Trees and Public Health: Saving Lives Through Urban Forestry

Elizabeth Rhoades, PhD
Los Angeles County Department of Public Health
Health Protection Bureau
Why Public Health?

• Health is a compelling lens with which to frame issues
• A “public health focus was the most likely to elicit emotional reactions consistent with support for climate change mitigation and adaptation”

Climate Change in Los Angeles County

- Hotter temperatures
  - Increase of about 3° by year 2050
  - More extreme heat days (over 95° F)
- Worse air quality
- More acres burned by wildfires
- More vector-borne disease
Climate Change in Los Angeles County

• **Hotter temperatures**
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• **Worse air quality**

• **More acres burned by wildfires**

• **More vector-borne disease**
Heat Predictions for Los Angeles

Current and projected temperature extremes for Los Angeles
Average annual days exceeding 95 degrees F

<table>
<thead>
<tr>
<th>Location</th>
<th>Current</th>
<th>2041-2060 ensemble projection</th>
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</thead>
<tbody>
<tr>
<td>Baldwin Hills</td>
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<tr>
<td>Downtown LA</td>
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<td>23</td>
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<tr>
<td>Eagle Rock</td>
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<tr>
<td>El Sereno</td>
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<td>Hollywood</td>
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<td>Watts</td>
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<td>Westwood</td>
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<td>Woodland Hills</td>
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</tr>
</tbody>
</table>

Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 18 climate models
Public Health Impacts of Heat

• Hundreds of deaths in the US:
  – Philadelphia (1993):
    118 deaths
  – Chicago (1995):
    739 deaths
  – California (2006):
    > 650 deaths

• More deaths than floods, storms, and lightning combined
Public Health Impacts of Heat

California Heat Wave of 2006

• Illness
  – 16,166 excess ER visits; 1,182 excess hospitalizations
  – More ER visits for heat-related illness, acute kidney failure, cardiovascular diseases, diabetes, electrolyte imbalance, nephritis (kidney inflammation)
Public Health Impacts of Heat

• Heat worsens air quality
  – More creation of ground-level ozone
  – More temperature inversions
  – Wildfires

Smog sticks around
Pollution can get trapped in a basin when high pressure prevents air from moving.

Cool air moves in from ocean
Falling warm air
Inversion layer
Mountains
Downtown Los Angeles
Trapped smog
LAX

Sources: Times reporting and Google Earth
Jon Schleuss / @latimesgraphics
Trees as Extreme Heat Preparedness

- Reduce the urban heat island
  - Shade impervious surfaces
  - Cool the air through evapotranspiration
- Shade buildings and people
  - Shade homes and other buildings
  - Shade parks, walkways, paths to public transit
Trees to Improve Air Quality

• Reduce temperatures
• Remove air pollutants
  – Gaseous air pollution
  – Airborne particles

Image Source: coolcalifornia.org
Wildfire Predictions for Los Angeles

- Area burned by wildfires projected to increase by mid-century
  - 64% (Santa Ana fires)
  - 77% (non-Santa Ana fires)
Public Health Impacts of Wildfires
Public Health Impacts of Wildfires

- Injuries and deaths
- Displacement and disruption of services
- Mental health issues from trauma
- Decreased air quality
  - Eye irritation
  - Respiratory illness (like asthma, COPD)
  - Allergies
  - Quality of life
Public Health Impacts of Wildfires

Arthur
@arthur_herpderp

Sucks that I have to ride because I need to go get the #SandFire #LAisonegig. 😞

Rob Embrey
@baywatchboy

Was going to go for a run in the heat, but not with the bad AQ from #SandFire. Could be a day on the couch.

Ryan Boyd
@ryanboyd

It's 100 degrees in LA, but don't leave your windows open unless you like ash from the #SandFire.

10:53 AM - 23 Jul 2016
Public Health Impacts of Wildfires

chadni
@chadni

Walk this morning with the dog. Or and could tell difference in lungs.

Alfredo Malatesta
@almalatesta

Anyone wanna go on a run today? #SandFire
#SantaClarita #HeatWave

10:58 AM - 23 Jul 2016
“One thing we’ve been talking about day after day is the stress of the vegetation; the drought”

– Los Angeles County Deputy Fire Chief John Tripp, on the Sand Fire
Trees as Public Health Protection

• Trees, both urban and rural are essential not just for ecological health, but for human health
LA County Public Health

• The Los Angeles County Department of Public Health:
  – 4,000 staff
  – Responsibility: Health & well-being of all 10 million residents in the County
Urban Heat Island Reduction Plan

- County of Los Angeles developing an Urban Heat Island Reduction Plan
  - County Climate Committee comprised of Public Health, Public Works, Regional Planning, Parks and Recreation, Fire, Beaches and Harbors, Internal Services
Urban Heat Island Reduction Plan

- Trees
- Green space
- Cool roofs
- Cool and permeable pavements
Thank You!

Elizabeth Rhoades, PhD
Los Angeles County
Department of Public Health
Health Protection Bureau
erhoades@ph.lacounty.gov