Envision Utah How we grow matters.

Survey Results for Disaster Resilience

Executive Summary

Utahns want the state to be resilient to potential disasters so that we minimize casualties and damage and we recover quickly.

- **Current circumstances:**
  - The chance of a large earthquake in the Wasatch Front region during the next 50 years is about 1 in 4.
    - Utah has 165,000 unreinforced brick buildings, which cause 55% of deaths in an earthquake.
    - If building codes do not change, many buildings will be uninhabitable following an earthquake.
  - Flooding and wildfire risk is increasing.
- **Survey findings:**
  - Almost all Utahns want at least some greater resilience to disasters. Over half want much greater disaster resilience.
  - Utahns are willing to take steps to improve resilience to earthquakes, wildfires, and flooding, even if they have to pay a little more for homes or utilities.

Table of Contents

The disaster resilience action team worked for 18 months to create scenarios for the future of disaster resilience in Utah.

Disaster Resilience Action Team

2013

Envision Utah and Governor Herbert invited disaster resilience experts from across the state to join the *Your Utah, Your Future* action team for this topics. The team has **19 members** from the legislature, industry, local businesses and government, advocacy groups, research institutions, and other organizations. The action team is facilitated by Envision Utah.

Utah Quality of Life Values Study

2014

The study concluded that Utahns value disaster resilience for so that they feel safe with less stress and so that we can get back to normal quickly after a disaster.

Your Utah, Your Future Scenarios & Choices

2015

The action team worked for **18 months** to research and model what Utah's disaster resilience future could be like in 2050 under various assumptions. They created **four scenarios** based on different strategies and outcomes for disaster resilience. Based on the public's responses in the *Your Utah, Your Future* survey, the action team will create a vision for Utah's disaster resilience future.

Disaster Resilience Action Team Members

Action team members were selected by Governor Gary Herbert and Envision Utah to represent a spectrum of experience and political persuasions. All action team members were invited to participate by Governor Herbert.

- ***Lisa Sun, Brigham Young University Law School**
- ***Kris Hamlet, Utah Division of Emergency Management**
- Ann Allen, Intermountain Healthcare
- Brad Bartholomew, Utah Division of Emergency Management
- Greg Bell, Utah Hospital Association
- Scott Brown, Questar Gas
- Lonnie Bullard, Jacobsen Construction
- Jason Davis, Utah Department of Transportation
- Bob Grow, Ogden Regional Medical Center
- Jeff King, Jordan Valley Water Conservancy District
- Debbie Kim, Intermountain Center for Disaster Preparedness
- Robert McIntyre, Walgreens District Manager
- Joaquin Mixco, Utah Department of Transportation - Emergency Management
- Chris Parker, Utah Division of Public Utilities
- Amy Shingleton, Rocky Mountain Power
- Marty Shaub, University of Utah - Emergency Management & Environmental Health & Safety
- Colonel Keith Squires, Utah Division of Emergency Management
- Richard Walje, Rocky Mountain Power
- Judy Watanabe, Utah Division of Emergency Management

*Action Team Co-Chair

Your Utah, Your Future Background

In Need of a Solution

Projections show that Utah's population will nearly double by the year 2050. The *Your Utah, Your Future* survey was designed for Utahns to create a vision for the State of Utah for the next 35 years.

Identifying the Issues

Envision Utah performed a values study to understand ***what*** Utahns care about regarding the future and ***why*** those issues are personally important to them. The study identified eleven key issues: agriculture, air quality, recreation, disaster resilience, public lands, transportation and communities, housing and cost of living, education, energy, jobs and economy, and water.

Identifying Choices and Trade-offs

Four-hundred Utah experts worked in eight task forces to identify Utah's choices for each of the 11 topics. **The information and options in the survey were the direct findings of these taskforces.**

Choosing a Future

The *Your Utah, Your Future* survey was designed to prioritize issues and their associated outcomes in order to make strategic decisions for Utah's future. Nearly 53,000 people weighed in on the future that they want to create in 2050.

The Challenge:

By 2050, Utah's population will nearly double in size. Utah will not.

TODAY THERE ARE

2,900,000

PEOPLE IN UTAH

BY 2050 THERE WILL BE

5,400,000

PEOPLE IN UTAH

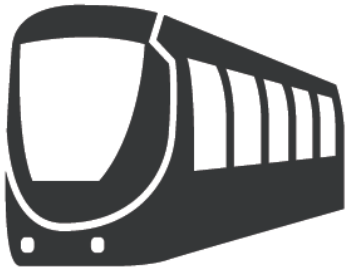
The *Your Utah, Your Future* survey asked Utahns to indicate their choices for Utah's Future on 11 specific issues.


Housing & Cost of Living


Education


Agriculture


Air Quality


Transportation & Communities


Economic Development


Disaster Resilience


Recreation


Water


Public Lands


Energy

Your Utah, Your Future Background

Survey participants then chose between five overall scenarios for Utah's future, with each overall scenario proposing a set of choices for the 11 specific issues.

Your Utah, Your Future Background

Our goal was for 50,000 Utahns to take the *Your Utah, Your Future* survey about their desires for the future for Utah.

Goal 50,000 Respondents

Actual **52,845 Respondents**

Your Utah, Your Future Background

The *Your Utah, Your Future* survey garnered more public participation than any such project ever has.

Envision Utah Quality Growth Strategy
(Wasatch Front and Back—1998)

Show Your Love, San Diego

Southern Nevada Strong

(Central Florida)

Total Survey Responses

1,000 | 5,000 | 7,000 | 8,000 | 17,500 | 23,000 | 28,000 | **52,845**

Heartland 2050
(Omaha, NE)

PLANiTULSA
(Tulsa, OK)

(Atlanta, GA)

Louisiana Speaks
(Southern Louisiana after Katrina)

The original *Envision Utah* 1999 survey held the record with 17,500 public response for many years.

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Survey Methodology

Survey Structure—Part One

Utahns were invited to participate in two parts of the survey.

In the first part:

Survey participants chose among five overall scenarios for Utah's future.

Each overall scenario was made up of a set a choices on 11 different topics.


Housing & Cost of Living


Education


Agriculture


Air Quality


Transportation & Communities


Economic Development


Disaster Resilience


Recreation


Water

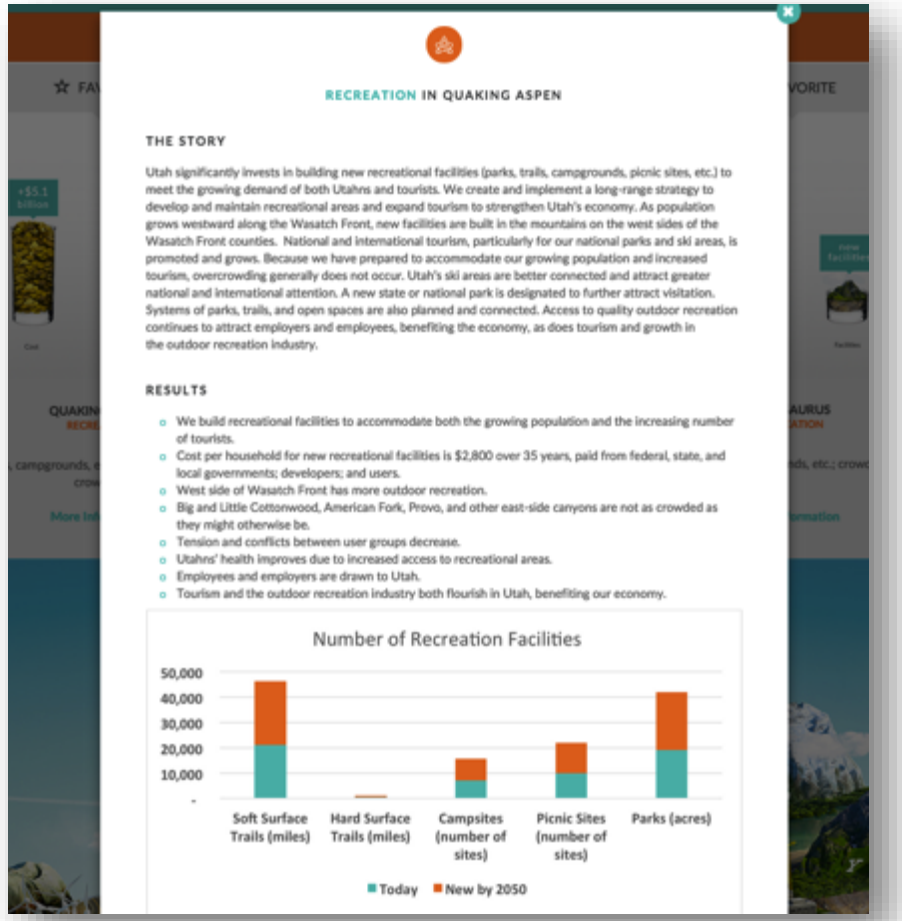

Public Lands


Energy

Survey Structure—Part One (Cont'd)

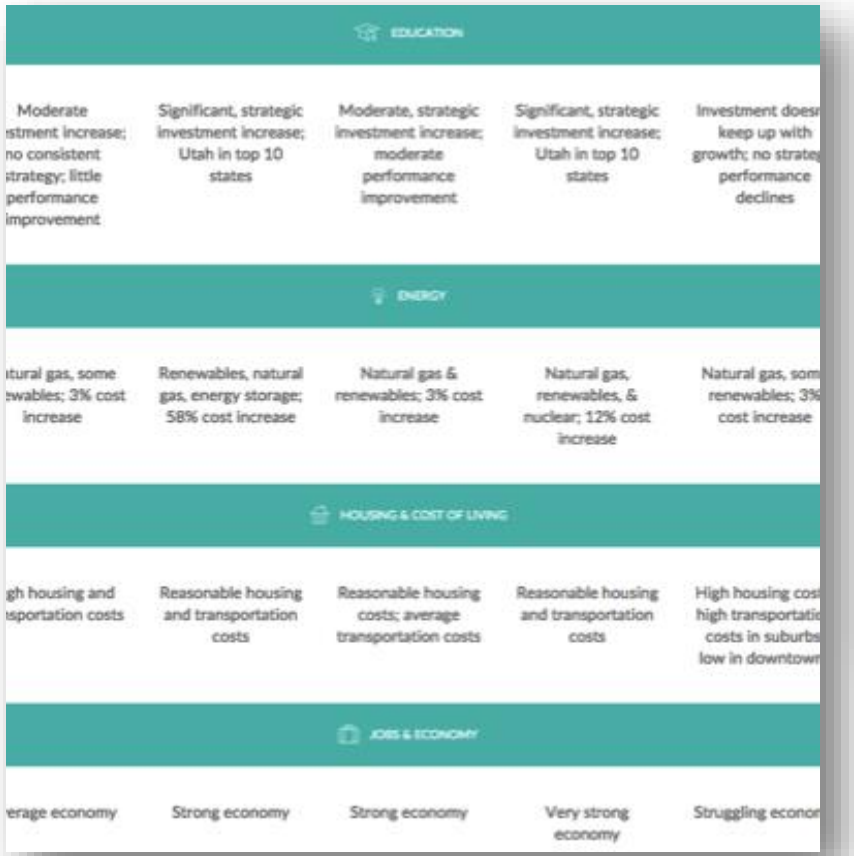
Participants compared the different options within each topic and selected their preferred scenarios for that specific topic.

They were provided with in-depth information and background data for each of the topics and choices.

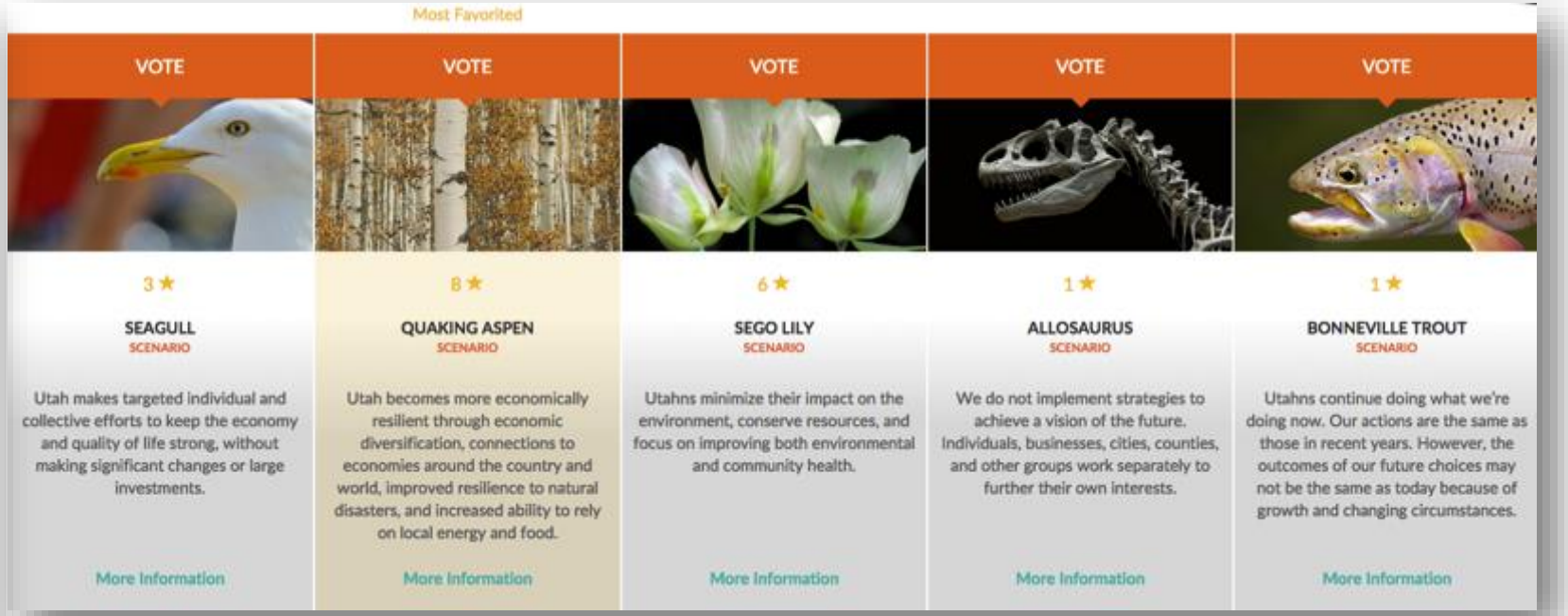


Survey Structure—Part One (Cont'd)

After making selections for each of the 11 topics, participants could study a summary comparison chart and vote on their preferred overall scenario.



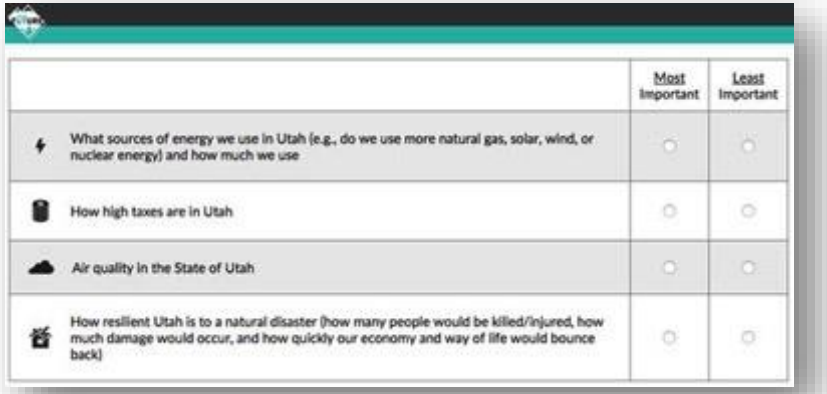
EDUCATION				
Moderate stment increase; no consistent strategy; little performance improvement	Significant, strategic investment increase; Utah in top 10 states	Moderate, strategic investment increase; moderate performance improvement	Significant, strategic investment increase; Utah in top 10 states	Investment does keep up with growth; no strate performance declines
ENERGY				
tural gas, some ewables; 3% cost increase	Renewables, natural gas, energy storage; 58% cost increase	Natural gas & renewables; 3% cost increase	Natural gas, renewables, & nuclear; 12% cost increase	Natural gas, som renewables; 3% cost increase
HOUSING & COST OF LIVING				
gh housing and sportation costs	Reasonable housing and transportation costs	Reasonable housing costs; average transportation costs	Reasonable housing and transportation costs	High housing cos high transportati costs in suburbs low in downtow
JOBS & ECONOMY				
erage economy	Strong economy	Strong economy	Very strong economy	Struggling econo



Survey Structure—Part Two

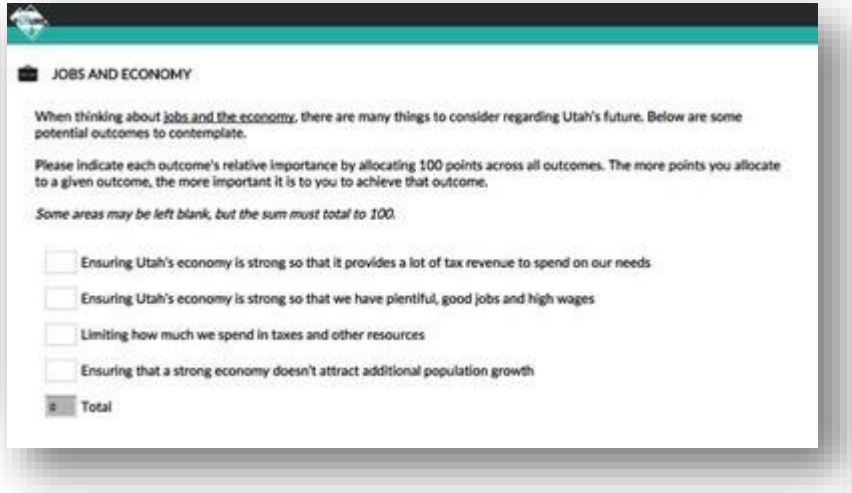
In the second part of the survey, Utahns participated in more traditional survey exercises.

Prioritizing Issues



	Most Important	Least Important
What sources of energy we use in Utah (e.g., do we use more natural gas, solar, wind, or nuclear energy) and how much we use	○	○
How high taxes are in Utah	○	○
Air quality in the State of Utah	○	○
How resilient Utah is to a natural disaster (how many people would be killed/injured, how much damage would occur, and how quickly our economy and way of life would bounce back)	○	○

Weighting Outcome Preference



JOBS AND ECONOMY

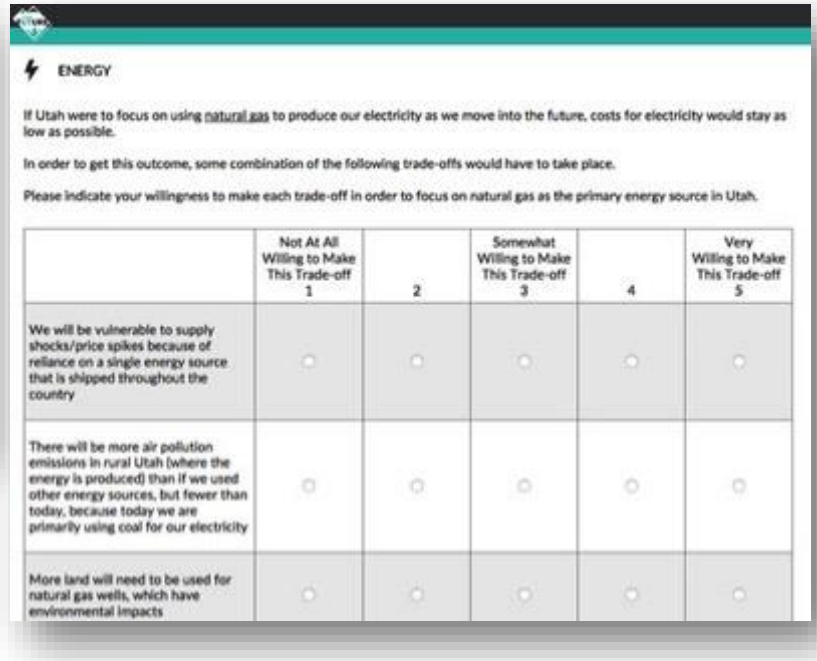
When thinking about jobs and the economy, there are many things to consider regarding Utah's future. Below are some potential outcomes to contemplate.

Please indicate each outcome's relative importance by allocating 100 points across all outcomes. The more points you allocate to a given outcome, the more important it is to you to achieve that outcome.

Some areas may be left blank, but the sum must total to 100.

- Ensuring Utah's economy is strong so that it provides a lot of tax revenue to spend on our needs
- Ensuring Utah's economy is strong so that we have plentiful, good jobs and high wages
- Limiting how much we spend in taxes and other resources
- Ensuring that a strong economy doesn't attract additional population growth
- Total

Indicating Tradeoff Willingness



ENERGY

If Utah were to focus on using natural gas to produce our electricity as we move into the future, costs for electricity would stay as low as possible.

In order to get this outcome, some combination of the following trade-offs would have to take place.

Please indicate your willingness to make each trade-off in order to focus on natural gas as the primary energy source in Utah.

	Not At All Willing to Make This Trade-off 1	2	Somewhat Willing to Make This Trade-off 3	4	Very Willing to Make This Trade-off 5
We will be vulnerable to supply shocks/price spikes because of reliance on a single energy source that is shipped throughout the country	○	○	○	○	○
There will be more air pollution emissions in rural Utah (where the energy is produced) than if we used other energy sources, but fewer than today, because today we are primarily using coal for our electricity	○	○	○	○	○
More land will need to be used for natural gas wells, which have environmental impacts	○	○	○	○	○

Together, the results of parts one and two of the survey allow a sophisticated analysis of what Utahns want, why they want it, and what they're willing to do to achieve their goals.

Detailed Survey Methodology

Each part of the survey had different goals and provided important information.

Process

1 SCENARIO SELECTIONS

- Issue "Favoriting"
- Scenario Vote

2 TRADE-OFF SURVEY

- Issue Prioritization
- Importance of Outcomes
- Trade-off Willingness

Goals

1. Educate Utahns on the key issues facing the state
2. Quantify preferences for issue-specific outcomes
3. Identify areas of consensus and disagreement across issues
4. Quantify preferences for defined scenarios

1. Force Utahns to prioritize importance / level of concern for all issues
2. Quantify importance of outcomes related to specific issues
3. Assess willingness to make trade-offs in order to reach desired outcomes

Survey Participation

A random sample survey of Utahns was used to cross-check outreach results

OUTREACH SAMPLE

Utahns that heard about the survey through Envision Utah's outreach efforts and went to the website to vote

- School outreach
- Digital media
- Partner organization emails and posts
- Radio advertisements
- News coverage

Total participants: 52,845

RANDOM SAMPLE

A statistically representative sample of Utahns randomly sampled to participate in the survey

- Direct email
- Physical mail (postcard invitations)
- Phone recruiting

Total participants: 1,264

Survey Participation

All Participants participated in Part One

OUTREACH — n=52,845

RANDOM SAMPLE — n=1,264

Outreach Participants had the option to participate in Part Two

OUTREACH — n=13,459

All **Random Sample** Participants participated in Part Two

RANDOM SAMPLE — n=1,264

Participant Comparison

Outreach and Random Sample participant responses were very much aligned across issues and preferences.

	Variance Across Most Responses
Issue "Favoriting"	+/- 3%
Scenario Vote	+/- 4%
Issue Prioritization	+/- 1.2%
Importance of Outcomes	+/- 2%
Trade-off Willingness	+/- 7%

"We can conclude that the results represent the desires and opinions of Utahns."

"Results were obtained via the largest public outreach effort in the history of Utah, resulting in public input from more than 50,000 people; an effort that was cross-checked with a random sample of 1,264 Utahns, and overseen by Dan Jones & Associates."

—Cicero; Dan Jones & Associates

Envision Utah performed a values study in 2014 to understand what Utahns care most about regarding the future.

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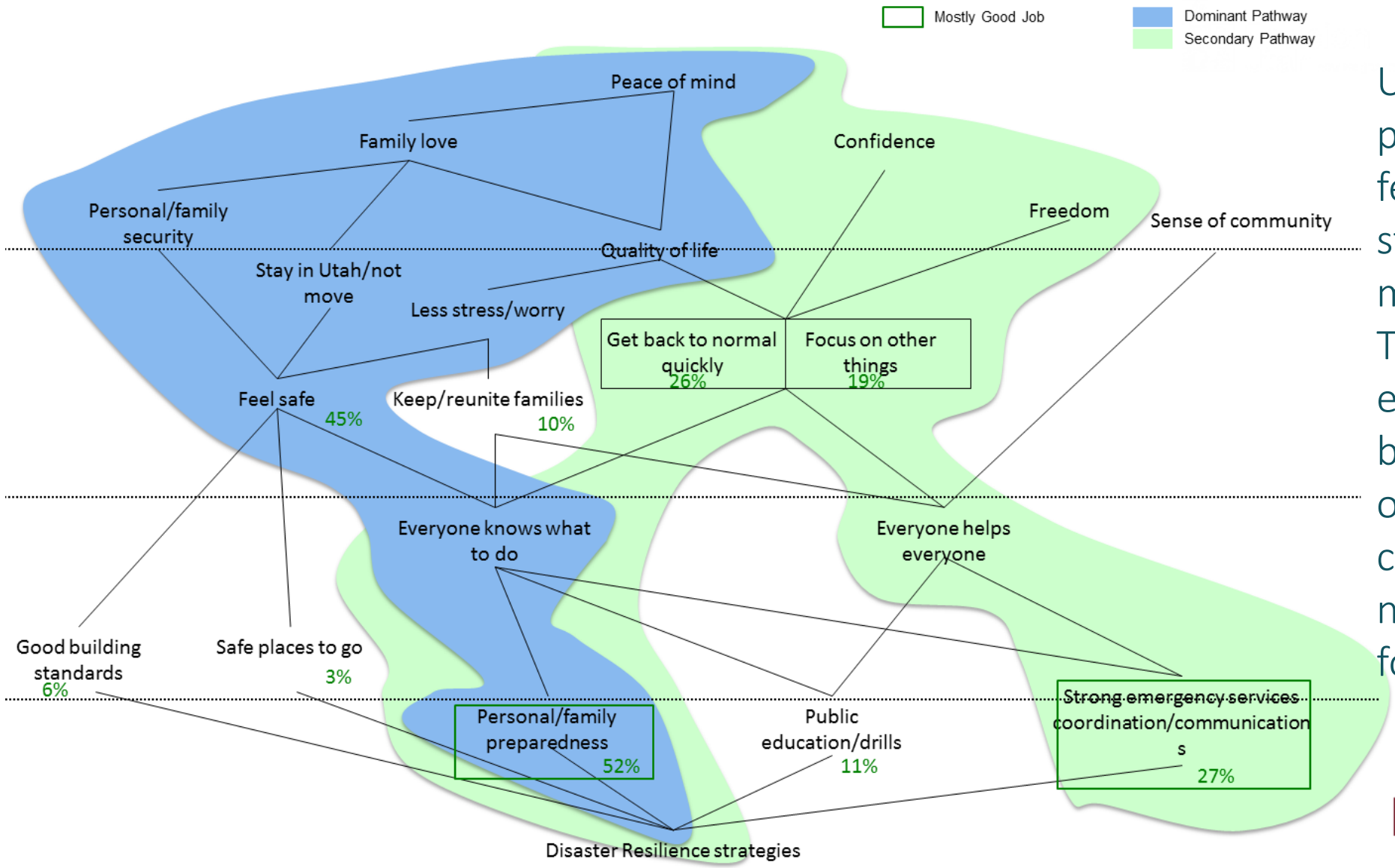
Disaster Resilience Values

Disaster Resilience Value Pathways



Utahns want to be prepared so they will feel safe, have less stress, and not have to move out of Utah. They also want the entire community to be prepared and help one another so we can get back to normal quickly and focus on other things.

HEART+MIND STRATEGIES

In the ***Your Utah, Your Future*** survey, Utahns were given information about Utah's disaster resilience today and four different scenarios for what our disaster resilience could be like in 2050 depending on the choices we make.

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Disaster Resilience Scenarios

What is Disaster Resilience?

- Disaster resilience is the ability to survive, adapt, and thrive no matter what kinds of stresses and shocks are experienced, so that we can withstand and quickly recover from catastrophic events without long-term disruption to our economy and way of life.

Utah's Disaster Resilience Today: Earthquakes

Unreinforced masonry building after Wells, NV earthquake

- The chance of a large earthquake in the Wasatch Front region during the next 50 years is about 1 in 4.*
- Utah has 165,000 unreinforced brick buildings, which will cause 55% of deaths in an earthquake.
- By 2050, the number of buildings (homes and businesses) in Utah will double; if new buildings are built to the current code, many of them will be uninhabitable after an earthquake.

*Source: University of Utah Seismograph Stations

Utah's Disaster Resilience Today: Floods and Fires

Flooding in Washington County

- The West is experiencing larger storms than ever before (e.g., Phoenix and Denver have seen significant flooding), and those storms are predicted to grow even larger.
- Wildfires are becoming an increasingly greater issue throughout the West.
- After a wildfire, flooding risk increases because of lack of vegetation.

Questions Concerning the Future of Disaster Resilience

- How much damage will we experience in a disaster, and how quickly will we recover?
- Will existing unreinforced masonry/brick buildings be retrofitted to withstand earthquakes?
- Will we upgrade building codes to have more resilient buildings so more residents will be able to move back into their homes following an earthquake?
- How will we prevent flooding damage?
- How will we prevent wildfire damage?

Earthquakes

Problem	Solution	Results
Utah has 165,000 unreinforced brick buildings, which cause 55% of deaths.	Retrofit structurally weak buildings.	·Cost of retrofitting is $5,000–$10,000 per home. ·Deaths and life-threatening injuries caused by weak buildings are reduced by 70%. ·Even after retrofitting, these buildings would be severely damaged and uninhabitable.

Earthquakes

Problem	Solution	Results
By 2050, the number of buildings in Utah will double; if new buildings are built to the current code, many of them will be uninhabitable after an earthquake.	Strengthen building codes.	·Cost of new buildings increases by approximately 1.5%. · Risk of a new home being uninhabitable decreases by half. ·Deaths and life-threatening injuries from new buildings are reduced by 65%.

Allosaurus & Bonneville Trout Scenarios

- We are not more resilient to earthquakes because:
  - Weak buildings with unreinforced brick are not reinforced.
  - Building codes are not strengthened to make new buildings more likely to be habitable.
  - Schools, hospitals, and nursing homes are retrofitted very slowly.
  - We continue to build in earthquake hazard areas.
  - Roads, water, sewer, power, and gas lines are upgraded only when replaced.
- We are also not more resilient to flooding or wildfire because:
  - Storm water systems are not upgraded to accommodate larger storms.
  - A large amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
  - Homes on the urban fringe are not designed to be fire-resistant.

Seagull Scenario

- We are somewhat more resilient to earthquakes because:
  - 1/3 of weak buildings with unreinforced brick are reinforced.
  - Building codes are strengthened to make new buildings more likely to be habitable.
  - Only 1/3 of new buildings meet these new codes, which are not implemented until 2038.
  - Schools, hospitals, and nursing homes are retrofitted slowly.
  - Communities continue to grow in earthquake hazard areas, though some disaster-prone areas are avoided.
  - Roads, water, sewer, power, and gas lines are upgraded to be somewhat more resilient.
- We are also somewhat more resilient to flooding and wildfire because:
  - Storm water systems are somewhat improved to accommodate larger storms.
  - A large amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
  - Only some homes on the urban fringe are designed to be fire-resistant.

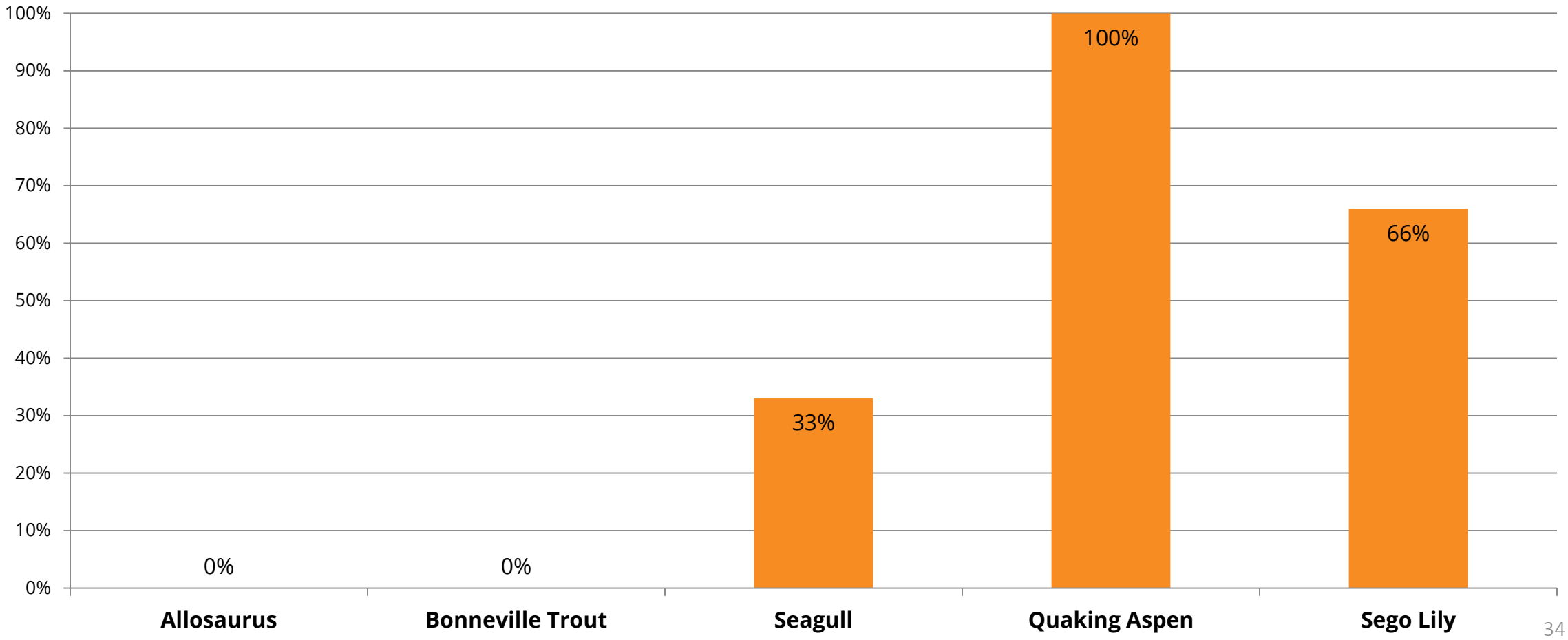
Sego Lily Scenario

- We are moderately more resilient to earthquakes because:
  - 2/3 of weak buildings with unreinforced brick are reinforced.
  - Building codes are strengthened to make new buildings more likely to be habitable.
  - 2/3 of new buildings meet these new codes, which are implemented in 2024.
  - Schools, hospitals, and nursing homes are retrofitted faster.
  - Some communities continue to grow in earthquake hazard areas, but some disaster-prone areas are avoided.
  - Roads, water, sewer, power, and gas lines are upgraded to be moderately more resilient.
- We are also moderately more resilient to flooding and wildfire because:
  - Storm water systems are improved to accommodate larger storms.
  - Only some scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
  - A moderate number of homes on the urban fringe are designed to be fire-resistant.

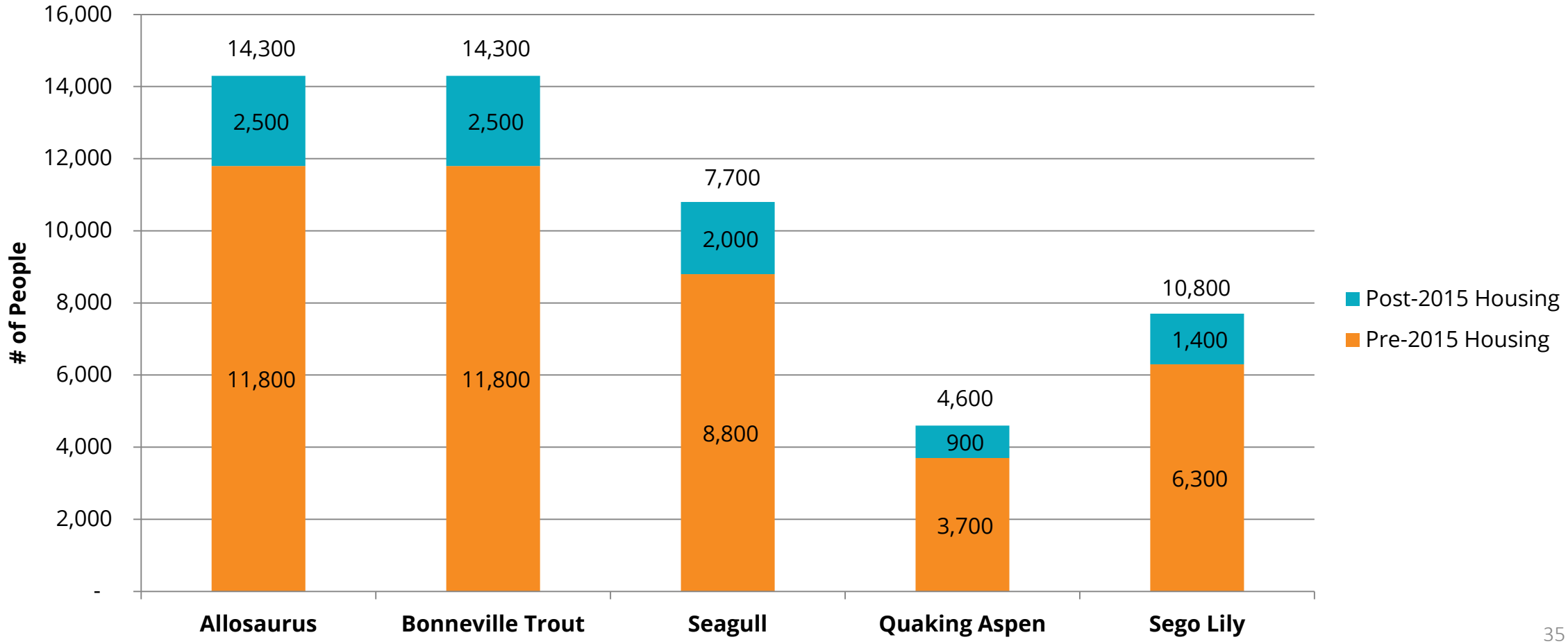
Quaking Aspen Scenario

- We are significantly more resilient to earthquakes because:
  - Almost all weak buildings with unreinforced brick are reinforced.
  - Building codes are strengthened to make new buildings more likely to be habitable.
  - Almost all new buildings meet these new codes, which are implemented as soon as possible.
  - Schools, hospitals, and nursing homes are retrofitted quickly.
  - Some communities continue to grow in earthquake hazard areas, but a serious effort is made to avoid disaster-prone areas.
  - Roads, water, sewer, power, and gas lines are upgraded to be much more resilient.
- We are also significantly more resilient to flooding and wildfire because:
  - Storm water systems are substantially improved to accommodate larger storms.
  - Only a small amount of scattered growth occurs on the fringe of urban areas, where homes are more vulnerable to wildfire.
  - Most homes on the urban fringe are designed to be fire-resistant.

Percent of Weak Buildings Retrofitted and Percent of New Buildings Built to a Stronger Building Code

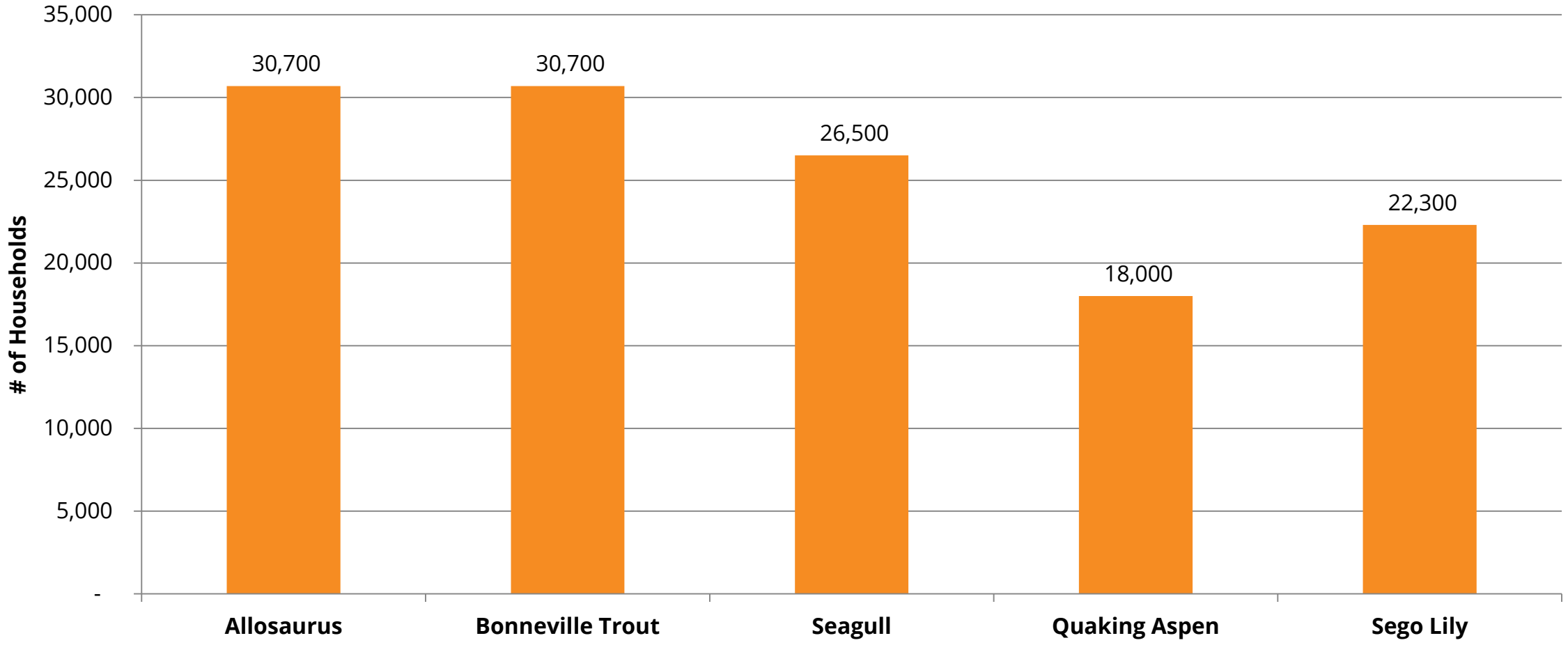


Deaths and Life Threatening Injuries
(7.0 Quake)



Displaced Households from New Homes*

(7.0 Quake)



*From homes built after 2015

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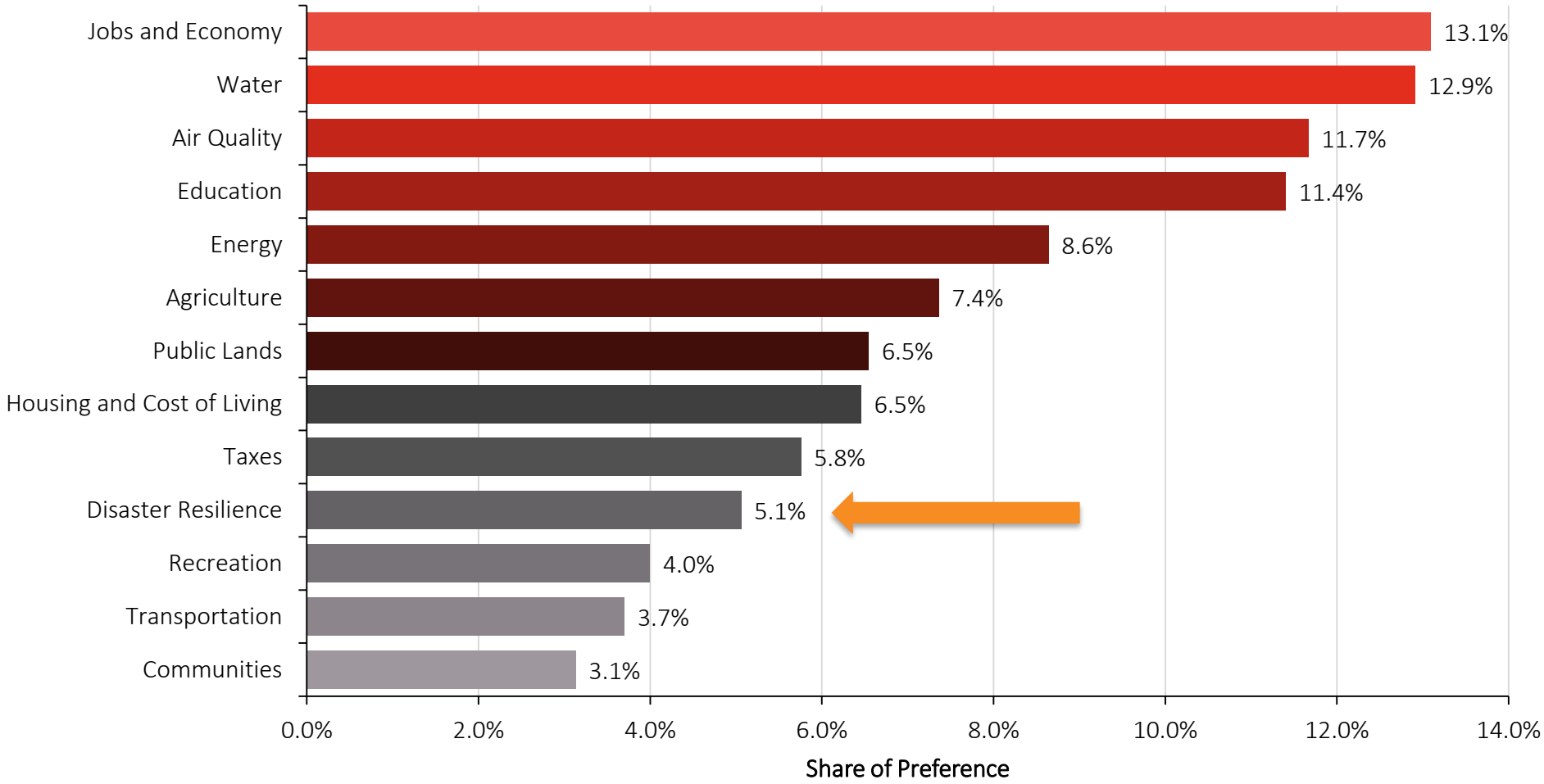
Disaster Resilience Survey Results

Level of Concern for the Future—Outreach Sample Results

Share of Preference, n=13,459



In the 2014 values study, Utahns ranked all 11 issues as being important to Utah's future. The 2015 survey used a sophisticated technique to force a "weighting" of the issues, providing a wider gradation of concern.

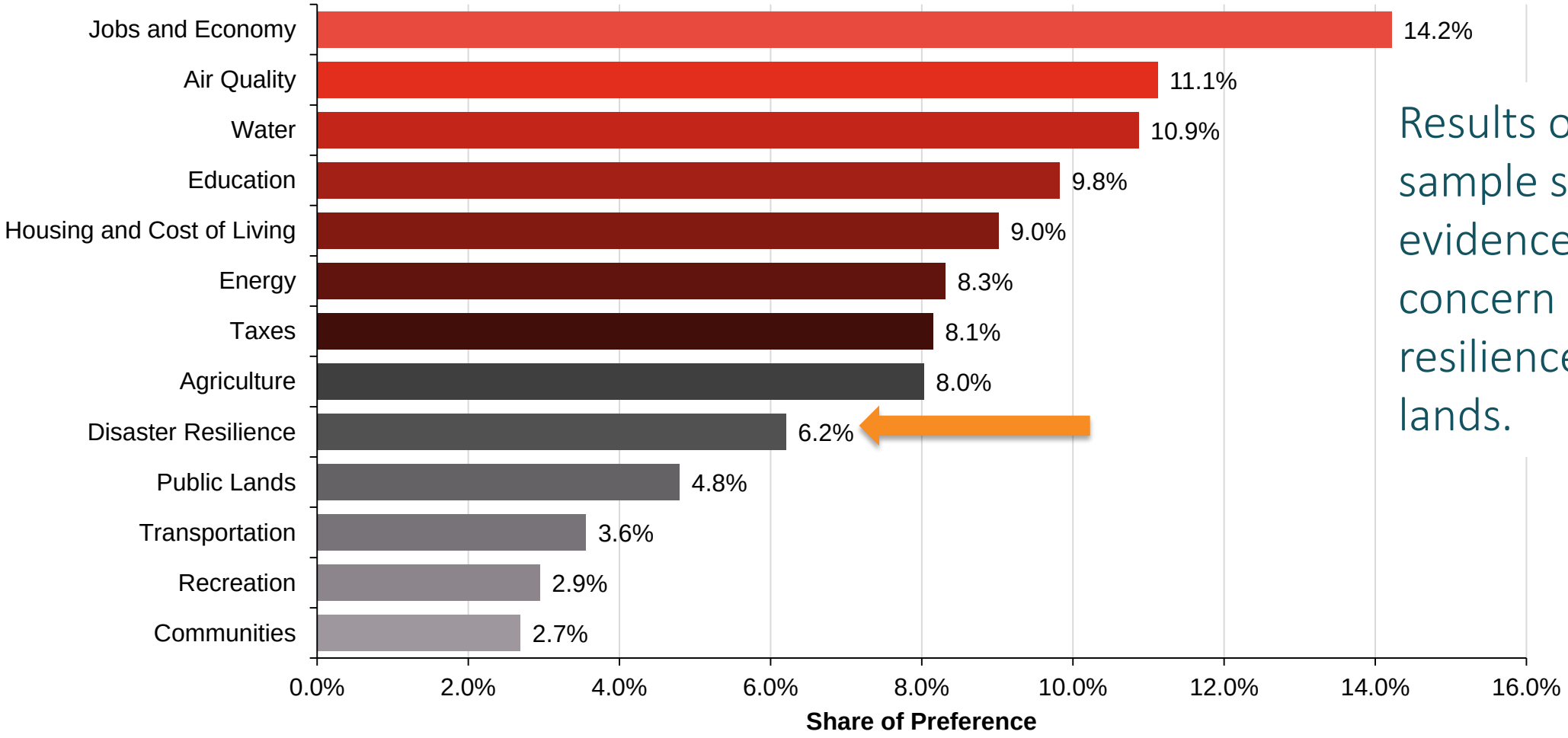
Source: Survey – Keeping in mind that between now and the year 2050, Utah will almost double in population, please consider how important each of the following issues is to you. Considering only these four issues, which is the Most Important and which is the Least Important as you think about Utah's future?

OUTREACH
n = 52,845

Level of Concern for the Future—Random Sample Results

Share of Preference, n=1,264

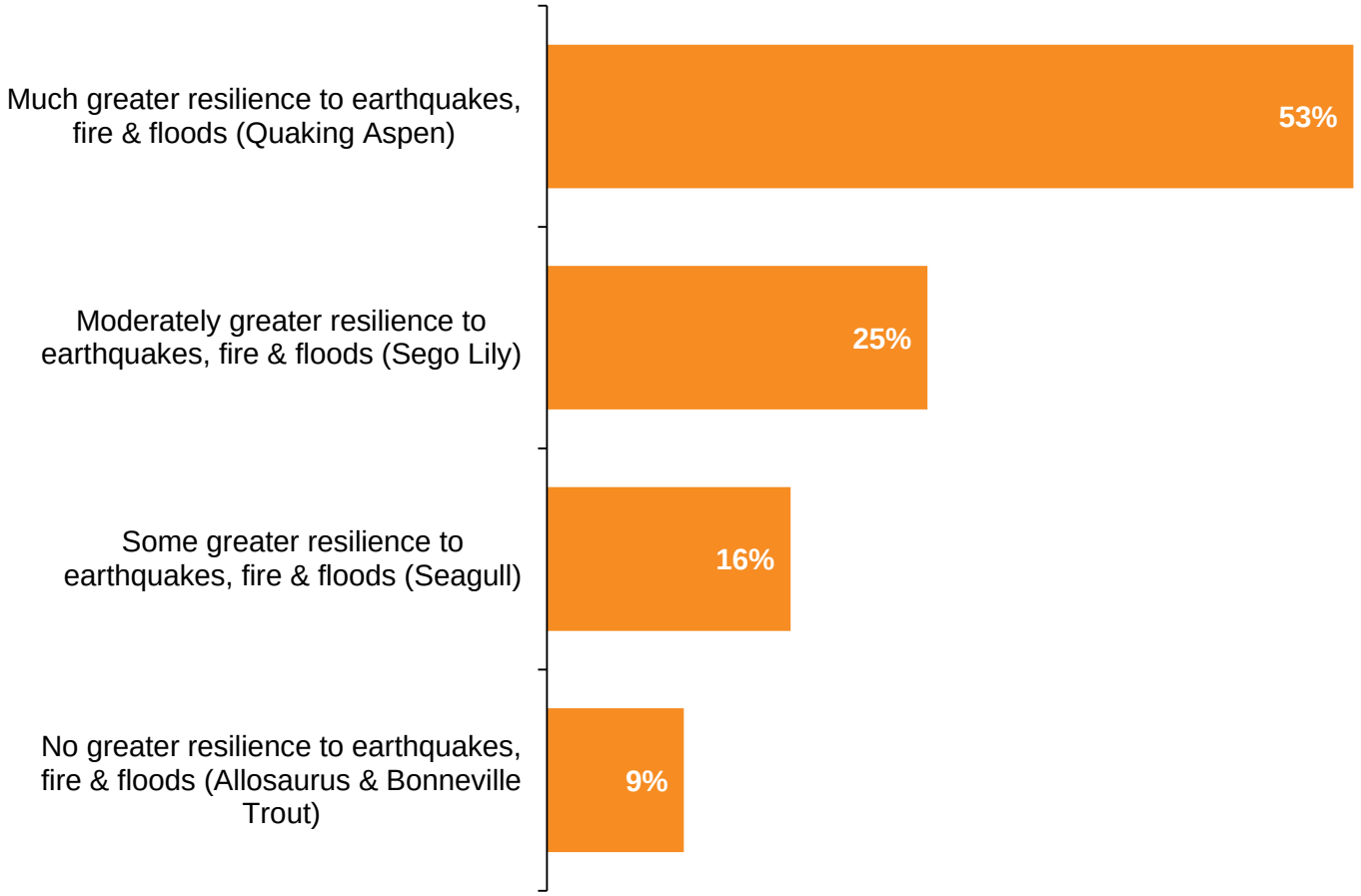
RANDOM SAMPLE
n = 1,264



Results of the random sample survey evidenced greater concern for disaster resilience than public lands.

Source: Survey – Keeping in mind that between now and the year 2050, Utah will almost double in population, please consider how important each of the following issues is to you. Considering only these four issues, which is the Most Important and which is the Least Important as you think about Utah's future?

Issue-specific Scenarios
% "Favorite" Selections, n=18,945



Source: Website – Select your favorite disaster resilience outcome(s) from the 4 presented below for Utah in 2050. Consider the effect of a 7.0 earthquake on lives and household displacement.

Cicero Dan Jones & Associates Public Opinion & Market Research

OUTREACH
n = 52,845

What Utahns Want:

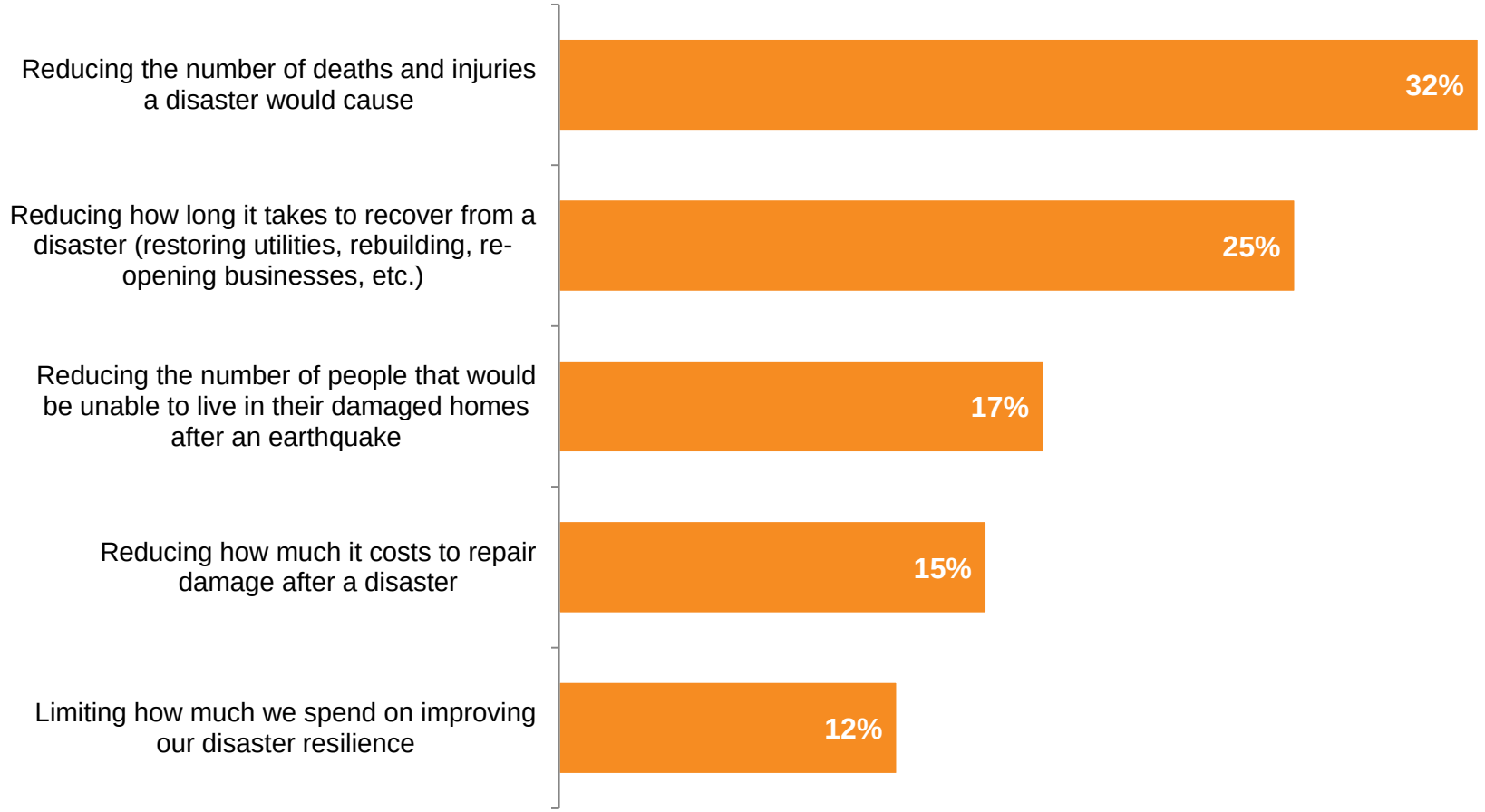
91% of Utahns chose a disaster resilience scenario with at least some greater resilience to disasters.

78% selected a scenario with at least moderately greater resilience to disasters.

53% chose a scenario with much greater resilience to disasters.

Importance of Outcomes

Average % Allocated, n=4,931

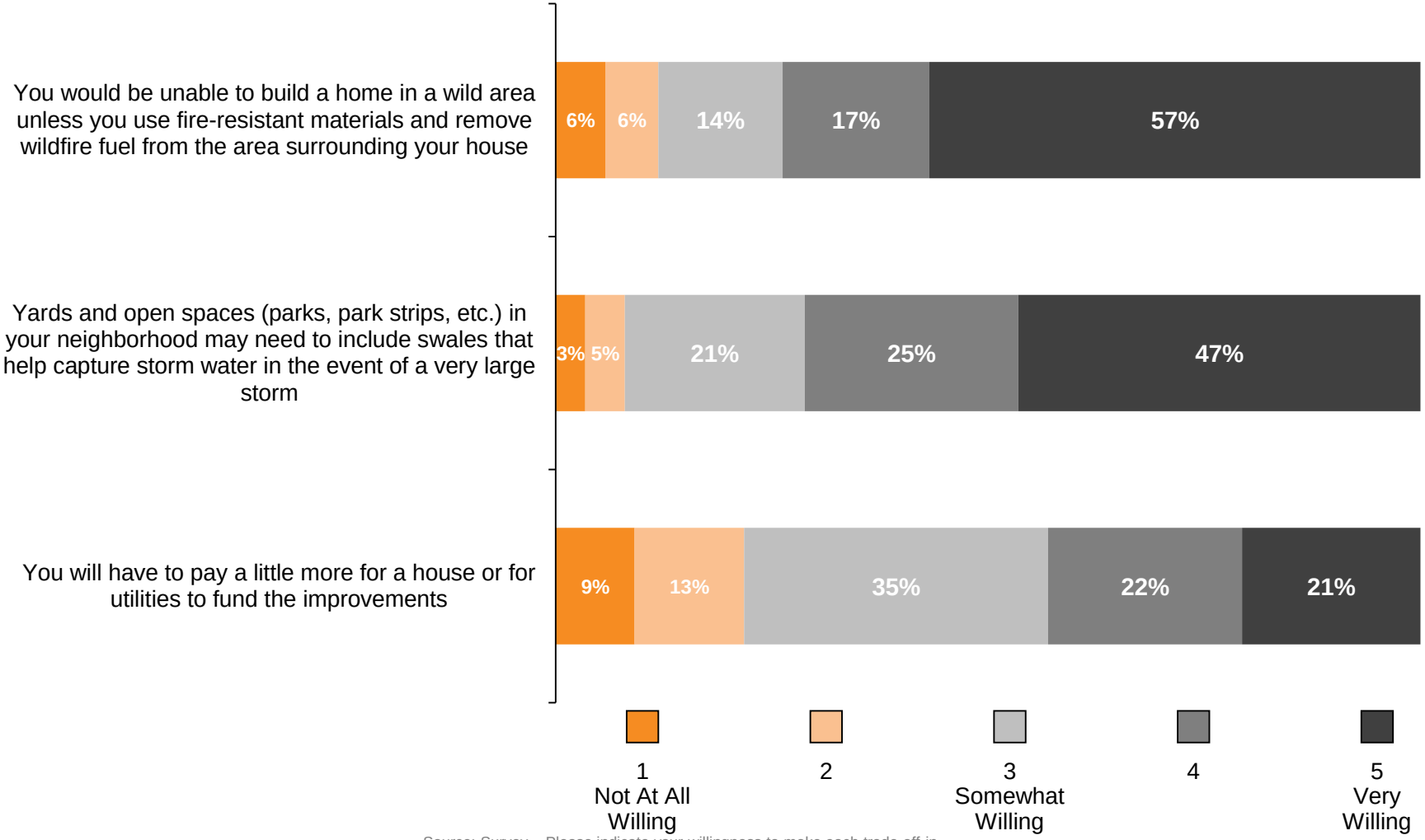


Why Utahns Want Greater Disaster Resilience:

Utahns want to reduce the total number of deaths and injuries resulting from a disaster. Utahns also want to be able to recover more quickly and not have to leave their homes.

maintain ecosystem health as well as ensure we have enough land for energy production, recreation, economic development, and grazing/agriculture.

Willingness to Make Tradeoffs
% Level of Willingness, n=4,931



What Utahns are willing to do to have greater disaster resilience:

Utahns are very willing to build carefully in wild areas and use techniques like swales to capture water. Utahns are also willing to pay more for housing and utilities to fund disaster resilience improvements.

Source: Survey – Please indicate your willingness to make each trade-off in order to focus on disaster resilience in Utah. Outcomes:
- Earthquake safety improvements made to existing structures
- Updated building codes for future structures
- Improved stormwater systems to prevent flooding
- Better wildfire resistance along the urban fringe

OUTREACH
n = 52,845

In addition to the specific results from disaster resilience questions, a number of results from other topics show support for disaster resilience.

Envision Utah How we grow matters.

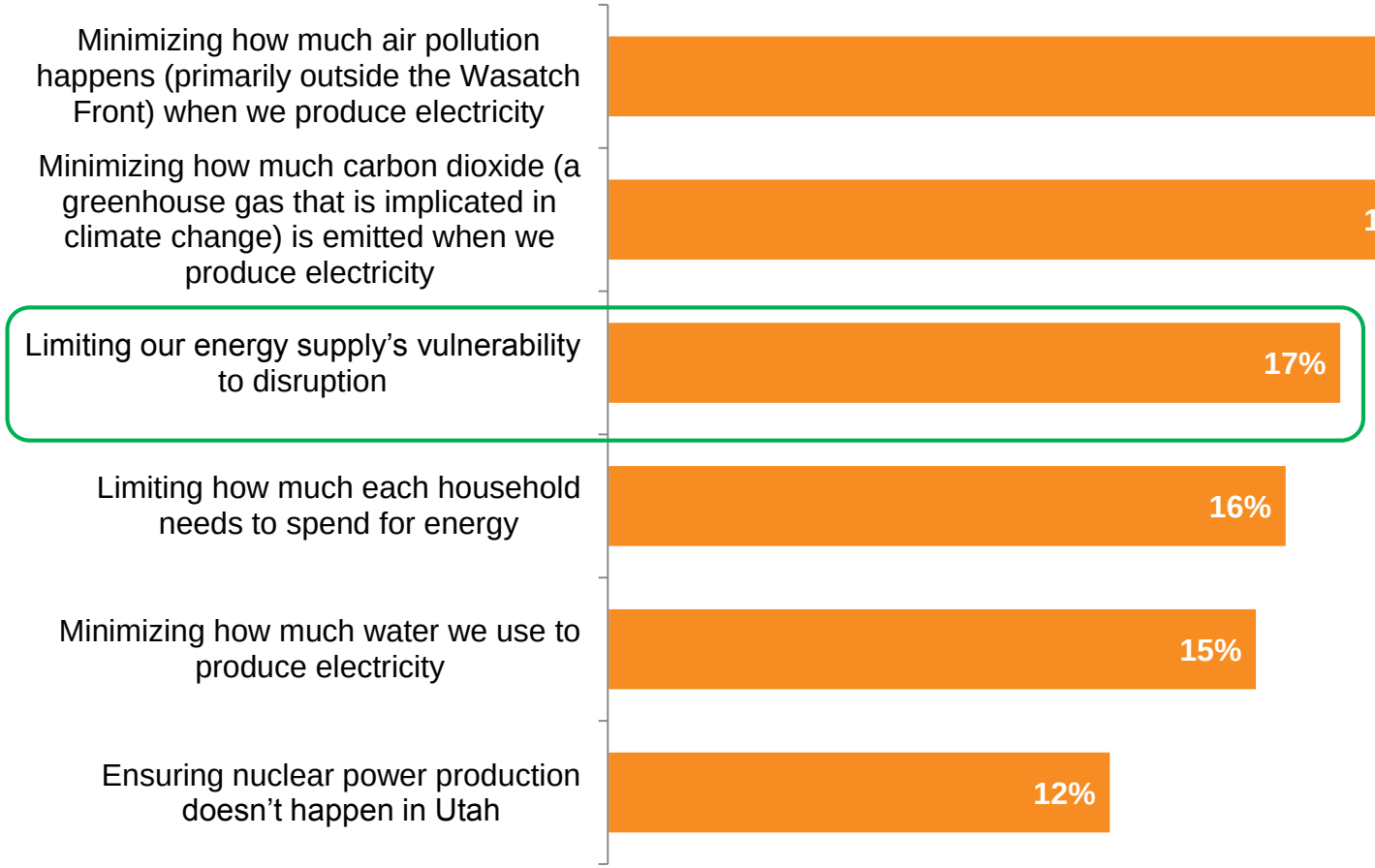
Supporting Survey Results

Supporting Survey Results: Energy

OUTREACH
n = 52,845

Importance of Outcomes—Energy

Average % Allocated, n=4,924



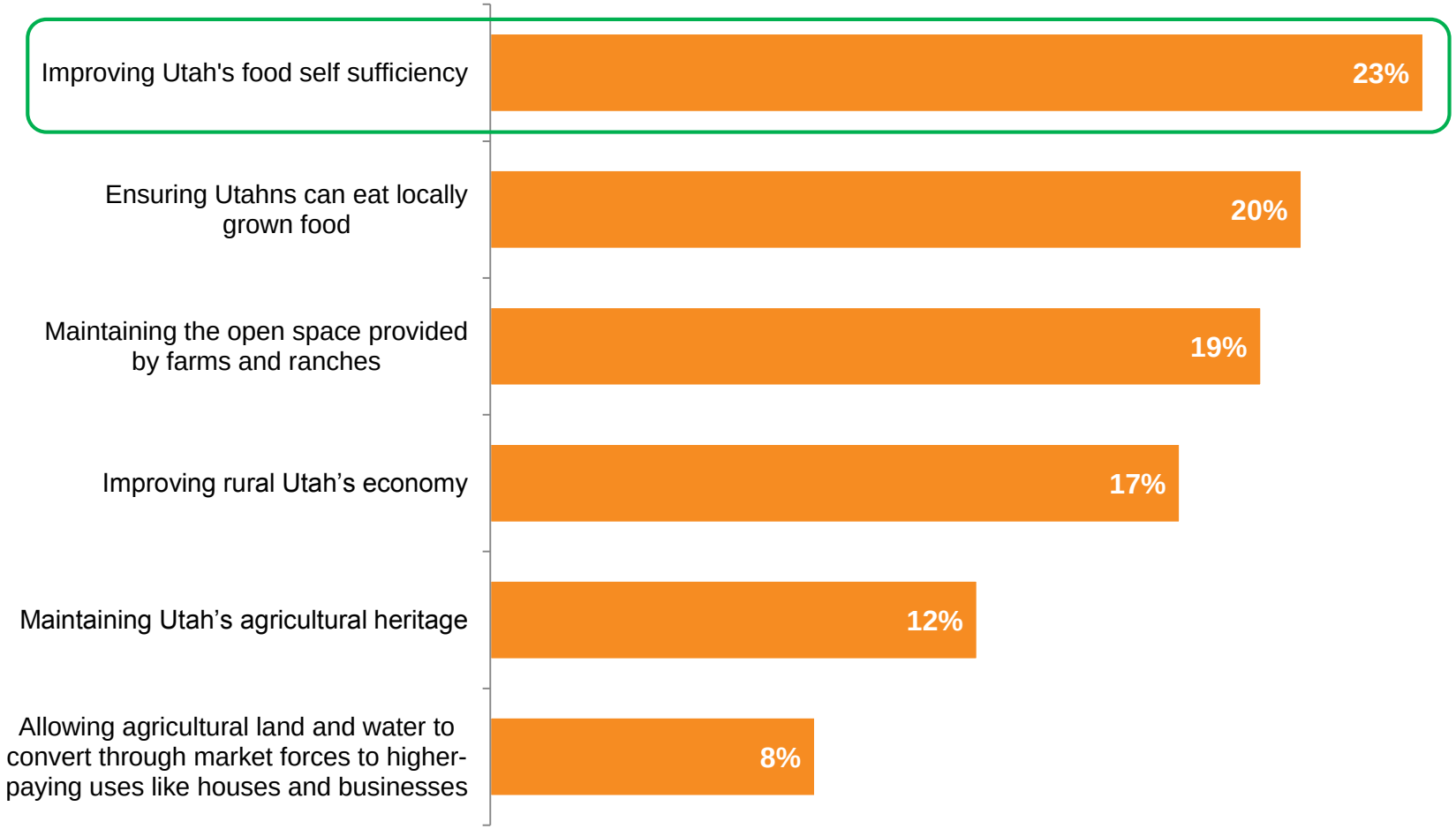
Utahns want to ensure that our energy supply is not vulnerable to disruption. Disruption risk can be reduced through more resilient infrastructure and other means.

Cicero Dan Jones & Associates Public Opinion & Market Research

Source: Survey – Please indicate each outcome's relative importance by allocating 100 points across all outcomes. The more points you allocate to a given outcome, the more important it is to you to achieve that outcome.

Importance of Outcomes—Agriculture

Average % Allocated, n=4,875



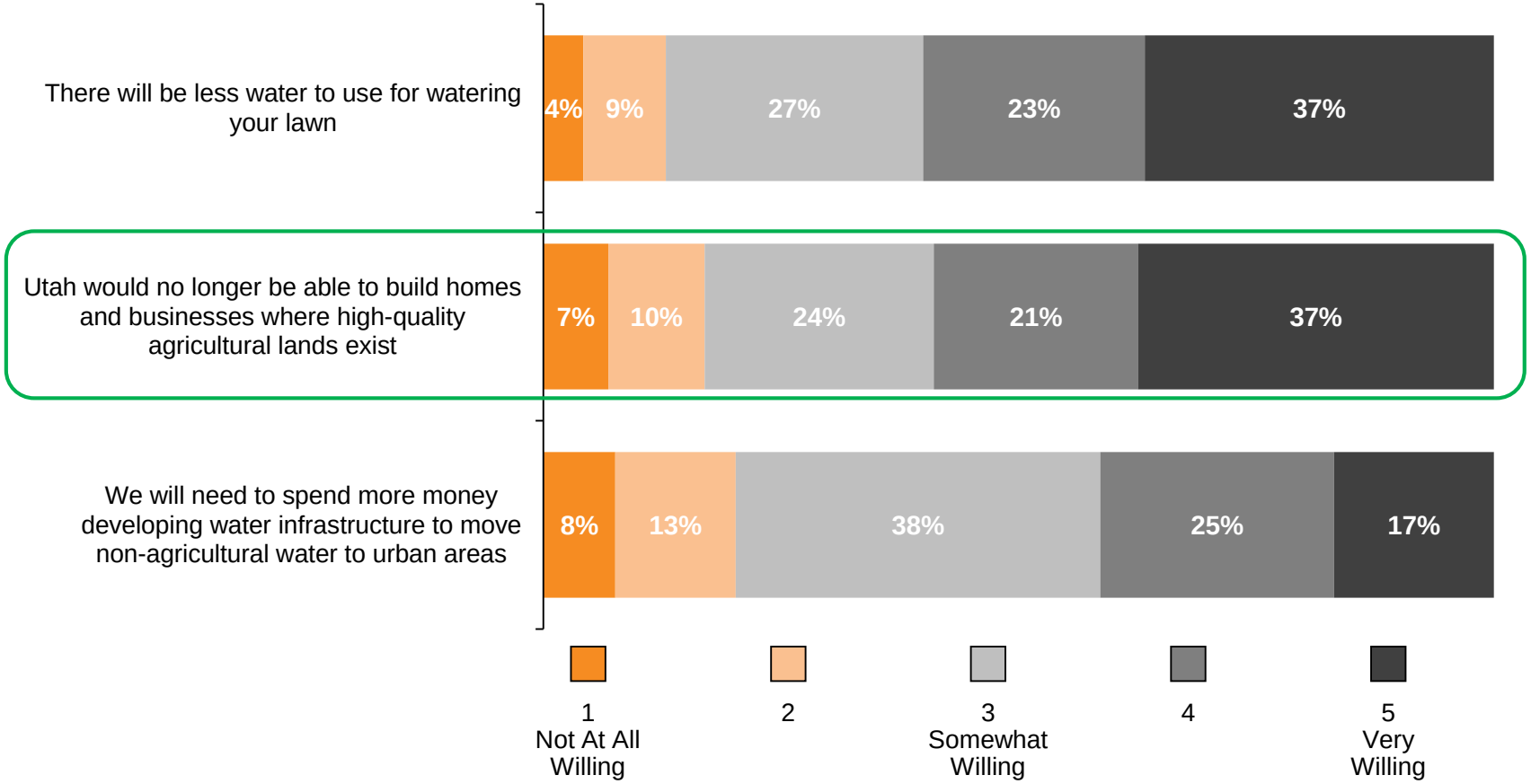
Utahns want the state be more self-sufficient in supplying its own food.

Source: Website – Please indicate each outcome's relative importance by allocating 100 points across all outcomes. The more points you allocate to a given outcome, the more important it is to you to achieve that outcome.

OUTREACH
n = 52,845

Willingness to Make Tradeoffs—Agriculture

% Level of Willingness, n=4,875



Source: Survey – Please indicate your willingness to make each trade-off in order to secure and expand agriculture in Utah. Outcomes:

- Increased locally grown food
- Less need to import food
- Increase agriculture exports

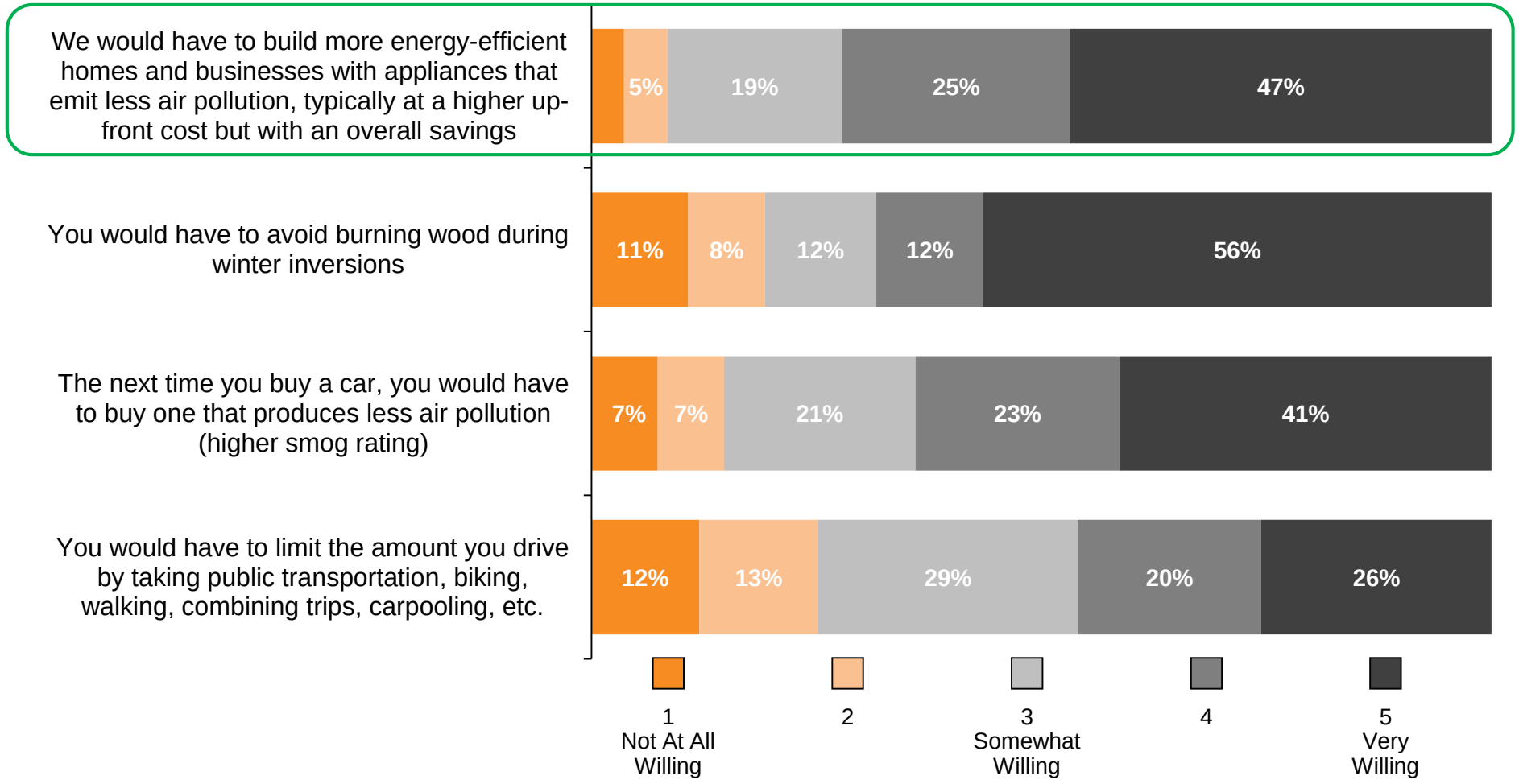
OUTREACH
n = 52,845

Utahns are willing to avoid building on high-quality agricultural lands, which often have high risk for liquefaction in an earthquake.

Willingness to Make Tradeoffs—Air Quality

% Level of Willingness, n=4,885

OUTREACH
n = 52,845



Utahns are very willing to build more energy-efficient homes and businesses to improve air quality. The same improvements that make unreinforced brick buildings more earthquake resilient may also improve energy efficiency.

Cicero Dan Jones & Associates Public Opinion & Market Research

Source: Survey – Please indicate your willingness to make each trade-off in order to improve Utah's air quality. Outcome:

- Breathe cleaner air, even during Wasatch Front inversions

The Survey is still available!

Visit **envisionutah.net** to view the **choices for disaster resilience** and each of the 11 topics in the *Your Utah, Your Future* survey.