Climate Change

Climate is changing and increasing public health risks. Climate changes threaten access to clean air, clean water, and healthy food. Oregon is experiencing more wildfires, heat waves, floods, and droughts that disrupt communities and economies. Changes in climate can increase risks of chronic disease, infectious disease, chronic stress, and trauma. People living with fewer financial resources, communities of color, people who work outdoors, indigenous communities, children, pregnant women and older adults are more likely to be affected by climate-related health risks. Climate change has the potential to amplify existing health disparities in Oregon.

Many climate strategies - like investments in active transportation and sustainable community design - can result in considerable public health benefits, especially when those improvements occur in historically underinvested communities.

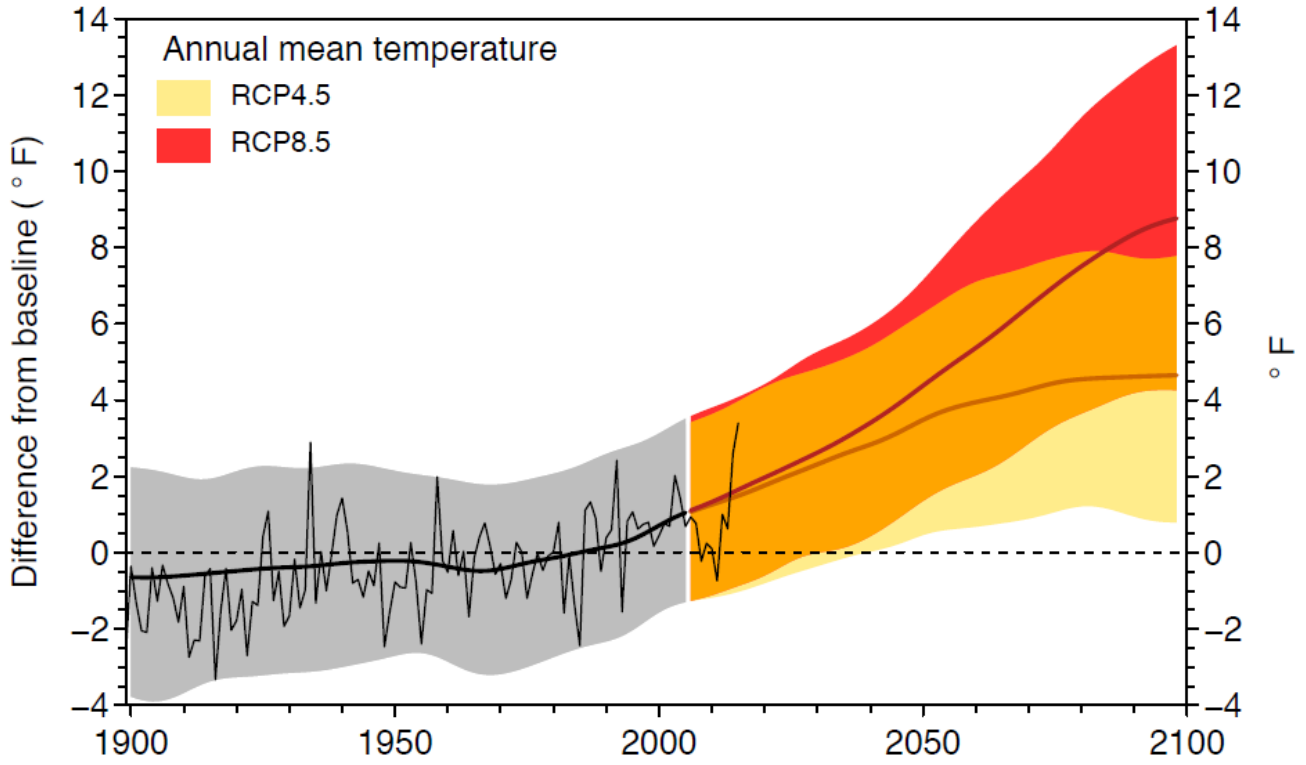
How is our climate changing?

Climate change is already affecting human health in Oregon and is projected to increase health risks in the years to come. The Northwest will continue to warm during all seasons, although the rate of warming will depend on current and future global greenhouse gas emissions[1]. By 2050, average temperatures in Oregon are expected to rise by 3 to 7 degrees and snowpack is expected to be less than half of what it was last century[2]. These conditions lead to projections of extended drought throughout the century and an increase in extreme events, like wildfires, flooding

[1] Rupp DE, Abatzoglou JT, Mote PW. 2016. Projections of 21st century climate of the Columbia River Basin. Climate Dynamics 1–17. DOI: 10.1007/s00382-016-3418-7.

[2] Dalton, M.M., K.D. Dello, L. Hawkins, P.W. Mote, and D.E. Rupp (2017) The Third Oregon Climate Assessment Report, Oregon Climate Change Research Institute, College of Earth, Ocean and Atmospheric Sciences, Oregon State University, Corvallis, OR.

and heat waves[3]. Disruptions in certain climate-dependent industries (such as agriculture) could lead to income loss, food insecurity, and mental health effects. Poorer air quality, due to wildfire smoke and other particulate matter, is expected to increase respiratory illnesses[4]. These and other impacts are detailed in the Oregon Health Authority's 2014 Oregon Climate and Health Profile Report[5].



Projected changes in Oregon's mean annual temperature through the end of the century (RCP4.5 is a low emissions scenario and RCP8.5 a high emissions scenario, with the orange shading indicating where scenarios overlap). The grey shading is temperature observation data for Oregon. Courtesy of the Oregon Climate Assessment Report produced by the Oregon Climate Change Research Institute.

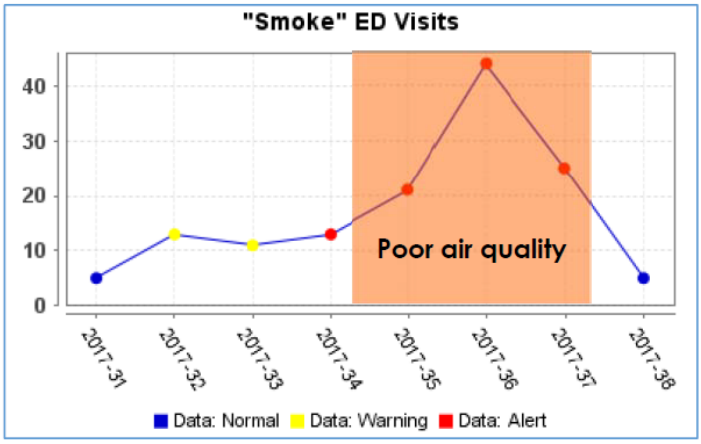
[3] Brewer MC, Mass CF. 2016b. Projected Changes in Western U.S. Large-Scale Summer Synoptic Circulations and Variability in CMIP5 Models. Journal of Climate 29(16): 5965–5978. DOI: 10.1175/JCLI-D-15-0598.1

[4] Liu JC, Mickley LJ, Sulprizio MP, Dominici F, Yue X, Ebisu K, Anderson GB, Khan RFA, Bravo MA, Bell ML. 2016. Particulate air pollution from wildfires in the Western US under climate change. Climatic Change 138(3–4): 655–666. DOI: 10.1007/s10584-016-1762-6

[5] Haggerty B, York E, Early-Alberts J, Cude C. Oregon Climate and Health Profile Report. Oregon Health Authority. September 2014: Portland, OR.

What health effects have we seen in Oregon?

The Oregon Health Authority tracks emergency department visits in the state, which tend to increase during extreme weather events. For example, during the 2017 wildfire season, asthma-related emergency department and urgent care visits peaked on September 5, 2017 with a 20 percent increase over the number of statewide visits normally expected for that day[6]. During summer heat waves, the Oregon Health Authority records spikes in heat-related emergency room visits[7]. Changes in our climate are also a factor in infectious diseases. For example, the number of cases of tick-borne disease in Oregon is steadily rising and is associated with warmer temperatures and changing tick habitat[8]. Qualitative data collection has indicated that some Oregon communities affected by drought conditions are experiencing increased stress and anxiety related to changes in the landscape and specific land-based livelihoods and cultures[9][10].



Interpretation: This query looks at "smoke" as mentioned by patients coming to ED and urgent care centers and at the ICD-10 code for respiratory conditions due to smoke inhalation from 7/30-9/23 (weeks 31-38). Weekly visits peaked at 44 visits on week 36 (9/3-9/9), an 86% increase over the number of visits expected based upon historic trends. Patients reported various outcomes related to smoke such as cough, sinus problems, vomiting and chest pain.

[6] Summer 2017 Oregon ESSENCE Hazard Snapshot: Wildfires. Published October 4, 2017. Oregon Health Authority.
[7] Summer 2018 Oregon ESSENCE Hazard Report. Published August 28,2018. Oregon Health Authority.
[8] Communicable Disease Summary: Peaks and Valleys of Reportable Diseases, Oregon 2016. Published March 2018, Volume 67, Number 2. Oregon Health Authority.
[9] Crook County Drought Community Assessment for Public Health Emergency Response (CASPER). Exit Interview May 5, 2017. CDC National Center for Environmental Health.
[10] Voices of the Confederated Tribes of Warm Springs. Climate and Health Program Story Project. June 2017.

Which Communities are most impacted?

Oregon-specific vulnerability assessments point to social determinants as the primary driver of climate vulnerability and these findings are in alignment with national assessments, such as the US Climate and Health Assessment (ref). The 2014 Oregon Climate and Health Profile Report (ref) concluded that certain communities that already bear a disproportionate burden of disease, including communities of color and low-income households, are most at risk. These groups are more susceptible to climate-related health effects and have fewer resources to plan for, and recover from, climate impacts.

In Oregon, the top contributor of greenhouse gases (GHG) that cause climate change are transportation-related emissions, which also produce "co-pollutants" (other air pollutants that are harmful to human health). Traffic pollution includes several toxics and increases the risk of heart disease, stroke, respiratory disease and cancer - four of the top five leading causes of death in Oregon. While the principal causes of these diseases are risk behaviors, such as tobacco use, poor diet, and lack of physical activity, air pollution is a significant contributor, although Oregon-specific data are lacking. National studies have demonstrated that low income communities and communities of color are more likely to be exposed to air pollution because of where they live, work, and go to school.

Type of Vulnerability	Populations Identified in the Oregon Climate and Health Profile Report
Demographic	• People with existing illness • People with disabilities • Older adults • Mothers, infants and children • Low-income communities • American Indians • Immigrants, refugees and linguistically isolated • Communities of color
Geographic	• Urban heat islands • Wildland-urban interface • Agricultural communities • Coastal communities • Households reliant on private water systems • Housing on steep slopes

Type of Vulnerability	Populations Identified in the Oregon Climate and Health Profile Report
Occupational	• Wildland firefighters • Outdoor workers • Growers, ranchers and farmworkers • First responders and health care workers • People who work in agricultural communities

What are the public health benefits of prioritizing climate change?

Even though climate projections point toward more natural disasters and hazards in Oregon, many of the health effects of climate change can be avoided through enacting proactive changes in our policies, systems, and environments. Investing in our environmental health infrastructure, improving early warning systems, and building resilience within our most vulnerable communities can help us prepare for projected health risks. Currently, 98% of local health departments in Oregon report having only partial to minimal ability to identify and prevent environmental health hazards[11]. Environmental health programs are not universally implemented across the state and more than a quarter of local health departments do not have the basic capacity to conduct mandated inspections[11].

Many strategies to reduce climate pollution are the same strategies that we must implement to reduce health inequities. When communities are more connected they have lower "carbon footprints" and this connectedness is often facilitated by good community design. Transportation and land use planning can increase or decrease a community's quality of life, economic prosperity and safety by improving access to clean air, healthy food, stable jobs, affordable housing, active transportation options, and more. By working closely with community partners, public health officials can inform decisions that shape our future built environments, ensuring more equitable, livable, and resilient communities.

[11] State of Oregon: Public Health Modernization Assessment Report. June 2016.

Chandra, Anita, Joie D. Acosta, Stefanie Howard, Lori Uscher-Pines, Malcolm V. Williams, Douglas Yeung, Jeffrey Garnett, and Lisa S. Meredith, ***Building Blocks for a Resilient Community****. Santa Monica, CA: RAND Corporation, 2014.*

Additional Resources:

Oregon Climate and Health Profile Report. Oregon Health Authority. 2014.

Oregon Climate and Health Resilience Plan. Oregon Health Authority. 2017.

US Climate and Health Assessment. US Global Research Group. 2016.

Climate Change, Health, and Equity. American Public Health Association, Public Health Institute, Center for Climate Change and Health. 2018.