

## California Building Resilience Against Climate Effects (CalBRACE) Project

**Short Title:** Car Ownership

**Full Title:** Percent of occupied housing units with no vehicle ownership

**CalBRACE Domain:** Population Sensitivity

### Why is this important to health?

Vehicle ownership is a measure of mobility and access to transportation. Transportation is a critical resource for survival, because it improves access to evacuation and shelter from environmental exposures, such as wildfire, air pollution, heat waves, and flooding, allowing people to move to cooler areas or other safe areas. Flooding may require emergency evacuation of populations living in coastal and low-lying areas, and may also require adequate sheltering for displaced populations. Rates of vehicle ownership are generally lower in urban areas, particularly in low-income inner city populations. Communities of color are more likely to have limited or no access to a car, increasing their risk of being impacted during heat and other extreme weather events.

### Summary of Evidence for Climate and Health

A survey among predominantly poor and African American Hurricane Katrina evacuees revealed that 34% reported lack of a car or other means of evacuating as the main reason for not evacuating the storm's danger.<sup>1, 2</sup> In the Los Angeles-Long Beach Metropolitan Area, higher proportions of African-Americans (20%), Latino (17%), and Asian (10%) households do not have access to a car compared to White households.<sup>3</sup>

### Key References:

1. Falanagan B, Gregory E, Hallisey E, et al. A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*. 2011; 8(1).
2. Brodie M, Weltzien E, Altman D, et al. Experiences of Hurricane Katrina Evacuees in Houston Shelters: Implications for Future Planning. *American Journal of Public Health*. 2006; 96(8): 1402-1408.
3. Morello-Frosch R, Pastor M, Sadd J, et al. The Climate Gap: Inequalities in How Climate Change Hurts Americans and How to Close the Gap; 2009.

### What is the indicator?

#### Detailed Definition

- Indicator (percent) = 
$$\frac{\text{Occupied housing units with no vehicle ownership}}{\text{Total Occupied Housing Units}}$$
- Stratification: 8 race/ethnicity strata (African American, American Indian Alaska Native, Asian, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, White, Two or more races, Total)
- Interpretation: Household without access to a vehicle are more sensitive to health impacts of climate change

## Data Source and Methodology

- **American Community Survey (ACS) 2010 Census** (<http://factfinder.census.gov>)
  - Years available: 2010
  - Geographies available: Census tract, city, county, county division, region (derived), state

Race/ethnicity population estimates were obtained from the American Community Survey (DP04 table). Population-weighted regional estimates and standard errors were calculated. Regions in the BRACE project are based on county aggregations in the [Adaptation Planning Guide Understanding Regional Characteristics](#). Decile rankings for places and census tracts as well as relative risk were calculated

## **Limitations**

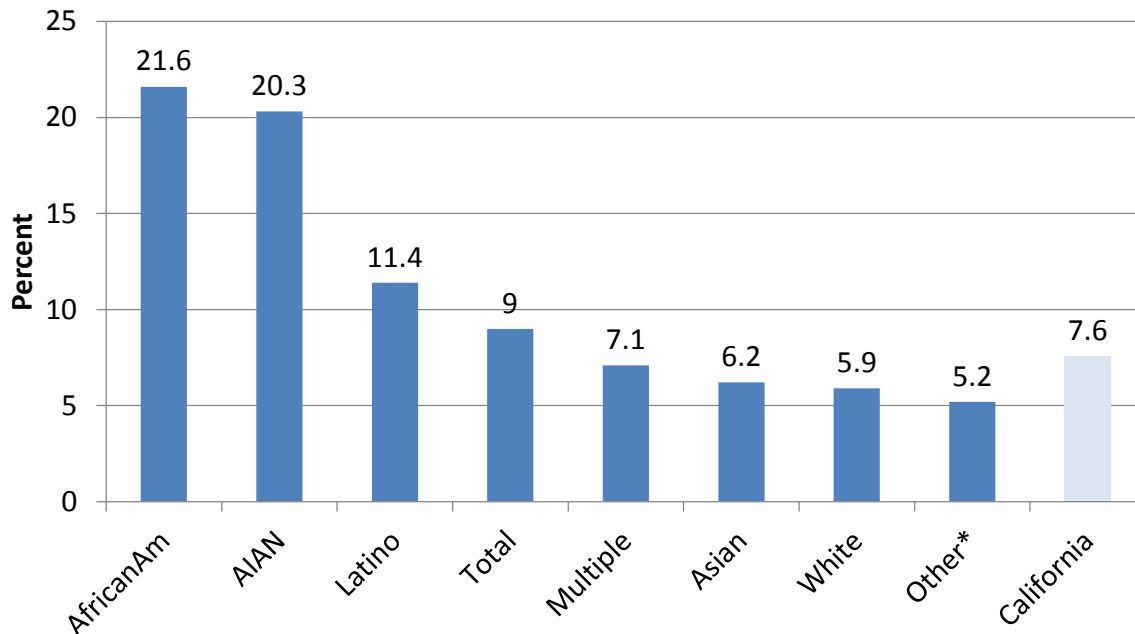
Data was collected from occupied housing units. Data show availability of passenger cars, vans, and pickup or panel trucks of one-ton capacity or less kept at home and available for the use of household members. Vehicles rented or leased for one month or more, company vehicles, and police and government vehicles are included if kept at home and used for non-business purposes. Dismantled or immobile vehicles are excluded. Vehicles kept at home but used only for business purposes are also excluded.

## **Acknowledgement and Disclaimer**

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Examples of Maps, Figures, and Tables:

**Figure 1. Percent of Households With No Vehicle Ownership by Race/Ethnicity, Fresno County, CA 2006-2010**



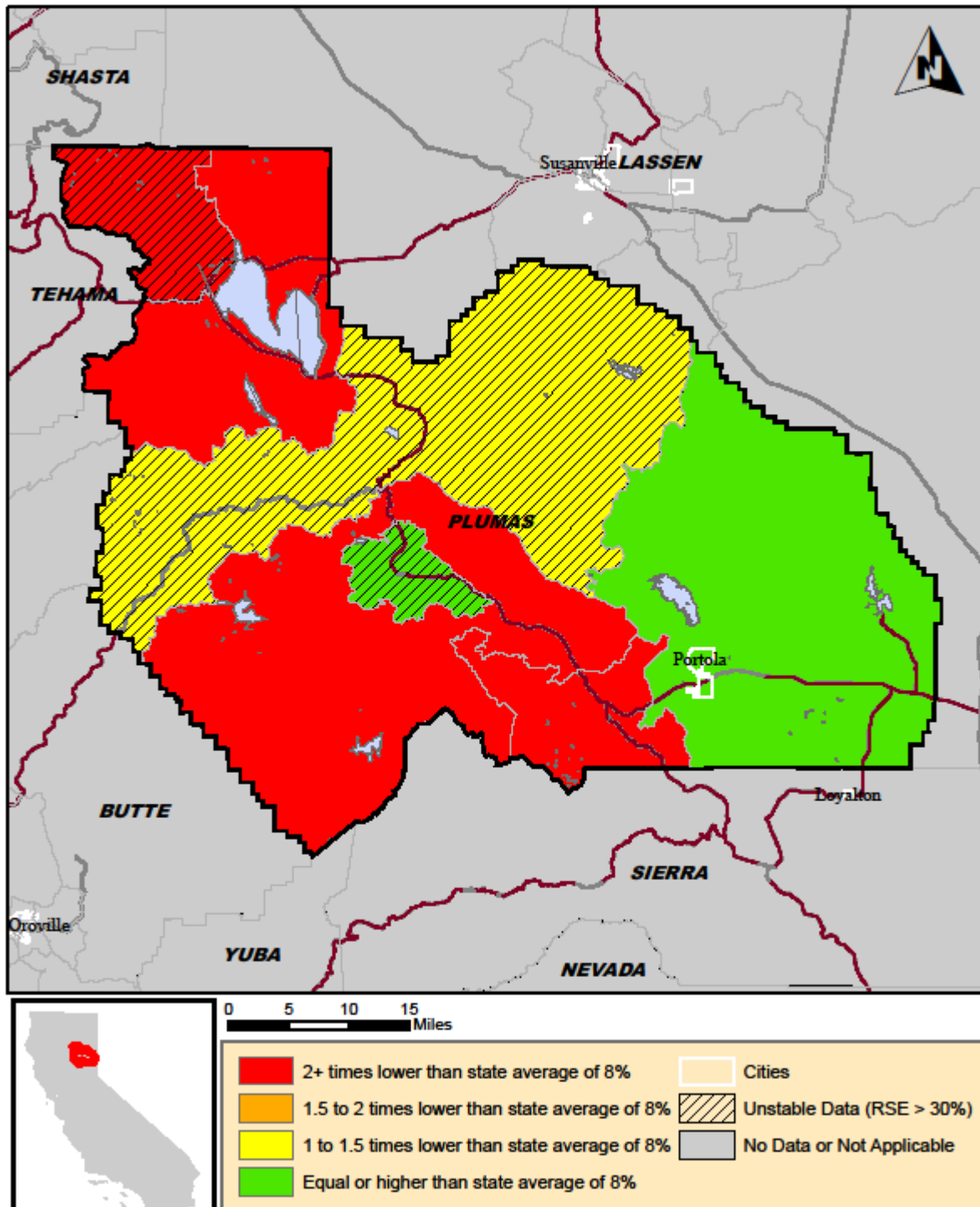
Race/ethnicity abbreviations are AIAN=American Indian/Alaska Native, AfricanAm=African American, NHOPI=Native Hawaiian/Other Pacific Islander.

**Table 1. Percent of Households With No Vehicle Ownership by City or Town > 1,000 Population, Fresno County, California, 2006-2010**

City or Town	Households With No Vehicle Ownership		Total Households
	Total	Percent	
Fresno	17,278	0%	156,226
Clovis	1,814	0%	31,867
Sanger	639	2%	6,416
Reedley	601	2%	6,239
Selma	412	1%	6,173
Kingsburg	262	2%	3,489
Kerman	211	2%	3,403
Parlier	480	3%	3,399
Mendota	272	3%	2,574
Coalinga	217	2%	2,544
Old Fig Garden	67	2%	2,096
Firebaugh	142	2%	1,974
Orange Cove	269	4%	1,968
Fowler	130	2%	1,700
Huron	555	6%	1,637
Sunnyside	59	2%	1,452
Tarpey Village	30	2%	1,293
Mayfair	154	4%	1,237
Squaw Valley	29	3%	1,019
<b>Fresno County</b>	<b>25,681</b>	<b>9%</b>	<b>283,836</b>
<b>California</b>	<b>935,969</b>	<b>8%</b>	<b>12,392,852</b>

Source: American Community Survey (ACS)

**Map 1: Percent of Households With No Vehicle Ownership by Census Tracts,  
Plumas County, California, 2006-2010**



Source: American Community Survey (ACS), 2006 - 2010

Analysis by CDPH and UC Davis

**Map 2: Percent of Households With No Vehicle Ownership by Cities and Towns,  
Alameda County, California, 2006-2010**

