Think Globally, Adapt Locally

Colorado Counties Health and Climate Index

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acclimate COLORADO

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4 Introduction

5 How to Use the Health and Climate Index

5 Adapting to a Changing Climate: Acclimate Colorado

6 Colorado's Environment, Coloradans' Health

7 Health and Climate Index: Findings

8 Environmental Exposure

10 Sensitive Populations: Health Outcomes and Access

12 Sensitive Populations: Social Factors

14 Plans and Perceptions

16 Conclusion

17 Appendix: How the Index Works

19 Endnotes

Acknowledgments

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To our community,

We need look no further than our own backyards to see the impacts of climate change. Just a few months ago, the most destructive wildfire in state history blazed through Boulder County, leaving our neighbors with devastating losses and questions about whether they could ever return to the communities they love. In the summer, parents can't send their children outside to play because of bad air quality. And unhoused people who used to worry about frigid nights must now contend with equally dangerous risks from scorching hot days.

Not only do these situations remind us that climate change is affecting every aspect of our lives, they highlight the fact that members of our communities do not bear this burden equally. People of color, immigrant groups, Coloradans with lower incomes, children, and older adults are more likely to suffer from the effects of a changing climate. Social factors and context — like age, poverty, discrimination, education, and access to care — all play a role in a person's risk of climate-related health consequences.

We have a responsibility to take bold steps to advance equity and drive meaningful change. We believe that all Coloradans deserve to be healthy, and that climate change is a significant barrier to health equity.

That is why the Colorado Health Institute and The Denver Foundation are partnering to advance solutions through Acclimate Colorado. Our vision is a Colorado where all communities are prepared to meet the health challenges caused or worsened by a changing climate.

Finding the way forward begins with understanding our risk. The 2022 Health and Climate Index, the first publication released as part of Acclimate Colorado, provides individuals and communities with the information they need to assess their risk. It also shares examples of how communities are taking steps to protect their most vulnerable members.

We hope that decision-makers at the community, regional, and state levels will harness the data in this report to chart a path for building resilient communities.

This is just the beginning. We invite you to join us in the hard work of creating a safer, healthier future for all Coloradans.

Michele Lueck
President and CEO,
Colorado Health Institute

Javier Alberto Soto
President and CEO,
The Denver Foundation

Introduction

The state's most destructive wildfire year on record. Air pollution from ozone and wildfires lingering over the Front Range. Ongoing droughts. Colorado's changing climate has been affecting human health and well-being in increasingly visible ways.

Colorado communities need a new focus on adapting to a changing climate and supporting resilience to preserve health and advance health equity.

The Colorado Health Institute (CHI) released the first Health and Climate Index in 2019 to illuminate how environmental exposures, demographics, and local policies and perceptions can affect vulnerability to climate change impacts such as wildfire, drought, and heat. Climate change is a global issue that will affect every Coloradan, but local environmental factors, health conditions, and social factors such as income, age, and race influence the risks faced by individuals and communities.

This 2022 Health and Climate Index, the first update to the original report, analyzes the risks Colorado counties face in four areas: **Exposure** to climate-related hazards, **health outcomes and access to care**, **social factors** that have been linked to climate vulnerability, and **plans and perceptions** related to climate change and health.

Minimizing climate change-related harm to human health requires reducing greenhouse gas emissions and taking steps to adapt to a changing environment.

The Index highlights a need for more targeted climate adaptation planning and capacity building across Colorado to respond to the changes that are already occurring and prepare for future impacts. Much of this work must take place at a local level and reflect local needs and realities.

Key Takeaways:

- Climate change is affecting Coloradans' health, but community and individual risks vary based on geography, health, and social factors.
- Many of the counties where people are at the highest risk are also the least prepared for the health impacts of climate change.
- Local communities can use the Health and Climate Index to assess risks and strengths and plan accordingly.

Douglas, Teller, and western Colorado counties had high risk scores for environmental exposure. Southeastern Colorado, Adams County, and several western and northeastern counties had high risk scores for health outcomes and access to care, while southeast Colorado and the San Luis Valley had high social factor risk scores. Rural counties had higher risk scores for plans and perceptions related to the health impacts of climate change.

The Health and Climate Index can help Coloradans identify vulnerabilities and develop approaches to supporting health equity in a changing climate that reflect their area's unique needs.

How to Use the Health and Climate Index

1. Refer to this report's statewide analysis to examine state trends; find guiding questions that can help communities plan for the health impacts of a changing climate; and find examples of promising practices across the state.
2. Review county data profiles for insight into exposure, sensitive populations, and plans and perceptions at the county level.
3. Explore the interactive mapping tool to examine each of the metrics in each county, region, and across the state.
4. Read the Appendix (P. 17) for more detail on what data is included and how the Index was created.

Adapting to a Changing Climate: Acclimate Colorado

The Health and Climate Index is part of Acclimate Colorado, CHI's effort to build capacity, community resilience, and a policy agenda for addressing climate-related health challenges in Colorado.

CHI has built Acclimate Colorado around the Centers for Disease Control and Prevention (CDC)'s Building Resilience Against Climate Effects (BRACE) framework. This model provides an architecture for developing and implementing evidence-based strategies to adapt to a changing climate and, in the process, prevent or minimize the harmful effects of climate change and prevent or reduce health disparities.

The BRACE framework is designed to be flexible and adapted to the needs of those who use it. It has five steps:

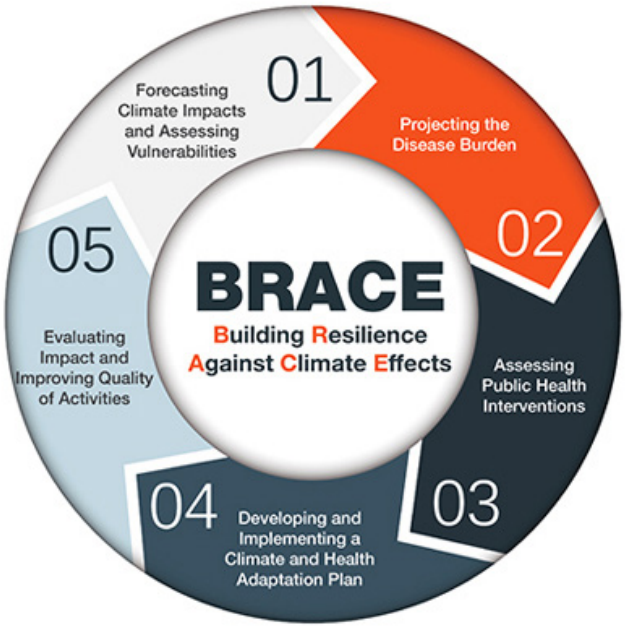
1. Forecasting Climate Impacts and Assessing Vulnerabilities
2. Projecting the Disease Burden
3. Assessing Public Health Interventions
4. Developing and Implementing a Health and Climate Adaptation Plan
5. Evaluating Impact and Improving Quality of Activities

The Health and Climate Index focuses on parts one and two of the BRACE framework: It uses data, research, and evidence about climate change and its impact on health to assess vulnerabilities and project areas of risk.

The Index will inform future Acclimate Colorado efforts focused on other steps in the BRACE framework, including identifying and assessing existing resources focused on climate and health adaptation (Step 3) and developing tools, policies, and programs to help address the climate and health crisis, with a focus on reducing disparities (Step 4).

This work will be done in collaboration with partners across the state who are also interested in helping build a Colorado where all communities are prepared to meet the urgent health challenges caused by a changing climate.

Figure 1: Building Resilience Against Climate Effects (BRACE) Framework



Source: Centers for Disease Control and Prevention (CDC)

A Snapshot, Not a Prediction

The Health and Climate Index is not intended to predict future changes in variables. It serves instead as a snapshot of climate factors in Colorado. The exposure variables, which include factors like wildfires and extreme heat, are most likely to change from year to year. Scores for plans and preparations will change as communities shift or adopt new policies. Health and social factor scores will evolve with migration, aging, and other trends. (See Appendix for more detailed methodology.)

Colorado's Environment, Coloradans' Health

Climate change is affecting Colorado's environment. Earlier snow melts, drier soils, and bark beetle invasions have taken a toll on Colorado's ecological systems. Colorado's average temperature has increased by about 2 degrees Fahrenheit in the past 30 years.[1] Projections suggest it could increase by an additional 2.5 to 5 degrees Fahrenheit by 2050.[2]

Most Coloradans are aware that the state's vegetation and wildlife are deeply affected by these changes, but less than half of residents consider their own health to be in jeopardy.[3]

Climate change's impacts on human health include an increase in disasters like wildfires, mudslides, and floods. They also include more persistent changes like the growing number of days with extreme heat, which affects the cardiovascular, respiratory, and nervous systems and exacerbates air pollution. Climate change is also affecting mental health, including stress, anxiety, and depression.[4]

Climate change is likely to increase many health disparities: Certain populations, including people who work outside, people living in poverty, children, people with chronic diseases, and many communities of color, are more vulnerable to these and other impacts.

The need to prepare to support human health in a changing climate is becoming increasingly urgent. In 2019, the state recorded its highest-ever temperature: 115 degrees Fahrenheit in Lamar.[5] In the summer of 2021, high ozone alerts were a daily occurrence along the Front Range, and wildfire smoke affected air quality across the state. In fact, three of the most destructive and far-reaching wildfires on record occurred in 2020 and 2021.

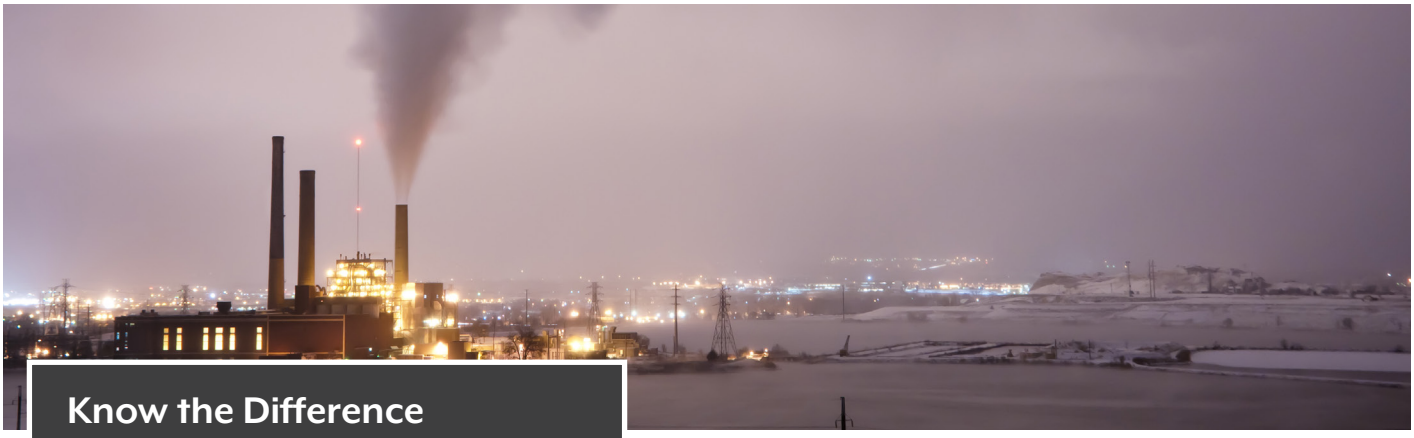
Mitigation and Adaptation

Climate change policy has two general categories: mitigation and adaptation. Mitigation is preventing or reducing greenhouse gas emissions that are warming the planet. Adaptation is preparing for life in a warmer world. Many actions are co-beneficial — they can serve both purposes.

COVID-19 and Climate Change

The COVID-19 pandemic holds lessons for climate adaptation planning. Like the pandemic, climate change affects all Coloradans, but some are more vulnerable than others.[6] Research suggests that people with fewer financial resources, some communities of color, people with chronic conditions like asthma, cardiovascular disease, and diabetes, and older Coloradans are likely to be more affected by a changing climate.[7] These same groups were particularly vulnerable to COVID-19.[8] Some lessons for organizations and governments working to improve health and reduce disparities include:

- **Share Information Openly With the Community.** Partner with community-based organizations and use existing relationships to share important information about risk and resources to those most disproportionately affected by climate exposures.
- **Foster Authentic Community Involvement.** People in groups identified as more vulnerable should be directly involved in the climate adaptation planning process. This includes identifying needs and possible solutions and participating in decisions that may affect their health or environmental conditions in their communities.
- **Invest Now or Pay Later.** Health systems, local governments, and community-based organizations should invest now in staff, training, resources, and infrastructure to prepare for current and future climate risks.



Know the Difference

Mitigation
Preventing or reducing greenhouse gas emissions that are warming the planet.

Adaptation
Preparing for life in a warmer world.

Reducing greenhouse gas emissions supports human health by helping to reduce air pollutants and prevent additional climate change. Colorado has an ambitious Greenhouse Gas Pollution Reduction Roadmap that aims to cut emissions to 90% of 2005 levels by 2050.

But climate change is already happening, and even the most ambitious mitigation policies will take time to bear fruit. In the meantime, it is critical that policies and plans also focus explicitly on adaptation and on the impacts of climate on health.

Federal, state, and local leaders have recently taken steps to prioritize protecting the health and well-being of communities. A 2021 law created a unit at the Colorado Department of Public Health & Environment to lead work to reduce environmental health disparities in communities of color and low-income communities. In 2022, legislators passed a bill creating an Office of Climate Preparedness.

Much of this adaptation work must take place at the local level. Communities across Colorado have already started adapting to the impacts of climate change on health, but the degree of preparedness varies widely across the state.

Health and Climate Index

CHI's Health and Climate Index is designed to provide data and highlight local dynamics and vulnerabilities that can inform the urgent work of adapting to a changing climate.

The Health and Climate Index analyzes risk in four categories: **Exposure** to climate-related hazards, **health outcomes and access to care**, **social factors** that have been linked to climate vulnerability, and **plans and perceptions** related to climate change and health. The Appendix (P. 17) includes a complete list of data and sources included for each category.

For each of these categories, Colorado's counties are sorted into quadrants that indicate their position relative to the rest of the state: Highest risk, high risk, moderate risk, and lowest risk.

Most counties were identified as high or highest risk in at least one category. Five counties — Delta, Fremont, Moffat, Montrose, and Prowers — were identified as high or highest risk in each category. This points to a need for resources and capacity-building to ensure that residents of these rural counties are as equipped as possible to deal with the increasing impacts of climate change.

But these risk scores are relative: Every county in Colorado is home to vulnerable populations and faces environmental exposures due to a changing climate. County profiles available on CHI's website include the data used in this Index for each county and can be used to explore local risks and identify opportunities.

Environmental Exposure

Counties in western Colorado had higher risk scores for climate-influenced environmental exposures such as wildfire, flooding, drought, and extreme heat. La Plata County had the state's highest risk score. Counties in southeast and eastern Colorado had lower risk scores, due largely to their lower vulnerability to wildfire and drought.

Douglas and Teller counties had higher risk scores due to high percentages of land identified as vulnerable to wildfire and high shares of their populations living in drought or in a wildland-urban interface, or WUI — the area where structures and human developments intermingle with undeveloped wildland. Population growth within the WUI increases risk from wildfire.

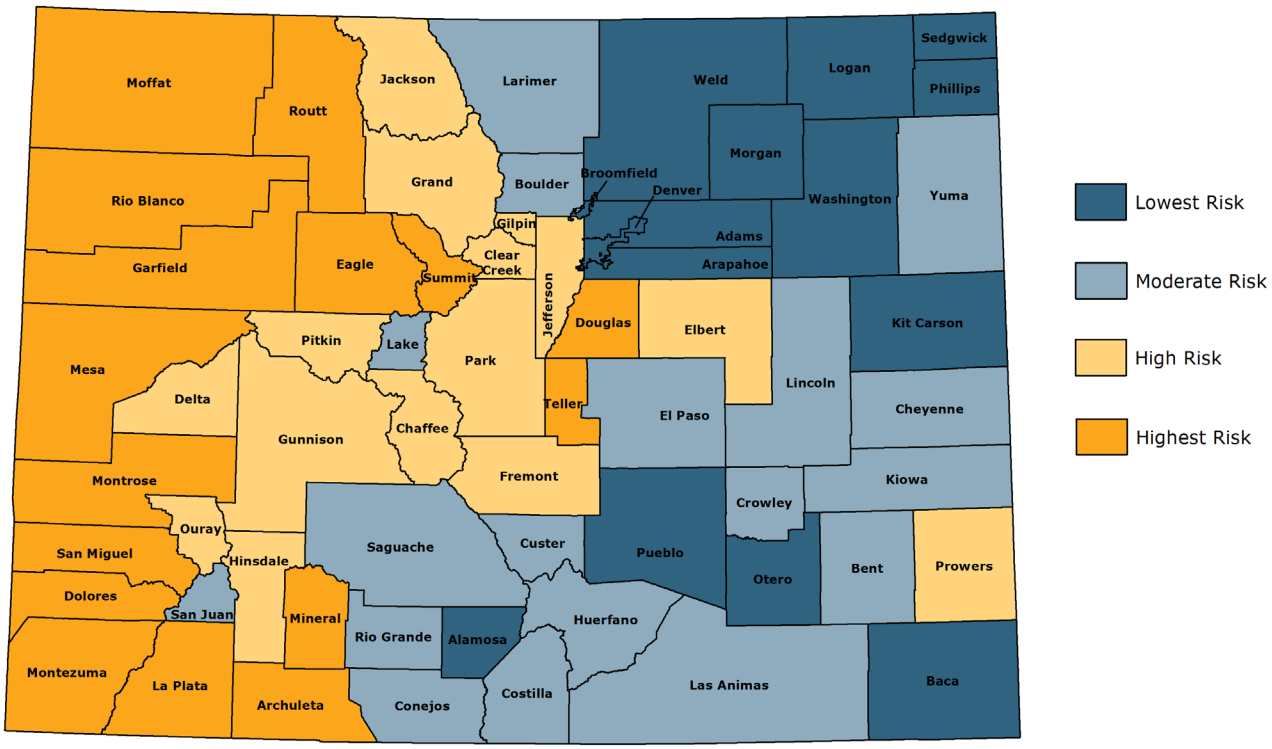
Vulnerability can vary within county lines. In Jefferson County, for instance, there are many fewer extreme heat days in Evergreen than in Golden.

Counties with lower risk scores on this Index still encounter climate-related environmental exposures. While Denver County had the state's lowest risk score, it had a high number of extreme heat days. Pueblo and Adams counties face similar dynamics. And while Alamosa County had a low overall risk score, some of its residents spent more than a third of the year experiencing serious drought conditions. Boulder County had a lower risk score in this category than many counties, and yet the Marshall Fire, which covered a small percentage of the county's land, was profoundly destructive.

Government agencies, community organizations and businesses, and individuals can take steps to plan and prepare for exposures that are more salient in their counties by creating and implementing plans, identifying needed resources, and creating programs tailored to local needs.

Map 1. Climate-Related Environmental Exposure by County: Risk Score by County

See Appendix, Category 1 for details.



Questions to Consider:

- What are the most prominent environmental exposures in your county identified in the Index?
- What additional climate exposures, such as poor air quality, infectious diseases, or changes to water or food systems, does your county experience?
- What exposures are likely to become more common over time?
- Are these exposures addressed in current individual or community planning efforts? What additional plans or resources are needed?
- What programs are available in your community to assist with personal and property damages caused by floods, wildfires, or other hazards?
- Do your county's residents have access to broadband internet or other ways to receive emergency alerts?

Promising Practices

Eagle County

Land Use and Building Codes for the Wildland Urban Interface

Nearly 3 million Coloradans live in WUIs, where neighborhoods and homes meet or intermingle with natural areas with flammable vegetation.[13] Many Colorado cities and counties are taking actions to protect their communities from wildfires. Eagle County is recognized by the National Fire Protection Association for including WUI codes in its land use regulations and building codes. Eagle County has identified neighborhoods at elevated risk for wildfire and encouraged fuel reduction strategies to thin vegetation. The county follows national best practices that require development within WUIs to allow firefighters to work safely and move freely.

City of Fort Collins

Planning for Extreme Heat

In anticipation of more days where high heat threatens human health, the City of Fort Collins is introducing an extreme heat plan that will initially start with expanded community messaging and specifically focus on expanding resources for people experiencing homelessness to go to when the temperatures rise. These shelters will be the same places that have historically been used to keep people warm during periods of extreme cold. The City will be building this plan out over time to include resources and partnerships to help prepare Fort Collins community members for hotter summer conditions.

Sensitive Populations: Health Outcomes and Access

Climate change can influence health by intensifying existing threats and conditions, including asthma, depression, and heart conditions.[9] Ensuring residents have access to health care is a critical piece of preparing for emerging health needs.

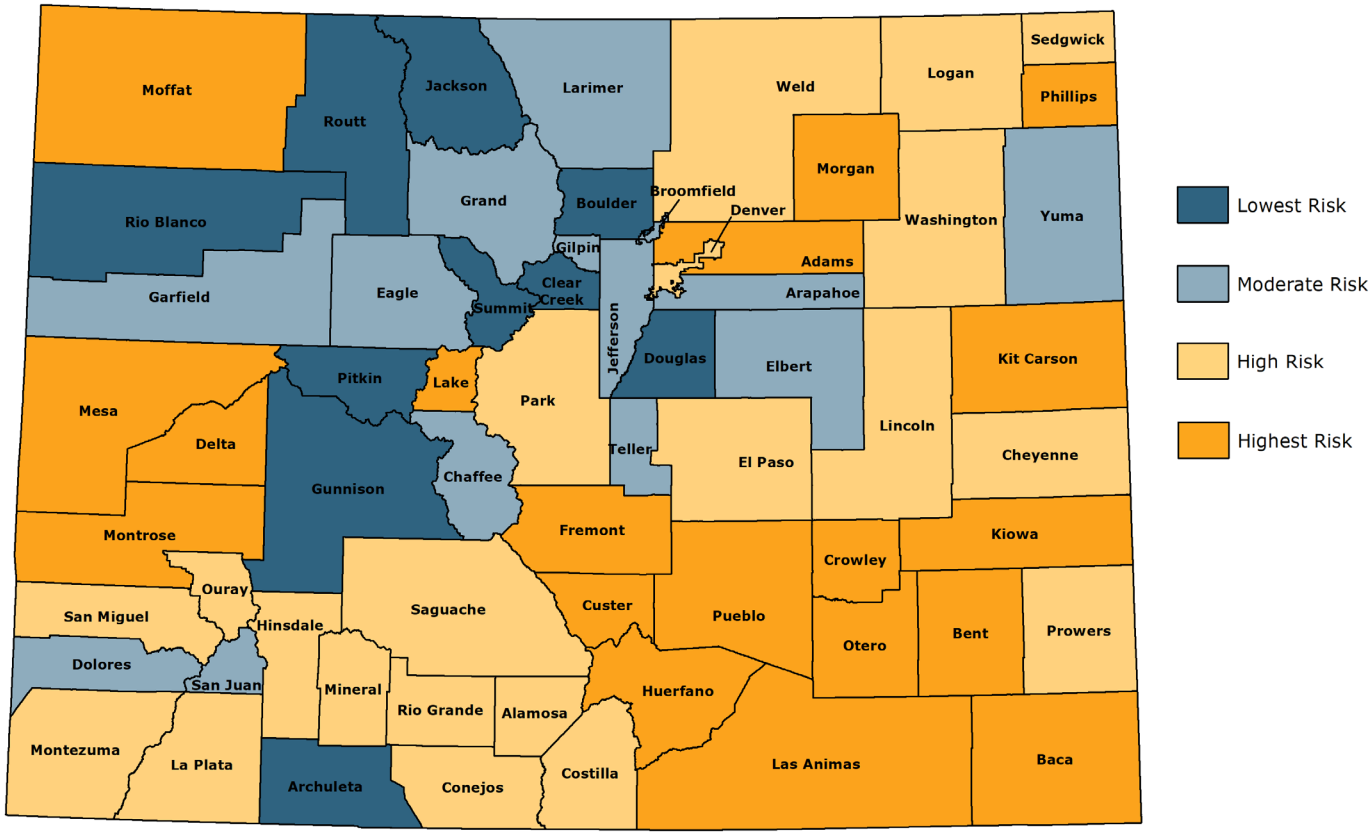
Counties in southeast and western Colorado had the highest risk scores in this category. In Otero County, the state's highest-risk county, 10% of residents were uninsured and 21% did not get health care when it was needed, while many residents have conditions like diabetes and depression that can indicate vulnerability to climate change. Pueblo, Adams, and Mesa counties also had high risk scores.

Some counties with low risk scores have limited access to care: In Summit County, for one, 24% of residents did not get health care when they needed it.

Risk scores in this category can point to opportunities for providers, health systems, policymakers, and others to provide information, education, and health services that reflect local needs. For instance, a health system in an area with high rates of asthma might create resources focused on managing the condition when air quality is poor, while counties with high uninsured rates might take steps to increase coverage.

Map 2. Climate Vulnerability Due to Health Factors: Risk Score by County

See Appendix, Category 2 for details.



Brian Clark/CHI

Questions to Consider:

- What are the most prominent health risk factors in your county identified in the Index?
- What health risk factors are likely to become more common over time?
- What does access to health care look like in your community? What are common barriers to care?
- Do residents in your community who have health conditions like diabetes, heart disease, or asthma have access to care when those conditions are made worse by hot temperatures or poor air quality days?
- Do health facilities in your community have the capacity to respond to disasters or environmental exposures related to climate change?
- Do health professionals in your community need additional trainings or resources to respond to current or emerging health needs?
- What public health initiatives, such as diabetes prevention efforts, are available to community members?

Sensitive Populations: Social Factors

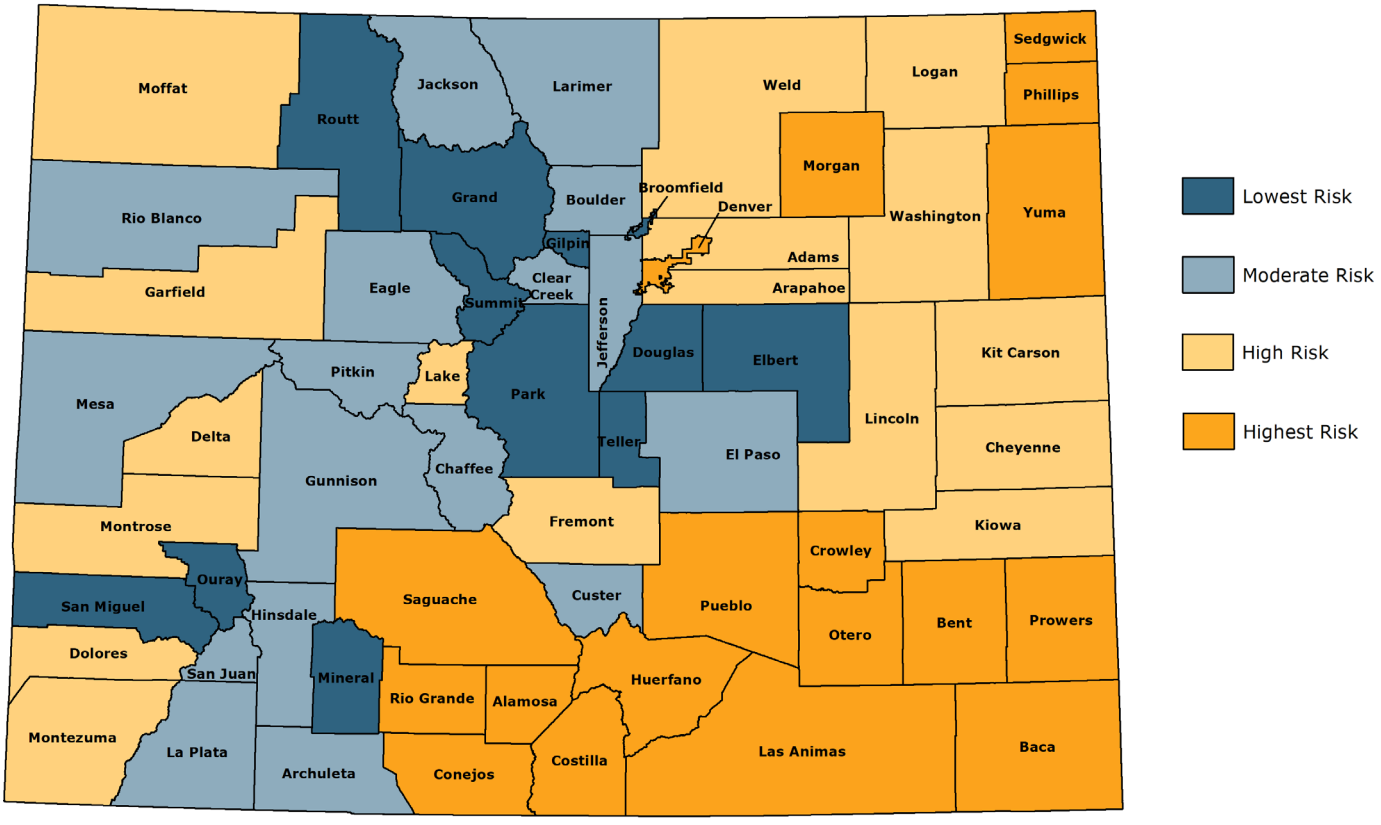
Social factors such as financial resources, education status, age, and race and ethnicity play a role in climate risk.[10] Language can influence access to health care and other services.[11] Climate change is likely to exacerbate existing inequities in health and other areas of life.[12]

Pueblo, Denver, and counties in the San Luis Valley and southeast Colorado had the highest risk scores in this category. These areas had higher rates of people with incomes below the federal poverty level ($26,500 annually for a family of four in 2021) and higher rates of people living in older houses. Rural Costilla County had the state's highest risk score. Douglas and Elbert counties had lower risk scores, as did counties in the central western part of the state.

Scores in this category can inform climate-related planning and highlight communities' unique needs. For instance, a local government where many residents speak Spanish might provide resources in that language, while a community organization in an area with many old homes without air conditioning might create resources focused on navigating extreme heat.

Map 3. Climate Vulnerability Due to Social Factors: Risk Score By County

See Appendix, Category 3 for details.



Questions to Consider:

- What social factors are affecting climate risk for the most people in your county?
- What populations not included in the Index, including people experiencing homelessness or people who work outside, are sensitive to the health impacts of a changing climate?
- How can climate-related policies and programs be inclusive of the perspectives and needs of community members who are most at risk?
- What steps can be taken to make sure climate mitigation and adaptation efforts do not exacerbate existing inequities?
- What resources do health providers, public health, and other concerned groups need to communicate and work effectively with all people in your community?
- To what extent are emergency alerts and climate-related materials available in multiple languages?
- To what extent are they available and accessible to others identified as sensitive populations, including seniors and young children and their families?

Promising Practices

City and County of Denver

Monitoring Air Quality at Schools

Concerns about the impact of poor air quality impacts on children's health led the Denver Department of Public Health and Environment and Denver Public Schools to create the Love My Air program. A network of air quality monitors at schools track air quality in real time, allowing schools to make decisions to support students' health. Teachers also can use the air monitors as a climate change learning opportunity for students. A replication toolkit provides resources for other municipalities interested in creating similar programs.

Boulder County

Providing Older Adults With HEPA Filters

Older adults are particularly vulnerable to the negative effects of poor air quality on respiratory and cardiovascular health.[13] In Boulder County, public health officials are piloting a program to support older adults' health by providing HEPA filters to improve indoor air quality. A group of older adults will receive filters during the summer months, when wildfires are common, and public health officials will track the quality of air and experiences of residents. Public health officials note that providing high-quality filters could be more effective and equitable than recommending that people buy filters they cannot afford or use makeshift strategies to create their own filters.

Plans and Perceptions

The impacts of a changing climate are not fully predictable. But planning to respond to likely impacts can help save and improve lives. Having a greater share of residents who believe that climate is likely to affect their health can help create the political will to develop such plans.[14]

Boulder and Pitkin counties had the lowest risk scores in this category: These counties had drought and wildfire preparedness plans as well as climate plans. Such plans cannot prevent disasters or change decisions made before the plans were created, but they can help communities respond to exposures effectively. La Plata County, which had the state's highest risk of climate-related exposures, had a low risk score in this category due to its climate-related plans and high percentage of residents who believe climate change will affect their health.

Most counties with higher risk scores in this category were rural. Eastern Plains counties had higher risk scores, as did counties in northwest Colorado.

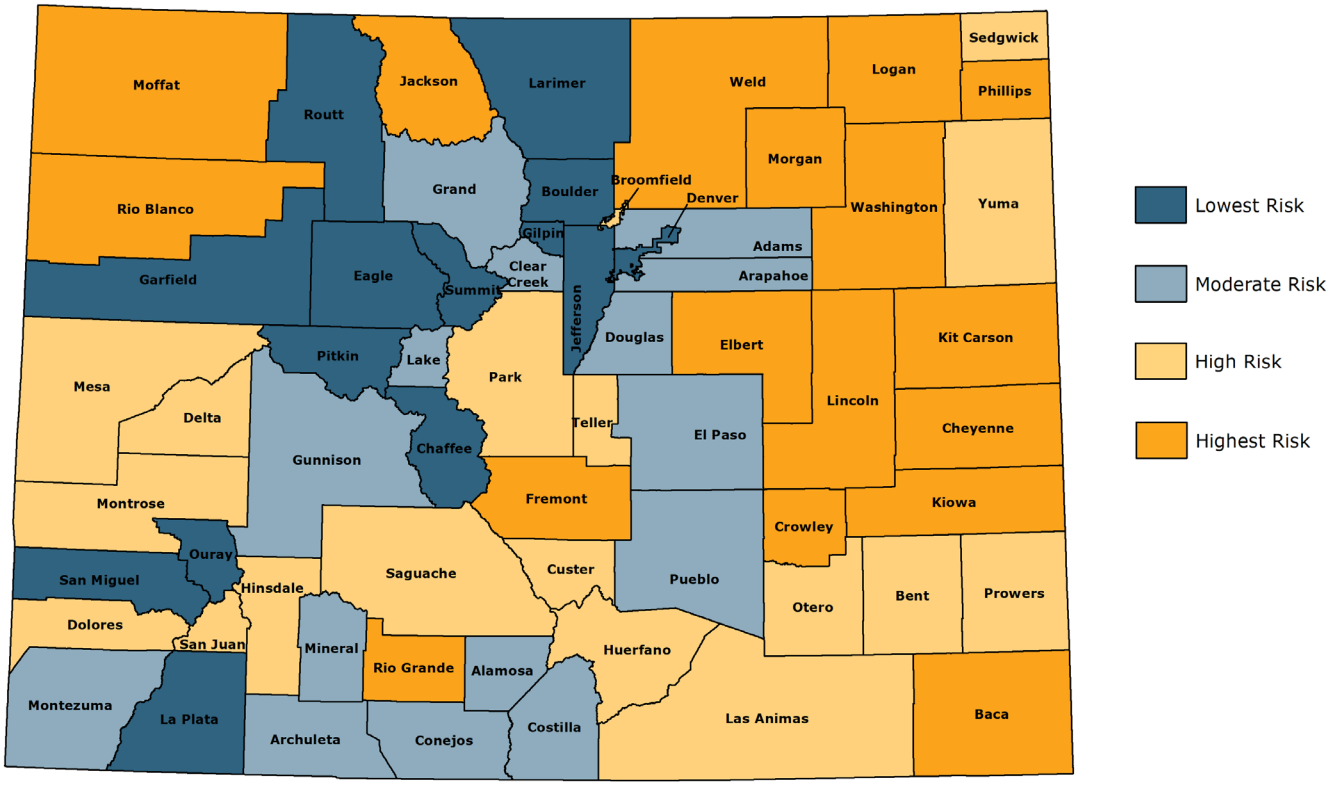
Moffat, Rio Blanco, Mesa, Dolores, and Fremont counties had high risk scores for exposure, health outcomes and access, and social factors, and also had high risk scores in this category.

Some of these counties lack resources to adopt or implement climate-focused plans. Counties where people were less likely to believe that climate change will impact their health were also less likely to have plans to prepare for a changing climate.

Since climate change can be a politically contentious issue, communities may take steps to address climate change-related risks without highlighting the role of climate change. For instance, a county where fewer people believe in climate change might create an effective plan to prepare for increasing periods of drought. Communities, organizations, and individuals may also take actions to adapt to climate change that are not included in an official plan, such as creating more green spaces or introducing asphalt that is less likely to absorb heat.

Map 4. Plans and Perceptions Related to Climate Change and Health: Risk Score by County

See Appendix, Category 4 for details.



Questions to Consider:

- What messages and communication materials are likely to be most effective in creating community agreement on the need for climate adaptation?
- What plans to respond to climate-related exposures are in place in your community? Who is responsible for implementing them? How is it going?
- Where are there opportunities for more robust or updated planning? Are there notable barriers to developing or implementing new plans?
- What resources, such as funding or infrastructure, are available? What resources are needed?
- Do climate-related plans in your community address the health needs and sensitive populations identified through the Index? Do planning processes include those most likely to be affected by a changing climate?
- What collaborative partnerships with neighboring communities, counties, and regions should be in place to address local needs?
- What efforts are happening outside of local government? For instance, what are nonprofits, businesses, schools, or individuals in your community doing to respond to a changing climate?

Promising Practices

Clear Creek County

Flood Adaptation Planning

In 2021, in support of the CDC's Building Resilience Against Climate Effects (BRACE) Initiative, Clear Creek County's Public Health Department worked with CHI to train county employees and older adults in the community about flood preparedness. Using the BRACE framework, the public health department identified a climate risk (flooding) and a sensitive population that needed support for adapting to flooding (older adults — who make up over 20% of the population) and partnered with CHI to provide community education and training materials to help prepare for future floods.

Front Range

Coordinating Through the Metro Denver Partnership for Health

The Metro Denver Partnership for Health, led by six public health agencies serving the metro Denver region, established a climate workgroup to share and develop resources among the public health agencies that serve the majority of Colorado's population. Its member agencies have each identified climate change as a strategic priority.

Ute Mountain Ute

A Collaborative Climate Action Plan

Research has shown that many indigenous people in the United States were displaced to areas that are vulnerable to climate change.[15] The Ute Mountain Ute's tribal lands have experienced severe drought and more extreme heat in recent decades. The tribe conducted an in-depth climate vulnerability assessment that resulted in a climate action plan, released in 2020, that includes a focus on human health. The plan was developed with the support of the Ute Mountain Ute Tribal Council, Elders, and other community members.

University of Colorado

Training Doctors for a New Role in a Changing Climate

The University of Colorado School of Medicine created a Diploma in Climate Medicine that aims to prepare doctors to offer insight and medical expertise to inform climate policy — and to be better prepared to treat their patients' emerging needs.

Conclusion

Colorado's communities are experiencing the health impacts of climate change. CHI's Health and Climate Index, part of the Acclimate Colorado initiative, highlights the risks Coloradans face in the places they live. This knowledge can inform and shape state and local plans to adapt to a changing climate.

Climate change is a health equity issue. Plans to adapt to a changing climate must be driven by the needs and experiences of communities.

The Health and Climate Index can help communities gauge areas of concern in different parts of Colorado and begin to connect the dots between a changing climate and the health of people in Colorado.

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Adapting to a Changing Climate

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Appendix: How the Index Works

The Health and Climate Index ranks Colorado counties using 32 variables related to health and climate. The Index is based on data from 2017 to 2022, depending on the most recent year for which all data points were available. The variables are sorted into four categories:

***Category 1: Exposure** to climate-related natural hazards*

***Category 2: Sensitive Populations: Health Access and Outcomes** that increase a person's health risks from environmental changes*

***Category 3: Sensitive Populations: Social Factors** that influence climate vulnerability*

***Category 4: Plans and Perceptions** related to climate change action and adaptation*

Metric References

- **ACS:** American Community Survey
- **BRFSS:** Behavioral Risk Factor Surveillance System
- **CHAS:** Colorado Health Access Survey
- **PRISM:** Parameter-elevation Regressions on Independent Slopes Model
- **U.S. Drought Monitor:** U.S. Drought Monitor
- **Yale:** Yale Climate Opinion Maps, 2021
- **CSFS:** Colorado State Forest Service
- **Global:** Global Covenant of Mayors for Climate and Energy
- **CC4CA:** Colorado Communities for Climate Action
- **FSF:** First Street Foundation
- **CDHSEM:** Colorado Division of Homeland Security and Emergency Management

Category 1: Exposure

- Number of extreme heat days (at or above 90 degrees Fahrenheit) (PRISM, 2021)
- Percentage of land rated moderate to highest risk for a fire occurring and possible loss or harm from a wildfire (CSFS, 2017)
- The percentage of weeks that any percentage of the county's population is in severe, extreme, or exceptional drought (U.S. Drought Monitor, 2021)
- Percentage of population that lives in a Wildland Urban Interface (CSFS, 2017)
- Community Flooding Risk Levels: Minimal, Minor, Moderate, Major, Severe and Extreme (FSF, 2021)

Category 2: Sensitive Populations: Health Access and Outcomes

- Percentage of population age 18 and older who have chronic obstructive pulmonary disease (COPD) (BRFSS, 2018-2020)
- Percentage of population age 18 and older who have diabetes (BRFSS, 2018-2020)
- Percentage of population age 18 and older who have asthma (BRFSS, 2018-2020)
- Percentage of population age 18 and older who have cardiovascular disease (BRFSS, 2018-2020)
- Percentage of population age 18 and older who were diagnosed with depression (BRFSS, 2018-2020)
- Percentage of population age 18 and older who are obese (BRFSS, 2018-2020)
- Percentage of population without health insurance (ACS, 2015-2019)
- Percentage of population who reported they experienced infrastructure barriers when trying to seek care (appointment, insurance, new patient) (CHAS, 2021)

Category 3:
Sensitive Populations: Social Factors

- Percentage of the population age 5 and younger (ACS, 2015-2019)
- Percentage of the population age 17 and younger (ACS, 2015-2019)
- Percentage of the population age 65 and older (ACS, 2015-2019)
- Percentage of population who are Black or African American (ACS, 2015-2019)
- Percentage of population who are Hispanic or Latino/a (ACS, 2015-2019)
- Percentage of population who are American Indian or Alaska Native (ACS, 2015-2019)
- Percentage of population in households with incomes below 100% of the Federal Poverty Level (ACS, 2015-2019)
- Percentage of the labor force that was unemployed (ages 16 and older) (ACS, 2015-2019)
- Percentage of population without a high school diploma (ages 25 and older) (ACS, 2015-2019)
- Percentage of population living in homes built before 1980 (ACS, 2015-2019)
- Percentage of population who speak a language other than English at home (ages 5 and older) (ACS, 2015-2019)
- Percentage of population with a cognitive difficulty (ACS, 2015-2019)
- Percentage of population living with an ambulatory difficulty (ACS, 2015-2019)

Category 4:
Plans and Perceptions

- Percentage of population who believe that global warming is currently happening (Yale, 2021)
- Percentage of population who believe that the impacts from global warming will harm them personally (Yale, 2021)
- Percentage of population who believe that global warming will harm future generations (Yale, 2021)
- Percentage of population who believe their local officials should do more to address global warming (Yale, 2021)
- Percentage of population who believe global warming is already harming people (Yale, 2021)
- Local and County Plans: The percentage of the following climate-related plans or commitments the county has developed or participated in:
    - County or major city in the county has a climate action or adaptation plan (various sources, 2022)
    - County or major city in the county is a member of the Colorado Communities for Climate Action coalition or is a member of Global Covenant of Mayors (CC4CA, Global, 2022)
    - County has a hazard mitigation plan (CDHSEM, 2022)
    - County has a wildfire protection plan (CSFS, 2022)

Scoring the Index

CHI converted each indicator into a score of 0 to 10, where 0 represents the most severe threats related to climate change. For example, if 70% of land in a given county is designated as moderate to highest risk for wildfire risk, this is translated into a score of 3.0 out of 10. Each county's score for each of the four main categories is the average of its scores in all metrics within the category. Each county's score for each of the four main categories is the average of its scores for all metrics within the category.

All variables were given equal weight except for the Local and County Plans metric in Category 4, which was given double weight because it reflects six climate-related plans or commitments.

The scores are based on county-level data where available. Due to sample limitations, some county health outcome data are only available at the regional level, and each county the region was assigned the same value.

In this report, counties are organized into quadrants that indicate their position relative to the rest of the state: Highest risk, high risk, moderate risk, and lowest risk. These are indicated on the keys of maps in this report.

A Note on Data Sources and Availability

Some data on populations and exposures that are relevant to understanding the impacts of climate on health in Colorado are not included in the Index because they are not collected consistently across all Colorado counties. Examples include data on air pollution, people experiencing homelessness, future impacts of climate change such as water contamination or shortages and impacts on the food system, and the mental health impacts of climate change.

The 2022 Index does not include information about local public health agencies' improvement plans. The Colorado Department of Health & Environment (CDPHE) included a new metric, climate resilience, as a possible priority each local public health department could select. At the time of this report, only the Eagle and Rio Blanco County public health agencies have chosen to prioritize climate resiliency. Departments are in the process of updating their plans. More information about each county's plan can be found on the CDPHE local public health website.

Endnotes

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