colorado State Forest Service SOURCE6 26.8%
- 7 US Forest Service SOURCE7 21.0%
- 8 National Park Service SOURCE8 5.8%
- 9 Other →Please describe: _____ SOURCE9 8.7%
- 10 None of the above, you have not received any information about wildfire risk. SOURCE10 10.1%

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 = 123) Mean 4.32	2.5%	2.5%	15.6%	20.5%	59.0%
Neighborhood group (homeowners group, local board, etc.)	1	2	3	4	5
SCON2 (n = 112) Mean = 3.22	13.5%	12.6%	31.5%	20.7%	21.6%
Neighbors, friends, or family members	1	2	3	4	5
SCON3 (n = 114) Mean = 3.26	7.1%	16.8%	36.3%	23.9%	15.9%
Media (newspaper, TV, radio, internet)	1	2	3	4	5

SCON4 (n = 121) Mean = 3.09	11.7%	20.0%	31.7%	22.5%	14.2%
County wildfire specialist	1	2	3	4	5
SCON5 (n = 115) Mean = 4.23	5.3%	1.8%	14.0%	23.7%	55.3%
Colorado State Forest Service	1	2	3	4	5
SCON6 (n = 114) Mean = 4.20	7.1%	1.8%	9.7%	27.4%	54.0%
U.S. Forest Service	1	2	3	4	5
SCON7 (n = 111) Mean = 4.05	9.1%	3.6%	13.6%	20.9%	52.7%
National Park Service	1	2	3	4	5
SCON8 (n = 1011) Mean = 3.89	9.9%	5.9%	16.8%	19.8%	47.5%
Other: ____ (SCONWHO) _____	1	2	3	4	5
SCON 9 (n = 11) Mean = 2.91	9.1%	18.2%	45.5%	27.3%	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)

	1	2	3	4	5	6
	Not Likely				Very Likely	Not Applicable
You would put the fire out.	1	2	3	4	5	6
LACT1 (n = 131) Mean = 2.62	28.2%	24.4%	21.4%	9.2%	16.8%	1.4%
The fire department would save your home.	1	2	3	4	5	6
LACT2 (n = 132) Mean = 3.69	9.1%	4.5%	28.0%	25.0%	33.3%	1.4%
There would be some smoke damage to your home.	1	2	3	4	5	6

LACT3 (n = 133) Mean = 3.99	3.0%	6.0%	21.1%	28.6%	41.4%	.7%
There would be some physical damage to your home.	1	2	3	4	5	6
LACT4 (n = 131) Mean = 3.59	6.1%	13.0%	24.4%	29.0%	27.5%	.7%
Your home would be destroyed.	1	2	3	4	5	6
LACT5 (n = 133) Mean = 2.80	23.3%	21.8%	22.6%	16.5%	15.8%	.7%
You would suffer financial losses due to the loss of business/income on your property.	1	2	3	4	5	6
LACT6 (n = 119) Mean = 2.47	51.3%	7.6%	10.1%	5.0%	26.1%	9.4%
Your trees and landscape would burn.	1	2	3	4	5	6
LACT7 (n = 127) Mean = 4.13	.8%	7.9%	17.3%	26.0%	48.0%	4.3%
Your pets would be harmed (include non-income generating livestock).	1	2	3	4	5	6
LACT8 (n = 113) Mean = 2.35	38.9%	19.5%	19.5%	12.4%	9.7%	15.2%
Your neighbors' homes would be damaged or destroyed.	1	2	3	4	5	6
LACT9 (n = 131) Mean = 3.46	6.1%	19.1%	24.4%	23.7%	26.7%	2.2%
Your community water supply would be threatened.	1	2	3	4	5	6
LACT10 (n = 119) Mean = 2.18	47.9%	20.2%	12.6%	5.0%	14.3%	11.6%
The fire would spread to nearby public lands.	1	2	3	4	5	6
LACT11 (n = 123) Mean = 3.46	20.3%	13.0%	9.8%	14.6%	42.3%	7.2%

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 = 135) Mean = 2.90	8.1%	32.6%	31.9%	15.6%	11.9%
With proper technology, we can control most wildfires after they have started.	1	2	3	4	5
STATE2 (n = 134) Mean = 3.33	2.2%	24.6%	20.9%	42.6%	9.7%
Wildfires that threaten human life should be put out.	1	2	3	4	5
STATE3 (n = 135) Mean = 1.57	55.6%	34.8%	6.7%	3.0%	0%
Wildfires that threaten property should be put out.	1	2	3	4	5
STATE4 (n = 133) Mean = 1.96	35.3%	39.8%	18.8%	5.3%	.8%
During a wildfire, saving homes should be a priority over saving forests.	1	2	3	4	5
STATE5 (n = 135) Mean = 2.07	32.6%	39.3%	17.8%	8.9%	1.5%
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	1	2	3	4	5
STATE6 (n = 135) Mean = 1.79	45.2%	38.5%	10.4%	4.4%	1.5%
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 = 135) Mean = 4.17	1.5%	6.7%	8.1%	40.7%	43.0%
You do not have the time to implement wildfire risk reduction actions.	1	2	3	4	5
STATE8 (n = 134) Mean = 3.85	1.5%	6.7%	18.7%	51.5%	21.6%
You do not have the money for wildfire risk reduction actions.	1	2	3	4	5
STATE9 (n = 135) Mean = 3.11	6.6%	25.9%	28.9%	26.7%	11.9%
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 = 135) Mean = 4.25	.7%	3.0%	8.1%	46.7%	41.5%

You live here for the trees and will not remove any of them to reduce fire risk.	1	2	3	4	5
STATE11 (n = 133) Mean = 4.00	2.3%	4.5%	15.0%	47.4%	30.8%
A wildfire is unlikely to happen within the time period you expect to live here.	1	2	3	4	5
STATE12 (n = 134) Mean = 3.58	5.2%	12.7%	23.1%	36.6%	22.4%
Managing the wildfire danger is a government responsibility, not yours.	1	2	3	4	5
STATE13 (n = 134) Mean = 4.18	0%	1.5%	10.4%	56.7%	31.3%
Actions to reduce the risk of loss due to wildfire are not effective.	1	2	3	4	5
STATE14 (n = 134) Mean = 4.01	1.5%	3.7%	11.2%	59.0%	24.6%
Your property is not at risk of wildfire.	1	2	3	4	5
STATE15 (n = 135) Mean = 3.90	2.2%	8.9%	14.8%	45.2%	28.9%
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 = 135) Mean = 4.11	.7%	3.0%	14.1%	48.9%	29.9%
You don't take action because adjacent properties are not treated leaving your actions ineffective.	1	2	3	4	5
STATE17 (n = 134) Mean = 3.93	0%	9.7%	17.9%	42.5%	29.9%

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 = 138)

1 No (27.1%)

2 Yes (72.9%)

5.2. Have any of your neighbors done anything to reduce the risk of wildfire on their property? (*Circle one number*) NACTION (n = 133)

1 No 18.8% → Skip to Question 5.5

2 Yes 60.9% → Please describe: _____ ACTIONWHAT

3 Don't know 20.3% → 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 = 78)

1 You have not taken any action 1.3%

2 They took action before you did 10.3%

3 They took action after you did 28.2%

4 They plan to take action 0%

5 We took action around the same time 47.4%

6 Don't know 12.8%

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 = 81)

1 No 45.7%

2 Yes, on your property 11.1%

3 Yes, on your neighbors' properties 11.1%

4 Yes, on both 32.1%

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 = 133)

- 1 No 25.6%
- 2 Yes 56.4%
- 3 Don't know 18.0%

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

	Very Sparse				Very Dense
When you first moved into your house, the vegetation on <i>your</i> property was...	1	2	3	4	5
VEG1 (n = 131) Mean = 3.10	13.7%	16.8%	34.4%	16.0%	19.1%
Currently, the vegetation on <i>your</i> property is...	1	2	3	4	5
VEG2 (n = 133) Mean = 2.63	12.0%	30.8%	42.1%	12.0%	3.0%
When you first moved in, the vegetation on most of the <i>properties neighboring yours</i> was...	1	2	3	4	5
VEG3 (n = 132) Mean = 3.26	7.6%	15.2%	37.9%	22.7%	16.7%
Currently, the vegetation on most of the <i>properties neighboring yours</i> is...	1	2	3	4	5
VEG4 (n = 133) Mean = 3.12	5.3%	19.5%	43.6%	21.1%	10.5%

Section 6: Now, we want you to think beyond just your neighbors, to consider the people who live near you. We refer to this as your *community* in the following questions. This would be your immediate neighborhood, subdivision, or development. If you live in a more rural setting, think of the surrounding area that would best approximate a neighborhood, subdivision, or development.

6.1. Since you bought or rented your property, has your community had any wildfire-related events or are there any organizations that address wildfire in your community (e.g., Firewise meeting, meetings with fire department about wildfire, community wildfire-awareness group or event)? (Circle one number) SOCIAL4 (n = 138)

- 1 No 33.9%
- 2 Yes 66.1%

6.2. Have you ever participated in any wildfire-related events or organizations (e.g., wildfire meeting, slash collection day) in your community? (Circle one number) SOCIAL5 (n = 138)

- 1 No 59.0%
- 2 Yes 41.0%

6.3. In your opinion, how much does each of the following contribute to the current wildfire danger in your community? (Circle one number for each)

		Not at all		Some		A lot
		1	2	3	4	5
Build up of vegetation on public land.		1	2	3	4	5
DANGER1 (n = 130) Mean = 3.47	9.2%	9.2%	31.5%	25.4%	24.6%	
The number of houses being built in your community.		1	2	3	4	5
DANGER2 (n = 131) Mean = 2.64	22.1%	19.8%	35.1%	17.6%	5.3%	
Timber cutting practices.		1	2	3	4	5
DANGER3(n = 126) Mean = 2.47	37.3%	14.3%	23.0%	15.1%	10.3%	
Vandalism and/or arson.		1	2	3	4	5
DANGER4 (n = 128) Mean = 2.55	27.3%	26.6%	20.3%	15.6%	10.2%	
Recreational use on public lands.		1	2	3	4	5
DANGER5 (n = 125) Mean = 3.08	17.6%	16.0%	24.8%	24.0%	17.6%	
Natural processes (droughts, changes in vegetation over time, lightning, etc.).		1	2	3	4	5
DANGER6 (n = 131) Mean = 4.05	3.1%	3.1%	17.6%	38.9%	37.4%	

Larger environmental changes such as global warming.	1	2	3	4	5
DANGER7 (n = 129) Mean = 2.95	26.4%	9.3%	24.8%	22.5%	17.1%
Diseases and pests (bark beetle, dwarf mistletoe)	1	2	3	4	5
DANGER8 (n = 130) Mean = 4.05	8.5%	4.6%	10.8%	25.4%	50.8%
Accidental ignitions	1	2	3	4	5
DANGER10 (n = 131) Mean = 3.76	5.3%	8.4%	22.9%	32.1%	31.3%
Other (<i>please specify</i>): __ (DANGERWHY)_____	1	2	3	4	5
DANGER9 (n = 15) Mean = 3.47	20.0%	6.7%	13.3%	26.7%	33.3%

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 = 131) Mean = 2.09	44.3%	22.9%	19.1%	6.9%	6.9%
Humans are largely responsible for climate change	1	2	3	4	5
CLIMATE2 (n = 132) Mean = 2.62	25.0%	25.8%	23.5%	13.6%	12.1%
Climate change is a hoax	1	2	3	4	5
CLIMATE3 (n = 131) Mean = 3.88	9.2%	4.6%	19.8%	22.1%	44.3%
I am skeptical about the existence of climate change	1	2	3	4	5
CLIMATE4 (n = 129) mean = 3.68	10.9%	10.1%	20.9%	16.3%	41.9%
I know a lot about climate change	1	2	3	4	5

CLIMATE5 (n = 131) Mean 2.75	10.7%	26.0%	44.3%	16.0%	3.1%
Climate change has increased the risk of wildfires in Boulder and Larimer counties	1	2	3	4	5
CLIMATE6 (n = 130) Mean = 2.63	16.2%	33.8%	30.0%	10.8%	9.2%
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 = 130) Mean = 3.38	3.1%	15.4%	39.2%	25.4%	16.9%
Most scientists agree that climate change exists	1	2	3	4	5
CLIMATE8 (n = 130) Mean = 2.36	23.8%	40.0%	19.2%	10.0%	6.9%
Most scientists agree that climate change is caused by humans	1	2	3	4	5
CLIMATE9 (n = 129) Mean = 2.71	15.5%	31.0%	30.2%	13.2%	10.1%
Climate change and wildfire risk are not related	1	2	3	4	5
CLIMATE10 (n = 128) Mean = 3.91	3.9%	4.7%	21.9%	35.2%	34.4%

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 = 126) Mean = 61.08

8.2. Are you? (*Circle one number*) GENDER (n = 130)

- 1 Male 56.9%
- 2 Female 43.1%

8.3. What is your racial or ethnic group? (*Circle all that apply*) (n = 138)

- 1 White RACE1 92.0%
- 2 Black or African American RACE2 0%
- 3 Hispanic RACE3 .7%
- 4 American Indian or Alaskan Native RACE3 2.2%
- 5 Asian RACE4 0%
- 6 Other RACE5 .7%

8.4. What best describes your current marital status? (*Circle one number*) MARRY (n = 130)

- 1 Now Married 75.4%
- 2 Widowed 8.5%
- 3 Divorced 10.0%
- 4 Never Married 6.2%

8.5. What is the highest grade or year of school you completed? (*Circle one number*) EDUC (n = 130)

- 1 Eighth grade or less 0 %
- 2 Some high school .7%
- 3 High school graduate 3.1%
- 4 Some college or technical school 20.8%
- 5 Technical or trade school 4.6%
- 6 College graduate 25.4%
- 7 Some graduate work 16.2%
- 8 Advanced Degree (M.D., M.A., M.S., Ph.D., etc.) 30.0%

8.6. Which of the following best describes your current employment situation? (*Circle one number*) EMPLOY (n = 134)

- 1 Employed full time 32.1%
- 2 Employed part time 4.5%

- 3 Unemployed 3.0%
- 4 Self-employed 13.4%
- 5 Retired 47.0%

8.7. Which of the following categories describes your household income? (*Circle one number*) INCOME
(n = 115)

- 1 Less than \$25,000 10.4%
- 2 \$25,000 - \$34,999 7.0%
- 3 \$35,000 – \$49,999 13.0%
- 4 \$50,000 - \$74,999 29.6%
- 5 \$75,000 - \$99,999 16.5%
- 6 \$100,000 - \$124,999 7.8%
- 7 \$125,000 - \$200,000 8.7%
- 8 More than \$200,000 7.0%

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	(p-value) McNemar test
	---Percent---		
Wildfires that threaten human life should be put out.	95	90	0.302
Wildfires are a natural part of the balance of a healthy forest/ecosystem.	88	84	0.238
Wildfires that threaten property should be put out.	81	75	0.265
During a wildfire, saving homes should be a priority over saving forests.	64	72	0.024
Naturally occurring wildfire is not the problem; people who choose to live in fire prone areas are the problem.	35	41	0.377
You do not have the money for wildfire risk reduction actions.	19	33	0.004
With proper technology, we can control most wildfires after they have started.	34	27	0.164
A wildfire is unlikely to happen within the time period you expect to live here.	15	18	0.690
Your property is not at risk of wildfire.	12	11	0.774
You don't take action because adjacent properties are not treated leaving your actions ineffective.	4	10	0.057
You do not need to action to reduce the risk of loss due to wildfire because the risk is not that great.	9	8	1.000
You do not have the time to implement wildfire risk reduction actions.	5	8	0.454
You live here for the trees and will not remove any of them to reduce fire risk.	6	7	1.000
Actions to reduce the risk of loss due to wildfire are not effective.	2	5	0.180
You do not need to act to reduce the risk of loss due to wildfire because you have insurance.	5	4	1.000
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.	3	4	1.000
Managing the wildfire danger is a government responsibility, not yours.	2	2	1.000



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.

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