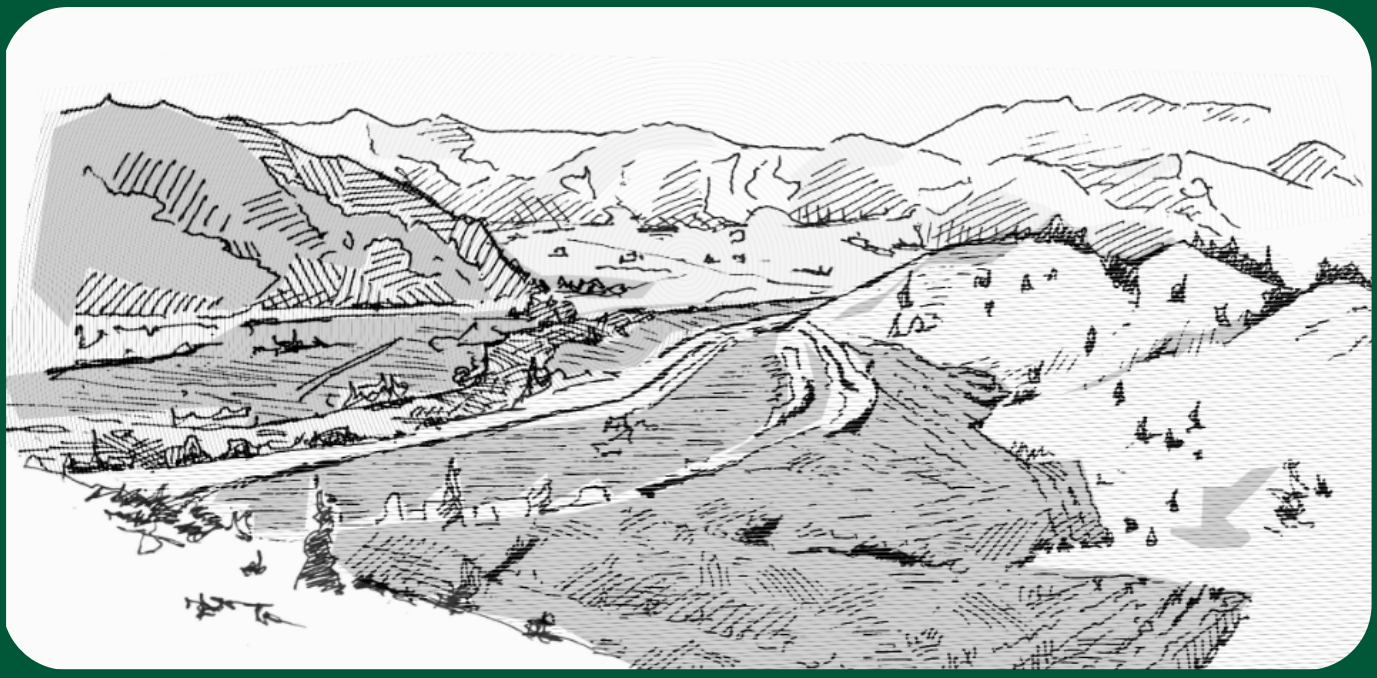
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Living With Wildfire in Lake Wenatchee, Chelan County, Washington: 2022 Data Report

Julia B. Goolsby, Patricia A. Champ, Suzanne Wittenbrink, Colleen Donovan, Kris King, Hannah Brenkert-Smith, James R. Meldrum, Christopher M. Barth, Carolyn Wagner, Chiara C. Forrester



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Abstract: Community wildfire readiness includes actions taken by residents, including wildfire risk mitigation at the parcel level and evacuation preparedness. This report presents results from two data collection efforts in the Lake Wenatchee Fire & Rescue service district in Chelan County, Washington: parcel level rapid wildfire risk assessments and household surveys sent to the owners of assessed parcels. Respondents reported that they were moderately aware of the risk of wildfire to their home, were discussing wildfire with their neighbors, and were taking action to reduce risk. There are gaps in respondents' understanding of wildfire risk that might be addressed through educational outreach. Respondents were supportive of wildfire risk reduction strategies at the community level, including fuel treatments and policy options.

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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Authors

Julia B. Goolsby, University of Colorado Boulder, Institute of Behavioral Science, Boulder, Colorado

Patricia A. Champ, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fort Collins, Colorado

Suzanne Wittenbrink, Wildfire Research (WiRē) Center, Niwot, Colorado

Colleen Donovan, Wildfire Research (WiRē) Center, Niwot, Colorado

Kris King, Wildfire Risk Reduction Coordinator, Lake Wenatchee Fire & Rescue, Lake Wenatchee, Washington

Hannah Brenkert-Smith, University of Colorado Boulder, Institute of Behavioral Science, Boulder, Colorado

James R. Meldrum, U.S. Geological Survey, Fort Collins Science Center, Fort Collins, Colorado

Christopher M. Barth, U.S. Department of Agriculture, Forest Service, Washington Office, Fire and Aviation Management

Carolyn Wagner, Wildfire Research (WiRē) Center, Niwot, Colorado

Chiara C. Forrester, The Watershed Center, Boulder, Colorado

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EXECUTIVE SUMMARY

In Brief

Respondents to a social survey sent to residents in the Lake Wenatchee Fire & Rescue (LWFR) service district are moderately aware of the risk of wildfire to their home, are discussing wildfire with their neighbors, and are taking action to reduce risk. There are gaps in respondents' understanding of wildfire risk that might be addressed through educational outreach, particularly from LWFR. Respondents are accepting of wildfire risk reduction strategies at the community level, including fuel treatments and policy options.

Background, Goals, and Methods

In 2021–2022, the Wildfire Research (WiRē) Center partnered with LWFR to learn more about parcel-level wildfire risk of residents in the greater Lake Wenatchee and Plain area in Chelan County, Washington. This research project was part of a larger, sustained collaboration between WiRē and other fire districts in Chelan County.

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, 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.

Results

Lake Wenatchee residents were responsive to the household survey (45% response rate) and their responses provide insights into study area residents' wildfire risk awareness, understanding of wildfire risk contributors, perceptions of community risk reduction strategies, communication preferences, and current mitigation activities.

Survey results indicate that respondents are aware of wildfire risk to their homes. Slightly less than three-quarters of respondents agreed that their property is at risk from wildfire, and over a third reported experience with evacuation due to wildfire (figs. 19, 21). While respondents did not think it likely that a wildfire would reach their property in the next year, they were not optimistic about outcomes were it to occur (fig. 22). In the event of the wildfire on their property, around half of respondents thought it likely their landscaping, home, or neighbor's home would incur damage (fig. 24), and only a third of respondents thought the fire department would be able save their home (fig. 23). More broadly, less than a third of respondents agreed that wildfires can be controlled, and few respondents agreed that local firefighters have sufficient resources to protect homes or keep wildfires from spreading (fig. 30).

Survey respondents appear to have some understanding of the drivers of wildfire risk, but comparison between WiRē RA and household survey assessments indicate gaps in that understanding. Almost all respondents recognized that the vegetation on and surrounding their property, as well as the physical characteristics of their house, were major contributors to the chances of a wildfire damaging their property in the next year (fig. 26). However, few respondents recognized embers and nearby homes as sources of ignition, indicating gaps in respondent understanding of wildfire risk (fig. 25). Furthermore, a comparison of WiRē RA and survey results indicate that respondents differ in their evaluation of wildfire risk as compared to trained assessors (fig. 4). Particularly, resident self-assessments of the following risk attributes were notably lower than trained assessor ratings: distance from the home to overgrown or unmaintained vegetation (fig. 9), distance from the home to other combustibles (fig. 10), and distance from the home to dangerous topography (fig. 11). These differences may present an opportunity for educational outreach about wildfire risk.

Respondents have already taken action to reduce their wildfire risk and might be encouraged to take further action. Virtually all respondents indicated that they think their actions are effective against wildfire and take some responsibility for managing wildfire risk (fig. 32). Most have already performed activities such as reducing vegetation around the home, regularly cleaning the roof and gutters, and regularly raking around the home (fig. 40). Respondents reported few barriers overall to taking mitigation action, although a third of respondents reported time to do the work, financial cost, and physical ability as barriers, and a quarter of respondents reported lack of information about or options for disposing of vegetation as a barrier (figs. 41-44). About half of respondents reported that information and resource incentives would encourage them to mitigate, including a report describing their property's risk factors, a one-on-one visit to the property by a wildfire expert, and help doing the work (figs. 45–47).

In addition to mitigation action, respondents also reported their current wildfire evacuation preparedness activities and information needs. Over three quarters of respondents reported having an evacuation plan (fig. 38) and having taken important evacuation planning steps, including identifying where to stay long-term, what to take and leave behind during an evacuation, and safe evacuation routes (fig. 39). However, only 39% of respondents reported having signed up for emergency notifications, indicating room for further outreach on this topic (fig. 39).

Survey responses also indicate pathways for outreach and education with residents about wildfire risk. Almost all respondents had received wildfire risk information from LWFR, and most respondents who had received information from that source found it very or extremely useful (fig. 36). Respondents also found information useful from Firewise USA and the community wildfire ambassador program, although these sources of information reached fewer respondents (fig. 36). While many respondents received information from the media, few found it useful (fig 36). Furthermore, respondents most preferred to receive information via email/e-newsletter, mailed newsletter, or in-person interactions (fig. 37). Notably, while many respondents currently receive wildfire risk information via newsletters, far fewer receive information via in-person interactions than would prefer to. Over two thirds of respondents also reported talking with their neighbors about wildfire, which may be another

pathway for wildfire risk education (fig. 33). About a third of respondents reported that their insurance company has charged them a higher premium due to wildfire risk, and a quarter of respondents have received wildfire risk information from their insurance company, suggesting that insurance is not currently a strong driver of mitigation education (fig. 35).

In addition to results related to property-level risk mitigation, respondents indicated their actions and preferences for wildfire management beyond their parcels. Over three-quarters of respondents indicated strong support for landscape-level fuel treatments, including removing vegetation along roadways for safer evacuation, removing trees and other vegetation broadly, managing a naturally ignited fire, reducing other vegetation on homeowners association (HOA) property surrounding communities, burning piles of vegetation, and conducting a prescribed fire ignited by fire professionals (fig. 27). Most survey respondents also indicated broad support for proposed wildfire regulations and practices, including building a new road to provide an emergency evacuation route, development standards that require vegetation management, building codes that require fire-resistant materials for structures located in fire-prone areas, and growth policies or land use regulations that limit new development. Slightly less than half of respondents found it acceptable to temporarily shut off the power grid on extreme fire risk days (fig. 28). These results indicate many possible pathways for community wildfire risk reduction.

WHAT IS WiRē?

The Wildfire Research (WiRē[1]) 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 is 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 (see Methods).
2. A social survey sent to the owner of each assessed property, which represents their notions of wildfire risk, how they communicate about wildfire risk, risk mitigation behaviors, including evacuation planning, and barriers and incentives to mitigate wildfire risk on private properties.

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

[1] Pronounced Wy-REE

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 DOES THE COMMUNITY AND ENVIRONMENT LOOK LIKE?

WiRē partnered with Lake Wenatchee Fire & Rescue (LWFR) to implement the WiRē approach in the greater Lake Wenatchee and Plain area, located on the east side of the Cascade Mountain Range Crest in Chelan County, Washington. Lake Wenatchee itself is located in the Upper Wenatchee watershed and is the headwaters of the Wenatchee River. The lake is fed primarily by four tributaries including the Chiwawa River, White River, Little Wenatchee River, and Nason Creek. All but Nason Creek have seen little development and are watersheds dominated by USDA Forest Service ownership with some checker-boarded private ownership, the majority of which is owned by Weyerhaeuser.

The Washington Department of Natural Resources has classified the areas surrounding and including the Lake Wenatchee and Plain area as ranging from moderate risk to extreme risk wildland-urban interface. The variation is, in part, due to the size of the zone. Past activities such as logging, grazing, and fire suppression have altered the normal fire regime, altered stand species composition, and affected forest health. Dense, overstocked stands of trees are increasing the fire hazard in the Lake Wenatchee and Plain area. Many stands of ponderosa pine are dominated by trees less than 18 inches in diameter. Numerous dense pockets of standing and dead fallen trees have been, or are being, affected by low level (~0.3 to 4.5 trees/acre) infestation by mountain pine beetle and/or fir engraver and root rot (disease). Stands often have contiguous crowns and ladder fuels in the form of young conifers and tall brush species. These variables provide a continuous fuel profile that can create conditions for an intense and fast-moving fire.[2]

This project between LWFR and the WiRē Center grew out of a 2018 collaboration with Chelan County Fire District 1 in the Squilchuck Drainage in Chelan County, Washington[3]. Following that collaboration, Cascadia Conservation District approached the WiRē Center about three additional projects with Chelan County fire departments. LWFR expressed interest in learning about residents in the greater Lake Wenatchee and Plain area.

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[2] Information about the study area comes from Chelan County Conservation District (2007) Lake Wenatchee and Plain Area Community Wildfire Protection Plan. https://www.lwfr.org/_files/ugd/7193ac_5cbafe9d90d940b6ac99bc6d4636d294.pdf.

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

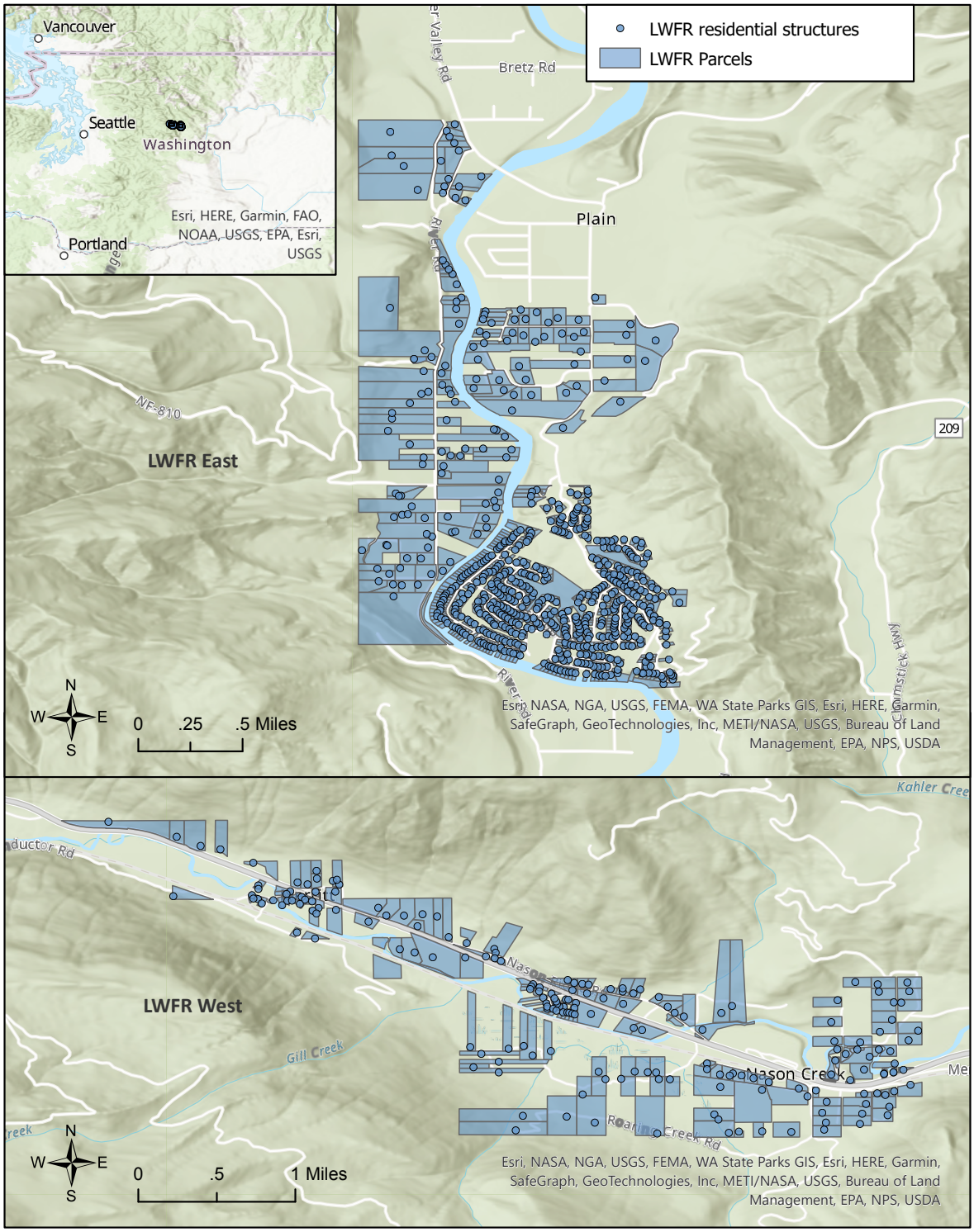


Figure 1—Map of residential parcels in the Lake Wenatchee Fire & Rescue (LWFR) service district, including east (top) and west (bottom) study areas (N = 822). Inset shows the location of the study area in Washington. Map image is the intellectual property of Esri and is used herein under license. Copyright © 2020 Esri and its licensors. All rights reserved.

WiRē Partner: Lake Wenatchee Fire & Rescue

LWFR is a small volunteer department with four stations, responsible for the protection of private property of communities in the Lake Wenatchee and Plain area, covering approximately 54 square miles. Fire district boundaries extend from the top of Beaver Hill and milepost 90 on Highway 2 to approximately milepost 67 near the summit of Stevens Pass. The fire district employs a part-time Fire Chief, two part-time administrative staff and three part-time mechanics and has an estimated 30 volunteers.

LWFR employs a full time Wildfire Risk Reduction Coordinator (WRRC) and a four-person seasonal fuels mitigation crew from April to October. The fuels crew and WRRC lead a free chipping program for the community, conduct wildfire home assessments, do public outreach, and host educational events for the community.

The Washington Department of Natural Resources (WDNR) is the primary agency responsible for fire protection on forested private and state lands while the USDA Forest Service is the primary agency responsible for management of fires on federal land. Lake Wenatchee Fire and Rescue often provides the Initial Attack on public lands due to the distance from, and availability of, WDNR and Forest Service fire fighting forces. Areas outside the boundaries of LWFR are not guaranteed a fire response from the LWFR fire district. WDNR will respond to forest fires; however, they do not have responsibility for structures. The LWFR fire district maintains mutual aid agreements with WDNR and fire districts within Chelan and Douglas Counties.

METHODS: WHAT DID WE DO?

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

Rapid Wildfire Risk Assessments

Rapid assessment data collection was conducted by LWFR 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 822 residential properties in winter 2021–2022 using the standard WiRē RA. The WiRē RA is composed of a set of 13 attributes that includes building materials, vegetation near the home, background fuels and topography, and access to the property.

To calculate a parcel’s overall “risk score” (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. See 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 percentile 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 (such as vent screen size, windows, fire-resistant flashing, etc.). Thus, WiRē risk scores are not an absolute measure of risk but are estimates of risk using a standardized suite of variables observed by a particular person at one point in time.

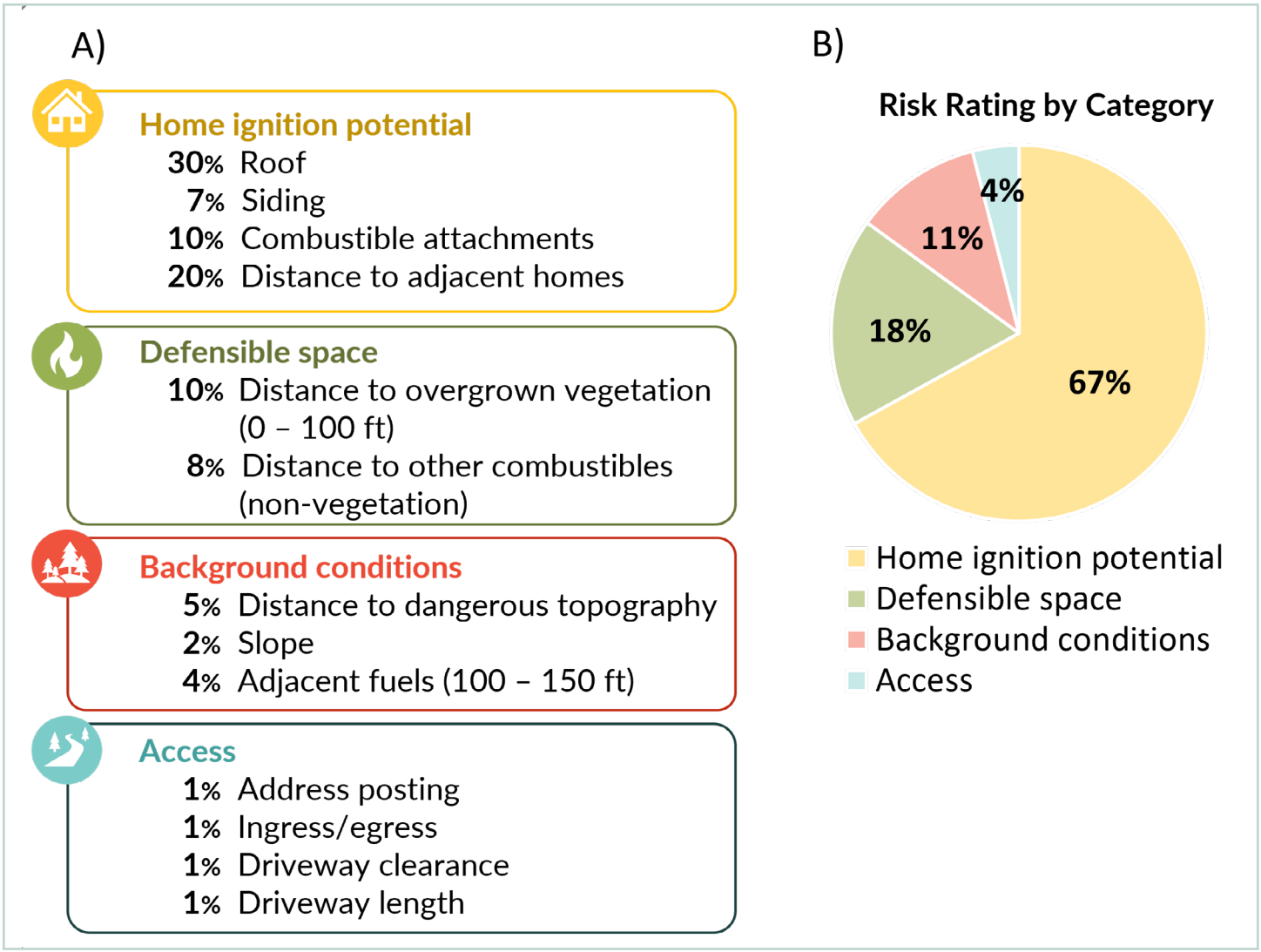


Figure 2—Wildfire Research (WiRē) Rapid Wildfire Risk Assessment (A) relative weight of each risk attribute within the overall risk score, and (B) relative weight of each risk category within the overall risk score.

To ensure consistent, high quality data collection, WiRē wildfire practitioners conducted a training that included a virtual orientation for LWFR professionals who conducted the rapid assessments (referred to as "trained assessors" below). Additionally, data were collected using ArcGIS Collector. A standardized reference sheet for data collectors was available for use in the field (see Appendix B for the Assessor Reference Guide).

All parcel-level assessments were conducted by four members of LWFR and were conducted on all residential properties with a structure in the study area unless access was blocked by a gated driveway or posted with no trespassing signage. In instances when the mitigation specialist could not observe a risk attribute, the specialist selected "unknown/not observed." During data processing, these responses were assigned the highest risk score.

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 LWFR. WiRē and LWFR worked collaboratively to develop the final version of the household survey. The household survey was mailed to the owners of all the properties for which a WiRē RA was completed.[4] Household survey data were collected using a modified Dillman approach[5] that includes three mailings after the initial letter announcing project activities and the data collection efforts (See 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 household survey was sent to 752 households. The number of surveys returned was 336, for a 45% 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 Lake Wenatchee Fire & Rescue and the Wildfire Research (WiRē) to collect information related to wildfire risk.

Mailing	Date of mailing
Initial letter	6/18/2021
First survey package	5/4/2022
Postcard reminder	6/8/2022
Second survey package	7/18/2022

Paired Rapid Assessment and Household Survey Data

The WiRē RA data, for which we have 822 records, were paired with the household survey data, for which we have 332 records, to produce 332 records with all the household survey

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

[5] For details, see Dillman, Don A. 2000. Internet and mail surveys: The tailored design method. 2000. New York: John Wiley.

and WiRē RA variables. After briefly describing the 822 records, this report summarizes results based on those 332 paired records.[6]

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

In this section, we present the rapid risk assessment results from the WiRē RA data collection and the household survey. Briefly, 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," see fig. 3) to compare the trained assessor risk ratings to the self-assessed risk ratings.

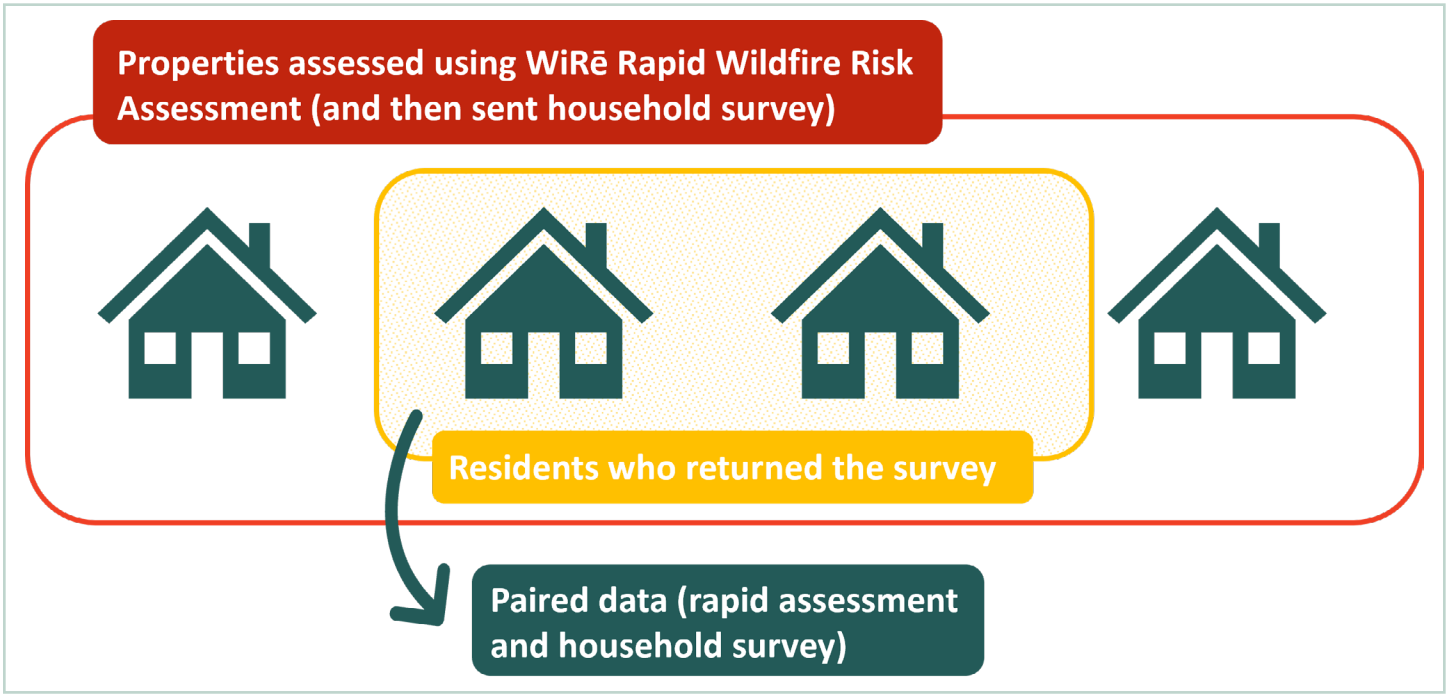


Figure 3—Representation of the rapid assessment and household survey data collected in the greater Lake Wenatchee and Plain, Washington, study area, which were combined to produce the paired data.

Community Risk: Results of the WiRē Rapid Assessment

A total of 822 parcels were assessed by LWFR using the WiRē RA. These parcels were assessed on 13 attributes and overall risk was categorized as low risk (2%), moderate risk (6%), high risk (54%), very high risk (22%), or extreme risk (16%). For more details, see Appendix C, table 1.1.

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

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 = 332) (Appendix D). 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 data to survey responses provides insight into the differing risk perspectives of residents and trained assessors

Overall wildfire risk ratings in the observed WiRē RA data were higher on average than those reported by survey respondents. Trained assessors placed very few parcels in the low (2%) and moderate (6%) wildfire risk categories, whereas most respondents rated their parcel as having low (33%) or moderate (57%) wildfire risk. In contrast, trained assessors indicated the greatest number of parcels were in the high-risk category (57%), with fewer survey respondents rating their property as high risk (27%). Following this trend, the trained assessors indicated that more parcels were in the very high (20%) and extreme risk (16%) categories compared to survey responses for very high (5%) or extreme risk (1%) (see fig. 4).

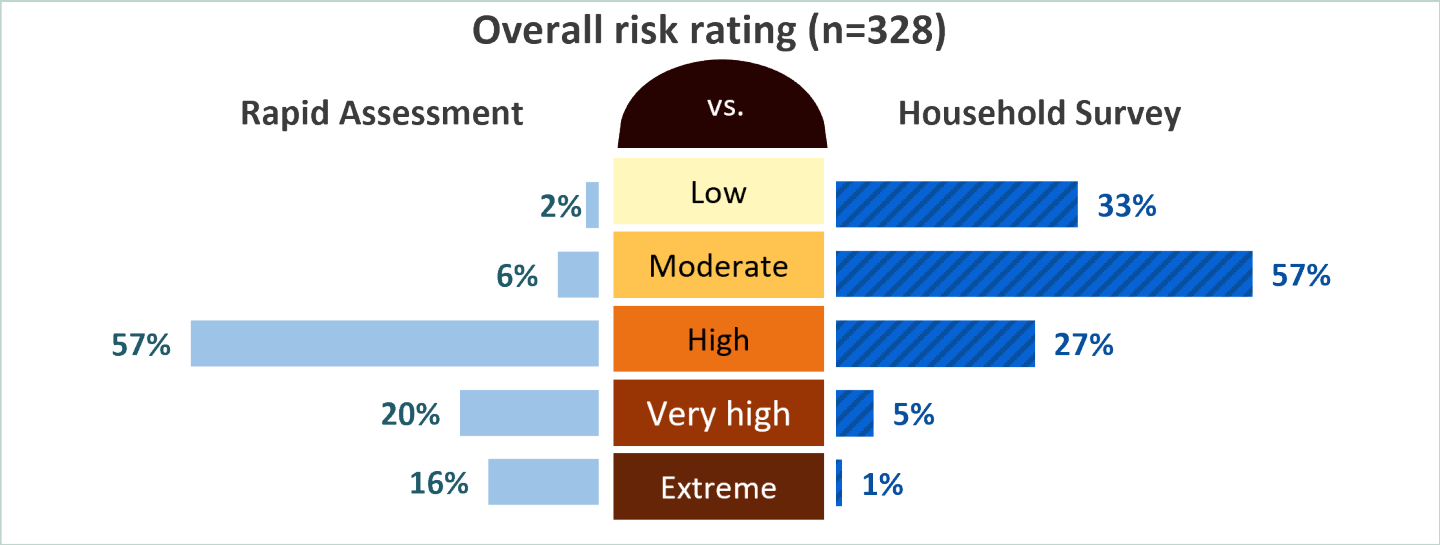


Figure 4—Distribution of overall risk rating. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 328 paired household surveys and rapid assessments.

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 WiRē RA data (92%) and survey responses (99%) were in accordance that most roofs are made of noncombustible materials (see fig. 5).

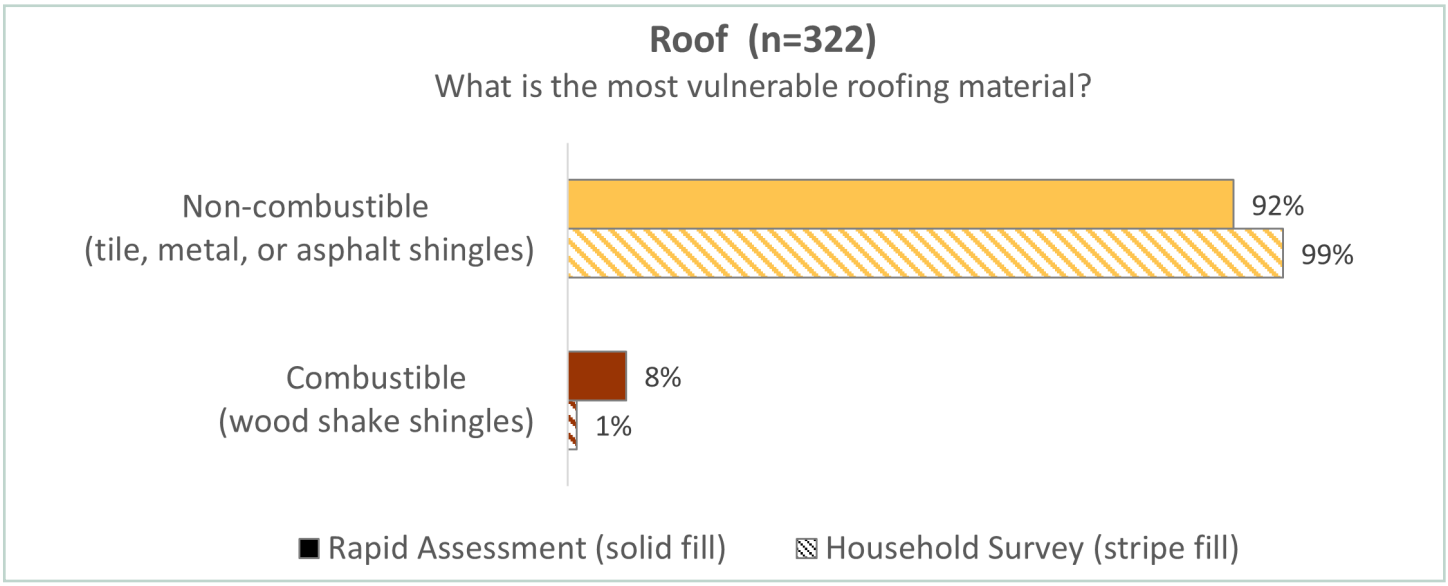


Figure 5—Combustibility of residential roof type. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 322 paired household surveys and rapid assessments.

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 that 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).

Trained assessors categorized almost all homes' siding as wood or vinyl (91%). Most survey respondents (69%) also reported their home's siding as wood or vinyl. However, more survey respondents reported noncombustible siding (20%) than in the WiRē RA data (2%). See figure 6.

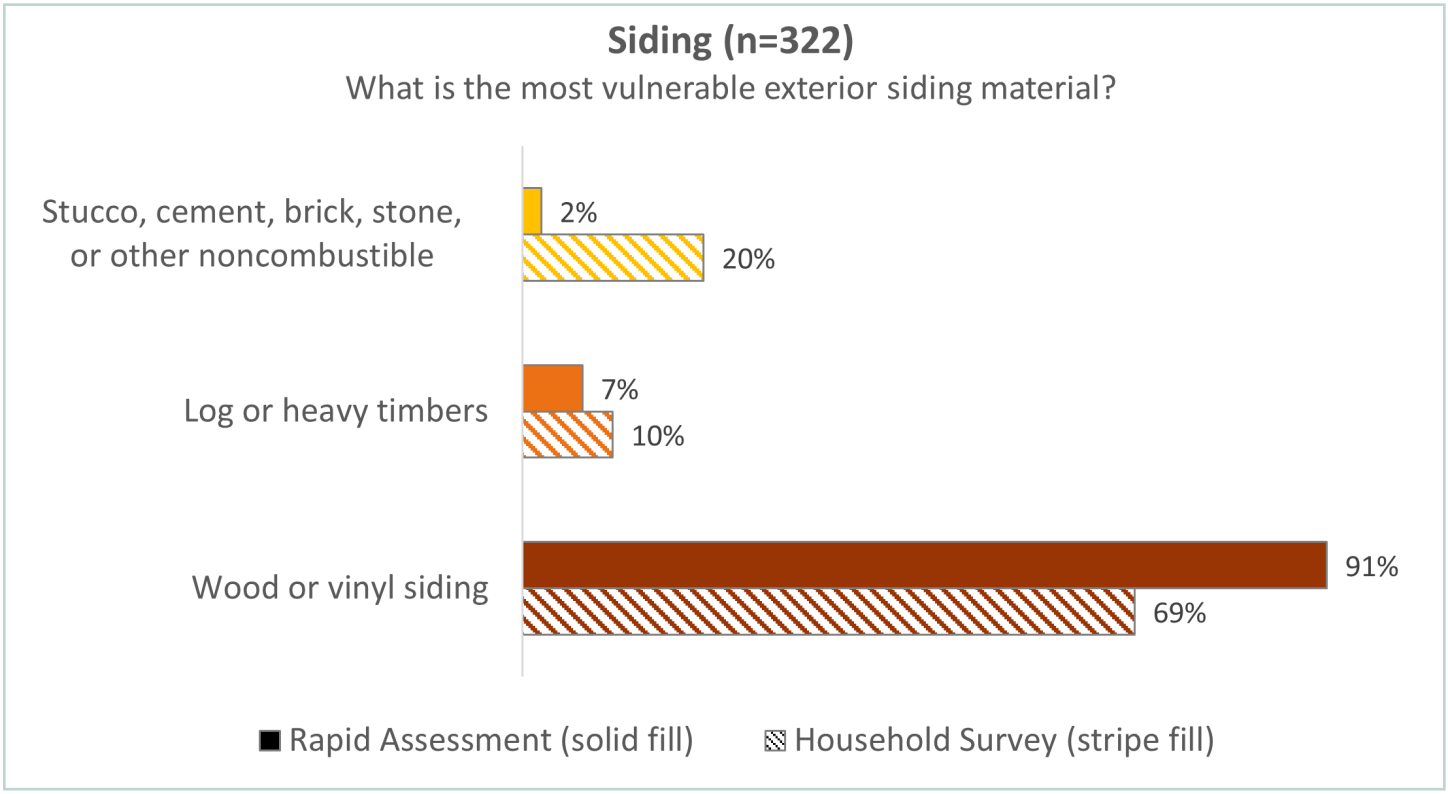


Figure 6—Residential exterior siding type, categorized by material into low, medium, and high-risk categories. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 322 paired household surveys and rapid assessments.

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, WiRē RA and household survey data were largely in alignment. Both indicate that most structures had combustible attachments, at 91% and 81%, respectively (see fig. 7).

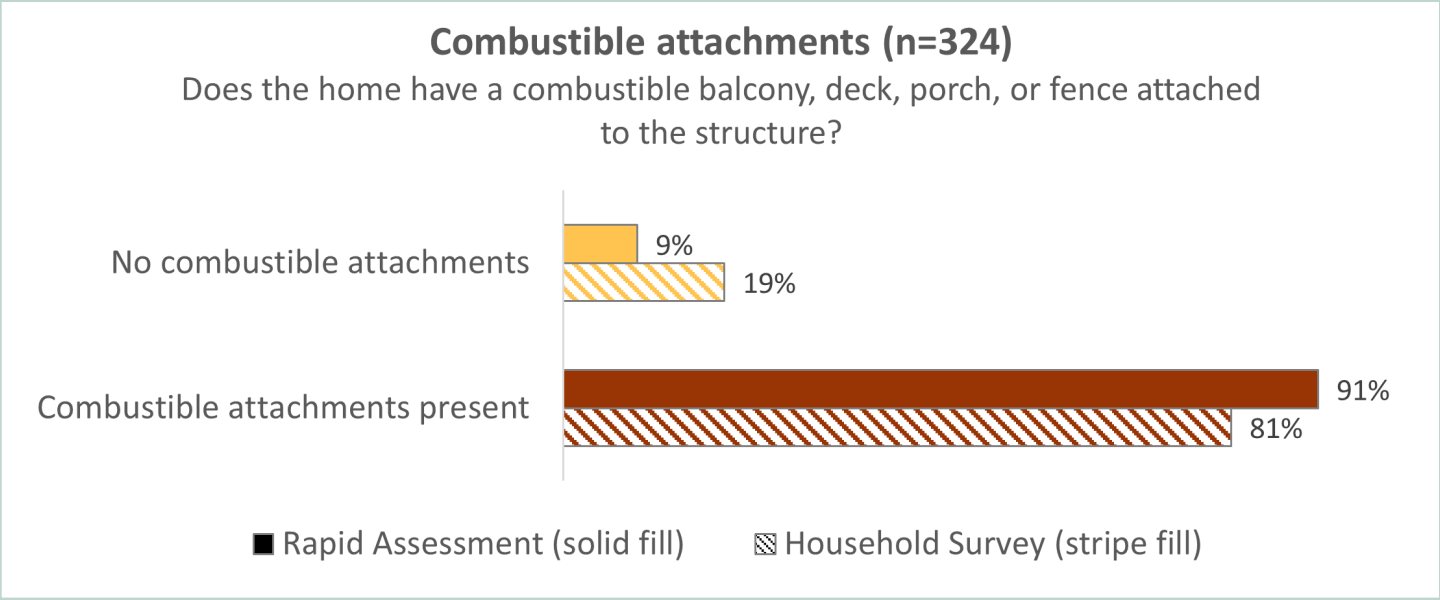


Figure 7—Presence or absence of combustible attachments. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 324 paired household surveys and rapid assessments.

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.

The WiRē RA and household survey data both indicated that 40% of homes were at a moderate distance of 30–100 feet from another home. However, the WiRē RA data placed more homes in the shorter distance category of 10–29 feet (28%) compared to survey responses (14%). More survey respondents estimated their home as greater than 100 feet from another home (44%) compared to the WiRē RA data (28%) (see fig. 8).

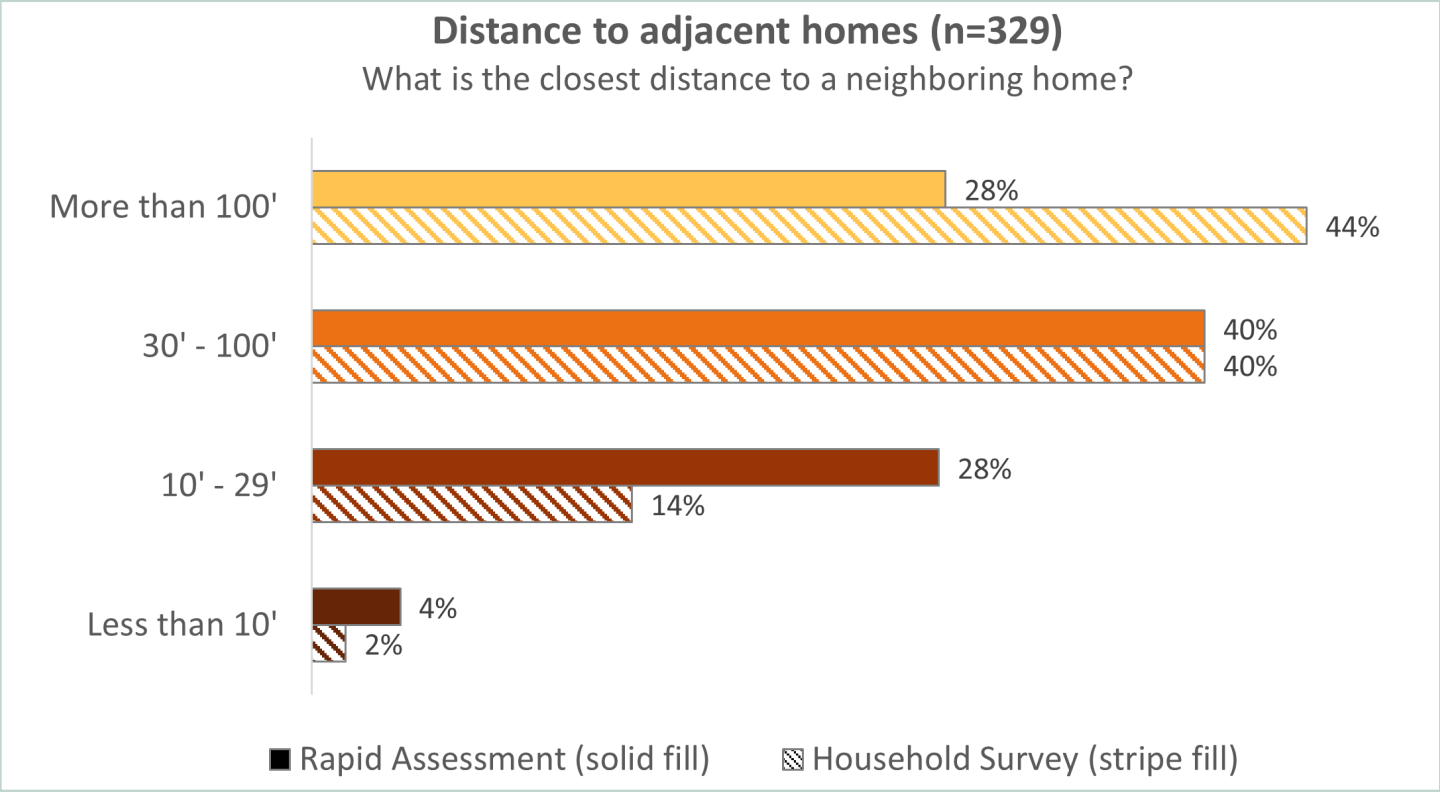


Figure 8—Proximity to adjacent homes, categorized by closest distance to neighboring home. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 329 paired household surveys and rapid assessments.

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 household survey and WiRē RA data. The WiRē RA data indicated that 80% of parcels had only 5–29 feet between the home and overgrown vegetation. Only 24% of survey respondents placed their home in that category. Survey respondents tended to rate the distance from their home to overgrown vegetation as either more than 100 feet (29%) or 30–100 feet (45%). See figure 9.

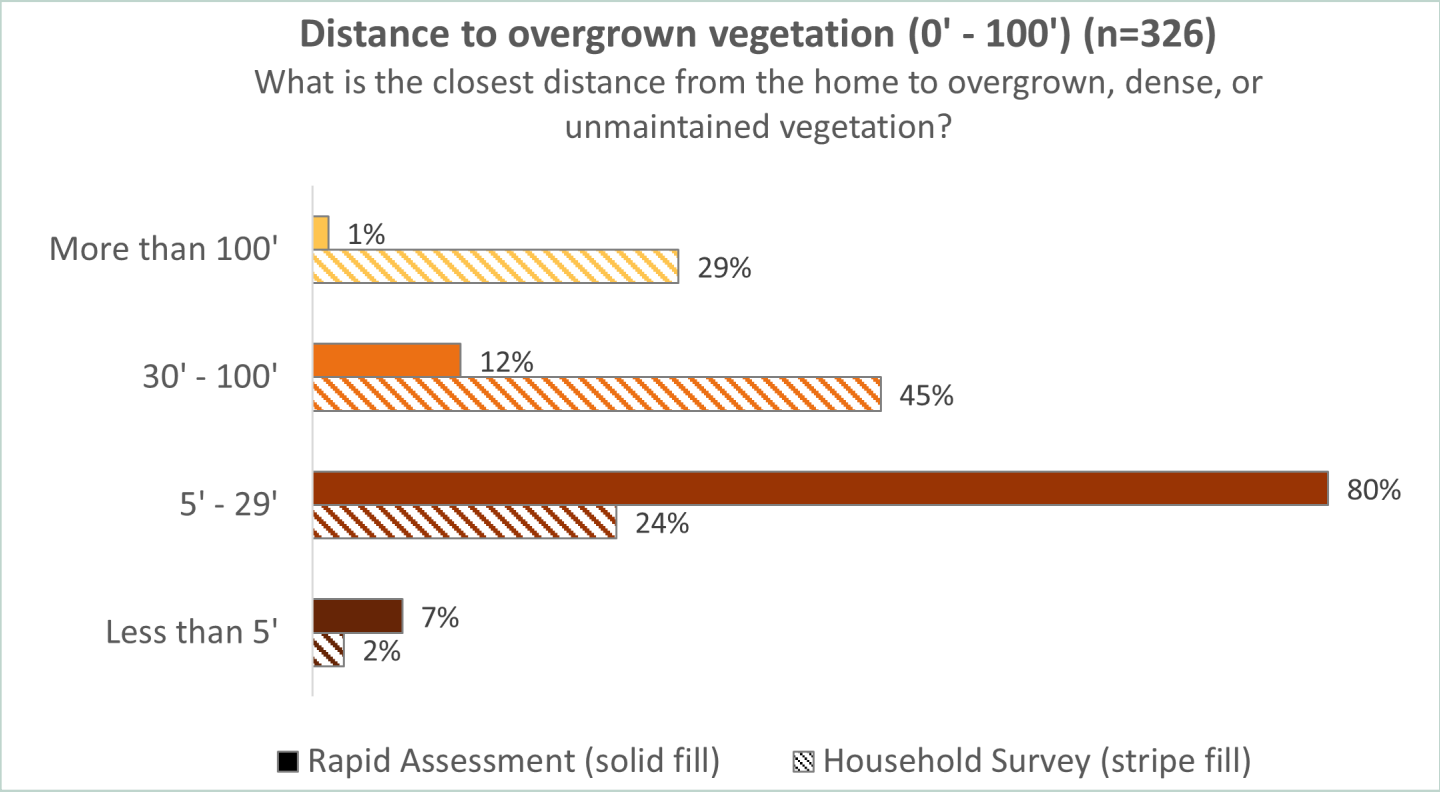


Figure 9—Defensible space, categorized by distance between the home and dense vegetation. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 326 paired household surveys and rapid assessments.

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.

A similar percentage of homes fell into the moderate distance category for the WiRē RA and household survey data. However, the WiRē RA data indicated only 4% of homes were more than 30 feet from non-vegetation combustible items, whereas 33% of survey respondents placed their home in this category. Accordingly, the WiRē RA data indicated more homes were less than 5 feet from combustibles (37%) compared to household survey data (16%) (see fig. 10).

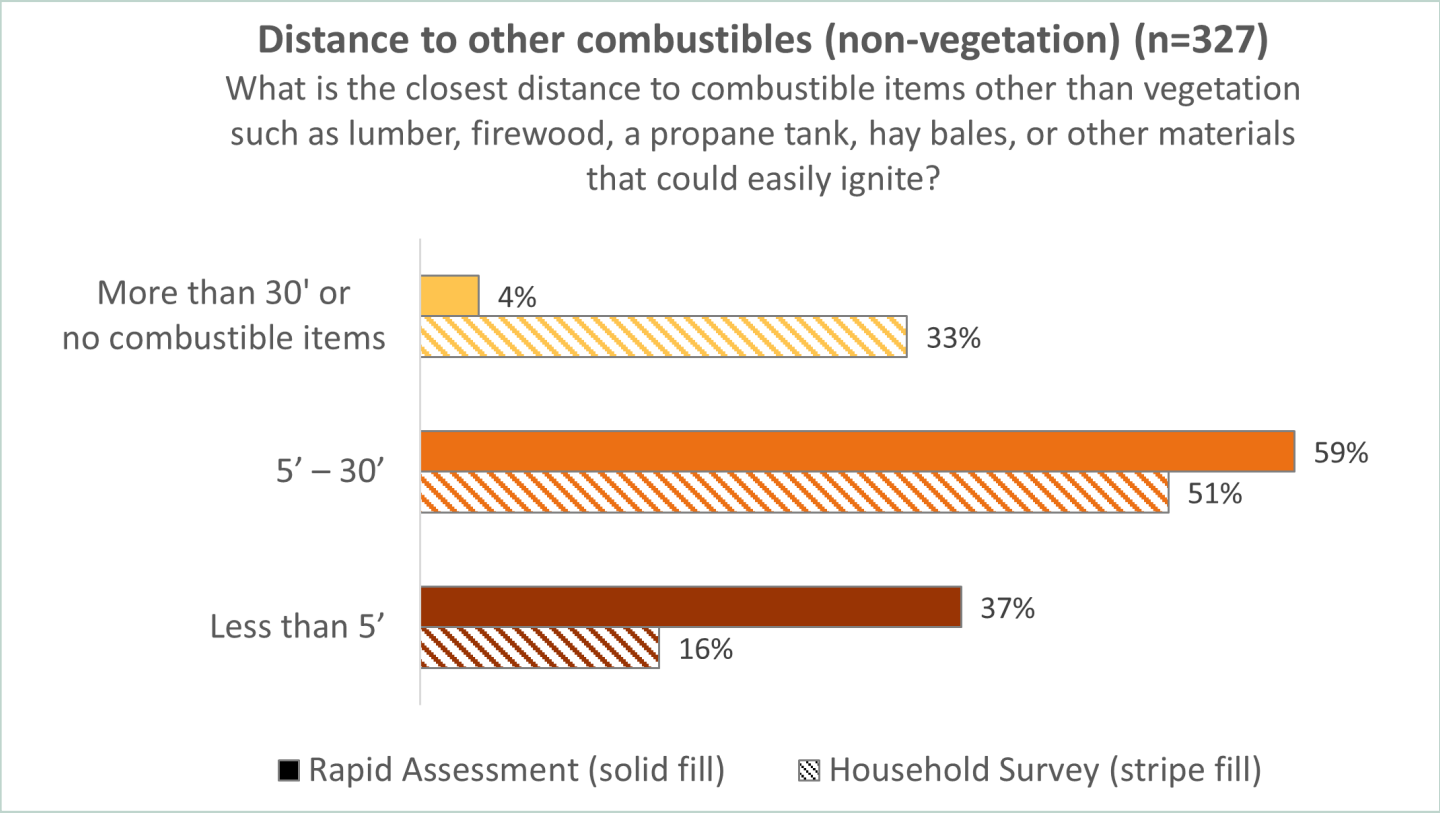


Figure 10—Other combustible materials, categorized by closest distance from home to combustible items other than vegetation. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 327 paired household surveys and rapid assessments.

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 the WiRē RA and household survey data in estimation of the distance between the home and dangerous topography. Most (83%) of survey respondents reported that their homes were more than 150 feet from dangerous topography while the WiRē RA indicated that 39% of homes were located at that distance from dangerous topography. The WiRē RA categorized most homes (45%) as being situated less than 50 feet from dangerous topography (see fig. 11).

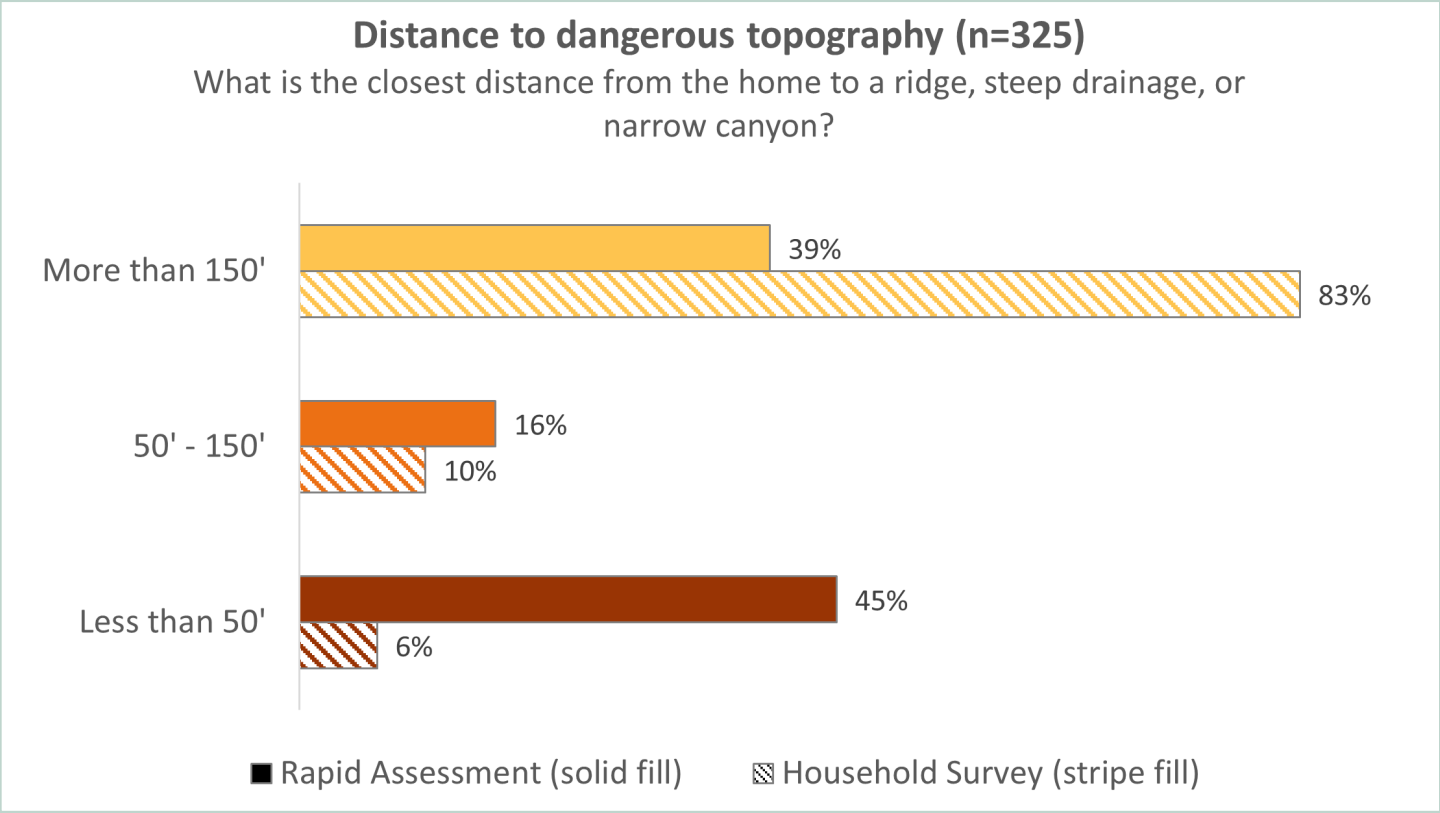


Figure 11—Closest distance from the home to dangerous topography (e.g., a ridge, steep drainage, or narrow canyon). Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 325 paired household surveys and rapid assessments.

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.

WiRē RA and household survey data were largely similar for the slope attribute, with most parcels falling into the gentle slope category (see fig. 12).

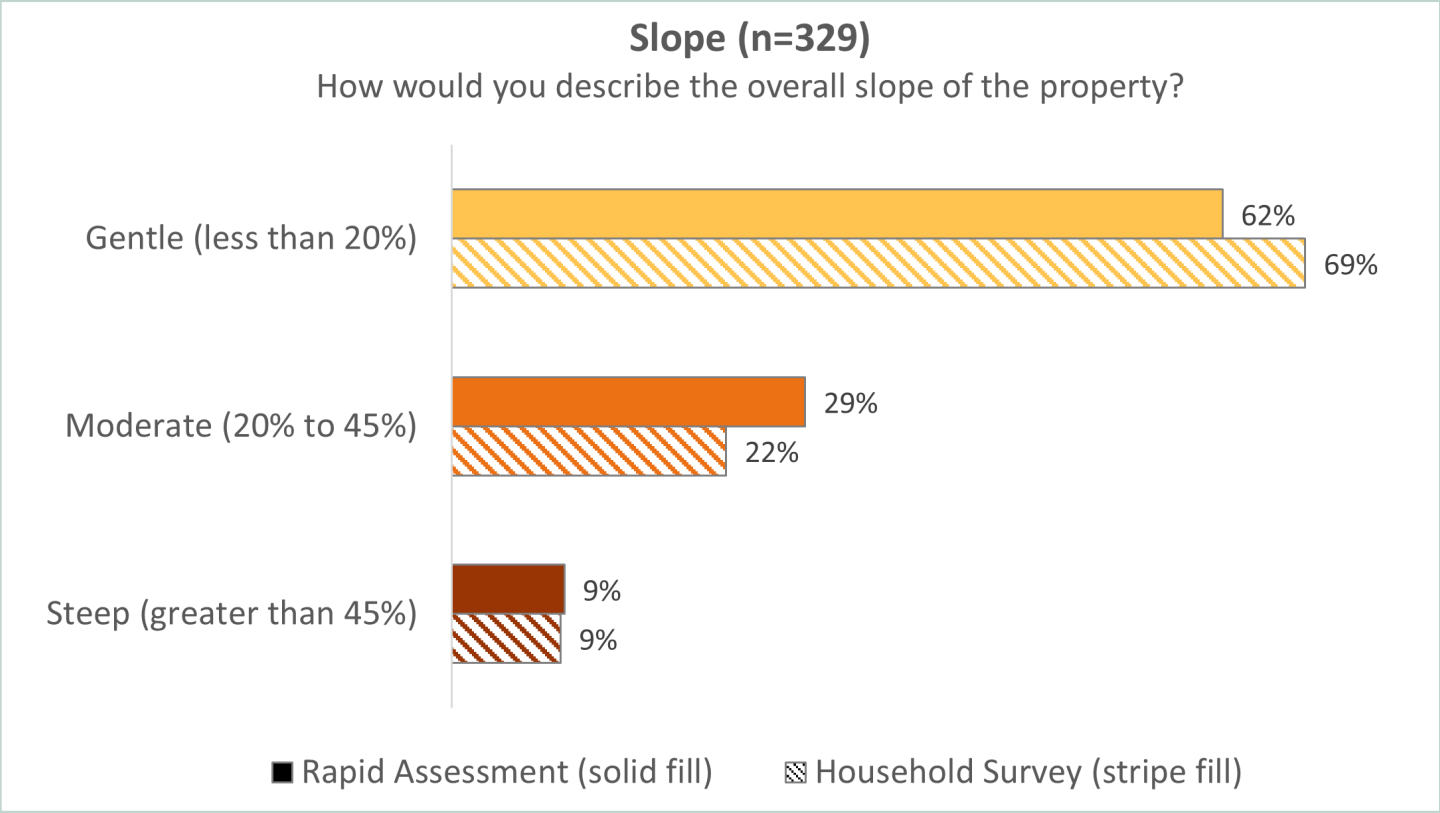


Figure 12—Overall slope of property. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 329 paired household surveys and rapid assessments.

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 WiRē RA, most of the survey respondents classified dominant adjacent vegetation to be of medium density (56% and 63% respectively). However, more survey respondents (27%) reported vegetation adjacent to their parcels as dense than did the trained assessors (5%) (see fig. 13).

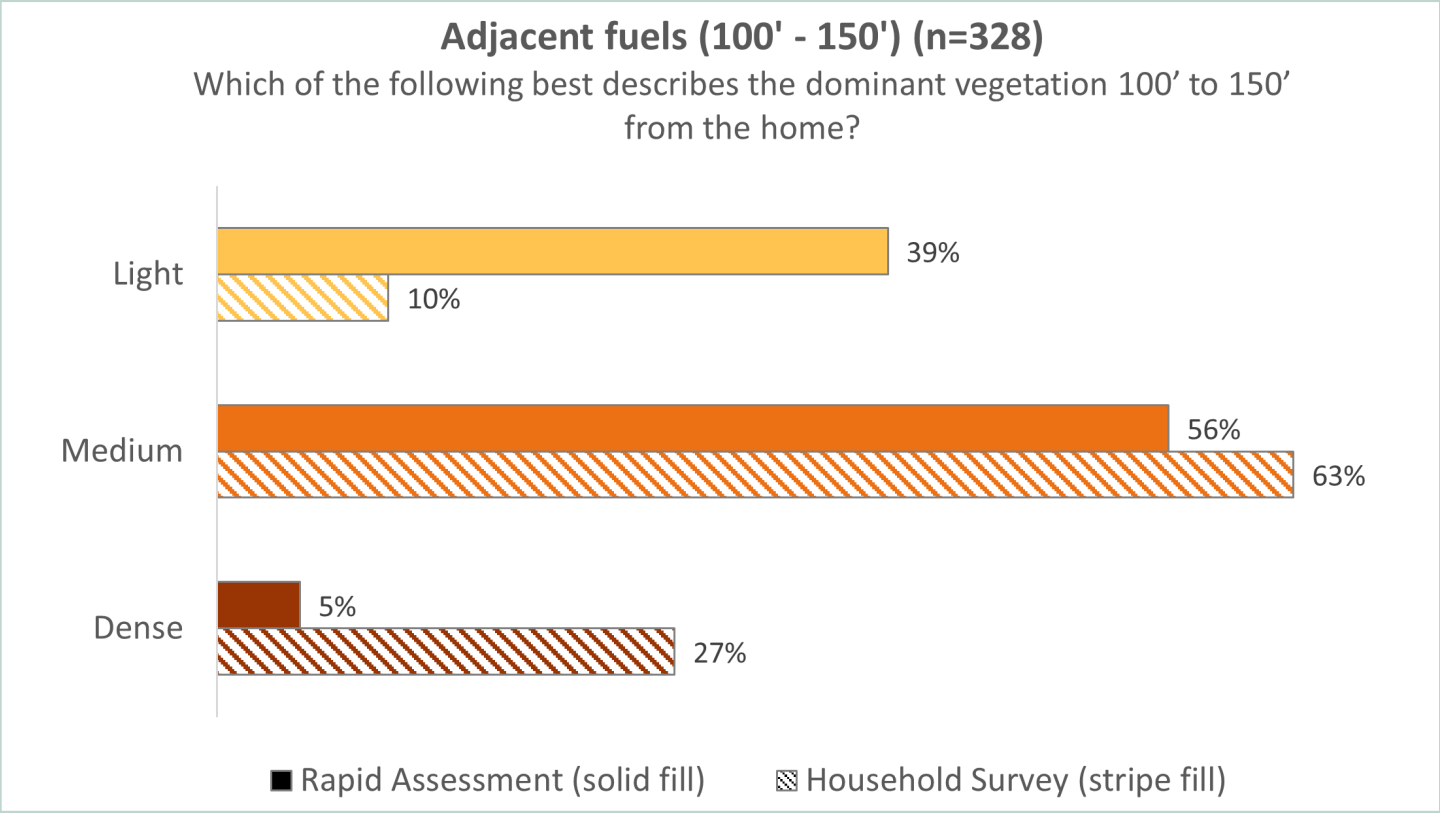


Figure 13—Adjacent fuels, categorized by the density of dominant vegetation 100 to 150 feet from the home. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 328 paired household surveys and rapid assessments.

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 a swift and safe response. Properties’ addressing conditions are assessed based on local standards of signage that is posted, made of blue reflective material, and visible from the primary road.

WiRē RA and household survey data were largely similar for the address posting attribute, with most addresses fully meeting the standard. On average, the WiRē RA data indicated more homes as meeting the address standards than the household survey data (see fig. 14).

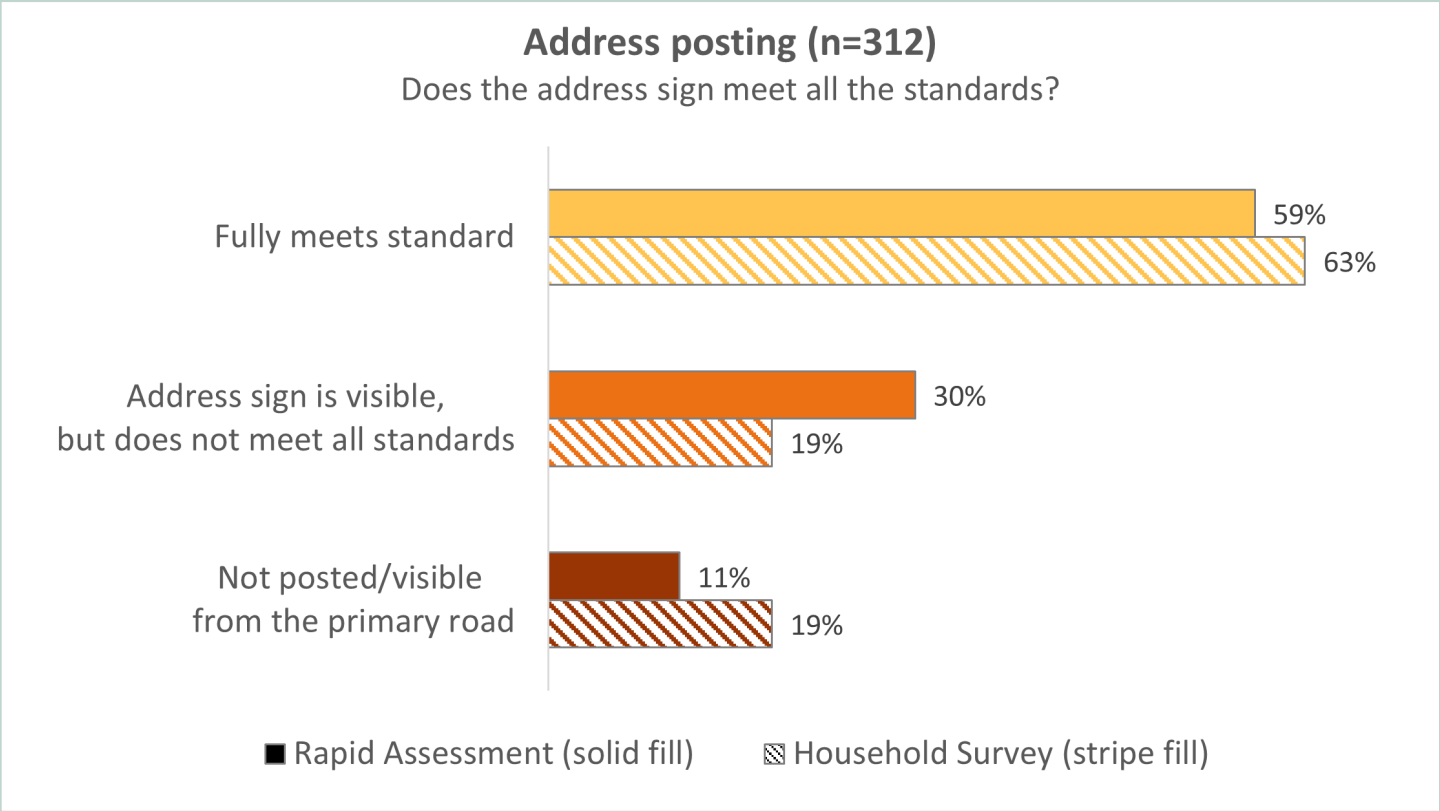


Figure 14—Characteristics of property address. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 312 paired household surveys and rapid assessments.

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.

The WiRē RA and household survey data were mostly aligned in terms of ingress/egress ratings, with most parcels having more than one way out of the community (see fig. 15).

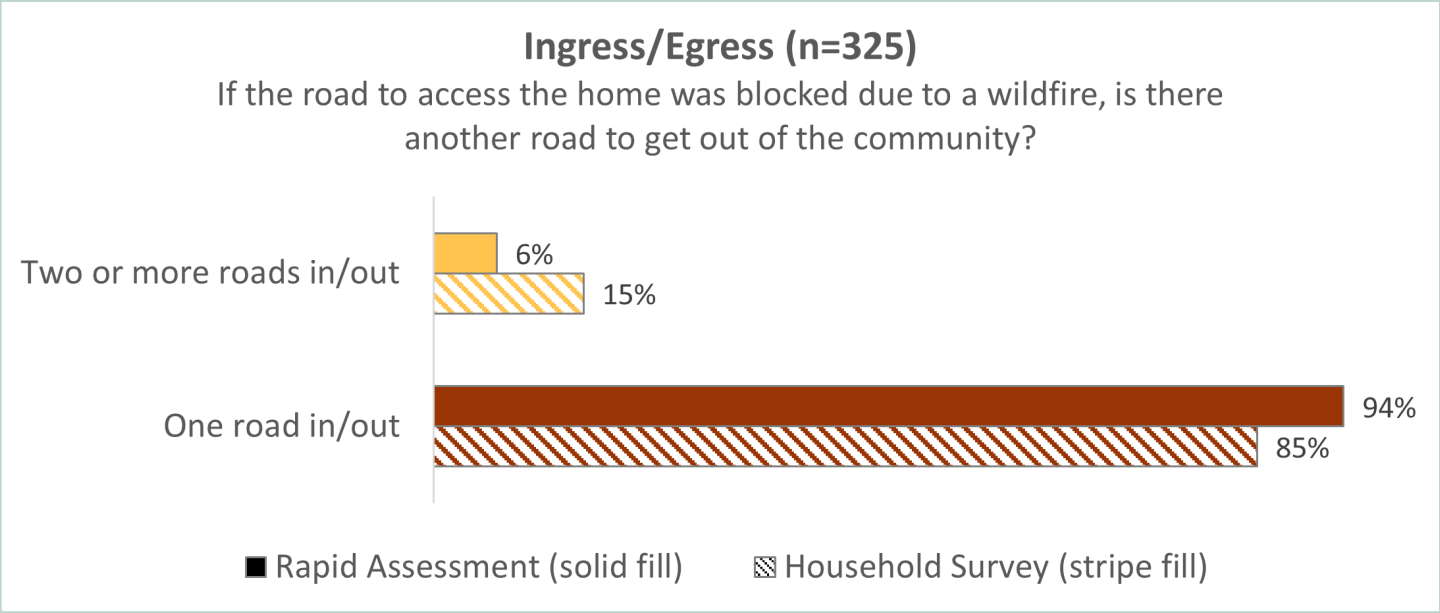


Figure 15—Number of evacuation routes in or out of community. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 325 paired household surveys and rapid assessments.

Risk attribute: driveway clearance

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

The WiRē RA and household survey data were mostly aligned in terms of driveway clearance, with 65% and 62% of parcels meeting all standards, respectively. The WiRē RA data indicated slightly more homes that did not meet either driveway clearance standard (18%) compared to survey responses (9%) (see fig. 16).

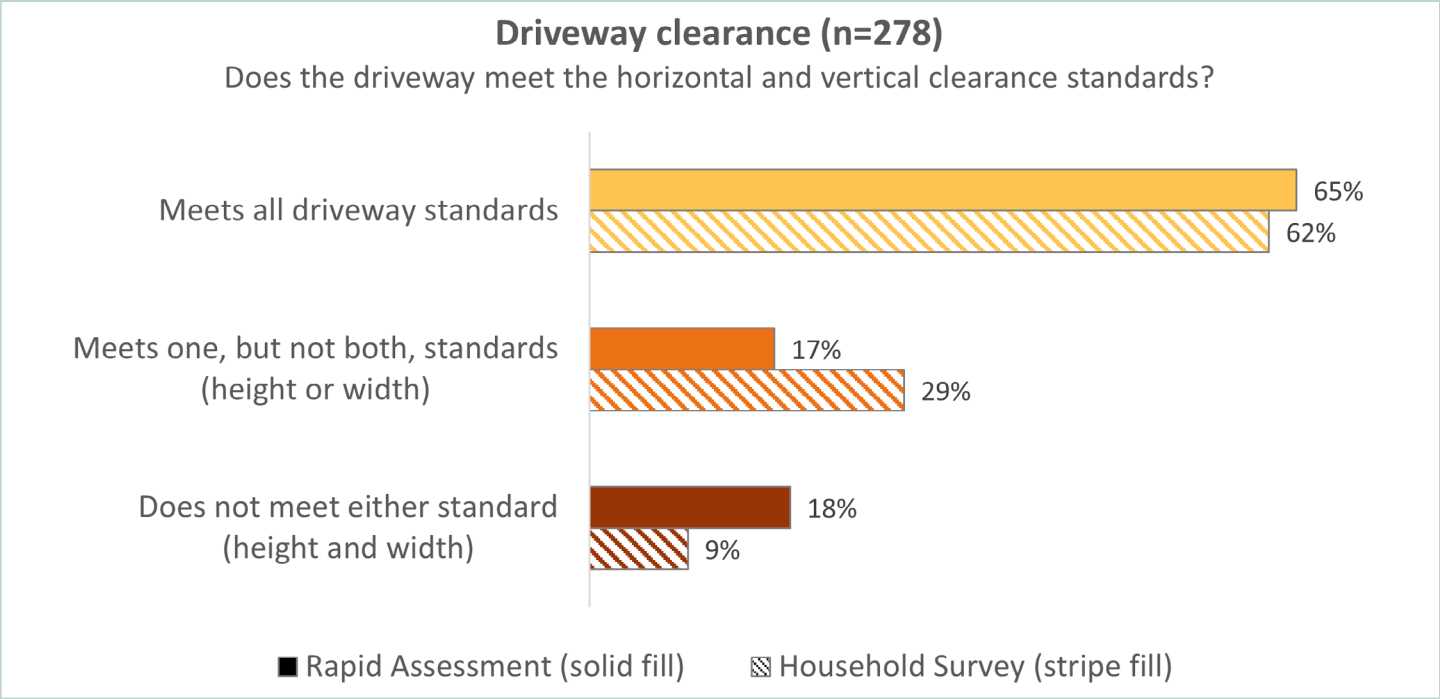


Figure 16—Width of residence driveway at its narrowest point. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 278 paired household surveys and rapid assessments.

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.

The WiRē RA and household survey data were mostly aligned in terms of driveway length ratings, with 71% and 61% of homes having driveways less than 150 feet long, respectively. The WiRē RA data indicated that slightly more homes had driveways longer than 150' without an adequate turnaround (18%) compared to survey responses (10%) (see fig. 17).

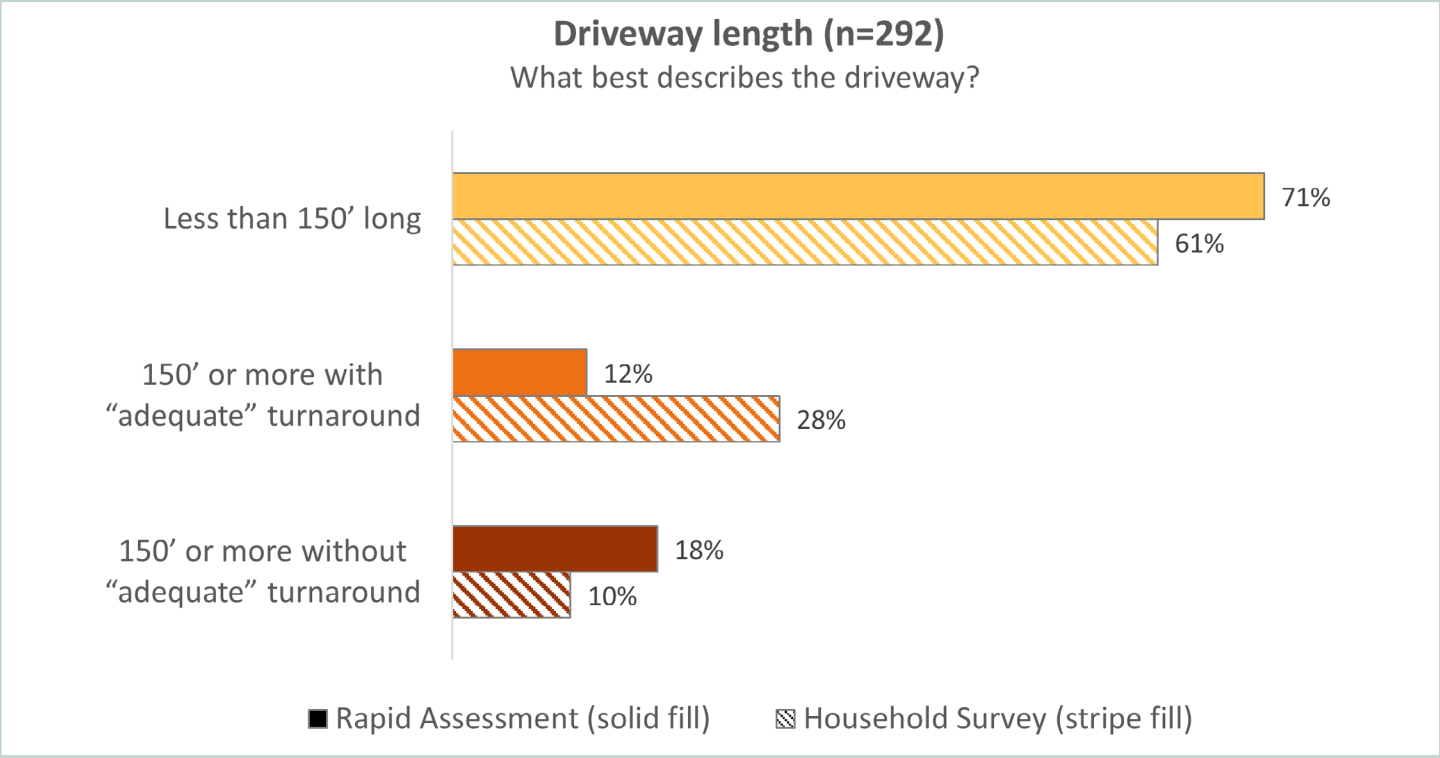


Figure 17—Driveway length and presence of turnaround. Comparison of household survey data as reported by survey respondents in the Greater Lake Wenatchee and Plain, Washington, study area, and paired Wildfire Research (WiRē) Rapid Assessment data. Represents data from 292 paired household surveys and rapid assessments.

SOCIAL DIMENSIONS OF WILDFIRE RISK IN LAKE WENATCHEE: 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 (see Appendix E for household survey questions and responses).

A majority (70%) of respondents stated that they occupy their Lake Wenatchee home year-round with 30% occupying their Lake Wenatchee home less than 12 months of the year. Notably, 80% or more of the respondents reported occupying their Lake Wenatchee home each individual month. The average year of construction of the homes in the study area was 1990, and the average year that respondents moved into their homes was 2006. At the time of purchasing or beginning to rent their home in Lake Wenatchee, 51% of respondents reported being very aware of the wildfire risk, 39% reported being somewhat aware, and 8% reported being not aware of wildfire risk (see fig. 18).

Survey respondents were more likely to respond as male (63%) and the average age of survey respondents was 62 years old. Sixty-three percent of respondents held a bachelor’s degree or higher. Forty-nine percent of survey respondents were retired, 43% worked full time, 6% worked part time, and 2% were unemployed or did not work outside the home. Sixty percent

of respondents reported yearly incomes of $100,00 or greater, 25% reported yearly incomes between $50,000 and $99,999, and 15% reported yearly incomes of less than $49,999.

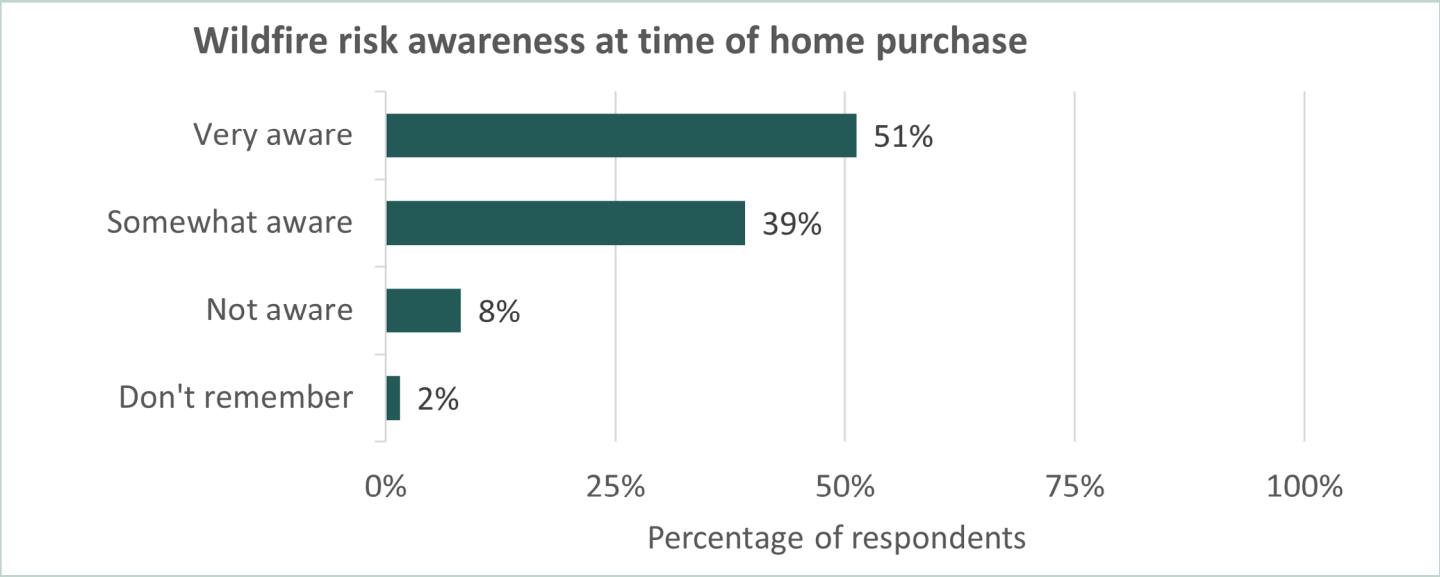


Figure 18—Respondents' awareness of wildfire risk, when they bought or began renting their home, as reported by survey respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 330 responses to this survey question.

Origins of Wildfire Perceptions and Knowledge

This section describes survey responses to questions about past wildfire experiences and perceptions of how and whether a wildfire might damage their home in the next 12 months.

Wildfire experience

Thirty-eight percent of respondents to this survey have evacuated due to wildfire in the past. Almost no respondents reported having experienced fire damage, smoke damage, or destruction of their residence due to wildfire (about 1%) (see fig. 19).

Despite few survey respondents with direct experience of wildfire on their properties, 71% reported that a wildfire had come within 10 miles from their property, or on their property (see fig. 20).

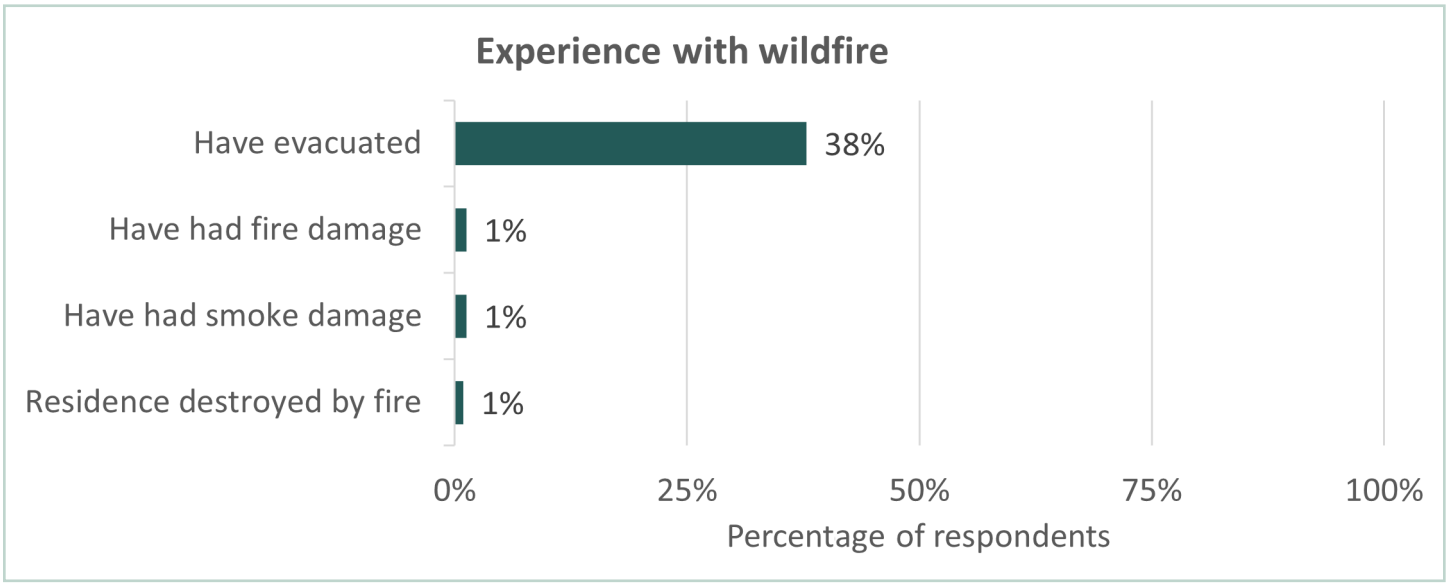


Figure 19—Respondent experience with various impacts of wildfire, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 316–330 responses to these survey questions.

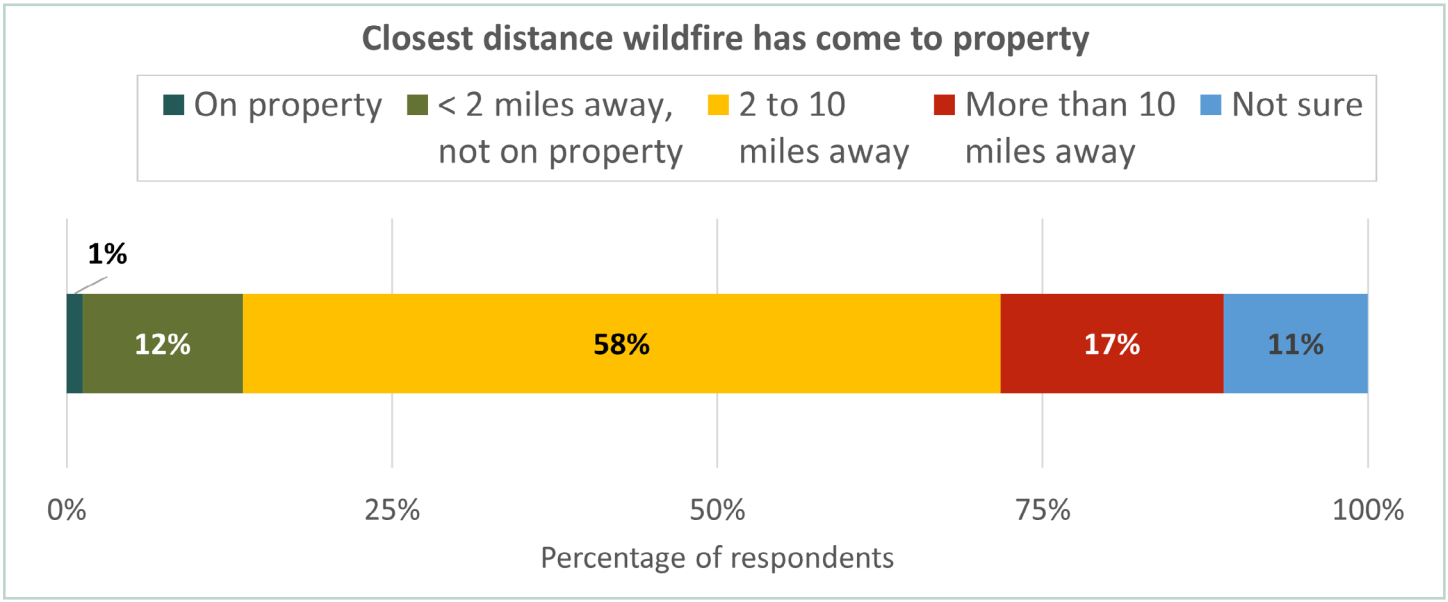


Figure 20—Respondent estimates of how close a wildfire has come to their property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 333 responses to this survey question.

Perceptions of risk

The household survey included several risk perception measures. Survey respondents were asked to consider the likelihood of the occurrence of a wildfire on their property and potential outcomes in that event. Seventy-two percent agreed or strongly agreed with the statement, "My property is at risk of wildfire." However, almost 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" (1%) (see fig. 21).

Only 26% of survey respondents thought it likely (greater than 50% chance) that there would be a wildfire on their property in the next year. However, if there were a wildfire on their property in the next year, a majority (60%) of survey respondents thought it likely they would lose their home (see fig. 22).

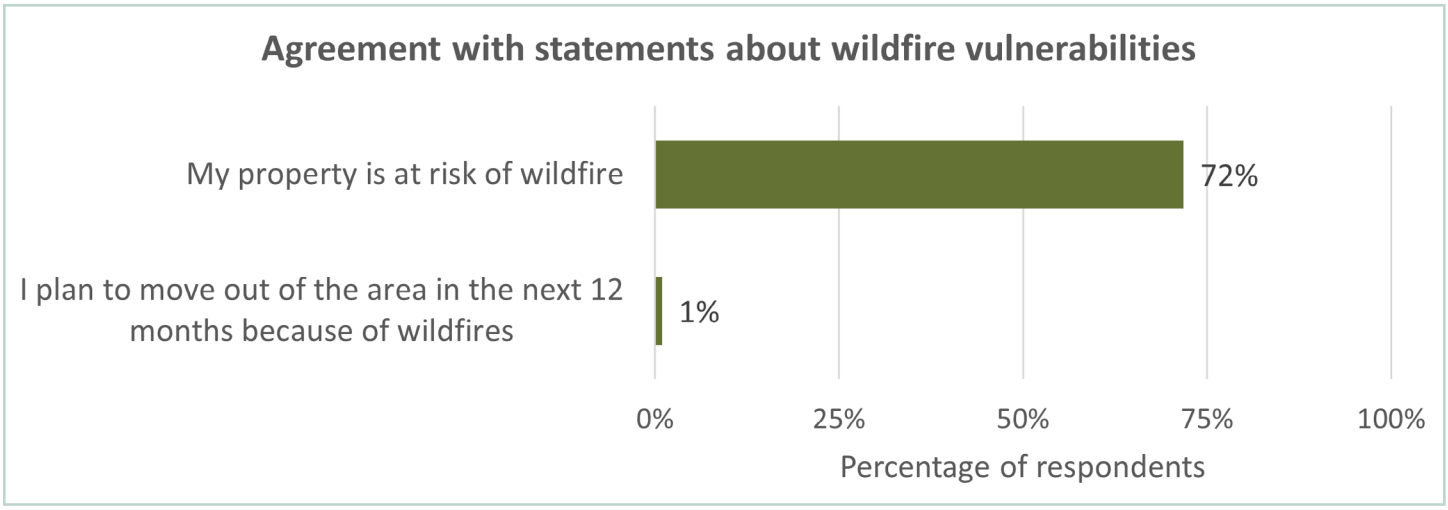


Figure 21—Agreement ("agree" or "strongly agree") with statements about whether wildfire threatens the respondent's property or affects residential decisions, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 224–226 responses to each survey statement listed.

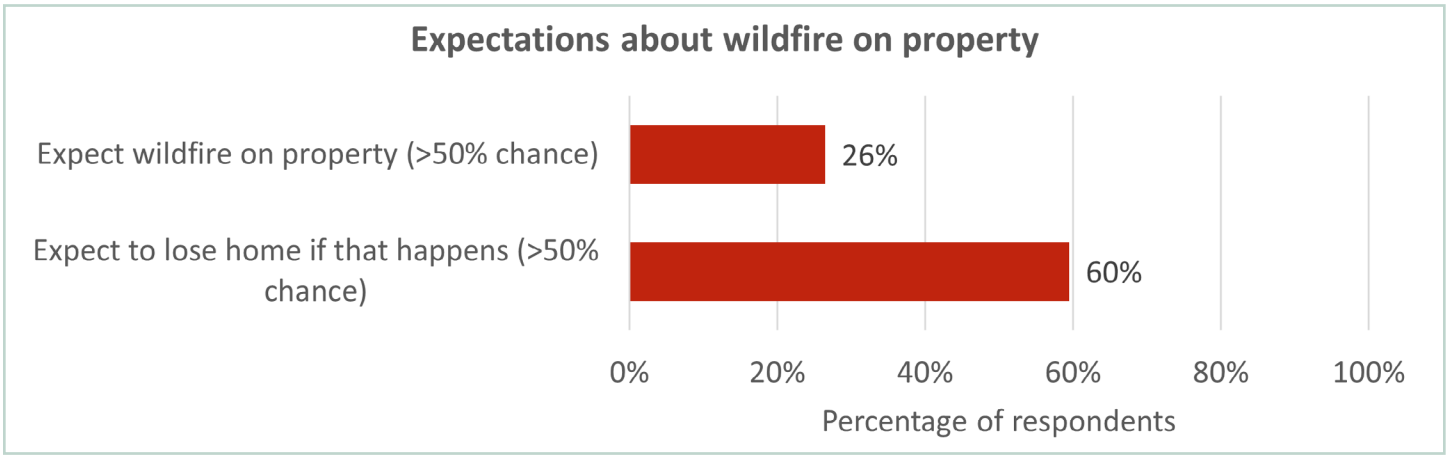


Figure 22—Estimate of the chances (> 50% chance) of a wildfire on property in the next year, and chances (> 50% chance) of losing home in that case, as reported by survey respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 321 and 326 responses to the two survey statements listed, respectively.

When asked to consider who would protect their home in the event of a wildfire, 20% of respondents thought it was very or extremely likely that they would put the fire out themselves. More respondents (35%) thought it very or extremely likely that the fire department would save their home (see fig. 23).

In terms of outcomes, about half 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 (57%), there would be smoke damage to their home (53%), or some physical damage (48%). Additionally, more respondents thought it was very or extremely likely their

neighbors' homes would be damaged or destroyed (42%) than thought their own home would be destroyed (25%). The outcome the fewest respondents (19%) thought was extremely or very likely was the loss of money due to the loss of a business or income (see fig. 24).

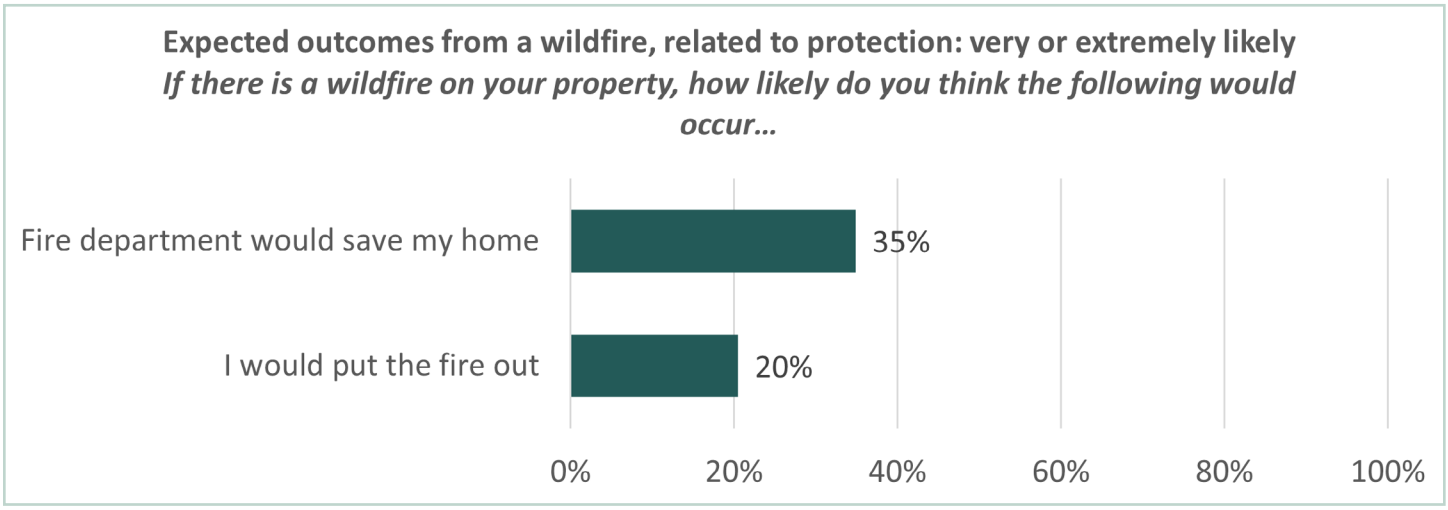


Figure 23—Percentage of survey respondents who thought the above source of protection to their home was very or extremely likely, in the event of a wildfire on their property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 327 responses to each survey statement listed.

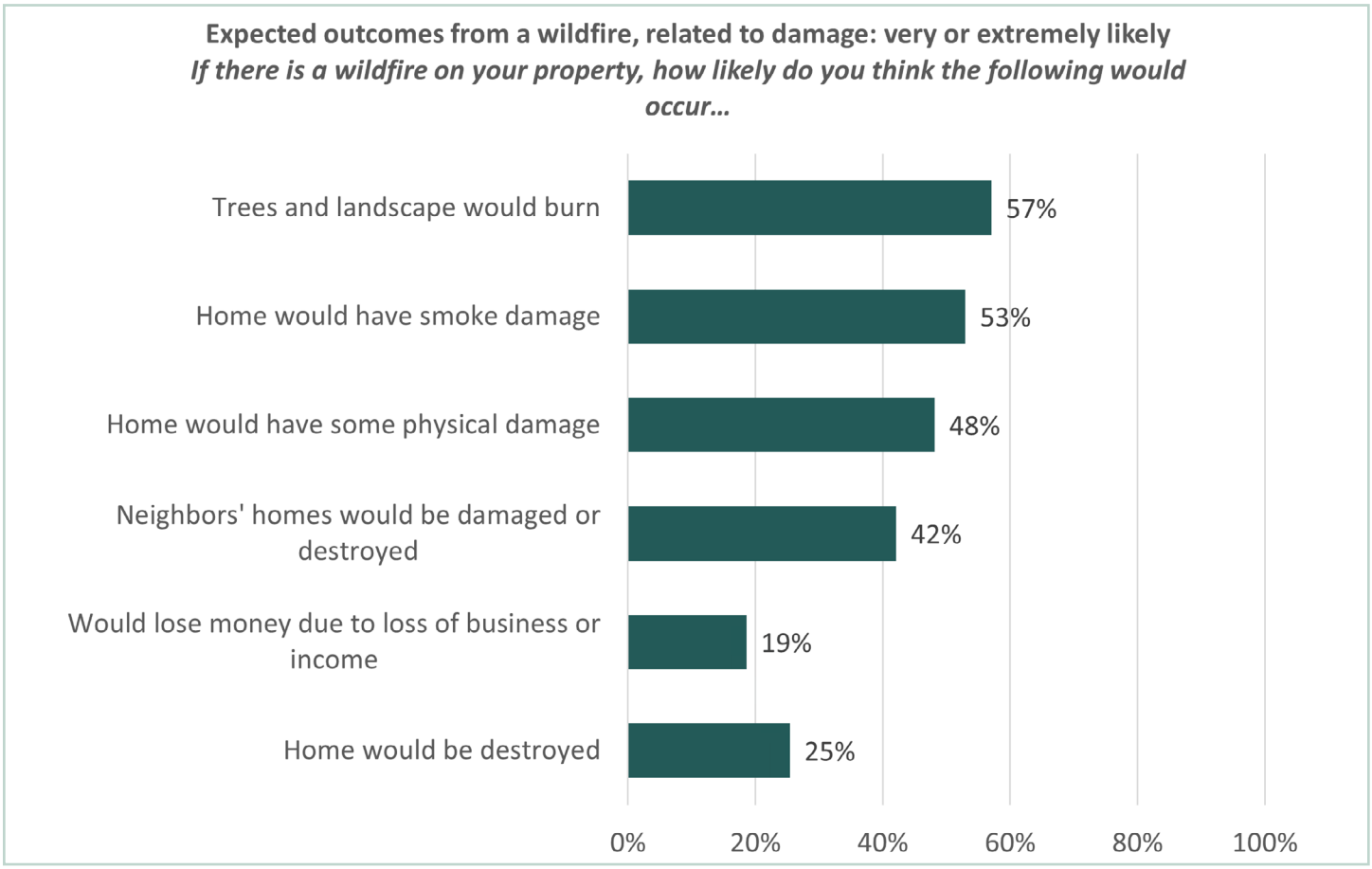


Figure 24—Percentage of survey respondents who thought the above forms of wildfire damage were very or extremely likely, in the event of a wildfire on their property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 319–330 responses to each survey statement listed.

Survey respondents indicated some understanding of the physical mechanisms of home ignition. The source of ignition respondents most likely indicated was direct flame (41%), with less than a third reporting high likelihood that embers (29%), or nearby homes (22%) might ignite their home, in the event of a wildfire on their property (see fig. 25).

Survey respondents also indicated high recognition of major sources of wildfire risk. Most respondents reported vegetation on their neighbor's properties (86%), vegetation on nearby public or large undeveloped lands (85%), vegetation on their own property (79%), and the physical characteristics of their house (75%) as major contributors to the chances of a wildfire damaging their property in the next year. About half of respondents thought a lack of nearby water supply contributed to their risk (see fig. 26).

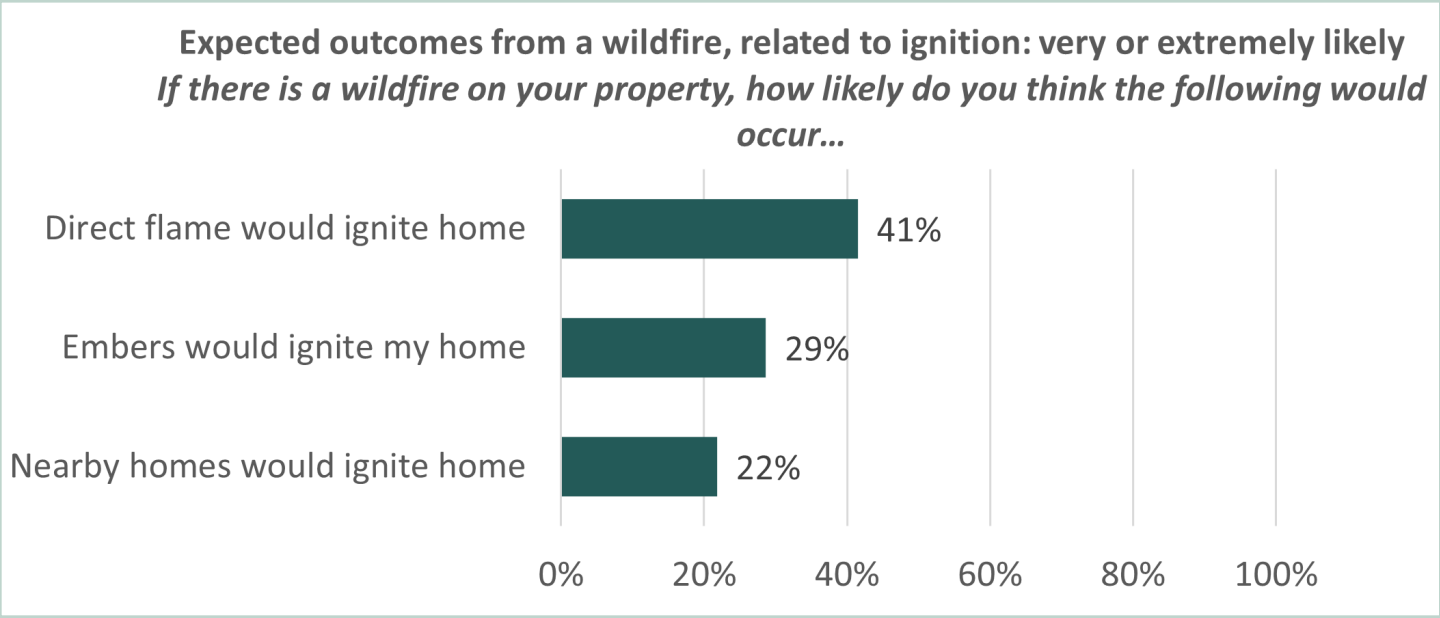


Figure 25—Percentage of respondents who thought the above sources of ignition were very or extremely likely, in the event of a wildfire on their property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 323–326 respondents to each survey statement listed.

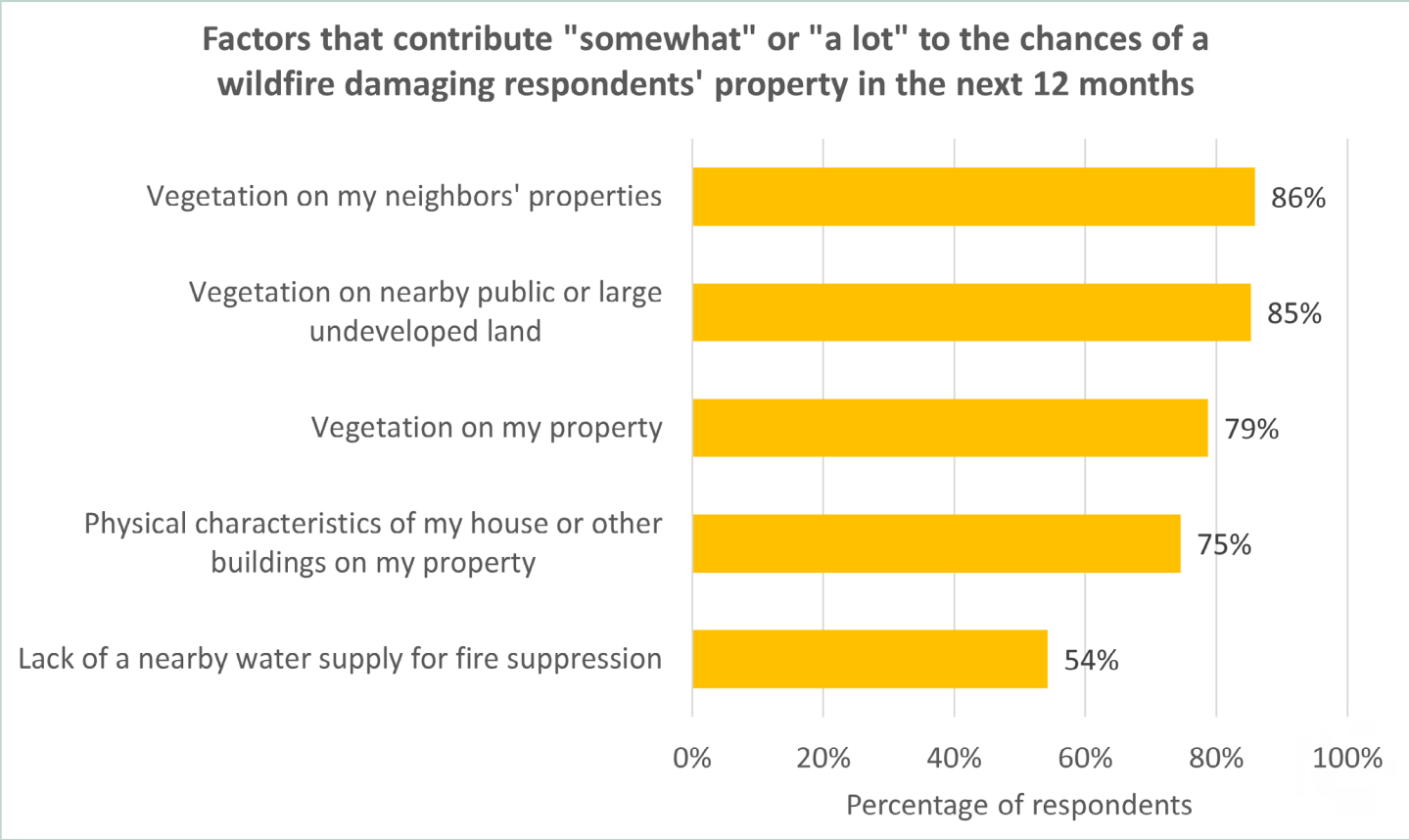


Figure 26—Percentage of respondents who thought the above factors contribute "somewhat" or "a lot" to the chances of a wildfire damaging their property in the next 12 months, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 326–329 respondents to each survey statement listed.

Perceptions of Community Risk Reduction Strategies and Fire Management

This section describes survey respondents' support for wildfire risk reduction practices and policies at the community scale, how they think wildfire should be managed, and perceptions of their own efficacy in reducing wildfire risk.

Support for risk management practices

Most survey respondents rated fuels treatments on nearby public lands as very or extremely acceptable, including the removal of vegetation along roadways for safer evacuation (85%), removing trees and other vegetation (82%), managing a naturally ignited fire (78%), reducing other vegetation on HOA property surrounding communities (77%), burning piles of vegetation (75%), and conducting a prescribed fire ignited by fire professionals (73%) (see fig. 27).

Survey respondents also indicated broad support for proposed wildfire regulations and practices, including building a new road to provide an emergency evacuation route (70%), development standards that require vegetation management (61%), building codes that require fire-resistant materials for structures located in fire-prone areas (61%), and growth

policies or land use regulations that limit new development (55%). Slightly less than half of respondents (43%) found it acceptable to temporarily shut off the power grid on extreme fire risk days (see fig. 28).

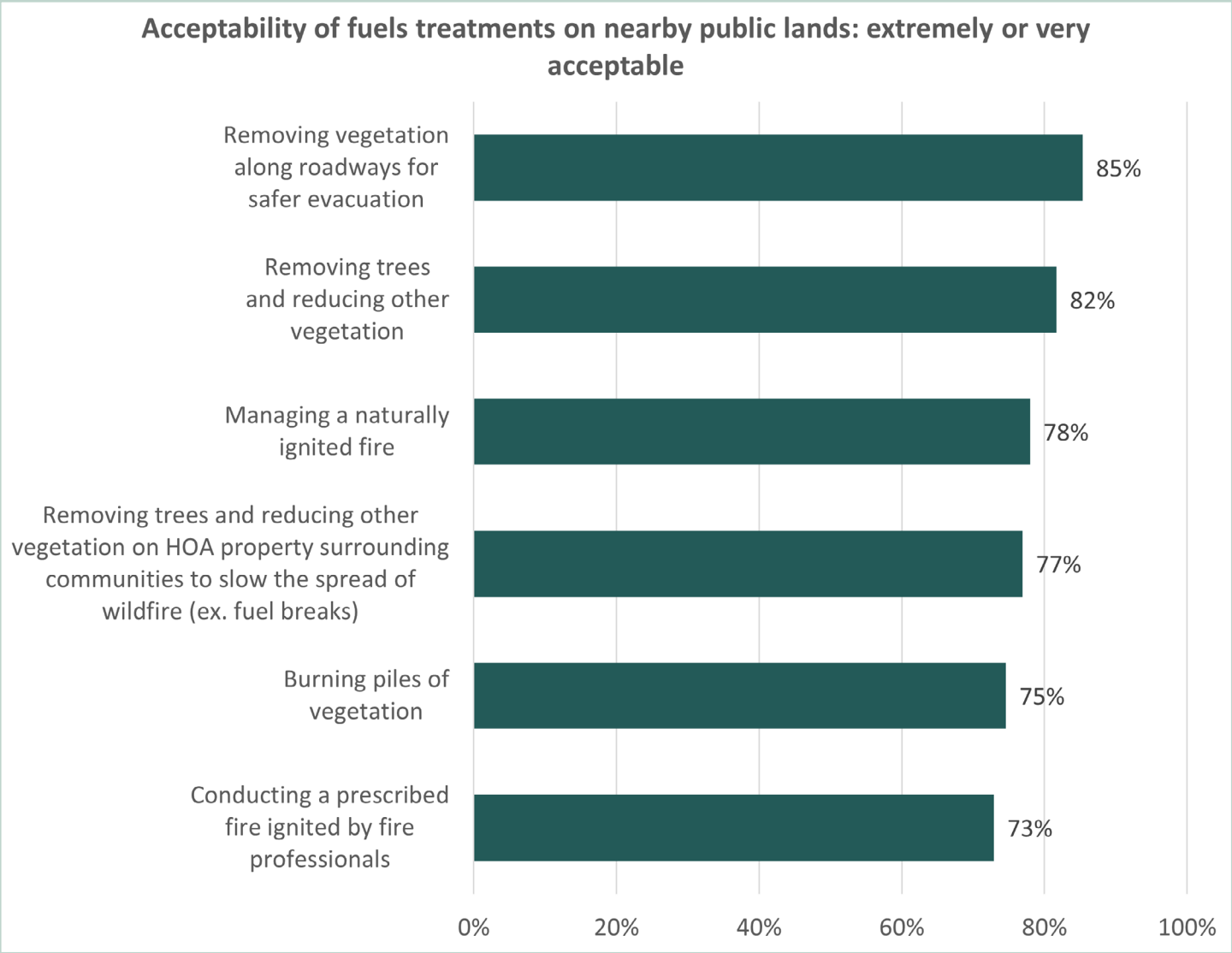


Figure 27—Percentage of respondents who found each of the above wildfire fuels management approaches very or extremely acceptable, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 321–329 respondents for each of the above statements.

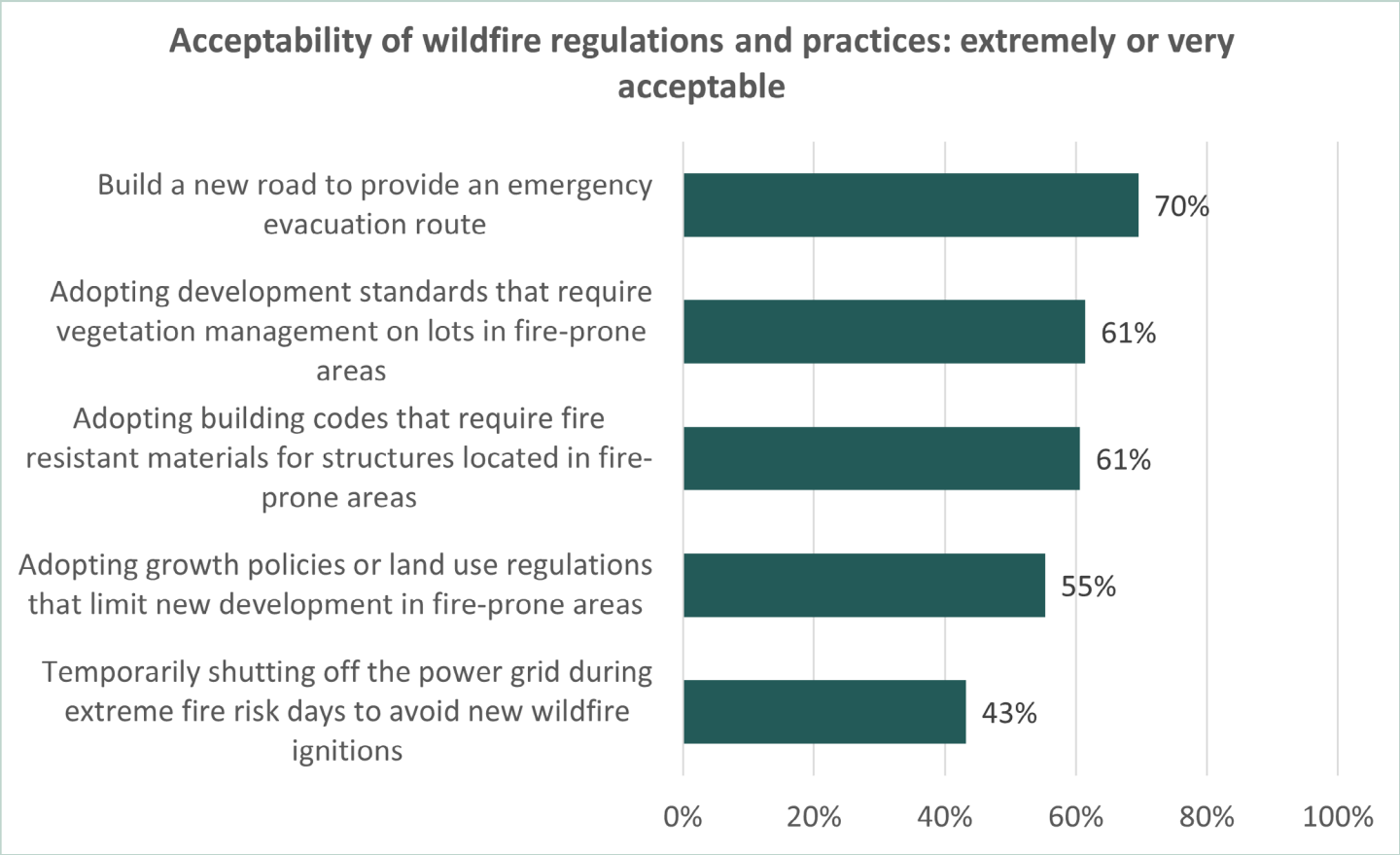


Figure 28—Percentage of respondents who found each of the above wildfire-related policies very or extremely acceptable, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 322–328 respondents for each of the above statements.

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 (96%) and threatening homes (91%) should be put out. In addition, most agreed or strongly agreed that wildfires are a natural part of a healthy forest ecosystem (84%), and two-thirds (67%) of survey respondents agreed or strongly agreed that saving homes should be prioritized over saving forests during wildfire events (see fig. 29).

Despite preferences to suppress wildfire, survey respondents were less confident in the technology and resources available to do so. Less than a third of respondents (31%) agreed or strongly agreed that most wildfires can be controlled with proper technology. Few respondents (13%) agreed or strongly agreed that local firefighters have sufficient resources to protect homes from wildfire, and just 9% agreed or strongly agreed that local firefighters have sufficient resources to keep wildfires from spreading (see fig. 30).

Another dimension of wildfire risk is the threat posed to local water supply. Few respondents (26%) agreed or strongly agreed that wildfires threaten their community water supply (see fig. 31).

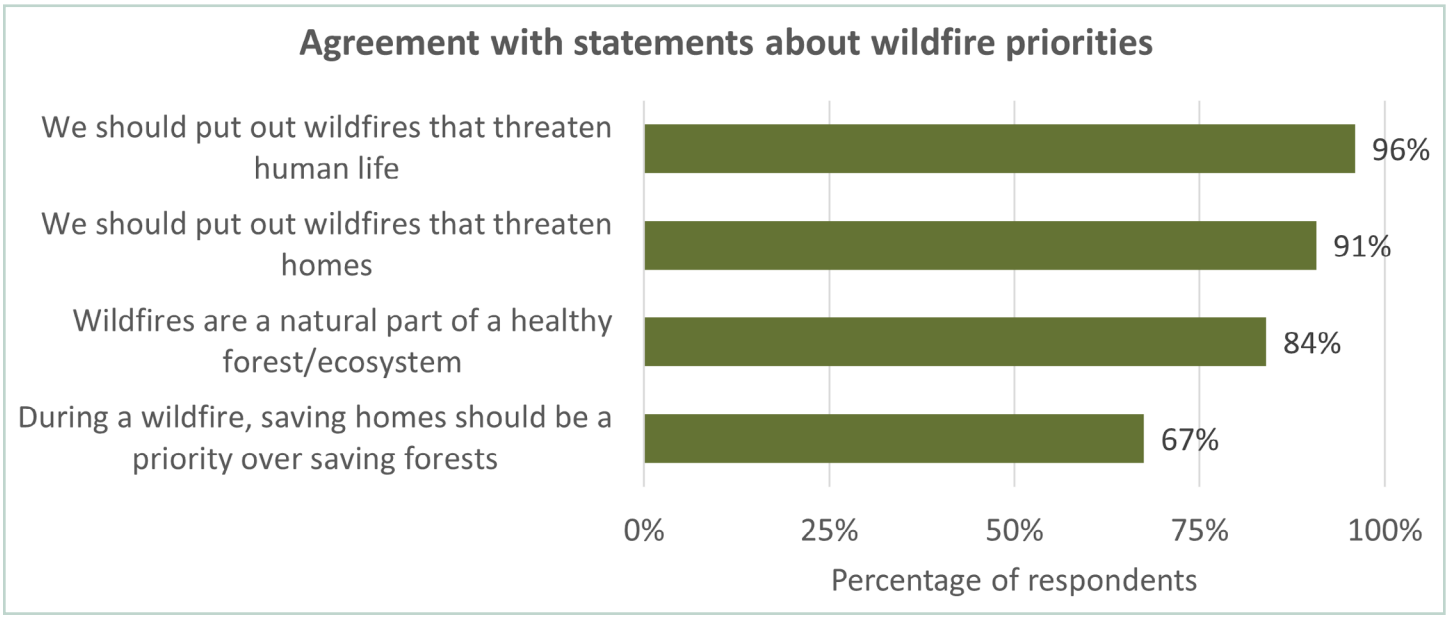


Figure 29—Agreement ("agree" or "strongly agree") with statements about priorities between human and natural resources during a wildfire, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 323–325 respondents to each survey statement listed.

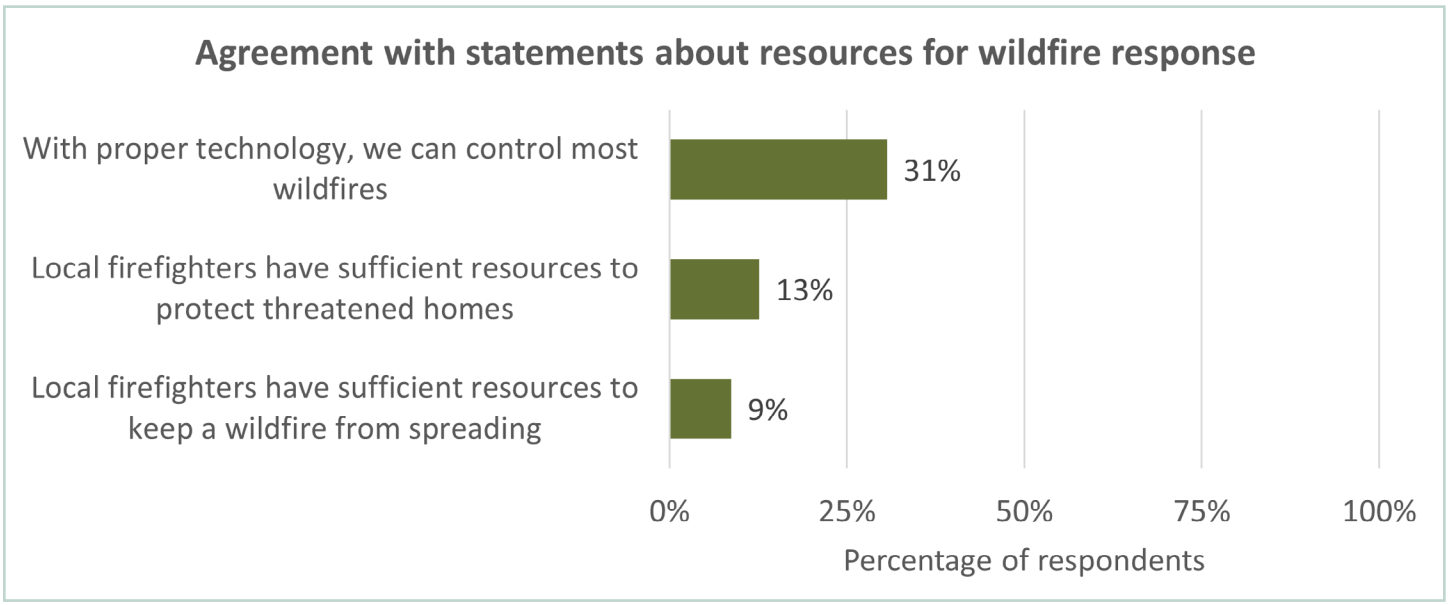


Figure 30—Agreement ("agree" or "strongly agree") with statements about available technology and resources to prevent wildfire impacts, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 322–324 respondents to each survey statement listed.

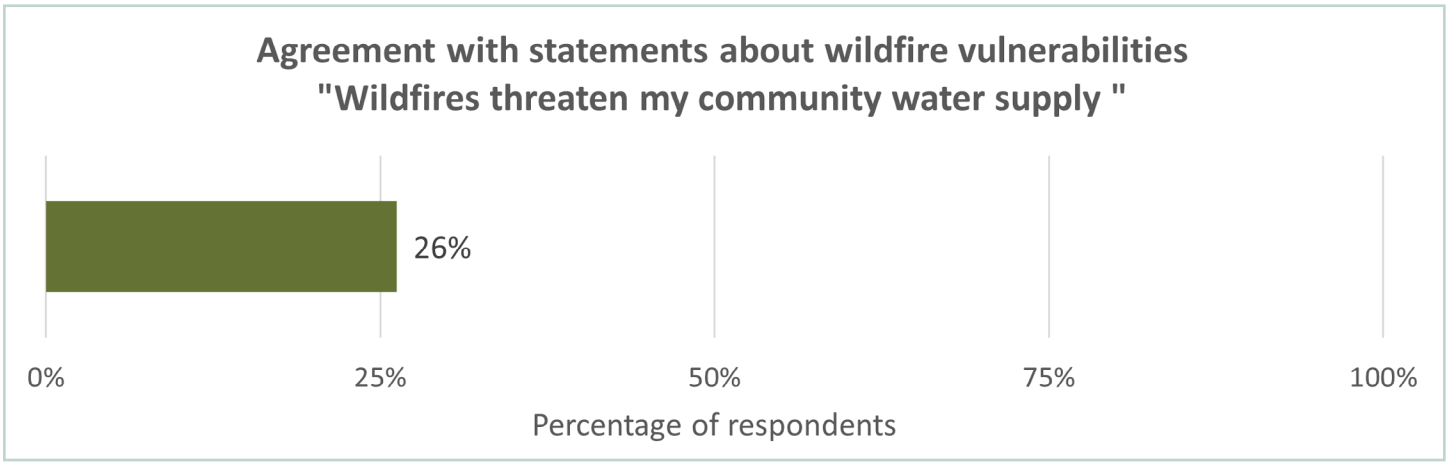


Figure 31—Agreement ("agree" or "strongly agree") with statements about whether wildfire threatens the respondent's property and water supply, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 324 respondents to each survey statement listed.

Lastly, survey responses indicate that participants feel responsibility for taking action to reduce their wildfire risk and believe in the efficacy of their actions in lowering their risk. While a third of respondents (32%) agreed or strongly agreed that development in fire-prone areas increase the risk to their property, just 19% 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. Furthermore, less than 5% of respondents agreed with statements that they live where they do for the trees and will not remove any from their property (4%), firefighters should risk their lives protecting homes (4%), managing wildfire risk is the government's responsibility (4%), or that homeowners' actions are ineffective against wildfire (3%) (see fig. 32).

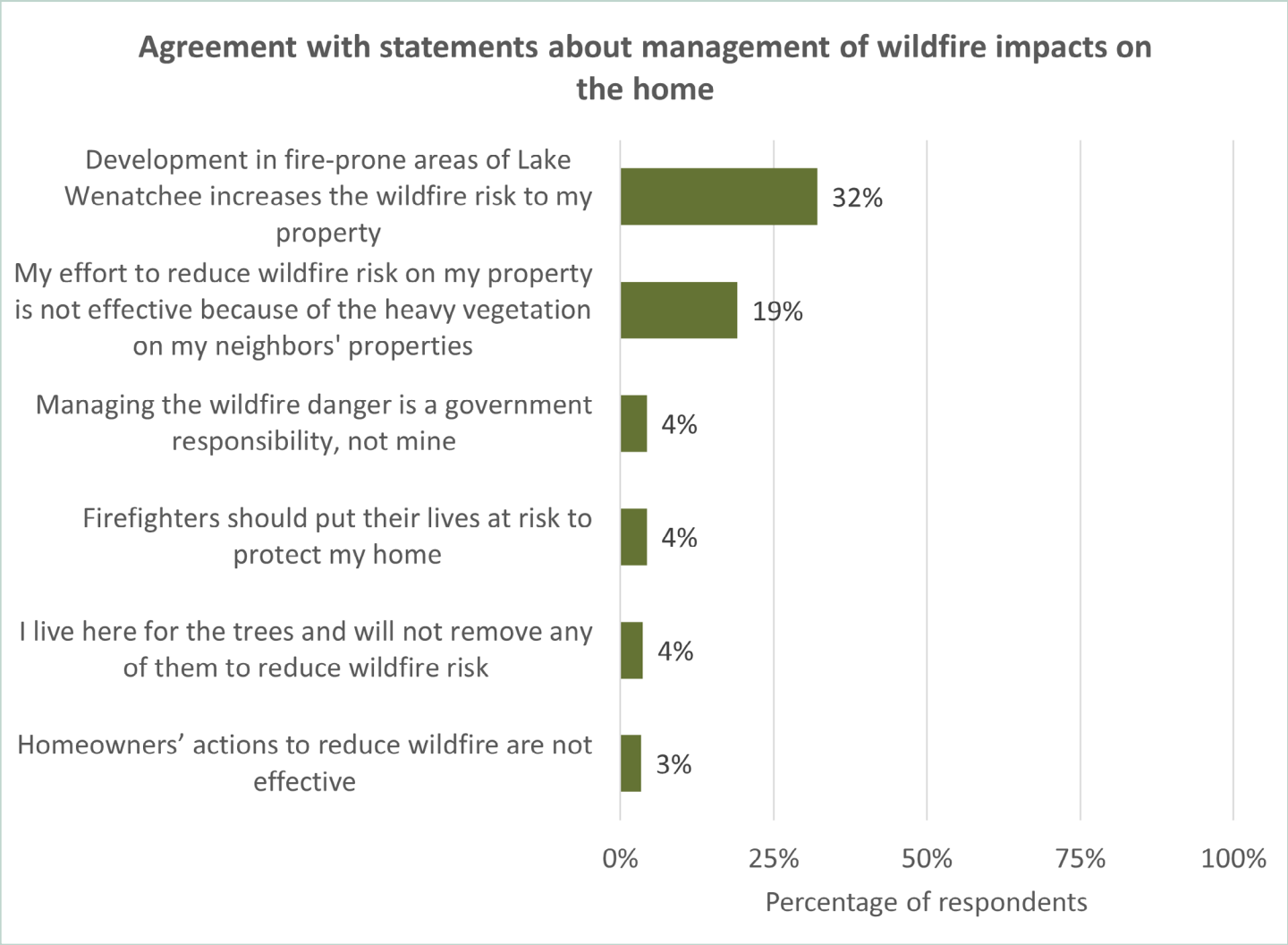


Figure 32—Agreement ("agree" or "strongly agree") with statements about personal and community management of wildfire impacts on the respondent's home, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 324–327 respondents to each survey statement listed.

Communication About Wildfire Risk

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

Communication with neighbors and insurance

Most survey respondents (70%) reported talking to their neighbors about wildfire (see fig. 33), and almost all survey respondents (94%) reported that at least some of their neighbors had taken action to reduce wildfire risk on their property (see fig. 34). Interactions with neighbors can serve to help spread information about localized risk of wildfire.

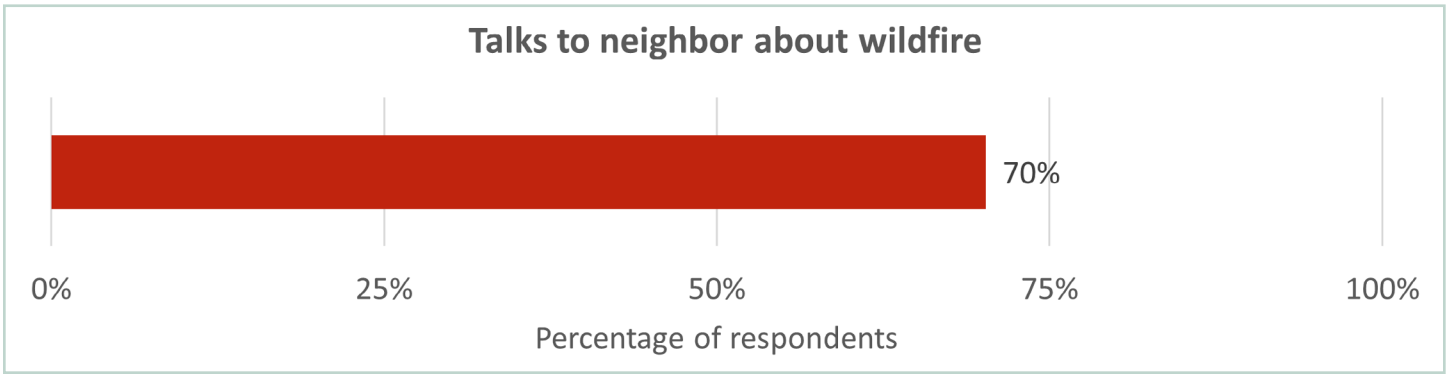


Figure 33—Percentage of respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area, who reported talking to their neighbor about wildfire. N = 329 respondents to this survey question.

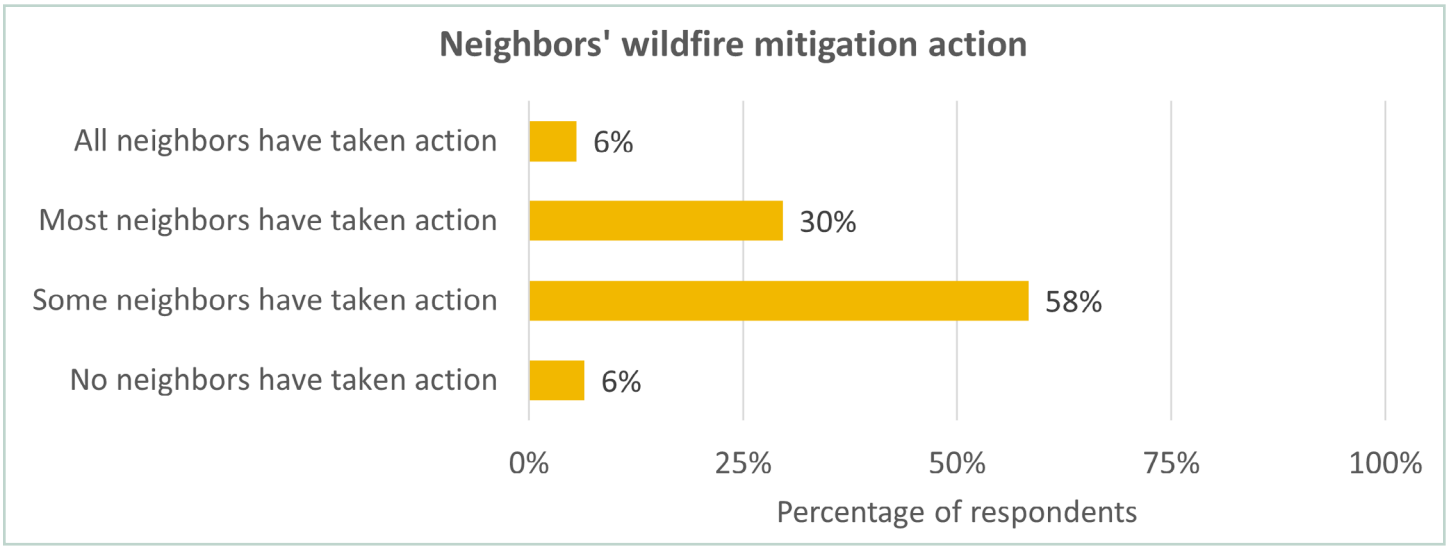


Figure 34—Respondents' estimates of how many neighbors take wildfire mitigation action, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 324 respondents to these two survey questions.

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. Just a third of respondents (32%) reported paying a higher premium due to wildfire risk, and only a quarter of respondents (25%) received information about wildfire risk reduction from their insurance company. Less than a fifth of respondents reported that their insurance company refused them insurance on grounds of wildfire risk (19%), required them to mitigate wildfire risk (9%), gave them a discount for reducing wildfire risk (8%), or offered them private firefighting services (8%). Notably, almost two-thirds (63%) of survey respondents felt that their home was adequately insured against loss from wildfire (fig. 35).

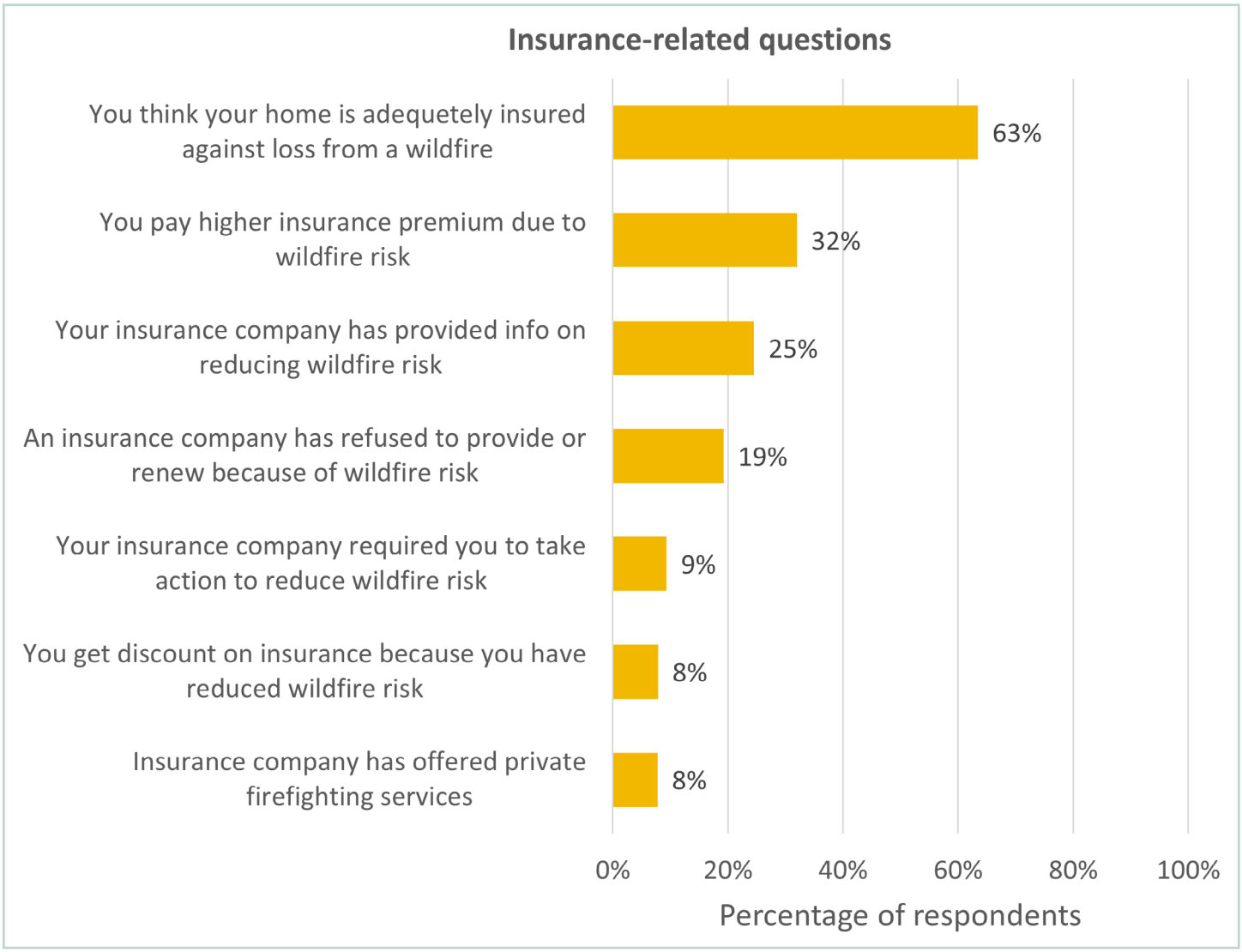


Figure 35—Respondents' knowledge of and experience with various insurance company actions, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 319–323 respondents to each statement.

Sources of information and reported usefulness

Survey respondents were asked to report on whether they had received wildfire risk information from a variety of sources and to evaluate the usefulness of each of the sources they had used. Lake Wenatchee Fire & Rescue was the source that reached the most respondents (81%), and it was also the source with the highest usefulness rating with 76% of respondents who received information from LWFR finding it very or extremely useful (fig. 36). Other sources of wildfire risk information either did not reach as many respondents or were not rated as highly useful.

Other sources of wildfire risk information received by around half of respondents were the media (59%), Chelan Public Utility District (58%), community groups such as homeowners' associations (57%), and Firewise USA (46%). Few respondents who received wildfire risk information from the media and Chelan Public Utility District found it useful (31% and 37%,

respectively). However, many respondents who received information from community groups (59%) and Firewise USA (60%) found it useful. Notably, although the community wildfire ambassador program only reached 34% of respondents, 62% of those respondents thought it provided useful information. Sources with limited reach but high usefulness ratings might present opportunities for expanded outreach efforts. Refer to figure 36.

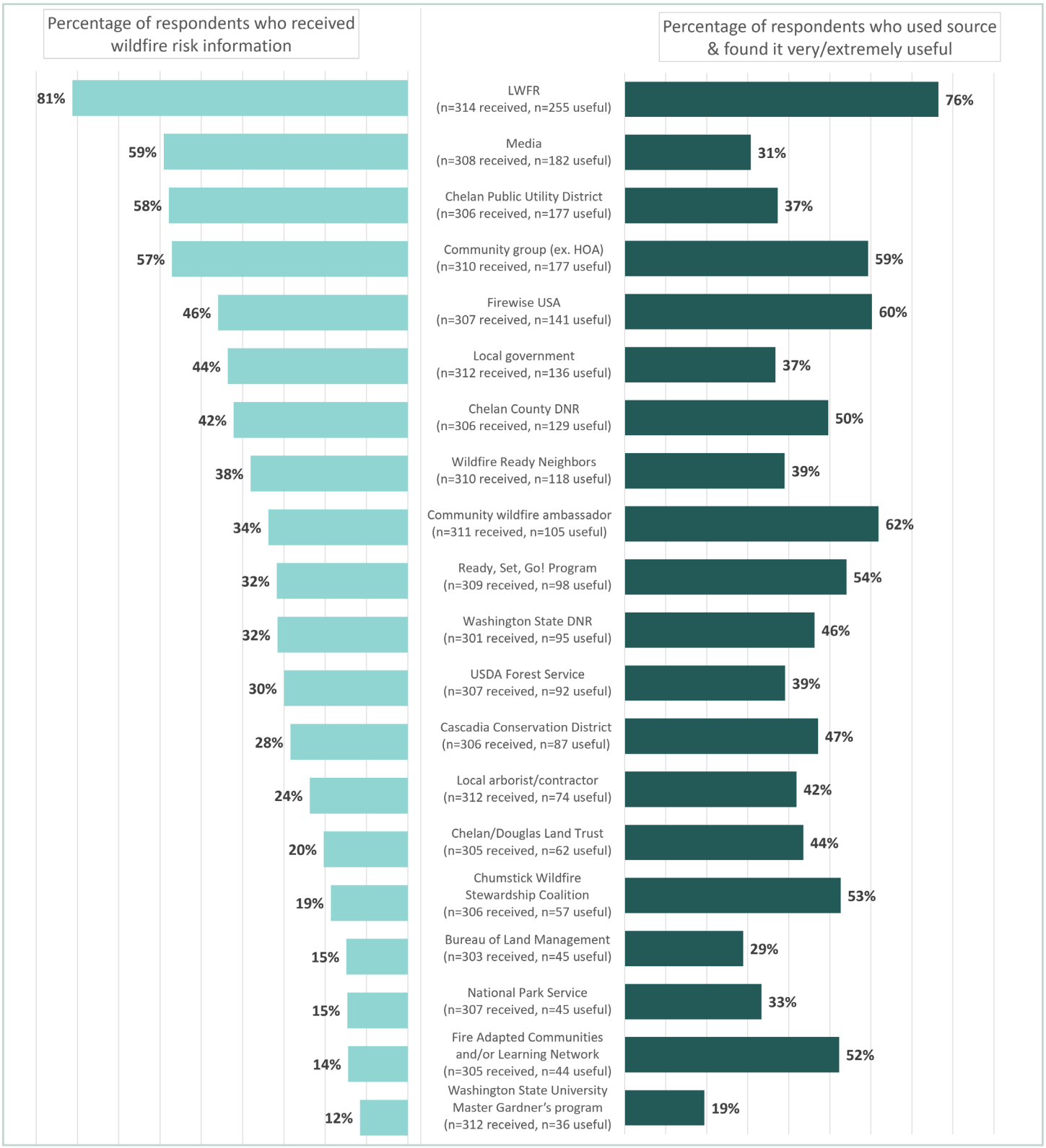


Figure 36—Percentage of respondents who received wildfire risk information, by source, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. These data are compared to the percentage of people who said they found each source's wildfire risk information very or extremely useful (percentage of all respondents who received wildfire risk information from that particular source). N = 305–314 respondents to source receipt questions; N = 36–255 respondents to source usefulness questions. LWFR = Lake Wenatchee Fire & Rescue; HOA = homeowner's association.

Current and preferred channels of communication

There are many different channels by which information about wildfire may be distributed. Participants were asked about the forms in which they currently receive wildfire-related information, as well as how they would prefer to receive this information. In general, responses indicate that there is no one main channel for communication about wildfire risk. The three channels through which the highest percentages of respondents reported receiving information were email/e-newsletter (46%), mailed newsletter (43%), and TV news (39%). The three most preferred channels of communication were email/e-newsletter (50%), mailed newsletter (37%), and in-person interactions (38%). Notably, more participants wanted information from email/e-newsletter and in-person interactions than currently receive information from those channels. Strikingly, the percentage of people who would prefer information from in-person interactions (38%) is much higher than those who currently receive information that way (22%) (see fig. 37).

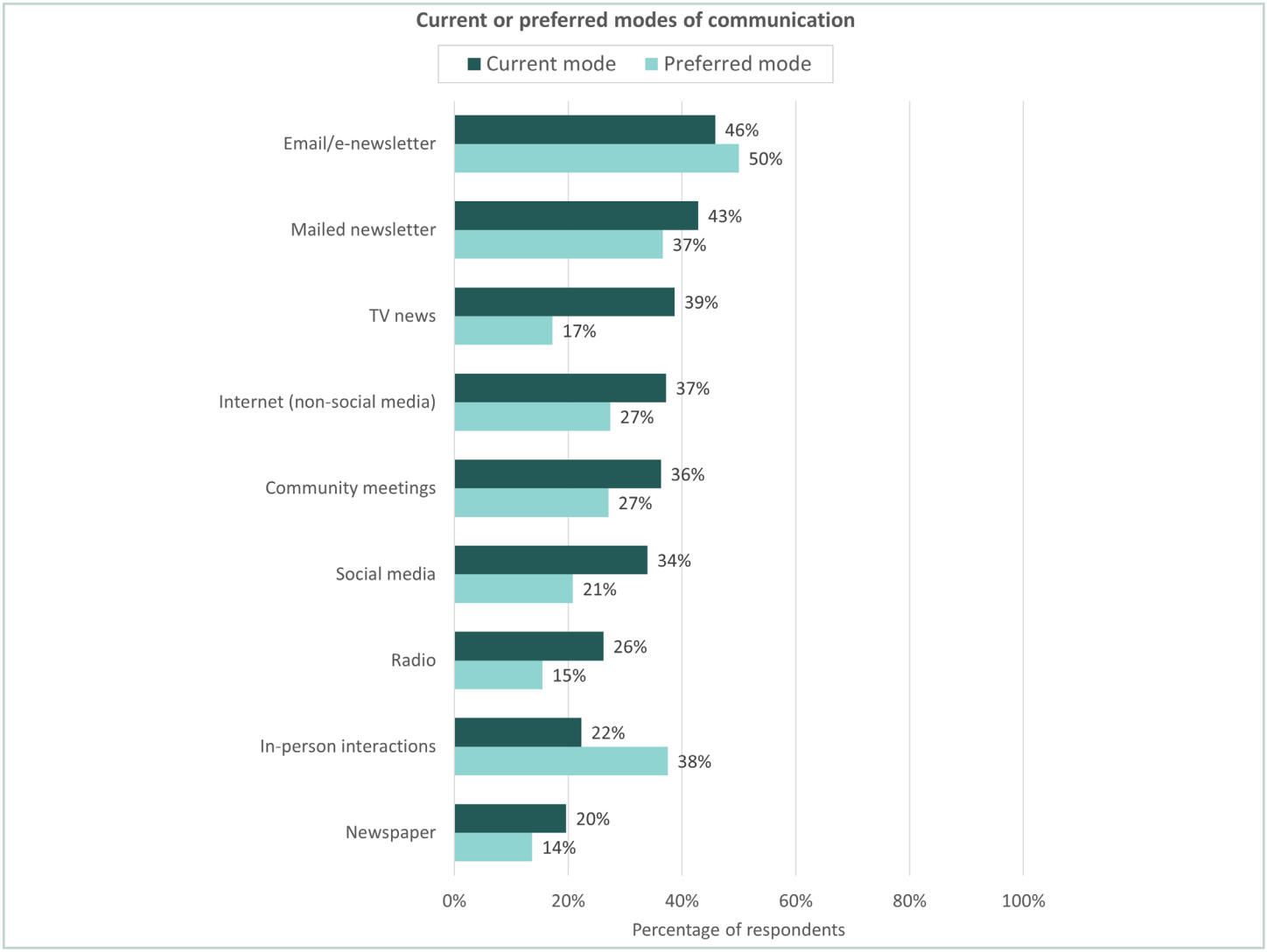


Figure 37—Comparison of current and preferred modes of communication about wildfire risk, ordered by current modes of communication, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. Survey respondents were able to select multiple options. N = 336 respondents to current modes; N = 336 respondents to preferred modes.

Preparedness and Mitigation Activities

Evacuation planning

Evacuation planning is an important step in wildfire preparedness, and most survey respondents appear to have completed some planning. Over three-quarters of survey respondents (79%) reported having evacuation plans for the people in their household (see fig. 38(a)). Of the survey respondents with pets, 77% had a plan for their pets (see fig. 38(b)). Of the few survey respondents with livestock, 31% had a plan for their livestock (see fig. 38(c)).

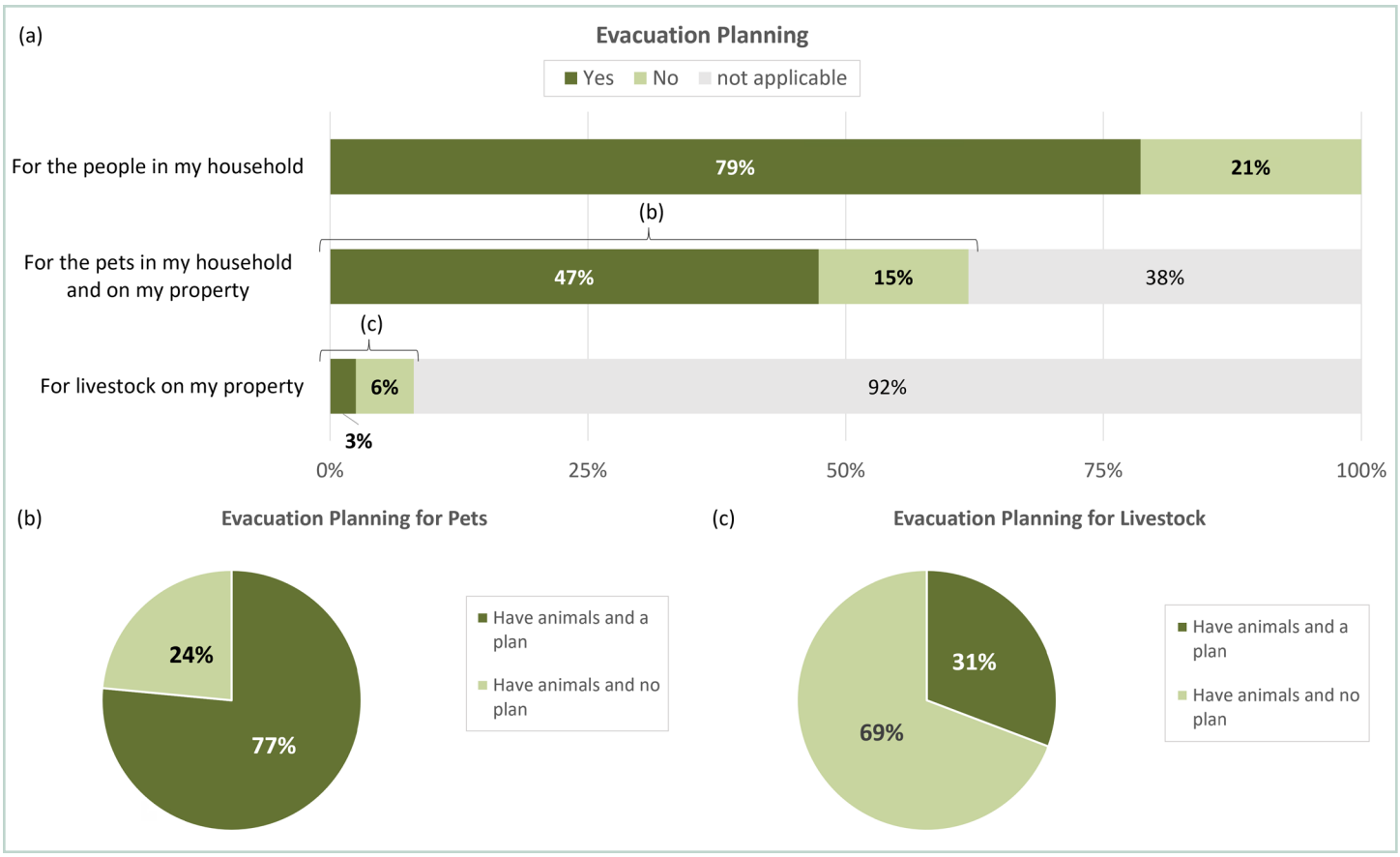


Figure 38—(a) Percentage of survey respondents who report having wildfire evacuation plans for people in the household and for pets and livestock, out of all responses to this question (n = 320–327). (b) Of respondents with pets, percentage who have a wildfire evacuation plan for their pet (n = 323). (c) Of respondents with livestock, percentage of have a wildfire evacuation plan for their livestock (n = 320). Data as reported by survey respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area.

Respondents were asked to think through evacuation actions they have completed, as well as to identify topics about which they would like more information. Although 79% of survey respondents reported having an evacuation plan (refer to fig. 38), survey responses indicate that those evacuation plans could be further developed. Most respondents have completed important evacuation preparedness actions such as identifying where to stay long-term (68%), what to take and leave behind during an evacuation (65%), safe evacuation routes (64%), and where to evacuate to (57%). However, only 39% of respondents have signed up for the emergency notification system Alert Sense, a crucial wildfire preparedness step. A similar

percentage of respondents (40%) 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. Many respondents (51%) reported already knowing how they will be notified about evacuation, which might indicate a gap in understanding about evacuation notifications (refer to fig. 39).

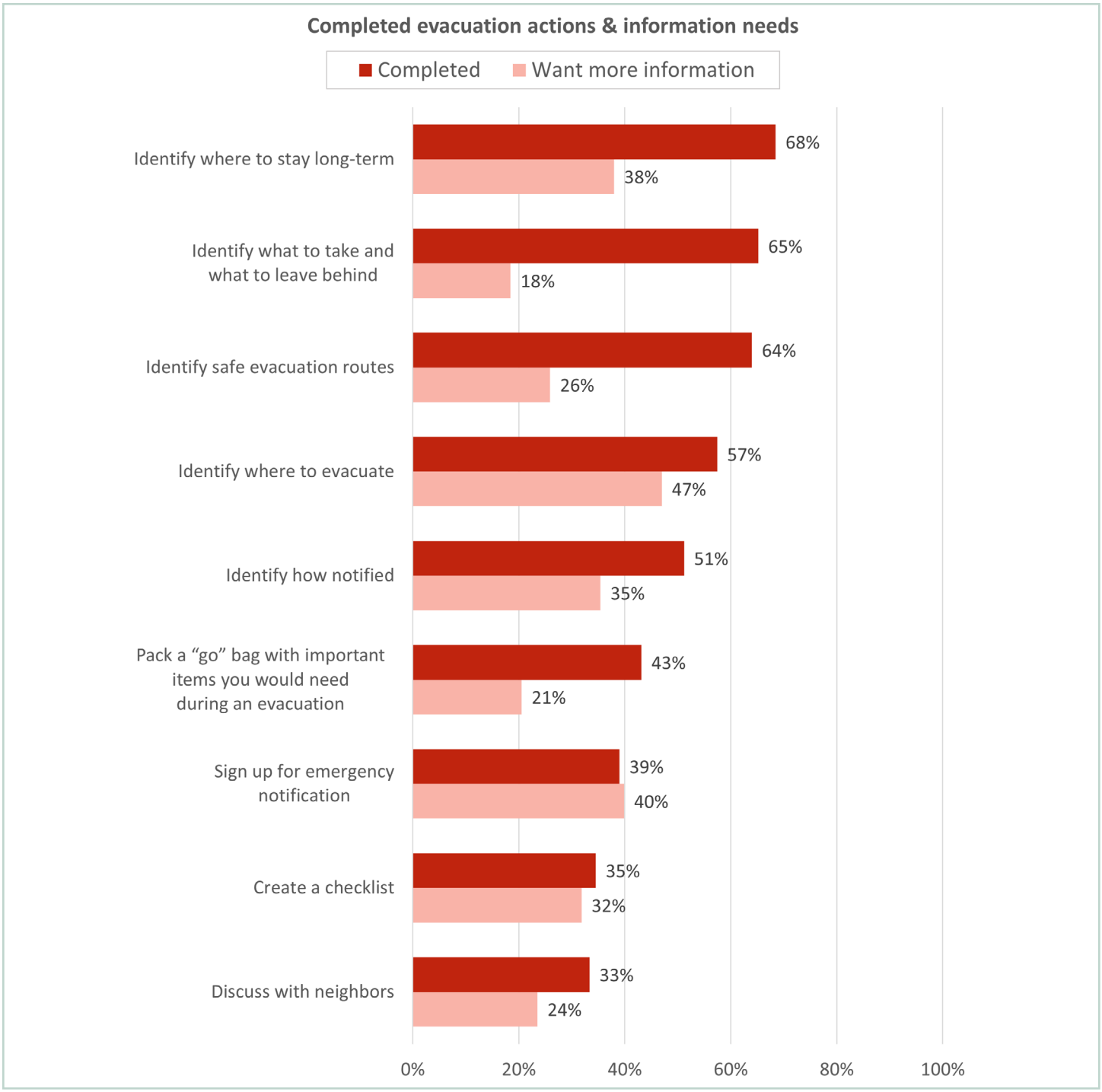


Figure 39—Evacuation preparations completed and information that would be helpful in evacuation plan development, ordered by actions completed, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 336 respondents to completed action segment; N = 336 respondents to wanting more information segment.

Wildfire risk mitigation

There are many ways property owners can reduce their risk of wildfire. The three most commonly reported activities were reducing vegetation (89%), regularly mowing and raking around the residence (89%), and regularly clearing roof and gutters (83%). Fewer respondents reported hardening their homes (46%) or more social activities such as participating in a community wildfire activity (40%), meeting with a wildfire professional to evaluate their home's risk (33%), or helping to reduce wildfire risk outside of their own property (24% or less) (refer to fig. 40).

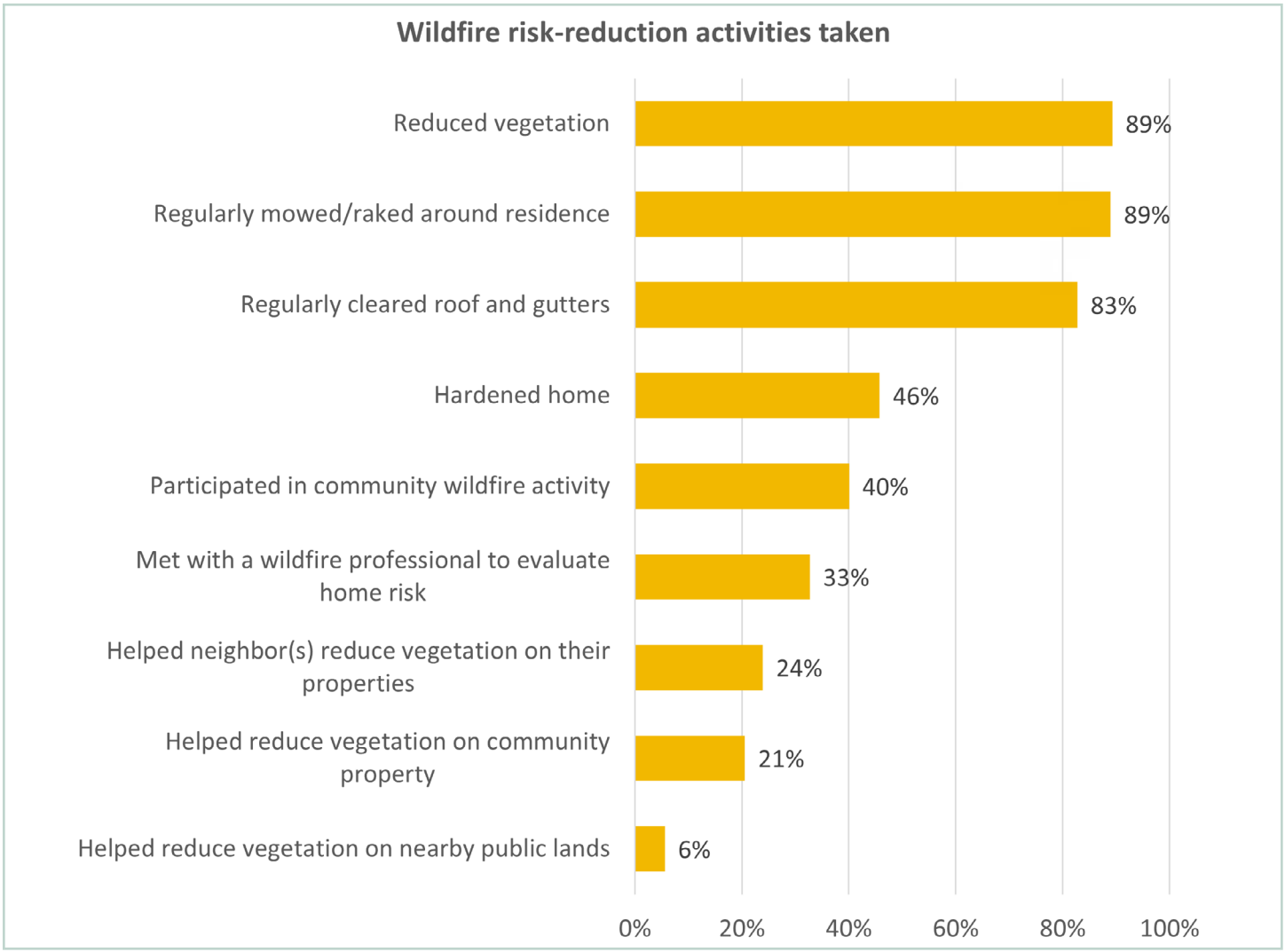


Figure 40—Percent of respondents who reported doing the above wildfire risk mitigation activities, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 319–327 respondents for each of the above activity statements.

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. Many survey respondents (61–77% per category) reported

no barriers, selecting the "none of these" option for most categories, apart from personal resources (43%). Across all four categories, the four most-reported barriers to mitigation were time to do the work (33%), financial expense/cost (33%), physical ability to do the work (28%), and lack of information about or options for disposing of vegetation or slash (23–24%) (figs. 41–44).

The three most-reported barriers were within the personal resources category (see fig. 41). Nonetheless, 43% of respondents reported none of the personal resource factors were barriers.

A lack of information presented a barrier to mitigation for a small but significant percentage of respondents. Not knowing where to dispose of vegetation (24%), how to reduce risk (19%) and factors contributing to risk (13%) are barriers that might be addressed via outreach. Most respondents (61%) reported that none of these were barriers (see fig. 42).

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 or thinking that taking action would not reduce risk, as barriers to mitigation. Just 3% of survey respondents reported that mitigation was a low priority. Most respondents (77%) reported that none of these were barriers (see fig. 43).

Community barriers were also reported by few respondents, except for a lack of options for disposing of slash (23%). Very few respondents selected the community barriers of restrictions about changing the look of a property (6%) or social pressure from neighbors (1%). Most respondents (73%) reported that none of these were barriers (see fig. 44).

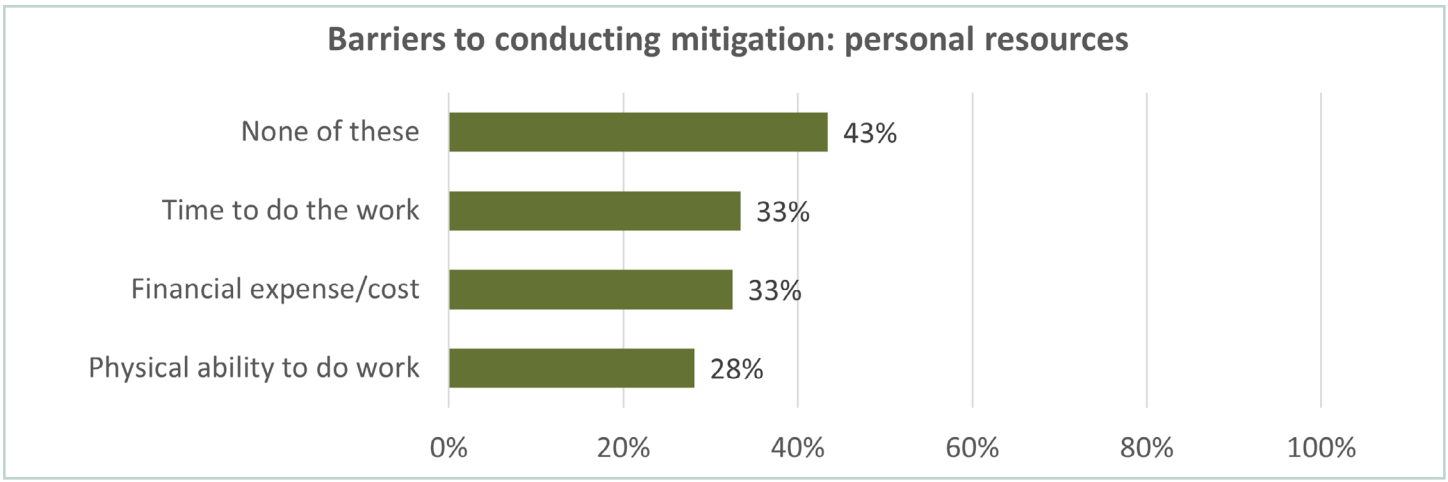


Figure 41—Personal resource barriers to conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 320 respondents for each of the above barriers.

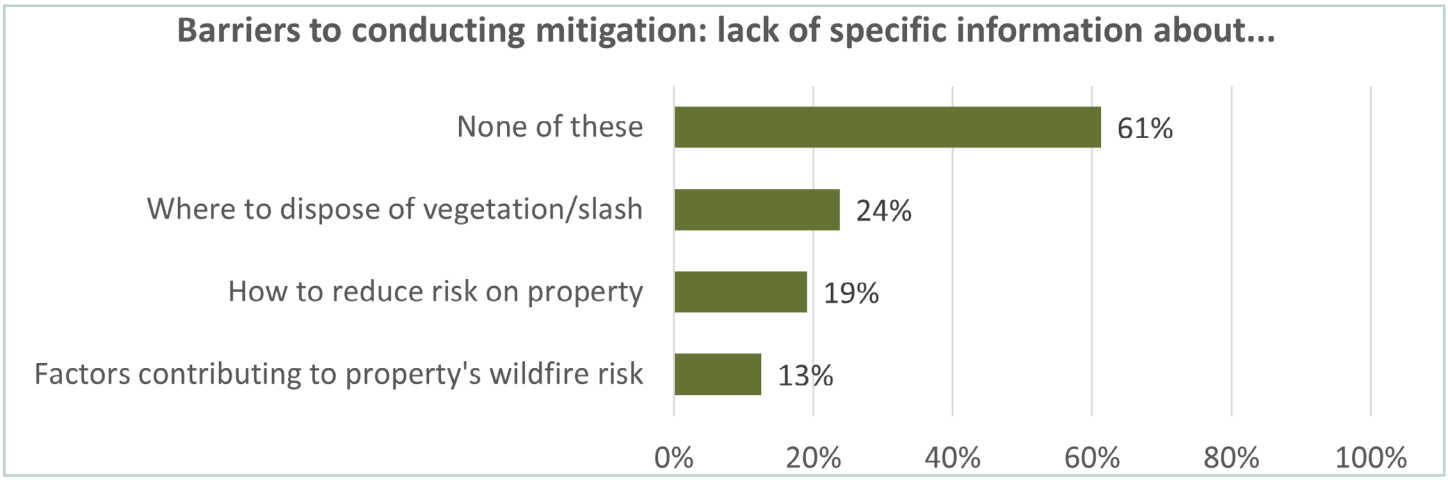


Figure 42—Information barriers to conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 320 respondents for each of the above barriers.

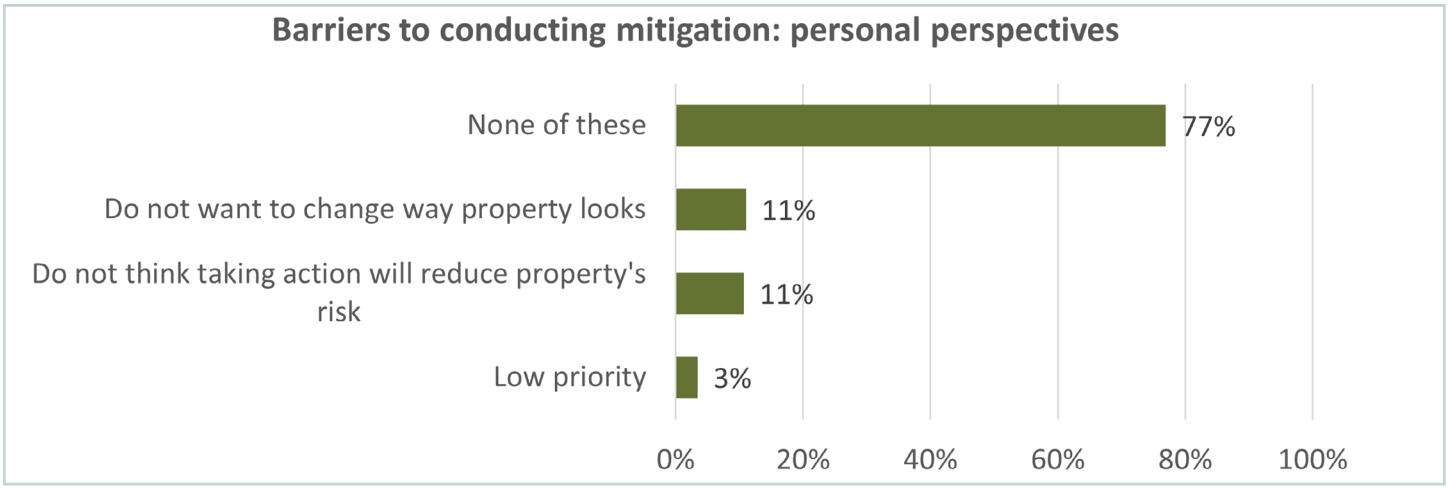


Figure 43—Personal perspectives or values that might affect wildfire mitigation activities on property, as reported by respondents residing in t the Greater Lake Wenatchee and Plain, Washington, study area. N = 317 respondents for each of the above barriers.

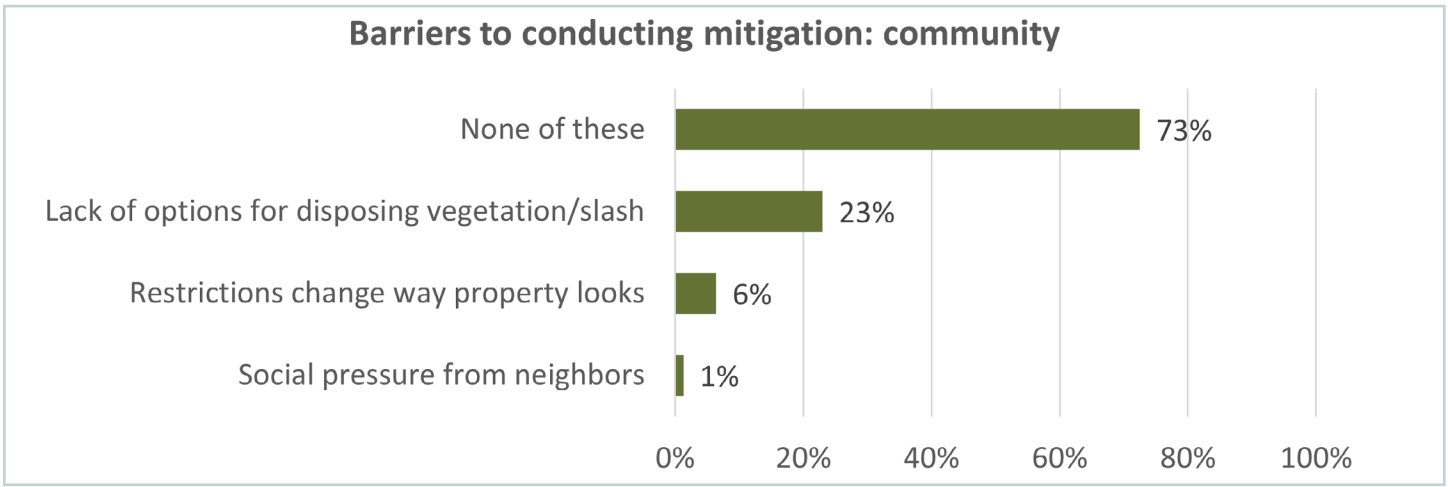


Figure 44—Community-related barriers to conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 313 respondents for each of the above barriers.

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 informational, a report describing their property's risk factors (52%), or a one-on-one visit to the property by a wildfire expert (51%), followed by help doing the work (48%). See figures 45–47.

In the resource incentives category, help doing the work (48%) was the most reported, followed by cost-share or financial assistance (41%), and recommended contractors (28%). Thirty-three percent of survey respondents reported that none of these incentives would encourage them to complete mitigation (see fig. 45).

Information incentives were popular, with half of respondents reporting that a report describing their property's risk factors (52%) or a one-on-one visit to the property by a wildfire expert (51%) would encourage them to mitigate. However, only 16% survey respondents wanted videos showing how to reduce wildfire risk on their properties. About a quarter of survey respondents (27%) reported that none of these incentives would encourage them to complete mitigation (see fig. 46).

In the social incentives category, 38% reported that feedback on work they had done to reduce their property's risk would be helpful, and 27% reported a neighborhood group that organizes wildfire risk reduction activities would be helpful. However, almost no respondents (6%) reported that receiving recognition would be motivating to perform mitigation, and 49% reported that none of these social incentives would encourage them to complete mitigation (see fig. 47).

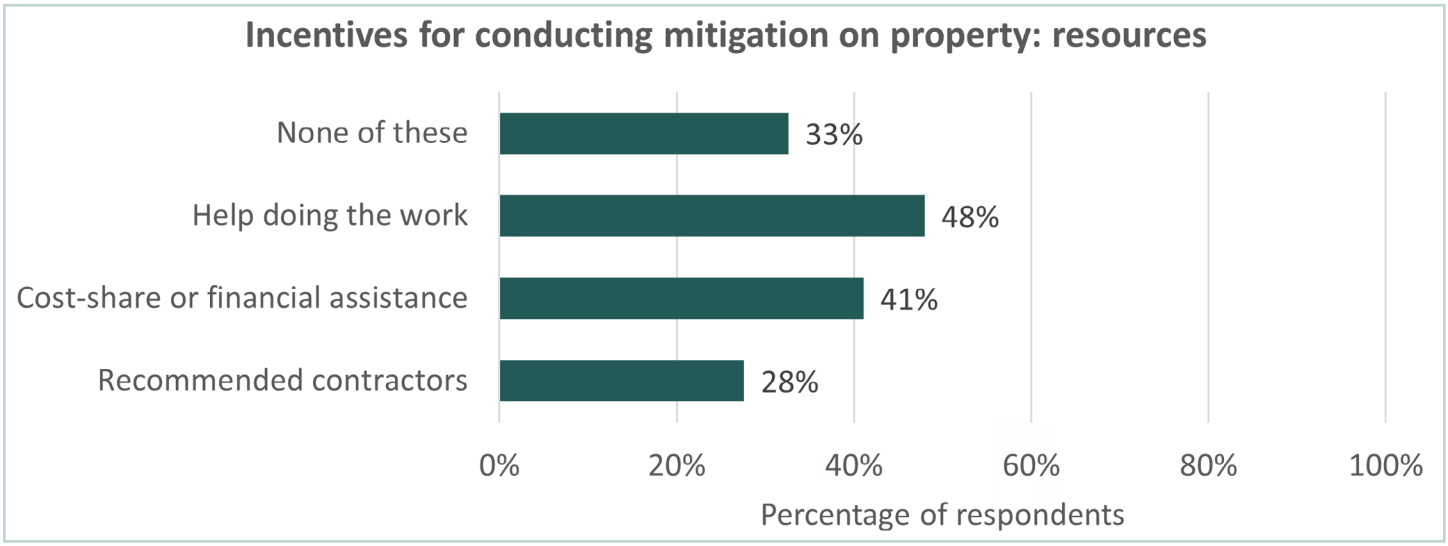


Figure 45—Resource incentives for conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 319 respondents for each of the above incentives.

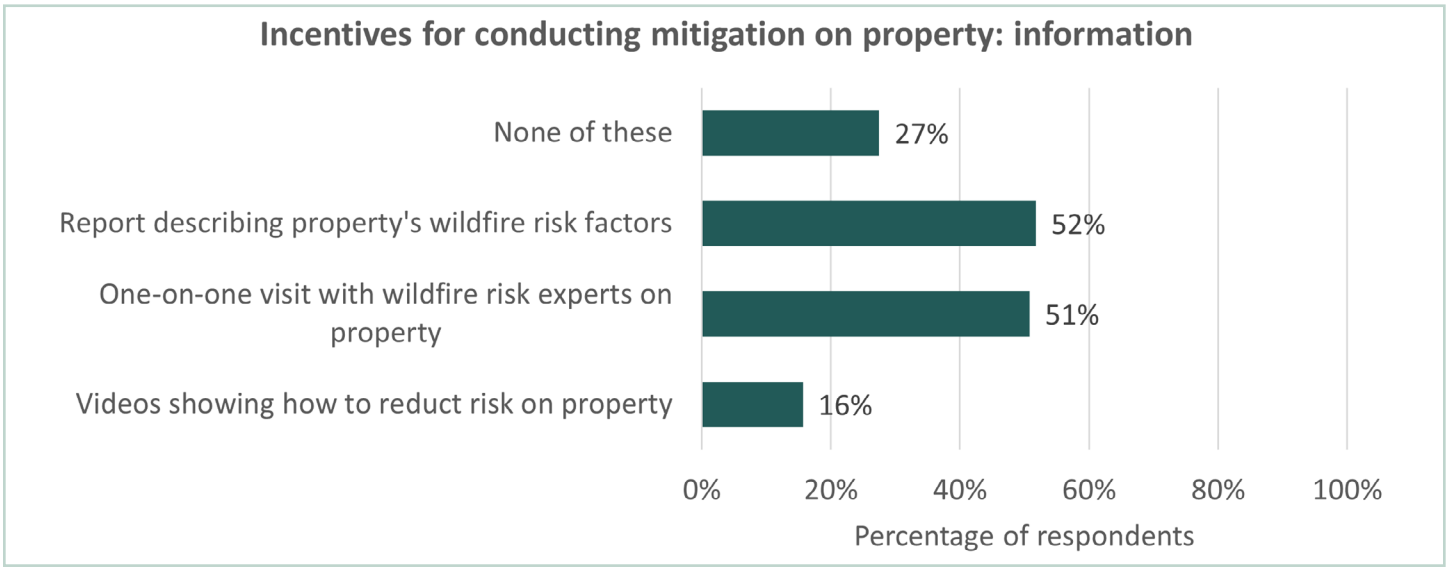


Figure 46—Information incentives for conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 313 respondents for each of the above incentives.

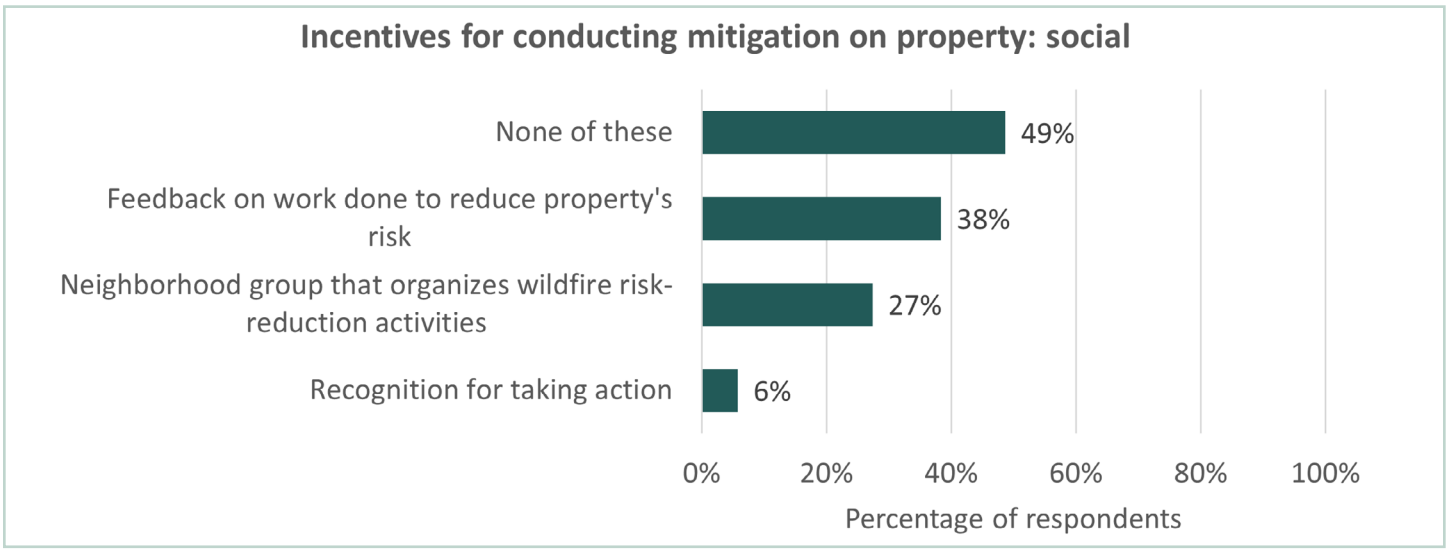


Figure 47—Social incentives for conducting wildfire mitigation activities on property, as reported by respondents residing in the Greater Lake Wenatchee and Plain, Washington, study area. N = 310 respondents for each of the above incentives.

CONCLUSION

This report compares rapid risk assessments conducted by trained assessors (WiRē RA) and homeowner self-assessment of parcel-level wildfire risk in the greater Lake Wenatchee and Plain area, the service district of Lake Wenatchee Fire & Rescue in 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.

Survey respondents reported moderately high levels of general wildfire risk awareness and experience, including a substantial portion who have evacuated due to wildfire (figs. 18–20). Respondents have already taken some action to reduce their wildfire risk (fig. 40), are discussing wildfire with their neighbors (fig. 33), believe that their actions to reduce wildfire are effective, and take responsibility for managing their own wildfire risk (fig. 32). Furthermore, the majority of residents did not report major barriers to mitigation (figs. 41–44). However, respondents have a limited understanding of the drivers of wildfire risk, including mechanisms of ignition (fig. 25) and their property's current risk level (fig. 4). Furthermore, few respondents expect to see a wildfire on their property in the next year (fig. 22). These results indicate that respondents may benefit from increased outreach and education about the drivers of wildfire risk and how to mitigate.

Most survey respondents recognized that vegetation on and surrounding their property, as well as the physical characteristics of their home, contribute to their property's wildfire risk (fig. 26). However, survey respondents' self-assessment of their property's risk tended to be lower than the risk ratings of trained assessors (fig. 4). 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 how to create defensible space and why it matters. Other major contributors to the gap between risk assessments by respondents and trained assessors fall into the background conditions category, particularly distance from the home to dangerous topography (fig. 11) 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 trained assessor perspectives on the components of wildfire risk and to improve the effectiveness of homeowner action.

Results indicate several avenues for encouraging mitigation amongst Lake Wenatchee residents. First, to address the gap between risk assessments by trained assessors and survey respondents, wildfire professionals can provide more specific information on home hardening, vegetation management in the home ignition zone (HIZ), and how to dispose of vegetation. A quarter of respondents reported lack of information about, or options for disposing of vegetation as a barrier to mitigation (figs. 42, 44). About half of respondents indicated that a report describing their property's risk factors or a one-on-one visit to the

property by a wildfire expert would encourage them to mitigate (fig. 46). 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 (see fig. 25). Third, programs that alleviate the cost or effort of mitigation might be popular, given that physical ability was a barrier for about a third of respondents and about half of respondents reported that help doing the work would encourage them to mitigate (figs. 41, 45). This could be particularly true among older residents, as the average age of respondents was 62 years old. Fourth, while results indicate that most respondents have prepared for an evacuation and have a plan (figs. 38–39), 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. Most respondents were accepting of practices including removing vegetation along roadways for safer evacuation, removing trees and other vegetation broadly, managing a naturally ignited fire, reducing other vegetation on HOA property surrounding communities, burning piles of vegetation, and conducting a prescribed fire ignited by fire professionals (fig. 27). Most survey respondents also indicated broad support for regulations and policies in fire-prone areas, such as development standards and building codes, as well as the idea of building a new road to provide an emergency evacuation route. However, respondents were less accepting of the option to temporarily shut off the power grid on extreme fire risk days (fig. 28). To support policymaking efforts in Chelan County, WiRē collaborated with LWFR and other Chelan County partners to develop a two-page pamphlet describing acceptability of wildfire policies and regulations (refer to Appendix F).

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 and find useful (fig. 36) and via communication channels that respondents find useful, particularly email or mailed newsletters and in-person interactions (fig. 37). Lake Wenatchee Fire & Rescue was both the top received by respondents and highest rated in terms of usefulness, thus making LWFR a preferred source of wildfire risk information for respondents. Firewise USA and the community ambassador program were also considered highly useful, although they reached fewer survey respondents. These programs might be expanded. Given LWFR's reputation within the study area, WiRē and LWFR collaborated on a two-page pamphlet sent to all residents in the study area, which answered respondents' key questions about wildfire risk mitigation and provided resources to encourage further action (refer to Appendix F).

APPENDIX A: Correspondence Materials and Household Survey

Correspondence Materials. 52
Household Survey 56

Dear Lake Wenatchee Fire & Rescue Resident,

Lake Wenatchee Fire & Rescue is dedicated to helping our community prepare for and mitigate the damage caused by a wildfire. While fire is an important part of the natural environment, wildfires have the potential to devastate homes and lives. As part of our proactive efforts, Lake Wenatchee Fire & Rescue is collecting information to help residents reduce wildfire risk on their properties and prepare for a wildfire event. Our effort has two components: parcel-level wildfire risk assessments and household surveys.

Wildfire Risk Assessment

This summer, Lake Wenatchee Fire & Rescue personnel will conduct parcel-level wildfire risk assessments from the street to determine how each household can be better prepared to survive a wildfire. Parcel-level assessments are a quick overview of the property characteristics that contribute to wildfire risk, including roof type, vegetation density, and evacuation routes. If you are interested in a more in-depth, on-site, no cost wildfire risk assessment of your home and property, please email homeassessments@lwfr.org or call (509)763-3034.

Living with Wildfire in Chelan County in 2021 Survey

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

If you have any questions about the parcel-level wildfire risk assessments or the household survey, please email or call Janessa Subido, Wildfire Risk Reduction Coordinator, Lake Wenatchee Fire & Rescue at jsubido@lwfr.org or (509)763-3034.

Thank you for participating.
Sincerely,

DAVID WALKER
DAVID WALKER (Jun 10, 2021 17:33 PDT)

David Walker
Fire Chief
Lake Wenatchee Fire & Rescue

Ja... (Jun 10, 2021 17:30 PDT)

Janessa Subido
Wildfire Risk Reduction Coordinator
Lake Wenatchee Fire & Rescue

Lake Wenatchee Fire & Rescue
21696 Lake Wenatchee Hwy, Leavenworth, WA 98826
"Working together to protect life and property while serving our greater community"

Dear Lake Wenatchee Fire & Rescue Resident,

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

Lake Wenatchee Fire & Rescue wants to hear from you. Participation in this survey is voluntary and will take about 20 minutes. We realize your time is valuable and appreciate you completing the survey.

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

If you have any questions about this survey, please email or call Danny Bacheldor, Wildfire Risk Reduction Coordinator at Lake Wenatchee Fire & Rescue at dbacheldor@lwfr.org or (509) 7633034.

Thank you for participating.
Sincerely,

David Walker
David Walker (Apr 6, 2022 12:58 PDT)

David Walker
Fire Chief
Lake Wenatchee Fire & Rescue

Danny Bacheldor (Apr 6, 2022 12:29 PDT)

Danny Bacheldor
Wildfire Risk Reduction Coordinator
Lake Wenatchee Fire & Rescue

Lake Wenatchee Fire & Rescue
21696 Lake Wenatchee Hwy, Leavenworth, WA 98826
"Working together to protect life and property while serving our greater community"

Dear Lake Wenatchee Fire & Rescue Resident,

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

Your responses to the "Living with Wildfire in Chelan County in 2022" survey will help Lake Wenatchee Fire & Rescue 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 Danny Bacheldor, Wildfire Risk Reduction Coordinator at Lake Wenatchee Fire & Rescue at dbacheldor@lwfr.org or (509) 763-3034.

Thank you for participating.
Sincerely,

David Walker
Fire Chief
Lake Wenatchee Fire & Rescue

Danny Bacheldor
Wildfire Risk Reduction Coordinator
Lake Wenatchee Fire & Rescue

Lake Wenatchee Fire & Rescue
21696 Lake Wenatchee Hwy, Leavenworth, WA 98826
"Working together to protect life and property while serving our greater community"

The Wildfire Research Center
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Niwot, CO 80503

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Dear Lake Wenatchee Fire & Rescue Resident,

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

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

Sincerely,

David Walker
Fire Chief
Lake Wenatchee Fire & Rescue

Danny Bacheldor
Wildfire Risk Reduction Coordinator
Lake Wenatchee Fire & Rescue

Living with Wildfire in Chelan County in 2022



Lake Wenatchee Fire & Rescue
21696 Lake Wenatchee Hwy, Leavenworth, WA 98826
https://www.lwfr.org/

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

When choosing a response, please fill in the circle completely. Correct: ● Incorrect: ⊘ ◉ ◔

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

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

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

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

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

_____ Year moved to my Chelan County home

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

_____ Year my Chelan County home was built

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- ☐ Tile, metal, or asphalt shingles
- ☐ Wood (shake shingles)

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

- ☐ Stucco, cement, brick, stone, or other noncombustible siding
- ☐ Log or heavy timbers
- ☐ Wood or vinyl siding

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

- ○ No
- ○ Yes

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

- ○ More than 30 feet or no combustible items
- ○ 5 – 30 feet
- ○ Less than 5 feet

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

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

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

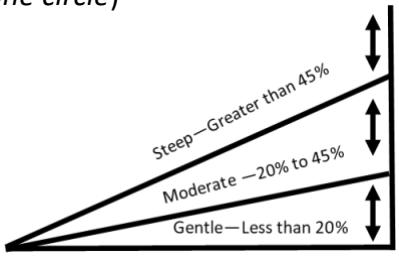
- ◯ Grasses and shrubs
- ◯ Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
- ◯ Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)

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

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

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

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



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

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

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

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

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

- ◯ No
- ◯ Yes →

	No	Yes
Is the posted number visible from the road? *(Fill in one circle)*	◯	◯
Is the posted number blue reflective? *(Fill in one circle)*	◯	◯

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

- ◯ No
- ◯ Yes

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

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

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

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

- ◯ No
- ◯ Yes

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

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

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

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

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

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

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

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

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

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

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

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

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

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

For sure — No chance

100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
○	○	○	○	○	○	○	○	○	○	○

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

For sure — No chance

100%	90%	80%	70%	60%	50%	40%	30%	20%	10%	0%
○	○	○	○	○	○	○	○	○	○	○

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

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

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

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

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

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

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

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

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

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

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

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

Very willing to take risks										Not at all willing to take risks
10	9	8	7	6	5	4	3	2	1	0
○	○	○	○	○	○	○	○	○	○	○

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

_____ years old

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

- ○ Male
- ○ Female
- ○ Other

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

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

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

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

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

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

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

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

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

WiRē Rapid Assessment Form 72
WiRē Rapid Assessment Instructions 74
Data Collection Tool Instructions. 79

WiRē Rapid Assessment Form

	Attribute	Attribute description	Response categories	Attribute weight	Category score
Access	Address posting ([WiRē] Address visibility)	Does the address sign meet all of the standards as identified in the Assessor Reference Guide?	Posted, blue reflective, visible from road	1%	0
			Posted, not blue reflective		5
			Not visible		10
	Ingress/Egress ([WiRē] Emergency egress)	If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?	Two or more roads in/out	1%	0
			One road in/out		10
			Unknown - not observed		11
	Driveway clearance ([WiRē] Driveway clearance)	Does the driveway meet the horizontal and vertical clearance standards as identified in the Assessor Reference Guide?	Greater than 14' height and width	1%	0
			Meets one standard, but not both		5
			Does not meet either standard		10
			Unknown - not observed		11
	Driveway length ([WiRē] Driveway length)	What best describes the driveway?	Less than 150' long	1%	0
			150' or more **with** "adequate" turnaround		5
			150' or more **without** "adequate" turnaround		10
			Unknown - not observed		11
Background Conditions	Distance to dangerous topography ([WiRē] Distance to topography)	What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?	Greater than 150'	5%	0
			Between 50' - 150'		25
			Less than 50'		50
			Unknown - not observed		51
	Slope ([WiRē] Property slope)	The "slope" or "grade" of a property refers to the steepness of the land. A large property may have steep, moderate, and gentle slopes. How would you describe the overall slope of the property?	Gentle - (<20%)	2%	0
			Moderate - (20% - 45%)		10
			Steep - (>45%)		20
			Unknown - not observed		21
	Adjacent fuels ([WiRē] Adjacent fuels)	Which of the following best describes the dominant vegetation 100' - 150' from the home. *This may be outside the property boundary.*	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 *other than* 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?	Non-combustible (Tile, metal, or asphalt shingles)	30%	0
			Combustible (Wood - shake shingles)		300
			Unknown - not observed		301
	Building exterior ([WiRē] Siding materials)	What is the most vulnerable exterior siding material?	Non-combustible (Stucco, cement, brick, stone, or other noncombustible siding)	7%	0
			Log or heavy timbers		35
			Wood or vinyl siding		70
			Unknown - not observed		71
	Combustible attachments ([WiRē] Attachments)	Does the home have a combustible balcony, deck, porch, or fence attached to the structure?	No - none	10%	0
			Yes - attached deck, fence, or other combustible structure(s)		100
			Unknown - not observed		101
	Proximity to adjacent homes ([WiRē] Proximity to neighboring homes)	What is the closest distance to a neighboring home?	More than 100’	20%	0
			30’ - 100’		50
			10’ - 29’		100
			Less than 10’		200
			Unknown - not observed		201
			Total checks	100%	1000

WiRē Rapid Assessment Instructions

Attribute	Description	Response categories	Rationale & Additional Considerations
STRUT_TYP	**What is the primary use of the structure?**	Single family residential	This question and response categories come directly from the NIFC structure triage survey.
		Multifamily residential	
		Mobile	
		Commercial	
		Industrial	
		Barn / shop / garage	
		Other	
		Unknown	
		Outbuilding	
		None	
[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	Use this category if the address sign fully meets or exceeds the local standard: visible from the public road and blue reflective.
		Posted, not blue reflective	Use this category if the address sign is visible from the road but IS NOT blue reflective. If there is a a local address sign standard, use this category if the address sign is visible from the road but does not meet all of the local standards.
		Not visible	Use this category if the address sign either (A) does not appear to exist or (B) is not visible. Use this category regardless of the whether or not the address sign meets the WiRe or local standard or not.
[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	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.
		One road in/out	
		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] 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 DrivewyClear, 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 signficantly 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 signficant factors, we know that as slope increases, the potential for elevated fire behavior characteristics increases correspondingly. To this end, the intent of this domain is to raise/increase awareness about this basic wildfire behavior fact so that those folks that have homes on steep slopes are extra diligent with regards to mitigation and preparedness - as they should be. But how do we measure slope? Slope is a measurement of the vertical rise between at least two points. To maintain consistency, we recommend that each assessor utilize the same methodology for estimating slope. The recommended methodology is as follows: Draw an imaginary transect that is 300 feet in length with the center of the transect being the center of the home that is being assessed. There will then be 150 feet of distance along the transect, in either direction, from the center of the home. Situate the transect so that it is perpendicular to the countours of the slope. Please note that the transect must be a straight line. If numerous undulations/topographic complexities exist, do your best to make an estimate of the overall lay of the land within approximately 150 feet of the home. Estimate the total elevation change (in feet) along the transect by subtracting the the lowest elevation at one end of the transect to the highest elevational point at the opposite end of the transect. Finally, divide the elevation change number by 300 and multiply that result by 100. Example: If you estimate a change of 38 feet in elevation between to the two ends of the imaginary transect then your percent slope is equal to 38/300=12.66%. If you estimate 120 feet of elevation change than the percent slope is equal to 120/300= 40%. A clinometer is a simple tool to estimate slope. This type of measurement can also be done using GIS. **PLEASE NOTE THE DIFFERENCE BETWEEN PERCENT SLOPE AND DEGREES.**
		Moderate - (20% - 45%)	
		Steep - (> 45%)	
		Unknown - not observed	
[WiRē] Adjacent fuels	**Which of the following best describes the dominant vegetation 100' - 150' from the home. *This may be outside the property boundary.***	Light - grasses and shrubs	Light - grasses and shrubs
		Medium - Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)	Medium - Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)
		Dense - Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)	Dense - Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)
		Unknown - not observed	If you observe the attribute, but are unsure of the correct response category, choose the riskiest option. If you can not observe the attribute at all, choose "Unknown - not observed."

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 *particular* 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.

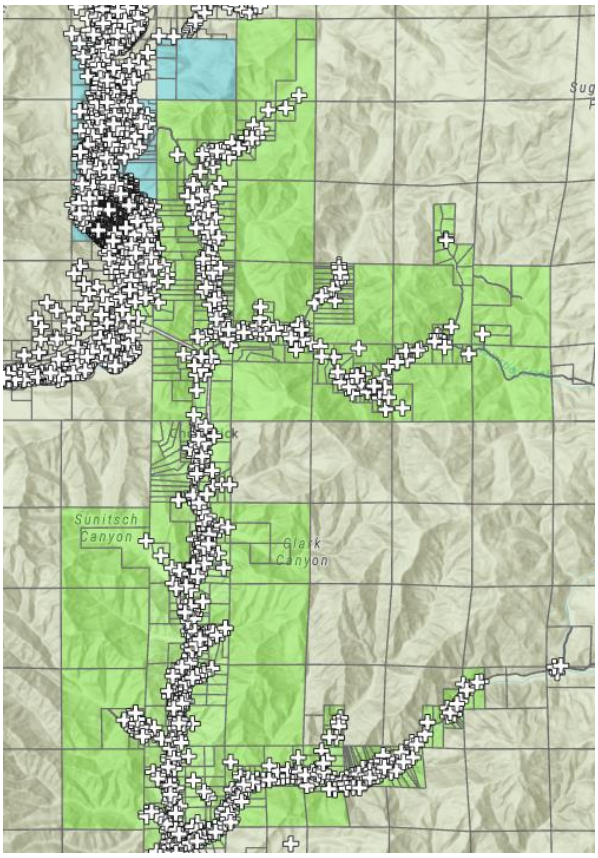
Attribute	Description	Response categories	Rationale & Additional Considerations
[WiRē] Siding materials	**What is the most vulnerable exterior siding material?**	Non-combustible (Stucco, cement, brick, stone, or other noncombustible siding)	This category includes brick, stone, block, concrete synthetic 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 ignititions (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.		

The Wildfire Research Center
WiRē

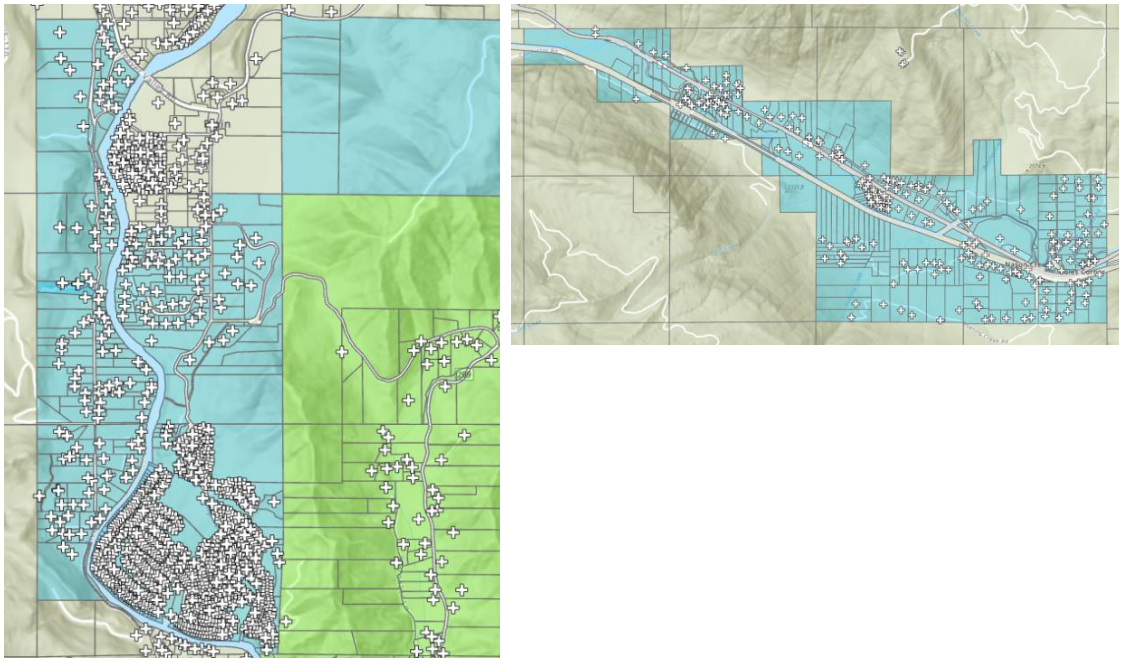
1 Chelan County Fire District 1, 3, and 9 Rapid Assessment Instructions for Using Collector

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.

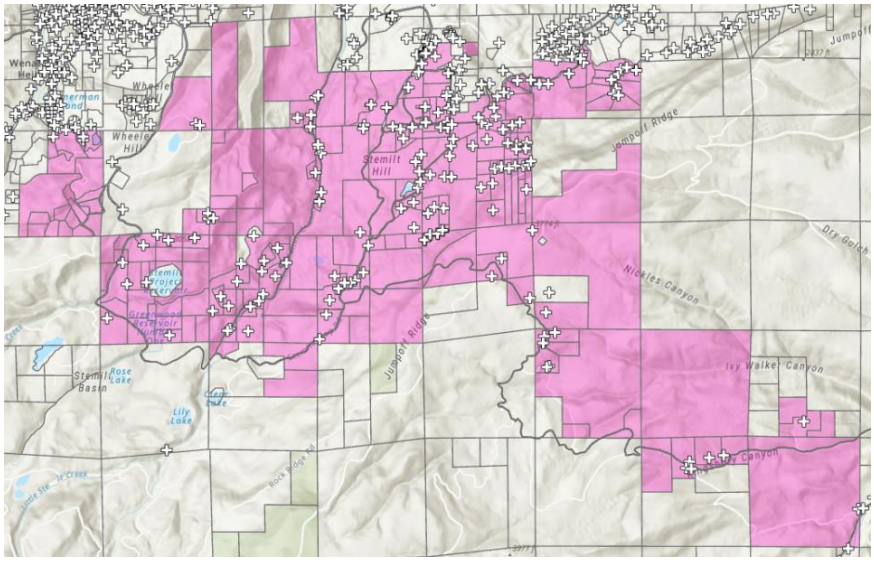
Be consistent with the response categories throughout data collection. The goal of the WiRē RAs is to assess all parcels with residential structures in the study area, which comprise approximately 2,178 parcels - 801 in CCFD3, 1,178 in CCFD9, and 239 in CCFD1. These parcels are indicated on the maps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



Map 1. Chelan County Fire District 3

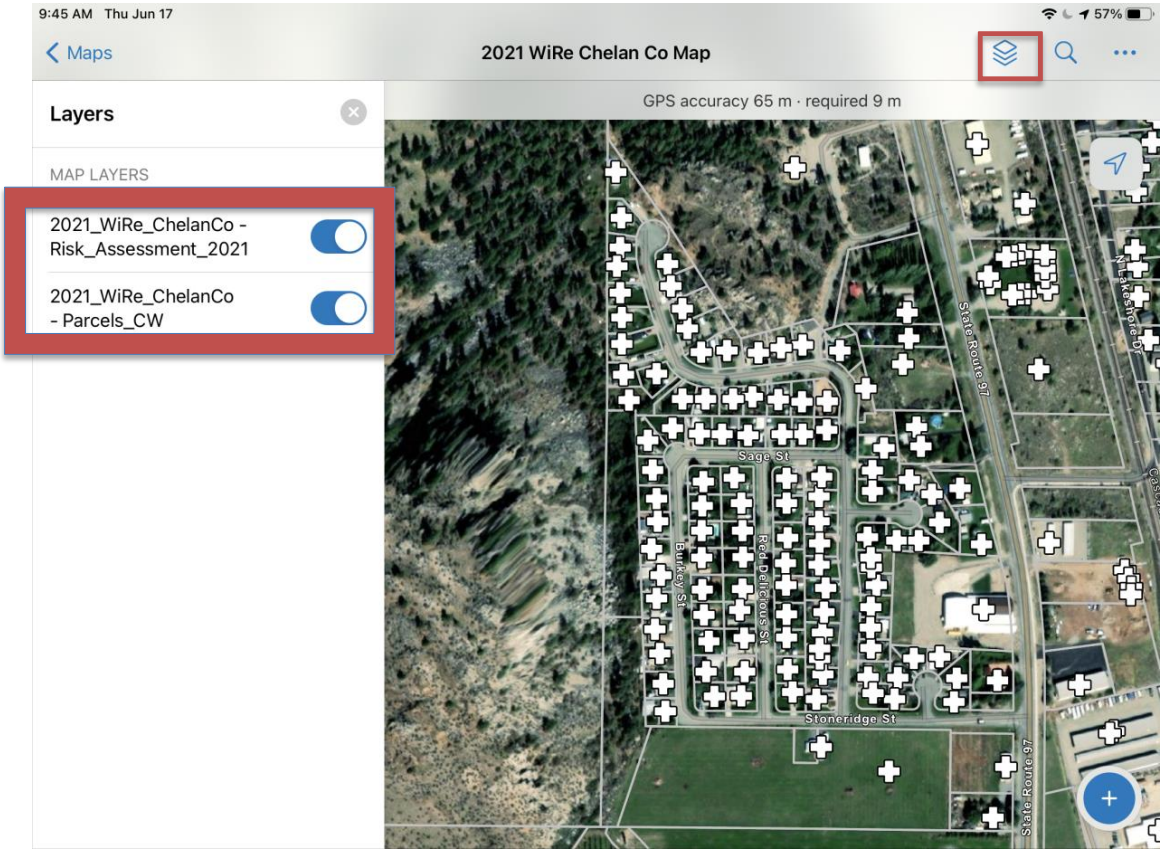


Map 2. Chelan County Fire District 9

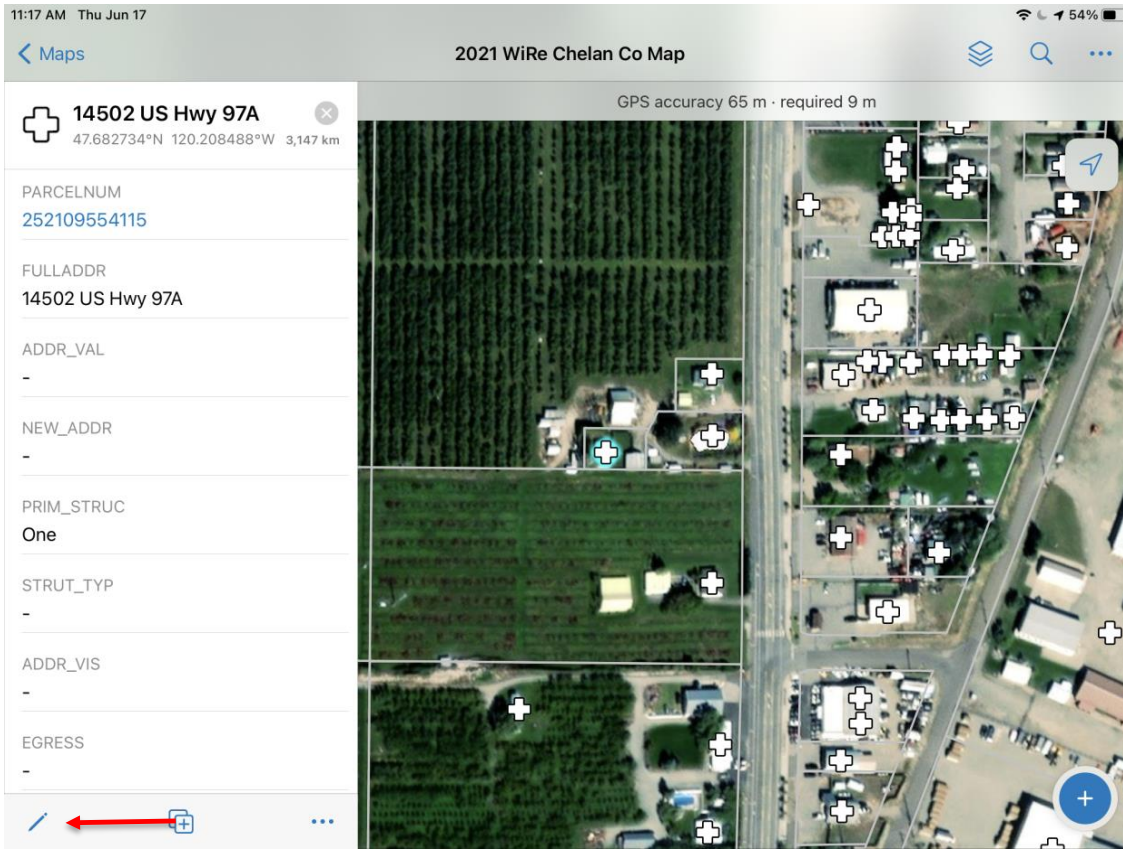


Map 3. Chelan County Fire District 1

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 Lake Wenatchee Fire and Rescue Rapid Assessment Summary

The Lake Wenatchee Fire and Rescue mitigation specialists conducted parcel-level rapid wildfire risk assessments in 2021 and 2022. Risk assessment data was collected as a census of all residential properties with a structure in the study area[1]. The rapid wildfire risk assessments were conducted for 822 residential properties using the standard WiRē Rapid Wildfire Risk Assessment ("rapid assessment"), 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 rapid assessment is evaluated relative to other private land parcels within the study area. As a result, the rapid assessment 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 rapid assessment, 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, Lake Wenatchee Fire and Rescue 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 Lake Wenatchee Fire and Rescue mitigation specialists could not observe a risk attribute, the specialist selected "unknown/not observed." It is WiRē's protocol to assign the "unknown/not observed" and true missing data (i.e., the mitigation specialist did not select a response) the highest risk score for the attribute in question. This is consistent with other parcel risk and structure protection assessments. If a particular attribute is "unknown/not observed" or missing, practitioners and firefighters assume that

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

** This project was supported with funding from USDA Forest Service, Washington Office Fire and Aviation Management.*
**All data received and processed as of June 9, 2022*
**Document prepared August 22, 2022*

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

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

The following tables present a summary of the Lake Wenatchee Fire and Rescue mitigation specialists' responses to the 13 risk attributes in the rapid assessment. 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 Based on the sum of the 13 attribute scores.		
Response categories	**Score range**	**All rapid assessments in study area (N=822)**
Low	20-240	2%
Moderate	241-305	6%
High	306-435	54%
Very high	436-505	22%
Extreme	506-1000	16%

1.2 Access

Risk attribute: Address Posting (1% of total rapid assessment score) Does the address sign meet all local standards (Posted, blue reflective, visible from the road)		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Fully meets standard	0	50%
Address sign is visible, but **does not meet all** standards	5	35%
Not posted/visible from the primary road	10	15%[a]
a. Out of a*ll rapid assessments in study area*, 22 were missing/unobserved (3%) and included in the highest risk category.		

Risk attribute: Ingress/Egress (1% of total rapid assessment score) If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Two or more roads in/out	0	6%
One road in/out	10	94% [a]
a. Out of a*ll rapid assessments in study area*, 3 were missing/unobserved (<1%) and included in the highest risk category.		

Risk attribute: Driveway clearance (1% of total rapid assessment score) Does the driveway meet the horizontal and vertical clearance standards: height and width greater than 14'?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Meets **all** driveway standards	0	64%
Meets one, but not both, standards (height or width)	5	17%
Does not meet either standard (height and width)	10	19% [a]
a. Out of a*ll rapid assessments in study area*, 55 were missing/unobserved (7%) and included in the highest risk category.		

Risk attribute: Driveway length (1% of total rapid assessment score) What best describes the driveway?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Less than 150’ long	0	76%
150’ or more **with** “adequate” turnaround	5	8%
150’ or more **without** “adequate” turnaround	10	16% [a]
a. Out of a*ll rapid assessments in study area*, 10 were missing/unobserved (1%) and included in the highest risk category.		

1.3 Background conditions

Risk attribute: Distance to dangerous topography (5% of total rapid assessment score) What is the closest distance from the home to a ridge, steep drainage, or narrow canyon?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Greater than 150'	0	40%
Between 50' - 150'	25	15%
Less than 50'	50	45% [a]
a. Out of a*ll rapid assessments in study area*, 92 were missing/unobserved (11%) and included in the highest risk category.		

Risk attribute: Slope (2% of total rapid assessment score) 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 slope of the property within 150’ of the home?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Gentle - less than 20%	0	67%
Moderate - between 20% and 45%	10	26%
Steep - greater than 45%	20	8% [a]
a. Out of a*ll rapid assessments in study area*, 2 were missing/unobserved (<1%) and included in the highest risk category.		

Risk attribute: Adjacent Fuels (4% of total rapid assessment 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 rapid assessments in study area (N=822)**
Light – grasses and shrubs	10	39%
Medium – Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)	20	55%
Dense – Dense brush and/or isolated trees (ex. continuous pine, fir, or other evergreen trees)	40	6% [a]
a. Out of a*ll rapid assessments in study area*, 2 were missing/unobserved (<1%) and included in the highest risk category.		

1.4 Defensible space

Risk attribute: Defensible Space (10% of total rapid assessment score) What is the closest distance from the home to overgrown, dense, or unmaintained vegetation?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
More than 100'	0	1%
Between 30' - 100'	50	11%
Between 5' - 29'	75	78%
Less than 5'	100	9% [a]
a. Out of a*ll rapid assessments in study area*, 2 were missing/unobserved <1%) and included in the highest risk category.		

Risk attribute: Other combustibles (8% of total rapid assessment 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 rapid assessments in study area (N=822)**
More than 30' or no combustible items	0	4%
Between 5' - 30'	40	57%
Less than 5'	80	39% [a]
a. Out of a*ll rapid assessments in study area*, 3 were missing/unobserved (<1%) and included in the highest risk category.		

1.5 Home ignition potential

Risk attribute: Roof (30% of total rapid assessment score) What is the most vulnerable roofing material?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Non-combustible (tile, metal, or asphalt shingles, or flat composition)	0	91%
Combustible (wood shake shingles)	300	9% [a]
a. Out of a*ll rapid assessments in study area*, 5 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Building Exterior (7% of total rapid assessment score) What is the most vulnerable exterior siding material?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
Stucco, cement, brick, stone, or other noncombustible siding	0	47%
Log or heavy timbers	35	0%
Wood or vinyl siding	70	53% [a]
a. Out of a*ll rapid assessments in study area*, 9 were missing/unobserved (1%) and included in the highest risk category.		

Risk attribute: Combustible Attachments (10% of total rapid assessment score) Does the home a combustible balcony, deck, porch/portal, or fence attached to the structure?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
No combustible attachments	0	9%
Combustible attachments present	100	91% [a]
a. Out of a*ll rapid assessments in study area*, 28 were missing/unobserved (3%) and included in the highest risk category.		

Risk attribute: Proximity to adjacent homes (20% of total rapid assessment score) What is the closest distance to a neighboring home?		
Response categories	**Score**	**All rapid assessments in study area (N=822)**
More than 100’	0	23%
Between 30’ – 100’	50	41%
Between 10’ – 29’	100	32%
Less than 10’	200	4% [a]
a. Out of a*ll rapid assessments in study area*, 3 were missing/unobserved (<1%) and included in the highest risk category.		

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

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The Wildfire Research Center
WiRē

Chelan County Rapid Assessment Compared to Household Survey Responses

Lake Wenatchee Fire and Rescue 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 332 properties for which we have a rapid assessment paired with household survey. There are an additional 490 properties with only a rapid assessment, for a total of 822 rapid assessments in the study area. Within this document, we present the following:

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

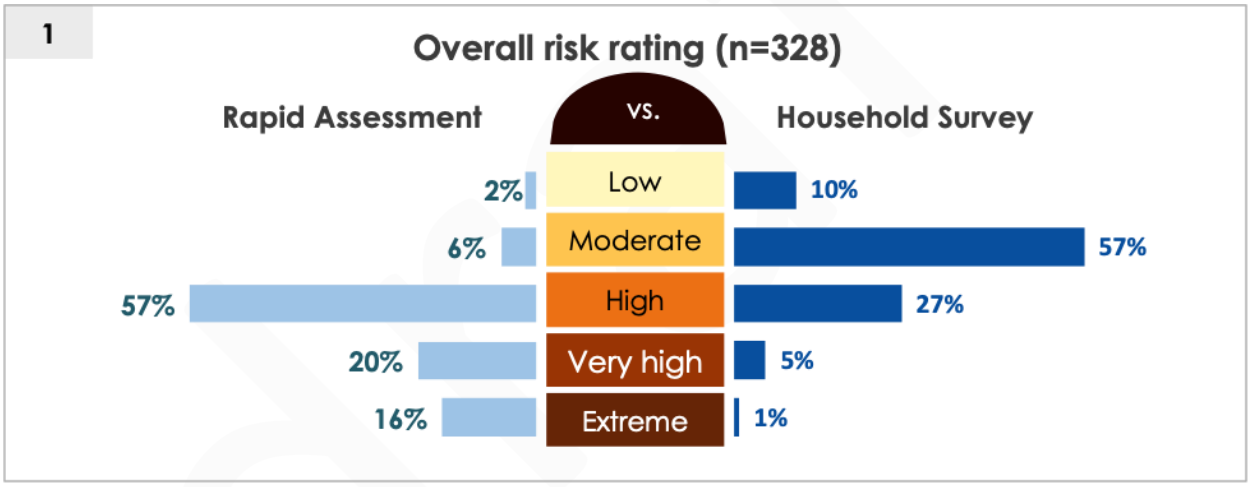
Section 1 and Section 2 are organized by overall risk rating, followed by the attribute-level risk ratings. The attribute-level risk ratings are grouped into the following categories: access, background conditions, defensible space, and home ignition potential.

** This project was funded by USDA Forest Service, Washington Office Fire and Aviation Management. The household survey administration was paid for by Lake Wenatchee Fire Rescue, 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 March 29, 2023*

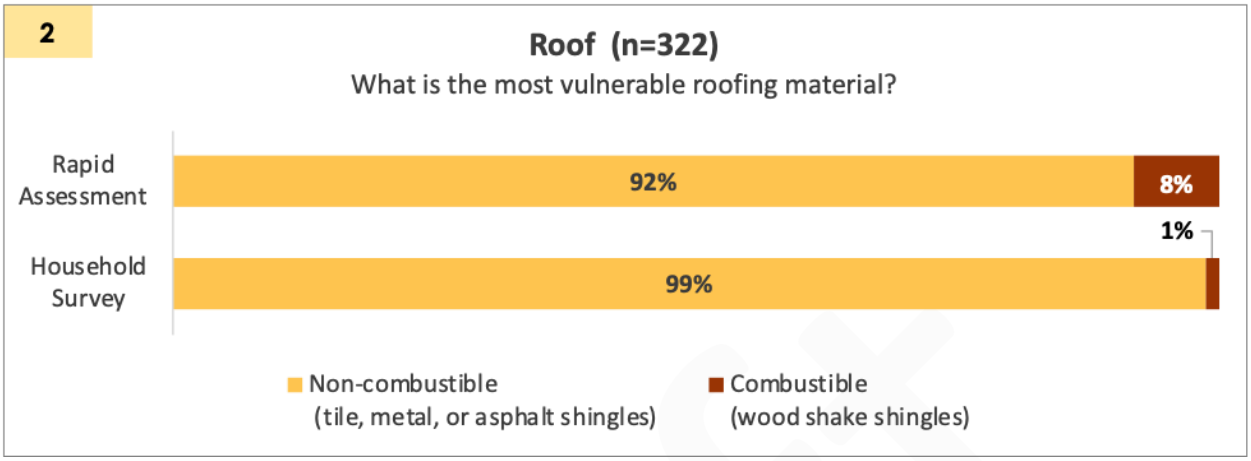
1. Comparison of paired WiRē Rapid Assessment vs. Household Survey

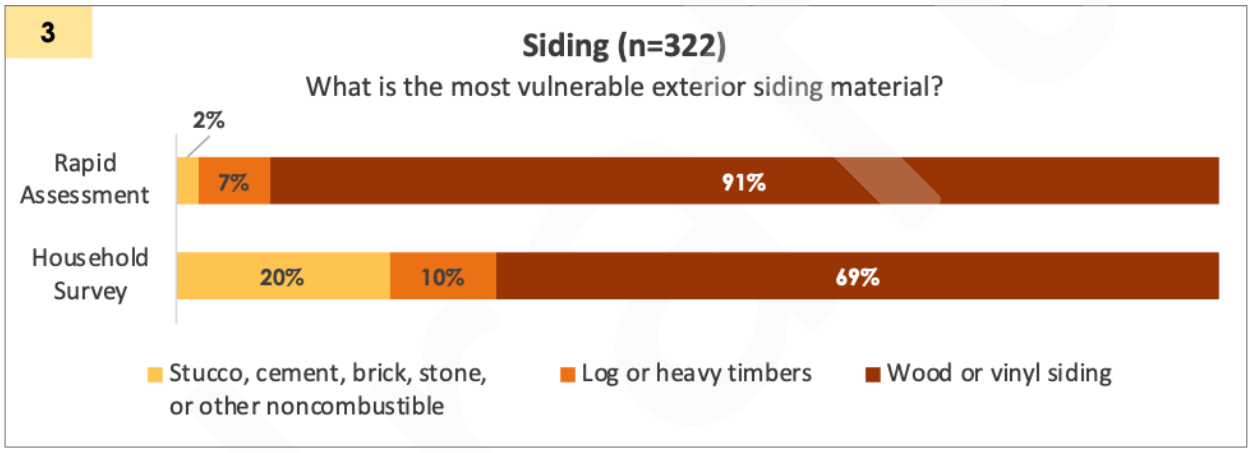
In this section, we compare professional risk ratings and household survey respondents' self-assessments for properties' overall risk rating and the 13 risk attributes included in the rapid assessment. These comparisons are presented as graphs. For the overall risk rating, the professional risk ratings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

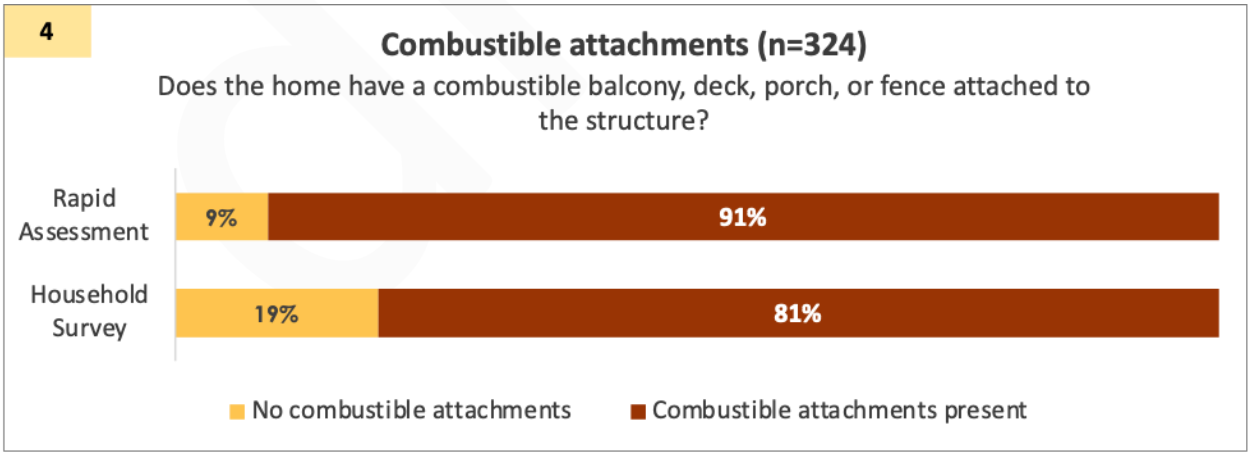
1.1. Overall risk rating

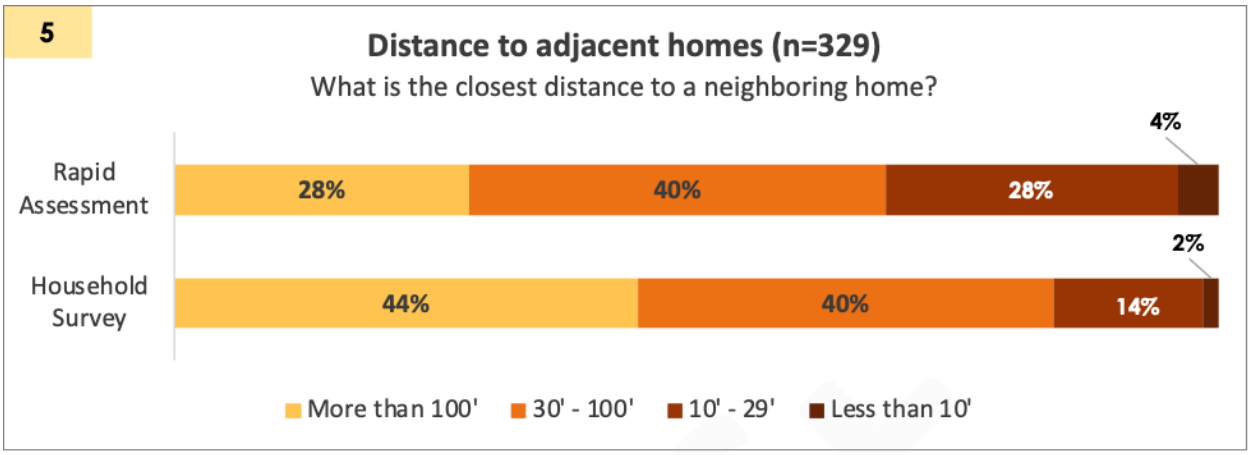


1.2. Home ignition potential

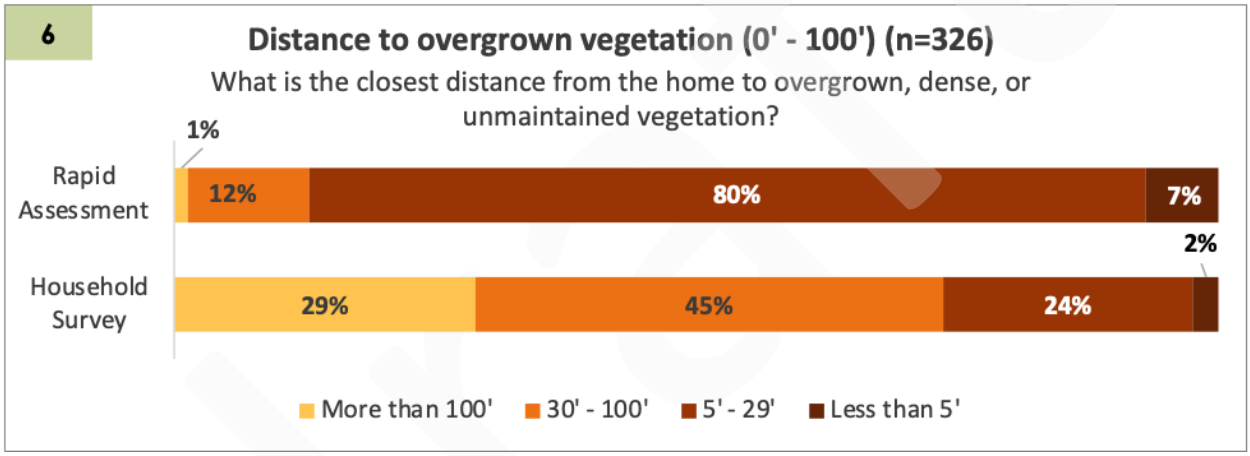


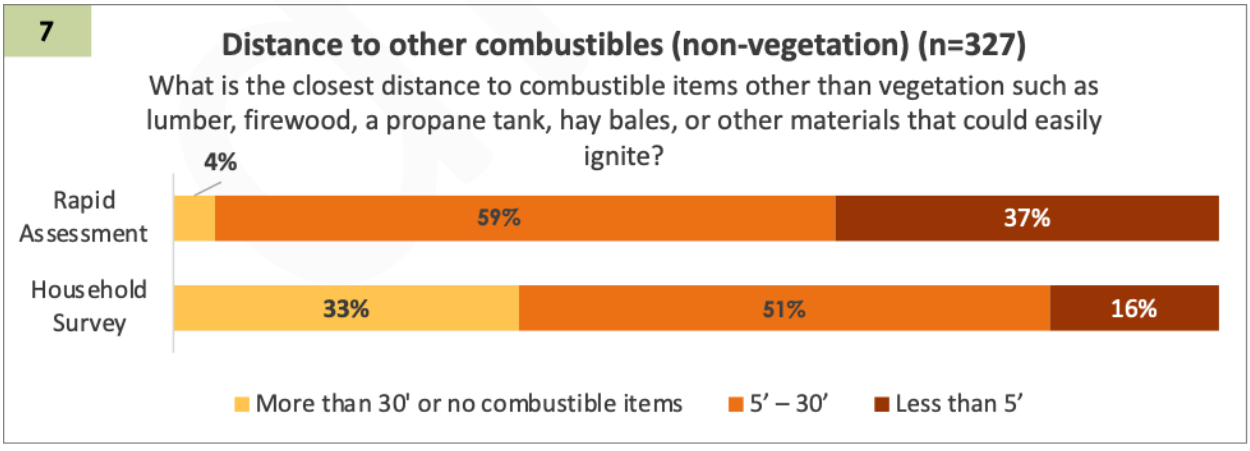




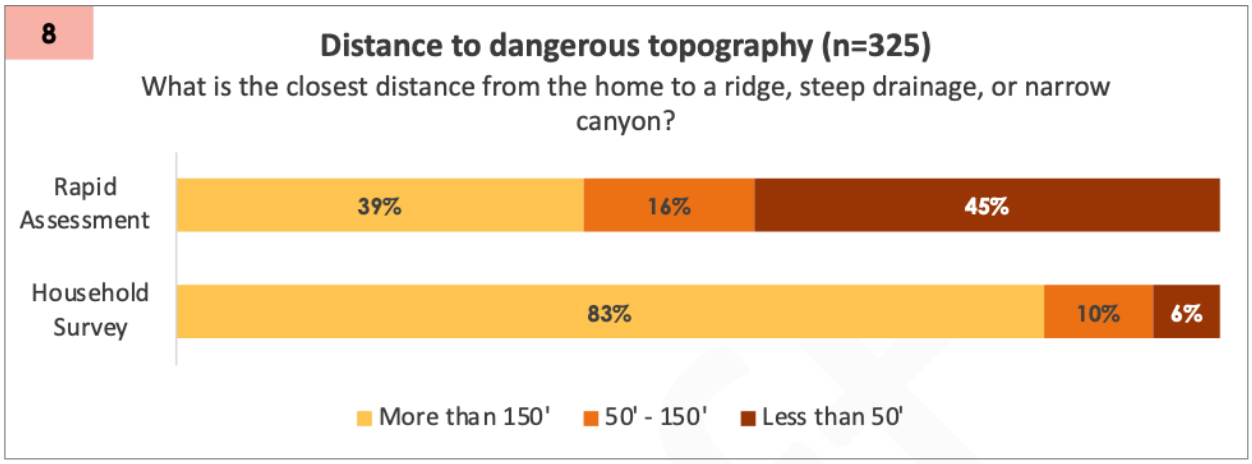


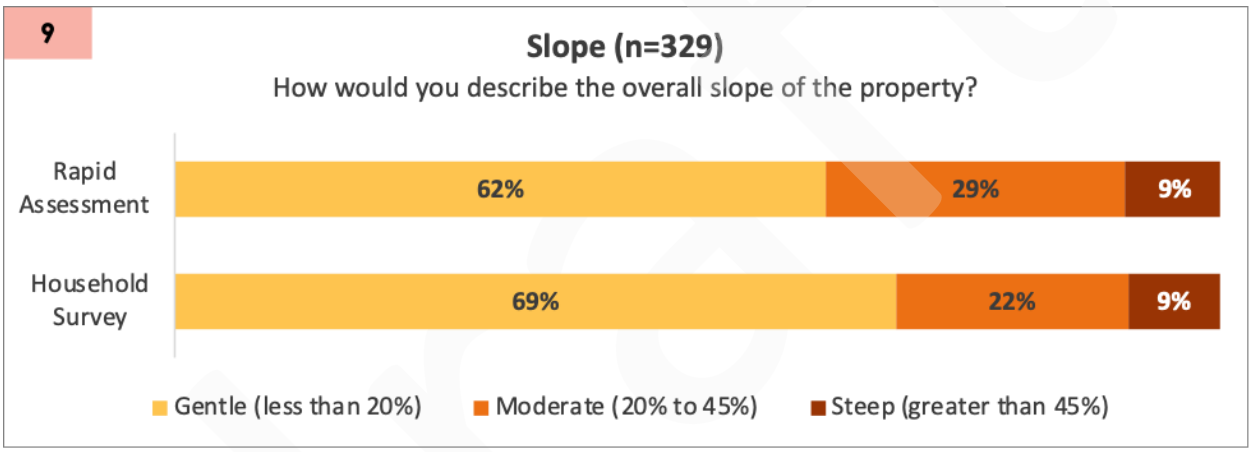
1.3. Defensible space

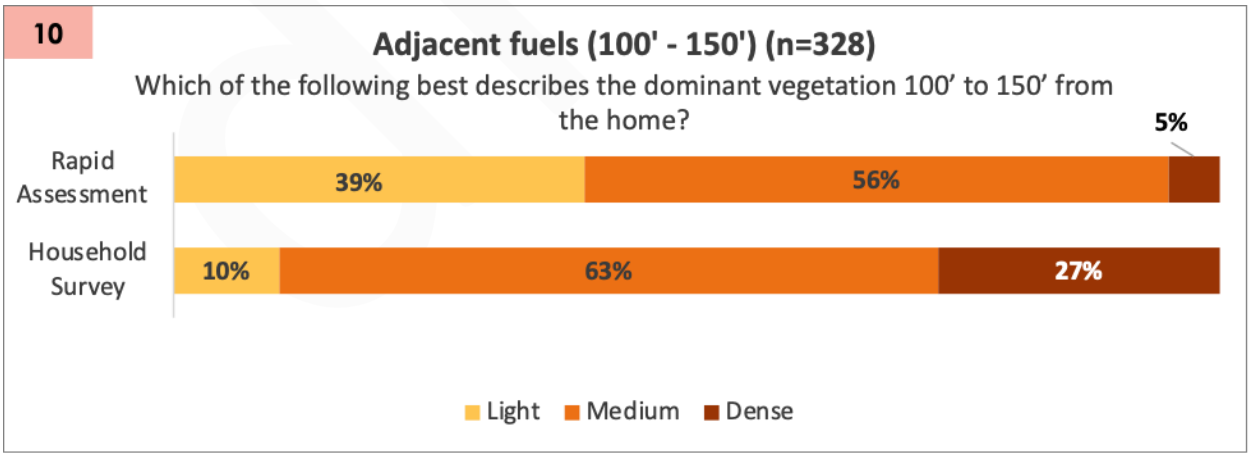




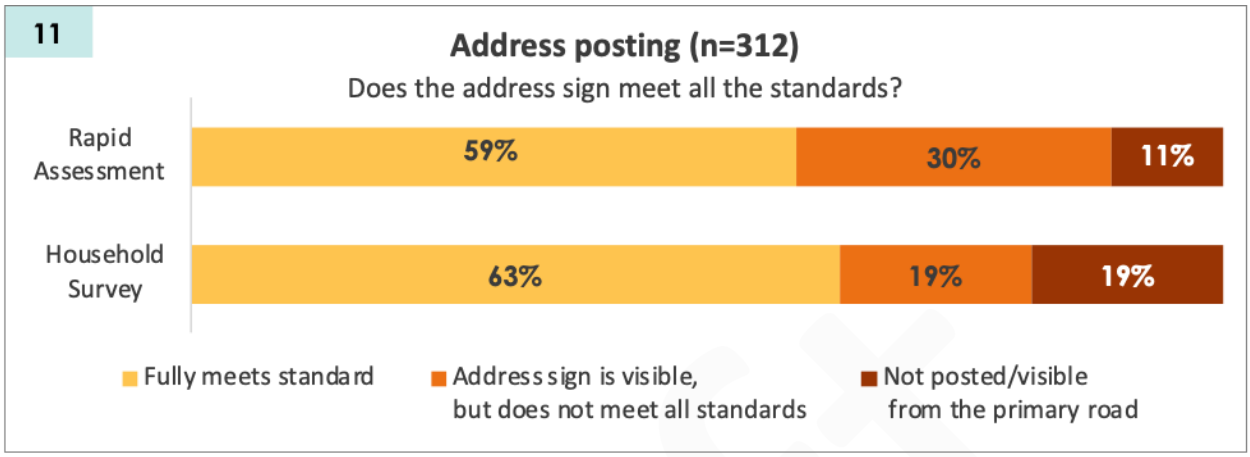
1.4. Background conditions

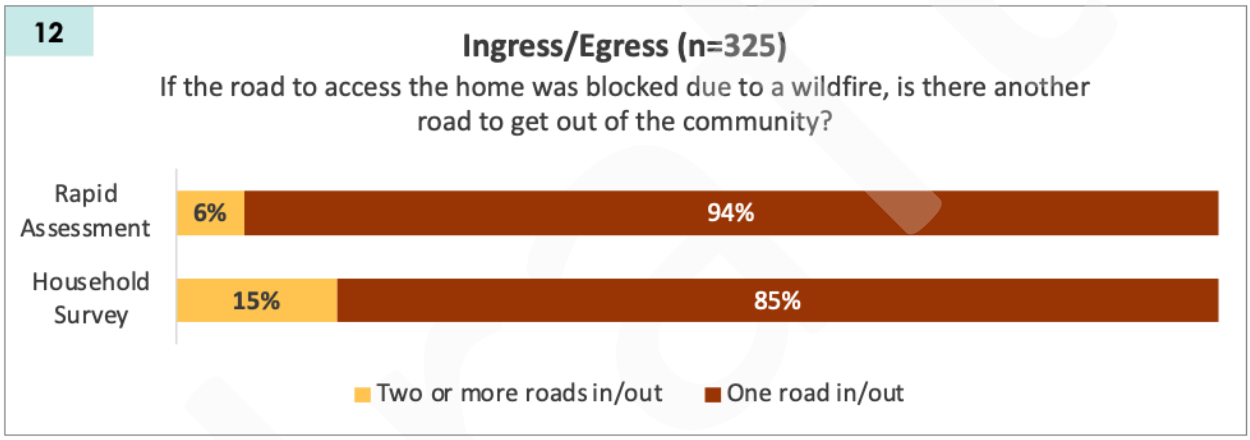


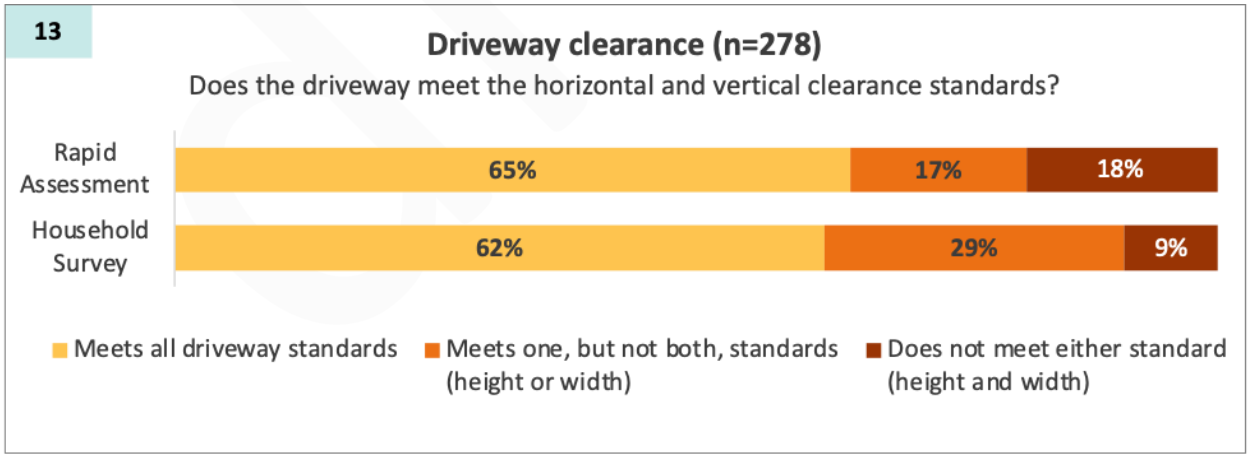


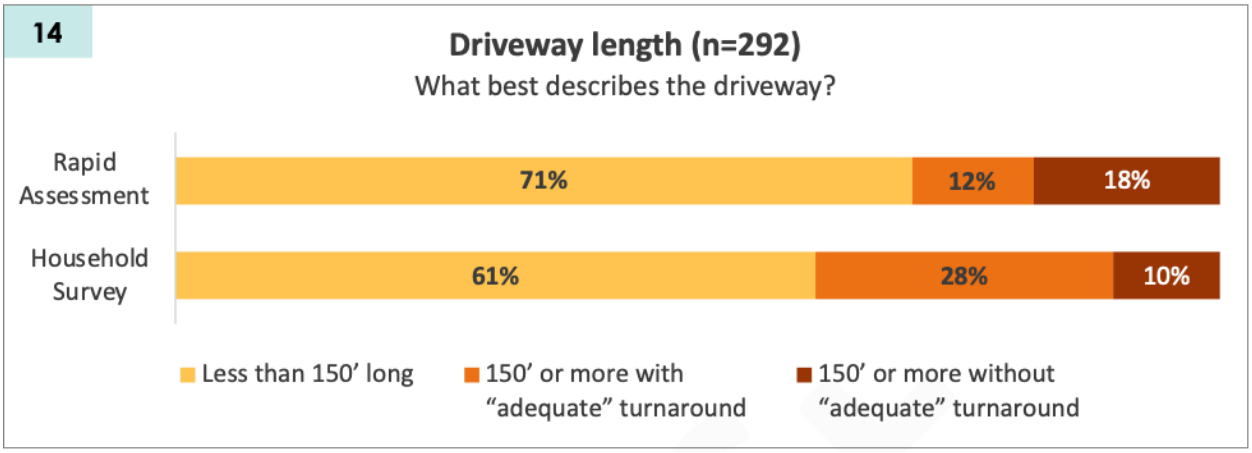


1.5. Access


11
Address posting (n=312)
Does the address sign meet all the standards?
Rapid Assessment
59%
30%
11%
Household Survey
63%
19%
19%
Fully meets standard
Address sign is visible, but does not meet all standards
Not posted/visible from the primary road


12
Ingress/Egress (n=325)
If the road to access the home was blocked due to a wildfire, is there another road to get out of the community?
Rapid Assessment
6%
94%
Household Survey
15%
85%
Two or more roads in/out
One road in/out


13
Driveway clearance (n=278)
Does the driveway meet the horizontal and vertical clearance standards?
Rapid Assessment
65%
17%
18%
Household Survey
62%
29%
9%
Meets all driveway standards
Meets one, but not both, standards (height or width)
Does not meet either standard (height and width)


14
Driveway length (n=292)
What best describes the driveway?
Rapid Assessment
71%
12%
18%
Household Survey
61%
28%
10%
Less than 150' long
150' or more with "adequate" turnaround
150' or more without "adequate" turnaround

draft

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.

1.1 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=822)	Subset of rapid assessments with a paired household survey (N=328)	Self-assessment from household surveys (N=328)
Low	2%	2%	10%
Moderate	6%	6%	57%
High	54%	57%	27%
Very high	22%	20%	5%
Extreme	16%	16%	1%

1.2 Home ignition potential

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

Response categories	All rapid assessments in study area (N=822)	Subset of rapid assessments with a paired household survey (N=322	Self-assessment from household surveys (N=322)
Non-combustible (tile, metal, or asphalt shingles)	91%	92%	99%
Combustible (wood shake shingles)	9%	8%	1%

a. Out of all rapid assessments in the study area, 5 were missing/unobserved (<1%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 0 were missing/unobserved.

Risk attribute: Siding What is the most vulnerable exterior siding material?			
Response categories	**All rapid assessments in study area (N=822)**	**Subset of rapid assessments with a paired household survey (N=322)**	**Self-assessment from household surveys (N=322)**
Stucco, cement, brick, stone, or other noncombustible siding	6%	2%	20%
Log or heavy timbers	7%	7%	10%
Wood or vinyl siding	87%	91%	69%
a. Out of all rapid assessments in the study area, 9 were missing/unobserved (1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 3 were missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Combustible Attachments Does the residence have a combustible balcony, deck, porch, or fence attached to the structure?			
Response categories	**All rapid assessments in study area (N=822)**	**Subset of rapid assessments with a paired household survey (N=324)**	**Self-assessment from household surveys (N=324)**
No combustible attachments	9%	9%	19%
Combustible attachments present*	91%	91%	81%
a. Out of all rapid assessments in the study area, 28 were missing/unobserved (3%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 9 were missing/unobserved (3%) 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=822)**	**Subset of rapid assessments with a paired household survey (N=329)**	**Self-assessment from household surveys (N=329)**
More than 100’	23%	28%	44%
30’ – 100’	41%	40%	40%
10’ – 29’	32%	28%	14%
Less than 10’	4%	4%	2%
a. Out of all rapid assessments in the study area, 3 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) and included in the highest risk category.			

1.3 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=822)**	**Subset of rapid assessments with a paired household survey (N=326)**	**Self-assessment from household surveys (N=326)**
More than 100'	1%	1%	29%
Between 30' - 100'	11%	12%	45%
Between 5' - 29'	78%	80%	24%
Less than 5'	9%	7%	2%
a. Out of all rapid assessments in the study area, 2 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) and included in the highest risk category.			

Risk attribute: Distance to other combustibles (non-vegetation) What is the closest distance to combustible items other than vegetation such as lumber, firewood, a propane tank, hay bales, or other materials that could easily ignite?			
Response categories	**All rapid assessments in study area (N=822)**	**Subset of rapid assessments with a paired household survey (N=327)**	**Self-assessment from household surveys (N=327)**
None, greater than 30' from structure	4%	4%	33%
Between 5'-30' from structure	57%	59%	51%
Less than 5' from structure*	39%	37%	16%
a. Out of all rapid assessments in the study area, 3 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 3 were missing/unobserved (<1%) and included in the highest risk category.			

1.4 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=822)	Subset of rapid assessments with a paired household survey (N=325)	Self-assessment from household surveys (N=325)
More than 150'	40%	39%	83%
50' - 150'	15%	16%	10%
Less than 50'	45%	45%	6%

a. Out of all rapid assessments in the study area, 92 were missing/unobserved (11%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 29 were missing/unobserved (9%) and included in the highest risk category.

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=822)	Subset of rapid assessments with a paired household survey (N=329)	Self-assessment from household surveys (N=329)
Gentle (less than 20%)	67%	62%	69%
Moderate (between 20% and 45%)	26%	29%	22%
Steep (greater than 45%)	8%	9%	9%

a. Out of all rapid assessments in the study area, 2 were missing/unobserved (<1%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) and included in the highest risk category.

Risk attribute: Adjacent Fuels (100 – 150 ft) Which of the following best describes the dominant vegetation 100'-150' from the home? This may be outside the property boundary.			
Response categories	**All rapid assessments in study area (N=822)**	**Subset of rapid assessments with a paired household survey (N=328)**	**Self-assessment from household surveys (N=328)**
Light	39%	39%	10%
Moderate	55%	56%	63%
Dense	6%	5%	27%
a. Out of all rapid assessments in the study area, 2 were missing/unobserved (<1%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) and included in the highest risk category.			

1.5 Access

Risk attribute: Address Posting Does the address sign meet all of the standards?			
Response categories	**All rapid assessments in study area (N=822)**	**Subset of rapid assessments with a paired household survey (N=312)**	**Self-assessment from household surveys (N=312)**
Fully meets standard	50%	59%	63%
Address sign is visible, but **does not meet all** standards	35%	30%	19%
Not posted/visible from the primary road	15%	11%	19%
a. Out of all rapid assessments in the study area, 22 were missing/unobserved (3%) and included in the highest risk category. b. Out of the subset of rapid assessments with a paired household survey, 10 were missing/unobserved (3%) and included in the highest risk category.			

Risk attribute: Ingress/Egress
If the road to access the residence was blocked due to a wildfire, is there another road to get out of the community?

Response categories	All rapid assessments in study area (N=822)	Subset of rapid assessments with a paired household survey (N=325)	Self-assessment from household surveys (N=325)
Two or more roads in/out	6%	6%	15%
One road in/out	94%	94%	85%

a. Out of all rapid assessments in the study area, 3 were missing/unobserved (<1%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) 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=822)	Subset of rapid assessments with a paired household survey (N=278)	Self-assessment from household surveys (N=278)
Meets **all** driveway standards	64%	65%	62%
Meets one, but not both, standards (height or width)	17%	17%	29%
Does not meet either standard (height or width)	19%	18%	9%

a. Out of all rapid assessments in the study area, 55 were missing/unobserved (7%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 25 were missing/unobserved (9%) 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=822)	Subset of rapid assessments with a paired household survey (N=292)	Self-assessment from household surveys (N=292)
150 feet long or less	76%	71%	62%
Longer than 150 feet with turnaround “adequate” turnaround	8%	12%	28%
Longer than 150 feet without “adequate” turnaround	16%	18%	10%

a. Out of all rapid assessments in the study area, 10 were missing/unobserved (1%) and included in the highest risk category.
b. Out of the subset of rapid assessments with a paired household survey, 2 were missing/unobserved (<1%) and included in the highest risk category.

APPENDIX E: Wildfire Research (WiRē) Household Survey Summary

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Living with Wildfire in Chelan County in 2022



Lake Wenatchee Fire & Rescue
21696 Lake Wenatchee Hwy, Leavenworth, WA 98826
https://www.lwfr.org/

Number of completed surveys: 336
Number of surveys mailed: 752
n = number of observations
Response rate: 44.7%
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 Lake Wenatchee Fire & Rescue, a Washington Resource and Development Council grant, and a Washington Department of Natural Resources Forest Partnerships Grant Program grant.*
**All data received and processed as of January 31, 2023*
**Document prepared February 24, 2023*

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

When choosing a response, please fill in the circle completely. Correct: ● Incorrect: ⊘ ◐ ◔

OWNRENT_a (n=332)

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

35% Own: primary home

64% Own: secondary residence

1% 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=330	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
	70%	81%	80%	80%	84%	87%	89%	92%	92%	92%	86%	80%	82%	2%

FULLTIME (n=308)

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

AVERAGE = 2006

YRBUILD (n=313)

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

AVERAGE = 1990

RISKAWAR (n=330)

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

51% Very aware

39% Somewhat aware

8% Not aware

2% Don't remember

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

FIRE (n=333)

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

1%	There has been a wildfire on my property
12%	Less than 2 miles away but not on my property
58%	2 to 10 miles away
17%	More than 10 miles away
11%	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=330)	I have evacuated from my Chelan County home due to a wildfire or threat of a wildfire	62%	38%
SMOKEDAM (n=317)	My Chelan County home has had smoke damage	99%	1%
FIREDAM (n=317)	My Chelan County home has had wildfire damage	99%	1%
DESTROY (n=316)	My Chelan County home was destroyed by a wildfire	99%	1%

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
EVACPPL (n=327)	For the people in my household	21%	79%	
EVACPETS (n=323)	For the pets in my household and on my property	15%	47%	38%
EVACLIVSTOC (n=320)	For livestock on my property	6%	3%	92%

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=336)	51%	EVACINFO1 (n=336)	35%
Sign up for a wildfire evacuation notification system (Alert Sense https://public.alertsense.com)	EVACACT2 (n=336)	39%	EVACINFO2 (n=336)	40%
Identify safe evacuation routes	EVACACT3 (n=336)	64%	EVACINFO3 (n=336)	26%
Identify a location that my household will evacuate to	EVACACT4 (n=336)	57%	EVACINFO4 (n=336)	24%
Identify what to take and what to leave behind during an evacuation	EVACACT5 (n=336)	65%	EVACINFO5 (n=336)	18%
Discuss evacuation with my neighbors	EVACACT6 (n=336)	33%	EVACINFO6 (n=336)	24%
Create a checklist for steps to take before evacuating	EVACACT7 (n=336)	35%	EVACINFO7 (n=336)	32%
Identify a place to stay during a long-term evacuation (i.e., more than a few days)	EVACACT8 (n=336)	68%	EVACINFO8 (n=336)	12%
Pack a "go" bag with important items you would need during an evacuation (see https://simplebooklet.com/emergencygobag)	EVACACT10 (n=336)	43%	EVACINFO10 (n=336)	21%

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=322)	Has your current or a previous insurance company ever provided information on reducing the risk of wildfire?	56%	25%	19%
INSURE3 (n=322)	Did an insurance company ever refuse to provide or renew insurance because of the risk of wildfire?	76%	19%	5%
INSURE4 (n=322)	Do you pay a higher premium for your insurance due to wildfire risk?	28%	32%	40%
INSURE10 (n=319)	Do you receive a discount on your insurance premium because you have reduced wildfire risk on your property?	62%	8%	30%
INSURE12 (n=323)	Do you think your home is adequately insured against loss from a wildfire?	15%	63%	22%
INSURE13 (n=321)	Has your current insurance company ever required you to take action to reduce wildfire risk in order to continue coverage?	86%	9%	5%
INSURE15(n=322)	Has your current insurance company offered private firefighting services?	82%	8%	10%

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=326)	Tile, metal, or asphalt shingles	1%	99%
ROOFTYPE2 (n=326)	Wood (shake shingles)	99%	1%

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

		No	Yes
SIDETYPE1 (n=326)	Stucco, cement, brick, stone, or other noncombustible siding	73%	27%
SIDETYPE2 (n=326)	Log or heavy timbers	88%	12%
SIDETYPE3 (n=326)	Wood or vinyl siding	31%	69%

ATTACHCOMB (n=328)

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

19% No
81% Yes

COMBUST_A (n=331)

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*)

33% More than 30 feet or no combustible items
51% 5 – 30 feet
16% Less than 5 feet

CLOSEVEG_A (n=330)

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

28% More than 100 feet
45% 30 – 100 feet
24% 5 – 29 feet
2% Less than 5 feet

DOMVEG_A (n=332)

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*)

10% Grasses and shrubs

63% Light brush and/or isolated trees (ex. grass with some pine, fir, or other evergreen trees)

27% Dense brush and/or dense trees (ex. continuous pine, fir, or other evergreen trees)

CLOSEHOME (n=333)

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

45% More than 100 feet

40% 30 - 100 feet

14% 10 – 29 feet

2% Less than 10 feet

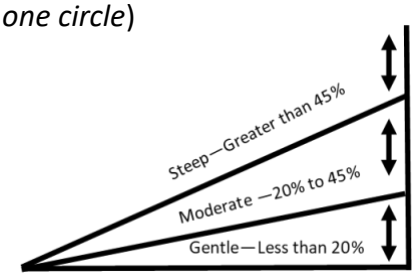
SLOPE (n=333)

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*)

9% Steep – Greater than 45%

23% Moderate – 20% to 45%

68% Gentle – Less than 20%



RIDGE (n=329)

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

83% More than 150 feet

10% 50 – 150 feet

6% 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=292)	has an overhead obstruction (ex. tree limbs) lower than 14 feet	84%	16%
DRIVEWAYW_C (n=291)	is narrower than 14 feet wide	68%	32%
DRIVEWAYL_A (n=299)	is longer than 150 feet	60%	40%
TURNARND_A (n=319)	has room for a fire truck to turn around	43%	57%

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

HOMENUM (n=277)

21% No

79% Yes →

HOMENUMVIS (N=262)

	No	Yes
Is the posted number visible from the road? *(Fill in one circle)*	2%	98%

REFLECT (N=261)

Is the posted number blue reflective? *(Fill in one circle)*	24%	76%

ROADS (n=329)

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)

85% No

16% Yes

RISKRATE (n=332)

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)

10% Low risk

57% Moderate risk

27% High risk

5% Very high risk

1% Extreme risk

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

TALKFIRE (n=329)

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

30% No

70% Yes

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

		No	Yes
ACTIVITIES1 (n=327)	Removed large or dense vegetation near my Chelan County home (ex. trees, shrubs, brush)	11%	89%
ACTIVITIES7 (n=319)	Regularly cleared my roof and gutters of leaves and pine needles	17%	83%
ACTIVITIES8 (n=327)	Regularly mowed and raked around my Chelan County home	11%	89%
ACTIVITIES2 (n=319)	Made my Chelan County home more fire resistant (ex. replaced roofing, siding, added hardscaping)	54%	46%
ACTIVITIES3 (n=326)	Helped neighbor(s) reduce vegetation on their properties	76%	24%
ACTIVITIES4 (n=321)	Helped reduce vegetation on community property (ex. HOA, subdivision)	79%	21%
ACTIVITIES5 (n=323)	Helped reduce vegetation on nearby public lands (ex. county, state, federal lands)	94%	6%
ACTIVITIES6 (n=322)	Participated in a community wildfire preparedness activity (ex. meeting, chipper day, etc.)	60%	40%
ACTIVITIES9 (n=327)	Met with a wildfire professional at your home to evaluate and discuss your property's wildfire risk	67%	33%
ACTIVITIES10 (n=325)	Interacted with public land managers (ex. Washington Dept. of Natural Resources or U.S. Forest Service) about fuels reduction on nearby public lands	83%	17%

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=329)	Vegetation on my property	18%	60%	21%
CONTRIB2 (n=326)	Physical characteristics of my house or other buildings (ex. roofing or siding) on my property	16%	59%	25%
CONTRIB3 (n=326)	Vegetation on my neighbors' properties	26%	60%	14%
CONTRIB4 (n=326)	Vegetation on nearby public or large undeveloped land	31%	54%	15%
CONTRIB5 (n=328)	Lack of nearby water supply (ex. hydrant or cistern) for fire suppression	22%	33%	46%

NEIGHBORACT (n=324)

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*)

6%	All my neighbors have taken action
30%	Most of my neighbors have taken action
58%	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=321)	Removing trees and reducing other vegetation on HOA property surrounding communities to slow the spread of wildfire (ex. fuel breaks)	41%	36%	17%	4%	2%
ACCEPT1 (n=328)	Removing trees and reducing other vegetation (thinning/fuel breaks) on nearby public lands	43%	38%	15%	2%	1%
ACCEPT2 (n=327)	Burning piles of vegetation (slash piles) on nearby public lands	38%	37%	18%	3%	4%
ACCEPT3 (n=325)	Conducting a prescribed fire ignited by fire professionals on nearby public lands	36%	37%	19%	5%	3%
ACCEPT4 (n=327)	Managing a naturally ignited fire (lightning) on nearby public lands	44%	34%	15%	5%	3%
ACCEPT6 (n=322)	Growth policies or land use regulations that limit new development in fire-prone areas in Chelan County	29%	27%	29%	9%	7%
ACCEPT7 (n=329)	Building codes that require fire resistant materials for structures located in fire-prone areas in Chelan County	33%	28%	28%	8%	4%
ACCEPT8 (n=329)	Development standards that require vegetation management (ex. removing or thinning trees and mowing grass) on lots located in fire-prone areas in Chelan County	27%	34%	22%	12%	5%
ACCEPT12 (n=324)	Temporarily shutting off the power grid during extreme fire risk days to avoid new wildfire ignitions	22%	22%	29%	17%	11%
ACCEPT9 (n=328)	Removing vegetation along roadways for safer evacuation	55%	31%	11%	3%	1%
ACCEPT13 (n=325)	Building a new road(s) to provide an emergency evacuation route	46%	24%	16%	8%	6%

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

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

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
STATE2 (n=323)	With proper technology, we can control most wildfires.	3%	28%	35%	33%	2%
STATE3 (n=325)	We should put out wildfires that threaten human life.	60%	36%	3%	1%	0%
STATE4_a (n=325)	We should put out wildfires that threaten homes.	46%	45%	7%	2%	0%
STATE5 (n=323)	During a wildfire, saving homes should be a priority over saving forests.	28%	39%	24%	8%	1%
STATE6 (n=325)	Wildfires are a natural part of a healthy forest/ecosystem.	36%	48%	14%	1%	1%
STATE11 (n=326)	I live here for the trees and will not remove any of them to reduce wildfire risk.	0%	4%	20%	48%	28%
STATE13 (n=325)	Managing the wildfire danger is a government responsibility, not mine.	1%	3%	20%	52%	24%
STATE14 (n=326)	Homeowners' actions to reduce wildfire are not effective.	1%	2%	12%	57%	28%
STATE15 (n=326)	My property is at risk of wildfire.	13%	59%	18%	8%	2%
STATE17 (n=325)	My effort to reduce wildfire risk on my property is not effective because of the heavy vegetation on my neighbors' properties.	3%	16%	33%	42%	6%
STATE19 (n=322)	Local firefighters have sufficient resources to keep a wildfire from spreading.	1%	8%	36%	40%	15%
STATE20 (n=324)	Local firefighters have sufficient resources to protect threatened homes.	1%	12%	41%	37%	10%
STATE21 (n=325)	Firefighters should put their lives at risk to protect my home.	1%	3%	11%	39%	46%
STATE22 (n=324)	Wildfires threaten my community water supply.	4%	22%	46%	22%	6%
STATE24 (n=327)	I plan to move out of the area in the next 12 months because of wildfires.	<1%	1%	4%	29%	66%
STATE25 (n=324)	Development in fire-prone areas of Chelan County increases the wildfire risk to my Chelan County property.	5%	27%	44%	19%	5%

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=327)	I would put the fire out.	9%	12%	18%	28%	32%	2%
LACT2 (n=327)	The fire department would save my home.	4%	31%	41%	18%	5%	1%
LACT3 (n=319)	My home would have smoke damage.	11%	42%	34%	9%	1%	2%
LACT4 (n=322)	My home would have some physical damage.	11%	37%	34%	13%	2%	2%
LACT5 (n=319)	My home would be destroyed.	7%	19%	39%	25%	9%	1%
LACT6 (n=323)	I would lose money due to the loss of business or income on my property.	8%	11%	8%	7%	24%	43%
LACT7 (n=326)	My trees and landscape would burn.	18%	39%	27%	14%	2%	<1%
LACT9 (n=323)	My neighbors' homes would be damaged or destroyed.	10%	32%	36%	18%	3%	1%
LACT12 (n=323)	Direct flame would ignite my home.	15%	27%	29%	19%	9%	2%
LACT13 (n=325)	Embers would ignite my home.	6%	23%	37%	25%	8%	1%
LACT14 (n=326)	Nearby homes would ignite my home.	7%	15%	25%	25%	26%	2%

CHANCES1 (n=321)

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%
0%	<1%	0%	3%	3%	20%	4%	13%	19%	34%	3%

CHANCES2 (n=326)

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%
6%	7%	8%	8%	6%	24%	6%	10%	11%	12%	2%

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

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

		Received info from source		Usefulness of information among respondents who received information from the source (sums to ~100%)				
				Extremely useful	Very useful	Moderately useful	Slightly useful	Not at all useful
Local fire department	SOURCEREC1 (n=314)	81%	SOURCEUSE1 (n=255)	28%	49%	17%	7%	0%
Community group (ex. homeowners association)	SOURCEREC2 (n=310)	57%	SOURCEUSE2 (n=177)	20%	40%	24%	12%	5%
Community wildfire ambassador	SOURCEREC25 (n=311)	34%	SOURCEUSE25 (n=105)	23%	39%	22%	10%	7%
Local arborist/contractor	SOURCEREC28 (n=312)	24%	SOURCEUSE28 (n=74)	8%	34%	35%	14%	9%
Washington State University Master Gardner's program	SOURCEREC17 (n=312)	12%	SOURCEUSE17 (n=36)	3%	17%	33%	22%	25%
Local government	SOURCEREC29 (n=312)	44%	SOURCEUSE29 (n=136)	6%	31%	39%	17%	7%
Wildfire Ready Neighbors	SOURCEREC40 (n=310)	38%	SOURCEUSE40 (n=118)	12%	27%	35%	19%	8%
Chelan County DNR	SOURCEREC18 (n=306)	42%	SOURCEUSE18 (n=129)	9%	41%	29%	16%	5%
Cascadia Conservation District	SOURCEREC16 (n=306)	28%	SOURCEUSE16 (n=87)	11%	36%	31%	14%	8%
Chumstick Wildfire Stewardship Coalition	SOURCEREC19 (n=306)	19%	SOURCEUSE19 (n=57)	12%	40%	30%	9%	9%
Chelan/Douglas Land Trust	SOURCEREC20 (n=305)	20%	SOURCEUSE20 (n=62)	6%	37%	19%	23%	15%
Chelan Public Utility District	SOURCEREC41 (n=306)	58%	SOURCEUSE41 (n=177)	8%	29%	41%	18%	4%
Washington State DNR	SOURCEREC11 (n=301)	32%	SOURCEUSE11 (n=95)	9%	37%	33%	19%	2%
Firewise USA®	SOURCEREC5 (n=307)	46%	SOURCEUSE5 (n=141)	25%	35%	22%	14%	4%
Ready, Set, Go! program	SOURCEREC24 (n=309)	32%	SOURCEUSE24 (n=98)	15%	39%	30%	10%	6%
Fire Adapted Communities and/or Learning Network	SOURCEREC8 (n=305)	14%	SOURCEUSE8 (n=44)	25%	27%	23%	14%	11%
USDA Forest Service	SOURCEREC14 (n=307)	30%	SOURCEUSE14 (n=92)	9%	30%	30%	25%	5%
National Park Service	SOURCEREC34 (n=307)	15%	SOURCEUSE34 (n=45)	2%	31%	27%	24%	16%
Bureau of Land Management	SOURCEREC15 (n=303)	15%	SOURCEUSE15 (n=45)	4%	24%	33%	18%	20%
Media (newspaper, TV, radio, internet)	SOURCEREC4 (n=308)	59%	SOURCEUSE4 (n=182)	7%	24%	40%	25%	5%

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=336)	46%	WANTINFO1 (n=336)	50%
Mailed newsletter	RECEIVEINFO2 (n=336)	43%	WANTINFO2 (n=336)	37%
Community meetings	RECEIVEINFO3 (n=336)	36%	WANTINFO3 (n=336)	27%
Conversations with local wildfire specialists	RECEIVEINFO4 (n=336)	22%	WANTINFO4 (n=336)	38%
Social media (Facebook, Twitter, Nextdoor)	RECEIVEINFO5 (n=336)	34%	WANTINFO5 (n=336)	21%
Internet (non-social media)	RECEIVEINFO6 (n=336)	37%	WANTINFO6 (n=336)	27%
TV news	RECEIVEINFO7 (n=336)	39%	WANTINFO7 (n=336)	17%
Newspaper	RECEIVEINFO8 (n=336)	20%	WANTINFO8 (n=336)	15%
Radio	RECEIVEINFO9 (n=336)	26%	WANTINFO9 (n=336)	15%

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=320)	FACTOR2 (n=320)	FACTOR3_a (n=320)	FACTORNO1 (n=320)
Personal resources	Financial cost 33%	Time to do the work 33%	Physical ability to do the work 28%	None of these 43%
	FACTOR11 (n=320)	FACTOR4 (n=320)	FACTOR12 (n=320)	FACTORNO2 (n=320)
Lack of specific information about…	The factors contributing to my property's wildfire risk 13%	How to reduce wildfire risk on my property 19%	Where to dispose of vegetation/slash 24%	None of these 61%
	FACTOR6 (n=317)	FACTOR5_a (n=317)	FACTOR13 (n=317)	FACTORNO3 (n=317)
Personal perspectives	I do not want to change the way my property looks 11%	I do not think taking action would reduce my property's wildfire risk 11%	It's a low priority to me 3%	None of these 77%
	FACTOR14 (n=313)	FACTOR9_a (n=313)	FACTOR15 (n=313)	FACTORNO4 (n=313)
Community	Lack of options for disposing vegetation/slash 23%	Restrictions on the changes I can make to my property 6%	Social pressure from neighbors 1%	None of these 73%

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

	INCENTV1 (n=319)	INCENTV3 (n=319)	INCENTV4 (n=319)	INCENTVNO1 (n=319)
Resources	Cost-share or financial assistance 41%	Help doing the work 48%	Recommended contractors 28%	None of these 33%
	INCENTV6 (n=313)	INCENTV7 (n=313)	INCENTV8 (n=313)	INCENTVNO2 (n=313)
Information	A report describing my property's wildfire risk factors 52%	Videos showing how to reduce risk on a property in my area 16%	One-on-one visit with wildfire risk experts on my property 51%	None of these 27%
	INCENTV9 (n=310)	INCENTV10 (n=310)	INCENTV11 (n=310)	INCENTVNO3 (n=310)
Other	Feedback on the work I've done to reduce my property's risk 38%	Recognition for taking action 6%	Neighborhood group that organizes wildfire risk-reduction activities 27%	None of these 49%

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=321)

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
3%	2%	7%	14%	12%	27%	7%	11%	11%	3%	3%

AGE (n=322)

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

MEAN AGE: 62 years old

GENDER (n=321)

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

63% Male

37% Female

1% Other

EDUC (n=318)

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

1% Less than high school

9% High school graduate

18% Some college or technical school

7% Technical or trade school

37% College graduate

6% Some graduate work

23% Advanced degree (M.D., M.A., M.S., Ph.D., etc.)

EMPLOY (n=324)

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

43% Employed full time (including self-employed)

6% Employed part time (including self-employed)

2% Unemployed or do not work outside of the home

49% Retired

INCOME (n=282)

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

1% Less than $15,000

2% $15,000 - $24,999

3% $25,000 – $34,999

9% $35,000 - $49,999

13% $50,000 - $74,999

12% $75,000 - $99,999

22% $100,000 - $149,999

11% $150,000 - $199,999

27% $200,000 or more

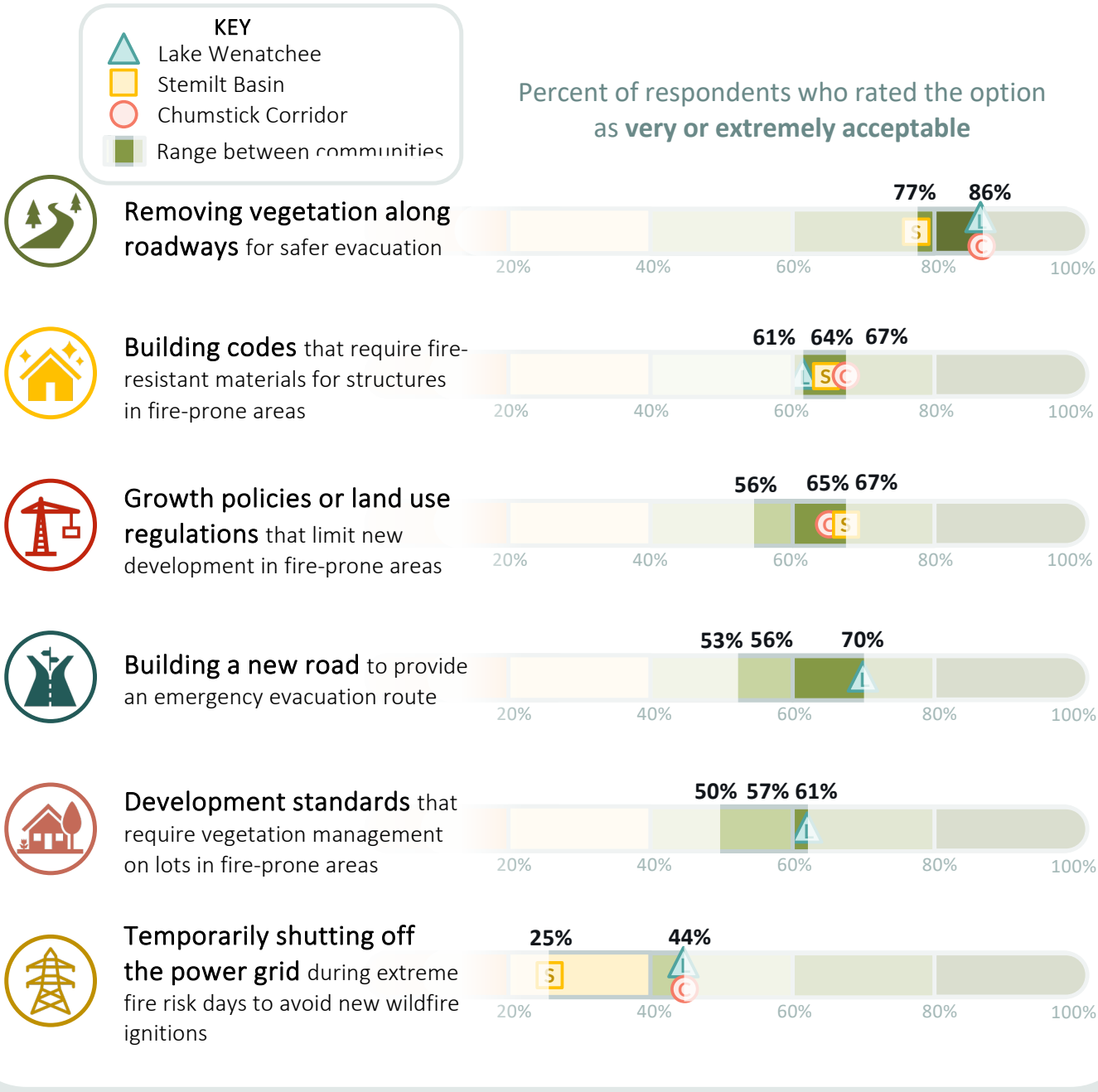
Thank you for your help. Please use the space below to write any additional comments. Refer to the cover letter included in your mailing for contact information if you would like to schedule an onsite visit with a wildfire professional to learn how you can reduce risk on your property.

APPENDIX F: Outreach materials

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%	38%	42%
Lake Wenatchee	Chumstick Corridor	Stemilt Basin



More about our data

Our survey

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

Our paired wildfire risk assessments

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

Adapting to wildfire at the **landscape level** requires the support of **community residents**.



So, we collected parcel-level wildfire risk and social data to better understand our residents.

Who are the survey respondents?

Households in the Greater Lake Wenatchee area, surveyed in 2022.

45% Response rate

65% Secondary homeowners

Our results will inform **cross-boundary collaborations**



We found broad support* for fuel treatment options on nearby public lands.



81% Support for **vegetation thinning**



78% Support for **prescribed fire**



88% Support for **pile burning**

* very or extremely acceptable to survey respondents

Learn how this research supports outreach efforts

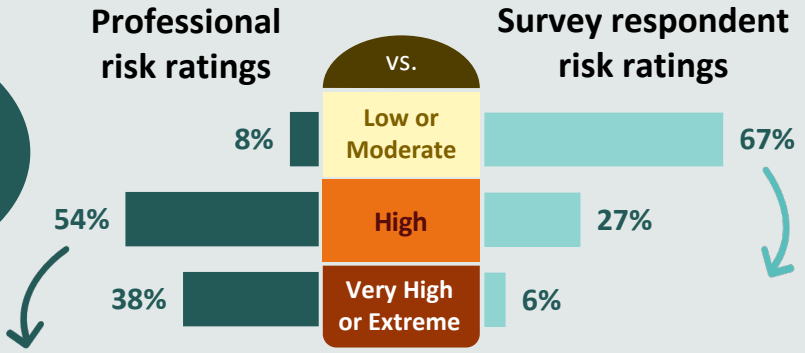




Kris King, Wildfire Risk Reduction Coordinator, Lake Wenatchee Fire & Rescue
kking@lwfr.org | 509-423-9684 | https://www.lwfr.org/

Residents' **wildfire risk** may be higher than they think.





Professionals rated most homes' risk as **High** or **Very High or Extreme**

Most **residents who responded to our survey** rated their home's risk as **Low or Moderate**.

Our results will inform **community outreach efforts**

LWFR is a top source for wildfire risk education.

81%

Receive wildfire risk information from LWFR

76%

Of those who receive LWFR info find it **very or extremely useful**

Respondents want home visits to discuss wildfire risk.

51%

Of survey respondents would like a one-on-one visit to discuss their property's wildfire risk

More about our data

What did we ask residents?

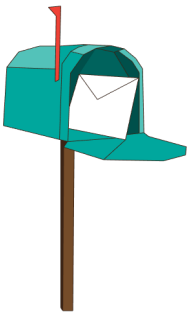
Our 16-page survey covered a lot of ground, including parcel-level wildfire risk perceptions, barriers to parcel-level wildfire risk mitigation, communication preferences, and acceptability of fuels treatments on public lands.

How did we assess wildfire risk?

We conducted rapid wildfire risk assessments, designed to take 60 seconds and assessed from the road. We evaluated: home ignition potential, defensible space, background conditions, and access to the property.

Is this a standalone project?

Two other fire districts, Wenatchee Valley Fire and Chelan County Fire District #3, also collected this data about their residents, creating opportunities for collaboration.



In 2022, we sent you a survey on wildfire risk.

Who responded?

We heard from 336 households in Lake Wenatchee! The response rate was 45%, which is very high for this type of survey. Thank you for participating.

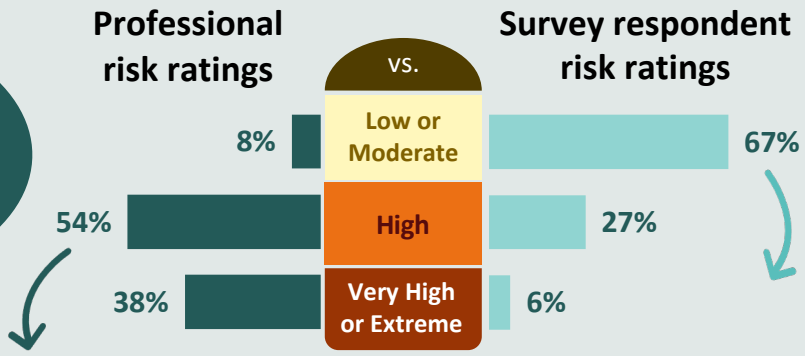
Who are we?

Lake Wenatchee Fire & Rescue is a rural, all hazards, community-based fire department.

Then we assessed your home's wildfire risk.

Your home's **wildfire risk** may be higher than you think.



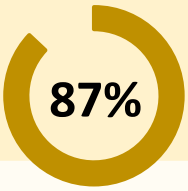


Professionals assessed 156 homes and rated most homes' risk as **High**.

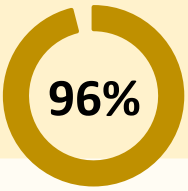
Most **residents who responded to our survey** rated their home's risk as **Low or Moderate**.

Is the defensible space around your home enough?

We found that most homes in the study area had **insufficient defensible space** (less than 30 ft around the home). We rated defensible space in two ways:



Of assessed properties had **dense or unmaintained vegetation** less than 30 ft from the home. *Only **26%** of survey respondents thought this was the case for their property.*



Of assessed properties had **other combustibles** (propane tanks, woodpiles, etc.) less than 30 ft from the home. ***67%** of respondents thought this was the case.*

Questions? Please contact us!

Kris King, Wildfire Risk Reduction Coordinator, Lake Wenatchee Fire & Rescue
509-423-9684 | kking@lwfr.org | https://www.lwfr.org/

There are many ways you can reduce your home's wildfire risk.

Sign up to receive a free reflective address sign



Reflective address signs are free and help responders find your house in dark, smoky conditions.

Use this QR code or find the order form at LWFR.org.

Sign up to use our chipper

Brush and other vegetation on your property contribute to your property's wildfire risk. Reduce your risk and the vegetation around your home and we'll bring our chipper to you and chip your piles for free.

Use this QR code to sign up or find out more at LWFR.org.

Sign up for our emergency communication system

Sign up for Chelan County Alerts to receive free evacuation alerts via text from the Chelan County Emergency Management Department.

Use this QR code or find the link at LWFR.org.

Request a free Wildfire Home Assessment

Sign up for a Wildfire Home Assessment and we will come to your property to see what actions can be taken to make your home more resilient to a wildfire.

Use this QR code or find the form at LWFR.org.

Create defensible space—start within 5 ft of your home:

- ❑ Clear pine needles & debris from roof, gutters, on/under deck, & foundation of home
- ❑ Remove tree branches overhanging home
- ❑ Keep weeds/grasses under 4 inches
- ❑ Move firewood and propane tanks at least 30ft away from home
- ❑ Dispose of slash from tree & shrub thinning
- ❑ Think like an ember: where could an ember land and start a fire?

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