

Public Perceptions of Values Associated with Fire Protection and WUIs Using Mixed Methods

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I. Introduction

For generations, the public was told that fire destroys forests and many of its associated values (e.g., timber, wildlife, recreation, aesthetics, ecosystem services). Recently, the science of fire prevention and fuel treatments has experienced renewed and enhanced support particularly as resource managers have learned more about ecosystems, their functions, and feedback loops. Still, wildfire prevention measures for enhancing ecosystem services have not found purchase in either the public's acceptance or involvement in this new role of and for fire. This is especially true of the forests within the Wildland Urban Interface (WUI), where fire protection is directed not only at the forests but also the homes and structures that are becoming much more prevalent in the WUI. The USDA Forest Service, for example, has estimated that more than 17 million hectares of private forests in the U.S., 11 % of the total area, is at risk of conversion to development within the next two decades, which will exacerbate this problem (Stein et al. 2005).

Coupled with public uncertainty of fire's role in the ecosystem, resistance to many recommended fuel treatments within and in close proximity to the WUI further complicates fire managers' roles. This resistance arises from two primary factors: (1) many of the prescribed fuel treatments do not reflect forest owners' understanding of vegetation management; and (2) treatments are developed with little recognition of the multiple values owners and the general public place on the forests and the WUI (Finney 2005; Stein et al. 2013; Toman et al. 2013). A wide range of diverse values have been attributed to the WUI. This includes a variety of ecosystem services such as climate regulation, enhanced air quality, habitat for a variety of species, noise abatement, enhanced property values, and numerous human and community health benefits. To date, however, much of the fire prevention/fuel treatment efforts have concentrated on protecting homes and other structures with little regard for the effects on other values.

A limited number of studies have examined the relationship between wildfire mitigation activities and amenity values, recreation, or sense of place (e.g., Nelson et al. 2004; Gunderson 2006; Brenkert-Smith 2006; Collins and Bolin 2009; Erickson and Prior 2011). More research is needed to consider the full set of multiple and competing values, particularly because wildland fire policy has evolved from agency-focused risk mitigation to empowerment and action at the household and community levels (USDA-USDI 2001; USDA-USDI 2009). Risk managers must acknowledge that successful implementation of risk reduction strategies necessitates resident participation which, in turn, demands an understanding of values associated with wildfire protection. To our knowledge, there have been no systematic, national, comparative, cross-sectional analyses of fire prevention/fuel treatment and their effects on the values associated with the WUI. This proposal is designed to provide such information by using a mixed method, multi-phased research model.

Project Justification

The fire science quantitative and qualitative research literature is extensive and growing. Recent books on the subject (Daniel et al. 2007; Martin et al. 2008) review and extend work on social acceptability of fire management (Brunson and Shindler 2004; Weisshaupt et al. 2005) while creating useful frameworks for understanding agency and public collaborations. A number of authors have identified the full range of non-market values associated with the WUI (Venn and Calkin 2007; Nowak et al. 2010). Determining the magnitude of the non-market values associated with fuel treatments in or near the WUI is difficult at best. Venn and Calkin (2007) identified six factors related to the problems this type of assessment must consider: (1) scarcity of information about how non-marketed resources are affected by wildfire; (2) scarcity of estimates of welfare change as a consequence of wildfire; (3) limited amenability of many non-marketed resources affected by wildfire to valuation by benefit transfer; (4) a dearth of studies that have estimated marginal willingness to pay (WTP); (5) violation of consumer budget constraints; and (6) valuation of indigenous cultural heritage is unlikely to be feasible. Successfully measuring each of these

values and the potential ramifications on fire management policy will require a comprehensive, national assessment of how these values differ in varying geographic, sociodemographic, and cultural contexts.

While some authors espouse mixed methods and use them, a carefully designed comparative study on values of the WUI and the effects of fuel treatments and fire prevention that assesses respondent concerns, attitudes, values, and behaviors is absent. The proposed project does this by assembling a team of national social scientists with long-term interests in community and social forestry, with training, experience, and skills in the use of both qualitative and quantitative methods and a commitment to developing policies that better reflect the realities of Americans across the country.

Project Objectives

This project's major goals were to identify and define the various values at risk from wildfire events both within and outside the WUI and to quantify the extent of these values. This was accomplished by working with landowners and the general public to identify the full range of values associated with WUIs, including ecosystem services, aesthetics, and other attributes these groups identified through key informant interviews. Based on the information gathered in this portion of the study, we employed a phone survey to estimate the willingness of residents to receive fuel reduction treatments. Two general research objectives guided this study: *(1) Residents and landowners value the WUI for a variety of benefits and services;* and *(2) A variety of factors affect the values placed on these benefits.* Identifying and better understanding the effects of these variables will allow managers to develop more effective fuel treatment policies to protect these values that will achieve stakeholder acceptance. Several hypotheses related to our overall goal were critical to this study and reflect its transdisciplinary design, revolving around biophysical, sociodemographic, and sociocultural concerns:

- H₁: Values associated with WUI and fuel treatments reflect biophysical differences across regions of the nation;
- H₂: Values associated with WUI and fuel treatments reflect sociodemographic differences among residents of the nation's different regions;
- H₃: Values associated with WUI and fuel treatments reflect sociocultural differences among residents of these regions; and
- H₄: Acceptance of fuel reduction treatments will relate to perceptions of wildfire risk and fire history.

Prior Research

Risk perceptions of wildfire

Risk perceptions of wildfire have reflected the variability of findings found in the broader risk perception literature. Despite the importance of risk perceptions to wildfire mitigation actions (Monroe et al. 2003; Brunson and Shindler 2004; Weible et al. 2005; Bright and Newman 2006; McCaffrey and Kumagai 2007; Ryan and Wamsley 2008; Winter et al. 2009), there is little consistency in the literature regarding the relationship between risk perceptions and mitigation behavior. For example, previous experience has been a factor in creating defensible space around homes; as well, it has been associated with apathy regarding the perceived likelihood of repeated wildfire events (McCaffrey et al. 2013). Similarly, proximity to wildfire has been shown to increase concern (Manfredo et al. 1990) or have little significance (Vining and Merrick 2008). Inconsistencies suggest intervening social, economic, and ecological elements influence the ways homeowners view and address a wildfire hazard (Carroll et al. 2005; Blanchard and Ryan 2007). As noted by several authors, risk perception is important to mitigation actions, but other factors within the biophysical, sociodemographic, and sociocultural contexts of wildfire may play equal or more important roles (McCaffrey 2004; Steelman 2008).

The biophysical context

Biophysical factors include land use and cover, topography, climate, fuel load, fire regimes, wildlife, and numerous other ecological characteristics of the study site. An important consideration in the WUI is that wildfire risk can increase due to forest fragmentation, inappropriate landscaping decisions, and flammable home building materials (Winter and Fried 2000; Daniel et al. 2003; Jakes and Nelson 2007). Emergency responders and natural resource managers are obligated to protect life and property even when low-density housing is difficult to defend from wildfire due to long emergency response times, lack of water sources, and underdeveloped road systems (Radeloff et al. 2005).

Recent studies have found WUI residents were aware that the lack of fire led to unhealthy forest conditions (Carroll et al. 2005; Monroe et al. 2006; Absher et al. 2008). As well, public education and outreach has had a positive influence on knowledge about fuel reduction treatment methods (Jacobson et al. 2001; Toman and Shindler 2006). Some studies have found respondents accepted the use of prescribed burning as an ecological practice on public land, although they preferred mechanical treatments when the forest is located close to a populated area (McFarlane 2006; Absher et al. 2008; Knotek et al. 2008). Despite these findings, high knowledge levels have also been associated with decreased concerns (Blanchard and Ryan 2007; Gordon et al. 2010). Ample evidence that the public recognizes the ecological role of fire suggests that additional factors intervene in attitudes towards fuel treatment methods, decisions to live in high-risk places, and other factors related to wildfire risk perceptions and mitigation activities.

The sociodemographic context

Although some differences have been observed for race and gender, sociodemographic (including geographic) variables by themselves have rarely explained important differences in attitudes and behaviors toward wildfire (Nelson et al. 2004; Bowker et al. 2008; Ryan and Wamsley 2008; Shindler et

al. 2009; Wyman et al. 2012; McCaffrey et al. 2013; Toman et al. 2013). This includes urban or rural residency status which has been linked to divergent views in resource management (i.e., prescribed fire, thinning, grazing), but not significant differences in wildfire risk perceptions per se (Shindler et al. 2009). Still, sociodemographics are important in the WUI where social and landscape change can lead to conflict in the sociocultural context of wildfire (Smith and Krannich 2000). Surveys used to quantify perceptions of wildfire risk often have a limited ability to draw connections between sociodemographic variables and more difficult to measure sociocultural variables, including social conflict and collective agency (McCaffrey and Olsen 2012).

The sociocultural context

Traditions, attitudes, beliefs, and value systems of WUI populations are part of the sociocultural context of wildfire. As Beck (1996) noted, risk is intertwined with society's economic and political structures, and the complexity of modern risk means no one fully understands the dangers they face. Wildfire risk is a fusion of ecological and technological drivers complicated further by enormous budgets, political lobbying, and media amplification. Nevertheless, risks are bound up in instrumental rational control – through decisions people make about their lives and future courses of action (Beck 1996). The sociocultural context of risk underscores both agency and the social construction of wildfire and preparedness (also Paveglio et al. 2011).

Within the sociocultural context, in-migration is an important characteristic of many interface zones even though the WUI is not defined by population change. In such cases, residents often have to renegotiate local identity and symbols of collective life as the penetration of new and different value systems and threats to traditional norms and membership groups occurs with the emergence of heterogeneity (Greider et al. 1991; Smith and Krannich 2000). These differences can manifest in competing notions about aesthetics, land use and community growth, natural resources management, and strategies for addressing wildfire risk. Additional community processes (e.g., race and class conflict, environmental concerns,

historical grudges, social movements, cultural celebrations) emerge from change. Sharing direct and indirect wildfire experiences and local landscape knowledge can become increasingly challenging as a result of conflicting worldviews and competing group memberships (Drabek et al. 1975; Tierney et al. 2001; McCaffrey 2004).

Social institutions (i.e., insurance, government, and corporations) are a critical aspect of the sociocultural context because they are key players in the management of risk (Beck 1996). To maintain this role, effective messaging must be continuously reevaluated because trust is dynamic and highly dependent on the relationship between the institution and the public. Residents who have less confidence in an institution's ability to fulfill its role have demonstrated increased levels of concern about wildfire and are less likely than others to accept initiatives designed to address it (Winter and Fried 2000; Carroll et al. 2005). Risk communication through direct contact, citizen involvement in decision-making, and an understanding of local context has been most effective in sustained wildfire mitigation at the individual and community levels (Jacobson et al. 2001; Weible et al. 2005; Jakes and Nelson 2007).

To examine values associated with wildfire perceptions and risk management, we consider the three dimensions of wildfire risk outlined above: biophysical, sociodemographic, and sociocultural. We then describe how community mitigation actions materialized from the contexts and merged into effective risk reduction strategies. Findings can serve as a springboard for wildfire and fuel treatment message development and contribute to evaluation processes capable of use in areas where public education campaigns are ongoing, are required, or are appropriate.

II. Key Informant Interviews¹

To gain insight into the values the public places on the WUI affected by fuel treatments, we conducted *key informant* interviews in each of four regions of the nation – Northeast, Southeast, Northwest, and Southwest. Within each region, two fire-prone areas proximate to each other based on the CWPP and WUI data sets were selected – one metropolitan and one nonmetropolitan. Thus, in total, key informant interviews were administered in four regions across the nation with four nonmetropolitan and four metropolitan sites. Key informant interviews allowed us to gather important information about people and places that cannot be measured precisely with secondary data.

Within each site, key informant interviews were administered to individuals knowledgeable about WUI issues and local affairs; moreover, these people will be broadly representative of private forest landowners (PFL), forest industry, government, local political and social factions, and social status. Key informants were identified through state and organizational directories and will include representatives from some or all of the following: (1) PFL; (2) PFL organizations; (3) state/federal resource management agency; (4) a senior local government official; (5) local planning agency; (6) local economic development agency; (7) local environmental group; (8) regional and/or national environmental group; (9) local media; (10) business community; (11) local forest industry; (12) nongovernmental organizations; (13) a senior hospital and/or clinic administrator/doctor; and (14) underrepresented or marginalized segment of local society (Wilson 1987, 1996). When participation of the identified informants could not be obtained, alternative respondents were selected. Responses were aggregated following a procedure that eliminates idiosyncratic answers and respondent error (see Schwartz et al. 2001).

The interview covered: (1) awareness of past and proposed fuel treatments in the area; (2) the range of values associated with the WUI; (3) perceptions of wildfire risk; (4) public response to wildfire risk and

¹ The Key Informant Interviews section was developed as a manuscript that is under revision for publication: J. Gordon, A.E. Luloff, James C. Finley, Adam S. Willcox, and Donald G. Hodges. *A National Study of the Public Perception of Wildfire Prevention: Results from Key Informant Interviews*.

occurrence; and (5) constraints on implementing wildfire reduction treatments. We also explored the perspectives these informants had with respect to the public's perceptions and attitudes towards WUI values and fuel treatments. To garner a historical perspective related to fire and fire protection for each selected study site, we collected editorials, reports, policy documents, and other archival sources. Relevant aggregations of secondary data and the key informant data enable us to systematically describe the relationship between the public's values, opinions, attitudes, concerns, and behaviors with respect to the WUI.

A synthesis of the key informant data are presented in a series of facilitated group discussions in each of the eight study sites. This process contributes to a better understanding of the strengths, weaknesses, opportunities, and threats associated with these issues in each region. Facilitated groups are similar to the more commonly used focus group approach in qualitative research. Such groups are designed to determine perceptions, feelings, concerns, and manners of thinking about particular products, services, and/or opportunities (Krueger 1988). Unlike focus groups, which are generally homogeneous and involve seven to ten people, facilitated groups are larger. They can easily accommodate up to fifty people and do not hinge upon homogeneity of participants – rather, these people must share an interest in the subject and willingness to engage in dialogue about the issues raised. The purpose of the group is to focus on and provide information about the WUI and the associated forest-related values they hold. To help ensure this, a facilitator who is highly trained in group processes and assisted by a colleague who takes notes and/or records the discussion is typically utilized. Our focused discussions will target the same types of individuals interviewed earlier – the major difference is the focus on “group think” as opposed to individual responses to core questions.

The results of both the key informant interviews were content analyzed by site (metropolitan-nonmetropolitan), area (one in each region), and as a larger aggregate (total metropolitan sites, total nonmetropolitan sites, and across all eight sites). Findings from these analyses were used to: (a) provide

more in-depth insight into issues related to the public's values, opinions, attitudes, concerns, and behaviors with respect to WUI values and protection than would be possible from a survey alone; and (b) develop questions for the subsequent national mail survey that will provide the opportunity for generalization.

Study Area

Research sites for this study were selected based on their classification in the WUI (Radeloff et al. 2005) and whether or not they had a Community Wildfire Protection Plan (CWPP; <http://www.forestsandrangelands.gov/success/index.cfm>). Sites varied by sociodemographic indicators (e.g., in-migration and seasonal housing) and biophysical factors (e.g., forest type) and corresponded to US Forest Service Regions (Eastern, Pacific Northwest, Southern; Brennan et al. 2005). For comparison, a metropolitan county was selected with an adjacent nonmetropolitan county in each region. All sites had been designated as wildfire-prone and wildland fire issues were prominent (USDA-USDI 2001).

Study counties included: Clinch (nonmetropolitan) and Lowndes Counties (metropolitan) in Georgia; Carlton (nonmetropolitan) and St. Louis (metropolitan) Counties in Minnesota; Rio Arriba (nonmetropolitan) and Santa Fe (metropolitan) Counties in New Mexico; and Jefferson (nonmetropolitan) and Deschutes (metropolitan) Counties in Oregon. In 2010, populations ranged from under 6,798 in Clinch County to over 200,000 in St. Louis County. All counties except Clinch, St. Louis, and Rio Arriba experienced an increase in population between decennial censuses. Deschutes County experienced the greatest population increase (37% to 157,733); Clinch County the greatest decline (-1% to 6,798). Jefferson County experienced the largest amount of in-migration to rural areas (17% to 13,710), while Rio Arriba County lost the most rural population (-2% to 40,246).

Methods

Key informant interviews were conducted in each of these four states during 2012 (Table 1). Interviews were administered to individuals knowledgeable about WUI issues and local affairs; moreover, these people were broadly representative of private forest landowners (PFLs), forest industry, government, local political and social factions, and social status (Krannich and Humphrey 1986). We conducted 33 interviews in Georgia, 35 in New Mexico, 35 in Minnesota, and 45 in Oregon for a total of 148. Initial key informants were identified using local directories and internet sources. To ensure comparability across urban and rural counties of each state, informants representing each of the following perspectives were interviewed in each community: (1) federal and state land manager; (2) extension agent; (3) local planner and/or natural resource manager; (4) emergency services professional; (5) elected official; (6) business leader; (7) landowner; (8) religious leader; (9) journalist; (10) consultant or industrial forester; (11) environmental activist; and (12) citizen activist. Additional informants were identified using snowball sampling with purposive selection to encourage diverse perspectives, including an underrepresented or marginalized segment of local society (Heckathorn 2002).

Each interview covered: (1) awareness of past and proposed fuel treatments in the area; (2) range of values associated with the WUI; (3) perceptions of wildfire risk; (4) public response to wildfire risk and occurrence; and (5) constraints on implementing wildfire reduction treatments. Open-ended questions encouraged informants to volunteer information, rather than simply respond to queries. Their rich and spontaneous replies provided a reality view of a place, including broad relationship patterns among actions and actors with the local environment (Elmendorf and Luloff 2001).

Interviewers' notes were analyzed for emergent themes using a two-step coding process involving reading the notes and then coding into thematic categories (Creswell 1998). Themes were compared within and

across cases in each state and then over the four states. Each author reviewed the data and added additional interpretation to improve reliability.

Findings

Risk perceptions

Risk perception themes were related to both wildfire and wildfire prevention with a focus on: (1) wildfire concern and (2) smoke. Aside from Jefferson County, where communities along a main highway were surrounded by irrigated crops, residents from rural communities in the study area demonstrated awareness about wildfire. In highly wildfire-prone areas, long-term residents mentioned wildfire as a routine aspect of life, especially during “wildfire” season. For example, a Minnesota respondent remarked, “We were raised with that awareness. We know to be careful as individuals” (St. Louis County). As discussed further below, this attitude may be waning in communities characterized by in-migration of residents seeking recreation and retirement opportunities. In such cases, perceptions tended to be mixed, ranging from heightened concern to indifference.

Of the four study areas, wildfire was mentioned as a prominent risk worthy of immediate concern only in Deschutes County (although CWPPs existed in each site¹). In the other sites, wildfire became a priority when residents perceived a near and eminent danger. A respondent in Lowndes County noted, “Fires in Colorado: we see and hear about [them] but that’s just another news story until you smell and see the smoke in your neighborhood and communities.” By contrast, previous experience with wildfire was mentioned as a source for influencing risk perceptions only when the disaster event was recent (within the last 10 years) and catastrophic.

¹ Although CWPP requires resident input (HFRA 2003), most of our informants were unaware of local CWPPs. Because CWPP is a necessary condition for receiving financial aid for mitigation under the Healthy Forests Restoration Act (2003), the critical elements of participation may have been neglected during the CWPP process in order to receive funding.

As the Georgia participant noted, smoke increased concerns about a wildfire even if personal safety and property were not under immediate threat. In particular, rural residents were likely to mention the negative health effects from smoke linked to prescribed fuel reduction fires or controlled fires employed in agriculture field preparation. Some informants said official and unofficial communication about smoke effects had wider socioeconomic impacts, especially in areas reliant on outdoor recreation. For example, a rural Minnesota resident stated, “The Pagami Creek Fire did not put smoke into Ely. The headlines outside of the community were that the town was on fire. These headlines killed business for the season” (St. Louis County). In urban areas and communities frequented by seasonal residents and vacationers, smoke was perceived as a risk if it disrupted community events, personal recreation activities, and travel. Although natural resource and emergency managers acknowledged wildfire risk specifically, the broader population was often more concerned about smoke.

Biophysical context

The predominant themes from the biophysical context were: (1) water availability; (2) proximity to fuels; and (3) fire as part of a natural system. Water was overwhelmingly mentioned as an issue in the Western states. For example, several New Mexico informants connected noticeable decreases in water availability with climate change and mountain pine beetle (MPB; *Dendroctonus ponderosae*). Wildfire was seen as a corollary to these hazards. In the quote below, an informant noted a decrease in precipitation with less snow hitting the forest floor due to a thick canopy.

The snow pack is no good - it doesn't hit the ground because the trees are too thick.

We're not getting runoff like before, so it's too dry. MPB is threatening stands in

NM...There is too much fuel loading and fire suppression. (Rio Arriba County)

This description suggests that high tree density increases wildfire risk because snow caught in the canopy sublimates.

Findings related to the biophysical context overlapped with the other dimensions of wildfire. For instance, Western residents connected water issues with sociodemographic themes such as population growth. Water problems were perceived as worsening with the growing WUI, but policy had not kept pace with water use. In some cases, study participants made a connection between management of local watersheds and wildfire. More importantly, WUI growth was a common denominator for both water use and wildfire.

By comparison, proximity to wildfire fuels emerged most prominently in Oregon and Minnesota. These places also exhibited the greatest degree of knowledge about fire's role in forest ecosystems. Minnesota informants noted that wildfire hazard increased proximal to a designated wilderness area. There, a catastrophic storm toppled extensive timber volume in the late 1990s. Through the media, word of mouth, and recreation activities, residents were frequently reminded of the well-known blow-down: "Fire is simply not thought about very often [in Carlton County]. However, the Boundary Waters incident makes people think about what could happen."

Similarly, in Oregon, Jefferson County informants noted forests were not near their agricultural communities. However, Deschutes County residents were in closer contact with the forest and concerns increased with knowledge of forest conditions. Informant responses highlighted how wildfire risk perceptions varied across minor geographic areas in relation to biophysical characteristics.

Perceptions of fire as part of an ecological system differed within and across study sites. Although such attitudes can reflect biophysical conditions, they were often intertwined with sociocultural values. Some, as in rural Georgia, considered idle land the antithesis of nature. Plantation forests were as natural as non-plantation forests and human intervention, including prescribed burning, in the forest was natural. "(The) difference between a planted forest and natural is not much...Controlled burning is insurance against wildfire – fire is our best friend" (Clinch County). By contrast, rural Minnesota informants often thought that because their forests were "over-managed," they were not natural and prescribed burning was an

artificial event (although not necessarily an unwanted practice). Rural Oregon informants said contemporary forests were not natural, but prescribed fire simulated a natural event to improve forest health.

Sociodemographic context

There were two predominant themes in the sociodemographic context: (1) population change and (2) economic shifts. In all states, residents discussed population change. Depending on the site, change was linked to WUI encroachment into fuel zones, increased diversity, and loss of community identity. In Georgia, New Mexico, and Oregon (Jefferson County), racial conflict emerged as an aspect of population change. Oregon and New Mexico were experiencing increasing immigrant populations, while the Georgia sites were characterized by race-based residence patterns. As a result, the sociodemographic context tested local social relationships and capacities to agree on values associated with fire and fuels management. For example, new and seasonal residents were said to be less concerned with community wildfire hazard impacts, but very concerned with smoke. Permanent residents, by contrast, either expressed concern or were not concerned about both aspects of fire.

Overall, Oregon communities sharply contrasted with the other sites in terms of dealing with different population groups. Despite responses such as “The term local ... is a misnomer because of the vast growth that this area has experienced” and “It is hard to do things when people are not the same,” the communities were described as proactive regarding wildfire preparedness. A local NGO specifically dealing with coordinating wildfire efforts was largely credited with leading community-wide efforts.

We were on the forefront of developing fuel management programs... Even the large landowners have gone on to do mitigation work without any assistance because it is the right thing to do. The program has grown in an organic way – it has not been forced

In New Mexico and Oregon, diversified and progressive economies of the metropolitan areas contrasted with the comparison rural agricultural counties. Economic strength was linked with perceived

high levels of human capital, which in turn translated to successful wildfire preparedness strategies, among other collective concerns. Santa Fe County leaders (private and public) engaged in fuel reduction to protect its watershed. Deschutes County leadership, led by the NGO mentioned above, engaged residents in defensible space, collaborated with the U.S. Forest Service, organized homeowner fuel removal and disposal events, and constructed a FireFree demonstration home, among other activities.

In all sites, informants expressed concerns about rural poverty and the decline of traditional agricultural economies and population. This quote from St. Louis County illustrates emergent conflict as communities struggled to reconcile extraction-oriented and recreation-oriented values. Long-time, permanent residents saw the recent influx of seasonal residents and tourists as “ideologues ... [newcomers] like the appearance of the town, and then they are shocked there is support for mining. It is not that [permanent residents] support [mining], but that they want to see it be done to support the economy and their livelihoods.” Notably, rural residents were more accepting of timber management; however, they were just as unlikely as their urban counterparts to discuss involvement in wildfire mitigation activities. The sociodemographic context helped frame sociocultural values associated with wildfire preparedness and fuel reduction.

Sociocultural context

The main themes from the sociocultural context revolved around: (1) natural resource values; (2) trust in government; and (3) community participation. Urban informants often discussed how residents valued forests for recreational pursuits (the main exception was rural St. Louis County where both urban and rural residents discussed recreation). In all sites, rural residents focused on cultural values associated with agriculture. Major conflicts over natural resource values often converged on motorized versus non-motorized recreation (e.g., Minnesota), resource utilization versus ecocentrism (e.g., New Mexico), and pro-growth versus restrained growth into wildlands (e.g., Georgia). Such conflicts often overshadowed collective definitions of risk and acceptable mitigation strategies. For example, in New Mexico and

Oregon, environmental activist groups from urban areas were seen as opposed to management actions that included thinning, prescribed fire, and post-wildfire salvage logging. This quote illustrates nuances in disagreements over management philosophies:

There are some environmentalists that say just leave it alone [and not to allow fuel reduction treatments]. But no one here wants to just clearcut the forest, they want responsible management. (Santa Fe County)

Trusting the government to fight wildfires, conducting prevention treatments, and working with communities differed among and within study sites and related to past interactions and experiences with government agencies. Although interviewees indicated a degree of trust in the ability of state and municipal governments to fight wildfires, they expressed less confidence in the federal government to implement wildfire prevention treatments and programs. All of our study sites, except Georgia, had reportedly experienced escaped prescribed fires, leading to skepticism regarding treatment needs and agencies' ability to implement prescriptions. This quote from Oregon exemplifies the difficulty of balancing public acceptance of fuel reduction treatments.

If we do a prescribed fire and unexpected weather conditions crop up do we [local government] and forest service know what we are doing? This is a concern and is problematic. The pendulum that swings back and forth all the time – too aggressive logging the forests and now too aggressive burning them down – still sorting out how to balance this out. (Deschutes County)

All study sites reported positive community response and increased volunteerism when faced with natural disasters, including wildfires. A high degree of participation in daily activities was described; informants said residents were proud of their communities and enjoyed contributing to improved local well-being in various ways. Like many communities, they also experienced major divisions along racial, ethnic, and socioeconomic lines. Participation was often linked to group membership. For example, a New Mexico informant described wildfire preparedness activities, including fuel reduction demonstrations; however, the Hispanic population was not involved and there was little expectation they

would participate. One informant noted a constant question among residents was “Whose town is it anyway?” Informants from Minnesota, New Mexico, and Oregon, described contradictory values and resources among social groups, which exponentially impacted conflict regarding other local life issues as well as disparate effectiveness of wildfire preparedness messaging between groups.

Discussion

This paper presented a synthesis of key informant findings from four states regarding public perceptions of values associated with wildfire protection. Findings provide a foundation for future research and application by placing public wildfire risk perceptions into the biophysical, sociodemographic, and sociocultural contexts of communities, which frame the full range of values, attitudes, and behaviors associated with wildfire and forests (Figure 1). The model is fluid, with each dimension influencing and influenced by the other dimensions. Findings underscore the need to better measure and understand how sociocultural factors are associated with wildfire response.

Most key informants described fairly low community level concerns about wildfire despite their counties being recognized as high risk and having Community Wildfire Protection Plans in place (USDA-USDI 2001). Deschutes County was an exception, with community-wide risk mitigation actions reflecting relatively high levels of concern. Interviews from the two Western states illustrated residents’ understanding of additional risks associated with fuel regimes. In some cases, informants were concerned about increased potential for wildfire as a result of tree mortality caused by the mountain pine beetle. In other cases, wildfire was linked to drought which, in turn, was linked to climate change. Key informants noted population pressures can increase this web of concerns in the American West. These findings underscore the public’s capacity for perceiving associations between environmental vulnerabilities; however, social and cultural dimensions of the community may cloud interpretations, and residents may have difficulty articulating such relationships.

Related to the sociodemographic dimension, risk perceptions, concerns, and behaviors varied across geographic areas in relation to biophysical characteristics of the landscape and cultural values of the population. This finding contrasts with previous research failing to demonstrate sociodemographic differences, including urban or rural residency (McCaffrey et al. 2013; Toman et al. 2011, 2013). Our study found increased concerns in the West compared to the two other study areas primarily due to the regions' recent history of catastrophic wildfires and drought conditions. As well, prescribed burning was generally accepted, but perspectives varied regionally as to whether it mimicked natural processes or was a component of "unnatural forests." In addition, findings generally supported previous research demonstrating public understanding of wildfire in forest ecosystems (e.g., Brenkert-Smith 2011; McCaffrey 2008; Monroe et al. 2006; Paveglio et al. 2011; Vaske et al. 2007). However, rural residents, who informants described as having more knowledge of biophysical processes than urban residents, were typically less concerned than their counterparts.

This study acknowledges that differences in wildfire perceptions are entwined in society's sociocultural structures. As McCaffrey and Olsen (2012:25) noted, sociocultural factors are "the more complex, often identity-based, and harder-to-measure factors ... [that] appear more likely to explain variation in how individuals respond to fire management issues." Key informant interviews demonstrated that growing communities have substantial challenges related to the social milieu which influenced collective perceptions and the ways communities could address wildfire (Drabek et al. 1975; Smith and Krannich 2000; Tierney et al. 2001; McCaffrey 2004). The importance of sociocultural factors suggests a considerable need for work that improves the ability to identify and describe how the sociocultural context fits into wildfire risk perceptions and mitigation.

Our findings underscore the importance of local social and political institutions as key players in leading risk management (Beck 1996). Of our eight county sites, Santa Fe and Deschutes Counties demonstrated the strongest actions to reduce wildfire hazard. These actions were driven by robust collaboration between

public and private groups (also Sturtevant and Jakes 2007). Organizations, such as the NGO in Deschutes County were important for transcending sociocultural divisions within communities and initiating dialogue about the threat of wildfire to *all* residents. Although New Mexico exhibited mitigation activities, key informants acknowledged the activities excluded specific segments of the population; therefore, the actions were impeded at the community level.

Several implications emerge from this discussion. Because residents cope with a range of risks and hazards in their daily lives, risk managers and community leaders should acknowledge competing risks when developing wildfire mitigation programs and messages. Risk managers have long understood that individuals have a finite capacity to effectively address the many risks they face, and wildfire may take a backseat to other more salient concerns. This study suggests one way of initially identifying and characterizing competing risks and concerns is to employ the framework used here for understanding sustainable risk reduction (Figure 1). With residents' direct input, this approach can help promote dialogue, understanding, and prioritization of community level concerns. As evidenced by Deschutes County leadership, resident contribution to the classification of risks is critical to the success of a comprehensive framework.

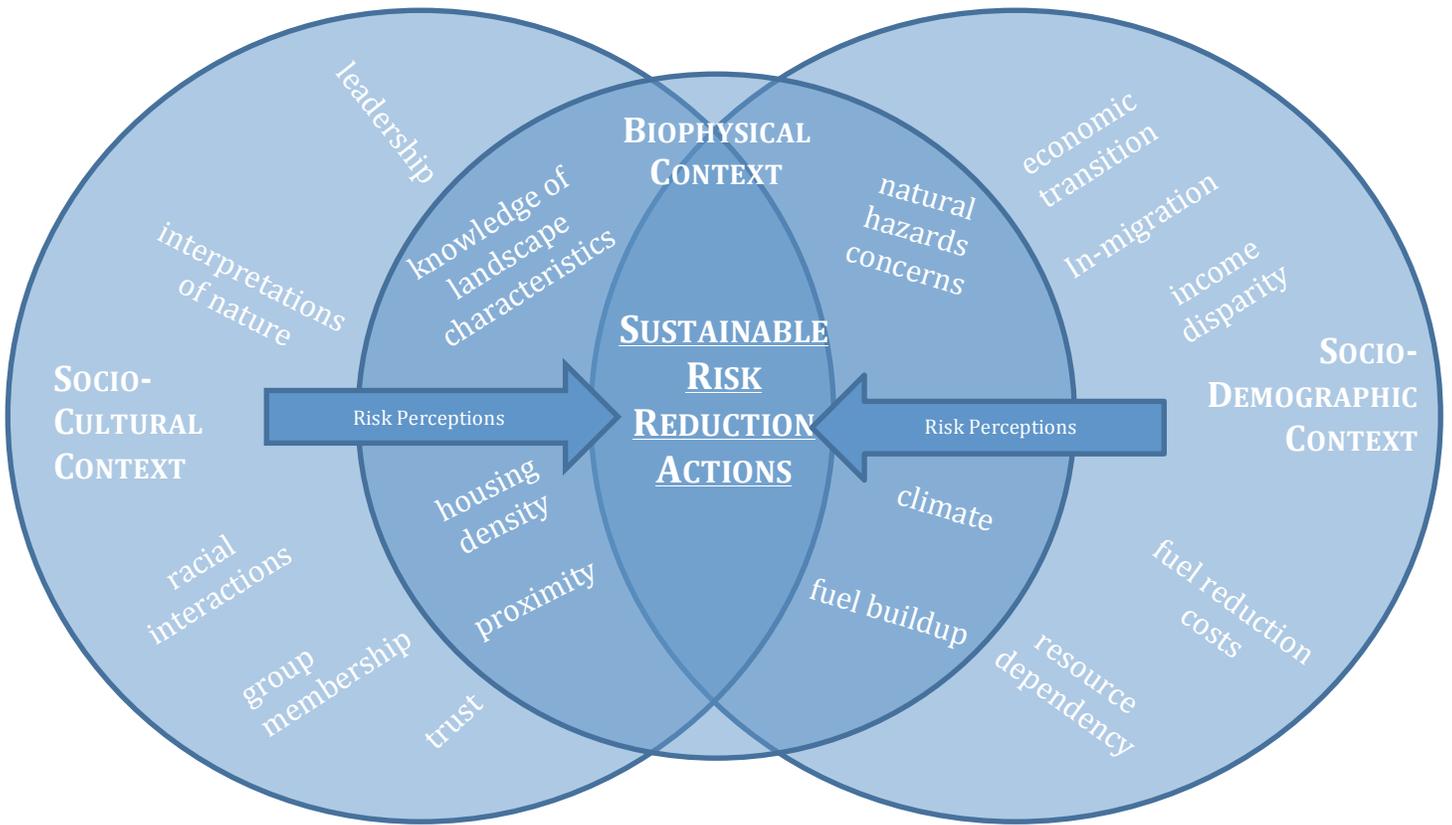
In addition, findings from this study suggest the potential for increasing awareness about wildfire and reducing risk by incorporating intersecting concerns from the biophysical context and acknowledging geographic differences (Nelson et al. 2004). For example, because water concerns and mountain pine beetle were salient and linked to wildfire, such hazards could be used as a vehicle to develop messaging that specifically addresses wildfire mitigation activities at the individual and community levels. For many places in the arid West, fuel reduction within the immediate goal of water quantity (and watershed management) may be valued more than fuel reduction for its own sake.

Similarly, programs in Georgia might focus more on the local health effects of smoke produced by wildfires; forest management activities such as prescribed fire have the potential to reduce air-borne contaminants. One goal of this communication would be to allay the remnants of the total suppression message. Because residents are familiar with smoke, but not familiar with wildfire per se, communication strategies addressing smoke may have the desired impact. This implication may have ancillary effects on the scale of fuel reduction since all prescriptions must be implemented on a larger scale than currently performed in order to have any real difference in mitigating wildfire risk (Calkin 2014).

Table 1. Key informant types (n=148)

Type	Number of Key Informants			
	New Mexico	Georgia	Minnesota	Oregon
Government (Federal, State, Local)	13	23	16	28
Business	5	4	6	4
Minority group	2		2	3
Environmentalist	4		3	4
Media	2	2	3	2
Landowners	4			
Forest Industry	1	3	3	2
Citizen Activists	2		1	
Religious Leaders	2	1	1	2
TOTAL	35	33	35	45

Figure 1. Framework for understanding sustainable risk reduction.



III. Phone Survey

In addition to the results regarding public perceptions of values associated with wildfire protection described in the previous section, the key informant interviews also were utilized in developing the questionnaire to assess the perceptions and values through a national phone survey. The phone survey was conducted by Opinion America Group (Philadelphia, PA) with 1,200 respondents residing in fire prone areas (half metropolitan, half nonmetropolitan). Four hundred respondents each were drawn from counties identified as being very high, high, and moderate risk for wildfire (http://silvis.forest.wisc.edu/projects/WUI_Main.asp). Table 2 summarizes the breakdown of the sample utilized in the survey.

Table 2. Sample Summary and Rate Calculations

RATE CALCULATIONS	TOTAL	VERY HIGH RISK	HIGH RISK	MODERATE RISK
Total Sample Records Used	21,507	5,833	6,908	8,766
<LESS> “Bad” Non-working/ Disconnected/etc. Sample Records	6,217	1,480	1,842	2,895
Percent of Sample “Bad” %	28.9%	25.4%	26.7%	33.0%
(A) Total “Good” Sample Records	15,290	4,353	5,066	5,871
<LESS> Sample Records Dialed 4xs+	8,524	2,450	3,153	2,921
<LESS> “Refused” to participate	3,818	1,279	1,136	1,403
Percent of “Good” Sample Records “Refused” %	25.0%	29.4%	22.4%	23.9%
NET Sample Records	2,948	624	777	1,547
(B) Completed surveys	1,200	400	400	400
(C) Disqualified	None	None	None	None
(D) Incomplete/Breakoffs	35	13	10	12
(E) Total responding	1,235	413	410	412
Total Responding/NET Sample Records	41.9%	66.2%	52.8%	26.6%
Qualification Rate = (E-C) / (E)	100%	100%	100%	100%
Completion Rate = (B) / (B+D)	97.2%	96.9%	97.6%	97.1%
“Good” Sample Yield Rate = (E) / (A)	8.1%	9.5 %	8.1%	7.0%
NET Response Rate = (E) / (E+Refused)	24.4%	24.4%	26.5%	22.7%

The respondents resided in 27 states (Figure 2 and Table 3), with the majority located in states west of the Mississippi River. Given that we wanted to ensure that the respondents represented the spectrum of fire risk, we allocated the survey population based primarily on the wildfire risk rating for the county of residence. Still, almost one-third of the respondents were located in the eastern half of the United States (Table 4). More than one-third of the respondents were California residents, primarily due to the requirement of interviewing 400 residents of “Very High” fire risk counties. While “Very High” fire risk counties are interspersed throughout many western states, most are sparsely populated requiring a heavy reliance on California counties for the necessary respondent numbers.

Figure 2. States and Zip Codes in which Respondents Resided

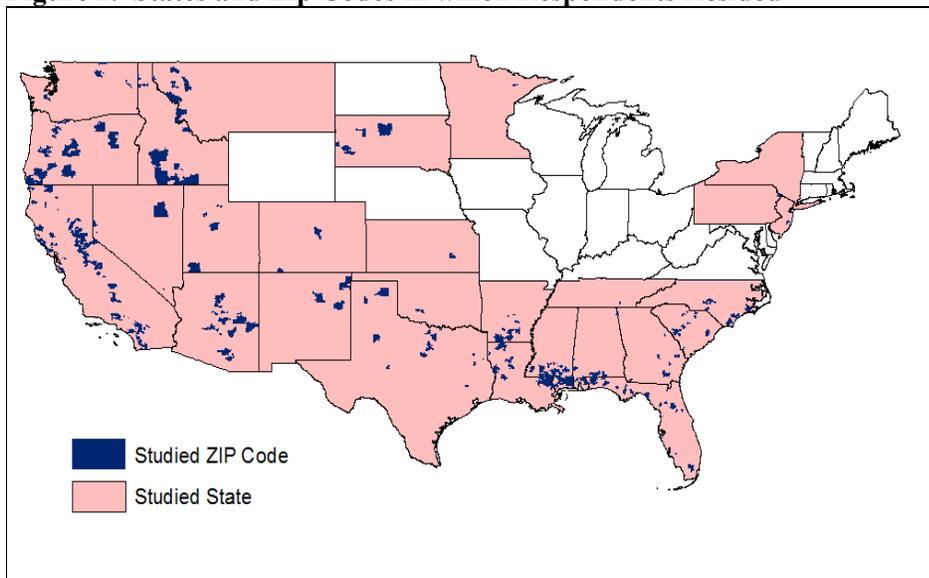


Table 3. Respondent Numbers by State and County Risk Category

		Very High Risk	High Risk	Moderate Risk	Total
STATE	AL	0	10	7	17
	AR	0	1	24	25
	AZ	3	19	95	117
	CA	331	88	13	432
	CO	0	1	9	10
	FL	0	26	31	57
	GA	0	13	0	13
	ID	1	21	5	27
	KS	0	1	0	1
	LA	0	30	24	54
	MN	0	0	1	1
	MS	0	44	4	48
	MT	2	12	12	26
	NC	9	41	1	51
	NJ	6	3	3	12
	NM	0	0	5	5
	NV	6	1	14	21
	NY	0	0	7	7
	OK	0	0	7	7
	OR	10	25	61	96
	PA	0	0	6	6
	SC	0	39	2	41
	SD	0	12	16	28
	TN	0	0	2	2
	TX	0	1	37	38
	UT	32	8	0	40
	WA	0	4	14	18
Total		400	400	400	1200

Table 4. Regional Distribution of Phone Survey Respondents

	Very High Risk	High Risk	Moderate Risk	Total
Southeast¹	9	204	102	315
Northeast²	6	3	17	26
Southwest³	372	117	164	653
Northwest⁴	13	76	117	206
	400	400	400	1200

¹ Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee

² Minnesota, New Jersey, New York, Pennsylvania

³ Arizona, California, New Mexico, Nevada, Texas, Utah

⁴ Colorado, Idaho, Kansas, Montana, Oregon, South Dakota, Utah

Differences Among Risk Categories

The first phase of the analysis provides an assessment of the differences in biophysical, socio-demographic, and sociocultural characteristics, as well as perceptions among regions (in the case, fire risk – see Figure 3). Differences among means were evaluated for the survey questions and reported below. Not surprisingly, a significantly larger portion of respondents in “very high risk” counties were involved in wildfire planning or preparedness at their homes, with more than 50 percent of those in very high risk counties participating in these activities, compared to less than one-third in the other areas (Table 5). Similar results were observed when respondents were asked about similar activities conducted at the community level (Table 6).

Figure 3. Fire risk severity in studied area

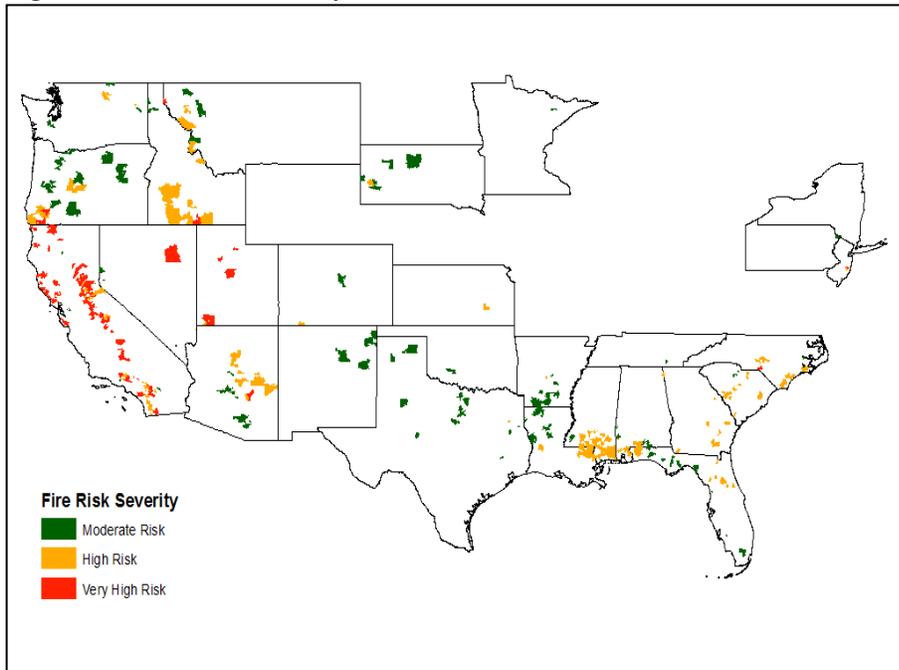


Table 5. Respondent Involvement in Wildfire Planning or Preparedness Activities ¹

			Very High Risk	High Risk	Moderate Risk	Total
5a. Have you been involved in wildfire planning or preparedness at your home?	Yes	Count	215 _a	124 _b	128 _b	467
		%	53.8%	31.0%	32.0%	38.9%
	No	Count	185 _a	276 _b	272 _b	733
		%	46.3%	69.0%	68.0%	61.1%
Total		Count	400	400	400	1200
		%	100.0%	100.0%	100.0%	100.0%

¹Each subscript letter in the subsequent tables denotes a subset of quota categories whose column proportions do not differ significantly from each other at the .05 level.

Table 6. Community Involvement in Wildfire Planning or Preparedness Activities

			Very High Risk	High Risk	Moderate Risk	Total
6a1. Has your community been involved in wildfire planning or preparedness?	Yes	Count	251 _a	176 _b	178 _b	605
		%	62.7%	44.0%	44.5%	50.4%
	No	Count	100 _a	164 _b	156 _b	420
		%	25.0%	41.0%	39.0%	35.0%
	Not sure	Count	49 _a	60 _a	66 _a	175
		%	12.3%	15.0%	16.5%	14.6%
Total	Count	400	400	400	1200	
	%	100.0%	100.0%	100.0%	100.0%	

Respondents also were asked to prioritize a number of issues, identifying the issue to be addressed first with limited resources. A greater percentage of respondents in the “very high risk” areas indicated that fire risk reduction was most important than respondents in the other two groups. Conversely, “very high risk” respondents ranked economic development as significantly less important than those in the other two groups (Table 7).

Table 7. Relative Importance of Local Issues

		Very High Risk	High Risk	Moderate Risk	Total
Environmental protection	Count	44 _a	34 _a	44 _a	122
	%	15.4%	13.4%	15.9%	15.0%
Economic development	Count	29 _a	57 _b	53 _b	139
	%	10.2%	22.4%	19.1%	17.0%
Local economies	Count	46 _a	58 _b	62 _{a, b}	166
	%	16.1%	22.8%	22.4%	20.3%
Ecological restoration	Count	24 _a	17 _a	17 _a	58
	%	8.4%	6.7%	6.1%	7.1%
Recreational access	Count	21 _a	13 _a	14 _a	48
	%	7.4%	5.1%	5.1%	5.9%
Low income housing	Count	17 _a	18 _a	18 _a	53
	%	6.0%	7.1%	6.5%	6.5%
Fire risk reduction	Count	104 _a	57 _b	69 _b	230
	%	36.5%	22.4%	24.9%	28.2%
Total	Count	285	254	277	816
	%	100.0%	100.0%	100.0%	100.0%

Respondents in “very high risk” areas demonstrated a strong understanding of the role of fire in the environment and were more accepting of its presence. Specifically, a larger percentage of this group, compared to the other two areas, strongly agreed with the statements that that ‘wildfire is a natural part of the landscape’ (Table 8), “to live here, we have to accept wildfire hazard” (Table 9), and “we must learn to live with wildfire because we cannot control it” (Table 10).

Table 8. Responses to “Wildfire is a natural part of the landscape”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	206 _a	148 _b	143 _b	497
	%	51.5%	37.0%	35.8%	41.5%
Somewhat Agree	Count	140 _a	163 _a	160 _a	463
	%	35.0%	40.8%	40.1%	38.6%
Neither Agree Nor Disagree	Count	10 _a	14 _a	19 _a	43
	%	2.5%	3.5%	4.8%	3.6%
Somewhat Disagree	Count	19 _a	40 _b	38 _b	97
	%	4.8%	10.0%	9.5%	8.1%
Strongly Disagree	Count	21 _a	31 _{a, b}	36 _b	88
	%	5.3%	7.8%	9.0%	7.3%
Don't know	Count	4 _a	4 _a	3 _a	11
	%	1.0%	1.0%	0.8%	0.9%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Table 9. Responses to “To live here, we have to accept wildfire hazard”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	205 _a	158 _b	138 _b	501
	%	51.2%	39.5%	34.6%	41.8%
Somewhat Agree	Count	121 _a	127 _a	136 _a	384
	%	30.3%	31.8%	34.1%	32.0%
Neither Agree Nor Disagree	Count	12 _a	14 _a	16 _a	42
	%	3.0%	3.5%	4.0%	3.5%
Somewhat Disagree	Count	26 _a	50 _b	53 _b	129
	%	6.5%	12.5%	13.3%	10.8%
Strongly Disagree	Count	33 _a	45 _{a, b}	53 _b	131
	%	8.3%	11.3%	13.3%	10.9%
Don't know	Count	3 _a	6 _a	3 _a	12
	%	0.8%	1.5%	0.8%	1.0%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Table 10. Responses to “We must learn to live with wildfire because we cannot control it”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	72 _a	64 _{a, b}	49 _b	185
	%	18.0%	16.0%	12.3%	15.4%
Somewhat Agree	Count	105 _a	95 _{a, b}	75 _b	275
	%	26.3%	23.8%	18.8%	22.9%
Neither Agree Nor Disagree	Count	25 _a	12 _b	28 _a	65
	%	6.3%	3.0%	7.0%	5.4%
Somewhat Disagree	Count	86 _a	104 _{a, b}	118 _b	308
	%	21.5%	26.0%	29.6%	25.7%
Strongly Disagree	Count	106 _a	119 _a	124 _a	349
	%	26.5%	29.8%	31.1%	29.1%
Don't know	Count	6 _a	6 _a	5 _a	17
	%	1.5%	1.5%	1.3%	1.4%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Interestingly, while respondents recognized that wildfires today are more intense and dangerous than in the past (Tables 11 and 12), and that natural areas around their communities are threatened by a number of 'natural' events (Table 13), they were less likely to agree that wildfires should be extinguished immediately (Table 14).

Table 15 depicts the number of respondents who have actively participated in wildfire planning or preparedness by the fire risk rating of their county of residence. More than 60 percent of the respondents have not participated in wildfire planning or preparedness. Not surprisingly, those residing in ‘Very High Risk’ counties were much more likely to have been involved in these activities. Specifically, more than 50 percent of the ‘Very High Risk’ respondents have participated in these activities, compared to approximately 30 percent of those residing in ‘High’ or ‘Moderate’ risk counties.

Table 11. Responses to “Wildfires are more intense than in the past”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	166 _a	138 _b	156 _{a, b}	460
	%	41.5%	34.5%	39.1%	38.4%
Somewhat Agree	Count	94 _a	101 _a	87 _a	282
	%	23.5%	25.3%	21.8%	23.5%
Neither Agree Nor Disagree	Count	19 _a	18 _a	20 _a	57
	%	4.8%	4.5%	5.0%	4.8%
Somewhat Disagree	Count	59 _a	72 _a	67 _a	198
	%	14.8%	18.0%	16.8%	16.5%
Strongly Disagree	Count	44 _a	40 _a	52 _a	136
	%	11.0%	10.0%	13.0%	11.3%
Don't know	Count	18 _{a, b}	31 _b	17 _a	66
	%	4.5%	7.8%	4.3%	5.5%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Table 12. Responses to “Wildfires are more dangerous than in the past”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	188 _a	151 _b	166 _{a, b}	505
	%	47.0%	37.8%	41.6%	42.1%
Somewhat Agree	Count	78 _a	105 _b	107 _b	290
	%	19.5%	26.3%	26.8%	24.2%
Neither Agree Nor Disagree	Count	12 _a	16 _a	11 _a	39
	%	3.0%	4.0%	2.8%	3.3%
Somewhat Disagree	Count	71 _a	63 _a	56 _a	190
	%	17.8%	15.8%	14.0%	15.8%
Strongly Disagree	Count	40 _a	49 _a	50 _a	139
	%	10.0%	12.3%	12.5%	11.6%
Don't know	Count	11 _a	16 _a	9 _a	36
	%	2.8%	4.0%	2.3%	3.0%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Table 13. Responses to “Local areas are threatened by 'natural' events”

		Very High Risk	High Risk	Moderate Risk	Total
Not at All	Count	65 _a	107 _b	86 _{a, b}	258
	%	16.3%	26.8%	21.5%	21.5%
Slightly	Count	44 _a	69 _b	66 _b	179
	%	11.0%	17.3%	16.5%	14.9%
Moderately	Count	117 _a	96 _a	119 _a	332
	%	29.3%	24.0%	29.8%	27.7%
Very	Count	84 _a	60 _b	57 _b	201
	%	21.0%	15.0%	14.2%	16.8%
Extremely	Count	81 _a	50 _b	58 _b	189
	%	20.3%	12.5%	14.5%	15.8%
Don't know	Count	9 _a	18 _a	14 _a	41
	%	2.3%	4.5%	3.5%	3.4%
Total	Count	400	400	400	1200
	%	100.0%	100.0%	100.0%	100.0%

Table 14. Responses to “All wildfires should immediately be extinguished”

		Very High Risk	High Risk	Moderate Risk	Total
Strongly Agree	Count	129 _a	158 _b	160 _b	447
	%	32.3%	39.5%	40.1%	37.3%
Somewhat Agree	Count	56 _a	96 _b	82 _b	234
	%	14.0%	24.0%	20.6%	19.5%
Neither Agree Nor Disagree	Count	24 _a	15 _{a, b}	10 _b	49
	%	6.0%	3.8%	2.5%	4.1%
Somewhat Disagree	Count	97 _a	79 _a	84 _a	260
	%	24.3%	19.8%	21.1%	21.7%
Strongly Disagree	Count	90 _a	50 _b	57 _b	197
	%	22.5%	12.5%	14.3%	16.4%
Don't know	Count	4 _a	2 _a	6 _a	12
	%	1.0%	0.5%	1.5%	1.0%
Total	Count	400	400	399	1199
	%	100.0%	100.0%	100.0%	100.0%

Table 15. Responses to ‘Have you been involved in wildfire planning or preparedness at your home?’ by fire risk rating.

Risk Rating	Yes	No	Total
Very High Risk	215	185	400
High Risk	124	276	400
Moderate Risk	128	272	400
Total	467	733	1200

Table 16 provides the distribution of activities conducted by the fire risk classes. Clearing or removing brush or other vegetation from around the home was the most popular activity in all three risk classes, followed by creating defensible areas, evacuation plans, and maintaining trees. These activities represent more than 60 percent of all activities reported. As expected, these activities were conducted by residents in 'Very High Risk' counties much more often than those in the other two risk classes.

Examining community activities provides similar results. More than 60 percent of the respondents in the 'Very High' risk counties reported that the communities were involved in wildfire planning or preparedness, compared to less than 50 percent of those in the other risk counties. Table 18 depicts the activities conducted by the respondents' communities. Two activities (educational sessions and coordinated brush clearing) constitute more than 35 percent of the reported activity, with the next three most popular activities (evacuation plan/shelter-in-place, land management, burn ban compliance) comprising an additional 32 percent. Somewhat different than the patterns with individual efforts, the probability of communities in the 'High' and 'Moderate' risk counties was much more similar to that for communities in 'Very High' risk counties.

Table 16. Individual Wildfire Planning and Preparedness Activities Undertaken by County Risk Rating*

	Very High Risk	High Risk	Moderate Risk	Total
Clearing/removing brush or other vegetation from around home/property	130	66	60	256
Creating a defensible area/fire breaks around the home	51	23	22	96
Developed an evacuation plan	32	16	36	84
Cutting tree limbs	22	6	16	44
Thinning trees	13	10	9	32
Keeping grass mowed	18	4	10	32
Water storage/Pond on property	18	5	6	29
Sprinklers/hoses	9	9	6	24
Metal/Non-Flammable roof	10	4	8	22
Participating in Community Fire/Disaster Preparation Meeting	6	5	10	21
Use Fire Resistant Home Material	9	8	3	20
Fire Extinguishers	5	9	6	20
Have a "to-go-bag" ready	8	7	4	19
Have fire/disaster kit prepared (water/food/fuel/generator)	7	7	5	19
Smoke detectors	5	7	6	18
Keeping Ground Watered	7	3	5	15
Raking Pine Needles	5	4	1	10
Working with Fire Agencies to Manage my Land	4	4	2	10
Have Fire Tools Handy	4	2	2	8
Landscaping with Fire Resistant Plants	5	1	1	7
Keeping in Touch with Local Fire Agencies	5	1	1	7
Prescribed Fire	1	1	2	4
Construct a Fire Resistant Shelter	0	0	1	1
Adequate Driveway Space	1	0	0	1
Total	375	203	222	800

* Total number of responses do not match those in Table 14; respondents may have conducted more than one activity.

Table 17. Has your community been involved in wildfire planning or preparedness?

	Yes	No	Not sure	Total
Very High Risk	251	100	49	400
High Risk	176	164	60	400
Moderate Risk	178	156	66	400
Total	605	420	175	1200

Table 18. Community activities reported*

	Very High Risk	High Risk	Moderate Risk	Total
Educational sessions	94	64	72	230
Neighbors coordinating brush clearing	90	75	63	228
Developed an evacuation or shelter-in-place plan for wildfire	50	42	46	138
Neighbors managing their land to reduce wildfire danger	62	35	37	134
Complied with burn bans	41	44	46	131
Neighborhood planning groups	48	31	23	102
Neighbors identifying neighborhood assets at risk	33	35	17	85
Public agencies or non-profit groups reducing fuel levels on	29	30	18	77
Residents working with or donating money to a non-profit group	18	19	19	56
Other (Specify)	16	15	16	47
Don't know	20	11	13	44
Total	501	401	370	1272

* Total number of responses do not match those in Table 14; communities may have conducted more than one activity.

Likelihood of Individual and Community Participation in Fire Prevention

Let U_a and U_b represent an individual's utility of two choices. The observed choice between the two reveals which one provides the greater utility, but not the unobservable utilities (Greene 2012). U_a might be the utility of a respondent thought that he/she was been involved in wildfire planning and preparedness at his/her home or community. Therefore, the observed indicator equals 1 if $U_a > U_b$ and 0 if $U_a \leq U_b$. A linear random utility model is shown as (Greene 2012):

$$U_a = x'\beta_a + z_a'\gamma_a + \varepsilon_a \text{ and } U_b = x'\beta_b + z_b'\gamma_b + \varepsilon_b, \quad (1)$$

where the observable vector of characteristics of the individual is denoted x , β_a and β_b are the vector of coefficients for each independent variables, the vectors z_a and z_b denote attributes of the two choices that might be choice specific and ε_a and ε_b represent the error terms.

Logit Model

The Logit model is expressed in the equations below (Long 1997):

$$Prob(Y = 1|x) = F(x, \beta), \quad (2)$$

$$Prob(Y = 0|x) = 1 - F(x, \beta), \quad (3)$$

where $Y = 1$ represents the respondent had been involved in wildfire planning or preparedness at his/her home or community and $Y = 0$ represents the respondent did not. On the probability, the set of characteristics β affects the impact of changes in x . $F(x, \beta)$ is similar to $x'\beta$, $Prob(Y = 1|x) = y_1$ and $Prob(Y = 0|x) = y_0$, so the regression model can be constructed as:

$$y_{1 \text{ or } 0} = x'\beta + \varepsilon. \quad (4)$$

Therefore, our general model community adoption of fire prevention strategies was

$$Pr(\text{adoption}) = f(\text{Community Demographics, Attitudes, Past Fire Experience}).$$

The general individual adoption decision was modeled as:

$$Pr(\text{adoption}) = f(\text{Community Demographics, Attitudes, Past Fire Experience, Residence Type}).$$

These were operationalized as final models for the community adoptions decision:

$$\begin{aligned} Pr_{ij}^{com} = & \beta_0 + \beta_1 POPC + \beta_2 AFRICAAM + \beta_3 ASIAN + \beta_4 HISPAN \\ & + \beta_5 FIRESERIOUS + \beta_6 FIREEXP + \beta_7 RISKRED + \beta_8 FEDRESPONS \\ & + \beta_9 COMMRULE \end{aligned} \quad (5)$$

and for the individual adoption decision:

$$\begin{aligned} Pr_{ij}^{ind} = & \beta_0 + \beta_1 AGE + \beta_2 YHOM + \beta_3 HIGHRISK + \beta_4 FIREEXP + \beta_5 POORMGMT \\ & + \beta_6 DROUGHT + \beta_7 ECONDEV + \beta_8 RISKRED + \beta_9 OWNERRESP \\ & + \beta_{10} COMMRULE + \beta_{11} SUBDIVIS + \beta_{12} APARTM + \beta_{13} INCOME \end{aligned} \quad (6)$$

All variable definitions are presented in Table 19.

Multicollinearity Diagnostics

Following Farrar and Glauber (1967) and Mansfield and Helms (1982), multicollinearity diagnostics was studied by because standard errors might be biased and harm the coefficients of estimators, if two or more independent variables are highly correlated, standard errors might be biased and harm the estimated coefficients and inferences. Variance inflation factors (VIF) are applied to diagnose collinearity among independent variables. The variance inflation factors are calculated by Equation (10) (Afifi and Clark 1984),

$$\text{VIF} = \frac{1}{1-R^2}, \quad (7)$$

where R^2 is the coefficient of determination of a regression of an independent variable on all the other independent variables (Nagelkerke 1991). If VIF value is greater than 10 indicates that severe multicollinearity may exist among independent variables (e.g., Kennedy 2003; Neter, Wasserman, and Kutner 1985).

Table 19. Definitions of Dependent and Explanatory Variables Used in Regression Models.

Variable	Definition
Dependent Variables	
Pr_{ij}^{com}	Has your community been involved in wildlife planning or preparedness? (Yes/No)
Pr_{ij}^{ind}	Have you been involved in wildlife planning or preparedness at your home? (Yes/No)
Explanatory Variables	
<i>RISK</i>	Risk zone (Very High = 1; High or Moderate = 0)
<i>YHOM</i>	Year home was built
<i>FIRESERIOUS</i>	How serious a problem is the wildlife hazard near your community? If 'very serious' then $QUEI = 1$; else $QUEI = 0$
<i>FIRE EXP</i>	Have you ever directly experienced a forest fire in your area? (Yes = 1; else = 0)
<i>RISKRED</i>	Importance of fire risk reduction for your community (Very important = 1; else = 0)
<i>FEDRESPONS</i>	How much responsibility should federal agencies bear in reducing wildfire hazard in your community?(A lot = 1; else = 0)
<i>COMMRULE</i>	Does your homeowner association or subdivision have rules about landscaping or building materials to help protect against fires? (Yes = 1; else = 0)
<i>POORMGMT</i>	How much does poor forest management contribute to the current wildfire danger in your area?(A lot = 1; else = 0)
<i>DROUGHT</i>	How much does drought contribute to the current wildfire danger in your area? (A lot = 1; else = 0)
<i>OWNERRESPON</i>	How much responsibility should individual owners bear in reducing wildfire hazard for their home?(A lot = 1; else = 0)
<i>ECONDEV</i>	How important is economic development to your community? (Very Important = 1; else = 0)
<i>SUBDIVIS</i>	Home located in a gated or un-gated subdivision (Yes = 1; else = 0)
<i>APARTM</i>	Home located in a apartment complex, condominium or townhouse complex (Yes = 1; else = 0)

<i>AGE</i>	Age of respondents
<i>INCOME</i>	Income less than \$100,000 (Yes = 1; else = 0)
<i>AFRICAAM</i>	Resident population: African-American (%) in 2009 (africaam = 1; else = 0)
<i>ASIAN</i>	Resident population: Asian (%) in 2009 (asian = 1; else = 0)
<i>HISPAN</i>	Resident population: Hispanic or Latino Origin alone (%) in 2009 (hispan = 1; else = 0)

Regression Results

Tables 20 and 21 provide the results of the final models developed for the adoption of fire prevention strategies by communities and individuals, respectively. The multicollinearity tests revealed no collinearity among the independent variables - all VIF values were less than 10. The mean VIF for community and individual is 1.58 and 1.39, respectively. All VIF's values are presented in Table 22 and 23.

Community

The community modeling results included the responses of 996 respondents; the log likelihood of the fitted model was -537.64, the likelihood ratio chi-square test of whether all predictor regression coefficients in the model was 268.23, and the pseudo-R² was 0.1996 with a p-value of 0.0000. The results are presented in Table 2 and revealed a number of significant factors in the probability of community adoption. These included African-American and Asian resident populations, individuals for whom wildfire hazard was a very serious risk and/or had experience with a forest fire in their area, people who thought fire risk reduction was very important, people who believed that the federal government should bear a lot responsibility in reducing wildfire hazard in their community, and people who resided in communities with rules about landscaping or building materials to help protect against fires.

Interpretations of the results (*ceteris paribus*) are provided below:

1. *AFRICAAM* – For a one percent change in the African-American resident population, the log-odds of a community being involved in wildfire planning or preparedness decreased by 0.055 percent.
2. *ASIAN* – For a one percent change in the Asian resident population, the log-odds of a community being involved in wildfire planning or preparedness decreased by 0.059 percent.
3. *RISK* – For a one unit of the increase in very high risk counties, the log odds of a community being involved in wildfire planning or preparedness increased by 0.470 units.
4. *FIRESERIOUS* – For a one percent change in the people for whom wildfire hazard is very serious, the log-odds of a community being involved in wildfire planning or preparedness increased by 0.545 percent.
5. *FIREEXP* – For a one percent change in people who have experienced a forest fire in their area, , the log-odds of a community being involved in wildfire planning or preparedness increased by 0.708 percent.

6. *RISKRED*– For a one percent in people who believe that fire risk reduction was very important, the log-odds of a community being involved in wildfire planning or preparedness increased by 0.938 percent.
7. *FEDRESPONS* – For a one percent change in the people who believe the federal government should bear a lot of the responsibility in reducing wildlife hazard in their community, the log-odds of a community being involved in wildfire planning or preparedness increased by 0.516 percent.
8. *COMMRULE* – For a one percent change in the number of people whose homeowner association or subdivision have rules about landscaping or building materials to help protect against fires, the log-odds of a community being involved in wildfire planning or preparedness increased by 0.690 percent.

Individual Adoption Decisions

Due to incomplete answers, the 610 observations were used for the individual model. The log likelihood of the fitted model was -301.06, the likelihood ratio chi-square test of all predictor regression coefficients was 228.35, and the pseudo R^2 was 0.2750 with a p-value of 0.0000. Results are presented in Table 3. The results reveal a number of significant variables in individual decisions regarding wildfire risk reduction, the interpretation of which are shown below:

1. *AGE* – For a one-year increase in resident age, the log-odds of an individual being involved in wildfire planning or preparedness at their home decreased by 0.014 percent.
2. *YHOM* – For a one percent increase in the age of a home, the log-odds of an individual being involved in wildfire planning or preparedness at their home decreased by 0.008 percent.
3. *RISK* – For a one unit increase in very high risk counties, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.470 percent.
4. *FIREEXP* – For a one percent change in people who have experienced a forest fire in their area, , the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 1.094 percent.
5. *POORMGMT* – For a one percent change in those who believe that failure to properly manage the forest contributes “a lot” to the current wildfire danger in their area, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.746 percent.
6. *DROUGHT* – For a one percent change in residents who believe that drought contributes “a lot” to the current wildfire danger in their area, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.522 percent.
7. *ECONDEV* – For a one percent change in people who believe economic development is very important, the log-odds of an individual being involved in wildfire planning or preparedness at their home decreased by 0.480 percent.
8. *RISKRED* – For a one percent change in people who believe fire risk reduction is very important, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.931 percent.
9. *OWNERRESP* – For a one percent change in people who believe that individual property owners should bear a lot responsibility in reducing wildlife hazard in their home, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.551 percent.

10. *COMMRULE* – For a one percent change in people whose homeowner association or subdivision have rules about landscaping or building materials to help protect against fires, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.701 percent.
11. *SUBDIVIS* – For a one percent increase in those who live in a residential subdivision, the log-odds of an individual being involved in wildfire planning or preparedness at their home decreased by 0.834 percent.
12. *APARTM* – For a one percent increase in those who live in an apartment complex and condominium or townhouse complex, the log-odds of an individual being involved in wildfire planning or preparedness at their home decreased by 0.843 percent.
13. *INCOME* – For a one percent increase in those who earn between \$50,000 and \$100,000 from all sources for their household (before taxes) in 2013, relative to those who had \$100,000 or more, the log-odds of an individual being involved in wildfire planning or preparedness at their home increased by 0.566 percent.

Table 20. Results of Significant Variables from Logit Regression for Community.

Variable	Coef.	Std.Err.	P> z
AFRICAAM	-0.0552	0.0166	0.001***
ASIAN	-0.0587	0.0318	0.065*
RISK	0.3803	0.2019	0.060*
FIRESERIOUS	0.5455	0.1907	0.004**
FIREEXP	0.7077	0.1640	0.000***
RISKRED	0.9379	0.1720	0.000***
FEDRESPONS	0.5156	0.1898	0.007**
COMMRULES	0.6898	0.1700	0.000***

¹ Variables are defined in Table 1.

² Standard Errors.

*, **, *** Significant at the 0.1, 0.05 and 0.01 probability levels, respectively.

Table 21. Results of Multinomial Logit Regression for Individual.

Variable	Coef.	Std. Err.	P> z
AGE	-0.0141	0.0078	0.072*
YHOM	-0.0080	0.0044	0.073*
RISK	0.4699	0.2669	0.078*
FIREEXP	1.0938	0.2319	0.000***
POORMGMT	-0.3251	0.1941	0.094*
DROUGHT	0.5222	0.2400	0.030**
ECONDEV	-0.4799	0.2280	0.035**
RISKRED	0.9314	0.2447	0.000***
OWNERRESP	0.5511	0.2290	0.016**
COMMRULE	-1.0454	0.5745	0.069*
SUBDIVIS	-0.8368	0.2410	0.001***
APARTM	-0.8433	0.4822	0.080*
INCOME	0.5661	0.3020	0.061*
Cons ³	-1.4555	0.7837	0.063*

¹ Variables are defined in Table 1.

² Standard Errors.

³ Constant.

*, **, *** Significant at the 0.1, 0.05 and 0.01 probability levels, respectively.

Table 22. Multicollinearity Diagnostics for Community.

Variable	VIF
AFRICAAM	4.53
ASIAN	1.95
RISK	1.65
FIRESERIOUS	1.42
FIREEXP	1.30
RISKRED	1.54
FEDRESPONS	1.40
COMMRULE	1.30

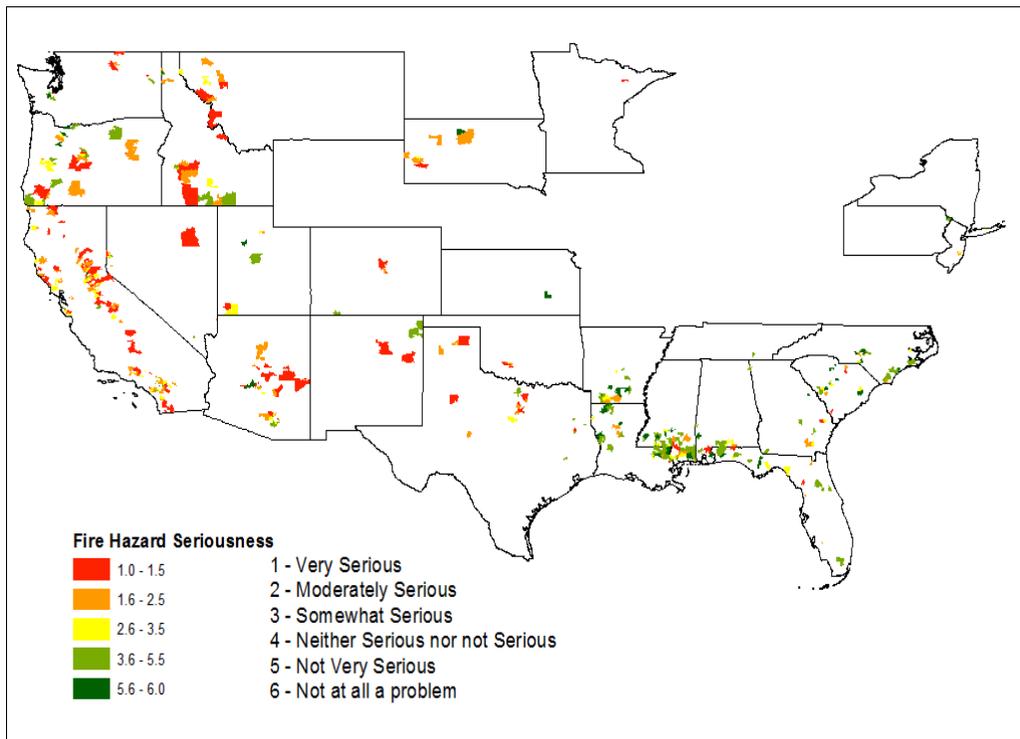
Table 23. Multicollinearity Diagnostics for Individual.

Variable	VIF
HINC	1.19
RISK	1.63
AGE	1.23
YHOM	1.19
FIRESERIOUS	1.55
FIREEXP	1.39
DROUGHT	1.31
POORMGMT	1.64
ECONDEV	1.22
RISKRED	1.47
OWNERRESP	1.23
COMMRULE	1.18
SUBDIVIS	1.38
APARTM	1.11
INCOME	2.13

Discussion

The results of the project support much of the conjectures we developed to guide this research. Biophysical differences across the regions of the US provide the basis by which individuals and communities value the WUI and wildfire planning and preparedness. Risk perceptions, concerns, and behaviors varied across geographic areas in relation to biophysical characteristics of the landscape and cultural values of the population. Figure 4 depicts respondent perceptions of wildfire hazard seriousness grouped into 6 categories. Category one represents very serious fire hazard conditions, with number 6 representing areas where respondents think wildfire is no problem in their community. The results correspond well to the fire risk classification provided in Figure 3, although respondents were more likely to rank wildfire hazard more serious in parts of the South than was the basis of the risk categories (http://silvis.forest.wisc.edu/projects/WUI_Main.asp). Much of this may be related to recent fire experiences.

Figure 4. Respondent's Perception of seriousness of wildfire hazard in their community



Comparing the distribution of perceived risks in Figure 4 corresponds well with fire perceptions nationally. That is, perceptions of fire risk were closely linked to perceptions of the causes of wildfire. Figure 5 depicts how respondents perceive the role of poor forest management in increased wildfire risk across the US. The largest concentrations was in western states (Arizona, Idaho, Montana, Oregon, and Arizona), but some areas of the South also indicated a strong connection. A similar patten is depicted in the attitudes regarding the role of fire in the natural environment (Figure 5). Maps depicting the distribution of responses to similar questions are provided in Appendix B.

Figure 5. Contribution of poor forest management to wildfire danger

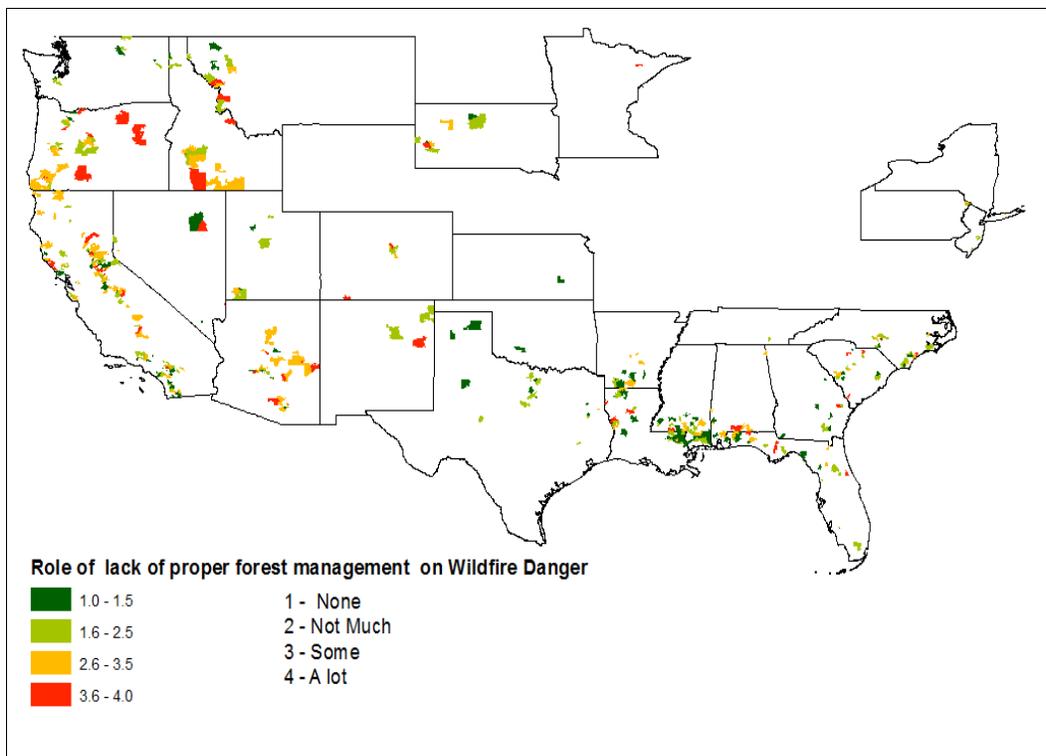
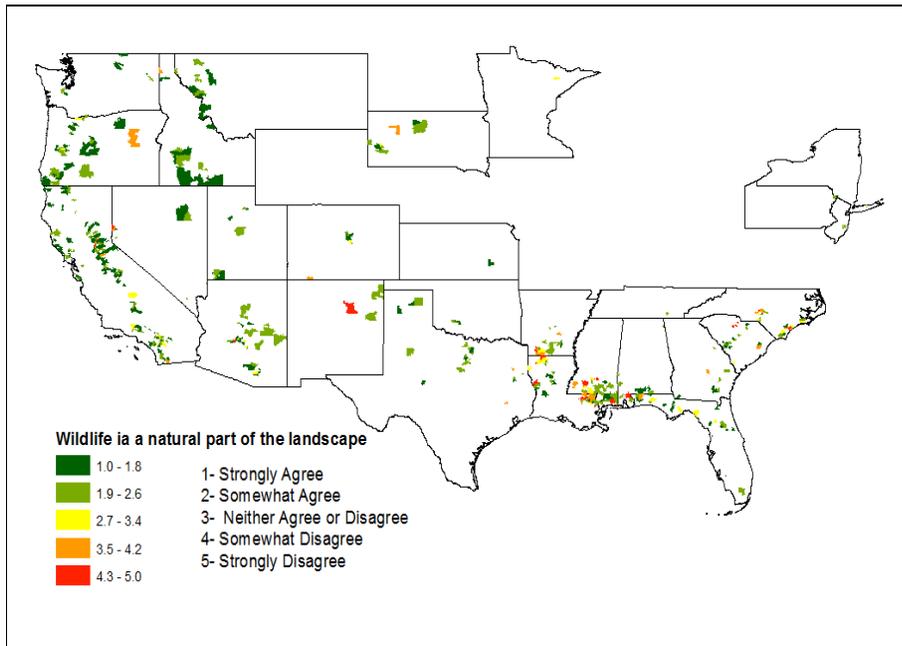


Figure 6. Wildfire is a natural part of the landscape



As was stated earlier in this report, most key informants described relatively little community concern about wildfire despite their counties being recognized as being classified as ‘High Risk’. This did not hold in the telephone survey. More survey respondents, particularly in the western US, were substantially concerned about the potential risk of wildfire, which translated into their willingness to participate in wildfire planning and preparedness activities. Increased concerns in the West compared to the two other study areas due to the regions’ recent history of catastrophic wildfires and drought conditions was evident in the key informant results, as well as in the phone survey results. Not surprisingly, individuals residing in and counties located in higher risk areas were more likely to participate in prevention activities. For individuals, past experience with fire, perceptions of wildfire causes, and attitudes regarding owner responsibility and community issues were the significant drivers. Community action was influenced most by past experience with fire and attitudes regarding fire risk severity.

Not surprisingly, individuals who believe that homeowners should assume much of the responsibility for reducing fire risk around their homes were more likely to have participated in wildfire planning and preparedness activities. Conversely, individuals who believe that the federal government should bear the primary responsibility for reducing fire risk were more likely to report that their communities were involved in such activities. Although it is difficult to infer from our data, perhaps communities have assumed this responsibility where federal agencies are not a significant presence or have not provided as much assistance as the respondents deemed needed in the past. Regardless, both individuals and communities have been most active in terms of fire prevention by removing brush and vegetation from around individual homes – either as a collaborative community effort or individually. At the community level, education is the most common activity, and one that federal agencies could continue to play a major role. It is unlikely, however, that this would satisfy those who want a more active, physical federal presence in wildfire control and prevention.

The implications of these results for fire managers and other developing wildfire prevention/fuel reduction strategies are numerous. One issue that was not evident in our results was the reluctance of the study participants for any specific wildfire planning or preparedness activity. Clearly, some of the practices were more commonly applied than others, but little evidence was discovered to indicate that certain practices were unacceptable. It is clear, however, that all levels of government must consider community and individual experiences with and values of the natural environment to effectively influence behavior. Because residents cope with a range of risks daily, risk managers and community leaders must acknowledge competing risks when developing wildfire mitigation programs and messages.

In addition, the findings of the key informant interviews and the phone survey highlight the potential for increasing awareness about wildfire and encouraging wildfire prevention and fuel reduction by incorporating information specific to the biophysical conditions and geographic differences of the various regions of the nation. For example, because water concerns and mountain pine beetle were salient and

linked to wildfire in the West, such hazards could be used emphasized in developing effective wildfire mitigation activities at the individual and community levels in this region. Similarly, smoke management and sound forest management could be the focus in the South. Regardless, more education is needed at the community level regarding the objectives of alternative prevention strategies and the possible effects on the natural and human environments.

Often, these may include issues beyond the scope of fuel management and fire prevention. The key informant interviews in southern Georgia, for example, highlighted an substantial increase in pesticide use in forest management due to smoke issues and the accompanying liability concerns related to prescribed fire. This management shift has resulted in a growing concern regarding the effects on honey bees and the honey in the area. Developing fire management strategies for communities and area managers that address smoke management could enhance public acceptance of prescribed fire as an effective wildfire prevention strategy with strong public support.

Finally, strong leadership can drive the process of characterizing community members' diverse values and concerns. Ideally, leadership in wildfire risk mitigation would originate from a community organization with no political affiliation. It is critical that, as one Oregonian put it, the program grow "in an organic way" and be part of the broader community development process (Garkovich 2009; Gordon et al. 2010). Although leadership has been a factor in the human dimensions of wildfire literature (Fleeger 2008; Jakes et al. 2007; Nelson et al. 2004; Shindler et al. 2009), further research is needed to characterize the qualities and processes (e.g., dispute resolution, social learning, and collaborative planning, which require an understanding of the ecological and social dynamics of the locality) of leadership emerging in success stories (Blatner et al. 2001; Daniel et al. 2007; Sturtevant and Jakes 2007; McCaffrey and Olsen 2012).

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APPENDIX A

Key Informant Questions

1. How would you describe your community, particularly over the past 10 years?
 - a. Describe how people work together in the community.
 - b. Where do residents hear most about community happenings? [local paper/radio, word of mouth, meetings?]
 - c. How is the community changing?
 - d. How do outsiders view the community?
 - e. What are special places and what makes them special? (are there special natural areas? How do people interact with the natural areas?)
2. What conditions or events bring community members together?
3. What are the major issues and concerns in your community? (Is wildfire a concern? Why or why not?) For how long has the community had these concerns?
Do community residents and government agencies communicate about these concerns?
How do they inform the general population?
4. Describe the relationship between the community and local government and how they work together to resolve community issues.
5. How concerned are you about wildfire risk in your community?
6. Are you aware of any past or prescribed fuel treatment plans to alleviate wildfire risk?
[Probes re: alternative fuel treatment methods]
7. What has been the public response to wildfire risk? [What are the roles of the federal and local governments and local citizens in wildfire reduction treatments?]
8. What are the constraints on implementing wildfire risk reduction treatments?
9. Do the present forests represent the natural forests of your community? If not, how do they differ from natural forests and why? Is fire a natural part of this area's forest ecosystems?
10. Should people be involved in natural processes? Should forests be left to recover by themselves after fire?
11. Finally, can you think of anyone else I should talk to about wildfire risk in your community?

WILD FIRE /RISK Questionnaire

RECORD ZIP CODE FROM SAMPLE:

RECORD RISK ZONE: VHR HR MR

Respondent Name or Initials:

INTRODUCTION:

Good (morning/afternoon/ evening). My name is _____ and I am calling on behalf of the Pennsylvania State University. Researchers with the Human Dimensions Unit are conducting a study on the impacts of WILDFIRE AND SMOKE on people and communities. We are not selling anything, and this study will only take a few minutes of your time. Your opinion is very important. All information is completely confidential. First, are you 18 years of age or older?

1. Yes (CONTINUE)

2. No (ASK TO SPEAK WITH INDIVIDUAL WHO IS, REPEAT INTRODUCTION)

1. How serious a problem is the wildfire hazard near your community? Would you say it is a ... (READ LIST)

- (1) Very serious;
- (2) Moderately serious;
- (3) Somewhat serious;
- (4) Neither serious nor not serious;
- (5) Not very serious;
- (6) Not at all a problem
- (VOL) (9) Don't Know

2. Have you ever directly experienced a forest fire in your area? (1) Yes (2) No

3. What is the primary environmental concern in your community? (PROBE KEY WORDS)

4a. How much does each of the following contribute to the current wildfire danger in your area? How much would you say (READ FIRST ITEM – ROTATE LIST) contributes to the current wildfire danger in your area? Would you say: None, Not Much, Some, or A Lot? (REPEAT FOR EACH ITEM)

SCALE -- (1)None; (2)Not Much; (3)Some; (4)A Lot; (VOL) (9) Don't Know

- a. Fuel buildup due to fire suppression
- b. Climate change
- c. Bark beetles
- d. Wind blow OR blow-down
- e. Houses being built in wild-lands
- f. Failure to properly manage the forest
- g. Poor timber harvesting practices
- h. Drought
- i. Accidents

(ASK LAST) 4b. Any thing else that you can think of that contributes to the current wildfire danger in your area? (RECORD COMMENT)

5a. Have you been involved in wildfire planning or preparedness at your home? (1)Yes (2) No
(If YES, ASK) 5b. Please indicate each of the things you have done. Anything else?
(DO NOT READ LIST -- ASK AS OPEN ENDED – USE LIST BELOW FOR CODING)

Landscaping issues:

- cutting tree limbs
- raking pine needles
- removing vegetation away from home
- thinning trees
- planting a lawn
- landscaping with fire resistant plants
- stacking firewood

Structural issues:

- roof vents and eave opening
- use fire resistant home material
- sprinklers
- construct a fire resistant shelter

Safety issues:

- developed an evacuation plan
- home address clearly visible
- adequate driveway space
- had a consultant evaluate my property
- have fire tools handy

Land management issues

- prescribed fire
- thinning
- worked with fire agencies to manage my land

(SPLIT BALLOT – ASK Q6a1 SERIES OF ½ RESPONDENTS)

6a1. Has your community been involved in wildfire planning or preparedness?

(1)

Yes (2) No (9) Not sure

Nq6b1_z (3900.20)

If q6a1(1)

. Which of the following types of activities has your community been involved in?

DO NOT READ LIST

- 01 Educational sessions
- 02 Neighborhood planning groups
- 03 Developed an evacuation or shelter-in-place plan for wildfire event
- 04 Neighbors coordinating brush clearing
- 05 Neighbors managing their land to reduce wildfire danger
- 06 Public agencies or non-profit groups reducing fuel levels on public land
- 07 Neighbors identifying neighborhood assets at risk
- 08 Complied with burn bans
- 09 Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community
- 97 Other (specify)
- 98 Don't know

(IF YES; ASK) 6b1. Which of the following types of activities has your community been involved in? (READ LIST – ROTATE)

- a. Educational sessions
- b. Neighborhood planning groups
- c. Developed an evacuation or shelter-in-place plan for wildfire event
- d. Neighbors coordinating brush clearing
- e. Neighbors managing their land to reduce wildfire danger
- f. Public agencies or non-profit groups reducing fuel levels on public land
- g. Neighbors identifying neighborhood assets at risk
- h. Complied with burn bans
- i. Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community

(SPLIT BALLOT – ASK Q6a2 SERIES OF ½ RESPONDENTS)

6a2. Has your community been involved in (INSERT FIRST ITEM) for wildfire planning or preparedness? (READ LIST – ROTATE) (1) Yes (2) No (9) Not sure

- a. Educational sessions
- b. Neighborhood planning groups
- c. Developed an evacuation or shelter-in-place plan for wildfire event
- d. Neighbors coordinating brush clearing
- e. Neighbors managing their land to reduce wildfire danger
- f. Public agencies or non-profit groups reducing fuel levels on public land
- g. Neighbors identifying neighborhood assets at risk
- h. Complied with burn bans
- i. Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community

7a. Given limited resources to address many locally important issues, there is often a need to prioritize which should be addressed first. Please indicate if each of the following issues are IMPORTANT or UNIMPORTANT to you. (READ LIST – ROTATE) –
(PROBE EACH RESPONSE: Is that VERY/SOMEWHAT IMPORANT/UNIMPORTANT)?

scale

- (1) very unimportant,
 - (2) somewhat unimportant,
 - (3) (VOL) neither unimportant nor important,
 - (4) somewhat important, or
 - (5) very important.
 - (9) (VOL) Don't Know
- a. Environmental protection
 - b. Economic development
 - c. Local economies
 - d. Ecological restoration
 - e. Recreational access
 - f. Low income housing
 - g. Fire risk reduction

(IF MORE THAN ONE RATED VERY IMPORTANT (5) – ASK;)

7b. Of the items that you just identified as being very important, which is MOST important? (READ LIST OF VERY IMPORTANT MENTIONS – SELECT ONE)

8. How much responsibility should (INSERT FIRST GROUP) have in reducing wildfire hazard in your community? (READ LIST ONE AT A TIME -- ROTATE). Would you say none, not much, some, or a lot?

SCALE

- None (1),
- Not Much (2),
- Some (3),
- A Lot (4),
- Don't Know (9)

- a. Individual property owners
- b. Homeowner associations
- c. Local government
- d. State government
- e. Fire department
- f. Federal government
- g. Non-profit wildfire organization
- h. Environmental group
- i. Forest industry

- 9a. Do you believe local levels of trust in various organizations have changed over time because of fire management issues? (1) Yes (2) No

(IF YES, ASK) 9b. For each of the following types of organizations, please indicate whether this level of trust has decreased, not changed, or increased...

(1) Decreased (2) Not Changed (3) Increased (4) (VOL) Don't Know

- a. Private Landowners
- b. Forestry Consultants Who Work With Private Forest Landowners
- c. Local Fire Department
- d. Local Forest Industry
- e. Local Forest Service Staff
- f. Local Ngo/Nonprofit Group
- g. Tribal Government
- h. State Forestry Commissions/Bureaus/Departments
- i. State NGO/Nonprofit Groups
- j. Environmental Protection Agency
- k. US Forest Service
- l. Bureau of Land Management
- m. US National Park Service
- n. National Guard
- o. National NGO/Nonprofit Group

9c. Any other Federal Agencies? (IDENTIFY) _____)

10. Please indicate if you agree or disagree with each of the following statements.
 (READ LIST – PROBE: Is that STRONGLY/SOMEWHAT AGREE/DISAGREE)?
 (1) Strongly agree; (2) Somewhat agree; (3) (VOL) Neither agree nor disagree;
 (4) Somewhat disagree; (5) Strongly disagree; (9) Don't know
- a. Wildfire is a natural part of the landscape
 - b. To live here, we have to accept wildfire hazard
 - c. We must learn to live with wildfire because we can't control it
 - d. All wildfires should immediately be extinguished
 - e. We should put out wildfires that will have a negative environmental outcome
 - f. The fire danger is exaggerated in my community
 - g. Wildfires are happening more often
 - h. Wildfires are more intense than in the past
 - i. Wildfires are more dangerous than in the past
 - j. Suppression costs are increasing

COMMUNITY

11. Every community is unique. Please tell me what, in your opinion, makes the place and people where you live unique. [DO NOT READ – ASK AS OPEN ENDED – USE LIST FOR CODING]

Close knit (e.g., everyone knows each other's name/business)
 Dependent upon nearby forests for jobs
 Strong local leadership
 Many community groups and activities
 Culture of volunteerism
 Strong faith-based /religious values
 Outdoor recreation and natural amenities are important to community life
 Seasonal residents/ second home owners
 Dependent on agriculture
 Dependent on mining
 Surrounded by farmland
 Economy is shifting from resource based to service
 In trouble due to out-migration
 Proactive approach to fuel management to reduce wildfire risk
 Wildfire hazard is a necessary trade-off for living here
 Collaborates with nearby communities
 Has a good relationship with county agencies
 Has a good relationship with state agencies
 Has a good relationship with federal agencies
 Knowledgeable about nearby forests
 Understands the role of fire in the forest
 Values and protects equal treatment for different races, ethnicity, religions, etc.
 Residents rally for a good cause

Neighbors help each other out
 Many local experts in natural resources
 Environmentally conscious
 Residents participate in government
 Residents get their voices heard by local government
 Trust in fire agencies (local and county)
 Well-prepared to mobilize resources for an emergency
 Knowledgeable about wildfire preparedness
 Lots of new residents
 Rapidly spreading into wild-land areas
 Willingness to create ordinances/ zoning to reduce wildfire risk

12a. Do any of these issues cause major conflict in your community? (READ LIST – ROTATE)

(1) Yes (2) No

- a. Forest management practices
- b. Development
- c. Access to water
- d. Waste treatment/ toxic dumping
- e. Casinos or gambling
- f. Drugs
- g. Religion
- h. Race or ethnicity
- i. School consolidation
- j. Sporting competition
- k. Values of new residents versus values of long-time residents
- l. Income disparity

12b. What other issues in your community, if any, cause major conflict?
 (PLEASE SPECIFY): _____

13. How well do EACH the following describe your thoughts and attitudes about the natural places surrounding your community? (READ LIST – ROTATE). (INSERT FIRST ITEM) Would you say this describes your thoughts; Not at all; Slightly; Moderately; Very; or Extremely?

SCALE (1) Not at all; (2) Slightly; (3) Moderately; (4) Very; (5) Extremely; (9) (VOL) Don't Know

- a. They have recreational value
- b. They are spiritual
- c. They are important economically
- d. They are some of my favorite places
- e. I would miss these places if I moved away
- f. They bring people together
- g. They are not really natural
- h. They threatened by human activities (e.g., development, unsustainable timber harvesting)
- i. They are threatened by "natural" events (e.g., fire, climate change, and invasive species)

14. Does your homeowners' association or subdivision have rules about landscaping or building materials to help protect against fires? (1) Yes (2) No (3) I don't live in a homeowners association or subdivision (9) (VOL) Don't Know.
15. How close is your home to a Wildland area -- such as forest or rangeland? Would you say you live....? (READ CHOICES)
- (1) Within a wildland area (4) More than 300 yards but less than 1 mile
(2) Adjacent to a wildland area (5) Between 1 and 3 miles
(3) Between 100 and 300 yards (6) More than 3 miles (9) (VOL) Don't Know

SOCIODEMOGRAPHICS

16. In what year were you born? 19__ (year)
17. What was the last grade of education that you completed?
- (1) Less than High School
 - (2) High School (or equivalent) Graduate
 - (3) Some College or Post-High School Trade School
 - (4) College Graduate
 - (5) Graduate School or other Post College Degree
 - (6) Other
18. Now thinking of your household and the people who live there. Including yourself, how many individuals live in your household who are: 18 years of age or less? 19 to 59 years of age? 60 years of age and older?
19. How long have you lived in this community? (RECORD NUMBER OF YEARS – BEST ESTIMATE)
20. Do you live in this community as a permanent or seasonal resident or both? (IF SEASONAL, ASK Typically, how many months each year do you live in this community?)
21. What kind of home do you live in? Is it a single family home; a multi-family home; a modular home, or something else?
- 22a. Where is this home located? Is it in a residential subdivision without a gate, a gated residential subdivision, isolated home or cabin, an apartment complex, a condominium or townhouse complex, or something else? (IF SOMETHING ELSE, ASK) 22b. Please describe where this home is located. (RECORD)
23. What year was your home built? (GET BEST ESTIMATE)
24. (SKIP IF APARTMENT/CONDO/TOWNHOME); What is the size of your property in terms of acres? (RECORD NUMBER OF ACRES TO NEAREST ACRE – ENTER ZERO FOR LESS THAN ONE ACRE)
25. How do you describe yourself politically? Would you say you are a liberal, a moderate liberal; moderate, a moderate conservative, or a conservative? (8) (VOL) Refused (9) (VOL) Don't Know
26. What was your total income from all sources for your household (before taxes) in 2013? Would you say...less than \$15,000; 15,000 but less than 25,000; 25,000 but less than 50,000, 50,000 but less than 75,000; 75,000 but less than 100,000; 100,000 but less than 150,000, or 150,000 or more? (VOL) (8) Refused (VOL) (9) Don't know

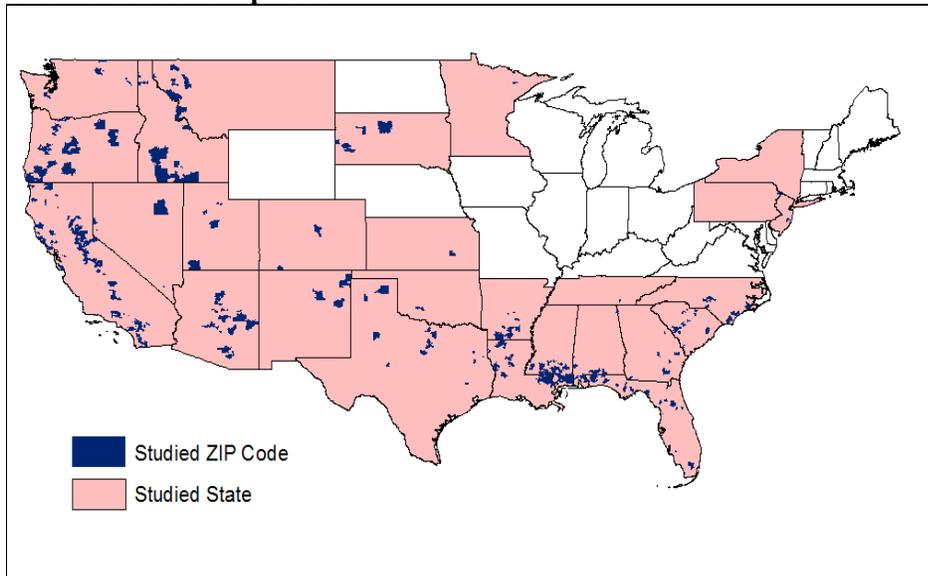
GENDER – RECORD BY VOICE ONLY: (1) Male (2) Female

Thank you for your time.

APPENDIX B

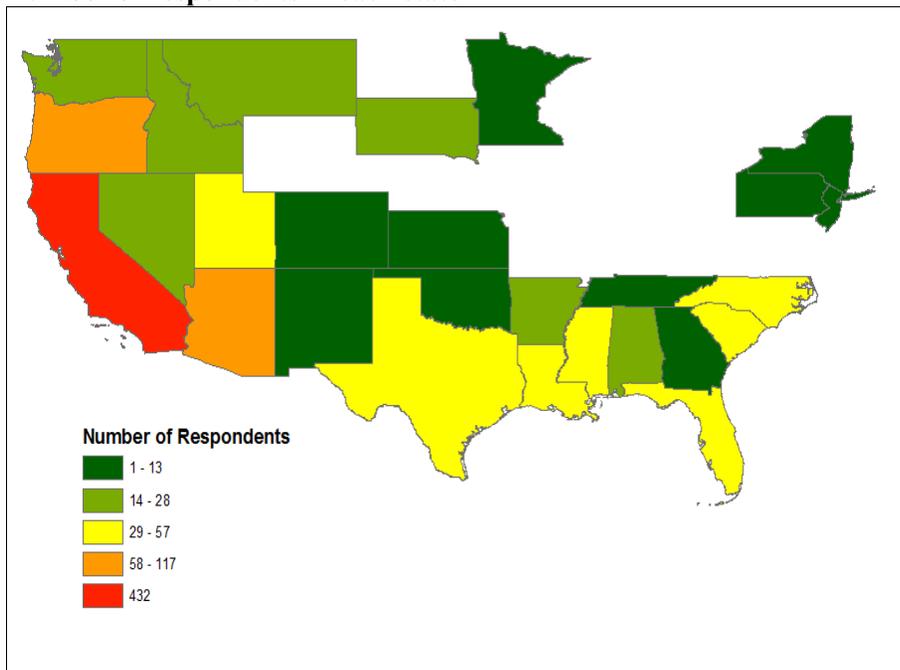
Maps related to survey data

Studied state and zip code

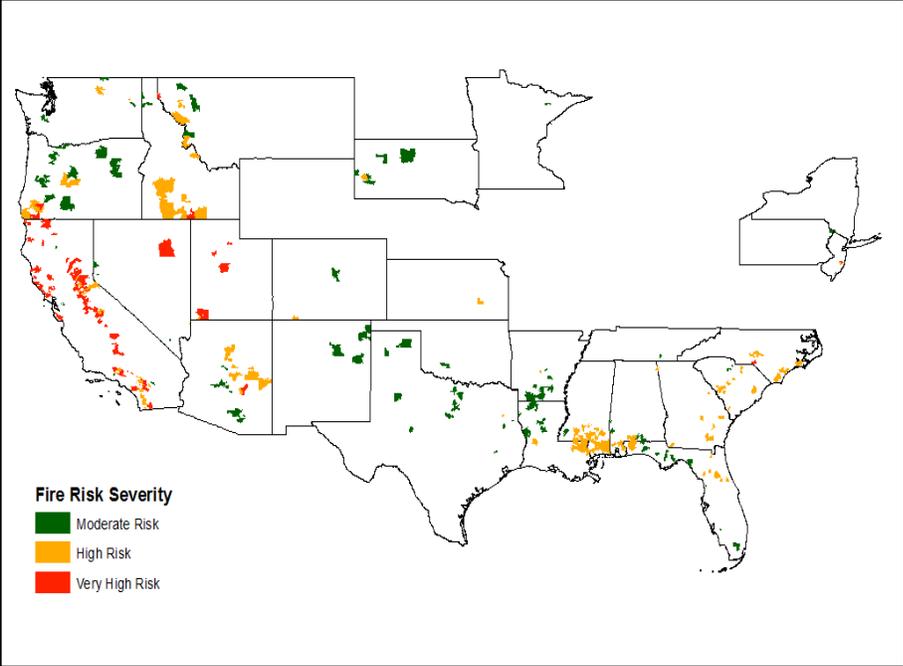


The study was conducted in 27 states and 484 unique zip codes.

Number of respondents in each state



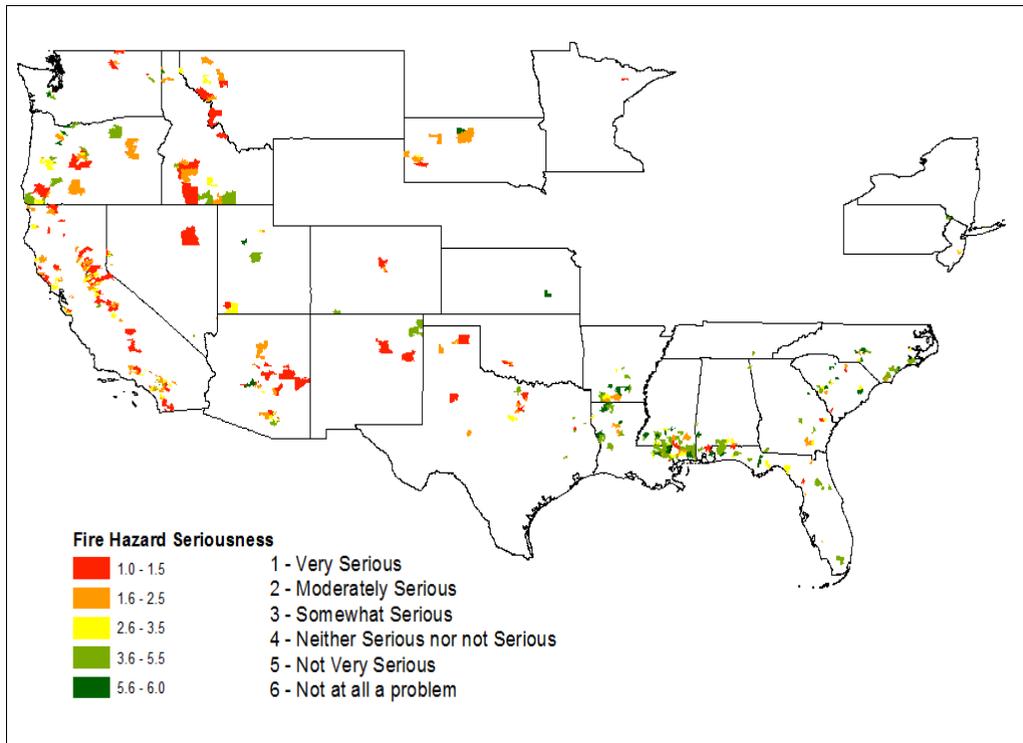
Fire risk severity in studied area



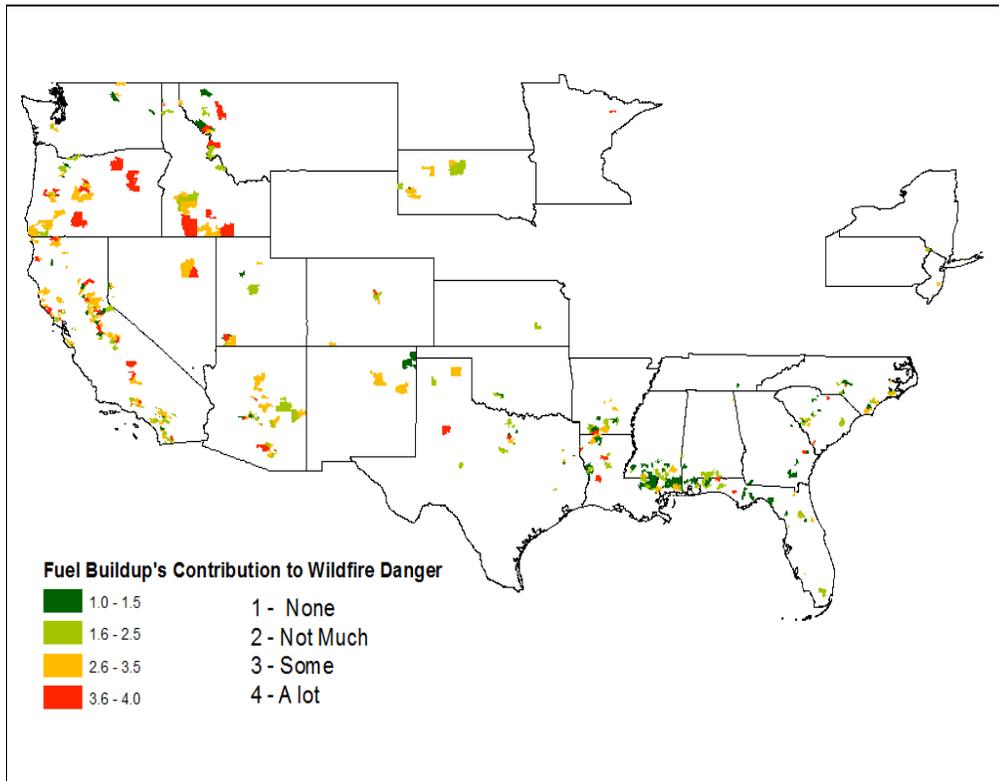
Very high risk areas are mainly present in California, Nevada, Utah, whereas most of the Southeast is characterized by high fire risks.

Wildfire Perceptions

Respondent's Perception of seriousness of wildfire hazard in their community

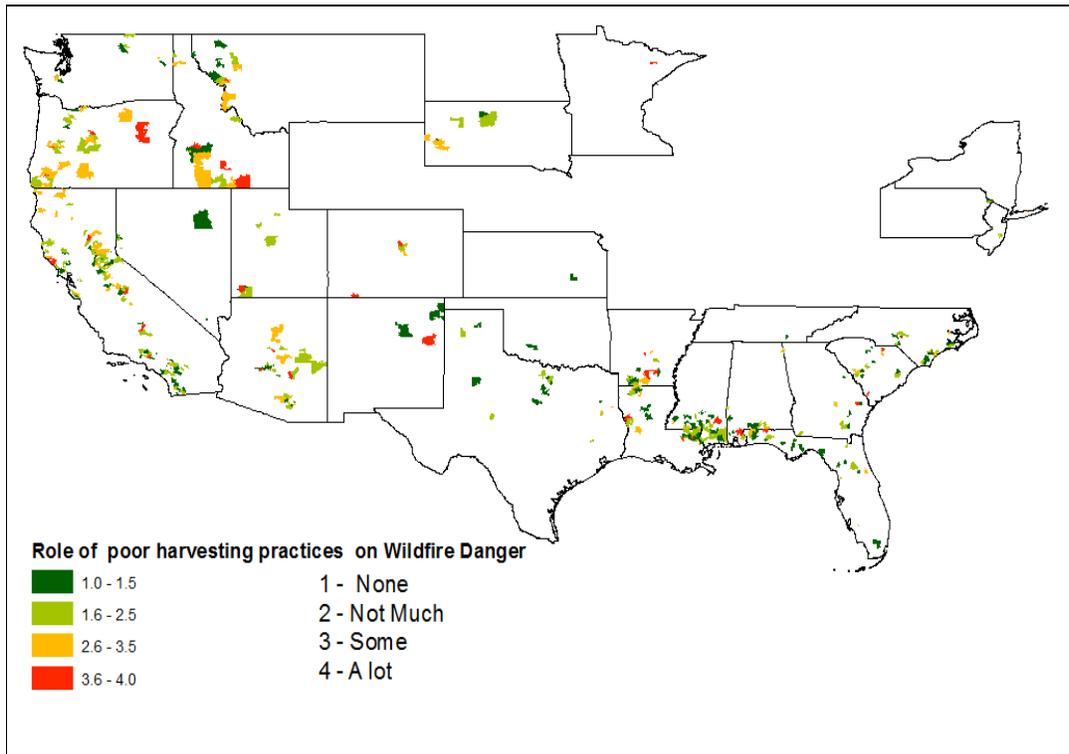


Perceived contribution of fuel buildup to the wildfire danger (due to fire suppression)

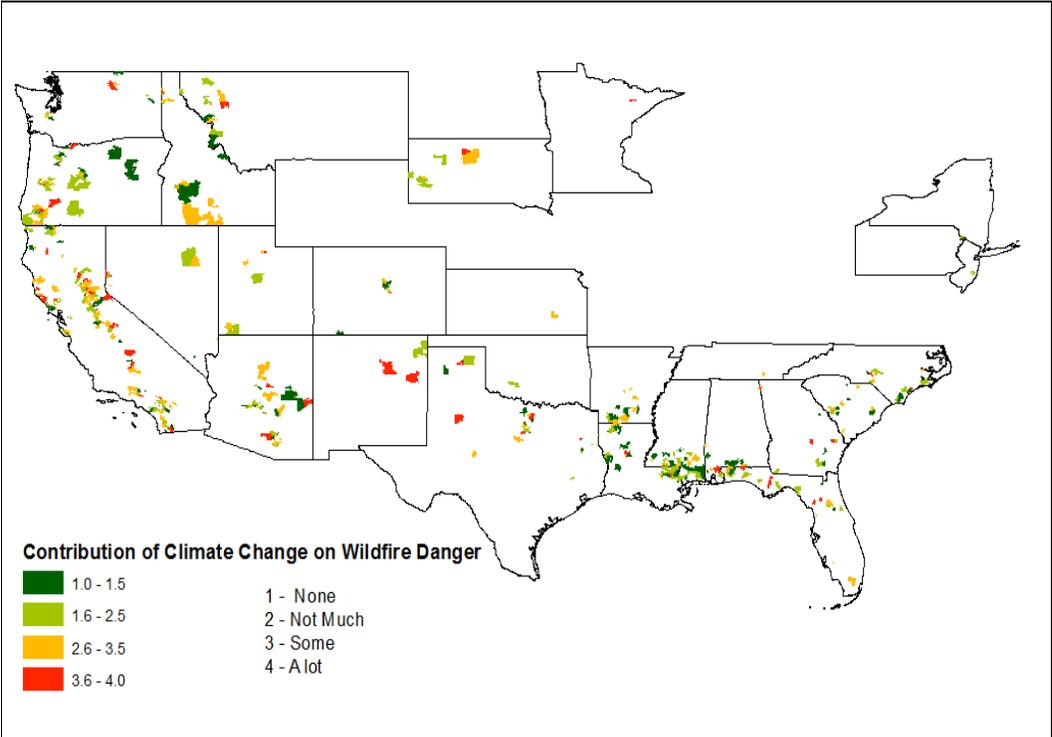


Most respondents in the Pacific and Mountain West believe that fuel buildup due to fire suppression contributes significantly to wildfire hazard. Most respondents in the Southeast stated that fuel buildup does not contribute significantly to wildfire danger. A number of respondents (128) did not know if fuel buildup is due to fire suppression or other causes.

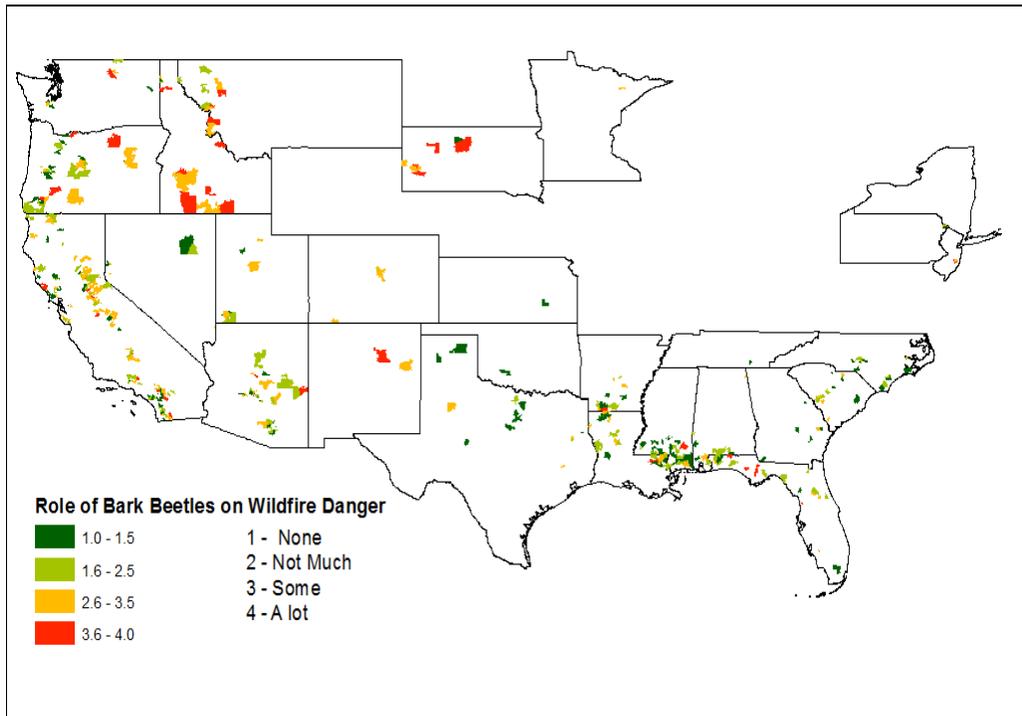
Contribution of fuel buildup to wildfire danger (due to poor harvesting practices)



Contribution of climate change to wildfire danger

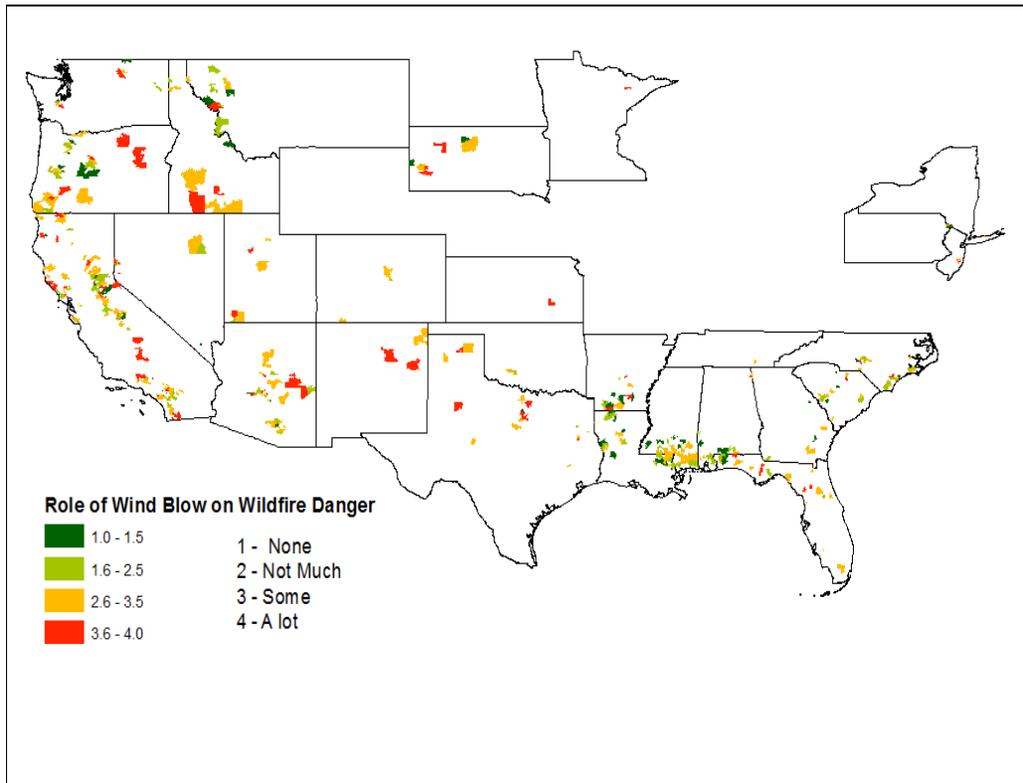


Contribution of bark beetles to wildfire danger



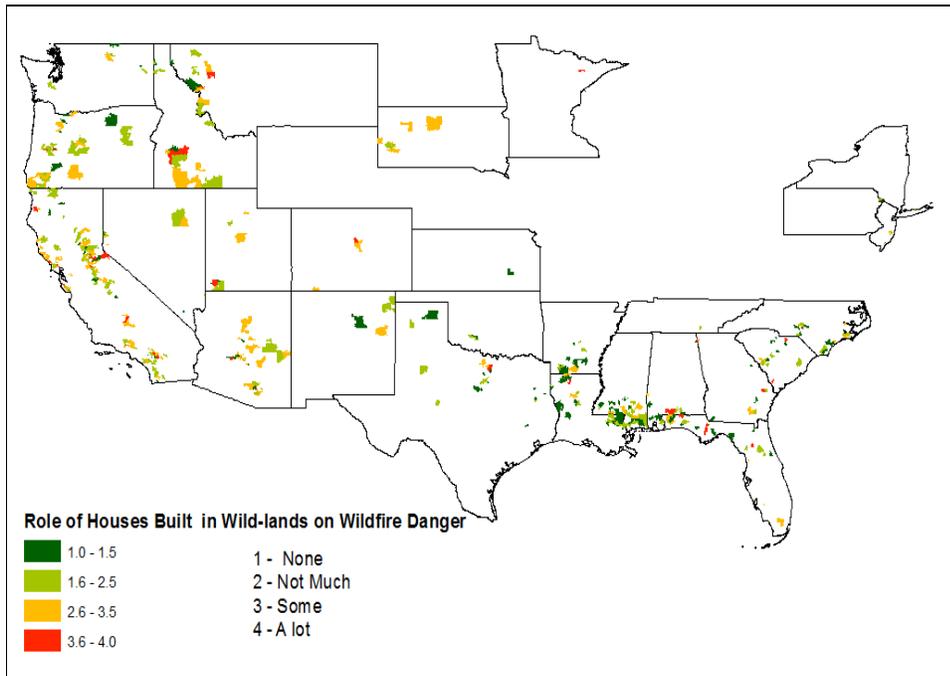
Respondents in Idaho, South Dakota, Oregon, and New Mexico noted the impact that bark beetles had presented in terms of wildfire danger. Similarly, respondents in several southern locations noted the impact of southern pine beetle infestations.

Contribution of wind blow to wildfire danger



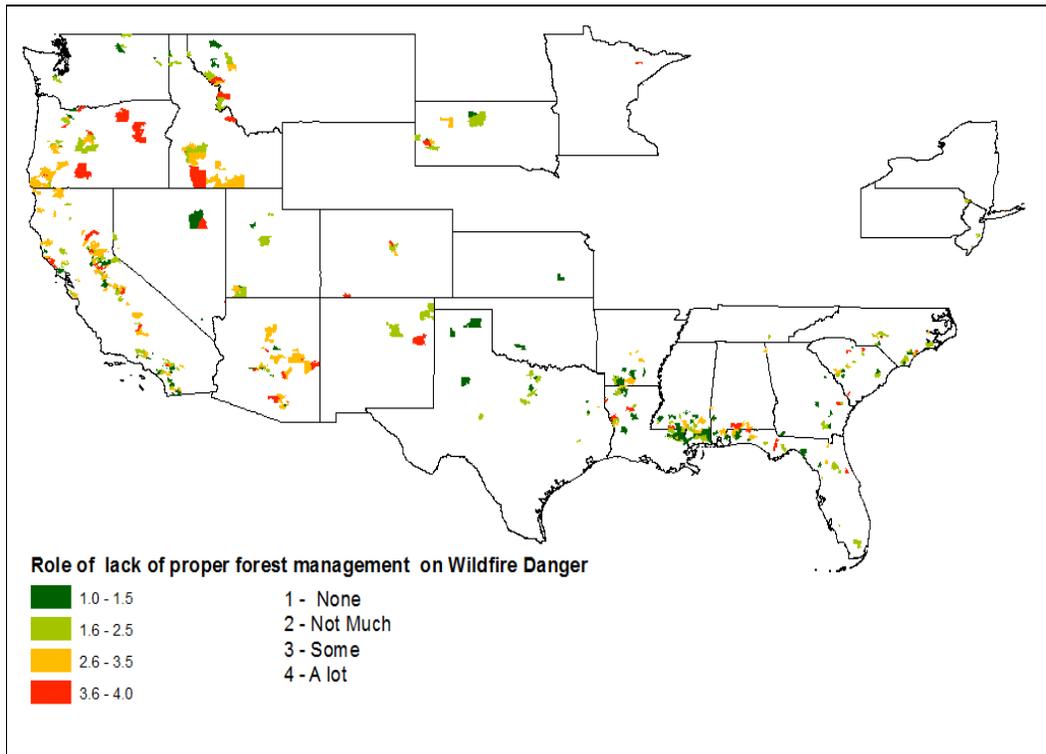
Not surprisingly, respondents in the Pacific and Mountain regions, as well as those in South Dakota, Texas, and Kansas were more likely to view wind as a factor in increasing wildfire hazard.

Contributions of housing construction in wildlands to wildfire danger



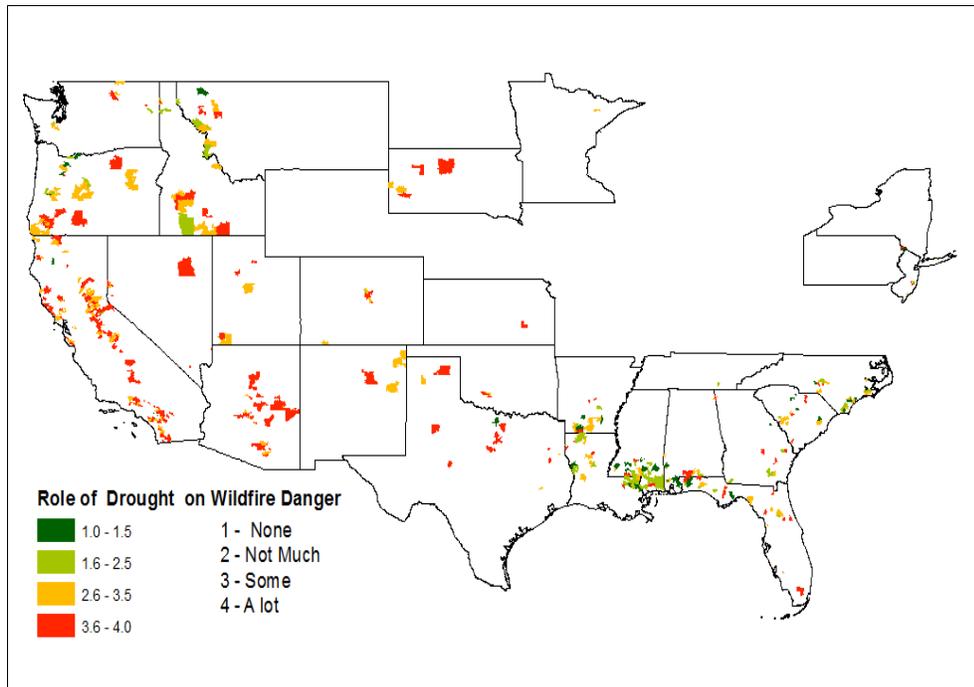
Pacific and Mountain West respondents were more likely to perceive a link between housing construction in the wildlands and increased wildfire risk. This was viewed as much less of an issue in the southern US.

Contribution of poor forest management to wildfire danger



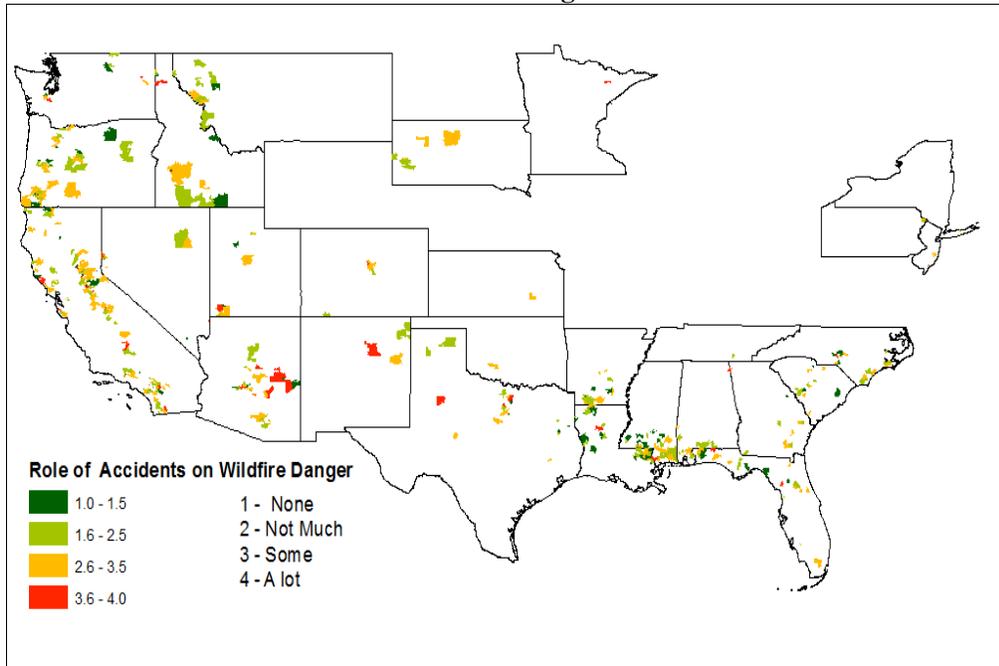
Respondents who believe that poor forest management has contributed to increased wildfire risk a lot were identified throughout the US, with the largest concentrations in western states (Arizona, Idaho, Montana, Oregon, and Arizona), with smaller concentrations in the South.

Contribution of drought to wildfire danger



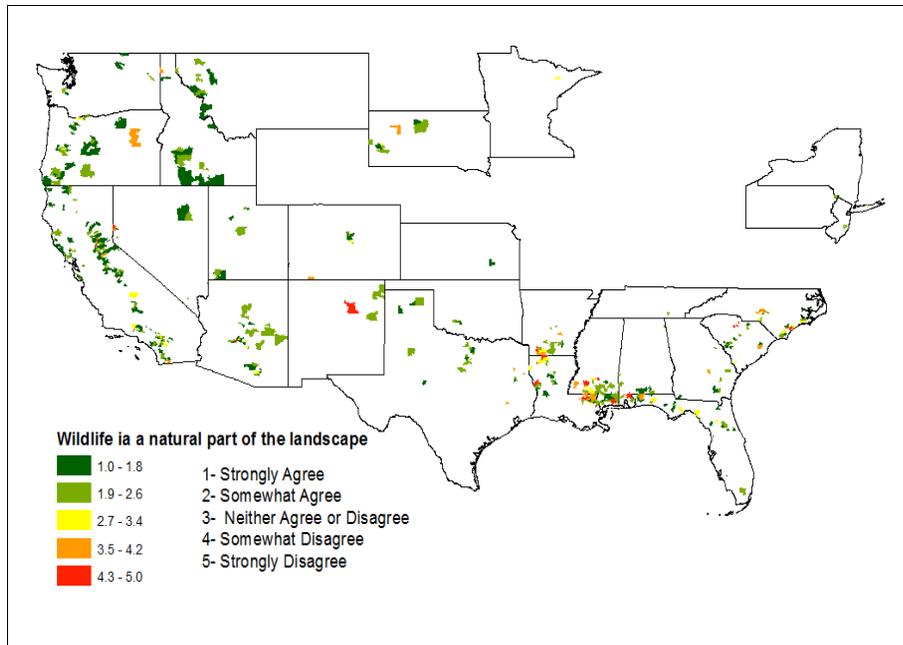
The majority of respondents in California, Oregon, Nevada, Arizona, New Mexico, South Dakota, and Texas note a significant role of drought on wildfire danger. This effect is downgraded by respondents in most of the Southeast

Contribution of accidents to the wildfire danger

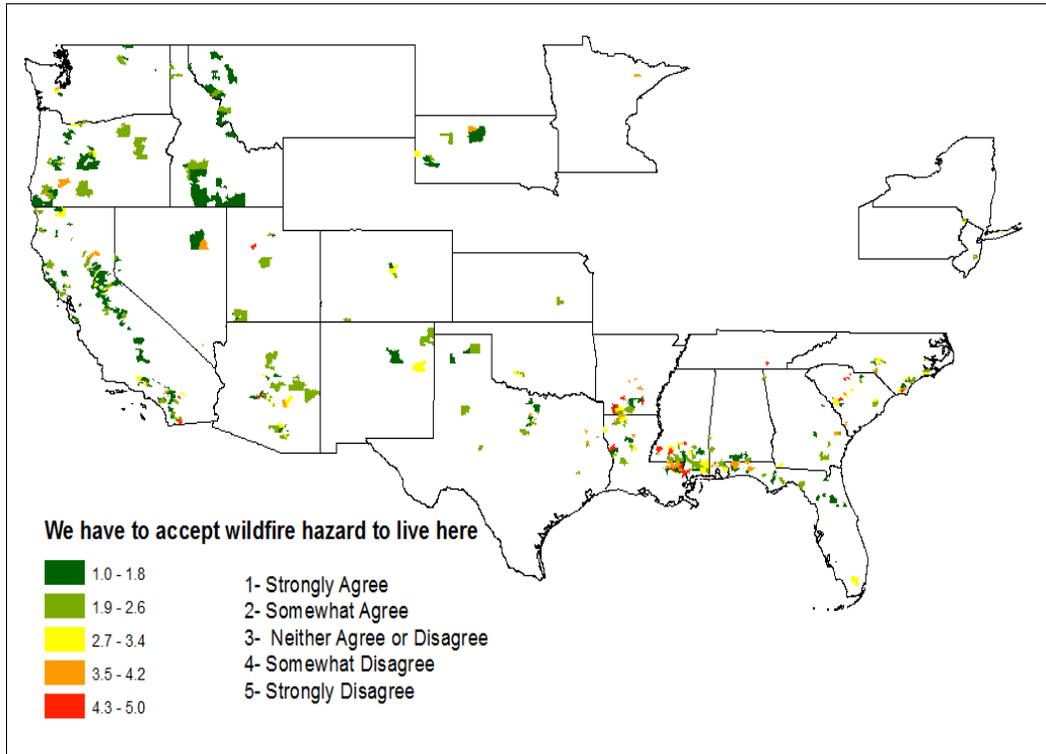


Attitudes toward Wildfire

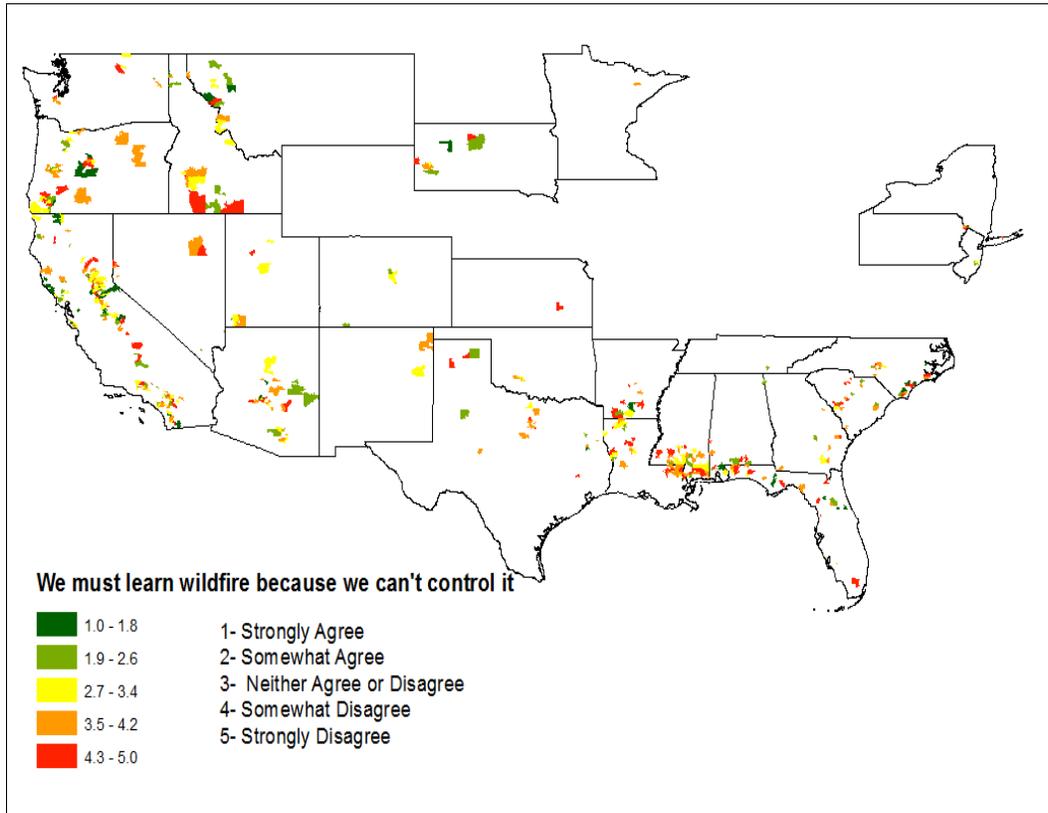
Wildfire is a natural part of the landscape



To live here, we have to accept wildfire hazard

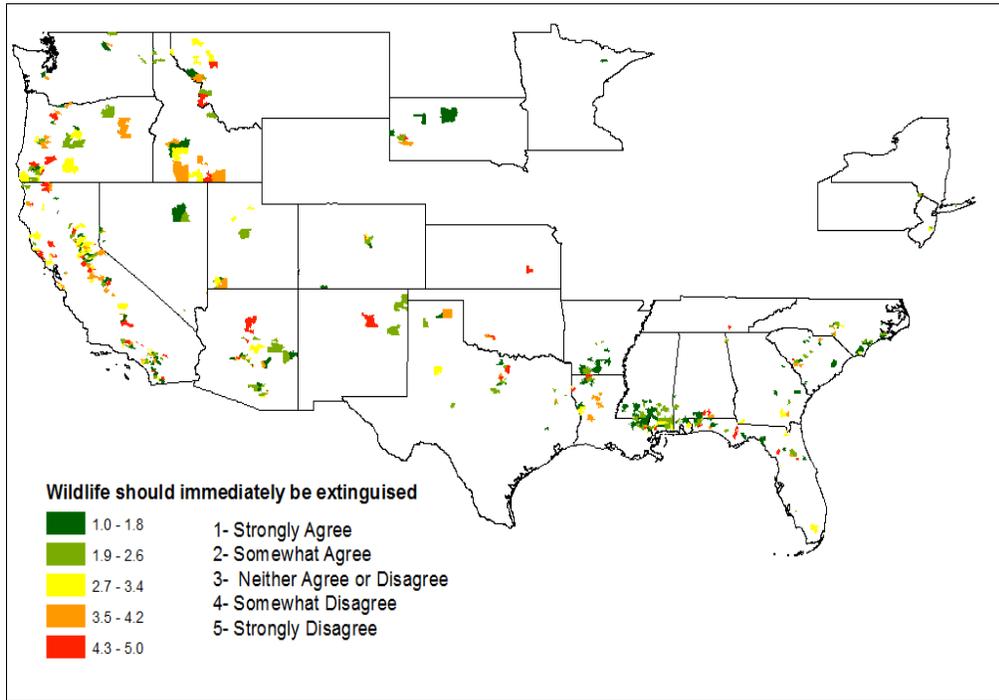


We must learn to live with wildfire because we cannot control it

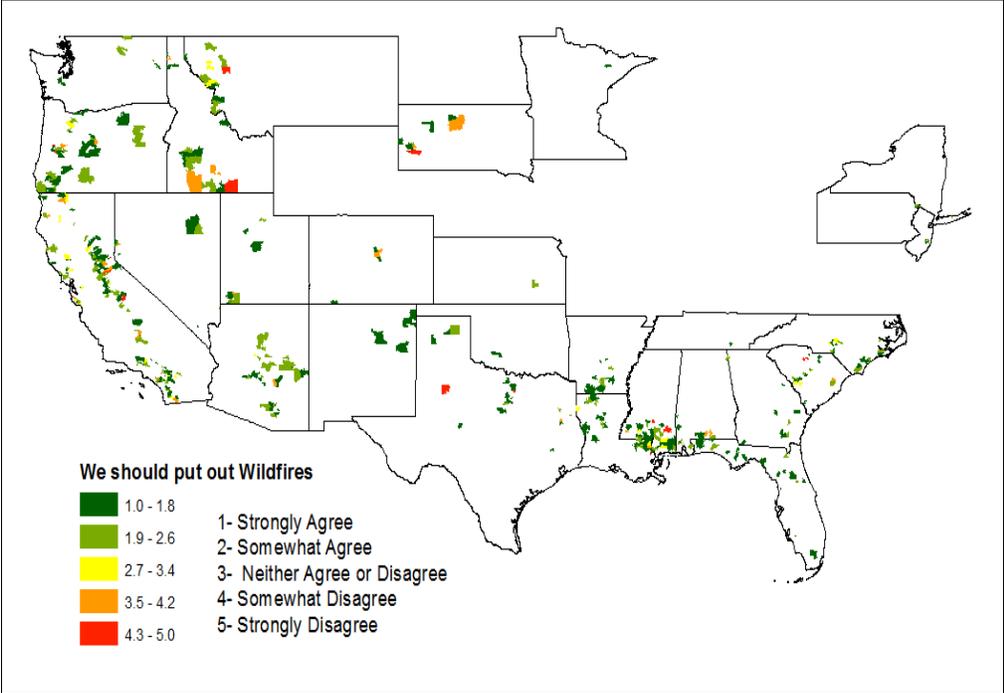


Most of the respondents throughout the study areas were at least neutral or disagree that they must learn to live with wildfire because they cannot control it. However, 17 respondents did not know that they have to learn to live with wildfire. Some of the respondents in Oregon and Montana think that they have to learn to live with wildfire.

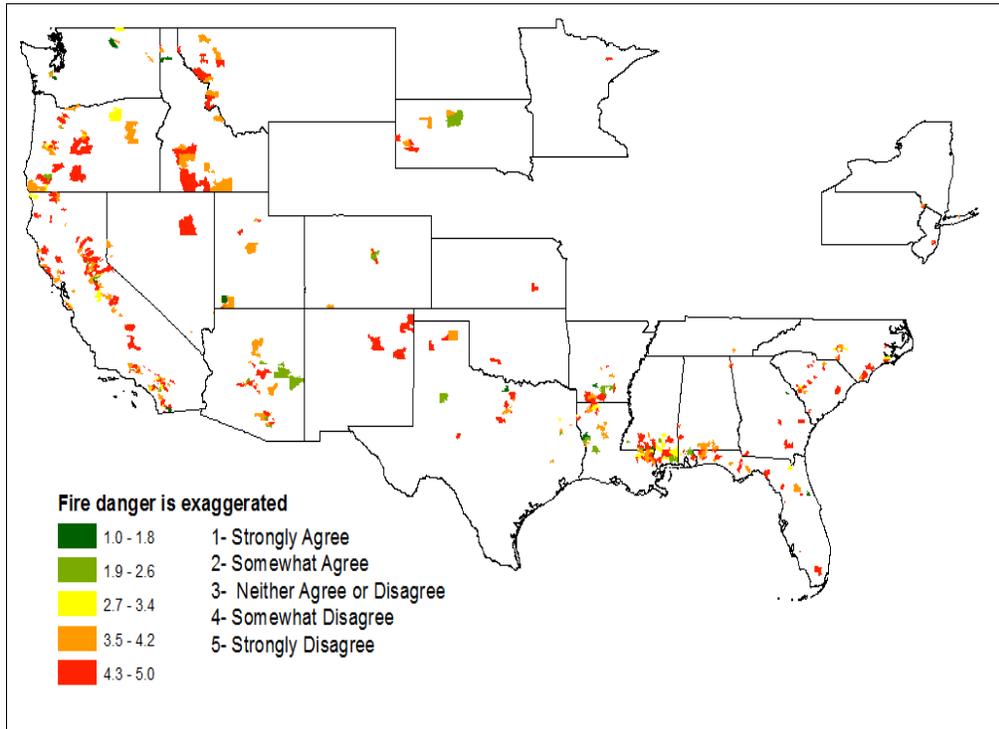
All wildfires should immediately be extinguished



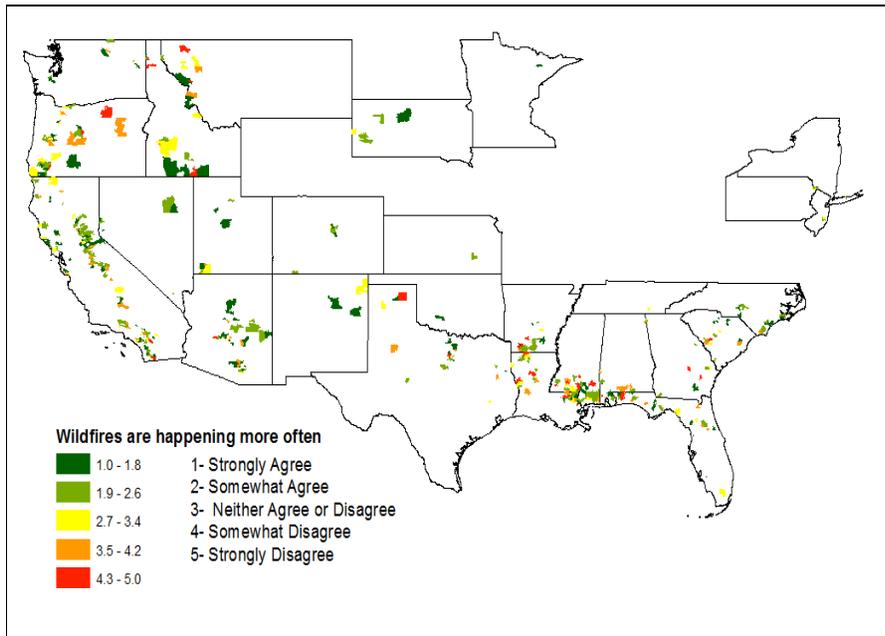
We should put out wildfires that will have a negative environmental outcome



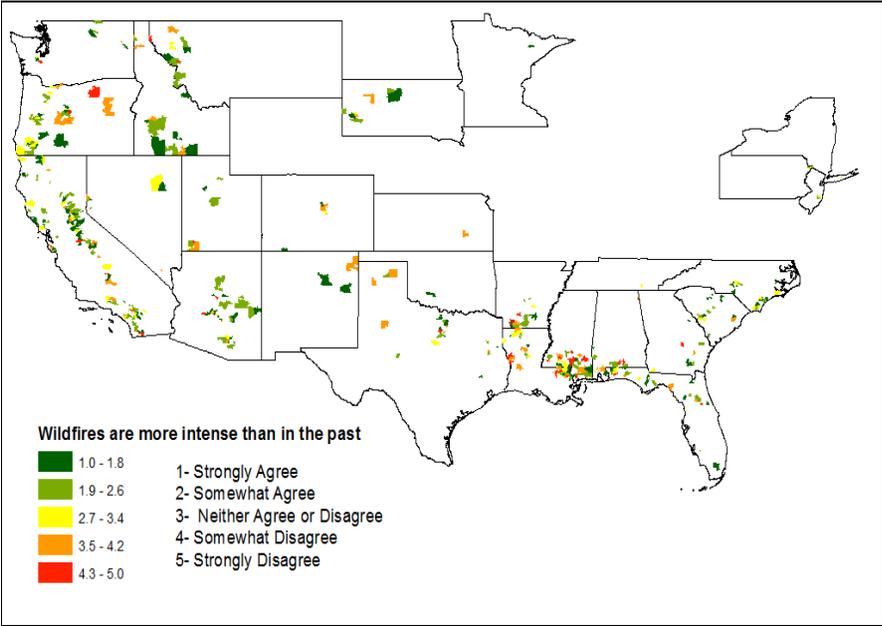
Fire danger is exaggerated in my community



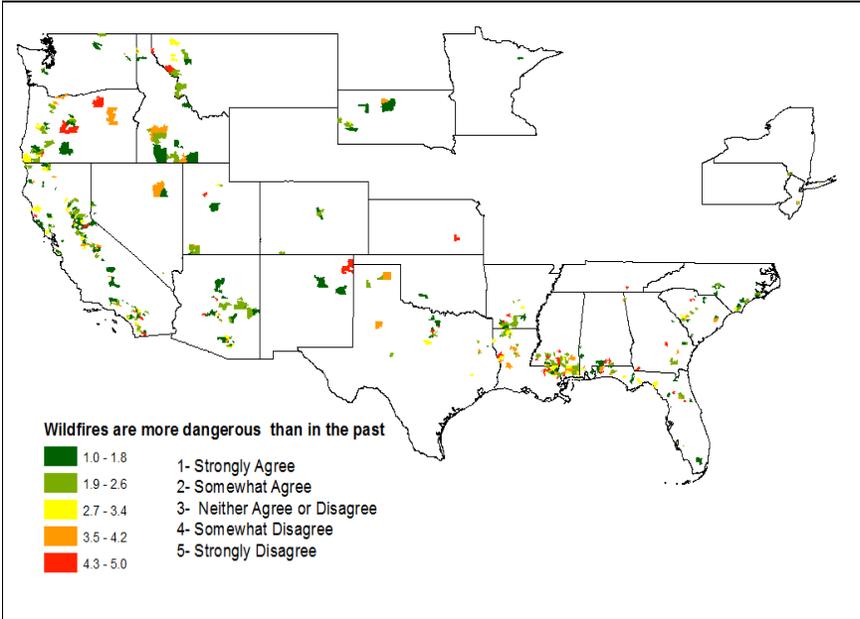
Wildfires are happening more often



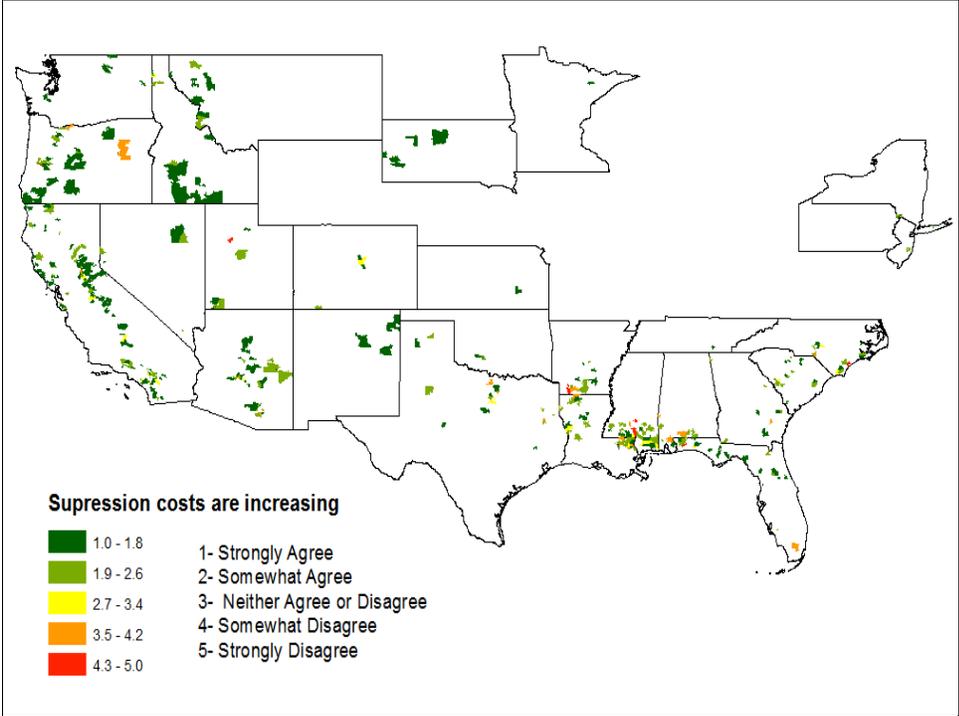
Wildfires are more intense than in the past



Wildfires are more dangerous than in the past

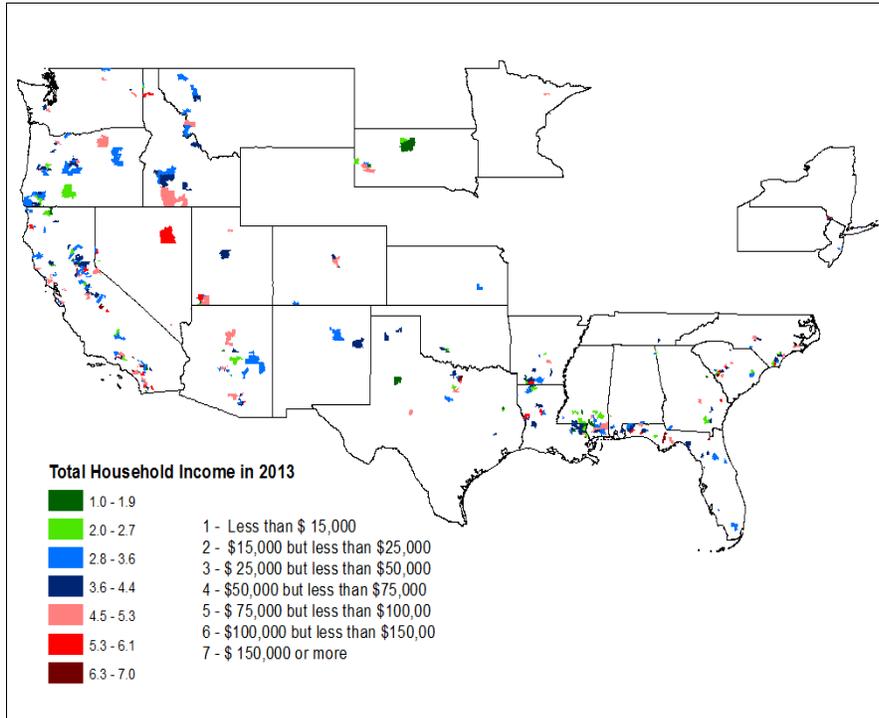


Suppression costs are increasing

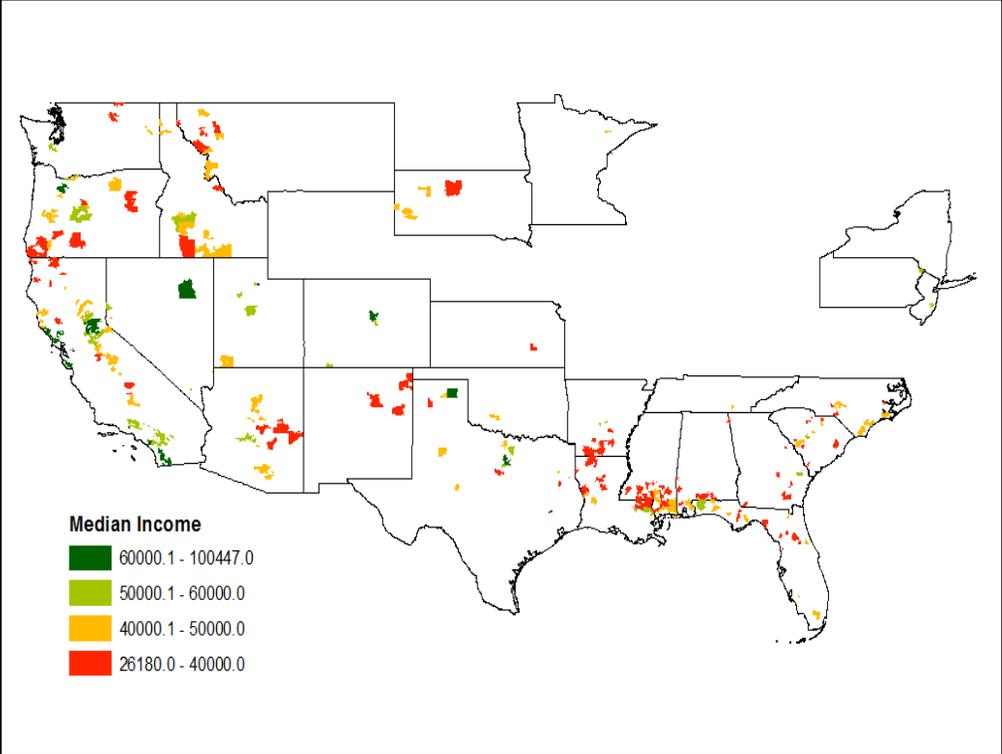


Demographic Variables

Household Income

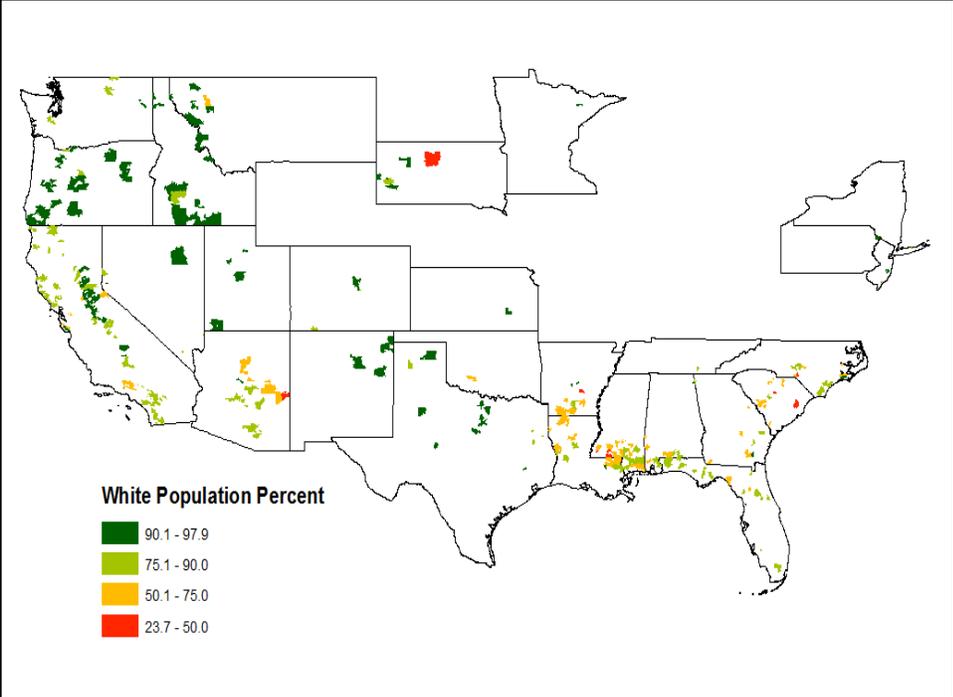


Median household income, 2009



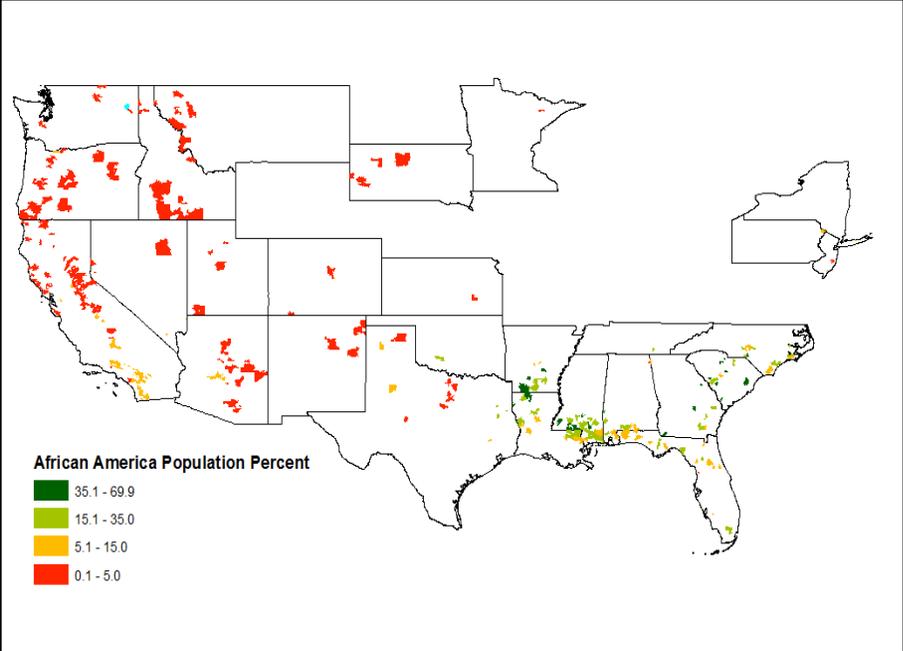
Source: US Census Bureau (2010)

Resident population: Caucasian, 2009



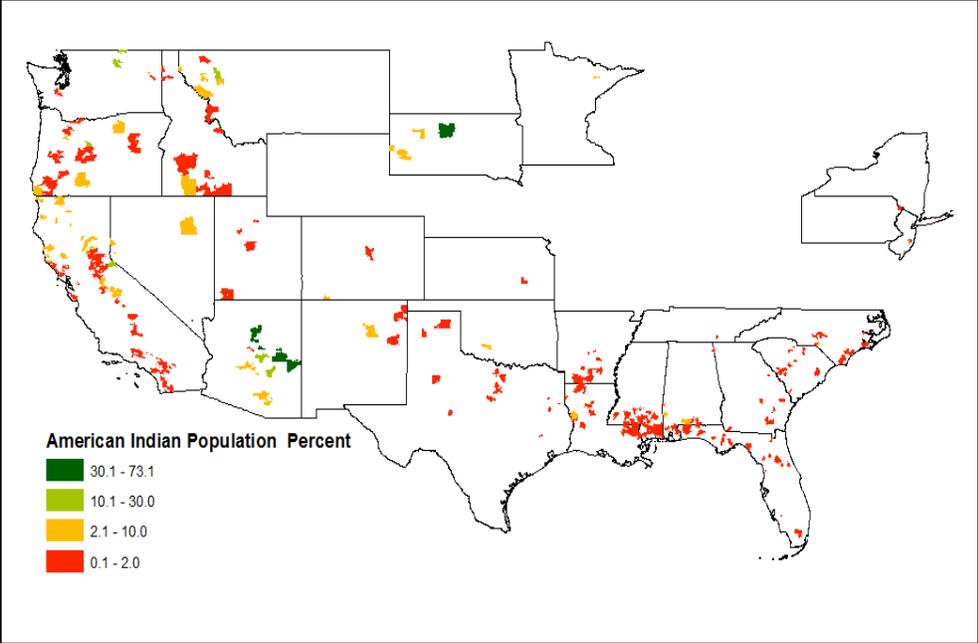
Source: US Census Bureau (2010)

Resident population: African-American alone, 2009



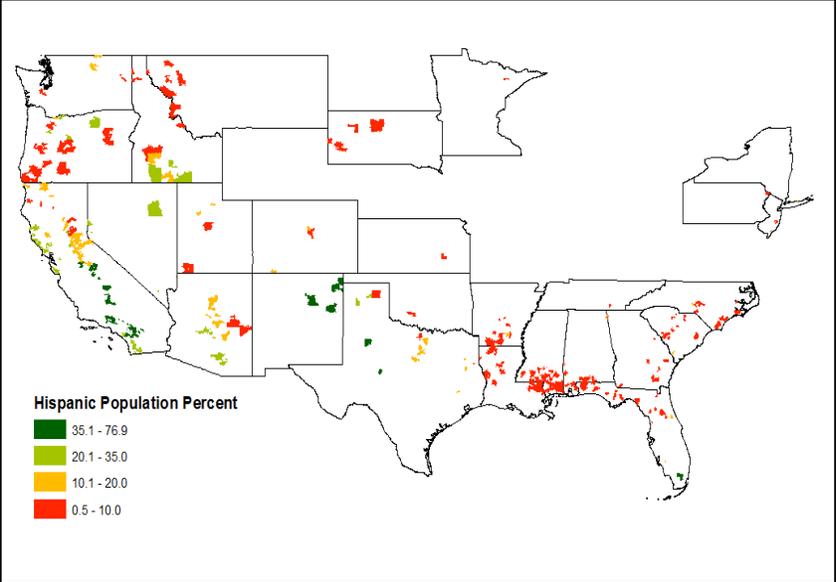
Source: US Census Bureau (2010)

Resident population: American Indian and Alaska Native, 2009



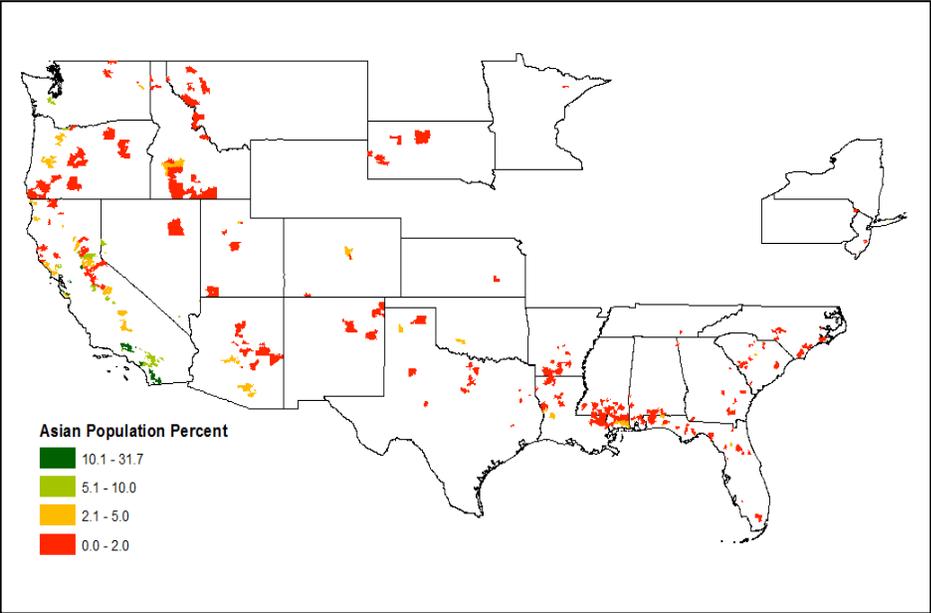
Source: US Census Bureau (2010)

Resident population: Hispanic, 2009



Source: US Census Bureau (2010)

Resident population: Asian alone, 2009



Source: US Census Bureau (2010)

APPENDIX C

Data Tables

STATE * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
STATE	AL	0	10	7	17
	AR	0	1	24	25
	AZ	3	19	95	117
	CA	331	88	13	432
	CO	0	1	9	10
	FL	0	26	31	57
	GA	0	13	0	13
	ID	1	21	5	27
	KS	0	1	0	1
	LA	0	30	24	54
	MN	0	0	1	1
	MS	0	44	4	48
	MT	2	12	12	26
	NC	9	41	1	51
	NJ	6	3	3	12
	NM	0	0	5	5
	NV	6	1	14	21
	NY	0	0	7	7
	OK	0	0	7	7
	OR	10	25	61	96
	PA	0	0	6	6
	SC	0	39	2	41
	SD	0	12	16	28
	TN	0	0	2	2
	TX	0	1	37	38
	UT	32	8	0	40
	WA	0	4	14	18
Total		400	400	400	1200

Risk Class * A. First, are you 18 years of age or older?

	A. First, are you 18 years of age or older?	
	Yes	Total
Risk Class Very High Risk	400	400
High Risk	400	400
Moderate Risk	400	400
Total	1200	1200

Risk Class * 1. How serious a problem is the wildfire hazard near your community? Would you say it is a..

(READ LIST)

	1. How serious a problem is the wildfire hazard near your community? Would you say it is a (READ LIST)							Total
	Very serious	Moderately serious	Somewhat serious	Neither serious nor not serious	Not very serious	Not at all a problem	(DO NOT READ) Don't Know	
Risk Class Very High Risk	185	83	57	13	33	26	3	400
High Risk	92	77	56	12	82	77	4	400
Moderate Risk	103	84	46	19	67	74	7	400
Total	380	244	159	44	182	177	14	1200

Risk Class * 2. Have you ever directly experienced a forest fire in your area?

	2. Have you ever directly experienced a forest fire in your area?		Total
	Yes	No	
Risk Class Very High Risk	263	137	400
High Risk	172	228	400
Moderate Risk	170	230	400
Total	605	595	1200

Risk Class * Fuel buildup due to fire suppression

		Fuel buildup due to fire suppression					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	66	51	116	122	45	400
Class	High Risk	129	75	85	66	45	400
	Moderate Risk	102	57	95	109	37	400
Total		297	183	296	297	127	1200

Risk Class * Climate change

		Climate change					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	99	49	109	113	30	400
Class	High Risk	140	69	101	71	19	400
	Moderate Risk	120	58	102	98	22	400
Total		359	176	312	282	71	1200

Risk Class * Bark beetles

		Bark beetles					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	95	57	105	50	93	400
Class	High Risk	137	49	77	56	81	400
	Moderate Risk	138	58	69	61	74	400
Total		370	164	251	167	248	1200

Risk Class * Wind blow OR blow-down

		Wind blow OR blow-down					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	49	67	121	134	29	400
Class	High Risk	82	71	127	98	22	400
	Moderate Risk	68	63	124	121	24	400
Total		199	201	372	353	75	1200

Risk Class * Houses being built in wild-lands

		Houses being built in wild-lands					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	87	92	110	91	20	400
Class	High Risk	140	95	82	59	24	400
	Moderate Risk	133	81	91	72	23	400
Total		360	268	283	222	67	1200

Risk Class * Failure to properly manage the forest

		Failure to properly manage the forest					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	100	61	112	107	20	400
Class	High Risk	135	67	90	80	28	400
	Moderate Risk	122	57	89	99	33	400
Total		357	185	291	286	81	1200

Risk Class * Poor timber harvesting practices

		Poor timber harvesting practices					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	144	81	70	62	43	400
Class	High Risk	163	80	71	53	33	400
	Moderate Risk	153	72	60	77	38	400
Total		460	233	201	192	114	1200

Risk Class * Drought

		Drought					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	23	25	71	278	3	400
Class	High Risk	76	51	103	169	1	400
	Moderate Risk	55	36	100	202	7	400
Total		154	112	274	649	11	1200

Risk Class * Accidents

		Accidents					Total
		None	Not Much	Some	A Lot	Don't know	
Risk Class	Very High Risk	59	79	160	85	17	400
	High Risk	98	103	134	49	16	400
	Moderate Risk	93	80	138	72	17	400
Total		250	262	432	206	50	1200

Risk Class * 4B. Is there any thing else that you can think of that contributes to the current wildfire danger in your area?

		4B. Is there any thing else that you can think of that contributes to the current wildfire danger in your area?		Total
		Yes	No	
Risk Class	Very High Risk	2	11	13
	High Risk	10	21	31
	Moderate Risk	2	24	26
Total		14	56	70

Risk Class * 5a. Have you been involved in wildfire planning or preparedness at your home?

		5a. Have you been involved in wildfire planning or preparedness at your home?		Total
		Yes	No	
Risk Class	Very High Risk	215	185	400
	High Risk	124	276	400
	Moderate Risk	128	272	400
Total		467	733	1200

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Risk Class * q5bcd1	467	38.9%	733	61.1%	1200	100.0%
Risk Class * q5bcd2	259	21.6%	941	78.4%	1200	100.0%
Risk Class * q5bcd3	74	6.2%	1126	93.8%	1200	100.0%
Risk Class * q5bcd4	10	0.8%	1190	99.2%	1200	100.0%
Risk Class * q5bcd5	1	0.1%	1199	99.9%	1200	100.0%
Risk Class * q5bcd6	1	0.1%	1199	99.9%	1200	100.0%

q5bcd1 * Risk Class

	Risk Class			Total
	Very High Risk	High Risk	Moderate Risk	
q5bcd1 cutting tree limbs	10	4	10	24
raking pine needles	2	1	0	3
removing vegetation away from home	7	4	4	15
thinning trees	6	2	4	12
landscaping with fire resistant plants	2	0	0	2
Clearing/removing brush from around home/property	93	49	44	186
Keeping grass mowed	6	2	2	10
Keeping the ground watered	1	2	2	5
Creating a defensible area/fire breaks around the home	30	13	12	55
use fire resistant home material	4	4	0	8
sprinklers/hoses	2	3	4	9
construct a fire resistant shelter	0	0	1	1
Water storage/Pond on property	5	3	3	11
Metal/Non-Flammable roof	1	1	3	5
Developed an evacuation plan	22	7	25	54
have fire tools handy	1	1	0	2
have a "to-go-bag" ready	3	6	1	10
keep in touch with local fire agencies	2	1	0	3
smoke detectors	5	3	1	9
fire extinguishers	3	5	3	11
have fire/disaster kit prepared (water/food/fuel/generator)	1	1	1	3
participate in Community fire/disaster preparation meeting	4	3	4	11
prescribed fire	0	0	1	1
thinning	1	1	0	2
worked with fire agencies to manage my land	2	3	2	7
other	2	4	1	7
Don't know	0	1	0	1
Total	215	124	128	467

q5bcd2 * Risk Class

	Risk Class			Total
	Very High Risk	High Risk	Moderate Risk	
q5bcd2 cutting tree limbs	6	2	6	14
raking pine needles	2	3	1	6
removing vegetation away from home	5	2	0	7
thinning trees	5	6	4	15
landscaping with fire resistant plants	2	0	1	3
Clearing/removing brush from around home/property	18	9	9	36
Keeping grass mowed	9	2	6	17
Keeping the ground watered	3	1	3	7
Creating a defensible area/fire breaks around the home	20	8	7	35
use fire resistant home material	5	3	1	9
sprinklers/hoses	4	4	2	10
Water storage/Pond on property	10	2	2	14
Metal/Non-Flammable roof	4	1	3	8
Developed an evacuation plan	7	7	8	22
adequate driveway space	1	0	1	2
hire fire tools handy	3	1	2	6
have a "to-go-bag" ready	4	0	1	5
keep in touch with local fire agencies	3	0	1	4
smoke detectors	0	2	3	5
fire extinguishers	1	4	3	8
have fire/disaster kit prepared (water/food/fuel/generator)	5	4	2	11
participate in Community fire/disaster preparation meeting	2	1	6	9
prescribed fire	1	1	1	3
worked with fire agencies to manage my land	2	1	0	3
Total	122	64	73	259

q5bcd3 * Risk Class

	Risk Class			Total
	Very High Risk	High Risk	Moderate Risk	
q5bcd3 cutting tree limbs	6	0	0	6
raking pine needles	1	0	0	1
removing vegetation away from home	1	0	0	1
thinning trees	1	1	1	3
landscaping with fire resistant plants	1	1	0	2
Clearing/removing brush from around home/property	5	2	3	10
Keeping grass mowed	2	0	2	4
Keeping the ground watered	3	0	0	3
Creating a defensible area/fire breaks around the home	1	2	2	5
use fire resistant home material	0	1	1	2
sprinklers/hoses	3	2	0	5
Water storage/Pond on property	3	0	0	3
Metal/Non-Flammable roof	5	2	2	9
Developed an evacuation plan	2	2	3	7
adequate driveway space	1	0	1	2
have a "to-go-bag" ready	1	1	0	2
smoke detectors	0	2	2	4
fire extinguishers	1	0	0	1
have fire/disaster kit prepared (water/food/fuel/generator)	1	2	0	3
participate in Community fire/disaster preparation meeting	0	1	0	1
Total	38	19	17	74

q5bcd4 * Risk Class

	Risk Class		Total
	Very High Risk	Moderate Risk	
q5bcd4 Clearing/removing brush from around home/property	1	0	1
Keeping grass mowed	1	0	1
use fire resistant home material	0	1	1
Water storage/Pond on property	0	1	1
Developed an evacuation plan	1	0	1
home address clearly visible	1	0	1
had a consultant evaluate my property	1	0	1
have a "to-go-bag" ready	0	2	2
have fire/disaster kit prepared (water/food/fuel/generator)	0	1	1
Total	5	5	10

q5bcd5 * Risk Class

	Risk Class		Total
	Moderate Risk		
q5bcd5 Creating a defensible area/fire breaks around the home	1		1
Total	1		1

q5bcd6 * Risk Class

	Risk Class		Total
	Moderate Risk		
q5bcd6 planting a lawn	1		1
Total	1		1

Risk Class * PICK6A

	PICK6A		Total
	PICK6A1	PICK6A2	
Risk Class Very High Risk	199	201	400
High Risk	199	201	400
Moderate Risk	202	198	400
Total	600	600	1200

Risk Class * 6a1. Has your community been involved in wildfire planning or preparedness?

		6a1. Has your community been involved in wildfire planning or preparedness?			Total
		Yes	No	Not sure	
Risk Class	Very High Risk	251	100	49	400
	High Risk	176	164	60	400
	Moderate Risk	178	156	66	400
Total		605	420	175	1200

Risk Class * 6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

		6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	
		Residents working with or donating money to a non-profit gro	Total
Risk Class	Very High Risk	2	2
	High Risk	6	6
	Moderate Risk	4	4
Total		12	12

Educational sessions * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Educational sessions	Yes	2	5	2	9
	No	2	1	1	4
	Not Sure	1	1	0	2
Total		5	7	3	15

Neighborhood planning groups * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighborhood planning groups	Yes	2	3	2	7
	No	2	4	1	7
	Not Sure	1	0	0	1
Total		5	7	3	15

Developed an evacuation or shelter-in-place plan for wildfire event * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Developed an evacuation or shelter-in-place plan for wildfire event	Yes	3	4	2	9
	No	2	2	1	5
	Not Sure	0	1	0	1
Total		5	7	3	15

Neighbors coordinating brush clearing * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors coordinating brush clearing	Yes	2	4	1	7
	No	2	2	1	5
	Not Sure	1	1	1	3
Total		5	7	3	15

Neighbors managing their land to reduce wildfire danger * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors managing their land to reduce wildfire danger	Yes	4	5	2	11
	No	1	0	1	2
	Not Sure	0	2	0	2
Total		5	7	3	15

Public agencies or non-profit groups reducing fuel levels on public land * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Public agencies or non-profit groups reducing fuel levels on public land	Yes	2	5	2	9
	No	0	0	1	1
	Not Sure	3	2	0	5
Total		5	7	3	15

Neighbors identifying neighborhood assets at risk * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors identifying neighborhood assets at risk	Yes	3	2	1	6
	No	0	2	1	3
	Not Sure	2	3	1	6
Total		5	7	3	15

Complied with burn bans * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Complied with burn bans	Yes	4	7	2	13
	Not Sure	1	0	1	2
Total		5	7	3	15

Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community	Yes	2	1	0	3
	No	1	2	1	4
	Not Sure	2	4	2	8
Total		5	7	3	15

Educational sessions * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Educational sessions	Yes	3	6	3	12
	No	3	5	10	18
	Not Sure	0	3	1	4
Total		6	14	14	34

Neighborhood planning groups * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighborhood planning groups	Yes	3	3	3	9
	No	3	9	10	22
	Not Sure	0	2	1	3
Total		6	14	14	34

Developed an evacuation or shelter-in-place plan for wildfire event * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Developed an evacuation or shelter-in-place plan for wildfire event	Yes	3	4	6	13
	No	2	8	7	17
	Not Sure	1	2	1	4
Total		6	14	14	34

Neighbors coordinating brush clearing * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors coordinating brush clearing	Yes	2	6	6	14
	No	4	5	8	17
	Not Sure	0	3	0	3
Total		6	14	14	34

Neighbors managing their land to reduce wildfire danger * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors managing their land to reduce wildfire danger	Yes	4	9	9	22
	No	2	4	4	10
	Not Sure	0	1	1	2
Total		6	14	14	34

Public agencies or non-profit groups reducing fuel levels on public land * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Public agencies or non-profit groups reducing fuel levels on public land	Yes	2	4	3	9
	No	2	5	8	15
	Not Sure	2	5	3	10
Total		6	14	14	34

Neighbors identifying neighborhood assets at risk * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Neighbors identifying neighborhood assets at risk	Yes	3	9	5	17
	No	3	4	8	15
	Not Sure	0	1	1	2
Total		6	14	14	34

Complied with burn bans * Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Complied with burn bans	Yes	5	7	10	22
	No	1	5	3	9
	Not Sure	0	2	1	3
Total		6	14	14	34

**Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk
in the community * Risk Class**

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
Residents working with or donating money to a non-profit group that seeks to reduce wildfire risk in the community	Yes	2	1	5	8
	No	4	9	9	22
	Not Sure	0	4	0	4
Total		6	14	14	34

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY *

Risk Class

	Risk Class			Total	
	Very High Risk	High Risk	Moderate Risk		
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Educational sessions	63	40	38	141
	Neighborhood planning groups	12	4	10	26
	Developed an evacuation or shelter-in-place plan for wildfire	27	21	26	74
	Neighbors coordinating brush clearing	49	26	25	100
	Neighbors managing their land to reduce wildfire danger	23	10	9	42
	Public agencies or non-profit groups reducing fuel levels on	6	10	6	22
	Neighbors identifying neighborhood assets at risk	7	4	4	15
	Complied with burn bans	33	32	33	98
	Residents working with or donating money to a non-profit gro	5	6	4	15
	Other (Specify)	6	12	10	28
	Don't know	20	11	13	44
Total		251	176	178	605

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

*** Risk Class**

	Risk Class			Total	
	Very High Risk	High Risk	Moderate Risk		
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Educational sessions	17	11	20	48
	Neighborhood planning groups	18	11	8	37
	Developed an evacuation or shelter-in-place plan for wildfire	21	16	16	53
	Neighbors coordinating brush clearing	11	13	9	33
	Neighbors managing their land to reduce wildfire danger	18	8	12	38
	Public agencies or non-profit groups reducing fuel levels on	5	8	3	16
	Neighbors identifying neighborhood assets at risk	8	7	5	20
	Complied with burn bans	2	3	2	7
	Residents working with or donating money to a non-profit gro	1	0	2	3
	Other (Specify)	7	2	5	14
Total		108	79	82	269

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY *

Risk Class

		Risk Class			Total
		Very High Risk	High Risk	Moderate Risk	
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Educational sessions	14	13	14	41
	Neighborhood planning groups	4	1	5	10
	Developed an evacuation or shelter-in-place plan for wildfire	2	5	4	11
	Neighbors coordinating brush clearing	10	8	3	21
	Neighbors managing their land to reduce wildfire danger	17	7	6	30
	Public agencies or non-profit groups reducing fuel levels on	5	2	5	12
	Neighbors identifying neighborhood assets at risk	1	6	4	11
	Complied with burn bans	1	1	3	5
	Residents working with or donating money to a non-profit gro	2	3	3	8
	Other (Specify)	0	0	1	1
Total	56	46	48	150	

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

*** Risk Class**

	Risk Class			Total	
	Very High Risk	High Risk	Moderate Risk		
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Neighborhood planning groups	6	4	0	10
	Neighbors coordinating brush clearing	10	14	13	37
	Neighbors managing their land to reduce wildfire danger	2	5	5	12
	Public agencies or non-profit groups reducing fuel levels on	5	2	2	9
6B1. Which types of activities	Neighbors identifying neighborhood assets at risk	8	8	2	18
	Complied with burn bans	1	2	4	7
	Residents working with or donating money to a non-profit gro	2	1	3	6
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Other (Specify)				
		1	0	0	1
Total		35	36	29	100

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

*** Risk Class**

	Risk Class			Total	
	Very High Risk	High Risk	Moderate Risk		
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Neighborhood planning groups	2	7	4	13
	Public agencies or non-profit groups reducing fuel levels on	2	0	1	3
	Neighbors identifying neighborhood assets at risk	1	2	2	5
	Complied with burn bans	2	2	0	4
	Residents working with or donating money to a non-profit gro	3	1	4	8
	Other (Specify)	0	1	0	1
Total		10	13	11	34

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

*** Risk Class**

	Risk Class			Total	
	Very High Risk	High Risk	Moderate Risk		
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	Public agencies or non-profit groups reducing fuel levels on	1	6	3	10
	Complied with burn bans	1	2	1	4
	Residents working with or donating money to a non-profit gro	1	1	2	4
	Other (Specify)	1	0	0	1
Total		4	9	6	19

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY

*** Risk Class**

	Risk Class			Total
	Very High Risk	High Risk	Moderate Risk	
6B1. Which types of activities Residents working with or has your community been donating money to a non-involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	2	6	4	12
Total	2	6	4	12

6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY * Risk Class

	Risk Class	Total
	Very High Risk	
6B1. Which types of activities has your community been involved in? DO NOT READ LIST, ENTER ALL THAT APPLY	1	1
Total	1	1

Risk Class * Environmental protection

		Environmental protection						Total
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important	Don't know	
Risk Class	Very High Risk	34	25	20	121	194	6	400
	High Risk	36	38	23	125	172	6	400
	Moderate Risk	28	27	28	143	167	7	400
Total		98	90	71	389	533	19	1200

Risk Class * Economic development

		Economic development						Total
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important	Don't know	
Risk Class	Very High Risk	35	61	28	145	125	6	400
	High Risk	34	48	20	130	162	6	400
	Moderate Risk	19	41	24	158	148	10	400
Total		88	150	72	433	435	22	1200

Risk Class * Local economies

		Local economies					Total	
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important		Don't know
Risk Class	Very High Risk	24	34	18	125	189	10	400
	High Risk	24	29	20	108	207	12	400
	Moderate Risk	16	25	17	134	200	8	400
Total		64	88	55	367	596	30	1200

Risk Class * Ecological restoration

		Ecological restoration					Total	
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important		Don't know
Risk Class	Very High Risk	32	42	28	136	148	14	400
	High Risk	28	55	22	158	116	21	400
	Moderate Risk	28	42	27	159	129	15	400
Total		88	139	77	453	393	50	1200

Risk Class * Recreational access

		Recreational access						Total
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important	Don't know	
Risk	Very High Risk	26	52	16	137	165	4	400
Class	High Risk	33	36	20	162	140	9	400
	Moderate Risk	19	45	16	152	162	6	400
Total		78	133	52	451	467	19	1200

Risk Class * Low income housing

		Low income housing						Total
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important	Don't know	
Risk	Very High Risk	72	79	30	128	77	14	400
Class	High Risk	65	53	35	136	99	12	400
	Moderate Risk	72	66	47	126	79	10	400
Total		209	198	112	390	255	36	1200

Risk Class * Fire risk reduction

		Fire risk reduction						Total
		Very Unimportant	Somewhat Unimportant	Neither Unimportant Nor Important	Somewhat Important	Very Important	Don't know	
Risk Class	Very High Risk	15	21	11	110	238	5	400
	High Risk	20	28	13	137	193	9	400
	Moderate Risk	15	29	14	128	207	7	400
	Total	50	78	38	375	638	21	1200

Risk Class * 7. b. Of the items that you just identified as being very important, which is MOST important? (READ LIST SELECT ONE)

		7_b. Of the items that you just identified as being very important, which is MOST important? (READ LIST SELECT ONE)							Total
		Environmental protection	Economic development	Local economies	Ecological restoration	Recreational access	Low income housing	Fire risk reduction	
Risk Class	Very High Risk	44	29	46	24	21	17	104	285
	High Risk	34	57	58	17	13	18	57	254
	Moderate Risk	44	53	62	17	14	18	69	277
	Total	122	139	166	58	48	53	230	816

Risk Class * Individual property owners

		Individual property owners					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	10	17	113	257	3	400
Class	High Risk	16	15	122	237	10	400
	Moderate Risk	16	18	129	236	1	400
Total		42	50	364	730	14	1200

Risk Class * Homeowner associations

		Homeowner associations					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	58	35	153	125	29	400
Class	High Risk	57	36	152	124	31	400
	Moderate Risk	57	38	144	128	33	400
Total		172	109	449	377	93	1200

Risk Class * Local government

		Local government					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	22	33	147	193	5	400
Class	High Risk	27	29	171	169	4	400
	Moderate Risk	27	18	167	184	4	400
Total		76	80	485	546	13	1200

Risk Class * State government

		State government					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	30	37	143	183	7	400
Class	High Risk	36	22	154	178	10	400
	Moderate Risk	27	26	164	178	5	400
Total		93	85	461	539	22	1200

Risk Class * Fire department

		Fire department					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	20	24	96	255	5	400
Class	High Risk	24	19	112	238	7	400
	Moderate Risk	18	19	106	253	4	400
Total		62	62	314	746	16	1200

Risk Class * Federal government

		Federal government					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	59	45	162	125	9	400
Class	High Risk	82	50	121	135	12	400
	Moderate Risk	69	44	140	136	11	400
Total		210	139	423	396	32	1200

Risk Class * Non-profit wildfire organization

		Non-profit wildfire organization					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	55	52	160	92	41	400
Class	High Risk	62	59	155	79	45	400
	Moderate Risk	47	54	172	75	52	400
Total		164	165	487	246	138	1200

Risk Class * Environmental group

		Environmental group					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	81	64	170	72	13	400
Class	High Risk	87	60	152	85	16	400
	Moderate Risk	82	66	152	83	17	400
Total		250	190	474	240	46	1200

Risk Class * Forest industry

		Forest industry					Total
		None	Not Much	Some	A Lot	Don't know	
Risk	Very High Risk	41	27	108	214	10	400
Class	High Risk	30	20	110	235	5	400
	Moderate Risk	42	19	88	237	14	400
Total		113	66	306	686	29	1200

Risk Class * 9a. Do you believe local levels of trust in various organizations have changed over time because of fire management issues?

		9a. Do you believe local levels of trust in various organizations have changed over time because of fire management issues?		Total
		Yes	No	
Risk	Very High Risk	175	225	400
Class	High Risk	159	241	400
	Moderate Risk	152	248	400
Total		486	714	1200

Risk Class * Private Landowners

		Private Landowners				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	35	77	48	15	175
Class	High Risk	26	56	68	9	159
	Moderate Risk	28	61	52	11	152
Total		89	194	168	35	486

Risk Class * Forestry Consultants Who Work With Private Forest Landowners

		Forestry Consultants Who Work With Private Forest Landowners				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	30	61	35	49	175
Class	High Risk	26	54	37	42	159
	Moderate Risk	19	46	47	40	152
Total		75	161	119	131	486

Risk Class * Local Fire Department

		Local Fire Department				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	21	63	87	4	175
Class	High Risk	20	57	75	7	159
	Moderate Risk	9	49	87	7	152
Total		50	169	249	18	486

Risk Class * Local Forest Industry

		Local Forest Industry				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	34	82	39	20	175
Class	High Risk	38	49	54	18	159
	Moderate Risk	26	56	48	22	152
Total		98	187	141	60	486

Risk Class * Local Forest Service Staff

		Local Forest Service Staff				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	27	63	61	24	175
Class	High Risk	30	56	55	18	159
	Moderate Risk	26	55	49	22	152
Total		83	174	165	64	486

Risk Class * Local Ngo/Nonprofit Group

		Local Ngo/Nonprofit Group				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	26	70	36	43	175
Class	High Risk	24	60	39	36	159
	Moderate Risk	24	67	28	33	152
Total		74	197	103	112	486

Risk Class * Tribal Government

		Tribal Government				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	28	59	28	60	175
Class	High Risk	36	50	30	43	159
	Moderate Risk	25	56	25	46	152
Total		89	165	83	149	486

Risk Class * State Forestry Commissions/Bureaus/Departments

		State Forestry Commissions/Bureaus/Departments				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	52	53	39	31	175
Class	High Risk	34	62	40	23	159
	Moderate Risk	35	44	53	20	152
Total		121	159	132	74	486

Risk Class * State NGO/Nonprofit Groups

		State NGO/Nonprofit Groups				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	27	76	26	46	175
Class	High Risk	32	58	33	36	159
	Moderate Risk	34	55	28	35	152
Total		93	189	87	117	486

Risk Class * Environmental Protection Agency

		Environmental Protection Agency				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	66	54	40	15	175
Class	High Risk	50	53	41	15	159
	Moderate Risk	44	56	38	14	152
Total		160	163	119	44	486

Risk Class * US Forest Service

		US Forest Service				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	42	73	47	13	175
Class	High Risk	37	59	51	12	159
	Moderate Risk	35	53	52	12	152
Total		114	185	150	37	486

Risk Class * Bureau of Land Management

		Bureau of Land Management				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	54	72	29	20	175
Class	High Risk	43	55	39	22	159
	Moderate Risk	38	49	46	19	152
Total		135	176	114	61	486

Risk Class * US National Park Service

		US National Park Service				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	47	73	39	16	175
Class	High Risk	39	56	48	16	159
	Moderate Risk	28	57	49	18	152
Total		114	186	136	50	486

Risk Class * National Guard

		National Guard				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	18	79	34	44	175
Class	High Risk	22	63	50	24	159
	Moderate Risk	15	66	52	19	152
Total		55	208	136	87	486

Risk Class * National NGO/Nonprofit Group

		National NGO/Nonprofit Group				Total
		Decreased	Not Changed	Increased	Don't know	
Risk	Very High Risk	32	74	19	50	175
Class	High Risk	31	59	26	43	159
	Moderate Risk	25	59	23	45	152
Total		88	192	68	138	486

Risk Class * 9C. Are there any other Federal Agencies that have changed over time because of fire management issues?

		9C. Are there any other Federal Agencies that have changed over time because of fire management issues?		Total
		Yes	No	
Risk	Very High Risk	18	157	175
Class	High Risk	11	148	159
	Moderate Risk	9	143	152
Total		38	448	486

Risk Class * Wildfire is a natural part of the landscape

		Wildfire is a natural part of the landscape					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk Class	Very High Risk	206	140	10	19	21	4	400
	High Risk	148	163	14	40	31	4	400
	Moderate Risk	143	160	19	38	36	3	399
	Total	497	463	43	97	88	11	1199

Risk Class * To live here, we have to accept wildfire hazard

		To live here, we have to accept wildfire hazard					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk Class	Very High Risk	205	121	12	26	33	3	400
	High Risk	158	127	14	50	45	6	400
	Moderate Risk	138	136	16	53	53	3	399
	Total	501	384	42	129	131	12	1199

Risk Class * We must learn to live with wildfire because we can't control it

		We must learn to live with wildfire because we can't control it					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	72	105	25	86	106	6	400
Class	High Risk	64	95	12	104	119	6	400
	Moderate Risk	49	75	28	118	124	5	399
Total		185	275	65	308	349	17	1199

Risk Class * All wildfires should immediately be extinguished

		All wildfires should immediately be extinguished					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	129	56	24	97	90	4	400
Class	High Risk	158	96	15	79	50	2	400
	Moderate Risk	160	82	10	84	57	6	399
Total		447	234	49	260	197	12	1199

Risk Class * We should put out wildfires that will have a negative environmental outcome

		We should put out wildfires that will have a negative environmental outcome					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	200	89	25	45	25	16	400
Class	High Risk	204	117	16	27	23	13	400
	Moderate Risk	215	105	19	23	19	18	399
Total		619	311	60	95	67	47	1199

Risk Class * The fire danger is exaggerated in my community

		The fire danger is exaggerated in my community					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	32	44	11	100	206	7	400
Class	High Risk	24	36	18	119	187	16	400
	Moderate Risk	24	33	14	127	187	14	399
Total		80	113	43	346	580	37	1199

Risk Class * Wildfires are happening more often

		Wildfires are happening more often					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	160	96	21	79	30	14	400
Class	High Risk	139	97	26	82	38	18	400
	Moderate Risk	146	105	16	67	47	18	399
Total		445	298	63	228	115	50	1199

Risk Class * Wildfires are more intense than in the past

		Wildfires are more intense than in the past					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	166	94	19	59	44	18	400
Class	High Risk	138	101	18	72	40	31	400
	Moderate Risk	156	87	20	67	52	17	399
Total		460	282	57	198	136	66	1199

Risk Class * Wildfires are more dangerous than in the past

		Wildfires are more dangerous than in the past					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	188	78	12	71	40	11	400
Class	High Risk	151	105	16	63	49	16	400
	Moderate Risk	166	107	11	56	50	9	399
Total		505	290	39	190	139	36	1199

Risk Class * Suppression costs are increasing

		Suppression costs are increasing					Total	
		Strongly Agree	Somewhat Agree	Neither Agree Nor Disagree	Somewhat Disagree	Strongly Disagree		Don't know
Risk	Very High Risk	202	128	11	17	12	30	400
Class	High Risk	171	112	19	23	13	62	400
	Moderate Risk	178	111	20	35	9	46	399
Total		551	351	50	75	34	138	1199

Risk Class * Forest management practices

		Forest management practices			Total
		Yes	No	Don't know	
Risk	Very High Risk	148	220	32	400
Class	High Risk	101	271	28	400
	Moderate Risk	105	254	41	400
Total		354	745	101	1200

Risk Class * Development

		Development			Total
		Yes	No	Don't know	
Risk	Very High Risk	202	189	9	400
Class	High Risk	183	208	9	400
	Moderate Risk	188	196	16	400
Total		573	593	34	1200

Risk Class * Access to water

		Access to water			Total
		Yes	No	Don't know	
Risk	Very High Risk	204	186	10	400
Class	High Risk	126	269	5	400
	Moderate Risk	141	249	10	400
Total		471	704	25	1200

Risk Class * Waste treatment/ toxic dumping

		Waste treatment/ toxic dumping			Total
		Yes	No	Don't know	
Risk	Very High Risk	101	280	19	400
Class	High Risk	110	277	13	400
	Moderate Risk	88	283	29	400
Total		299	840	61	1200

Risk Class * Casinos or gambling

	Casinos or gambling	Total

		Yes	No	Don't know	
Risk	Very High Risk	1	12	0	13
Class	High Risk	3	27	1	31
	Moderate Risk	5	21	0	26
Total		9	60	1	70

Risk Class * Drugs

		Drugs			Total
		Yes	No	Don't know	
Risk	Very High Risk	275	115	10	400
Class	High Risk	260	122	18	400
	Moderate Risk	241	140	19	400
Total		776	377	47	1200

Risk Class * Religion

		Religion			Total
		Yes	No	Don't know	
Risk	Very High Risk	0	13	0	13
Class	High Risk	1	27	3	31
	Moderate Risk	4	22	0	26
Total		5	62	3	70

Risk Class * Race or ethnicity

		Race or ethnicity			Total
		Yes	No	Don't know	
Risk	Very High Risk	74	311	15	400
Class	High Risk	83	303	14	400
	Moderate Risk	79	300	21	400
Total		236	914	50	1200

Risk Class * School consolidation

		School consolidation			Total
		Yes	No	Don't know	
Risk	Very High Risk	102	257	41	400
Class	High Risk	99	266	35	400
	Moderate Risk	106	255	39	400
Total		307	778	115	1200

Risk Class * Sporting competition

		Sporting competition			Total
		Yes	No	Don't know	
Risk	Very High Risk	4	9	0	13
Class	High Risk	3	24	4	31
	Moderate Risk	3	20	3	26
Total		10	53	7	70

Risk Class * Values of new residents versus values of long-time residents

		Values of new residents versus values of long-time residents			Total
		Yes	No	Don't know	
Risk	Very High Risk	183	195	22	400
Class	High Risk	141	230	29	400
	Moderate Risk	141	230	29	400
Total		465	655	80	1200

Risk Class * Income disparity

		Income disparity			Total
		Yes	No	Don't know	
Risk	Very High Risk	186	197	17	400
Class	High Risk	165	207	28	400
	Moderate Risk	163	212	25	400
Total		514	616	70	1200

Risk Class * 12b. Are there any other issues in your community that cause major conflict?

		12b. Are there any other issues in your community that cause major conflict?		Total
		Yes	No	
Risk	Very High Risk	1	12	13
Class	High Risk	8	23	31
	Moderate Risk	5	21	26
Total		14	56	70

Risk Class * They have recreational value

		They have recreational value					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	19	27	79	127	143	5	400
Class	High Risk	31	32	82	115	128	12	400
	Moderate Risk	21	39	80	133	117	10	400
Total		71	98	241	375	388	27	1200

Risk Class * They are spiritual

		They are spiritual					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	101	45	99	66	61	28	400
Class	High Risk	87	55	116	66	52	24	400
	Moderate Risk	106	62	101	60	45	26	400
Total		294	162	316	192	158	78	1200

Risk Class * They are important economically

		They are important economically					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	52	45	83	117	97	6	400
Class	High Risk	41	40	84	115	109	11	400
	Moderate Risk	29	42	99	134	84	12	400
Total		122	127	266	366	290	29	1200

Risk Class * They are some of my favorite places

		They are some of my favorite places					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	33	26	72	116	145	8	400
Class	High Risk	31	37	84	120	115	13	400
	Moderate Risk	43	34	60	118	127	18	400
Total		107	97	216	354	387	39	1200

Risk Class * I would miss these places if I moved away

		I would miss these places if I moved away					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	28	28	61	94	181	8	400
Class	High Risk	48	26	66	112	140	8	400
	Moderate Risk	41	22	53	99	165	20	400
Total		117	76	180	305	486	36	1200

Risk Class * They bring people together

		They bring people together					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	34	42	113	110	90	11	400
Class	High Risk	36	38	101	118	96	11	400
	Moderate Risk	45	45	111	116	72	11	400
Total		115	125	325	344	258	33	1200

Risk Class * They are not really natural

		They are not really natural					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	231	43	55	21	22	28	400
Class	High Risk	218	56	55	23	20	28	400
	Moderate Risk	225	56	62	21	15	21	400
Total		674	155	172	65	57	77	1200

Risk Class * They threatened by human activities (e.g., development, unsustainable timber harvesting)

		They threatened by human activities (e.g., development, unsustainable timber harvesting)					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	132	50	95	68	46	9	400
Class	High Risk	143	71	81	53	37	15	400
	Moderate Risk	127	68	87	61	45	12	400
Total		402	189	263	182	128	36	1200

Risk Class * They are threatened by 'natural' events (e.g., fire, climate change, and invasive species)

		They are threatened by 'natural' events (e.g., fire, climate change, and invasive species)					Total	
		Not at All	Slightly	Moderately	Very	Extremely		Don't know
Risk	Very High Risk	65	44	117	84	81	9	400
Class	High Risk	107	69	96	60	50	18	400
	Moderate Risk	86	66	119	57	58	14	400
Total		258	179	332	201	189	41	1200

Risk Class * 14. Does your homeowners' association or subdivision have rules about landscaping or building materials to help protect against fires?

		14. Does your homeowners' association or subdivision have rules about landscaping or building materials to help protect against fires?				Total
		Yes	No	I don't live in a homeowners association or subdivision	(DO NOT READ) Don't Know.	
Risk Class	Very High Risk	115	152	121	12	400
	High Risk	121	145	125	9	400
	Moderate Risk	108	151	125	16	400
Total		344	448	371	37	1200

Risk Class * 15. How close is your home to a Wildland area-such as forest or rangeland? Would you say you live.. (READ CHOICES)

		15. How close is your home to a Wildland area -- such as forest or rangeland? Would you say you live.... (READ CHOICES)							Total
		Within a wildland area	Adjacent to a wildland area	Between 100 and 300 yards	More than 300 yards but less than 1 mile	Between 1 and 3 miles	More than 3 miles	(DO NOT READ) Don't Know	
Risk Class	Very High Risk	110	57	41	53	63	68	8	400
	High Risk	64	64	32	63	74	100	3	400
	Moderate Risk	55	56	46	63	71	101	8	400
Total		229	177	119	179	208	269	19	1200

Risk Class * 17. What was the last grade of education that you completed?

		17. What was the last grade of education that you completed?						Total
		Less than High School	High School (or equivalent) Graduate	Some College or Post-High School Trade School	College Graduate	Graduate School or other Post College Degree	(DO NOT READ) Refused	
Risk Class	Very High Risk	9	64	130	112	81	4	400
	High Risk	15	98	106	110	67	4	400
	Moderate Risk	9	92	102	118	66	13	400
Total		33	254	338	340	214	21	1200

Risk Class * 18 years of age or less

		18 years of age or less									Total
		0	1	2	3	4	5	6	7	999	
Risk Class	Very High Risk	289	29	45	20	3	1	3	0	10	400
	High Risk	287	39	41	12	4	2	2	1	12	400
	Moderate Risk	286	38	45	11	4	1	0	0	15	400
Total		862	106	131	43	11	4	5	1	37	1200

Risk Class * 19 to 59 years of age

		19 to 59 years of age													Total
		0	1	2	3	4	5	6	7	8	9	12	20	999	
Risk Class	Very High Risk	181	77	86	24	12	5	3	0	1	0	0	0	11	400
	High Risk	187	70	91	23	11	2	2	1	0	0	0	0	13	400
	Moderate Risk	194	62	91	27	4	5	0	0	0	1	1	1	14	400
Total		562	209	268	74	27	12	5	1	1	1	1	1	38	1200

Risk Class * 60 years of age and older

		60 years of age and older											Total
		0	1	2	3	5	6	8	9	10	12	999	
Risk Class	Very High Risk	105	137	139	5	0	2	0	0	0	1	11	400
	High Risk	130	119	136	3	1	0	0	1	0	0	10	400
	Moderate Risk	124	119	136	5	0	0	1	0	3	0	12	400
Total		359	375	411	13	1	2	1	1	3	1	33	1200

Risk Class * 20. Do you live in this community as a permanent or seasonal resident or both?

		20. Do you live in this community as a permanent or seasonal resident or both?				Total
		Seasonal	Both	Permanent	(DO NOT READ) Refused	
Risk Class	Very High Risk	3	5	390	2	400
	High Risk	7	10	381	2	400
	Moderate Risk	7	7	384	2	400
Total		17	22	1155	6	1200

Risk Class * 20a. Typically, how many months each year do you live in this community?

		20a. Typically, how many months each year do you live in this community?										Total	
		1	2	3	4	5	6	8	9	10	11		999
Risk Class	Very High Risk	0	0	0	1	2	1	1	0	0	1	2	8
	High Risk	1	0	2	2	2	3	2	0	0	4	1	17
	Moderate Risk	0	3	0	1	2	1	2	4	1	0	0	14
Total		1	3	2	4	6	5	5	4	1	5	3	39

Risk Class * 21. What kind of home do you live in? Is it a single family home; a multi-family home; a modular home, or something else?

		21. What kind of home do you live in? Is it a single family home; a multi-family home; a modular home, or something else?				Total
		Single family home	Multi family home	Modular/Mobile home	(DO NOT READ) Refused	
Risk Class	Very High Risk	331	27	40	2	400
	High Risk	338	22	37	3	400
	Moderate Risk	342	30	23	5	400
Total		1011	79	100	10	1200

Risk Class * 22a. Where is this home located? Is it in a residential subdivision without a gate, a gated residential subdivision, isolated home or cabin, an apartment complex, a condominium or townhouse complex, or something else?

		22a. Where is this home located? Is it in a residential subdivision without a gate, a gated residential subdivision, isolated home or cabin, an apartment complex, a condominium or townhouse complex, or something else?							
		Residential subdivision without a gate	A gated residential subdivision	Isolated home or cabin	An apartment complex	A condominium or townhouse complex	Something else	(DO NOT READ) Refused	Total
Risk	Very High Risk	192	27	139	20	4	8	10	400
Class	High Risk	210	29	136	11	4	7	3	400
	Moderate Risk	210	32	128	15	9	2	4	400
Total		612	88	403	46	17	17	17	1200

Risk Class * 25. How do you describe yourself politically? Would you say you are a liberal, a moderate liberal; moderate, a moderate conservative, or a conservative?

		25. How do you describe yourself politically? Would you say you are a liberal, a moderate liberal; moderate, a moderate conservative, or a conservative?							
		Liberal	Moderate liberal	Moderate	Moderate conservative	Conservative	(DO NOT READ) Refused	(DO NOT READ) Don't Know	Total
Risk	Very High Risk	57	65	48	65	103	42	19	399
Class	High Risk	54	38	57	66	124	30	31	400
	Moderate Risk	52	50	60	70	112	34	22	400
Total		163	153	165	201	339	106	72	1199

Risk Class * 26. What was your total income from all sources for your household (before taxes) in 2013? Would you say less than \$15,000; 15,000 but less than 25,000; 25,000 but less than 50,000, 50,000 but less than 75,000; 75,000 but less than 100,000; 100,000 but...

		26. What was your total income from all sources for your household (before taxes) in 2013? Would you say less than \$15,000; 15,000 but less than 25,000; 25,000 but less than 50,000, 50,000 but less than 75,000; 75,000 but less than 100,000; 100,000 but...									
		Less than \$15,000	15,000 but less than 25,000	25,000 but less than 50,000	50,000 but less than 75,000	75,000 but less than 100,000	100,000 but less than 150,000	or 150,000 or more?	(DO NOT READ) Refused	(DO NOT READ) Don't know	Total
Risk Class	Very High Risk	15	29	79	52	34	30	21	122	17	399
	High Risk	25	28	63	66	31	29	15	126	17	400
	Moderate Risk	23	28	55	72	44	28	12	130	8	400
	Total	63	85	197	190	109	87	48	378	42	1199