Assessing Drought Impacts Using Community Assessment for Public Health Emergency Response (CASPER)

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Preparing for the Health Impacts of Drought • February 4, 2019
Drought

A “deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people”

— National Oceanic and Atmospheric Administration
Drought

...a complex and prolonged disaster

one of the most costly climate-related events
Brown declares California drought emergency
Potential Health Effects of Drought

- Decreased **quality** and **quantity** of potable water

Photo: California Department of Water Resources
Potential Health Effects of Drought

- Decreased **quality** and **quantity** of potable water

  - 2,600 dry wells
  - 13,000 residents
Potential Health Effects of Drought

- Decreased **quality** and **quantity** of potable water
- Compromised food and nutrition
Potential Health Effects of Drought

- Decreased **quality** and **quantity** of potable water
- Compromised food and nutrition
- Increased disease incidence
Potential Health Effects of Drought

- Decreased quality and quantity of potable water
- Compromised food and nutrition
- Increased disease incidence
- Adverse behavioral health outcomes
Assessments of Public Health Impact of Drought, 2015

Mariposa County:
- Sierras, forested foothills
- Massive tree-deaths, low reservoirs

Tulare County:
- Central valley, agricultural
- >1,300 dry wells, impacting >6,000 residents
Objectives

Effects of Drought

- Access to water
- Attitudes and practices
- Chronic disease exacerbations
- Behavioral health outcomes
- Finances and property
Community Assessment for Public Health Emergency Response (CASPER)

- Rapid needs assessment
- Disaster response
- Decision making and resource allocation
- Specific needs of local health jurisdiction
Community Assessment for Public Health Emergency Response (CASPER)

- Two-stage sampling
- 210 interviews (30 x 7 design)
- Generalized to the area of interest
Community Assessment for Public Health Emergency Response (CASPER)

210 Households

48 Hours

Results in 1-2 Days
North Tulare: Wells beginning to run dry

South Tulare: Dry wells for multiple years
Private well owner

No running water in home

North Tulare: 8%
South Tulare: 12%
Mariposa: 3%
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Reduced water for lawns
- North Tulare: 83%
- South Tulare: 92%
- Mariposa: 80%

Capture and reuse water
- North Tulare: 29%
- South Tulare: 42%
- Mariposa: 37%
Wash hands less frequently/shorter duration

North Tulare: 58%
South Tulare: 68%
Mariposa: 52%

Photo attribution: CDC
Property impacts
North Tulare: 39%
South Tulare: 48%
Mariposa: 54%

Financial impacts
North Tulare: 39%
South Tulare: 40%
Mariposa: 25%

Photo: Dave Conway
### Chronic condition has gotten worse since drought started*

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Tulare</td>
<td>26%</td>
</tr>
<tr>
<td>South Tulare</td>
<td>46%</td>
</tr>
<tr>
<td>Mariposa</td>
<td>36%</td>
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</tbody>
</table>

*Among households reporting a member with a chronic condition*
Acutely stressed
North Tulare: 15%
South Tulare: 26%
Mariposa: 8%

Photo attribution: Mother Jones
Considered moving

North Tulare: 14%
South Tulare: 34%
Mariposa: 17%

Photo attribution: Mother Jones
Decreased quantity of potable water

Water conservation behaviors

Exacerbations of chronic disease

Acute stress

Property and financial effects

Depopulation risk
Recommendations

- Provision of private well assistance
- Promotion of proper hygiene
- Expansion of health services for drought-affected persons
- Facilitation of tree removal
Is CASPER Right for the Job?

Household-level

Statistics
Flexibility
Timeliness

Effort
Large Population
One Time

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CASPER e-Courses and Videos

- UNC course (25min, CEU available)
  https://nciph.sph.unc.edu/tws/HEP_CASPER/certificate.php

- CDC course (60-120 min, CEU available)
  http://www.cdc.gov/nceh/hsb/disaster/CASPER_elearning/

- Lake County, CA, 2012 (9-min)
  https://www.youtube.com/watch?v=vf12bE-pdu0

- Fort Bend, TX, 2015 (5-min)
  https://www.youtube.com/watch?v=37mWBZ83aQE

- Ysleta Del Sur Pueblo Indian Nation, by El Paso, TX, 2015 (7-min)
  https://www.youtube.com/watch?v=pQtpKoAaV_w

- Harris County, TX, 2015, 2017
  (3-min) https://www.youtube.com/watch?v=IDgna5xyG4c (10-min) https://www.youtube.com/watch?v=GwB9jtTbrKU
  (nine 1-min videos on different CASPER aspects)
  https://www.youtube.com/playlist?list=PLOBJgqWGHBJEcdrJhS22AL3cvumFxtVWz

- CDC Response to Hurricanes, 2018 (5-min)
  https://www.youtube.com/watch?v=bTc91V1Xexg