

# Resilience Planning in Colorado's Local Governments: A Baseline Planning Survey Report

Deserai Crow, PhD., University of Colorado Denver, School of Public Affairs



**COLORADO**  
Resiliency Office  
Department of Local Affairs



School of Public Affairs  
UNIVERSITY OF COLORADO **DENVER**

**TABLE OF CONTENTS**

**RESILIENCE PLANNING IN COLORADO’S LOCAL GOVERNMENTS**..... 2

    STATEWIDE SURVEY APPROACH..... 3

**PLANNING IN LOCAL GOVERNMENTS: The Current State of Colorado’s Local Government Resiliency Planning Efforts**..... 4

**EXPERIENCE WITH SHOCKS AND STRESSORS: Past Experiences and Current Concern for the Risks and Vulnerabilities that Colorado Communities Face** ..... 8

**RISK PERCEPTIONS: Understanding and Concern for Future Risk** ..... 12

**CRO ROLE AND PROGRAMMING: Resources and Support the CRO Can Provide to Colorado’s Local Governments** ..... 16

**LOCAL GOVERNMENT RESILIENCE: SIGNIFICANT RELATIONSHIPS**..... 18

**SUMMARY OF KEY FINDINGS** ..... 19

**REFERENCES**..... 20

**APPENDIX A: AGGREGATE DESCRIPTIVE STATISTICS & CHARTS** ..... 21

**APPENDIX B: REGIONAL COMPARISON STATISTICS & GRAPHS**..... 72

**APPENDIX C: SIGNIFICANT RELATIONSHIPS** ..... 168

**APPENDIX D: SURVEY**..... 212

# Resilience Planning in Colorado's Local Governments

Climate change and human population growth are increasing the frequency, severity, and impact of natural disasters across the Western United States. As increasing aridity exposes wildland and agricultural ecosystems to greater risk of drought and fires, stronger intensity of summer rainstorms is exposing low-lying and riparian areas to greater risk of destructive floods. Meanwhile, growth of human populations and economies is expanding and intensifying land use and numerous public health and social interactions, and thus the human impact of disasters when they occur.



Credit: Associated Press

The State of Colorado is at the leading edge of addressing resiliency in the U.S.

- After catastrophic wildfires and floods in 2012 and 2013, then-Governor Hickenlooper established the Colorado Resiliency and Recovery Office to coordinate disaster recovery efforts.
- In 2015, the office released the Colorado Resiliency Framework, the first-of-its-kind framework for how the state can better prepare for and recover from major shocks and stresses, including natural disasters and other disruptions. The Colorado Resiliency Framework is the roadmap and vision for a more resilient Colorado, outlining a holistic approach across six sectors for state agencies to address disruptions due to changing social, climate, and economic conditions.
- In 2017, the office moved to the Colorado Department of Local Affairs (DOLA) and was renamed the Colorado Resiliency Office (CRO).
- In 2018, the Colorado General Assembly passed HB 18-1394 which established the CRO and mandated the CRO create a Resiliency and Community Recovery Program in consultation with state, local, non-profit, and private sector partners. The survey reported here is one aspect of developing such a program that is responsive to the needs of Colorado's communities.

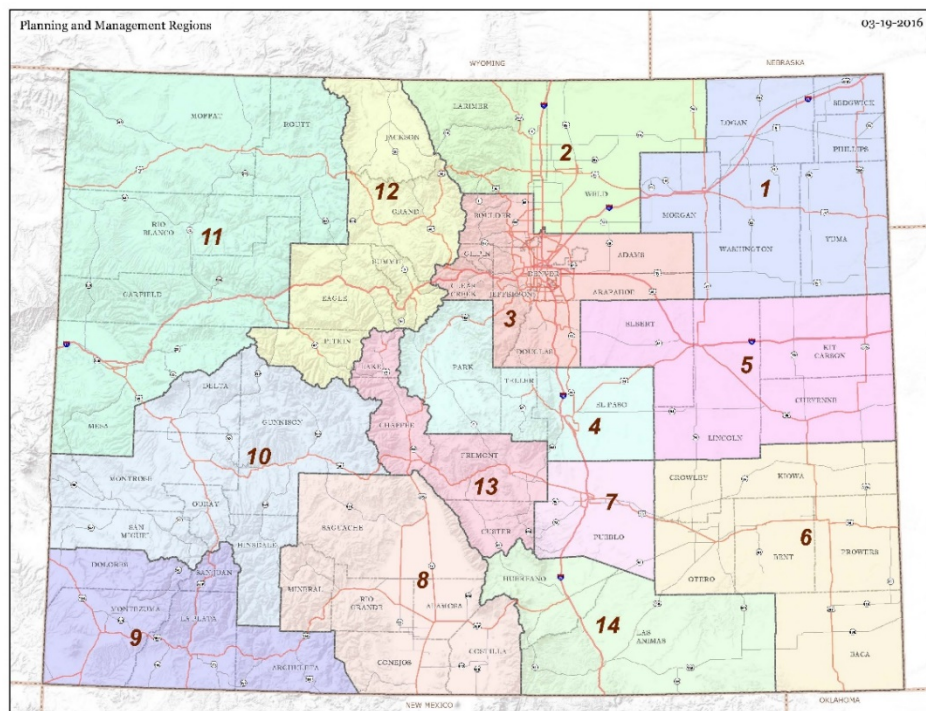
*“The ability of communities to rebound, positively adapt to, or thrive amidst changing conditions or challenges—including human-caused and natural disasters—and to maintain quality of life, healthy growth, durable systems, economic vitality, and conservation of resources for present and future generations.”*

**Resilient communities are able to adapt and thrive no matter what disruptions they face.** In partnership with Colorado communities, the survey was intended to help the CRO build a Resilience and Community Recovery Program poised to support communities in addressing their vulnerabilities and risks. In the survey and in this report, risk refers to natural, human-caused, technological, and other risks that pose a threat to a community. These risks, when they culminate in a crisis can lead to a disaster. Natural risks may include wildfire, floods, drought, and others. Human-caused risks include things such as industrial accidents, security threats, and chemical spills. Social risks include things such as poverty, affordable housing, and drug abuse. Economic risks include things such as plant closures, economic downturns, and similar stresses.

# STATEWIDE SURVEY APPROACH

To understand the state of resiliency planning among Colorado’s local governments, we used the list of municipal governments maintained by the Department of Local Affairs. All local governments in Colorado were included in this survey sample. Email invitations to municipal and county government staff were sent beginning April 2, 2019 with weekly reminders sent twice. The survey closed on May 3, 2019.

- Respondents represent all regions illustrated in the map with the exception of Region 7 (Pueblo and surrounding areas).
- A total of 179 respondents completed all or a portion of the survey.
- Survey results are discussed throughout this report using only complete responses, so they range from 100-140.



From this survey research, key findings and lessons for various types of communities are presented in this report and the attached Appendix A-C. Appendix D includes the full survey instrument.

## SURVEYS



April 2019

179

Local government staff and officials

## SURVEY QUESTIONS

- Organizational affiliation and staff role
- Perceived organizational and leadership support for resiliency planning
- State of resiliency planning within the organization
- Past experience with various shocks and stresses
- Perceptions of increasing risks and their causes
- Organizations and resources viewed as most helpful in disaster recovery and resiliency planning
- Programs and resources the CRO may provide to support and assist local governments

## WHAT WE LEARNED

The survey findings reported here are broken into the major categories of: (1) **planning progress and priorities within local governments**, (2) **past experience with shocks and stresses**, (3) **risk perceptions**, and (4) **the role of the Colorado Resiliency Office**. The following sections of this report review findings in each area.

### **PLANNING IN LOCAL GOVERNMENTS:** The Current State of Colorado’s Local Government Resiliency Planning Efforts

The statewide survey was distributed with the goal of understanding experiences, perceptions, resources, and needs of local governments across the state of Colorado. Prior research on resilience tells us that broad stakeholder participation in robust resilience planning is crucial to help communities prepare for, reduce the likelihood of, and recover from disasters and other disruptions. Best practice in resilience planning addresses these shocks in tandem with other stresses across sectors such as changing economic conditions and climate change. At the same time, we know that conducting such planning processes can be expensive, labor intensive for staff, and requires technical skills and information that many local governments may not have.

Due to this balance between the need for long-term planning and the resources it requires, this report begins by describing the organizations represented by the survey respondents, major differences in capacity, and their current status with regard to resilience planning.

Representatives from local governments across Colorado responded, representing all of Colorado’s planning and management regions except Region 7. In this report, planning and management regions are grouped geographically and reported according to the following groupings:

- **Eastern Plains:** Regions 1, 5, and 6
- **North-Central:** Regions 2 and 3
- **South-Central:** Regions 4, 7, 8, 13, and 14
- **Southwest:** Regions 9 and 10
- **Northwest:** Regions 11 and 12

#### PREVIOUS RESEARCH TELLS US

- Public participation can increase buy-in for government decisions and policies.<sup>1,2,3</sup>
- Public participation in government decisions is difficult, expensive, and often avoided due to limited capacity in government agencies.<sup>4,5,6,7,8,9,10</sup>

*“We’ve done a series of open houses to make sure we had a clear understanding of how things played out across the community and more than anything to let people tell their stories and be heard, but we’ve accumulated a massive amount of data from that and probably more long-term that’ll feed into our master*

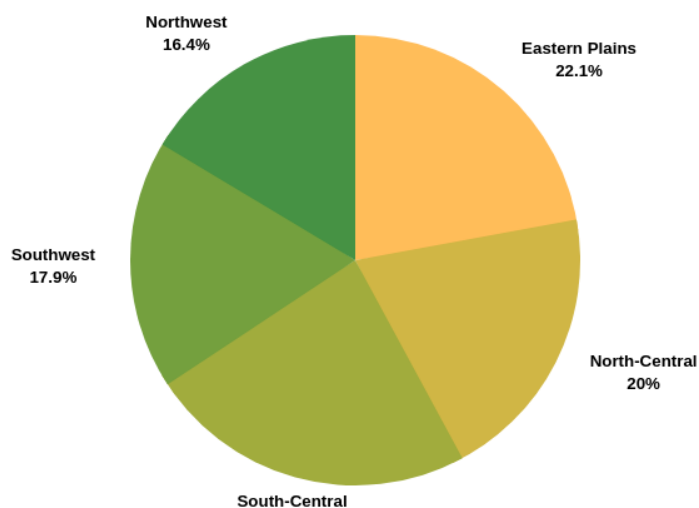


Figure 1. Survey Respondent Regional Distribution

In this report, regional variations are discussed when they are warranted. Complete summary statistics are included in Appendices A and B. The breakdown of respondents by region is fairly even, as illustrated in Figure 1. The vast majority represent municipal governments (107), while a smaller number represent county governments (32).

Colorado’s local governments display variation in characteristics such as:

- organizational capacity
- status of planning for resilience
- political will to incorporate resiliency planning

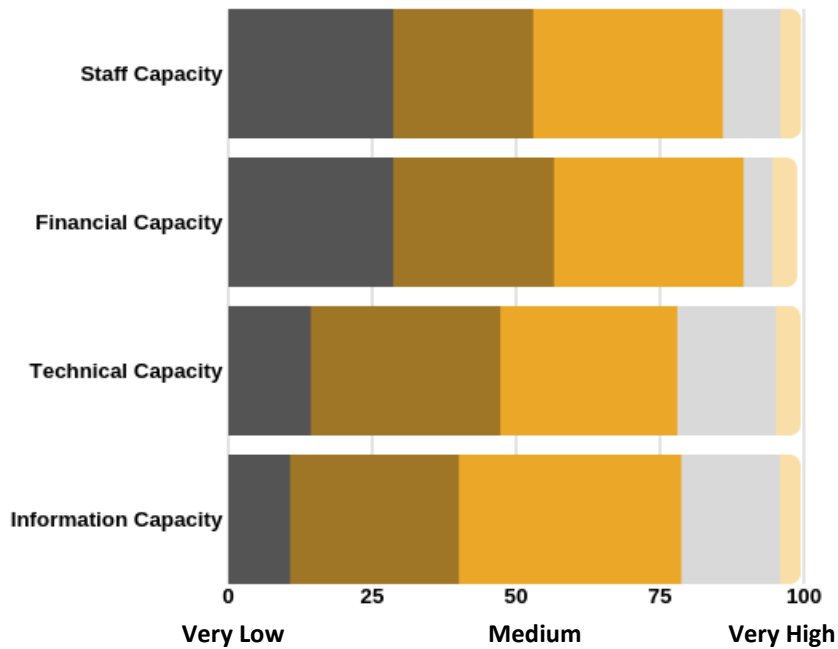


Figure 2. Capacity of Local Governments

These characteristics may influence whether a local government engages in resiliency planning. Perhaps most importantly, organizational capacity may limit some local governments from conducting a planning process. **The local governments represented by survey respondents vary according to the organizational capacity, including staff, financial, technical, and informational capacities.**

Each of the questions presented was measured as a 5-point scale. For example, when asked about organizational capacity, respondents could choose from (1) very low, (2) somewhat low, (3) medium, (4) somewhat high, or (5) high capacity.

Each figure presents aggregated data from Colorado, while the graphics at the end of this section break out summary findings related to regional differences.

The local governments represented in the survey findings vary with regard to their state of resiliency planning. Local governments range from advanced planning across the entire organization through no resiliency planning. Despite varying degrees of planning, the local governments represented in the survey are perceived to have moderate to high levels of support for engaging in such planning. The lowest levels were reported in dedicating resources to resiliency and adding resiliency to the organizational mission.

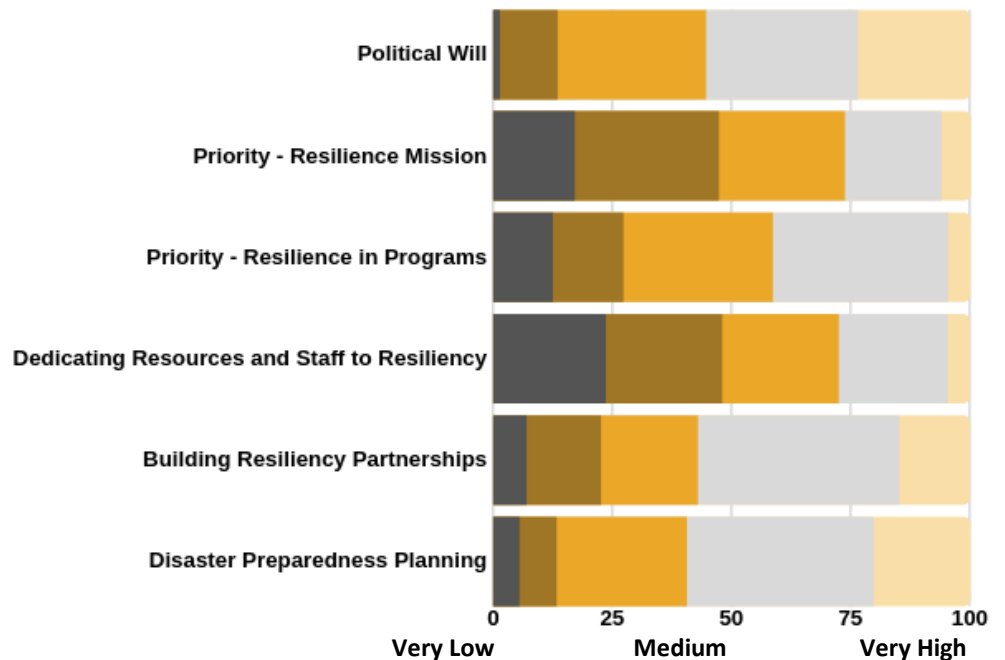


Figure 3. Political Will and Resilience Planning Status

Respondents were asked about the resilience planning efforts conducted within their organizations, specifically regarding various types of plans that may help communities plan for and build resilience. For each plan listed in

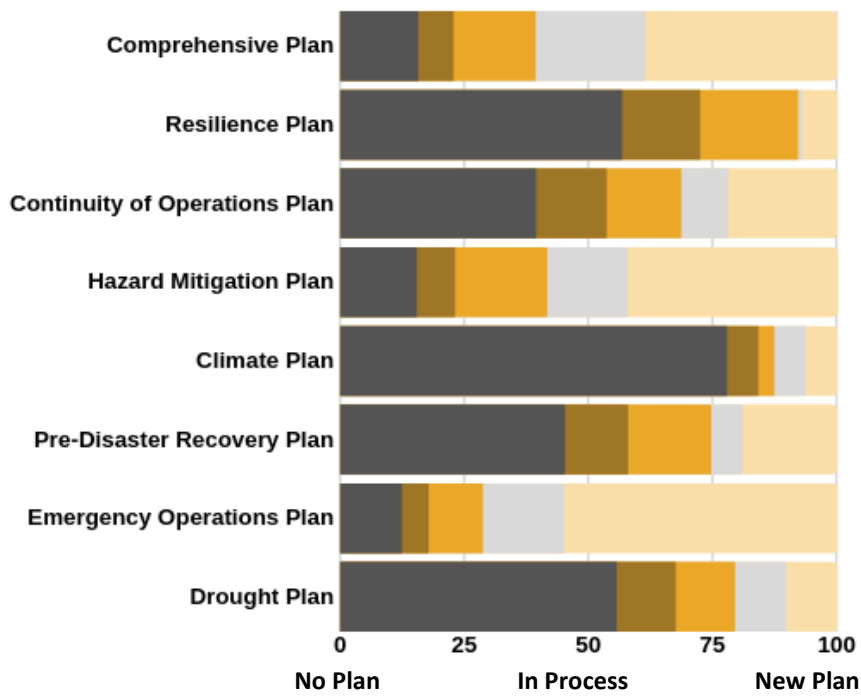


Figure 4. Status of Local Government Planning

Figure 4, respondents indicated whether their local government (1) does not have a plan, (2) is discussing developing a plan, (3) is in the planning process, (4) has a new plan within 10 years, or (5) has a new plan within five years.

While varying levels of resilience-related planning efforts exist across Colorado, as illustrated in Figure 5, it is important to point out that several types of plans are rare in all regions of Colorado:

- Resilience Plans
- Disaster Recovery Plans
- Climate Plans
- Drought Plans

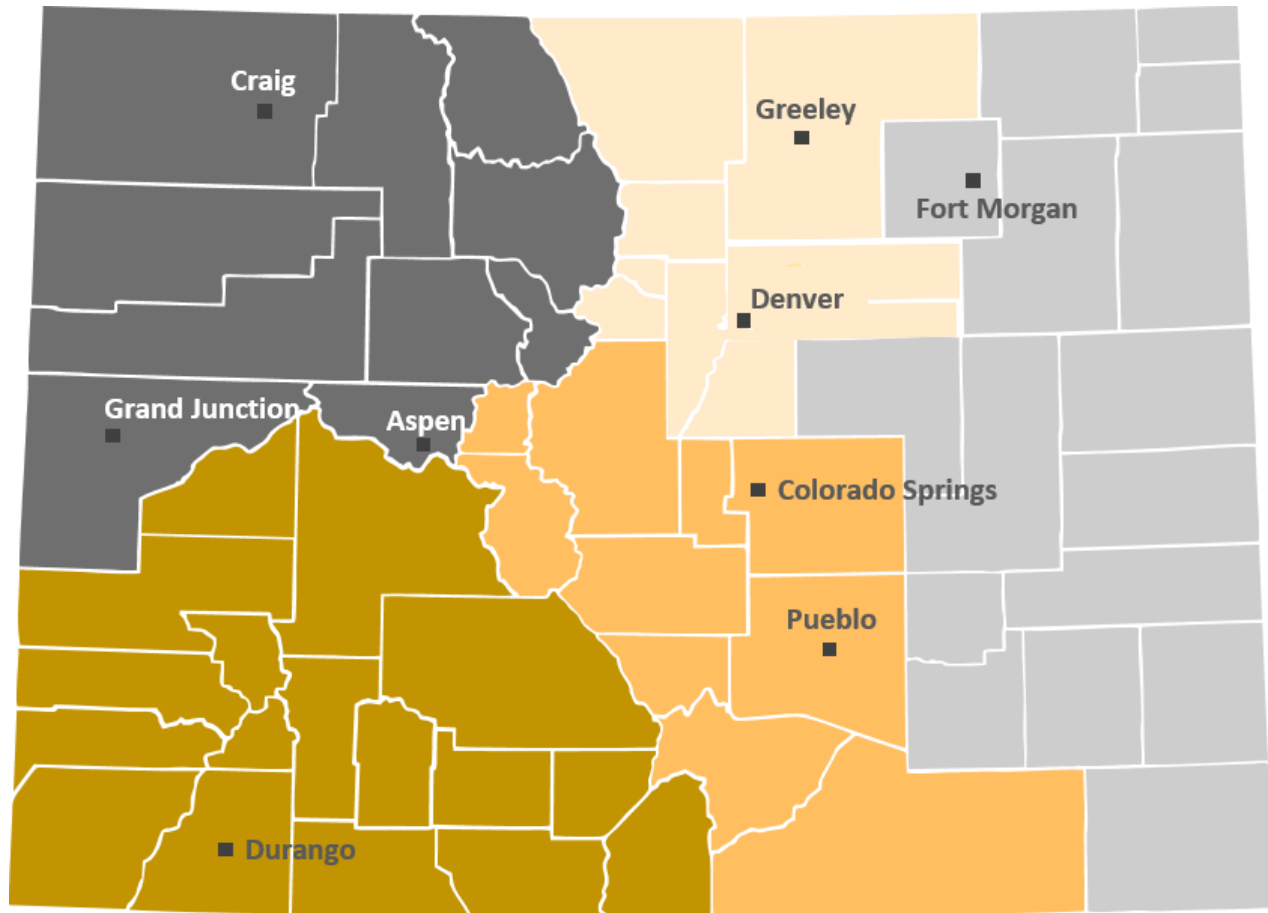
The findings in this section indicate that regional variations in capacity and current planning actions are important to consider as the CRO builds programming to support local governments.

Finally, respondents were asked a series of open-ended questions about projects they are working on locally and existing partnerships. County partners and other municipalities in the same county or region are where respondents spend time and effort in planning for various aspects of resilience, as shown in the graphic to the right.

The graphic below illustrates regional summaries of (1) local government capacity, (2) planning status, (3) perceptions of priority placed on various aspects of resilience planning, and (4) the actors perceived as responsible for risk mitigation and disaster recovery.



## REGIONAL RESILIENCE PLANNING AND LOCAL GOVERNMENT CAPACITY IN COLORADO



### Eastern Plains

- Second lowest overall capacity region
- Least likely region to have plans in place
- Lowest perceived local government and community concern for resilience
- High perceived role for individuals and county government in risk mitigation and recovery

### North-Central

- High variation in overall capacity
- Most likely region to have plans in place
- Moderate perceived community concern for resilience, high local government concern
- High perceived role for local government and coordination in risk mitigation and recovery

### South-Central

- Lowest overall capacity region
- Variation in types of plans in place
- Highest perceived community concern for resilience, high local government concern
- Highest perceived role for individuals and state government in risk mitigation and recovery

### Northwest

- Moderate to high levels of overall capacity
- More likely to have multiple plans in place
- Moderate perceived community and local government concern for resilience
- Highest perceived role for local government in recovery, risk mitigation viewed as a coordinated effort

### Southwest

- Moderate to very low levels of overall capacity
- Highly variable likelihood of having plans in place
- Moderate perceived community and government concern for resilience
- High perceived role for local, state, and coordinated action in risk mitigation and recovery



# WHAT WE LEARNED

## EXPERIENCE WITH SHOCKS AND STRESSORS: Past Experiences and Current Concern for the Risks and Vulnerabilities that Colorado Communities Face

Past experience with disasters can have profound effects on whether individuals, organizations, and governments view disasters and other disruptions as worth the time and attention required to conduct long-term planning to reduce future risks and increase resilience.

In Colorado, communities have faced a great variety of shocks and stressors historically.

- Recently, natural disasters have struck communities, primarily in the form of wildfires, floods, extreme weather events, and drought.
- More often communities have coped with housing, economic, and public health or mental health stressors.
- Ongoing stressors are more common than sudden shocks.

**PREVIOUS RESEARCH TELLS US**

**Past disaster experience & perceived risk.** With no direct experience, people tend to underestimate the future risk. With direct experience, people tend to overestimate the future risk.<sup>11,12</sup>

Survey respondents were asked about various shocks and stressors their community has experienced, including: drought, wildfires, floods, climate change, ecosystem damage, housing availability/affordability, economic stressors, aging populations, drug use, suicide and mental health issues, public health risks or epidemics, industrial accidents, security risks or terrorism, and access to quality education. Those stressors that are not natural-caused or shocks (security/terrorism, etc.) were categorized as social stressors, including: housing, economic, aging, public health, drug use, mental health, and education.

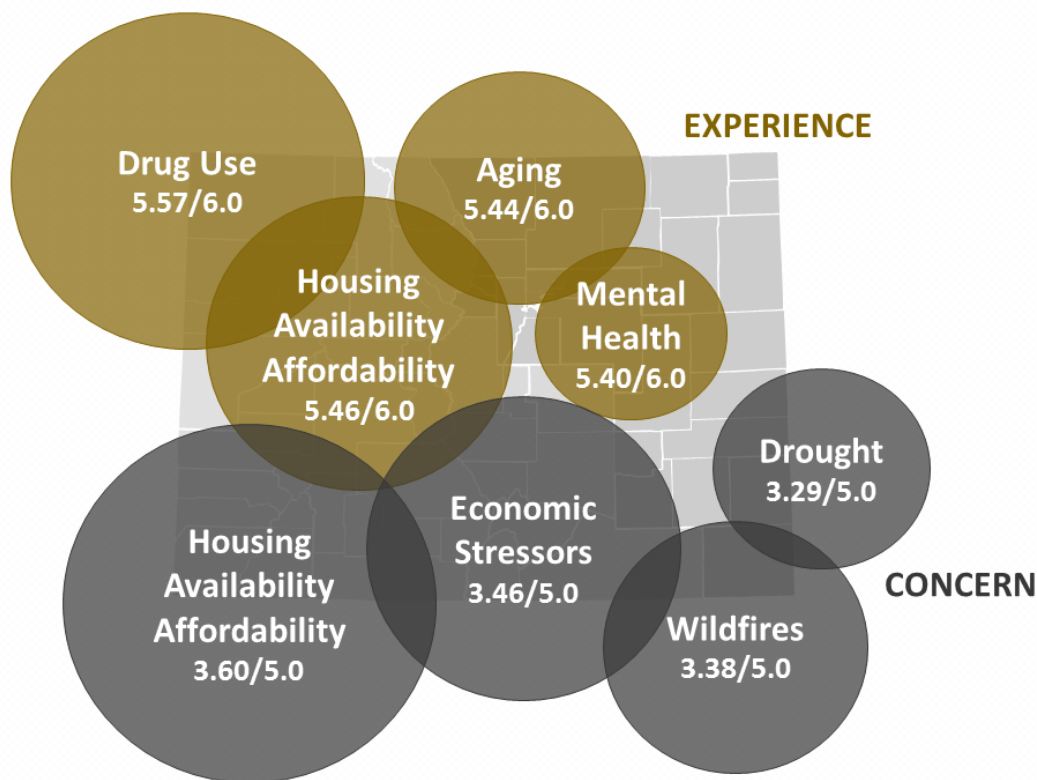
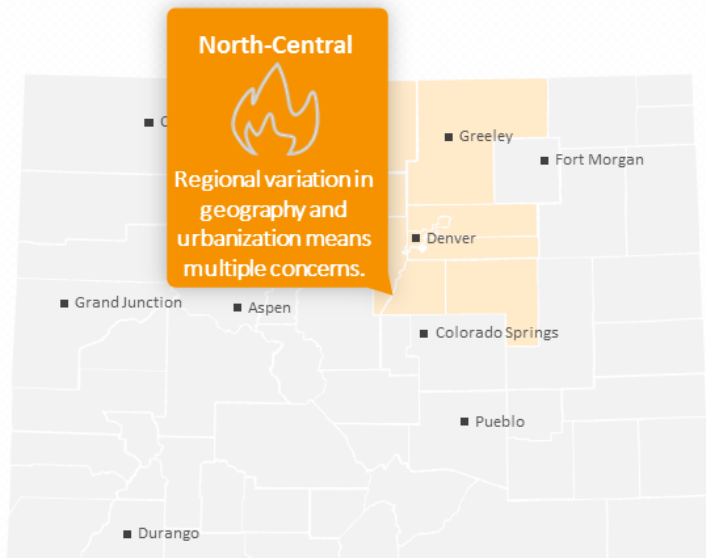


Figure 5. Statewide Shock and Stress Experience vs. Concerns

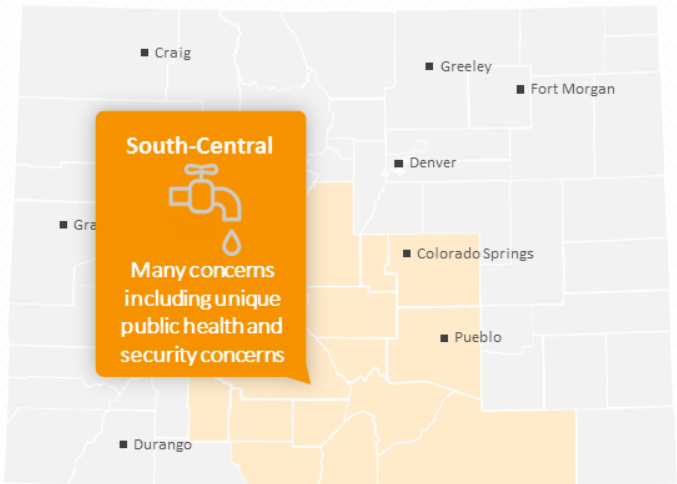
When asked about historical and recent shocks and stressors that their communities have faced, survey respondents indicated that with the exception of floods, industrial accidents, and security or terrorism, the risks they face are ongoing rather than periodic.

The **Eastern Plains** deals with numerous social stressors, which are also the highest concern for survey respondents. These include housing and economic stress, drug use, public health issues, and mental health issues. Drought and wildfire are other major concerns, although flooding was experienced and does not raise as much concern for respondents. Extreme weather was mentioned with regard to recent damage, but also did not raise concern to the same level as those illustrated in the graphic.



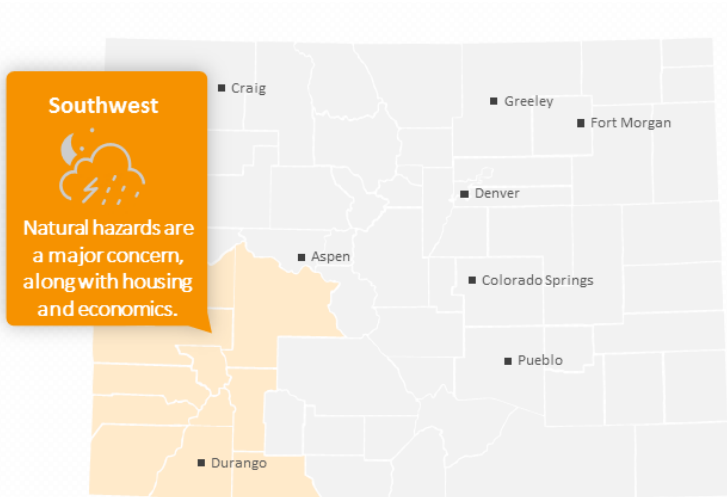
**North-Central Colorado** has experienced flooding and drought, including flood damage and extreme weather damage. Climate change was also perceived to be a significant ongoing stressor for this region. Of the social stressors presented, respondents indicated that housing availability/affordability, drug use, and mental health were ongoing stressors. All social stressors raised concern for respondents. It is important to note that this region is noted for its variation in geography and urbanization, leading to varying stressors for communities.

The **South-Central** region has recently experienced all natural shocks that were presented in the survey, along with industrial accidents, social stressors, and security threats (likely due to the military installations in this region). Social stressors include notable levels of public health and drug experience and concern. Drought, flood, wildfire, and extreme weather damage were noted by respondents. The most important concerns for this region include wildfire, drought, and social stressors.



	<b>EXPERIENCE</b>		<b>DAMAGE</b>		<b>CONCERN</b>
---	-------------------	---	---------------	---	----------------

- |  |  |   |
|--|--|---|
| <ol style="list-style-type: none"> <li>1. Wildfires</li> <li>2. Flooding</li> <li>3. Drought</li> <li>4. Ecosystem damage</li> <li>5. Climate change</li> <li>6. Industrial accidents</li> <li>7. All social stresses, although not aging</li> </ol> | <ol style="list-style-type: none"> <li>1. Moderate drought, wildfire, and extreme weather damage</li> <li>2. Only region reporting avalanche damage</li> </ol> | <ol style="list-style-type: none"> <li>1. Highest regional level of concern for climate change and ecosystem damage</li> <li>2. High concern for drought, wildfires, and flooding</li> <li>3. High concern for housing affordability</li> </ol> |
|--|--|---|

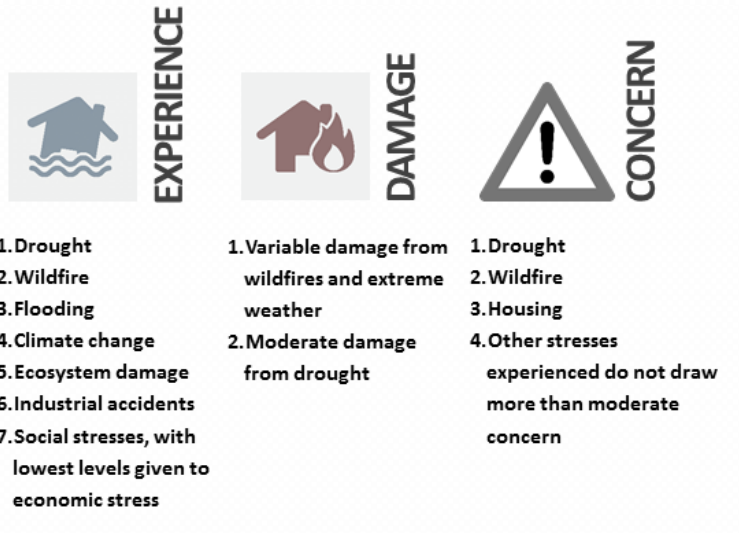
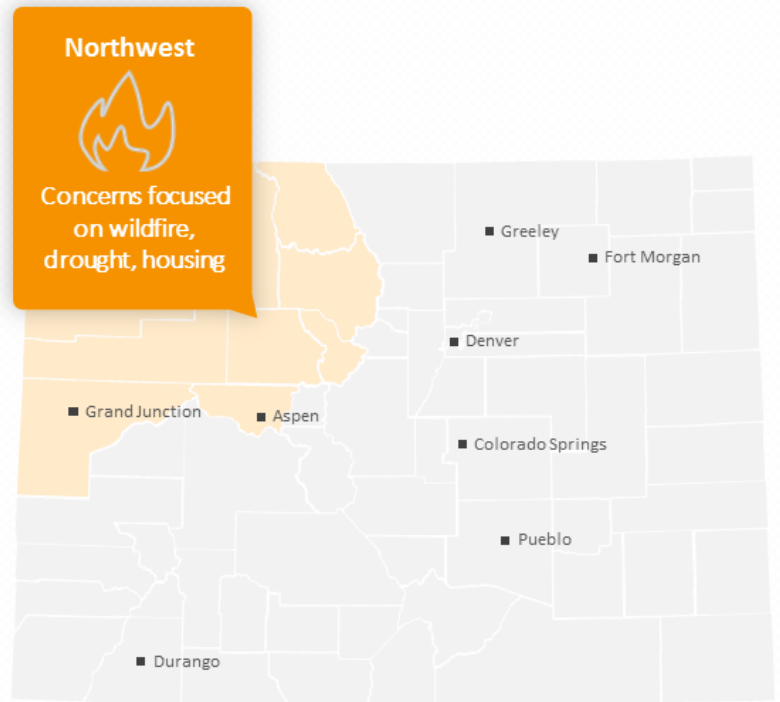


	<b>EXPERIENCE</b>		<b>DAMAGE</b>		<b>CONCERN</b>
---	-------------------	---	---------------	---	----------------

- |   |  |  |
|---|--|--|
| <ol style="list-style-type: none"> <li>1. Wildfires</li> <li>2. Flooding</li> <li>3. Drought</li> <li>4. Climate change</li> <li>5. Ecosystem damage</li> <li>6. Security threats</li> <li>7. Industrial accidents</li> <li>8. All social stresses</li> </ol> | <ol style="list-style-type: none"> <li>1. Moderate to severe damage from flooding</li> <li>2. Moderate damage from drought</li> <li>3. Variable damage from wildfires and extreme weather</li> </ol> | <ol style="list-style-type: none"> <li>1. Major concern for wildfires and drought</li> <li>2. Some concern for flooding, ecosystems, and climate change</li> <li>3. Major concern for all social stresses</li> </ol> |
|---|--|--|

**Southwest Colorado** depends on its natural resources for its economic base, but those natural resources also bring risks to the region. Respondents indicated that all natural shocks had happened recently, along with industrial accidents and social stressors. Damage from drought, wildfire, and extreme weather was noted. This region is the only region that indicated experience with avalanche damage. This region also demonstrated the highest levels of concern for climate change and ecosystem damage, along with housing affordability.

**Northwest Colorado** has recently dealt with nearly every shock and stressor presented in the survey, but surprisingly economic stress was the lowest social stressor ranked by respondents. Damages from wildfire, drought, and extreme weather were noted by respondents, along with concerns highlighted for drought, wildfire, and housing.



# WHAT WE LEARNED

## RISK PERCEPTIONS: Understanding and Concern for Future Risk

Perceptions of risk can influence how much a community engages in resiliency planning. How local government officials and stakeholders perceive the severity of flooding, for example, is linked to past flood experience and professional expertise<sup>13,14,15</sup>. Professionals in technical fields are often more likely to estimate risk lower than the general public, sometimes as an indication of more accurate understanding of risk, but other times because they may have a higher sense – whether accurate or not – that the risk can be controlled.

*“I think there’s a great resistance to recognizing risk. You know, ‘that it hasn’t happened before’, or ‘it’s not going to happen here’, ‘or it’s not going to be as bad’, or ‘we’ve had this before’.”*

*Local government respondent*

**PREVIOUS RESEARCH TELLS US**

**RISK PERCEPTION = Perceived likelihood of event + Expected damage**

**Experts and the General Public view disaster risk differently.**  
 Experts perceive risk more narrowly – using probabilities and severity of consequences. Experts may have a higher sense of control over risks.<sup>13,14</sup>

General public perceives risk more broadly – using their social, psychological and cultural lenses. The public may focus more on consequence of the event (expected damage).<sup>15</sup>

Among the survey respondents, perceptions of risk vary significantly based on the type of risk and the region of Colorado that the respondent represents, illustrated in the graphics.

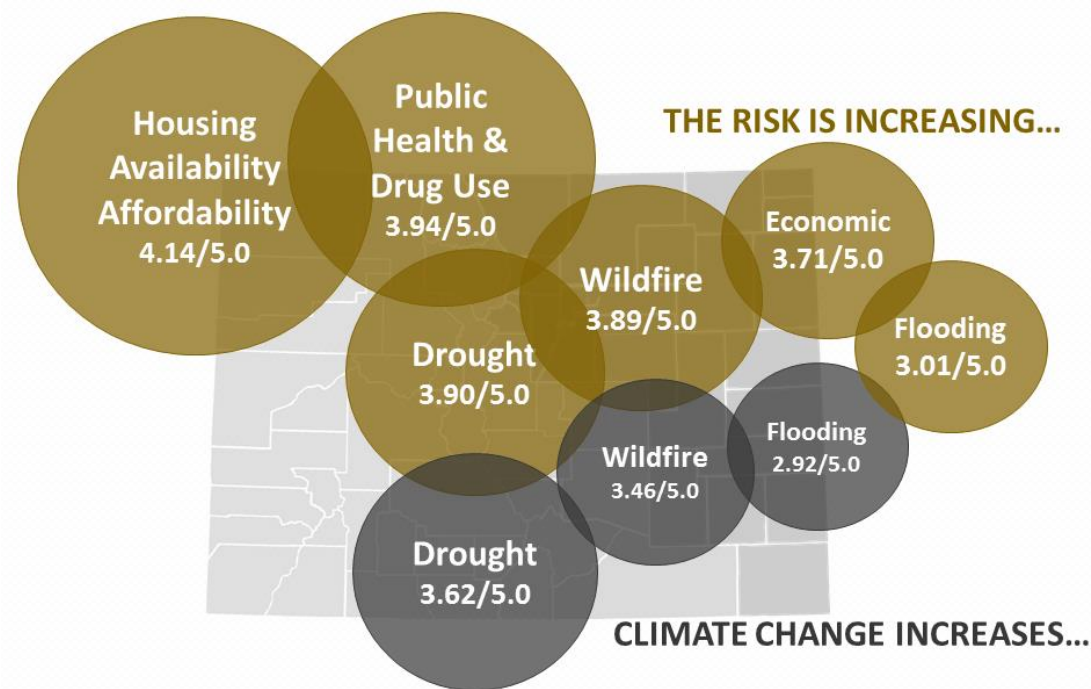


Figure 6. Statewide Risk Perceptions and Causal Understanding

Colorado that the respondent represents, illustrated in the graphics. Statewide in Figure 6, we see that concern for increasing risks related to climate change is higher than perceptions that they are, in fact, influenced by climate change. For example, high concern exists about flooding, wildfires, and drought, but agreement that these are linked to climate change is lower than agreement that the risk is increasing for each.

Regionally, survey some agreement increasing. Housing stress showed the most agreement across regions, which is why it was the highest statewide issue in Figure 6. Figure 7 illustrates this broad agreement regionally.

Respondents from all regions agreed that drought, wildfire, housing stress, and public health/drug use risks are increasing. Additionally,

- The Northwest region was the only region to have low levels of agreement with the statement that economic risk is increasing.
- With regard to increasing flood risk, North-Central and South-Central regions – both regions that experienced major flooding in the past five years – agreed.

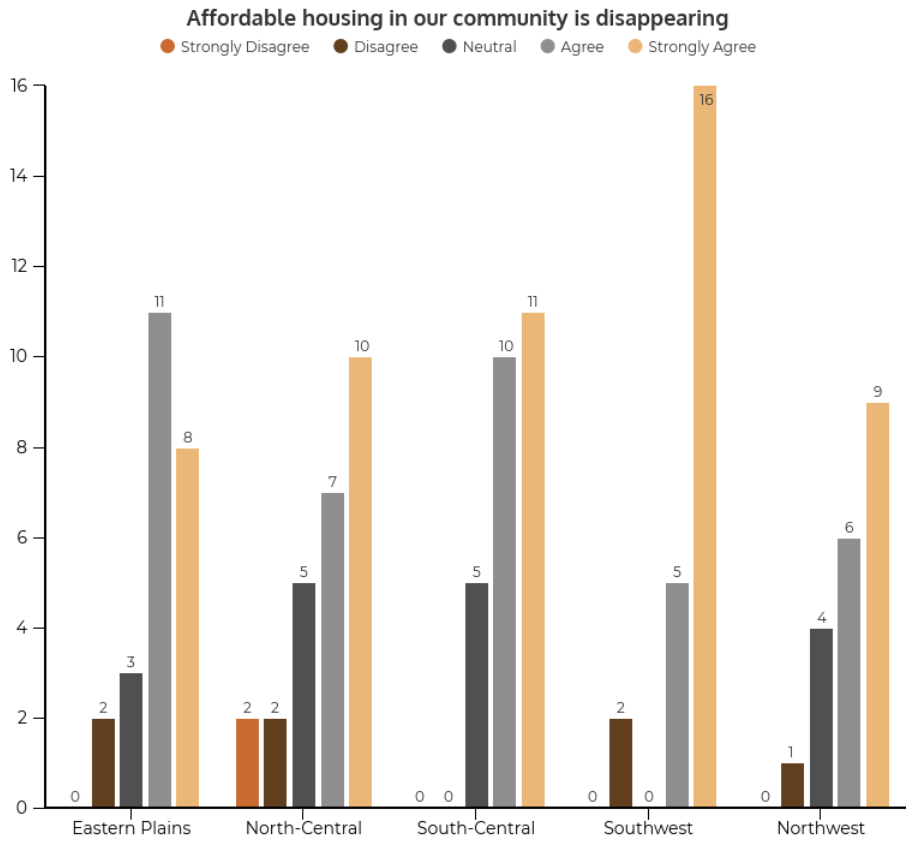
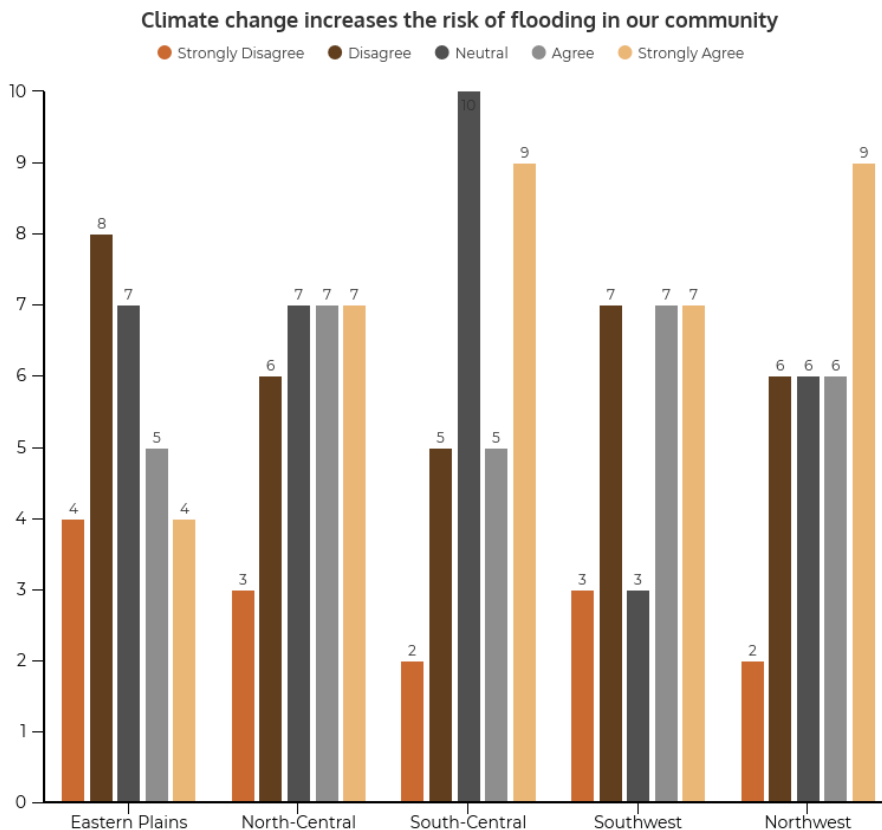


Figure 7. Regional Variation: Affordable Housing is Disappearing



When asked if climate change increases risks such as drought, flooding, and wildfires, drought saw higher levels of agreement, followed by wildfire and flooding. The Eastern Plains showed the lowest levels of agreement with the statement that climate change increases flooding as shown in Figure 8. While generally agreeing that climate change is increasing wildfire and drought risks, the Eastern Plains showed a bit more skepticism than other regions.

Figure 8. Regional Variation: Climate Change Increases Flooding Risk

Finally, survey respondents were asked whether they agree or disagree that various community areas are aspects of resilience. Knowing how individuals understand resilience can assist the CRO in communicating clearly and determining opportunities for educational outreach. Figure 9 illustrates the five community areas and the Colorado regions that agreed that the area is a facet of resilience.

## RESILIENCE IS...

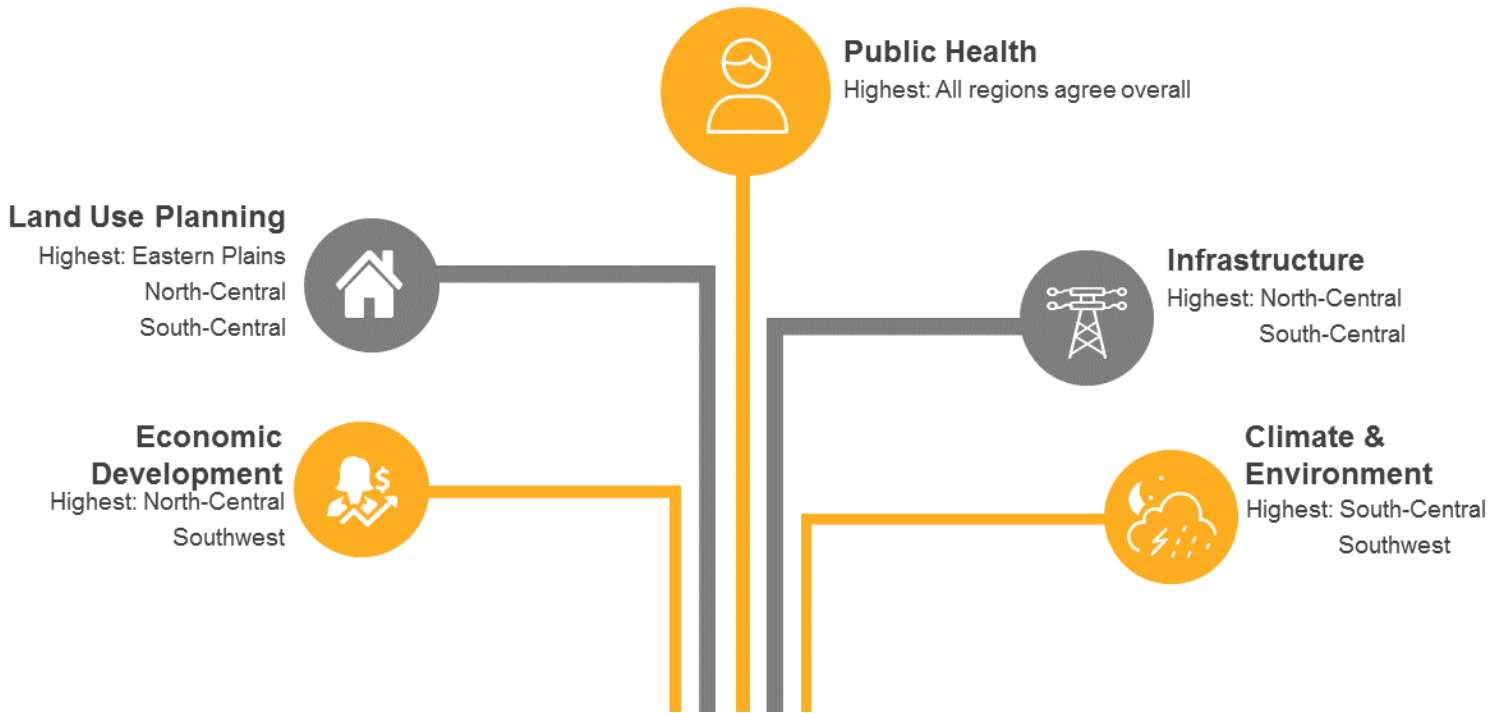


Figure 9. Defining Resilience

When asked open-ended questions about (1) resources that were most helpful during disaster recovery (Total = 81 responses), (2) the organizations they would call first after a disaster strikes (Total = 107 responses), and (3) the concerns they have that keep them up at night (Total = 95 responses), respondents indicated that their concerns are related to infrastructure [power grids, roads and bridges, and accessibility during a disaster event]. They also worry about security issues and cybersecurity, along with public health. Overriding these concerns are those that relate to common natural risks: wildfire, floods, and drought. Along with these sector-specific concerns, procedural issues were raised that relate to resources, awareness, and constraints placed on local governments in Colorado. The following graphic illustrates the open-ended responses to these questions.



# PLANNING FOR RESILIENCE



## ORGANIZATIONS

### LOCAL

Counties  
Emergency managers  
Municipalities  
Water planning groups

### STATE

DOLA  
DSHEM  
CDPHE  
CDOT  
OEDIT  
National Guard

### FEDERAL

FEMA  
USFS  
BLM  
NRCS

### NGO

Red Cross  
CIRSA  
VOAD  
United Way  
Faith groups



## RESOURCES

### FEMA funding

Technical assistance  
Mutual aid  
County resources  
Preparedness  
Training

### State of Colorado

DOLA  
DSHEM



## CONCERNS

What keeps respondents up at night?

Wildfire  
Flooding  
Community power outage  
Emergency road & bridge access  
Economic decline  
Outbreaks  
Mass shooting



### Respondents express concern for:

Resources for planning, community awareness, local political will, and TABOR & Gallagher and the limits they place on local mitigation and preparedness



# WHAT WE LEARNED

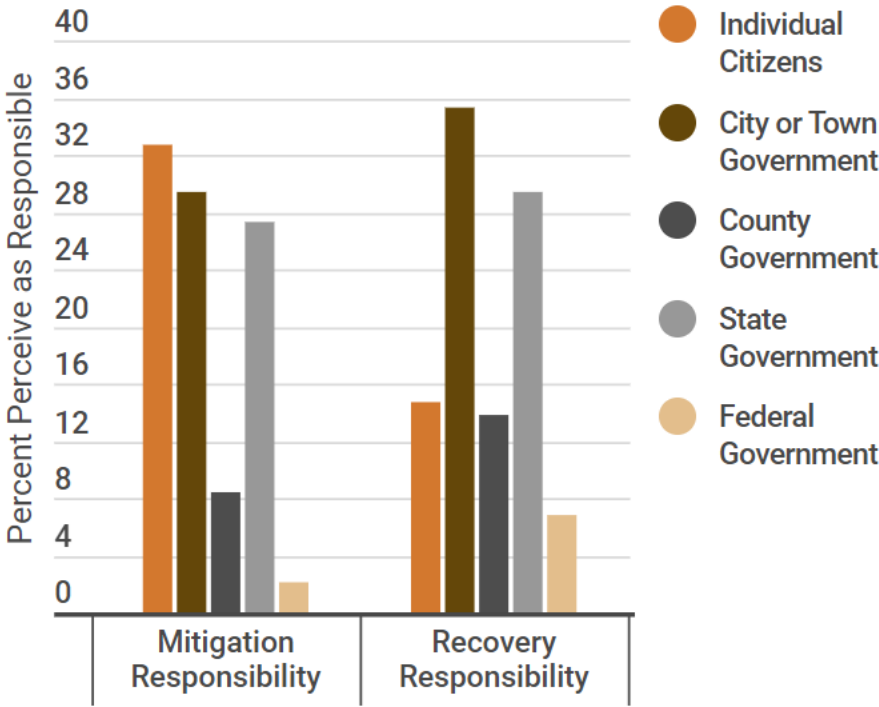
## CRO ROLE AND PROGRAMMING: Resources and Support the CRO Can Provide to Colorado's Local Governments

To plan for the role the CRO can serve in supporting local governments, it is useful to understand what entities local government personnel view as best to handle risks and disasters. It is also important to solicit feedback from stakeholders who are likely to work with the CRO in the future.

To understand perceptions of government roles and responsibilities, survey respondents were asked what entities they believe are responsible for dealing with risk reduction as well as disaster recovery. The charts below show that there are important differences in perceived responsibility for these tasks.

### CRO PROGRAMMING CONSIDERATIONS

- Colorado's risks may be different among rural and urban communities, including economic and health-related risks.
- Colorado's diverse natural environment creates variation in the weather and climate-related risks present.
- The capacity of local governments may influence their ability to identify and monitor their local risks, as well as conduct planning processes for resiliency building.<sup>10,16</sup>



Individuals are perceived as the primary locus of responsibility for risk reduction, while municipal and state government are perceived to bear primary responsibility for disaster recovery. There was no significant difference between municipal government respondents and county government respondents for the mitigation question. County respondents were significantly more likely to say that county government is responsible for disaster recovery, however.

Those who responded 'other' tended to believe that the responsibility lies with some combination of the listed entities.

Figure 8. Perceived Responsibility for Risk Mitigation and Disaster Recovery

The survey asked two questions about: (1) the role that the CRO should play and (2) the best modes of communication that the CRO can use as it builds capacity and programming. In the survey, respondents were asked to rank the most helpful programs or modes of communication in order of preference.

Across the state, respondents agreed that the CRO could best serve its role of supporting local governments in building resiliency by:

- providing examples of 'best practices' to help communities in their planning processes
- maintaining a database that can help communities understand their risk profile
- training local government staff on planning for resilience
- highlighting resilience-related funding opportunities

In terms of the communication that the CRO will engage in as part of its programming, respondents across the state agreed that a website that includes the various resources, databases, and planning tools is the most essential. Community workshops (within their community or nearby) and webinars were also ranked highly. Finally, it is worth noting that a handful of respondents expressed preferences for brochures or email communication, so these may opt-in features that the CRO could consider.

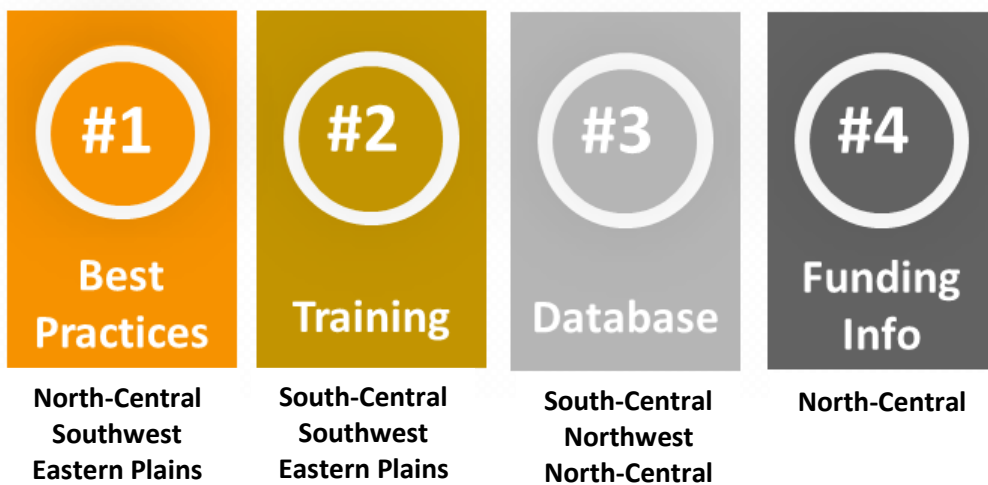


Figure 10. Most Helpful CRO Programming and Regional Differences



Figure 11. Most Helpful CRO Communication Strategies and Regional Differences

It is not surprising that the regions farthest from the Denver area are the most interested in training and workshops that can be accessed remotely. Providing static information (websites and archived webinars) as well as in-person workshops to these regions will be critical to assisting them in resilience planning, particularly because the Eastern Plains and South-Central are also the lowest capacity regions.

## LOCAL GOVERNMENT RESILIENCE: SIGNIFICANT RELATIONSHIPS

The survey findings outlined in this report provide a foundation for the CRO to build its programming to support local governments in planning for resilience. A number of **statistically significant relationships** are useful to highlight as conclusions. Beyond the descriptions of regional differences and statewide patterns, the following are potentially important to help individuals and communities build higher levels of resilience:

### Experience and Concern with Shocks and Stressors

- Communities that have experienced a shock are more likely to be concerned about similar future risks. This relationship is particularly strong for drought, wildfires, and floods.
- Communities that have experienced a natural disaster such as drought, wildfire, or flooding are more likely to be concerned with associated risks such as climate change and ecosystem damage.
- Experience and concern about risks is not systematically associated with increased resilience planning activity.
- Concern about risks is associated with higher priority assigned to resilience planning, but only for natural hazards.
- Social stressor appear not to be linked to higher priority placed on resilience planning.

### Organization Type

- Higher capacity organizations place a higher priority on dedicating resources to resilience planning.
- Higher capacity organizations perceive higher levels of risk from climate change and see climate change as a causal mechanism for natural disasters.
- There are no significant relationships between organization type (county versus municipal government) and risk perceptions or resilience planning efforts.
- Municipal respondents expressed significantly more concern about drug abuse.
- County respondents expressed significantly more concern about mental health issues.
- County respondents were significantly more likely to view it as important to include resilience in their organization's mission, programs, and to devote resources and personnel to resiliency planning.
- There was no difference in perceived responsibility for mitigation activities, but municipal respondents were significantly more likely to say that municipal, state, and federal governments are responsible for disaster recovery. County respondents were significantly more likely to say that county government is responsible for disaster recovery.

Summary statistics for these relationships are presented in Appendix C, including all specific relationships that are statistically significant.

## SUMMARY OF KEY FINDINGS

The survey findings indicate that the Colorado Resiliency Office can serve Colorado's local governments through a number of programming, educational, and communications modes. Understanding the needs and concerns of local governments outlined in this report will assist the CRO's efforts. The following key findings may be particularly useful during the planning process.

### PLANNING IN LOCAL GOVERNMENTS

1. Local governments across Colorado vary according to capacity, planning progress, and priority they place on planning for resilience.
2. Higher capacity organizations are more likely to place higher priority on various aspects of planning for resilience.

### EXPERIENCE WITH SHOCKS AND STRESSORS

1. Experience with shocks and stressors among Colorado's local governments varies wildly. At the the same time, regional patterns discussed here are important to consider. Some communities have recently dealt with catastrophic wildfires and floods, while others routinely cope with stressors such as drought and economic strain that cause chronic concern for local governments.
2. Regional differences are key to understanding the approaches that Colorado's local governments take to cope with shocks and stressors.

### RISK PERCEPTIONS

1. While the CRO views resilience broadly, including natural hazards, human-caused risks and vulnerabilities, economic stressors, health-related stressors, and others, survey respondents were more likely to view natural resources and infrastructure as related to resilience than various social and economic stressors.
2. While survey respondents view some risks as increasing (drought, wildfire, etc.), they are less likely to view them as connected to climate change. While many respondents understand this links, a vocal minority does not and should be considered in CRO planning.
3. When individuals have experienced a shock or stress they are more likely to be concerned about that type of risk.
4. Concern for risks is connected to higher priority being placed on resilience planning, but is not associated with planning actions by local governments.

### CRO ROLE AND PROGRAMMING

1. Survey respondents indicate that several CRO programming categories would be most useful including: a database of information, examples of best practices, and training modules on the CRO website for local governments across Colorado to use in their planning processes

### ACKNOWLEDGEMENTS

The survey findings presented in this report depended on the time and care that nearly 200 local government personnel across Colorado took when responding to our survey. In addition to the expert personnel who provided feedback on earlier versions of the survey, a huge thanks is due to the participants who made this work possible.

## REFERENCES

1. Irvin, Renee A., and John Stansbury. "Citizen participation in decision making: Is it worth the effort?." *Public administration review* 64, no. 1 (2004): 55-65.
2. Steelman, Toddi A., and William Ascher. "Public involvement methods in natural resource policy making: Advantages, disadvantages and trade-offs." *Policy Sciences* 30, no. 2 (1997): 71-90.
3. Uslaner, Eric M. "Trust and social bonds: Faith in others and policy outcomes reconsidered." *Political Research Quarterly* 57, no. 3 (2004): 501-507.
4. Beierle, Thomas C. *Public participation in environmental decisions: an evaluation framework using social goals*. Washington, DC: Resources for the Future, 1998.
5. Beierle, Thomas C. "The quality of stakeholder-based decisions: Lessons from the case study record." Washington, DC: Resources for the Future, 2000.
6. Beierle, Thomas C., and Jerry Cayford. *Democracy in practice: Public participation in environmental decisions*. Washington, DC: Resources for the Future, 2002.
7. Beierle, Thomas C., and David M. Konisky. "Values, conflict, and trust in participatory environmental planning." *Journal of Policy Analysis and Management* (2000): 587-602.
8. Irvin, Renee A., and John Stansbury. "Citizen participation in decision making: Is it worth the effort?." *Public administration review* 64, no. 1 (2004): 55-65.
9. Steelman, Toddi A., and William Ascher. "Public involvement methods in natural resource policy making: Advantages, disadvantages and trade-offs." *Policy Sciences* 30, no. 2 (1997): 71-90.
10. Albright, Elizabeth A., and Deserai A. Crow. "Learning processes, public and stakeholder engagement: Analyzing responses to Colorado's extreme flood events of 2013." *Urban Climate* 14 (2015): 79-93.
11. Dessai, Suraje, W. Neil Adger, Mike Hulme, John Turnpenny, Jonathan Köhler, and Rachel Warren. "Defining and experiencing dangerous climate change." *Climatic Change* 64, no. 1 (2004): 11-25.
12. Leiserowitz, Anthony A. "American risk perceptions: Is climate change dangerous?" *Risk analysis* 25, no. 6 (2005): 1433-1442.
13. Mileti, Dennis S., and Paul W. O'Brien. "Warnings during disaster: Normalizing communicated risk." *Social Problems* 39, no. 1 (1992): 40-57.
14. Wachinger, Gisela, Ortwin Renn, Chloe Begg, and Christian Kuhlicke. "The risk perception paradox—implications for governance and communication of natural hazards." *Risk analysis* 33, no. 6 (2013): 1049-1065.
15. Albright, Elizabeth A., and Deserai Crow. "Beliefs about climate change in the aftermath of extreme flooding." *Climatic Change* (2019): 1-17.
16. Crow, Deserai A., Elizabeth A. Albright, Todd Ely, Elizabeth Koebele, and Lydia Lawhon. "Do disasters lead to learning? Financial policy change in local government." *Review of Policy Research* 35, no. 4 (2018): 564-589. Aggregate