

Advancing Climate Resilience for Community Health

Recommendations and Opportunities
for Health Care Systems and
Philanthropic Organizations

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Introduction

Many factors influence the health of individuals and communities. These factors range from access to care and healthy food to employment opportunities. Increasingly, the effects of our changing climate — including increased wildfire and flood risk, drought, extreme heat and cold, and poor air quality — influence a community's well-being and ability to thrive. Community health is tied to how state and local communities act to address both climate change mitigation (preventing or reducing greenhouse gas emissions that are warming the planet) and adaptation (preparing for life in a changing climate). Many actions can and should serve both purposes.

Key Takeaways

- Climate change is already affecting people's health and worsening existing inequities. Health care systems and philanthropic organizations have the influence and resources to help Coloradans adapt and become more resilient.
- Health care systems are committed to advancing community health and they employ one of the most trusted workforces. They are also one of the largest global contributors of carbon emissions. As such, health care systems have an opportunity and responsibility to take a leadership role in addressing climate change.
- Health care systems and philanthropic groups can make a difference in several key areas: education, advocacy and leadership, community health initiatives, data and research, and assessment.

The Impact of Climate Change on Health

- Climate change disrupts physical, biological, and ecological systems, which in turn affect health. Poor air quality aggravates cardiovascular, respiratory, and allergy-related illnesses. Extreme weather increases waterborne illness and can cause injury and death. And rising temperatures cause dehydration, heat stroke, and aggravated cardiovascular and respiratory illnesses.¹
- Climate-related disasters also cause behavioral health issues, which can include stress, anxiety, depression, post-traumatic stress disorder, and increases in both substance use and violence.²

Climate Change and Health Equity

- The same root causes and upstream drivers of health inequities — including housing, transportation, land use, food, and socioeconomic systems — also contribute to climate change. Structural racism, historical disinvestment in some communities, and inequities in the distribution of money and power create disproportionate health risks and impacts of climate change among communities of color and low-income communities.³
- Climate change accelerates existing instabilities, especially related to food, housing, and the economy, that an individual, family, or community may face.

Acknowledgment

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Colorado's Opportunity

Six of the eight hottest years on record in Colorado have happened in the past decade.⁴ Colorado's average temperature has increased by about 2 degrees Fahrenheit in just the past 30 years.⁵ Projections suggest it could increase by an additional 2.5 to 5 degrees Fahrenheit by 2050.⁵ Residents of Colorado's urban and suburban areas — where a majority of the state's population resides — see and feel days of poor air quality each year. Denver-Aurora, Fort Collins, and Colorado Springs rank among the worst metropolitan areas in the United States for air pollution, particularly for ozone, which can irritate the lungs and exacerbate chronic health conditions.⁶ In fact, in 2021, the Denver metro area recorded a record 65 ozone alert days from May through August — the four months of the ozone season.⁶

Southern and southeastern Colorado continue to face extreme drought conditions, affecting local food and economic security and the mental health of local communities.⁷ These areas are home to some of the more sensitive populations such as adults over 65 years old, people with chronic diseases, people who are housing insecure, and households earning a low income.

Climate change is a health equity issue. Health systems — including their health care delivery, workforce, research, and philanthropic divisions — have an opportunity to take a lead role in tackling the climate crisis. Addressing climate change is similarly aligned with philanthropic organizations' and health foundations' commitment to advancing racial equity, environmental justice, and health. Coloradans are already feeling the health impacts of climate change and need leaders from the health

Kaiser Permanente's Commitment to the Environment⁸

Kaiser Permanente is a mission-driven organization committed to improving the health of the communities it serves. As part of this mission, Kaiser Permanente believes it has an obligation as a health care provider to minimize its environmental impact. Its actions related to energy use, supply chains, waste management, and community investments aim to improve the conditions caused by climate change that lead to poor health.

Kaiser Permanente has taken a leading role in fostering partnerships with nonprofit organizations and between the public and private sectors to develop operational policies and systems that strengthen community health and protect the environment. The Kaiser Permanente team hopes its commitment to environmental responsibility serves as an example and call to action for other health care organizations.



care and philanthropic sectors to help address them.

Building community resilience to climate change is essential for preserving the physical and mental health of Coloradans, especially for people of color, immigrant groups, households earning low-incomes, children, and older adults who are

particularly sensitive to climate change impacts due to chronic conditions and physical vulnerabilities.

Many agencies and organizations across Colorado are working to address climate change, and many more are interested in and positioned to join and advance these efforts. Health systems and philanthropic organizations are recognizing their role as environmental stewards with a responsibility to protect the natural environment and human health, which are interconnected and interdependent. Health care and philanthropic groups have an opportunity to leverage their resources, infrastructure, workforce, and community connections to foster healthy, thriving, and resilient communities.

This report presents a call to action to health systems and philanthropic organizations to learn about and pursue opportunities to protect and advance the health and well-being of communities from the impacts of climate change in Colorado.

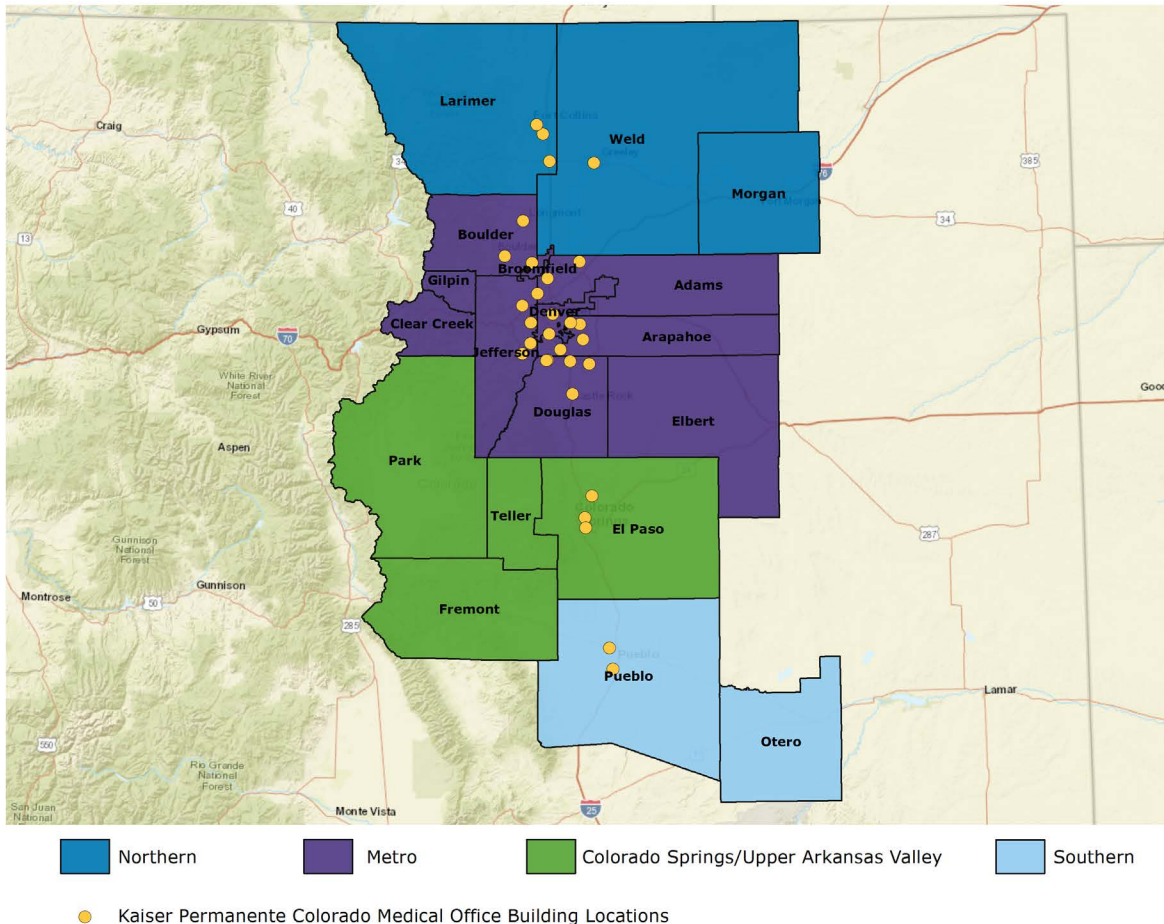
Background and Methods

Kaiser Permanente Colorado commissioned the Colorado Health Institute (CHI) to identify recommendations for health systems and philanthropic organizations to support, lead, and advance climate change mitigation and adaptation efforts in Colorado.

For its assessment, CHI collected and analyzed data to identify and map needs within each of Kaiser Permanente Colorado’s service areas, then conducted a landscape scan of existing programs, needs, and opportunities across those areas (Map 1) to inform the recommendations included in this report.

While not inclusive of the state’s entire geography, Kaiser Permanente Colorado’s service area encompasses a majority of Colorado’s population at nearly 5 million people (or 86% of Colorado residents).

Map 1. Kaiser Permanente Colorado Service Area and Medical Office Building Locations



Data Collection and Analysis

While climate change affects everyone, some populations are more likely to experience vulnerabilities to their health. Research has identified certain social, health, and demographic-based communities that are particularly sensitive to the impacts of a changing climate (Table 1).

CHI assessed the relationship between climate-related environmental exposures (extreme heat, wildfire risk, flood risk, drought, and air quality)

and the social and demographic factors that have been known to elevate health risks in communities. CHI's assessment included qualitative and quantitative data collection and analysis and secondary data analysis. During this data-driven and community-engaged process, CHI met with various stakeholders across Colorado. They are listed in the Appendix.

Findings from CHI's assessment are available upon request.

Table 1. Populations That Are Particularly Sensitive to Climate Change Impacts ^{7,10}

Health Factors	
Chronic diseases	People with chronic diseases, such as cardiovascular disease, diabetes, chronic obstructive pulmonary disorder (COPD), and asthma, are particularly sensitive to extreme heat and poor air quality.
People with physical or cognitive disabilities	In addition to health-related challenges, people who have impaired vision, are deaf or hard of hearing, have limited mobility, or have cognitive disabilities may be less likely to have access to timely and pertinent information related to adverse weather events. They may also face greater challenges in the event evacuations are required.
Social and Demographic Factors	
Youth and older adults	Children and older adults have more difficulty regulating body temperature and are therefore more sensitive to extreme heat. Young children and teens have higher health risks from climate and environmental hazards because they are developing rapidly and have immature immune and nervous systems.
People of color	People of color and other marginalized groups face greater health disparities that climate impacts can exacerbate. Due to historically discriminatory housing policies, people of color disproportionately live in areas with higher environmental exposures.
Language	People who speak a language other than English may not have access to resources in their language or information that is culturally relevant.
Income	People earning low incomes have fewer financial resources to prepare for and recover from adverse climate events.
Health insurance	People without health insurance have less access to and use of health care compared to those with health insurance. This means that people who are chronically or acutely exposed to environmental impacts may be less likely to have access to preventive care and treatment.

Landscape Scan

During the second phase of this work, CHI met with 20 local and statewide key informants to discuss current programs, partnerships, funding, evaluation efforts, needs, and gaps related to climate change and its impact on health. Key informants represented 15 organizations, including local departments of public health and environment, climate offices and organizations, safety net clinics, community-based organizations and associations, and K–12 education partners.

Findings from CHI's landscape scan are available upon request.

Recommendations

CHI identified the following recommendations to address health-related climate impacts through our data analysis and community-engaged research. Recommendations are organized by topic area in order of frequency (meaning, the most to least talked about recommendation across stakeholders). They include: education, advocacy and leadership, community health initiatives, data and research, and assessment. Health systems and philanthropic organizations may find the regional opportunities highlighted in the sidebar particularly helpful.

Education

Background

Education was the most talked about need across key informants. Over 60% (13) of the 20 organizations CHI interviewed highlighted education needs. These organizations included K–12 education, local departments of public health and environment, community-based organizations, climate offices and organizations, and safety-net clinics. Stakeholders in every Kaiser Permanente Colorado service area and those representing statewide organizations identified the need for additional education.

Educate health professionals about the effects of climate change on patient health and train them on screening and referral for climate-related health impacts.

Health professionals have an opportunity as trusted messengers to educate their patients and

communities about the relationship between climate change and health and discuss solutions with them. Health systems can support these professionals by providing training and education to increase provider knowledge and confidence in assessing and addressing the impacts of climate change on health. Various organizations have developed toolkits and guides for health professionals. These include Climate for Health and ecoAmerica's [Let's Talk Health & Climate: Communication Guidance for Health Professionals](#) and RMI's [Health Professionals Can Play a Role in Electrification](#).

"[Health Systems] need to view climate impacts as health impacts — something your family doctor can treat and prevent." – Key Informant

"Nationally, a lot of health professionals think climate and health education is important and affects their patients, but they are not comfortable or confident in addressing [these impacts] inside and outside of the exam room." – Key Informant

Provide education to patients and the community regarding the impacts of environmental exposures and climate change on health.

Less than half of Coloradans believe they have personally experienced the effects of global warming or that global warming will harm them personally.¹¹ Yet, Coloradans are experiencing more extreme weather, natural disasters, poorer air quality, and drought. Health systems have an opportunity to educate patients and the public about the impact of climate change on health and ways to address it, as nurses, physicians, and health care workers rank among the most trustworthy professions, alongside teachers.¹² Health systems can use existing resources, such as the Environmental Protection Agency's [climate change and health factsheets](#), the American Public Health Association's [How Climate Change Affects Your Health](#) infographics, and the American Red Cross' [emergency preparedness tips](#) on extreme heat, flooding, drought, wildfires, winter storms, and other climate disasters.

Health systems may also consider integrating environmental health history forms into electronic health record systems to assess risk among

sensitive populations, discuss the relationship between climate change and health, and identify solutions. One example of such a tool is the National Environmental Education Foundation's [environmental history form for pediatric asthma](#).

“Outreach and education in multiple languages is needed, such as health classes and health information in languages other than English.”
– Key Informant

“There are too few existing programs in the community. Many places do not have the infrastructure to support educating or providing resources to the community.” – Key Informant

Advocacy and Leadership

Background

Over half (12) of the 20 organizations CHI interviewed highlighted advocacy and leadership as a need. These organizations included K–12 education, local departments of public health and environment, community-based organizations, climate offices and organizations, and academia. Stakeholders in every Kaiser Permanente Colorado service area and those representing statewide organizations identified advocacy and leadership opportunities for health systems and philanthropic organizations.

Further engage in efforts to decarbonize the health sector in the U.S.

The U.S. health care system is responsible for about 27% of all global health care-related greenhouse gas emissions and 10% of all national greenhouse gas emissions.^{13,14,15} Health systems can advance and model sustainable practices; train and incentivize their staff to provide high-value, low-waste care; and encourage staff at all levels to be conscious of resources and waste. Kaiser Permanente is already a leader in this space as the first health system in the U.S. to reach carbon neutrality.¹⁶

“There is a need for more leadership to be brought in — not just individual providers but [health systems]. And it doesn't need to be punitive; it can be positive, such as creating 'green awards' to recognize sustainability efforts.” – Key Informant

Advocate for policies that benefit both the environment and human health.

Policies related to land use, the built environment, and public transportation can benefit both the environment and human health. For instance, designing more walkable cities and expanding public transportation infrastructure is healthy for residents and reduces vehicle emissions.

Health systems and philanthropic organizations can also advocate for health insurance solutions. One way is through Section 1115 waivers, which allow states to test new ways to operate their Medicaid programs to fund health-related social needs. The Centers for Medicare & Medicaid Services have approved waivers in Massachusetts and Oregon that allow these states to pay for medically necessary supports to improve air quality, such as air conditioners, humidifiers, and air filtration devices.¹⁷ Colorado has several approved or pending 1115 waivers, but none are specifically related to climate and health.¹⁸

“Getting medical professionals to see advocacy and policy interventions as part of their role and professional obligation is an ongoing conversation.” – Key Informant

Lead cross-sector partnerships to align stakeholders' efforts.

Health systems and philanthropic groups are well-positioned to bring together the full array of people and organizations working on climate and health. They have the resources and networks to unite partners from local departments of public health and environment, local government, community-based organizations, and community champions to support or create local partnerships and coalitions.

“Another area where we could use health system leadership is with partnerships. We need other organizations, not just cities and health departments, to be the leads on this work ... The entire ecosystem — health care, nonprofits, local government, and community members — needs to be involved.” – Key Informant



Regional Opportunities

Colorado Springs/ Upper Arkansas Valley

Fountain residents are deeply concerned about water quality. Their water supply contains high levels of perfluoroalkyl and polyfluoroalkyl substances (PFAS) — manufactured chemicals in consumer goods that are harmful to human health, can cause developmental delays in children, and increase the risk of some cancers, among other impacts.²² Fountain residents shared a need for access to low- or no-cost testing for PFAS blood levels. Health systems could use assessments as a tool to better understand this need and other community health needs related to climate and the environment.

Denver/Boulder Metropolitan Area

Denver is an urban heat island — a metropolitan area that is hotter than its outlying counties due to the density of its buildings and the lack of green space. Denver is, on average, five degrees warmer than its surrounding areas.²³ People of color and those earning low incomes disproportionately live in areas without a dense tree canopy, exposing them to warmer temperatures.²⁴ Denver would benefit from health system support to improve access to clean and efficient cooling in homes and at convenient community locations, so that that all residents can live comfortably.

Northern Colorado

Rural mountain communities need better access to health care and information about disaster preparedness, making outreach to these communities especially important. Health systems may consider using existing infrastructure to provide community education. For example, the Larimer County Office of Emergency Management supports [community hubs](#) that are created by residents to make their neighborhoods more socially connected, safer, informed, and resilient places to live. Partnering with community hubs to share climate and health education is one way health systems can easily reach residents.

Southern Colorado

Drought is a significant climate impact in southern Colorado that also negatively affects air quality from dust, water quality from declining water tables, and wildfire risk. Drought also contributes to poor mental health among agricultural workers. Health systems and philanthropic organizations could partner with local water companies to support water management and sustainability efforts.



Build partnerships with local community-based organizations to better connect patients to resources for climate change adaptation.

Health systems need to strengthen their referral networks to responsibly screen for and provide education on patient sensitivities to climate change. Many health systems already screen and refer patients for social factors that influence health and can use a similar model to assess patients' susceptibility to climate change impacts and connect them to resources. Health systems and philanthropic organizations should consider the effect that increasing referrals may have on the demand for services and work with community-based organizations to evaluate and address their capacity to meet community needs.

Community Health Initiatives

Background

Half of the 20 organizations CHI interviewed identified a need for additional community health initiatives. These organizations included community-based organizations, local departments of public health and environment, climate offices and organizations, and K-12 education. Stakeholders who shared this need represented both local and statewide organizations.

Organizations working to increase community resilience through climate change mitigation and adaptation efforts need additional support. Key informants told CHI that current funding is not enough to sustain and expand the programs and workforce necessary to protect communities from the impacts of climate change. Recommendations to address climate change by exposure or hazard type include:

Support efforts to address extreme heat and poor air quality.

As mentioned, Colorado's average temperatures have increased over the past 30 years and will continue to rise. The increasing frequency and intensity of wildfires and increased ozone levels contribute to poor air quality. Community-based organizations are working to protect communities by increasing access to safe, comfortable living conditions, and would benefit from additional support from the health and philanthropic sectors.

*"[Our organization] is trying to get a fixed air monitoring system, but it is very expensive. A lot of grants are not friendly to the community because they require lots of paperwork. Small nonprofits like us don't have time for all the reports and meetings. There needs to be greater funding for BIPOC organizations who are trusted and respected."
– Key Informant*

Support efforts to address drought and its impact on water availability and quality.

Regions of Colorado continue to face extreme drought conditions, which can contribute to water shortages. These shortages not only lead to poorer water quality, but also negatively affect the economy in areas that rely on agriculture. Drought is a major stressor for Colorado's farmers, agricultural workers, and their families. Health systems and philanthropic groups could support organizations working in water conservation and provide mental health support to agricultural communities.

Data and Research

Background

Of the 20 organizations CHI interviewed, eight mentioned the need for additional data and research. These organizations included local departments of public health and environment, climate offices and organizations, community-based organizations, and academia. Representatives across every Kaiser Permanente Colorado service area as well as those from organizations serving Colorado statewide identified this need.

Health and environmental researchers have identified gaps in the public's knowledge about health impacts of climate change, climate change interventions, and policy solutions. Many opportunities exist to further understand the relationship between climate change and health in communities as well as gaps in data availability to do so. Expanding the body of climate and health research will inform next steps to advance climate change mitigation and adaptation efforts in Colorado. Health systems and philanthropic organizations may consider the following examples, identified through CHI's research, as potential ways to meaningfully address data and research needs.

Partner with organizations conducting studies that explore the relationship between environmental exposures and health.

Researchers are piloting interventions to assess their effectiveness in improving air quality and other key metrics. For example, Rocky Mountain Institute (RMI) is conducting interventional pilot studies

to assess the effect that switching to electric stoves from gas stoves has on indoor air quality. Pairing study data with health data would allow researchers to evaluate the effectiveness of interventions, such as home electrification, on health outcomes, such as asthma and other respiratory conditions.

Collect data to better understand how environmental exposures and extreme weather events relate to health outcomes and health care utilization.

A key knowledge gap in the field of climate and health research is understanding which patients are more likely to need access to health care for climate-sensitive conditions and how and when they obtain care.¹⁹ One way for health systems to fill this knowledge gap is to report, for instance, the air quality when patients are hospitalized due to asthma or the temperature when patients experience heat-related illness. Researchers and health systems also need data across the full spectrum of health care — from preventive, to urgent, to emergency care — as emergency room data alone only show the worst-case scenarios. Finally, communities, local public health departments, and local governments need access to this data to inform decision-making and advocacy efforts.

“Exposure and health outcome research is needed, which could be an opportunity for [health systems]. We get asked this a lot by community members — for instance, people living in areas with high cancer rates and wanting to know if it is related to environmental exposures — but right now it's anecdotal.”
— Key Informant

Support evaluation efforts to measure the impact of existing programs.

Many community-based climate mitigation and adaptation efforts are just beginning. Organizations that have not historically focused on climate are stepping up to fill a need in their communities. Evaluating these programs will add to the pool of evidence-based and promising practices that can be scaled and replicated.

Assessment

Background

Five of the 20 organizations CHI interviewed identified assessment as an opportunity for health systems. These organizations included K-12 education, community-based organizations, and academia. Organizations across several of Kaiser Permanente Colorado's service areas and organizations serving Colorado statewide identified this need.

Incorporate climate and environmental metrics into community health needs assessments.

In Colorado, nonprofit tax-exempt general hospitals are required to complete a community health needs assessment every three years.²⁰ These assessments can be an opportunity for health systems to incorporate climate and environmental metrics into both secondary data collection and community engagement efforts. Incorporating data and discussion related to climate change and its impact on health will allow health systems to identify the most urgent health needs and create tailored solutions for the communities they serve. Kaiser Permanente Colorado's most recent community health needs assessment identified climate and the environment as a prioritized health need in its service area, which informed its climate-related implementation strategies.²¹

“More research is needed, such as what does it look like when you integrate environmental stewardship into a community health needs assessment? What does the community want and care about?” – Key Informant

Conclusion

Climate change is affecting the health and well-being of communities across Colorado today. Health systems and philanthropic organizations are recognizing an opportunity and responsibility to lead and support climate change mitigation and adaptation efforts and build community resilience. This report is meant to inform strategic planning processes as these organizations work to improve health and advance equity in a changing climate.

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Appendix

Organizations Informing CHI's Analysis and Recommendations

- Alliance of Nurses for Healthy Environments
- Boulder County Public Health
- City of Fort Collins
- Cultivando
- Denver Department of Public Health and Environment
- Denver Office of Climate Action, Sustainability, and Resiliency
- East Colfax Neighborhood Association
- Fountain Valley Clean Water Coalition
- GreenLatinos
- Healthy Air and Water Colorado
- Larimer County Climate and Sustainability Program
- Larimer County Department of Health and Environment
- Mission Medical Center
- Mothers Out Front
- National Environmental Education Foundation
- Otero County Health Department
- Rocky Mountain Institute (RMI)
- Trust for Public Land
- University of Colorado School of Medicine
- Widefield School District 3 School Board

Endnotes

- ¹ American Public Health Association. How Climate Change Affects Your Health. (2022). <https://www.apha.org/news-and-media/multimedia/infographics/how-climate-change-affects-your-health>
- ² Substance Abuse and Mental Health Services Administration. Climate Change and Health Equity. (2023). <https://www.samhsa.gov/climate-change-health-equity>
- ³ American Public Health Association. Climate Change, Health, and Equity: A Guide for Local Health Departments. (2022). https://www.apha.org/-/media/files/pdf/topics/climate/climate_health_equity.ashx
- ⁴ Frankson R., Kunkel K.E., Stevens L.E., et al. Colorado State Climate Summary. National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service. (2022). <https://statesummaries.ncics.org/chapter/co/>
- ⁵ Lukas J., et al. Climate Change in Colorado: A Synthesis to Support Water Resources Management and Adaptation. (2014) https://www.colorado.edu/sites/default/files/2021-09/Exec_Summary_Climate_Change_CO_Report_2014_FINAL.pdf
- ⁶ American Lung Association. State of the Air. Most Polluted Cities. (2023). <https://www.lung.org/research/sota/city-rankings/most-polluted-cities>
- ⁷ Colorado Health Institute. Think Globally, Adapt Locally: Colorado Counties Health and Climate Index. (2022). <https://www.coloradohealthinstitute.org/research/2022-climate-change-health-index>
- ⁸ Kaiser Permanente. Environmental Stewardship. <https://about.kaiserpermanente.org/commitments-and-impact/healthy-communities/improving-community-conditions/environmental-stewardship>
- ⁹ Kaiser Permanente of Colorado. 2022 Community Health Needs Assessment. (2022). <https://about.kaiserpermanente.org/content/dam/kp/mykp/documents/reports/community-health/colorado-chna-2022.pdf>
- ¹⁰ Colorado Health Institute. Colorado's Climate and Colorado's Health. (2017). <https://www.coloradohealthinstitute.org/research/colorados-climate-and-colorados-health>
- ¹¹ Yale Program on Climate Change Communications. Yale Climate Opinion Maps. (2021). <https://climatecommunication.yale.edu/visualizations-data/ycom-us/>
- ¹² Gallup. Gallup Survey of Honesty and Ethics. (2022). <https://news.gallup.com/poll/388649/military-brass-judges-among-professions-new-image-lows.aspx>
- ¹³ Eckelman M., Sherman J. Environmental Impacts of the U.S. Health Care System and Effects on Public Health. (2016). <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0157014#sec010>
- ¹⁴ Eckleman M., et al. Health Care Pollution and Public Health Damage in the United States: An Update. (2020) <https://doi.org/10.1377/hlthaff.2020.01247>
- ¹⁵ Health Care Without Harm. Health Care's Climate Footprint: How the Health Sector Contributes to the Global Climate Crisis and Opportunities for Action. (2019). https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf
- ¹⁶ Reed T. Kaiser Permanente's Health System Reached Carbon-Neutral Status. (2020). <https://www.fiercehealthcare.com/hospitals/kaiser-permanente-s-health-system-reaches-carbon-neutral-status>
- ¹⁷ The Commonwealth Fund. CMS Approves Groundbreaking Section 1115 Demonstrations. (2022). <https://www.commonwealthfund.org/blog/2022/cms-approves-groundbreaking-section-1115-demonstrations>
- ¹⁸ Centers for Medicare & Medicaid Services. State Waivers List. https://www.medicare.gov/medicaid/section-1115-demo/demonstration-and-waiver-list/index.html?f%5B0%5D=waiver_state_facet%3A991&search_api_fulltext=&items_per_page=10&f%5B0%5D=waiver_state_facet%3A991&page=1#content#content#content#content
- ¹⁹ Salas R., Friend T., Bernstein A., Jha A. Adding a Climate Lens to Health Policy in the United States. (2020). <https://www.healthaffairs.org/doi/10.1377/hlthaff.2020.01352>
- ²⁰ Colorado Department of Health Care Policy and Financing. Hospital Community Benefit Accountability Program Requirements. <https://hcpf.colorado.gov/hospital-community-benefit-accountability-program-requirements>
- ²¹ Kaiser Permanente of Colorado. 2022 Implementation Strategy. (2022). <https://about.kaiserpermanente.org/content/dam/kp/mykp/documents/reports/community-health/colorado-is-2022.pdf>
- ²² United States Environmental Protection Agency. Our Current Understanding of the Human Health and Environmental Risks of PFAS. (2023). <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>
- ²³ Climate Central. Local Urban Heat Island Score. (2021) <https://www.climatecentral.org/graphic/urban-heat-islands?graphicSet=Local%20UHI%20Score>
- ²⁴ Beaty K. Here's who will suffer most as temperatures rise in Denver. (2019). <https://denverite.com/2019/09/09/heres-who-will-hurt-most-as-temperatures-rise-in-denver/>



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