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Living With Wildfire in Stemilt Basin, Chelan County, Washington: 2022 Data Report

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Abstract: Homeowner wildfire risk mitigation and preparedness are important components of community wildfire readiness. This report presents data collected via rapid wildfire risk assessments to describe the parcel-level wildfire risk of properties within the Stemilt Basin, Chelan County, Washington study area. The report also describes household survey data collected from homeowners in the study area, including their perspectives on wildfire risk, outreach preferences, mitigation and preparedness activities, and perceptions of community risk reduction strategies. Results may inform the wildfire risk outreach and programmatic efforts of the local fire department.

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

Stemilt Basin residents who responded to the survey indicated awareness of the risks of wildfire and have already taken action to reduce risk on their property. However, survey respondent estimations of wildfire risk on their own properties differ from those made by wildfire professionals, indicating a gap in understanding of wildfire risk. Residents may benefit from outreach and incentive programs to encourage mitigation and emergency notification signups.

Background, Goals, and Methods

In 2021–2022, the Wildfire Research (WiRē) Center partnered with Wenatchee Valley Fire Department (WVFD) to learn more about parcel-level wildfire risk in the Stemilt Basin in Chelan County, Washington. This research project was part of a larger, sustained collaboration between WiRē and other fire districts in Chelan County. The Stemilt Basin is an area colloquially referred to as “no man’s land” because residents are not within the WVFD services area unless they petition to be annexed into it. Annexing involves paying a tax for fire protection and emergency services. The decision to annex is made by each household. In other words, an annexed parcel could have neighbors on either side that are not annexed into WVFD services area. Approximately 35% of the households in the Stemilt Basin had opted into WVFD’s services area at the time of the study. This project provided an opportunity for WVFD to learn about the wildfire preparation and perspectives of a small community with a mix of annexed and unannexed residents.

This project centers on two types of data: rapid wildfire risk assessment data and household survey data. The WiRē Rapid Wildfire Risk Assessment (WiRē RA) protocol measures parcel-level risk as the sum of a set of 13 attributes in four main areas: building materials, 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 in the study area, collecting homeowners’ self-assessment of their property’s wildfire risk as well as a range of social data related to how residents live with the risk of wildfire. This report summarizes the results of this study. Notably, due to the small size of the study area, the number of survey respondents is small. Interpretation of survey results, particularly for questions with few respondents, should take this into account.

Results

Although some Stemilt Basin residents were unannexed into WVFD’s services area, the community was responsive to the household survey (42% response rate), and most (72%) reported being very aware of wildfire risk to their home at time of purchase (fig. 18). However, only 15% of respondents thought it likely there would be a fire on their property in the next year, and only 26% thought it likely they would lose their home in that event (fig. 22). These results indicate that residents may not be fully aware of the risk to their property.

When WiRē RA results are compared to survey responses, a notable gap is evident between the perspective of the wildfire professional and the parcel resident. This gap may present an educational opportunity for WVFD. The WiRē RA assessed 91% of the homes in the study area as having flammable wood or vinyl siding (fig. 6), 69% as having a combustible attachment (fig. 7), 80% as having overgrown vegetation within 30 feet of the home (fig. 9), and 80% as having nonvegetation combustibles within 30 feet of the home (fig. 10). Residents have the ability to improve those four attributes. Indeed, respondents have already taken mitigation action, including regularly mowing and raking around the home (97%), reducing vegetation (92%), regularly cleaning the roof and gutters (81%), and hardening the home (62%) (fig. 34). Respondents might be encouraged to take further action on these risk attributes.

Stemilt Basin residents reported few barriers to mitigation, excepting cost (43% of respondents; fig. 35). However, respondents did indicate several incentives that would encourage them to mitigate. Top incentives for respondents were a cost-share program (40%), a one-on-one visit with an expert on their property (38%), a report describing their property's risk factors (29%), feedback on completed work (29%), and help doing the work (26%) (figs. 39, 40). Few respondents indicated that their wildfire insurance has provided wildfire risk information, charged a higher premium, or performed other actions that might encourage mitigation (fig. 29).

At the time of the survey, no source or channel for wildfire risk reduction information was reported to reach a majority of residents. However, WVFD and Cascadia Conservation District were two of the sources most received (by 45% and 34% of respondents respectively) by respondents and were also considered most useful (36% and 64%, respectively; fig. 30). Respondents reported currently receiving information via mass-media channels, such as radio and television, but the top two preferred information channels were mailed newsletters (44%) and in-person interactions (42%; fig. 31).

In addition to results related to property-level risk mitigation, respondents indicated their actions and preferences related to evacuation preparedness and community-level risk reduction strategies. Seventy-five percent of Stemilt Basin residents reported having an evacuation plan (fig. 32) and having taken important evacuation planning steps (fig. 33). However, only 28% of respondents reported having signed up for emergency notifications (fig. 33), indicating room for further outreach on this topic. In addition, respondents indicated strong support for landscape-level fuel treatments, including burning piles of vegetation (83%), removal of vegetation along roadways for safer evacuation (78%), and managing a naturally ignited fire (75%; fig. 42). Respondents also supported building a new road to provide an emergency evacuation route (78%), growth policies or land use regulations that limit new development (75%), adopting building codes that require fire-resistant materials for structures located in fire-prone areas (67%), and development standards that require vegetation management (64%). These results indicate many possible pathways for community wildfire risk reduction.

A similar number of annexed and unannexed residents responded to the survey. Generally, there were few differences between annexed and unannexed resident survey responses, partly because the small number of respondents limits the degree of appropriate comparison.

However, annexed respondents tended to have moved into their home longer ago and have older homes. Additionally, unannexed respondents tended to report having completed more evacuation preparedness actions than annexed respondents.

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 on their property before a fire, as well as supporting an effective response when fires threaten a community. 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 projects, 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 the *Methods* section).
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

¹ Pronounced Wy-REE

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 summarizes local data and provides wildfire practitioner partners with the tools to act on research results. The WiRē Center also works with some partners with a regional reach to expand the WiRē Approach into new communities.

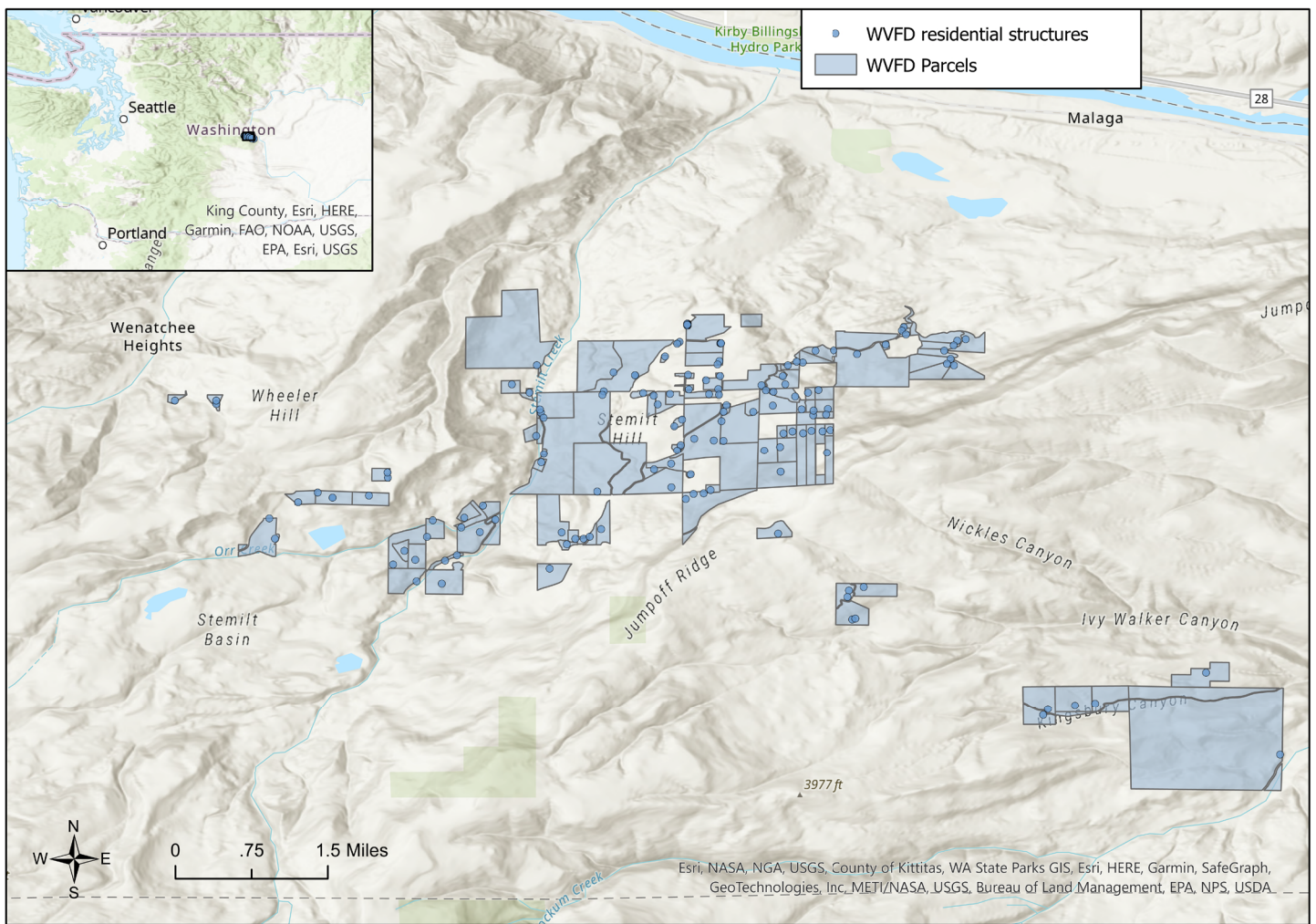
At a broader scale, the WiRē Center manages, compiles, and analyzes data collected across communities to provide insights across space and time with respect to wildfire risk on private land and the characteristics, knowledge, and experience of the people who live on those properties. These data are an 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.

PROJECT AREA: WHAT DO THE COMMUNITY AND ENVIRONMENT LOOK LIKE?

WiRē partnered with the Wenatchee Valley Fire Department (WVFD; formerly Chelan County Fire District 1) to implement the WiRē approach in the Stemilt Basin. This project between WVFD 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, Washington.² Following that collaboration, Cascadia Conservation District approached the WiRē Center about three additional projects with Chelan County fire departments. WVFD expressed interest in learning about residents in the Stemilt Basin, a basin adjacent to the Squilchuck Drainage (refer to fig. 1).

The landscape within the WVFD jurisdiction has a dominant shrub-steppe environment that presents significant mitigation challenges and opportunities on private properties as well as on public lands that surround the communities. A significant challenge of wildfire in the area relates to fire response capacity within local fire response organizations. For the broader area, there are typically fewer than 20 career firefighters on duty at any one time. Accordingly, WVFD describes this level of response capacity as being insufficient for both wildland fire or structural fire response. This constraint was notable in the Sleepy Hollow fire in 2015, during which firefighters were initially deployed in brush rigs but quickly faced a fire that was transitioning into the interface, with home ignitions. Responders shuffled responsibilities in order to send firefighters back to the stations to retrieve structural firefighting trucks to address the changing nature of the fire (wildland fire transforming into interface fire). WVFD characterized the typical response to wildfire as expecting that “if the fire is not controlled fast, we are looking at the next ridge,” rather than expecting to be able to do anything where the fire is already burning.

² 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.



WiRē + Wenatchee Valley Fire Department

Data collected in 2021

Map produced by The Wildfire Research Center (WiRē)

Figure 1—Map of residential parcels in the Stemilt Basin, Washington, study area. Inset shows the location of the study area in Washington. WVFD = Wenatchee Valley Fire Department. The 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: Wenatchee Valley Fire Department

Located in North Central Washington, the WVFD serves approximately 74,000 citizens within a 172-square-mile jurisdiction in Chelan County and Douglas County. This includes residents of the City of Wenatchee, East Wenatchee, and the Town of Rock Island, as well as some unincorporated area. WVFD sits on the Columbia River and along the edge of the Chelan County boundary to Douglas County.

WVFD is staffed with 68 career firefighters. In addition, one staff member is dedicated to wildland fire prevention. Along with five chiefs and four administrative staff, WVFD receives support from 57 volunteer firefighters and 12 additional support volunteers. The fact that WVFD is staffed primarily by career firefighters is notable in an area where most fire districts

are primarily or completely staffed by volunteers. A Community Wildfire Liaison position is a relatively new addition and represents the department's stated goal "to work side by side with homeowners, communities, businesses, agencies and organizations to increase our community wildfire resilience, and improve future wildfire outcomes." The position was created in response to the Sleepy Hollow Fire in 2015.

Organizations in the area have engaged in notable activities in response to the threat of wildfire in recent years. In 2016, the City of Wenatchee initiated the Community Planning Assistance for Wildfire (CPAW) process, and in 2017, Chelan County implemented the CPAW process. This iterative process provided mapping products to support improved insights into and tools for wildfire mitigation and response activities. As part of the CPAW process, portions of the city adopted the 2015 International Wildland-Urban Interface Code. WVFD and partners are actively working to update the Douglas County CWPP, which will include mapping products and wildfire mitigation actions.

METHODS: WHAT DID WE DO?

In the study area, WVFD and WiRē implemented the WiRē Approach, a systematic approach to data collection that includes a parcel-level WiRē RA and household survey data collection. This project also included a follow-up survey to residents living in the unannexed part of the study area. Together, these three forms of data collection support better understandings of wildfire risk and the residents whose decisions and actions shape the community landscape. The project 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 collection was conducted by WVFD mitigation specialists (hereafter referred to as "trained assessors") as a census of all residential properties with a structure in the study area. Rapid assessments were conducted for 156 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 (refer to fig. 2).

To calculate a parcel's overall "risk score" (continuous number on a 1,000-point scale), each WiRē RA attribute is weighted, reflecting its relative contribution to parcel-level wildfire risk. For example, because roofing materials can present a more significant risk than address posting, these attributes are weighted differently, constituting 30% and 1% 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 projects to date. Specifically, the cut-offs between each risk rating are the 10th, 25th, 75th, and 90th percentiles of the full distribution across WiRē projects. This

resulted in the following overall risk ratings: low (20–240), moderate (241–305), high (306–435), very high (436–505), 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, and so on). 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.

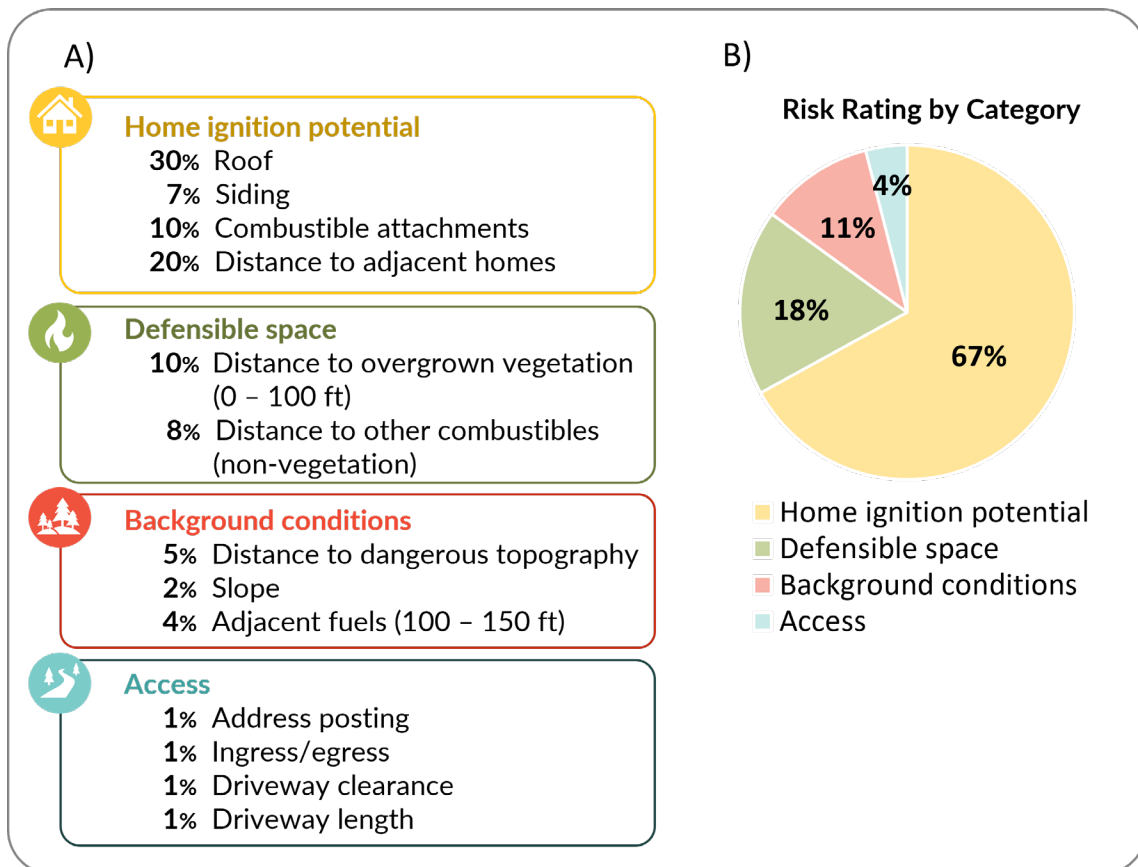


Figure 2—Wildfire Research (WiRē) Rapid Wildfire Risk Assessment: (A) Relative weight of each risk attribute within the overall risk score; (B) Relative weight of each risk category within the overall risk score.

To ensure consistent, high quality data collection, WiRē wildfire practitioners conducted a training that included a virtual orientation for those who would conduct the rapid assessments. Additionally, data were collected using ArcGIS Collector. 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 WVFD and were conducted on all residential properties in the study area unless access was blocked by a gated driveway or posted with no trespassing signage. While environmental and situational variables may occasionally affect the rapid assessment data collection process, WVFD is confident that the rapid assessments collected for this project provide an accurate representation of wildfire risk.

to the parcels in the Stemilt Basin study area. 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 project, many of the responses pertaining to combustible attachments and combustibles other than vegetation were 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 projects. However, some questions were tailored to address the interests of WVFD. WiRē and WVFD 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.³ Household survey data were collected using a modified Dillman approach⁴ that includes three mailings after the initial letter announcing project 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 1 month after the initial survey packet. The final mailing was a second complete survey packet with an updated cover letter mailed to nonrespondents approximately 1 month after the reminder postcard.

After the household survey was administered, the residents living in the unannexed part of the study area (n = 48) were sent a short annexation survey, along with a cover letter and return envelope with postage paid (refer to Appendix A). The annexation survey explained that annexation would mean paying a tax for fire protection and emergency services.

The household survey was sent to 86 households. Thirty-six surveys were returned for a 42% response rate. Of those completed household surveys, 16 were from nonannexed residents. The additional annexation survey administration process resulted in 11 completed annexation surveys for a 23% 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 Wenatchee Valley Fire Department and the Wildfire Research (WiRē) Center 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	6/17/2022
Annexation survey package	9/13/2022

³ 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.

⁴ For details, see: Dillman, Don A. 2000. Internet and mail surveys: The tailored design method, 2000. New York: John Wiley. 480 p.

Paired Rapid Assessment and Household Survey Data

The WiRē RA data, for which we have 156 records, were paired with the household survey data, for which we have 36 records, to produce 36 records with all the household survey and WiRē RA variables. After briefly describing the 156 records, this report summarizes results based on those 36 paired records.⁵ While the 36 records represent 42% of the Stemilt Basin residents, it is a small number of observations and care must be taken when considering subsamples of very few observations.

⁵ 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.

A COMPARISON OF RISK ASSESSMENT: RESULTS OF THE WiRē RAPID ASSESSMENT AND HOUSEHOLD SURVEY

In this section, we present the rapid wildfire risk assessment results from the WiRē RA and the household survey. Rapid wildfire risk assessment data were collected by WVFD mitigation specialists trained to use the WiRē RA (hereafter referred to as “trained assessors”). First, we present overall wildfire risk from all rapid assessments in the study area, and then we focus on the properties for which we have both rapid assessment and household survey data (“paired data,” refer to fig. 3) to compare the professional risk ratings to the self-assessed risk ratings.

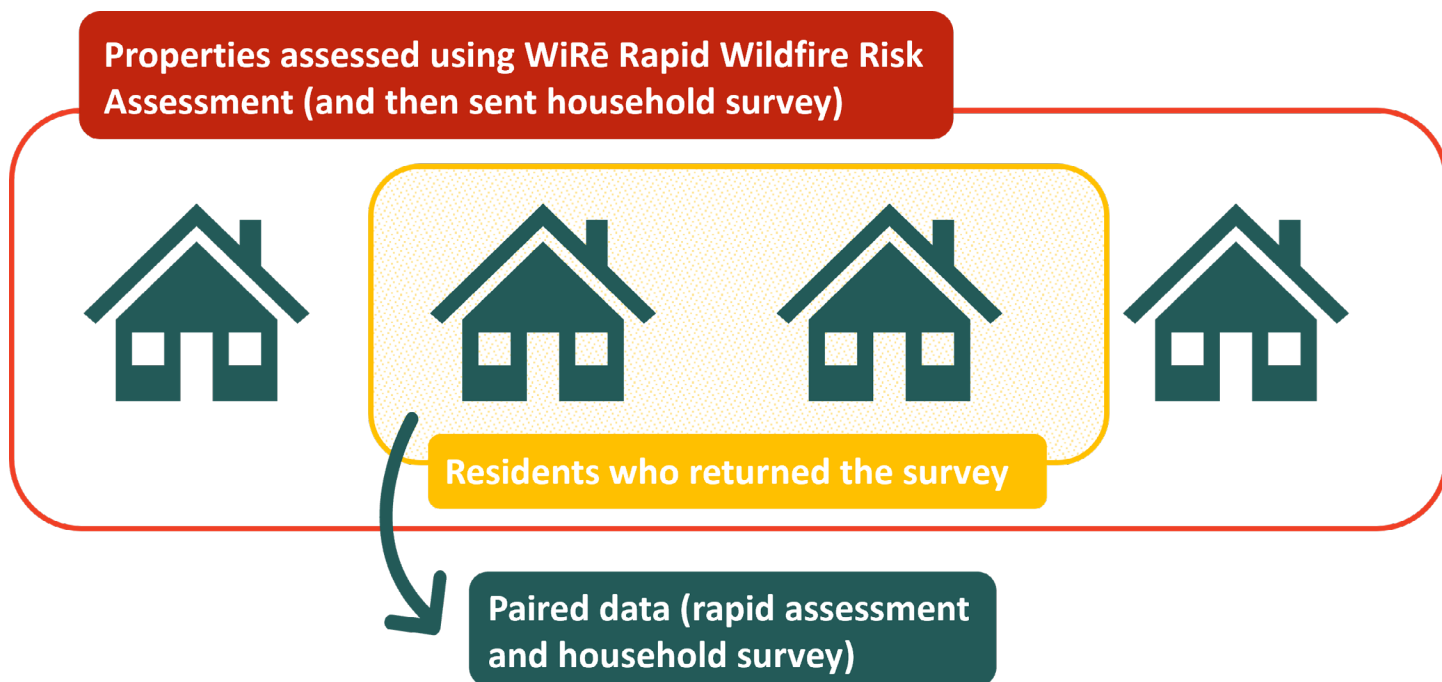


Figure 3—Representation of the rapid assessment and household survey data collected in the Stemilt Basin, Washington, study area in 2022, which were combined to produce the paired data presented in this report. WiRē = Wildfire Research.

Community Risk: Results of the WiRē Rapid Assessment

A total of 156 parcels were assessed by trained assessors. These parcels were assessed on 13 attributes and overall risk was categorized as low risk (4%), moderate risk (12%), high risk (58%), very high risk (13%), or extreme risk (13%). 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 results presented below are based on data for which we have a rapid assessment paired with a household survey (N = 36) (refer to Appendix D for more details). In other words, the data used in this section only represent 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 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.

Overall wildfire risk rating

Survey respondents evaluated their property's risk for each of 13 risk attributes included in the WiRē RA. They were also asked to provide an assessment of their property's 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 certain 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 to survey responses provides insight into the differing risk perspectives of residents and wildfire professionals.

Overall wildfire risk ratings reported by survey respondents are lower on average than those in the observed WiRē RA data. Most respondents rated their parcel as having either low (33%) or moderate (42%) wildfire risk, whereas trained assessors placed very few parcels in the low (8%) and moderate (14%) risk categories. In contrast, few survey respondents rated their property as high risk (22%), whereas trained assessors placed the greatest number of parcels in this category (47%). Following this trend, almost none of the survey respondents rated their property as very high risk (3%) or extreme risk (0%), whereas trained assessors placed 14% of parcels in the very high risk category and 17% of parcels in the extreme risk category (refer to fig. 4).

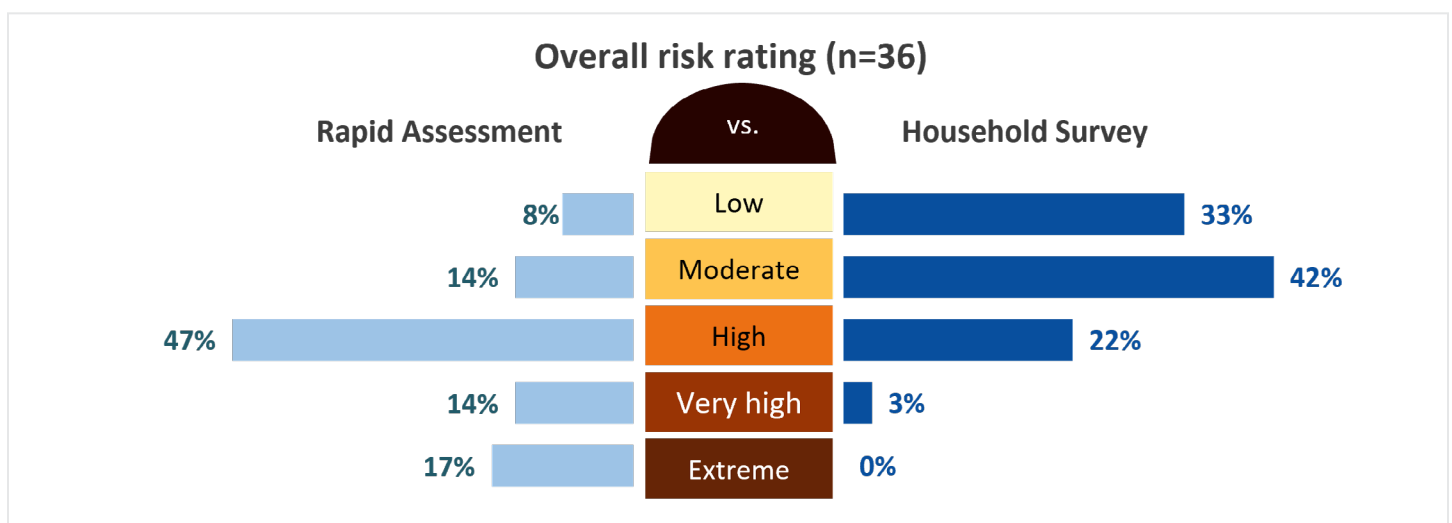


Figure 4—Distribution of overall risk rating. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents 36 paired household survey and rapid assessment data.

Home ignition potential

Wildfire conditions can impose long periods of convective and radiant heat on structures. These conditions test the limits of the materials used in construction. Both the design and building materials play a role in the ignitability of a structure.

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. Both the survey responses and WiRē RA data are in accordance that most roofs are made of noncombustible materials (92%) (refer to fig. 5).

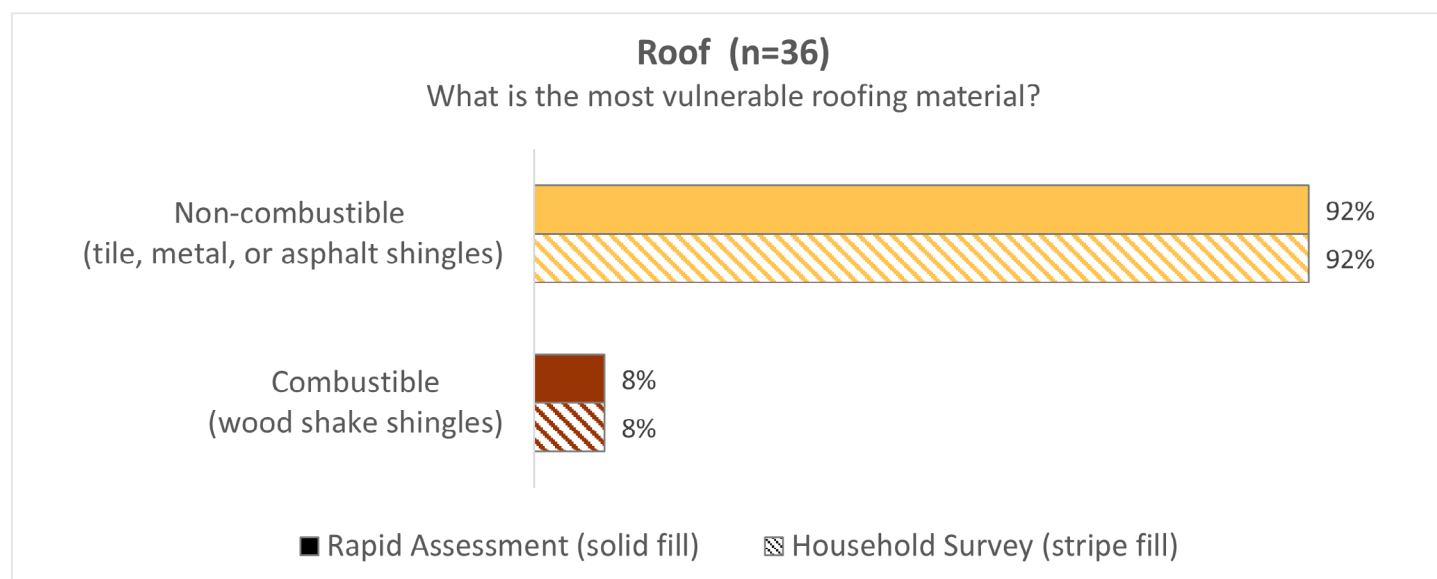


Figure 5—Combustibility of residential roof type. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 responses to this survey question.

Risk attribute: siding

A structure's exterior walls, including the materials used and the design and construction, 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 combustion risk materials (log, heavy timbers, maintained wood); or high combustion risk materials (vinyl, unmaintained wood, or other ember-receptive siding).

Most survey respondents (60%) reported that their home's siding is wood or vinyl. However, trained assessors placed almost all homes in this category (91%). Accounting for this difference in assessment, more survey respondents (34%) reported noncombustible siding (34%) than the trained assessors (9%). Refer to figure 6.

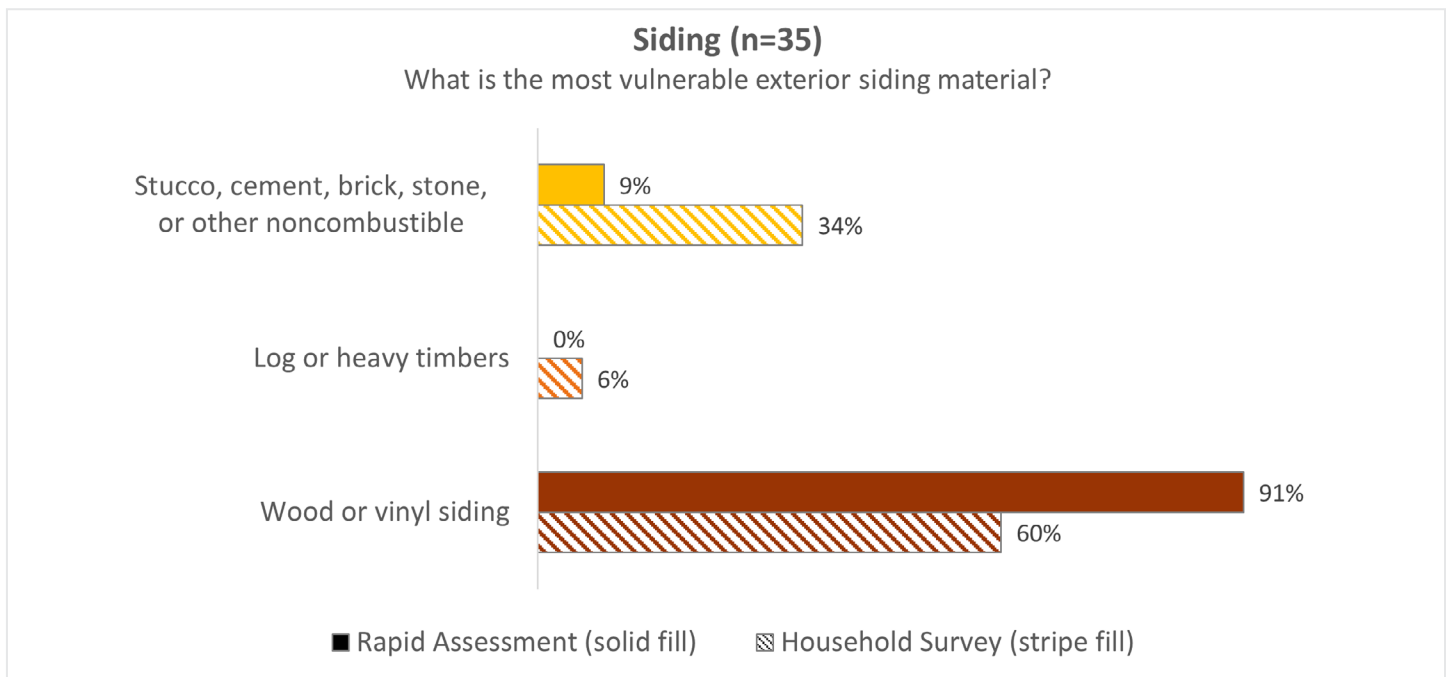


Figure 6—Residential exterior siding type, categorized by material into low, medium, and high-risk categories. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 35 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 have the potential to increase convective and radiant heat. Parcels were assessed on the presence or absence of combustible attachments, including a combustible balcony, deck, porch/portal, and fence.

Regarding the presence of combustible attachments, survey responses and WiRē RA data are largely in alignment. Both the survey responses and WiRē RA data indicate that most structures had combustible attachments, at 61% and 69%, respectively (refer to fig. 7).

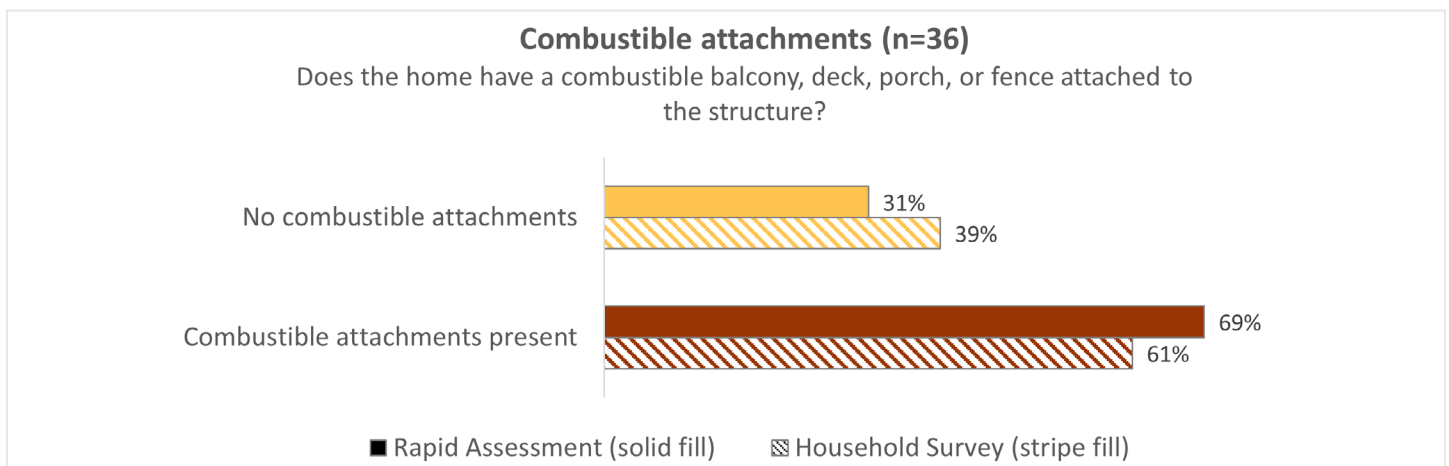


Figure 7—Presence or absence of combustible attachments. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 responses to this survey question.

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.

All survey respondents (100%) reported that adjacent homes were more than 100 feet away. Similarly, trained assessors placed most (75%) of homes in that category. However, the WiRē RA data do indicate shorter distances to adjacent homes for a quarter of observed parcels (refer to fig. 8).

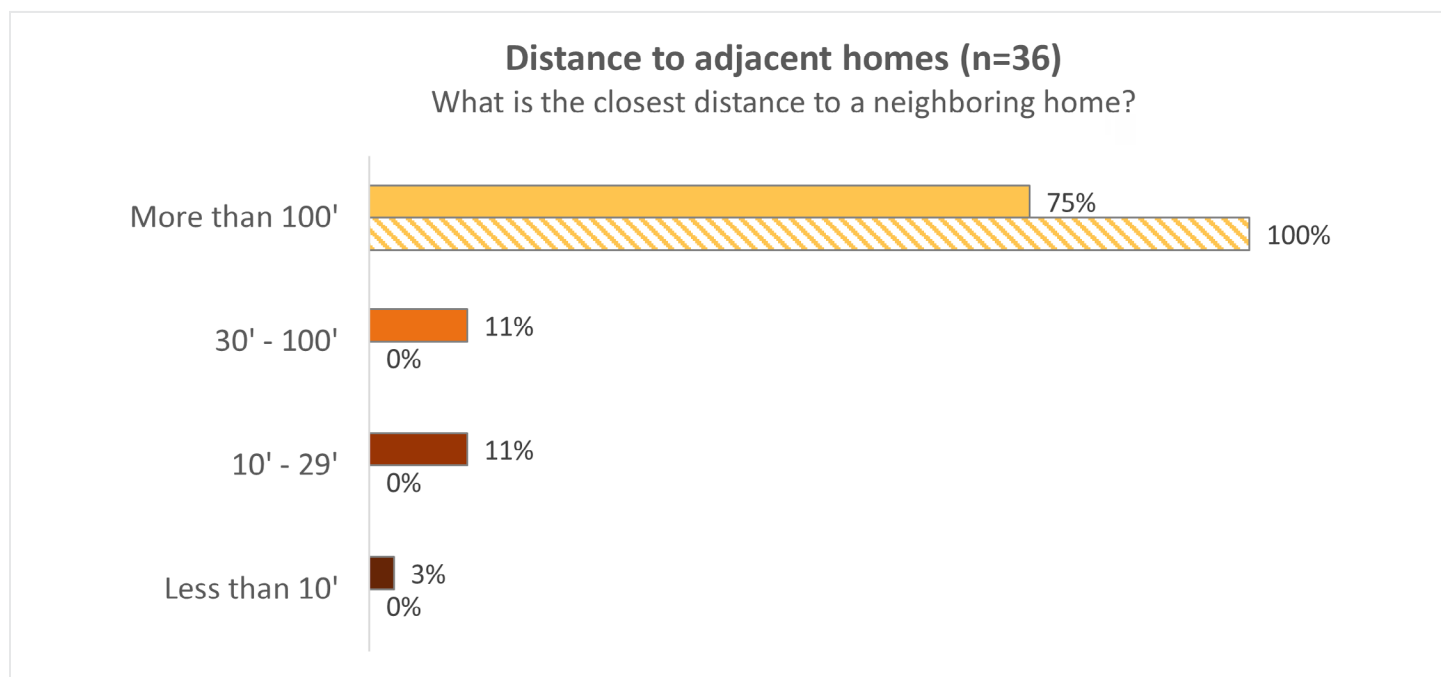


Figure 8—Proximity to adjacent homes, categorized by closest distance to neighboring home. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 responses to this survey question.

Defensible space

Home ignition is affected by the presence of or direct contact with vegetation and other combustible materials that can ignite and transfer flames 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

The presence of fuels within 100 feet of the home increases the risk of wildfire damage to the home. 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.

This attribute showed one of the largest differences between survey responses and WiRē RA data. Few survey respondents (14%) reported less than 30 feet of distance between their home and overgrown vegetation. In contrast, trained assessors estimated three-quarters of parcels (80%) as having less than 30 feet between the home and overgrown vegetation. Survey respondents tended to rate the distance as either more than 100 feet (43%) or 30–100 feet (43%). Refer to figure 9.

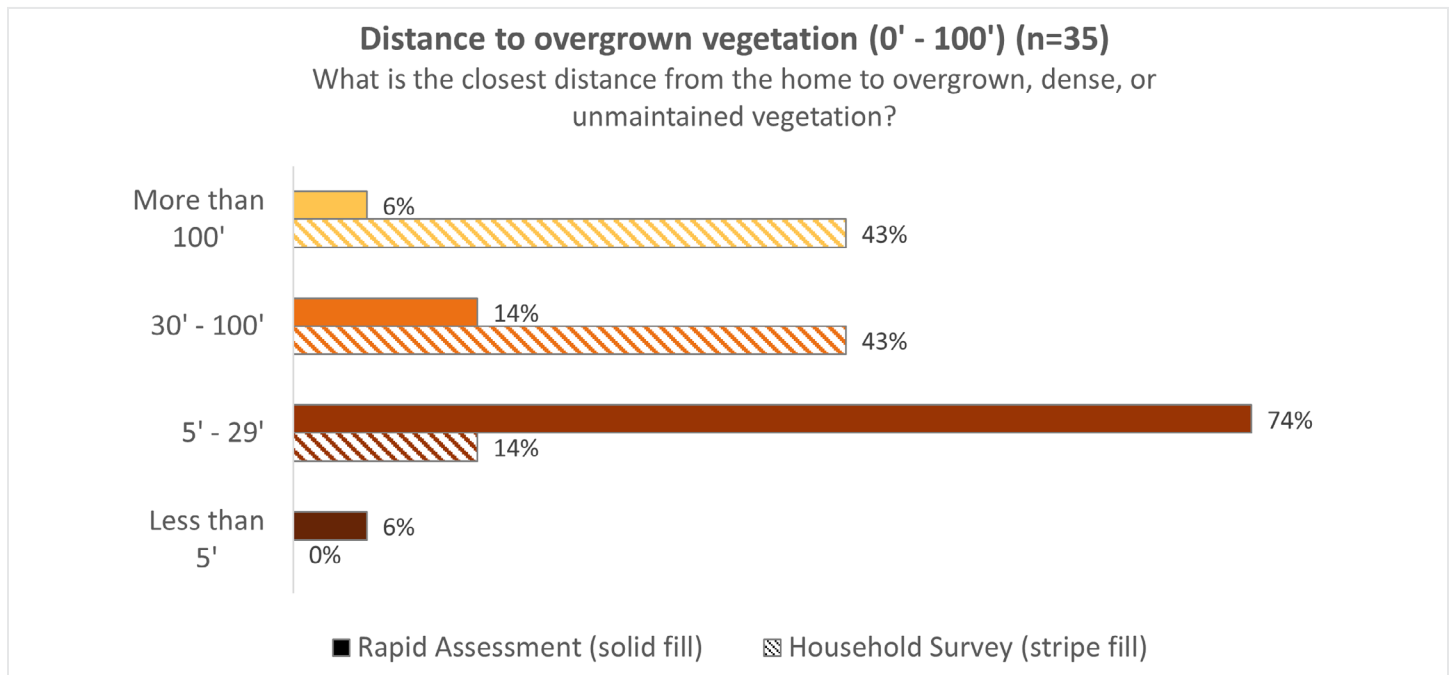


Figure 9—Distance to overgrown vegetation, categorized by distance between the home and overgrown, dense, or unmaintained vegetation. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 35 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.

The WiRē RA data and survey responses did not line up on this attribute. Eight percent of survey respondents reported less than 5 feet between their home and combustible items other than vegetation. In contrast, WiRē RA data indicated that half of homes (53%) were less than 5 feet from nonvegetative combustibles. Most survey respondents (61%) reported other combustibles as being more than 30 feet away or having no other combustibles (refer to fig. 10).

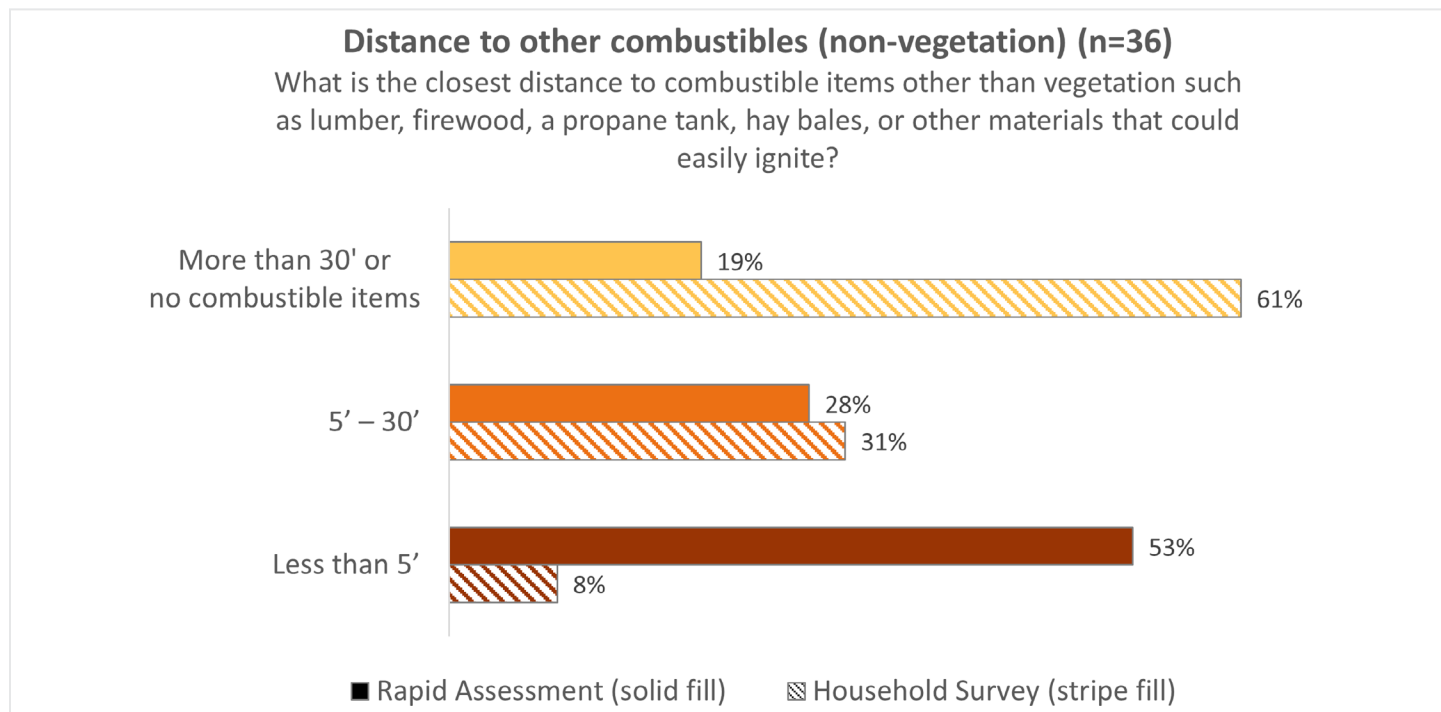


Figure 10—Other combustible materials, categorized by closest distance from home to combustible items other than vegetation. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 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 distance of the home to steep or dangerous topography at distances of less than 50 feet, 50 feet to 150 feet, and more than 150 feet.

Results indicate a disparity between survey respondents and trained assessors in estimation of the distance between the home and dangerous topography. Most (78%) of survey respondents reported that their homes were more than 150 feet from dangerous topography while the trained assessors placed only 17% of homes in that category. The trained assessors categorized most homes (72%) as being situated less than 50 feet from dangerous topography (refer to fig. 11).

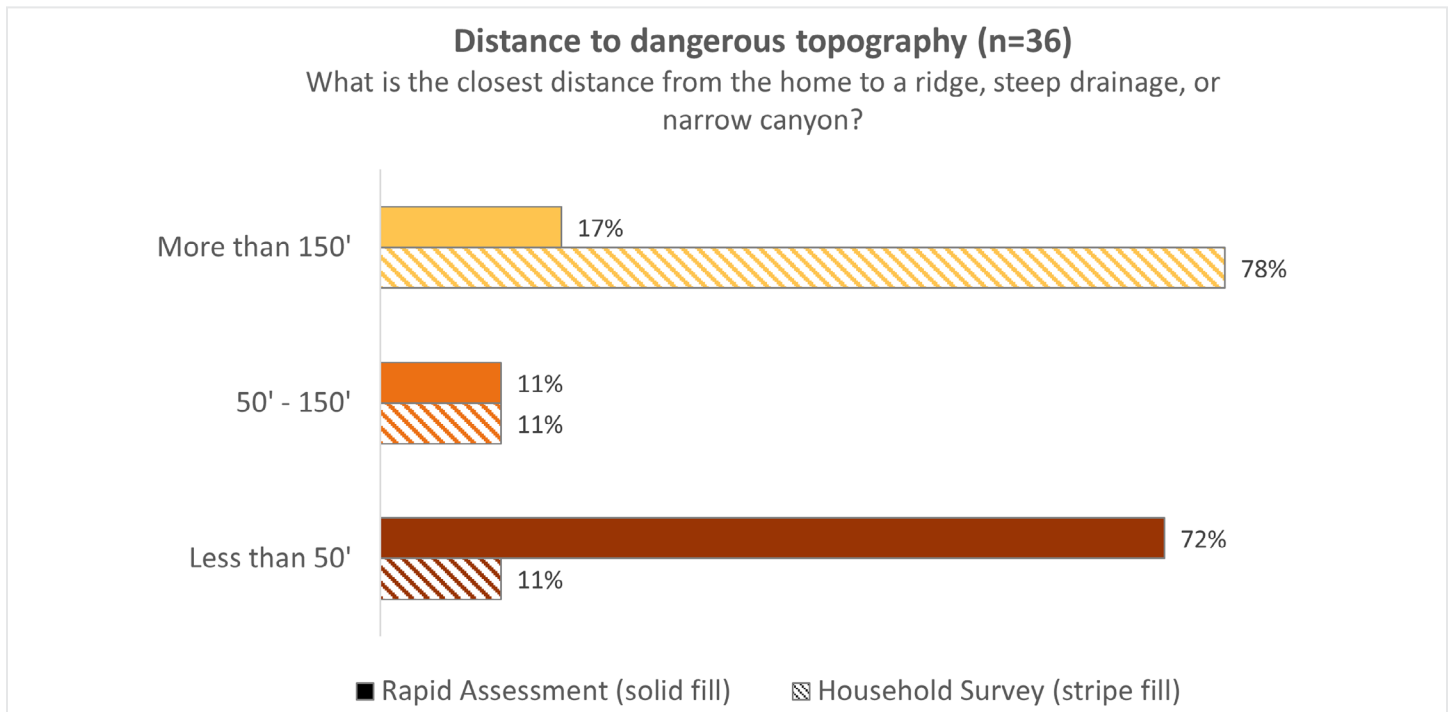


Figure 11—Closest distance from the home to dangerous topography (e.g., a ridge, steep drainage, or narrow canyon). Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 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 survey respondents and trained assessors reported similar numbers of parcels (28% and 22%, respectively) to have an overall gentle slope. However, 22% of respondents described their properties as having a steep slope, while the trained assessors classified 61% of the parcels as having a steep slope. Half (50%) of respondents reported their parcels' overall slope as moderate but the trained assessors classified only 17% of the parcels as having a moderate slope. Refer to figure 12.

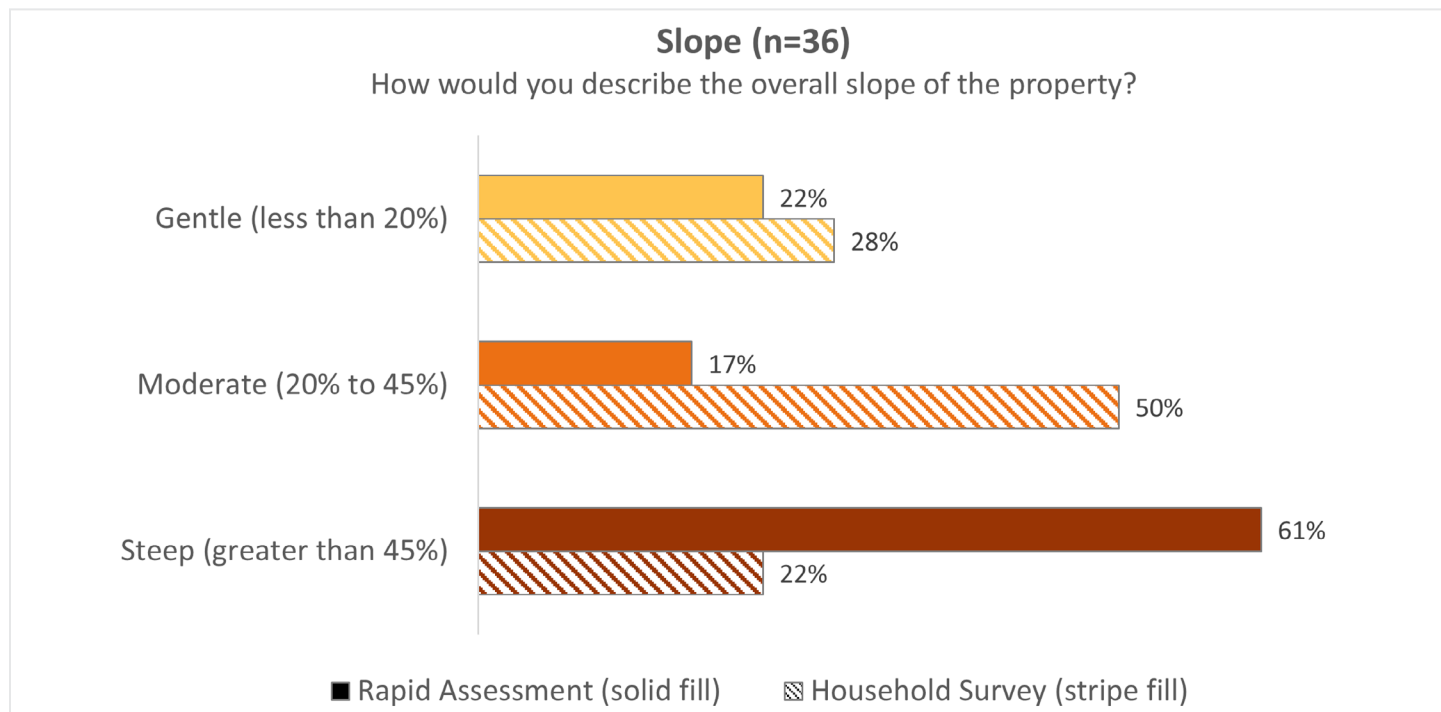


Figure 12—Overall slope of property. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 responses to this survey question.

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).

Like the trained assessors, most of the survey respondents classified dominant adjacent vegetation to be of medium density (67% and 75%, respectively). However, only 6% of survey respondents reported vegetation adjacent to their parcels as dense, while the trained assessors placed almost one-third (31%) of parcels in that category (refer to fig. 13).

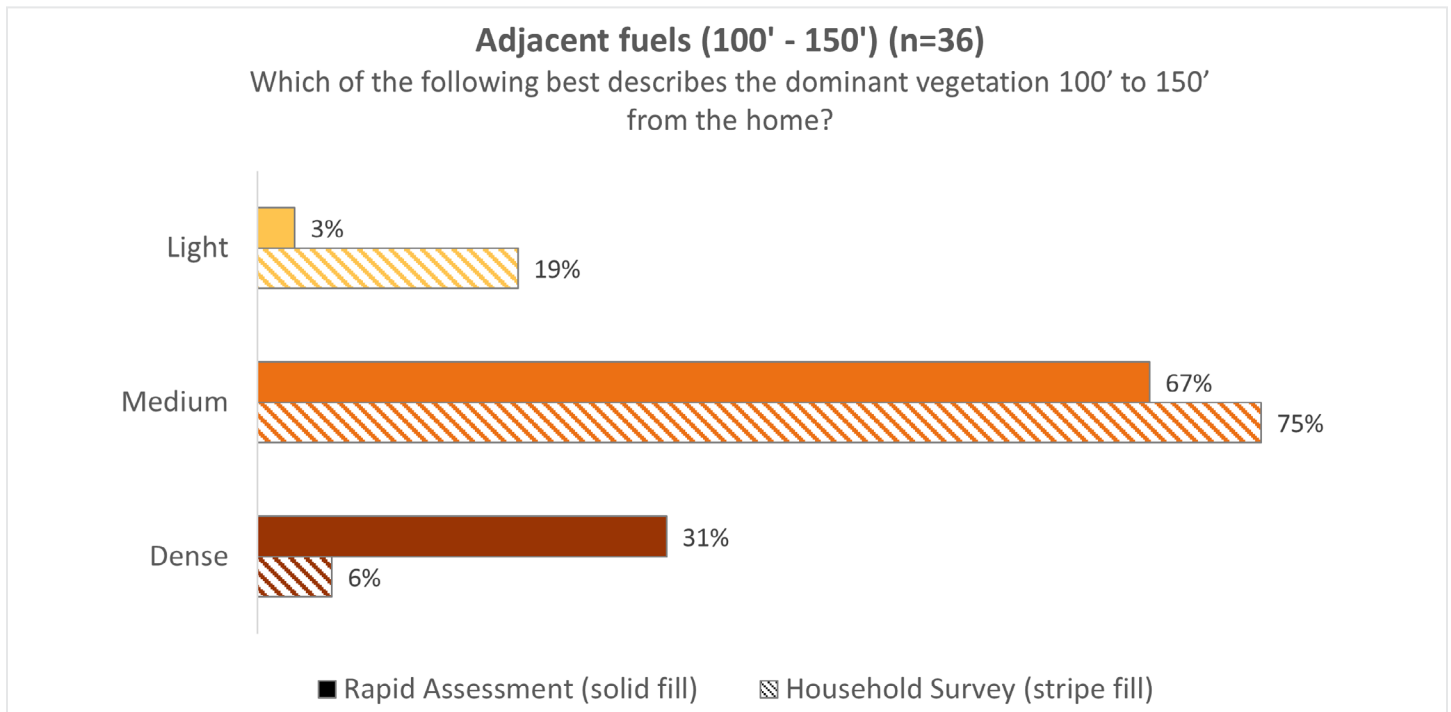


Figure 13—Adjacent fuels, categorized by the density of dominant vegetation 100 to 150 feet from the home. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRe) Rapid Assessment data. N = 36 responses 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 sign compared to the trained assessors. About one-third (39%) of survey respondents reported that their address fully met the standards while another third (39%) said it was visible from the road but did not meet all the standards. In contrast, the trained assessors reported few parcels as meeting all standards (21%) and over half of parcels as meeting some but not all standards (55%). Survey respondents and the trained assessors classified a similar number of parcels with address signs that are either not posted or not visible from the road (21% and 24%, respectively). Refer to figure 14.

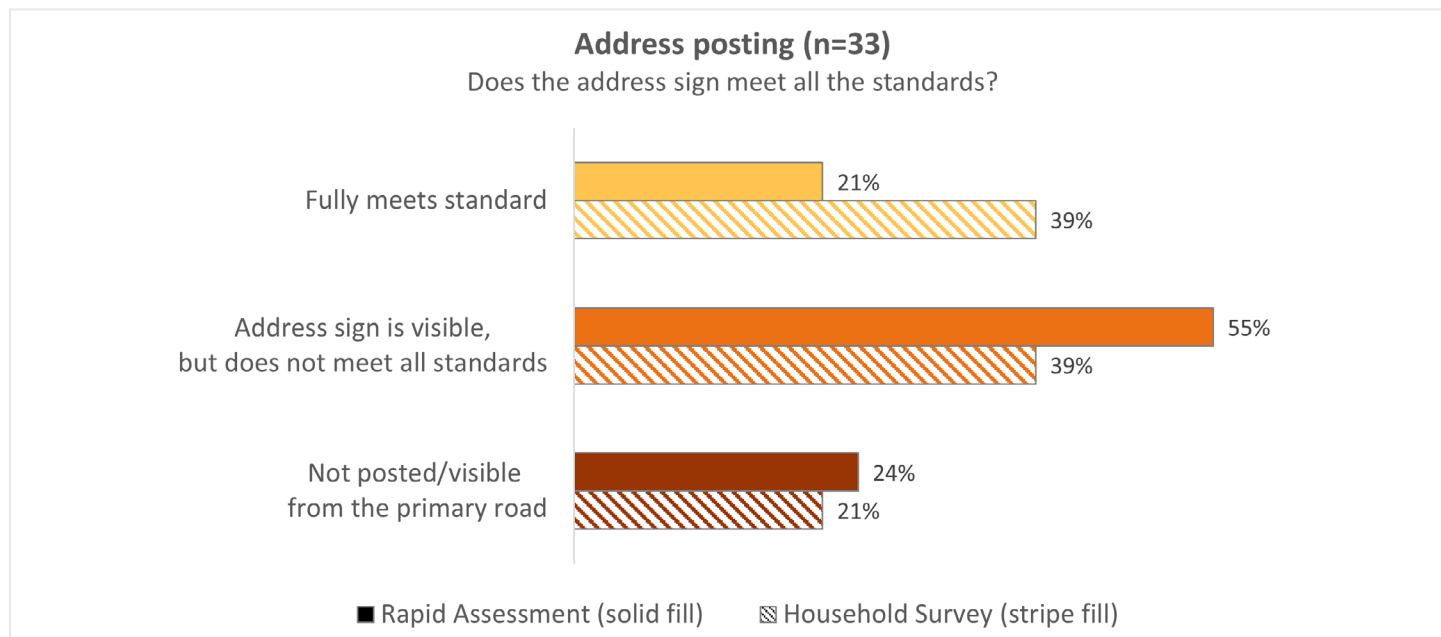


Figure 14—Characteristics of property address. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 33 responses to this survey question.

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 aligned in their perceptions of ingress/egress routes: both data sources indicated that about half of the parcels had more than one way out of the community (53% and 56% respectively) (refer to fig. 15).

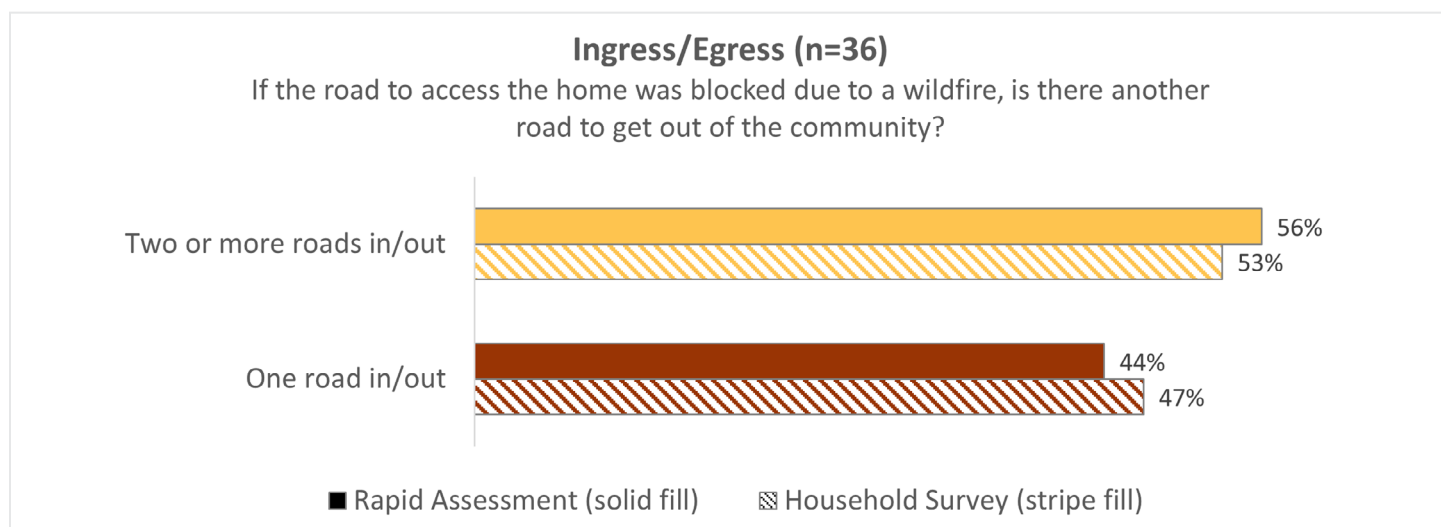


Figure 15—Number of evacuation routes in or out of community. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 36 responses to this survey question.

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.

According to the survey responses (61%) and the WiRē RA data (91%), most driveways met all standards. However, over a third of survey respondents (39%) did not think their driveway met both height and width standards. In other words, some survey respondents reported less accessible driveways than observed by trained assessors (refer to fig. 16).

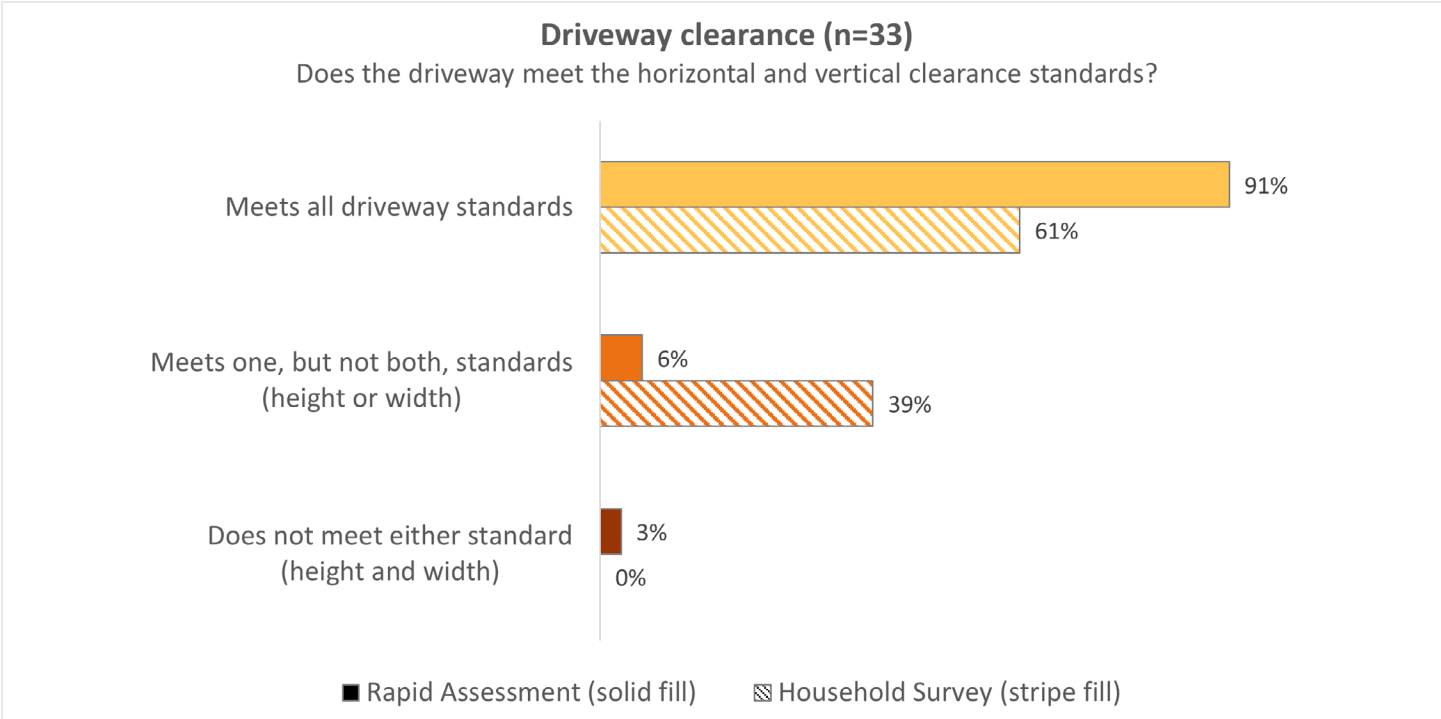


Figure 16—Width of residence driveway at its narrowest point. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 33 responses to this survey question.

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 lower risk categories than did the trained assessors. Twenty-nine percent of survey respondents stated that the length of their driveways was less than 150 feet and another 60% reported that their driveways were longer

than 150 feet but had adequate turnaround space. Only 11% of survey respondents reported that their driveways were longer than 150 feet and without adequate turnaround space. In contrast, trained assessors reported 17% of driveways as shorter than 150 feet, 46% as longer than 150 feet with adequate turnaround space, and 37% as longer than 150 feet with no adequate turnaround space (refer to fig. 17).

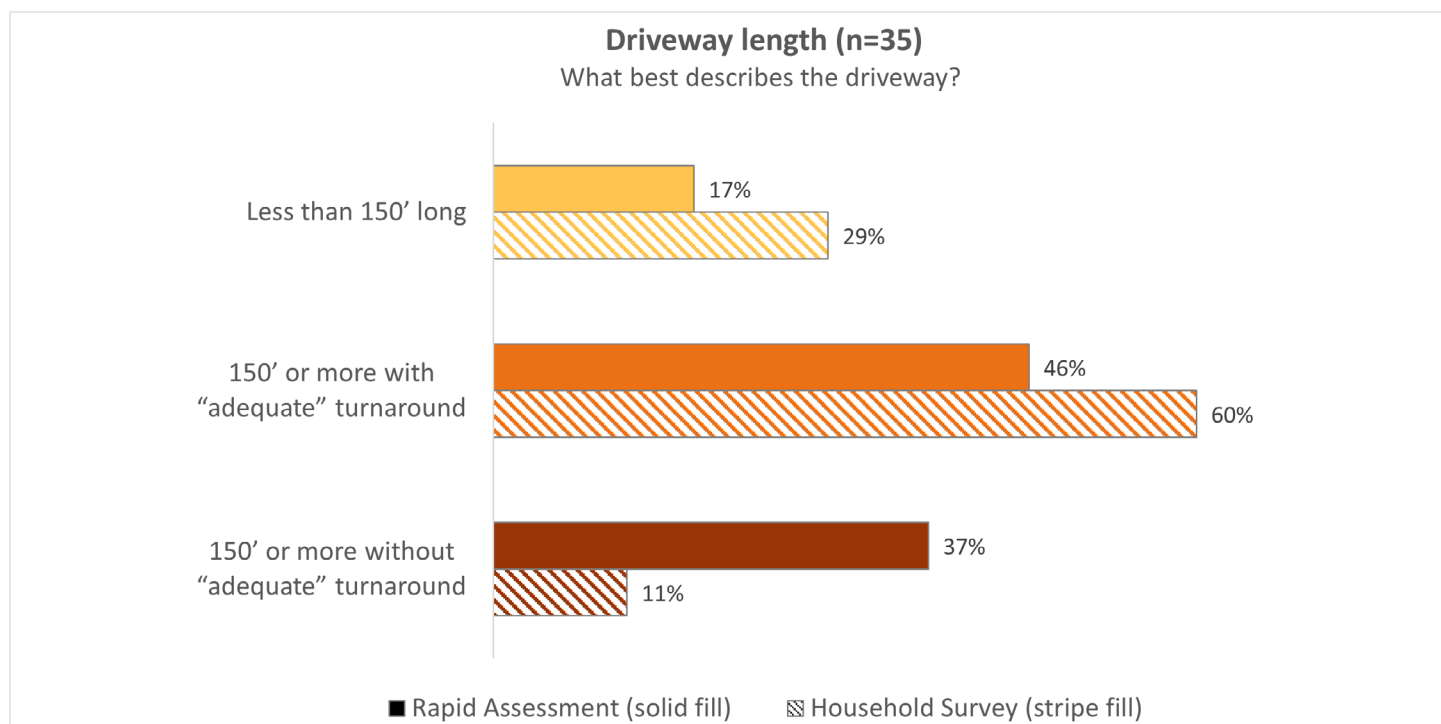


Figure 17—Driveway length and presence of turnaround. Comparison of household survey data as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. N = 35 responses to this survey question.

SOCIAL DIMENSIONS OF WILDFIRE RISK IN STEMILT BASIN: 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 (89%) of survey respondents occupy their homes in Stemilt Basin year-round, with just 11% occupying their residence fewer than 12 months out of the year. The average year of construction of the homes in the study area was 1994, and the average year that survey respondents moved into their homes was 2003. Annexed survey residents reported older homes on average than nonannexed residents (1988 vs. 2002) and moved into their homes longer ago (1998 vs. 2010). At the time of purchasing or beginning to rent their home in Stemilt Basin, 72% of survey respondents reported being very aware of the wildfire risk, 22% reported being somewhat aware, and 6% reported being unaware of wildfire risk (refer to fig. 18).

Survey respondents were more likely to identify as male (69%) and the average age of survey respondents was 58 years old. Sixty percent of survey respondents reported holding a bachelor's degree or higher. Forty-four percent of survey respondents were retired, 44% worked full-time, and 12% worked part-time. Forty-eight percent of households reported yearly incomes of \$100,000 or greater, 14% reported \$75,000 to \$99,999, and 21% reported \$50,000 to \$74,999.

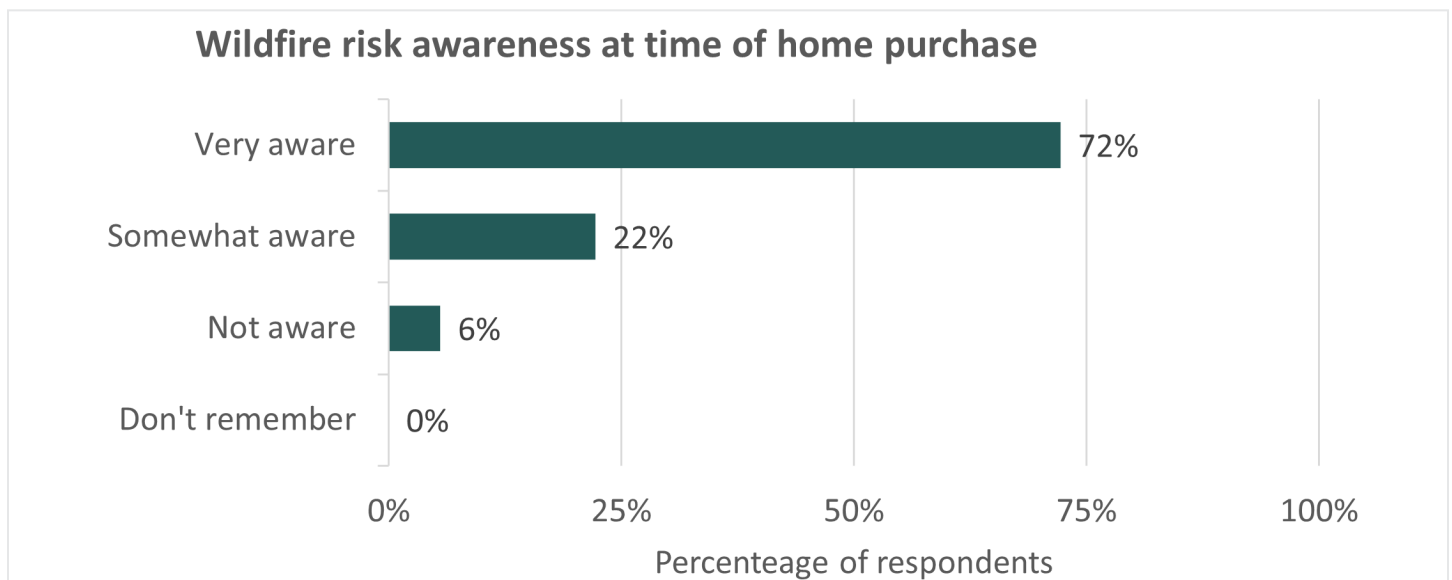


Figure 18—Respondents' awareness of wildfire risk, when they bought or began renting their home, as reported in 2022 by survey respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to this survey question.

Wildfire Experience and Risk Perceptions

Wildfire experience

Only 22% 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 residence due to wildfire (refer to fig. 19).

Despite few survey respondents with direct experience of wildfire on their properties, 91% reported that a wildfire had come within 10 miles from their properties (refer to fig. 20).

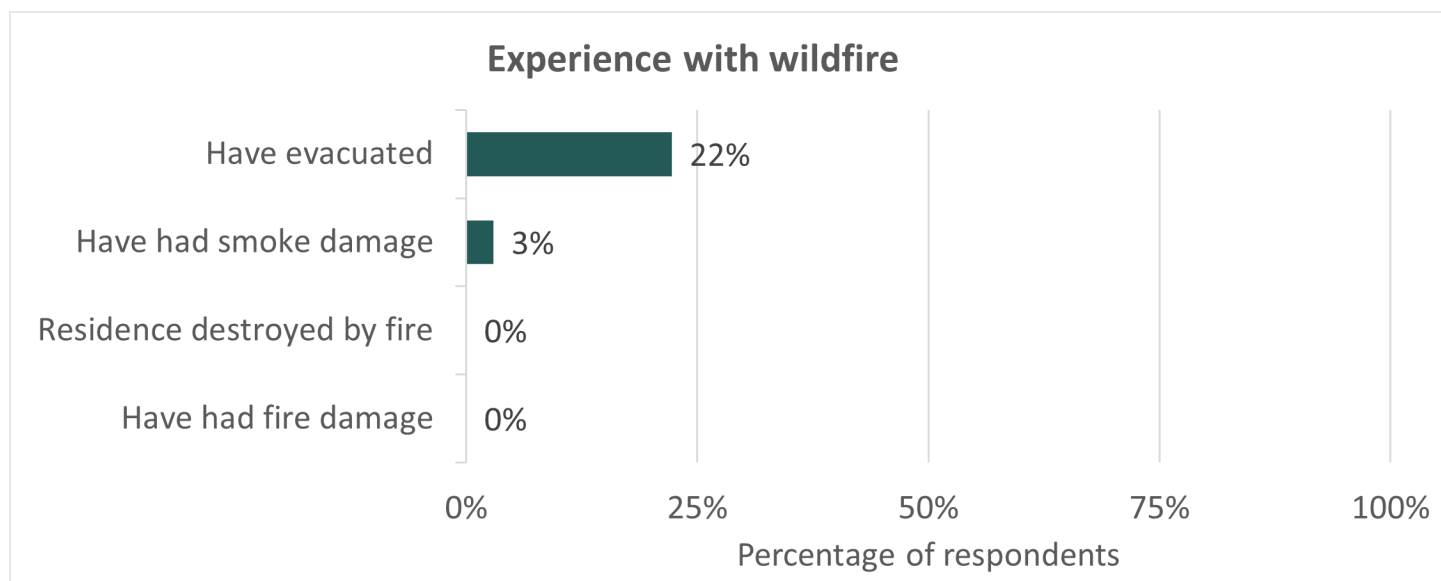


Figure 19—Respondent experience with various impacts of wildfire, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to these survey questions.

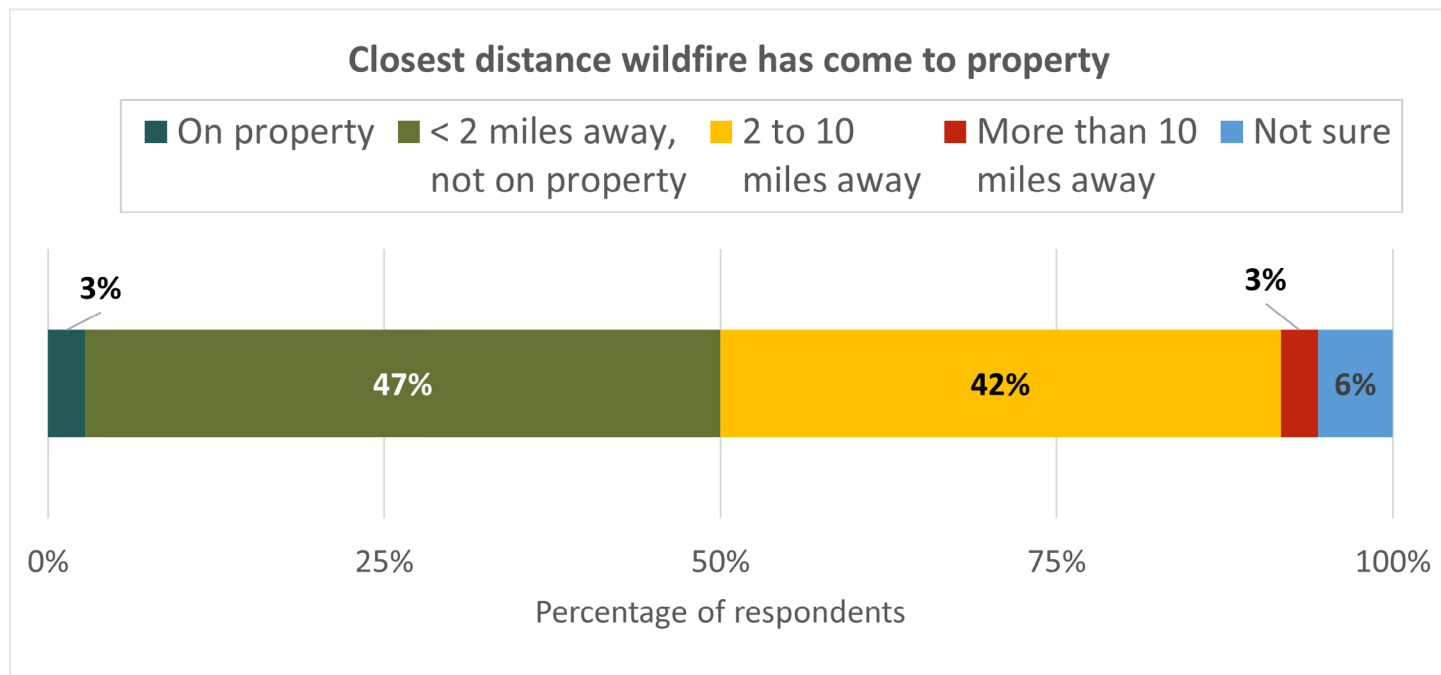


Figure 20—Respondent estimates of how close a wildfire has come to their property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to this survey question.

Perceptions of risk

Survey respondents were asked to consider the likelihood of the occurrence of a wildfire on their property and potential outcomes in that event. Fifty-eight 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).

Despite awareness that their property is at risk of wildfire, only 15% of survey respondents thought it likely (greater than 50% chance) that there would be a wildfire on their property in the next year. Furthermore, if there were a wildfire on their property in the next year, only a quarter (26%) of survey respondents thought it likely they would lose their home (refer to fig. 22).

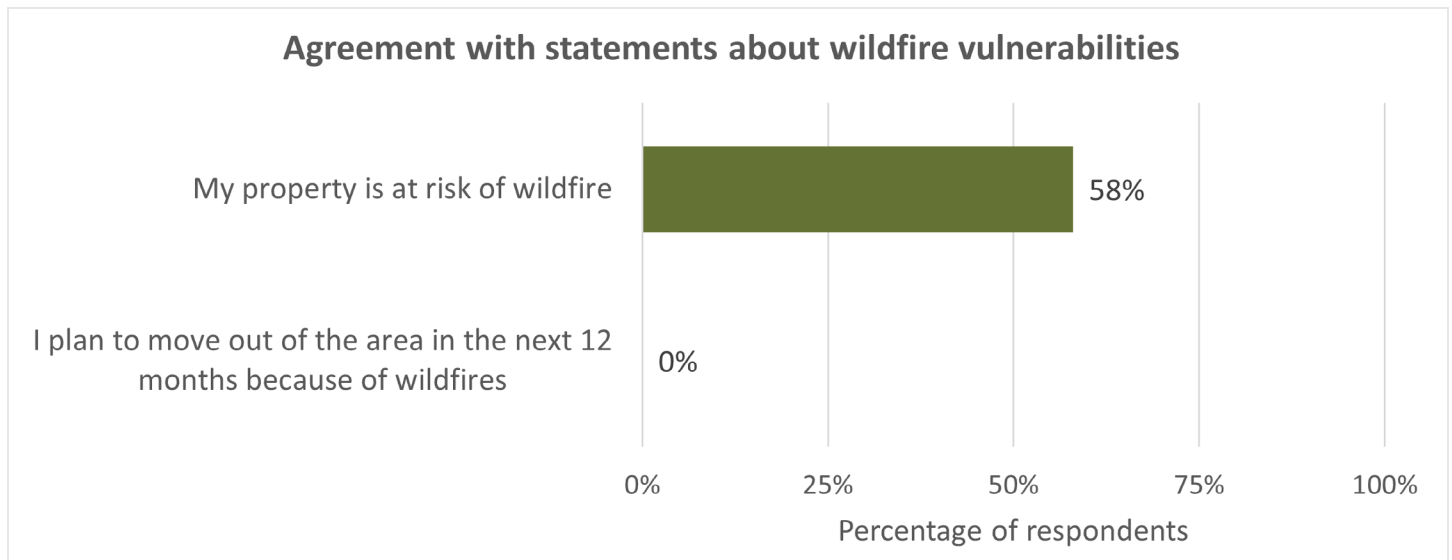


Figure 21—Agreement (“agree” or “strongly agree”) with statements about whether wildfire threatens the respondent’s property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to each survey statement listed.

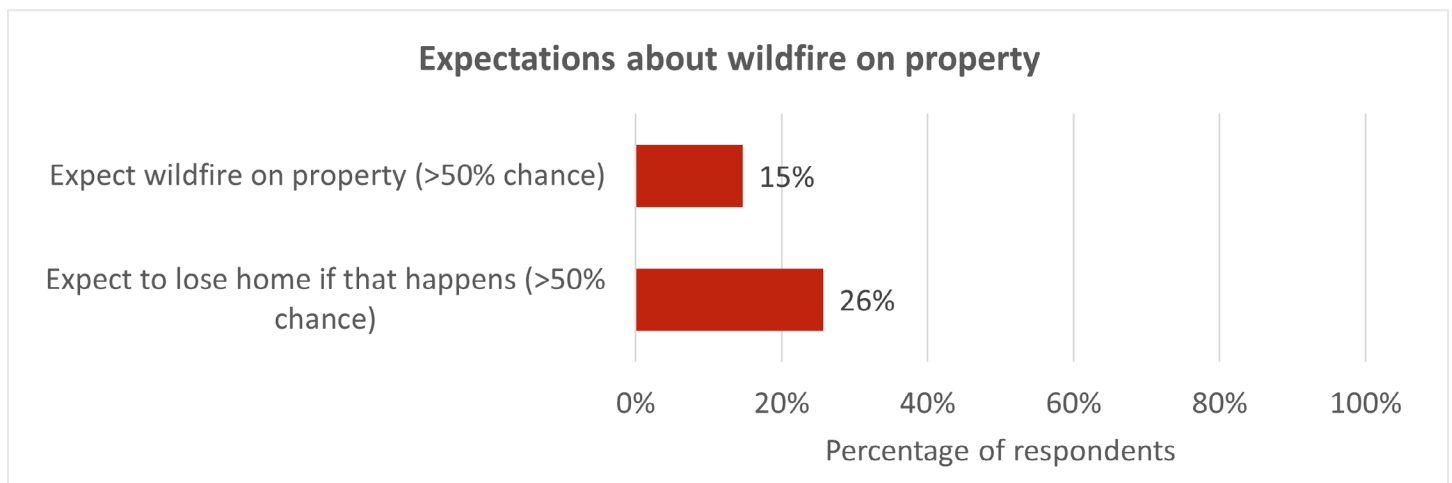


Figure 22—Estimate of the chances (> 50% chance) of a wildfire on their property in the next year, and chances (> 50% chance) of losing their home in that case, as reported in 2022 by survey respondents residing in the Stemilt Basin, Washington, study area. N = 34 and 35 responses to the two survey statements listed, respectively.

When asked to consider who would protect their home in the event of a wildfire, few survey respondents (26%) thought it was very or extremely likely that the fire department would save their home. More respondents (34%) thought it very or extremely likely that they would put the fire out themselves (refer to fig. 23).

In terms of outcomes, 51% of survey respondents reported that, in the event of a wildfire on their property, it was very or extremely likely that their trees and landscape would burn, and 31% reported it was very or extremely likely that there would be smoke damage to their homes. Twenty-nine percent thought it very or extremely likely that there would be some physical damage to their homes. Notably, more respondents thought it was very or extremely likely their neighbors' homes would be damaged or destroyed (21%) than thought their own home would be destroyed (11%) or they would lose money due to loss of business or income (11%) (refer to fig. 24).

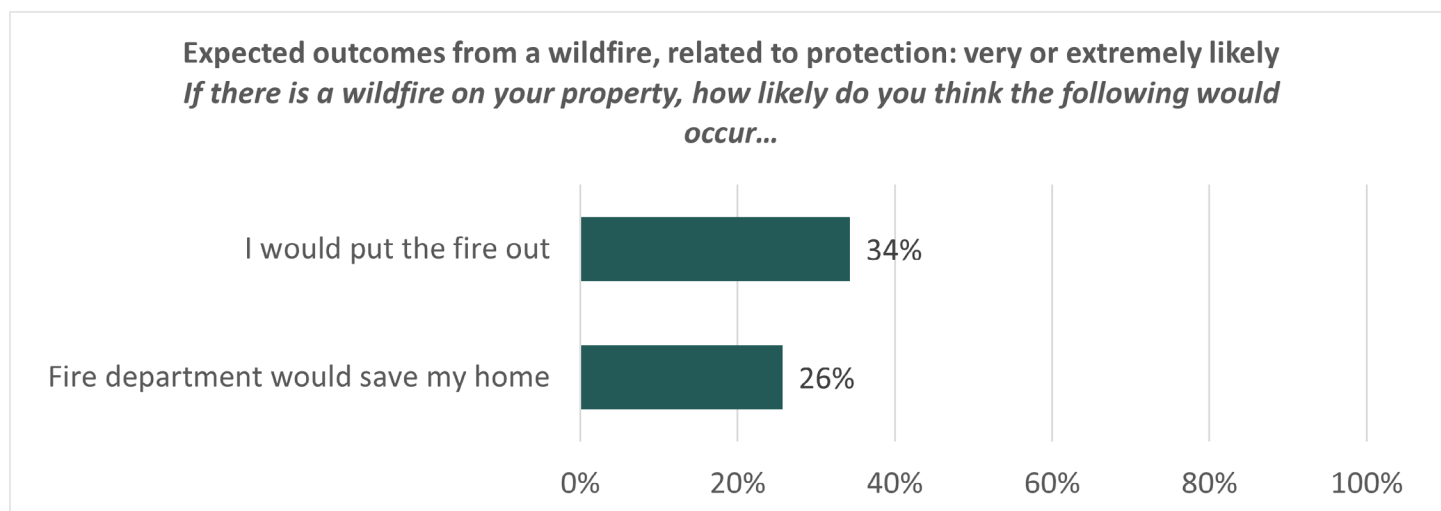


Figure 23—Percentage of survey respondents who thought the above source of protection to their home was very or extremely likely, in the event of a wildfire on their property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 responses to each survey statements listed.

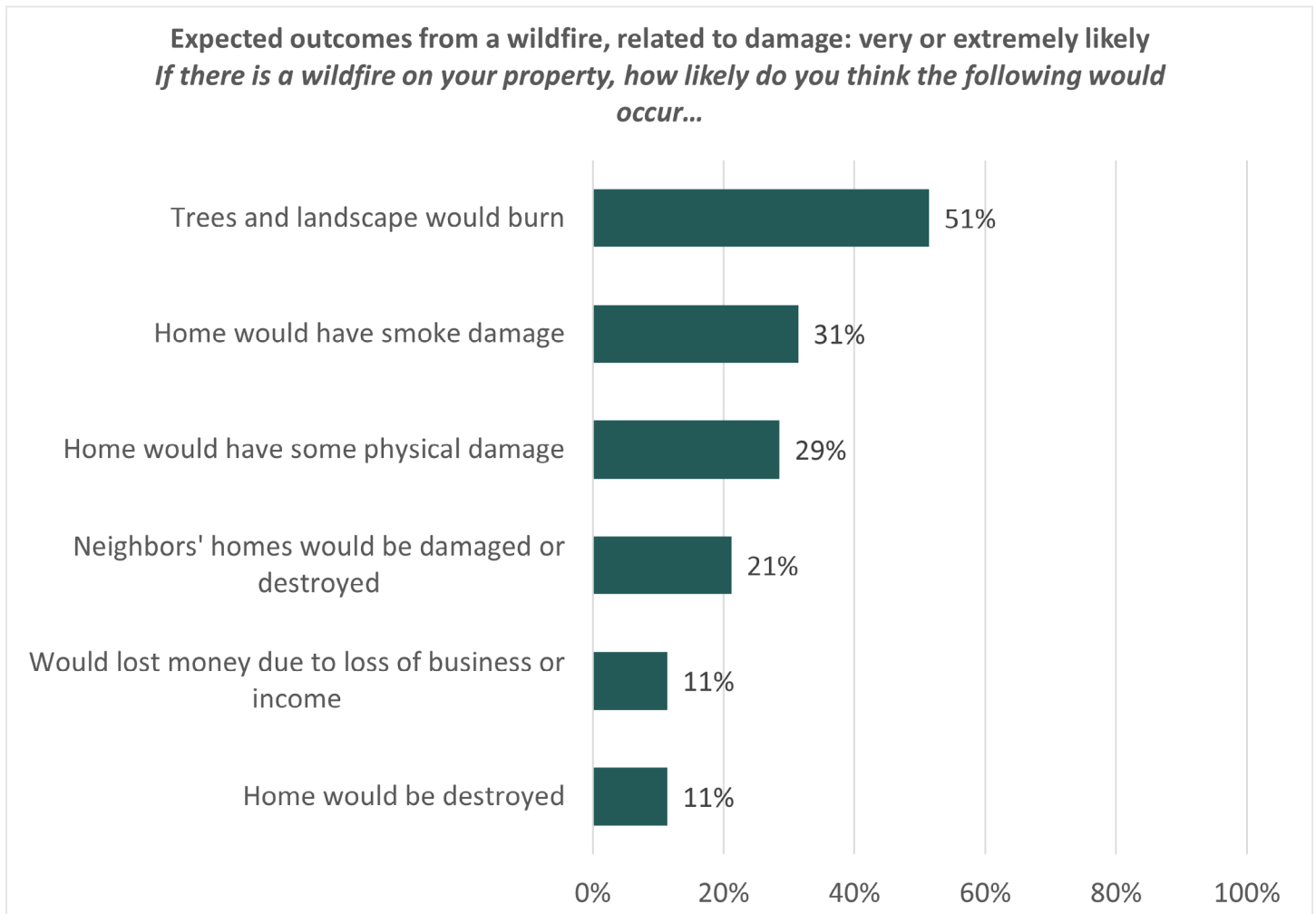


Figure 24—Percentage of survey respondents who thought the above forms of wildfire damage were very or extremely likely, in the event of a wildfire on their property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington study area. N = 33–35 responses to each survey statement listed.

Survey respondents indicated a limited understanding of the physical mechanisms of home ignition. Few respondents thought there was a high likelihood of direct flame (23%), embers (11%), or nearby homes (0%) igniting their home, in the event of a wildfire on their property (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 (83%) listed lack of nearby water supply as a major contributor to the chances of a wildfire damaging their property in the next year, followed by vegetation on public or undeveloped lands (78%), on their property (75%), or on their neighbors' properties (67%). The factor respondents thought least likely to contribute to property damage was physical characteristics of the home or other buildings on the property (refer to fig. 26).

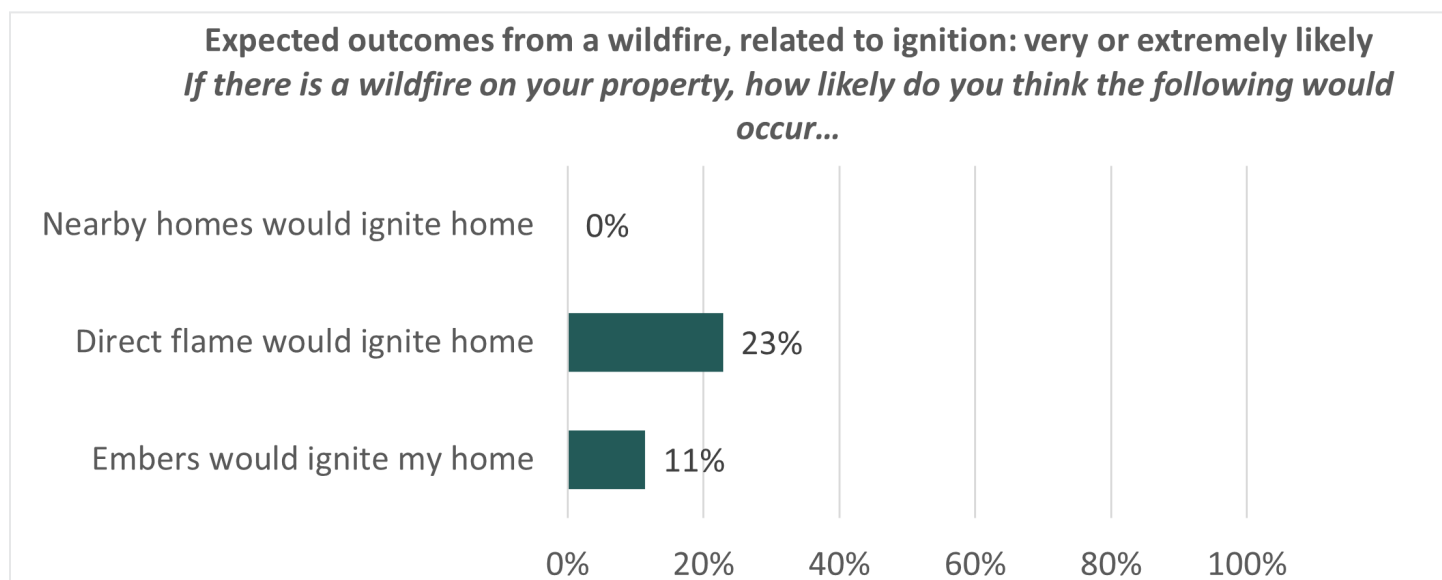


Figure 25—Percentage of survey respondents who thought the above sources of ignition were very or extremely likely, in the event of a wildfire on their property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 responses to each survey statement listed.

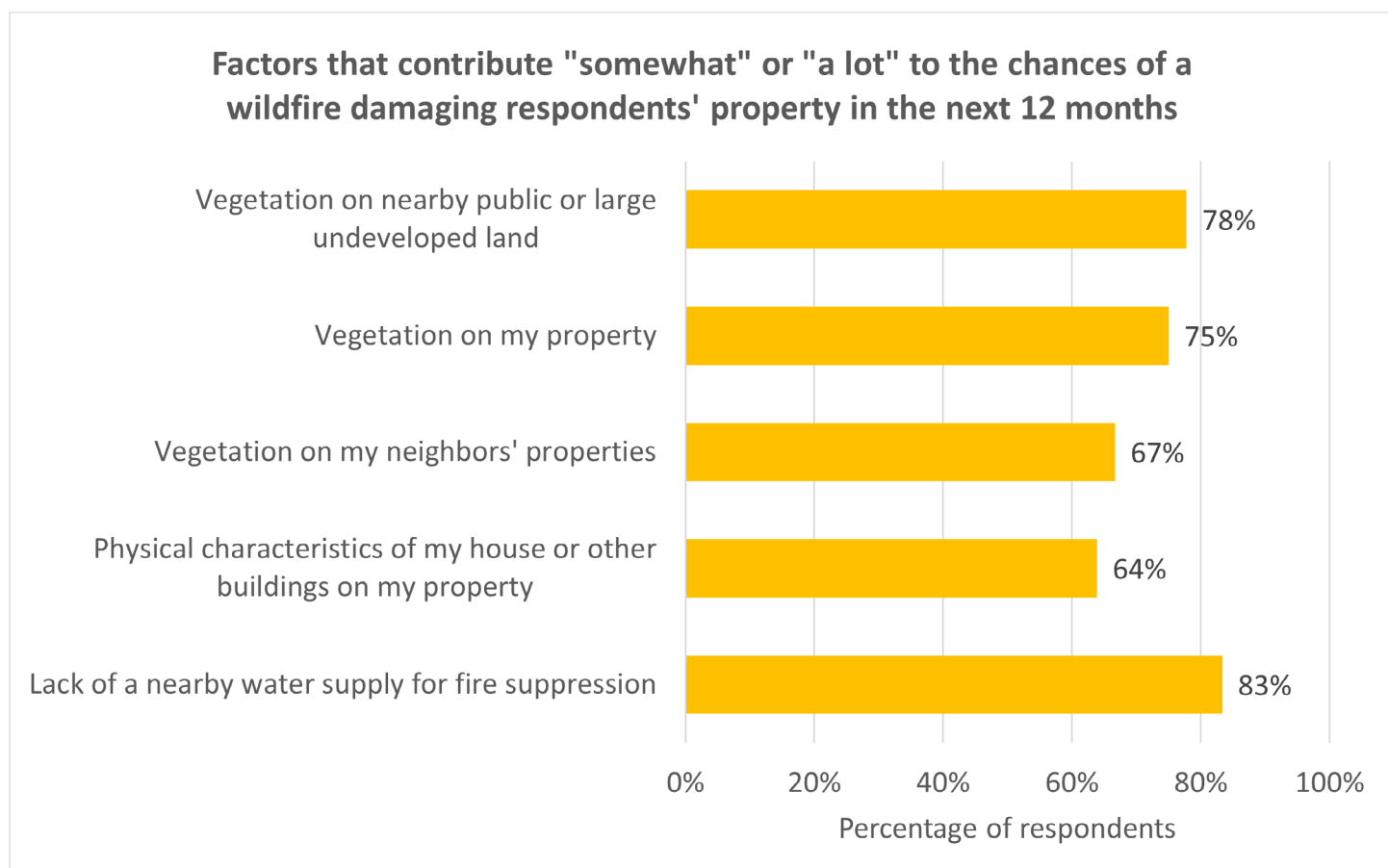


Figure 26—Percentage of survey respondents who thought the above factors contribute "a lot" to the chances of a wildfire damaging their property in the next 12 months, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to each survey statement listed.

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 half (64%) 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 (71%) reported that some of their neighbors have taken action to mitigate wildfire risk. Furthermore, 20% reported that most of their neighbors had taken action, and 3% reported that all of their neighbors had taken action. Only 6% of survey respondents reported that none of their neighbors had taken action to mitigate wildfire risk—since the number of respondents to this question is 36, 6% is the equivalent of 2 respondents (refer to fig. 28).

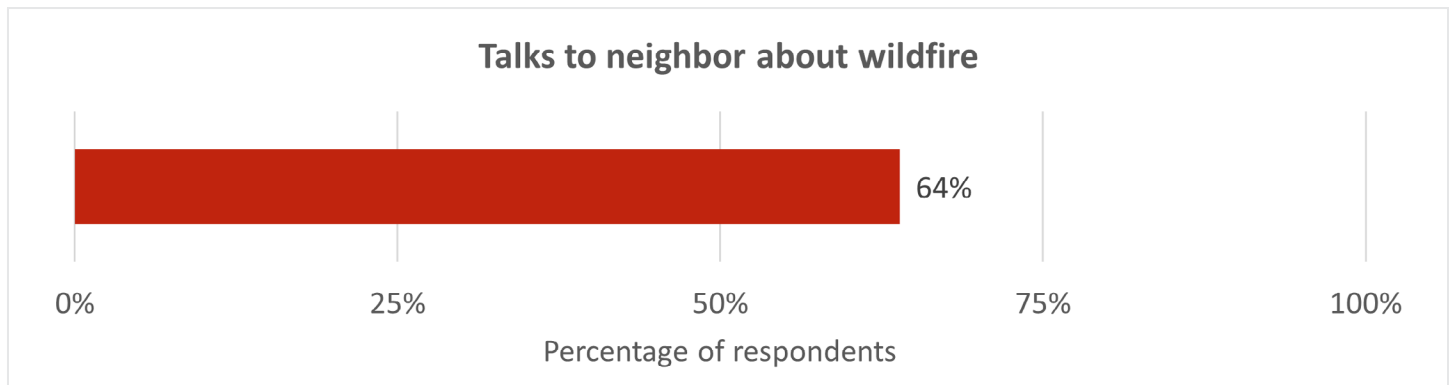


Figure 27—Percentage of survey respondents residing in the Stemilt Basin, Washington, study area, who reported in 2022 talking to their neighbor about wildfire. N = 36 responses to this survey question.

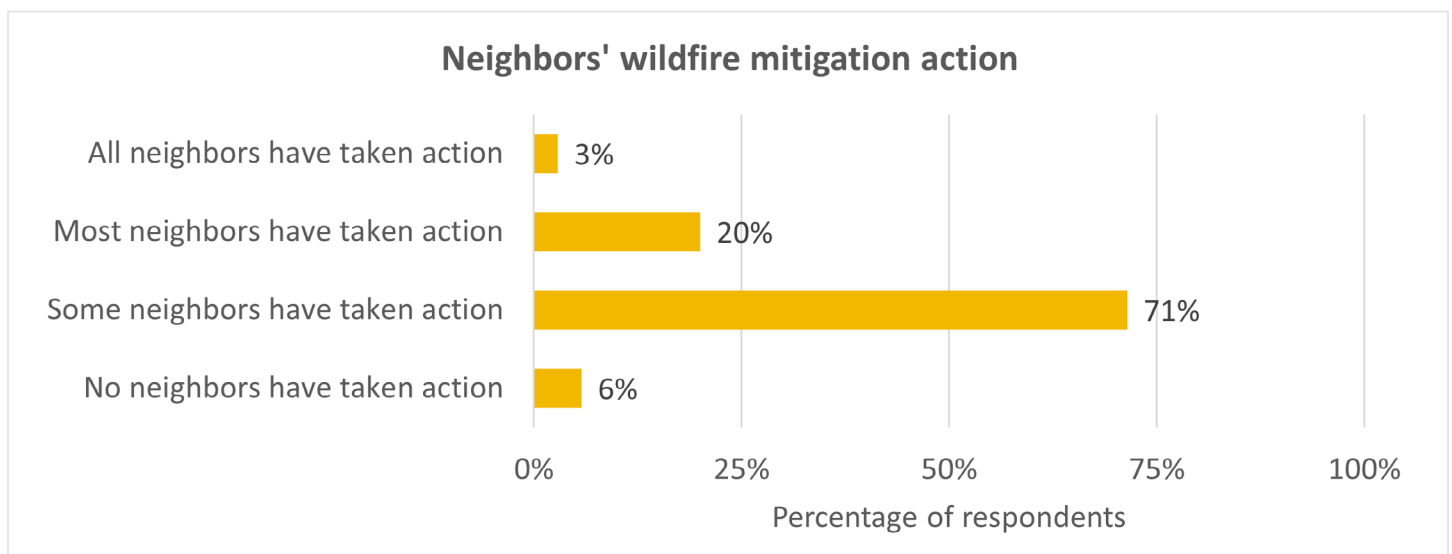


Figure 28—Respondents' estimates of how many neighbors take wildfire mitigation action, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 responses to this survey question.

While insurance providers could shape homeowner knowledge and perceptions of wildfire risk and motivate performance of mitigation activities, few survey respondents reported interactions with their insurance companies. A third of respondents (35%) received information about wildfire risk reduction from their insurance company, but few respondents reported that their insurance company charged them higher premiums due to wildfire risk (23%), offered them private firefighting services (14%), refused them insurance on grounds of wildfire risk (11%), or required them to mitigate wildfire risk (3%). Notably, two-thirds (66%) of survey respondents felt that their home was adequately insured against loss from wildfire (fig. 29).

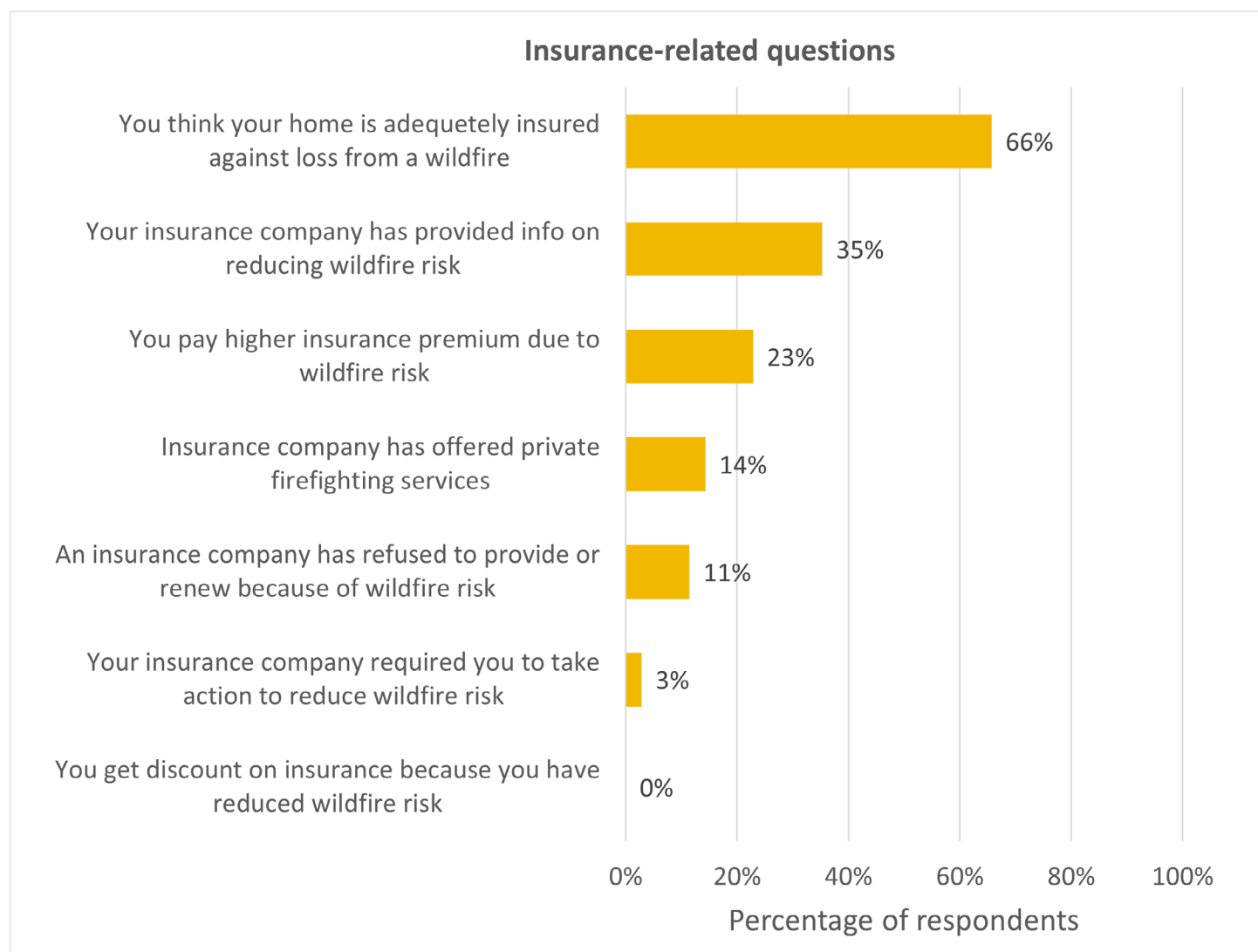


Figure 29—Respondents' knowledge of and experience with various insurance company actions, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 34–35 responses to each statement.

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. In general, fewer than half of respondents reported receiving information from each of the sources listed. There were many sources of information available, but most of them reached less than a quarter of respondents. The sources that reached the most respondents were the local fire department (45%), the media (42%), Cascadia Conservation District (34%), and Chelan County Department of Natural Resources (DNR) (32%). Of the top received sources, the most useful to respondents was the Cascadia Conservation District (64%) and the least useful was media (8%).

Interpretation of data from this question should take into account the small number of respondents to this survey (N = 36), and particularly to the source receipt (n = 31–34) and source usefulness (n = 1–14) questions. For example, while sources such as Chumstick Wildfire Stewardship Coalition, Fire Adapted Communities/Learning Network, and the Bureau of Land Management were reported to be very or extremely useful to those who had received information from them (100%), these sources only received usefulness ratings from 1–2 respondents (refer to fig. 30).

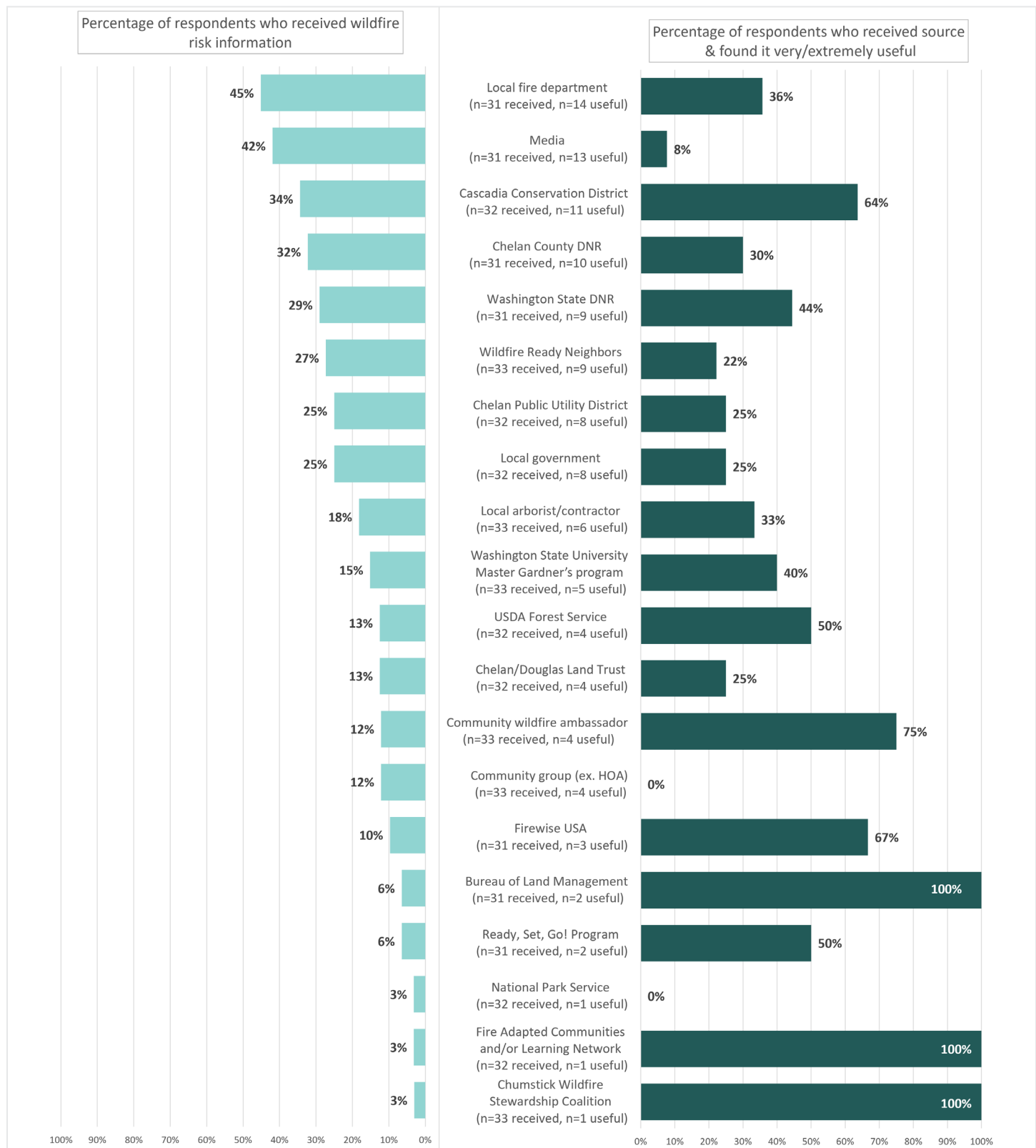


Figure 30—Percentage of survey respondents who received wildfire risk information, by source, as reported in 2022 by survey respondents in the Stemilt Basin, Washington, study area. These data were compared to the percentage of people who said they found each source's wildfire risk information very or extremely useful (percentage of all respondents who received wildfire risk information from that source). N = 31–34 responses to source receipt questions; N = 1–14 responses to source usefulness questions. HOA = homeowners association; USDA = U.S. Department of Agriculture; WSU = Washington State University.

Current and preferred channels of communication

There are many different channels by which information about wildfire may be distributed. We asked participants about the forms in which they currently receive wildfire-related information, as well as how they would prefer to receive this information. In general, there were three channels through which a significant amount of survey respondents reported receiving wildfire information. These common communication channels reported were radio, TV news, and mailed newsletters (39%, 31%, and 28%, respectively), while the most often preferred communication channel was mailed newsletter or in-person interactions (44% and 42%, respectively). For some of the channels of communication, more participants reported wanting to receive information than reported currently receiving information. This is particularly striking for in-person interactions, a channel that 42% of respondents prefer but only 14% receive (refer to fig. 31).

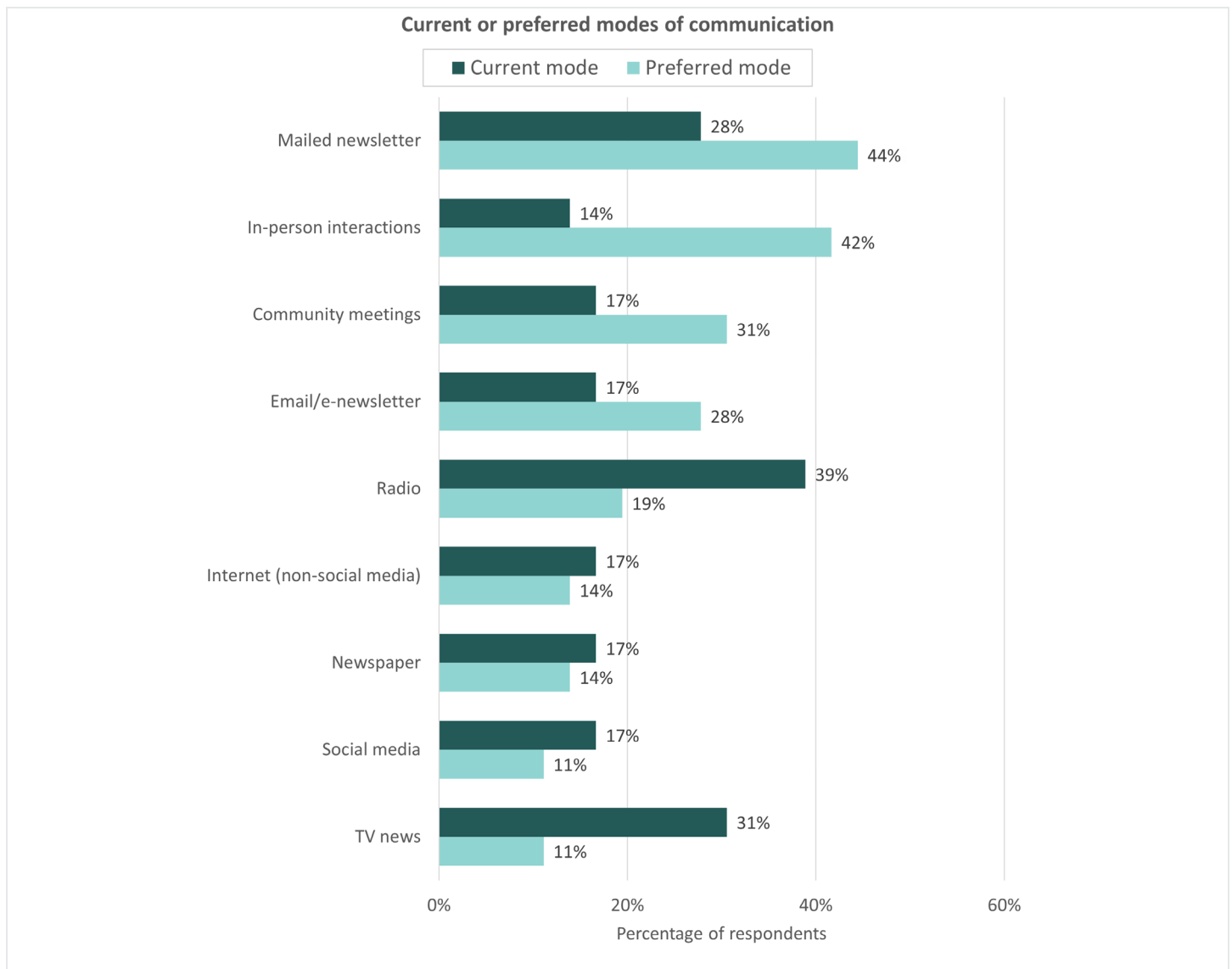


Figure 31—Comparison of current and preferred channels of communication about wildfire risk, ordered by current channels of communication, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. Survey respondents were able to select multiple options. N = 36 responses 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. Three quarters of survey respondents (75%) reported having evacuation plans for the people in their household (refer to fig. 32a). Of the survey respondents with pets, 78% had a plan for their pets (refer to fig. 32b). Of the survey respondents with livestock, 77% had a plan for their livestock (refer to fig. 32c).

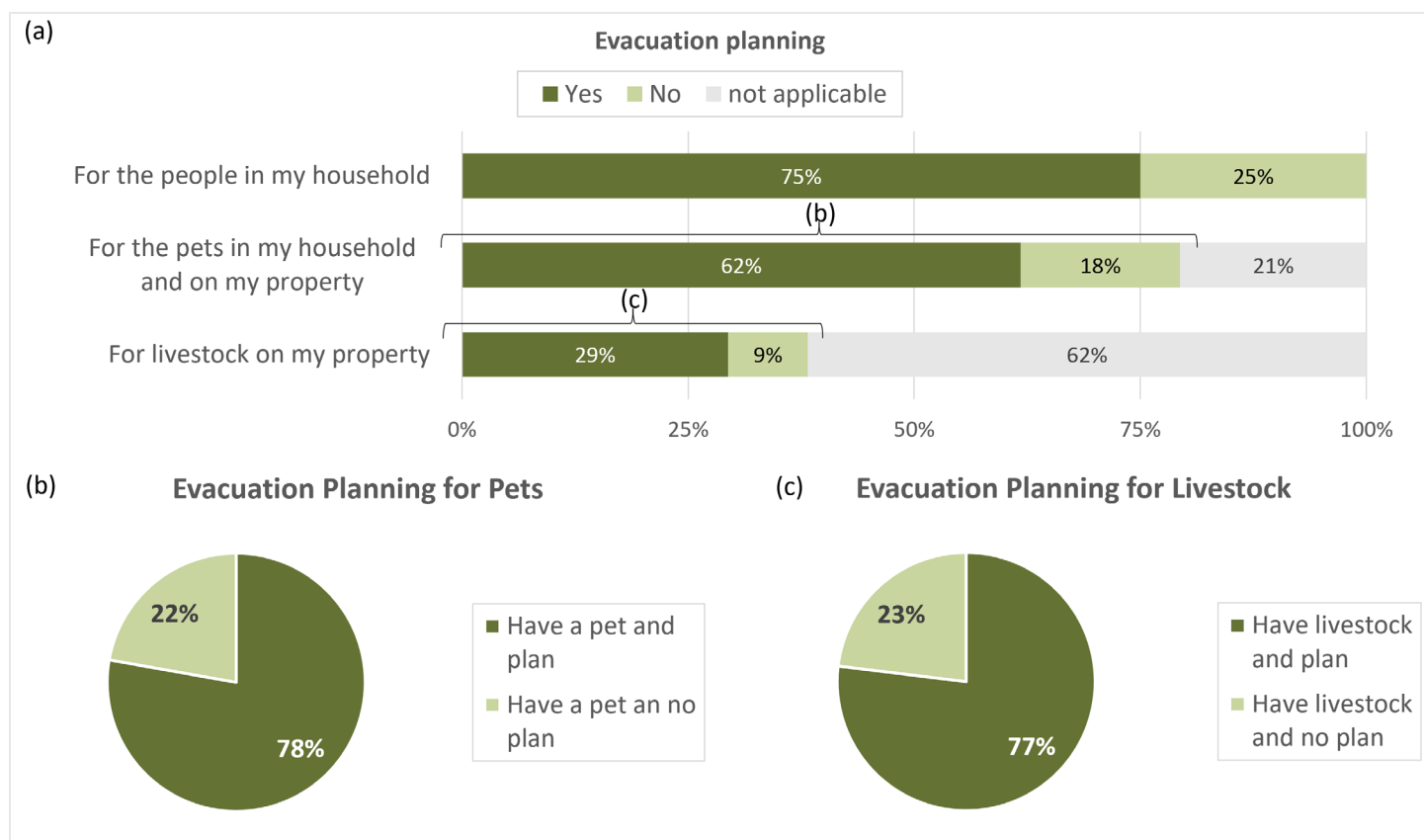


Figure 32—(a) Percentage of survey respondents who report having wildfire evacuation plans for people in the household and for pets and livestock, out of all responses to this question (n = 34–36). (b) Of respondents with pets, percentage who have a wildfire evacuation plan for their pet (n = 27). (c) Of respondents with livestock, percentage who have a wildfire evacuation plan for their livestock (n = 13). Data as reported in 2022 by survey respondents residing in the Stemilt Basin, Washington, study area.

Respondents were asked to think through the actions regarding evacuation they have completed, as well as to identify topics about which they would like more information. Although 75% of survey respondents reported having an evacuation plan, survey responses indicate that those evacuation plans could be further developed. Notably, only 28% of respondents have signed up for the emergency notification system Alert Sense, a crucial wildfire preparedness step. The same percentage of respondents (28%) 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. Most respondents (61%) reported already knowing how they will be notified about evacuation, which might

indicate a gap in understanding about evacuation notifications. 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).

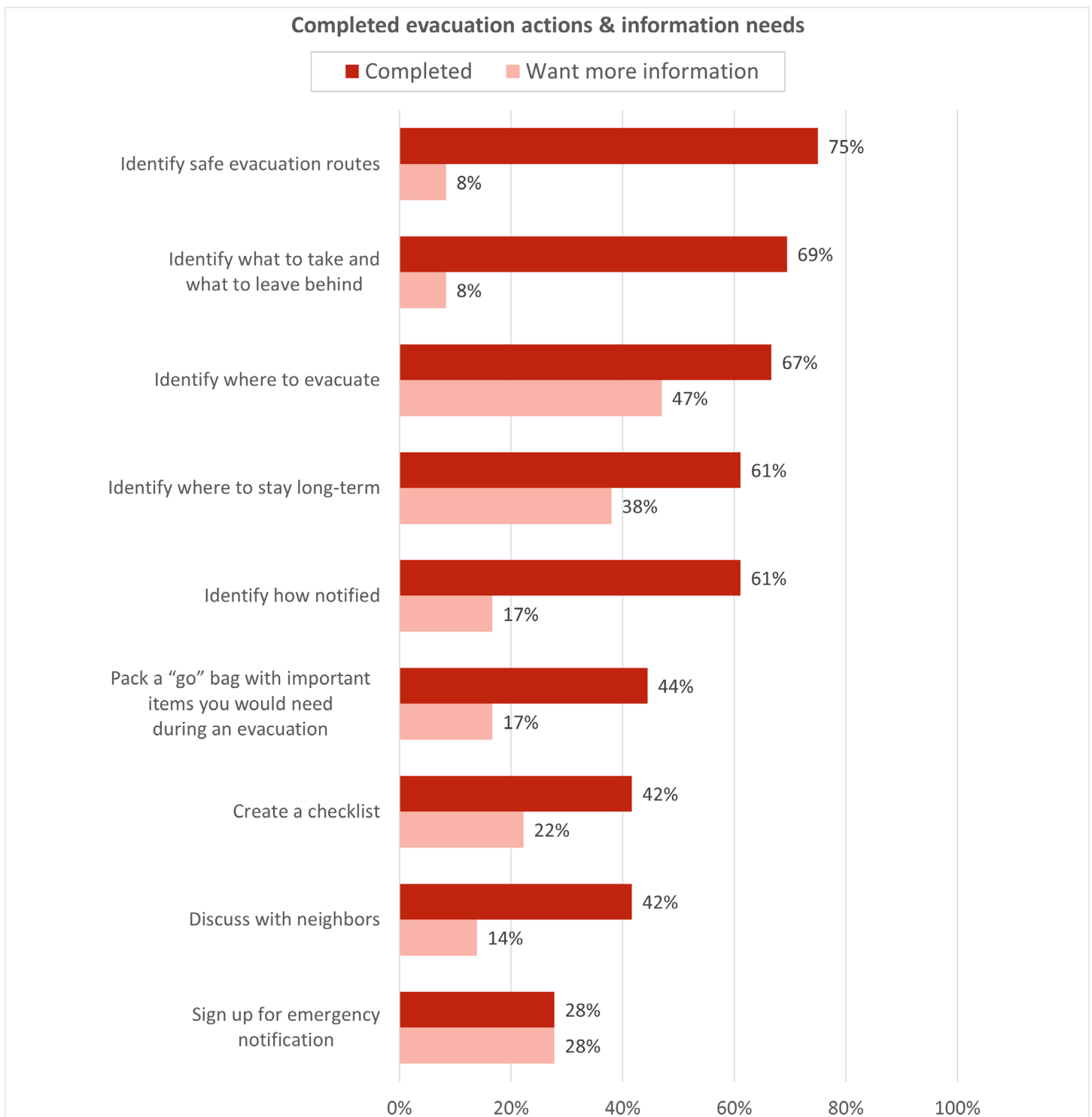


Figure 33—Evacuation preparations completed and information that would be helpful in evacuation plan development, ordered by actions completed, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to completed action segment. N = 36 responses to wanting more information segment.

Wildfire risk mitigation

There are many ways property owners can reduce their risk of wildfire. Respondents reported high levels of mitigation actions they have performed on their properties and around their communities. The three most commonly reported activities were regularly mowing and raking around the residence (97%), reducing vegetation (92%), and regularly clearing roof and gutters (81%). However, fewer respondents (62%) reported hardening their homes, and 25% had met with a wildfire professional to evaluate their home's risk. Few respondents reported mitigation activities off their own property, including participating in a community wildfire activity and helping neighbors reduce vegetation on their property (17% each), or reducing the amount of vegetation on public land(s) (9%) and in the community (6%) (refer to fig. 34).

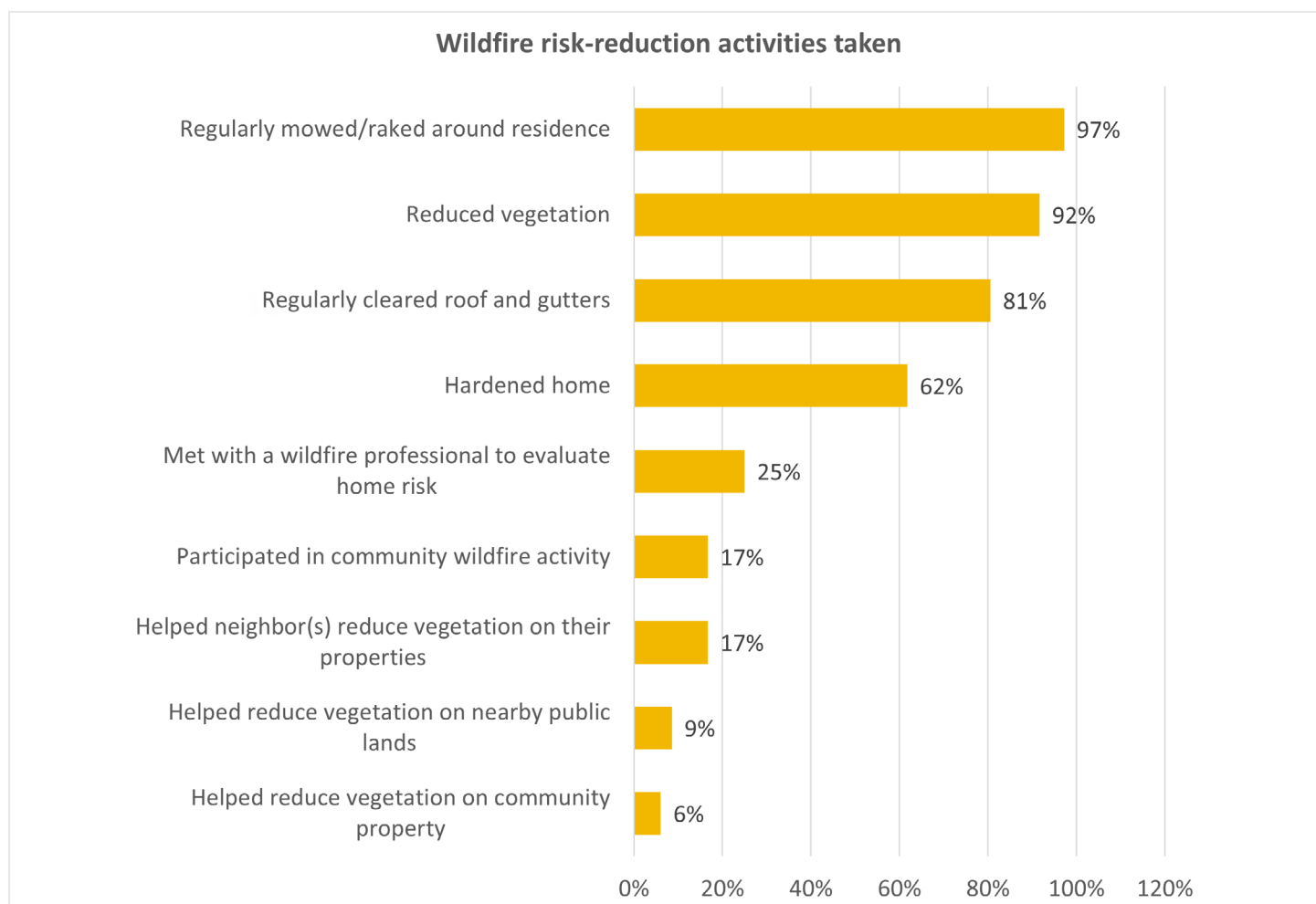


Figure 34—Percent of survey respondents who reported doing the above wildfire risk mitigation activities, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 33–36 respondents for each of the above activity statements.

Barriers and incentives

Respondents were asked about four categories of potential barriers to conducting wildfire mitigation, including personal resources, lacking specific information, personal perspectives, and community-based barriers. A strong majority (74–83% per category) of survey

respondents reported no barriers, selecting the “none of these” option, for most categories apart from personal resources (49%). Across all four categories, the four most-reported barriers to mitigation were financial expense/cost (43%), physical ability to do the work (23%), time to do the work (20%), and lack of options for disposing of vegetation or slash (14%) (figs. 35–38).

The three most-reported barriers were within the personal resources category (refer to fig. 35). Nonetheless, 49% 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. Eleven percent of respondents reported lack of information on where to dispose of slash as a barrier to mitigation. Most respondents (80%) reported that none of these were barriers (refer to fig. 36).

Few respondents reported barriers to mitigation rooted in personal perspectives. Just 11% of survey respondents reported not wanting to change the look of their property as a barrier to mitigation, 11% reported that taking action would not reduce risk, and 3% of survey respondents reported that mitigation was a low priority. Most respondents (74%) 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 (14%). Very few respondents selected the community barriers of restrictions about changing the look of a property (3%) or social pressure from neighbors (0%). Most respondents (83%) reported that none of these were barriers (refer to fig. 38).

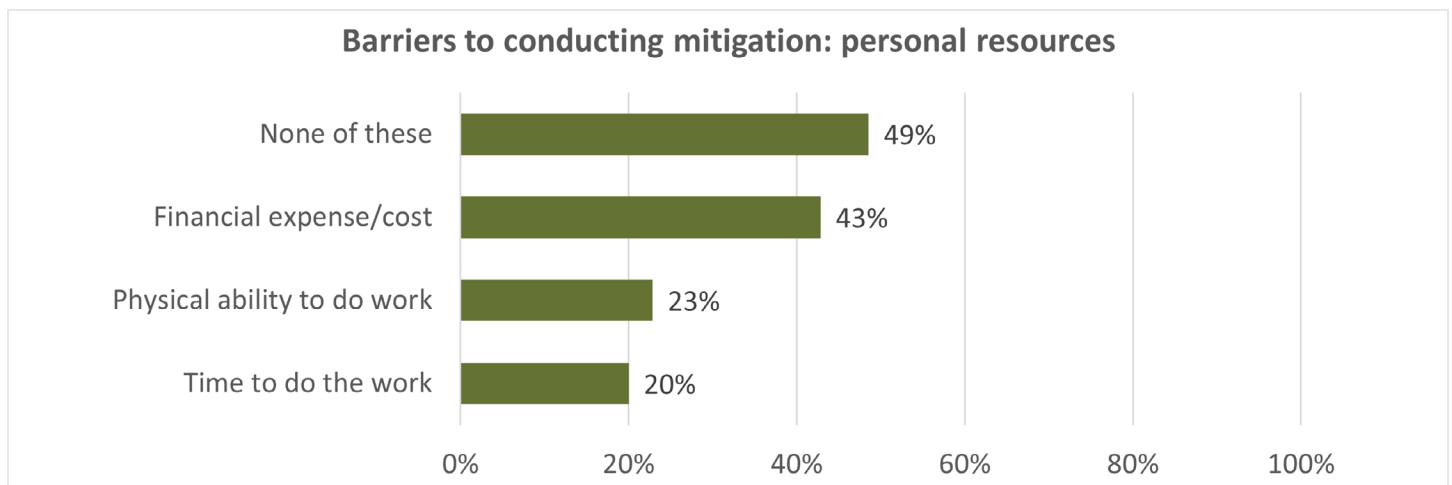


Figure 35—Personal resource barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 respondents for each of the above barriers.

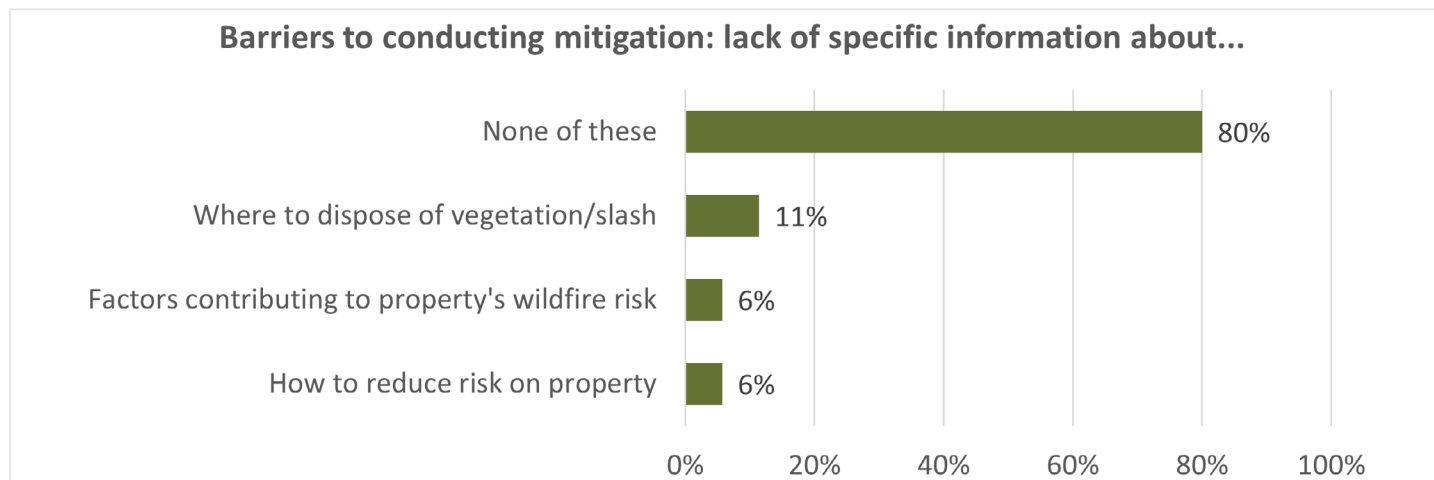


Figure 36—Information barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 respondents for each of the above barriers.

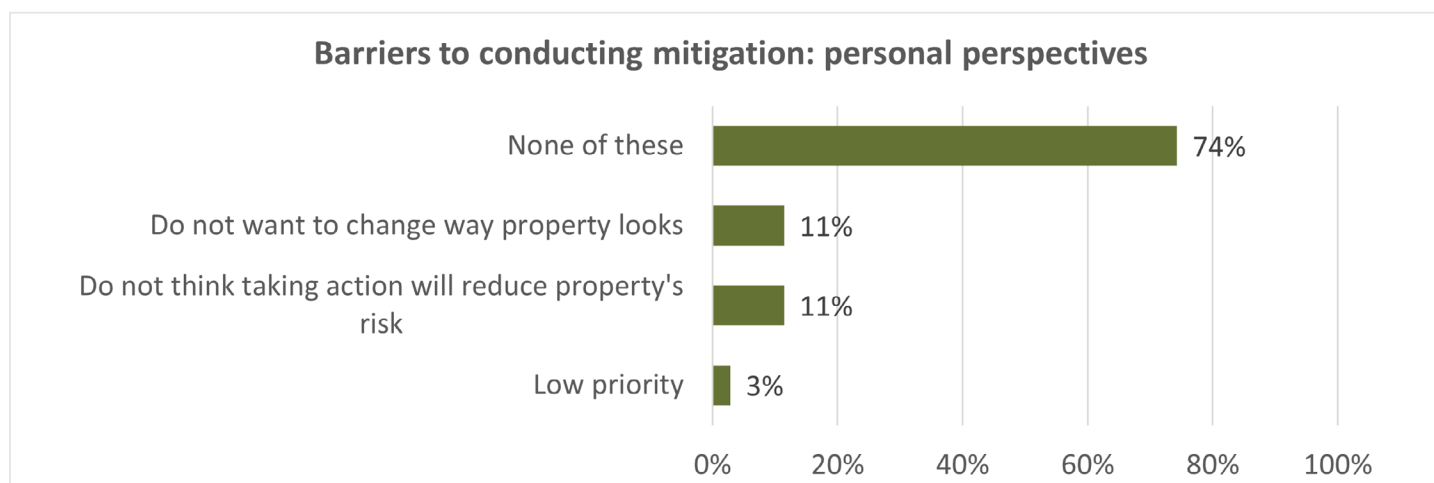


Figure 37—Personal perspectives or values that might affect wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 respondents for each of the above barriers.

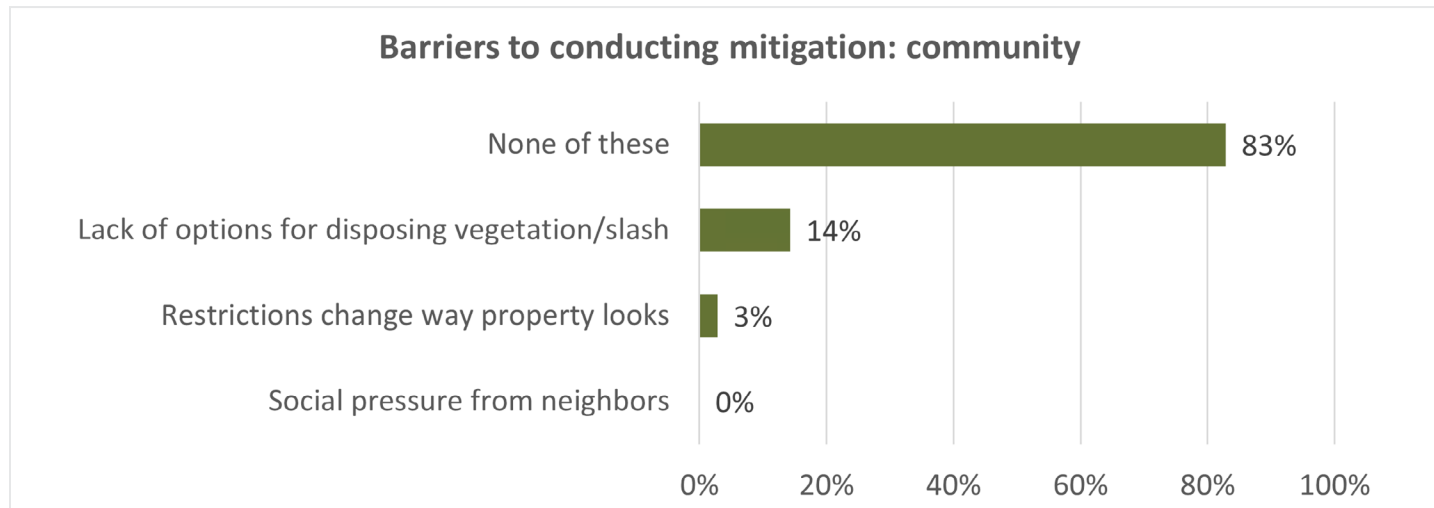


Figure 38—Community-related barriers to conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 respondents for each of the above barriers.

We 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 two most popular forms of support were cost-share or financial assistance (40%) and a one-on-one visit to the property by a wildfire expert (38%).

In the resource incentives category, cost-share or financial assistance was the most popular (40%), followed by help doing the work (26%), and recommended contractors (9%). 43% of survey respondents reported that none of these incentives would encourage them to complete mitigation (refer to fig. 39).

In the information category, 38% of survey respondents reported that a one-on-one visit with an expert on their property would encourage them to mitigate. Twenty-nine percent of respondents stated that a report describing their property's risk factors would help them to mitigate. Only 9% of survey respondents wanted videos showing how to reduce wildfire risk on their properties. Half of the survey respondents reported that none of these incentives would help them complete mitigation (50%) (refer to fig. 40).

Social incentives to encourage mitigation were not popular with survey respondents. Twenty-nine percent reported that feedback on work they had done to reduce their property's risk would be helpful, but hardly anyone (6%) thought a neighborhood group that organizes wildfire risk reduction activities would be helpful or that receiving recognition would be motivating to perform mitigation (refer to fig. 41).

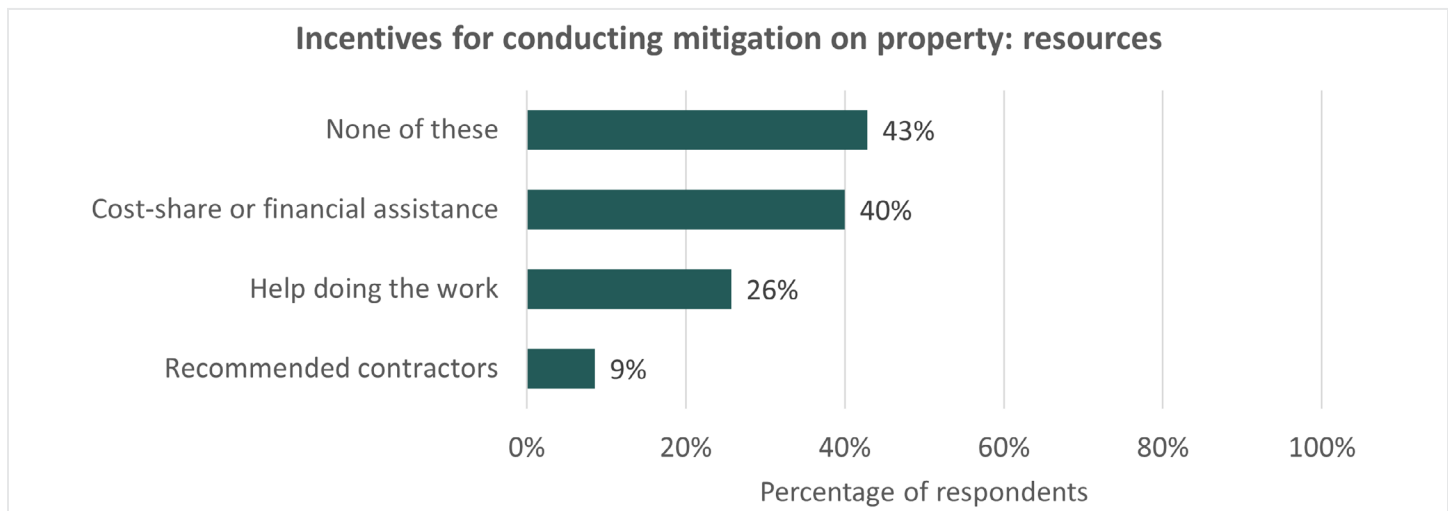


Figure 39—Resource-related incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35 respondents for each of the above incentives.

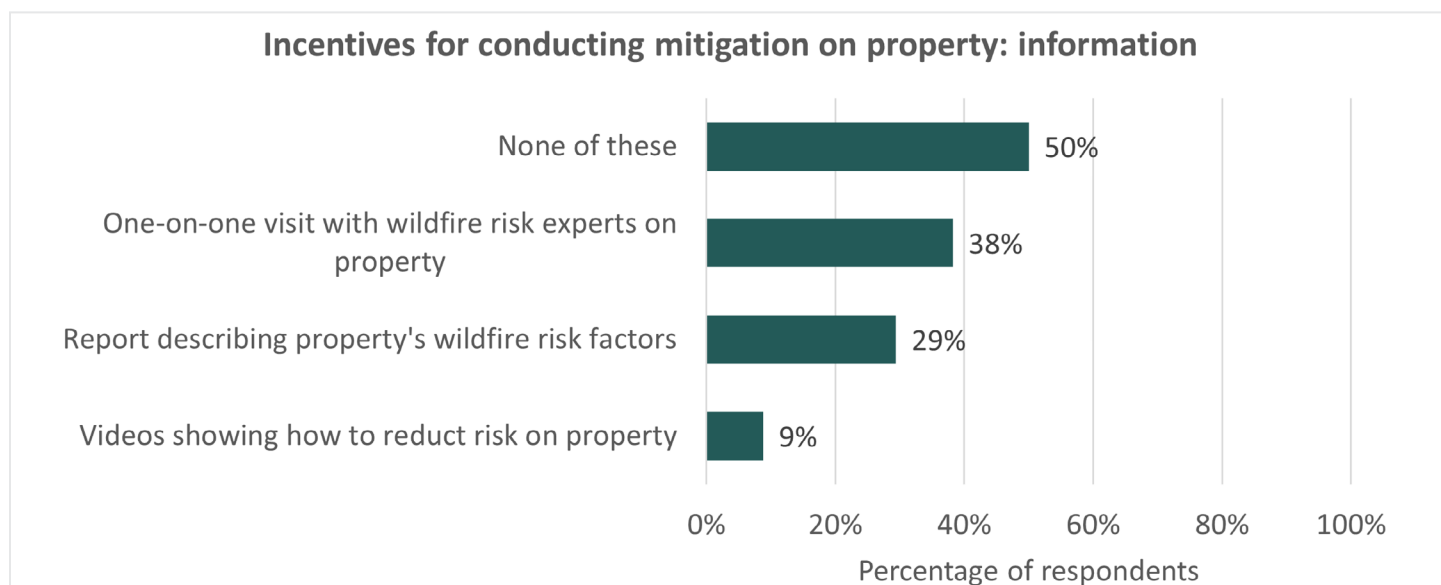


Figure 40—Information-related incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 34 respondents for each of the above incentives.

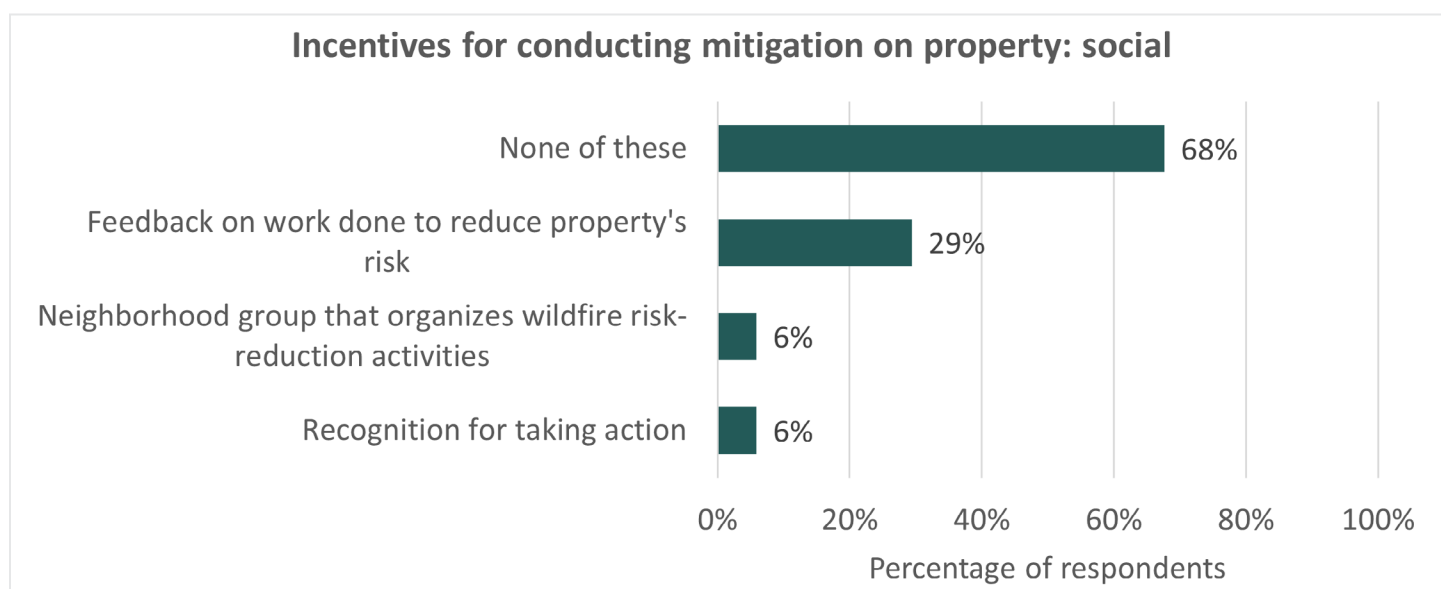


Figure 41—Other incentives for conducting wildfire mitigation activities on property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 34 respondents for each of the above incentives.

Perceptions of Community Risk Reduction Strategies and Fire Management

Support for risk management practices

Most survey respondents rated fuels treatments on nearby public lands as very or extremely acceptable. The highest level of acceptability was for burning piles of vegetation (83%), followed by the removal of vegetation along roadways for safer evacuation (78%) and managing a naturally ignited fire (75%). Less accepted, but still very or extremely acceptable to over half of survey respondents, were removing trees and other vegetation and conducting

a prescribed fire ignited by fire professionals (69%) as well as removing trees and reducing other vegetation on HOA property surrounding communities to slow the spread of wildfire such as fuel breaks (60%) (refer to fig. 42).

Survey respondents also indicated broad support for proposed wildfire regulations and practices apart from temporarily shutting off the power grid on extreme fire risk days (only 25% rated this as very or extremely acceptable). Most survey respondents found adoption of codes or regulations in fire-prone areas very or extremely acceptable, including building a new road to provide an emergency evacuation route (78%), growth policies or land use regulations that limit new development (75%), adopting building codes that require fire-resistant materials for structures located in fire-prone areas (67%), and development standards that require vegetation management (64%) (refer to fig. 43).

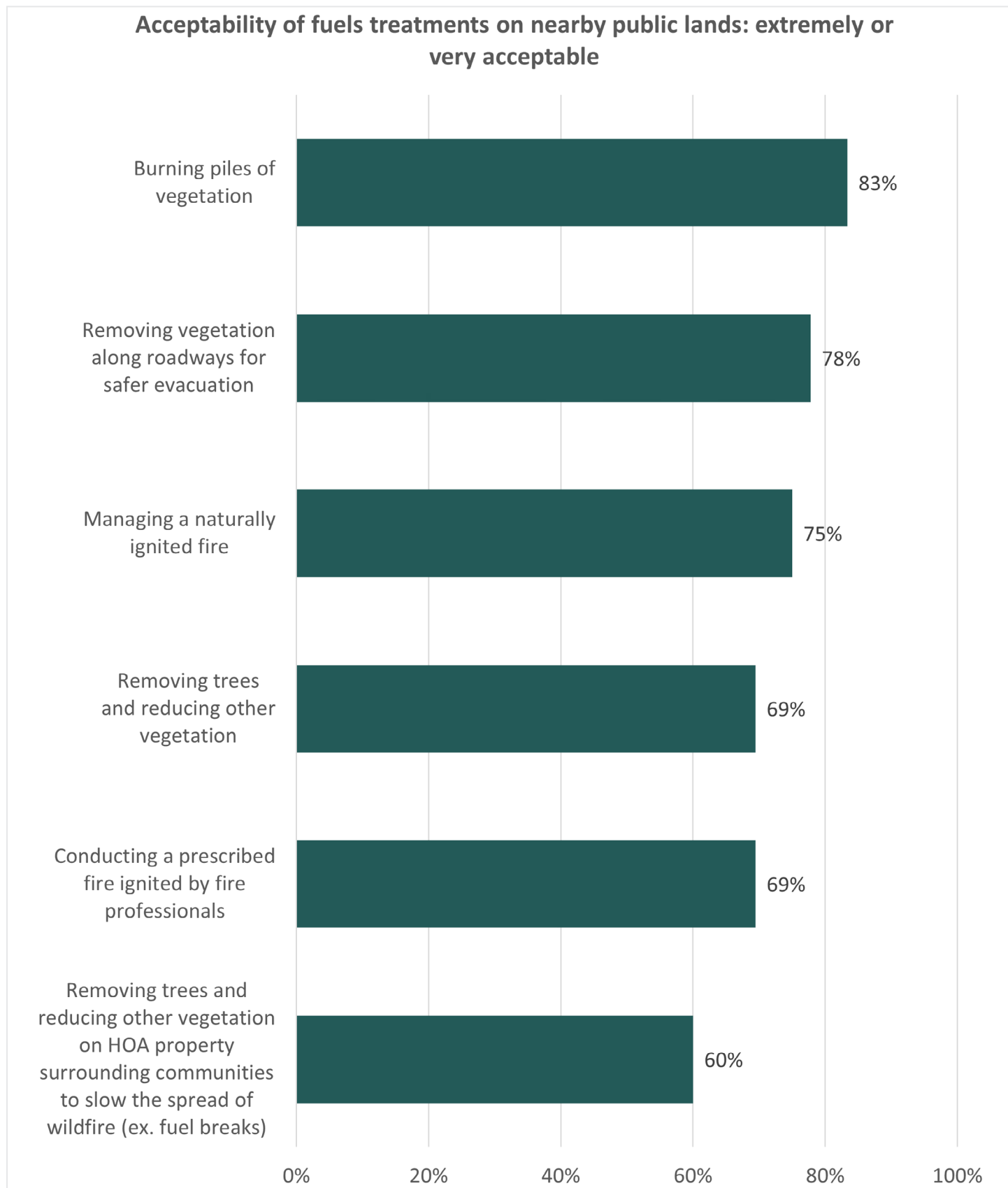


Figure 42—Percentage of survey respondents who found each of the above wildfire fuels management approaches very or extremely acceptable, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35–36 respondents for each of the above statements. HOA = homeowners association.

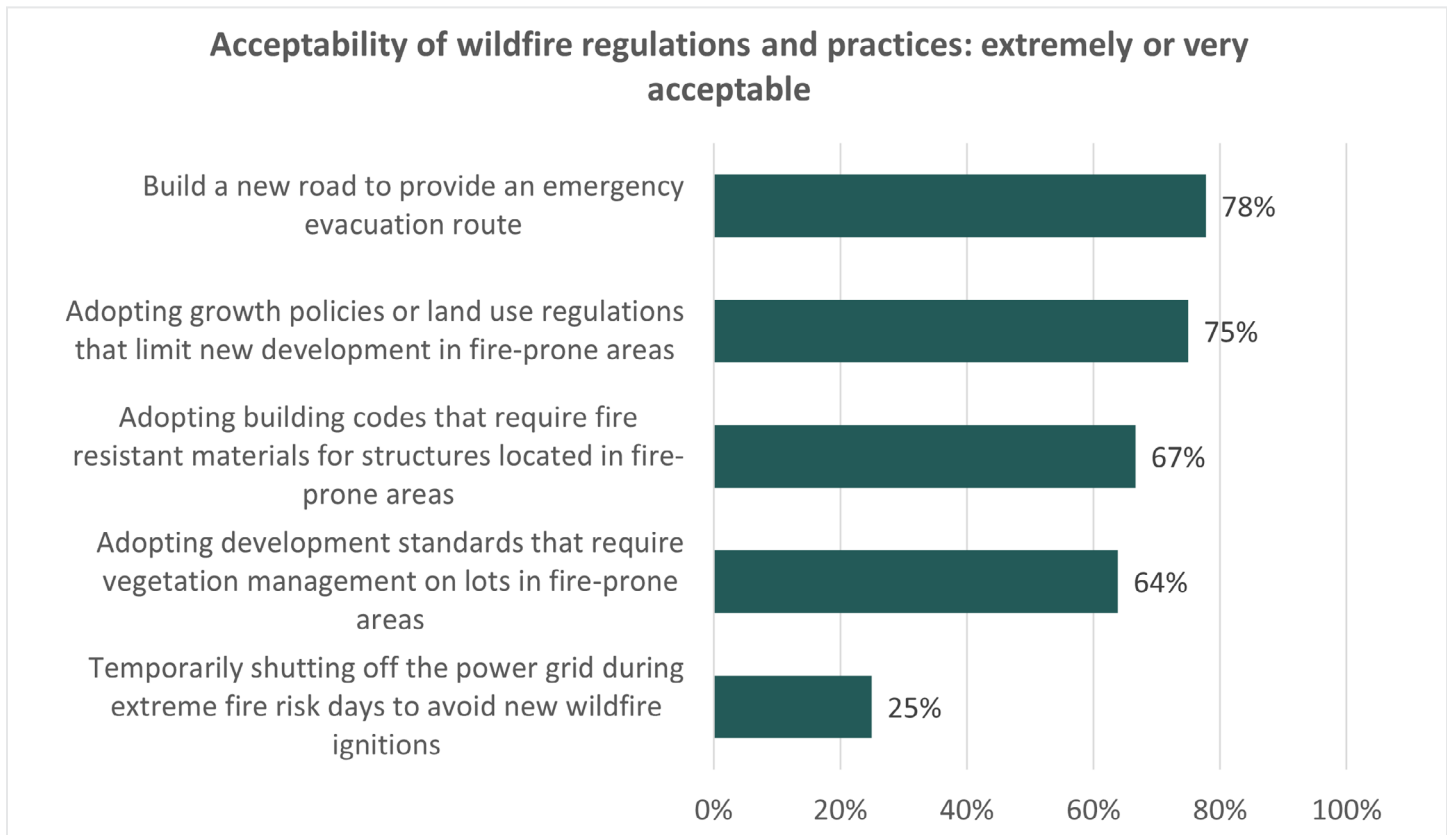


Figure 43—Percentage of survey respondents who found each of the above wildfire-related policies very or extremely acceptable, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 respondents for each of the above statements. FPD = fire protection district.

Notions of hazard and response

We asked respondents to what extent they agreed or disagreed with a wide range of statements about wildfire. Most survey respondents agreed or strongly agreed that wildfires threatening human life (97%) and threatening homes (92%) should be put out. In addition, most agreed or strongly agreed that wildfires are a natural part of a healthy forest ecosystem (78%). Over two thirds (69%) 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. Fewer than half of respondents (46%) agreed or strongly agreed that most wildfires can be controlled with proper technology. A similar percentage (42%) agreed or strongly agreed that local firefighters have sufficient resources to protect homes from wildfire, and just a third (34%) 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 (22%) agreed or strongly agreed that wildfires threaten their community water supply (refer to fig. 46).

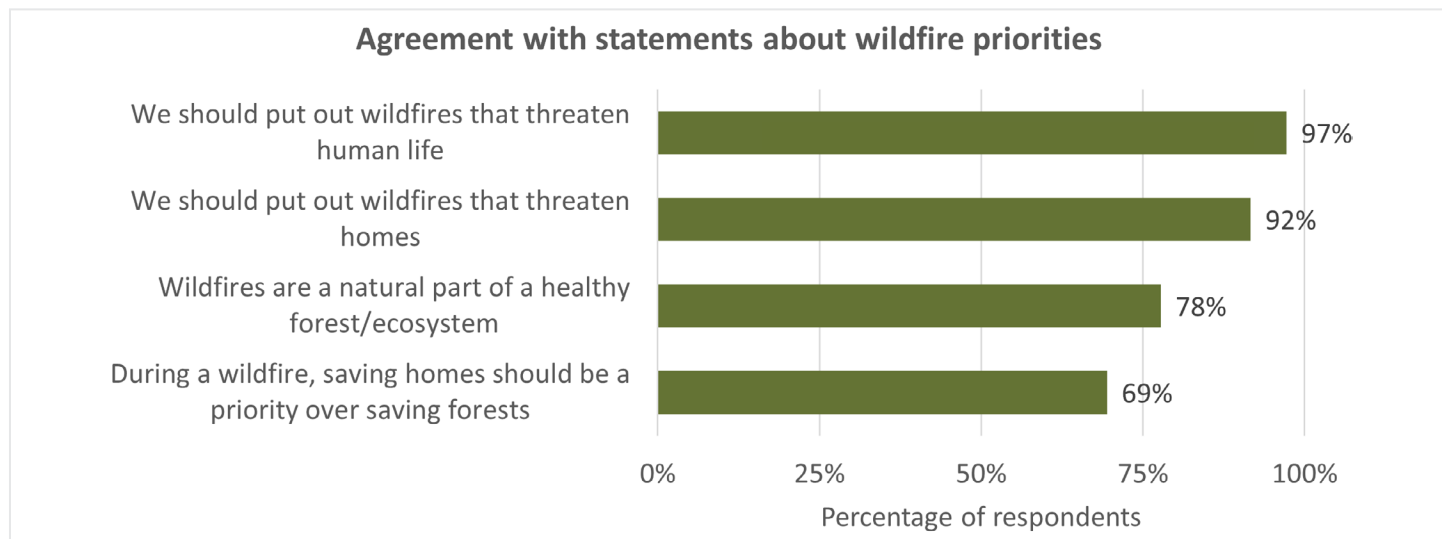


Figure 44—Agreement (“agree” or “strongly agree”) with statements about priorities between human and natural resources during a wildfire, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to each survey statement listed.

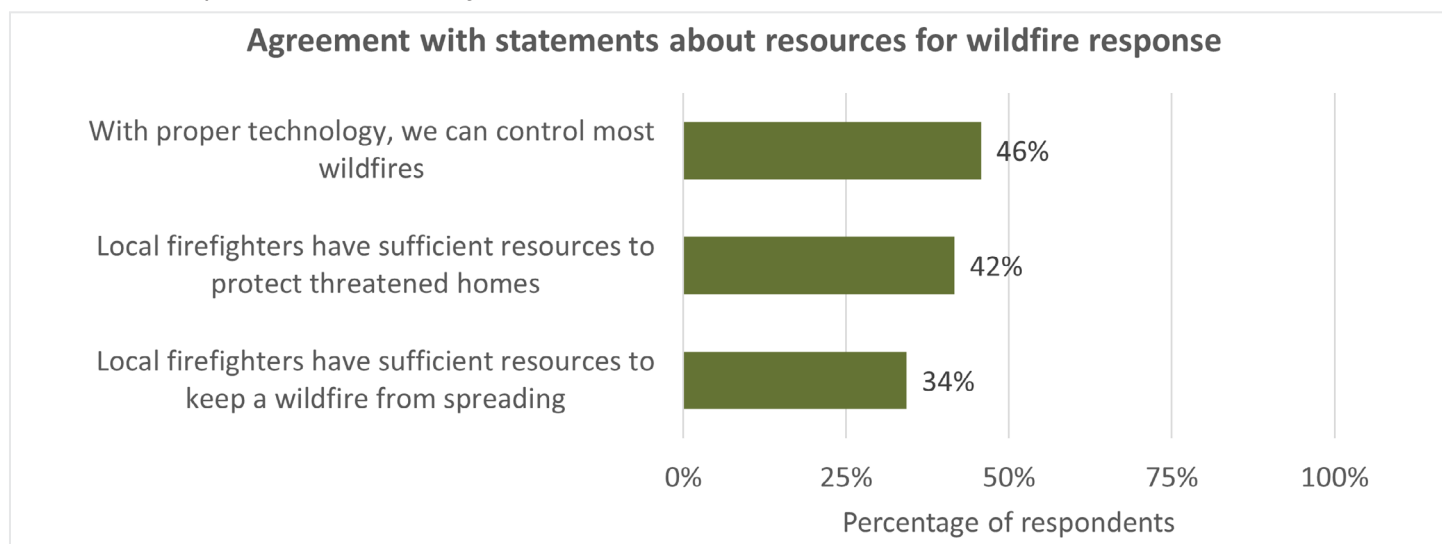


Figure 45—Agreement (“agree” or “strongly agree”) with statements about available technology and resources to prevent wildfire impacts, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 35–36 responses to each survey statement listed.

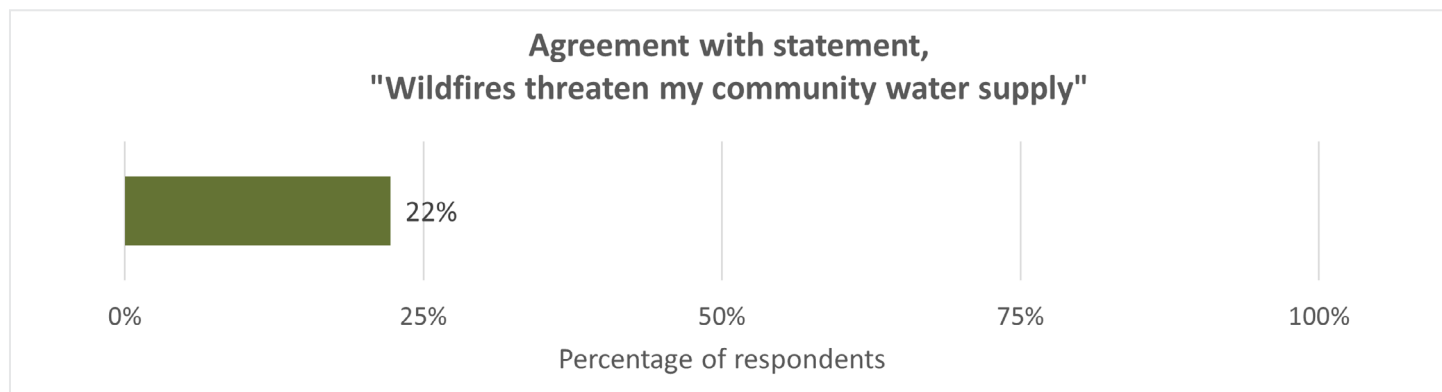


Figure 46—Agreement (“agree” or “strongly agree”) with statement about wildfire threat to water supply, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to the survey statement listed.

Lastly, survey responses indicate that participants feel responsibility for taking action to reduce their risk and believe in the efficacy of their actions in lowering their risk. Just over one-quarter of respondents (28%) agreed or strongly agreed that development in fire-prone areas increase the risk to their property, but less than a quarter of survey respondents agreed or strongly agreed that their actions to mitigate wildfire risk on their properties were rendered ineffective by heavy vegetation on neighboring properties (14%). Eight percent of respondents stated that they live where they do for the trees and will not remove any from their properties. Notably, with 36 respondents to this survey question, 8% of respondents is the equivalent of just 3 respondents. Six percent of survey respondents (2 respondents) agreed or strongly agreed that firefighters should risk their lives protecting homes. Only 3% (1 respondent) agreed or strongly agreed with the statement that homeowner's actions are ineffective against wildfire, but none of the respondents thought that managing wildfire risk is the government's responsibility, not their own (refer to fig. 47).

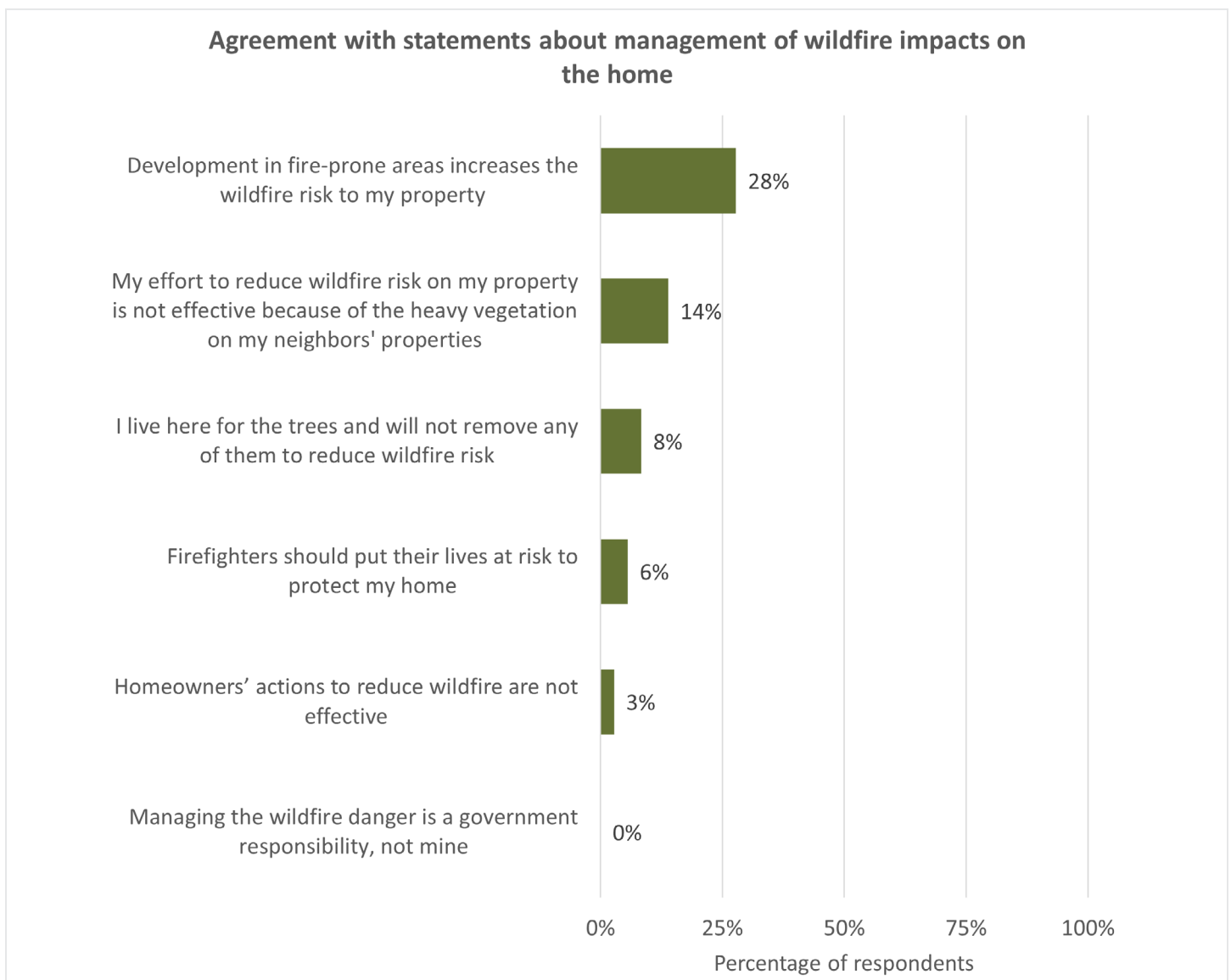


Figure 47—Agreement (“agree” or “strongly agree”) with statements about personal and community management of wildfire impacts on the respondent’s home, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 36 responses to each survey statement listed. FPD = fire protection district.

Results From Annexation Survey

An additional survey was sent to residents whose properties were unannexed into the WVFD services area (N = 48), meaning those residents were not paying taxes to cover WVFD protective services. The results below are based on n=11 annexation survey responses. Refer to Appendix F for more details on the annexation survey questions and response percentages.

According to WVFD records, all respondents to the annexation survey were unannexed into the WVFD services area at the time of the survey. Five respondents remembered receiving a letter or other form of communication from WVFD regarding annexation, three respondents reported that they have voluntarily petitioned to annex their property into the WVFD services area, and two reported that their property has been annexed into the services area.

Only one respondent reported having dialed 911 while at their Chelan County home. However, all but one respondent affirmed that they thought first responders would be able to access their home in the event of an emergency. When asked which emergency services provided by Chelan County Fire District 1 might be necessary at their Chelan County home, most respondents responded that Emergency Medical Service (EMS) response (90%), structural firefighting (70%), and wildland firefighting (80%) might be necessary on their property (refer to fig. 48).

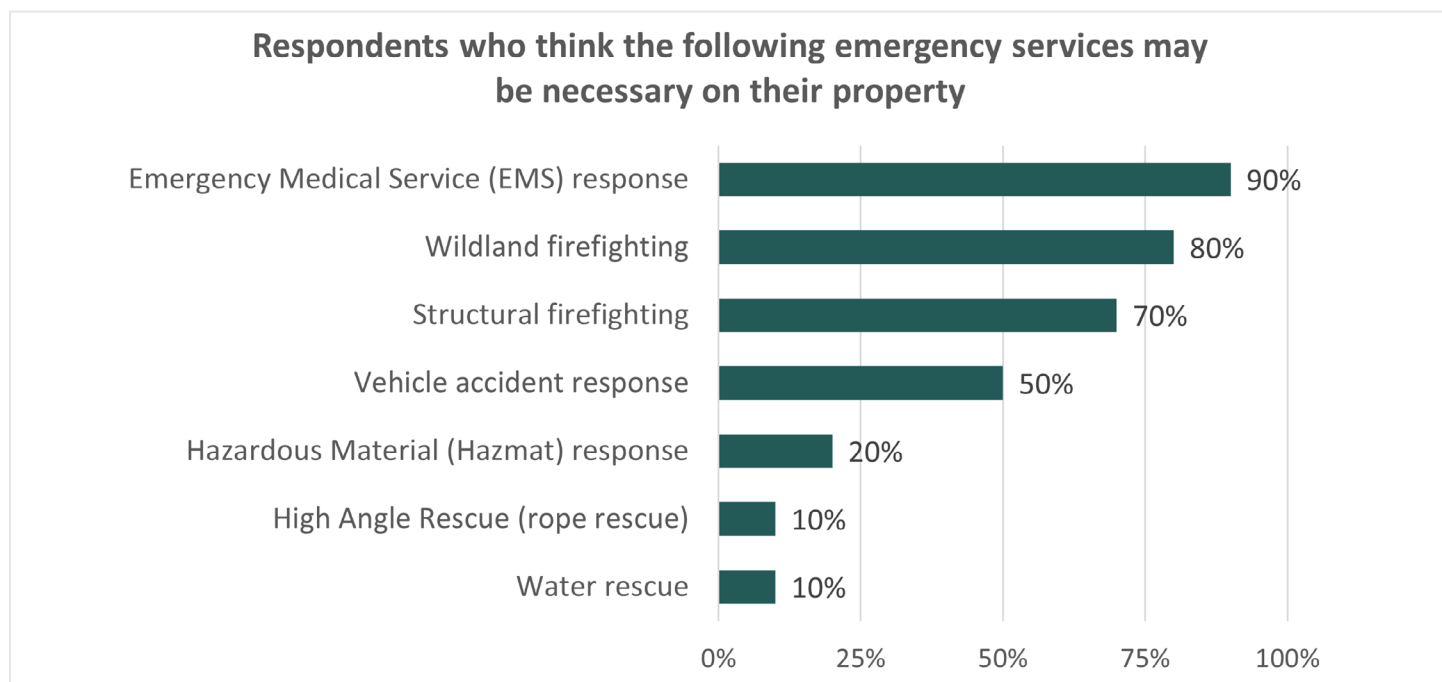


Figure 48—Agreement (“yes” or “no”) with whether emergency services might be necessary on one’s own property, as reported in 2022 by respondents residing in the Stemilt Basin, Washington, study area. N = 10 responses to each survey statement listed.

CONCLUSION

This report compares professional rapid risk assessment and homeowner self-assessment of parcel-level wildfire risk in the Stemilt Basin of Chelan County, Washington. The report also highlights the social dimensions of wildfire, including 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. It is important to note this report presents data from 36 parcels in the study area. While the response rate for the household survey was relatively high at 42%, it is more difficult to draw conclusions about residents in this area with a small sample size.

Survey respondents reported high levels of general wildfire risk awareness and experience (figs. 18–20). They 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 have few barriers to taking action (figs. 35–38), with the top barrier being financial cost (fig. 35). However, only about half of respondents agreed their property is at risk of wildfire (fig. 21), and few thought it likely that their home would be damaged by wildfire in the next year (figs. 22, 24). These results raise questions about how respondents perceive wildfire risk to their properties, since the entire community is generally considered to have high fire risk.

Rapid assessment and survey results indicate that respondents differ in their evaluation of wildfire risk as compared to wildfire professionals. A major contributor to this difference is perceptions of defensible space, including distance from the home to overgrown vegetation (fig. 9) and other combustibles (fig. 10). This gap in perceptions may be an opportunity for public education about defensible space. Other major contributors to the gap between respondent and professional risk assessment fall into the background conditions category, including distance from the home to dangerous topography (fig. 11), slope of the property (fig. 12), and dominant vegetation type present between 100 feet and 150 feet from the home (fig. 13). Residents may not be able to mitigate risk from background conditions, but these attributes may serve as motivation to reduce risk arising from other sources. These results suggest the need for increased outreach to align homeowner and professional perspectives on the components of wildfire risk and to improve the effectiveness of homeowner action.

Results indicate several areas for educational outreach with Stemilt Basin residents. First, to address the gap between professional and respondent risk assessments, wildfire professionals can provide more specific information on vegetation management in the home ignition zone (HIZ) 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 (refer to fig. 25). Third, while results indicate that most respondents have prepared for an evacuation and have a plan (figs. 32, 33), relatively few have signed up for the emergency notification system Alert Sense. Residents may benefit from outreach not just about wildfire mitigation but also this crucial preparedness step.

Survey results also indicate opportunities for wildfire risk reduction at the landscape level, on public lands. Results indicate high acceptability of fuel treatment options, especially for burning piles of vegetation, vegetation removal along roadways for safer evacuation, and managing a naturally ignited 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).

Outreach efforts to educate residents about mitigation and preparedness or upcoming fuel treatment projects may be most effective if coming from sources of information that respondents currently receive (fig. 30) and via communication channels that respondents find useful, particularly mailed newsletters and in-person interactions (fig. 31). While none of the sources were received by more than 50% of respondents, the local fire department and Cascadia Conservation District were two of the most received and highly useful sources. Given the preference for mailed newsletters, Wenatchee Valley Fire Department and WiRē are collaborating on a forthcoming two-page pamphlet, to be sent to all residents in the study area, which answers respondents' key questions about wildfire risk mitigation and provides resources to encourage further action. Given that the project in Wenatchee Valley was implemented in conjunction with similar projects in two other fire districts in Chelan County, WiRē also worked with the fire department and other partners in Chelan County to create a summary of survey responses in each study area related to acceptability of wildfire policies (Appendix G). This summary document might be used in county-wide wildfire risk reduction efforts.

APPENDIX A: Correspondence Materials and Household Survey

Correspondence Materials. 50

Postcard Reminder/Thank You. 53

Postcard Correction Letter 54

Household Survey 55

Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com



Dear Fire District #1 Resident,

Si nesecita información en Español, lláme a Jon Riley al 509-662-4734.

Chelan County Fire District #1's goal is to be proactive in confronting wildfire and reducing potential loss of life and property. The District serves many capacities beyond fire suppression including wildfire education and mitigation. Chelan County Fire District #1's dedicated mitigation staff coordinate effective projects throughout our area and embrace a "shared responsibility" approach of wildfire prevention. Together, we can learn to live with wildfire. As part of our proactive efforts, Chelan County Fire District #1 is collecting information to help residents reduce wildfire risk on their properties and prepare for a wildfire event. Our investigation has two components: parcel-level wildfire risk assessments and household surveys.

Wildfire Risk Assessment

This summer, Chelan County Fire District #1 will assess the wildfire vulnerabilities of individual properties from the sidewalk. District staff are available, upon request, to conduct a more in-depth and free wildfire risk analysis of your home. Our goal is to work alongside you and your neighbors to improve the safety of your community.

Living with Wildfire in Chelan County in 2021 Survey

To create the most effective programs possible, we need to understand what you know about wildfire, your experiences with wildfire, as well as the characteristics of your property. Later this summer we will send you a household survey in the mail to help us answer these questions. We value your voluntary time and participation in this study. The information you provide will help us improve our response, outreach, and education efforts.

If you have any questions about these efforts, please feel free to call Jon Riley at 509-662-4734 or email him at jriley@chelancountyfire.com.

Thank you for participating.
Sincerely,

Brian D. Brett
Brian D. Brett (Jun 11, 2021 10:02 PDT)

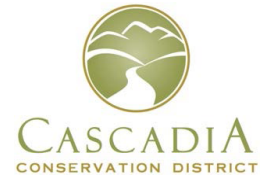
Brian Brett
Fire Chief,
Chelan County Fire District 1

Jon Riley
Jon Riley (Jun 11, 2021 09:27 PDT)

Jon Riley
Community Wildfire Liaison
Chelan County Fire District 1

Our Mission is to save lives and property with Professionalism
through Pride Commitment and Compassion

Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com



Dear Fire District #1 Resident,

Si necesita información o instrucciones de la encuesta en Español, lláme a Hillary Heard al 509-662-4734.

As part of Chelan County Fire District #1's goal to be proactive in confronting wildfire and reducing potential loss of life and property, we are sending the "Living with Wildfire in Chelan County in 2022" survey. To create the most effective programs possible, we need 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 #1 and emergency responders better prepare for future fires as well as improve our outreach and education efforts. Results from the study will be shared with local, state, and federal groups considering wildfire risk management at the conclusion of this project.

Chelan County Fire District #1 is asking that you complete the enclosed survey. Participation in this study is completely voluntary and will take about 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 put it in the postage paid return envelope.

If you have any questions about this survey, please email or call Hillary Heard, Wildfire Liaison at Chelan County Fire District #1 at hheard@chelancountyfire.com or (509) 662-4734 ext. 301

Thank you for participating.
 Sincerely,

Brian D. Brett

Brian D. Brett (Mar 31, 2022 11:23 PDT)

Brian Brett
 Fire Chief,
 Chelan County Fire District 1

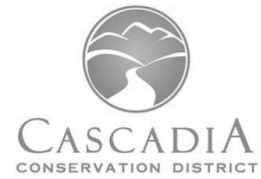
Hillary Heard

Hillary Heard (Mar 31, 2022 14:48 PDT)

Hillary Heard
 Wildfire Liaison
 Chelan County Fire District 1

Our Mission is to save lives and property with Professionalism
 through Pride Commitment and Compassion

Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com



Dear Fire District #1 Resident,

Si necesita información o instrucciones de la encuesta en Español, lláme a Hillary Heard al 509-662-4734.

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 #1 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 this survey, please email or call Hillary Heard, Wildfire Liaison at Chelan County Fire District #1 at hheard@chelancountyfire.com or (509) 662-4734 ext. 301

Thank you for participating.
Sincerely,

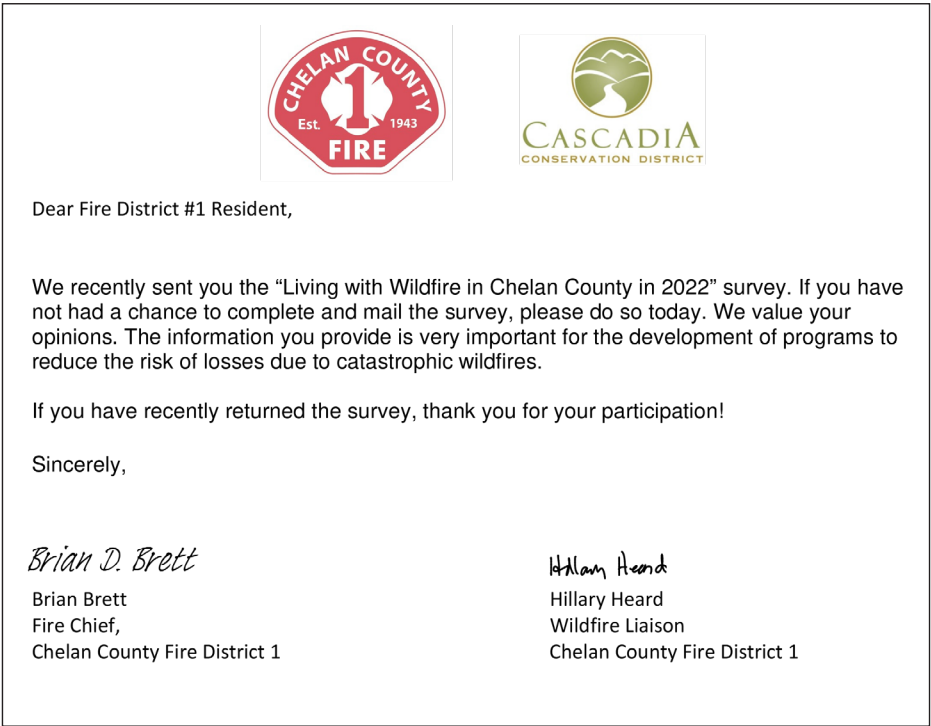
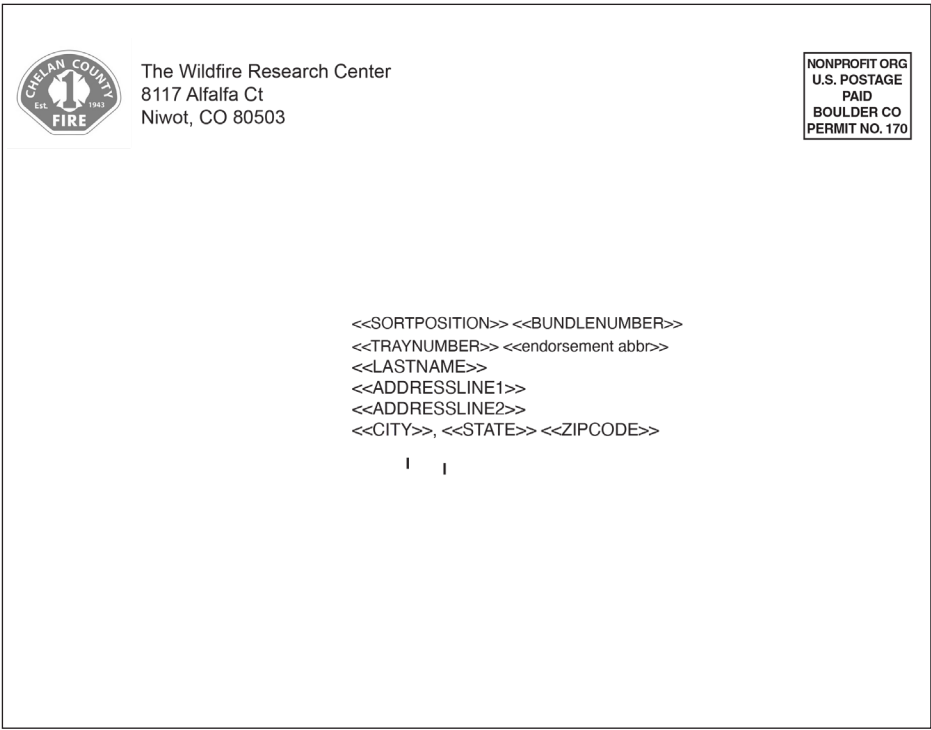
Brian D. Brett

Brian Brett
Fire Chief,
Chelan County Fire District 1

Hillary Heard

Hillary Heard
Wildfire Liaison
Chelan County Fire District 1

Our Mission is to save lives and property with Professionalism
through Pride Commitment and Compassion





Dear Fire District #1 Resident,

We recently sent you the “Living with Wildfire in Chelan County in 2022” survey. Several other fire districts in Chelan County are also administering this survey to their residents, and our print vendor inadvertently sent you a copy of the survey on Lake Wenatchee Fire & Rescue letterhead. We apologize for this mixup and will send you another copy in the coming week with the correct letterhead.

If you have already sent back a completed survey, you do not need to do anything else. We appreciate your time and effort.

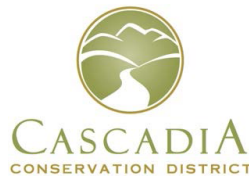
We value your opinions. The information you provide is very important for the development of programs to reduce the risk of losses due to catastrophic wildfires.

Sincerely,

Brian Brett
Fire Chief,
Chelan County Fire District 1

Hillary Heard
Wildfire Liaison
Chelan County Fire District 1

Living with Wildfire in Chelan County in 2022



Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com

Section 1: In this first section of the survey, we ask about your home in Santa Fe. 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)	☐	☐
	☐	☐

- 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 your 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

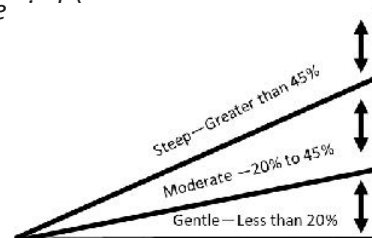
3.3. Does your Chelan County home have a **combustible** balcony, deck, porch, or fence attached to the structure? *(Fill in one circle)*

- ☐ 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		No	Yes
☐ Yes	Is the posted number visible from the road? <i>(Fill in one circle.)</i>	☐	☐
	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	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
Chelan County Department of Natural Resources	☐	☐	☐	☐	☐	☐
Cascadia Conservation District	☐	☐	☐	☐	☐	☐
Chumstick Wildfire Stewardship Coalition	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
Chelan Public Utility District	☐	☐	☐	☐	☐	☐
Washington State Department of Nat Resources	☐	☐	☐	☐	☐	☐
Firewise USA®	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
Fire Adapted Communities and/or Learning Network	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
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 Santa Fe 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

WiRē Rapid Assessment Form continued.

Attribute	Attribute description	Response categories	Attribute weight	Category score
Home Ignition Potential	Roofing materials ([WiRē] Roofing materials)	What is the most vulnerable roofing material?	30%	0
		Non-combustible (Tile, metal, or asphalt shingles)		300
		Combustible (Wood - shake shingles)		301
	Building exterior ([WiRē] Siding materials)	What is the most vulnerable exterior siding material?	7%	0
		Non-combustible (Stucco, cement, brick, stone, or other noncombustible siding)		35
		Log or heavy timbers		70
		Wood or vinyl siding		71
	Combustible attachments ([WiRē] Attachments)	Does the home have a combustible balcony, deck, porch, or fence attached to the structure?	10%	0
		No - none		100
		Yes - attached deck, fence, or other combustible structure(s)		101
	Proximity to adjacent homes ([WiRē] Proximity to neighboring homes)	What is the closest distance to a neighboring home?	20%	0
		More than 100'		50
		30' - 100'		100
		10' - 29'		200
		Less than 10'		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 Multifamily residential Mobile Commercial Industrial Barn / shop / garage Other Unknown Outbuilding None	This question and response categories come directly from the NIFC structure triage survey.
[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 Posted, not blue reflective Not visible	Use this category if the address sign fully meets or exceeds the local standard: visible from the public road and 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. 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 One road in/out Unknown - not observed	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 (should be determined prior to beginning RA what the determining factors are) 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. 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] 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	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] 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	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] 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	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] 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 contours 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."

WiRē Rapid Assessment Instructions continued.

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	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] 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 densly 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.		

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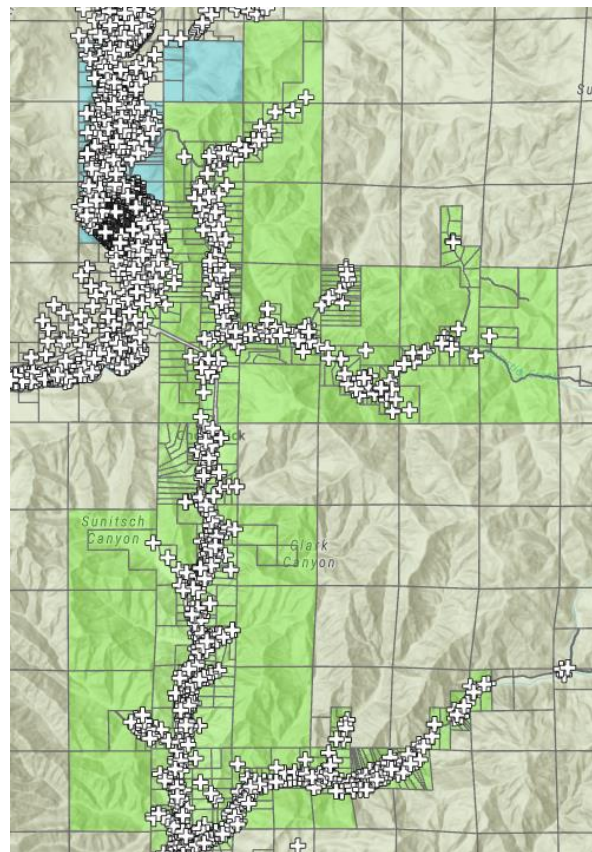
WiRē



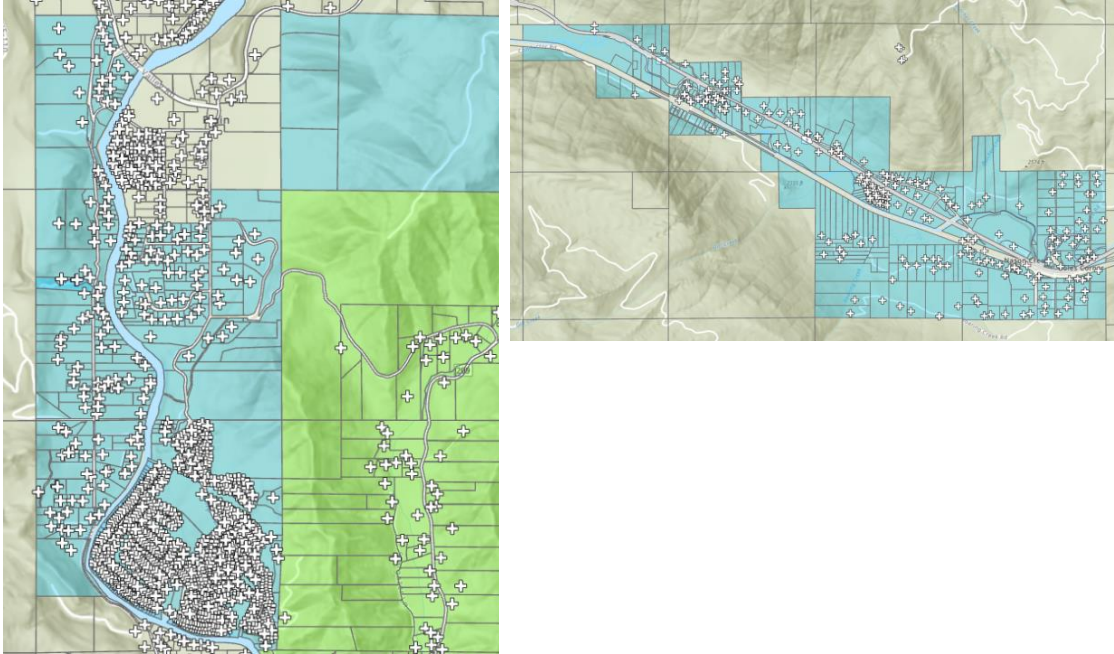
1 Chelan County Fire District 1, 3, and 9 Rapid Assessment Instructions for Using Collector

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.

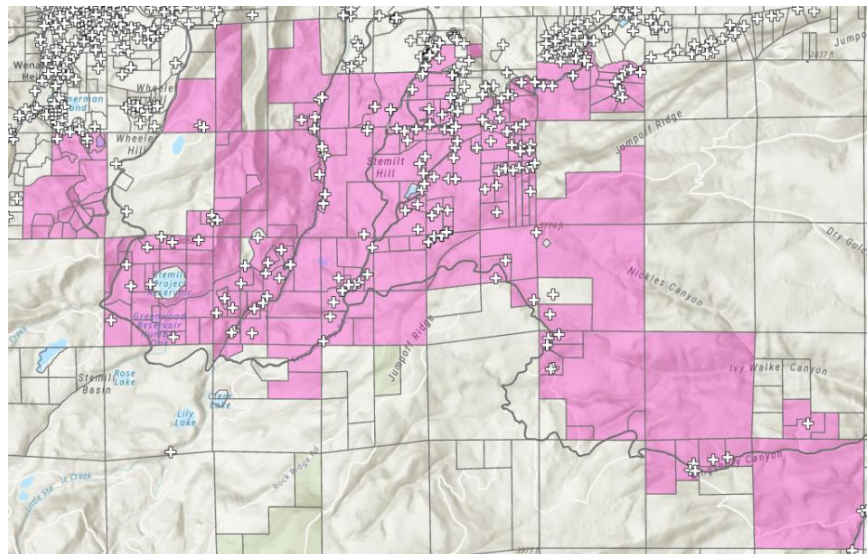
Be consistent with the response categories throughout data collection. The goal of the WiRē RAs is to assess all parcels with residential structures in the study area, which comprise approximately 2,178 parcels - 801 in CCFD3, 1,178 in CCFD9, and 239 in CCFD1. These parcels are indicated on the maps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



Map 1. Chelan County Fire District 3

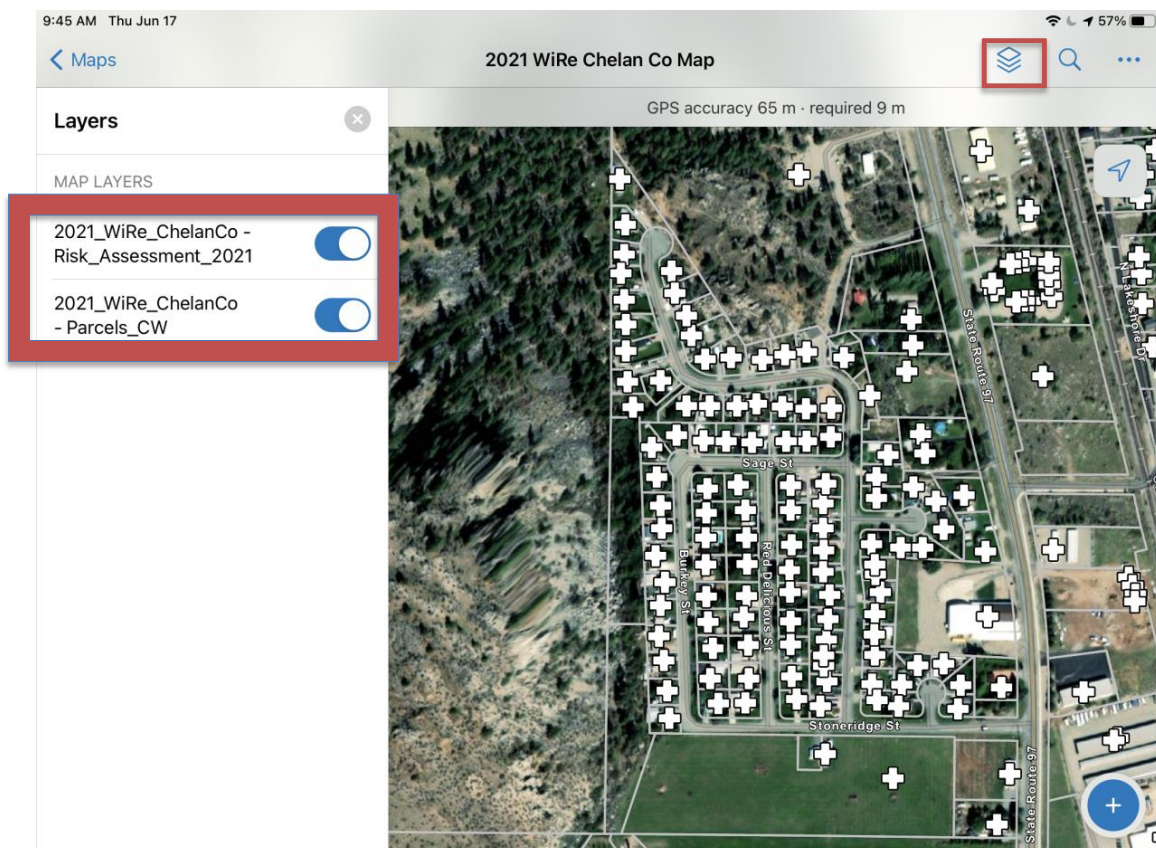


Map 2. Chelan County Fire District 9

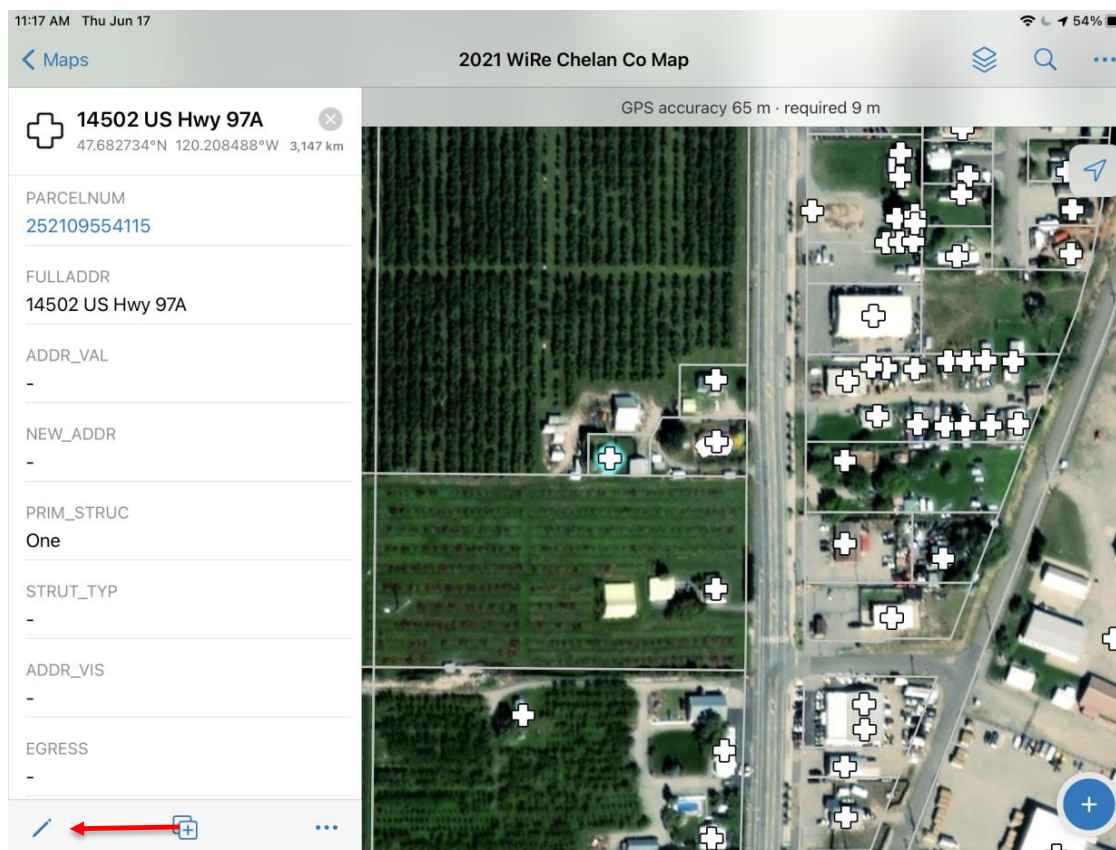


Map 1. Chelan County Fire District 1

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 Wildfire Research Center

WiRē



The Wenatchee Valley Fire Department Rapid Assessment Summary

The Wenatchee Valley Fire Department (formerly Chelan County Fire Protection District #1) 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 156 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, Wenatchee Valley Fire Department 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 Wenatchee Valley Fire Department 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

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 29, 2022

attribute is “unknown/not observed” or missing, practitioners and firefighters assume that 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 Wenatchee Valley Fire Department 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=156)
Low	20-240	4%
Moderate	241-305	12%
High	306-435	58%
Very high	436-505	13%
Extreme	506-100	13%

1.2 Access

Risk attribute: Address Posting (1% of total RA score) Does the address sign meet all local standards (Posted at the driveway entrance and visible from both directions of travel along the road)		
Response categories	Score	All RAs in study area (N=156)
Yes, fully meets standard	0	11%
Address sign is visible but does not meet all standards	5	44%
No, not posted/visible from the primary road	10	45%
^a Out of <i>all RAs in study area</i> , 2 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 wildfire, is there another road to get out of the community?

Response categories	Score	All RAs in study area (N=156)
Two or more roads in/out	0	56%
One road in/out	10	44%

^a Out of *all RAs in the study area*, 3 were missing/unobserved (2%) 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=156)
Meets all driveway standards	0	79%
Meets one, but not both , standards (height or width)	5	19%
Does not meet either standard (height and width)	10	2%

^a Out of *all RAs in study area*, 2 were missing/unobserved (1%) 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=156)
Less than 150' long	0	24%
150' or more with "adequate" turnaround	5	42%
150' or more without "adequate" turnaround	10	34%

^a Out of *all RAs in the study area*, 3 were missing/unobserved (2%) 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=156)
More than 150'	0	24%
Between 50' - 150'	25	10%
Less than 150'	50	65%

^a Out of *all RAs in study area*, 0 were missing/unobserved.

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=156)
Gentle - less than 20%	0	30%
Moderate - between 20% and 45%	10	30%
Steep - greater than 45%	20	40%

^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=156)
Light – grass and shrubs	10	4%
Medium - Light brush and/or isolated trees (ex. grass with some pine, fire, or other evergreen trees)	20	51%
Dense - Dense brush and/or isolated trees (ex. continuous pine, fire, or other evergreen trees)	40	46%

^a Out of *all RAs in study area*, 3 were missing/unobserved (2%) 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 home to overgrown, dense, or unmaintained vegetation?

Response categories	Score	All RAs in study area (N=156)
More than 100'	0	5%
30' - 100'	50	19%
5' - 29'	75	66%
Less than 5'	100	10%

^a Out of all RAs in study area, 0 were missing/unobserved.

Risk attribute: Other combustibles (8% of total RA score)

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?

Response categories	Score	All RAs in study area (N=156)
More than 30' or no combustible items	0	12%
5' - 30'	40	22%
Less than 5'	80	66%

^a Out of all RAs in study area, 86 were missing/unobserved (55%) 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=156)
Non-combustible (tile, metal, or asphalt shingles, or flat composition)	0	95%
Combustible (wood shake shingles)	300	5%

^a Out of all RAs in study area, 6 were missing/unobserved (4%) 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=156)
Stucco, cement, brick, stone, or other noncombustible siding	0	21%
Log or heavy timbers	35	0%
Wood or vinyl siding	70	79%

^a Out of *all RAs in study area*, 6 were missing/unobserved (4%) 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, or fence attached to the structure?

Response categories	Score	All RAs in study area (N=156)
No combustible attachments	0	33%
Combustible attachments present	100	67%

^a Out of *all RAs in study area*, 41 were missing/unobserved (26%) 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=156)
More than 100'	0	58%
30' – 100'	50	25%
10' – 29'	100	12%
Less than 10'	200	5%

^a Out of *all RAs in study area*, 6 were missing/unobserved (4%) and included in the highest risk category.

APPENDIX D: Comparison of Wildlife Research (WiRē) Rapid Assessment and Household Survey

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The Wildfire Research Center

WiRē



Chelan County Rapid Assessment Compared to Household Survey Responses

Wenatchee Valley Fire Department (formerly Chelan County Fire District #1) 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 36 properties for which we have a rapid assessment paired with household survey. There are an additional 120 properties with only a rapid assessment, for a total of 156 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, which are organized by categories of 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 Wenatchee Valley Fire Department, a Washington Resource and Development Council grant, and a Washington Department of Natural Resources Forest Partnerships Grant Program grant.*

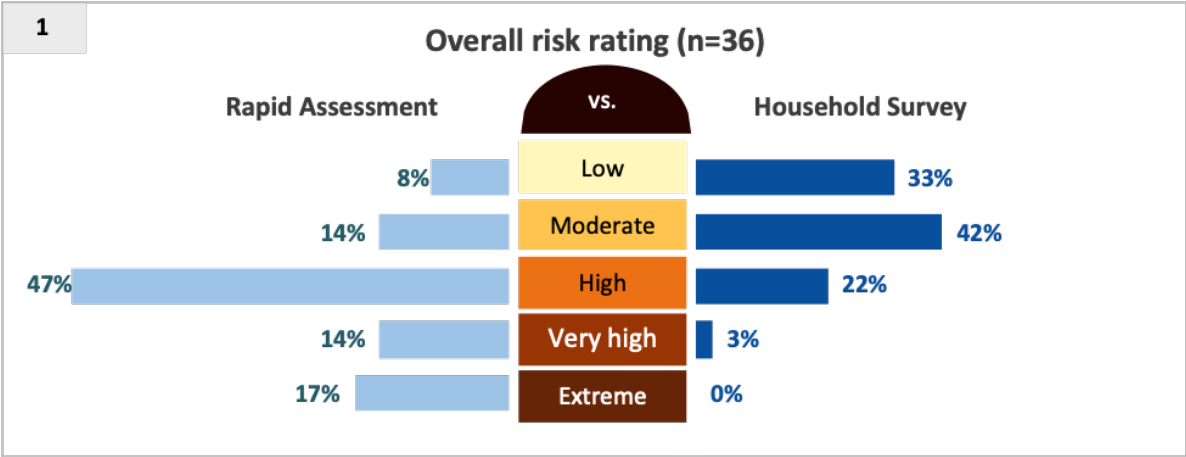
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**Document prepared February 22, 2023*

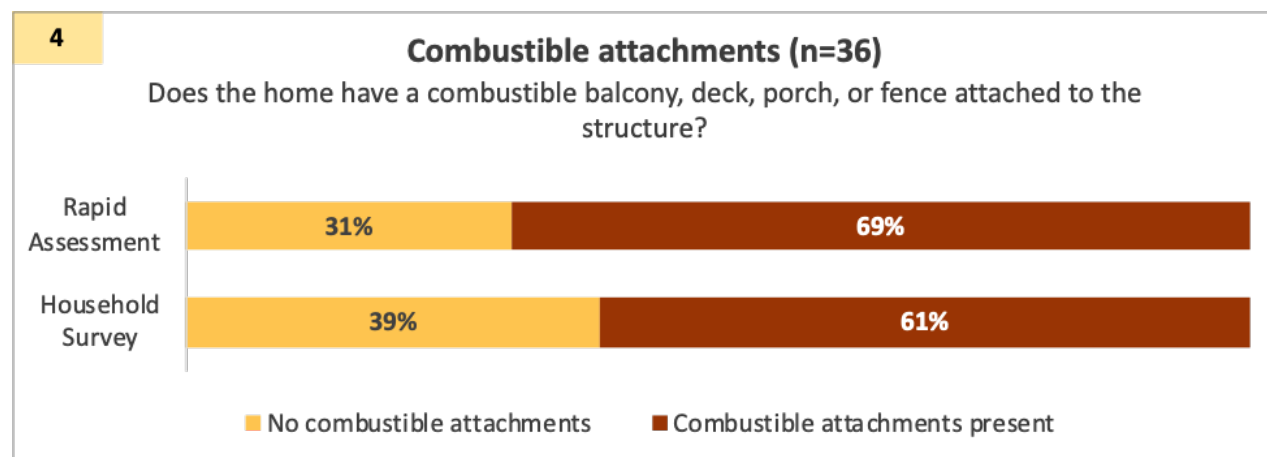
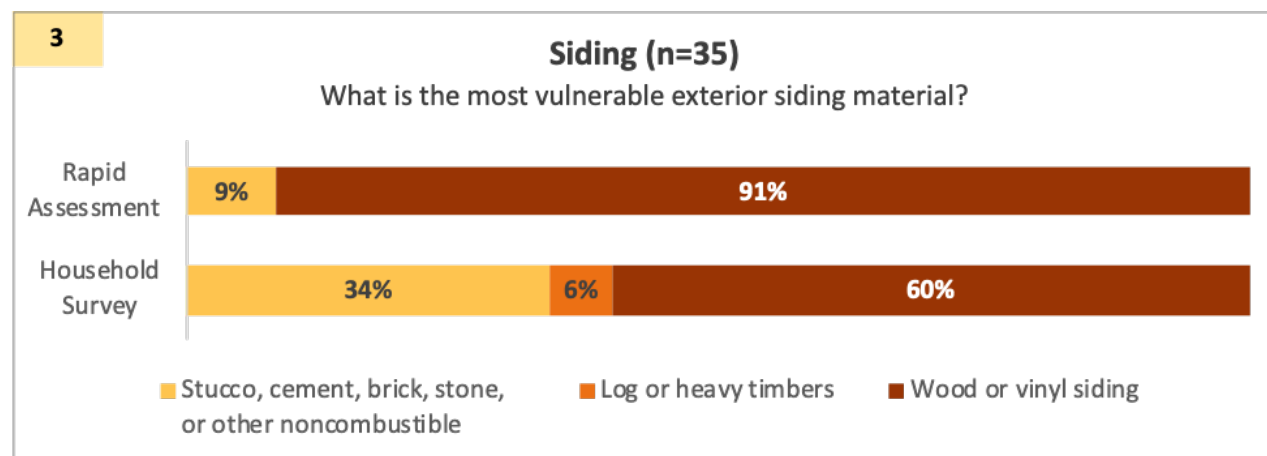
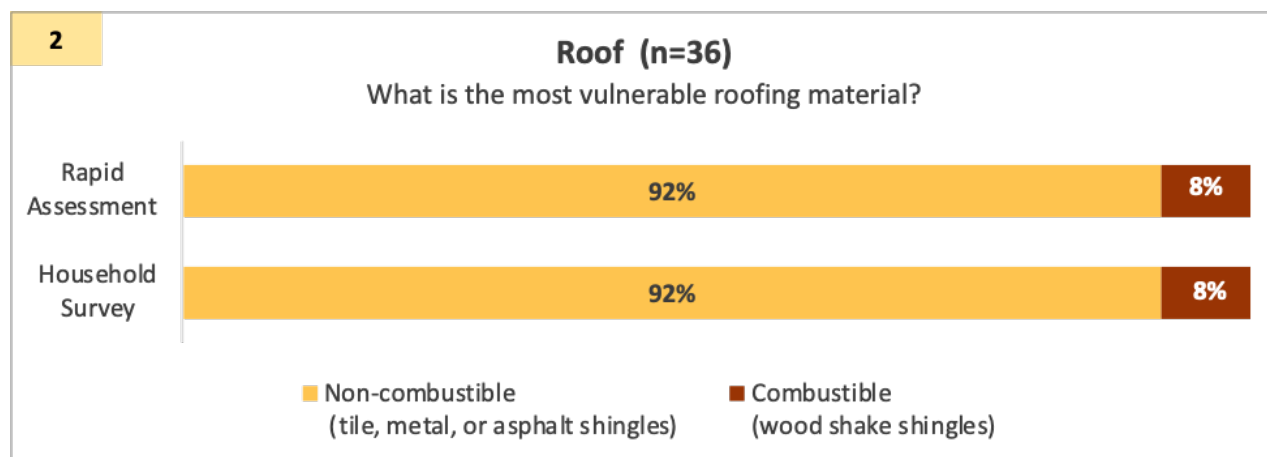
1. Comparison of paired WiRē Rapid Assessment vs. Household Survey

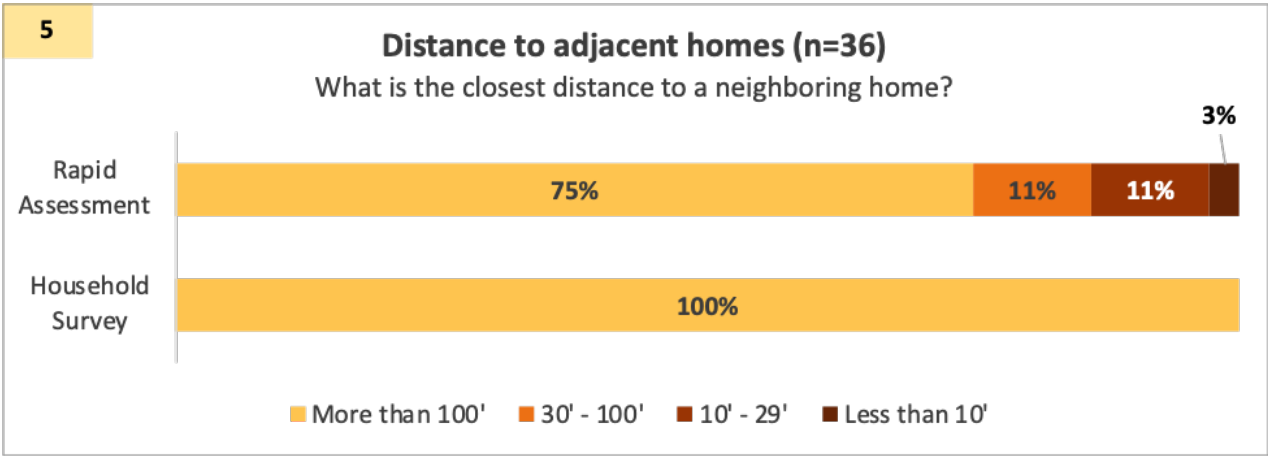
In this section, we compare professional risk ratings and household survey respondents' self-assessments for properties' overall risk rating and the 13 risk attributes included in the rapid assessment. These comparisons are presented as graphs. For the overall risk rating, the professional risk ratings 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

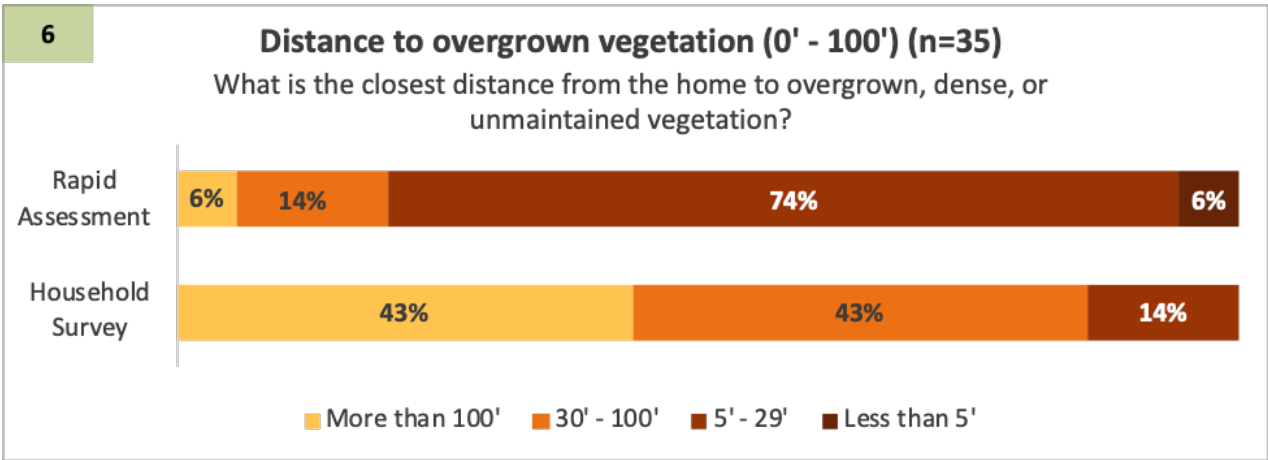


1.2 Home ignition potential





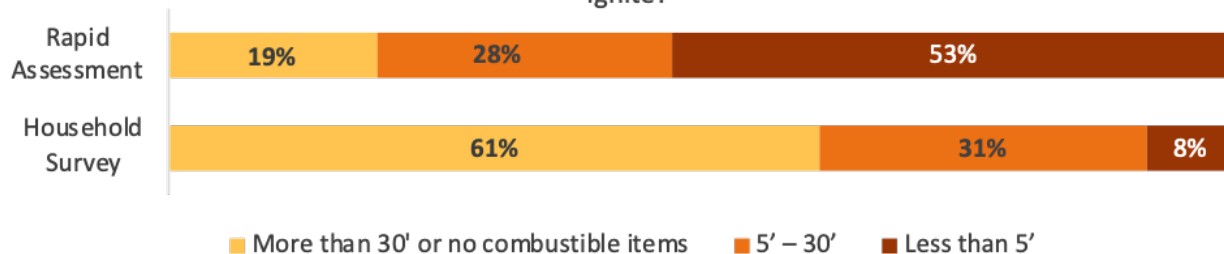
1.3 Defensible space



7

Distance to other combustibles (non-vegetation) (n=36)

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?

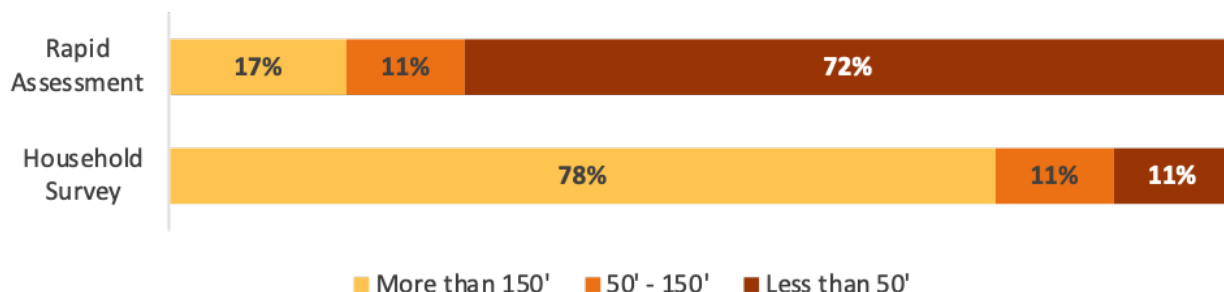


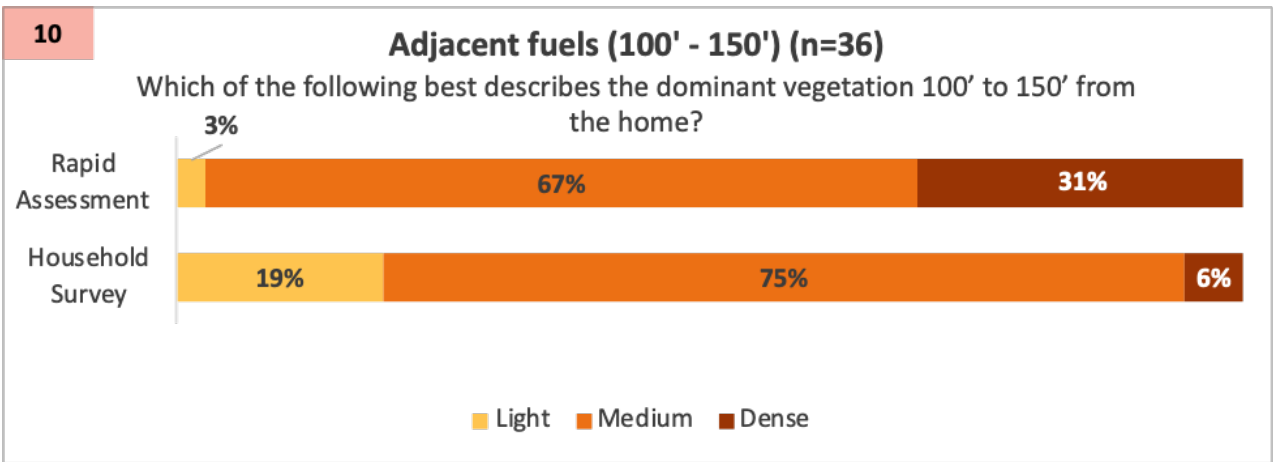
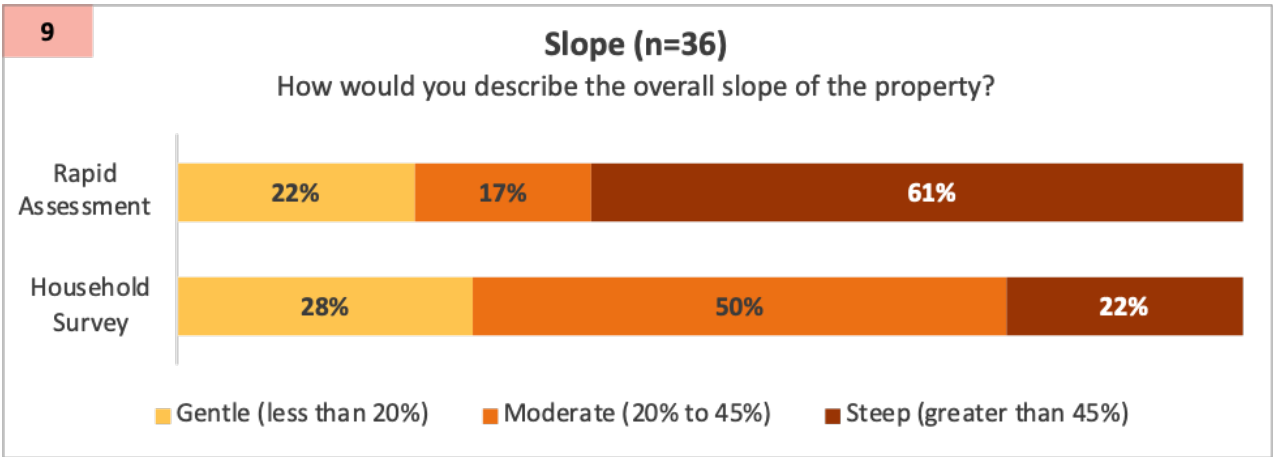
1.4 Background conditions

8

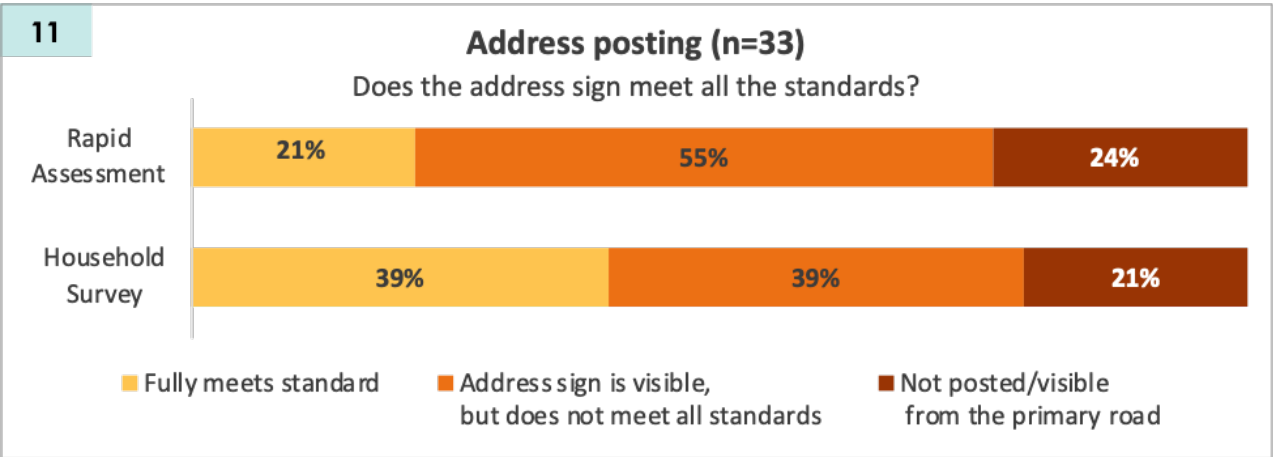
Distance to dangerous topography (n=36)

What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?





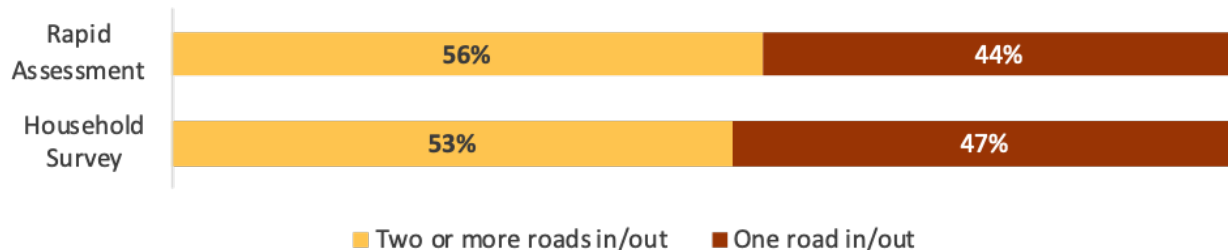
1.5 Access



12

Ingress/Egress (n=36)

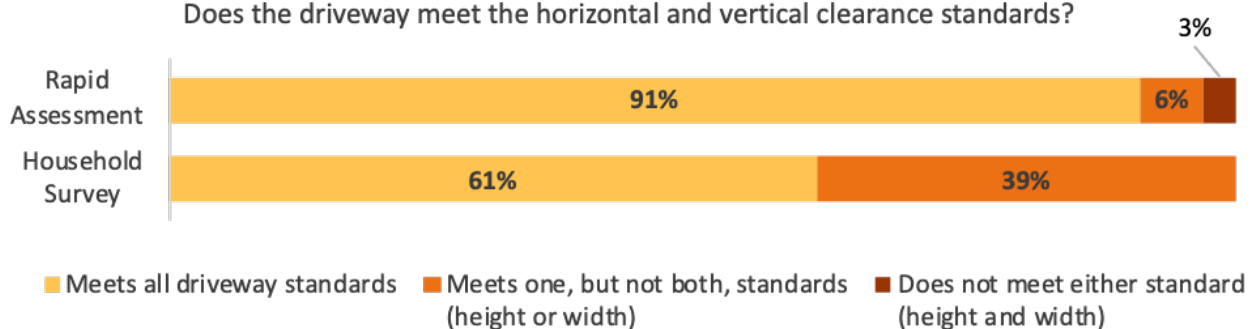
If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?



13

Driveway clearance (n=33)

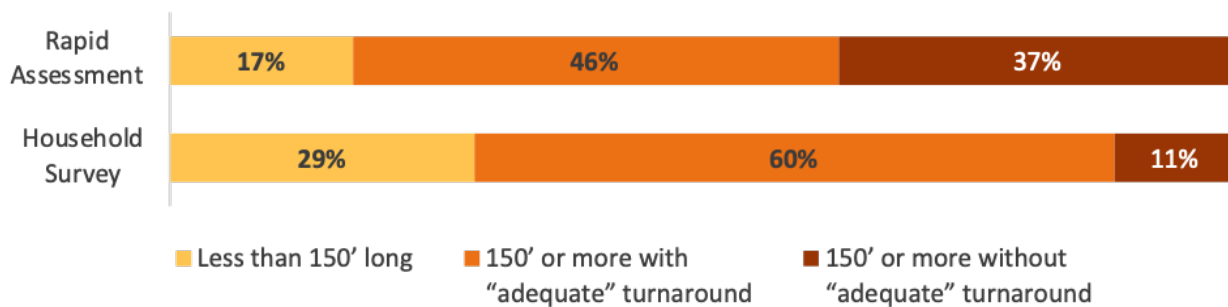
Does the driveway meet the horizontal and vertical clearance standards?



14

Driveway length (n=35)

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=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
Low	4%	8%	33%
Moderate	12%	14%	42%
High	58%	47%	22%
Very high	13%	14%	3%
Extreme	13%	17%	0%

2.2 Home ignition potential

Risk attribute: Roof
What is the most vulnerable roofing material?

Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
Non-combustible (tile, metal, or asphalt shingles, or flat composition)	95%	92%	92%
Combustible (wood shake shingles)	5%	8%	8%

a. Out of all RAs in study area, 6 were missing/unobserved (4%) 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=156)	Subset of rapid assessments with a paired household survey (N=35)	Self-assessment from household surveys (N=35)
Stucco, cement, brick, stone, or other noncombustible siding	21%	9%	34%
Log or heavy timbers	0%	0%	6%
Wood or vinyl siding	79%	91%	60%

- a. Out of all rapid assessments in the study area, 6 were missing/unobserved (4%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (6%) and included in the highest risk category.

Risk attribute: Combustible Attachments

Does the home have a combustible balcony, deck, porch, or fence attached to the structure?

Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
No combustible attachments	33%	31%	39%
Combustible attachments present	67%	69%	61%

- a. Out of all rapid assessments in the study area, 41 were missing/unobserved (26%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 6 were missing/unobserved (17%) 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=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
More than 100'	58%	75%	100%
30' – 100'	25%	11%	0%
10' – 29'	12%	11%	0%
Less than 10'	5%	3%	0%

- a. Out of all rapid assessments in the study area, 6 were missing/unobserved (4%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 1 was missing/unobserved (3%) and included in the highest risk category.

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=156)	Subset of rapid assessments with a paired household survey (N=35)	Self-assessment from household surveys (N=35)
More than 100'	5%	1%	43%
Between 30' - 100'	19%	14%	43%
Between 5' - 29'	66%	74%	14%
Less than 5'	10%	6%	0%

a. Out of all rapid assessments in the study area, 0 were missing/unobserved.

b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/ unobserved.

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=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
None, greater than 30' from structure	12%	19%	61%
Between 5' - 30' from structure	22%	28%	31%
Less than 5' from structure	66%	53%	8%

a. Out of all rapid assessments in the study area, 86 were missing/unobserved (55%) and included in the highest risk category.

b. Out of the subset of rapid assessments with a paired household survey, 18 were missing/unobserved (50%) and included in the highest risk category.

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=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
More than 150'	24%	28%	53%
50' - 150'	10%	45%	31%
Less than 150'	65%	27%	16%

a. Out of all rapid assessments in the study area, 0 were missing/unobserved.

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=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
Gentle (less than 20%)	30%	22%	28%
Moderate (between 20% to 45%)	30%	17%	50%
Steep (greater than 45%)	40%	61%	22%

a. Out of all RAs in study area, 1 was missing/unobserved (<1%) and included in the highest risk category.

b. Out of the subset of rapid assessment 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' to 150' from the home? This may be outside the property boundary.

Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=393)
Light	4%	3%	19%
Medium	51%	67%	75%
Dense	46%	31%	6%

a. Out of all rapid assessments in the study area, 3 were missing/unobserved (2%) 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 local standards?

Response categories	All rapid assessments in study area (N=156)	Subsets of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=33)
Fully meets standard	11%	21%	39%
Address sign is visible, but does not meet all standards	44%	55%	39%
Not posted/visible from the primary road	45%	24%	21%

a. Out of all rapid assessments in the study area, 2 were missing/unobserved (1%) and included in the high risk category.

b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.

Risk attribute: Ingress/Egress

If the road to access the home was blocked due to wildfire, is there another road to get out of the community?

Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=36)	Self-assessment from household surveys (N=36)
Yes, two or more roads in/out	56%	56%	53%
No, one road in/out	44%	44%	47%

a. Out of all rapid assessments in the study area, 3 were missing/unobserved (2%) and included in the high risk category.

b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (6%) and included in the highest risk category.

Risk attribute: Driveway clearance

Does the driveway meet the horizontal and vertical clearance standards?

Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=33)	Self-assessment from household surveys (N=33)
Meets all driveway standards	79%	91%	61%
Meets one, but not both, standards (height or width)	19%	6%	39%
Does not meet either standard (height and width)	2%	3%	0%

a. Out of all RAs in 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, 1 missing/unobserved (3%) and included in the highest risk category.

Risk attribute: Driveway length
What best describes the driveway?

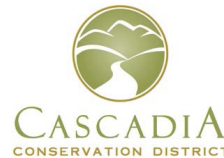
Response categories	All rapid assessments in study area (N=156)	Subset of rapid assessments with a paired household survey (N=35)	Self-assessment from household surveys (N=35)
150 feet long or less	24%	17%	29%
Longer than 150 feet with “adequate” turnaround	42%	46%	60%
Longer than 150’ without “adequate” turnaround	34%	37%	11%

a. Out of all RAs in study area, 3 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 missing/unobserved (3%) and included in the highest risk category.

APPENDIX E: Wildfire Research (WiRē) Household Survey Summary

Begins on next page.

Living with Wildfire in Chelan County in 2022



Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com

Number of completed surveys: 36

Number of surveys mailed: 86

n = number of observations

Response rate: 41.9%

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 Wenatchee Valley Fire Department, 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 February 24, 2023*

Section 1: In this first section of the survey, we ask about your home in Santa Fe. 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=36)

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

- 97% Own: Primary home
- 3% 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=35	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
	89%	89%	89%	89%	94%	97%	94%	100%	100%	94%	97%	91%	91%	0%

FULLTIME (n=35)

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

AVERAGE = 2003

YRBUILD (n=35)

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

AVERAGE = 1994

RISKAWAR (n=36)

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

- 72% Very aware
- 22% Somewhat aware
- 6% Not aware
- 0% 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=36)

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

- 3% There has been a wildfire on my property
- 47% Less than 2 miles away but not on my property
- 42% 2 to 10 miles away
- 3% More than 10 miles away
- 6% 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=36)	I have evacuated from my Chelan County home due to a wildfire or threat of a wildfire	78%	22%
SMOKEDAM (n=34)	My Chelan County home has had smoke damage	97%	3%
FIREM (n=34)	My Chelan County home has had wildfire damage	100%	0%
DESTROY (n=34)	My Chelan County home was destroyed by a wildfire	100%	0%

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=36)	For the people in my household	25%	75%	-
EVACPETS (n=34)	For the pets in my household and on my property	18%	62%	21%
EVACLIVSTOC (n=34)	For livestock on my property	9%	29%	62%

- 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=36)	61%	EVACINFO1 (n=36)	17%
Sign up for a wildfire evacuation notification system (Alert Sense https://public.alertsense.com)	EVACACT2 (n=36)	28%	EVACINFO2 (n=36)	28%
Identify safe evacuation routes	EVACACT3 (n=36)	75%	EVACINFO3 (n=36)	8%
Identify a location that my household will evacuate to	EVACACT4 (n=36)	67%	EVACINFO4 (n=36)	6%
Identify what to take and what to leave behind during an evacuation	EVACACT5 (n=36)	69%	EVACINFO5 (n=36)	8%
Discuss evacuation with my neighbors	EVACACT6 (n=36)	42%	EVACINFO6 (n=36)	14%
Create a checklist for steps to take before evacuating	EVACACT7 (n=36)	42%	EVACINFO7 (n=36)	22%
Identify a place to stay during a long-term evacuation (i.e., more than a few days)	EVACACT8 (n=36)	61%	EVACINFO8 (n=36)	11%
Pack a “go” bag with important items you would need during an evacuation (see https://simplebooklet.com/emergencygobag)	EVACACT10 (n=36)	44%	EVACINFO10 (n=36)	17%

- 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=34)	Has your current or a previous insurance company ever provided information on reducing the risk of wildfire?	50%	35%	15%
INSURE3 (n=35)	Did an insurance company ever refuse to provide or renew your insurance because of the risk of wildfire?	80%	11%	9%
INSURE4 (n=35)	Do you pay a higher premium for your insurance due to wildfire risk?	51%	23%	26%
INSURE10 (n=35)	Do you receive a discount on your insurance premium because you have reduced wildfire risk on your property?	71%	0%	29%
INSURE12 (n=35)	Do you think your home is adequately insured against loss from a wildfire?	14%	66%	20%
INSURE13 (n=35)	Has your current insurance company ever required you to take action to reduce wildfire risk in order to continue coverage?	89%	3%	9%
INSURE14 (n=35)	Has your current insurance company offered private firefighting services?	71%	14%	14%

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=36)	Tile, metal, or asphalt shingles	8%	92%
ROOFTYPE2 (n=36)	Wood (shake shingles)	92%	8%

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

(Fill in all that apply)

		No	Yes
SIDETYPE1 (n=35)	Stucco, cement, brick, stone, or other noncombustible siding	57%	43%
SIDETYPE2 (n=35)	Log or heavy timbers	94%	6%
SIDETYPE3 (n=35)	Wood or vinyl siding	40%	60%

ATTACHCOMB (n=36)

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

39%	No
61%	Yes

COMBUST_A (n=36)

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)*

61%	More than 30 feet or no combustible items
31%	5 – 30 feet
8%	Less than 5 feet

CLOSEVEG_A (n=35)

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

43%	More than 100 feet
43%	30 – 100 feet
14%	5 – 29 feet
0%	Less than 5 feet

DOMVEG_A (n=36)

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)*

- 19% Grasses and shrubs
- 75% Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
- 6% Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)

CLOSEHOME (n=36)

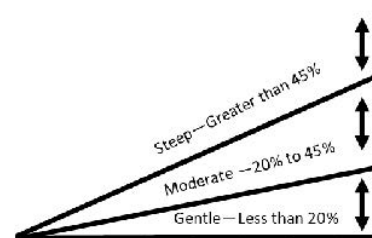
3.7. What is the **closest** distance from your Chelan County home to a neighboring home? *(Fill in one circle)*

- 100% More than 100 feet
- 0% 30 – 100 feet
- 0% 10 – 29 feet
- 0% Less than 10 feet

SLOPE (n=36)

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)*

- 22% Steep – Greater than 45%
- 50% Moderate – 20% to 45%
- 28% Gentle – Less than 20%

**RIDGE (n=36)**

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

- 78% More than 150 feet
- 11% 50 – 150 feet
- 11% 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=33)	has an overhead obstruction (ex. tree limbs) lower than 14 feet	91%	9%
DRIVEWAYW_C (n=35)	is narrower than 14 feet wide	69%	31%
DRIVEWAYL_A (n=35)	is longer than 150 feet	29%	71%
TURNARND_A (n=36)	has room for a fire truck to turn around	31%	69%

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

HOMENUM_A (n=31)	23%	No	HOMENUMVIS (N=29)	No	Yes
	77%	Yes →	Is the posted number visible from the road? <i>(Fill in one circle)</i>	7%	93%
REFLECT (N=28)			Is the posted number blue reflective? <i>(Fill in one circle)</i>	47%	53%

ROADS (n=36)

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)*

47% No

53% Yes

RISKRATE (n=36)

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)*

33% Low risk

42% Moderate risk

22% High risk

3% Very high risk

0% Extreme risk

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

TALKFIRE (n=36)

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

36% No
64% Yes

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

		No	Yes
ACTIVITIES1 (n=36)	Removed large or dense vegetation near my Chelan County home (ex. trees, shrubs, brush)	8%	92%
ACTIVITIES7 (n=36)	Regularly cleared my roof and gutters of leaves and pine needles	19%	81%
ACTIVITIES8 (n=36)	Regularly mowed and raked around my Chelan County home	3%	97%
ACTIVITIES2 (n=34)	Made my Chelan County home more fire resistant (ex. replaced roofing, siding, added hardscaping)	38%	62%
ACTIVITIES3 (n=36)	Helped neighbor(s) reduce vegetation on their properties	83%	17%
ACTIVITIES4 (n=33)	Helped reduce vegetation on community property (ex. HOA, subdivision)	94%	6%
ACTIVITIES5 (n=35)	Helped reduce vegetation on nearby public lands (ex. county, state, federal lands)	91%	9%
ACTIVITIES6 (n=36)	Participated in a community wildfire preparedness activity (ex. meeting, chipper day, etc.)	83%	17%
ACTIVITIES9 (n=36)	Met with a wildfire professional at your home to evaluate and discuss your property's wildfire risk	75%	25%
ACTIVITIES10 (n=36)	Interacted with public land managers (ex. Washington Dept. of Natural Resources or U.S. Forest Service) about fuels reduction on nearby public lands	89%	11%

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=36)	Vegetation on my property	14%	61%	25%
CONTRIB2 (n=36)	Physical characteristics of my house or other buildings (ex. roofing or siding) on my property	8%	56%	36%
CONTRIB3 (n=36)	Vegetation on my neighbors' properties	17%	50%	33%
CONTRIB4 (n=36)	Vegetation on nearby public or large undeveloped land	17%	61%	22%
CONTRIB5 (n=36)	Lack of nearby water supply (ex. hydrant or cistern) for fire suppression	53%	31%	17%

NEIGHBORACT (n=35)

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)*

- 3% All my neighbors have taken action
- 20% Most of my neighbors have taken action
- 71% Some of my neighbors have taken action
- 6% 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=35)	Removing trees and reducing other vegetation on HOA property surrounding communities to slow the spread of wildfire (ex. fuel breaks)	26%	34%	29%	9%	3%
ACCEPT1 (n=36)	Removing trees and reducing other vegetation (thinning/fuel breaks) on nearby public lands	33%	36%	19%	8%	3%
ACCEPT2 (n=36)	Burning piles of vegetation (slash piles) on nearby public lands	42%	42%	6%	3%	8%
ACCEPT3 (n=36)	Conducting a prescribed fire ignited by fire professionals on nearby public lands	44%	25%	17%	3%	11%
ACCEPT4 (n=36)	Managing a naturally ignited fire (lightning) on nearby public lands	39%	36%	11%	8%	6%
ACCEPT6 (n=36)	Growth policies or land use regulations that limit new development in fire-prone areas in Chelan County	42%	25%	17%	3%	14%
ACCEPT7 (n=36)	Building codes that require fire resistant materials for structures located in fire-prone areas in Chelan County	36%	28%	14%	14%	8%
ACCEPT8 (n=36)	Development standards that require vegetation management (ex. removing or thinning trees and mowing grass) on lots located in fire-prone areas in Chelan County	31%	19%	25%	11%	14%
ACCEPT12 (n=36)	Temporarily shutting off the power grid during extreme fire risk days to avoid new wildfire ignitions	14%	11%	11%	14%	50%
ACCEPT9 (n=36)	Removing vegetation along roadways for safer evacuation	44%	33%	11%	6%	6%
ACCEPT13 (n=36)	Building a new road(s) to provide an emergency evacuation route	28%	28%	17%	8%	19%

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=35)	With proper technology, we can control most wildfires.	17%	29%	20%	31%	3%
STATE3 (n=36)	We should put out wildfires that threaten human life.	61%	36%	3%	0%	0%
STATE4_a (n=36)	We should put out wildfires that threaten homes.	53%	39%	6%	3%	0%
STATE5 (n=36)	During a wildfire, saving homes should be a priority over saving forests.	42%	28%	19%	8%	3%
STATE6 (n=36)	Wildfires are a natural part of a healthy forest/ecosystem.	33%	44%	17%	3%	3%
STATE11 (n=36)	I live here for the trees and will not remove any of them to reduce wildfire risk.	0%	8%	19%	42%	31%
STATE13 (n=36)	Managing the wildfire danger is a government responsibility, not mine.	0%	0%	22%	47%	31%
STATE14 (n=36)	Homeowners' actions to reduce wildfire are not effective.	0%	3%	11%	61%	25%
STATE15 (n=36)	My property is at risk of wildfire.	11%	47%	14%	22%	6%
STATE17 (n=36)	My effort to reduce wildfire risk on my property is not effective because of the heavy vegetation on my neighbors' properties.	6%	8%	14%	64%	8%
STATE19 (n=35)	Local firefighters have sufficient resources to keep a wildfire from spreading.	3%	31%	34%	29%	3%
STATE20 (n=36)	Local firefighters have sufficient resources to protect threatened homes.	3%	39%	36%	19%	3%
STATE21 (n=36)	Firefighters should put their lives at risk to protect my home.	3%	3%	0%	53%	42%
STATE22 (n=36)	Wildfires threaten my community water supply.	11%	11%	31%	44%	3%
STATE24 (n=36)	I plan to move out of the area in the next 12 months because of wildfires.	0%	0%	0%	22%	78%
STATE25 (n=36)	Development in fire-prone areas of Chelan County increases the wildfire risk to my Chelan County property.	6%	2%	36%	36%	0%

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=35)	I would put the fire out.	23%	5%	16%	24%	46%	1%
LACT2 (n=35)	The fire department would save my home.	6%	24%	44%	21%	5%	<1%
LACT3 (n=35)	My home would have smoke damage.	14%	47%	28%	7%	1%	1%
LACT4 (n=35)	My home would have some physical damage.	14%	43%	36%	8%	1%	1%
LACT5 (n=35)	My home would be destroyed.	3%	16%	37%	31%	12%	1%
LACT6 (n=35)	I would lose money due to the loss of business or income on my property.	6%	15%	13%	12%	17%	36%
LACT7 (n=35)	My trees and landscape would burn.	14%	44%	25%	8%	1%	1%
LACT9 (n=35)	My neighbors' homes would be damaged or destroyed.	0%	31%	40%	17%	4%	2%
LACT12 (n=35)	Direct flame would ignite my home.	11%	22%	32%	29%	11%	1%
LACT13 (n=35)	Embers would ignite my home.	3%	23%	39%	24%	7%	1%
LACT14 (n=35)	Nearby homes would ignite my home.	0%	12%	31%	29%	23%	2%

CHANCES1 (n=34)

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%
3%	0%	0%	0%	0%	12%	9%	9%	32%	26%	9%

CHANCES2 (n=35)

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%
0%	6%	6%	6%	0%	9%	9%	14%	26%	14%	11%

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)*

			Usefulness of information among respondents who received information from the source (sums to ~100%)					
		Received info from source		Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful
Local fire department	SOURCEREC1 (n=31)	45%	SOURCEUSE1 (n=14)	14%	21%	43%	14%	7%
Community group (ex. homeowners association)	SOURCEREC2 (n=33)	12%	SOURCEUSE2 (n=4)	0%	0%	0%	0%	100%
Community wildfire ambassador	SOURCEREC25 (n=33)	12%	SOURCEUSE25 (n=4)	25%	50%	0%	0%	25%
Local arborist/contractor	SOURCEREC28 (n=33)	18%	SOURCEUSE28 (n=6)	0%	33%	17%	17%	33%
Washington State University Master Gardener’s program	SOURCEREC17 (n=33)	15%	SOURCEUSE17 (n=5)	0%	40%	20%	0%	40%
Local government	SOURCEREC29 (n=32)	25%	SOURCEUSE29 (n=8)	0%	25%	38%	13%	25%
Wildfire Ready Neighbors	SOURCEREC40 (n=33)	27%	SOURCEUSE40 (n=9)	11%	11%	11%	44%	22%
Chelan County DNR	SOURCEREC18 (n=31)	32%	SOURCEUSE18 (n=10)	10%	20%	20%	40%	10%
Cascadia Conservation District	SOURCEREC16 (n=32)	34%	SOURCEUSE16 (n=11)	18%	45%	18%	18%	0%
Chumstick Wildfire Stewardship Coalition	SOURCEREC19 (n=33)	3%	SOURCEUSE19 (n=1)	0%	100%	0%	0%	0%
Chelan/Douglas Land Trust	SOURCEREC20 (n=32)	13%	SOURCEUSE20 (n=4)	0%	25%	25%	50%	0%
Chelan Public Utility District	SOURCEREC41 (n=32)	25%	SOURCEUSE41 (n=8)	0%	25%	63%	13%	0%
Washington State DNR	SOURCEREC11 (n=31)	29%	SOURCEUSE11 (n=9)	11%	33%	22%	33%	0%
Firewise USA®	SOURCEREC5 (n=31)	10%	SOURCEUSE5 (n=3)	67%	0%	33%	0%	0%
Ready, Set, Go! program	SOURCEREC24 (n=31)	6%	SOURCEUSE24 (n=2)	0%	50%	0%	50%	0%
Fire Adapted Communities and/or Learning Network	SOURCEREC8 (n=32)	3%	SOURCEUSE8 (n=1)	0%	100%	0%	0%	0%
USDA Forest Service	SOURCEREC14 (n=32)	13%	SOURCEUSE14 (n=4)	25%	25%	25%	25%	0%
National Park Service	SOURCEREC34 (n=32)	3%	SOURCEUSE34 (n=1)	0%	0%	100%	0%	0%
Bureau of Land Management	SOURCEREC15 (n=31)	6%	SOURCEUSE15 (n=2)	0%	100%	0%	0%	0%
Media (newspaper, TV, radio, internet)	SOURCEREC4 (n=31)	42%	SOURCEUSE4 (n=13)	0%	8%	62%	23%	8%

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=36)	17%	WANTINFO1 (n=36)	28%
Mailed newsletter	RECEIVEINFO2 (n=36)	28%	WANTINFO2 (n=36)	44%
Community meetings	RECEIVEINFO3 (n=36)	17%	WANTINFO3 (n=36)	31%
Conversations with local wildfire specialists	RECEIVEINFO4 (n=36)	14%	WANTINFO4 (n=36)	42%
Social media (Facebook, Twitter, Nextdoor)	RECEIVEINFO5 (n=36)	17%	WANTINFO5 (n=36)	11%
Internet (non-social media)	RECEIVEINFO6 (n=36)	17%	WANTINFO6 (n=36)	14%
TV news	RECEIVEINFO7 (n=36)	31%	WANTINFO7 (n=36)	11%
Newspaper	RECEIVEINFO8 (n=36)	17%	WANTINFO8 (n=36)	14%
Radio	RECEIVEINFO9 (n=36)	39%	WANTINFO9 (n=36)	19%

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=35)	FACTOR2 (n=35)	FACTOR3_a (n=35)	FACTORNO1 (n=35)
Personal resources	Financial cost 43%	Time to do the work 20%	Physical ability to do the work 23%	None of these 49%
Lack of specific information about...	FACTOR11 (n=35) The factors contributing to my property's wildfire risk 6%	FACTOR4 (n=35) How to reduce wildfire risk on my property 6%	FACTOR12 (n=35) Where to dispose of vegetation/slash 11%	FACTORNO2 (n=35) None of these 80%
Personal perspectives	FACTOR6 (n=35) I do not want to change the way my property looks 11%	FACTOR5_a (n=35) I do not think taking action would reduce my property's wildfire risk 11%	FACTOR13 (n=35) It's a low priority to me 3%	FACTORNO3 (n=35) None of these 74%
Community	FACTOR14 (n=35) Lack of options for disposing vegetation/slash 14%	FACTOR9_a (n=35) Restrictions on the changes I can make to my property 3%	FACTOR15 (n=35) Social pressure from neighbors 0%	FACTORNO4 (n=35) None of these 83%

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	INCENTV1 (n=35) Cost-share or financial assistance 40%	INCENTV3 (n=35) Help doing the work 26%	INCENTV4 (n=35) Recommended contractors 9%	INCENTVNO1 (n=35) None of these 43%
	INCENTV6 (n=34) A report describing my property's wildfire risk factors 29%	INCENTV7 (n=34) Videos showing how to reduce risk on a property in my area 9%	INCENTV8 (n=34) One-on-one visit with wildfire risk experts on my property 38%	INCENTVNO2 (n=34) None of these 50%
Other	INCENTV9 (n=34) Feedback on the work I've done to reduce my property's risk 29%	INCENTV10 (n=34) Recognition for taking action 6%	INCENTV11 (n=34) Neighborhood group that organizes wildfire risk-reduction activities 6%	INCENTVNO3 (n=34) None of these 68%

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

RISKTAKE1 (n=34)

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
6%	0%	12%	18%	6%	32%	6%	9%	9%	0%	3%

AGE (n=33)

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

MEAN AGE: 58 years old

GENDER (n=35)

8.3. Are you? (Fill in one circle)

- 69% Male
- 31% Female
- 0% Other

EDUC (n=33)

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

- 3% Less than high school
- 21% High school graduate
- 3% Some college or technical school
- 12% Technical or trade school
- 39% College graduate
- 6% Some graduate work
- 15% Advanced degree (M.D., M.A., M.S., Ph.D., etc.)

EMPLOY (n=34)

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

- 44% Employed full time (including self-employed)
- 12% Employed part time (including self-employed)
- 0% Unemployed or do not work outside of the home
- 44% Retired

INCOME (n=29)

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

- 0% Less than \$15,000
- 3% \$15,000 - \$24,999
- 7% \$25,000 – \$34,999
- 7% \$35,000 - \$49,999
- 21% \$50,000 - \$74,999
- 14% \$75,000 - \$99,999
- 41% \$100,000 - \$149,999
- 0% \$150,000 - \$199,999
- 7% \$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: WiRē Annexation Survey Cover Letter, Survey,
and Responses**

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Chelan County Fire District 1
731 N. Wenatchee Ave., Wenatchee, WA 98801
www.chelancountyfire.com



Dear Fire District #1 Resident,

Si nessecita información o instrucciones de la encuesta en Español, lláme a Hillary Heard al 509-662-4734.

Chelan County Fire District 1's goal is to be proactive in confronting wildfire and reducing potential loss of life and property. We recently sent you the "Living with Wildfire in Chelan County in 2022" survey to understand what you know about wildfire, your experiences with wildfire, as well as the characteristics of your property. Your participation with this survey is much appreciated.

Chelan County Fire District 1 is also interested in gathering additional information specific to annexation into the fire protection district. We would like you to answer the questions on the enclosed sheet. After completing the sheet, please fold it and put it in the postage paid return envelope.

We realize your time is valuable and appreciate your response. Your participation is completely voluntary.

If you have any questions, please email or call Hillary Heard, Wildfire Liaison at Chelan County Fire District 1 at hheard@chelancountyfire.com or (509) 662-4734 ext. 301.

Thank you for participating.
Sincerely,

Brian Brett
Fire Chief,
Chelan County Fire District 1

Hillary Heard
Wildfire Liaison,
Chelan County Fire District 1

**Our Mission is to save lives and property with Professionalism
through Pride Commitment and Compassion**



This series of questions is specific to annexation into Chelan County Fire District 1. Annexing into Chelan County Fire District 1 means paying a tax for fire protection and emergency services. Approximately 35% of the households and properties in this area have opted into Chelan County Fire District 1’s protection by paying this tax. Others have not. We are interested in hearing from everyone.

When you have completed both sides of this sheet, please include it in the postage paid envelope.

A1. Have you ever dialed 911 while at your Chelan County home? *(Fill in one circle)*

- ☐ No
- ☐ Yes
- ☐ Don’t know

A2. If an emergency took place on your Chelan County property, do you think first responders would be able to reach it? *(Fill in one circle)*

- ☐ No
- ☐ Yes
- ☐ Don’t know

A3. Do you think the following emergency services provided by Chelan County Fire District 1 may be necessary at your Chelan County property? *(Fill in one circle per row)*

	No	Yes
Structural firefighting	☐	☐
Wildland firefighting	☐	☐
Emergency Medical Service (EMS) response	☐	☐
Vehicle accident response	☐	☐
Water rescue	☐	☐
Hazardous Material (Hazmat) response	☐	☐
High Angle Rescue (rope rescue	☐	☐



A4. Have you ever received a letter or other form of communication from Chelan County Fire District 1 regarding annexation? *(Fill in one circle)*

- ☐ No
- ☐ Yes
- ☐ Don't know

A5. Have you voluntarily signed a petition to annex your property into the Chelan County Fire District 1 services area? *(Fill in one circle)*

- ☐ No
- ☐ Yes
- ☐ Don't know

A6. Has your Chelan County property been annexed into the Chelan County Fire District 1 service area (in other words, has your property has been assessed a fire protection tax)? *(Fill in one circle)*

- ☐ No
- ☐ Yes
- ☐ Don't know

Please return this sheet in the postage paid return envelope.



Number of completed surveys: 11

Number of surveys mailed: 48

n = number of observations

Response rate: 23%

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 series of questions is specific to annexation into Chelan County Fire District 1. Annexing into Chelan County Fire District 1 means paying a tax for fire protection and emergency services. Approximately 35% of the households and properties in this area have opted into Chelan County Fire District 1's protection by paying this tax. Others have not. We are interested in hearing from everyone.

When you have completed both sides of this sheet, please include it in the postage paid envelope.

DIAL911 (n=11)

A1. Have you ever dialed 911 while at your Chelan County home? *(Fill in one circle)*

91% No

9% Yes

0% Don't know

FIRSTRESPONDERREACH (n=11)

A2. If an emergency took place on your Chelan County property, do you think first responders would be able to reach it? *(Fill in one circle)*

9% No

91% Yes

0% Don't know

**This project was funded by USDA Forest Service, Washington Office Fire and Aviation Management. The annexation survey administration was paid for by Wenatchee Valley Fire Department, a Washington Resource and Development Council grant, a Washington Department of Natural Resources Forest Partnerships Grant Program grant, and contributions from Cascadia Conservatoion District.*

**All data received and procesed as of March 24, 2023*

**Document prepared March 28, 2023*



A3. Do you think the following emergency services provided by Chelan County Fire District 1 may be necessary at your Chelan County property? *(Fill in one circle per row)*

	No	Yes
Structural firefighting NECESSARYSERVICES1 (n=10)	30%	70%
Wildland firefighting NECESSARYSERVICES2 (n=10)	20%	80%
Emergency Medical Service (EMS) response NECESSARYSERVICES3 (n=10)	10%	90%
Vehicle accident response NECESSARYSERVICES4 (n=10)	50%	50%
Water rescue NECESSARYSERVICES5 (n=11)	91%	9%
Hazardous Material (Hazmat) response NECESSARYSERVICES6 (n=10)	80%	20%
High Angle Rescue (rope rescue) NECESSARYSERVICES7 (n=10)	90%	10%

RECANNEXLETTER (n=11)

A4. Have you ever received a letter or other form of communication from Chelan County Fire District 1 regarding annexation? *(Fill in one circle)*

27% No

45% Yes

27% Don't know

ANNEXPETITION (n=11)

A5. Have you voluntarily signed a petition to annex your property into the Chelan County Fire District 1 services area? *(Fill in one circle)*

64% No

27% Yes

9% Don't know

ANNEXED (n=11)

A6. Has your Chelan County property been annexed into the Chelan County Fire District 1 service area (in other words, has your property has been assessed a fire protection tax)? *(Fill in one circle)*

45% No

18% Yes

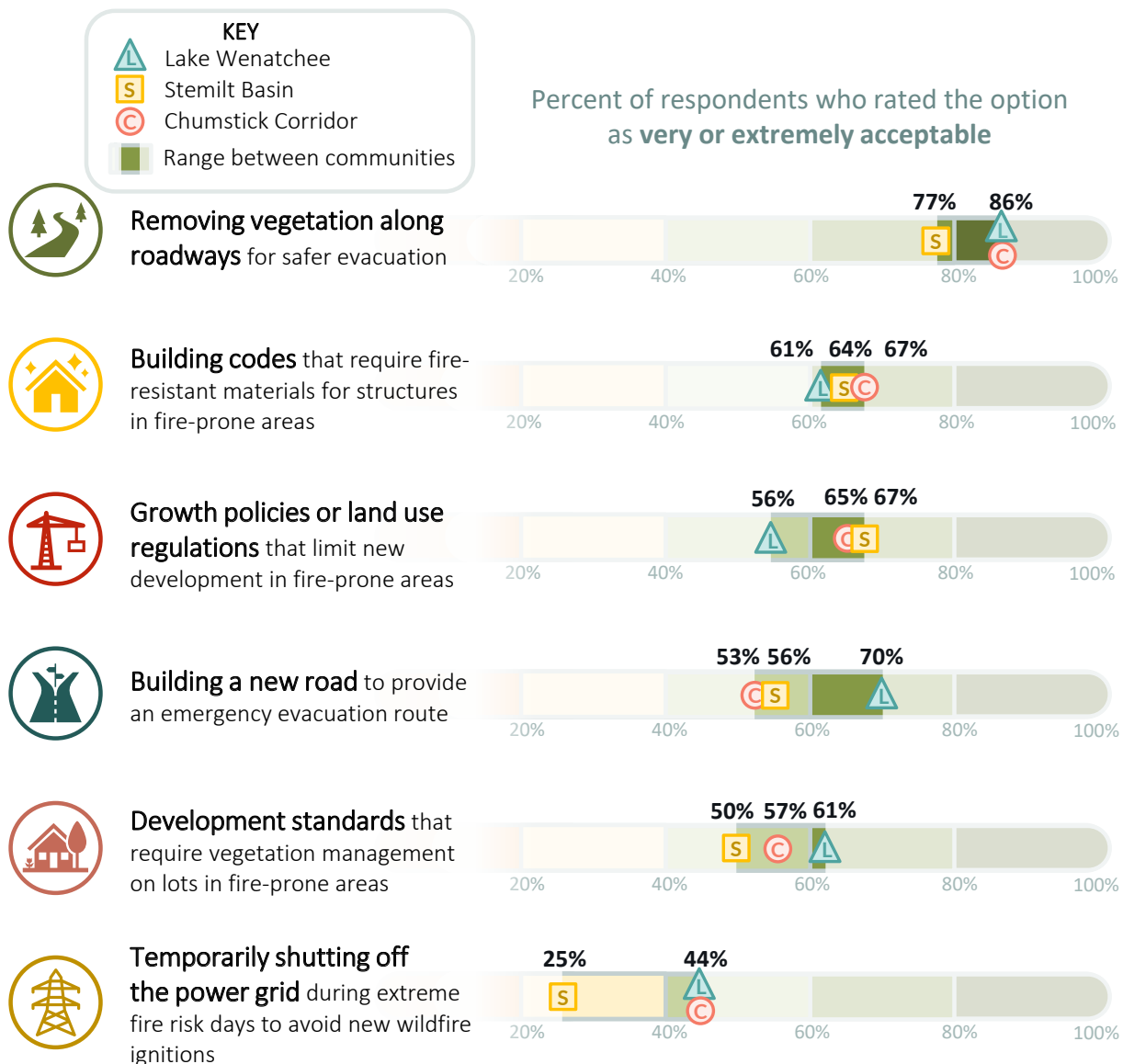
36% Don't know

APPENDIX G: Outreach Materials

Begins on next page.



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
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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.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.htm and at any USDA office or write a letter addressed to U A and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.



To learn more about RMRS publications or search our online titles:

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