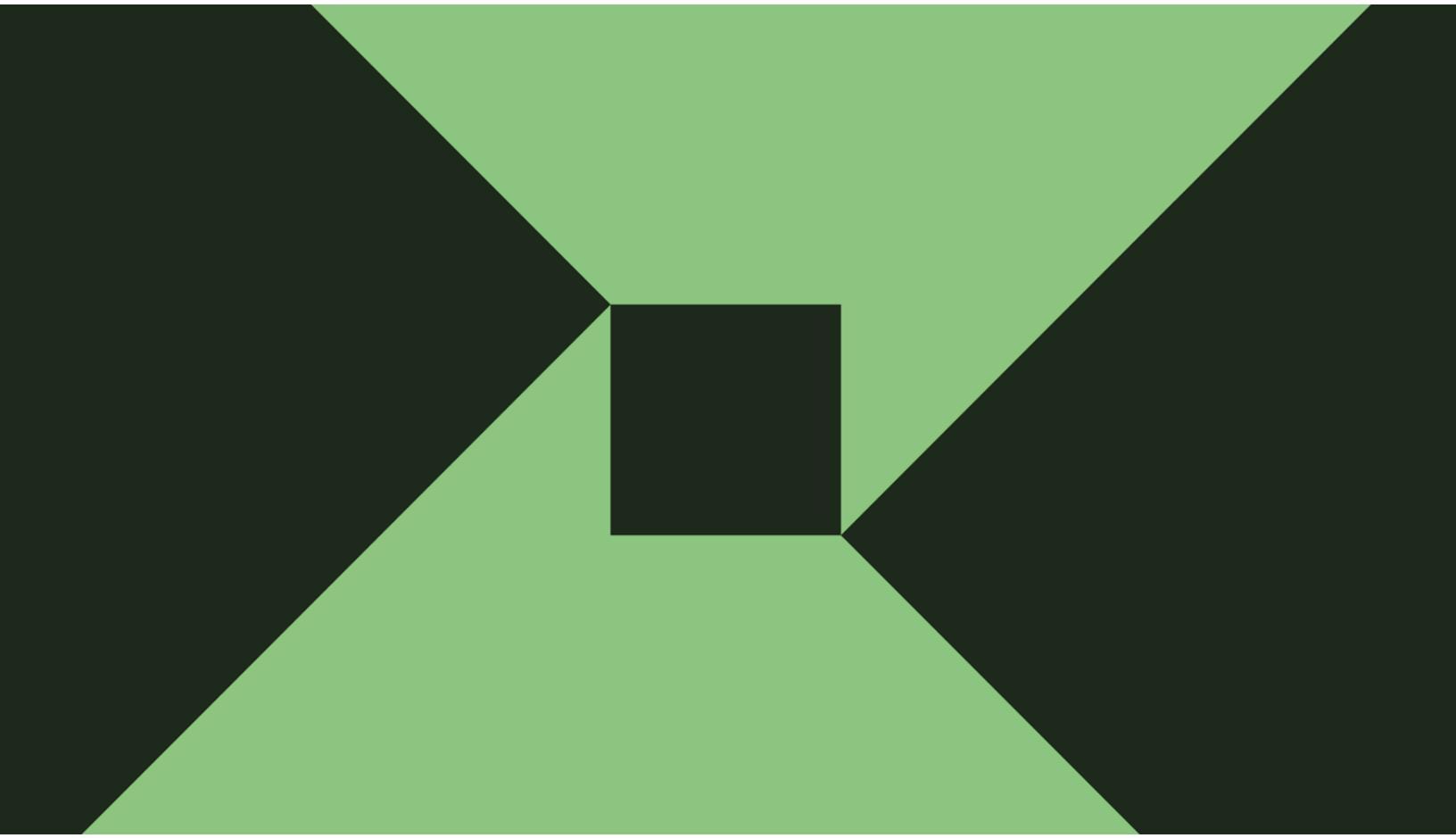
MILLIMAN REPORT

WUI Data Commons Phase 1: Stakeholder Interview Summary

Prepared for the Insurance Institute for Business & Home Safety

March 2024

Nancy Watkins, FCAS, MAAA
SiewGee Lim, FCAS, MAAA



Milliman

Contents

1 Background and Scope

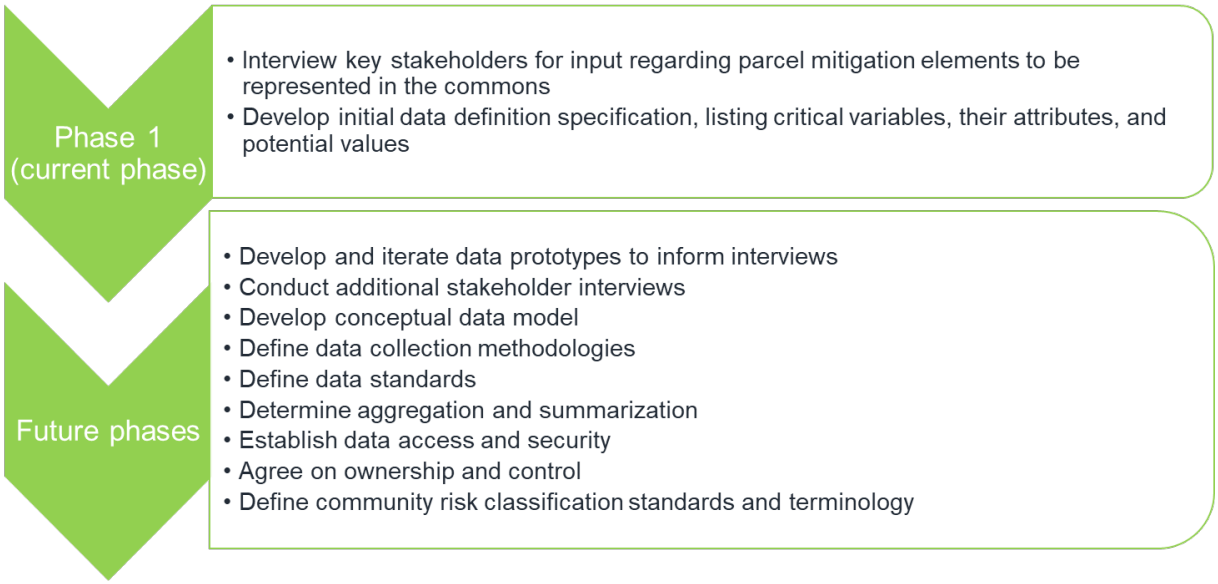
The Insurance Institute for Business & Home Safety (IBHS) is an independent, 501(C) nonprofit scientific research and communications organization supported by property insurers, reinsurers, and affiliated companies. IBHS turns research and insights into actions home and business owners can take to reduce costs associated with natural catastrophe losses.

In 2022, IBHS launched Wildfire Prepared Home™, the first-ever wildfire mitigation program to allow homeowners to achieve a designation showing they have taken the science-based actions required to meaningfully reduce wildfire risk. However, mitigated parcels may continue to be exposed to significant community-level risk due to conditions present on surrounding parcels, meaning that collective action at a community scale is required to be truly effective.

If parcel-level data is collected consistently and widely across a community, it may be possible to develop a much more informed view of the wildfire risk within a community. To accurately gauge the state of wildfire risk in communities located in the wildland-urban interface (WUI), there needs to be a common ground truth upon which various consumers of data can rely. IBHS is exploring the establishment of a WUI Data Commons to overcome many of the challenges associated with the availability of and access to wildfire risk data at the parcel and community level.

A shared data commons will help various stakeholders engaged in risk measurement and/or risk reduction – such as fire scientists, risk modelers, communities, and government entities – incorporate and utilize these data within an adaptive framework. In this way, a continuous cycle of improvement and re-evaluation can be used to track progress, drive prioritization and implementation, and refine the value of mitigations.

A schematic of a high-level development plan is shown as follows:



As an exploratory first phase of this effort, IBHS engaged Milliman, Inc. (Milliman) to gather inputs from critical stakeholders (catastrophe modelers, insurers, reinsurers and regulators) active in wildfire-exposed areas of the U.S., regarding the components described above. Phase 1 is intended to provide IBHS a record of interest and input that will be used as a launching point for future work in the development of a robust Data Commons.

Between December 2023 and March 2024, Milliman and IBHS conducted interviews with representatives from 11 different entities to get a better understanding of their current data usage, challenges, and desired future state. All entities other than the regulator were asked to complete follow-up surveys requesting granular feedback on potential data items to include in the Data Commons. This report provides the materials Milliman created for Phase 1 and a summary of findings from the interviews and surveys.

2 Executive Summary

Responses to our survey provided the following key findings:

- Almost all of the characteristics related to structures, decks, fences, and Hazard Ignition Zone were ascribed a medium or high level of usefulness. The less useful items were detailed landscaping features, although tree and shrub spacing and pruning were also rated highly useful.
- The desired level of data complexity varies by type of entity responding. Catastrophe modelers have the highest demand in terms of data granularity and completeness, followed by primary insurers, and then reinsurers.
- Only a few characteristics were rated to be consistently available, including structure type, number of stories, roof class, roof cover, and wall cover. With respect to many other characteristics, respondents reported various levels of inconsistency or expressed no opinion.
- Participants generally reported a medium to high level of confidence in their responses on usefulness, complexity and consistency. Confidence in information on decks and landscaping was generally lower than on other characteristics. Catastrophe modelers and primary insurers generally reported a higher level of confidence than reinsurers.

Our interviews with stakeholders provided the following key findings:

- All stakeholders indicated that there are significant gaps in crucial wildfire risk data desired at the structure and parcel level, with even greater gaps at the community level.
- All stakeholders had concerns regarding the quality of current data.
- All stakeholders indicated that they would use the data from the Data Commons and identified multiple use cases and benefits from better data access.
- All stakeholders indicated that better data would reduce the uncertainties around wildfire risk. A number of insurers and reinsurers indicated that this would likely allow them to increase capacity and potentially improve insurance affordability.
- All primary insurers were generally willing to consider a contributory data model (like CLUE[1]) as long as there is critical mass of participation and a requirement of reciprocity for other insurers to input inspection data.
- The most common barriers to adoption identified included privacy issues, consistency, and regulatory constraints.
- The regulators seemed open to the idea of insurers sharing inspection data, provided that the data is credible.
- Many stakeholders mentioned that they value IBHS and are currently using its research in determining important wildfire risk factors.

Several areas of potential resistance were identified during our interviews:

- Insurance companies with significant data resources who may fear losing a competitive advantage.
- Insureds who would like to opt-out due to the fear of being penalized for a lack of mitigation, either on their own parcels or on surrounding parcels in their communities.
- Consumer advocacy groups concerned about data privacy.
- Vendors selling wildfire data and risk assessment solutions who may resist disintermediation.

At the close of their interviews, several of the primary insurers indicated a strong interest in being part of the WUI Data Commons and a willingness to consider participating in a pilot. The suggested approach would be to start with several large insurers (e.g. at least three of the top five to seven carriers in market share), so that the data contributed would represent a large and credible sample and no one carrier would dominate. If the pilot demonstrates a significant benefit by generating better risk information at reduced cost to participants, it will be easier to make the case for broader industry adoption.

[1] Comprehensive Loss Underwriting Exchange. See https://risk.lexisnexis.com/products/clue-auto for additional details.

The following are some key quotes from the interviews about current market problems arising from insufficient data for wildfire risk assessment, and the perceived value of a WUI Data Commons to address those problems.

How uncertainty in wildfire risk assessment is contributing to our current insurance and reinsurance market problems

Primary insurers:

"We really try to avoid saying no. And… we are finding ourselves having to say no in some situations because we can't, we don't feel like we know enough to confirm that we are being compensated for the risk that we are taking."

"This (wildfire) is a peril that we want to have in our portfolio. This is not something that we are trying to run away from. We have just not been able to be confident in the offering."

"Right now, in the wildfire space, in terms of available data, we don't have much that can make us comfortable in some situations."

"As carriers are beginning to file their mitigation discounts that are required in California, they are essentially filing discounts that equate to like half a percent because they don't have the information to get comfortable that the mitigation that they are saying is there is actually going to drive loss cost."

Reinsurers:

"To us it's about confidence in assessing the risk, right? As long as we have that confidence, capacity is available, right? The more unknown it is, the less confidence in the risk modeling, you tend to be more conservative. And I'm not saying just from a numerical risk assessment point of view, it's just in terms of deploying capacity relative to maybe another market or another portfolio, it comes down to that."

"We are trying to answer how bad 'bad' can be still."

Catastrophe modelers:

"There is a lot of inference on how you get the community data… That is the scenario we are hoping that IBHS can help with a lot of blind spots in the industry."

The value of a WUI Data Commons to help address these problems

Primary insurers:

"That is one of the things that would make the value of this exponential, is if it goes beyond like the parcel level and can start to… identify neighborhoods and provide some insight on the community based off of the parcel level insight that is out there… If we know which communities have the best, like calling that out, that makes it exponentially valuable in my mind."

"That (understanding of wildfire) is what we as an organization [have] been waiting for… I think the models have come a long way more recently but at the same time there [has] just been so much different information and different recommendations on what actually reduces the risk of fire… I feel like we are just now getting to the phase where people are starting to rally around [how] certain mitigation efforts, done as a system, can materially reduce the risk."

"I think the reinsurers don't know… how to evaluate wildfire yet, so they depend on us to give them a sense and if we can give them confidence, they'll sort of follow what we say. And if we can't give them confidence, then the rates are going to be a lot higher. So the more we can give the reinsurers confidence in how to assess the risk that they're insuring, the more we can expect the rates to be reasonable… The better the information we can give them, the more they can refine their pricing, and in general that's going to mean lower pricing."

Reinsurers:

"It would provide more confidence and… more reduced uncertainty in the risk that we (as reinsurers) write."

"It would add value or increase our confidence in their underwriting and portfolio management capacity."

"This is a huge data challenge, but… in the large scale could definitely benefit this industry and… society as well. So thank you for trying to take the first bite out of this massive problem."

3 Interview and Survey Process

The Phase 1 interview and survey process was conducted as follows:

- Milliman and IBHS identified a list of contacts at primary insurers, reinsurers, catastrophe modelers and regulators who are significantly involved in the wildfire-exposed homeowners insurance markets in the U.S., especially California.
- Milliman created a presentation, included with this report as Appendix A, to summarize the Data Commons idea and the Phase 1 pilot with IBHS. Milliman sent the presentation to the stakeholder contacts, requesting their participation in the interview and survey process.
- Milliman created a question list, shared the list with the stakeholders, and set up interviews with the stakeholders to go over the questions. The questions were tailored to gather information regarding current and future data usage, and thus, vary slightly by group; Appendix B contains the list of questions for each group.
- Milliman also provided participants an initial data definition specification for possible attributes and their potential values, as an example of the type of parcel-level data that might be in the WUI Data Commons. The data specification, which is based on the Wildfire Prepared Home™ standard, is provided as Attachment C to this report.
- Milliman and IBHS conducted individual one-hour interviews with representatives from 11 different entities: five primary insurers, two reinsurers, three catastrophe modelers and one state insurance regulator. Collectively, the five primary insurers that we interviewed represented 39% of the homeowners market share in California and 23% countrywide.[2]
- An online survey was sent out after the interviews to gather more information about each attribute. With respect to each attribute, we asked about its level of usefulness, the level of complexity desired, the typical consistency of data that respondents had worked with in the past, and how confident the respondents felt in their responses. Appendix D contains information about the survey, which was sent to all interviewees except the regulator. All but one company who received the survey provided responses; we allowed multiple entries from different personnel within the same company.

Exhibit 1 provides more details from the survey regarding the perceived utility (usefulness), desired complexity, current data consistency, and the level of confidence in the answers provided for each attribute, summarized by group.

The remainder of this section contains a high-level summary of the interviews.

[2] Based on 2022 data from S&P Global Market Intelligence, Insurance Statutory Market Share.

3.1 INTERVIEW SUMMARY: CURRENT DATA USAGE

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
Current data sources	Structure level data including: ▪ Inspection data including structure information and surrounding vegetation (density and type) ▪ Protection class ▪ Vendor-supplied hazard scores (property level) ▪ Additional data using aerial imagery / machine learning ▪ NFPA Firewise (yes/no)	Structure level data from insurance company clients Limited model predictions from vendor and or catastrophe models Supplementary information from satellite data, vendor machine learning data, academic research	Inspection data from clients and other information including: ▪ Structure characteristics (internal proprietary data or vendor data) ▪ Spatial and topographic data ▪ USGS fuel data ▪ LANDFIRE data ▪ Structure density ▪ Width of streets	Not applicable
Data and structure	Structure inspection data is not aggregatable, other than whether an inspection has been done. One insurer is in the process of transitioning into using information based on the Wildfire Prepared Home™ Program.	Data is limited and less granular than what is typically available to primary carriers. Data format is restricted to the requirements of the catastrophe models.	The models have been built with the capability to ingest data of varying granularity. The model inputs are often entered directly by their clients and the inputs are often less granular than what the models can ingest.	Not applicable
Analysis and Usage	Analyses focus on the risk of individual structures, used for: ▪ Pricing and underwriting ▪ Prioritization of inspection ▪ Gathering inputs into catastrophe models	Analyses are high level and focus on aggregate risk, instead of the risk of individual structures.	Analyses include complex models that consider factors like fire ignition, fire spread, fire suppression, and structural damage. The models consider fire spread in the community. This requires compilation of data from different sources; a lot of inference is needed to obtain community data.	Not applicable
Use of parcel or community level data	Only one interviewee has community level data, which they collected on their own from about 100 communities.	Typically have structure data, but lack crucial data at parcel level. They assess the risk of the elements around a structure but do not account for community level risk/mitigation.	Some models have been built to take in parcel level data, but the inputs are often limited or defaulted.	Not applicable

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
Challenges	Home inspections are pricey. Many insurers inspect only a fraction of homes insured. Recency is a problem. Inspection data is inconsistent between vendors. This drives up costs for policies who have already been inspected and go to a different insurer. The lack of data makes it challenging to quantify the mandated mitigation discounts in CA. Want to consider conditions on adjacent parcels but are constrained by regulation. No community level data is available. Have talked to CAL FIRE, Firewise, etc. but no consistency. Lack of enforcement, validation of building codes.	Important and reliable wildfire related data is limited. Some companies have legacy systems that don't capture all the data needed. Some inspection info available but not digitalized or stored in useful format.	Fuel data becomes less reliable when it is not updated regularly. The lack of a standardized assessment of the effectiveness of community mitigation efforts makes it hard to account for them in the models, for example: ▪ Fuel treatment ▪ Fire response capabilities ▪ Emergency management by the fire department	Not applicable

3.2 INTERVIEW SUMMARY: DESIRED PARCEL DATA

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
Data requirements and preference	Prefer granular data, including data from homes that are not in their book of business. Should enable them to quantify required mitigation discounts. Want data that is proven predictive by science. Should include a consistent definition of a "community" and enable research of the impact of community mitigation on individual structures. A mapping of the Data Commons variables to the variables from other sources (i.e., catastrophe model). Countrywide data.	They prefer less granular data with a focus on the most important variables. Also want better granular data that can be aggregated up. Want to fill the gaps in data that is currently offered by vendors.	They prefer granular and highly complex data.	They would like the ability to track parcel-level attributes from the Safer from Wildfires Program, individually and in combination, over time. High-level (yes/no for attributes) is useful.

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
	A good process for insureds or their agents to review and update the data.			
Attributes to consider	Debris under the deck, defensible space, roof type, roof age, additional roof details, attached/detached structures, current conditions of a property and the changes of the conditions over time. Distance to ridge or canyon Drought and wind patterns Building density Fire pathways and how individual parcel risk is higher within community Effectiveness of fire suppression response Ability of law enforcement & firefighters to manage resources, evacuation	Clearance distance and distance to vegetation. Community data could be helpful to determine aggregated risk level, manage their portfolio and identify business opportunities.	Roof class that truly reflects wildfire risk, dual pane windows, vertical clearance, exterior siding, standardized building code (by year), roof type by percentage of cover. They would like granular community level data including passive defensive efforts, fuels, and fuel breaks (i.e., type, clearance area in shapefile format).	All items listed under the Safer from Wildfires Program, inspection date, fire district, location data that can be easily summarized and aggregated, data that is difficult to obtain including Zone 0. Would like to know if a structure is within a wildfire risk reduction zone or Firewise zone. Level of inspection (e.g. % inspected per year) in a community.
Data quality	High quality, consistent, frequently updated, and accurate. Ideally, they hope that the data has regulatory buy-in. They use what is available currently, but hope for IBHS leading the way and don't want a fragmented voice.	High quality, standardized, easy to access, and trustworthy.	High quality, complete, transparent, and frequently updated. Data completeness is crucial for model improvement and research.	High quality, consistent, standardized, verified, and accurate.

3.3 INTERVIEW SUMMARY: DATA ACCESS AND USE

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
Data Usage and contribution	All the primary insurers that we interviewed would use the data from the Data Commons. All indicated that they would be open to contributing data to the Data Commons if other insurers with sizable market share contribute.	They would use the data from the Data Commons but will not be able to contribute data.	If they had access to data from the Data Commons they would absolutely use it, but would likely not be able to contribute data. Any updates to the structure level data could be immediately	Would not be able to contribute data but would be open to being an authorized user. The regulator seemed open to the idea of insurers sharing inspection data, provided that the data is credible: consistent,

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
			incorporated when the clients re-run the model.	standardized, accurate, high-quality.
Potential Use Cases and Benefits	Reduce cost for the whole system Prioritizing in-person inspections; cost saving by reducing the need to order new inspections Incorporating the data in the quote process Targeting communities & homes who have undergone mitigation for focused marketing Better risk selection with the goal of saying yes Accurately differentiate risk in pricing Better quantifying value of state-mandated mitigation discounts Improving wildfire risk models Educating insureds to better understand their exposure and how to reduce risk Shifting insureds' mindset from repair/replace to protect/prevent Helping insureds understand where they need to harden homes, connect them to vendors with discounts Identifying targeted mitigations at community scale that would change outcomes Appropriately sharing risk when it makes sense (e.g. deductibles) Clarifying need for strict no-vegetation maintenance in zone 0	Risk management, risk accumulation Identifying areas to grow -- compare companies and regions and see which risks are more attractive to pick up Validating the effectiveness of mitigation efforts Due diligence checks on their clients' portfolios Supporting the building blocks of the models or other tools Complete, reliable, and comprehensive data could be useful to improve model components (i.e., fire spread). Having others (e.g. Firewise) contribute data and explain to homeowners why their mitigation impacts insurance premiums	Improving models to simulate scenarios on fire propagation Improving the understanding of wildfire Helping clients to get a better understanding of their exposure	Public communication regarding risk and mitigation - understanding what actions they should take to protect their properties Informing the rate filing review process Informing future revisions to the Safer from Wildfires framework Better understanding of the risks Improving insurance affordability and availability Creating incentives for more inspections Ultimate goal is to improve wildfire safety

3.4 INTERVIEW SUMMARY: OVERARCHING ISSUES

INFORMATION	PRIMARY INSURER	REINSURER	CAT MODELER	REGULATOR
Barrier to adoption or concerns	Data quality, consistency over time Recency is critical to increase confidence in the risk and make renewal decisions Regulatory constraints Data security and privacy Checks and balances on third party data Perfection getting in the way of progress Varied industry responses rather than having a cohesive message Cost Consumer acceptance	Data consistency Ease of use Must keep up with maintenance Getting everyone to agree on what means what Concerns from insurers, data vendors re competition Transparency and consistent message from fire chiefs are important	Data consistency over time – need to ensure there is not a bias in reporting Regulatory constraints Data security and privacy Data quality and transparency Pushback from consumer groups regarding use of data outside control of the insured (e.g. neighbor data)	Data privacy Should consider consumer complaint process while developing Data Commons Ensure data sharing between insurers is credible, consistent

4 Limitations

4.1 USE OF REPORT

The data and exhibits in this report are provided to support the findings contained herein, limited to the scope of work specified by IBHS, and may not be suitable for other purposes. Milliman is available to answer any questions regarding this report or any other aspect of our review.

4.2 DATA RELIANCE

In preparing this report, we relied upon the information provided by the interviewees. We did not audit, verify, or review the data and other information for sampling bias, reasonableness, and consistency. Such a review is beyond the scope of our assignment. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete. In that event, the results of our analysis may not be suitable for the intended purpose.

4.3 DISTRIBUTION

Milliman's work is prepared solely for the internal business use of IBHS and is not to be distributed to third parties except as otherwise agreed in writing. Milliman does not intend to benefit any third-party recipient of its work product, even if Milliman consents to the release of its work product to such third party.

In the event Milliman consents to release its work product, it must be provided in its entirety. Milliman recommends that any third-party recipient have its own actuary or qualified professional review the work product to ensure that the party understands the assumptions and uncertainties inherent in the estimates. No third-party recipient of Milliman’s work product should rely upon Milliman’s work product.

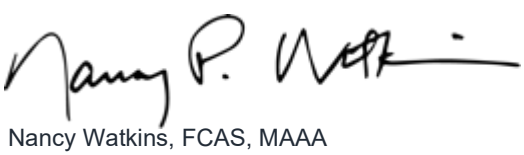
4.4 USE OF MILLIMAN'S NAME

Any reader of this report agrees that they shall not use Milliman's name, trademarks or service marks, or refer to Milliman directly or indirectly in any third party communication without Milliman's prior written consent for each such use or release, which consent shall be given in Milliman's sole discretion.

5 Closing

We appreciate the opportunity to provide these services to IBHS and look forward to discussing the results with you.

Sincerely,



Nancy Watkins, FCAS, MAAA
Principal & Consulting Actuary

Siew Gee Lim, FCAS, MAAA
Actuary

Attachments:

- Exhibit 1: Summary of Survey Responses
- Appendix A: Interview Deck
- Appendix B: Interview Questions
- Appendix C: Parcel Attribute Workbook
- Appendix D: Parcel Attribute Survey

For more information about Milliman please visit us at:

milliman.com

Milliman is among the world's largest providers of actuarial, risk management, and technology solutions. Our consulting and advanced analytics capabilities encompass healthcare, property & casualty insurance, life insurance and financial services, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

milliman.com

CONTACT

Nancy Watkins
nancy.watkins@milliman.com

Siew Gee Lim
siewgee.lim@milliman.com

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Perceived Utility (Usefulness): Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				**Reinsurer**				**Catastrophe Modeler**				**All Groups Combined**			
	Not Useful	**Low**	**Medium**	**High**	**Not Useful**	**Low**	**Medium**	**High**	**Not Useful**	**Low**	**Medium**	**High**	**Not Useful**	**Low**	**Medium**	**High**
Primary Structure																
Structure Type	0%	0%	40%	60%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	20%	80%
Number of Stories	0%	20%	40%	40%	0%	0%	0%	100%	0%	0%	67%	33%	0%	10%	40%	50%
Structure Separation Distance	0%	0%	0%	100%	0%	0%	0%	100%	0%	33%	0%	67%	0%	10%	0%	90%
Accessory Structure																
Accessory Structure(s) Present	0%	0%	20%	80%	0%	0%	50%	50%	0%	0%	33%	67%	0%	0%	30%	70%
Accessory Structure Distance	0%	0%	40%	60%	0%	0%	0%	100%	0%	0%	33%	67%	0%	0%	30%	70%
Accessory Structure Compliant	0%	0%	20%	80%	0%	0%	100%	0%	0%	0%	33%	67%	0%	0%	40%	60%
Accessory Structure Detail	0%	20%	40%	40%	0%	0%	100%	0%	0%	33%	0%	67%	0%	20%	40%	40%
Roof																
Roof Class A	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%
Roof Debris	0%	0%	20%	80%	0%	0%	100%	0%	0%	33%	33%	33%	0%	10%	40%	50%
Dominant Roof Cover Type	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%
Dominant Roof Cover Percent	0%	40%	40%	20%	0%	0%	100%	0%	0%	33%	33%	33%	0%	30%	50%	20%
Secondary Roof Cover Type	0%	0%	40%	60%	0%	50%	50%	0%	0%	33%	33%	33%	0%	20%	40%	40%
Secondary Roof Cover Percentage	0%	40%	60%	0%	0%	50%	50%	0%	0%	67%	33%	0%	0%	50%	50%	0%
Gutter and Downspout																
Gutters Compliant	0%	20%	20%	60%	0%	0%	0%	100%	0%	33%	33%	33%	0%	20%	20%	60%
Gutter Material	0%	60%	20%	20%	0%	0%	100%	0%	0%	33%	67%	0%	0%	40%	50%	10%
Gutter Debris	0%	20%	20%	60%	0%	50%	50%	0%	0%	33%	33%	33%	0%	30%	30%	40%
Gutter Guards	0%	20%	20%	60%	0%	0%	50%	50%	0%	67%	33%	0%	0%	30%	30%	40%
Vent																
Vents Compliant	0%	0%	20%	80%	0%	0%	50%	50%	0%	0%	67%	33%	0%	0%	40%	60%
Dryer Vent Protection	20%	20%	0%	60%	0%	50%	0%	50%	0%	33%	67%	0%	10%	30%	20%	40%
Roof Vent Type	20%	20%	20%	40%	0%	0%	100%	0%	0%	0%	100%	0%	10%	10%	60%	20%
Roof Vent Protection	20%	20%	20%	40%	0%	0%	0%	100%	0%	0%	67%	33%	10%	10%	30%	50%
Gable End Vent Protection	20%	20%	20%	40%	0%	0%	50%	50%	0%	0%	67%	33%	10%	10%	40%	40%
Crawlspace Vent Protection	20%	20%	20%	40%	0%	0%	50%	50%	0%	33%	67%	0%	10%	20%	40%	30%
Under Eave Vent Protection	20%	0%	40%	40%	0%	0%	50%	50%	0%	0%	67%	33%	10%	0%	50%	40%
Eves and Soffit																
Eave Enclosure Material	0%	20%	0%	80%	0%	0%	0%	100%	0%	0%	100%	0%	0%	10%	30%	60%
Exterior Glass, Window, and Door																
Exterior Glass	0%	20%	0%	80%	0%	0%	0%	100%	0%	0%	0%	100%	0%	10%	0%	90%
Exterior Doors	0%	20%	0%	80%	0%	0%	100%	0%	0%	0%	0%	100%	0%	10%	20%	70%
Enclosed Bay Windows	0%	20%	20%	60%	0%	100%	0%	0%	0%	0%	33%	67%	0%	30%	20%	50%
Exterior Walls																
Vertical Clearance	0%	20%	0%	80%	0%	0%	0%	100%	0%	0%	0%	100%	0%	10%	0%	90%
Dominant Wall Cover Material	0%	0%	40%	60%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	20%	80%
Dominant Wall Cover Percentage	0%	40%	40%	20%	0%	0%	100%	0%	0%	33%	0%	67%	0%	30%	40%	30%
Secondary Wall Cover Material	0%	20%	20%	60%	0%	50%	50%	0%	0%	0%	0%	100%	0%	20%	20%	60%
Secondary Wall Cover Percentage	0%	60%	20%	20%	0%	100%	0%	0%	0%	33%	33%	33%	0%	60%	20%	20%
Decorative Shutter Type	0%	60%	20%	20%	0%	50%	50%	0%	0%	0%	67%	33%	0%	40%	40%	20%

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Perceived Utility (Usefulness): Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				Reinsurer				Catastrophe Modeler				All Groups Combined			
	Not Useful	Low	Medium	High	Not Useful	Low	Medium	High	Not Useful	Low	Medium	High	Not Useful	Low	Medium	High
Deck																
Decks Compliant	0%	0%	20%	80%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	10%	90%
Deck Defensible Space	0%	0%	20%	80%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	10%	90%
Top Deck Debris	0%	0%	0%	100%	0%	50%	50%	0%	0%	0%	33%	67%	0%	10%	20%	70%
Top Deck Plants	0%	20%	60%	20%	0%	100%	0%	0%	0%	33%	0%	67%	0%	40%	30%	30%
Deck Items Noncombustible	0%	0%	80%	20%	0%	100%	0%	0%	0%	33%	0%	67%	0%	30%	40%	30%
Deck Vegetation	0%	0%	20%	80%	0%	50%	0%	50%	0%	0%	0%	100%	0%	10%	10%	80%
Deck Storage	0%	20%	20%	60%	0%	50%	0%	50%	0%	0%	33%	67%	0%	20%	20%	60%
Enclosed Deck	0%	0%	20%	80%	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	30%	70%
Deck Structures	0%	0%	60%	40%	0%	50%	0%	50%	0%	0%	0%	100%	0%	10%	30%	60%
Decks Detached	0%	20%	60%	20%	0%	0%	100%	0%	0%	33%	0%	67%	0%	20%	50%	30%
Noncombustible Deck	0%	0%	20%	80%	0%	0%	50%	50%	0%	0%	33%	67%	0%	0%	30%	70%
Fence																
Noncombustible Fence	0%	0%	0%	100%	0%	0%	50%	50%	0%	0%	0%	100%	0%	0%	10%	90%
Fence Distance	0%	0%	40%	60%	0%	100%	0%	0%	33%	0%	0%	67%	10%	20%	20%	50%
Hazard Ignition Zone (HIZ)																
HIZ Vegetation	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%
HIZ Dead Organic	0%	0%	0%	100%	0%	50%	0%	50%	0%	0%	33%	67%	0%	10%	10%	80%
HIZ Combustible Items	0%	0%	0%	100%	0%	50%	0%	50%	0%	0%	0%	100%	0%	10%	0%	90%
Percent Fuel Coverage	0%	0%	20%	80%	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	10%	90%
Landscaping																
Receptive Fuel Bed	0%	0%	40%	60%	0%	0%	100%	0%	33%	0%	0%	67%	10%	0%	40%	50%
Fire Pathways to House	0%	0%	40%	60%	0%	50%	50%	0%	33%	0%	0%	67%	10%	10%	30%	50%
Elevated Fire Pathways to House	0%	0%	40%	60%	0%	50%	50%	0%	0%	0%	0%	100%	0%	10%	30%	60%
Ground Fire Spread	0%	20%	20%	60%	0%	50%	50%	0%	0%	0%	0%	100%	0%	20%	20%	60%
Ground Fire to Canopy	0%	0%	40%	60%	0%	100%	0%	0%	0%	0%	0%	100%	0%	20%	20%	60%
Fire Spread	0%	20%	20%	60%	0%	0%	100%	0%	33%	0%	0%	67%	10%	10%	30%	50%
Landscaping Debris	0%	0%	20%	80%	0%	50%	50%	0%	0%	0%	33%	67%	0%	10%	30%	60%
Tree Spacing	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%	0%	100%	0%	0%	20%	80%
Tree Pruning	0%	0%	0%	100%	0%	50%	50%	0%	0%	0%	0%	100%	0%	10%	10%	80%
Shrub Spacing	0%	0%	0%	100%	0%	50%	50%	0%	33%	0%	0%	67%	10%	10%	10%	70%
Tree Spacing >= 4 ft trunk size	0%	0%	75%	25%	0%	100%	0%	0%	33%	0%	0%	67%	11%	22%	33%	33%
Tree Spacing < 4 ft trunk size	0%	0%	100%	0%	0%	100%	0%	0%	33%	0%	0%	67%	11%	22%	44%	22%
Tree Pruning >=4ft trunk size	0%	0%	75%	25%	0%	100%	0%	0%	33%	0%	0%	67%	11%	22%	33%	33%
Tree Pruning < 4ft trunk size	0%	0%	100%	0%	0%	100%	0%	0%	33%	0%	0%	67%	11%	22%	44%	22%

Notes:
1. Column (1) is calculated as pp.3-4, Column (1) / pp.3-4, Column (5). Other columns are calculated similarly using the Total column of the corresponding category.

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Perceived Utility (Usefulness): Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					**Reinsurer**					**Catastrophe Modeler**					**All Groups Combined**				
	Not Useful	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**
Primary Structure																				
Structure Type	0	0	2	3	5	0	0	0	2	2	0	0	0	3	3	0	0	2	8	10
Number of Stories	0	1	2	2	5	0	0	0	2	2	0	0	2	1	3	0	1	4	5	10
Structure Separation Distance	0	0	0	5	5	0	0	0	2	2	0	1	0	2	3	0	1	0	9	10
Accessory Structure																				
Accessory Structure(s) Present	0	0	1	4	5	0	0	1	1	2	0	0	1	2	3	0	0	3	7	10
Accessory Structure Distance	0	0	2	3	5	0	0	0	2	2	0	0	1	2	3	0	0	3	7	10
Accessory Structure Compliant	0	0	1	4	5	0	0	2	0	2	0	0	1	2	3	0	0	4	6	10
Accessory Structure Detail	0	1	2	2	5	0	0	2	0	2	0	1	0	2	3	0	2	4	4	10
Roof																				
Roof Class A	0	0	0	5	5	0	0	0	2	2	0	0	0	3	3	0	0	0	10	10
Roof Debris	0	0	1	4	5	0	0	2	0	2	0	1	1	1	3	0	1	4	5	10
Dominant Roof Cover Type	0	0	0	5	5	0	0	0	2	2	0	0	0	3	3	0	0	0	10	10
Dominant Roof Cover Percent	0	2	2	1	5	0	0	2	0	2	0	1	1	1	3	0	3	5	2	10
Secondary Roof Cover Type	0	0	2	3	5	0	1	1	0	2	0	1	1	1	3	0	2	4	4	10
Secondary Roof Cover Percentage	0	2	3	0	5	0	1	1	0	2	0	2	1	0	3	0	5	5	0	10
Gutter and Downspout																				
Gutters Compliant	0	1	1	3	5	0	0	0	2	2	0	1	1	1	3	0	2	2	6	10
Gutter Material	0	3	1	1	5	0	0	2	0	2	0	1	2	0	3	0	4	5	1	10
Gutter Debris	0	1	1	3	5	0	1	1	0	2	0	1	1	1	3	0	3	3	4	10
Gutter Guards	0	1	1	3	5	0	0	1	1	2	0	2	1	0	3	0	3	3	4	10
Vent																				
Vents Compliant	0	0	1	4	5	0	0	1	1	2	0	0	2	1	3	0	0	4	6	10
Dryer Vent Protection	1	1	0	3	5	0	1	0	1	2	0	1	2	0	3	1	3	2	4	10
Roof Vent Type	1	1	1	2	5	0	0	2	0	2	0	0	3	0	3	1	1	6	2	10
Roof Vent Protection	1	1	1	2	5	0	0	0	2	2	0	0	2	1	3	1	1	3	5	10
Gable End Vent Protection	1	1	1	2	5	0	0	1	1	2	0	0	2	1	3	1	1	4	4	10
Crawlspace Vent Protection	1	1	1	2	5	0	0	1	1	2	0	1	2	0	3	1	2	4	3	10
Under Eave Vent Protection	1	0	2	2	5	0	0	1	1	2	0	0	2	1	3	1	0	5	4	10
Eves and Soffit																				
Eave Enclosure Material	0	1	0	4	5	0	0	0	2	2	0	0	3	0	3	0	1	3	6	10
Exterior Glass, Window, and Door																				
Exterior Glass	0	1	0	4	5	0	0	0	2	2	0	0	0	3	3	0	1	0	9	10
Exterior Doors	0	1	0	4	5	0	0	2	0	2	0	0	0	3	3	0	1	2	7	10
Enclosed Bay Windows	0	1	1	3	5	0	2	0	0	2	0	0	1	2	3	0	3	2	5	10
Exterior Walls																				
Vertical Clearance	0	1	0	4	5	0	0	0	2	2	0	0	0	3	3	0	1	0	9	10
Dominant Wall Cover Material	0	0	2	3	5	0	0	0	2	2	0	0	0	3	3	0	0	2	8	10
Dominant Wall Cover Percentage	0	2	2	1	5	0	0	2	0	2	0	1	0	2	3	0	3	4	3	10
Secondary Wall Cover Material	0	1	1	3	5	0	1	1	0	2	0	0	0	3	3	0	2	2	6	10
Secondary Wall Cover Percentage	0	3	1	1	5	0	2	0	0	2	0	1	1	1	3	0	6	2	2	10
Decorative Shutter Type	0	3	1	1	5	0	1	1	0	2	0	0	2	1	3	0	4	4	2	10

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Perceived Utility (Usefulness): Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					**Reinsurer**					**Catastrophe Modeler**					**All Groups Combined**				
	Not Useful	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**	**Not Useful**	**Low**	**Medium**	**High**	**Total**
Deck																				
Decks Compliant	0	0	1	4	5	0	0	0	2	2	0	0	0	3	3	0	0	1	9	10
Deck Defensible Space	0	0	1	4	5	0	0	0	2	2	0	0	0	3	3	0	0	1	9	10
Top Deck Debris	0	0	0	5	5	0	1	1	0	2	0	0	1	2	3	0	1	2	7	10
Top Deck Plants	0	1	3	1	5	0	2	0	0	2	0	1	0	2	3	0	4	3	3	10
Deck Items Noncombustible	0	0	4	1	5	0	2	0	0	2	0	1	0	2	3	0	3	4	3	10
Deck Vegetation	0	0	1	4	5	0	1	0	1	2	0	0	0	3	3	0	1	1	8	10
Deck Storage	0	1	1	3	5	0	1	0	1	2	0	0	1	2	3	0	2	2	6	10
Enclosed Deck	0	0	1	4	5	0	0	2	0	2	0	0	0	3	3	0	0	3	7	10
Deck Structures	0	0	3	2	5	0	1	0	1	2	0	0	0	3	3	0	1	3	6	10
Decks Detached	0	1	3	1	5	0	0	2	0	2	0	1	0	2	3	0	2	5	3	10
Noncombustible Deck	0	0	1	4	5	0	0	1	1	2	0	0	1	2	3	0	0	3	7	10
Fence																				
Noncombustible Fence	0	0	0	5	5	0	0	1	1	2	0	0	0	3	3	0	0	1	9	10
Fence Distance	0	0	2	3	5	0	2	0	0	2	1	0	0	2	3	1	2	2	5	10
Hazard Ignition Zone (HIZ)																				
HIZ Vegetation	0	0	0	5	5	0	0	0	2	2	0	0	0	3	3	0	0	0	10	10
HIZ Dead Organic	0	0	0	5	5	0	1	0	1	2	0	0	1	2	3	0	1	1	8	10
HIZ Combustible Items	0	0	0	5	5	0	1	0	1	2	0	0	0	3	3	0	1	0	9	10
Percent Fuel Coverage	0	0	1	4	5	0	0	0	2	2	0	0	0	3	3	0	0	1	9	10
Landscaping																				
Receptive Fuel Bed	0	0	2	3	5	0	0	2	0	2	1	0	0	2	3	1	0	4	5	10
Fire Pathways to House	0	0	2	3	5	0	1	1	0	2	1	0	0	2	3	1	1	3	5	10
Elevated Fire Pathways to House	0	0	2	3	5	0	1	1	0	2	0	0	0	3	3	0	1	3	6	10
Ground Fire Spread	0	1	1	3	5	0	1	1	0	2	0	0	0	3	3	0	2	2	6	10
Ground Fire to Canopy	0	0	2	3	5	0	2	0	0	2	0	0	0	3	3	0	2	2	6	10
Fire Spread	0	1	1	3	5	0	0	2	0	2	1	0	0	2	3	1	1	3	5	10
Landscaping Debris	0	0	1	4	5	0	1	1	0	2	0	0	1	2	3	0	1	3	6	10
Tree Spacing	0	0	0	5	5	0	0	2	0	2	0	0	0	3	3	0	0	2	8	10
Tree Pruning	0	0	0	5	5	0	1	1	0	2	0	0	0	3	3	0	1	1	8	10
Shrub Spacing	0	0	0	5	5	0	1	1	0	2	1	0	0	2	3	1	1	1	7	10
Tree Spacing >= 4 ft trunk size	0	0	3	1	4	0	2	0	0	2	1	0	0	2	3	1	2	3	3	9
Tree Spacing < 4 ft trunk size	0	0	4	0	4	0	2	0	0	2	1	0	0	2	3	1	2	4	2	9
Tree Pruning >=4ft trunk size	0	0	3	1	4	0	2	0	0	2	1	0	0	2	3	1	2	3	3	9
Tree Pruning < 4ft trunk size	0	0	4	0	4	0	2	0	0	2	1	0	0	2	3	1	2	4	2	9

Notes:

1. Responses by attribute come from WUI Data Commons - Parcel Attribute Survey, distributed to stakeholders after the interviews by company.
   Utility: Usefulness of the data to the stakeholder
   Complexity: Desired complexity with Level 3 being the most complex
   Consistency: Consistency of the data used by the stakeholder
   Confidence: Confidence in the answers given for utility, complexity and consistency
2. For primary insurer, *** is displayed if the total number of responses falls below the threshold of 4 (75% of the total number of primary insurer respondents).
   For reinsurer, *** is displayed if the total number of responses falls below the threshold of 2 (100% of the total number of reinsurer respondents).
   For catastrophe modeler, *** is displayed if the total number of responses falls below the threshold of 3 (100% of the total number of catastrophe modeler respondents).
   For all groups combined, *** is displayed if the total number of responses falls below the threshold of 9 (88% of the total number of respondents).

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Complexity: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				**Reinsurer**				**Catastrophe Modeler**				**All Groups Combined**			
	No Preference	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**
Primary Structure																
Structure Type	0%	0%	80%	20%	0%	0%	50%	50%	0%	0%	33%	67%	0%	0%	60%	40%
Number of Stories	0%	60%	20%	20%	50%	50%	0%	0%	0%	67%	0%	33%	10%	60%	10%	20%
Structure Separation Distance	0%	0%	20%	80%	0%	50%	0%	50%	0%	33%	0%	67%	0%	20%	10%	70%
Accessory Structure																
Accessory Structure(s) Present	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Accessory Structure Distance	0%	20%	60%	20%	0%	50%	50%	0%	0%	33%	67%	0%	0%	30%	60%	10%
Accessory Structure Compliant	20%	20%	40%	20%	0%	100%	0%	0%	0%	33%	67%	0%	10%	40%	40%	10%
Accessory Structure Detail	0%	20%	40%	40%	0%	100%	0%	0%	33%	0%	67%	0%	10%	30%	40%	20%
Roof																
Roof Class A	0%	80%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	0%	90%	0%	10%
Roof Debris	0%	20%	40%	40%	0%	100%	0%	0%	0%	33%	33%	33%	0%	40%	30%	30%
Dominant Roof Cover Type	0%	0%	80%	20%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	90%	10%
Dominant Roof Cover Percent	0%	75%	0%	25%	0%	50%	50%	0%	33%	67%	0%	0%	11%	67%	11%	11%
Secondary Roof Cover Type	20%	20%	40%	20%	50%	50%	0%	0%	67%	33%	0%	0%	40%	30%	20%	10%
Secondary Roof Cover Percentage	25%	50%	0%	25%	100%	0%	0%	0%	33%	67%	0%	0%	44%	44%	0%	11%
Gutter and Downspout																
Gutters Compliant	0%	80%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	0%	90%	0%	10%
Gutter Material	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	0%	33%	10%	70%	0%	20%
Gutter Debris	25%	50%	0%	25%	100%	0%	0%	0%	33%	67%	0%	0%	44%	44%	0%	11%
Gutter Guards	0%	60%	0%	40%	100%	0%	0%	0%	67%	33%	0%	0%	40%	40%	0%	20%
Vent																
Vents Compliant	20%	60%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	10%	80%	0%	10%
Dryer Vent Protection	50%	25%	0%	25%	50%	50%	0%	0%	33%	67%	0%	0%	44%	44%	0%	11%
Roof Vent Type	50%	25%	0%	25%	0%	100%	0%	0%	0%	100%	0%	0%	22%	67%	0%	11%
Roof Vent Protection	25%	25%	25%	25%	0%	0%	100%	0%	0%	67%	33%	0%	11%	33%	44%	11%
Gable End Vent Protection	50%	25%	0%	25%					33%	33%	33%	0%				
Crawlspace Vent Protection	50%	25%	0%	25%					67%	33%	0%	0%				
Under Eave Vent Protection	25%	25%	0%	50%					33%	33%	33%	0%				
Eves and Soffit																
Eave Enclosure Material	0%	40%	40%	20%	0%	50%	50%	0%	0%	100%	0%	0%	0%	60%	30%	10%
Exterior Glass, Window, and Door																
Exterior Glass	0%	40%	40%	20%	0%	50%	50%	0%	0%	0%	33%	67%	0%	30%	40%	30%
Exterior Doors	0%	40%	60%	0%	0%	100%	0%	0%	0%	0%	67%	33%	0%	40%	50%	10%
Enclosed Bay Windows	50%	0%	25%	25%	100%	0%	0%	0%	33%	0%	33%	33%	56%	0%	22%	22%
Exterior Walls																
Vertical Clearance	0%	20%	40%	40%	0%	50%	50%	0%	0%	0%	67%	33%	0%	20%	50%	30%
Dominant Wall Cover Material	0%	0%	80%	20%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	90%	10%
Dominant Wall Cover Percentage	50%	25%	0%	25%	50%	50%	0%	0%	33%	33%	33%	0%	44%	33%	11%	11%
Secondary Wall Cover Material	50%	0%	25%	25%	100%	0%	0%	0%	0%	33%	67%	0%	44%	11%	33%	11%
Secondary Wall Cover Percentage	50%	25%	0%	25%	100%	0%	0%	0%	33%	33%	33%	0%	56%	22%	11%	11%
Decorative Shutter Type	50%	0%	25%	25%	100%	0%	0%	0%	33%	33%	33%	0%	56%	11%	22%	11%

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Complexity: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				**Reinsurer**				**Catastrophe Modeler**				**All Groups Combined**			
	No Preference	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**No Preference**	**Level 1**	**Level 2**	**Level 3**
Deck																
Decks Compliant	20%	60%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	10%	80%	0%	10%
Deck Defensible Space	20%	60%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	10%	80%	0%	10%
Top Deck Debris	20%	60%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	10%	80%	0%	10%
Top Deck Plants	20%	60%	0%	20%	0%	100%	0%	0%	33%	67%	0%	0%	20%	70%	0%	10%
Deck Items Noncombustible	20%	40%	20%	20%	0%	100%	0%	0%	33%	67%	0%	0%	20%	60%	10%	10%
Deck Vegetation	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Deck Storage	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Enclosed Deck	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Deck Structures	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Decks Detached	20%	60%	0%	20%	0%	100%	0%	0%	33%	67%	0%	0%	20%	70%	0%	10%
Noncombustible Deck	20%	60%	0%	20%	0%	100%	0%	0%	0%	67%	33%	0%	10%	70%	10%	10%
Fence																
Noncombustible Fence	20%	60%	0%	20%	0%	100%	0%	0%	0%	100%	0%	0%	10%	80%	0%	10%
Fence Distance	20%	40%	20%	20%	50%	50%	0%	0%	33%	67%	0%	0%	30%	50%	10%	10%
Hazard Ignition Zone (HIZ)																
HIZ Vegetation	0%	40%	40%	20%	0%	100%	0%	0%	0%	33%	67%	0%	0%	50%	40%	10%
HIZ Dead Organic	0%	40%	40%	20%	0%	100%	0%	0%	0%	33%	67%	0%	0%	50%	40%	10%
HIZ Combustible Items	0%	40%	40%	20%	0%	100%	0%	0%	0%	33%	67%	0%	0%	50%	40%	10%
Percent Fuel Coverage	0%	60%	20%	20%	0%	100%	0%	0%	0%	33%	67%	0%	0%	60%	30%	10%
Landscaping																
Receptive Fuel Bed	0%	40%	40%	20%	50%	50%	0%	0%	33%	33%	33%	0%	20%	40%	30%	10%
Fire Pathways to House	0%	40%	40%	20%	50%	50%	0%	0%	33%	33%	33%	0%	20%	40%	30%	10%
Elevated Fire Pathways to House	0%	60%	20%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	50%	30%	10%
Ground Fire Spread	0%	60%	20%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	50%	30%	10%
Ground Fire to Canopy	0%	60%	20%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	50%	30%	10%
Fire Spread	0%	60%	20%	20%	50%	50%	0%	0%	33%	33%	33%	0%	20%	50%	20%	10%
Landscaping Debris	0%	20%	60%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	30%	50%	10%
Tree Spacing	0%	20%	60%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	30%	50%	10%
Tree Pruning	0%	40%	40%	20%	50%	50%	0%	0%	0%	33%	67%	0%	10%	40%	40%	10%
Shrub Spacing	0%	20%	60%	20%	50%	50%	0%	0%	33%	33%	33%	0%	20%	30%	40%	10%
Tree Spacing >= 4 ft trunk size	0%	25%	50%	25%	50%	50%	0%	0%	33%	33%	33%	0%	22%	33%	33%	11%
Tree Spacing < 4 ft trunk size	0%	25%	50%	25%	50%	50%	0%	0%	33%	33%	33%	0%	22%	33%	33%	11%
Tree Pruning >=4ft trunk size	0%	25%	50%	25%	50%	50%	0%	0%	33%	33%	33%	0%	22%	33%	33%	11%
Tree Pruning < 4ft trunk size	0%	25%	50%	25%	50%	50%	0%	0%	33%	33%	33%	0%	22%	33%	33%	11%

Notes:
1. Column (1) is calculated as pp.7-8, Column (1) / pp.7-8, Column (5). Other columns are calculated similarly using the Total column of the corresponding category.
Complexity: Desired complexity with Level 3 being the most complex

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Complexity: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					**Reinsurer**					**Catastrophe Modeler**					**All Groups Combined**				
	No Preference	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**
Primary Structure																				
Structure Type	0	0	4	1	5	0	0	1	1	2	0	0	1	2	3	0	0	6	4	10
Number of Stories	0	3	1	1	5	1	1	0	0	2	0	2	0	1	3	1	6	1	2	10
Structure Separation Distance	0	0	1	4	5	0	1	0	1	2	0	1	0	2	3	0	2	1	7	10
Accessory Structure																				
Accessory Structure(s) Present	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Accessory Structure Distance	0	1	3	1	5	0	1	1	0	2	0	1	2	0	3	0	3	6	1	10
Accessory Structure Compliant	1	1	2	1	5	0	2	0	0	2	0	1	2	0	3	1	4	4	1	10
Accessory Structure Detail	0	1	2	2	5	0	2	0	0	2	1	0	2	0	3	1	3	4	2	10
Roof																				
Roof Class A	0	4	0	1	5	0	2	0	0	2	0	3	0	0	3	0	9	0	1	10
Roof Debris	0	1	2	2	5	0	2	0	0	2	0	1	1	1	3	0	4	3	3	10
Dominant Roof Cover Type	0	0	4	1	5	0	0	2	0	2	0	0	3	0	3	0	0	9	1	10
Dominant Roof Cover Percent	0	3	0	1	4	0	1	1	0	2	1	2	0	0	3	1	6	1	1	9
Secondary Roof Cover Type	1	1	2	1	5	1	1	0	0	2	2	1	0	0	3	4	3	2	1	10
Secondary Roof Cover Percentage	1	2	0	1	4	2	0	0	0	2	1	2	0	0	3	4	4	0	1	9
Gutter and Downspout																				
Gutters Compliant	0	4	0	1	5	0	2	0	0	2	0	3	0	0	3	0	9	0	1	10
Gutter Material	1	3	0	1	5	0	2	0	0	2	0	2	0	1	3	1	7	0	2	10
Gutter Debris	1	2	0	1	4	2	0	0	0	2	1	2	0	0	3	4	4	0	1	9
Gutter Guards	0	3	0	2	5	2	0	0	0	2	2	1	0	0	3	4	4	0	2	10
Vent																				
Vents Compliant	1	3	0	1	5	0	2	0	0	2	0	3	0	0	3	1	8	0	1	10
Dryer Vent Protection	2	1	0	1	4	1	1	0	0	2	1	2	0	0	3	4	4	0	1	9
Roof Vent Type	2	1	0	1	4	0	2	0	0	2	0	3	0	0	3	2	6	0	1	9
Roof Vent Protection	1	1	1	1	4	0	0	2	0	2	0	2	1	0	3	1	3	4	1	9
Gable End Vent Protection	2	1	0	1	4	***	***	***	***	***	1	1	1	0	3	***	***	***	***	***
Crawlspace Vent Protection	2	1	0	1	4	***	***	***	***	***	2	1	0	0	3	***	***	***	***	***
Under Eave Vent Protection	1	1	0	2	4	***	***	***	***	***	1	1	1	0	3	***	***	***	***	***
Eves and Soffit																				
Eave Enclosure Material	0	2	2	1	5	0	1	1	0	2	0	3	0	0	3	0	6	3	1	10
Exterior Glass, Window, and Door																				
Exterior Glass	0	2	2	1	5	0	1	1	0	2	0	0	1	2	3	0	3	4	3	10
Exterior Doors	0	2	3	0	5	0	2	0	0	2	0	0	2	1	3	0	4	5	1	10
Enclosed Bay Windows	2	0	1	1	4	2	0	0	0	2	1	0	1	1	3	5	0	2	2	9
Exterior Walls																				
Vertical Clearance	0	1	2	2	5	0	1	1	0	2	0	0	2	1	3	0	2	5	3	10
Dominant Wall Cover Material	0	0	4	1	5	0	0	2	0	2	0	0	3	0	3	0	0	9	1	10
Dominant Wall Cover Percentage	2	1	0	1	4	1	1	0	0	2	1	1	1	0	3	4	3	1	1	9
Secondary Wall Cover Material	2	0	1	1	4	2	0	0	0	2	0	1	2	0	3	4	1	3	1	9
Secondary Wall Cover Percentage	2	1	0	1	4	2	0	0	0	2	1	1	1	0	3	5	2	1	1	9
Decorative Shutter Type	2	0	1	1	4	2	0	0	0	2	1	1	1	0	3	5	1	2	1	9

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Complexity: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					**Reinsurer**					**Catastrophe Modeler**					**All Groups Combined**				
	No Preference	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**	**No Preference**	**Level 1**	**Level 2**	**Level 3**	**Total**
Deck																				
Decks Compliant	1	3	0	1	5	0	2	0	0	2	0	3	0	0	3	1	8	0	1	10
Deck Defensible Space	1	3	0	1	5	0	2	0	0	2	0	3	0	0	3	1	8	0	1	10
Top Deck Debris	1	3	0	1	5	0	2	0	0	2	0	3	0	0	3	1	8	0	1	10
Top Deck Plants	1	3	0	1	5	0	2	0	0	2	1	2	0	0	3	2	7	0	1	10
Deck Items Noncombustible	1	2	1	1	5	0	2	0	0	2	1	2	0	0	3	2	6	1	1	10
Deck Vegetation	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Deck Storage	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Enclosed Deck	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Deck Structures	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Decks Detached	1	3	0	1	5	0	2	0	0	2	1	2	0	0	3	2	7	0	1	10
Noncombustible Deck	1	3	0	1	5	0	2	0	0	2	0	2	1	0	3	1	7	1	1	10
Fence																				
Noncombustible Fence	1	3	0	1	5	0	2	0	0	2	0	3	0	0	3	1	8	0	1	10
Fence Distance	1	2	1	1	5	1	1	0	0	2	1	2	0	0	3	3	5	1	1	10
Hazard Ignition Zone (HIZ)																				
HIZ Vegetation	0	2	2	1	5	0	2	0	0	2	0	1	2	0	3	0	5	4	1	10
HIZ Dead Organic	0	2	2	1	5	0	2	0	0	2	0	1	2	0	3	0	5	4	1	10
HIZ Combustible Items	0	2	2	1	5	0	2	0	0	2	0	1	2	0	3	0	5	4	1	10
Percent Fuel Coverage	0	3	1	1	5	0	2	0	0	2	0	1	2	0	3	0	6	3	1	10
Landscaping																				
Receptive Fuel Bed	0	2	2	1	5	1	1	0	0	2	1	1	1	0	3	2	4	3	1	10
Fire Pathways to House	0	2	2	1	5	1	1	0	0	2	1	1	1	0	3	2	4	3	1	10
Elevated Fire Pathways to House	0	3	1	1	5	1	1	0	0	2	0	1	2	0	3	1	5	3	1	10
Ground Fire Spread	0	3	1	1	5	1	1	0	0	2	0	1	2	0	3	1	5	3	1	10
Ground Fire to Canopy	0	3	1	1	5	1	1	0	0	2	0	1	2	0	3	1	5	3	1	10
Fire Spread	0	3	1	1	5	1	1	0	0	2	1	1	1	0	3	2	5	2	1	10
Landscaping Debris	0	1	3	1	5	1	1	0	0	2	0	1	2	0	3	1	3	5	1	10
Tree Spacing	0	1	3	1	5	1	1	0	0	2	0	1	2	0	3	1	3	5	1	10
Tree Pruning	0	2	2	1	5	1	1	0	0	2	0	1	2	0	3	1	4	4	1	10
Shrub Spacing	0	1	3	1	5	1	1	0	0	2	1	1	1	0	3	2	3	4	1	10
Tree Spacing >= 4 ft trunk size	0	1	2	1	4	1	1	0	0	2	1	1	1	0	3	2	3	3	1	9
Tree Spacing < 4 ft trunk size	0	1	2	1	4	1	1	0	0	2	1	1	1	0	3	2	3	3	1	9
Tree Pruning >=4ft trunk size	0	1	2	1	4	1	1	0	0	2	1	1	1	0	3	2	3	3	1	9
Tree Pruning < 4ft trunk size	0	1	2	1	4	1	1	0	0	2	1	1	1	0	3	2	3	3	1	9

Notes:

1. Responses by attribute come from WUI Data Commons - Parcel Attribute Survey, distributed to stakeholders after the interviews by company.
   Utility: Usefulness of the data to the stakeholder
   Complexity: Desired complexity with Level 3 being the most complex
   Consistency: Consistency of the data used by the stakeholder
   Confidence: Confidence in the answers given for utility, complexity and consistency
2. For primary insurer, *** is displayed if the total number of responses falls below the threshold of 4 (75% of the total number of primary insurer respondents).
   For reinsurer, *** is displayed if the total number of responses falls below the threshold of 2 (100% of the total number of reinsurer respondents).
   For catastrophe modeler, *** is displayed if the total number of responses falls below the threshold of 3 (100% of the total number of catastrophe modeler respondents).
   For all groups combined, *** is displayed if the total number of responses falls below the threshold of 9 (88% of the total number of respondents).

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Consistency: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				Reinsurer				Catastrophe Modeler				All Groups Combined			
	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent
Primary Structure																
Structure Type	20%	0%	80%	0%	0%	0%	100%	0%	33%	0%	67%	0%	20%	0%	80%	0%
Number of Stories	0%	0%	100%	0%	0%	0%	100%	0%	67%	0%	33%	0%	20%	0%	80%	0%
Structure Separation Distance	60%	40%	0%	0%	50%	0%	0%	50%	67%	0%	33%	0%	60%	20%	10%	10%
Accessory Structure																
Accessory Structure(s) Present	0%	40%	60%	0%	50%	0%	50%	0%	33%	33%	33%	0%	20%	30%	50%	0%
Accessory Structure Distance	20%	60%	20%	0%	50%	0%	0%	50%	67%	0%	33%	0%	40%	30%	20%	10%
Accessory Structure Compliant	40%	40%	0%	20%	50%	0%	0%	50%	67%	0%	33%	0%	50%	20%	10%	20%
Accessory Structure Detail	40%	20%	0%	40%	50%	0%	0%	50%	33%	0%	33%	33%	40%	10%	10%	40%
Roof																
Roof Class A	0%	20%	80%	0%	0%	50%	50%	0%	33%	0%	67%	0%	10%	20%	70%	0%
Roof Debris	20%	40%	40%	0%	100%	0%	0%	0%	67%	0%	33%	0%	50%	20%	30%	0%
Dominant Roof Cover Type	20%	20%	60%	0%	0%	50%	50%	0%	33%	0%	67%	0%	20%	20%	60%	0%
Dominant Roof Cover Percent	25%	25%	50%	0%	50%	50%	0%	0%	67%	0%	33%	0%	44%	22%	33%	0%
Secondary Roof Cover Type	40%	20%	40%	0%	50%	0%	0%	50%	67%	0%	33%	0%	50%	10%	30%	10%
Secondary Roof Cover Percentage	50%	25%	25%	0%	50%	0%	0%	50%	67%	0%	33%	0%	56%	11%	22%	11%
Gutter and Downspout																
Gutters Compliant	60%	40%	0%	0%	50%	0%	0%	50%	33%	33%	33%	0%	50%	30%	10%	10%
Gutter Material	80%	20%	0%	0%	50%	0%	0%	50%	33%	33%	33%	0%	60%	20%	10%	10%
Gutter Debris	25%	25%	0%	50%	50%	0%	0%	50%	67%	0%	33%	0%	44%	11%	11%	33%
Gutter Guards	60%	0%	20%	20%	50%	0%	0%	50%	67%	0%	33%	0%	60%	0%	20%	20%
Vent																
Vents Compliant	60%	0%	40%	0%	50%	0%	0%	50%	33%	33%	33%	0%	50%	10%	30%	10%
Dryer Vent Protection					50%	0%	0%	50%	67%	0%	33%	0%				
Roof Vent Type					50%	0%	0%	50%	33%	33%	33%	0%				
Roof Vent Protection					50%	0%	0%	50%	33%	0%	33%	33%				
Gable End Vent Protection					50%	0%	0%	50%	33%	33%	33%	0%				
Crawlspace Vent Protection					50%	0%	0%	50%	67%	0%	33%	0%				
Under Eave Vent Protection					50%	0%	0%	50%	33%	33%	33%	0%				
Eves and Soffit																
Eave Enclosure Material	40%	20%	20%	20%	50%	50%	0%	0%	33%	33%	33%	0%	40%	30%	20%	10%
Exterior Glass, Window, and Door																
Exterior Glass	60%	0%	40%	0%	50%	50%	0%	0%	33%	0%	67%	0%	50%	10%	40%	0%
Exterior Doors	60%	0%	40%	0%	50%	50%	0%	0%	33%	0%	67%	0%	50%	10%	40%	0%
Enclosed Bay Windows	50%	25%	0%	25%	50%	0%	0%	50%	67%	0%	33%	0%	56%	11%	11%	22%
Exterior Walls																
Vertical Clearance	40%	20%	20%	20%	50%	0%	0%	50%	33%	33%	33%	0%	40%	20%	20%	20%
Dominant Wall Cover Material	0%	40%	60%	0%	50%	0%	50%	0%	33%	0%	67%	0%	20%	20%	60%	0%
Dominant Wall Cover Percentage	25%	25%	50%	0%	50%	0%	0%	50%	67%	0%	33%	0%	44%	11%	33%	11%
Secondary Wall Cover Material	50%	0%	50%	0%	50%	0%	0%	50%	67%	0%	33%	0%	56%	0%	33%	11%
Secondary Wall Cover Percentage	50%	0%	50%	0%	50%	0%	0%	50%	67%	0%	33%	0%	56%	0%	33%	11%
Decorative Shutter Type	50%	25%	25%	0%	50%	0%	0%	50%	67%	0%	33%	0%	56%	11%	22%	11%

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Consistency: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				Reinsurer				Catastrophe Modeler				All Groups Combined			
	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent
Deck																
Decks Compliant	75%	25%	0%	0%	50%	50%	0%	0%	33%	33%	33%	0%	56%	33%	11%	0%
Deck Defensible Space	75%	25%	0%	0%	50%	0%	0%	50%	33%	33%	33%	0%	56%	22%	11%	11%
Top Deck Debris	75%	25%	0%	0%	50%	0%	0%	50%	67%	0%	33%	0%	67%	11%	11%	11%
Top Deck Plants	100%	0%	0%	0%	50%	0%	0%	50%	67%	0%	33%	0%	78%	0%	11%	11%
Deck Items Noncombustible	80%	0%	0%	20%	50%	0%	0%	50%	67%	0%	33%	0%	70%	0%	10%	20%
Deck Vegetation	60%	0%	0%	40%	50%	0%	0%	50%	33%	0%	33%	33%	50%	0%	10%	40%
Deck Storage	80%	0%	0%	20%	50%	0%	0%	50%	33%	0%	33%	33%	60%	0%	10%	30%
Enclosed Deck	60%	20%	0%	20%	50%	0%	0%	50%	33%	0%	33%	33%	50%	10%	10%	30%
Deck Structures	60%	40%	0%	0%	50%	0%	0%	50%	67%	0%	33%	0%	60%	20%	10%	10%
Decks Detached	80%	20%	0%	0%	50%	0%	0%	50%	67%	0%	33%	0%	70%	10%	10%	10%
Noncombustible Deck	20%	40%	40%	0%	50%	50%	0%	0%	33%	33%	33%	0%	30%	40%	30%	0%
Fence																
Noncombustible Fence	40%	0%	60%	0%	50%	0%	0%	50%	33%	33%	33%	0%	40%	10%	40%	10%
Fence Distance	60%	0%	20%	20%	50%	0%	0%	50%	67%	0%	33%	0%	60%	0%	20%	20%
Hazard Ignition Zone (HIZ)																
HIZ Vegetation	0%	60%	40%	0%	50%	0%	0%	50%	33%	0%	67%	0%	20%	30%	40%	10%
HIZ Dead Organic	20%	60%	20%	0%	50%	0%	0%	50%	33%	0%	33%	33%	30%	30%	20%	20%
HIZ Combustible Items	0%	60%	40%	0%	50%	0%	0%	50%	33%	0%	33%	33%	20%	30%	30%	20%
Percent Fuel Coverage	20%	20%	40%	20%	0%	0%	50%	50%	67%	0%	33%	0%	30%	10%	40%	20%
Landscaping																
Receptive Fuel Bed	80%	0%	20%	0%	50%	0%	0%	50%					78%	0%	11%	11%
Fire Pathways to House	80%	0%	20%	0%	50%	0%	0%	50%					78%	0%	11%	11%
Elevated Fire Pathways to House	60%	0%	20%	20%	50%	0%	0%	50%					56%	0%	22%	22%
Ground Fire Spread	60%	0%	20%	20%	50%	0%	0%	50%					56%	11%	11%	22%
Ground Fire to Canopy	60%	20%	20%	0%	50%	0%	0%	50%					56%	22%	11%	11%
Fire Spread	60%	0%	20%	20%	50%	0%	0%	50%					67%	0%	11%	22%
Landscaping Debris	20%	40%	40%	0%	50%	0%	0%	50%					44%	22%	22%	11%
Tree Spacing	40%	40%	20%	0%	50%	0%	0%	50%					56%	22%	11%	11%
Tree Pruning	40%	40%	20%	0%	50%	0%	0%	50%					56%	22%	11%	11%
Shrub Spacing	40%	40%	20%	0%	50%	0%	0%	50%					56%	22%	11%	11%
Tree Spacing >= 4 ft trunk size	50%	25%	25%	0%	50%	0%	0%	50%								
Tree Spacing < 4 ft trunk size	50%	25%	25%	0%	50%	0%	0%	50%								
Tree Pruning >=4ft trunk size	50%	25%	25%	0%	50%	0%	0%	50%								
Tree Pruning < 4ft trunk size	50%	25%	25%	0%	50%	0%	0%	50%								

Notes:
1. Column (1) is calculated as pp.11-12, Column (1) / pp.11-12, Column (5). Other columns are calculated similarly using the Total column of the corresponding category.

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Consistency: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					**Reinsurer**					**Catastrophe Modeler**					**All Groups Combined**				
	No Opinion	**Somewhat Inconsistent**	**Consistent**	**Very Inconsistent**	**Total**	**No Opinion**	**Somewhat Inconsistent**	**Consistent**	**Very Inconsistent**	**Total**	**No Opinion**	**Somewhat Inconsistent**	**Consistent**	**Very Inconsistent**	**Total**	**No Opinion**	**Somewhat Inconsistent**	**Consistent**	**Very Inconsistent**	**Total**
Primary Structure																				
Structure Type	1	0	4	0	5	0	0	2	0	2	1	0	2	0	3	2	0	8	0	10
Number of Stories	0	0	5	0	5	0	0	2	0	2	2	0	1	0	3	2	0	8	0	10
Structure Separation Distance	3	2	0	0	5	1	0	0	1	2	2	0	1	0	3	6	2	1	1	10
Accessory Structure																				
Accessory Structure(s) Present	0	2	3	0	5	1	0	1	0	2	1	1	1	0	3	2	3	5	0	10
Accessory Structure Distance	1	3	1	0	5	1	0	0	1	2	2	0	1	0	3	4	3	2	1	10
Accessory Structure Compliant	2	2	0	1	5	1	0	0	1	2	2	0	1	0	3	5	2	1	2	10
Accessory Structure Detail	2	1	0	2	5	1	0	0	1	2	1	0	1	1	3	4	1	1	4	10
Roof																				
Roof Class A	0	1	4	0	5	0	1	1	0	2	1	0	2	0	3	1	2	7	0	10
Roof Debris	1	2	2	0	5	2	0	0	0	2	2	0	1	0	3	5	2	3	0	10
Dominant Roof Cover Type	1	1	3	0	5	0	1	1	0	2	1	0	2	0	3	2	2	6	0	10
Dominant Roof Cover Percent	1	1	2	0	4	1	1	0	0	2	2	0	1	0	3	4	2	3	0	9
Secondary Roof Cover Type	2	1	2	0	5	1	0	0	1	2	2	0	1	0	3	5	1	3	1	10
Secondary Roof Cover Percentage	2	1	1	0	4	1	0	0	1	2	2	0	1	0	3	5	1	2	1	9
Gutter and Downspout																				
Gutters Compliant	3	2	0	0	5	1	0	0	1	2	1	1	1	0	3	5	3	1	1	10
Gutter Material	4	1	0	0	5	1	0	0	1	2	1	1	1	0	3	6	2	1	1	10
Gutter Debris	1	1	0	2	4	1	0	0	1	2	2	0	1	0	3	4	1	1	3	9
Gutter Guards	3	0	1	1	5	1	0	0	1	2	2	0	1	0	3	6	0	2	2	10
Vent																				
Vents Compliant	3	0	2	0	5	1	0	0	1	2	1	1	1	0	3	5	1	3	1	10
Dryer Vent Protection	***	***	***	***	***	1	0	0	1	2	2	0	1	0	3	***	***	***	***	***
Roof Vent Type	***	***	***	***	***	1	0	0	1	2	1	1	1	0	3	***	***	***	***	***
Roof Vent Protection	***	***	***	***	***	1	0	0	1	2	1	0	1	1	3	***	***	***	***	***
Gable End Vent Protection	***	***	***	***	***	1	0	0	1	2	1	1	1	0	3	***	***	***	***	***
Crawlspace Vent Protection	***	***	***	***	***	1	0	0	1	2	2	0	1	0	3	***	***	***	***	***
Under Eave Vent Protection	***	***	***	***	***	1	0	0	1	2	1	1	1	0	3	***	***	***	***	***
Eves and Soffit																				
Eave Enclosure Material	2	1	1	1	5	1	1	0	0	2	1	1	1	0	3	4	3	2	1	10
Exterior Glass, Window, and Door																				
Exterior Glass	3	0	2	0	5	1	1	0	0	2	1	0	2	0	3	5	1	4	0	10
Exterior Doors	3	0	2	0	5	1	1	0	0	2	1	0	2	0	3	5	1	4	0	10
Enclosed Bay Windows	2	1	0	1	4	1	0	0	1	2	2	0	1	0	3	5	1	1	2	9
Exterior Walls																				
Vertical Clearance	2	1	1	1	5	1	0	0	1	2	1	1	1	0	3	4	2	2	2	10
Dominant Wall Cover Material	0	2	3	0	5	1	0	1	0	2	1	0	2	0	3	2	2	6	0	10
Dominant Wall Cover Percentage	1	1	2	0	4	1	0	0	1	2	2	0	1	0	3	4	1	3	1	9
Secondary Wall Cover Material	2	0	2	0	4	1	0	0	1	2	2	0	1	0	3	5	0	3	1	9
Secondary Wall Cover Percentage	2	0	2	0	4	1	0	0	1	2	2	0	1	0	3	5	0	3	1	9
Decorative Shutter Type	2	1	1	0	4	1	0	0	1	2	2	0	1	0	3	5	1	2	1	9

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Consistency: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
	Primary Insurer					Reinsurer					Catastrophe Modeler					All Groups Combined				
	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	Total	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	Total	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	Total	No Opinion	Somewhat Inconsistent	Consistent	Very Inconsistent	Total
Deck																				
Decks Compliant	3	1	0	0	4	1	1	0	0	2	1	1	1	0	3	5	3	1	0	9
Deck Defensible Space	3	1	0	0	4	1	0	0	1	2	1	1	1	0	3	5	2	1	1	9
Top Deck Debris	3	1	0	0	4	1	0	0	1	2	2	0	1	0	3	6	1	1	1	9
Top Deck Plants	4	0	0	0	4	1	0	0	1	2	2	0	1	0	3	7	0	1	1	9
Deck Items Noncombustible	4	0	0	1	5	1	0	0	1	2	2	0	1	0	3	7	0	1	2	10
Deck Vegetation	3	0	0	2	5	1	0	0	1	2	1	0	1	1	3	5	0	1	4	10
Deck Storage	4	0	0	1	5	1	0	0	1	2	1	0	1	1	3	6	0	1	3	10
Enclosed Deck	3	1	0	1	5	1	0	0	1	2	1	0	1	1	3	5	1	1	3	10
Deck Structures	3	2	0	0	5	1	0	0	1	2	2	0	1	0	3	6	2	1	1	10
Decks Detached	4	1	0	0	5	1	0	0	1	2	2	0	1	0	3	7	1	1	1	10
Noncombustible Deck	1	2	2	0	5	1	1	0	0	2	1	1	1	0	3	3	4	3	0	10
Fence																				
Noncombustible Fence	2	0	3	0	5	1	0	0	1	2	1	1	1	0	3	4	1	4	1	10
Fence Distance	3	0	1	1	5	1	0	0	1	2	2	0	1	0	3	6	0	2	2	10
Hazard Ignition Zone (HIZ)																				
HIZ Vegetation	0	3	2	0	5	1	0	0	1	2	1	0	2	0	3	2	3	4	1	10
HIZ Dead Organic	1	3	1	0	5	1	0	0	1	2	1	0	1	1	3	3	3	2	2	10
HIZ Combustible Items	0	3	2	0	5	1	0	0	1	2	1	0	1	1	3	2	3	3	2	10
Percent Fuel Coverage	1	1	2	1	5	0	0	1	1	2	2	0	1	0	3	3	1	4	2	10
Landscaping																				
Receptive Fuel Bed	4	0	1	0	5	1	0	0	1	2	***	***	***	***	***	7	0	1	1	9
Fire Pathways to House	4	0	1	0	5	1	0	0	1	2	***	***	***	***	***	7	0	1	1	9
Elevated Fire Pathways to House	3	0	1	1	5	1	0	0	1	2	***	***	***	***	***	5	0	2	2	9
Ground Fire Spread	3	0	1	1	5	1	0	0	1	2	***	***	***	***	***	5	1	1	2	9
Ground Fire to Canopy	3	1	1	0	5	1	0	0	1	2	***	***	***	***	***	5	2	1	1	9
Fire Spread	3	0	1	1	5	1	0	0	1	2	***	***	***	***	***	6	0	1	2	9
Landscaping Debris	1	2	2	0	5	1	0	0	1	2	***	***	***	***	***	4	2	2	1	9
Tree Spacing	2	2	1	0	5	1	0	0	1	2	***	***	***	***	***	5	2	1	1	9
Tree Pruning	2	2	1	0	5	1	0	0	1	2	***	***	***	***	***	5	2	1	1	9
Shrub Spacing	2	2	1	0	5	1	0	0	1	2	***	***	***	***	***	5	2	1	1	9
Tree Spacing >= 4 ft trunk size	2	1	1	0	4	1	0	0	1	2	***	***	***	***	***	***	***	***	***	***
Tree Spacing < 4 ft trunk size	2	1	1	0	4	1	0	0	1	2	***	***	***	***	***	***	***	***	***	***
Tree Pruning >=4ft trunk size	2	1	1	0	4	1	0	0	1	2	***	***	***	***	***	***	***	***	***	***
Tree Pruning < 4ft trunk size	2	1	1	0	4	1	0	0	1	2	***	***	***	***	***	***	***	***	***	***

Notes:

1. Responses by attribute come from WUI Data Commons - Parcel Attribute Survey, distributed to stakeholders after the interviews by company.
   Utility: Usefulness of the data to the stakeholder
   Complexity: Desired complexity with Level 3 being the most complex
   Consistency: Consistency of the data used by the stakeholder
   Confidence: Confidence in the answers given for utility, complexity and consistency
2. For primary insurer, *** is displayed if the total number of responses falls below the threshold of 4 (75% of the total number of primary insurer respondents).
   For reinsurer, *** is displayed if the total number of responses falls below the threshold of 2 (100% of the total number of reinsurer respondents).
   For catastrophe modeler, *** is displayed if the total number of responses falls below the threshold of 3 (100% of the total number of catastrophe modeler respondents).
   For all groups combined, *** is displayed if the total number of responses falls below the threshold of 9 (88% of the total number of respondents).

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Confidence: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Primary Insurer			**Reinsurer**			**Catastrophe Modeler**			**All Groups Combined**		
	Low	**Medium**	**High**	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**
Primary Structure												
Structure Type	0%	20%	80%	0%	0%	100%	0%	0%	100%	0%	10%	90%
Number of Stories	0%	20%	80%	0%	0%	100%	0%	33%	67%	0%	20%	80%
Structure Separation Distance	0%	60%	40%	0%	0%	100%	0%	33%	67%	0%	40%	60%
Accessory Structure												
Accessory Structure(s) Present	0%	60%	40%	0%	100%	0%	0%	67%	33%	0%	70%	30%
Accessory Structure Distance	0%	80%	20%	0%	50%	50%	0%	33%	67%	0%	60%	40%
Accessory Structure Compliant	0%	60%	40%	0%	100%	0%	0%	33%	67%	0%	60%	40%
Accessory Structure Detail	20%	60%	20%	0%	100%	0%	0%	33%	67%	10%	60%	30%
Roof												
Roof Class A	0%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0%	100%
Roof Debris	0%	40%	60%	0%	50%	50%	0%	33%	67%	0%	40%	60%
Dominant Roof Cover Type	20%	0%	80%	0%	0%	100%	0%	0%	100%	10%	0%	90%
Dominant Roof Cover Percent	20%	60%	20%	0%	100%	0%				11%	56%	33%
Secondary Roof Cover Type	20%	60%	20%	50%	50%	0%				22%	56%	22%
Secondary Roof Cover Percentage	20%	60%	20%	50%	50%	0%				22%	56%	22%
Gutter and Downspout												
Gutters Compliant	20%	40%	40%	0%	50%	50%	0%	33%	67%	10%	40%	50%
Gutter Material	20%	40%	40%	0%	50%	50%	0%	33%	67%	10%	40%	50%
Gutter Debris	40%	40%	20%	50%	0%	50%	0%	33%	67%	30%	30%	40%
Gutter Guards	20%	40%	40%	0%	50%	50%	0%	33%	67%	10%	40%	50%
Vent												
Vents Compliant	0%	40%	60%	0%	0%	100%	0%	33%	67%	0%	30%	70%
Dryer Vent Protection	25%	50%	25%	50%	0%	50%	33%	33%	33%	33%	33%	33%
Roof Vent Type	0%	100%	0%	0%	50%	50%	0%	33%	67%	0%	67%	33%
Roof Vent Protection	0%	75%	25%	0%	0%	100%	0%	33%	67%	0%	44%	56%
Gable End Vent Protection	0%	100%	0%	50%	0%	50%	0%	33%	67%	11%	56%	33%
Crawlspace Vent Protection	0%	100%	0%	50%	0%	50%	0%	33%	67%	11%	56%	33%
Under Eave Vent Protection	0%	75%	25%	50%	0%	50%	0%	33%	67%	11%	44%	44%
Eves and Soffit												
Eave Enclosure Material	0%	40%	60%	0%	100%	0%	0%	33%	67%	0%	50%	50%
Exterior Glass, Window, and Door												
Exterior Glass	0%	20%	80%	0%	50%	50%	0%	0%	100%	0%	20%	80%
Exterior Doors	0%	20%	80%	0%	100%	0%	0%	0%	100%	0%	30%	70%
Enclosed Bay Windows	0%	25%	75%	50%	50%	0%	33%	33%	33%	22%	33%	44%
Exterior Walls												
Vertical Clearance	0%	20%	80%	0%	50%	50%	0%	0%	100%	0%	20%	80%
Dominant Wall Cover Material	0%	60%	40%	0%	50%	50%	0%	0%	100%	0%	40%	60%
Dominant Wall Cover Percentage	0%	80%	20%	0%	100%	0%				0%	67%	33%
Secondary Wall Cover Material	0%	40%	60%	0%	50%	50%				0%	44%	56%
Secondary Wall Cover Percentage	0%	80%	20%	50%	0%	50%				11%	56%	33%
Decorative Shutter Type	20%	60%	20%	50%	50%	0%				22%	56%	22%

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Confidence: Percentage of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Primary Insurer			**Reinsurer**			**Catastrophe Modeler**			**All Groups Combined**		
	Low	**Medium**	**High**	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**
Deck												
Decks Compliant	0%	50%	50%	0%	50%	50%	0%	33%	67%	0%	44%	56%
Deck Defensible Space	0%	50%	50%	0%	50%	50%	33%	33%	33%	11%	44%	44%
Top Deck Debris	0%	75%	25%	50%	0%	50%	33%	33%	33%	22%	44%	33%
Top Deck Plants	75%	0%	25%	50%	0%	50%	33%	33%	33%	56%	11%	33%
Deck Items Noncombustible	40%	20%	40%	50%	50%	0%	33%	33%	33%	40%	30%	30%
Deck Vegetation	20%	40%	40%	50%	0%	50%	0%	33%	67%	20%	30%	50%
Deck Storage	0%	60%	40%	50%	0%	50%	0%	33%	67%	10%	40%	50%
Enclosed Deck	0%	60%	40%	50%	50%	0%	0%	33%	67%	10%	50%	40%
Deck Structures	20%	40%	40%	50%	50%	0%	33%	33%	33%	30%	40%	30%
Decks Detached	20%	40%	40%	50%	50%	0%	0%	33%	67%	20%	40%	40%
Noncombustible Deck	0%	40%	60%	50%	0%	50%	0%	33%	67%	10%	30%	60%
Fence												
Noncombustible Fence	0%	0%	100%	0%	50%	50%	0%	0%	100%	0%	10%	90%
Fence Distance	20%	20%	60%	50%	50%	0%	0%	0%	100%	20%	20%	60%
Hazard Ignition Zone (HIZ)												
HIZ Vegetation	0%	20%	80%	0%	50%	50%	0%	33%	67%	0%	30%	70%
HIZ Dead Organic	0%	40%	60%	50%	0%	50%	0%	33%	67%	10%	30%	60%
HIZ Combustible Items	0%	40%	60%	50%	0%	50%	0%	33%	67%	10%	30%	60%
Percent Fuel Coverage	0%	40%	60%	0%	50%	50%	33%	33%	33%	10%	40%	50%
Landscaping												
Receptive Fuel Bed	20%	40%	40%	50%	50%	0%				33%	44%	22%
Fire Pathways to House	20%	40%	40%	0%	100%	0%				22%	56%	22%
Elevated Fire Pathways to House	20%	40%	40%	100%	0%	0%				33%	33%	33%
Ground Fire Spread	20%	40%	40%	50%	50%	0%				22%	56%	22%
Ground Fire to Canopy	20%	40%	40%	50%	50%	0%				22%	44%	33%
Fire Spread	20%	40%	40%	0%	100%	0%				22%	56%	22%
Landscaping Debris	0%	20%	80%	50%	50%	0%				22%	33%	44%
Tree Spacing	0%	20%	80%	0%	100%	0%				11%	44%	44%
Tree Pruning	0%	20%	80%	100%	0%	0%				33%	22%	44%
Shrub Spacing	0%	20%	80%	50%	50%	0%				22%	33%	44%
Tree Spacing >= 4 ft trunk size	20%	60%	20%	100%	0%	0%				44%	44%	11%
Tree Spacing < 4 ft trunk size	20%	60%	20%	100%	0%	0%				44%	44%	11%
Tree Pruning >=4ft trunk size	20%	60%	20%	100%	0%	0%				44%	44%	11%
Tree Pruning < 4ft trunk size	20%	60%	20%	100%	0%	0%				44%	44%	11%

Notes:
1. Column (1) is calculated as pp.15-16, Column (1) / pp.15-16, Column (4). Other columns are calculated similarly using the Total column of the corresponding category.

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Confidence: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				**Reinsurer**				**Catastrophe Modeler**				**All Groups Combined**			
	Low	**Medium**	**High**	**Total**	**Low**	**Medium**	**High**	**Total**	**Low**	**Medium**	**High**	**Total**	**Low**	**Medium**	**High**	**Total**
Primary Structure																
Structure Type	0	1	4	5	0	0	2	2	0	0	3	3	0	1	9	10
Number of Stories	0	1	4	5	0	0	2	2	0	1	2	3	0	2	8	10
Structure Separation Distance	0	3	2	5	0	0	2	2	0	1	2	3	0	4	6	10
Accessory Structure																
Accessory Structure(s) Present	0	3	2	5	0	2	0	2	0	2	1	3	0	7	3	10
Accessory Structure Distance	0	4	1	5	0	1	1	2	0	1	2	3	0	6	4	10
Accessory Structure Compliant	0	3	2	5	0	2	0	2	0	1	2	3	0	6	4	10
Accessory Structure Detail	1	3	1	5	0	2	0	2	0	1	2	3	1	6	3	10
Roof																
Roof Class A	0	0	5	5	0	0	2	2	0	0	3	3	0	0	10	10
Roof Debris	0	2	3	5	0	1	1	2	0	1	2	3	0	4	6	10
Dominant Roof Cover Type	1	0	4	5	0	0	2	2	0	0	3	3	1	0	9	10
Dominant Roof Cover Percent	1	3	1	5	0	2	0	2	***	***	***	***	1	5	3	9
Secondary Roof Cover Type	1	3	1	5	1	1	0	2	***	***	***	***	2	5	2	9
Secondary Roof Cover Percentage	1	3	1	5	1	1	0	2	***	***	***	***	2	5	2	9
Gutter and Downspout																
Gutters Compliant	1	2	2	5	0	1	1	2	0	1	2	3	1	4	5	10
Gutter Material	1	2	2	5	0	1	1	2	0	1	2	3	1	4	5	10
Gutter Debris	2	2	1	5	1	0	1	2	0	1	2	3	3	3	4	10
Gutter Guards	1	2	2	5	0	1	1	2	0	1	2	3	1	4	5	10
Vent																
Vents Compliant	0	2	3	5	0	0	2	2	0	1	2	3	0	3	7	10
Dryer Vent Protection	1	2	1	4	1	0	1	2	1	1	1	3	3	3	3	9
Roof Vent Type	0	4	0	4	0	1	1	2	0	1	2	3	0	6	3	9
Roof Vent Protection	0	3	1	4	0	0	2	2	0	1	2	3	0	4	5	9
Gable End Vent Protection	0	4	0	4	1	0	1	2	0	1	2	3	1	5	3	9
Crawlspace Vent Protection	0	4	0	4	1	0	1	2	0	1	2	3	1	5	3	9
Under Eave Vent Protection	0	3	1	4	1	0	1	2	0	1	2	3	1	4	4	9
Eves and Soffit																
Eave Enclosure Material	0	2	3	5	0	2	0	2	0	1	2	3	0	5	5	10
Exterior Glass, Window, and Door																
Exterior Glass	0	1	4	5	0	1	1	2	0	0	3	3	0	2	8	10
Exterior Doors	0	1	4	5	0	2	0	2	0	0	3	3	0	3	7	10
Enclosed Bay Windows	0	1	3	4	1	1	0	2	1	1	1	3	2	3	4	9
Exterior Walls																
Vertical Clearance	0	1	4	5	0	1	1	2	0	0	3	3	0	2	8	10
Dominant Wall Cover Material	0	3	2	5	0	1	1	2	0	0	3	3	0	4	6	10
Dominant Wall Cover Percentage	0	4	1	5	0	2	0	2	***	***	***	***	0	6	3	9
Secondary Wall Cover Material	0	2	3	5	0	1	1	2	***	***	***	***	0	4	5	9
Secondary Wall Cover Percentage	0	4	1	5	1	0	1	2	***	***	***	***	1	5	3	9
Decorative Shutter Type	1	3	1	5	1	1	0	2	***	***	***	***	2	5	2	9

The Insurance Institute for Business & Home Safety
Wildfire Mitigation Open Data Commons
Stakeholders Survey

Confidence: Number of Responses by Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Primary Insurer				Reinsurer				Catastrophe Modeler				All Groups Combined			
	Low	Medium	High	Total	Low	Medium	High	Total	Low	Medium	High	Total	Low	Medium	High	Total
Deck																
Decks Compliant	0	2	2	4	0	1	1	2	0	1	2	3	0	4	5	9
Deck Defensible Space	0	2	2	4	0	1	1	2	1	1	1	3	1	4	4	9
Top Deck Debris	0	3	1	4	1	0	1	2	1	1	1	3	2	4	3	9
Top Deck Plants	3	0	1	4	1	0	1	2	1	1	1	3	5	1	3	9
Deck Items Noncombustible	2	1	2	5	1	1	0	2	1	1	1	3	4	3	3	10
Deck Vegetation	1	2	2	5	1	0	1	2	0	1	2	3	2	3	5	10
Deck Storage	0	3	2	5	1	0	1	2	0	1	2	3	1	4	5	10
Enclosed Deck	0	3	2	5	1	1	0	2	0	1	2	3	1	5	4	10
Deck Structures	1	2	2	5	1	1	0	2	1	1	1	3	3	4	3	10
Decks Detached	1	2	2	5	1	1	0	2	0	1	2	3	2	4	4	10
Noncombustible Deck	0	2	3	5	1	0	1	2	0	1	2	3	1	3	6	10
Fence																
Noncombustible Fence	0	0	5	5	0	1	1	2	0	0	3	3	0	1	9	10
Fence Distance	1	1	3	5	1	1	0	2	0	0	3	3	2	2	6	10
Hazard Ignition Zone (HIZ)																
HIZ Vegetation	0	1	4	5	0	1	1	2	0	1	2	3	0	3	7	10
HIZ Dead Organic	0	2	3	5	1	0	1	2	0	1	2	3	1	3	6	10
HIZ Combustible Items	0	2	3	5	1	0	1	2	0	1	2	3	1	3	6	10
Percent Fuel Coverage	0	2	3	5	0	1	1	2	1	1	1	3	1	4	5	10
Landscaping																
Receptive Fuel Bed	1	2	2	5	1	1	0	2	***	***	***	***	3	4	2	9
Fire Pathways to House	1	2	2	5	0	2	0	2	***	***	***	***	2	5	2	9
Elevated Fire Pathways to House	1	2	2	5	2	0	0	2	***	***	***	***	3	3	3	9
Ground Fire Spread	1	2	2	5	1	1	0	2	***	***	***	***	2	5	2	9
Ground Fire to Canopy	1	2	2	5	1	1	0	2	***	***	***	***	2	4	3	9
Fire Spread	1	2	2	5	0	2	0	2	***	***	***	***	2	5	2	9
Landscaping Debris	0	1	4	5	1	1	0	2	***	***	***	***	2	3	4	9
Tree Spacing	0	1	4	5	0	2	0	2	***	***	***	***	1	4	4	9
Tree Pruning	0	1	4	5	2	0	0	2	***	***	***	***	3	2	4	9
Shrub Spacing	0	1	4	5	1	1	0	2	***	***	***	***	2	3	4	9
Tree Spacing >= 4 ft trunk size	1	3	1	5	2	0	0	2	***	***	***	***	4	4	1	9
Tree Spacing < 4 ft trunk size	1	3	1	5	2	0	0	2	***	***	***	***	4	4	1	9
Tree Pruning >=4ft trunk size	1	3	1	5	2	0	0	2	***	***	***	***	4	4	1	9
Tree Pruning < 4ft trunk size	1	3	1	5	2	0	0	2	***	***	***	***	4	4	1	9

Notes:

1. Responses by attribute come from WUI Data Commons - Parcel Attribute Survey, distributed to stakeholders after the interviews by company.
   Utility: Usefulness of the data to the stakeholder
   Complexity: Desired complexity with Level 3 being the most complex
   Consistency: Consistency of the data used by the stakeholder
   Confidence: Confidence in the answers given for utility, complexity and consistency
2. For primary insurer, *** is displayed if the total number of responses falls below the threshold of 4 (75% of the total number of primary insurer respondents).
   For reinsurer, *** is displayed if the total number of responses falls below the threshold of 2 (100% of the total number of reinsurer respondents).
   For catastrophe modeler, *** is displayed if the total number of responses falls below the threshold of 3 (100% of the total number of catastrophe modeler respondents).
   For all groups combined, *** is displayed if the total number of responses falls below the threshold of 9 (88% of the total number of respondents).

Wildland-Urban Interface Data Commons

Technical interview pre-read materials

Milliman

Insurance Institute for Business & Home Safety®

Table of contents

IBHS & the wildland urban interface (WUI) data commons

Background

The Insurance Institute of Business and Home Safety (IBHS) is an independent, 501(C) nonprofit scientific research and communications organization supported by property insurers, reinsurers, and affiliated companies. In 2022 IBHS launched Wildfire Prepared Home™, the first-ever wildfire mitigation program to allow homeowners to achieve a designation showing they have taken the science-based actions required to meaningfully reduce their home's wildfire risk.

However, mitigated parcels may continue to be exposed to significant community-level risk due to conditions present on surrounding parcels, meaning that collective action at a community scale is required to be truly effective.

If parcel-level data is collected consistently and widely across a community, it may be possible to develop a much more informed view of the wildfire risk within a community.

Establishment of a shared data commons will help various stakeholders engaged in risk measurement and/or risk reduction – such as fire scientists, risk modelers, communities, and government entities – incorporate and utilize these data within an adaptive framework. In this way, a continuous cycle of improvement and re-evaluation can be used to track progress, drive prioritization and implementation, and refine the value of mitigations.

IBHS has engaged Milliman, an actuarial consulting firm with expertise in catastrophe modeling and wildfire risk, to assist with Phase 1 of the data commons development by conducting a series of interviews.

This slide deck is intended to provide background information for interviewees so that they can be prepared to answer questions during the scheduled interview time.

Data commons development plan

Phase 1 (current phase)

- Interview key stakeholders for input regarding parcel mitigation elements to be represented in the commons
- Develop initial data definition specification, listing critical variables, their attributes, and potential values

Future phases

- Develop and iterate data prototypes to inform interviews
- Conduct additional stakeholder interviews
- Develop conceptual data model
- Define data collection methodologies
- Define data standards
- Determine aggregation and summarization
- Establish data access and security
- Agree on ownership and control
- Define community risk classification standards and terminology

Need for a common data source

Dependencies between risk at the parcel, neighborhood, and community make measuring risk difficult

To better understand community wildfire risk, there is a need for a common data source to maintain ground-level information about parcel and community-level wildfire mitigation.

- The actions of one homeowners can affect the survivability of their neighboring structures during a wildfire, unlike for other perils such as hurricanes, earthquakes, and floods.
- Because community risk is closely linked to parcel risk, without a shared way to access parcel information, our understanding of community risk is very limited.
- Crucial data required to model and measure community risk is not easily captured.
- Currently, parcel data is often collected sporadically by different entities and at different resolutions. Data elements captured can be inconsistent, unverified, and may not consider real-time changes.
- The definition of community varies depending on the specific use case, requiring the ability for data to be aggregated at different levels.

Need for a common data source

Mitigation research & planning

The lack of shared data and measurement standards inhibits effective mitigation research and planning.

- Entities such as academic researchers, fire practitioners, insurance companies, data vendors, and wildfire mitigation contractors all collect similar data on parcel and community mitigation, but in different ways.
- This data therefore may not be transferable or usable by another entity because of small differences in when and how the data was collected or because access is restricted.
- Lack of reliable data on the existence of mitigations before a fire makes it difficult to understand mitigation efficacy.

Need for a common data source

Wildfire risk modeling and property insurance

Catastrophe (CAT) modelers supporting the insurance industry do not have access to parcel and community data at scale to build mitigation actions into their models.

- Detailed, common information regarding fuel breaks, mitigated buffers, and hardened parcels are not typically incorporated in current wildfire CAT models.
- Insurance companies using CAT models to assess wildfire risk may therefore have less precise assessments for specific homes and reduced confidence in their ability to understand the current wildfire risk.
- This results in homeowners and communities having distrust for the insurance industry, because their actions may not be reflected in improved insurance availability or affordability.

The disconnect between how various stakeholders view risk in WUI communities is exacerbated by differences in the data available to them

What is a data commons?

A collaborative platform designed to facilitate the collection, storage, and sharing of data

Data commons facilitate the collection, storage, management, and sharing of data and related resources and are typically designed to promote collaboration, information exchange, and innovation among many different stakeholders. Guiding principles include:

Participants share data for their mutual benefit: By contributing data, organizations can access a larger pool of information that can be used for various purposes, such as data analysis, benchmarking, research, or making informed decisions. This principle underlines the idea that the value of the database increases as more participants contribute data.

Data standardization and quality assurance: Contributors often need to adhere to specific data formats, structures, and quality standards to maintain the integrity of the database. This helps ensure that the data is accurate, consistent, and suitable for the intended purposes.

Some data commons examples include:

- ***Comprehensive Loss Underwriting Exchange (C.L.U.E.)*** Insurers submit information on home, rental, and auto insurance claims to the C.L.U.E. database, which is offered by LexisNexis. LexisNexis verifies and standardizes this data and generates C.L.U.E. reports for individuals. Insurance companies than obtain a report when a person applies for insurance; likewise consumers may obtain their own report annually. Participation by various insurers is voluntary.
- ***Credit bureaus (Equifax, Experian, TransUnion)*** Financial institutions, lenders and creditors voluntarily report an individual's financial activities to these bureaus which then verify and standardize the data to ensure consistency. They then compile credit information into a credit report, which is available for other organizations and consumers to review. Individuals have access to their own credit data. Credit scoring models use data in these reports to calculate credit scores, but how exactly the scores are calculated is proprietary.

WUI data commons

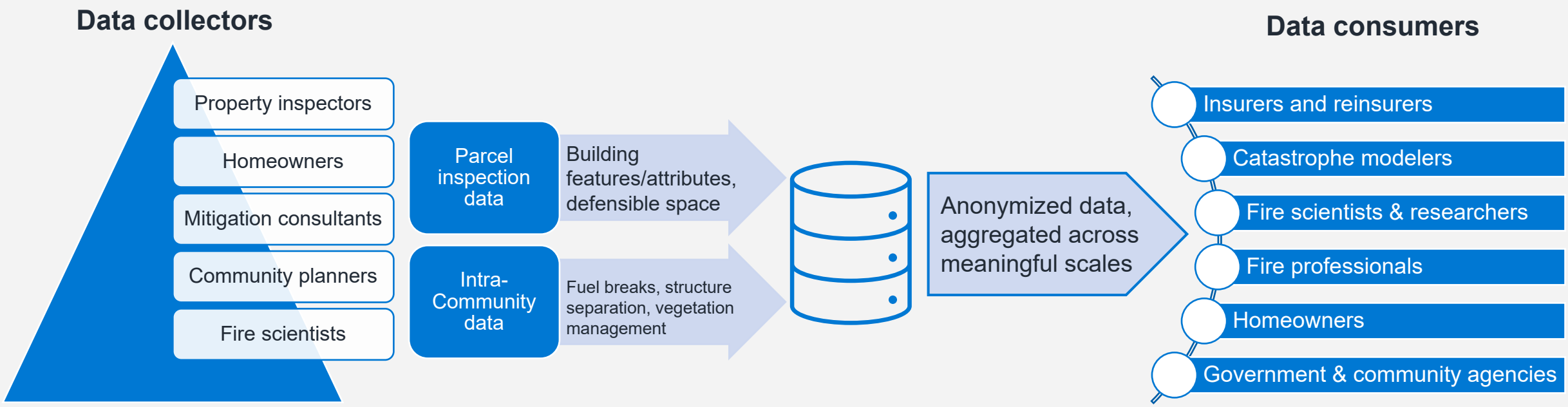
Benefits

The proposed data commons would be a key foundational element in addressing many of the issues surrounding resolving disconnects between wildfire mitigation efforts, risk measurement, and insurance affordability and availability in the WUI, such as:

- Closing the gap between actions by communities and homeowners to mitigate risk and what is visible and usable by insurers and CAT modelers
- Improving wildfire risk measurements at the parcel level with accurate data on the conditions of adjacent homes
- Driving down the cost of collecting data that requires onsite inspections and changes rapidly
- Facilitating targeted prioritization of mitigations to better allocate scare resources
- Allowing the progression of mitigation efforts to be tracked over time and available for reporting at appropriate levels

WUI data commons conceptual layout

Data collectors contribute data; consumers extract aggregated data



WUI data commons

Desired key attributes

Consistent

Similar data collected across different platforms, geographic areas and time periods

Cost-beneficial

Cost to collect the data is reasonable vs. value for users

Current

Collected frequently enough to capture quickly changing conditions

Accurate

Auditable and verifiable

Secure

Database architecture will have robust measures to restrict use and access

Aggregable

Will allow for views of risk at various geographic scales, to maximize usefulness by all parties

WUI data commons

Important development considerations (1 of 2)

Data standards

- A data standard is a set of specifications that governs the way data is collected, stored, processed, and exchanged.
- Stakeholders across the wildfire risk management and measurement community need to come to an agreed-upon set of standards to ensure data collected moving forward is done so in a correct, comprehensive, consistent, continuous, and cost-beneficial manner.
- This would need to address numerous questions such as what data should be collected, when during the year to collect it, how frequently to re-measure, who should collect the data, how data should be collected and how it should be verified.
- These standards can (and should) evolve over time as our understanding of wildfire risk and how to capture it improves.

Data synthesis

- Data will need to be aggregated up to meaningful levels that allow users to understand conditions surrounding a given parcel.
- The exact level of aggregation (e.g., 90-meter pixels, 10-parcel grids) and definitions of the aggregation measures (e.g., percentage of homes with Zone 0 clearance) will be an iterative process that responds to the needs of stakeholders and the evolving scientific understanding of community risk factors.

WUI data commons

Important development considerations (2 of 2)

Access and privacy

- Data should be hosted on a secure platform where all stakeholders can access the data under appropriate permissions
- Homeowners should be able to access their own detailed data at no cost, to know how and when they are being assessed.
- Local fire professionals should be able to access data within their areas of oversight at no or low cost, to be able to support their wildfire risk reduction planning efforts.
- Access rights for other stakeholders (communities, state agencies, insurers, modelers and researchers, etc.) will need to be worked out with respect to cost, extent and level of detail.
- Privacy issues must be considered and data must be abstracted and aggregated accordingly.

Ownership and control

- The data commons would need to be managed in a way that allows for effective governance, management, access, and control.
- In order to succeed, it needs to be trusted by a wide variety of public and private stakeholders.
- It also needs to be adaptable across state lines to be fully operationalized by insurers, reinsurers, and catastrophe modelers, for whom wildfire risk is not a single-state problem.

Technical interviews

Input needed from key collectors and users of data

- Representatives from Milliman and IBHS are jointly conducting a series of confidential interviews to inform the development of the data commons.
- The purpose of the interviews is to develop a comprehensive understanding of what wildfire risk metrics are the most important for different stakeholders to assess the current conditions surrounding a property and how these metrics should be captured and aggregated into useable data.
- Interviewees include representatives from leading property insurance and reinsurance companies, catastrophe modeling firms, data vendors, community organizations, and the fire service, among others.
- The interviews will be translated into a data definition specification and used to inform the development of the data commons, including data collection standards, access, and contribution requirements.

- Interview answers provided by participants will be treated with the utmost confidentiality and are intended solely for research purposes.
- At the request of the interviewee, we can draft a confidentiality agreement prior to the interview.
- We are committed to protecting the privacy and anonymity of our participants.
- Your responses will not be attributed to you in any way, and all identifying information will be kept separate from your answers.
- Your candid and honest responses will be invaluable in advancing our understanding of the subject matter, and we greatly appreciate your participation in this important research endeavor.

Next steps

- Milliman will reach out to selected interviewees to schedule a 1-hour virtual interview.
- Milliman will send out a question list and example data definition within 1 week of the scheduled interview.
- Interviewees can opt to answer questions in writing, but this is not required.
- Confidential interviews will be conducted between personnel from interviewee, Milliman, and IBHS.

Thank you

- For interview scheduling questions, please contact Staci St. Clair: staci.stclair@milliman.com
- For technical questions regarding interview content, please contact: Molly Barth molly.barth@milliman.com
- For questions regarding the data commons project, please contact Ian Giammanco (igiammanco@ibhs.org) and Nancy Watkins (nancy.watkins@milliman.com)

WUI Data Commons Interview Questions – Primary Insurer

Current data usage

1. In what forms do you currently receive wildfire risk data for a parcel or community?

2. What information about a given structure and its surrounding area do you use?

3. How do you use the data?

4. What problems are you trying to solve with the data you have today?

Desired parcel attributes

1. What are the core parcel attributes you would like to have access to? Consider both the structure and its surrounding area.

Data access and use

1. If you had access to this data, would you use it?

2. How could the data commons be integrated into your company?

3. What would be your conditions for contributing to the data commons?

4. What questions are you trying to answer that would be better answered with this data?

5. If you had access to this information, what impact do you think it would have on your understanding of wildfire risk on the ground and your confidence in that understanding?

Overarching

1. What barriers do you envision towards industry adoption?

2. Will emerging work result in future changes to the responses?

Closing

1. Is there anyone else at your organization or network you think we should speak to?

2. Do you have any feedback on the interview materials or process?

3. Do you have any additional thoughts or questions about the data commons project?

WUI Data Commons Interview Questions - Reinsurer

Current data usage

1. In what forms do you currently receive wildfire risk data for a parcel or community?

2. What information about a given structure and its surrounding area do you use?

3. How do you use the data?

4. What problems are you trying to solve with the data you have today?

Desired parcel attributes

1. What are the core parcel attributes you would like to have access to? Consider both the structure and its surrounding area.

Data access and use

1. If you had access to this data, would you use it?

2. How could the data commons be integrated into your company?

3. What would be your conditions for contributing to the data commons?

4. What questions are you trying to answer that would be better answered with this data?

5. If you had access to this information, what impact do you think it would have on your understanding of wildfire risk on the ground and your confidence in that understanding?

Overarching

1. What barriers do you envision towards industry adoption?

2. Will emerging work result in future changes to the responses?

Closing

1. Is there anyone else at your organization or network you think we should speak to?

2. Do you have any feedback on the interview materials or process?

3. Do you have any additional thoughts or questions about the data commons project?

WUI Data Commons Interview Questions – CAT Modeler

Current data usage

1. In what forms do you currently receive wildfire risk data for a parcel or community?

2. What information about a given structure and its surrounding area do you use?

3. How do you use the data?

4. What problems are you trying to solve with the data you have today?

Desired parcel attributes

1. What are the core parcel attributes you would like to have access to? Consider both the structure and its surrounding area.

Data access and use

1. If you had access to this data, would you use it?

2. Can you integrate the parcel attributes as secondary modifiers?

3. How could the data commons be easily integrated into your company?

4. What questions are you trying to answer that would be better answered with this data?

5. If you had access to this information, what impact do you think it would have on your understanding of wildfire risk on the ground and your confidence in that understanding?

Overarching

1. What barriers do you envision towards industry adoption?

2. Will emerging work result in future changes to the responses?

Closing

1. Is there anyone else at your organization or network you think we should speak to?

2. Do you have any feedback on the interview materials or process?

3. Do you have any additional thoughts or questions about the data commons project?

WUI Data Commons Interview Questions - Regulator

Current data usage

1. In what forms do you currently receive wildfire risk data for a parcel or community?

2. What information about a given structure and its surrounding area do you use?

3. How do you use the data?

4. What problems are you trying to solve with the data you have today?

Desired parcel attributes

1. What are the core parcel attributes you think should be included in the data commons? Consider both the structure and its surrounding area.

Data access and use

1. If you had access to this data, would you use it?

2. How could the data commons be easily integrated at CDI?

3. Do you have concerns about how insurers or other stakeholders might contribute to the data commons?

4. What questions are you trying to answer that would be better answered with this data?

5. If you had access to this information, what impact do you think it would have on your understanding of wildfire risk on the ground and your confidence in that understanding?

Overarching

1. What barriers do you envision towards adoption by CDI?

2. How should we work with CDI in the early stages of this project ?

3. What aspects of the regulatory process should we consider?

4. Will emerging work result in future changes to the responses?

Closing

1. Is there anyone else at your organization or network you think we should speak to?
2. Do you have any feedback on the interview materials or process?
3. Do you have any additional thoughts or questions about the data commons project?

Parcel Attribute Workbook Instructions

- Each sheet in this workbook refers to a different component of structure and its immediate surroundings. These are shown in the same order they appear in the parcel attribute survey you will sent after your interview.

- The attributes listed throughout this workbook are all evaluated as a part of the IBHS Wildfire Prepared Home standard. This represents what we believe is an exhaustive list of possible data elements to include in the data commons; however, there may be additional attributes that are of interest to you. The survey will provide you the oppotunity to list additional attributes we have left out.

- The example values are to demonstrate what increasing levels of data complexity could be. During the survey, you will be asked to evaluate the desired level of complexity for each attribute of interest as in the survey. Note that examples are not provided for all attributes: a ""-"" in the attribute values column indicates not relevant (e.g. only a binary or simple answer could be possible); a ""..."" indicates that the values for that attribute would be possible but have not been provided here for brevity.

- Additional pictures and information about Wildfire Prepared Home and many of the attributes listed here can be found here: https://wildfireprepared.org/wildfire-prepared-home-overview/"

Structure Properties

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Structure Type	Structure type	0 - residential 1 - commercial 2 - unable to determine	0.1 - residential single family home 0.2 - residential condominium 0.3 - residential townhome 1.1 - commercial office building 1.2 - commercial retail 1.3 - commercial other	0.1 - residential single family home 0.2 - residential condominium 0.3 - residential townhome 1.1 - commercial office building 1.2 - commercial retail 1.3 - commercial other
Number of Stories	How many stories is the structure?	1 to N	1 to N	1 to N
Structure Separation Distance	Distance to nearest other structure (includes outbuildings)	0 - Does not meet standard 1 - Meets standard 2 - Unable to Determine	30 meters	30 meters to nearest outbuilding; 100 meters to nearest occupied structure

Accessory Structures

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Accessory Structure(s) Present	presence of accessory structure within 30 ft	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Accessory Structure Distance	distance to all accessory structures	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	0-N feet, for each accessory structure	…
Accesory Structure Compliant	accessory structures meet same fire-resistant requirments of home	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	compliance / non-compliane for each structure	…
Accesory Structure Detail	detailed assesssment of assesory structures non-compliance	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	0.1 does not have clear decks 0.2 does not have ember resistant vents 0.3 non-class A roof …	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Roof Class A	roof is Class A	0 - no 1 - yes 2 - Unable to Determine	—	—
Roof Debris	presence or absence of debris on roof	0 - Does not meet standard 1 - Meets standard 2 - Unable to Determine	0.1 - No; live vegetation touching roof 0.2 - No; live and dead vegetation touching roof 0.2 - No; dead vegetation touching roof 0.3 - No; Non vegetative materials touching roof 1 - Meets standard 2 - Unable to Determine	0.1 - No; dead deciduous vegetation present on roof 0.1 - No; dead coniferous vegetation present on roof 0.3 - No; live deciduous vegetation touching/present on roof 0.4 - No; live coniferous vegetation touching/present on roof 0.5 - No; live and dead deciduous vegateion touching/present on roof 1 - Meets standard 2 - Unable to determine
Dominant Roof Cover Type	Dominant roof cover type	0 - Does not meet standard 1 - Meets standard 2 - Unable to Determine	1.1 - asphalt shingles 1.2 - clay tile 1.3 - concrete tile 1.4 - standing seam metal 1.5 - stone-coated metal 1.6 - slate 0.1 - wood shake 0.2 - composite shingles 2 - unknown	…
Dominant Roof Cover Percent	Dominant roof cover percentage	0.0 - 100%	…	…
Secondary Roof Cover Type	Secondary roof cover type	…	…	…
Secondary Roof Cover Percentage	…	…	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Gutters Compliant	gutters and downspouts meet all fire-resistant standards	0 - yes 1 - no 2 - Unable to Determine	n/a	n/a
Gutter Material	what the gutters and downspouts are made of	0 - Does not meet standard 1 - Meets standard 2 - Unable to determind 3 - Not present / not applicable	0 - Does not meet standard 1 - Meets standard 2 - Unable to determind 3 - Not present / not applicable	0.1 Vinyl 0.2 Wood 0.3 Plastic 1.1 Aluminum 1.2 Steel 1.3 Copper 2 - Unable to determine 3 - Not present / not applicable
Gutter Debris	presence or absence of debris in gutters	…	…	…
Gutter Guards	gutter guard cover materal	…	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Vents Compliant	vents corrosion-resistant and ember-resistant	0 - yes 1 - no 2 - Unable to Determine	…	…
Dryer Vent Protection	dryer vent covered with louver or flap covering, not mesh	0 - yes 1 - no 2 - Unable to Determine	…	…
Roof Vent Type	Type of roof vents present	Select all that apply: - ridge vents - off ridge vents - turbine vents - exhaust fan vents - more than one type of vent - other - cannot determine - not present	…	…
Roof Vent Protection	What are roof vents protected by?	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not present / not applicable	For each type of vent: 0.1 - not covered with 1/8" metal mesh or finer 0.2 - not otherwise fire and ember resistant 1.1 - covered with 1/8" metal mesh or finer 1.2 - covered with other fire and ember resistant material 2 - Unable to determine 3 - Not present / not applicable	For each type of vent: 0.1 - covered with metal mesh >= 1.8" 0.2 - covered with plastic cover 0.3 - covered with wood cover 1.1 - covered with 1/8" metal mesh or finer 1.2 - covered with other fire and ember resistant material 2 - Unable to determine 3 - Not present / not applicable
Gable End Vent Protection	What are gable end vents protected by?	…	…	…
Crawlspace Vent Protection	What are crawl space vents protected by?	…	…	…
Under Eave Vent Protection	What are under eave vents protected by?	…	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Eave Enclosure Material	what are eaves enclosed with?	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not present / not applicable	0.1 - enclosed with plywood or OSB 0.2 - enclosed with soffit made of combustible and/or non ignition resistant material 1.1 - enclosed with 2" lumber 1.2 - enclosed with soffit made of noncombustible, ignition resistant material 2 - Unable to determine 3 - Not present / not applicable	0.1 - enclosed with plywood 0.2 - enclosed with osb 0.3 - enclosed with soffit made of x 0.4 - enclosed with soffit made of y 1.1 - enclosed with 2" lumber 1.2 - enclosed with metal 1.3 - enclosed with stucco 2 - Unable to determine 3 - Not present / not applicable

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Exterior Glass	fire resistance of all windows (includes skylights, and glazed openings within doors)	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine	0.1 - <=25% of windows not double-paned and/or outer pane not tempered 0.2 - >=25% windows not double-paned and/or outer pane not tempered 1 - all windows double paned with at least outer pane tempered or glass blocks 2 - Unable to determine	0.1 - skylights not double-paned and/or not tempered 0.2 - door opening not double-paned and/or not tempered 0.3 - windows not double-paned and/or not tempered 1 - all windows double paned or glass blocks 2 - Unable to determine
Exterior Doors	fire resistance of exterior doors	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine	0 .1 - exterior doors do not have noncombustible surface or cladding 0.2 - combustible storm doors installed as the outermost exterior door 1 - exterior doors have noncombustible surface or cladding 1 - storm doors installed as the outermost exterior door 2 - unable to determine	…
Enclosed Bay Windows	open space under first-floor bay windows enclosed with a noncombustible wall section	…	…	…

Exterior Walls

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Vertical Clearance	combustible siding within 6 inches of the grade	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine	0 - less than 6 vertical inches; combustible material 0 - less than 6 vertical inches; non-combustible material 0 - at least 6 vertical inches; combustible material 1 - at least 6 vertical inches; non-combustible material 2 - could not determine	0 - less than 6 vertical inches; wood 0 - less than 6 vertical inches; wood shake 0 - less than 6 vertical inches; vinyl 0 - less than 6 vertical inches; brick 0 - less than 6 vertical inches; concrete 1 - at least 6 vertical inches; brick 1 - at least 6 vertical inches; concrete 1 - at least 6 vertical inches; stone 2 - could not determine
Dominant Wall Cover Material	Dominant wall cover material	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine	0 - Vinyl 0 - Wood panel 0 - wood shake 1 - Concrete 1 - Stucco 1 - Brick 1 - Concrete fiber board 1 - Stone 2 - other / could not determine	…
Dominant Wall Cover Percentage	Dominant wall coverage percentage	0 - 100%	…	…
Secondary Wall Cover Material	Secondary wall cover material	…	…	…
Secondary Wall Cover Percentage	Secondary wall cover percent coverage	…	…	…
Decorative Shutter Type	Decorative shuttle type	…	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Decks Compliant	Deck lower than 4 feet from ground is not enclosed with noncombustible cladding or eighth-inch mesh.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Deck Defensible Space	Decks and porches have 5 ft of noncombustible defensible space	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Top Deck Debris	Decks and porches cleared of yard debris	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Top Deck Plants	Vegetation on decks	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Deck Items Noncombustible	non-combustible/ignition-resistant status of items on deck	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Deck Vegetation	Underneath deck vegetation	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Deck Storage	Underneath deck storage	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Enclosed Deck	Deck and porch enclosures	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Deck Structures	Additonal structure attached to deck	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Decks Detached	Detached Decks	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…
Noncombustible Deck	deck material noncompustible	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	…

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Noncombustible Fence	Any fencing within 5 ft of the home is made of non-combustible materials	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	—	—
Fence Distance	Distance between back-to-back fences	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	0-N ft	—

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
HIZ Vegetation	Combustible vegetation in Home Ignition Zone (includes all ground cover and overhanging tree branches)	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	details regarding type and postiion of vegetation	—
HIZ Dead Organic	Combustible dead organic material within Home Ignition Zone	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	details regarding type and postiion of dead organic matter	—
HIZ Combustible Items	Combustible items or materials in Home Ignition Zone (furniture, trash cans, boats, RVs)	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	details regarding type and position of combustible items	—
Percent Fuel Coverage	Total percent coverage of fuels in the 0-5 zone	0 - 0% fuel coverage 1 - 1-5% fuel coverage 2 - 6-25% fuel coverage 3 - 26-50% fuel coverage 4 - 51-75% fuel coverage 5 - >75% fuel coverage	percent by fuel type	—

Landscaping (5-30ft)

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
Receptive Fuel Bed	Conditions for receptive fuel bed present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	further detail capturing condition of receptive fuel bed	—
Fire Pathways To House	Conditions for fire pathways to house present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	further detail capturing fire pathway to house	—
Elevated Fire Pathways To House	Conditions for elevated fire pathways to house present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	—
Ground Fire Spread	Conditions for ground fire spread to tree canopy present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	—
Ground Fire To Canopy	Conditions for ground fire spread to canopy spread present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	—
Fire Spread	Conditions for general fire spread present.	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	—
Landscaping Debris	accumulated fallen pine needles, leaves or other debris present	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	details on ground litter	—
Tree Spacing	tree spacing	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	details on tree spcing	—
Tree Pruning	tree pruning	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	…	—
Shrub Spacing	shrub spacing	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	1-N ft	—
tree spacing >= 4 ft trunk size	tree spacing >= 4 ft trunk size	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	1-N ft	—

Attribute Name	Attribute Description	Example Values, Complexity Level 1	Example Values, Complexity Level 2	Example Values, Complexity Level 3
tree spacing < 4 ft trunk size	tree spacing < 4 ft trunk size	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	1-N ft	—
tree pruning >=4ft trunk size	tree pruning >=4ft trunk size	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	1-N ft	—
tree pruning < 4ft trunk size	tree pruning < 4ft trunk size	0 - Does not meet standard 1 - Meets standard 2 - Unable to determine 3 - Not applicable	1-N ft	—

WUI Data Commons - Parcel Attribute Survey

Thank you for taking the time to fill out our survey. For questions, please contact siewgee.Lim@milliman.com

The following pages will present you with various parcel attributes which are being considered for inclusion in the data commons.

For each attribute, please select:

- Your perceived **utility** of the attribute. Do you think having this information for structures in WUI communities would be useful for your company?
- The level of **complexity** of data desired. If this variable would be useful, how detailed would you like the data to be? Refer to the attribute workbook for examples values for each level of complexity. If a variable is not useful, you can leave this blank.
- Typical **consistency** of the data you have worked with in the past. If you have received data about this attribute for structures in the past from a data vendor or inspector, how consistent has this data been? If you have not worked with this data or are otherwise unsure, please select no opinion.
- How **confident** you are, generally speaking, in your answers regarding utility, complexity, and consistency.

For attribute definitions, please refer to the attribute workbook.

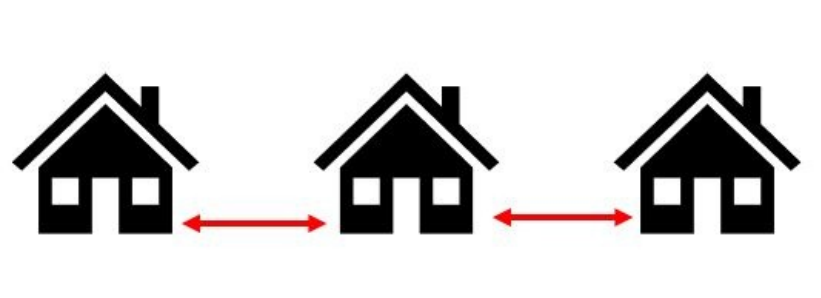
1. What is your name?

2. What is the name of your organization?

3. What is your role in wildfire risk measurement?

WUI Data Commons - Parcel Attribute Survey

Primary structure attributes



Structure separation distance is the minimum distance between homes and other structures.

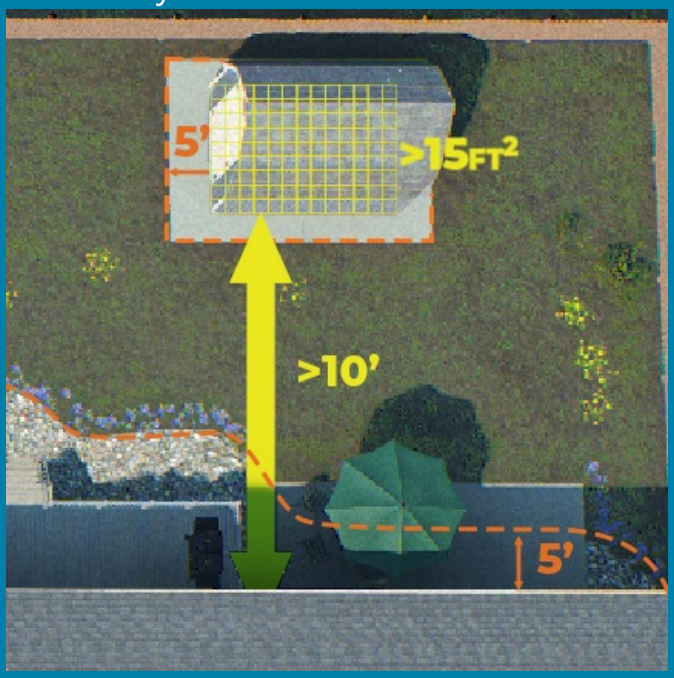
4. Primary structure attributes

	Utility	Complexity	Consistency	Confidence
Structure Type				
Number of Stories				
Structure Separation Distance				

5. Any additional thoughts to share about primary structure attributes?

WUI Data Commons - Parcel Attribute Survey

Accessory structures



Accessory structures are structures detached from the main structure.

6. Accessory structure attributes

	Utility	Complexity	Consistency	Confidence
Accessory Structure(s) Present				
Accessory Structure Distance				
Accessory Structure Compliant				
Accessory Structure Detail				

7. Any additional thoughts to share about accessory structures?

WUI Data Commons - Parcel Attribute Survey

Roof

Roof cover refers to what materials the roof is made out of

8. Roof attributes

	Utility	Complexity	Consistency	Confidence
Roof Class A				
Roof Debris				
Dominant Roof Cover Type				
Dominant Roof Cover Percent				
Secondary Roof Cover Type				
Secondary Roof Cover Percentage				

9. Any additional thoughts to share about roof attributes?

WUI Data Commons - Parcel Attribute Survey

Gutters and downspouts

Gutter and downspout (left); gutter with cover (right)

10. Gutter and downspout attributes

	Utility	Complexity	Consistency	Confidence
Gutters Compliant				
Gutter Material				
Gutter Debris				
Gutter Guards				

11. Any additional thoughts to share about gutters and downspouts?

WUI Data Commons - Parcel Attribute Survey

Vents

Crawlspace vent (top left), gable end vent (bottom left), dryer vent (middle), roof vents (right)

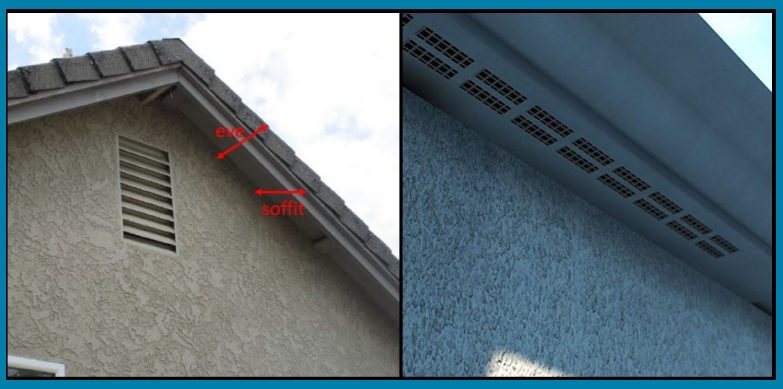
12. Vent attributes

	Utility	Complexity	Consistency	Confidence
Vents Compliant				
Dryer Vent Protection				
Roof Vent Type				
Roof Vent Protection				
Gable End Vent Protection				
Crawlspace Vent Protection				
Under Eave Vent Protection				

13. Any additional thoughts to share about vents?

WUI Data Commons - Parcel Attribute Survey

Eves and soffits



Eves and soffit (left); eve enclosure (right)

14. Eves and soffit attributes

	Utility	Complexity	Consistency	Confidence
Eave Enclosure Material				

15. Any additional thoughts to share about eaves and soffits?

WUI Data Commons - Parcel Attribute Survey

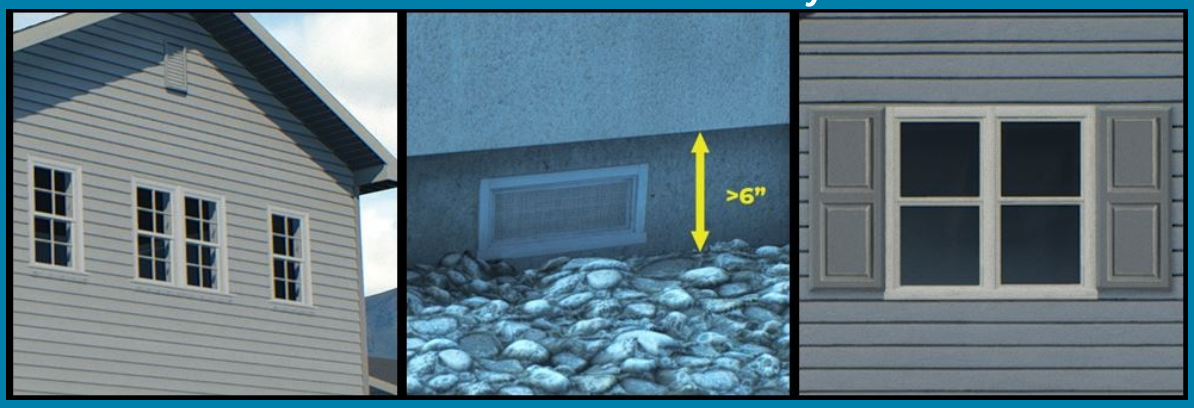
Fire resistant glass (left); exterior door (middle); enclosed bay windows (right)

16. Exterior glass, window, and door attributes

	Utility	Complexity	Consistency	Confidence
Exterior Glass				
Exterior Doors				
Enclosed Bay Windows				

17. Any additional thoughts to share about exterior glass, windows, and doors?

WUI Data Commons - Parcel Attribute Survey



Exterior walls (left); vertical clearance (middle); decorative shutters (right)

18. Exterior walls attributes

	Utility	Complexity	Consistency	Confidence
Vertical Clearance				
Dominant Wall Cover Material				
Dominant Wall Cover Percentage				
Secondary Wall Cover Material				
Secondary Wall Cover Percentage				
Decorative Shutter Type				

19. Any additional thoughts to share about exterior walls?

WUI Data Commons - Parcel Attribute Survey

20. Deck attributes

	Utility	Complexity	Consistency	Confidence
Decks Compliant				
Deck Defensible Space				
Top Deck Debris				
Top Deck Plants				
Deck Items Noncombustible				
Deck Vegetation				
Deck Storage				
Enclosed Deck				
Deck Structures				
Decks Detached				
Noncombustible Deck				

21. Any additional thoughts to share about decks?

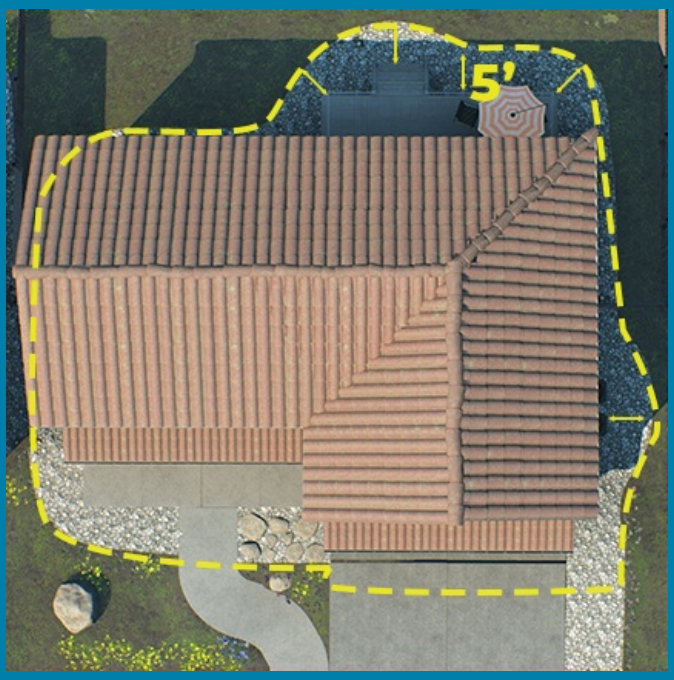
WUI Data Commons - Parcel Attribute Survey

22. Fence attributes

	Utility	Complexity	Consistency	Confidence
Noncombustible Fence				
Fence Distance				

23. Any additional thoughts to share about fences?

WUI Data Commons - Parcel Attribute Survey



The home ignition zone (HIZ) refers to the area 0-5 ft surrounding the structure

24. HIZ attributes

	Utility	Complexity	Consistency	Confidence
HIZ Vegetation				
HIZ Dead Organic				
HIZ Combustible Items				
Percent Fuel Coverage				

25. Any additional thoughts to share about the home ignition zone?

WUI Data Commons - Parcel Attribute Survey

Landscaping refers to the area 5-30 ft surrounding the structure

26. Landscaping attributes

	Utility	Complexity	Consistency	Confidence
Receptive Fuel Bed				
Fire Pathways to House				
Elevated Fire Pathways to House				
Ground Fire Spread				
Ground Fire to Canopy				
Fire Spread				
Landscaping Debris				
Tree Spacing				
Tree Pruning				
Shrub Spacing				
Tree Spacing >= 4 ft trunk size				
Tree Spacing < 4 ft trunk size				
Tree Pruning >=4ft trunk size				
Tree Pruning < 4ft trunk size				

27. Any additional thoughts to share about landscaping?

WUI Data Commons - Parcel Attribute Survey
Closing Questions

28. Are there any other attributes we have not considered that you would like to see included in the data commons? Please enter them below.

29. Do you have any feedback for us that can help improve the interview and survey process?

30. Do you have any additional thoughts or questions about the data commons project?