

Water and Sanitation in California

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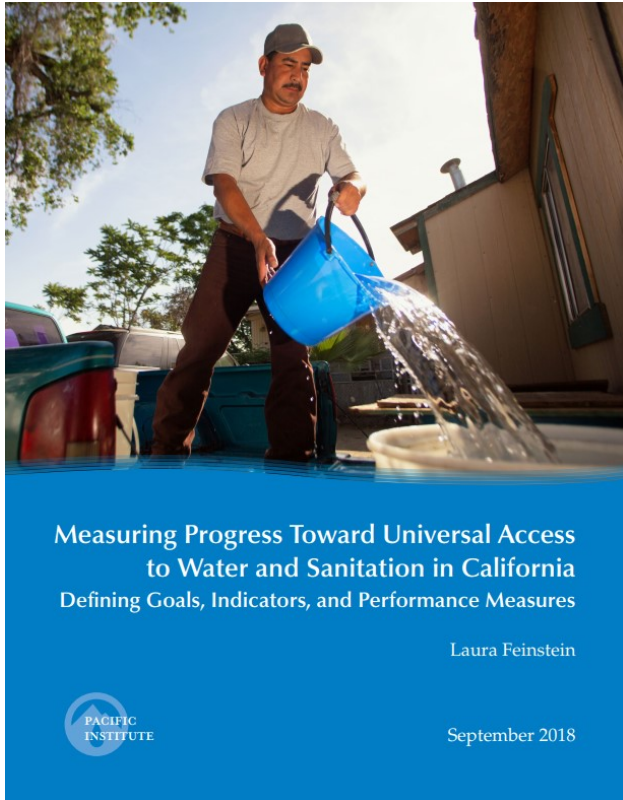


April 18, 2019

Background: Pacific Institute

- **Organization:** Independent non-profit research institute.
- **Mission:** Create and advance solutions to the world's most pressing water challenges.
- **Strategy:** produce research that advances a sustainable environment, healthy economy, and social equity with science-based solutions.

Recent Publications



Measuring Progress Toward Universal Access to Water and Sanitation in California

*How should the state define,
measure, and track water and
sanitation service?*

Recent Publications

Plumbing the Depths: Californians Without Toilets and Running Water



April 2019

Laura Feinstein

Gabriel Daless



Plumbing the Depths: Californians Without Toilets and Running Water

How many Californians lack access to water and sanitation because they are unhoused, or have incomplete plumbing in the home?

Recent Publications

ACCESS TO SANITATION AND HYGIENE FOR INDIVIDUALS EXPERIENCING HOMELESSNESS IN ALAMEDA COUNTY

Executive Summary

Housing and supportive services are the solution to homelessness, but people experiencing homelessness need access to sanitation and hygiene now. Access to toilets, handwashing, showers, and clothes washers can solve multiple problems at a lower cost while protecting public health and may be a better use of public dollars than punitive measures like clearing encampments or criminalization of public urination. To advance access to sanitation for persons experiencing homelessness in sanitation, we recommend the following measures:

1. **Meaningfully engage with unhoused persons:** Early stages of policy development and implementation must include direct consultation with persons experiencing homelessness about their needs to develop policy solutions *with* them.
2. **Commit to minimum standards:** Support and implement legislation in consultation with unhoused persons to establish minimum standards for access to sanitation and align policy and resource allocation with those standards.
3. **Support mobile hygiene units:** Legislation should be developed in consultation with unhoused persons to facilitate access to mobile shower and sanitation services while more permanent solutions are developed and implemented.
4. **Fund dignity and public health:** Evaluate city and county resources spent on homelessness in all departments (e.g., public health, social services, law enforcement, environmental quality) to identify funds that can be redirected toward more efficient solutions, including providing access to water and sanitation.



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Access to Sanitation and Hygiene for Individuals Experiencing Homelessness in Alameda County

*How can a county improve access to
toilets and handwashing for persons
experiencing homelessness?*

Overview

Part 1: Background

Part 2: Defining Water and Sanitation Service in California

Part 3: Who Lacks Access to Water and Sanitation in California

Part 4: Policy Recommendations

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What are drinking water, sanitation and hygiene?

Drinking water is water for indoor domestic use: “consumption, cooking, and sanitary purposes” (California Water Code §106.3)

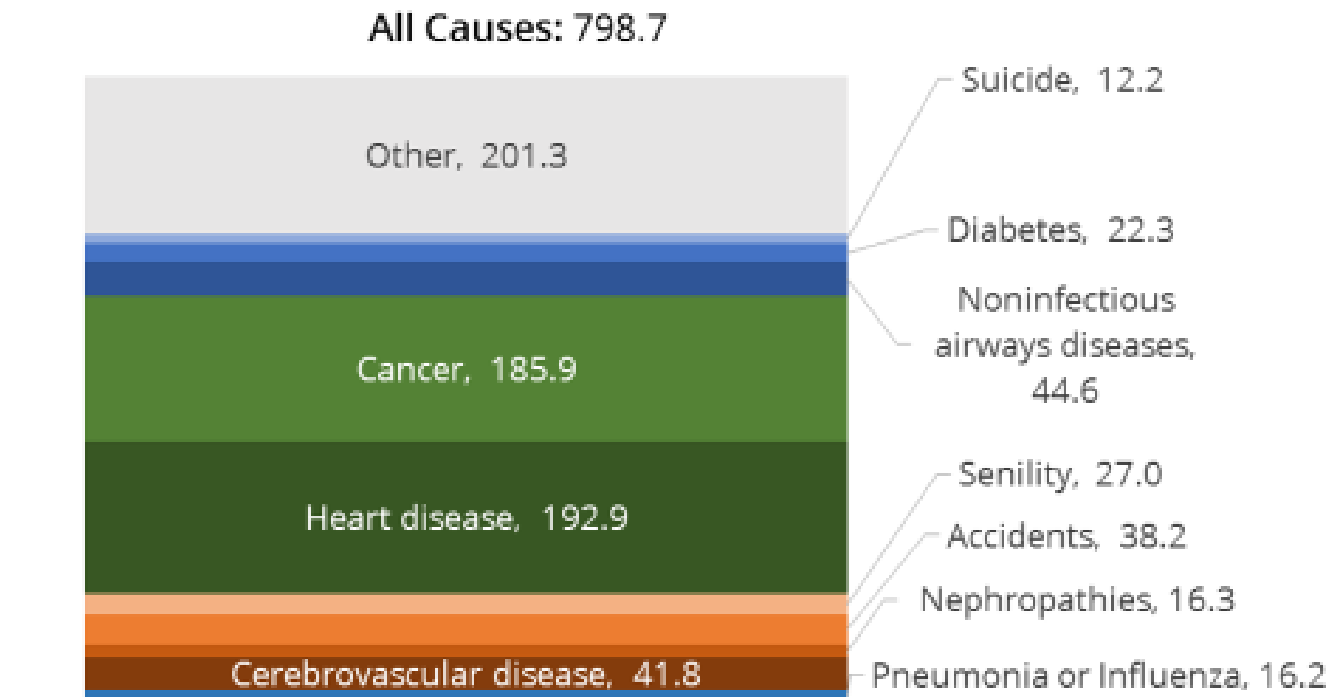
Sanitation is a toilet and the infrastructure and management for safe disposal of human waste and wastewater

- Does not include the water for operating a toilet and wastewater system

Hygiene refers to a facility for handwashing, accompanied by soap

Water, Sanitation, and Public Health

Causes of Death, United States, 2010



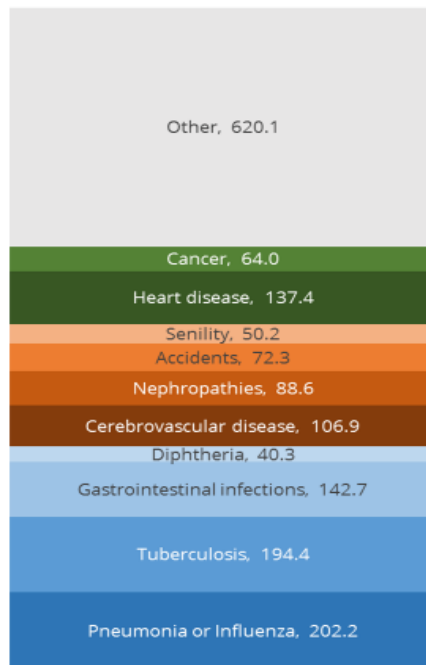
Deaths per 100,000 people

Source: University of North Carolina Population Center and Center for Disease Control

Water, Sanitation, and Public Health

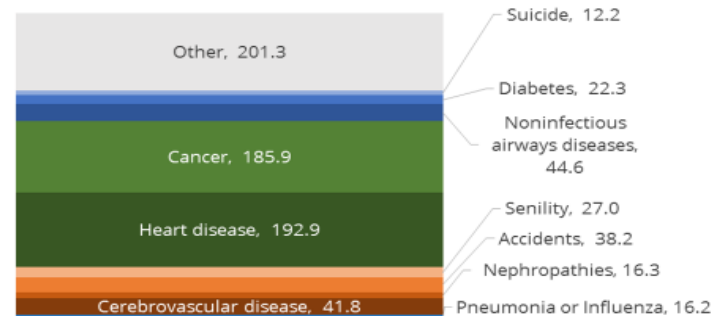
Causes of Death, United States, 1900 versus 2010

1900



Gastrointestinal disease: from third-leading cause of death to near-zero

2010



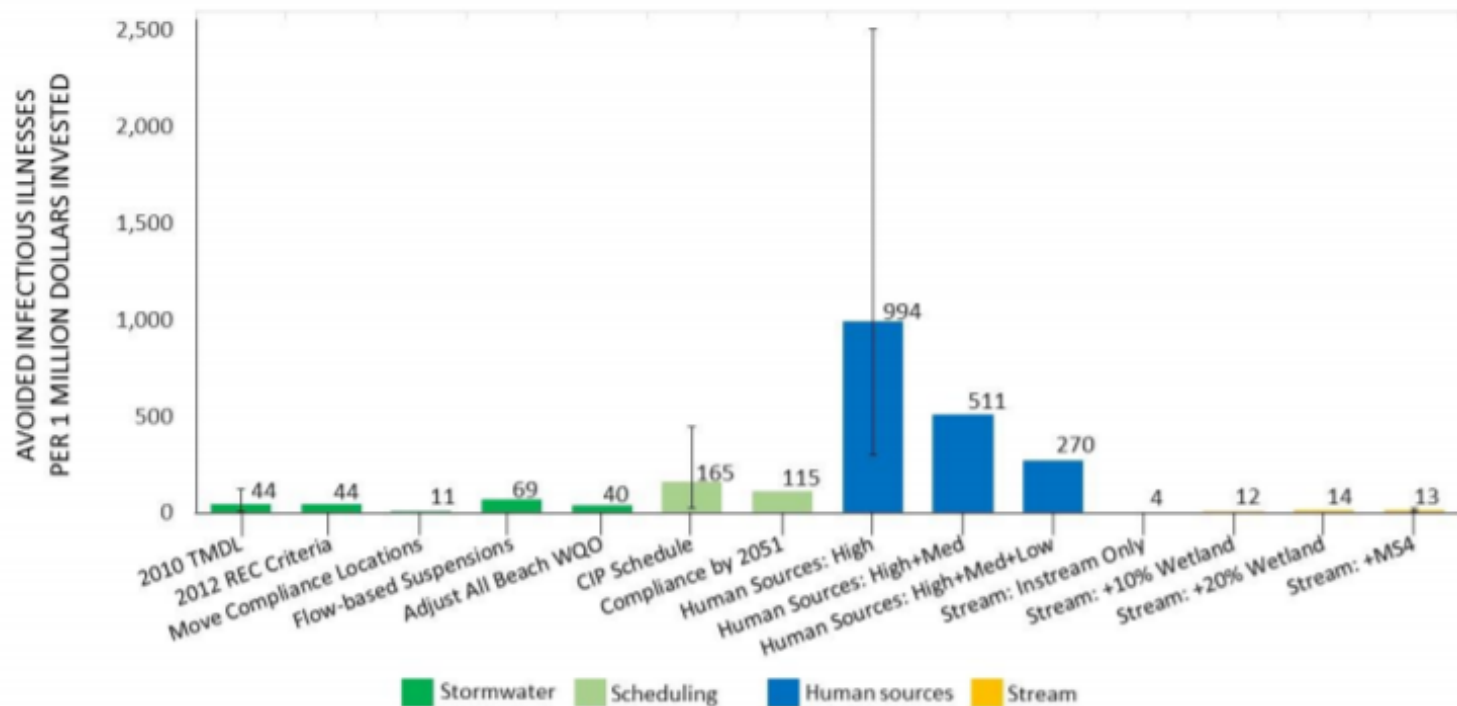
Deaths per 100,000 people

Source: University of North Carolina Population Center and Center for Disease Control

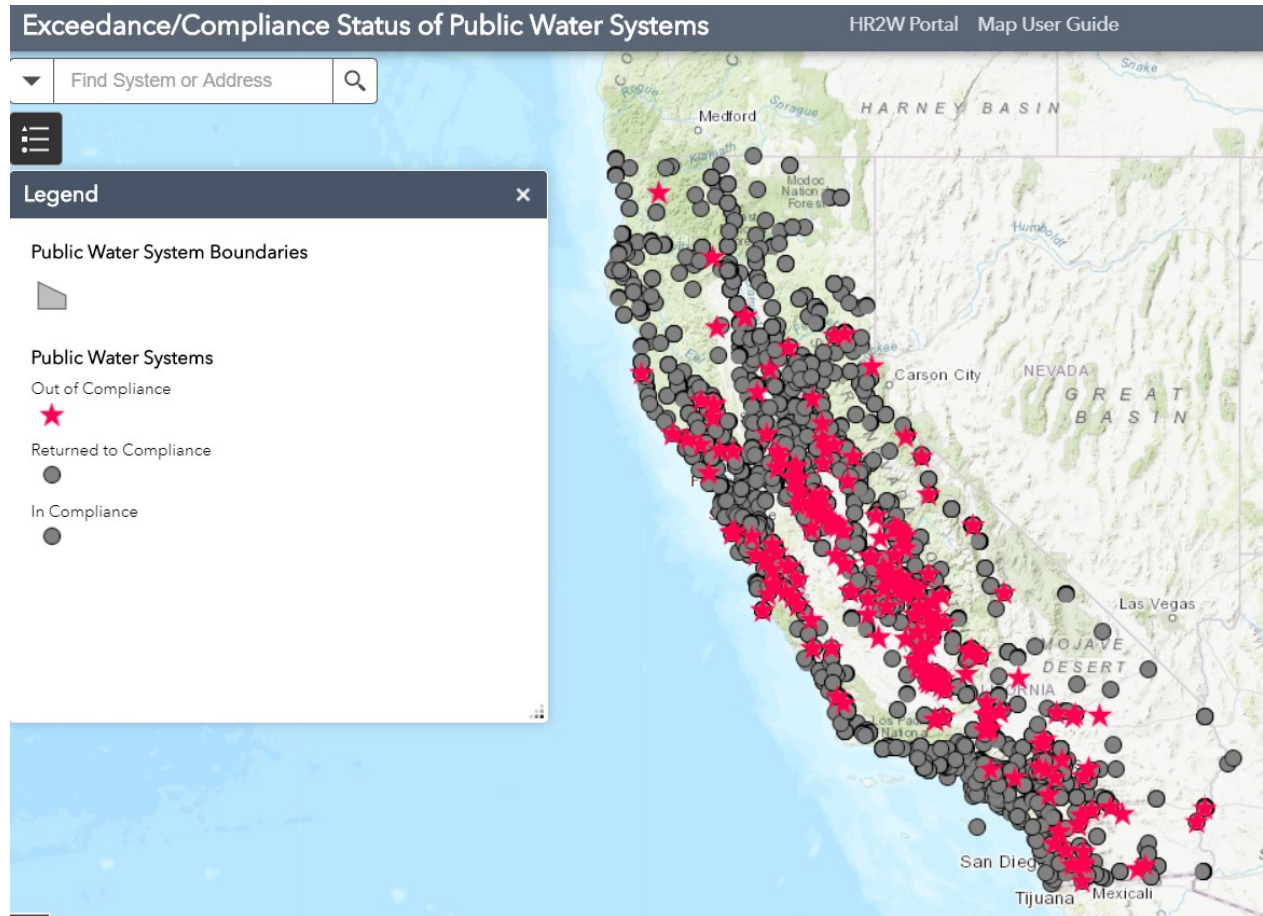
Surface Water Quality and Sanitation

Cost-Benefits Analysis: How to Reduce Bacteria Load in San Diego Waterways (2017)
San Diego Water Board *et al.*

“Targeting human waste sources of bacteria is the most cost-effective strategy to improve public health and increase recreational opportunities following rain events.”



Measuring Water Service at a System Level



Source: Human Right to Water Portal, State Water Board (4/18/2019)

System Quality \neq Service Experienced by Individuals

Drinking water/wastewater service area



S

Household with complete plumbing

S

Premise plumbing quality problems: lead and copper, pathogens, secondary contaminants

X

Household with incomplete plumbing

S

Public drinking fountains and restrooms

?



Persons experiencing homelessness

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Approach: Service Ladders

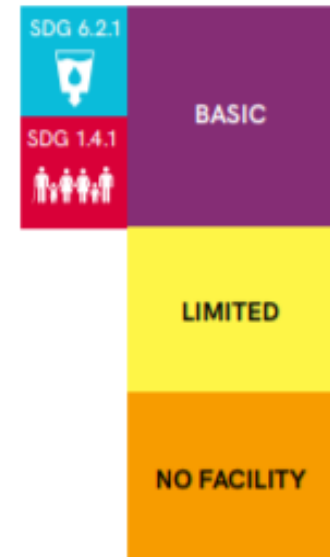
Drinking Water



Sanitation



Hygiene



Source: World Health Organization and UNICEF, 2017

Approach: Service Ladders

By 2015, 154 countries had achieved over 75% coverage with basic sanitation services

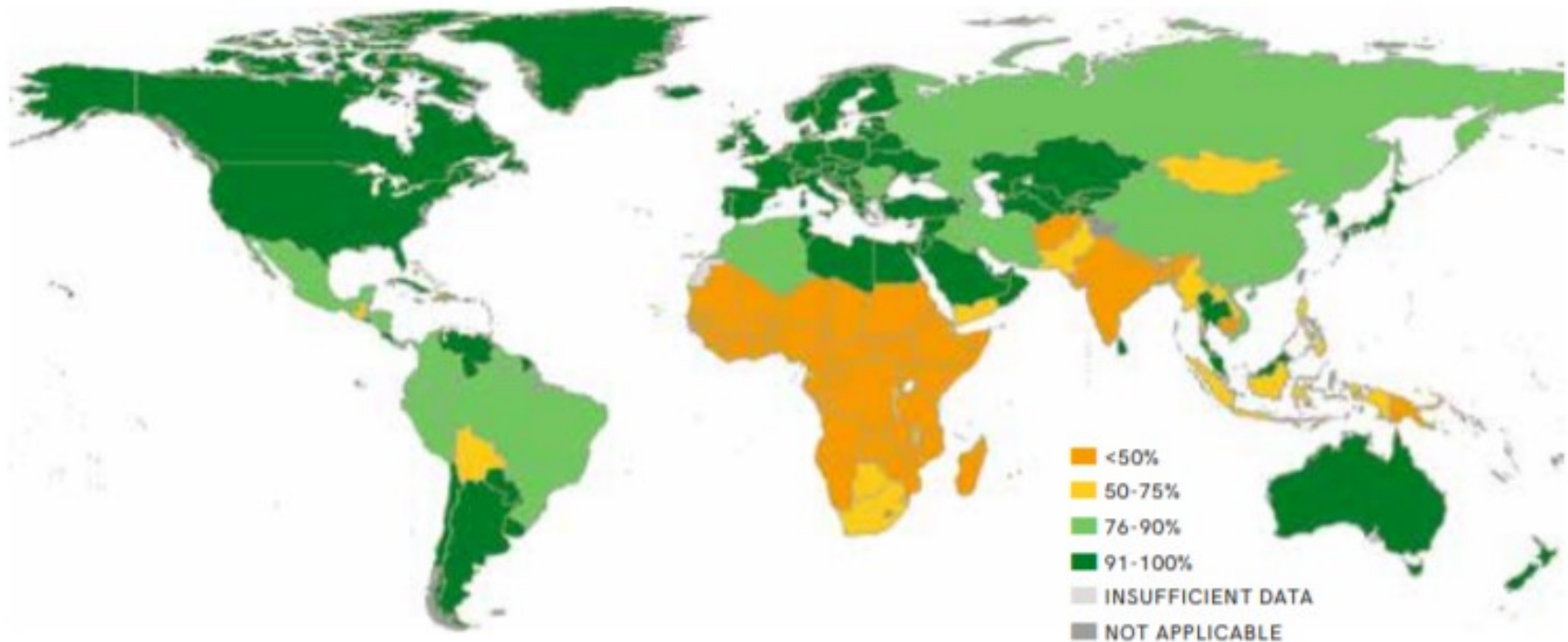


Fig. 7 Proportion of national population using at least basic sanitation services, 2015

Service Ladders Are Adaptable

- Schools
- Health care facilities
- Specific regions



WASH in Schools

SERVICE LEVEL	DRINKING WATER	SANITATION	HYGIENE
Advanced	<i>To be defined at national level</i>	<i>To be defined at national level</i>	<i>To be defined at national level</i>
Basic (SDG)	Drinking water from an improved source is available at the school	Improved facilities, which are single-sex and usable at the school	Handwashing facilities that have water and soap are available
Limited	There is an improved source (piped, protected well/spring, rainwater, packaged/delivered water), but water is not available at time of survey	There are improved facilities (flush/pour flush toilets, pit latrine with slab, composting toilet), but not single-sex or not usable at time of survey	Handwashing facilities with water, but no soap
No service	No water source or unimproved source (unprotected well/spring, surface water)	No toilets or latrines, or unimproved facilities (pit latrines without a slab or platform, hanging latrines, bucket latrines)	No handwashing facilities at the school or handwashing facilities with no water

Source : WHO and UNICEF, 2017

Our Results: California Service Ladders

In *Measuring Progress* (2018)

Service Ladders customized for prevailing statutes and regulations, aligned with public datasets

- Safe Water
- Affordable Water and Sanitation
- Accessible Water
- Safe Sanitation
- Accessible Sanitation



California Service Ladders

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Service Ladders customized for prevailing statutes and regulations, aligned with public datasets

- Safe Water
- Affordable Water and Sanitation
- **Accessible Water**
- Safe Sanitation
- **Accessible Sanitation**



Accessible Drinking Water

Goal: Accessible water should be available in the home, in sufficient volumes to meet domestic needs, at hot and cold temperatures, twenty-four hours a day.

Considerations:

- Location
- Time to collect water
- Sufficient volume
- Temperature
- Available hours

Service Ladder: Accessible Drinking Water

Goal: Water should be available in sufficient volumes to meet domestic needs, at hot and cold temperatures, in a location near home, at the times needed.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Sufficient hot and cold indoor piped water reliably available 24 hours a day.	At least 43 GPCD hot and cold indoor piped potable water available 24 hours a day.
	Moderate	Sufficient hot and cold water from an improved source available on premises (indoors or outside) and reliably available 24 hours a day; bottled or delivered water acceptable in some circumstances.	At least 43 GPCD hot and cold piped potable water available on the premises 24 hours a day.
	Marginal	Sufficient water from an improved source, including bottled water or tanks of water delivered by truck, provided collection time is not more than 30 minutes round-trip (including waiting time), and reliably available at least 12 hours a day.	Improved, potable water source providing at least 14 GPCD within 30 minutes round-trip of place of residence (including waiting time), available at least 12 hours a day.
	Unacceptable	Water that does not meet at least the Marginal standards for access.	Any one of the characteristics of Marginal access to water is not met.

Service Ladder: Accessible Drinking Water

Context: Relevant for group shelters, encampments without in-unit running water.

43 Gallons Per Capita Day (GPCD) derived from Residential End Use of Studies (DeOreo 2016, 2011)

See *Measuring Progress* for full methodology

Moderate	Sufficient hot and cold water from an improved source available on premises (indoors or outside) and reliably available 24 hours a day; bottled or delivered water acceptable in some circumstances.	At least 43 GPCD hot and cold piped potable water available on the premises 24 hours a day.
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Context: short term emergency living situations.

Minimum to sustain life in emergencies

14 GPCD Derived from Gleick (1996) and United Nations Development Programme (2006)

Accessible Sanitation

Goal: Toilets should be private, located in the home, safe to visit, and available when needed.

Considerations:

- Private to use
- Physical safety
- Maintenance
- Number of people sharing a toilet
- Location
- Open hours



Service Ladder: Accessible Sanitation

Goal: Toilets should be private, located in the home, safe to visit, and available when needed.

		Household-Level Service Indicator	Household-Level Performance Measure
Service Level	Satisfactory	Private, secure, well-maintained, in-home facility, not shared with other households, available 24 hours a day	Household has 24-hour access to a functioning toilet not shared with other households.
	Moderate	Private, secure, well-maintained, on-site facility, possibly shared with other households, available 24 hours a day.	Household has 24-hour access to a functioning toilet either in the structure (not necessarily in their unit for multi-unit buildings) or on the property, with at least one toilet per 10 male residents plus one toilet per 8 female residents.
	Marginal	Private, secure, well-maintained facility, possibly shared with other households, no more than 50 meters from home, available 24 hours a day.	Household has 24-hour access to a functioning toilet shared with no more than 20 people, within 50 meters of their usual place of residence.
	Unacceptable	Facility is more than 50 meters from home, not available 24 hours a day, or use of the facility compromises personal safety or privacy.	Any one of the characteristics of Marginal access to sanitation is not met.

Service Ladder: Accessible Sanitation

Context: toilet on the premises but not necessarily in the unit, such as a toilet shared among several units in a Single Room Occupancy.

Maximum number of persons sharing toilet based on California Plumbing Code for residential dormitories (California Building Standards Commission 2016).

Moderate	Private, secure, well-maintained, on-site facility, possibly shared with other households, available 24 hours a day.	Household has 24-hour access to a functioning toilet either in the structure (not necessarily in their unit for multi-unit buildings) or on the property, with at least one toilet per 10 male residents plus one toilet per 8 female residents.
Marginal	Private, secure, well-maintained facility, possibly shared with other households, no more than 50 meters from home, available 24 hours a day.	Household has 24-hour access to a functioning toilet shared with no more than 20 people, within 50 meters of their usual place of residence.

Context: Shared living situations such as encampments, boat marinas, RV parks without in-unit toilets.

Corresponds to Emergency Sanitation Standards specified by the United Nations High Commissioner on Refugees (2018)

Overview

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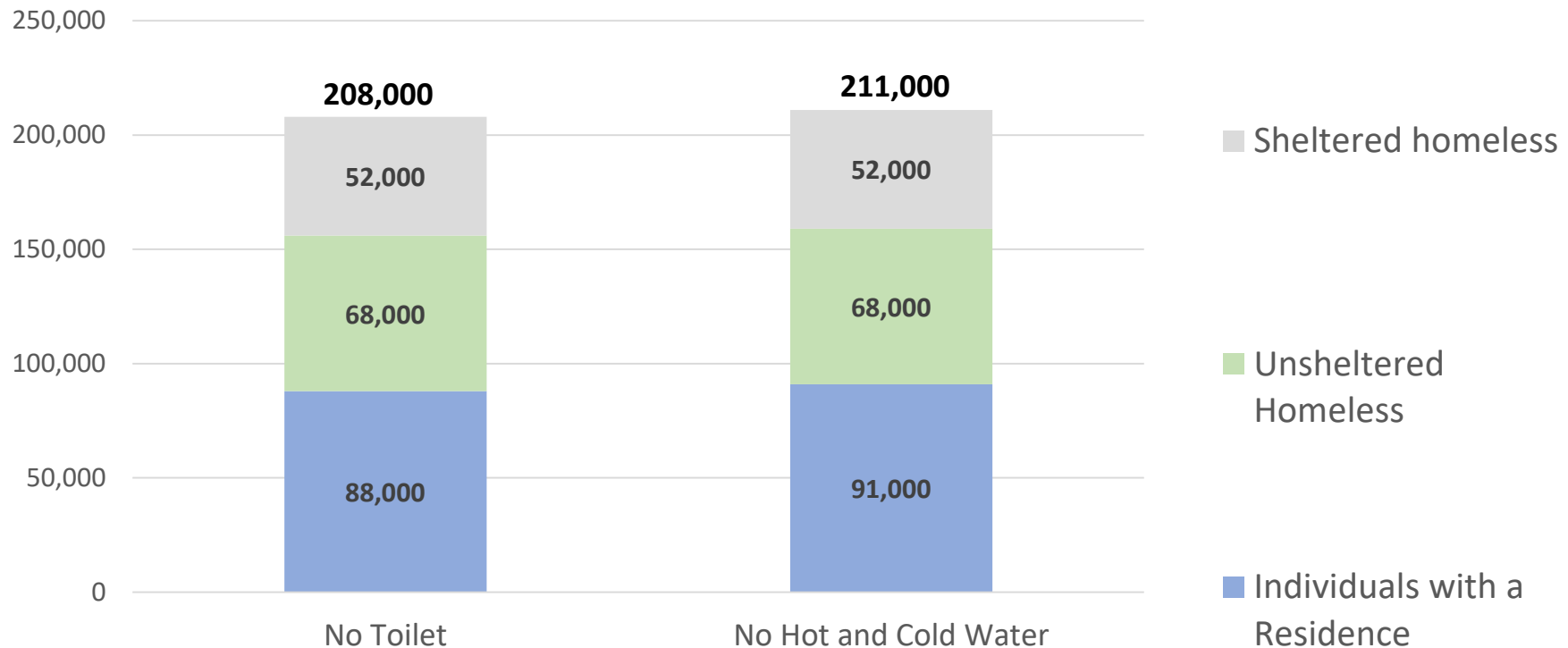
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Lack of Access to Drinking Water and Sanitation

Californians Without Access to Toilets or Hot and Cold Water, 2015



From *Plumbing the Depths* (2019)

Data sources: U.S. Census Bureau (2015), U.S. Housing and Urban Development (2016)

Barriers in Accessing Public Toilets

Public restrooms are often:

- Shared among too many people
- Too far from place of residence
- Closed at night
- Dangerous to visit
- Poorly maintained and cleaned
- Without doors, locks, soap, or toilet paper



See *Measuring Progress* and *Plumbing the Depths* for documentation

Lack of Public Toilets is a Problem for All

Public restrooms are a vital public service

Those who lack shelter are particularly dependent on public facilities



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Policy Recommendations

- Recognize sanitation as a co-equal component of the Human Right to Water.
- Recognize and address barriers to water and sanitation failures at the household and individual level.
- Use Service Ladders to define and track safe, affordable, accessible water and sanitation for those with permanent shelter and those experiencing homelessness.
- Identify minimum standards for access to drinking water and sanitation for those without shelter.

Policy Recommendations

- Use water quality objectives and stormwater permits as an avenue to direct resources toward sanitation and hygiene.
- Support mobile hygiene units and public restrooms.
- Staff public restrooms with members of the community they serve.



Mobile Hygiene Unit by Lava Mae

Additional Information

Visit Report Web Page:

<http://pacinst.org/publication/measuring-progress/>

- Report With Full Service Ladders
- Data Sources for Informing Performance Indicators

Also see: *A Survey of Efforts to Achieve Universal Access to Water and Sanitation in California*

Coming Soon: *Californians with Incomplete Plumbing*

Questions?

Acknowledgements

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Contact: Laura Feinstein, lfeinstein@pacinst.org

Gallons Per Capita Day

Table A. Volume of Water for Indoor Use		
	<u>A</u>	<u>B</u>
Use(s)	Adjusted Water Use in California Cities, 2018	Observed Water Use in California Cities, 2006- 2008
Essential Indoor Use	43	47
Leaks	9	10
Total Indoor Use	52	58