

2021 Marshall Fire Evacuation Household Survey

Erica D. Kuligowski^{a*}, Ruggiero Lovreglio^b, Xilei Zhao^c, Xiang Yan^c, Thomas J. Cova^d, Daniel Nilsson^e

^aRMIT University, 124 La Trobe Street, Melbourne, Vic 3000, Australia

^bMassey University, Private Bag 102904, North Shore Auckland 0745, New Zealand

^cUniversity of Florida, 1949 Stadium Road, Gainesville, FL 32611, USA

^dUniversity of Utah, 260 S Central Campus Dr, Salt Lake City, UT 84112, USA

^eUniversity of Canterbury, 69 Creyke Road, Christchurch 8041, New Zealand

*Corresponding author: erica.kuligowski@rmit.edu.au

Survey screening questions:

Q1a. Are you 18 years of age or older?

- Yes
- No

Q1b. Were you at home or in the area affected by the Marshall fire on December 30, 2021?

- Yes
- No
- Other, please explain _____

Q1c. Where were you located when the Marshall fire occurred? (please select one from the options provided)

- Louisville
- Superior
- Broomfield
- Westminster
- Lafayette
- Arvada
- City of Boulder
- Other area (not listed above) _____
- I don't know or don't recall

Q1d. Please provide the ZIP code that best describes where you were when the Marshall fire occurred. (enter 5-digit ZIP code in the box provided)

The next set of questions relate to your understanding and actions before the Marshall fire.

Q2. Before the Marshall fire, did you know that wildfires could be a problem in your community?

Note: In this survey the term “wildfires” includes grass fires, like the Marshall fire.

- Yes
- No
- Not sure, please explain _____

Q3. Before the Marshall fire, how would you have described the possibility that a wildfire would **threaten your property**, on a scale from 1 to 5, where 1 signifies “not at all likely” and 5 signifies “very likely”? (Select only one)

Note: “Property” is defined here as the residence or home and surrounding land.

	1: not at all likely	2	3	4	5: very likely
Possibility of wildfire threatening your property	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4. Before the Marshall fire, had you or others taken any measures to protect your residence from wildfires? (Select all that apply)

- No measures were taken
- Cleared or removed vegetation from property (for example, removed or trimmed trees, cleared brush)
- Removed or moved flammable items away from house (for example, woodpiles, gazebos, mulch or other ground cover)
- Installed sprinkler system (or other fire protection system) or nearby house
- Modified residential structure
- Other, please explain _____
- I don’t know or don’t remember

Q5a. Did you have a household emergency plan for wildfires in place before the Marshall fire?

- Yes (Go to Q5b)
- No (Go to Q6)
- I don’t know or don’t remember

Q5b. What was the ultimate goal of this household emergency plan? (Select only one)

- The plan was for my family and/or me to evacuate (that is, leave and travel to a different, safer place)
- The plan was for my family and/or me to stay at home
- I don’t know or don’t remember

The following questions ask about your experience with fires before the Marshall fire.

Q6a. How many wildfires have you experienced?

Q6b. How many times have you evacuated from a wildfire?

Q6c. How many times have you had property damage from a wildfire?

The following questions ask about your experience with emergency notification before the Marshall fire.

Q7a. Were you aware of your county's warning system (e.g., Everbridge or CodeRED)

- Yes
- No
- I don't know or don't remember

Q7b. Did you register for your county's alerting service (e.g., Everbridge or CodeRED)

- Yes
- No
- I don't remember

Q7c. Did you put an app on your phone to receive emergency alerts?

- Yes
- No
- I don't remember

Q8. Prior to the Marshall fire, how many times had you received a Wireless Emergency Alert on your mobile device for fire emergencies?

One type of emergency notification that some people receive is called a Wireless Emergency Alert. This is the service that sends messages for Amber Alerts and the National Weather Service frequently uses it to alert people about tornado and flash flood as well as other hazards.

- 1
- 2
- 3
- 4
- 5+
- I don't know or don't remember

The next set of questions relate to your home or place of residence at the time of the Marshall fire (December 30, 2021).

Q9a. How long had you lived at that residence?

Note: *Residence is another word for home.*

- Less than 1 year
- 1-2 years
- 3-4 years
- 5-10 years
- 10 or more years
- I don't know or don't remember

Q9b. Did you own or rent at that residence?

- Own
 - Rent
 - Other, please explain _____
 - I don't know or don't remember

Q9c. Which of the following best describes the type of structure of your residence?

- Detached single family home
- Multi-family, 1-2 stories
- Multi-family, 3 or more stories
- Mobile or manufactured home
- Other, please specify _____
- I don't know or don't remember

The next set of questions ask about things during the Marshall fire on December 30, 2021.

Q10a. Before you decided to evacuate (or stay), did one or more **emergency officials** let you know that your area was under an **evacuation warning**, **pre-evacuation notice**, or an **evacuation order**?

Note: An **emergency official** is anyone working in an official capacity, including officials from the police department, sheriff's office, fire department, emergency management agency, governor's office, or mayor's office. Emergency officials can **let you know** about information in a variety of ways, including phone calls, text messages, in-person discussions, television, radio, and sirens or other types of alerts.

An **evacuation order** instructed people to evacuate immediately. An **evacuation warning or pre-evacuation notice** instructed people to prepare for evacuation or leave if you feel unsafe.

- Yes (Go to Q10b- Q10f)
- No (Go to Q11a)

Q10b. What ways did one or more **emergency officials** let you know that your area was under an evacuation warning or order? (select all that apply)

- Email message
- Face-to-face (in-person or door-to-door)
- Loudspeaker or public address system
- Radio
- Social media, such as Twitter or Facebook
- Telephone (landline or cell phone) with a live person
- Telephone (landline or cell phone) with a recorded message
- Television
- Text message
- Website (including streaming television, radio)
- Other, please explain _____
- I don't know or don't remember

The next several questions are going to ask you about the first time one or more emergency officials let you know that your area was under an evacuation warning or order.

Q10c. What time on December 30, 2021 did the emergency official(s) first let you know? Please indicate the time as accurately as possible.

	Hours/Minutes		AM/PM	
	HH	MM	AM	PM
Enter time			<input type="radio"/>	<input type="radio"/>

Q10d. After first finding out from the emergency official(s), how much did you believe each of the following statements on a scale of 1 to 5, where 1 represents “did not believe” and 5 represents “fully believed”? (Select a number for each statement)

	1: Did not <u>believe</u>	2	3	4	5: Fully <u>believed</u>
My home would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My city/town would be					

damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
------------------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

Q10e. After first finding out from the emergency official(s), how much did you agree with each of the following statements on a scale of 1 to 5, where 1 represents “not likely” and 5 represents “extremely likely”? (Select a number for each statement)

	1: Not <u>likely</u>	2	3	4	5: Extremely <u>likely</u>
I might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q10f. What was your immediate reaction when the emergency official(s) first let you know?

- No reaction; I continued my activities
- I waited for more information
- I tried to find more information
- I started preparing to act, and then waited
- I acted immediately (for example, evacuated or left the location, defended my property, took shelter)
- I don't know or don't remember

Q11a. Before you decided to evacuate (or stay), did **someone you know** tell you to evacuate or that an evacuation warning or order was issued for your area?

*Note: **Someone you know** could be a coworker, family member, friend, neighbor, or anyone else you know personally. People can **tell** you information in a variety of ways, including phone calls, text messages, emails, and in-person discussions.*

- Yes (Go to Q11b-Q11g)
- No (Go to Q12a)

Q11b. Was **this person** your: (select all that apply)

- Coworker
- Family member
- Friend
- Neighbor
- Anyone else you know personally

Q11c. Thinking about the person or people you just selected, what were the ways they told you your area was under an evacuation warning or order? (select all that apply)

- Email Message
- Face-to-face (in-person)
- Social media, such as Twitter or Facebook
- Telephone (landline or cell phone)
- Text message
- Other, please explain _____
- I don't know or don't remember

The next several questions are going to ask you about the first time someone you know told you that your area was under an evacuation warning or order.

Q11d. What time on December 30, 2021 did someone you know first tell you?

	Hours/Minutes		AM/PM	
	HH	MM	AM	PM
Enter time			○	○

Q11e. After first finding out from someone you know, how much did you believe each of the following statements on a scale of 1 to 5, where 1 represents “did not believe” and 5 represents “fully believed”? (Select a number for each statement)

	1: Did not <u>believe</u>	2	3	4	5: Fully <u>believed</u>
My home would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My city/town would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11f. After first finding out from someone you know, how much did you agree with each of the following statements on a scale of 1 to 5, where 1 represents “not likely” and 5 represents “extremely likely”? (Select a number for each statement)

	1: Not <u>likely</u>	2	3	4	5: Extremely <u>likely</u>
I might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q11g. What was your immediate reaction when someone you know first told you? (Select only one)

- No reaction; I continued my activities
- I waited for more information
- I tried to find more information
- I started preparing to act, and then waited
- I acted immediately (for example, evacuated or left the location, defended my property, took shelter)
- I don't know or don't remember

We will now ask you some questions about the fire and what you may have observed.

Q12a. Before you decided to evacuate (or stay), did you see, hear, or feel **fire cues** in your immediate vicinity (for example, your neighborhood)? (mark all that apply)

*Note: **Fire cues** can be **flames** (from burning trees, structures, or vehicles), or **smoke**, or **embers** (small or larger pieces of burning or glowing materials flying past your property or landing on your property).*

- Yes, I observed flames in my vicinity (Go to Q12b-e)
- Yes, I observed smoke in my vicinity (Go to Q12b-e)
- Yes, I observed embers in my vicinity (Go to Q12b-e)
- No, I did not observe flames, smoke, or embers in my vicinity before making my decision (Go to Q13)

Q12b. What time on December 30, 2021 did you first observe fire cues in your vicinity?

	Hours/Minutes		AM/PM	
	HH	MM	AM	PM
Enter time			○	○

Q12c. After you first observed fire cues, how much did you believe each of the following statements on a scale of 1 to 5, where 1 represents “did not believe” and 5 represents “fully believed”? (Select a number for each statement)

	1: Did not <u>believe</u>	2	3	4	5: Fully <u>believed</u>
My home would be damaged or destroyed by fire	○	○	○	○	○
My neighborhood					

would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My city/town would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12d. After you first observed the fire cues, how much did you agree with each of the following statements on a scale of 1 to 5, where 1 represents “not likely” and 5 represents “extremely likely”? (Select a number for each statement)

	1: Not <u>likely</u>	2	3	4	5: Extremely <u>likely</u>
I might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q12e. What was your immediate reaction to observing fire cues? (Select only one)

- No reaction; I continued my activities
- I waited for more information
- I tried to find more information
- I started preparing to act, and then waited
- I acted immediately (for example, evacuated or left the location, defended my property, took shelter)
- I don't know or don't remember

Now, we are discussing the decision you made in response to the Marshall fire.

Q13. In response to the Marshall fire, what did you decide to do?

- I decided to stay in place
- I decided to evacuate

Q14. At the moment you decided what to do, how much did you believe each of the following statements on a scale of 1 to 5, where 1 represents “did not believe” and 5 represents “fully believed”? (Select a number for each statement)

	1: Did not <u>believe</u>	2	3	4	5: Fully <u>believed</u>
My home would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My neighborhood would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My city/town would be damaged or destroyed by fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15. At the moment you decided what to do, how much did you agree with each of the following statements on a scale of 1 to 5, where 1 represents “not likely” and 5 represents “extremely likely”? (Select a number for each statement)

	1: Not <u>likely</u>	2	3	4	5: Extremely <u>likely</u>
I might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might become injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people, pets or livestock might die	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Now, we are discussing your actual response to the Marshall fire.

Q16a. In Question 13, we asked about what you decided to do. Here, we want to ask about what you eventually did in response to the Marshall fire. Please select the one response that best describes what **action** you took.

- I evacuated (Go to Q16b-k)
- I stayed in place (Go to Q17)

Q16b. What were the reasons that you eventually left/evacuated? **(Select the top 3)**

- Seeing, hearing, smelling flames, embers, smoke, or heat from the fire
- Observing others evacuating (in person OR on TV, radio, or social media)
- Was afraid and/or felt danger for myself, my family or my friends
- Was afraid for my pets or livestock (or other farm animals)
- Finding out or receiving information about the fire (for example, location, intensity)
- My property caught fire
- I was being overcome by the effects of heat and/or smoke
- Police, fire or other emergency official(s) ordered me to leave
- My family, friends or neighbors advised or ordered me to leave
- Other, please explain _____
- I don't know or don't remember

Q16c. Did you do any of the following **in or around your home** on December 30, 2021 before leaving?
(Select all that apply)

- Attending to pets or livestock (or other farm animals)
- Prepared home or property (for example, prepared house by turning off gas, turning off air conditioning, shut windows, or put water on the house, vegetation and/or landscape)
- Packed items to take with me and/or loaded vehicle
- Talked to others about: the fire, what I was doing or what they were doing
- Instructed others to evacuate/leave
- Planned an evacuation route (for example, travel directions)
- Identified and /or secured an evacuation destination
- Other, please explain _____
- None of these
- I don't know or don't recall

Q16d. How much time did you take to prepare before you began evacuating?

Note: Time could have been spent doing actions listed in the previous question, such as packing, planning, securing your home, or meeting with others?

- Hours _____
- Minutes _____

Q16e. What time did you leave your house or other location to start evacuation on December 30, 2021?

	Hours/Minutes		AM/PM	
	HH	MM	AM	PM
Enter time			○	○

Q16f. What mode(s) of transportation did you (and your household) use to evacuate? (Select all that apply)

- One personal vehicle (car, SUV, pickup, van, etc.)
- Two or more personal vehicles
- Recreational vehicle (RV) or truck with trailer
- Non-household carpool
- Rental car
- Uber or Lyft
- Public transit (bus or rail)
- Paratransit or other accessible transportation services
- Walk or bike
- Other, please specify _____

Q16g. Before arriving at a safe place, did you provide assistance to **others outside of your family** (e.g., friends, neighbors, coworkers)?

***Note:** Your assistance can be anything including helping them with packing and loading, picking up pets and valuables, and having them carpool with you.*

- Yes
- No
- I don't know or don't remember

Q16h. Who did you help and how did you help them?

Q16i. Before evacuating to a safe place, did you **drive anywhere** to do the following? (select that all apply)

- Reunited with and/or helped family members away from home
- Reunited with and/or helped others outside of family (for example, friends, neighbors, coworkers)
- Picked up or attended to pets or livestock (or other farm animals)
- Purchased or picked up items to prepare the home or to prepare for evacuation
- Other, please explain _____
- I don't know or don't recall

Q16j. Which of the following **roads** did you use to evacuate, if any?

- Denver-Boulder Turnpike
- Northwest Pkwy/Highway 470
- 120th Ave/Highway 128
- Coal Creek Canyon Rd/Highway 72
- Broadway St./Highway 93
- Highway 42 (95th St/96th St)
- Highway 287 (107th St/112th St)
- Wadsworth Pkwy/Highway 121
- None of the above
- Other, please specify _____

Q16k. Where did you go for safety? (please select all that apply)

- Friend's or family's residence (or home)
- Public shelter
- Park or campground
- Parking lot
- Hotel or motel
- Restaurant, shopping mall, or other stores (e.g., Costco, Walmart, Target)
- Public building (e.g., library) or some office building
- Second residence
- Other, please specify _____
- I don't know or don't remember

Q17. What were the reasons you didn't leave? **(Select the top 3)**

- I was not in an area ordered to evacuate
- I did not believe that I was in an area at risk or wildfires
- I did not think that there would be a fire
- I did not know anything about the fire
- I wanted or needed to do my job
- I observed others staying behind (in person, on TV, radio, or social media)
- I wanted or needed to protect (or defend) my property
- I wanted or needed to take care of pets or livestock (or other farm animals)
- I wanted or needed to take care of a person (or persons) unable to evacuate
- I did not have the resources, for example, money or a vehicle
- I was physically unable to evacuate
- It was too late to leave and/or it was too dangerous to evacuate
- I thought that it was safer to stay in place
- Other, please explain _____
- I don't know or don't remember

Q18. After the Marshall fire, did you register to receive alerts about emergencies from EverBridge or other alerting systems?

- Yes
- No

The last set of questions is about you. Answers to these questions will help us learn how different people respond to wildfires.

Q19. Do you consider yourself:

- Female
- Male
- Other, I identify as _____
- I prefer not to answer this question

Q20. Which of the following racial/ethnic groups best describes you? (Select one or more)

- American Indian or Alaskan Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or other Pacific Islander
- White
- Other _____
- I prefer not to answer this question

Q21. How old are you? (Please enter your age at the time you are taking this survey below)

Q22. How many **motor vehicles** (cars, trucks, SUVs, vans, RVs, and motorcycles that are in working order) were there in your household at the time of the Marshall fire?

- 0
- 1
- 2
- 3
- 4
- 5
- 6 or more

Q23. What is the highest level of education you have completed?

- Less than high school diploma
- High school diploma or equivalent
- Some college but no degree
- Associate degree
- Bachelor degree

- Graduate degree
- I prefer not to answer this question

Q24. Thinking of all the people in your household, what was the total household income, including your own income, from all sources in 2021?

- Less than \$24,999
- \$25,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$124,999
- \$125,000 to \$149,999
- \$150,000 to \$174,999
- \$175,000 to \$199,999
- \$200,000 or more
- I prefer not to answer this question

Q25. Which of the following categories best describes your employment status at the time the Marshall fire started (on December 30, 2021)? (Select only one)

- Employed (including self-employed), working 1-20 hours per week
- Employed (including self-employed), working 21-40 hours per week
- Not employed
- Retired
- Disabled, not able to work
- Stay at home mom, dad, or other
- Other _____
- I prefer not to answer this question

Q26. How many people including yourself and pets lived in your household (or on your property) at the time of the Marshall fire?

Note: Please mark "0" for none, or provide numbers for the following:

- Children: under 13 years old _____
- Children: 13 years old to 17 years old _____
- Adults (including your own adult children): 18 years old to 64 years old

- Pets _____
- Livestock or other farm animals _____

Q27a. Did you or someone in your household, including yourself, have a medical condition at the time of the Marshall fire?

- Yes
- No
- I prefer not to answer this question

Q27b. If yes, please list the medical condition(s):

Q28. Please use the space below to tell us anything else you would like to say about your experience with the Marshall fire on December 30, 2021.

(Next screen...or end with the following statement)

We thank you for your time spent taking this survey.

Your response has been recorded.