

Climate and Health

Type of EPHT Indicator	Exposure
Measures	<ol style="list-style-type: none"> 1. Average Temperature, Maximum High Temperature, and Minimum Low Temperature 2. Total Precipitation 3. High Heat Days
Derivation of Measures	This measure will be developed from climate data compiled by the Iowa Environmental Mesonet from multiple weather and climate monitoring networks.
Units	<ol style="list-style-type: none"> 1. Temperature in Degrees Fahrenheit 2. Precipitation Total Inches 3. High Heat Number of Days
Geographic Scope	State
Geographic Scale	State
Time Period	Temperature and precipitation data from the year 2000 through the most recent year of data available.
Time Scale	Calendar year
Rationale	<p>Temperature, Precipitation and Public Health</p> <p>The Intergovernmental Panel on Climate Change (IPCC) projects with “virtual certainty” suggest that climate change will cause more frequent, more intense, and longer heat waves (1). Any individual, regardless of age, sex or health status can develop heat stress if engaged in intense physical activity and/or exposed to environmental heat (and humidity). Physiologic mechanisms maintain the core body temperature (i.e., the operating temperature of vital organs in the head or trunk) in a narrow optimum range around 37 °C (98.6 °F). When core body temperature rises, the physiologic response is to sweat and circulate blood closer to the skin's surface to increase cooling. If heat exposure exceeds the physiologic capacity to cool, and core body temperature rises, then a range of heat-related symptoms and conditions can develop. High ambient temperatures can cause health effects such as heat stress or heat-related illness ranging from mild heat edema and rash, heat syncope, heat cramps, to the most common type, heat exhaustion. Heat-related cramps, rash, and edema are relatively minor readily treatable conditions; however, they should be used as important warning signs to immediately remove the affected individual from the exposure situation.</p> <p>According to the latest National Climate Assessment (Luber et al., 2014), the frequency of heavy precipitation events has already increased for the nation as a whole, and is projected to increase in all U.S. regions. Increases in both extreme precipitation and total precipitation have contributed to increases in severe flooding events in certain regions. Floods are the second deadliest of all weather-related hazards in the United States, accounting for approximately 98 deaths per year, most due to drowning (Ashley et al., 2008). Flooding associated with tropical storms result in the highest number of deaths.</p> <p>In addition to the immediate health hazards associated with extreme precipitation events when flooding occurs, other hazards can often appear</p>

	<p>once a storm has passed. Elevated waterborne disease outbreaks have been reported in the weeks following heavy rainfall, although other variables may affect these associations. Water intrusion into buildings can result in mold contamination that manifests later, leading to indoor air quality problems. Buildings damaged during hurricanes are especially susceptible to water intrusion. Populations living in damp indoor environments experience increased prevalence of asthma and other upper respiratory tract symptoms, such as coughing and wheezing, as well as lower respiratory tract infections such as pneumonia, respiratory syncytial virus (RSV), and RSV pneumonia (Institute of Medicine, 2004).</p>
Use of Measure	<p>This measure can allow for a better understanding of spatial and temporal trends of precipitation totals and extreme heat.</p>
Limitations of The Measure	<p>These data are compiled from multiple sources and networks of weather monitoring stations in Iowa and are a subset of the data collected by the Iowa Environmental Mesonet.</p> <p>These data are aggregated to the county level based on the location of contributing weather monitoring stations. They do not account for weather conditions differences within county boundaries.</p>
Data Sources	<p>Iowa Environmental Mesonet</p>
Limitations of Data Sources	<p>The modeled meteorological data may not accurately reflect the true temperature and heat index values in each county.</p>
Related Indicators	<p>Heat related illness indicators.</p>