

Managing Environmental Quality Impacts: Recommendations for Health Resources and Services Administration-funded Health Care Providers

Purpose

The purpose of this fact sheet is to: (1) expand upon concepts related to environmental justice and climate change, particularly as they affect populations served by Health Resources and Services Administration (HRSA)-funded health centers; (2) provide data on environmental quality in counties across the United States; and (3) offer recommendations for health care providers on counseling their patients to mitigate the effects of specific climate change indicators.

Health Impacts of Climate Change

As the Earth continues to warm from increasing greenhouse gas emissions, climate crises and extreme weather events are becoming more severe and frequent with significant human health impacts on, for example, mental health (e.g., anxiety, depression, and posttraumatic stress disorder)ⁱ and physical health (e.g., increased morbidity and mortality; worse heart and lung health; more severe allergies; and greater risk of infectious diseases.ⁱⁱ

Additionally, the impacts of the changing climate and rise in extreme weather events has been associated with increased rates of intimate partner violence (IPV) due to several interconnected factors that exacerbate stress and household tensions.^{iii,iv} First, extreme weather events often lead to significant economic instability, food insecurity, and resource scarcity. Economic pressures, such as job losses or damaged livelihoods due to climate-related disasters, can increase frustration and aggression, particularly within households already facing financial difficulties. Moreover, extreme weather events can disrupt social infrastructures, making it more difficult for victims of IPV to access support services. The isolation that can occur during disasters, such as being trapped indoors during extreme weather, may intensify power imbalances and dependency, making it harder for victims of IPV to escape abusive situations. Studies have found that this distress can lead to increased frequency and severity of IPV during emergencies, with women disproportionately affected,^v and IPV overall affecting nearly half of women (41 percent) and 26 percent of men in the United States.^{vi} Climate change-induced emergencies overall reinforce preexisting inequities in access to health care and social support services, underscoring the need to support health care systems and providers responding to IPV before, during, and after such emergencies.

Data Analysis of HRSA Health Centers and Environmental Quality Across the U.S.

HRSA's Bureau of Primary Health Care funds health centers in medically underserved communities, providing access to affordable, comprehensive, high-quality, primary health care services for people who are low-income, uninsured, or face other obstacles to getting health care. Approximately 1,400 health centers operate over 15,500 service delivery sites, providing care for more than 31 million people in rural and

underserved communities. These health centers are intentionally positioned to serve underserved communities, many of which are disproportionately impacted by the effects of climate change.

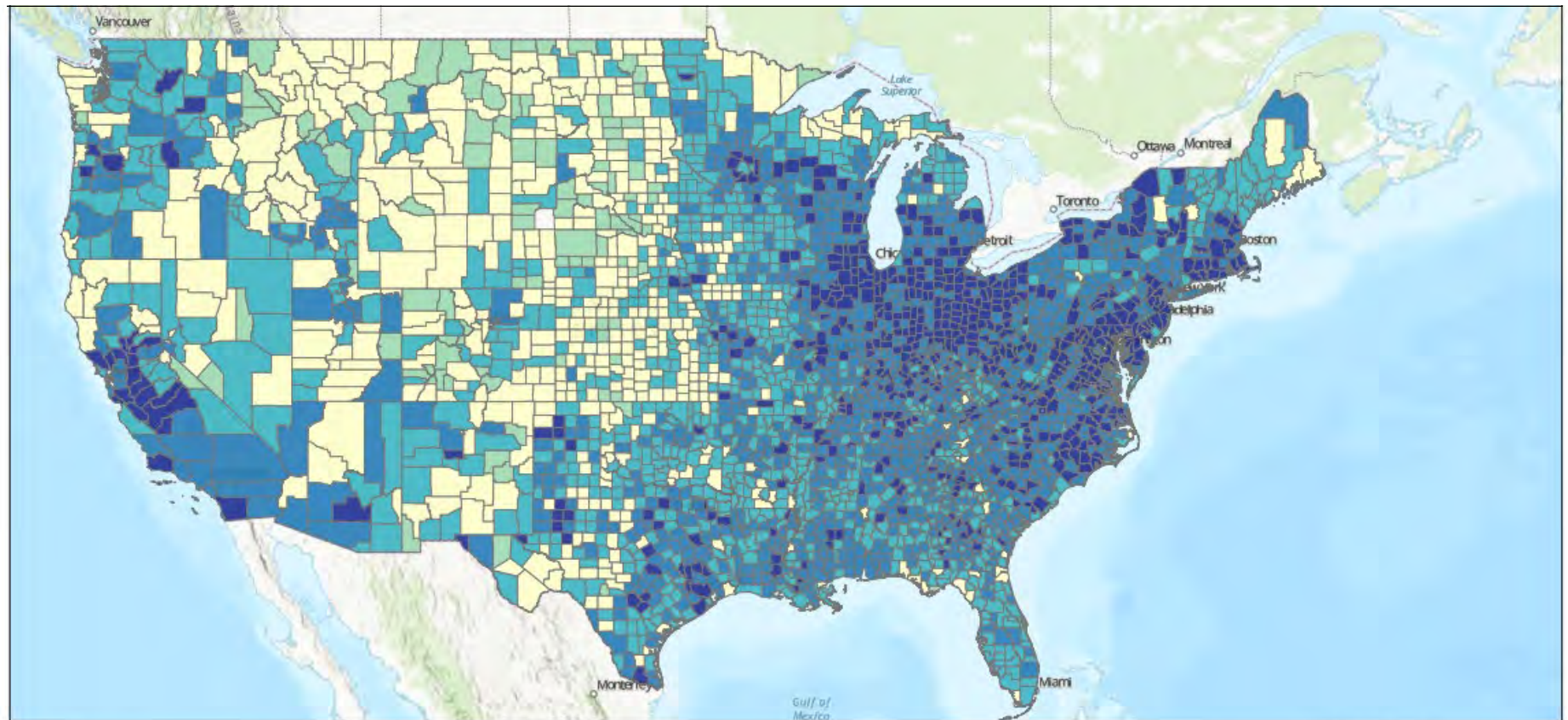
Notably, 67 percent of health center clinics are located in counties where the environmental quality is worse than the national average (the Environmental Quality Index (EQI) is above 0). Health centers with EQI above the national average (8,133 of 11,932 health centers) were identified using HRSA's [Health Equity Mapping Tool](#). Schools and hospitals were excluded from this analysis, as well as 196 health centers in the U.S. territories and Kusilvak, Alaska where EQI data was not available.

The U.S. Environmental Protection Agency developed the [EQI](#) which provides a county-by-county snapshot of overall environmental quality across the United States across five domains: air, water, land, built environment, and sociodemographic variables. It considers the impact of the air we breathe, the water we drink, the food we eat, and the buildings around us to understand the cumulative impact of environmental exposures on our health.

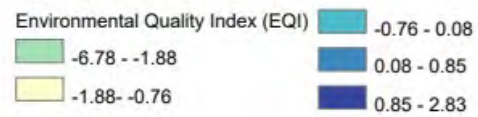
The first map below provides the EQI from 2021 in counties across the United States. **Lower values mean better overall quality, while higher values mean worse quality.** The second map shows the same EQI values from the first map with the addition of HRSA health centers.

This information can be used to assess the overall environmental quality where your health center is located to gain a greater understanding of the climate risks that your patients might be facing. Additionally, HRSA's Health Equity Mapping Tool provides more community profile indices with environmental and social determinants of health variables. This mapping tool can also be used to layer the environmental quality in counties where specific health centers are located.

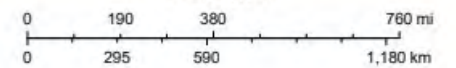
Environmental Quality Indicators Map



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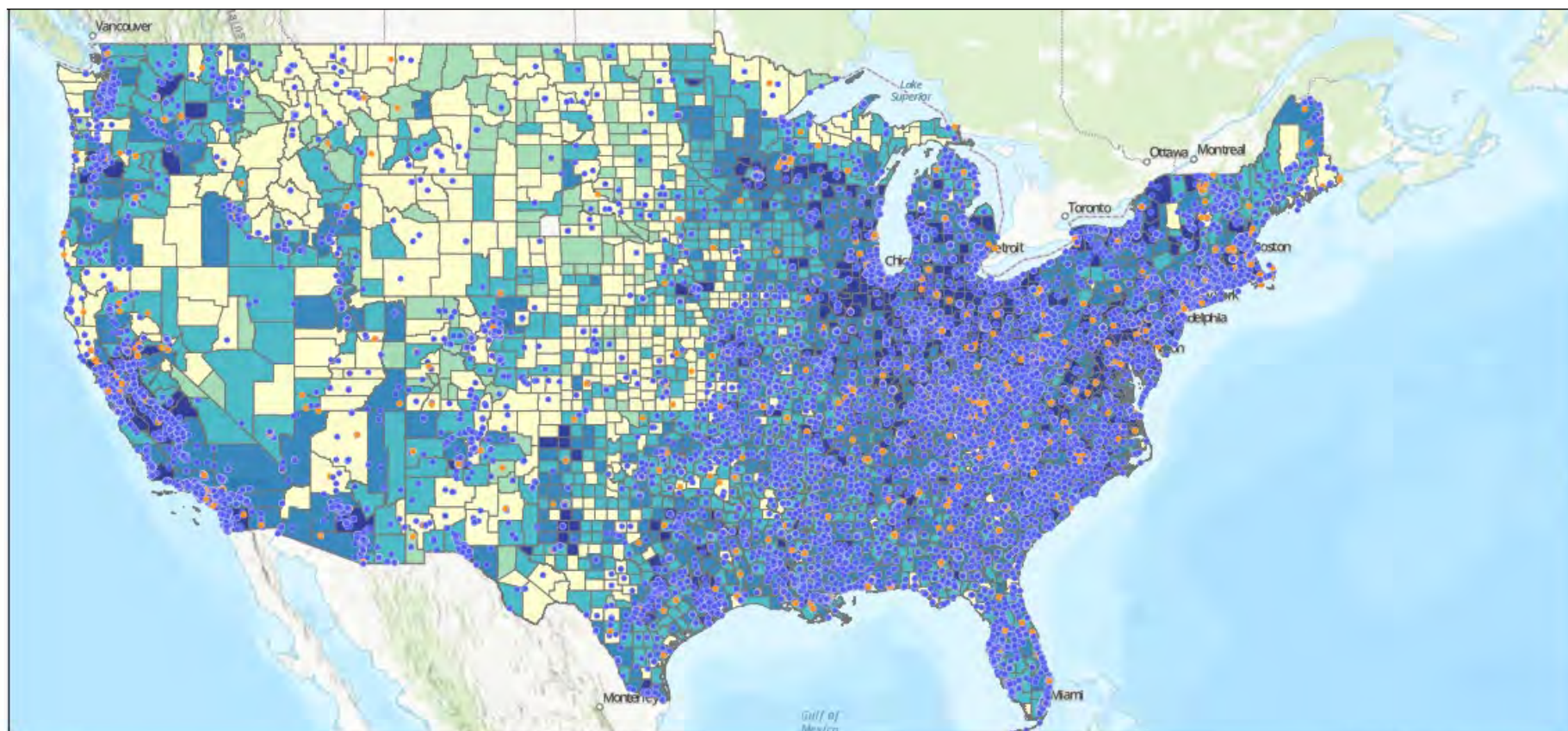


Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, USGS

Environmental Quality Indicators + HRSA Health Centers Map

A few descriptors of note regarding the map below:

- HRSA's Region 2 (New York)^{vii} has the highest percentage of health centers located in counties where the EQI is worse than the national average (nearly 97 percent). Region 5 (Chicago) is close behind with 90 percent of their health centers in counties with an EQI above 0.
- Of all the regions, Region 5 (Chicago) has the greatest number of health centers located in counties with the worst EQI (between 0.85-2.83).



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Health Center Service Delivery Sites

- Service Delivery Site
- Administrative/Service Delivery Site

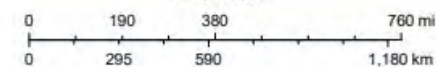
Environmental Quality Index (EQI)

- 6.78 - -1.88
- 1.88 - -0.76

-0.76 - 0.08

- 0.08 - 0.85
- 0.85 - 2.83

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Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, USGS

Health Care Providers’ Role in Addressing Environmental Health Issues

According to the [American Academy of Family Physicians](#), physicians are uniquely positioned to educate and counsel their patients on climate change risks and how they may impact their health. Climate change exacerbates existing health disparities by increasing the prevalence of certain diseases and conditions. Health care providers at HRSA-funded health centers who are aware of these disparities can tailor their approach to patient care, providing targeted interventions and resources to those who need them most, to promote health equity and meaningful access to health care.

Examples of climate change indicators and their impact on health are outlined below, along with specific recommendations for health care providers on counseling their patients to help mitigate these effects.

Recommendations for Physicians on Counseling Patients

Climate Change Indicator	Health Impact	Potential Disproportionate Impact	Recommendations for Health Care Providers
Poor air quality	Air pollution is responsible for more than 6.5 million deaths each year globally. ^{viii} Poor air quality can result from releasing harmful pollutants into the air (e.g., factory emissions, vehicle emissions, hazardous waste sites).	Low-income and minority populations are more likely to live near areas with greater air pollution emissions and therefore experience greater exposure to air pollution. Additionally, almost 90% of people who live in urban areas worldwide are affected by air pollution.	<ul style="list-style-type: none"> • Teach your patients with respiratory conditions how to monitor the Air Quality Index and when to avoid being outside. • Encourage the use of self-monitoring devices and N95 protective masks to reduce exposure to harmful air pollutants. • AIR mnemonic for patients with pulmonary disease:ⁱⁱ <ul style="list-style-type: none"> ○ Ask patients what they know about the effects of air pollution on their lung health. ○ Inform patients about symptoms that may be related to air pollution (e.g., phlegm, shortness of breath, chest tightness).

Climate Change Indicator	Health Impact	Potential Disproportionate Impact	Recommendations for Health Care Providers
			<ul style="list-style-type: none"> ○ React: counsel patients to monitor air quality, carry a rescue inhaler on high-risk days, limit time outdoors, and avoid intense or prolonged exertion outdoors.
Poor water quality ^{ix}	An aging infrastructure and increased occurrence of extreme weather events can lead to pollutants and hazardous materials contaminating water supplies.	Similar to air quality, low-income communities and those with a higher percentage of Hispanic or Black individuals face significantly higher exposure to poor water quality.	<ul style="list-style-type: none"> ● Counsel patients on how to monitor their local water quality and any changes in water quality. ● Provide patients with resources about water quality, how to make their water safe, and how to store an emergency water supply.^x
Extreme heat	Rising temperatures and an increase in the number of “extreme heat” days that impact communities across the United States have led to dramatic increases in heat-related deaths and illnesses, such as heat exhaustion, stroke, and cardiovascular disease.	<p>People over 65 are several times more likely to die from heat-related cardiovascular disease.</p> <p>Other populations disproportionately impacted by extreme heat include infants and children, outdoor workers, pregnant women, and individuals with low income.^{xi}</p>	<ul style="list-style-type: none"> ● Educate your patients on the risks associated with high heat and ways to stay safe during extreme temperature days.^{xii} ● Counsel patients about prevention, including moving to public cooling centers during heat waves and, especially for outdoor workers, avoiding peak heat, taking breaks, and hydrating often. ● Recognize early symptoms of heat-related injury, such as heavy sweating, headache, dizziness, and fainting, and ensure appropriate action by moving the person to a cooler place,

Climate Change Indicator	Health Impact	Potential Disproportionate Impact	Recommendations for Health Care Providers
			<p>lowering their body temperature, or getting immediate medical help.</p>
Prolonged pollen season	<p>Warmer-than-average spring temperatures cause some plants to produce pollen earlier, and later winters extend the growing season. Longer pollen seasons means greater exposure to environmental allergens that can cause hay fever, trigger asthma attacks, and create longer allergy seasons.</p>	<p>Allergies account for more than 13 million visits to health care providers every year. Those with limited access to health care resources are more likely to experience exacerbated effects of a longer allergy season.^{xiii}</p> <p>Children and elderly adults are particularly vulnerable to pollen and other allergens.</p>	<ul style="list-style-type: none"> • Counsel patients on how to monitor pollen counts and how these allergens may interact with and exacerbate other health concerns for the patient.
Increasing frequency and severity of extreme weather events (such as droughts, hurricanes, floods, wildfires, etc.)	<p>Extreme weather events are becoming more frequent and intense due to climate change. These can cause a myriad of health concerns through potential displacement, reduced air and water quality, and limited access to essential resources such as health care, shelter, food, and water.</p> <p>Additionally, the increase in climate disasters has been associated with increased rates of IPV, which can result in increased depression and posttraumatic stress disorder.^{xiv}</p>	<p>Racial and ethnic minority communities and low-income populations are more likely to live in places that are at greater risk for extreme weather events and have limited resources to protect themselves from the effects.^{xv}</p> <p>Older adults and individuals with disabilities are also more likely to be isolated and face challenges evacuating an area or finding safety following an extreme weather event.^{vi}</p>	<ul style="list-style-type: none"> • Help patients create an emergency kit containing medications, information about chronic diseases, protective clothing, cell phone, and copies of important documents and emergency contacts. • Ensure concise, standardized, easy-to-read, and accurate summary of key points of a patient’s history, current medications, and test results to promote safe and effective care if a patient needs to be transferred to another hospital during a disaster. • Train your workforce to be adaptable to climate crises and make practitioners aware of how

Climate Change Indicator	Health Impact	Potential Disproportionate Impact	Recommendations for Health Care Providers
			<p>climate change may influence their ability to deliver care, from disaster-related mental health impacts to extreme heat exposure.</p> <ul style="list-style-type: none"> • Train your workforce to be aware of and screen for the increased risk of IPV during emergencies. Include safety planning and providing IPV-related health care and supportive services as part of your preparedness and response activities.^{xvi}
<p>Expanded range of disease-carrying hosts, such as ticks, mosquitos, and fleas</p>	<p>Warming temperatures across the globe are increasing the range of disease-carrying hosts to places where they previously could not survive, as well as increasing the length of their survival season. Greater prevalence of these hosts means an increase in vector-borne diseases, such as Lyme disease, West Nile virus, dengue fever, and malaria.</p>	<p>A person’s occupation influences their amount of exposure to disease-carrying hosts. For example, people who work outdoors, such as farmers and landscapers, are at a greater risk of vector-borne diseases.^{xvii}</p>	<ul style="list-style-type: none"> • Counsel patients on how to monitor the rates of vector-borne diseases in their community. • Counsel patients about the signs and symptoms to watch for regarding vector-borne diseases and ways to reduce exposure (such as the use of mosquito nets or bug spray). • Be aware of factors that may put patients at increased risk, such as those who work outside or patients with comorbidities.

ⁱ Charlson F, Ali S, Benmarhnia T, et al. Climate Change and Mental Health: A Scoping Review. *Int J Environ Res Public Health*. 2021;18(9):4486. Published 2021 Apr 23. doi:10.3390/ijerph18094486. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8122895/pdf/ijerph-18-04486.pdf>.

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- ⁱⁱ American Academy of Family Physicians. (2019, November 15). *The Changing Climate: Managing Health Impacts*. <https://www.aafp.org/pubs/afp/issues/2019/1115/p618.html#:~:text=The%20American%20Academy%20of%20Family,reduce%20pollution%20of%20our%20and%2C>.
- ⁱⁱⁱ Anastario M, Shehab N, Lawry L. *Increased gender-based violence among women internally displaced in Mississippi 2 years post-Hurricane Katrina*. *Disaster Med Public Health Prep*. 2009;3(1):18-26. doi:10.1097/DMP.0b013e3181979c32
- ^{iv} Piquero AR, Jennings WG, Jemison E, Kaukinen C, Knaul FM. *Domestic violence during the COVID-19 pandemic - Evidence from a systematic review and meta-analysis*. *Journal of Criminal Justice*. 2021;74:101806. <https://doi.org/10.1016/j.jcrimjus.2021.101806>.
- ^v Castañeda Camey, I., Sabater, L., Owren, C. and Boyer, A.E. (2020). *Gender-based violence and environment linkages: The violence of inequality*. Wen, J. (ed.). Gland, Switzerland: IUCN. 272pp.
- ^{vi} The Centers for Disease Control and Prevention. (2024, February 8). *Intimate Partner Violence Prevention*. <https://www.cdc.gov/intimate-partner-violence/about/index.html>.
- ^{vii} See HRSA's Regional Offices and Headquarters [map](#) for more information about which states fall in each HRSA region.
- ^{viii} National Institute of Environmental Health Sciences. (2024, January 26). *Air Pollution and Your Health*. <https://www.niehs.nih.gov/health/topics/agents/air-pollution>.
- ^{ix} McDonald YJ, Jones NE. Drinking Water Violations and Environmental Justice in the United States, 2011-2015. *Am J Public Health*. 2018;108(10):1401-1407. doi:10.2105/AJPH.2018.304621
- ^x Centers for Disease Control and Prevention. (2020, June 19). *Preparing a Home Water Supply*. https://www.cdc.gov/healthywater/emergency/preparing-a-home-water-supply.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fhealthywater%2Femergency%2FEmergency-Water-Supply.html
- ^{xi} Centers for Disease Control and Prevention. (2022, August 25). *Protecting Disproportionately Affected Populations from Extreme Heat*. <https://www.cdc.gov/disasters/extremeheat/specificgroups.html>.
- ^{xii} National Integrated Heat Health Information System. [Heat.gov](#).
- ^{xiii} U.S. Department of Health and Human Services. (2024, March 5). *Pollen*. <https://www.hhs.gov/climate-change-health-equity-environmental-justice/climate-change-health-equity/climate-health-outlook/pollen/index.html#:~:text=Pollen%20Affects%20Health%20in%20Many%20Ways&text=Pollen%20exposure%20can%20trigger%20various,or%20other%20respiratory%20illness%20exacerbation..>
- ^{xiv} Cannon, C., Kovach, K. (2023, December 14). *Intimate Partner Violence and Disasters: A Review of the Literature*. *Traumatology*. <https://doi.org/10.1037/trm0000491>.
- ^{xv} Berberian AG, Gonzalez DJX, Cushing LJ. *Racial Disparities in Climate Change-Related Health Effects in the United States*. *Curr Environ Health Rep*. 2022;9(3):451-464. doi:10.1007/s40572-022-00360-w
- ^{xvi} Futures Without Violence. *CUES: An Evidence-Based Intervention to Address Domestic and Sexual Violence in Health Settings*. <https://www.futureswithoutviolence.org/wp-content/uploads/CUES-graphic-Final.pdf>.
- ^{xvii} U.S. Environmental Protection Agency. (2023, December 27). *Climate Change and the Health of Workers*. <https://www.epa.gov/climateimpacts/climate-change-and-health-workers>.