

California Heat Assessment Tool (CHAT)

The California Heat Assessment Tool (CHAT) was developed as part of the California's Fourth Climate Assessment. This online tool addresses a data gap identified by local health practitioners who called for local, contextualized data to effectively prepare for the health impacts of more frequent and severe extreme heat events in California.

This interactive online tool allows users to explore the projected changes in local heat health events alongside data on frontline populations in each census tract across California.

- To help guide long-term planning strategies users can explore the projected changes in heat health events (those with adverse health impacts), including frequency, duration, temperature and humidity, in each census tract.
- Users will also see which tracts stand out with high numbers of individuals with preexisting health conditions or limited resources as well as those with unfavorable environmental characteristics.
- Public health professionals can use this information to inform targeted service and public education delivery, promote climate adaptation efforts and work with land use planners to inform cooling strategies.

Heat waves on the rise: Californians are experiencing more frequent and severe extreme heat events.

- Current climate change projections show that a typical California summer in 2100 may be 4-5° F warmer than today.
- In addition to hotter temperatures, heat waves are lasting longer, occurring later into the summer season and occurring in areas less accustomed to heat waves.
- The duration of average extreme heat events could increase by up to two weeks in some parts of the Central Valley by mid-century.
- In the North Sierra region, mid-summer extreme heat events could occur four to ten times more often by mid-century.
- Increasingly warm nights and longer heat events could limit individuals' abilities to recover and could particularly affect the homeless, outdoor workers and those without air conditioning.

Heat has major health impacts.

- The elderly or very young, outdoor workers and those with preexisting health conditions or limited resources are most sensitive to the impacts of extreme heat and may be disproportionately affected.
- This research found that some of these sensitive, or frontline, populations may experience adverse health impacts at temperatures 6-8° F lower than the general population.
- Targeted planning is limited by a lack of local data about frontline populations and their sensitivity to extreme heat.
- Current thresholds for heat alerts are based on temperatures that exceed certain statistical thresholds, rather than temperatures that cause public health impacts. These health-neutral thresholds may underestimate the health risks for the most sensitive populations.

Redefining Heat Health Events: Four Twenty Seven used historical medical and weather data to identify health-based heat thresholds, which provide the foundation for the climate projections in CHAT.

- Based on the heat wave signatures (temperature, humidity and duration) that corresponded to high rates of emergency room visits, two sets of heat thresholds were developed: one for the general population and another for frontline populations who are disproportionately impacted by extreme heat (infants, elderly, non-majority racial groups).
- Then, Four Twenty Seven used twenty-four climate models that project daily minimum and maximum relative humidity and daily minimum and maximum temperature. These models project how the frequency of heat health events in each census tract may change through the end of the century.