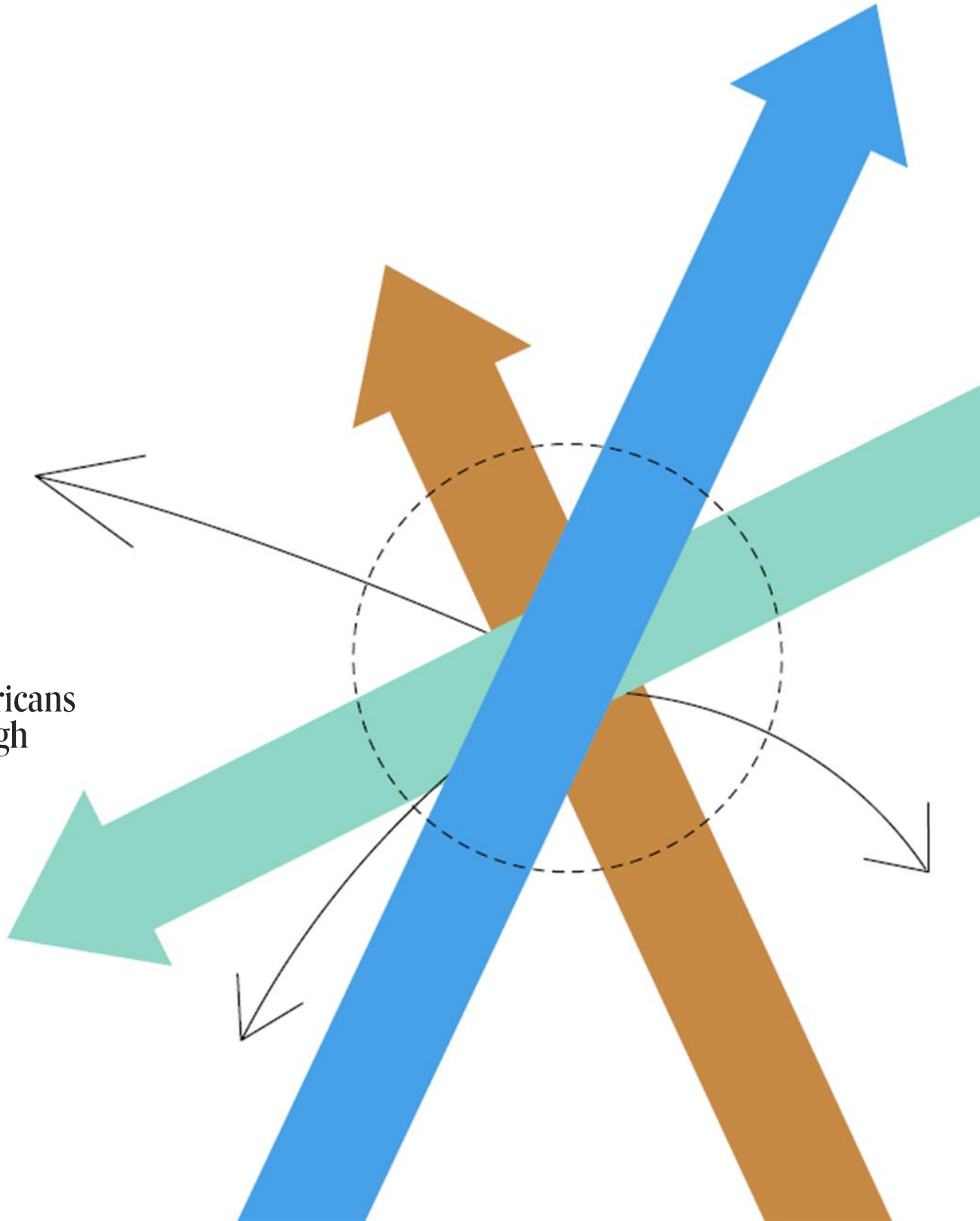
The Six Types of Risky Movers

Understanding the Types of Americans Moving into Areas Exposed to High Climate-Related Risks



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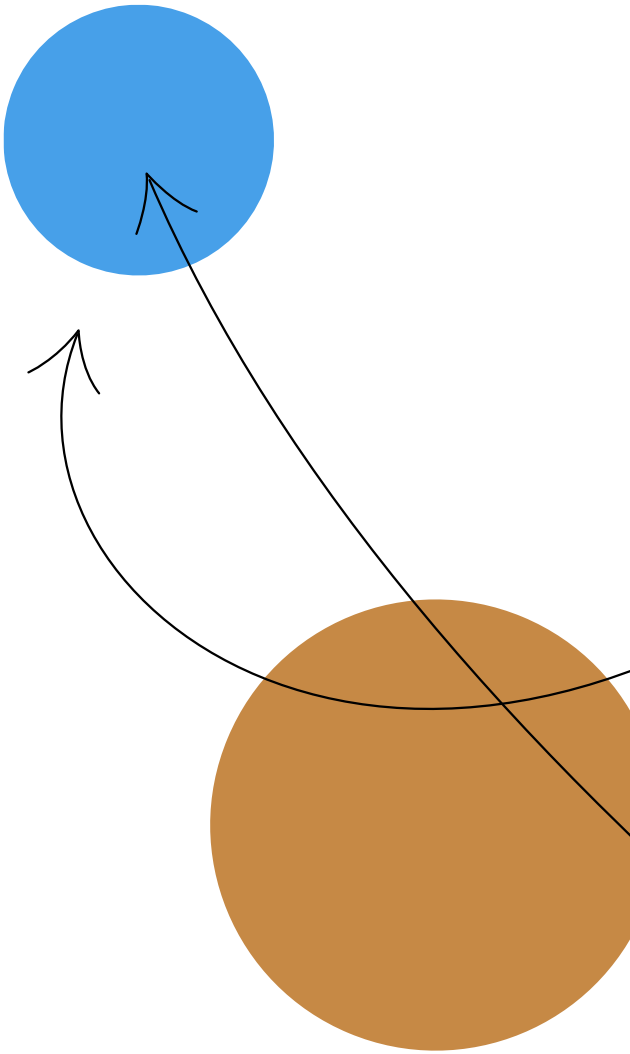
Inside

Moving in the Context of Climate-Related Risks

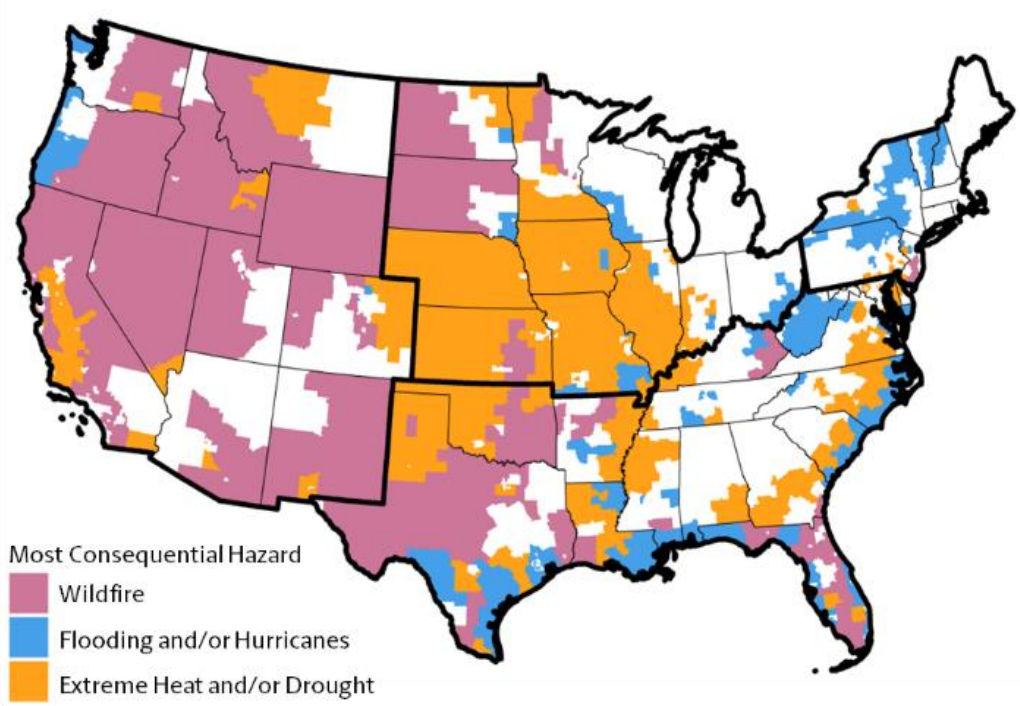


Where we choose to live is one of the most consequential decisions we make as we adapt to the changing climate.

People consider many factors when buying a home. Increasingly, that list includes the risk of experiencing climate-related disasters like floods, hurricanes, wildfires, extreme heat, and droughts. Climate-related disasters can have significant impacts on those living in affected areas, such as loss of life, displacement and job loss, and large financial losses resulting from damage to their homes and belongings. Social vulnerabilities in exposed communities, including poverty, lack of access to transportation, and crowded housing tend to exacerbate these impacts. Meanwhile, disaster resilience factors—such as the strength of the local building stock, local investments in disaster mitigation, and personal economic assets—can contribute to a community's ability to withstand and recover from climate-related disasters quicker and more completely. Exposure, vulnerability, and resilience to climate-related disasters are already affecting home values in some areas, and risks are rising. Nearly 80% of Americans say they would hesitate to buy a home in an area where disaster risk is increasing, yet populations in the riskiest counties are growing while those in the least risky are shrinking.

Natural hazards are exacerbated by climate change, and climate-related disasters are increasing in frequency and severity in certain parts of the U.S.

Disasters are projected to become more frequent and severe across many regions of the United States. Extreme heat and drought risks are concentrated in the Midwest—where warm-season temperatures are projected to increase more than in any other region—and in the Southeast. Coastal areas in the Gulf Southeast are likely to experience more hurricanes and floods, with flood risk also being high in the Northeast and Pacific Northwest. Wildfires have long been a hazard in the West, but the risk is high and increasing in the South as well. The hazards included in this analysis are coastal and riverine flooding, hurricanes, wildfire, heat waves, and droughts.



Map shows Census Public Use Microdata Areas (PUMA) where the risk of wildfire, flood/hurricane, or extreme heat/drought is in the top 10% nationally. Colors represent the hazard in the area with the highest risk score per the Federal Emergency Management Agency's

Comparing People Who Move to High-Risk Areas

We examined the characteristics of 195,391 adults over the age of 18 who moved from out of state or country to a new area of the United States in the last 12 months (see Figure 1). We assumed that those moving from out of state or country likely considered multiple locations and compared the costs and benefits of each area, such as commute times, home values and rent prices, or school ratings. We sought to understand the types of people who elected to move to areas exposed to high climate-related risks, including wildfire, flooding, hurricanes, extreme heat, and drought.

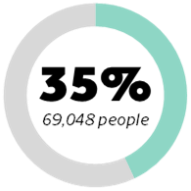
Figure 1: Risky Mover Data Types and Sources

We aggregated climate-related disaster risk and socioeconomic, demographic, and climate-related attitudinal data from the following publicly available sources into a respondent-level dataset to compare Risky Movers to the average mover.

- **FEMA's National Risk Index (NRI)** provides hazard type and frequency, annualized estimated loss, a resilience index score, and social vulnerability index score data and computes a relative risk score for every county and census tract in the United States.
- **Yale Climate Opinion Maps** provide estimates of U.S. climate change beliefs, risk perceptions, and policy preferences for counties across the United States.
- **The Census Bureau's American Community Survey (ACS) Public Use Microdata Sample (PUMS)** files are the unweighted, individual, and household-level responses to the ACS. They provide detailed sociodemographic data by Public Use Microdata Area (PUMA), a unique geography that is designed to prevent deanonymization of respondents.

In total, 69,048 (35%) of our out-of-state/country movers are *Risky Movers*—that is, people who moved to areas in the top 10% of climate-related risk in the United States in the last 12 months.

Risky Movers
are different from the average out-of-state/country mover.

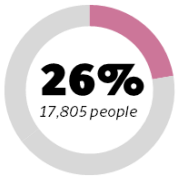


Risky Movers
Moved to high-risk areas

Compared to the average out-of-state/country mover, the average **"Risky Mover"** has the following characteristics:

- Lower **household income**
- Lower **property values, mortgage payments, & rent payments**
- Less **education**
- Moved to areas where less of the population agrees that **climate change: is happening, affects the weather, has or will harm them or other people in the U.S., and/or worries them**
- More likely to **own their home free and clear with no mortgage**
- More likely to be **white**
- Moved to areas where climate-related **hazards are likely to be felt more acutely** – i.e., more socially vulnerable and less disaster resilient

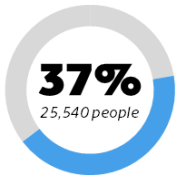
Among Risky Movers, there are differences among people who moved to high-risk fire, flood, or heat areas.



Fire

Moved to high-risk wildfire areas

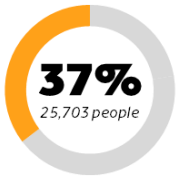
- Older than the average mover (on par with the flood category)
- Highest property values and mortgage/rent payments
- More likely to be homeowners than renters
- More likely to be Native American
- More likely to have children in the household
- Moved to areas that are the least disaster resilient
- Least educated (on par with the heat category)
- Moved to areas with the lowest level of agreement with climate beliefs



Flood

Moved to high-risk flood and/or hurricane areas

- Older than the average mover (on par with the fire category)
- Highest household income
- Households tend to have less occupants and are least likely to have children in the household
- Most likely to own home without a mortgage
- Most likely to be covered by hazard insurance
- Most educated
- Moved to areas that are the most disaster resilient
- Moved to areas with higher levels of agreement with climate beliefs (on par with the heat category)



Heat

Moved to high-risk heat wave and/or drought areas

- Lowest household income
- Lowest property values and mortgage/rent payments
- More likely to be renters than homeowners
- More racially diverse and more likely to be Black or Native American
- Youngest of all Risky Mover groups
- Least educated (on par with the fire category)
- Moved to areas with higher levels of agreement with climate beliefs (on par with the flood category)

The Six Types of Risky Movers

Recognizing that Risky Movers differ in several important ways beyond the climate-related hazards they face, we employed a probabilistic clustering algorithm to assign each of our Risky Movers to one of six main archetypes based on key demographic, hazard, and climate opinion variables (see Figure 2).

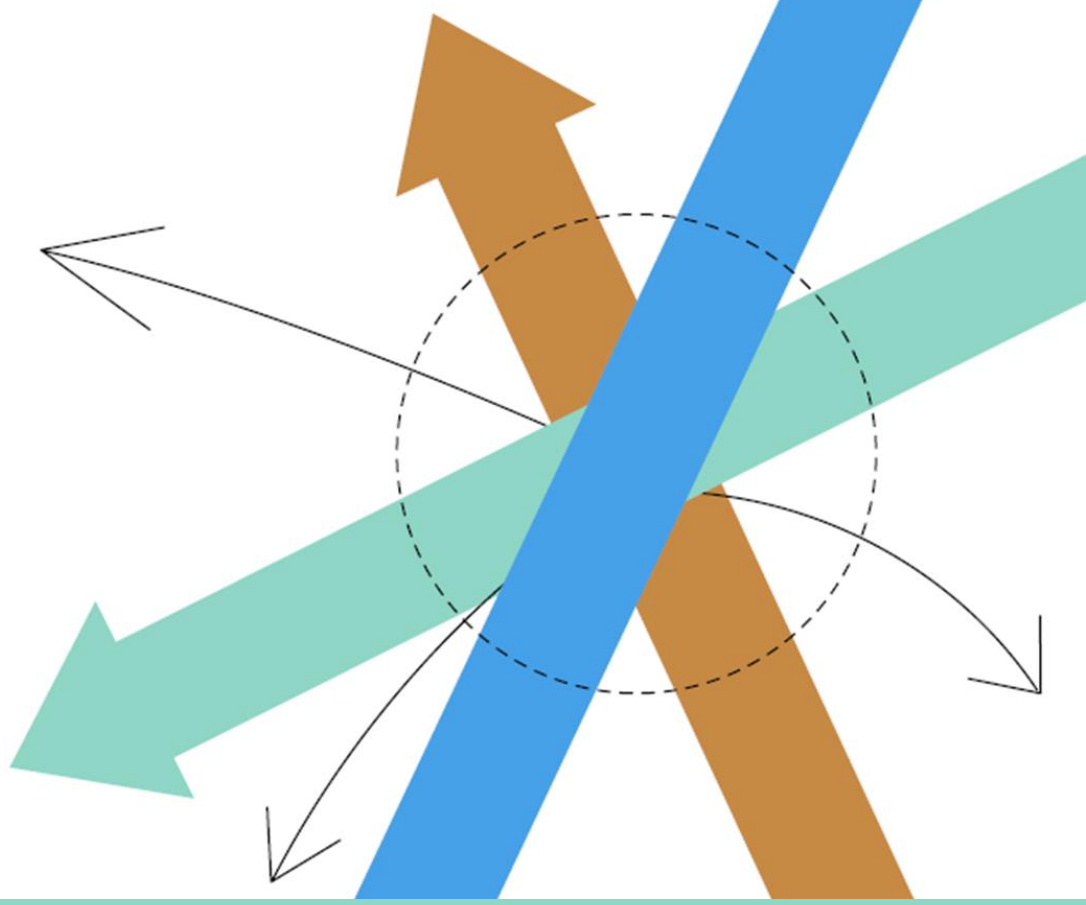


Figure 2: Risky Mover Clustering Variables

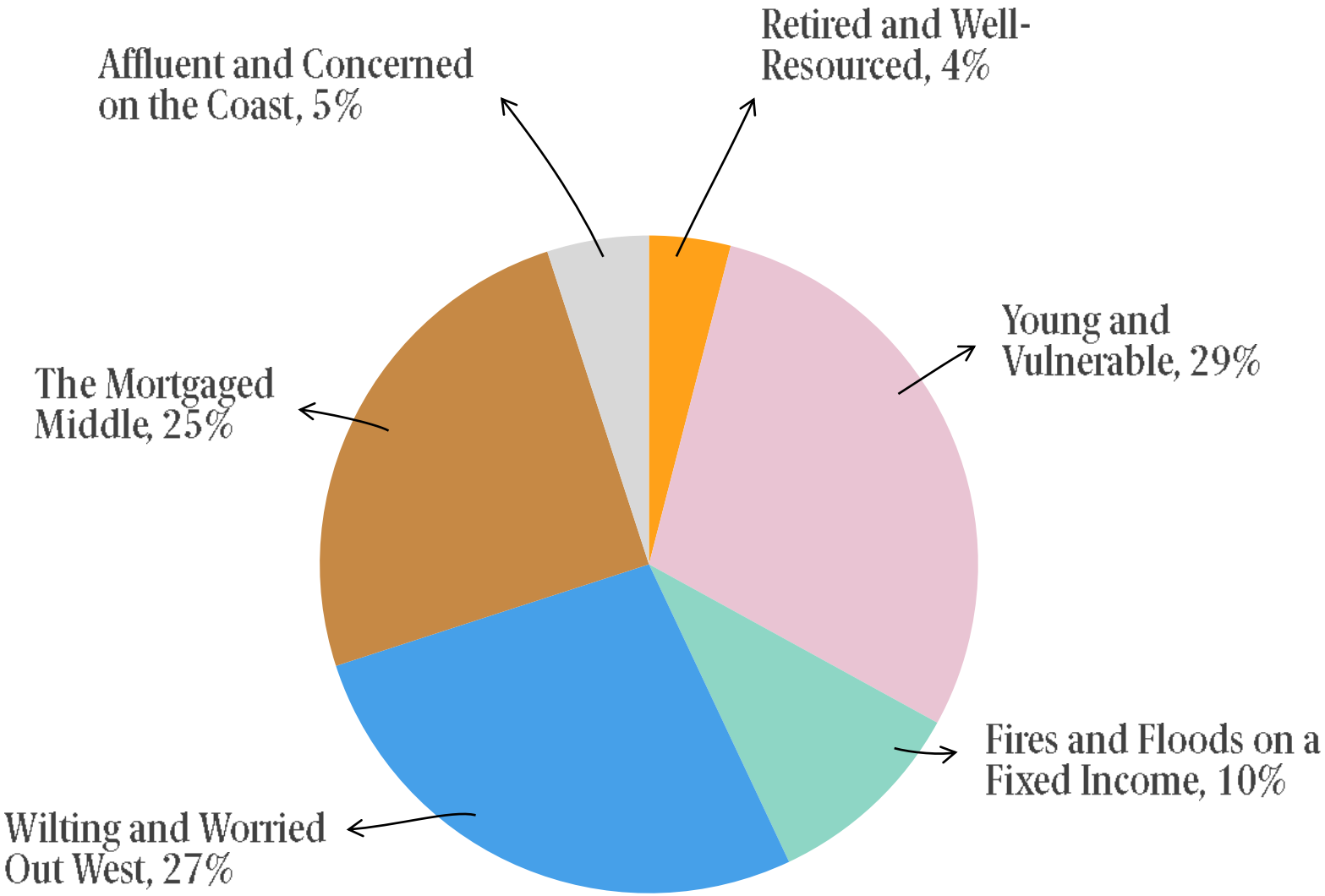
Demographic
- Age
- Household income
- Monthly mortgage or rent
- Property value
- Education
- Homeowner status
- Mortgage loan status
- Presence and age of children in the home

Hazard
- Flood: Coastal flooding, riverine flooding, and hurricane
- Fire: Wildfire
- Heat: Heat wave and drought

Climate Opinions

Somewhat or strongly agree with the following:
- Worried about global warming (GW)
- GW is affecting weather
- Personally experienced GW effects
- GW is happening
- GW will harm future generations, people in the United States, and/or them personally

The groups that moved to areas with the highest flood, hurricane, wildfire, heat, and drought risks in the last 12 months:



01 Retired and Well-Resourced

4% of Risky Movers

Age
58

Annual Household income
$165,257

Race
White

Education
Bachelor's degree

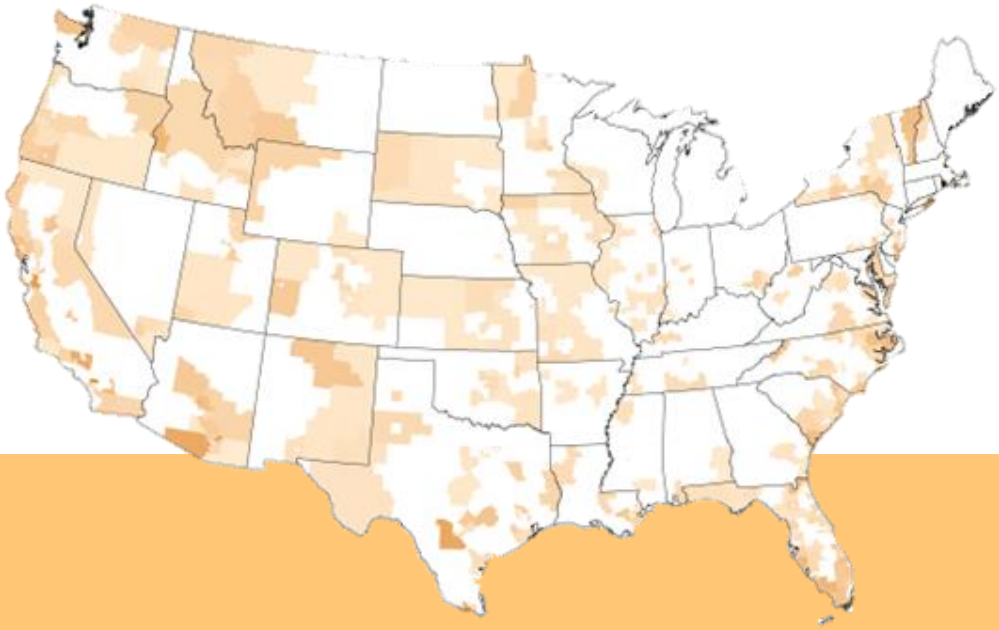
Household Composition
Married, no kids at home

Home Characteristics
$490K home, no mortgage, built after 1980

Climate-related Risks
High hurricane and coastal flood risks

Resilience Characteristics
Low resilience, one in 10 not covered by insurance

Climate Change Beliefs in New Community
Average, neither the most nor least concerned



Retired and Well-Resourced

The Retired and Well-Resourced (RWR) mover is among the oldest of the Risky Movers. More than half of RWRs are baby boomers born before 1964; and four in five are over the age of 44. Many are retired and married, and the majority do not have any children living at home. RWRs are more educated than the average Risky Mover and boast the second-highest annual household income of all Risky Mover groups. All RWRs are homeowners who do not have a mortgage. RWRs tend to own more valuable homes than the average Risky Mover, including other risky retirees in the Fires and Floods on a Fixed Income (FFFI) group. More RWRs tend to live on or near the coasts of the United States—facing the highest hurricane risks and the second-highest coastal flooding risks of all Risky Movers. These areas are less disaster resilient than average and are most likely to experience the largest losses when climate disasters strike. Luckily, 91% of RWRs are covered by hazard insurance. Finally, RWRs moved to areas where the population is generally concerned about climate change, but neither more nor less concerned than the average Risky Mover.

02 Young and Vulnerable

29% of Risky Movers

Age
37

Annual Household income
$40,788

Race
More Diverse: More Black, Multi-Racial, and Other

Education
High school, some college

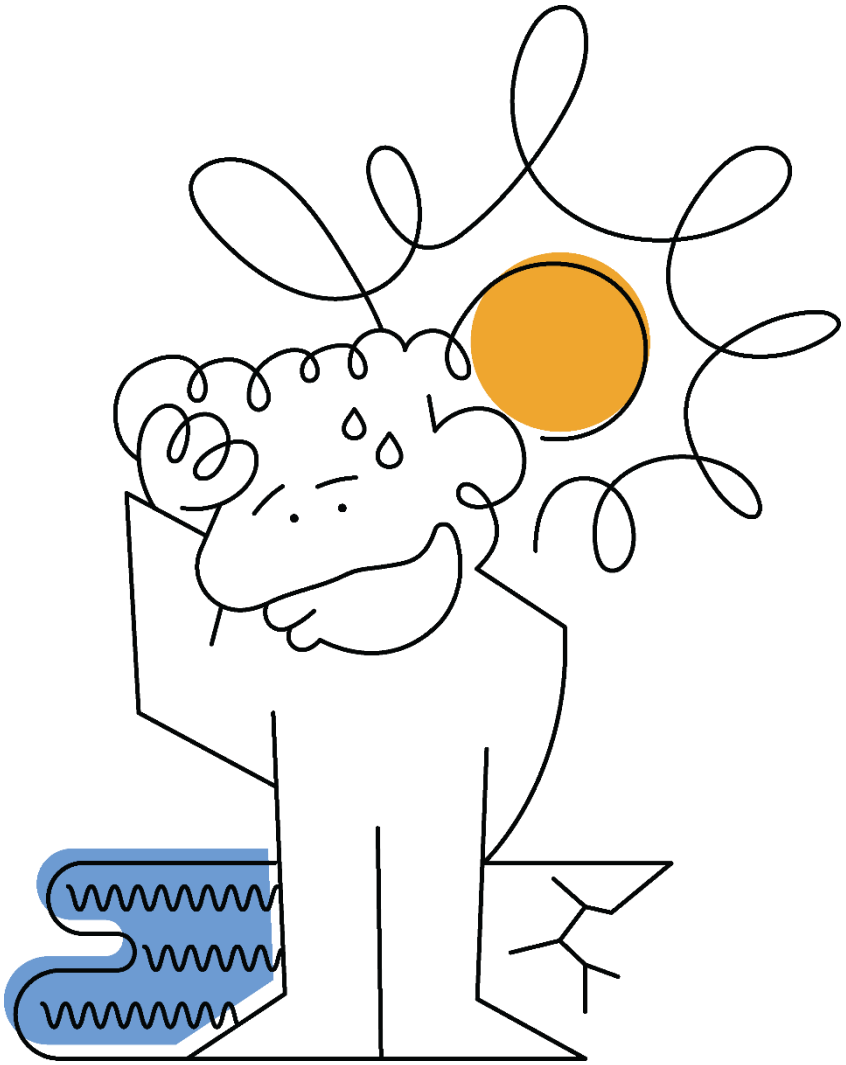
Household Composition
Single, never married

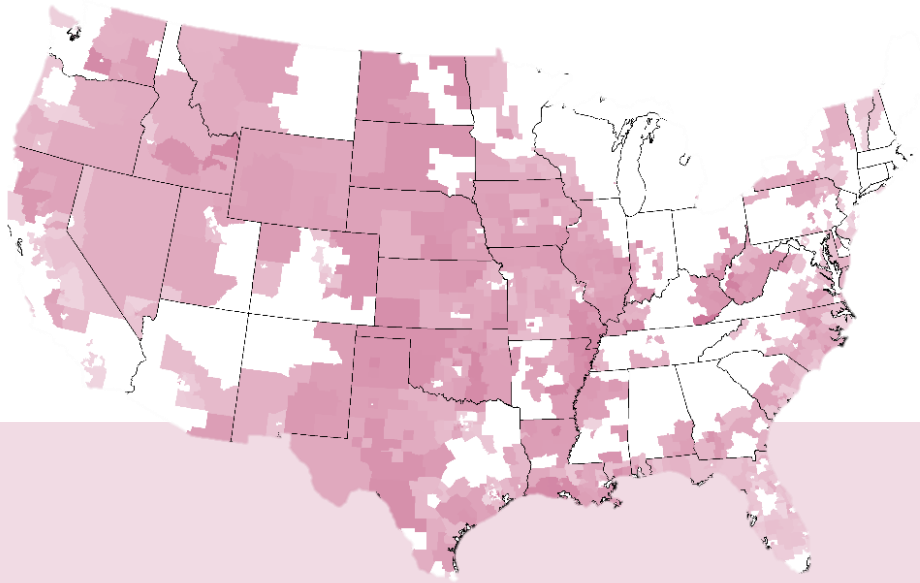
Home Characteristics
$972 monthly rent, ~ one in three built before 1970

Climate-related Risks
High drought, heat wave and riverine flood risk

Resilience Characteristics
High social vulnerability, average resilience

Climate Change Beliefs in New Community
Low, less than half believe they will be harmed





Young and Vulnerable

The Young and Vulnerable (Y&V) mover is among the youngest of the Risky Movers. The majority of Y&Vs are Gen Zers and millennials born after 1997. Although the majority of Risky Movers are White, Y&Vs are more diverse than the typical Risky Mover group, with higher proportions of Black, multi-racial, Hispanic, Native American, and races self-described as “Other.” Most are single and never married; however, some have younger children living at home. Y&Vs are the least educated of the Risky Movers and the majority of these households bring home an income of less than $44,000 annually. All Y&Vs are renters living in the oldest homes of all the Risky Movers (the majority of their homes were built before 1990). Y&Vs tend to live in the middle of the country, facing the highest drought and riverine flood risks and the second-highest heat wave risks of all Risky Movers. They moved to areas that are moderately disaster resilient, but much more socially vulnerable compared to other Risky Movers. Finally, Y&Vs moved to areas where the population has the lowest level of concern about climate change and the least agreement that climate change is happening, affects the weather, and has harmed or will harm them or others in the United States.

03 Fires and Floods on a Fixed Income

10% of Risky Movers

Age
58

Annual Household income
$56,706

Race
White

Education
High school, some college

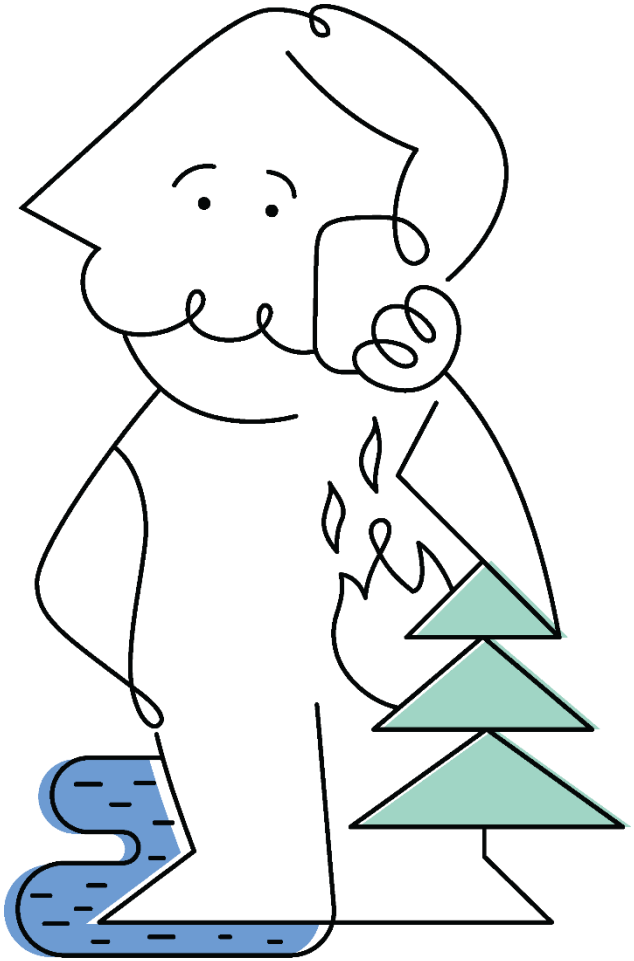
Household Composition
More likely divorced, single, or widowed with no kids

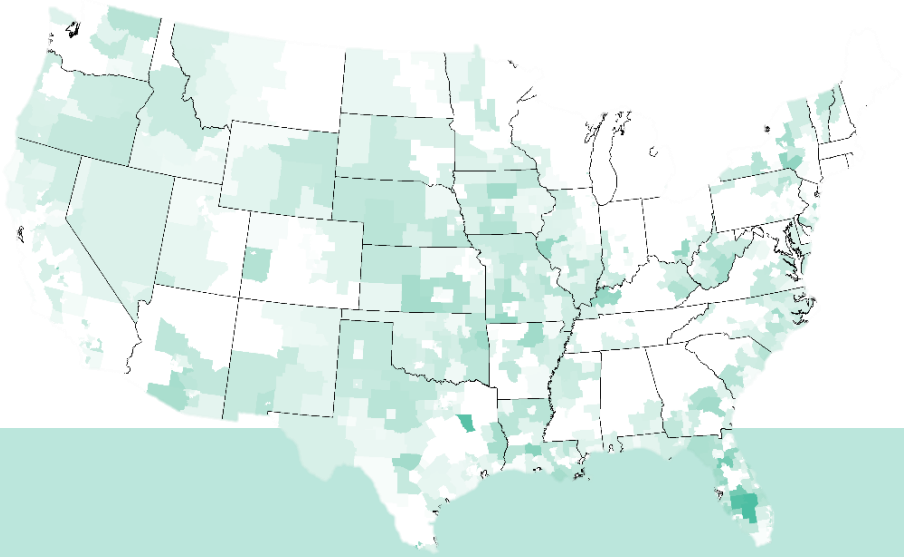
Home Characteristics
$184K home, no mortgage, ~one in four built before 1970

Climate-related Risks
High wildfire and riverine flood risk

Resilience Characteristics
Highest social vulnerability, lowest resilience

Climate Change Beliefs in New Community
Lower than average concern





Fires and Floods on a Fixed Income

The Fires and Floods on a Fixed Income (FFFI) mover is among the oldest of the Risky Movers (tied with the Retired and Well-Resourced [RWR] group). More than half of FFFIs are baby boomers born before 1964; and three in four are over the age of 44. Most are retired without children living at home. A higher proportion of FFFIs are divorced, separated, or widowed than all other Risky Movers. FFFIs are less educated and bring home less annual household income than the average Risky Mover. All FFFIs are homeowners who don't have a mortgage. FFFIs tend to own lower-value and older homes compared to other Risky Movers, but are still likely to experience large losses when climate-related disasters hit. FFFIs face the highest wildfire risks and the second-highest riverine flooding risks of all Risky Movers. They live in areas with the lowest levels of disaster resilience and most social vulnerability. Nearly one in four FFFIs are not covered by hazard insurance despite the risks they face. Finally, FFFIs moved to areas where the population has a lower-than-average concern about climate change and agreement that climate change is happening, affects the weather, and has or will harm them or others in the United States.

04 Wilting and Worried Out West

27% of Risky Movers

Age
37

Annual Household income
$82,894

Race
More Diverse: More likely to be Asian or Hispanic

Education
Bachelor's degree

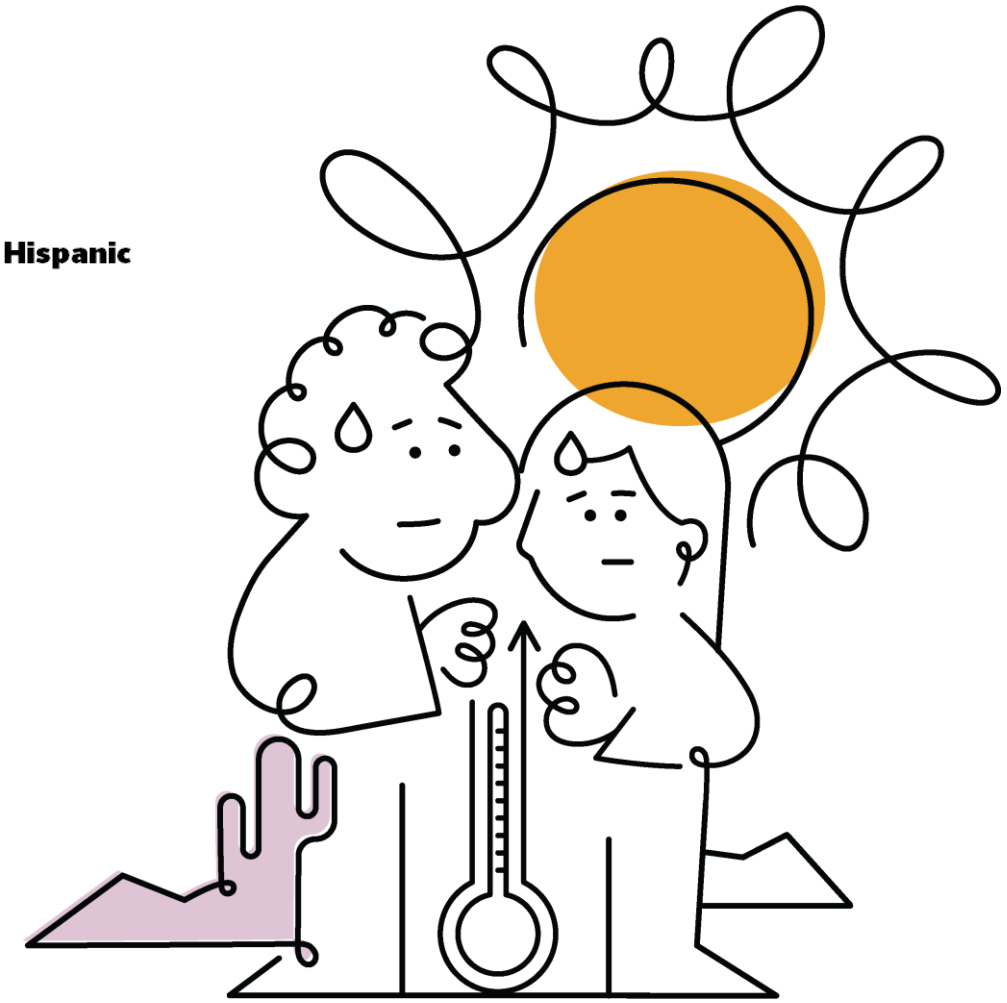
Household Composition
Young families or single, never married

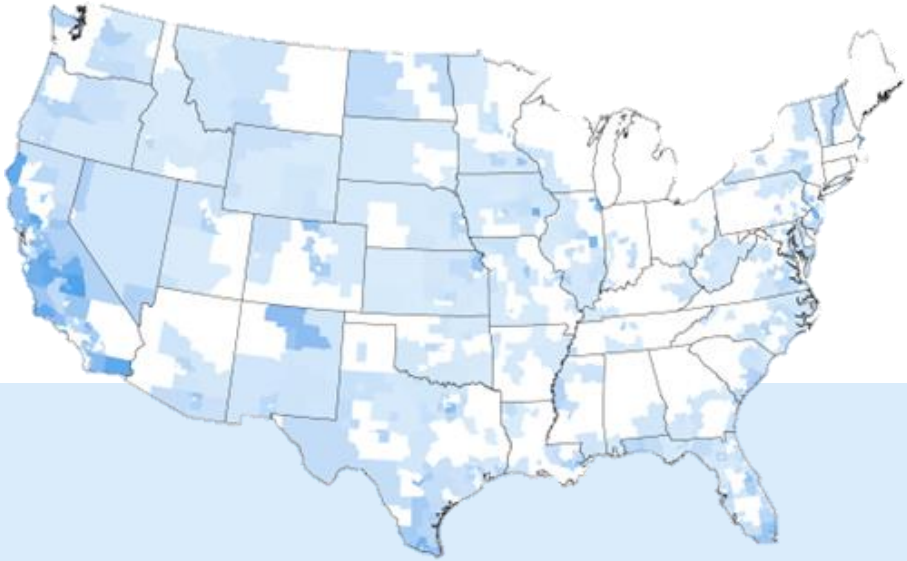
Home Characteristics
$1,727 monthly rent

Climate-related Risks
High heat wave risk

Resilience Characteristics
Most resilient

Climate Change Beliefs in New Community
Most concerned





Wilting and Worried Out West

The Wilting and Worried Out West (WWOW) movers are among the youngest of the Risky Movers (tied with the Young and Vulnerable [Y&V] group). A large proportion of WWOWs are millennials born between 1980–1994. Although mostly White, WWOWs are more diverse than the typical Risky Mover group, with higher proportions of Asian and Native Hawaiian/Pacific Islander, Hispanic, and Black households. There are roughly equal numbers of young married households with kids and single households. WWOWs are slightly more educated than the average Risky Mover and bring home an average household income of $82,894 annually. All WWOWs are renters, and most live in homes of average age. WWOWs are concentrated in California and face the highest heat wave risks of all Risky Movers. They moved to areas that are most resilient to disasters and they are exposed to less potential disaster-driven losses than other Risky Movers. Finally, WWOWs moved to areas where the population has the highest level of concern about climate change among all high-risk areas. The majority of the community agrees that climate change is happening, affects the weather, and has or will harm them or others in the United States.

05 The Mortgaged Middle

25% of Risky Movers

Age
47

Annual Household income
$110,601

Race
White

Education
Some college or a bachelor's degree

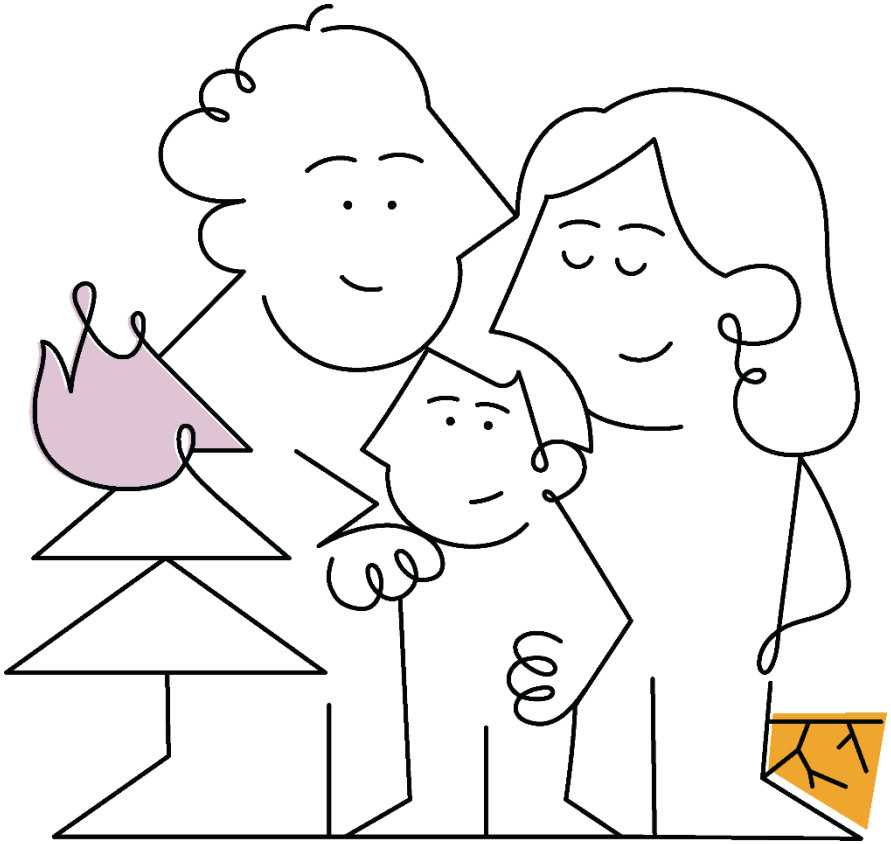
Household Composition
Married with kids at home

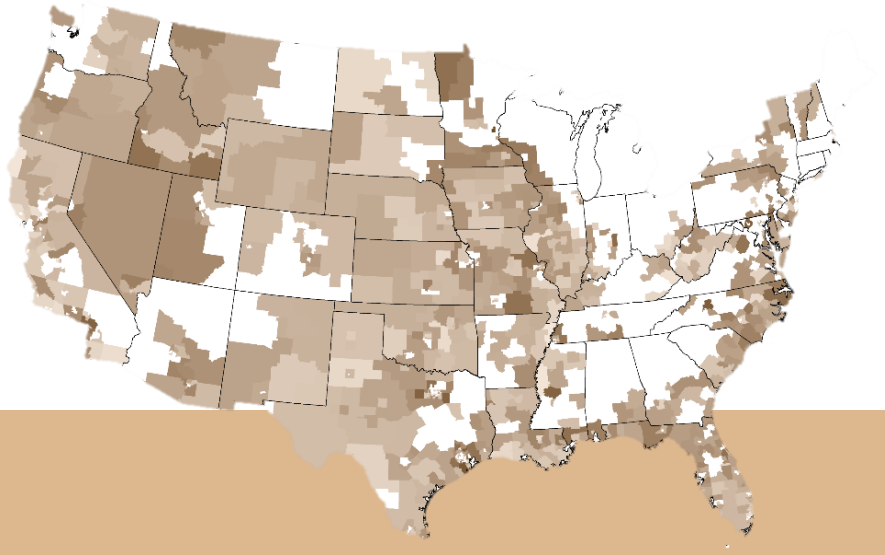
Home Characteristics
$311K home, mortgaged, built after 1990

Climate-related Risks
High wildfire, moderate drought and riverine flood risk

Resilience Characteristics
Average resilience, 93% covered by hazard insurance

Climate Change Beliefs in New Community
Average, neither the most nor least concerned





The Mortgaged Middle

The Mortgaged Middle (MM) mover is, on average, middle aged. However, MMs represent a diverse set of generations, with equal proportions of millennials, Gen Xers, and baby boomers in the group. MMs are mostly married with children living at home. Their level of education is on par with the average Risky Mover, and more than half of these households bring home over $95,000 in annual income. All MMs have financed their homes with an average monthly mortgage payment of $1,436. They tend to live in relatively newer homes, the majority of which were built after 1990. MMs face the second-highest wildfire risk of all Risky Movers and moderate drought and riverine flood risks. MMs moved to areas with an average level of disaster resilience and have a high rate of hazard insurance coverage. Finally, MMs moved to areas where the population is generally concerned about climate change but neither more nor less concerned than the average Risky Mover.

06 Affluent and Concerned on the Coast

5% of Risky Movers

Age
49

Annual Household income
$405,646

Race
White

Education
Bachelor's degree, Likely also a Post-Grad degree

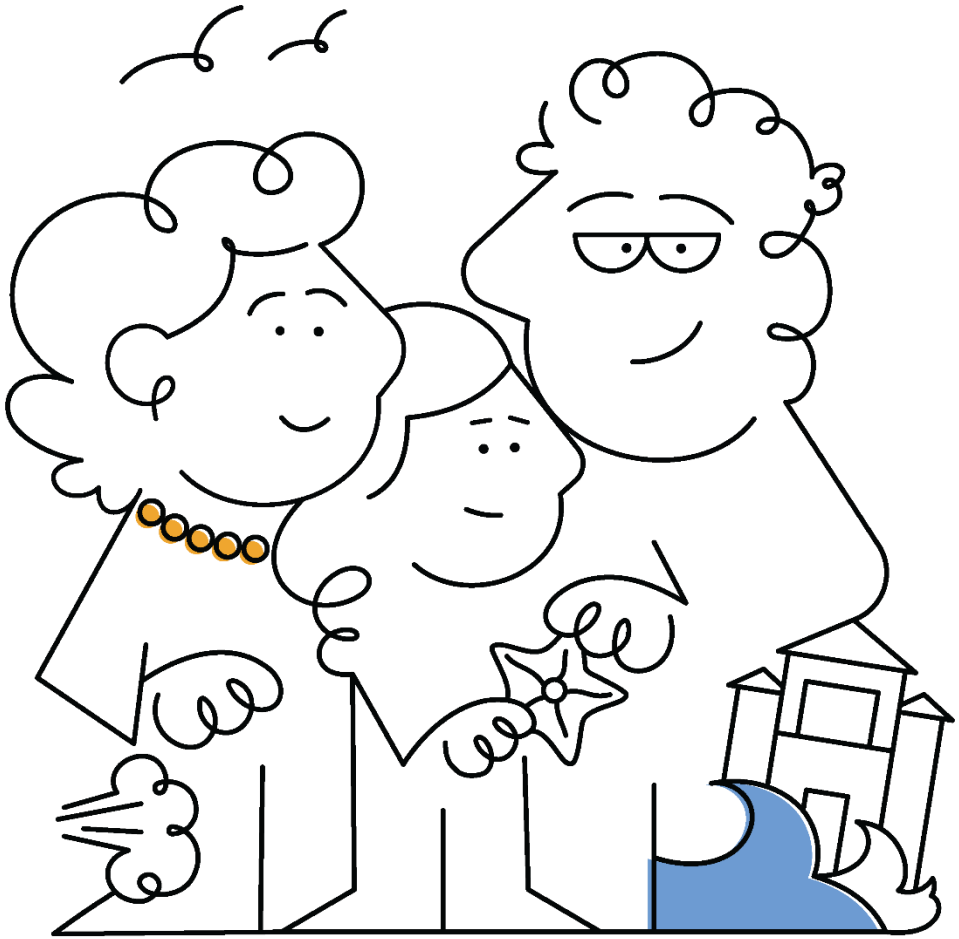
Household Composition
Married with kids at home

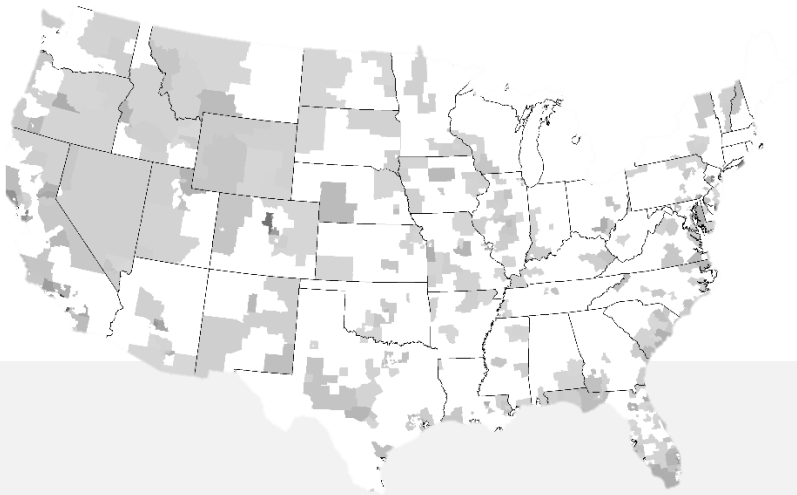
Home Characteristics
$3,135 monthly rent, $1.25M homes, built after 2000

Climate-related Risks
High coastal flood and hurricane risks

Resilience Characteristics
Highly resilient, 95% covered by hazard insurance

Climate Change Beliefs in New Community
Highly concerned





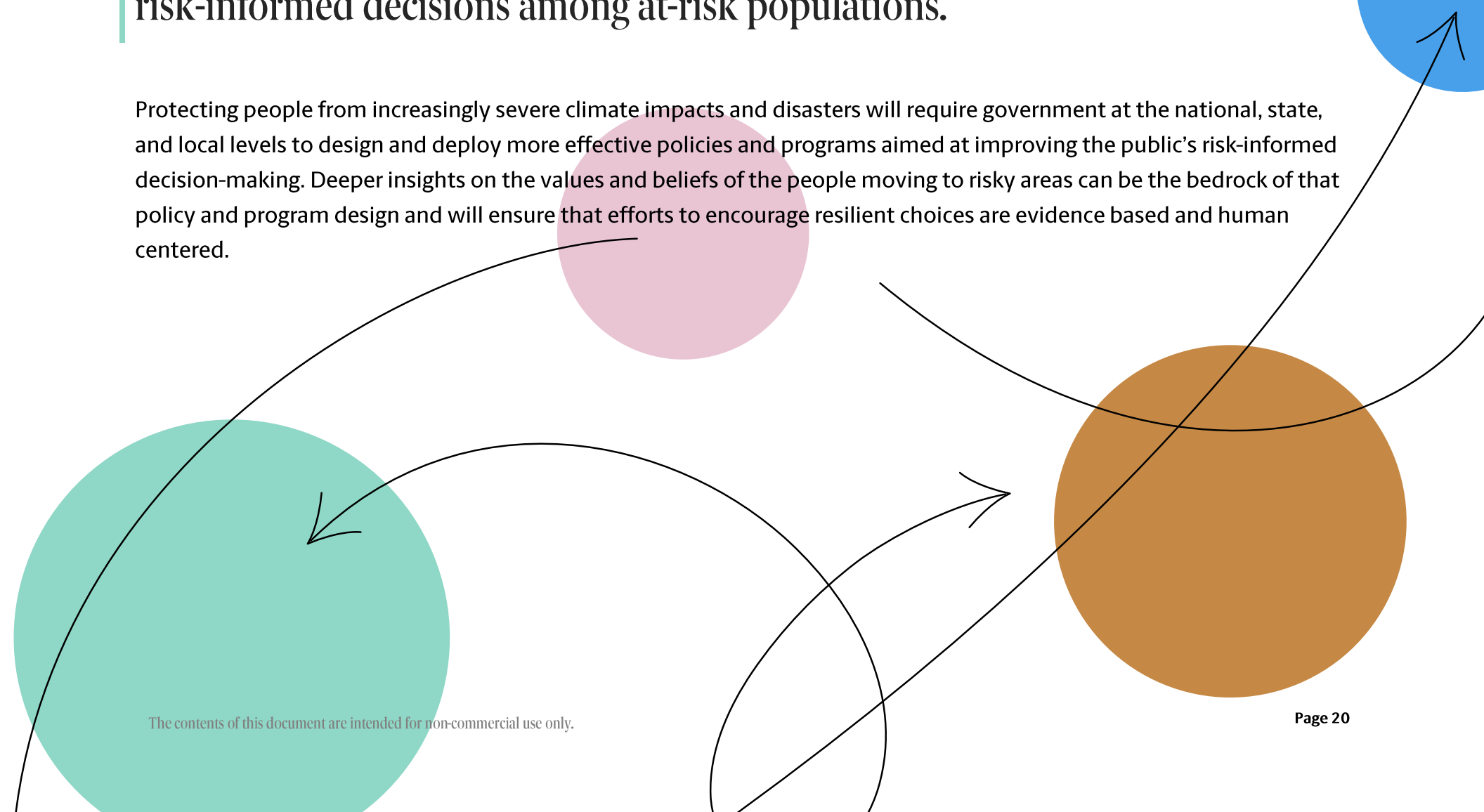
Affluent and Concerned on the Coast

The Affluent and Concerned on the Coast (ACC) mover is, on average, middle aged. However, ACCs represent a diverse set of generations, with equal proportions of millennials, Gen Xers, and baby boomers in the group. ACCs are mostly White households with a slightly higher proportion of Asian and Native Hawaiian/Pacific Islander households than average. Most ACCs are married with children living at home. ACCs are the most educated of all the Risky Movers and are highly affluent, boasting the highest annual household income of all Risky Movers. ACCs tend to live in the newest and most valuable homes of all Risky Movers and are as likely to rent as they are to own (with or without a mortgage). ACCs face the highest coastal flood risks and second highest hurricane risks of all Risky Movers—similar to the Retired and Well-Resourced (RWR) movers. They tend to live in and around major coastal urban centers like New York City, Miami, San Francisco, and Los Angeles. They moved to areas that are highly resilient to disasters and have the highest rate of hazard insurance coverage of all Risky Movers, which is important since ACCs are exposed to the highest potential disaster-driven losses compared to other Risky Movers. Finally, ACCs moved to areas where the population has a higher-than-average level of concern about climate change. More people in these areas agree that climate change is happening, affects the weather, and has or will harm them or others in the United States.

Implications for Public Programs

> Risky Mover insights can help influence more accurate threat appraisals and risk-informed decisions among at-risk populations.

Protecting people from increasingly severe climate impacts and disasters will require government at the national, state, and local levels to design and deploy more effective policies and programs aimed at improving the public's risk-informed decision-making. Deeper insights on the values and beliefs of the people moving to risky areas can be the bedrock of that policy and program design and will ensure that efforts to encourage resilient choices are evidence based and human centered.



Appendix: Detailed Methodology

1 We aggregated climate-related disaster risk, socioeconomic, demographic, and attitudinal data (see Figure 1) about climate opinions from publicly available sources (listed below) into a respondent-level dataset.

2 From an initial 277,940 respondents, we filtered down to 195,391 (~70% of original group) using the following criteria:

- Moved from out of state or out of the country
- 18 years of age and older
- Household income greater than zero
- Home finance: Owned with mortgage or loan, owned free and clear, or rented

3 We then filtered down to 69,048 respondents (35% of filtered population) to just those who moved to areas with FEMA risk index scores in the top 10% for the following hazards:

- Coastal flood
- Riverine flood
- Hurricane
- Wildfire
- Drought
- Heat wave

4 We compared the sociodemographic and economic status of adults living in households in areas that are exposed to the top 10% of climate-related risks with those in the lower 90%.

5 Finally, we clustered respondents using 16 variables (see Figure 2). The cluster analysis included the following steps:

- ***Created intuitive bins:*** To make our data more digestible, we created binned variables for educational attainment, mortgage loan status, and presence and age of children in household.
- ***Scaled continuous variables:*** We scaled the continuous independent variables to ensure that all variables had equal range and variance.
- ***Reduced dimensions with factor analysis***: We employed factor analysis to reduce the number of variables in our clustering model to just those that were most significant to the results.
- ***Gaussian Mixture Model cluster assignment:*** We employed the Gaussian Mixture Model (GMM) to perform the cluster analysis (i.e., the machine-learned algorithm that finds clusters of points in the dataset that share common characteristics). We chose to use GMM because it is more flexible, and with a covariance matrix, we can make the boundaries elliptical as opposed to being constrained to the circular boundaries resulting from alternative clustering methods.

About Fors Marsh

A Seriously Human™ Approach to Climate Resilience

At Fors Marsh, we take on society's greatest challenges—with clarity that people and place matter. We are a team of researchers, advisors, and communicators working together to shape the systems that shape our lives. Fueled by empathy and grounded in evidence, we bring together the science of research and the art of communication to design targeted, whole solutions that drive lasting social change where the physical and transition risks of climate change intersect with the human experience.

Meet the Team

Experts from across Fors Marsh's Climate, Policy, and Analytics practices are the hearts and minds behind Risky Movers.

Kristin Murphy
Director, Climate Resilience

Kristin leads solutions and responsible growth for clients on the front lines of the climate challenge. She is a business strategy and transformation leader who has spent the past 2 decades helping more than a dozen federal agencies, the White House, and the private sector improve the nation's climate resilience.

Taylor Dimsdale
Senior Research Fellow

Taylor is a senior research fellow with extensive subject matter expertise in disaster resilience, climate change, and sustainability. He has spent nearly 2 decades advising governments, businesses, and institutions around the world on climate risk management, security, and resilience policy.

Jesse Fleri
Senior Scientist

Jesse is a data scientist and conservation ecologist with 9 years of experience working with nature-based solutions to solve societal problems. He has used geospatial techniques to improve strategic planning and provide decision support for conservation and health projects with government, state, and nonprofit organizations.

Kelly McGarry
Senior Scientist

Kelly is a data scientist who has spent the last decade working with insurance- and health care-focused clients to identify and use data to influence their digital agenda. She has used data science methods to identify patterns in insurance claim characteristics, predict catastrophic weather insurance claims, and create customer profiles and predict their behaviors.

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