

Health Impacts of Climate Change

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*Jonathan E. Fielding, MD, MPH
Director and Health Officer*

*Los Angeles County Department of Public Health
Distinguished Professor of Health Services and Pediatrics
Schools of Public Health and Medicine, UCLA*



Los Angeles County Residents

- 10 million residents
- 24% under 18 years old
- 12% over 65 years old
- 36% foreign born
- Over 140 cultures and 200 languages
- 57% speak a language other than English at home
- ≈1.7 million students in grade schools and hundreds of thousands of community college and university students



Vulnerable Populations

- **Elderly:** Los Angeles County's senior population (> 65 years old) is expected to increase by 83% by the year 2020
- **Children**
- **Immunocompromised individuals**
- **Individuals with chronic lung and/or heart conditions**
- **Individuals with limited mobility**
- **Individuals who work outside**
- **Homeless:** In Los Angeles County \approx 73,000 homeless
- **Economically disadvantaged:** Over 16% of County residents are living under 100% Federal Poverty Level

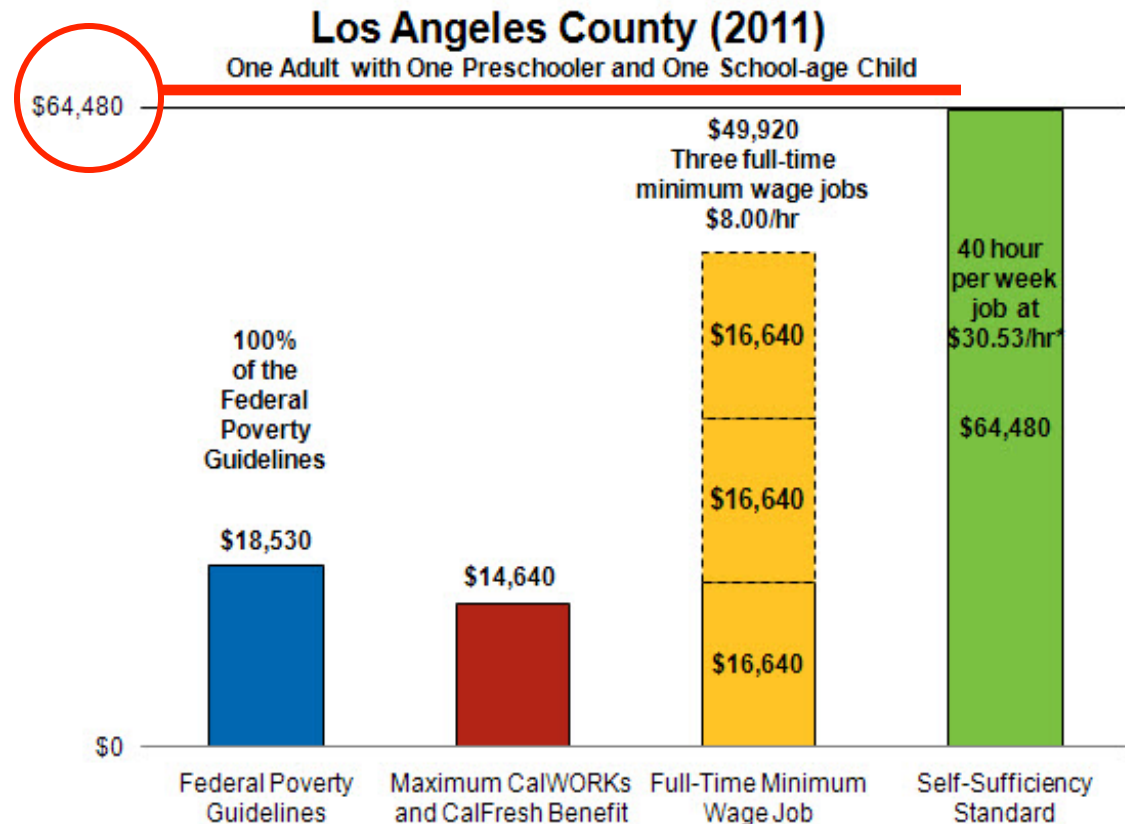


Family Economic Self-Sufficiency Standard: LA County, 2011

How much income does a family need to meet basic needs without public or private aid in LA County?

This self-sufficiency standard is based on the costs families face often, including:

- Housing and food
- Child care
- Out-of-pocket medical expenses
- Transportation



* Note: The Self-Sufficiency Standard includes the net effect of the addition of the child care and child tax credits and the subtraction of taxes.



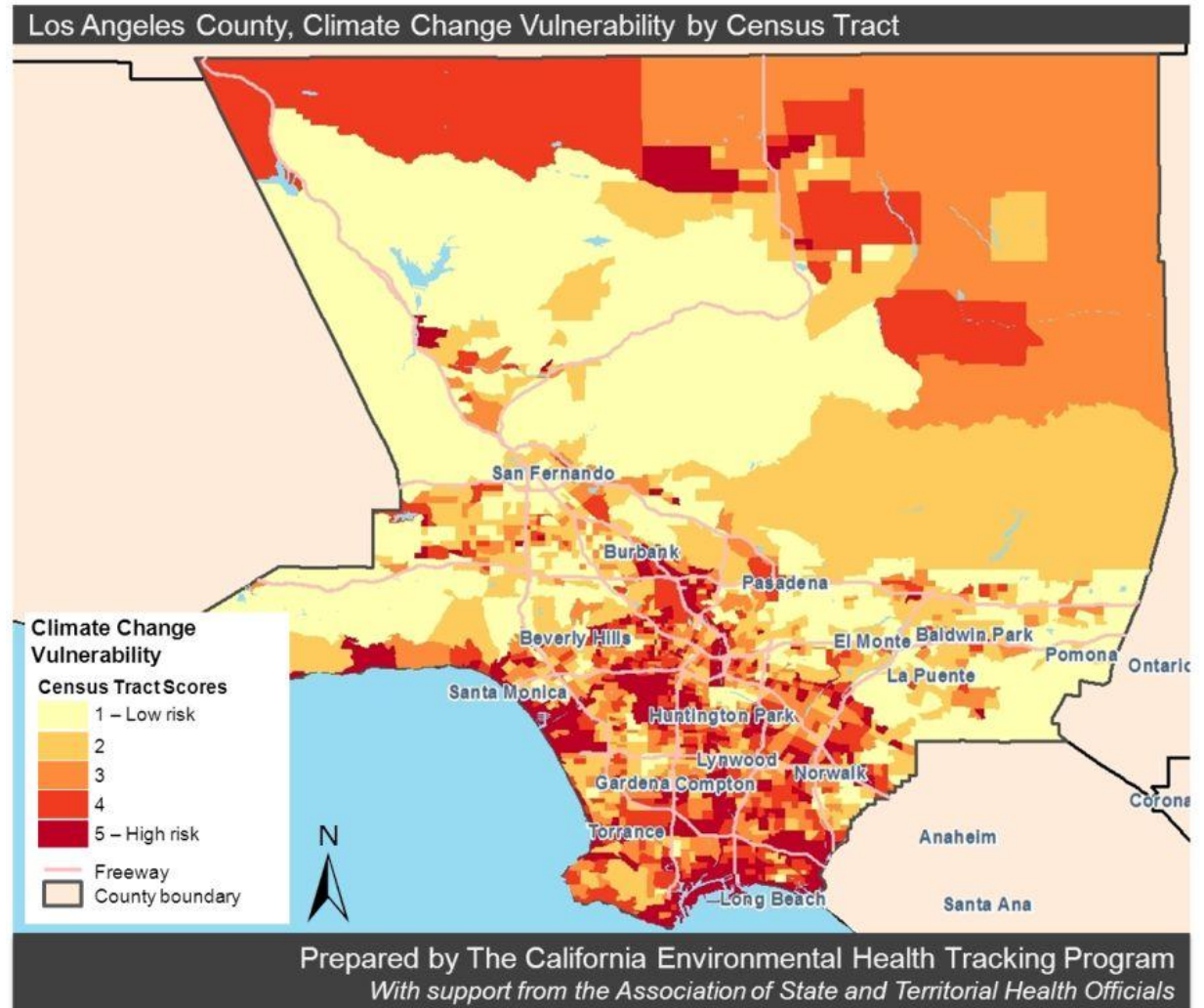
Vulnerable Areas in Los Angeles County

Indicators:

- Sea level rise
- Access to transportation
- Wildfire and flood risks
- Social vulnerabilities (e.g. elderly living alone)
- Land cover characteristics (e.g. tree canopy)
- Access to air conditioning

Study Found:

- Racial and economic disparities in risk



Climate Change in the Los Angeles Region

In Los Angeles County we expect:

- **Temperature increases** of 4-5° F by 2050, and 4-9°F by 2100

→Heat waves: 2-5 times increase in number of days over 90°F

- **Sea level rise** of 5 - 24 inches by 2050, and 17-66 inches by 2100

- **More extreme weather events** including wind/wildfires, heavy storms, flooding, and heat waves



Sources: 1) California Natural Resources Agency. *California Climate Adaptation Strategy* 2009;
2) National Research Council. *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. Washington, DC: The National Academies Press, 2012.



Drought and Health

- Gov. Brown declared a statewide drought emergency January 17, 2014
- Public Health concerns related to drought conditions:
 - Quantity and quality of potable water
 - Agricultural production: potential for increased food prices or food shortages
 - Living conditions (e.g. air quality)
 - Disease incidence and severity: infectious, vector-borne and chronic
 - Ecosystem changes



Ecological Changes and Health

- Climate effects the distribution, quantity and type of organisms in the environment
 - Example: seasonal freezes minimize crop pests
- Changes in flora and fauna can lead to changes in pathogens and vectors for disease
 - Example: some mosquitoes carry West Nile Virus in LA County now, with climate change we could see new species of mosquitoes carrying Dengue or Yellow Fever
- Public Health concerns related to changing ecology:
 - Surveillance for new emerging disease, unexpected patterns or outbreaks
 - Prevention measures and public education



Extreme Heat and Health

- Annual occurrences of extreme heat events has increased in large urban areas
 - Rate of increase higher in sprawling urban regions like Los Angeles County
 - Cities typically have reduced vegetative cover, dark roofing and pavement, and higher thermal loads because of concentrations of vehicles, air conditioning units, and generators → “heat islands”
- Public Health concerns related to extreme heat:
 - Direct health effects ranging from heat rash to heat stroke
 - Aggravation of chronic cardiovascular and respiratory diseases
 - Vulnerable populations

CLIMATE CHANGE & EXTREME HEAT

CAUSES MORE DEATHS
each year than hurricanes, lightning, tornadoes, earthquakes, and floods
COMBINED!

WHO'S AT RISK?

Adults over 65, children under 4, people with existing medical problems such as heart disease, and people without access to air conditioning

WHAT CAN YOU DO?

STAY COOL

- Find an air-conditioned shelter
- Avoid direct sunlight
- Wear lightweight, light-colored clothing
- Take cool showers or baths
- Do not rely on a fan as your primary cooling device

STAY HYDRATED

- Drink more water than usual
- Don't wait until you're thirsty to drink more fluids
- Avoid alcohol or liquids containing high amounts of sugar
- Remind others to drink enough water

STAY INFORMED

- Check local news for extreme heat alerts and safety tips
- Learn the symptoms of heat illness

LEARN MORE!

Visit CDC's Environmental Public Health Tracking Network to learn more about climate change and extreme heat at www.cdc.gov/ephtracking

Source: Stone B, Hess J, Frumkin H. *Urban Form and Extreme Heat Events: Are Sprawling Cities More Vulnerable to Climate Change Than Compact Cities?* Environ Health Perspect 2010; 118(10):1425-28.

Infographic credit: CDC

Findings of the 2012 Climate Vulnerability and Adaptation Study for California¹

On “*extremely hot*” days:

- Mortality from various cardiovascular conditions 28% higher
- Elevated risks of hospitalization for stroke, diabetes, acute kidney failure, dehydration, and pneumonia for those 65 yrs. and older, infants under 1 and African Americans
- Pre-term delivery more likely for all pregnant women, especially for younger African American and Asian American women



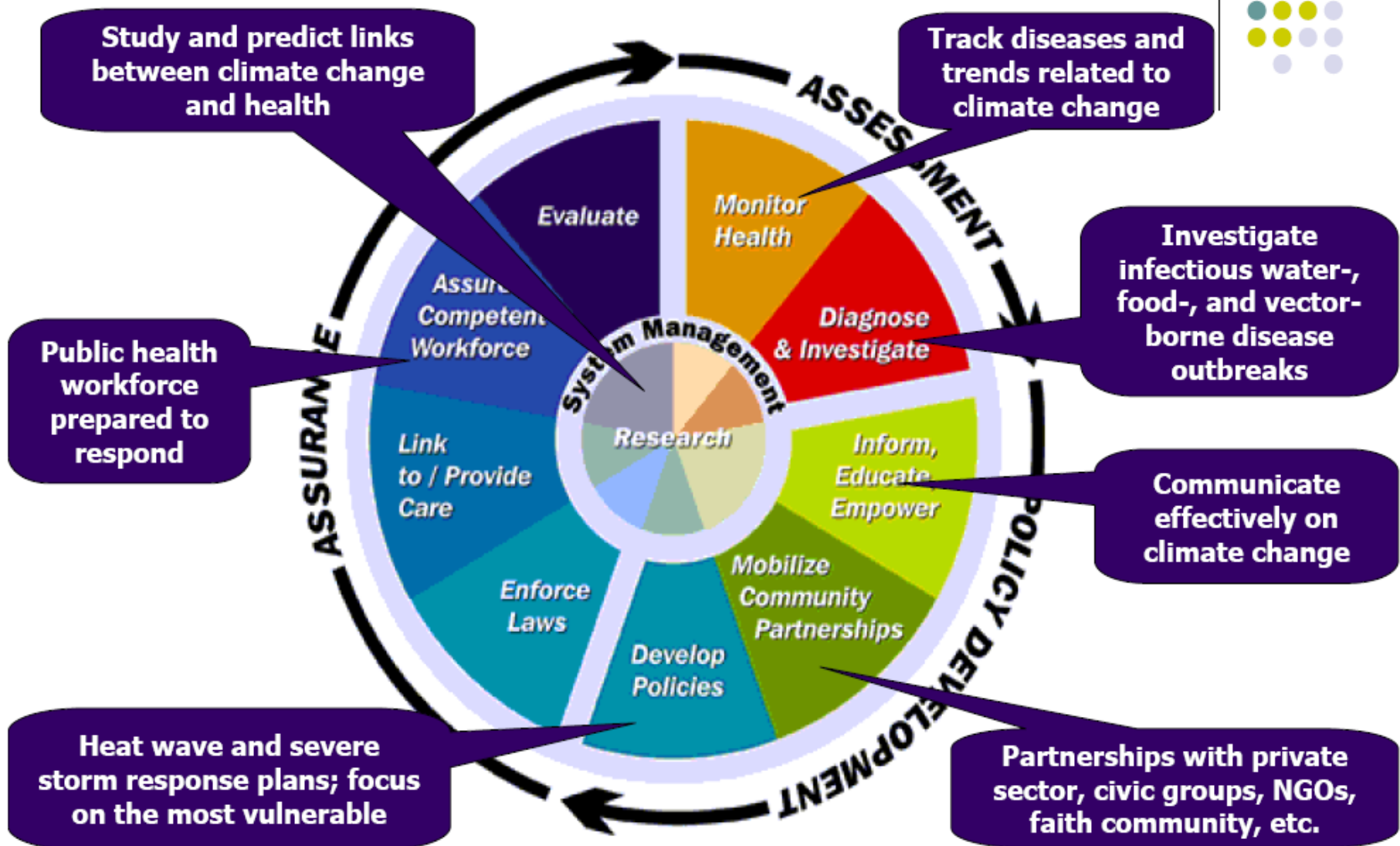
¹Climate Vulnerability and Adaptation Study for California, White Paper from the California Energy Commission's California Climate Change Center, 2012

Air Quality and Health

- Warming degrades air quality:
 - Increases levels of ground-level ozone
 - Creates longer seasons for allergen-producing weeds
 - Increases wildfires fueled by higher winds and hotter, longer summers
 - Increased levels of particulate matter (e.g. pollen, smoke, fluorocarbons)
- Public Health concerns related to air quality
 - Irritation of bronchial passages and lungs, exacerbating chronic respiratory illnesses (e.g., asthma) and increasing risks for acute respiratory infection (e.g., bronchitis and bacterial pneumonia, including dust pneumonia)



Public Health Actions: For Climate Change



What Can City Officials Do?

1. Create and enforce policy to mitigate climate change

Examples

- Reduce vehicle miles traveled by expanding bike lanes, requiring transit oriented design around transportation hubs, ensuring safe crosswalks for pedestrians
- Promote urban greening by preserving existing regional green space, considering installation of street trees, requiring more reflective surfaces on roads, buildings and rooftops



What Can City Officials Do?

2. Prepare for a range of climate change scenarios

Examples

- Coastal storms and flooding
- Extreme heat events
- Assess vulnerable populations in your jurisdiction
- Identify local resources (e.g. libraries, malls, movie theaters as potential cooling centers for those without air conditioning)



Photo credit: Pacific Institute.
Coast along Venice Beach and Marina Del Rey.
Dark blue marks flooded area projected if sea level rises by 5 feet.



Closing Comments

- Everyone is affected by climate change, yet certain groups are more vulnerable to climate related health risks
- Beyond people, climate change is affecting pathogens, vectors and particles that contribute to ill health and disease
- Action is required by government, industry, and the general public to mitigate the impacts and adapt to the “new normals” of climate change



Visit us at:
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The screenshot shows the homepage of the County of Los Angeles Department of Public Health. At the top left is the logo with the text "COUNTY OF LOS ANGELES Public Health". To the right is the "Department of Public Health" name and a navigation menu with links: Home, About Us, Health News, Health Professionals, Schools, Statistics & Data, Services, Report Complaints, and Newsroom. A search bar with a "Go" button is on the left, and an "A-Z Index" with letters A through Z and "ALL" is in the center. A "Font Size" selector is on the right. Below the header is a large banner for "It's Still Flu Season Get Vaccinated!" featuring a group of diverse people. To the left of the banner is a "Media Advisory" box stating there are no events scheduled. To the right is a "Latest Infographics" section with a link to "February Heart Month". Below the banner are four small boxes: "Healthy Pets, Healthy Families Report", "6 months or older? Get a flu vaccination", "Smaller portion sizes & healthier children's meals", and "Is your emergency supplies kit ready to go?". The main content area is a grid of service tiles: "Public Health Centers" (Locations, Immunizations, Testing, etc.), "Inspections" (Restaurant, Beach, Housing, etc.), "Diseases & Conditions" (Infectious, Chronic, Flu, Hepatitis, etc.), "Environmental Health" (Air Pollution, Carbon Monoxide, etc.), "Statistics" (Vital Records, Birth & Death Certificates, etc.), "File a Report" (Foodborne Illness, Restaurant, etc.), "Emergency Preparedness & Response" (Bioterrorism, Emergency Kits), and "Life Stages & Populations" (Infant & Child, Pregnancy, Seniors, Women). On the far left is a "Publications & Reports" sidebar with links to various reports like "Influenza Watch", "Rx for Prevention", "Strategic Plan: 2013-2017", "LA Health", "Key Indicators of Health (March 2013)", "Epi Profile of HIV & AIDS, 2009", "Annual Morbidity Report 2011", "Annual Mortality Report 2010", and "Surveillance Reports". On the far right are "Current News" with links to "Measles Information", "Meningococcal Disease Investigation", "Avian Flu A(H7N9) Info", and "TB Information", and a "Health Care Reform" section. At the bottom right is a "Contact Public Health" section with the text "Do you need information from or have a question for the Department of Public Health? If so, send an e-mail to phinfo@ph.lacounty.gov".



Glass Half Full Viewpoint

- Areas not previously able to be farmed, may now have the right climate for farming
- Warmer winters could lead to decreases in illness or death associated with exposure to cold

