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Living with Wildfire in Chelan County Fire District #3, Chelan County, Washington: 2022 Data Report

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Abstract: Community wildfire readiness includes homeowner wildfire risk mitigation and wildfire evacuation preparedness. In 2021 and 2022, the Wildfire Research (WiRē) Center partnered with Chelan County Fire District #3 (CCFD #3) to learn how CCFD #3 can effectively engage with residents about preparing for a wildfire event and mitigating wildfire risk around the home.

The CCFD #3 residents were responsive to the household survey (38% response rate). Respondents reported being aware of wildfire risk and having taken action to mitigate risk on their properties and prepare for evacuation. However, residents' perceptions of property-level wildfire risk did not align with wildfire assessments conducted by trained assessors. Residents may benefit from financial assistance to support proper mitigation and educational outreach.

Keywords: WiRē (wildfire research), co-produced research, risk assessment, survey data, social science, community, resident, wildfire risk, preparedness, mitigation, wildland urban interface (WUI)

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Executive Summary

In Brief

Respondents to a Chelan County Fire District #3 household survey reported being aware of wildfire risk and having taken action to mitigate risk on their properties and prepare for evacuation. However, residents' perceptions of property-level wildfire risk did not align with wildfire assessments conducted by trained assessors. Residents may benefit from financial assistance to support proper mitigation and educational outreach from Chelan County Fire District #3 that informs them of their properties' level of risk.

Background, Goals, and Methods

In 2021 and 2022, the Wildfire Research (WiRē) Center partnered with Chelan County Fire District #3 (CCFD #3) to learn how CCFD #3 can effectively engage with residents about preparing for a wildfire event and mitigating wildfire risk around the home. This study was part of a larger, sustained collaboration between WiRē and other fire districts in Chelan County, Washington.

This study included collection of two types of data: rapid parcel-level wildfire risk assessment data and household survey data. The WiRē Rapid Wildfire Risk Assessment (WiRē RA) protocol measures parcel-level risk based on 13 attributes related to home ignition, defensible space, background conditions, and access to the property. The assessments were conducted on all properties with residential structures within the study area. Next, a survey was sent to all households with completed assessments in the study area, collecting homeowners' self-assessments of the wildfire risk to their properties as well as social measures related to residents' experiences and notions of wildfire. This report summarizes the results of the two data collection efforts.

Results

Chelan County Fire District #3 residents were responsive to the household survey (38% response rate). The average age of respondents was 61 years old, and 52 percent were retired. Forty-nine percent of survey respondents reported a yearly income of \$100,000 or greater, and 70 percent held a bachelor's degree or higher. Survey responses provide insights into study area residents' wildfire risk awareness, understanding of wildfire risk contributors, perceptions of community risk reduction strategies, communication preferences, and current mitigation activities.

Survey results indicate that respondents were aware of wildfire risk to their homes but few expected to incur wildfire damage. Two-thirds of respondents agreed that their properties were at risk from wildfire, and 40 percent reported experience with evacuation due to wildfire (figs. 19, 21). However, less than half of respondents thought it likely that a wildfire would reach their properties in the next year, or that they would lose their homes if that happened (fig. 22). In the event of a wildfire on their properties, less than half of respondents thought it likely their landscaping or homes would incur wildfire or smoke damage, and more respondents thought it was likely their neighbors' homes would be damaged or destroyed than their own homes (fig. 24). However, only 40 percent of respondents thought the fire

department would be able save their homes in the event of a wildfire on their properties (fig. 24). More broadly, less than a third of respondents agreed that wildfires can be controlled, and less than 20 percent of respondents agreed that local firefighters have sufficient resources to protect homes or keep wildfires from spreading (fig. 45).

Survey results indicate that respondents perceived some, but not all components of wildfire risk in the WUI. On one hand, almost all respondents viewed water supply and the vegetation on and surrounding their properties as major contributors to the chances of a wildfire damaging their properties in the next year, and two-thirds recognized that the physical characteristics of their houses could also affect their risk (fig. 26). However, only half of respondents recognized direct flame or embers as sources of ignition, and only 21 percent saw nearby homes as a potential ignition source (fig. 25). Furthermore, a comparison of WiRē RA and household survey results indicates that respondents differed in their evaluations of wildfire risk as compared to trained assessors (fig. 4). Particularly, resident self-assessments of the following risk attributes were notably lower than WiRē RA ratings: distance from the home to neighboring homes (fig. 8), to overgrown or unmaintained vegetation (fig. 9), distance to other (non-vegetation) combustibles (fig. 10), and distance to dangerous topography (fig. 11). Notably, while respondents tended to overestimate defensible space, most residents did indeed have at least 30 feet of distance between the home and overgrown or unmaintained vegetation (fig. 9). Respondents also differed from trained assessors in their perceptions of address sign visibility (fig. 14) and estimation of the number of ingress/egress routes from their community (fig. 15). These differences may present an opportunity for educational outreach about wildfire risk mitigation and the need to prepare for an evacuation.

Most respondents reported taking action to reduce their wildfire risk. Almost all respondents (94%) indicated that they thought their actions are effective against wildfire and took some responsibility for managing wildfire risk (fig. 47). Most reported performing activities such as regularly cleaning the roof and gutters, reducing vegetation around the home, regularly mowing and raking around the home, and even hardening the home (fig. 34). However, respondents did face barriers to mitigation. Around 30-40 percent of respondents reported personal resource barriers, including time to do the work, financial cost, and physical ability to do the work (fig. 35). Twenty percent of respondents reported lack of information about disposing of vegetation as a barrier (fig. 36). Furthermore, many respondents reported that information and resource incentives would encourage them to mitigate, including a cost share or financial assistance (60%), help doing the work (55%) and a one-on-one visit to the property by a wildfire expert (49%) (figs. 39–40).

In addition to mitigation action, respondents also reported their current wildfire evacuation preparedness activities and information needs. Eighty percent of respondents reported having an evacuation plan (fig. 32) and about two-thirds have taken important evacuation planning steps, including what to take during an evacuation, safe evacuation routes, where to stay long-term, and where to evacuate (fig. 33). However, only 38 percent of respondents reported having signed up for emergency notifications, 44 percent have packed a “go bag” with items needed during an evacuation, and 35 percent have created an evacuation checklist, indicating room for further outreach on this topic (fig. 33).

Survey responses also indicate pathways for outreach and education with residents about wildfire risk. Almost all respondents had received wildfire risk information from CCFD #3 and the Chumstick Wildfire Stewardship Coalition, and most respondents who received information from those sources found it very or extremely useful (fig. 30). While many respondents received information from the media, few found it useful (fig. 30). Furthermore, respondents most preferred to receive information via mailed newsletter, email/e-newsletter, or in-person interactions (fig. 31). Most respondents also reported talking with their neighbors about wildfire, which may be another pathway for wildfire risk education (fig. 27). About a third of respondents reported that their insurance companies have charged them a higher premium due to wildfire risk, and a quarter of respondents had received wildfire risk information from their insurance companies (fig. 29).

In addition to results related to property-level risk mitigation, respondents reported their preferences related to community-level risk reduction strategies. Most respondents indicated strong support for each of the landscape-level fuel treatments listed, including removing vegetation along roadways for safer evacuation, removing trees and other vegetation in general, reducing other vegetation on Homeowners Association (HOA) property surrounding communities, burning piles of vegetation, managing a naturally ignited fire, and conducting a prescribed fire ignited by fire professionals (fig. 42).

Aligning with support for prescribed fire, 90 percent of respondents agreed that wildfires are a natural part of a healthy forest ecosystem (fig. 44). Most survey respondents also indicated broad support for proposed wildfire regulations and practices, including building a new road to provide an emergency evacuation route, development standards that require vegetation management, building codes that require fire resistant materials for structures located in fire-prone areas, and growth policies or land use regulations that limit new development. Slightly less than half of respondents found it acceptable to temporarily shut off the power grid on extreme fire risk days (fig. 43).

What Is WiRē?

The Wildfire Research (WiRē¹) Center works with wildfire practitioners seeking to create communities that are adapted to wildfire through an evidenced-based approach. Historically, immediate threats and wildfire suppression have garnered much attention and resources. While these efforts remain critical, getting in front of the problem by promoting pathways to fire adaptation is of paramount importance. Fire adaptation is about living with wildfire. It's about creating safe and resilient communities that mitigate wildfire risk before a fire to allow for effective response to and recovery from wildfires. It is also about allowing fire, as an important ecological process, on the landscape when it is safe and beneficial to do so.

Over the last decade, a team of researchers and practitioners, referred to as the WiRē Team, has developed and successfully implemented a systematic data collection and integration approach (the WiRē Approach) that informs local wildfire risk education efforts and allows for monitoring of community adaptation over time.

The mission of the WiRē Center is to support evidence-based community wildfire education and mitigation efforts so that communities can live with wildfire. Specifically, the WiRē Center provides personalized expertise and support to collect, interpret, and use paired parcel-level wildfire risk and social data. The WiRē Approach enables partners to effectively allocate resources and engage with residents in the study area. Leveraging lessons learned across studies, the WiRē Center pursues scientific approaches to inform conversations and decisions about wildfire adaptation.

The WiRē Approach

The WiRē Approach includes two central data collection efforts:

1. A property-level WiRē Rapid Wildfire Risk Assessment (WiRē RA) based on attributes related to building materials, fuels near the home, background fuels and topography, and access to the property. The WiRē RA also includes an overall risk rating for the property. WiRē risk scores are not an absolute measure of risk but are estimates of risk using a standardized suite of variables observed by a particular person at one point in time (refer to *Methods*).
2. A household survey sent to the owner of each assessed property, which represents their notions of wildfire risk, how they communicate about wildfire risk, risk mitigation behaviors, including evacuation planning, and barriers and incentives to mitigate wildfire risk on private properties.

The WiRē Approach aims to empower the voice of wildfire practitioner partners. These partners both participate in the data collection process and share the results with their communities. Experience has demonstrated that sharing results with the community provides a common platform for constructive discussion about adapting to wildfire. During these discussions, wildfire practitioner partners can draw from data that reflect the entire community, not just a vocal few. To support these discussions and other partner goals, the WiRē Center works with partners to summarize and interpret research results.

¹ Pronounced Wy-REE

At a broader scale, the WiRē Center manages, compiles, and analyzes data collected across communities to provide insights across space and time with respect to wildfire risk on private land and the characteristics, knowledge, and experience of the people who live on those properties. These data are an important contribution to the state of knowledge regarding private lands and wildfire risk. Guided by the WiRē Team, the WiRē Center advances understanding of effective pathways to community wildfire adaptation.

Study Area: What Does the Community and Environment Look Like?

WiRē partnered with Chelan County Fire District # 3 (CCFD #3) to implement the WiRē approach in the fire district (see fig. 1). The CCFD #3 response area contains the City of Leavenworth, Washington, as well as over 80 square miles of unincorporated Chelan County. Leavenworth was rated the #1 community threatened by wildfire in the Pacific Northwest.²

This study between CCFD #3 and the Wildfire Research (WiRē) Center grew out of a 2018 collaboration with Chelan County Fire District #1 in the Squilchuck Drainage in Chelan County, WA.³ Following that collaboration, Cascadia Conservation District approached the WiRē Center about three additional studies with Chelan County fire departments, including CCFD #3.

² For more details, refer to: Scott, J.H.; Gilbertson-Day, J.; Stratton, R.D. 2018. Exposure of human communities to wildfire in the Pacific Northwest. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Regional Office. 10 p. https://pyrologix.com/wp-content/uploads/2019/11/RiskToCommunities_OR-WA_BriefingPaper.pdf

³ For more details, refer to: Brenkert-Smith, Hannah; Champ, Patricia A.; Riley, Jonathan; Barth, Christopher M.; Donovan, Colleen; Meldrum, James R.; Wagner, Carolyn. 2020. Living with wildfire in the Squilchuck Drainage-Chelan County, Washington: 2020 data report. Res. Note RMRS-RN-87. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Research Station. 125 p.

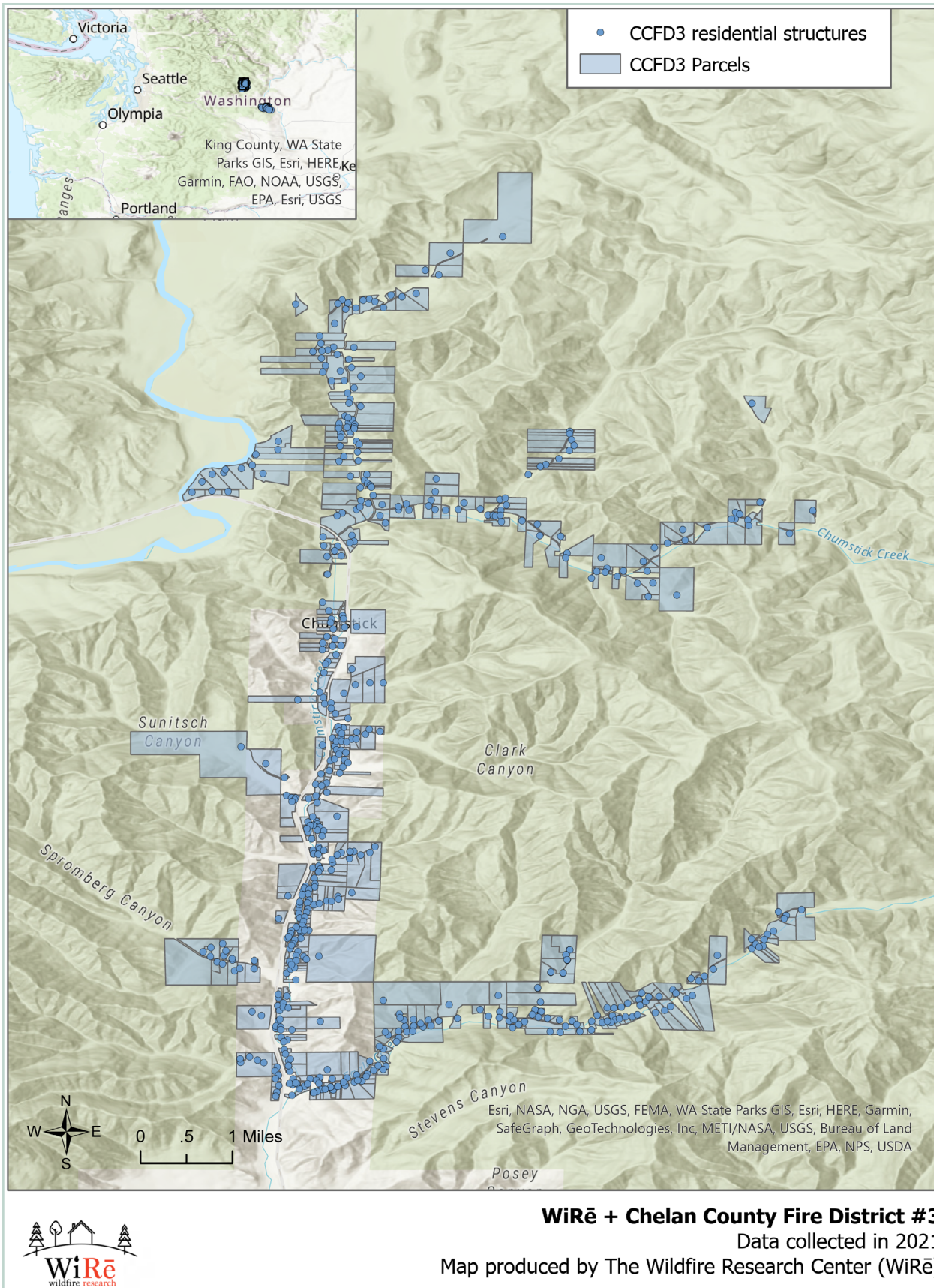


Figure 1—Map of residential parcels in the Chelan County Fire District 3, Washington, study area. Inset shows the location of the study area in Washington. Map image is the intellectual property of Esri and is used herein under license. Copyright © 2020 Esri and its licensors. All rights reserved.

WiRē Partner: Chelan County Fire District #3

CCFD #3 is a fire suppression agency tasked with the mitigation of all hazards within the designated Fire District. CCFD #3 has jurisdiction for fire suppression on private property in the District (Chapter 52 of the Revised Code of Washington). CCFD #3 is committed to wildland preparedness and helping citizens create fire resilient properties.

Methods: What Did We Do?

In the study area, CCFD #3 and WiRē implemented the WiRē Approach, a systematic approach to data collection that includes a parcel-level WiRē RA and household survey data collection. Together, these two forms of data collection support better understandings of wildfire risk and the residents whose decisions and actions shape the community landscape. The study launched with the mailing of an initial letter in late 2021 to inform residents in the study area of the upcoming activities (Refer to Appendix A for correspondence materials and household survey).

Rapid Wildfire Risk Assessments

Rapid assessment data was collected by CCFD #3 mitigation specialists (hereafter referred to as the “trained assessors”) as a census of all residential properties with a structure in the study area. Rapid assessments were conducted for 539 residential properties in winter 2021-22 using the standard WiRē RA. The WiRē RA is composed of a set of 13 attributes that includes building materials, vegetation near the home, background fuels and topography, and access to the property.

To calculate a parcel’s overall “risk score” (a continuous number on a 1,000-point scale), each WiRē RA attribute is weighted, reflecting its relative contribution to parcel-level wildfire risk (fig. 2). For example, because roofing materials can present a more significant risk than address posting, these attributes are weighted differently, constituting 30 percent and 1 percent of the overall risk score, respectively. Refer to Appendix B for specific rapid assessment attribute weightings.

To support comparison of risk across properties, the overall risk scores for each parcel are placed into five categorical “risk ratings” (low, moderate, high, very high, and extreme). These risk ratings are defined by the distribution of risk scores in WiRē’s compiled dataset, which includes all applicable WiRē studies to date. Specifically, the cut-offs between each risk rating are the 10th, 25th, 75th, and 90th percentile of the full distribution across WiRē studies. This resulted in the following overall risk ratings: low (20–240), moderate (241–305), high (306–435), very high (436–505), and extreme (506–1,000).

Importantly, a parcel-level risk rating does not account for all components of risk, including variable or extreme weather conditions and some factors that can only be captured during a comprehensive on-site consultation (e.g., vent screen size, windows, fire-resistant flashing, etc.). Thus, WiRē risk scores are not an absolute measure of risk but are estimates of risk using a standardized suite of variables observed by a particular person at one point in time.

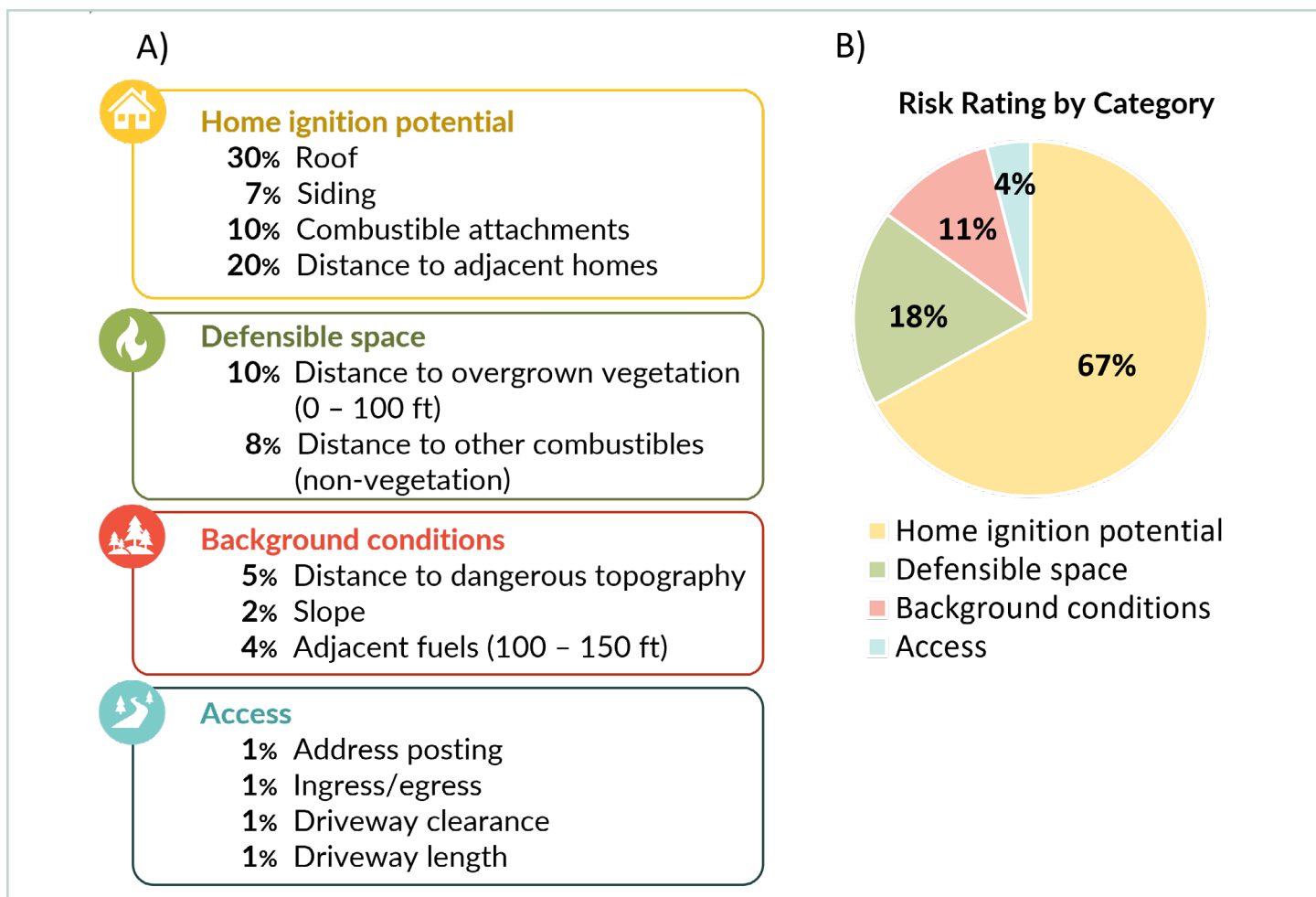


Figure 2— Wildfire Research (WiRē) Rapid Wildfire Risk Assessment (A) Relative weight of each risk attribute within the overall risk score. (B) Relative weight of each risk category within the overall risk score.

To ensure consistent, high quality data collection, WiRē wildfire practitioners conducted a virtual training on June 17, 2021 that included a virtual orientation of the WiRē RA attributes and data collection tool. Additionally, data were collected using ArcGIS FieldMaps. A standardized reference sheet for data collectors was available for use in the field (refer to Appendix B for the *Assessor Reference Guide*).

All parcel level assessments were conducted by four members of CCFD #3 and were completed on all residential properties in the study area unless access was blocked by a gated driveway or posted with no trespassing signage. In instances when the mitigation specialist could not observe a risk attribute, the specialist selected “unknown/not observed.” During data processing, these responses were assigned the highest risk score. For this study, less than 2 percent of parcels for each risk attribute coded as “unknown/not observed.”

Household Survey

The household survey was designed to collect a range of social data related to how residents in the study area live with the risk of wildfire. Most of the survey questions are standardized across WiRē studies. However, some questions were tailored to address the interests of CCFD #3. WiRē and CCFD #3 worked collaboratively to develop the final version of the household

survey. The household survey was mailed to the owners of all the properties for which a WiRē RA was completed.⁴

Household survey data were collected using a modified Dillman approach⁵ that includes three mailings after the initial letter announcing study activities and the data collection efforts (Refer to table 1 for survey administration timing.) The first mailing was a survey packet containing a cover letter, a household survey, and a postage-paid and addressed return envelope. The second mailing, a reminder/thank you postcard, was mailed to the entire mailing list approximately one month after the initial survey packet. The final mailing was a second complete survey packet with an updated cover letter mailed to nonrespondents approximately one month after the reminder postcard.

The household survey was sent to 469 households. The number of surveys returned was 178, for a 38 percent response rate. Results from the household survey can be found in Appendix E.

Table 1—Timing of the household survey administered to residents in the study area by the Chelan County Fire District 3 and the Wildfire Research (WiRē) to collect information related to wildfire risk.

Mailing	Date of mailing
Initial letter	6/18/2021
First survey package	4/19/2022
Postcard reminder	5/6/2022
Second survey package	6/16/2022

A Comparison of Risk Assessment: Results of the Wirē Rapid Assessment and Household Survey

Community Risk: Results of the WiRē Rapid Assessment

A total of 539 parcels were assessed by CCFD #3 mitigation specialists who were trained to use the WiRē RA (hereafter referred to as the “trained assessors”). These parcels were assessed on 13 attributes and overall risk was categorized as low risk (14%), moderate risk (10%), high risk (46%), very high risk (6%) or extreme risk (24%). For more details, refer to Appendix C, table 1.1.

Rapid Assessment Attributes: Observed in WiRē Rapid Assessment vs. Self-Assessed by Household Survey Respondents

The WiRē RA data, for which we have 539 records, were paired with the household survey data, for which we have 178 records, to produce 178 records with all the household survey and WiRē RA variables (“paired data,” refer to fig. 3).⁶ The data used in this section represent

⁴ As part of the WiRē Approach, one survey is sent to each individual homeowner in the study area. If an individual owns multiple properties, they receive only one survey with a prompt to select a specific property address. As a result, the number of household surveys mailed out is different from the total number of rapid assessments conducted.

⁵ For details, refer to Dillman, Don A. 2000. Internet and Mail Surveys: The Tailored Design Method, 2000. New York: John Wiley. 480 p.

⁶ Any differences between the numbers reported here and the Comparison of Wildfire Research (WiRē) Rapid Assessment and Household Survey Summary (Appendix D) should be minor and the result of rounding.

the paired data—properties for which a household survey was completed and there is an associated WiRē RA.

The WiRē RA and household survey data were compared by looking at the overall wildfire risk rating and the results for each risk attribute. The household survey asked residents to each evaluate their property using the same attributes as the WiRē RA, which allows for this comparison. The results below are organized by overall risk and then risk categories of home ignition potential, defensible space, background conditions, and access.

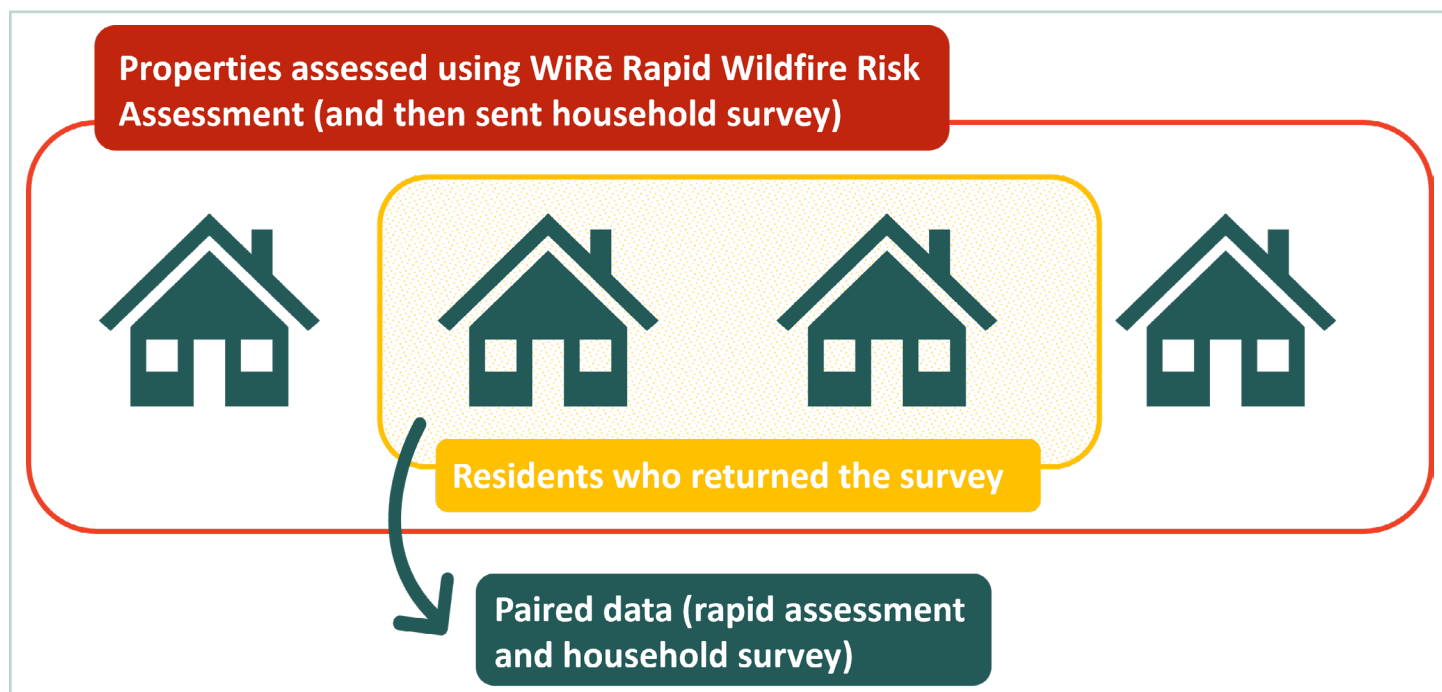


Figure 3—Representation of the rapid assessment and household survey data collected in the Chelan County Fire District 3, Washington, study area which were combined to produce the paired data presented in this report. WiRē=Wildfire Research Center.

Statistical tests were performed to assess whether parcel-level wildfire risk was different for parcels whose residents responded to the household survey (i.e., the paired data) compared to parcels in the study area whose residents did not respond. Several statistically significant differences were found (See Appendix G).

Overall wildfire risk rating—

Survey respondents evaluated their properties' risk for each of 13 risk attributes included in the WiRē RA. They were also asked to provide an assessment of their properties' overall wildfire risk based on the 13 risk attributes. The survey question about overall wildfire risk offered five response options: low, moderate, high, very high, or extreme risk. This scale matches the WiRē RA's overall risk rating scale; however, unlike the survey overall ratings, the WiRē RA's overall ratings were calculated as the sum of each individual risk attribute score with each risk category (i.e., low, moderate, high, very high, extreme) representing a specific numerical range. The WiRē RA overall ratings reflect the relative weight of the various attributes (e.g., a wood roof is 30% of the overall risk score). Comparing the WiRē RA data to

survey responses provides insight into the differing risk perspectives of residents and trained assessors.

Overall wildfire risk ratings reported by survey respondents were lower on average than those in the observed WiRē RA data. Ratings in the high-risk category best exemplify this trend: fewer survey respondents (30%) rated their parcels as at high risk of wildfire compared to the WiRē RA (51%) (refer to fig. 4).

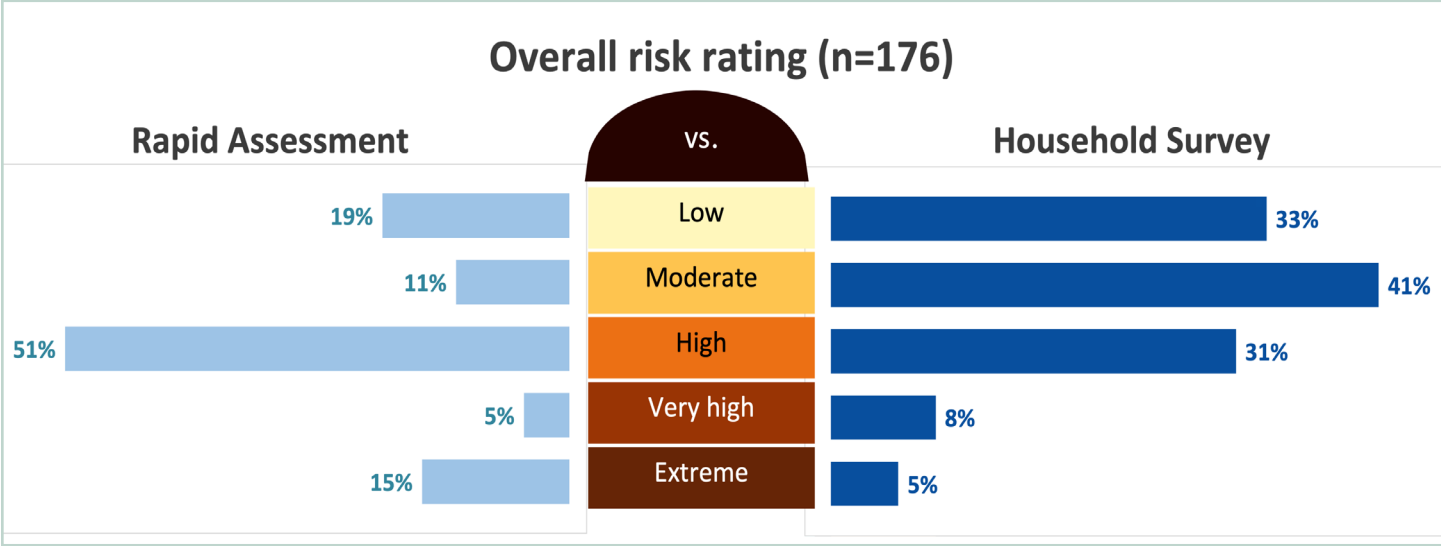


Figure 4—Distribution of overall risk rating. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. This represents 176 paired household survey and rapid assessment data.

Home ignition potential—

Exposure to convective, conductive, or radiant heat on structural materials can ultimately compromise those materials’ integrity, leading to structure ignitions.

Risk attribute: roof—

The roofing material of a structure is a critical component in determining ignitability. Roofs were assessed by the material from which they were constructed. These were either fire-resistant (noncombustible) materials such as metal, tile, and asphalt, or fire-receiving (combustible) materials such as wood shingles.

The WiRē RA data (83%) and survey responses (98%) were in accordance that most roofs were made of noncombustible materials. However, the WiRē RA data (17%) had more roofs in the combustible roof category than the survey response data (2%). Refer to figure 5.

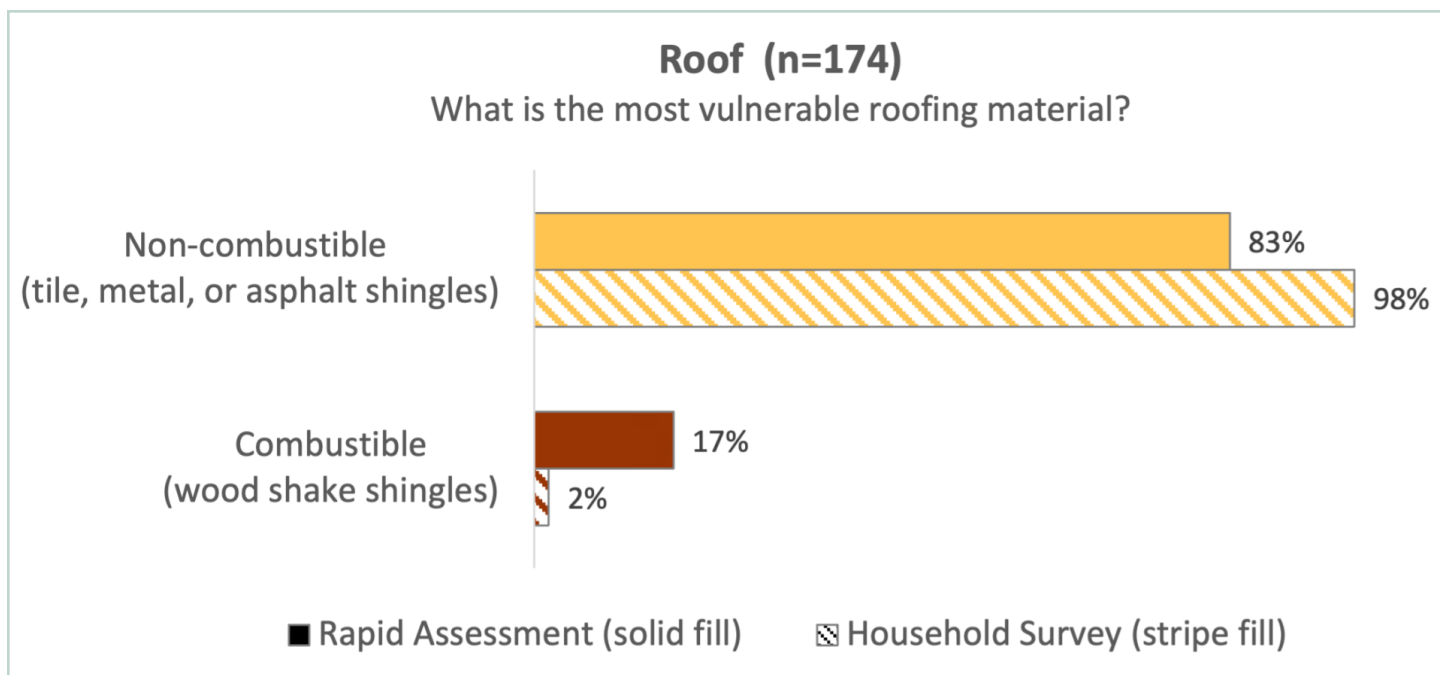


Figure 5—Combustibility of residential roof type. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 174 responses to this survey question.

Risk attribute: siding—

A structure's exterior walls, including the materials used and orientation of exterior walls, contribute to the overall ignitability of a home in a wildfire event. Smooth, noncombustible materials such as stucco and metal have less chance of collecting blowing embers than unmaintained wood siding which may have more spaces for embers to land. The siding of homes was assessed into three categories: low risk, noncombustible materials (e.g., stucco, brick, stone); medium risk, combustible materials (log, heavy timbers, maintained wood); or high risk, combustible materials (vinyl, unmaintained wood, or other ember-receptive siding).

The WiRē RA data and survey responses were largely in alignment that most homes in the study area had wood or vinyl siding. Refer to figure 6.

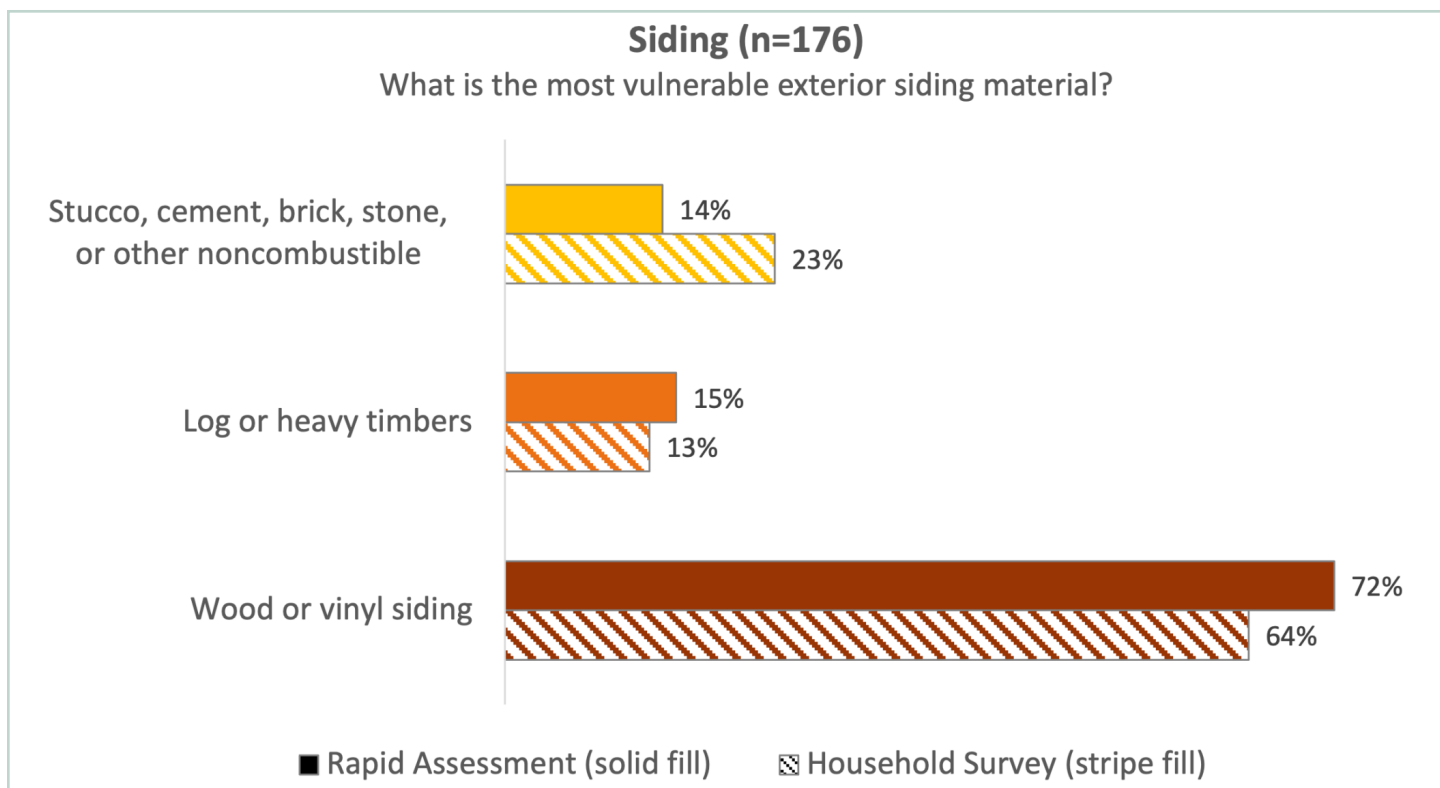


Figure 6—Residential exterior siding type, categorized by material into low, medium, and high-risk categories. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 176 responses to this survey question.

Risk attribute: combustible attachments—

Attachments to structures (e.g., wooden decks, fences) increase the area exposed to blowing embers in a wildfire event and can increase ignition potential. Parcels were assessed on the presence or absence of combustible attachments, including a combustible balcony, deck, porch, and fence.

WiRē RA and household survey data were largely in alignment that about two-thirds of properties had combustible attachments (see fig. 7).

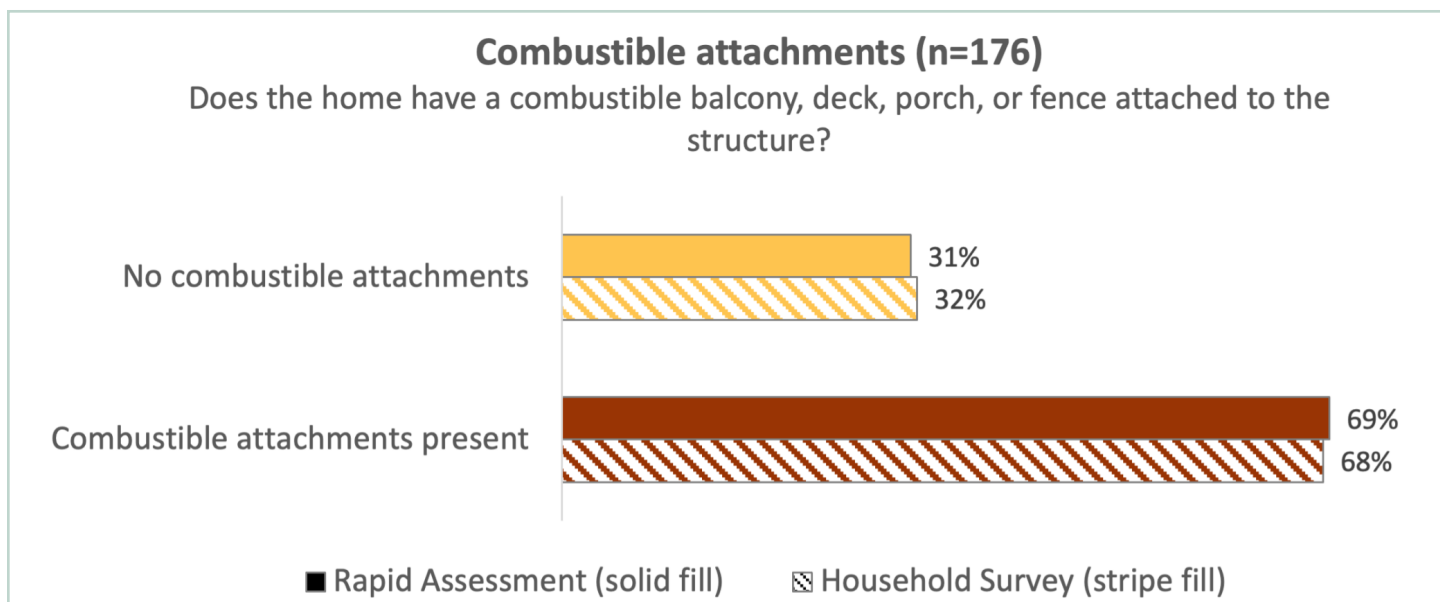


Figure 7—Presence or absence of combustible attachments. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 176 responses to this survey question.

Risk attribute: proximity to adjacent homes—

Home-to-home ignitions (i.e., conflagration) are a significant factor in the spread of fire through more densely built environments. Homes and structures built with combustible materials can ignite due to radiant heat. Homes located in close proximity are more likely to result in home-to-home ignition. In conflagration events, homes are both the recipients of fire and the drivers of fire. Parcels were assessed on the proximity of homes to nearby structures.

Almost all survey respondents (92%) reported that adjacent homes were more than 100 feet away, the lowest risk category. However, the WiRē RA data indicated shorter distances to adjacent homes for 59 percent of observed parcels (refer to fig. 8).

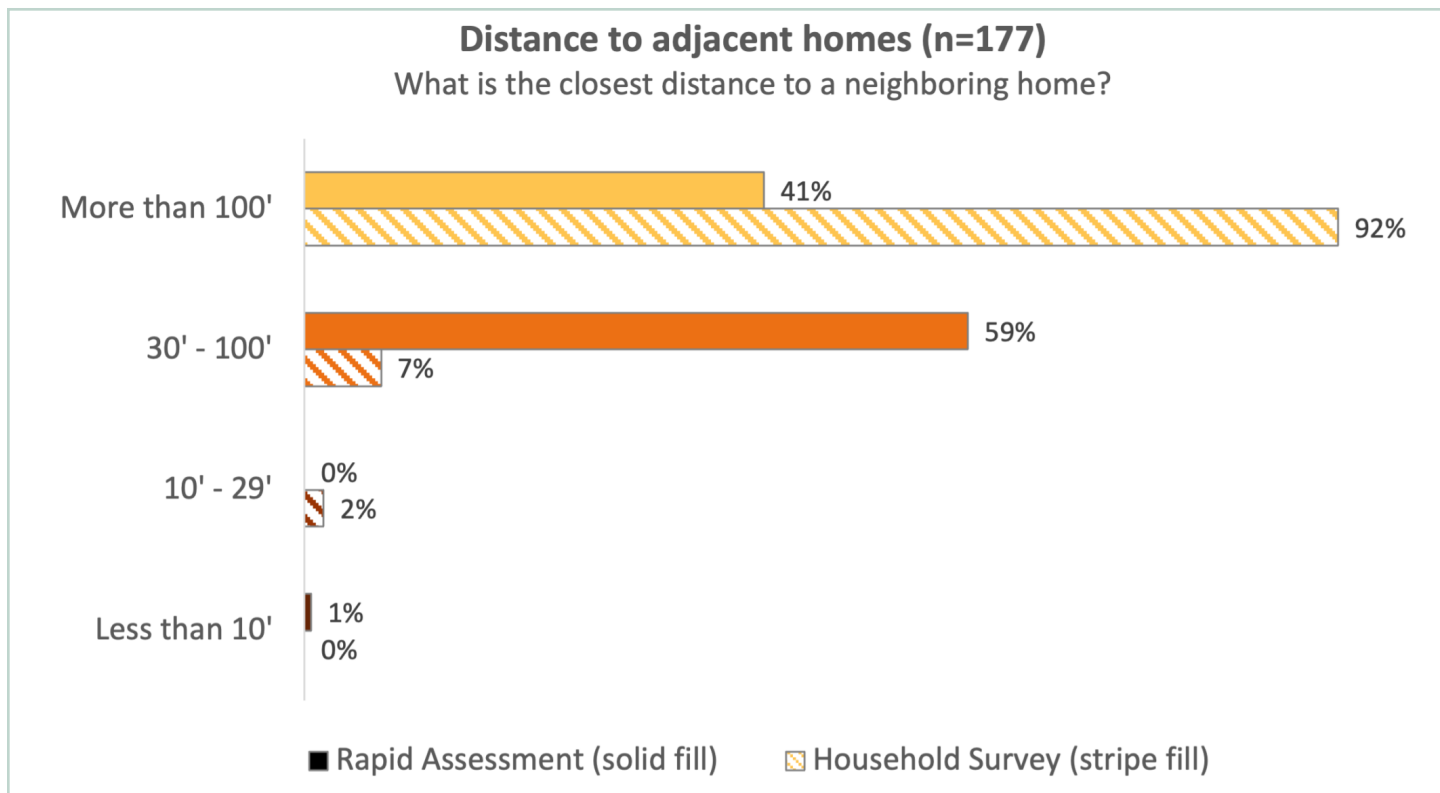


Figure 8—Proximity to adjacent homes, categorized by closest distance to neighboring home. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 177 responses to this survey question.

Defensible space—

Home ignition is affected by the presence of, or direct contact with, vegetation and other combustible materials which can ignite and transfer heat to the home itself. Additionally, vegetation and combustible materials around the home influence fire behavior and firefighters' ability to access and defend the home (e.g., a canopy fire in a densely treed area around the home is more difficult to suppress than a fire on the ground).

Risk attribute: distance to overgrown vegetation—

Fuels within 100 feet of the home increase the risk of wildfire damage. Particularly flammable or abundant vegetation near the home may ignite and spread fire to the home. Distance to overgrown vegetation (also referred to in earlier versions of the assessment as “defensible space”) was assessed by the proximity of the home to vegetation categorized as overgrown, dense, or unmaintained.

Trained assessors and survey respondents both reported that most parcels (62% and 53% respectively) had 30 to 100 feet of defensible space. However, on average, the trained assessors placed more parcels into higher risk categories for defensible space, compared to the survey respondents. Notably, 31 percent of survey respondents reported having more than 100 feet of defensible space, whereas the trained assessors placed only 1 percent of parcels into that category. Refer to figure 9.

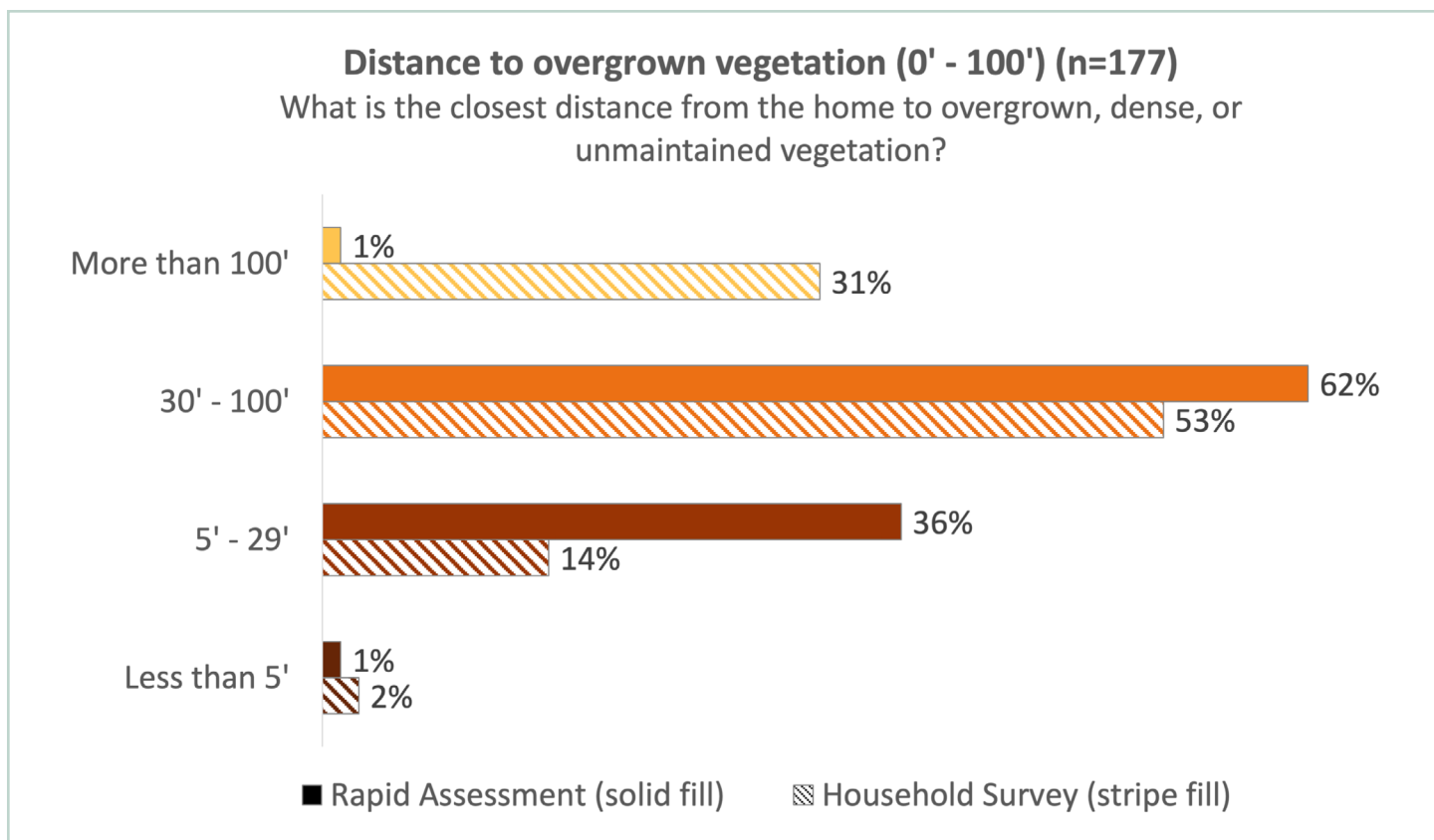


Figure 9—Distance to overgrown vegetation, categorized by distance between the home and overgrown, dense, or unmaintained vegetation. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 177 responses to this survey question.

Risk attribute: other combustibles—

In addition to vegetation, defensible space includes the presence of other combustible materials within 30 feet of the home such as lumber, firewood, hay bales, propane tanks, storage sheds, and other flammable materials.

WiRē RA data and the survey responses did not line up on this attribute. Half of survey respondents (53%) reported more than 30 feet of distance from their homes to non-vegetative combustible items, the least risky category. However, the trained assessors placed only 22 percent of parcels into the least risky category. In contrast, the trained assessors rated most homes (71%) as 5 to 30 feet from non-vegetative combustible items, whereas 38 percent of survey respondents placed their homes into this category. Both the trained assessors and respondents placed few parcels in the riskiest category—less than 5 feet of distance to other combustibles. Refer to figure 10.

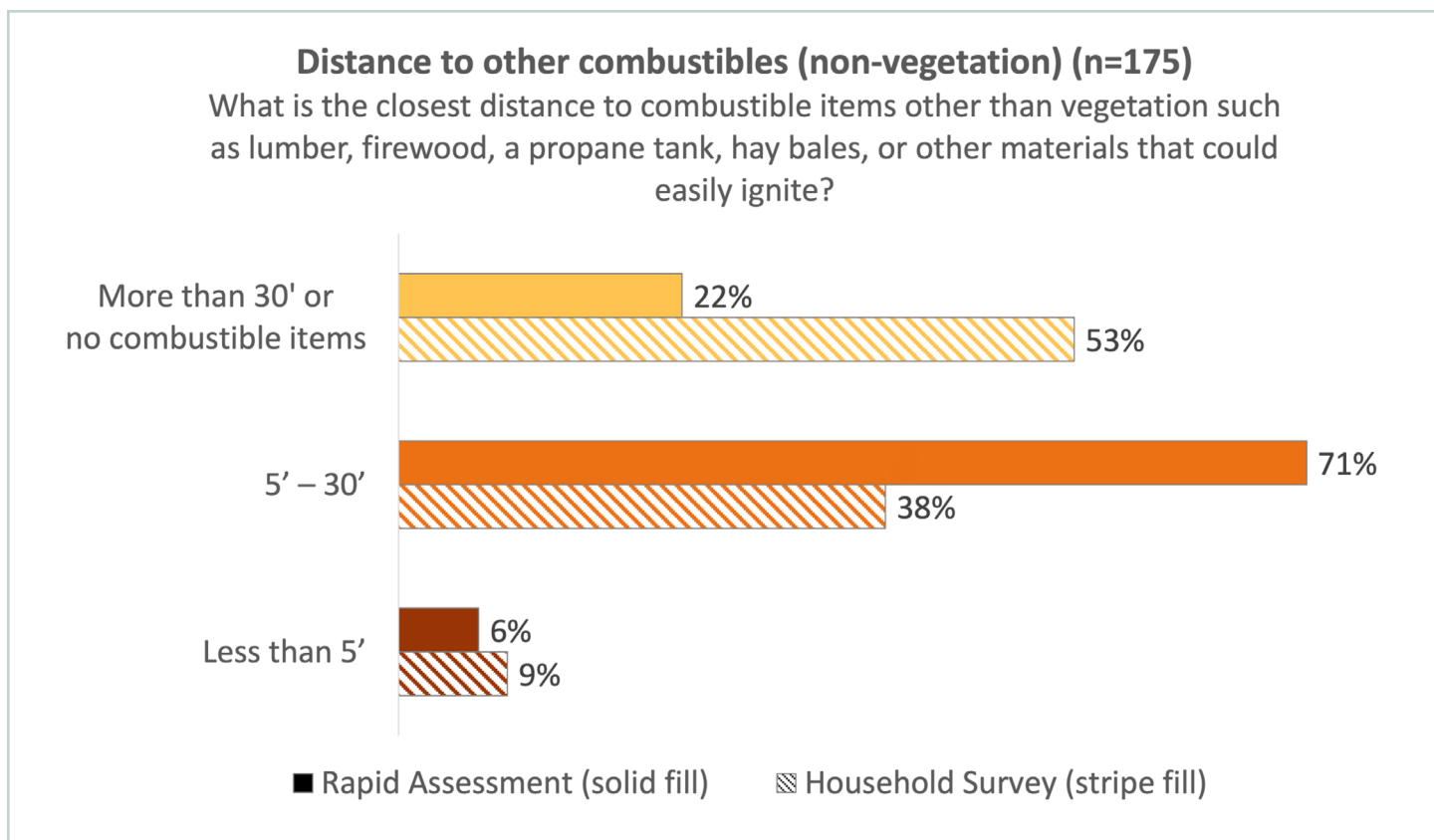


Figure 10—Other combustible materials, categorized by closest distance from home to combustible items other than vegetation. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRe) Rapid Assessment data. N = 175 responses to this survey question.

Background conditions—

Background conditions may vary from parcel to parcel within communities, creating unique levels of risk for each home. Such conditions include dangerous topography, overall slope of the property, and the type and density of surrounding vegetation. These are further described below.

Risk attribute: distance to dangerous topography—

Wildfire behavior is influenced by topography. Features that can facilitate increased fire behavior (rate of spread, intensity, etc.) such as drainages, narrow canyons, and chimneys are considered when assessing topography. Properties are assessed into categories that measure the home's distance from steep or dangerous topography at distances of less than 50 feet, 50 feet to 150 feet, and over 150 feet.

Results indicate a disparity between survey respondents and the trained assessors in estimation of the distance between the home and dangerous topography. The trained assessors on average rated parcels as closer to dangerous topography than survey respondents. Refer to figure 11.

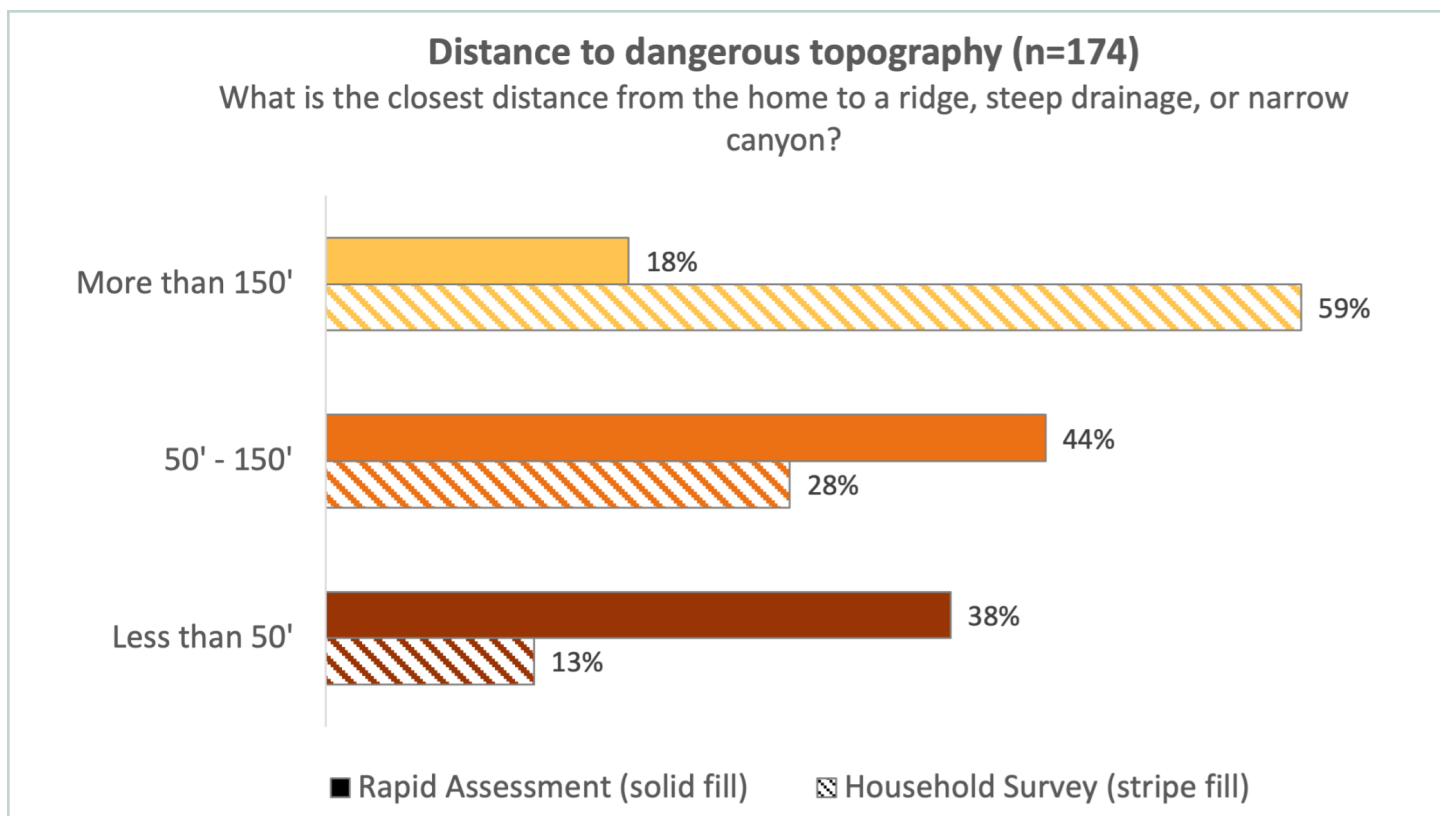


Figure 11—Closest distance from the home to dangerous topography (e.g., a ridge, steep drainage, or narrow canyon). Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 174 responses to this survey question.

Risk attribute: slope—

Slope is an additional factor that influences wildfire behavior and response. For example, steep terrain can increase the rate of wildfire spread. Additionally, firefighters and their equipment may be hindered by uneven topography.

Both the trained assessors and survey respondents reported similar numbers of parcels (39% and 42% respectively) to have an overall gentle slope. However, while the trained assessors classified 57 percent of the parcels as having a moderate slope, only 33 percent of respondents rated their properties in this category. Furthermore, only 1 percent of trained assessors classified the parcels as having a steep slope in the WiRē RA data, whereas over a quarter (28%) of survey responses were in that category. Refer to figure 12.

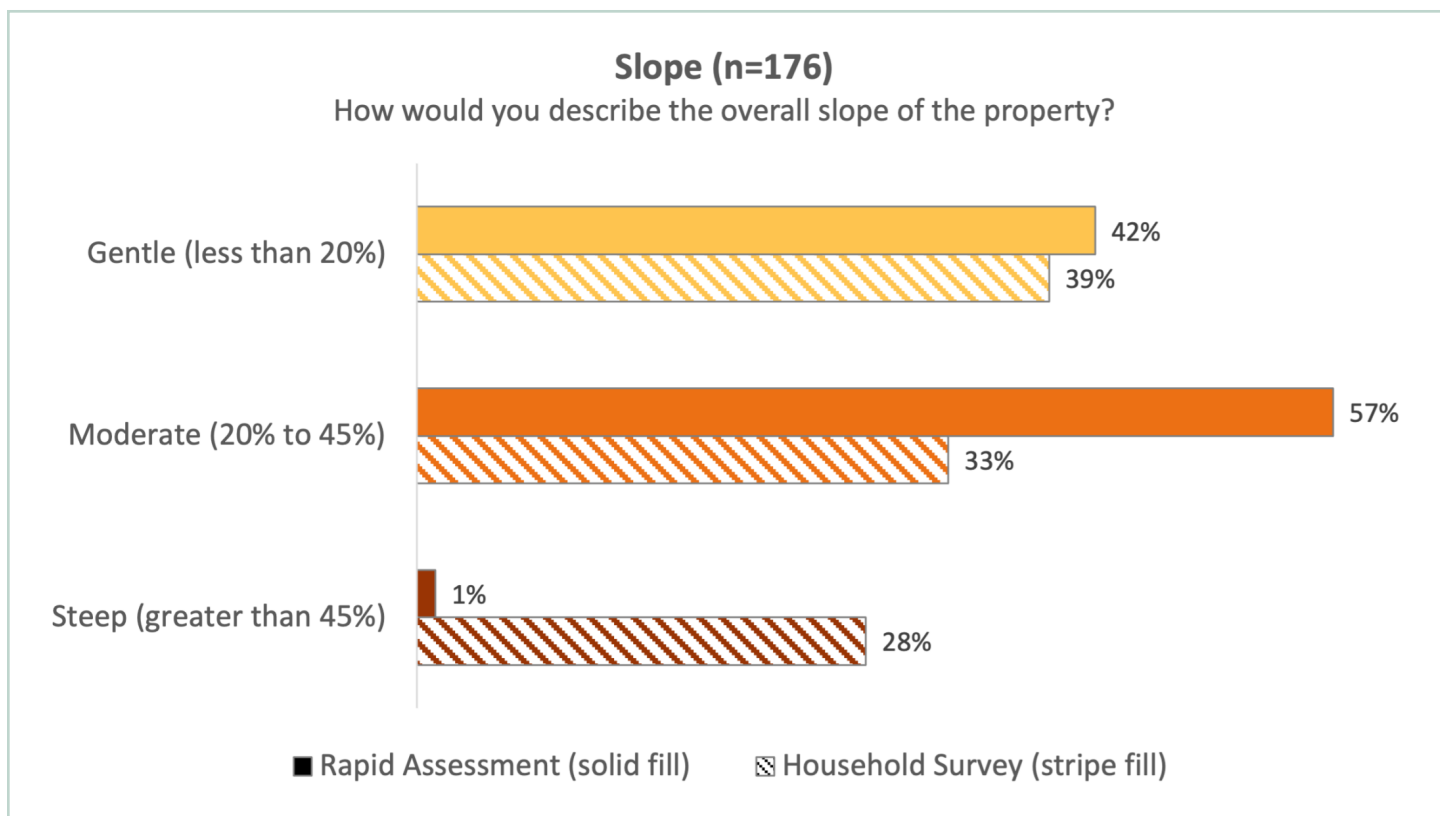


Figure 12—Overall slope of property. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRe) Rapid Assessment data. N = 176 responses to this survey question.

Risk attribute: adjacent fuels—

Vegetation surrounding the home beyond the defensible space zone is another factor in determining wildfire behavior. Properties are assessed on the dominant vegetation type present between 100 feet and 150 feet from the home, regardless of whether this falls within the property boundary. Three categories of vegetation are used: light (grasses), medium (light brush and/or isolated trees), and dense (dense brush and/or dense trees).

Ratings from the trained assessors and survey respondents were not aligned on this risk attribute, with survey respondents estimating denser, riskier adjacent vegetation. The trained assessors classified 55 percent of parcels' dominant adjacent vegetation as light, whereas only 16 percent of survey respondents reported this category. The trained assessors and survey respondents both classified around half of parcels as having medium density adjacent vegetation (43% and 52% respectively), but the trained assessors classified far fewer properties than survey respondents as having high density adjacent vegetation (2% and 32% respectively). Refer to figure 13.

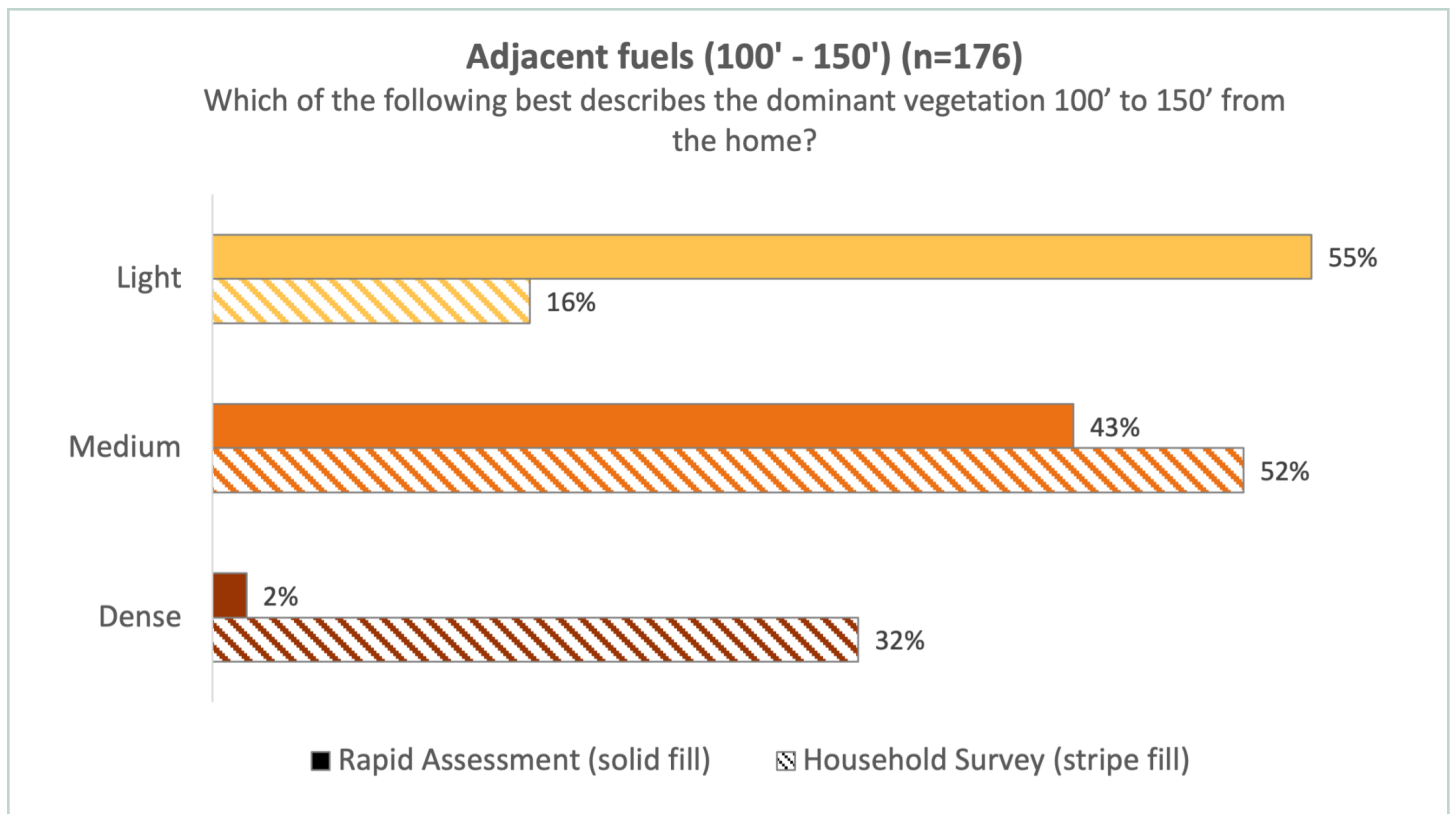


Figure 13—Adjacent fuels, categorized by the density of dominant vegetation 100 to 150 feet from the home. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 176 responses to this survey question.

Access—

During a wildfire, residents must have evacuation route options and emergency responders must be able to safely identify and access properties. The following four attributes describe access for both residents and emergency responders in terms of home identification, evacuation routes, and parcel accessibility by way of a driveway.

Risk attribute: address posting—

The visibility of home addresses in various conditions of smoke and daylight is critical for swift and safe response. Properties' addressing conditions are assessed based on local standards of signage that is posted and visible from the primary road.

Survey respondents tended to overestimate the adequacy of their address signs compared to the trained assessors. In the WiRē RA data, about a quarter of parcels met all standards (28%) and most parcels as met some but not all standards (70%). In contrast, about half (55%) of survey respondents reported that their addresses fully met the standards while another 30 percent said it was visible from the road but did not meet all the standards. Within the survey response data and the WiRē RA data, the fewest address signs were in the category of either not posted or not visible from the road (1% and 15%, respectively). Refer to figure 14.

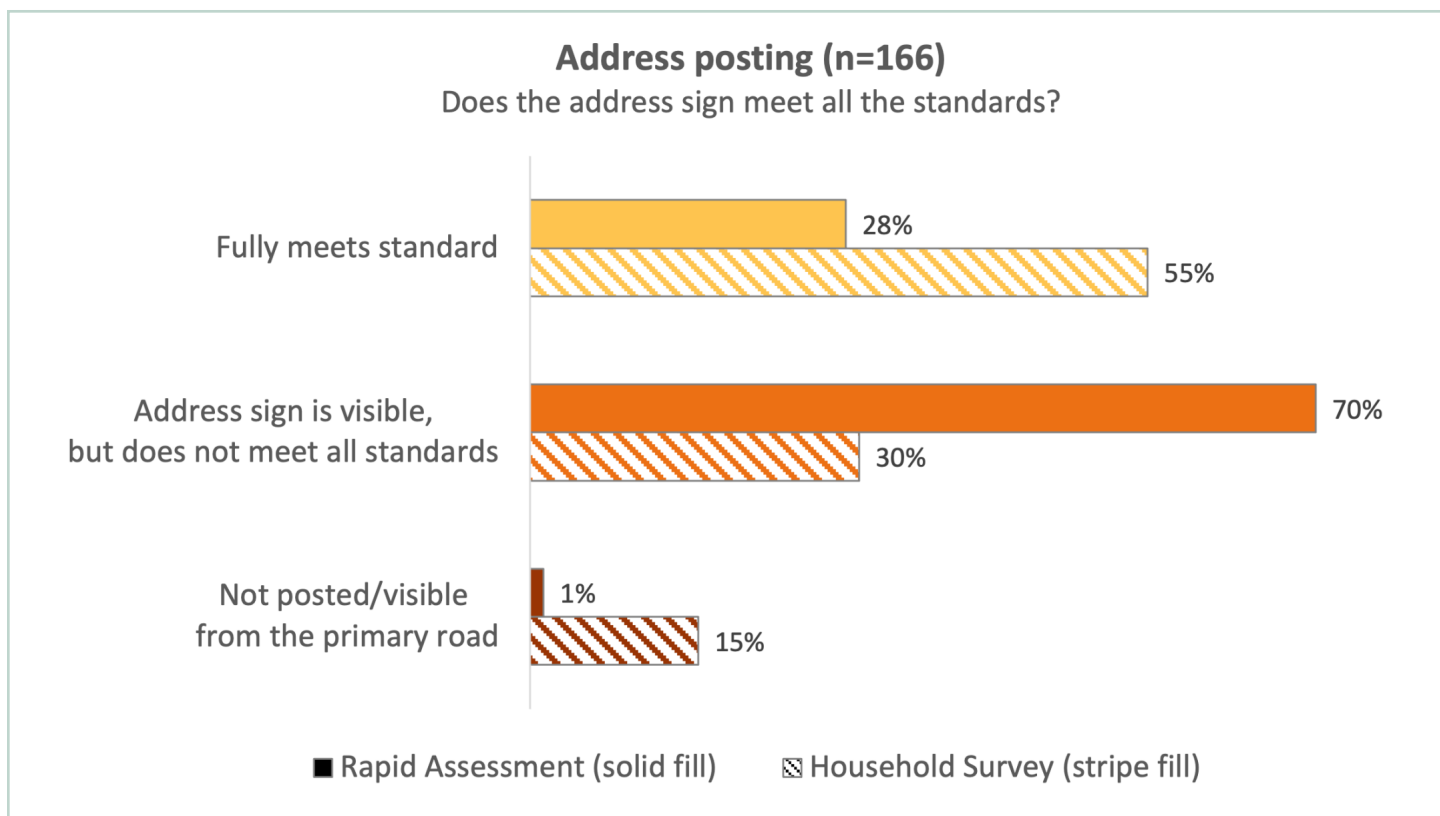


Figure 14—Characteristics of property address. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 166 responses to this survey question.

Risk attribute: evacuation routes for ingress/egress—

Resident evacuation options and safe routes for emergency responders to access properties are critical. This access is dictated by existing road systems within communities. Wildfire conditions may block evacuation routes, limiting residents' ability to safely evacuate. Thus, properties are evaluated based on having two (or more) roads in and out.

Survey respondents and the trained assessors were misaligned in their perceptions of ingress/egress routes. While the trained assessors classified most parcels (87%) as having only one road in and out of the community, survey responses were more evenly split between the two response categories (refer to fig. 15).

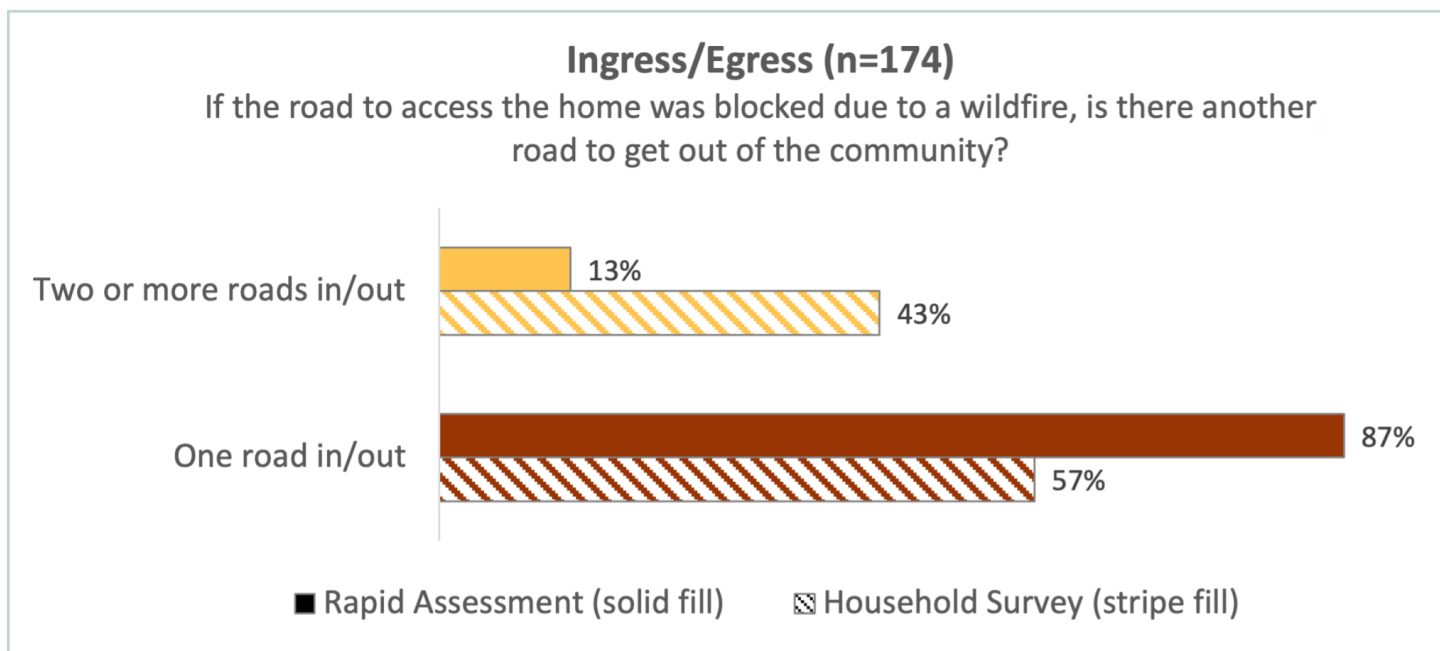


Figure 15—Number of evacuation routes in or out of community. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 174 responses to this survey question.

Risk attribute: driveway clearance—

Emergency vehicles must be able to easily access and quickly exit a property. This ability can be affected by a driveway's width, length, and presence or lack of a turnaround, as well as narrow gates or low hanging tree branches. Driveway clearance is assessed based on height and width and is reported as meeting both standards, meeting one standard but not the other, or not meeting either standard. The standards are greater than 14 feet in both height and width.

The trained assessors classified driveways in the study area as more accessible and less risky than did the survey respondents. The WiRē RA data indicate that most parcels (83%) met all driveway clearance standards; a smaller majority of survey respondents (61%) rated their driveway clearance in this category. The trained assessors classified 17 percent of driveways as meeting one but not both driveway clearance standards, and just 1 percent as not meeting either standard. Survey respondents placed slightly more parcels in these categories, with 33 percent meeting one but not both clearance standards, and 7 percent meeting neither standard (refer to fig. 16).

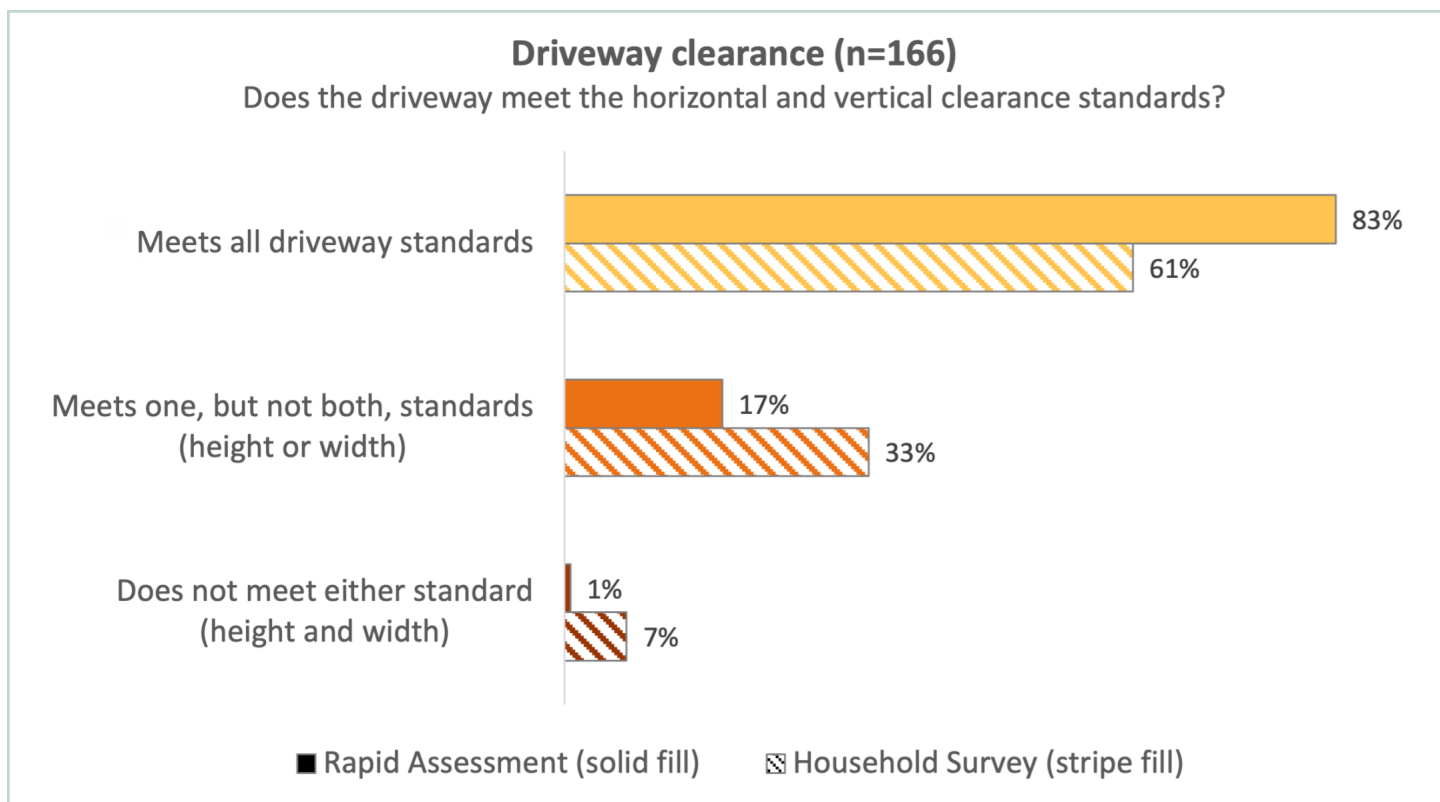


Figure 16—Width of residence driveway at its narrowest point. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 166 responses to this survey question.

Risk attribute: driveway length—

Similar to driveway clearance, the length of a driveway also affects the ability of fire engines to turn around and safely respond to a wildfire. The WiRē RA distinguishes between properties with driveways that are shorter than 150 feet, driveways that are longer than 150 feet but with a turnaround suitable for a Type 1 engine, and driveways longer than 150 feet and without adequate turnaround space.

Survey respondents tended to place their driveways in higher risk categories compared to the WiRē RA data. Thirty-five percent of survey respondents stated that the length of their driveways was less than 150 feet, and another 52 percent reported that their driveways were longer than 150 feet but had adequate turnaround space. Only 14 percent of survey respondents reported that their driveways were longer than 150 feet and without adequate turnaround space. In contrast, trained assessors reported 21 percent of driveways as shorter than 150 feet, 63 percent as longer than 150 feet with adequate turnaround space, and 15 percent as longer than 150 feet with no adequate turnaround space (refer to fig. 17).

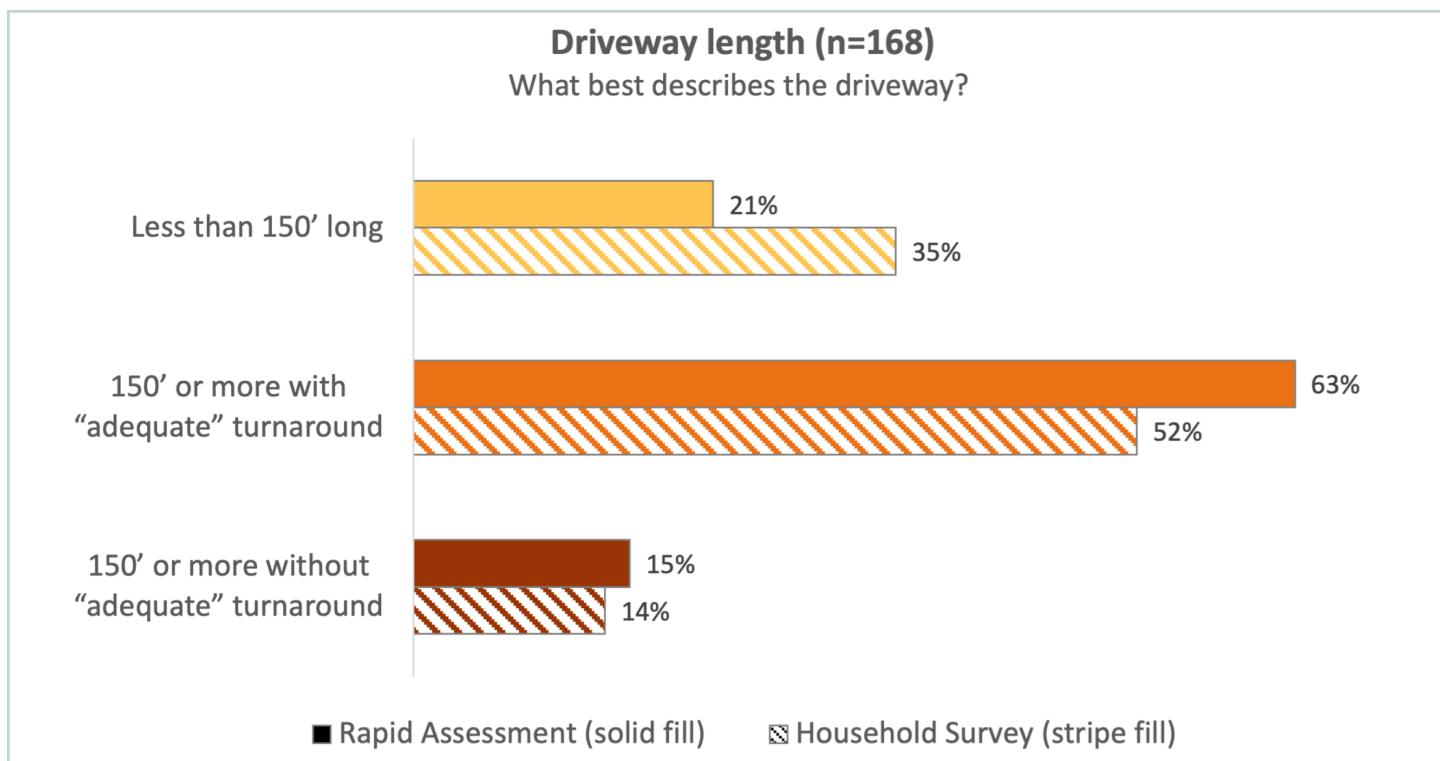


Figure 17—Driveway length and presence of turnaround. Comparison of household survey data as reported in 2022 by survey respondents in the Chelan County Fire District 3, Washington, study area and paired Wildfire Research (WiRē) Rapid Assessment data. N = 168 responses to this survey question.

Social Dimensions of Wildfire Risk in Chelan County Fire District #3: Results of the Household Survey

In this section, we present the results of the remaining data collected from the household survey to demonstrate the social dimensions of wildfire in this unique study area (refer to Appendix E for household survey questions and responses).

Demographics

Almost all (88%) of survey respondents occupy their homes in CCFD #3 year-round, with just 12 percent occupying their residences fewer than 12 months out of the year. The average year of construction of the homes in the study area was 1982, and the average year that survey respondents moved into their homes was 2004. At the time of purchasing or beginning to rent their homes in Chelan County Fire District #3, 51 percent of survey respondents reported being very aware of the wildfire risk, 38 percent reported being somewhat aware, and 8 percent reported being unaware of wildfire risk (refer to fig. 18).

Survey respondents were more likely to identify as male (64%) and the average age of survey respondents was 61 years old. Seventy percent of survey respondents reported holding a bachelor's degree or higher, and a quarter held an advanced degree (e.g., M.D., M.A., M.S., PhD). Fifty-two percent of survey respondents were retired, 38 percent worked full-time, 8 percent worked part-time, and 2 percent were unemployed. Forty-nine percent of households reported yearly incomes of \$100,000 or greater, 10 percent reported \$75,000–\$99,999, 27 percent reported \$35,000–\$74,999, and 14 percent reported yearly incomes less than \$35,000.

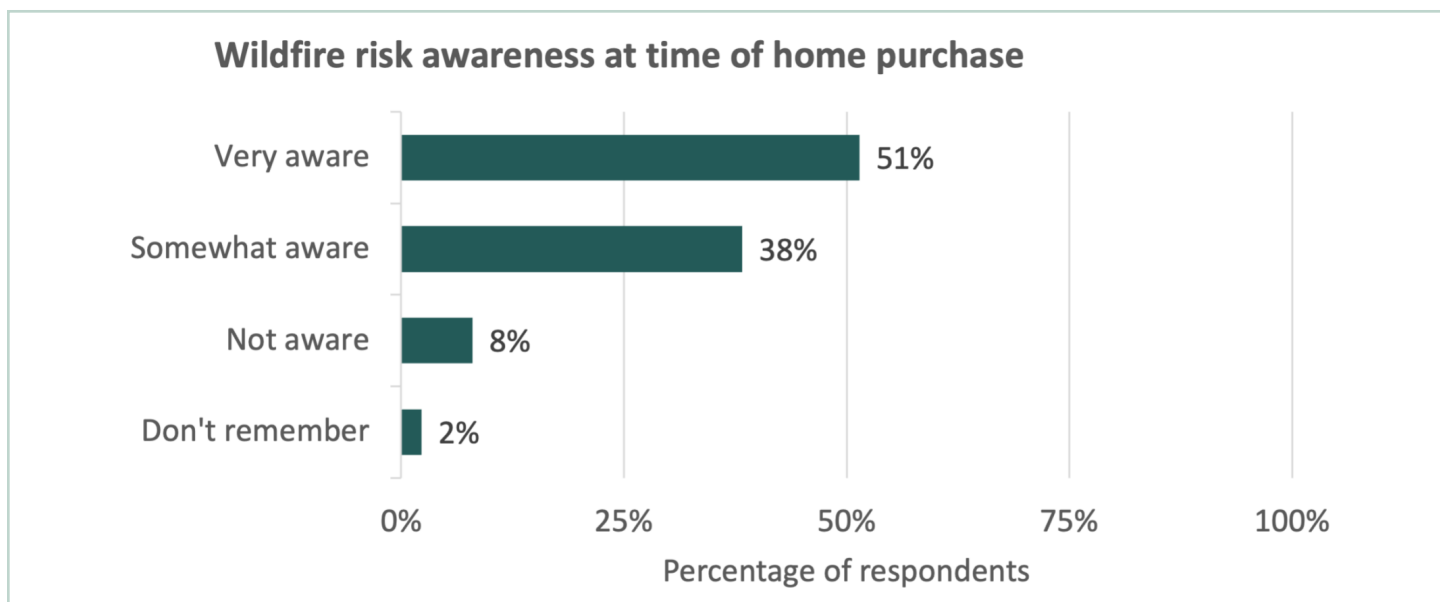


Figure 18—Respondents’ awareness of wildfire risk, when they bought or began renting their homes, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 175 respondents to this survey question.

Wildfire Experience and Risk Perceptions

Wildfire experience—

Forty percent of respondents to this survey have evacuated due to wildfire in the past. Almost no respondents reported having experienced fire damage, smoke damage, or destruction of their residences due to wildfire (refer to fig. 19).

Despite little experience with direct wildfire impacts, 82 percent of respondents reported that a wildfire had come within 10 miles from their properties (refer to fig. 20).

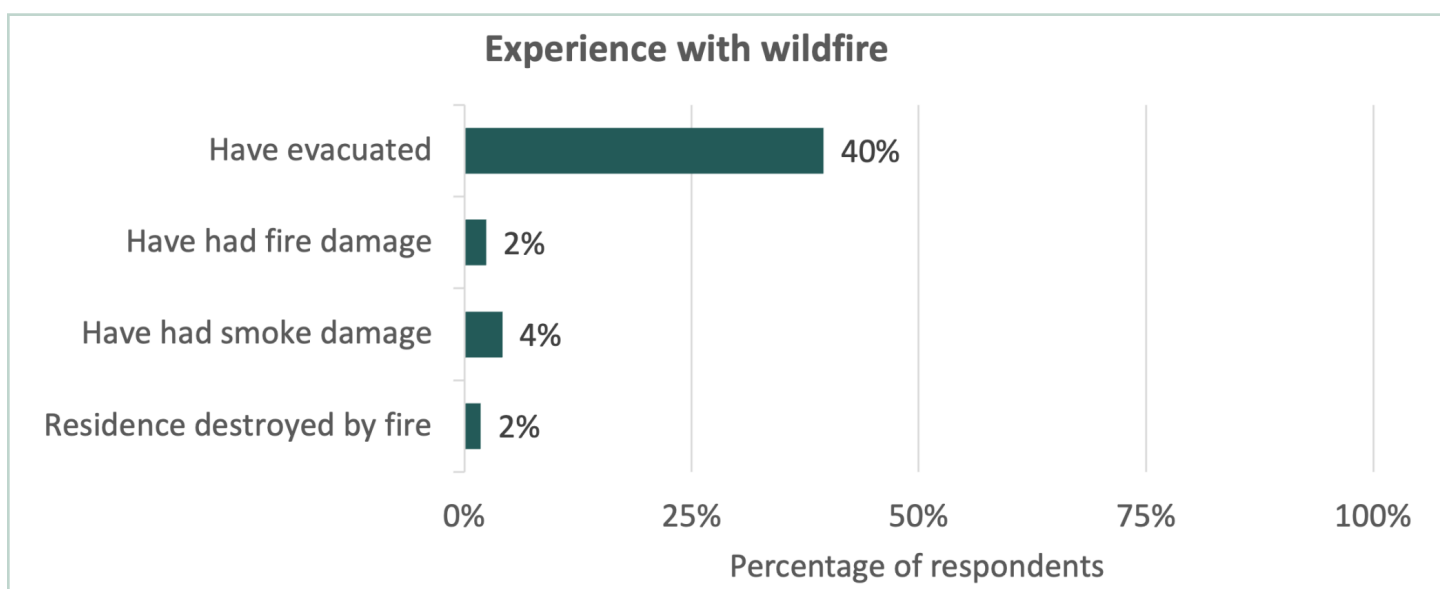


Figure 19—Respondent experience with various impacts of wildfire, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 165–177 respondents to these survey questions.

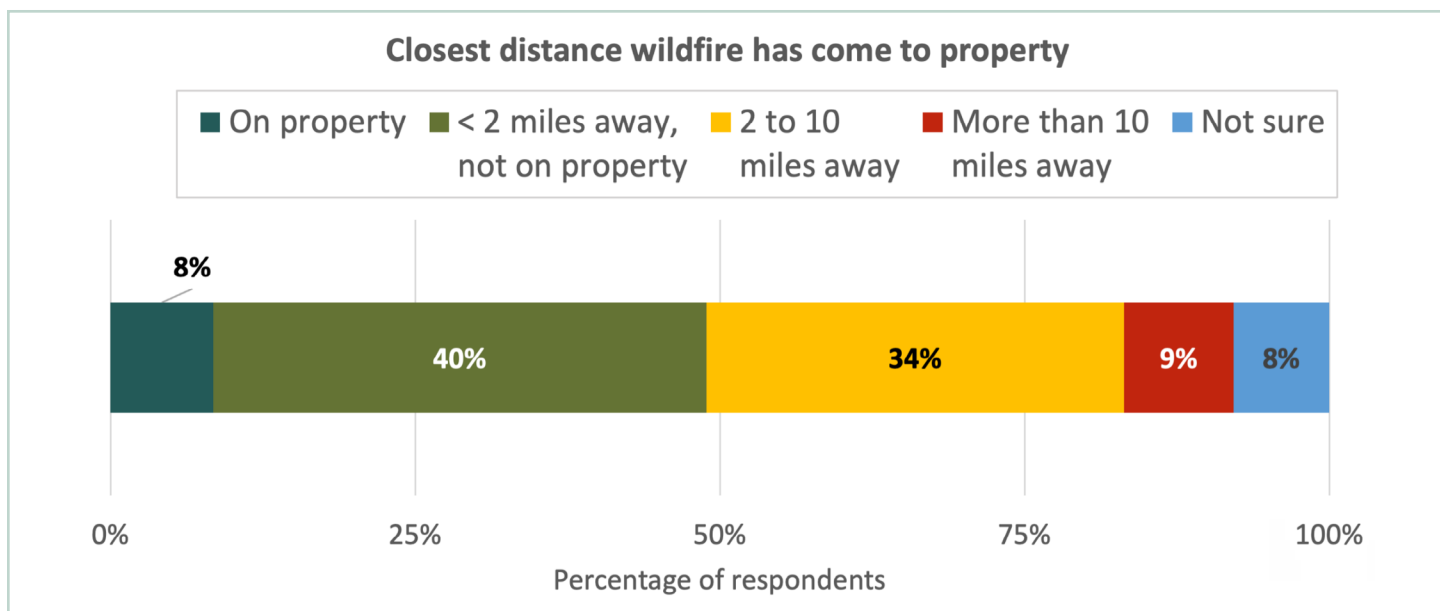


Figure 20—Respondent estimates of how close a wildfire has come to their properties, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 178 respondents to this survey question.

Perceptions of risk—

Survey respondents were asked to consider the likelihood of the occurrence of a wildfire on their properties and potential outcomes in that event. Sixty-seven percent agreed or strongly agreed with the statement, “My property is at risk of wildfire.” However, none of the property owners agreed or strongly agreed with the statement, “I plan to move out of the area in the next 12 months because of wildfires” (refer to fig. 21).

Although a majority of respondents agreed that their properties were at risk of wildfire, only 30 percent of survey respondents thought it likely (greater than 50% chance) that there would be a wildfire on their properties in the next year. Furthermore, if there were a wildfire on their properties in the next year, just 41 percent of survey respondents thought it likely they would lose their homes (refer to fig. 22).

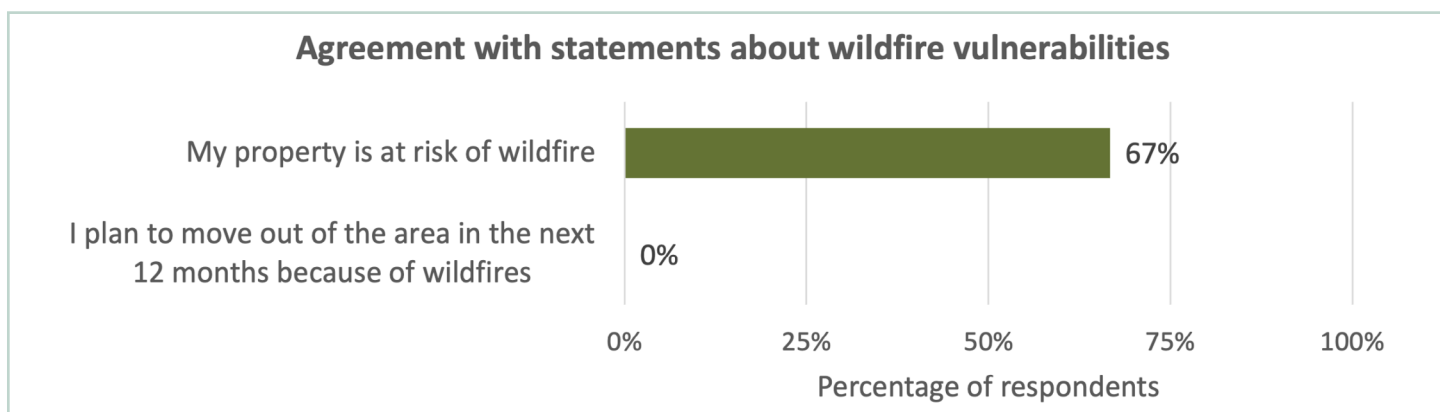


Figure 21—Agreement (“agree” or “strongly agree”) with statements about whether wildfire threatens the respondent’s property and whether they plan to move in the next 12 months because of wildfire, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174–177 respondents to each survey statement listed.

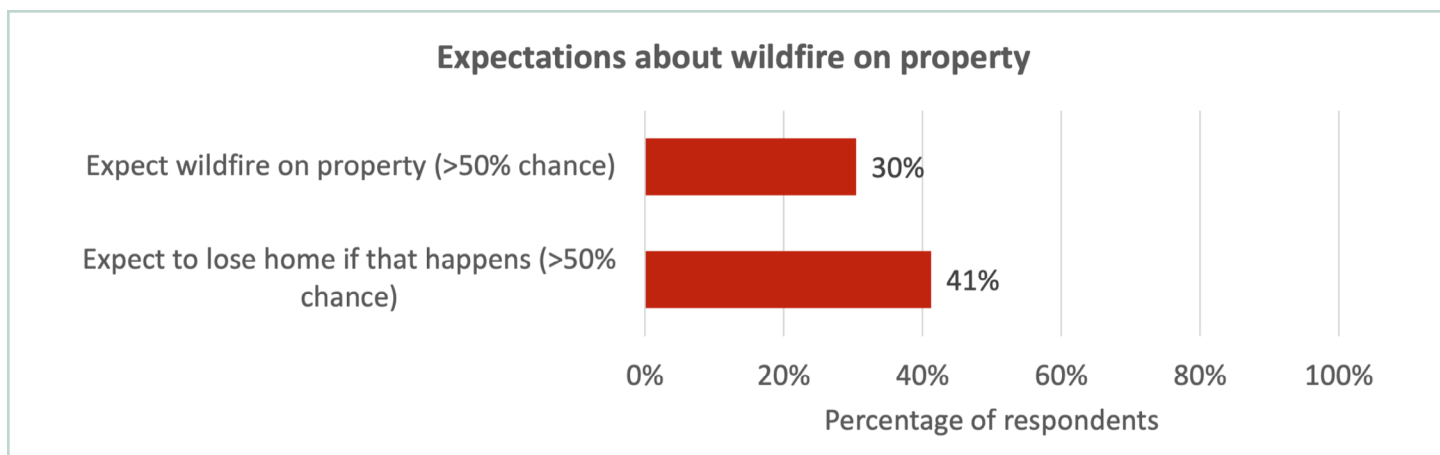


Figure 22—Estimate of the chances (>50% chance) of a wildfire on their properties in the next year, and chances (>50% chance) of losing their homes in that case, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174 and 177 respondents to the two survey statements listed, respectively.

When asked to consider who would protect their homes in the event of a wildfire, less than half survey respondents (40%) thought it was very or extremely likely that the fire department would save their homes. Less than a quarter of respondents (20%) thought it very or extremely likely that they would put the fire out themselves (refer to fig. 23).

In terms of outcomes, 53 percent of survey respondents reported that, in the event of a wildfire on their properties, it was very or extremely likely that their trees and landscaping would burn, and 39 percent reported it was very or extremely likely their homes would have smoke damage. A third of respondents (33%) thought it very or extremely likely their homes would sustain some physical damage. Notably, more respondents thought it was very or extremely likely their neighbors' homes would be damaged or destroyed (30%) than thought their own homes would be destroyed (16%) or they would lose money due to loss of business or income (21%) (refer to fig. 24).

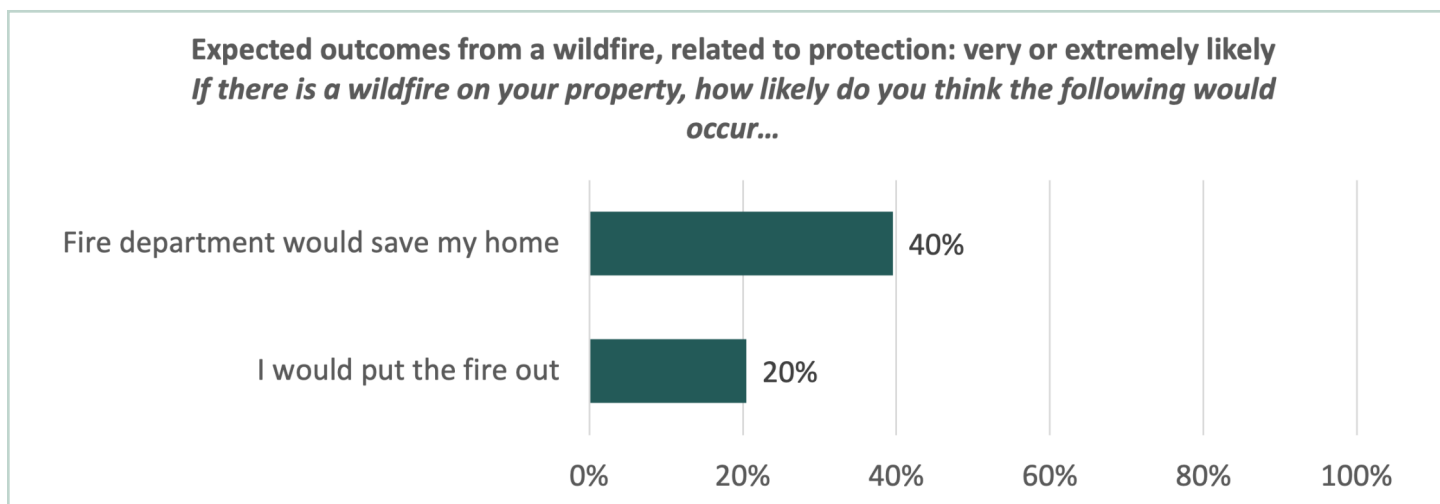


Figure 23—Percentage of respondents who thought the above source of protection to their homes were very or extremely likely, in the event of a wildfire on their properties, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 176–177 respondents to each survey statement listed.

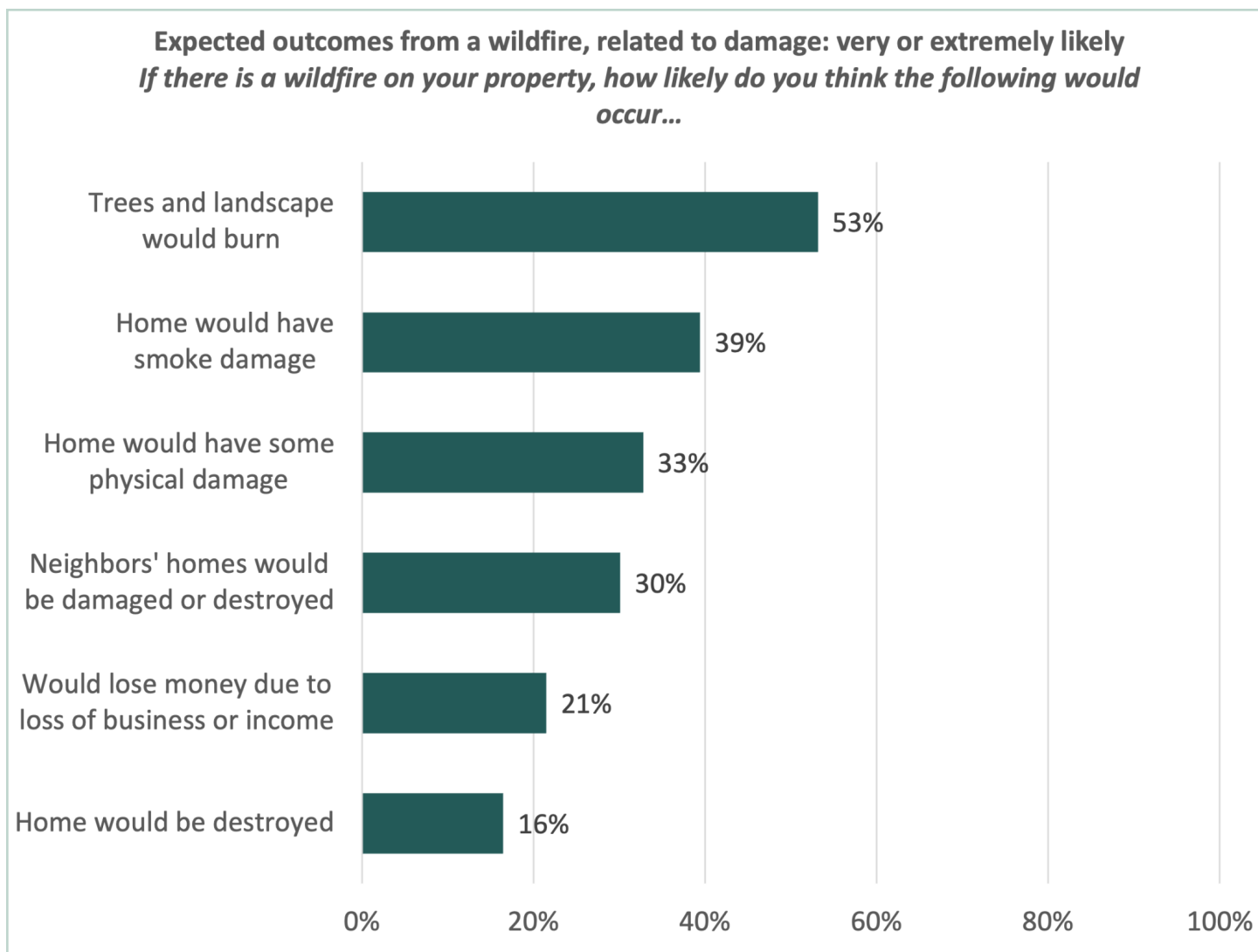


Figure 24—Percentage of respondents who thought the above forms of wildfire damage were very or extremely likely, in the event of a wildfire on their properties, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174–177 respondents to each survey statement listed.

Survey respondents indicated a limited understanding of the physical mechanisms of home ignition. Only half respondents thought there was at least a moderate likelihood of embers (53%), direct flame (50%), or nearby homes (21%) igniting their homes, in the event of a wildfire on their properties (refer to fig. 25).

Despite thinking wildfire-related property damage is unlikely, survey responses indicate high recognition of major sources of wildfire risk. Most respondents (88%) listed lack of nearby water supply as a major contributor to the chances of a wildfire damaging their properties in the next year, followed by vegetation on public or undeveloped lands (86%), on their neighbors' properties (83%), or on their properties (82%). The factor respondents thought least likely to contribute to property damage was physical characteristics of the home or other buildings on the property (66%) (refer to fig. 26).

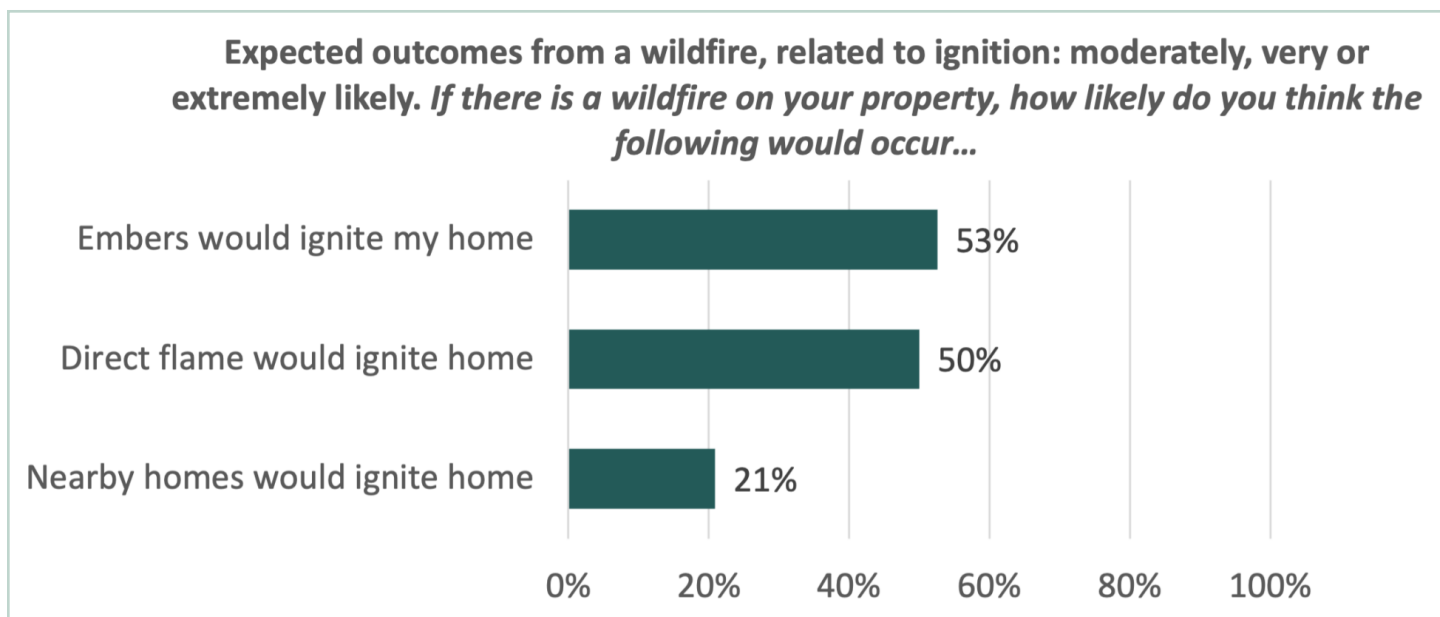


Figure 25—Percentage of respondents who thought the above sources of ignition were moderately, very, or extremely likely, in the event of a wildfire on their properties, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 176–177 respondents to each survey statement listed.

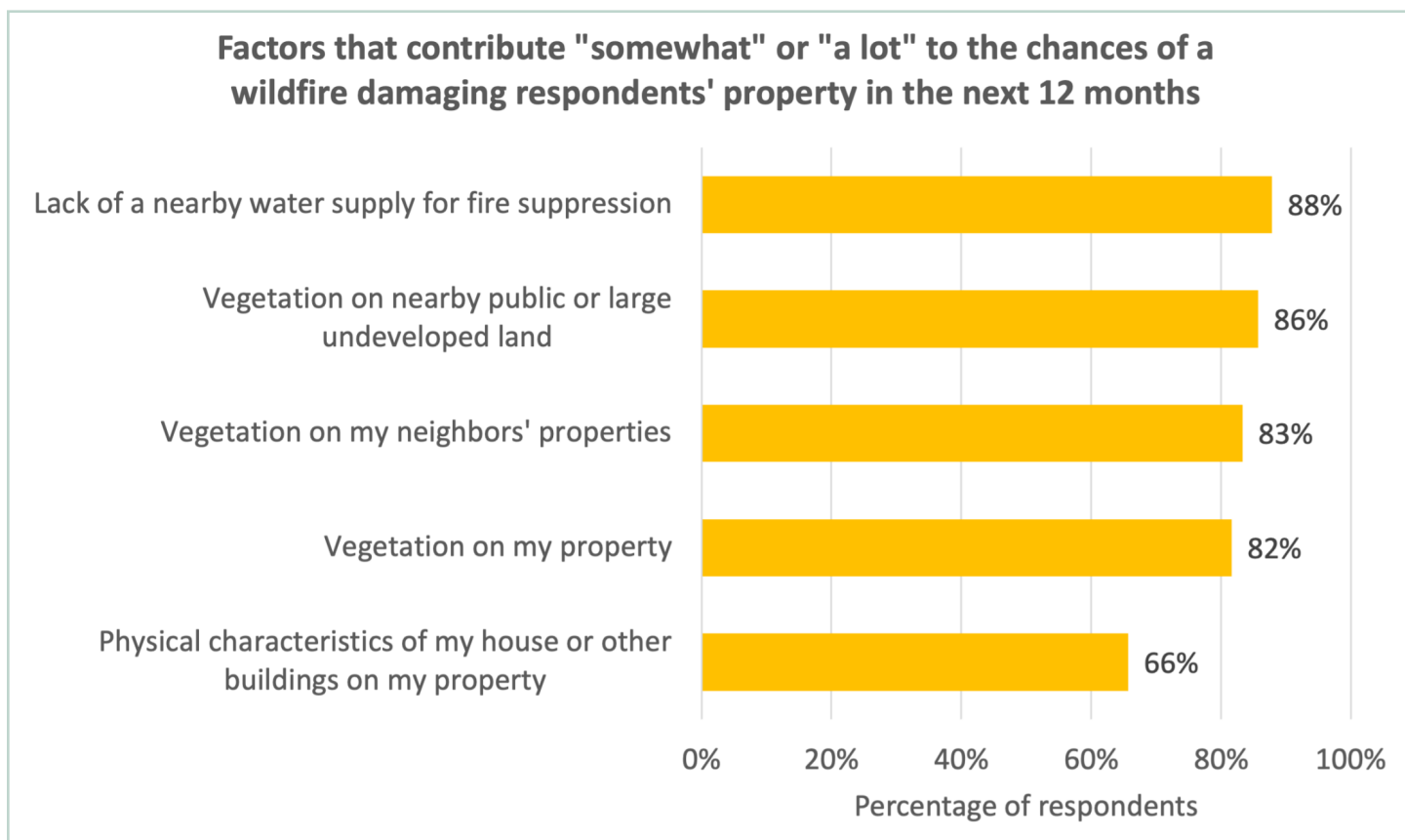


Figure 26— Percentage of respondents who thought the above factors contribute “a lot” to the chances of a wildfire damaging their properties in the next 12 months, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 173–175 respondents to each survey statement listed.

Communication About Wildfire Risk

This section summarizes survey responses related to different forms of communication about wildfire risk, including via private channels such as conversations with neighbors or interactions with insurance companies. It also describes currently used and preferred sources of wildfire risk information and preferred channels (e.g., e-newsletter, radio, in person) for receiving wildfire risk information.

Communication with neighbors and insurance—

Over three-quarters (76%) of survey respondents reported talking to their neighbors about wildfire (refer to fig. 27). These interactions can serve to help spread information about localized risk of wildfire. Most survey respondents (90%) reported that at least some of their neighbors have taken action to mitigate wildfire risk (refer to fig. 28).

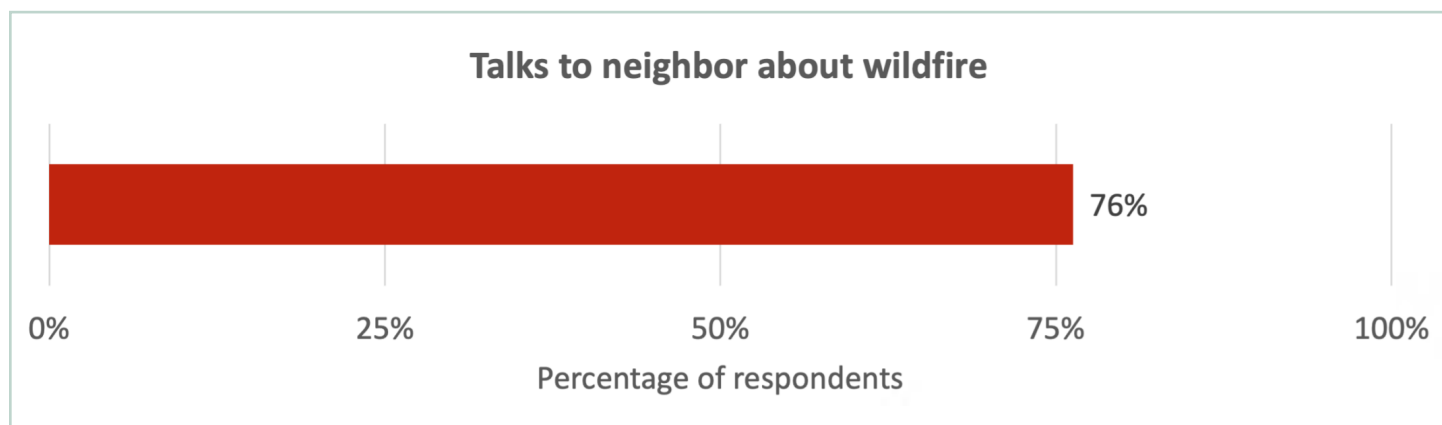


Figure 27—Percentage of respondents residing in the Chelan County Fire District 3, Washington, study area who reported talking to their neighbors about wildfire. N = 177 respondents to this survey question.

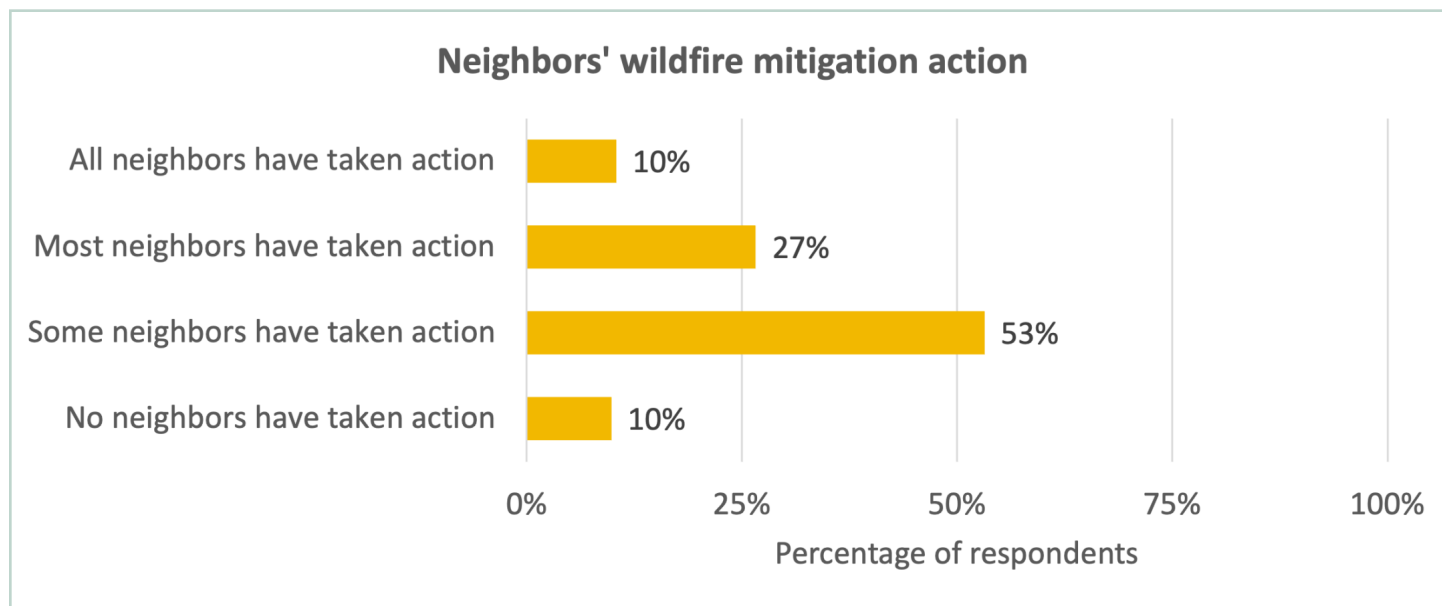


Figure 28—Respondents' estimates of how many neighbors take wildfire mitigation action, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 173 respondents to these two survey questions.

Few survey respondents reported interactions with their insurance companies, suggesting that while insurance providers could shape homeowner knowledge and perceptions of wildfire risk and motivate performance of mitigation activities, this was largely not the case in the study area at the time of the survey. Some respondents reported that their insurance companies charged them higher premiums (36%) or refused them coverage (26%) on grounds of wildfire risk, and some received information about wildfire risk reduction from their insurance companies (21%). Fewer respondents' insurance companies required them to mitigate wildfire risk (11%), offered them private firefighting services (7%), or offered them a discount for reducing wildfire risk (5%). Notably, two-thirds (65%) of survey respondents felt that their homes were adequately insured against loss from wildfire (fig.29).

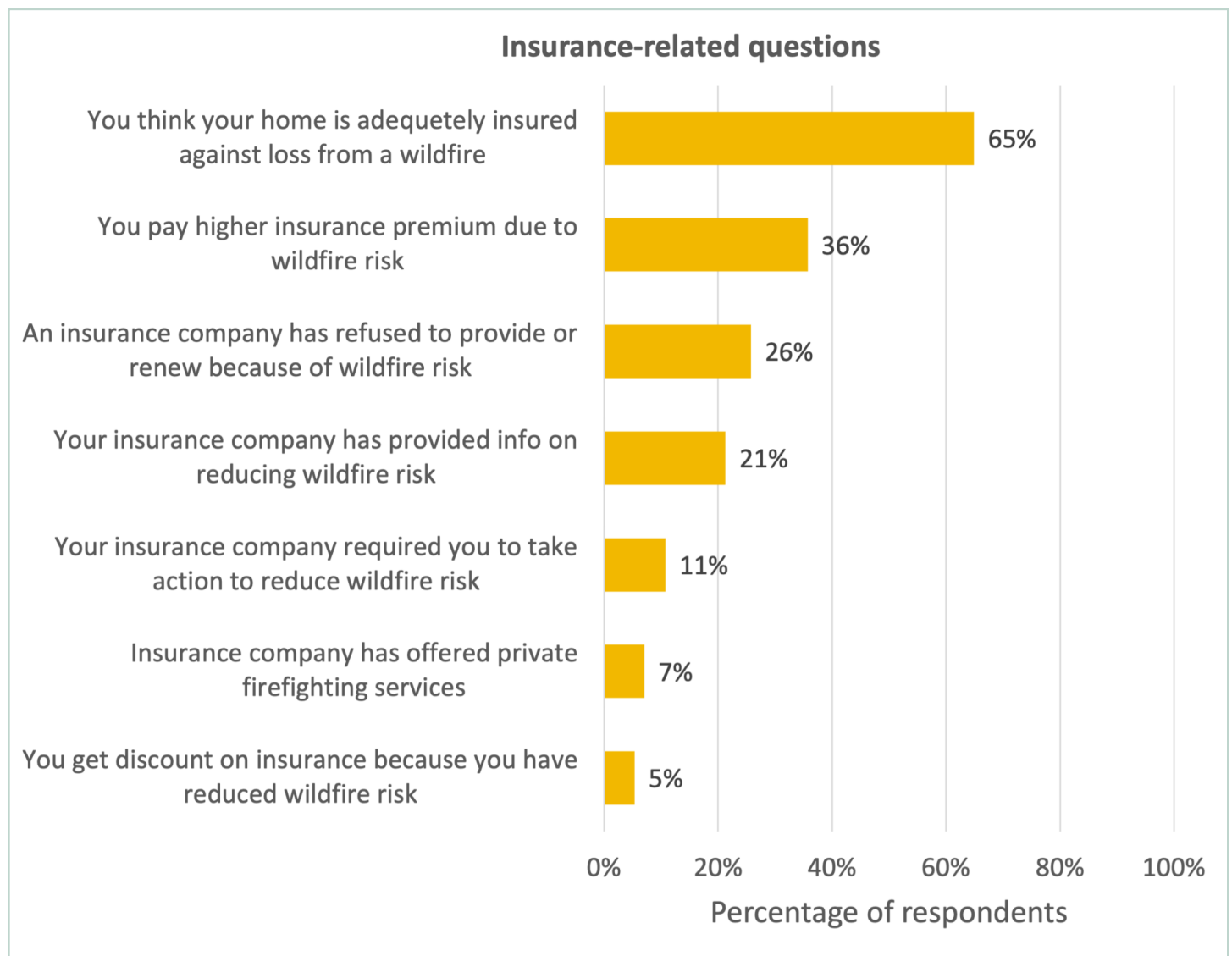


Figure 29—Respondents' knowledge of and experience with various insurance company actions, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 167–169 respondents to each statement.

Sources of information and reported usefulness—

Survey respondents were asked to report on whether they had received information from a variety of sources and evaluate the usefulness of each of the sources they had used. The sources that reached the most respondents were the local fire department (71%), Chumstick Wildfire Stewardship Coalition (68%), the media (62%), Cascadia Conservation District (53%), and Chelan County DNR (50%). Of the top received sources, the most useful to respondents were the local fire department (68%) and Chumstick Wildfire Stewardship Coalition (63%). The media was only useful to 30 percent of the respondents who reported receiving information via that source. Refer to figure 30.

Current and preferred channels of communication—

There are many different channels by which information about wildfire may be distributed. The survey asked participants about how they currently receive wildfire-related information, as well as how they would prefer to receive this information. In general, there were no information channels currently received or preferred by over 50 percent of respondents, suggesting a diversity of channel preferences. The top channel through which survey respondents reported receiving wildfire information was mailed newsletters (50%). A moderate number of respondents received information via email/e-newsletter (40%), in-person interactions (36%), the internet (non-social media; 36%) and the radio (34%). The most preferred channels of communication were email/e-newsletter (45%), in-person interactions (37%), and mailed newsletter (35%). Refer to figure 31.

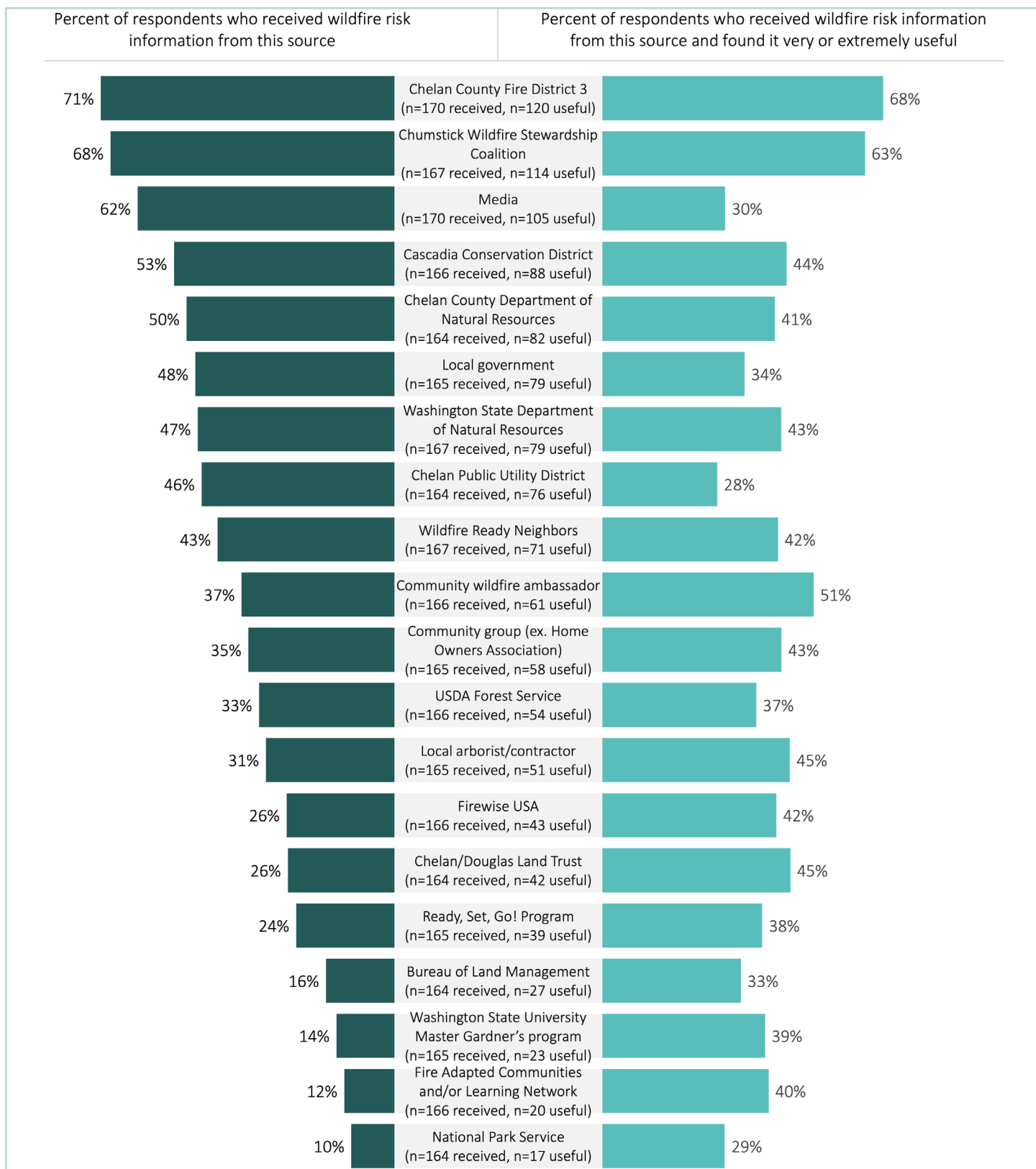


Figure 30—Percentage of respondents who received wildfire risk information, by source, as reported in 2022 by respondents residing in the Chelan County Fire District 3 (CCFD3), Washington, study area. These data are compared to the percentage of people who said they found each source's wildfire risk information very or extremely useful (percentage of all respondents who received wildfire risk information from that particular source). N = 164–170 respondents to source receipt questions; N = 17–120 respondents to source usefulness questions. DNR =Department of Natural Resources, USDA = U.S. Department of Agriculture, HOA = Homeowners Association.

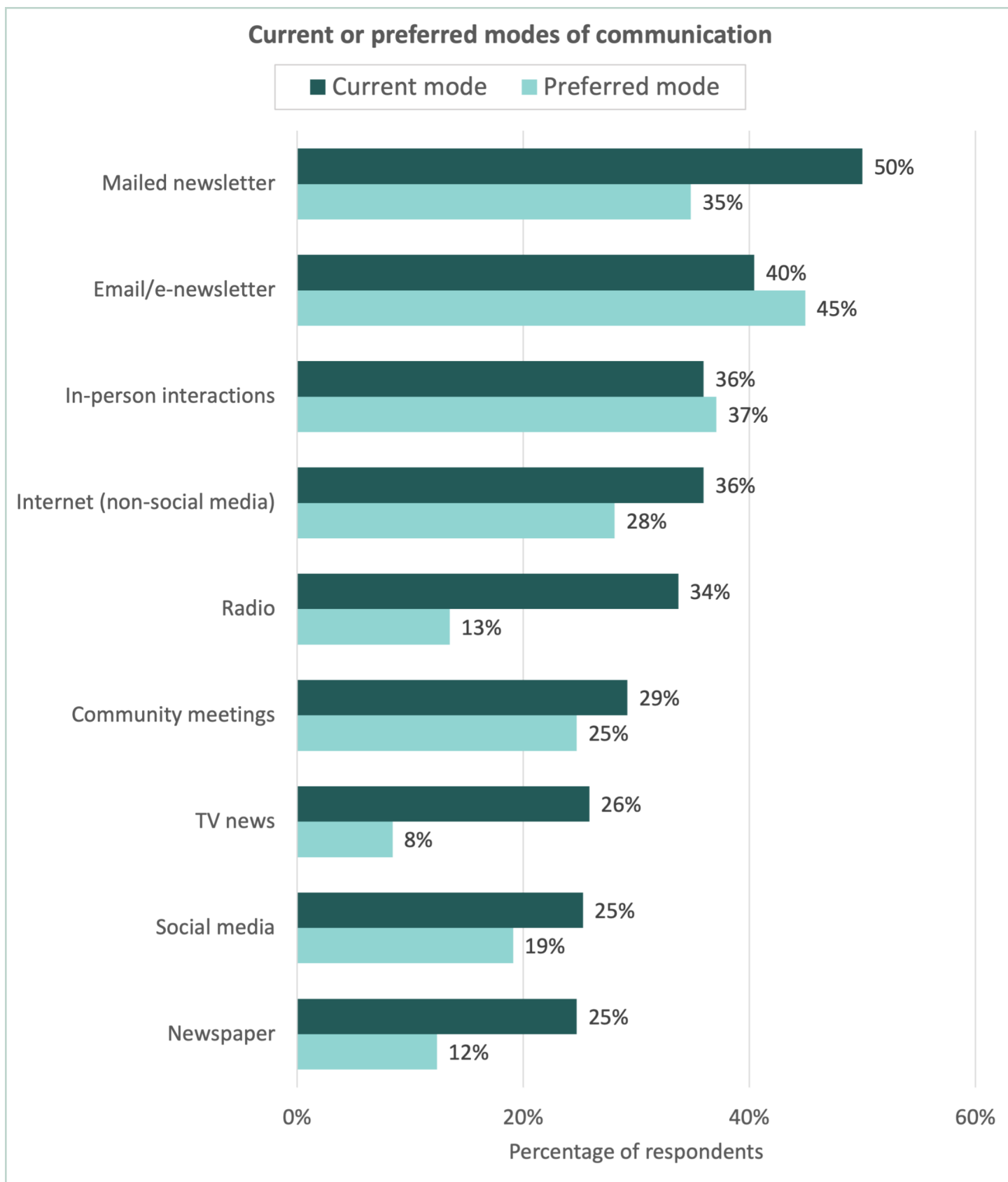


Figure 31—Comparison of current and preferred channels of communication about wildfire risk, ordered by current channels of communication, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. Survey respondents were able to select multiple options. N = 36 responses to current channels; N = 36 responses to preferred channels.

Mitigation and Preparedness Activities

Evacuation planning—

Evacuation planning is an important step in wildfire preparedness, and most survey respondents appear to have completed some planning. Over three-quarters of survey respondents (80%) reported having evacuation plans for the people in their households (refer to fig. 32(a)). Of the survey respondents with pets, 79 percent had a plan for their pets (refer to fig. 32(b)). Of the survey respondents with livestock, 59 percent had a plan for their livestock (refer to fig. 32(c)).

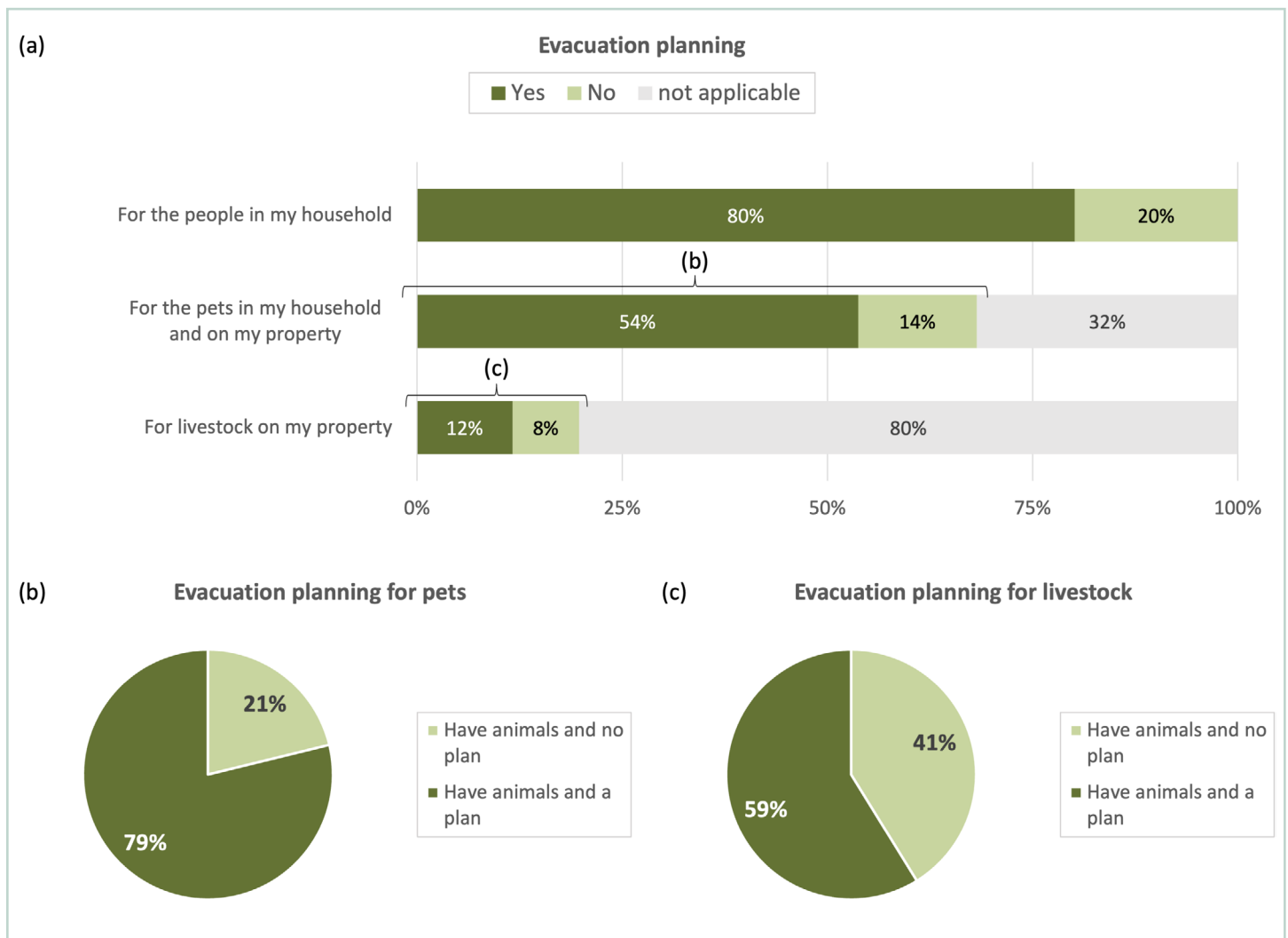


Figure 32—(a) Percentage of survey respondents who report having wildfire evacuation plans for people in the household and for pets and livestock, out of all responses to this question (N = 172–176). (b) Of respondents with pets, percentage who have a wildfire evacuation plan for their pets (N = 173). (c) Of respondents with livestock, percentage of have a wildfire evacuation plan for their livestock (N = 172). Data as reported in 2022 by survey respondents residing in the Chelan County Fire District 3, Washington, study area.

Respondents were asked to report evacuation actions they completed, as well as to identify evacuation topics about which they would like more information. Although most survey respondents reported having an evacuation plan (refer to fig. 32), survey responses indicate that those evacuation plans could be further developed. Most respondents have identified

what to take and what to leave behind during an evacuation (69%), safe evacuation routes (66%), where to stay long term (63%), and where to evacuate (63%). However, only 38 percent of respondents have signed up for the emergency notification system Alert Sense, a crucial wildfire preparedness step. A similar percentage (34%) want more information about signing up for Alert Sense, possibly indicating the need to educate respondents not just about how to sign up but why it is important to do so. Responses to other evacuation actions in this question followed a general trend of having been completed by a moderate number of respondents, with a smaller percentage requesting more information about the action (refer to fig. 33).

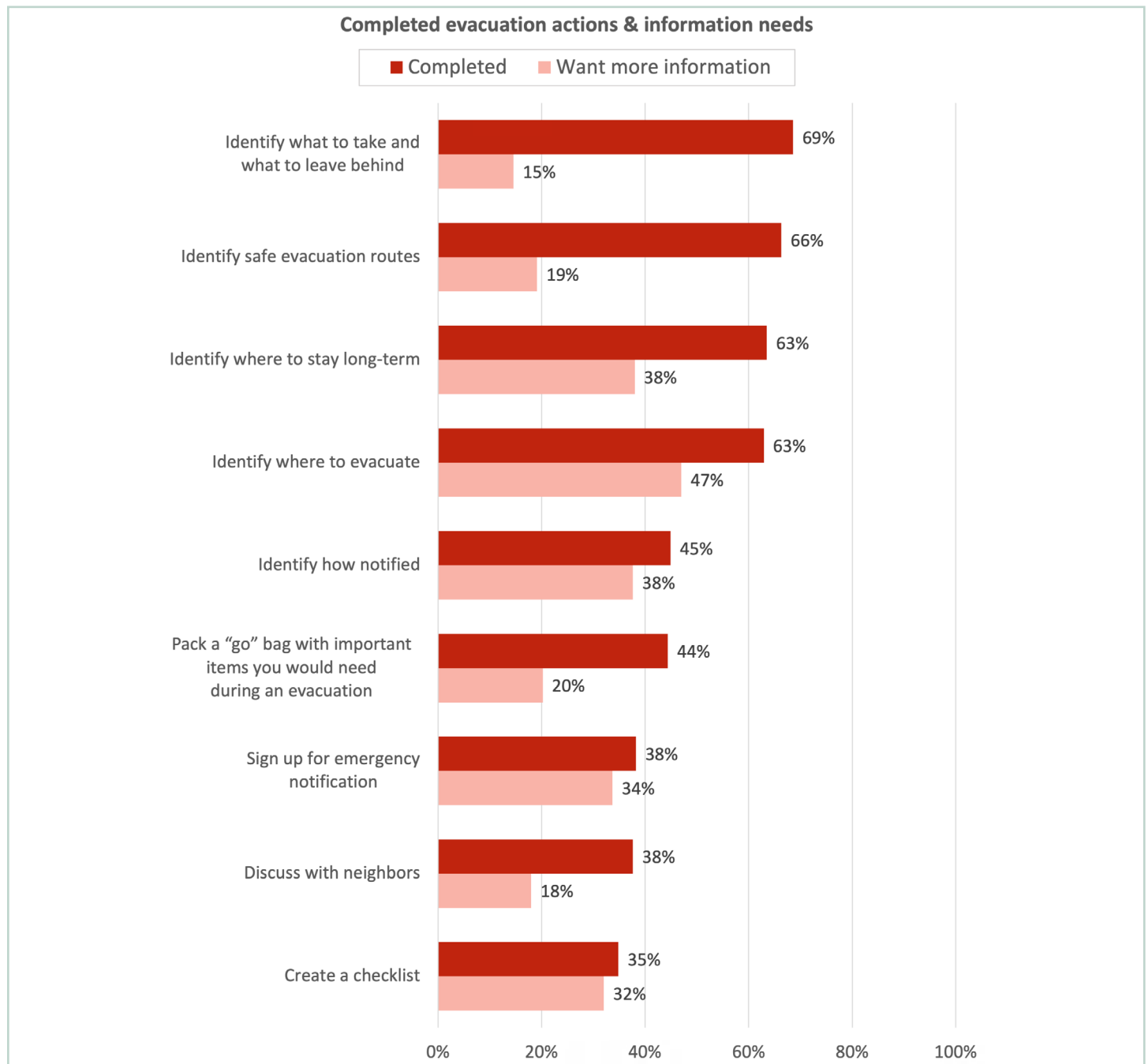


Figure 33—Evacuation preparations completed and information that would be helpful in evacuation plan development, ordered by actions completed, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 178 respondents to completed action segment; N = 178 respondents to wanting more information segment.

Wildfire risk mitigation—

There are many ways property owners can reduce the risk of a wildfire damaging or destroying their homes. Respondents reported high levels of mitigation actions on their properties and around their community. The three most reported activities were regularly mowing and raking around the residence (94%), reducing vegetation (91%), and regularly clearing roof and gutters (78%). A smaller but still significant percentage of respondents reported having hardened their homes (60%) and met with wildfire professionals to evaluate their homes' risk (60%). Few respondents reported mitigation activities off their own properties, including participating in a community wildfire activity (36%), helping neighbors reduce vegetation on their property (30%), or reducing the amount of vegetation on public lands (14%) or on community property (13%) (refer to fig. 34).

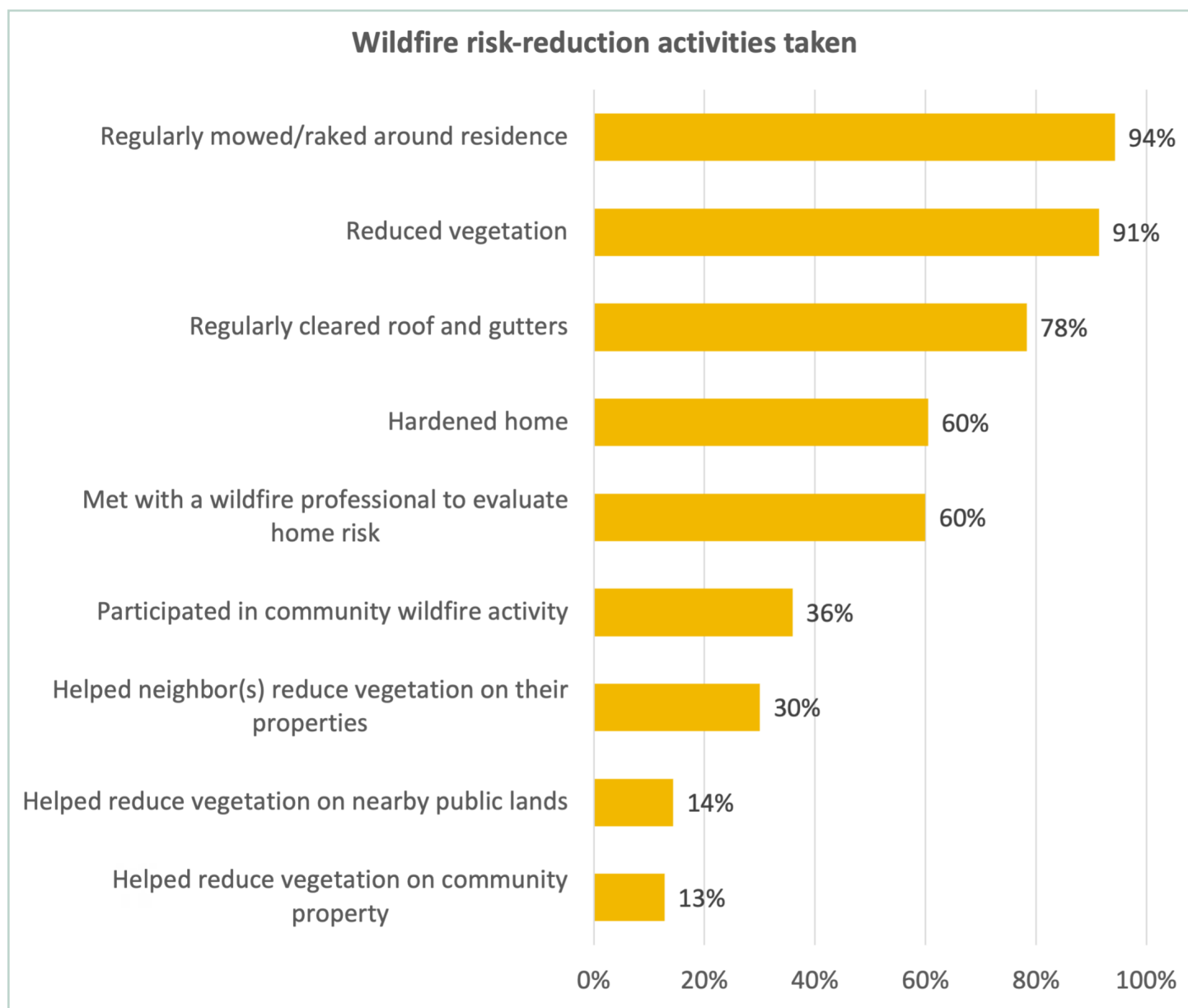


Figure 34—Percent of respondents who reported doing the above wildfire risk mitigation activities, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 171–176 respondents for each of the above activity statements.

Barriers and incentives—

Respondents were asked about four categories of potential barriers to conducting wildfire mitigation, including personal resources, information, personal perspectives, and community-based barriers. Excepting personal resource barriers, a strong majority (63-80% per category) of survey respondents reported no barriers, selecting the “none of these are barriers” option. Across all four categories, the four most-reported barriers to mitigation were financial expense/cost, time to do the work, physical ability to do the work, and knowing where to dispose of vegetation or slash.

The three most reported barriers were within the personal resources category (refer to fig. 35). Nonetheless, 31 percent of respondents reported none of the personal resource factors were barriers.

Few survey respondents reported that a lack of information presented a barrier to wildfire mitigation. The most-reported barrier in this category was lack of information on where to dispose of slash (21%). Most respondents (63%) reported that none of these were barriers (refer to fig. 36).

Few respondents reported barriers to mitigation rooted in personal perspectives. Just 10 percent of survey respondents reported that taking action would not reduce risk, 8 percent reported not wanting to change the look of their properties as a barrier to mitigation, and 5 percent reported that mitigation was a low priority. Most respondents (80 %) reported that none of these were barriers (refer to fig. 37).

Community barriers to mitigation were the least reported barriers overall. The barrier most selected by respondents among those presented was a lack of options for disposing of slash (20%). Very few respondents selected the community barriers of restrictions about changing the look of a property (5%) or social pressure from neighbors (2%). Most respondents (77%) reported that none of these were barriers (refer to fig. 38).

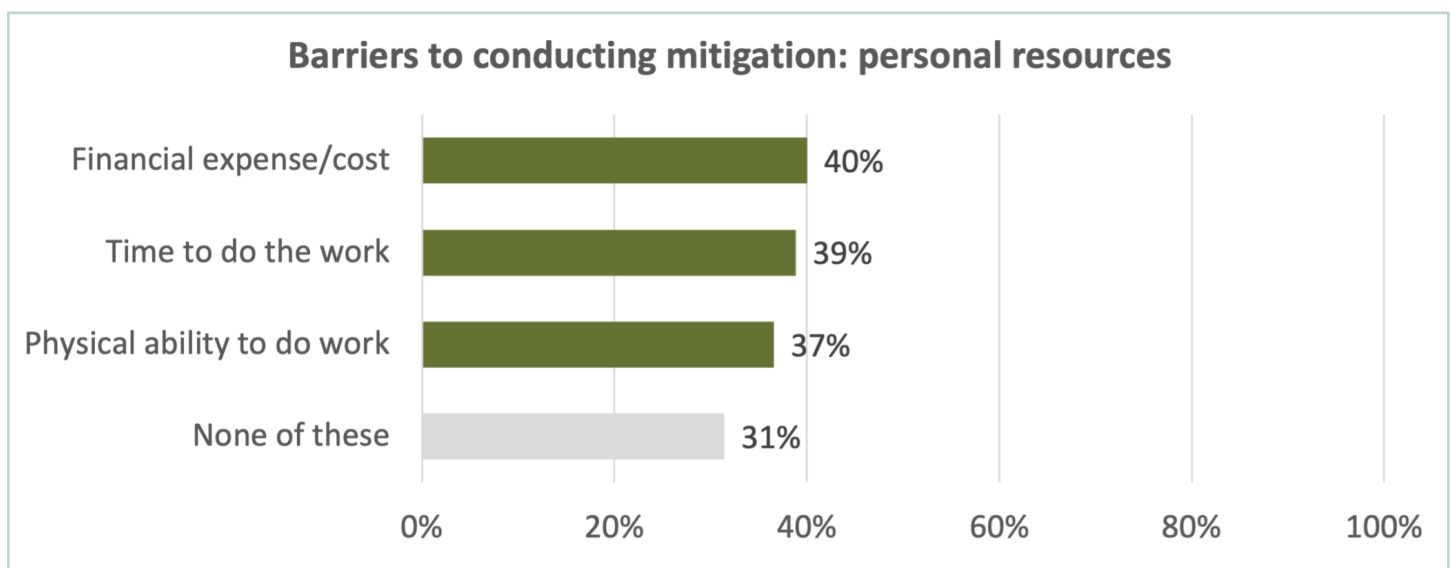


Figure 35—Personal barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 175 respondents for each of the above barriers.

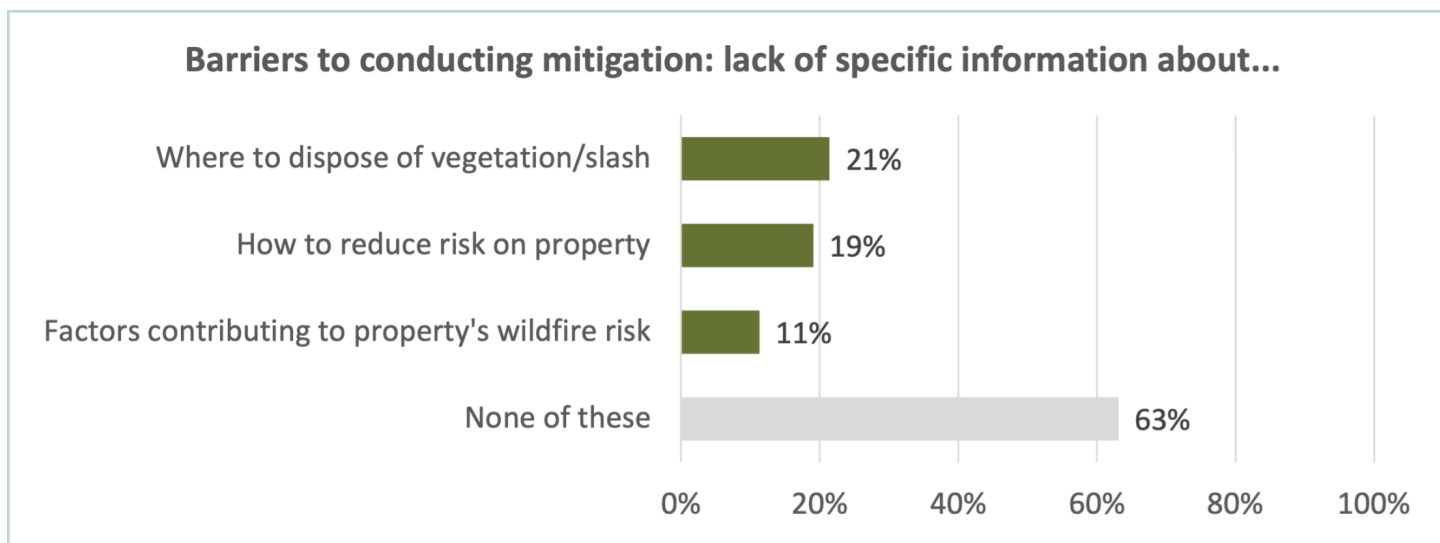


Figure 36—Information barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 168 respondents for each of the above barriers.

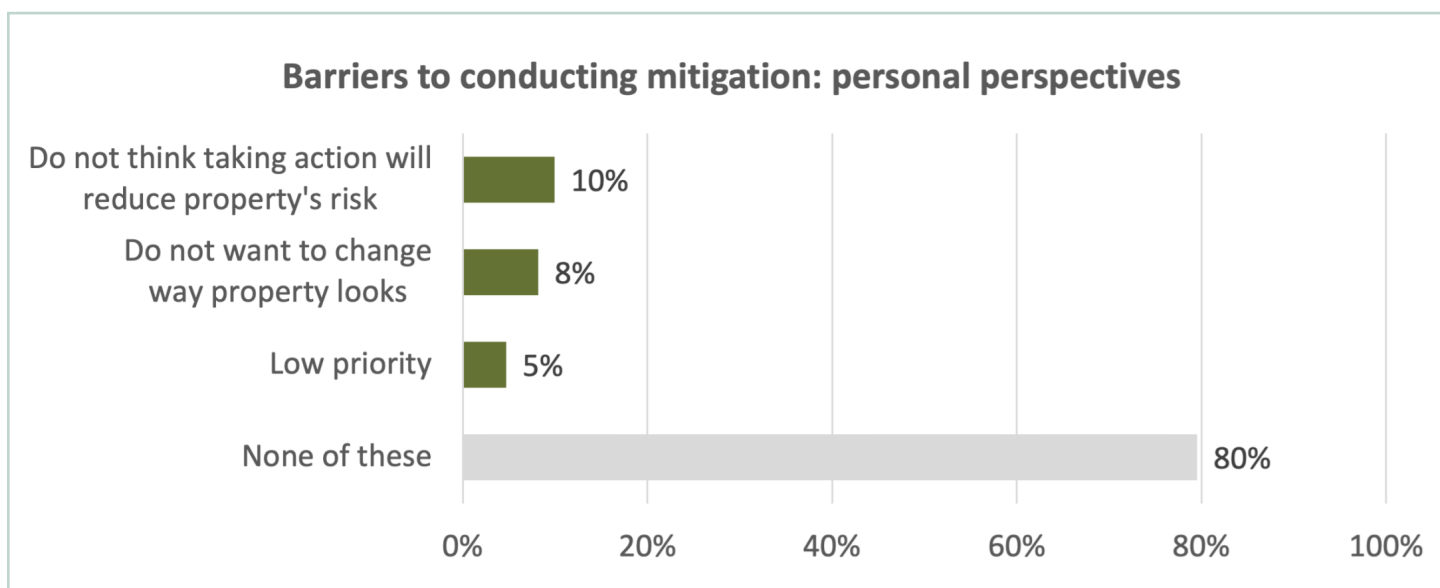


Figure 37—Personal perspectives or values that might affect wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 171 respondents for each of the above barriers.

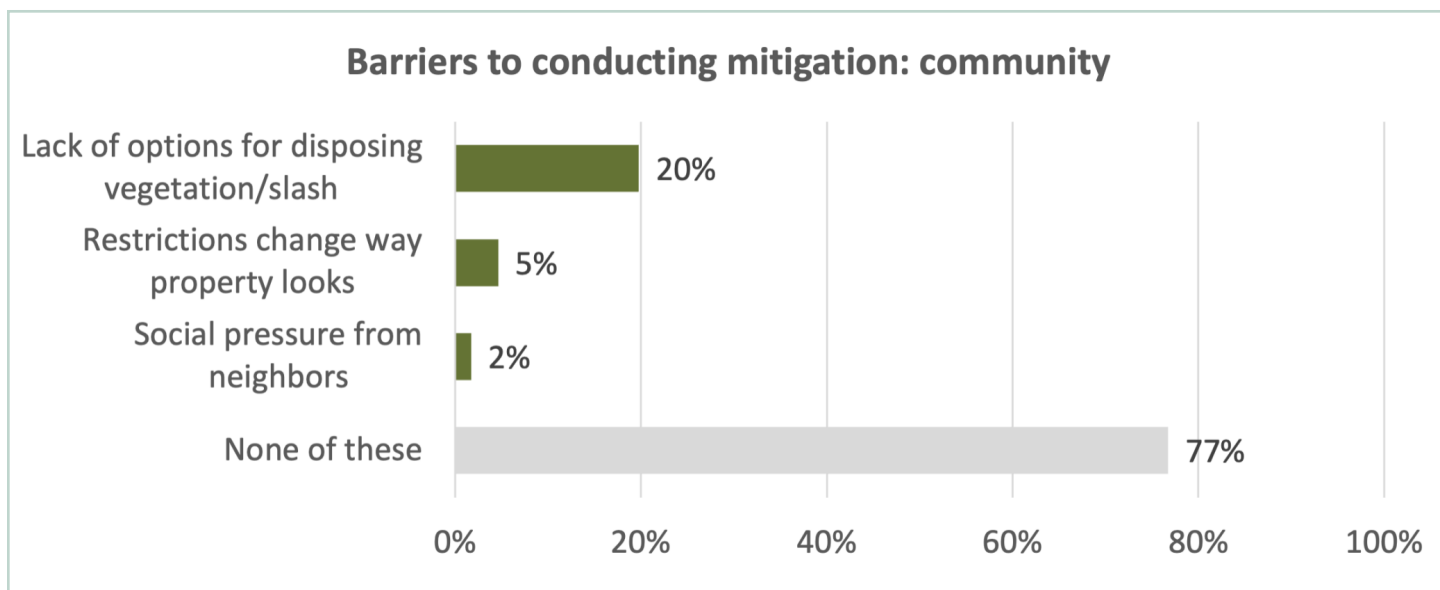


Figure 38—Community-related barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 172 respondents for each of the above barriers.

The survey also asked respondents to consider potential incentives that would help them complete mitigation actions. These were presented in three categories: resources, information, and social incentives. In general, more respondents reported that incentives would encourage them to mitigate than barriers prevent them from mitigating. Across these categories, the three most popular forms of support were cost share or financial assistance, help doing the work, and a one-on-one visit to the property by a wildfire expert.

In the resource incentives category, cost-share or financial assistance was the most popular (60%), followed by help doing the work (55%), and recommended contractors (34%). Twenty-one percent of survey respondents reported that none of these incentives would encourage them to complete mitigation (refer to fig. 39).

In the information category, 49 percent of survey respondents reported that a one-on-one visit with an expert on their properties would encourage them to mitigate. Forty-five percent of respondents stated that a report describing their properties' risk factors would help them to mitigate. Only 20 percent of survey respondents wanted videos showing how to reduce wildfire risk on their properties. A third of the survey respondents reported that none of these incentives would help them complete mitigation (32%) (refer to fig. 40).

Social incentives to encourage mitigation were not as popular with survey respondents. Forty-two percent reported that feedback on work they had done to reduce their properties' risk would be helpful, 27 percent reported that a neighborhood group that organizes wildfire risk reduction activities would be helpful, and 12 percent reported that receiving recognition would be motivating to perform mitigation. Forty-five percent of respondents reported that none of these incentives would encourage them to mitigate (refer to fig. 41).

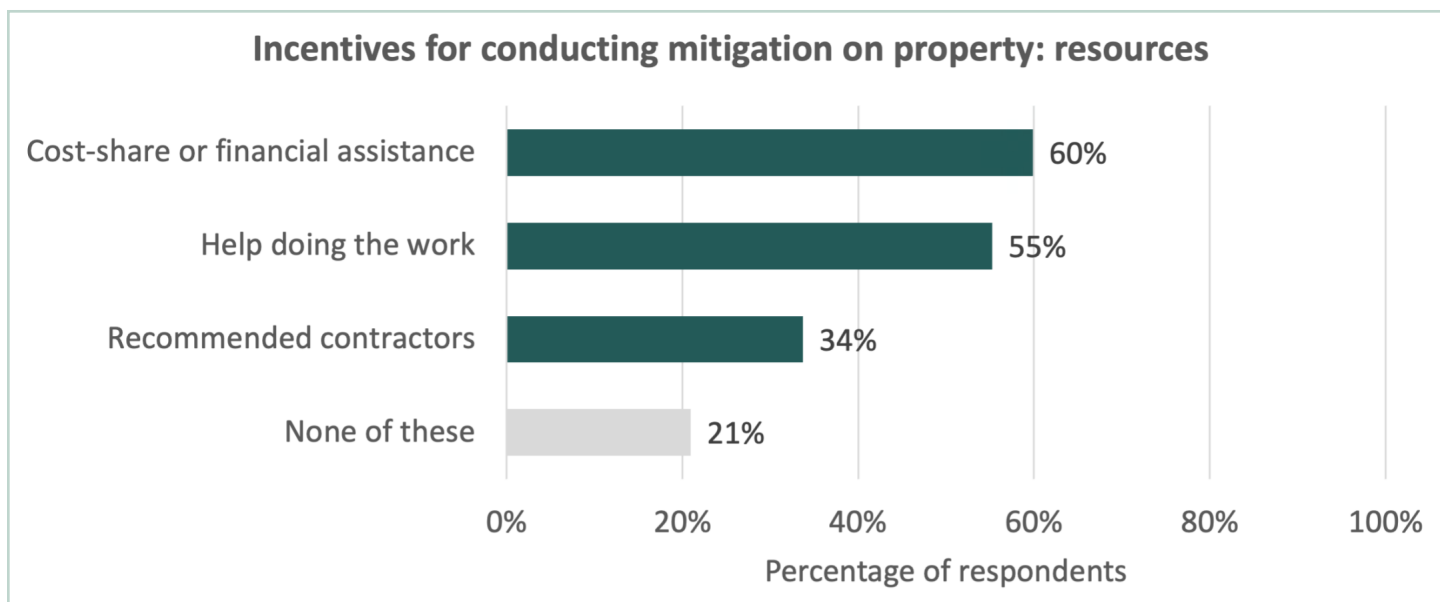


Figure 39—Resource-related incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 172 respondents for each of the above incentives.

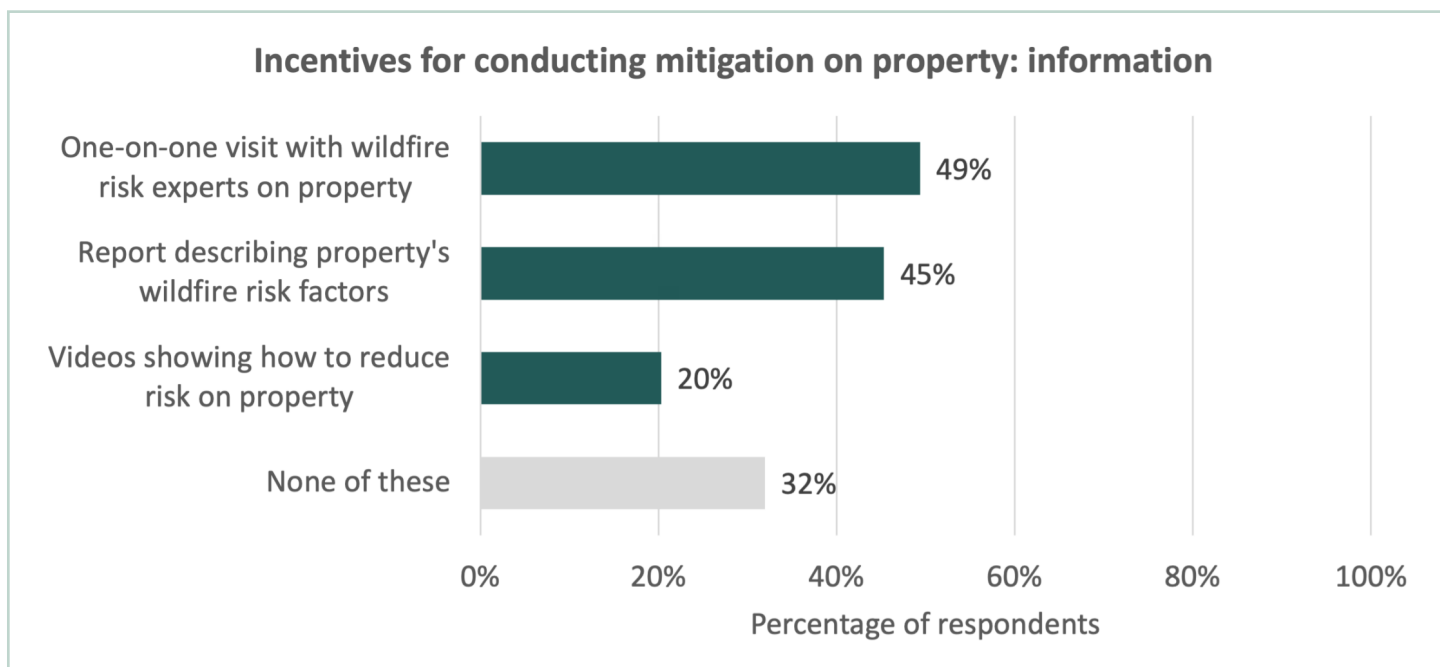


Figure 40—Information-related incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 172 respondents for each of the above incentives.

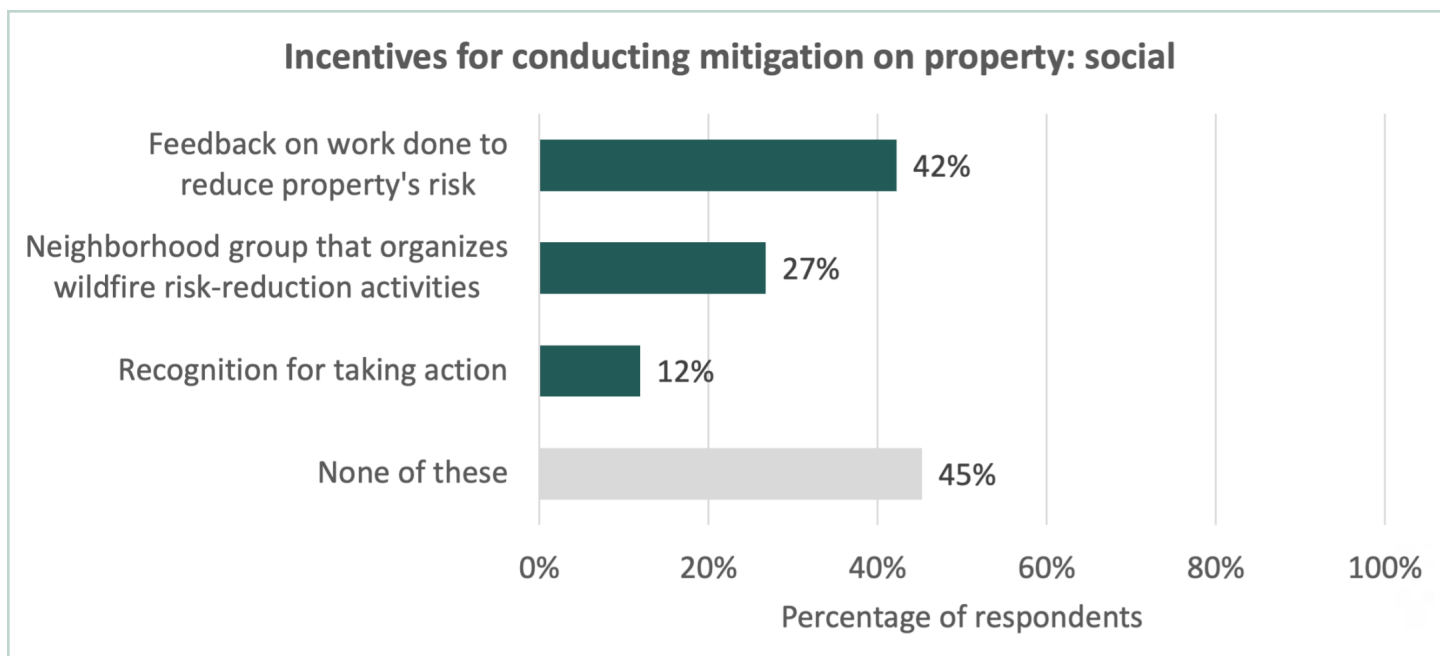


Figure 41—Other incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 168 respondents for each of the above incentives.

Perceptions of Community Risk Reduction Strategies and Fire Management

Support for risk management practices—

A strong majority of survey respondents (72–86%) rated fuels treatments on nearby public lands as very or extremely acceptable. In order of most to least acceptable, actions supported by respondents included the removal of vegetation along roadways for safer evacuation, removing trees and other vegetation, burning piles of vegetation, removing trees and reducing other vegetation on homeowners association (HOA) property surrounding communities to slow the spread of wildfire such as fuel breaks, managing a naturally ignited fire, and conducting a prescribed fire (refer to fig. 42).

Survey respondents also indicated broad support (65–86%) for proposed wildfire regulations and practices apart from temporarily shutting off the power grid on extreme fire risk days (only 44% rated this as very or extremely acceptable). In order of acceptability, respondents supported building a new road to provide an emergency evacuation route, growth policies or land use regulations that limit new development, development standards that require vegetation management, and adopting building codes that require fire resistant materials for structures located in fire-prone areas (refer to fig. 43).

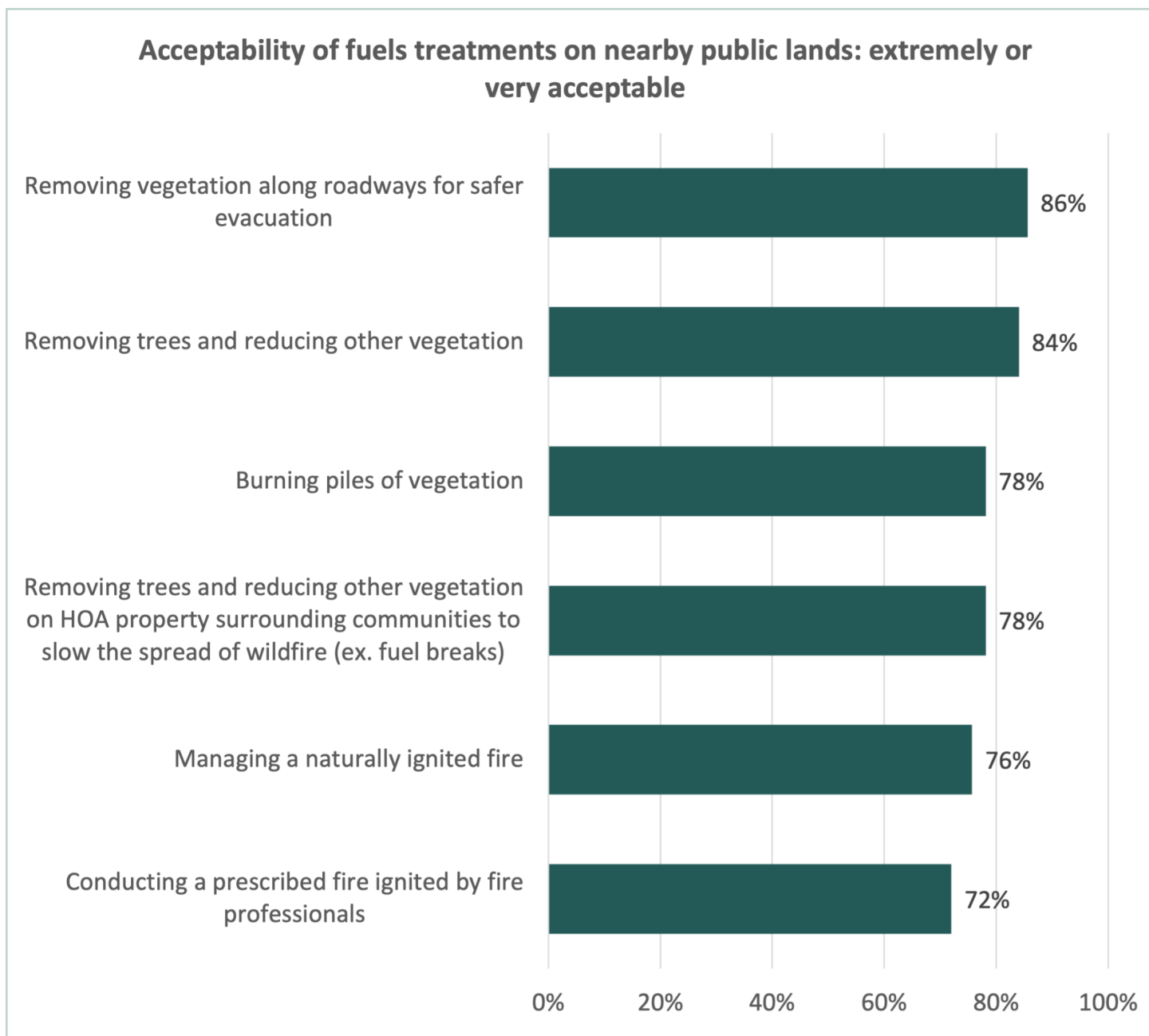


Figure 42— Percentage of respondents who found each of the above wildfire fuels management approaches very or extremely acceptable, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 172–176 respondents for each of the above statements. HOA = Homeowners Association.

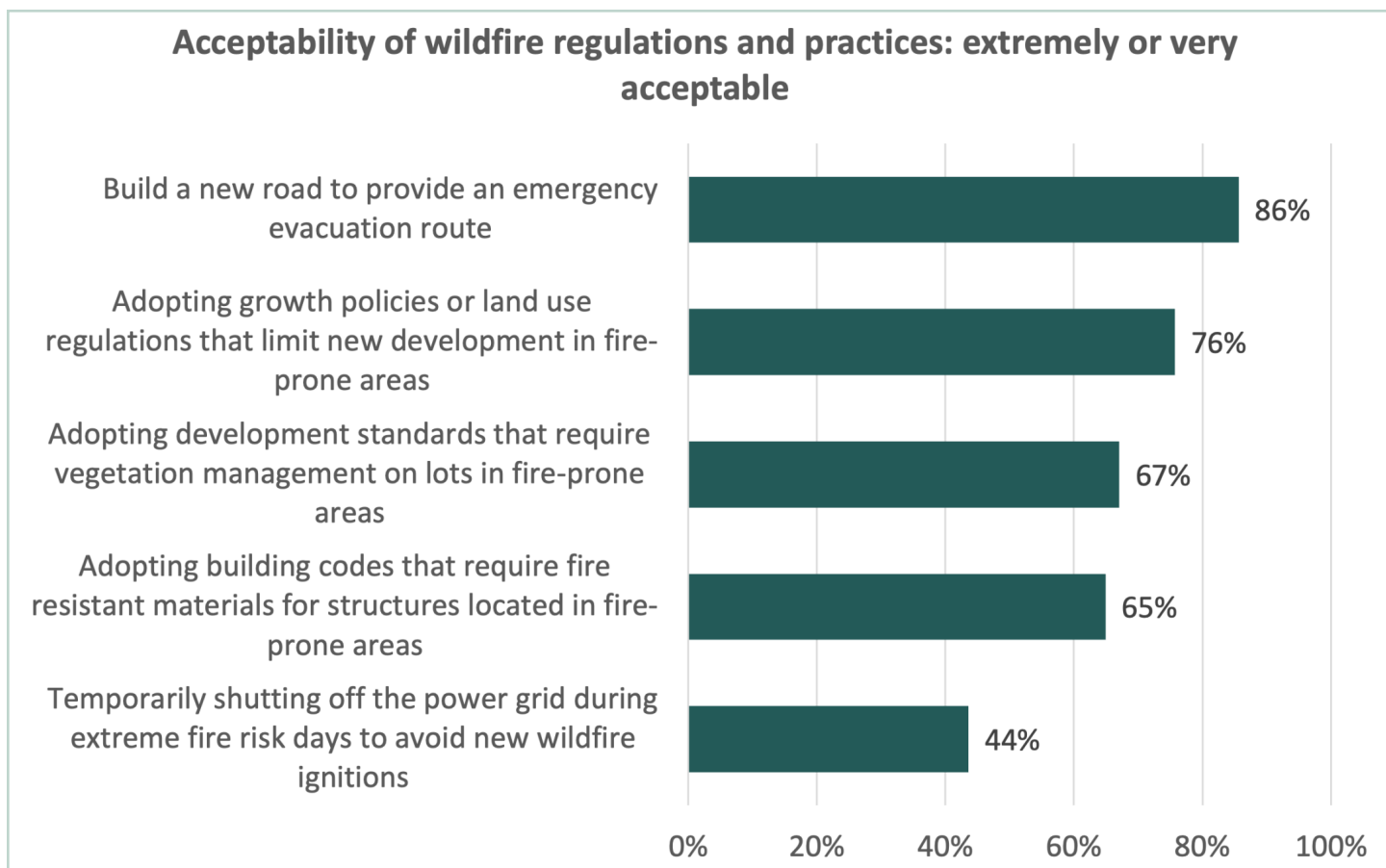


Figure 43—Percentage of respondents who found each of the above wildfire-related policies very or extremely acceptable, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 172–174 respondents for each of the above statements.

Notions of hazard and response—

Respondents seemed to understand that wildfires are important to ecosystem health but reported wanting wildfires suppressed when they threaten lives or homes. Almost all agreed or strongly agreed that wildfires are a natural part of a healthy forest ecosystem (90%). Furthermore, most respondents agreed or strongly agreed that wildfires threatening human life (87%) and threatening homes (83%) should be put out. Almost two-thirds (63%) of survey respondents agreed or strongly agreed that saving homes should be prioritized over saving forests during wildfire events (refer to fig. 44).

Despite preferences to suppress wildfire, survey respondents were less confident in the technology and resources available to do so. Less than half of respondents (31%) agreed or strongly agreed that most wildfires can be controlled with proper technology. A smaller percentage (18%) agreed or strongly agreed that local firefighters have sufficient resources to protect homes from wildfire, and even fewer (10%) agreed or strongly agreed that local firefighters have sufficient resources to keep wildfires from spreading (refer to fig. 45).

Another dimension of wildfire risk is the threat posed to local water supply. Few respondents (17%) agreed or strongly agreed that wildfires threaten their community water supply (refer to fig. 46).

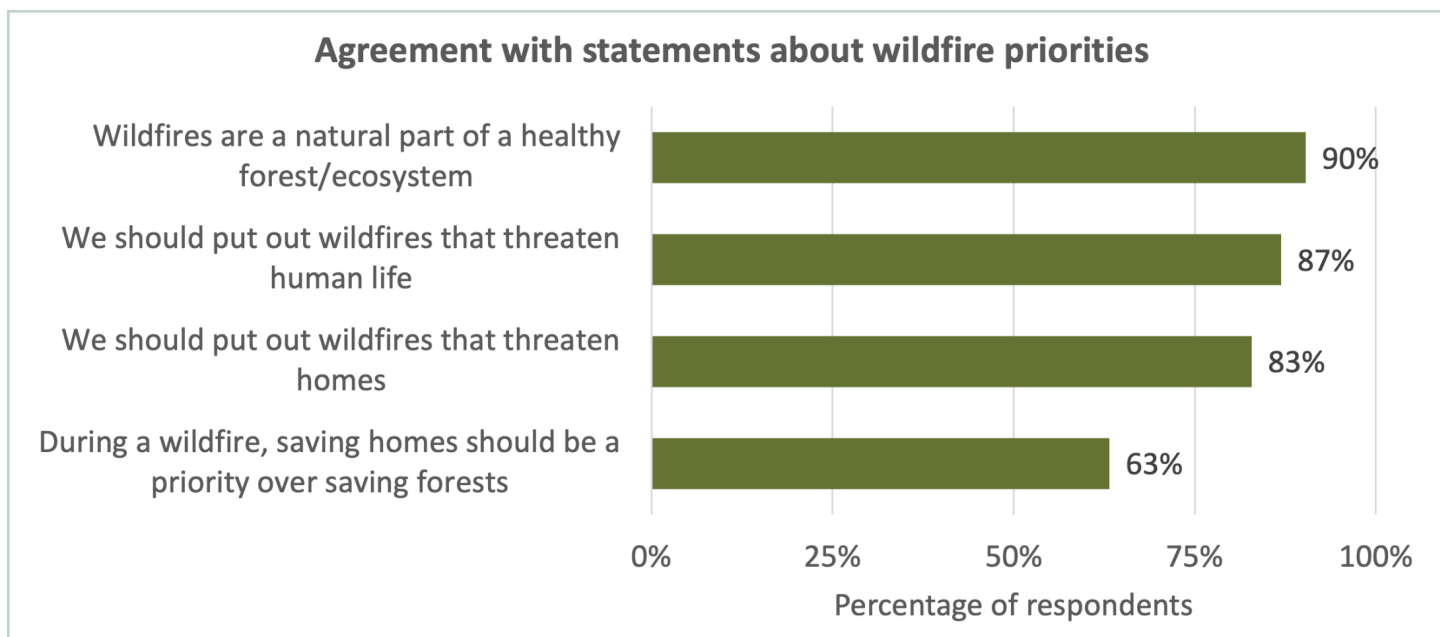


Figure 44—Agreement (“agree” or “strongly agree”) with statements about priorities between human and natural resources during a wildfire, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174–176 respondents to each survey statement listed.

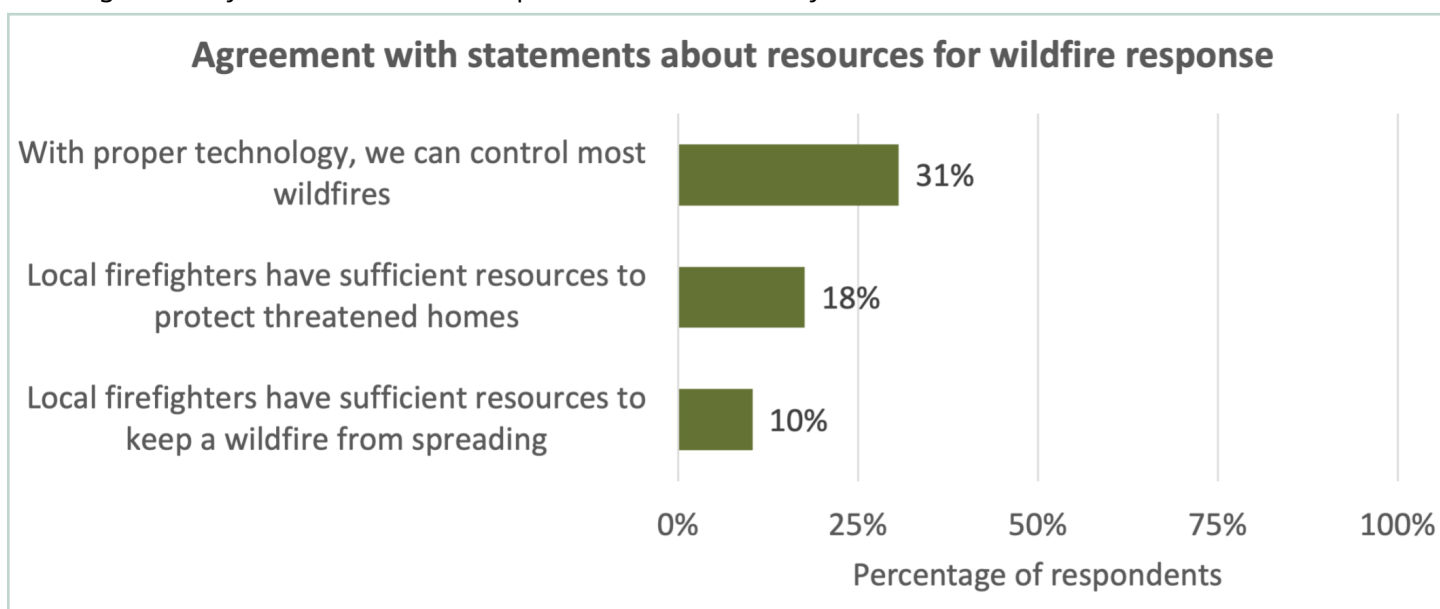


Figure 45— Agreement (“agree” or “strongly agree”) with statements about available technology and resources to prevent wildfire impacts, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174–176 respondents to each survey statement listed.

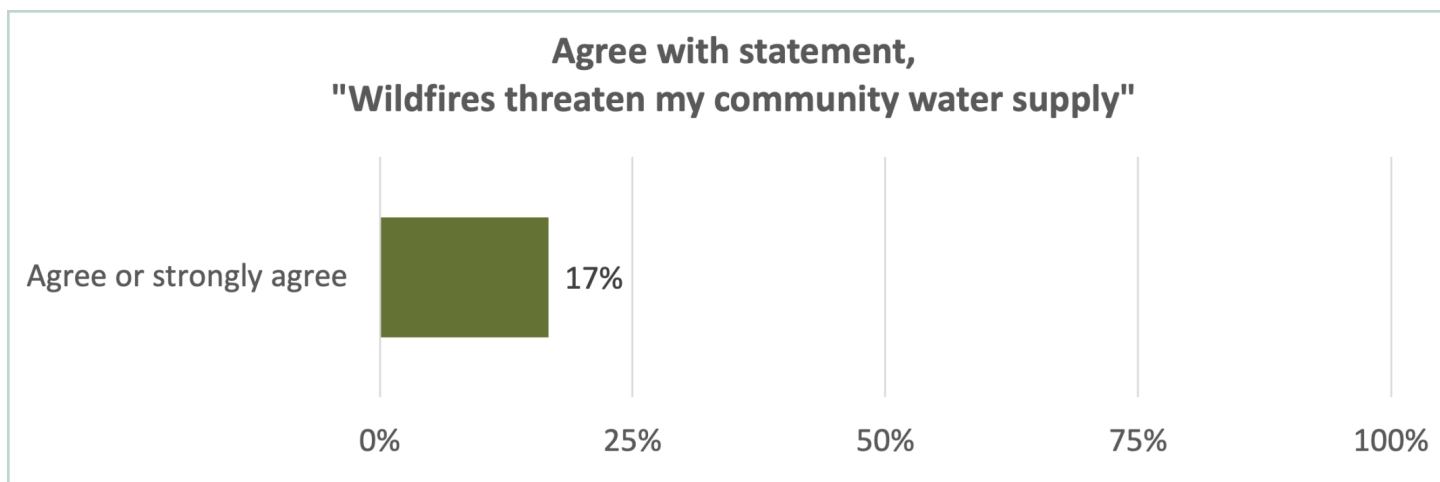


Figure 46— Agreement (“agree” or “strongly agree”) with statement about wildfire threat to water supply, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 174 responses to the survey statement listed.

Parcel-level wildfire risk is not entirely within a homeowner’s control, which may affect perceptions of efficacy of risk mitigation. While forty-two percent of respondents agreed or strongly agreed that development in fire prone areas increase the risk to their properties, less than a quarter of survey respondents (22%) agreed or strongly agreed that their actions to mitigate wildfire risk on their properties were rendered ineffective by heavy vegetation on neighboring properties.

Survey responses indicate that participants feel responsibility for taking action to reduce their risk and believe in the efficacy of their actions. Just 9 percent of respondents thought that managing wildfire risk is the government’s responsibility, not their own, and only 6 percent agreed or strongly agreed with the statement that homeowner’s actions are ineffective against wildfire. Furthermore, only 3 percent of survey respondents agreed or strongly agreed that firefighters should risk their lives protecting homes, and just 3 percent of respondents stated that they live where they do for the trees and will not remove any from their properties (refer to fig. 47).

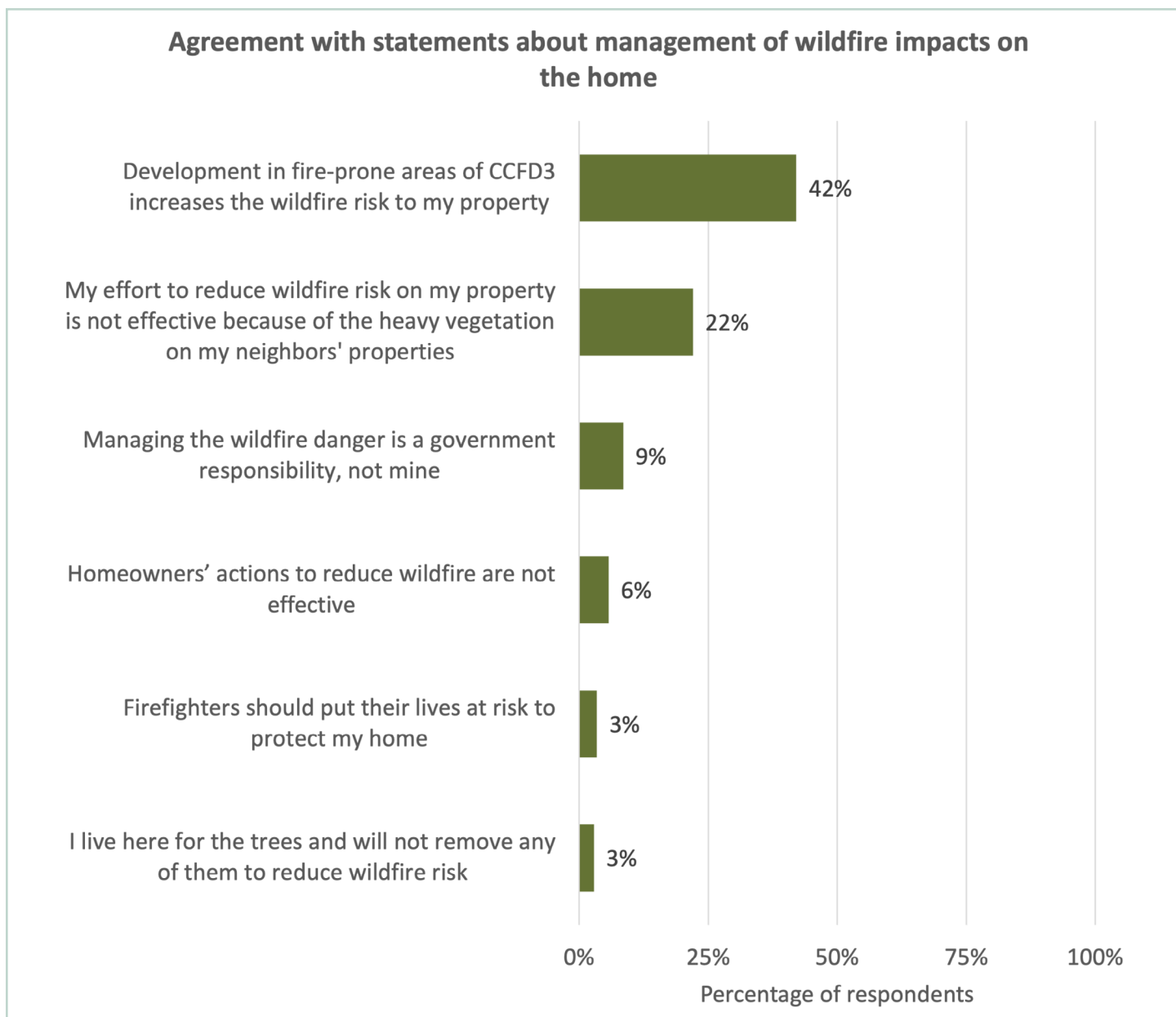


Figure 47—Agreement (“agree” or “strongly agree”) with statements about personal and community management of wildfire impacts on the respondent’s home, as reported in 2022 by respondents residing in the Chelan County Fire District 3, Washington, study area. N = 176–177 respondents to each survey statement listed.

Conclusion

This report compares rapid wildfire risk assessments conducted by trained assessors and homeowner self-assessments of parcel-level wildfire risk in the Chelan County Fire District #3 of Chelan County, Washington. The report also highlights the social dimensions of wildfire, including household survey respondents’ perceptions of wildfire risk and responsibility for wildfire risk reduction, perceptions of public land management strategies and policies for wildfire risk mitigation, current mitigation and evacuation preparedness activities, barriers and incentives to mitigation, and communication preferences. The household survey received a 38 percent response rate. Survey respondents reported high levels of general wildfire risk awareness, and many have experienced wildfire evacuation (figs. 18–20). Two thirds of

respondents agreed their properties were at risk of wildfire (fig.21). Most respondents have already taken some action to reduce their wildfire risk (fig. 34), believe that their actions to reduce wildfire are effective, take responsibility for managing their own wildfire risk (fig. 47), and do not expect the fire department to save their homes in the event of a wildfire (fig. 23). However, many residents face personal resource barriers to mitigation, especially financial cost, time to do the work, and physical ability (fig. 35). Respondents indicated resource and information incentives would encourage them to act (figs. 39–41). These results indicate that respondents may respond well to wildfire risk mitigation programs and outreach, especially those that address personal resource barriers or provide personalized risk information.

Rapid assessment and survey results indicate that respondents differ in their evaluation of wildfire risk as compared to trained assessors from Chelan County Fire District #3. A major contributor to this difference is perceptions of defensible space. Respondents estimated greater distances from the home to overgrown vegetation (fig. 9) and other combustibles (fig. 10), compared to the estimations of trained assessors. This gap in perceptions may be an opportunity for public education about defensible space. However, most homes in the study had at least 30 feet of distance from the home to vegetation, and as such, managing other combustibles in the home ignition zone might be of greater necessity. Other risk attributes that respondents estimated as lower than estimated by the trained assessors included proximity to adjacent homes (fig. 8), distance from the home to dangerous topography (fig. 11), address posting and visibility (fig. 14), and ingress/egress routes (fig. 15). Residents may not be able to mitigate risk from adjacent homes, topography, or number of egress routes, but these risk attributes may serve as motivation to reduce risk arising from other sources. Replacing address signage is a relatively easy action homeowners might take. Overall, these results indicate the need for increased outreach to align homeowner and trained assessor perspectives on the components of wildfire risk and to improve the effectiveness of homeowner action.

Results indicate several areas for educational outreach with Chelan County Fire District #3 residents. First, to address the gap between trained assessor and respondent risk assessments, wildfire professionals can provide more specific information on defensible space and home hardening. Second, results indicate respondents may benefit from education about the mechanisms of home ignition, such as the possibility of ember-driven and home-to-home ignition, which may inform how residents approach mitigation (fig. 25). Fourth, while results indicate that most respondents have an evacuation plan (fig. 32), relatively few have signed up for the emergency notification system Alert Sense (fig. 33). Furthermore, many respondents may be unaware that they have only one egress route (fig. 15). Residents may benefit from outreach not just about wildfire mitigation but also critical preparedness actions.

Survey results also indicate opportunities for wildfire risk reduction at the community and landscape level, via fuel treatments on public lands and wildfire policies or regulations. Results indicate high acceptability of all fuel treatment options, including vegetation removal, burning piles of vegetation, managing a naturally ignited fire, and prescribed fire (fig. 42). Survey respondents also indicated broad support for adoption of codes or regulations in fire-prone areas and building a road to serve as an additional evacuation route (fig. 43). However, respondents were less accepting of the option to temporarily shut off the power grid on extreme fire risk days (fig. 43). These results may inform fuel treatment planning

and prioritization in the study area, as well as local wildfire policy development. To inform decision-making in Chelan County, WiRē collaborated with CCFD #3 and other partners in Chelan County to develop a two-page pamphlet for policymakers, describing wildfire policy acceptability (refer to Appendix F).

Outreach efforts to educate residents about mitigation and preparedness or upcoming fuel treatment studies may be most effective if coming from sources of information that respondents currently receive and find useful (fig. 30) and via communication channels that respondents prefer (fig. 31). The fire department and the Chumstick Wildfire Stewardship Coalition were two of the most received and highly useful sources (fig. 30). While the media was a top received source, fewer respondents rated it as useful. While respondents preferred to receive information via a variety of channels, the top preferred channels were email/e-newsletter, in-person interactions, and mailed newsletter (fig. 31). The preference for in-person interactions is supported by about half of respondents' agreement that a one-on-one visit with an expert on their properties, or a report describing their properties' risk factors, would encourage them to mitigate (fig. 40). These results indicate the desire for outreach from the fire department, particularly via newsletters and personal interactions.

Appendix A: Correspondence Materials and Household Survey

Correspondence Materials. 51

Household Survey 55

CHELAN COUNTY FIRE DISTRICT #3

The Bavarian Village in the heart of Washington State



228 Chumstick Hwy. • Leavenworth, WA. 98826 • (509) 548-7711 • www.chelanfd3.org • chief3@chelanfd3.org

Dear Chelan County Fire District #3 Resident,

Chelan County Fire District #3 is grateful for your support and will continue to advocate for residents in our jurisdiction. Wildfire poses a serious threat to our community. As part of our collaborative efforts, Chelan County Fire District #3 is collecting information to help residents reduce wildfire risk on their properties and prepare for a wildfire event. Our effort has two components: parcel-level wildfire risk assessments and household surveys.

Wildfire Risk Assessment

This summer, Chelan County Fire District #3 personnel are conducting parcel-level wildfire risk assessments from the street as well as speaking directly with home owners to determine how each household can be better prepared to survive a wildfire. Wildfire risk assessments are a quick overview of the property characteristics that contribute to wildfire risk, including roof type, vegetation density, and evacuation routes. If you are interested in a more in-depth, on-site, no cost wildfire risk assessment of your home and property, please contact us at info@chelanfd3.org or call Chelan County Fire District #3 at (509) 548-7711 to make a request.

Living with Wildfire in Chelan County in 2021 Survey

The second part of the effort is a household survey that will help us understand your knowledge and perspectives on wildfire. Surveys will be mailed to all households later this summer. Your participation in this survey is voluntary. The information you provide will help emergency responders better prepare for future fires as well as improve our outreach and education efforts. A project report will be available in early 2022, at the conclusion of the project.

If you have any questions about a wildfire risk assessment or the household survey, please email or call Chelan County Fire District #3 at info@chelanfd3.org or (509) 548-7711.

Thank you for participating.

Sincerely ,

A handwritten signature in black ink that reads 'Dave Nalle'.

Dave Nalle
Deputy Fire Chief
Chelan County Fire District #3





CHELAN COUNTY FIRE DISTRICT #3

The Bavarian Village in the heart of Washington State

228 Chumstick Hwy. • Leavenworth, WA. 98826 • (509) 548-7711 • www.chelanfd3.org • chief3@chelanfd3.org

Dear Chelan County Fire District #3 Resident,

Chelan County Fire District #3 is taking proactive steps to reduce wildfire risk and the potential loss of life and property. As part of our proactive efforts, we are sending the “Living with Wildfire in Chelan County in 2022” survey. We want to understand what you know about wildfire, your experiences with wildfire, as well as the characteristics of your property. The information you provide will help Chelan County Fire District #3 and emergency responders better prepare for future fires as well as improve our outreach and education efforts. Results from the survey will be shared with local, state, and federal organizations that are working to manage wildfire risk in the area.

Chelan County Fire District #3 wants to hear from you. Participation in this survey is voluntary and will take about 20 minutes. We realize your time is valuable and appreciate you completing the survey.

When you return the survey, your name will be deleted from the mailing list. Survey results will be reported in summary form and your name will not be connected with your answers in any way. After completing the survey, please fold it and return it in the postage paid return envelope.

If you have any questions about a wildfire risk assessment or the household survey, please email or call Chelan County Fire District #3 at info@chelanfd3.org or (509) 548-7711.

Thank you for participating.

Sincerely ,

David J Nalle

David J Nalle (Mar 16, 2022 14:16 PDT)

Dave Nalle
Deputy Fire Chief
Chelan County Fire District #3



CHELAN COUNTY FIRE DISTRICT #3

The Bavarian Village in the heart of Washington State



228 Chumstick Hwy. • Leavenworth, WA. 98826 • (509) 548-7711 • www.chelanfd3.org • chief3@chelanfd3.org

Dear Chelan County Fire District #3 Resident,

We recently requested your participation in an important survey about wildfire in our community. Many residents have completed and returned the survey. However, we would like to hear from you so we can consider your opinions. If you have already returned the survey, thank you for your participation. If you have not yet responded, please complete and return the enclosed survey.

Your responses to the “Living with Wildfire in Chelan County in 2022” survey will help Chelan County Fire District #3 and emergency responders better prepare for future fires as well as improve our outreach and education efforts. It is our goal to proactively confront wildfire preparedness issues before the smoke is in the air.

Participation in this study is completely voluntary. The survey is intended to take roughly 20 minutes. We realize your time is valuable and we appreciate you taking the time to fill out the survey.

When you return the survey, your name will be deleted from the mailing list. Survey results will be reported in summary form and your name will not be connected with your answers in any way. After completing the survey, please fold it and return it in the postage paid return envelope.

If you have any questions about the household survey, please email or call Chelan County Fire District #3 at info@chelanfd3.org or (509) 548-7711.

Thank you for participating.
Sincerely ,

Dave Nalle
Deputy Fire Chief
Chelan County Fire District #3





Dear Chelan County Fire District #3 Resident,

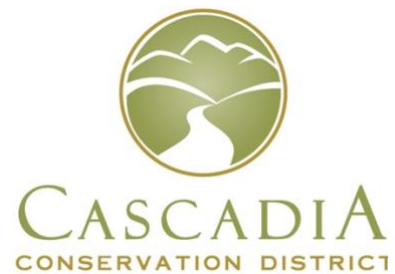
We recently sent you the “Living with Wildfire in Chelan County in 2022” survey. If you have not had a chance to complete and mail the survey, please do so today. We value your opinions. The information you provide is very important for the development of programs to reduce the risk of losses due to catastrophic wildfires.

If you have recently returned the survey, thank you for your participation!

Sincerely,

Dave Nalle
Deputy Fire Chief
Chelan County Fire District #3

Living with Wildfire in Chelan County in 2022



Chelan County Fire District #3
228 Chumstick Hwy. Leavenworth, WA. 98826
<http://www.chelanfd3.org/>

Section 1: In this first section of the survey, we ask about your home in Chelan County. Please answer the following questions with respect to your **Chelan County home**.

When choosing a response, please fill in the circle completely. Correct:  Incorrect:    

1.1. Do you own or rent your Chelan County home? (*Fill in one circle*)

- ☐ Own: primary home
- ☐ Own: secondary residence
- ☐ Rent: I do not own this home

1.2. In a typical year, what months do you spend any time at your Chelan County home?
(*Fill in all that apply*)

All 12 months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	No months
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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

_____ Year moved to my Chelan County home

1.4. In what year was your Chelan County home originally built? (*Fill in the blank*)

_____ Year my Chelan County home was built

1.5. How aware of wildfire risk were you when you bought or decided to rent your Chelan County home? (*Fill in one circle*)

- ☐ Very aware
- ☐ Somewhat aware
- ☐ Not aware
- ☐ Don't remember

Section 2: In this section, we ask about your experience with, and preparation for, wildfire at your Chelan County home.

2.1. What is the closest distance (as a crow flies) a wildfire has come to your Chelan County property? *(Fill in one circle)*

- ☐ There has been a wildfire on my property
- ☐ Less than 2 miles away, but not on my property
- ☐ 2 to 10 miles away
- ☐ More than 10 miles away
- ☐ Not sure

2.2. Have you had any of the following wildfire experiences at your Chelan County home? *(Fill in one circle per row)*

	No	Yes
I have evacuated from my Chelan County home due to a wildfire or threat of a wildfire	☐	☐
My Chelan County home has had smoke damage	☐	☐
My Chelan County home has had wildfire damage	☐	☐
My Chelan County home was destroyed by a wildfire	☐	☐

2.3. Do you currently have an evacuation plan in the event a wildfire threatens your Chelan County home? *(Fill in one circle per row)*

	No	Yes	Not applicable
For the people in my household	☐	☐	
For the pets in my household and on my property	☐	☐	☐
For livestock on my property	☐	☐	☐

- 2.4. Have you completed any of the following actions to prepare for a **wildfire evacuation**, and do you want more information about how to complete any of the actions?
(Fill in all circles that apply)

	Completed action?	Want more information?
Identify how I will be notified about an evacuation	☐	☐
Sign up for a wildfire evacuation notification system (Alert Sense https://public.alertsense.com)	☐	☐
Identify safe evacuation routes	☐	☐
Identify a location that my household will evacuate to	☐	☐
Identify what to take and what to leave behind during an evacuation	☐	☐
Discuss evacuation with my neighbors	☐	☐
Create a checklist for steps to take before evacuating	☐	☐
Identify a place to stay during a long-term evacuation (i.e., more than a few days)	☐	☐
Pack a “go” bag with important items you would need during an evacuation (see https://simplebooklet.com/emergencygobag)	☐	☐

- 2.5. Please tell us about your experiences with your **homeowners insurance** for your Chelan County home. (Fill in one circle per row)

	No	Yes	Don't know
Has your current or a previous insurance company ever provided information on reducing the risk of wildfire?	☐	☐	☐
Did an insurance company ever refuse to provide or renew insurance because of the risk of wildfire?	☐	☐	☐
Do you pay a higher premium for your insurance due to wildfire risk?	☐	☐	☐
Do you receive a discount on your insurance premium because you have reduced wildfire risk on your property?	☐	☐	☐
Do you think your home is adequately insured against loss from a wildfire?	☐	☐	☐
Has your current insurance company ever required you to take action to reduce wildfire risk in order to continue coverage?	☐	☐	☐
Has your current insurance company offered private firefighting services?	☐	☐	☐

Section 3: In this section, we ask about the characteristics of your Chelan County home and the area near your Chelan County home.

3.1. Does your Chelan County home have any of the following roofing materials?

(Fill in all that apply)

☐ Tile, metal, or asphalt shingles

☐ Wood (shake shingles)

3.2. Does your Chelan County home have any of the following exterior siding materials?

(Fill in all that apply)

☐ Stucco, cement, brick, stone, or other noncombustible siding

☐ Log or heavy timbers

☐ Wood or vinyl siding

3.3. Does your Chelan County home have a **combustible** balcony, deck, porch, or fence attached to the structure? *(Fill in one circle)*

☐ No

☐ Yes

3.4. What is the **closest** distance from your Chelan County home to combustible items other than vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite? *(Fill in one circle)*

☐ More than 30 feet or no combustible items

☐ 5 – 30 feet

☐ Less than 5 feet

3.5. What is the **closest** distance from your Chelan County home to overgrown, dense, or unmaintained vegetation? *(Fill in one circle)*

- ☐ More than 100 feet
- ☐ 30 – 100 feet
- ☐ 5 – 29 feet
- ☐ Less than 5 feet

3.6. Which of the following best describes the **majority** of vegetation on your Chelan County property between 100 and 150 feet from your home? That area might be outside your property boundary and include properties immediately surrounding you. *(Fill in one circle)*

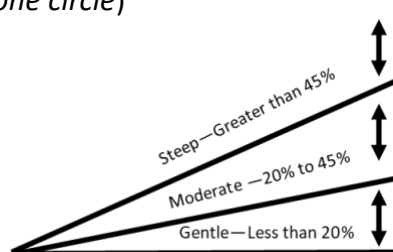
- ☐ Grasses and shrubs
- ☐ Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
- ☐ Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)

3.7. What is the **closest** distance from your Chelan County home to a neighboring home? *(Fill in one circle)*

- ☐ More than 100 feet
- ☐ 30 – 100 feet
- ☐ 10 – 29 feet
- ☐ Less than 10 feet

3.8. The “slope” or “grade” of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the average slope within 150 feet of your Chelan County home? *(Fill in one circle)*

- ☐ Steep – Greater than 45%
- ☐ Moderate – 20% to 45%
- ☐ Gentle – Less than 20%



3.9. What is the closest distance from your Chelan County home to a ridge, steep drainage, or narrow canyon? *(Fill in one circle)*

- ☐ More than 150 feet
- ☐ 50 – 150 feet
- ☐ Less than 50 feet

3.10. Do any of the following describe your driveway? My driveway... *(Fill in one circle per row)*

	No	Yes
has an overhead obstruction (ex. tree limbs) lower than 14 feet	☐	☐
is narrower than 14 feet wide	☐	☐
is longer than 150 feet	☐	☐
has room for a fire truck to turn around	☐	☐

3.11. Is the address number of your Chelan County home posted at the end of your driveway? *(Fill in one circle)*

☐ No

☐ Yes →

	No	Yes
Is the posted number visible from the road? <i>(Fill in one circle)</i>	☐	☐

	No	Yes
Is the posted number blue reflective? <i>(Fill in one circle)</i>	☐	☐

3.12. If the road you use to access your Chelan County home was blocked during a wildfire, is there another road you could use to get out of your community? *(Fill in one circle)*

☐ No

☐ Yes

3.13. Properties in your community are assessed for overall wildfire risk based on the items asked about in questions 3.1 – 3.12 above. What do you think is your Chelan County property's current overall wildfire risk rating? *(Fill in one circle)*

- ☐ Low risk
- ☐ Moderate risk
- ☐ High risk
- ☐ Very high risk
- ☐ Extreme risk

Section 4: In this section, we ask about wildfire risk reduction activities.

4.1. Have you ever talked about wildfire issues with a neighbor? *(Fill in one circle)*

- ☐ No
☐ Yes

4.2. Have you done any of the following wildfire-related activities? *(Fill in one circle per row)*

	No	Yes
Removed large or dense vegetation near my Chelan County home (ex. trees, shrubs, brush)	☐	☐
Regularly cleared my roof and gutters of leaves and pine needles	☐	☐
Regularly mowed and raked around my Chelan County home	☐	☐
Made my Chelan County home more fire resistant (ex. replaced roofing, siding, added hardscaping)	☐	☐
Helped neighbor(s) reduce vegetation on their properties	☐	☐
Helped reduce vegetation on community property (ex. HOA, subdivision)	☐	☐
Helped reduce vegetation on nearby public lands (ex. county, state, federal lands)	☐	☐
Participated in a community wildfire preparedness activity (ex. meeting, chipper day, etc.)	☐	☐
Met with a wildfire professional at your home to evaluate and discuss your property's wildfire risk	☐	☐
Interacted with public land managers (ex. Washington Dept. of Natural Resources or U.S. Forest Service) about fuels reduction on nearby public lands	☐	☐

4.3. How much do you think each of the following factors increases the chances of a wildfire damaging your Chelan County property **in the next 12 months**? *(Fill in one circle per row)*

	A lot	Somewhat	Not at all
Vegetation on my property	☐	☐	☐
Physical characteristics of my house or other buildings (ex. roofing or siding) on my property	☐	☐	☐
Vegetation on my neighbors' properties	☐	☐	☐
Vegetation on nearby public or large undeveloped land	☐	☐	☐
Lack of nearby water supply (ex. hydrant or cistern) for fire suppression	☐	☐	☐

4.4. How many of your immediate neighbors do you think have taken action to reduce wildfire risk on their properties (ex. removing dense vegetation or switching to noncombustible siding)? *(Fill in one circle)*

- ☐ All my neighbors have taken action
- ☐ Most of my neighbors have taken action
- ☐ Some of my neighbors have taken action
- ☐ None of my neighbors have taken action

4.5. How acceptable are the following approaches to **reducing wildfire risk** in Chelan County to you? *(Fill in one circle per row)*

	Extremely acceptable	Very acceptable	Moderately acceptable	Slightly acceptable	Not at all acceptable
Removing trees and reducing other vegetation on HOA property surrounding communities to slow the spread of wildfire (ex. fuel breaks)	☐	☐	☐	☐	☐
Removing trees and reducing other vegetation (thinning/fuel breaks) on nearby public lands	☐	☐	☐	☐	☐
Burning piles of vegetation (slash piles) on nearby public lands	☐	☐	☐	☐	☐
Conducting a prescribed fire ignited by fire professionals on nearby public lands	☐	☐	☐	☐	☐
Managing a naturally ignited fire (lightning) on nearby public lands	☐	☐	☐	☐	☐
Growth policies or land use regulations that limit new development in fire-prone areas in Chelan County	☐	☐	☐	☐	☐
Building codes that require fire resistant materials for structures located in fire-prone areas in Chelan County	☐	☐	☐	☐	☐
Development standards that require vegetation management (ex. removing or thinning trees and mowing grass) on lots located in fire-prone areas in Chelan County	☐	☐	☐	☐	☐
Temporarily shutting off the power grid during extreme fire risk days to avoid new wildfire ignitions	☐	☐	☐	☐	☐
Removing vegetation along roadways for safer evacuation	☐	☐	☐	☐	☐
Building a new road(s) to provide an emergency evacuation route	☐	☐	☐	☐	☐

Section 5: In this section, we ask about your notions, expectations, and risk perceptions related to wildfire.

5.1. How much do you agree or disagree with the following statements about wildfire?
(Fill in one circle per row)

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
With proper technology, we can control most wildfires.	☐	☐	☐	☐	☐
We should put out wildfires that threaten human life.	☐	☐	☐	☐	☐
We should put out wildfires that threaten homes.	☐	☐	☐	☐	☐
During a wildfire, saving homes should be a priority over saving forests.	☐	☐	☐	☐	☐
Wildfires are a natural part of a healthy forest/ecosystem.	☐	☐	☐	☐	☐
I live here for the trees and will not remove any of them to reduce wildfire risk.	☐	☐	☐	☐	☐
Managing the wildfire danger is a government responsibility, not mine.	☐	☐	☐	☐	☐
Homeowners' actions to reduce wildfire are not effective.	☐	☐	☐	☐	☐
My property is at risk of wildfire.	☐	☐	☐	☐	☐
My effort to reduce wildfire risk on my property is not effective because of the heavy vegetation on my neighbors' properties.	☐	☐	☐	☐	☐
Local firefighters have sufficient resources to keep a wildfire from spreading.	☐	☐	☐	☐	☐
Local firefighters have sufficient resources to protect threatened homes.	☐	☐	☐	☐	☐
Firefighters should put their lives at risk to protect my home.	☐	☐	☐	☐	☐
Wildfires threaten my community water supply.	☐	☐	☐	☐	☐
I plan to move out of the area in the next 12 months because of wildfires.	☐	☐	☐	☐	☐
Development in fire-prone areas of Chelan County increases the wildfire risk to my Chelan County property.	☐	☐	☐	☐	☐

5.2. If there is a wildfire on your Chelan County property, how likely do you think it is that the following would occur? *(Fill in one circle per row)*

	Extremely likely	Very likely	Moderately likely	Slightly likely	Not at all likely	Not applicable
I would put the fire out.	☐	☐	☐	☐	☐	☐
The fire department would save my home.	☐	☐	☐	☐	☐	☐
My home would have smoke damage.	☐	☐	☐	☐	☐	☐
My home would have some physical damage.	☐	☐	☐	☐	☐	☐
My home would be destroyed.	☐	☐	☐	☐	☐	☐
I would lose money due to the loss of business or income on my property.	☐	☐	☐	☐	☐	☐
My trees and landscape would burn.	☐	☐	☐	☐	☐	☐
My neighbors' homes would be damaged or destroyed.	☐	☐	☐	☐	☐	☐
Direct flame would ignite my home.	☐	☐	☐	☐	☐	☐
Embers would ignite my home.	☐	☐	☐	☐	☐	☐
Nearby homes would ignite my home.	☐	☐	☐	☐	☐	☐

5.3. What do you think is the chance that a wildfire will be on your Chelan County property **in the next 12 months**? *(Fill in one circle)*

For sure										No chance
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

5.4. If there is a wildfire on your property **in the next 12 months**, what do you think is the chance that it will destroy or severely damage your Chelan County home? *(Fill in one circle)*

For sure										No chance
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Section 6: In this section, we ask where you get information about wildfire, how useful the information is, how you receive information, and how you would like to receive information.

6.1. The following sources provide information about wildfire risk. If you have received information from one of these sources, how useful has it been? *(Fill in one circle per row)*

	Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful	Fill in this circle if you have NOT received information from this source
Local fire department	☐	☐	☐	☐	☐	☐
Community group (ex. homeowners association)	☐	☐	☐	☐	☐	☐
Community wildfire ambassador	☐	☐	☐	☐	☐	☐
Local arborist/contractor	☐	☐	☐	☐	☐	☐
Washington State University Master Gardner's program	☐	☐	☐	☐	☐	☐
Local government	☐	☐	☐	☐	☐	☐
Wildfire Ready Neighbors	☐	☐	☐	☐	☐	☐
Chelan County Department of Natural Resources	☐	☐	☐	☐	☐	☐
Cascadia Conservation District	☐	☐	☐	☐	☐	☐
Chumstick Wildfire Stewardship Coalition	☐	☐	☐	☐	☐	☐
Chelan/Douglas Land Trust	☐	☐	☐	☐	☐	☐
Chelan Public Utility District	☐	☐	☐	☐	☐	☐
Washington State Department of Natural Resources	☐	☐	☐	☐	☐	☐
Firewise USA®	☐	☐	☐	☐	☐	☐
Ready, Set, Go! program	☐	☐	☐	☐	☐	☐
Fire Adapted Communities and/or Learning Network	☐	☐	☐	☐	☐	☐
USDA Forest Service	☐	☐	☐	☐	☐	☐
National Park Service	☐	☐	☐	☐	☐	☐
Bureau of Land Management	☐	☐	☐	☐	☐	☐
Media (newspaper, TV, radio, internet)	☐	☐	☐	☐	☐	☐

- 6.2. How do you currently receive information about wildfire risk reduction, and how would you prefer to receive information? Please answer **both** questions for each row.
(Fill in all circles that apply)

	I receive information from this source	I would like to receive information from this source
Email/e-newsletter	☐	☐
Mailed newsletter	☐	☐
Community meetings	☐	☐
Conversations with local wildfire specialists	☐	☐
Social media (Facebook, Twitter, Nextdoor)	☐	☐
Internet (non-social media)	☐	☐
TV news	☐	☐
Newspaper	☐	☐
Radio	☐	☐

Section 7: In this section, we would like to know why you do or do not take action to reduce the risk of wildfire to your Chelan County property.

- 7.1. Do any of the following **prevent you** from taking action to reduce the wildfire risk on your Chelan County property (ex. cutting trees, changing roof/siding)?
(Fill in all that apply for each row)

Personal resources	Financial cost ☐	Time to do the work ☐	Physical ability to do the work ☐	None of these ☐
Lack of specific information about...	The factors contributing to my property's wildfire risk ☐	How to reduce wildfire risk on my property ☐	Where to dispose of vegetation/slash ☐	None of these ☐
Personal perspectives	I do not want to change the way my property looks ☐	I do not think taking action would reduce my property's wildfire risk ☐	It's a low priority to me ☐	None of these ☐
Community	Lack of options for disposing vegetation/slash ☐	Restrictions on the changes I can make to my property ☐	Social pressure from neighbors ☐	None of these ☐

- 7.2. Would any of the following **encourage you** to take action to reduce the wildfire risk on your Chelan County property? (Fill in all that apply for each row)

Resources	Cost-share or financial assistance ☐	Help doing the work ☐	Recommended contractors ☐	None of these ☐
Information	A report describing my property's wildfire risk factors ☐	Videos showing how to reduce risk on a property in my area ☐	One-on-one visit with wildfire risk experts on my property ☐	None of these ☐
Other	Feedback on the work I've done to reduce my property's risk ☐	Recognition for taking action ☐	Neighborhood group that organizes wildfire risk-reduction activities ☐	None of these ☐

Section 8: In this section, we ask about personal and household characteristics. Your name will never be connected to your answers in any way.

8.1. In general, do you view yourself as someone who is very willing to take risks or not at all willing to take risks? *(Fill in one circle)*

Very willing
to take risks

Not at all willing
to take risks

10	9	8	7	6	5	4	3	2	1	0
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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

_____ years old

8.3. Are you? *(Fill in one circle)*

- ☐ Male
- ☐ Female
- ☐ Other

8.4. What is the highest grade or year of school you completed? *(Fill in one circle)*

- ☐ Less than high school
- ☐ High school graduate
- ☐ Some college or technical school
- ☐ Technical or trade school
- ☐ College graduate
- ☐ Some graduate work
- ☐ Advanced degree (M.D., M.A., M.S., Ph.D., etc.)

8.5. Which of the following best describes your current employment situation?
(Fill in one circle)

- ☐ Employed full time (including self-employed)
- ☐ Employed part time (including self-employed)
- ☐ Unemployed or do not work outside of the home
- ☐ Retired

8.6. Which of the following categories describes your annual household income?
(Fill in one circle)

- ☐ Less than \$15,000
- ☐ \$15,000 - \$24,999
- ☐ \$25,000 – \$34,999
- ☐ \$35,000 - \$49,999
- ☐ \$50,000 - \$74,999
- ☐ \$75,000 - \$99,999
- ☐ \$100,000 - \$149,999
- ☐ \$150,000 - \$199,999
- ☐ \$200,000 or more

Thank you for your help. Please use the space below to write any additional comments. Refer to the cover letter included in your mailing for contact information if you would like to schedule an onsite visit with a wildfire professional to learn how you can reduce risk on your property.

Appendix B: Wildfire Research (WiRē) Assessor Reference Guide: Rapid Assessment Form, Rapid Assessment Instructions, and Data Collection Tool Instructions

Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

WiRē Rapid Assessment Form 72

WiRē Rapid Assessment Instructions 74

Data Collection Tool Instructions..... 79

WiRē Rapid Assessment Form

	Attribute	Attribute description	Response categories	Attribute weight	Category score
Access	Address posting ([WiRē] Address visibility)	Does the address sign meet all of the standards as identified in the Assessor Reference Guide?	Posted, blue reflective, visible from road	1%	0
			Posted, not blue reflective		5
			Not visible		10
	Ingress/Egress ([WiRē] Emergency egress)	If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?	Two or more roads in/out	1%	0
			One road in/out		10
			Unknown - not observed		11
	Driveway clearance ([WiRē] Driveway clearance)	Does the driveway meet the horizontal and vertical clearance standards as identified in the Assessor Reference Guide?	Greater than 14' height and width	1%	0
			Meets one standard, but not both		5
			Does not meet either standard		10
			Unknown - not observed		11
	Driveway length ([WiRē] Driveway length)	What best describes the driveway?	Less than 150' long	1%	0
			150' or more with "adequate" turnaround		5
			150' or more without "adequate" turnaround		10
			Unknown - not observed		11
Background Conditions	Distance to dangerous topography ([WiRē] Distance to topography)	What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?	Greater than 150'	5%	0
			Between 50' - 150'		25
			Less than 50'		50
			Unknown - not observed		51
	Slope ([WiRē] Property slope)	The "slope" or "grade" of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the overall slope of the property?	Gentle - (<20%)	2%	0
			Moderate - (20% - 45%)		10
			Steep - (>45%)		20
			Unknown - not observed		21
	Adjacent fuels ([WiRē] Adjacent fuels)	Which of the following best describes the dominant vegetation 100' - 150' from the home. <i>This may be outside the property boundary.</i>	Light - grasses and shrubs	4%	10
			Medium - Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)		20
			Dense - Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)		40
			Unknown - not observed		41
Defensible Space	Defensible Space ([WiRē] Defensible space)	What is the closest distance from the home to overgrown, dense, or unmaintained vegetation?	More than 100'	10%	0
			Between 30' - 100'		50
			Between 5' - 29'		75
			Less than 5'		100
			Unknown - not observed		101
	Other combustibles ([WiRē] Combustible materials)	What is the closest distance from the home to combustible items <i>other than</i> vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite?	More than 30' - none	8%	0
			Between 5' - 30'		40
			Less than 5'		80
			Unknown - not observed		81

Attribute		Attribute description	Response categories	Attribute weight	Category score
Home Ignition Potential	Roofing materials ([WiRē] Roofing materials)	What is the most vulnerable roofing material?	Non-combustible (Tile, metal, or asphalt shingles)	30%	0
			Combustible (Wood - shake shingles)		300
			Unknown - not observed		301
	Building exterior ([WiRē] Siding materials)	What is the most vulnerable exterior siding material?	Non-combustible (Stucco, cement, brick, stone, or other noncombustible siding)	7%	0
			Log or heavy timbers		35
			Wood or vinyl siding		70
			Unknown - not observed		71
	Combustible attachments ([WiRē] Attachments)	Does the home have a combustible balcony, deck, porch, or fence attached to the structure?	No - none	10%	0
			Yes - attached deck, fence, or other combustible structure(s)		100
			Unknown - not observed		101
	Proximity to adjacent homes ([WiRē] Proximity to neighboring homes)	What is the closest distance to a neighboring home?	More than 100'	20%	0
			30' - 100'		50
			10' - 29'		100
			Less than 10'		200
			Unknown - not observed		201
Total checks				100%	1000

WiRe Rapid Assessment Instructions

Attribute	Description	Response categories	Rationale & Additional Considerations
STRUT_TYP	What is the primary use of the structure?	Single family residential	This question and response categories come directly from the NIFC structure triage survey.
		Multifamily residential	
		Mobile	
		Commercial	
		Industrial	
		Barn / shop / garage	
		Other	
		Unknown	
		Outbuilding	
		None	
[WiRe] Address visibility	Does the address sign meet all of the standards as identified in the Assessor Reference Guide?	Posted, blue reflective, visible from road	Use this category if the address sign fully meets or exceeds the local standard: visible from the public road and blue reflective.
		Posted, not blue reflective	Use this category if the address sign is visible from the road but IS NOT blue reflective. If there is a local address sign standard, use this category if the address sign is visible from the road but does not meet all of the local standards.
		Not visible	Use this category if the address sign either (A) does not appear to exist or (B) is not visible. Use this category regardless of the whether or not the address sign meets the WiRe or local standard or not.
[WiRe] Emergency egress	If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?	Two or more roads in/out	Safe and effective ingress and egress is a critical component to community planning as well as safe and effective emergency response and evacuation. Numerous types of emergency ingress/egress situations can exist such that there may be certain locations that will have more than one road out from the immediate house, but then over some distance, these multiple ingress/egress routes funnel back in to a single ingress/egress route. It will be up to the discretion of the assessor (<i>should be determined prior to beginning RA what the determining factors are</i>) to determine if a property has more than one VIABLE route for getting in and out of the property and to a reasonably far away location, that will more likely than not be considered a safe location, during a future wildfire incident. This category can also be "pre-assessed" using paper maps and/or GIS. Please talk with your WiRe designated Practitioner about this option.
		One road in/out	
		Unknown - not observed	

WiRē Rapid Assessment Instructions continued.

Attribute	Description	Response categories	Rationale & Additional Considerations
([WiRē] Driveway clearance)	Does the driveway meet the horizontal and vertical clearance standards as identified in the Assessor Reference Guide?	Greater than 14' height and width	The rationale behind this question is primarily related to emergency access, and in particular, access for wildland fire engines, structure fire apparatus, and other emergency responders to access the property. Horizontal Standard: Under ideal circumstances, each WUI driveway would provide enough horizontal width so that two vehicles could easily pass one another along the driveway. By width, we are talking about horizontal obstruction-free clearance that would permit vehicle access. We are not talking solely about road base. In other words, if a driveway road base is 12 feet wide and is bordered by flat ground, that could easily be driven on by any of the above listed vehicles, with no obstructions in either direction for at least 4 feet on each side (a total of 20 feet), then the assessor should mark the driveway as "More than 20 ft". However, if there are obstructions, such as vegetation, driveway gateways or anything else deemed as an obstruction that would make it difficult or impossible for two vehicles to pass each other along the driveway, at any point, than the assessor should rate this domain as "Meets one, but not both, standards (height or width)" or "Does not meet either standard (height and width)" depending on an observational estimate of the width of the driveway. The takeaway for homeowners is that they may need to remove obstructions, such as vegetation or gateways, so that emergency vehicles can safely utilize their driveway during a future incident. Vertical Standard: Vertical obstructions are another consideration. Overhanging tree branches or ranch style gateways can create vertical obstructions. The vertical standard for this assessment is 13.5 feet.
		Meets one standard, but not both	
		Does not meet either standard	
		Unknown - not observed	
[WiRē] Driveway length	What best describes the driveway?	Less than 150	Similar to DrivewayClear, length is related to the safety of emergency responders that are accessing the home. The longer the driveway, the more risk exposure for responders. Length may be estimated by driving down the driveway (which will be very helpful to answer several other additional questions), satellite imagery, or visual estimate. Similarly, the "turnaround" aspect of the question relates to whether or not an adequate and appropriate turnaround exists along the driveway. By "adequate" - we mean that a turnaround exists that meets/exceeds the local FPD/county/relevant jurisdictional standards for emergency vehicle turnarounds.
		150' or more with "adequate" turnaround	
		150' or more without "adequate" turnaround	
		Unknown - not observed	
[WiRē] Distance to topography	What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?	Greater than 150'	Topography is one of the three main factors that influence wildland fire behavior. It is well documented and understood that certain topographic features, such as ridges, chimneys, and drainages are known to dramatically increase fire behavior (rate of spread, flame length, etc.). As such, homes that are located close to and in direct alignment with these features are at significantly higher risk than those homes that are situated back and away from such features. The goal of this domain is to assess the relative proximity of the home to any observed feature.
		Between 50' and 150'	
		Less than 50'	
		Unknown - not observed	

WiRē Rapid Assessment Instructions continued.

Attribute	Description	Response categories	Rationale & Additional Considerations
[WiRē] Property slope	The “slope” or “grade” of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the overall slope of the property?	Gentle - (<20%)	While certain topographic features can significantly influence wildfire behavior characteristics, the overall slope of the land where the home is situated has a significant influence in how wildfire will likely behave. While the arrangement of fuels (type, moisture levels, vertical continuity, horizontal continuity, etc.), aspect and incident specific weather conditions will also become significant factors, we know that as slope increases, the potential for elevated fire behavior characteristics increases correspondingly. To this end, the intent of this domain is to raise/increase awareness about this basic wildfire behavior fact so that those folks that have homes on steep slopes are extra diligent with regards to mitigation and preparedness - as they should be. But how do we measure slope? Slope is a measurement of the vertical rise between at least two points. To maintain consistency, we recommend that each assessor utilize the same methodology for estimating slope. The recommended methodology is as follows: Draw an imaginary transect that is 300 feet in length with the center of the transect being the center of the home that is being assessed. There will then be 150 feet of distance along the transect, in either direction, from the center of the home. Situate the transect so that it is perpendicular to the countours of the slope. Please note that the transect must be a straight line. If numerous undulations/topographic complexities exist, do your best to make an estimate of the overall lay of the land within approximately 150 feet of the home. Estimate the total elevation change (in feet) along the transect by subtracting the the lowest elevation at one end of the transect to the highest elevational point at the opposite end of the transect. Finally, divide the elevation change number by 300 and multiply that result by 100. Example: If you estimate a change of 38 feet in elevation between to the two ends of the imaginary transect then your percent slope is equal to $38/300=12.66\%$. If you estimate 120 feet of elevation change than the percent slope is equal to $120/300= 40\%$. A clinometer is a simple tool to estimate slope. This type of measurement can also be done using GIS. PLEASE NOTE THE DIFFERENCE BETWEEN PERCENT SLOPE AND DEGREES.
		Moderate - (20% - 45%)	
		Steep - (> 45%)	
		Unknown - not observed	
[WiRē] Adjacent fuels	Which of the following best describes the dominant vegetation 100' - 150' from the home. This may be outside the property boundary.	Light - grasses and shrubs	Light - grasses and shrubs
		Medium - Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)	Medium - Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
		Dense - Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)	Dense - Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."

Attribute	Description	Response categories	Rationale & Additional Considerations
[WiRē] Defensible space	What is the closest distance from the home to overgrown, dense, or unmaintained vegetation?	More than 100'	Primary experimental research from the International Crown Fire Modeling Experiment (1998) demonstrated that structures (stick built, T-1- 111 siding, composite shingles) were able to survive (with light scorch) from the radiant heat of an active crown fire (Jack Pine) at a distance as little as 10 meters (32.8 feet), without direct flame contact, but did ignite when the structure was exposed to direct flames. At a distance of 30 meters (98.42 ft), the same structures survived without any scorch. Along with modeling, case studies and other research, this famous experiment laid the foundation for the classic zones of defensible space: Zone 1 (0-30 feet) / Zone 2 (30-100 feet) / Zone 3 (100 feet or more with slope factor). Additional understanding and research has lead to a fuller understanding of ignition vulnerabilities for the home (primarily related to ember ignitions). A new 5 foot zone has emerged from the work being conducted by IBHS and has begun to gain more widespread adoption. For this domain, each assessor will need to determine, using best professional judgement, the amount of distance (in feet) between the home and any "overgrown, dense or unmaintained vegetation". To this extent, it is important to consider the vegetation in question and whether or not that <i>particular</i> vegetation would more likely than not contribute to an active wildland fire and thusly expose the home in question to direct flames and/or radiant heat and/or convective heat that could presumably result in ignition in most imagined scenarios. In other words, if you were recommending treatment/mitigation for defensible space, would you recommend that the vegetation in question be managed within 5 feet of the home? Within 30 feet of the home? Within 100 feet of the home?
		Between 30' and 100'	
		Between 5' and 29'	
		Less than 5'	
		Unknown - not observed	
[WiRē] Combustible materials	What is the closest distance from the home to combustible items other than vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite?	More than 30' - none	Are there any other combustible materials, near the home (within Zone 1), that a structure triage group would likely want to remove/clean up in the event of an approaching wildfire? Common items include lumber, construction materials, firewood, propane tanks, hay bales, leaves, wicker furniture, decorative ornaments, etc. If so, how close to the home are these items?
		Between 5' and 30'	
		Less than 5'	
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."
[WiRē] Roofing materials	What is the most vulnerable roofing material?	Non-combustible (Tile, metal, or asphalt shingles)	Tile, metal or asphalt shingles are commonly associated with a Class A roofing assembly - though not in all cases. Tar or rubberized roofs are most commonly found with adobe SW style homes with a flat roof. Certainly there are some additional types of roofing materials that are used besides the ones listed - in which case the assessor should make a determination using best available information related to the roofing material and its potential ignitability. In other instances, multiple types of roofing materials are used, particular in homes with complex roof lines, dormers and extensions. In these cases, we recommend rating the entire roof as whatever is the most vulnerable section.
		Combustible (Wood - shake shingles)	
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."

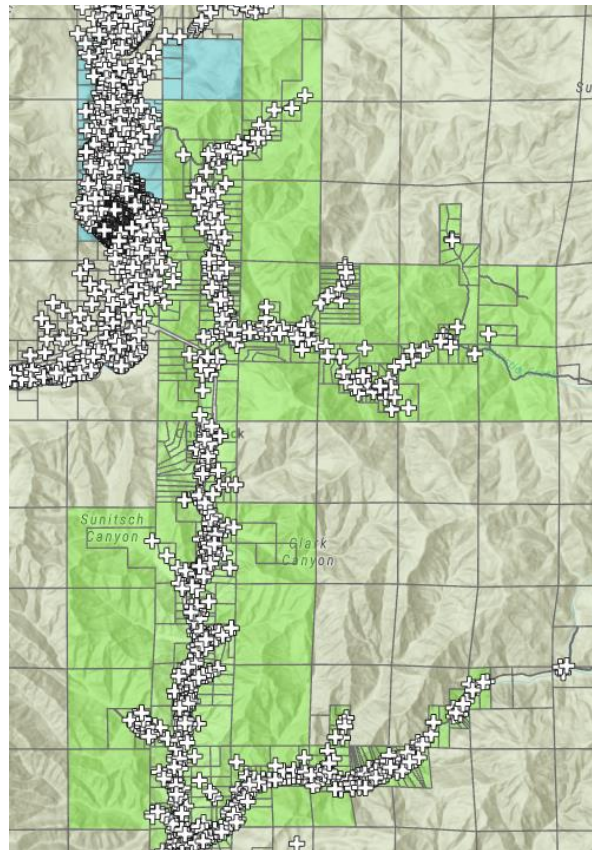
WiRē Rapid Assessment Instructions continued.

Attribute	Description	Response categories	Rationale & Additional Considerations
[WiRē] Siding materials	What is the most vulnerable exterior siding material?	Non-combustible (Stucco, cement, brick, stone, or other noncombustible siding)	This category includes brick, stone, block, concrete synthetic stone, metal, stucco (3 stage or EIFS), fiber cement (e.g. Hardie Board) or other materials that are considered Class A or B.
		Log or heavy timbers	In order to qualify as log, it needs to be considered "heavy log construction" with a minimum log diameter of 6 inches with all bark striped and incorporating a chinking material to fill the gaps between the logs. Faux logs, D-Link, and square logs DO NOT qualify for this category and should be counted as "Wood or open sided".
		Wood or vinyl siding	Wood or vinyl siding only
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."
[WiRē] Attachments	Does the home have a combustible balcony, deck, porch, or fence attached to the structure?	No - none	Decks and fences are well known to be considerable home ignition vulnerabilities. If no deck or fence is attached to the structure, then the answer is no. However, if a deck or fence is attached, the assessor will need to determine to what extent the attached deck or fence poses an ignition risk based upon an observation of the combustibility of such attachment. While composite decking boards (e.g. Trex) are considered by many to be a better alternative than standard decking boards, for the purposes of this risk assessment, we are considering composite decking to fall in to the category of "combustible."
		Yes - attached deck, fence, or other combustible structure(s)	
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."
[WiRē] Proximity to neighboring homes	What is the closest distance to a neighboring home?	More than 100'	Home to home ignitions (i.e. conflagration) are a significant factor in the spread of fire through more densely built environments. Homes and structures are generally built with combustible materials and contain gutters, porches and vulnerable locations where embers can get trapped and combust. When assessing the home, determine the relative proximity of the nearest home. Is the nearest home more than 100 feet away? Is it less than 100 feet, but more than 30 feet? Is the nearest home within 10 feet of the home being assessed?
		30' - 100'	
		10' - 29'	
		Less than 10'	
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."
[WiRē] Mail survey	Should we mail a household survey?	Yes, it's a residential structure	As part of the WiRē process, we mail a household survey to all residential structures in the study area. This field is our indicator for whether the structures is residential or something else.
		No, it's not a residential structure	
{WiRē} status	Is the rapid assessment done?	Done - NIFC	The default for all crosses is “Incomplete - RA”. In order to submit data for a structure, you will need to change the status to “Done - RA”
		Done - RA	
		Incomplete - RA	
Assessor comments	This is a good place to record any comments that might help us understand what you were thinking. It is not necessary from a WiRē perspective.		

1 Chelan County Fire District 1, 3, and 9 Rapid Assessment Instructions for Using Collector

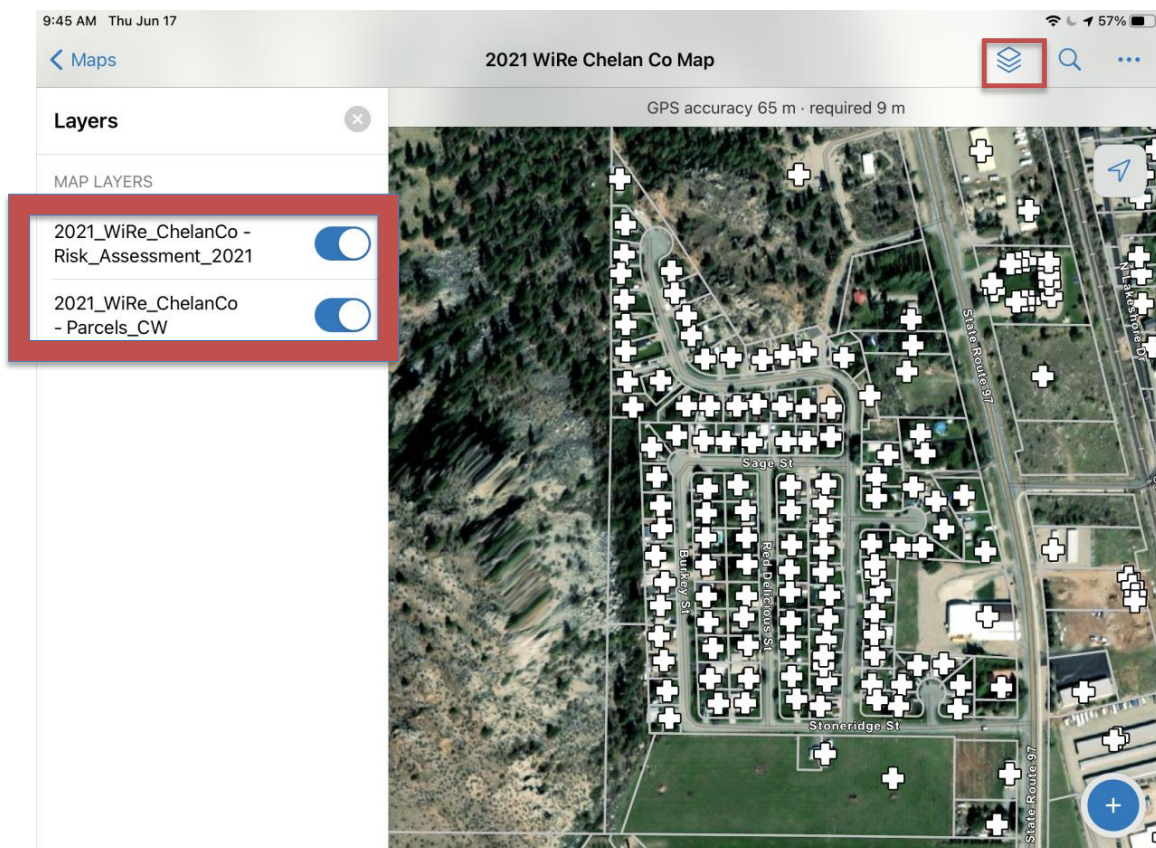
Before starting the WiRē rapid wildfire risk assessments (RAs), it's important to remember the strong tie between the RA and the homeowner survey. The driving principle behind the paired data collection approach is to empower residents to take action to reduce their wildfire risk.

Be consistent with the response categories throughout data collection. The goal of the WiRē RAs is to assess all parcels with residential structures in the study area, which comprise approximately 2,178 parcels - 801 in CCFD3, 1,178 in CCFD9, and 239 in CCFD1. These parcels are indicated on the maps below.

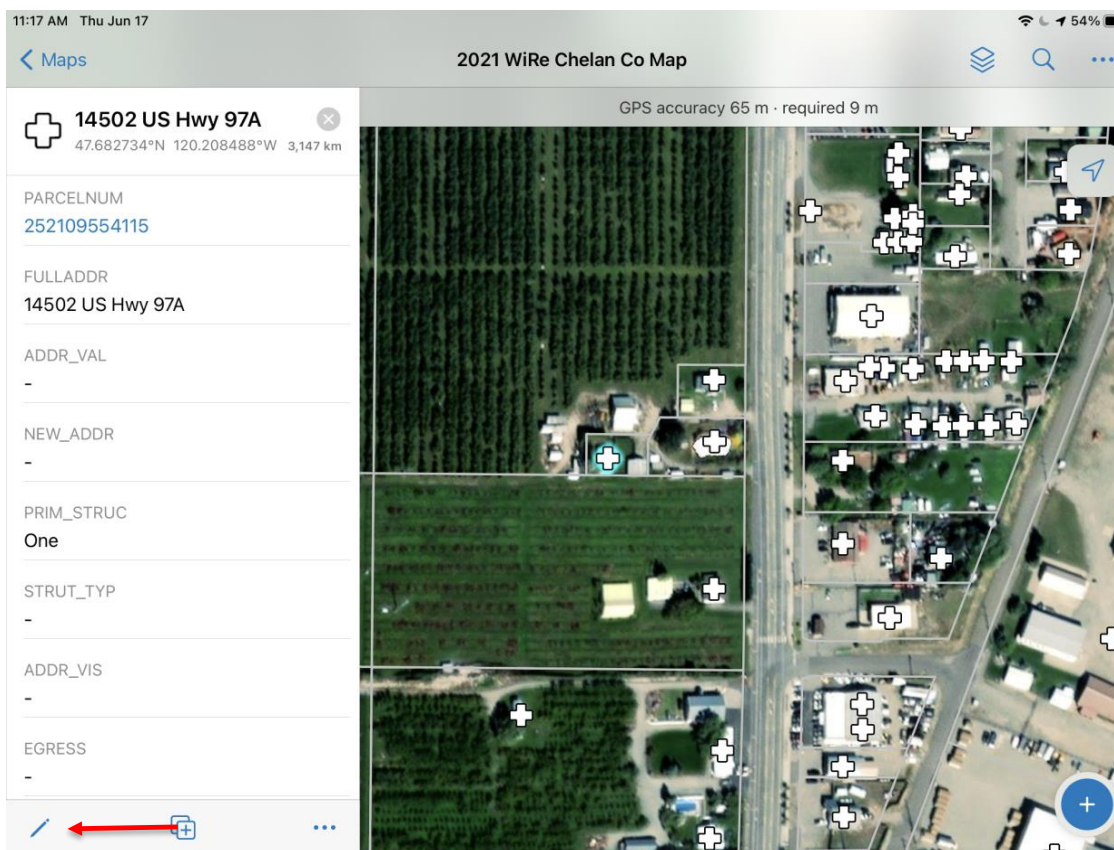


WiRē

1. How to access the data collection app?
 - a. Download Collector onto your tablet or other device. For Android users choose 'Collector' and iPad users choose "ArcGIS Collector" as there are two apps.
 - b. Log into the app using the following credentials:
 - i. Username: [redacted]
 - ii. Password: [redacted]
 - c. There will be a map called 2021 WiRe Chelan Co Map on your display once you've logged into Collector.
 - i. Click on the map
 - ii. Click the layers button and click on the 2021_WiRe_ChelanCo-Parcels_CW to bring you to the study area on the map. Zoom into Wenatchee or Leavenworth to see the parcel boundaries and structure points.



2. What to do to collect data
 - a. Open Collector and pan to the parcels in your study area.
 - b. Select a white cross, which represents a structure, and a sidebar will pop up on the left.
 - c. Click the blue pencil icon (edit) in the lower left corner to populate responses to the questions.



- d. Fill out the form following protocols outlined in the Assessor Reference Guide. If you are assessing a residential structure, please answer all of the [WiRē] questions.
- e. When done, click submit in top, right-hand corner. Note, you have to select **Done – RA** to the “[WiRē] Status” question in order to submit your responses.

3. How to add an off-line basemap?
 - a. From the main screen in Collector, select the three dots next to the 2021 WiRē Chelan Co Map and select “Add Offline Area”
 - b. Move the box over the area where you will conduct the rapid assessments and select “Download Area”. It may take some time to fully download. I had the best luck at the front of the fire station. Once the area is downloaded, you can go collect the data.
4. How to sync after being off-line?
 - a. When you have finished for the day, return to a place where you have WIFI to sync your work.
 - b. Go the map screen, select the three dots next to the offline area you selected in step #4, and then select “Sync.”
 - a. You will know it has synced because the time will update. Right after you sync, it should say “Just Now”.
 - b. Once you’ve synced the data, click on the three dots again and select “Remove Area.” This will return you to the full view of the area.
5. Contacts:
 - a. Jon Riley, CCFD1: (509) 662-4734
 - b. Colleen Donovan, WiRē Project Manager: (303) 810-2922
 - c. Carolyn Wagner, WiRē Data Manager: (720) 352-6432

Appendix C: Wildfire Research (WiRē) Rapid Assessment Summary

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The Chelan County Fire Protection District #3 Rapid Assessment Summary

The Chelan County Fire Protection District #3 mitigation specialists conducted parcel-level rapid wildfire risk assessments in 2021. Risk assessment data collection was collected as a census of all residential properties with a structure in the study area¹. The rapid wildfire risk assessments were conducted for 539 residential properties using the standard WiRē Rapid Wildfire Risk Assessment (RA), which is comprised of a set of 13 attributes that includes access to the property, background fuels and topography, vegetation near the home, and building materials. Each attribute of the RA is evaluated relative to other private land parcels within the study area. As a result, the RA serves as an indicator of the relative risk of private land parcels within the study area, rather than an absolute measure of risk.

The 13 attributes are weighted and summed to produce an overall risk score for each parcel. The weights reflect the attributes' relative contribution (ranging from 1% - 30% per attribute) to overall wildfire risk. Following our process for a standard RA, we apply a standard approach for placing the overall risk scores into five risk categories: low (20-240), moderate (241-305), high (306-435), very high (436-505), extreme (506-1000). This process can be iterative over time but has been validated across previous WiRē projects.

To ensure consistent, high quality data collection WiRē wildfire practitioners conducted a virtual training for those who would conduct the rapid risk assessments. A standardized reference sheet for data collectors was available for use in the field.

All parcel level assessments were conducted on the property being assessed unless access was blocked by a gated driveway or posted with no trespassing signage. While environmental and situational variables may occasionally impact the rapid assessment data collection process, Chelan County Fire Protection District #3 is confident that the rapid assessments collected for this project provide an accurate representation of relative wildfire risk to the parcels in the study area.

In instances when Chelan County Fire Protection District #3 mitigation specialists could not observe a risk attribute, the specialist selected "unknown/not observed." It is WiRē's protocol to assign the "unknown/not observed" and true missing data (i.e., the mitigation specialist did not select a response) the highest risk score for the attribute in question. This is consistent with other parcel risk and structure protection assessments. If a particular attribute is "unknown/not observed" or missing, practitioners and firefighters assume that

¹ Chelan County Assessor data from June 2021 was used as the underlying dataset to collect data.

** This project was supported with funding from USDA Forest Service, Washington Office Fire and Aviation Management.*

** All data received and processed as of June 9, 2022*

** Document prepared June 9, 2022*

a hazard exists. At best, the correct attribute response is chosen; at worst, the assessment invites a conversation with the parcel owner to delve deeper into the mitigation needs of the parcel in question and an update to their parcel risk assessment.

This protocol allows us to report results for all residential parcels in the study area rather than only those for which all attributes could be observed. For each risk attribute in the tables below, we report the number of “unknown/not observed” and missing as a footnote.

The following tables present a summary of the Chelan County Fire Protection District #3 mitigation specialists’ responses to the 13 risk attributes in the RA. Additionally, the tables present the results of the overall wildfire risk rating, which is the sum of the attribute scores. The percentages might not add to 100% due to rounding.

1.1 Overall risk rating

Overall risk rating: RA: Based on the sum of the 13 attribute scores.		
Response categories	Score range	All RAs in study area (N=539)
Low	20-240	14%
Moderate	241-305	10%
High	306-435	46%
Very high	436-505	6%
Extreme	506-1000	24%

1.2 Access

Risk attribute: Address Posting (1% of total RA score) Does the address sign meet all local standards (Posted, blue reflective, visible from the road)		
Response categories	Score	All RAs in study area (N=539)
Fully meets standard	0	31%
Address sign is visible, but does not meet all standards	5	67%
Not posted/visible from the primary road	10	1% ^a
a. Out of all RAs in study area, 5 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Ingress/Egress (1% of total RA score) If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?		
Response categories	Score	All RAs in study area (N=539)
Two or more roads in/out	0	17%
One road in/out	10	83% ^a
a. Out of all RAs in study area, 5 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Driveway clearance (1% of total RA score) Does the driveway meet the horizontal and vertical clearance standards: height at least 14' and width at least 14'?		
Response categories	Score	All RAs in study area (N=539)
Meets all driveway standards	0	81%
Meets one, but not both, standards (height or width)	5	17%
Does not meet either standard (height and width)	10	2% ^a
a. Out of all RAs in study area, 10 were missing/unobserved (2%) and included in the highest risk category.		

Risk attribute: Driveway length (1% of total RA score) What best describes the driveway?		
Response categories	Score	All RAs in study area (N=539)
Less than 150' long	0	27%
150' or more with "adequate" turnaround	5	56%
150' or more without "adequate" turnaround	10	17% ^a
a. Out of all RAs in study area, 8 were missing/unobserved (1%) and included in the highest risk category.		

1.3 Background conditions

Risk attribute: Distance to dangerous topography (5% of total RA score) What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?		
Response categories	Score	All RAs in study area (N=539)
More than 150'	0	21%
Between 50' - 150'	25	45%
Less than 50'	50	34% ^a
a. Out of all RAs in study area, 1 was missing/unobserved (<1%) and included in the highest risk category.		

Risk attribute: Slope (2% of total RA score) The "slope" or "grade" of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the slope of the property within 150' of the home?		
Response categories	Score	All RAs in study area (N=539)
Gentle - less than 20%	0	49%
Moderate - between 20% and 45%	10	51%
Steep - greater than 45%	20	1% ^a
a. Out of all RAs in study area, 1 was missing/unobserved (<1%) and included in the highest risk category.		

Risk attribute: Adjacent Fuels (4% of total RA score) Which of the following best describes the dominant vegetation 100' to 150' from the home? This may be outside the property boundary.		
Response categories	Score	All RAs in study area (N=539)
Light – grass and shrubs	10	53%
Medium – Light brush and/or isolated trees (ex. grass with some pine, fire, or other evergreen trees)	20	42%
Dense – Dense brush and/or isolated trees (ex. continuous pine, fire, or other evergreen trees)	40	5% ^a
a. Out of all RAs in study area, 2 were missing/unobserved (<1%) and included in the highest risk category.		

1.4 Defensible space

Risk attribute: Defensible Space (10% of total RA score) What is the closest distance from the home to overgrown, dense, or unmaintained vegetation?		
Response categories	Score	All RAs in study area (N=539)
More than 100'	0	1%
30' - 100'	50	58%
5' - 29'	75	38%
Less than 5'	100	2% ^a
a. Out of all RAs in study area, 4 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Other combustibles (8% of total RA score) What is the closest distance from the home to combustible items <i>other than vegetation</i> such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite?		
Response categories	Score	All RAs in study area (N=539)
More than 30' or no combustible items	0	19%
5' - 30'	40	72%
Less than 5'	80	9% ^a
a. Out of all RAs in study area, 2 were missing/unobserved (<1%) and included in the highest risk category.		

1.5 Home ignition potential

Risk attribute: Roof (30% of total RA score) What is the most vulnerable roofing material?		
Response categories	Score	All RAs in study area (N=539)
Non-combustible (tile, metal, or asphalt shingles, or flat composition)	0	73%
Combustible (wood shake shingles)	300	27% ^a
a. Out of all RAs in study area, 1 was missing/unobserved (<1%) and included in the highest risk category.		

Risk attribute: Building Exterior (7% of total RA score) What is the most vulnerable exterior siding material?		
Response categories	Score	All RAs in study area (N=539)
Stucco, cement, brick, stone, or other noncombustible siding	0	9%
Log or heavy timbers	35	12%
Wood or vinyl siding	70	78% ^a
a. Out of all RAs in study area, 4 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Combustible Attachments (10% of total RA score) Does the home have a combustible balcony, deck, porch/portal, or fence attached to the structure?		
Response categories	Score	All RAs in study area (N=539)
No combustible attachments	0	29%
Combustible attachments present	100	71% ^a
a. Out of all RAs in study area, 3 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Proximity to adjacent homes (20% of total RA score) What is the closest distance to a neighboring home?		
Response categories	Score	All RAs in study area (N=539)
More than 100'	0	35%
30' – 100'	50	62%
10' – 29'	100	2%
Less than 10'	200	1% ^a
a. Out of all RAs in study area, 4 were missing/unobserved (1%) and included in the highest risk category.		

Appendix D: Comparison of Wildfire Research (WiRē) Rapid Assessment and Household Survey

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Chelan County Rapid Assessment Compared to Household Survey Responses

Chelan County Fire District #3 conducted parcel-level rapid wildfire risk assessments and administered a household survey in 2022. The rapid assessment provides the professional's risk rating for each parcel, and the household survey provides, among other things, respondent's self-assessed risk for their own parcel. Pairing these data is the heart of the WiRē Approach because it allows us to analyze the risk gap between how professionals rate wildfire risk and how survey respondents (i.e., homeowners) perceive their risk.

Overall, there are 178 properties for which we have a rapid assessment paired with household survey. There are an additional 361 properties with only a rapid assessment, for a total of 539 rapid assessments in the study area. Within this document, we present the following:

- Section 1 provides graphs that compare the professional risk ratings from the rapid assessment to the self-assessed risk ratings from the paired household survey.
- Section 2 provides tables that provide a three-way comparison of risk ratings from all rapid assessments in the study area, the subset of rapid assessments for which there is a paired household survey, and the household survey self-assessment.

Section 1 and Section 2 are organized by overall risk rating, followed by the attribute-level risk ratings. The attribute-level risk ratings are grouped into the following categories: access, background conditions, defensible space, and home ignition potential.

** This project was funded by USDA Forest Service, Washington Office Fire and Aviation Management. The household survey administration was paid for by Chelan County Fire District #3, a Washington Resource and Development Council grant, a Washington Department of Natural Resources Forest Partnerships Grant Program grant, and contributions from Cascadia Conservation District.*

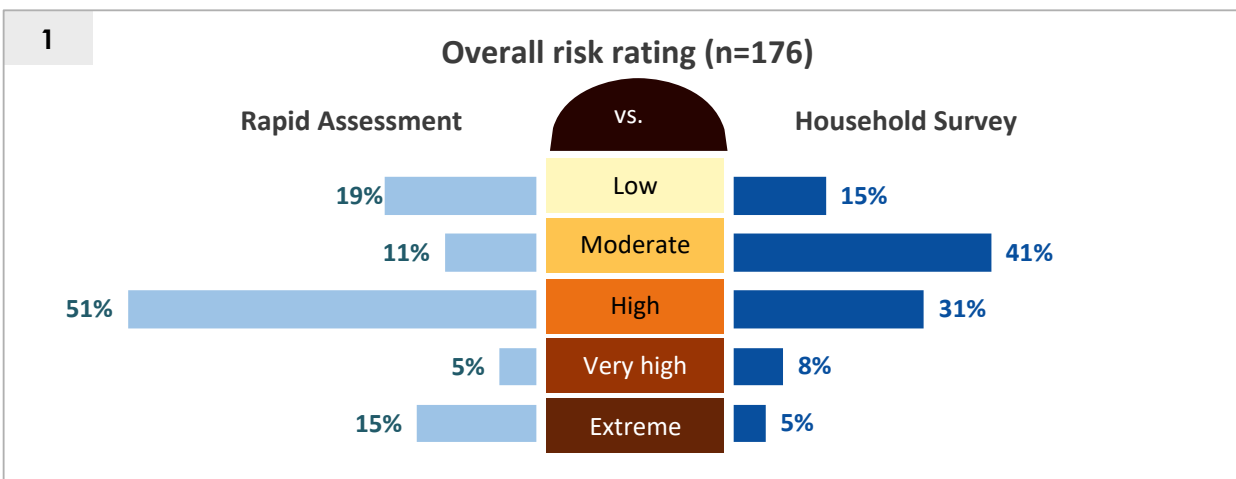
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**Document prepared March 29, 2023*

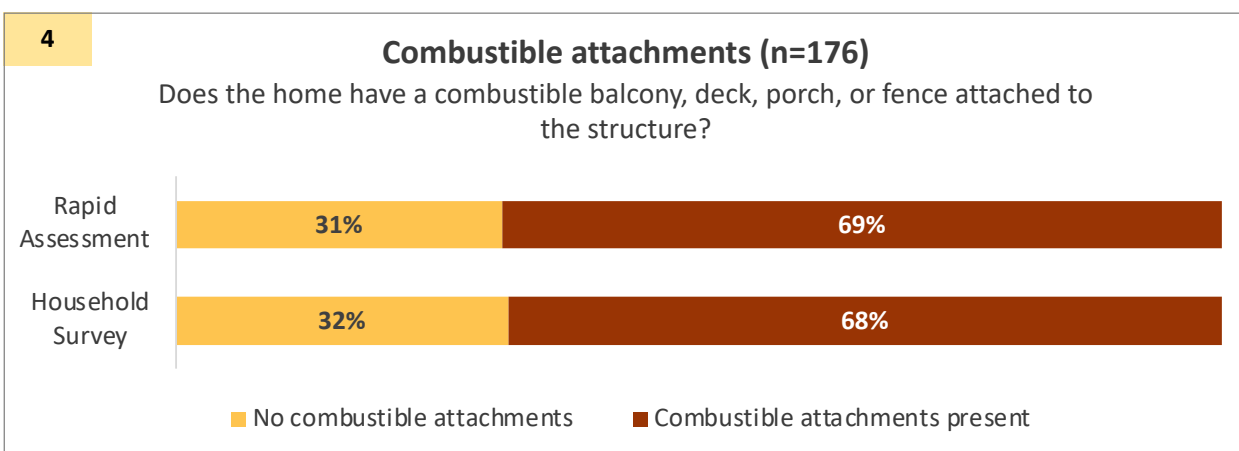
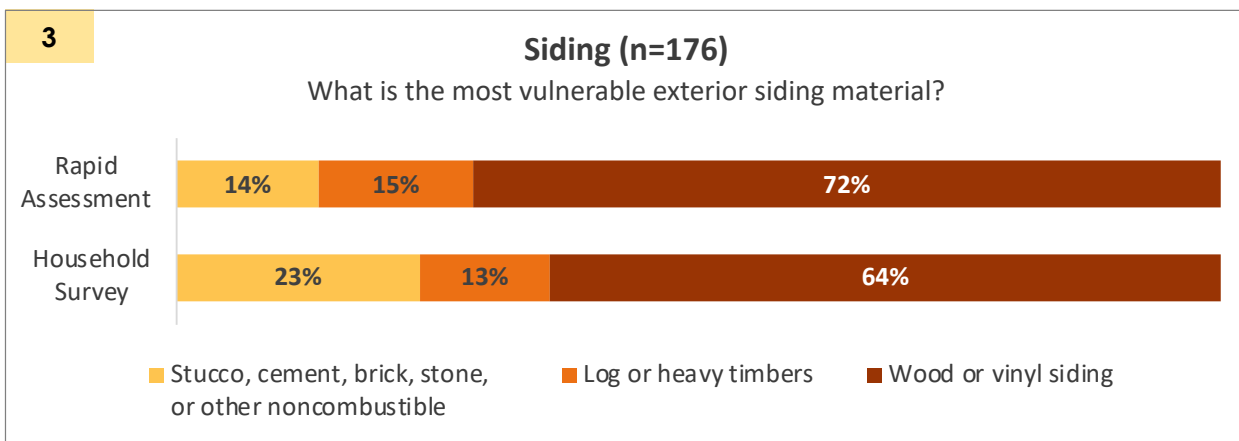
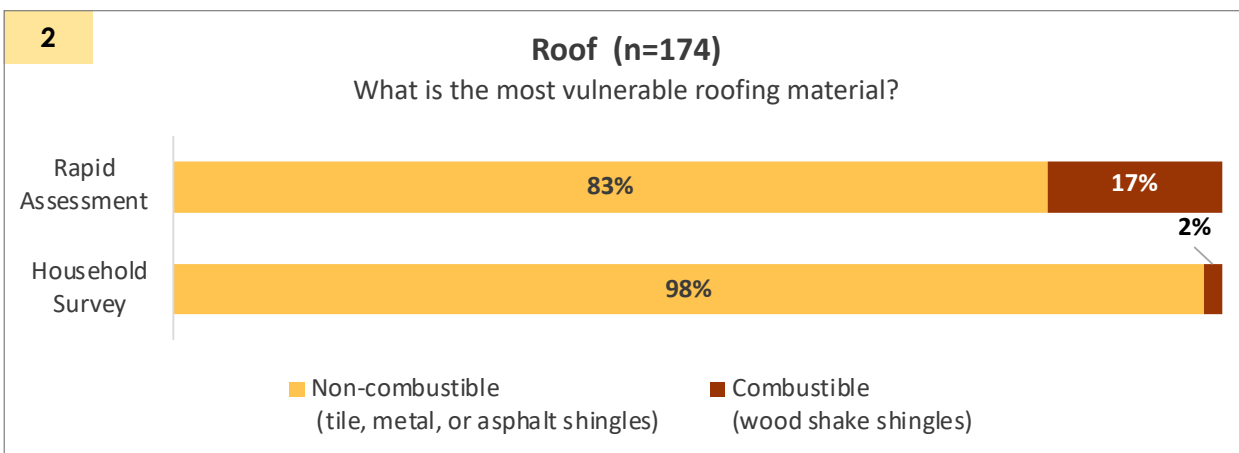
1. Comparison of paired WiRē Rapid Assessment vs. Household Survey

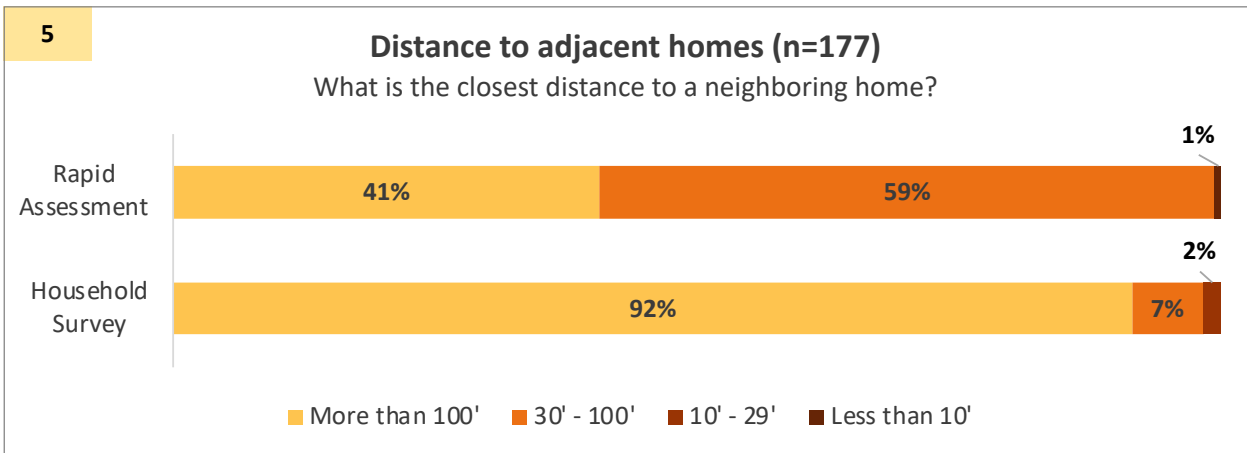
In this section, we compare professional risk ratings and household survey respondents' self-assessments for properties' overall risk rating and the 13 risk attributes included in the rapid assessment. These comparisons are presented as graphs. For the overall risk rating, the professional risk ratings are on the left and the household survey respondent' self-assessment is on the right. For the remaining risk attributes, the first bar shows the professional risk rating, and the second bar presents the household survey respondents' self-assessment. For each individual risk attribute, our comparisons only include the data from properties for which we have both rapid assessment and household survey data for that particular attribute, and thus the number of records (signified by "n=") varies by attribute and is reported for each.

1.1. Overall risk rating

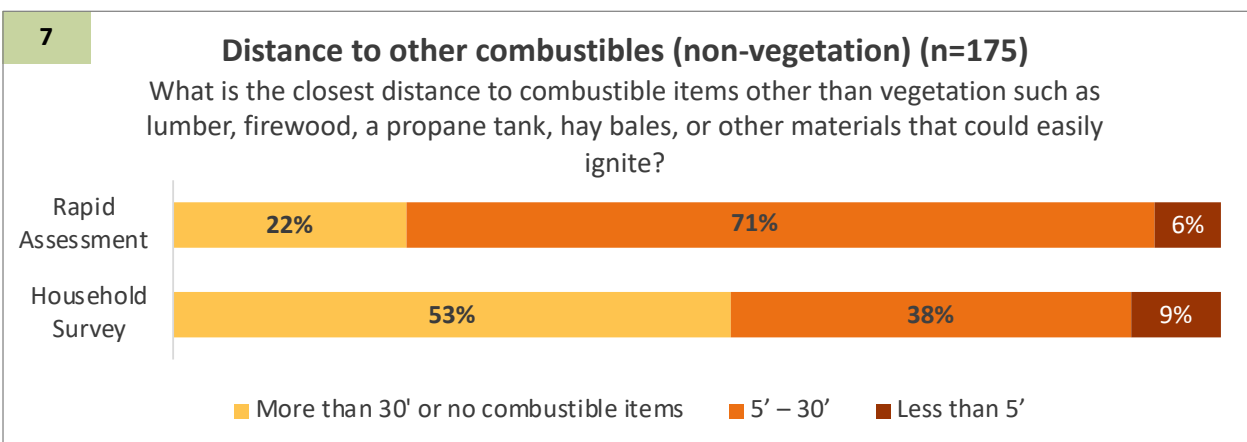
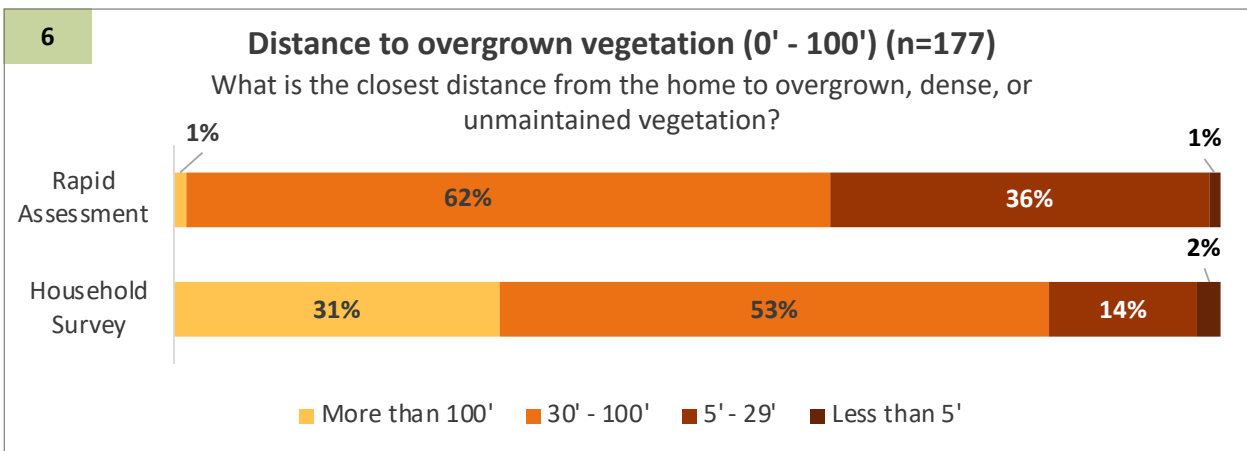


1.2. Home ignition potential

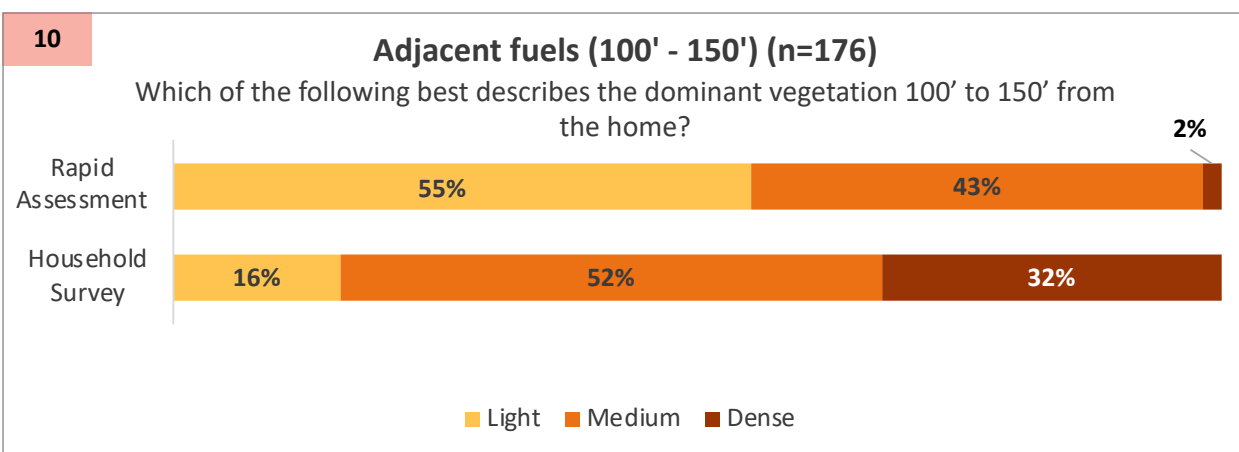
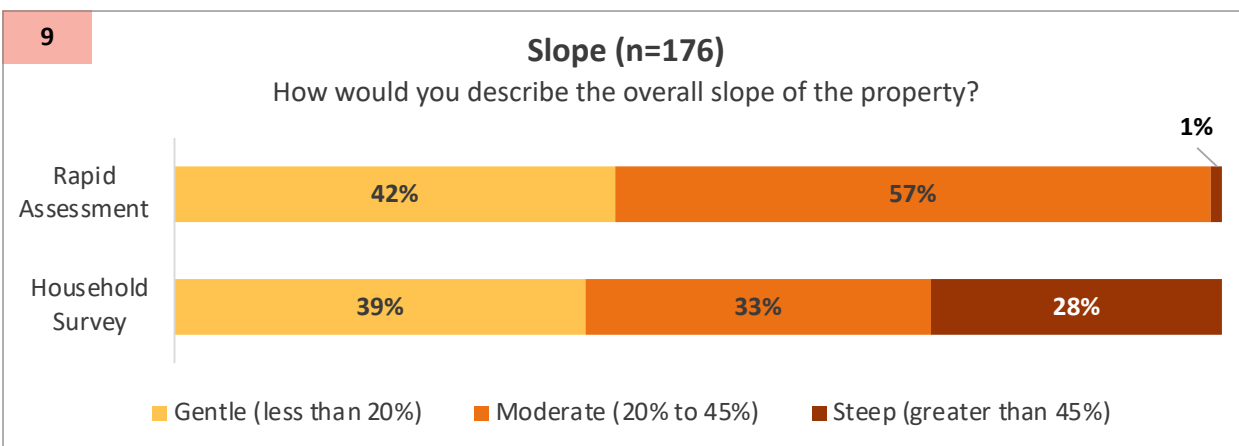
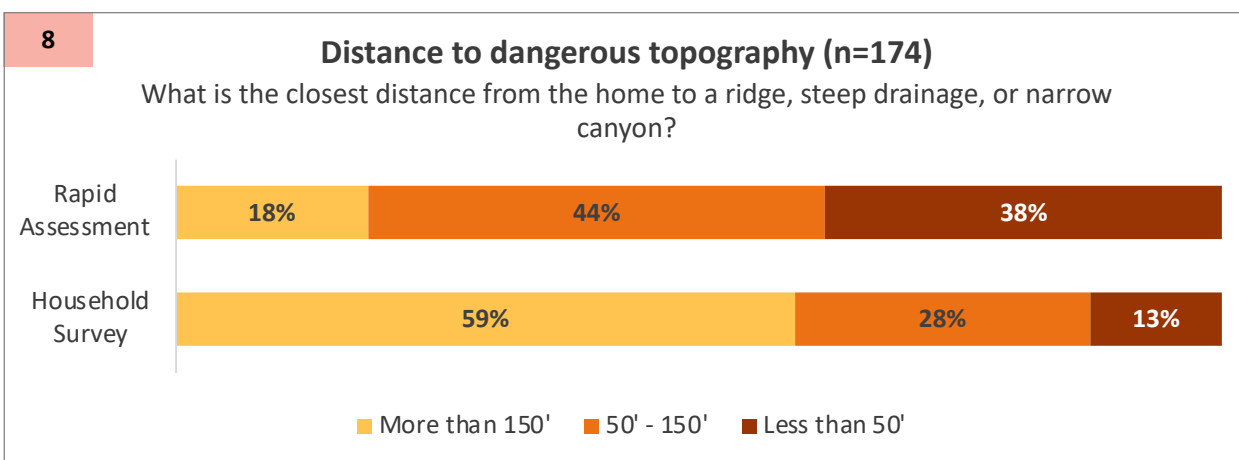




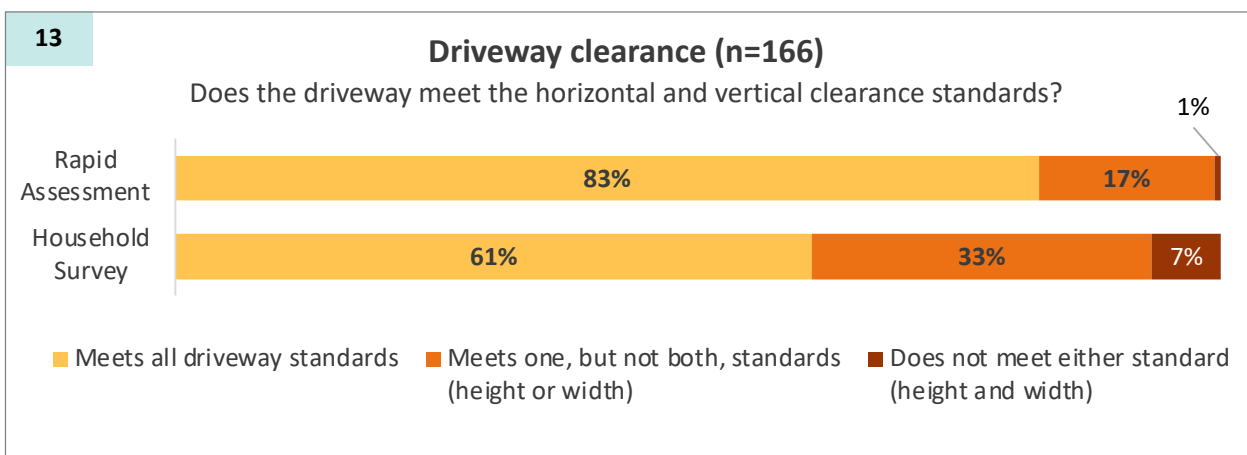
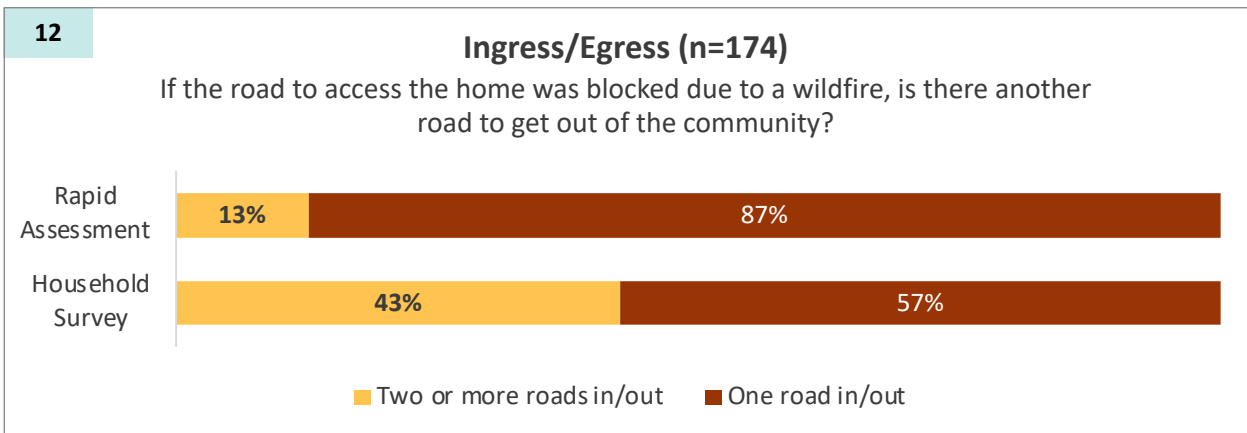
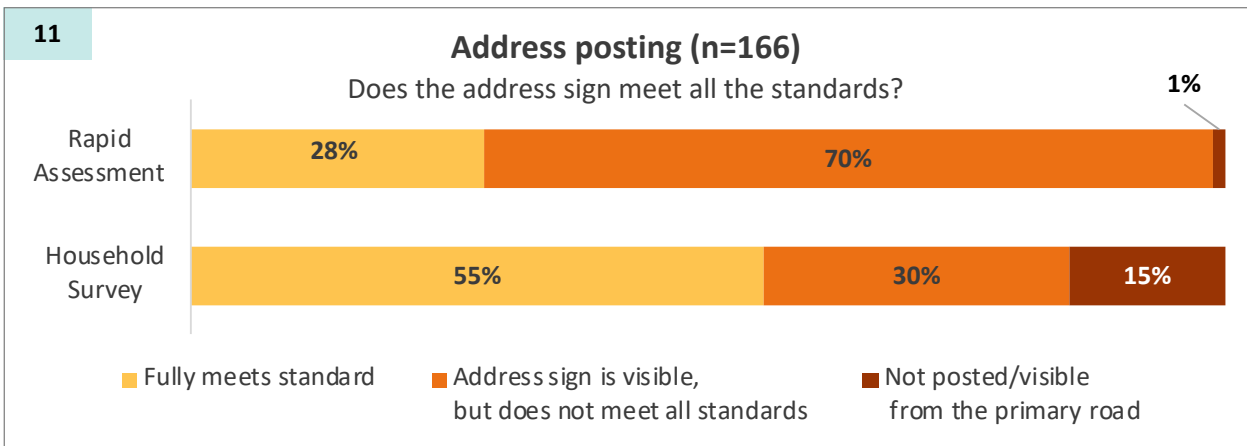
1.3. Defensible space



1.4. Background conditions

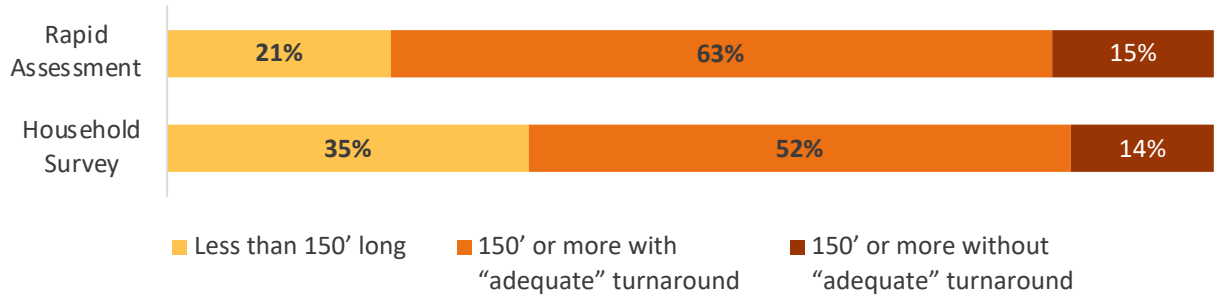


1.5. Access



Driveway length (n=168)

What best describes the driveway?



2. Comparison of all Rapid Assessments vs. paired Rapid Assessment and Household Survey

Section 2 provides tables that provide a three-way comparison of risk ratings from all rapid assessments in the study area, the subset of rapid assessments for which there is a paired household survey, and the household survey self-assessment.

2.1 Overall risk rating

Overall risk rating: Based on the sum of the 13 attribute scores. Homeowner's self-assessment response to: What do you think is your Wasatch property's current overall wildfire risk rating?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey(N=176)	Self-assessment from household surveys (N=176)
Low	14%	19%	15%
Moderate	10%	11%	41%
High	46%	51%	31%
Very high	6%	5%	8%
Extreme	24%	15%	5%

2.2 Home ignition potential

Risk attribute: Roof What is the most vulnerable roofing material?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=174)	Self-assessment from household surveys (N=174)
Non-combustible (tile, metal, or asphalt shingles)	73%	83%	98%
Combustible (wood shake shingles)	27%	17%	2%
a. Out of all rapid assessments in the study area, 1 was missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

Risk attribute: Siding What is the most vulnerable exterior siding material?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=176)	Self-assessment from household surveys (N=176)
Stucco, cement, brick, stone, or other noncombustible siding	9%	14%	23%
Log or heavy timbers	12%	15%	13%
Wood or vinyl siding	78%	72%	64%
a. Out of all rapid assessments in the study area, 4 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 1 was missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Combustible Attachments Does the residence have a combustible balcony, deck, porch, or fence attached to the structure?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=176)	Self-assessment from household surveys (N=176)
No combustible attachments	29%	31%	32%
Combustible attachments present*	71%	69%	68%
a. Out of all rapid assessments in the study area, 3 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 1 was missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Distance to adjacent homes What is the closest distance to a neighboring home?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=177)	Self-assessment from household surveys (N=177)
More than 100'	35%	41%	92%
30' – 100'	62%	59%	7%
10' – 29'	2%	0%	2%
Less than 10'	1%	1%	0%
a. Out of all rapid assessments in the study area, 4 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

2.3 Defensible space

Risk attribute: Distance to overgrown vegetation (0 – 100 ft) What is the closest distance from the residence to overgrown, dense, or unmaintained vegetation?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=177)	Self-assessment from household surveys (N=177)
More than 100'	1%	1%	31%
Between 30' - 100'	58%	62%	53%
Between 5' - 29'	38%	36%	14%
Less than 5'	2%	1%	2%
a. Out of all rapid assessments in the study area, 4 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 1 was missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Distance to other combustibles (non-vegetation) What is the closest distance to combustible items other than vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=175)	Self-assessment from household surveys (N=175)
None, greater than 30' from structure	19%	22%	53%
Between 5'-30' from structure	72%	71%	38%
Less than 5' from structure*	9%	6%	9%
a. Out of all rapid assessments in the study area, 2 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

2.4 Background conditions

Risk attribute: Distance to dangerous topography What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=174)	Self-assessment from household surveys (N=174)
More than 150'	21%	18%	59%
50' - 150'	45%	44%	28%
Less than 50'	34%	38%	13%
a. Out of all rapid assessments in the study area, 1 was missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

Risk attribute: Slope The "slope" of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the overall slope of the residence?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=176)	Self-assessment from household surveys (N=176)
Gentle (less than 20%)	49%	42%	39%
Moderate (between 20% and 45%)	51%	57%	33%
Steep (greater than 45%)	1%	1%	28%
a. Out of all rapid assessments in the study area, 1 was missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

Risk attribute: Adjacent Fuels (100 – 150 ft) Which of the following best describes the dominant vegetation 100'-150' from the home? This may be outside the property boundary.			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=176)	Self-assessment from household surveys (N=176)
Light	53%	55%	16%
Moderate	42%	43%	52%
Dense	5%	2%	32%
a. Out of all rapid assessments in the study area, 2 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

2.5 Access

Risk attribute: Address Posting Does the address sign meet all of the standards?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=166)	Self-assessment from household surveys (N=166)
Fully meets standard	31%	28%	55%
Address sign is visible, but does not meet all standards	67%	70%	30%
Not posted/visible from the primary road	1%	1%	15%
a. Out of all rapid assessments in the study area, 5 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (1%) and included in the highest risk category.			

Risk attribute: Ingress/Egress If the road to access the residence was blocked due to a wildfire, is there another road to get out of the community?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=174)	Self-assessment from household surveys (N=174)
Two or more roads in/out	17%	13%	43%
One road in/out	83%	87%	57%
a. Out of all rapid assessments in the study area, 5 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

Risk attribute: Driveway clearance Does the driveway meet the horizontal and vertical clearance standards?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=166)	Self-assessment from household surveys (N=166)
Meets all driveway standards	81%	83%	61%
Meets one, but not both, standards (height or width)	17%	17%	33%
Does not meet either standard (height or width)	2%	1%	7%
a. Out of all rapid assessments in the study area, 10 were missing/unobserved (2%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 1 was missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Driveway length What best describes the driveway?			
Response categories	All rapid assessments in study area (N=539)	Subset of rapid assessments with a paired household survey (N=168)	Self-assessment from household surveys (N=168)
150 feet long or less	27%	21%	35%
Longer than 150 feet with turnaround “adequate” turnaround	56%	63%	52%
Longer than 150 feet without “adequate” turnaround	17%	15%	14%
a. Out of all rapid assessments in the study area, 8 were missing/unobserved (1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.			

Appendix E: Wildfire Research (WiRē) Household Survey Summary

Begins on next page.

Living with Wildfire in Chelan County in 2022



Number of completed surveys: 178

Number of surveys mailed: 469

n = number of observations

Response rate: 38%

Blue numbers are percent responses (might not total to 100% due to rounding)

Red ALL CAPS are variable names

Please note: We encourage use of this survey instrument for applied, research, and/or publication purposes but request to be notified before any such use at:

info@wildfireresearchcenter.org

** This project was funded by USDA Forest Service, Washington Office Fire and Aviation Management. The household survey administration was paid for by Chelan County Fire District #3, a Washington Resource and Development Council grant, and a Washington Department of Natural Resources Forest Partnerships Grant Program grant.*

**All data received and processed as of January 31, 2023*

**Document prepared February 24, 2023*

Section 1: In this first section of the survey, we ask about your home in Chelan County. Please answer the following questions with respect to your **Chelan County home**.

When choosing a response, please fill in the circle completely. Correct: ☒ Incorrect: ☐ ☐ ☐ ☐

OWNRENT_a (n=175)

1.1. Do you own or rent your Chelan County home? *(Fill in one circle)*

70% Own: primary home

30% Own: secondary residence

0% Rent: I do not own this home

1.2. In a typical year, what months do you spend any time at your Chelan County home? *(Fill in all that apply)*

N=579	ALL_MONTHS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	NO_MONTHS
	All 12 months	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	No months
	88%	92%	90%	92%	95%	97%	97%	97%	96%	97%	98%	95%	91%	0%

FULLTIME (n=171)

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

AVERAGE = 2004

YRBUILD (n=169)

1.4. In what year was your Chelan County home originally built? *(Fill in the blank)*

AVERAGE = 1982

RISKAWAR (n=175)

1.5. How aware of wildfire risk were you when you bought or decided to rent your Chelan County home? *(Fill in one circle)*

51% Very aware

38% Somewhat aware

8% Not aware

2% Don't remember

Section 2: In this section, we ask about your experience with, and preparation for, wildfire at your Chelan County home.

FIRE (n=178)

2.1. What is the closest distance (as a crow flies) a wildfire has come to your Chelan County property? *(Fill in one circle)*

- 8% There has been a wildfire on my property
- 40% Less than 2 miles away but not on my property
- 34% 2 to 10 miles away
- 9% More than 10 miles away
- 8% Not sure

2.2. Has your Chelan County home ever had smoke or fire damage from a wildfire?
(Fill in one circle per row)

		No	Yes
EVACUATED (n=177)	I have evacuated from my Chelan County home due to a wildfire or threat of a wildfire	60%	40%
SMOKEDAM (n=166)	My Chelan County home has had smoke damage	96%	4%
FIREM (n=166)	My Chelan County home has had wildfire damage	98%	2%
DESTROY (n=165)	My Chelan County home was destroyed by a wildfire	98%	2%

2.3. Do you currently have an evacuation plan in the event a wildfire threatens your Chelan County home? *(Fill in one circle per row)*

		No	Yes	Not applicable
EVACPL (n=176)	For the people in my household	20%	80%	
EVACPETS (n=173)	For the pets in my household and on my property	14%	54%	32%
EVACLIVSTOC (n=172)	For livestock on my property	8%	12%	80%

- 2.4. Have you completed any of the following actions to prepare for a wildfire **evacuation** and do you want more information about how to complete any of the actions?
(Fill in two circles per row, one for each question)

	Completed action?		Want more information about the action?	
Identify how I will be notified about an evacuation	EVACACT1 (n=178)	45%	EVACINFO1 (n=178)	38%
Sign up for a wildfire evacuation notification system (Alert Sense https://public.alertsense.com)	EVACACT2 (n=178)	38%	EVACINFO2 (n=178)	34%
Identify safe evacuation routes	EVACACT3 (n=178)	66%	EVACINFO3 (n=178)	19%
Identify a location that my household will evacuate to	EVACACT4 (n=178)	63%	EVACINFO4 (n=178)	17%
Identify what to take and what to leave behind during an evacuation	EVACACT5 (n=178)	69%	EVACINFO5 (n=178)	15%
Discuss evacuation with my neighbors	EVACACT6 (n=178)	38%	EVACINFO6 (n=178)	18%
Create a checklist for steps to take before evacuating	EVACACT7 (n=178)	35%	EVACINFO7 (n=178)	32%
Identify a place to stay during a long-term evacuation (i.e., more than a few days)	EVACACT8 (n=178)	63%	EVACINFO8 (n=178)	12%
Pack a “go” bag with important items you would need during an evacuation (see https://simplebooklet.com/emergencygobag)	EVACACT10 (n=178)	44%	EVACINFO10 (n=178)	20%

- 2.5. Please tell us about your experiences with your **homeowners insurance** for your Chelan County home. (Fill in one circle per row)

		No	Yes	DK
INSURE2 (n=169)	Has your current or a previous insurance company ever provided information on reducing the risk of wildfire?	62%	21%	17%
INSURE3 (n=167)	Did an insurance company ever refuse to provide or renew insurance because of the risk of wildfire?	68%	26%	6%
INSURE4 (n=168)	Do you pay a higher premium for your insurance due to wildfire risk?	27%	36%	38%
INSURE10 (n=167)	Do you receive a discount on your insurance premium because you have reduced wildfire risk on your property?	64%	5%	31%
INSURE12 (n=168)	Do you think your home is adequately insured against loss from a wildfire?	15%	65%	20%
INSURE13 (n=167)	Has your current insurance company ever required you to take action to reduce wildfire risk in order to continue coverage?	85%	11%	5%
INSURE15(n=169)	Has your current insurance company offered private firefighting services?	84%	7%	9%

Section 3: In this section, we ask about the characteristics of your Chelan County home and the area near your Chelan County home.

- 3.1. Does your Chelan County home have any of the following roofing materials?
(Fill in all that apply)

		No	Yes
ROOFTYPE1 (n=174)	Tile, metal, or asphalt shingles	1%	99%
ROOFTYPE2 (n=174)	Wood (shake shingles)	98%	2%

- 3.2. Does your Chelan County home have any of the following exterior siding materials?
(Fill in all that apply)

		No	Yes
SIDETYPE1 (n=176)	Stucco, cement, brick, stone, or other noncombustible siding	68%	32%
SIDETYPE2 (n=176)	Log or heavy timbers	81%	19%
SIDETYPE3 (n=176)	Wood or vinyl siding	36%	64%

ATTACHCOMB (n=176)

- 3.3. Does your Chelan County home have a **combustible** balcony, deck, porch, or fence attached to the structure? (Fill in one circle)

32% No
68% Yes

COMBUST_A (n=175)

- 3.4. What is the **closest** distance from your Chelan County home to combustible items other than vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite? (Fill in one circle)

53% More than 30 feet or no combustible items
38% 5 – 30 feet
9% Less than 5 feet

CLOSEVEG_A (n=177)

- 3.5. What is the **closest** distance from your Chelan County home to overgrown, dense, or unmaintained vegetation? (Fill in one circle)

31% More than 100 feet
53% 30 – 100 feet
14% 5 – 29 feet
2% Less than 5 feet

DOMVEG_A (n=176)

3.6. Which of the following best describes the **majority** of vegetation on your Chelan County property between 100 and 150 feet from your home? That area might be outside your property boundary and include properties immediately surrounding you. *(Fill in one circle)*

- 16% Grasses and shrubs
- 52% Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
- 32% Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)

CLOSEHOME (n=177)

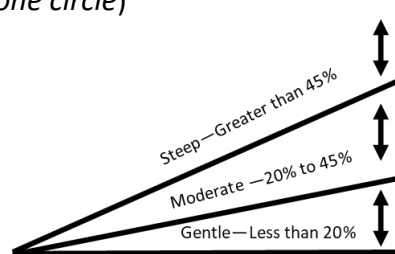
3.7. What is the **closest** distance from your Chelan County home to a neighboring home? *(Fill in one circle)*

- 92% More than 100 feet
- 7% 30 - 100 feet
- 2% 10 – 29 feet
- <1% Less than 10 feet

SLOPE (n=176)

3.8. The “slope” or “grade” of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the average slope within 150 feet of your Chelan County home? *(Fill in one circle)*

- 28% Steep – Greater than 45%
- 33% Moderate – 20% to 45%
- 39% Gentle – Less than 20%



RIDGE (n=174)

3.9. What is the closest distance from your Chelan County home to a ridge, steep drainage, or narrow canyon? *(Fill in one circle)*

- 59% More than 150 feet
- 28% 50 – 150 feet
- 13% Less than 50 feet

3.10. Do any of the following describe your driveway? My driveway... (Fill in one circle per row)

		No	Yes
DRIVEWAYV_A (n=167)	has an overhead obstruction (ex. tree limbs) lower than 14 feet	90%	10%
DRIVEWAYW_C (n=167)	is narrower than 14 feet wide	64%	36%
DRIVEWAYL_A (n=170)	is longer than 150 feet	34%	66%
TURNARND_A (n=173)	has room for a fire truck to turn around	23%	77%

3.11. Is the address number of your Chelan County home posted at the end of your driveway?
(Fill in one circle)

HOMENUM (n=167)	17%	No	HOMENUMVIS (N=149)		No	Yes
	83%	Yes	→	Is the posted number visible from the road? (Fill in one circle)	8%	92%
REFLECT (N=148)				Is the posted number blue reflective? (Fill in one circle)	38%	62%

ROADS (n=174)

3.12. If the road you use to access your Chelan County home was blocked due to a wildfire, is there another road you could use to get out of your community? (Fill in one circle)

57% No
43% Yes

RISKRATE (n=176)

3.13. Properties in your community are assessed for overall wildfire risk based on the items asked about in questions 3.1 – 3.12 above. What do you think is your Chelan County property's current overall wildfire risk rating? (Fill in one circle)

15% Low risk
41% Moderate risk
31% High risk
8% Very high risk
5% Extreme risk

Section 4: In this section, we ask about wildfire risk reduction activities.

TALKFIRE (n=177)

4.1. Have you ever talked about wildfire issues with a neighbor? *(Fill in one circle)*

24% No
76% Yes

4.2. Have you done any of the following wildfire-related activities? *(Fill in one circle per row)*

		No	Yes
ACTIVITIES1 (n=175)	Removed large or dense vegetation near my Chelan County home (ex. trees, shrubs, brush)	9%	91%
ACTIVITIES7 (n=171)	Regularly cleared my roof and gutters of leaves and pine needles	22%	78%
ACTIVITIES8 (n=176)	Regularly mowed and raked around my Chelan County home	6%	94%
ACTIVITIES2 (n=172)	Made my Chelan County home more fire resistant (ex. replaced roofing, siding, added hardscaping)	40%	60%
ACTIVITIES3 (n=173)	Helped neighbor(s) reduce vegetation on their properties	70%	30%
ACTIVITIES4 (n=172)	Helped reduce vegetation on community property (ex. HOA, subdivision)	87%	13%
ACTIVITIES5 (n=174)	Helped reduce vegetation on nearby public lands (ex. county, state, federal lands)	86%	14%
ACTIVITIES6 (n=175)	Participated in a community wildfire preparedness activity (ex. meeting, chipper day, etc.)	64%	36%
ACTIVITIES9 (n=175)	Met with a wildfire professional at your home to evaluate and discuss your property's wildfire risk	40%	60%
ACTIVITIES10 (n=175)	Interacted with public land managers (ex. Washington Dept. of Natural Resources or U.S. Forest Service) about fuels reduction on nearby public lands	67%	33%

4.3. How much do you think each of the following factors contributes to the chances of a
wildfire damaging your Chelan County property **in the next 12 months?**
(Fill in one circle per row)

		A lot	Somewhat	Not at all
CONTRIB1 (n=174)	Vegetation on my property	24%	58%	18%
CONTRIB2 (n=175)	Physical characteristics of my house or other buildings (ex. roofing or siding) on my property	14%	51%	34%
CONTRIB3 (n=174)	Vegetation on my neighbors' properties	29%	54%	17%
CONTRIB4 (n=175)	Vegetation on nearby public or large undeveloped land	49%	37%	14%
CONTRIB5 (n=173)	Lack of nearby water supply (ex. hydrant or cistern) for fire suppression	42%	46%	12%

NEIGHBORACT (n=173)

4.4. How many of your immediate neighbors do you think have taken action to reduce wildfire risk on their properties (ex. removing dense vegetation or switching to noncombustible siding) *(Fill in one circle)*

- 10% All my neighbors have taken action
- 27% Most of my neighbors have taken action
- 53% Some of my neighbors have taken action
- 10% None of my neighbors have taken action

4.5. How acceptable to you are the following approaches to reducing wildfire risk on nearby public lands? *(Fill in one circle per row)*

		Extremely acceptable	Very acceptable	Moderately acceptable	Slightly acceptable	Not at all acceptable
ACCEPT14 (n=174)	Removing trees and reducing other vegetation on HOA property surrounding communities to slow the spread of wildfire (ex. fuel breaks)	44%	34%	18%	1%	3%
ACCEPT1 (n=176)	Removing trees and reducing other vegetation (thinning/fuel breaks) on nearby public lands	48%	36%	10%	4%	2%
ACCEPT2 (n=174)	Burning piles of vegetation (slash piles) on nearby public lands	45%	33%	14%	4%	3%
ACCEPT3 (n=175)	Conducting a prescribed fire ignited by fire professionals on nearby public lands	39%	33%	18%	6%	4%
ACCEPT4 (n=173)	Managing a naturally ignited fire (lightning) on nearby public lands	46%	30%	19%	3%	2%
ACCEPT6 (n=174)	Growth policies or land use regulations that limit new development in fire-prone areas in Chelan County	37%	28%	20%	11%	5%
ACCEPT7 (n=173)	Building codes that require fire resistant materials for structures located in fire-prone areas in Chelan County	38%	29%	16%	13%	4%
ACCEPT8 (n=173)	Development standards that require vegetation management (ex. removing or thinning trees and mowing grass) on lots located in fire-prone areas in Chelan County	29%	28%	31%	9%	3%
ACCEPT12 (n=172)	Temporarily shutting off the power grid during extreme fire risk days to avoid new wildfire ignitions	17%	27%	23%	19%	15%
ACCEPT9 (n=174)	Removing vegetation along roadways for safer evacuation	54%	32%	9%	4%	2%
ACCEPT13 (n=172)	Building a new road(s) to provide an emergency evacuation route	26%	27%	30%	12%	6%

Section 5: In this section, we ask about your notions, expectations, and risk perceptions related to wildfire.

5.1. How much do you agree or disagree with the following statements about wildfire?
(Fill in one circle per row)

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
STATE2 (n=176)	With proper technology, we can control most wildfires.	6%	25%	32%	30%	7%
STATE3 (n=176)	We should put out wildfires that threaten human life.	51%	36%	8%	4%	1%
STATE4_a (n=175)	We should put out wildfires that threaten homes.	38%	45%	12%	3%	2%
STATE5 (n=174)	During a wildfire, saving homes should be a priority over saving forests.	25%	38%	27%	7%	3%
STATE6 (n=176)	Wildfires are a natural part of a healthy forest/ecosystem.	49%	41%	8%	2%	0%
STATE11 (n=176)	I live here for the trees and will not remove any of them to reduce wildfire risk.	1%	2%	14%	47%	37%
STATE13 (n=176)	Managing the wildfire danger is a government responsibility, not mine.	2%	6%	15%	53%	23%
STATE14 (n=176)	Homeowners' actions to reduce wildfire are not effective.	2%	4%	8%	51%	35%
STATE15 (n=177)	My property is at risk of wildfire.	24%	43%	22%	8%	3%
STATE17 (n=177)	My effort to reduce wildfire risk on my property is not effective because of the heavy vegetation on my neighbors' properties.	4%	18%	29%	41%	8%
STATE19 (n=174)	Local firefighters have sufficient resources to keep a wildfire from spreading.	2%	9%	32%	39%	19%
STATE20 (n=176)	Local firefighters have sufficient resources to protect threatened homes.	1%	16%	36%	31%	15%
STATE21 (n=177)	Firefighters should put their lives at risk to protect my home.	1%	3%	10%	39%	48%
STATE22 (n=174)	Wildfires threaten my community water supply.	2%	14%	43%	30%	10%
STATE24 (n=177)	I plan to move out of the area in the next 12 months because of wildfires.	0%	0%	4%	26%	70%
STATE25 (n=176)	Development in fire-prone areas of Chelan County increases the wildfire risk to my Chelan County property.	15%	27%	36%	18%	4%

5.2. If there is a wildfire on your Chelan County property, how likely do you think it is that the following would occur? *(Fill in one circle per row)*

		Extremely likely	Very likely	Moderately likely	Slightly likely	Not at all likely	Not applicable
LACT1 (n=176)	I would put the fire out.	10%	10%	18%	28%	33%	1%
LACT2 (n=177)	The fire department would save my home.	5%	34%	38%	18%	5%	0%
LACT3 (n=175)	My home would have smoke damage.	7%	33%	46%	13%	2%	0%
LACT4 (n=177)	My home would have some physical damage.	3%	30%	38%	25%	3%	0%
LACT5 (n=176)	My home would be destroyed.	3%	13%	29%	40%	14%	1%
LACT6 (n=177)	I would lose money due to the loss of business or income on my property.	10%	12%	9%	12%	23%	34%
LACT7 (n=175)	My trees and landscape would burn.	15%	38%	30%	14%	2%	1%
LACT9 (n=176)	My neighbors' homes would be damaged or destroyed.	5%	25%	34%	29%	5%	2%
LACT12 (n=176)	Direct flame would ignite my home.	7%	23%	20%	35%	14%	1%
LACT13 (n=177)	Embers would ignite my home.	5%	20%	28%	35%	12%	1%
LACT14 (n=177)	Nearby homes would ignite my home.	3%	6%	12%	24%	50%	5%

CHANCES1 (n=572)

5.3. What do you think is the chance that a wildfire will be on your Chelan County property **in the next 12 months?** *(Fill in one circle)*

For sure										No chance
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
20%	1%	1%	1%	4%	22%	6%	13%	19%	29%	3%

CHANCES2 (n=568)

5.4. If there is a wildfire on your property **in the next 12 months**, what do you think is the chance that it will destroy or severely damage your Chelan County home? *(Fill in one circle)*

For sure										No chance
100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
3%	2%	6%	5%	4%	21%	8%	14%	18%	18%	2%

Section 6: In this section, we ask where you get information about wildfire, how useful the information is, how you receive information, and how you would like to receive information.

6.1. The following sources provide information about wildfire risk. If you have received information from one of these sources, how useful has it been? *(Fill in one circle per row)*

		Received info from source		Usefulness of information among respondents who received information from the source (sums to ~100%)				
				Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful
Local fire department	SOURCEREC1 (n=170)	71%	SOURCEUSE1 (n=120)	24%	43%	25%	4%	0%
Community group (ex. homeowners association)	SOURCEREC2 (n=165)	35%	SOURCEUSE2 (n=58)	14%	29%	38%	16%	3%
Community wildfire ambassador	SOURCEREC25 (n=166)	37%	SOURCEUSE25 (n=61)	20%	31%	33%	16%	0%
Local arborist/contractor	SOURCEREC28 (n=165)	31%	SOURCEUSE28 (n=51)	22%	24%	29%	22%	4%
Washington State University Master Gardner's program	SOURCEREC17 (n=165)	14%	SOURCEUSE17 (n=23)	9%	30%	22%	13%	26%
Local government	SOURCEREC29 (n=165)	48%	SOURCEUSE29 (n=79)	8%	27%	32%	28%	6%
Wildfire Ready Neighbors	SOURCEREC40 (n=167)	43%	SOURCEUSE40 (n=71)	13%	30%	34%	20%	4%
Chelan County DNR	SOURCEREC18 (n=164)	50%	SOURCEUSE18 (n=82)	12%	29%	39%	12%	7%
Cascadia Conservation District	SOURCEREC16 (n=166)	53%	SOURCEUSE16 (n=88)	15%	30%	32%	15%	9%
Chumstick Wildfire Stewardship Coalition	SOURCEREC19 (n=167)	68%	SOURCEUSE19 (n=114)	32%	32%	21%	11%	5%
Chelan/Douglas Land Trust	SOURCEREC20 (n=164)	26%	SOURCEUSE20 (n=42)	12%	33%	24%	21%	10%
Chelan Public Utility District	SOURCEREC41 (n=164)	46%	SOURCEUSE41 (n=76)	12%	16%	36%	26%	11%
Washington State DNR	SOURCEREC11 (n=167)	47%	SOURCEUSE11 (n=79)	13%	30%	35%	16%	5%
Firewise USA®	SOURCEREC5 (n=166)	26%	SOURCEUSE5 (n=43)	12%	30%	37%	16%	5%
Ready, Set, Go! program	SOURCEREC24 (n=165)	24%	SOURCEUSE24 (n=39)	10%	28%	33%	18%	10%
Fire Adapted Communities and/or Learning Network	SOURCEREC8 (n=166)	12%	SOURCEUSE8 (n=20)	20%	20%	45%	5%	10%
USDA Forest Service	SOURCEREC14 (n=166)	33%	SOURCEUSE14 (n=54)	11%	26%	30%	20%	13%
National Park Service	SOURCEREC34 (n=164)	10%	SOURCEUSE34 (n=17)	18%	12%	12%	18%	41%
Bureau of Land Management	SOURCEREC15 (n=164)	16%	SOURCEUSE15 (n=27)	22%	11%	19%	22%	26%
Media (newspaper, TV, radio, internet)	SOURCEREC4 (n=170)	62%	SOURCEUSE4 (n=105)	6%	24%	28%	30%	12%

- 6.2. How do you currently receive information about wildfire risk reduction, and how would you prefer to receive information? Please answer **both** questions for each row.
(Fill in all circles that apply)

	I receive information from this source		I would like to receive information from this source	
Email/e-newsletter	RECEIVEINFO1 (n=178)	40%	WANTINFO1 (n=178)	45%
Mailed newsletter	RECEIVEINFO2 (n=178)	50%	WANTINFO2 (n=178)	35%
Community meetings	RECEIVEINFO3 (n=178)	29%	WANTINFO3 (n=178)	25%
Conversations with local wildfire specialists	RECEIVEINFO4 (n=178)	36%	WANTINFO4 (n=178)	37%
Social media (Facebook, Twitter, Nextdoor)	RECEIVEINFO5 (n=178)	25%	WANTINFO5 (n=178)	19%
Internet (non-social media)	RECEIVEINFO6 (n=178)	36%	WANTINFO6 (n=178)	28%
TV news	RECEIVEINFO7 (n=178)	26%	WANTINFO7 (n=178)	8%
Newspaper	RECEIVEINFO8 (n=178)	25%	WANTINFO8 (n=178)	12%
Radio	RECEIVEINFO9 (n=178)	34%	WANTINFO9 (n=178)	13%

Section 7: In this section, we would like to know why you do or do not take action to reduce the risk of wildfire to your Chelan County property.

- 7.1. Do any of the following **prevent you** from taking action to reduce the wildfire risk on your Chelan County property (ex. cutting trees, changing roof/siding?)
(Fill in all circles that apply for each row)

	FACTOR1 (n=175)	FACTOR2 (n=175)	FACTOR3_a (n=175)	FACTORNO1 (n=175)
Personal resources	Financial cost 40%	Time to do the work 39%	Physical ability to do the work 37%	None of these 31%
Lack of specific information about...	FACTOR11 (n=168) The factors contributing to my property's wildfire risk 11%	FACTOR4 (n=168) How to reduce wildfire risk on my property 19%	FACTOR12 (n=168) Where to dispose of vegetation/slash 21%	FACTORNO2 (n=168) None of these 63%
Personal perspectives	FACTOR6 (n=171) I do not want to change the way my property looks 8%	FACTOR5_a (n=171) I do not think taking action would reduce my property's wildfire risk 10%	FACTOR13 (n=171) It's a low priority to me 5%	FACTORNO3 (n=171) None of these 80%
Community	FACTOR14 (n=172) Lack of options for disposing vegetation/slash 20%	FACTOR9_a (n=172) Restrictions on the changes I can make to my property 5%	FACTOR15 (n=172) Social pressure from neighbors 2%	FACTORNO4 (n=172) None of these 77%

7.2. Would any of the following encourage you to take action to reduce the wildfire risk on you Chelan County property? (*Fill in all that apply for each row*)

Resources	INCENTV1 (n=172)	INCENTV3 (n=172)	INCENTV4 (n=172)	INCENTVNO1 (n=172)
	Cost-share or financial assistance 60%	Help doing the work 55%	Recommended contractors 34%	None of these 21%
Information	INCENTV6 (n=172)	INCENTV7 (n=172)	INCENTV8 (n=172)	INCENTVNO2 (n=172)
	A report describing my property's wildfire risk factors 45%	Videos showing how to reduce risk on a property in my area 20%	One-on-one visit with wildfire risk experts on my property 49%	None of these 32%
Other	INCENTV9 (n=168)	INCENTV10 (n=168)	INCENTV11 (n=168)	INCENTVNO3 (n=168)
	Feedback on the work I've done to reduce my property's risk 42%	Recognition for taking action 12%	Neighborhood group that organizes wildfire risk-reduction activities 27%	None of these 45%

Section 8: In this section, we ask about personal and household characteristics. Your name will never be connected to your answers in any way.

RISKTAK1 (n=175)

8.1. In general, do you view yourself as someone who is not at all willing to take risks or very willing to take risks? *(Fill in one circle)*

Very willing to take risks											Not at all willing to take risks
10	9	8	7	6	5	4	3	2	1	0	
8%	3%	7%	12%	14%	25%	5%	14%	7%	3%	2%	

AGE (n=561)

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

MEAN AGE: 61 years old

GENDER (n=170)

8.3. Are you? *(Fill in one circle)*

64% Male
36% Female
0% Other

EDUC (n=174)

8.4. What is the highest grade or year of school you completed? *(Fill in one circle)*

0% Less than high school
10% High school graduate
15% Some college or technical school
5% Technical or trade school
36% College graduate
9% Some graduate work
25% Advanced degree (M.D., M.A., M.S., Ph.D., etc.)

EMPLOY (n=173)

8.5. Which of the following best describes your current employment situation?
(Fill in one circle)

- 38% Employed full time (including self-employed)
- 8% Employed part time (including self-employed)
- 2% Unemployed or do not work outside of the home
- 52% Retired

INCOME (n=162)

8.6. Which of the following categories describes your annual household income?
(Fill in one circle)

- 1% Less than \$15,000
- 7% \$15,000 - \$24,999
- 6% \$25,000 – \$34,999
- 11% \$35,000 - \$49,999
- 16% \$50,000 - \$74,999
- 10% \$75,000 - \$99,999
- 19% \$100,000 - \$149,999
- 7% \$150,000 - \$199,999
- 23% \$200,000 or more

Thank you for your help. Please use the space below to write any additional comments. Refer to the cover letter included in your mailing for contact information if you would like to schedule an onsite visit with a wildfire professional to learn how you can reduce risk on your property.

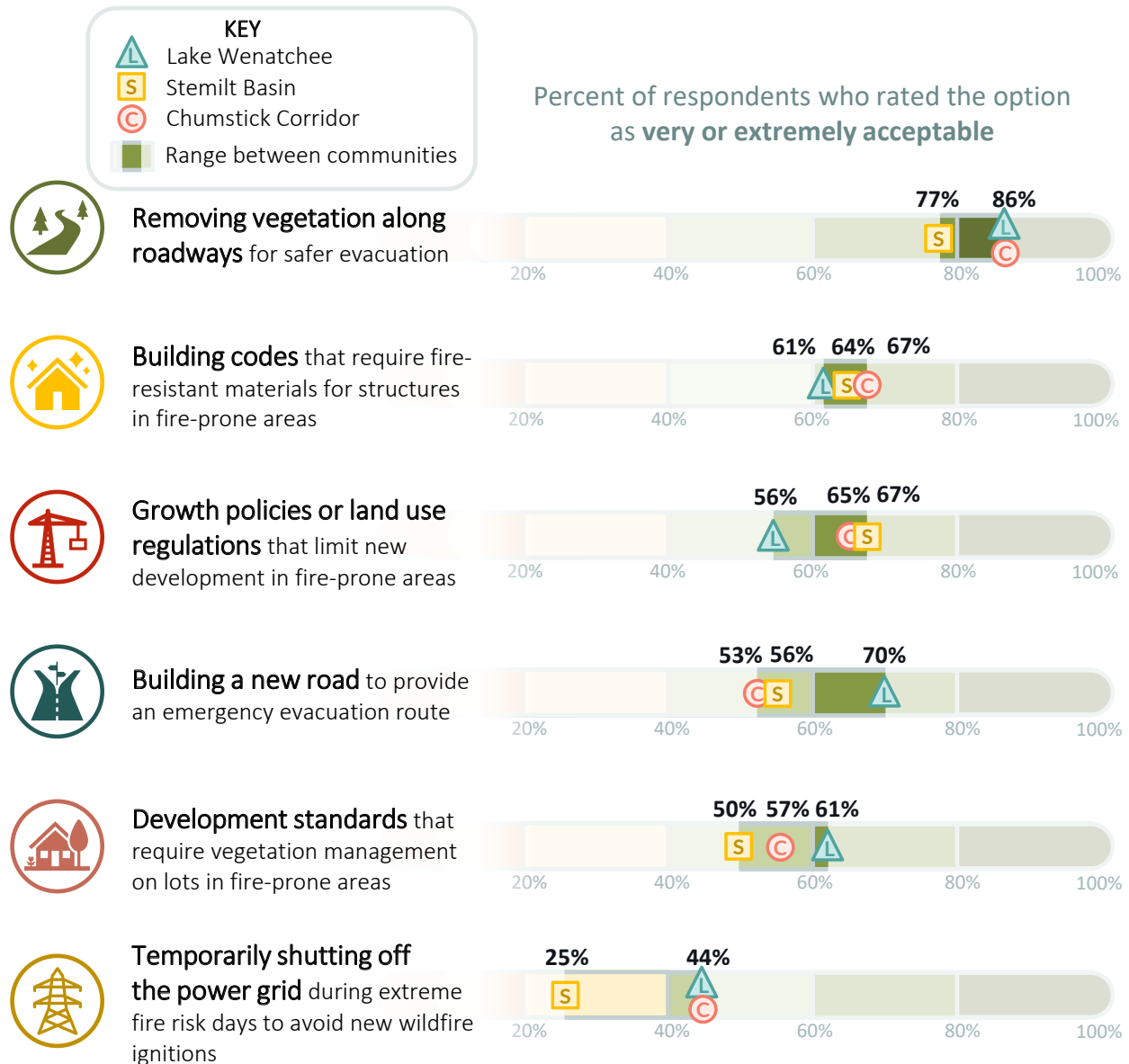
Appendix F: Outreach Materials

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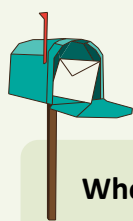


Resident support for wildfire policies:

Survey results from three Chelan County communities



[Learn how we collected this data](#) →



More information about our research

Who were the survey respondents?

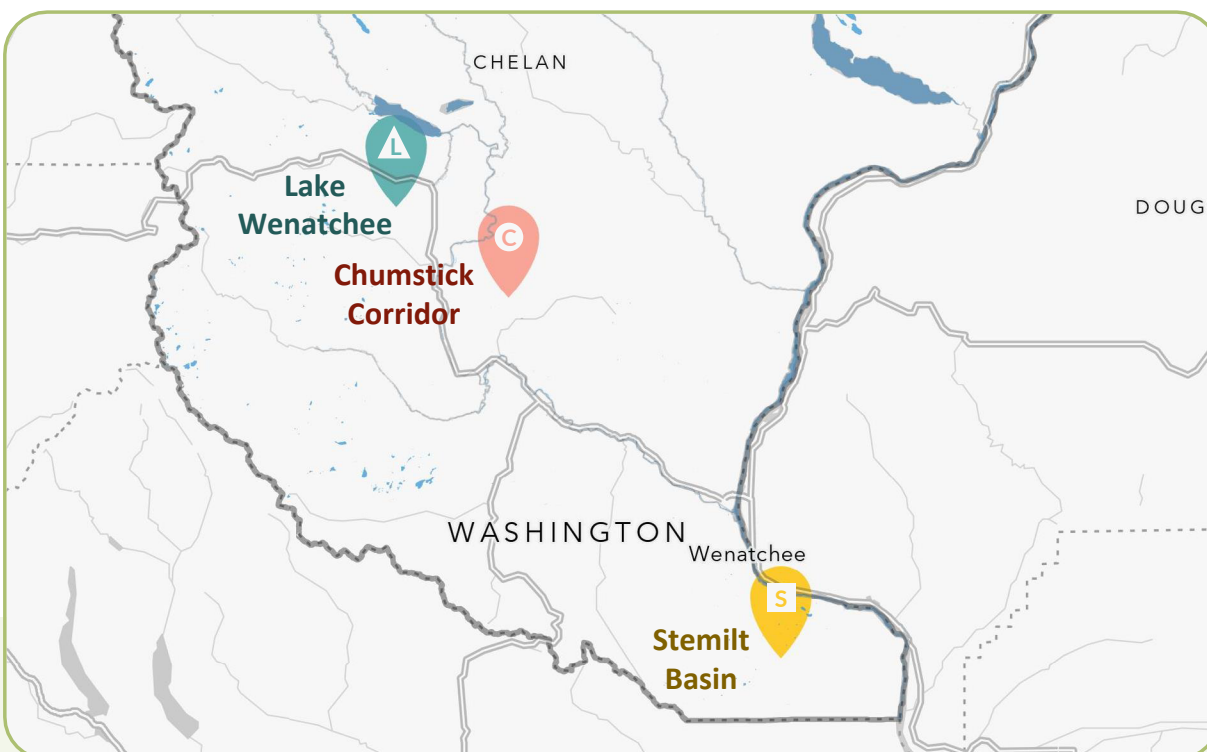
Homeowners in Lake Wenatchee Fire District, Chelan County Fire District 3 (Chumstick Corridor), and Wenatchee Valley Fire District (Stemilt Basin).

Response rate:

45%
Lake
Wenatchee

38%
Chumstick
Corridor

42%
Stemilt
Basin



More about our data

Our survey

Our 16-page survey covered a lot of ground. We asked about everything from acceptability of wildfire-related policies and fuel treatment on public lands, to parcel-level wildfire risk perceptions, barriers to action, communication preferences, and more.

Our paired wildfire risk assessments

We conducted rapid wildfire risk assessments, designed to be conducted from the road and take 60 seconds. We evaluated: home ignition potential, defensible space, background conditions, and access to the property. We then compared those professional assessments to survey respondents' self-assessment of their home's wildfire risk. This allows us to identify priorities for wildfire risk outreach and programming.

Appendix G: Comparison of Wildfire Research (WiRē) Rapid Assessments of Non-Respondents and Survey Respondents

Begins on next page.

Chelan County Fire District #3 Comparison of Rapid Assessments of Non-Respondents and Survey Respondents

We performed statistical tests to assess whether the rapid, parcel-level wildfire risk was different for parcels whose residents did not respond to the household survey (non-respondents) compared to parcels whose residents did respond to the household survey (survey respondents). Statistical differences were found for the following risk attributes:

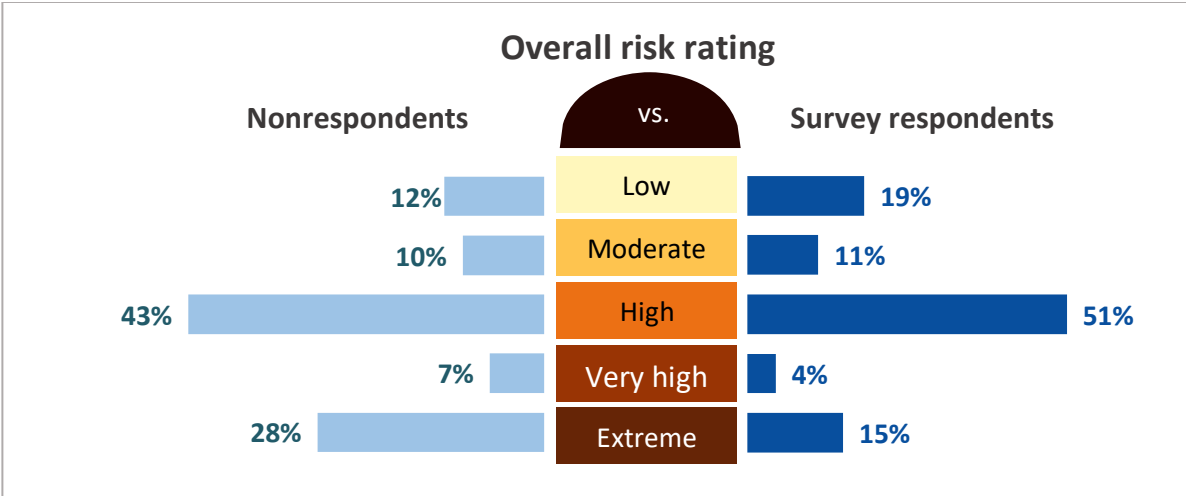
- Overall risk rating. Fewer survey respondents had overall risk ratings of very high and extreme and more had overall risk ratings of low, moderate, and high.
- Roof. Fewer homes of survey respondents had wood roofs than houses of non-respondents.
- Siding. Fewer homes of survey respondents had siding made of vinyl or wood.
- Proximity to adjacent homes. Survey respondents' homes tended to be further from other homes.
- Slope. More survey respondent's parcels had moderate slopes, whereas more non-respondents' parcels had gentle slopes.

The remainder of this document shows the comparison of non-respondents and survey respondents for these risk attributes that were found to be statistically different. There are 361 parcels with only a rapid assessment (non-respondents) and 178 parcels for which we have a rapid assessment and household survey (survey respondents). We include the results from a Wilcoxon rank sum test, which tests the hypothesis that the attribute distributions for non-respondents are the same as that of the survey respondents. A p-value less than 0.05 suggests that the compared distributions are statistically different.

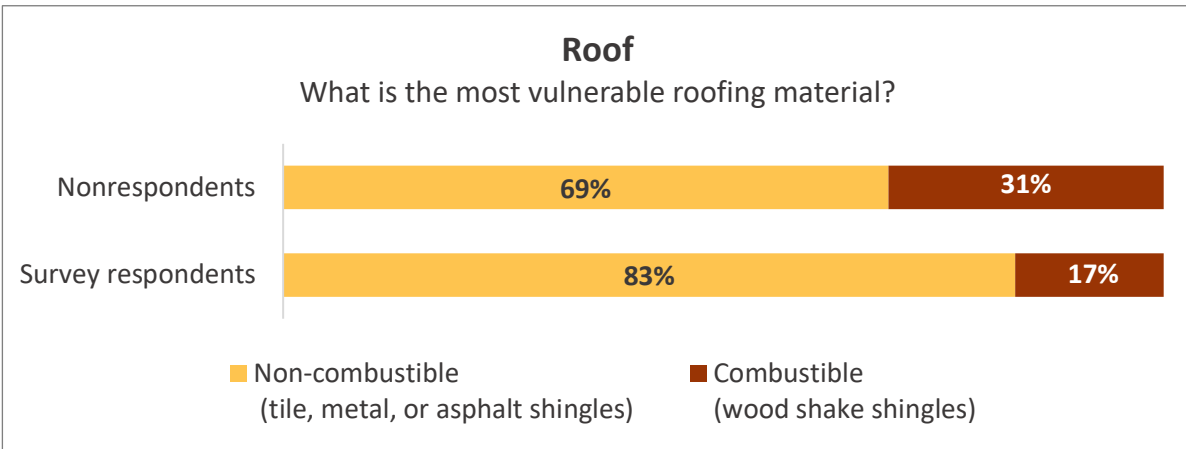
** This project was funded by USDA Forest Service, Washington Office Fire and Aviation Management. The household survey administration was paid for by Chelan County Fire District #3, a Washington Resource and Development Council grant, a Washington Department of Natural Resources Forest Partnerships Grant Program grant, and contributions from Cascadia Conservation District.*

**All data received and processed as of January 31, 2023*

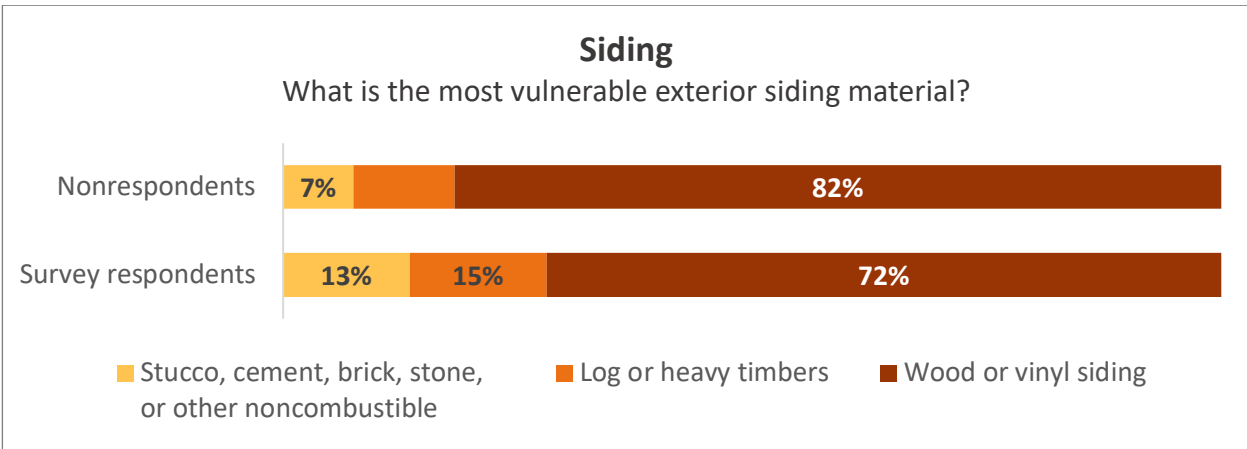
**Document prepared June 5, 2024*



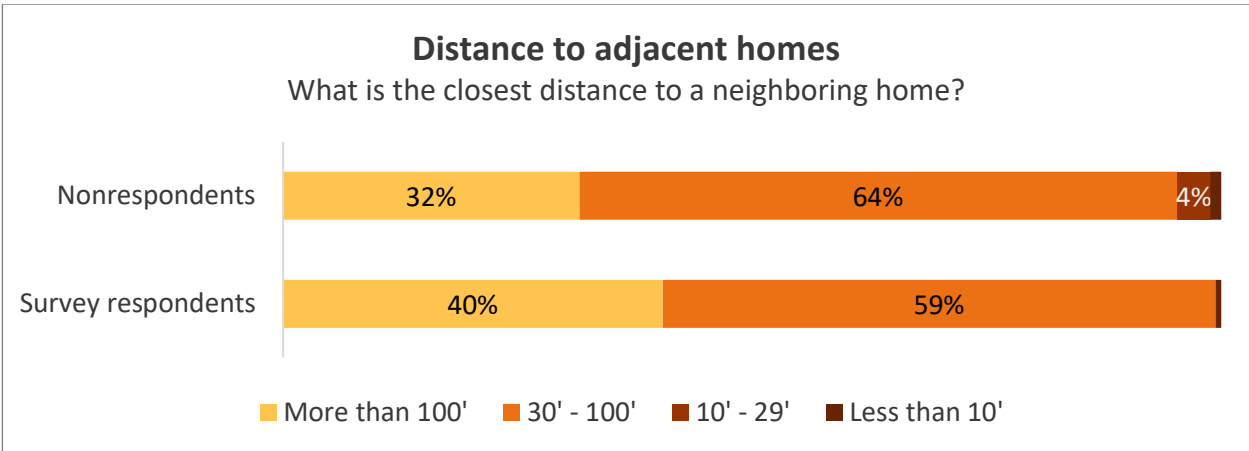
Overall risk rating. The two distributions are statistically different (two-sample Wilcoxon rank-sum (Mann–Whitney) test: $P = 0.0006$).



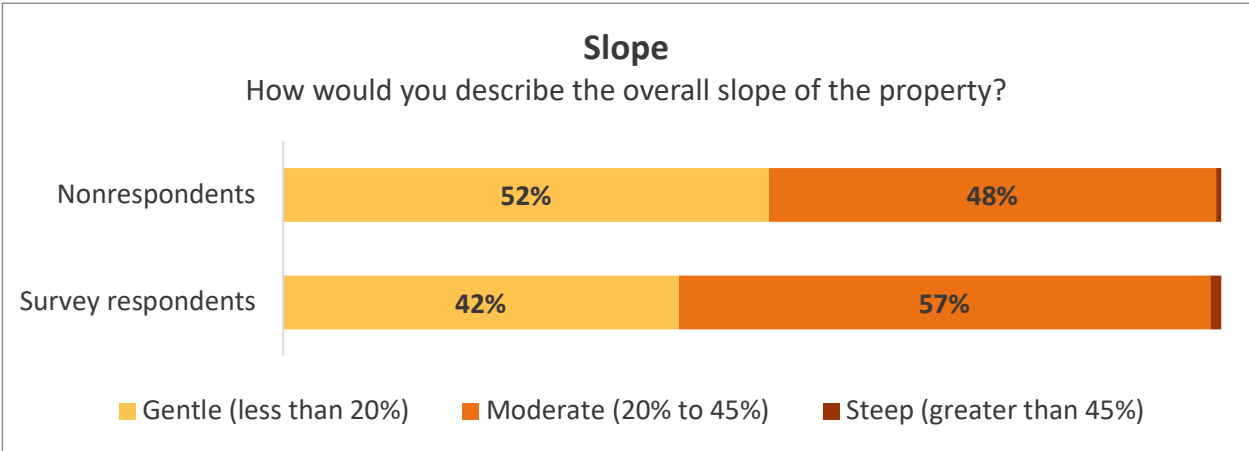
Risk attribute: Roof. The two distributions are statistically different (two-sample Wilcoxon rank-sum (Mann–Whitney) test: $P = 0.0004$).



Risk attribute: Siding. The two distributions are statistically different (two-sample Wilcoxon rank-sum (Mann–Whitney) test: $P = 0.0074$).



Risk attribute: Distance to adjacent homes. The two distributions are statistically different (two-sample Wilcoxon rank-sum (Mann–Whitney) test: $P = 0.0120$).



Risk attribute: Slope. The two distributions are statistically different (two-sample Wilcoxon rank-sum (Mann–Whitney) test: $P = 0.0316$).

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