

California Building Resilience Against Climate Effects (CalBRACE) Project

Short Title: Disability

Full Title: Percent of population with a disability

CalBRACE Domain: Population Sensitivity

Why is this important to health?

Physical Disability: Climate change is expected to cause increased hardship for persons with physical disabilities during emergencies due to extreme weather events and displacement as a result of flooding, erosion, and agricultural disruptions.¹ Persons with physical disabilities face disadvantages with limited resources and mobility during the phases of evacuation, response, and recovery.² Improved preparation is required to ensure preventable health impacts on those with physical disabilities due to climate change. Key issues that may impact quality of life and well-being of persons with a disability as a result of climate change, include the following: food insecurity and resulting malnutrition; decreased access to clean water, sanitation and hygiene; reduced access to shelter and basic services; and displacement or migration.¹ Population displacement compromises medical care which increases the risk of disease exposure and can worsen existing medical conditions. Populations with physical disability who have increased vulnerability to the health impacts of climate change include the following: persons with less education, less income, and living in an urban area; and elderly and children with disabilities and their caregivers.³⁻⁶ Additionally, persons with disabilities who belong to marginalized groups based on gender, race, or ethnicity may face added disadvantages, such as greater stigma and discrimination.⁷

Mental Disability: Climate change will bring a range of more frequent, long lasting and severe adverse environmental changes, which can affect the severity and incidence of mental disabilities and mental health problems. Mental disorders affect hundreds of millions of people and, if left untreated, create enormous suffering, disability and economic loss. Rates of depression, anxiety disorders, post-traumatic stress disorders, substance abuse, and suicides are all expected to rise as the effects of climate change worsen.⁸⁻¹¹ Following disasters, mental health problems increase, among both people with no history of mental illness or disability, and those with pre-existing risk. The impacts of climate change on mental health are likely associated with the stress, shock, loss of livelihood, housing, and displacement following storms, droughts, floods, heat, and environmental degradation. Additionally, the knowledge of climate change may lead to anxiety and despair in some people.¹² Climate change may affect people with mental health disabilities directly through exposure to trauma or by affecting their physical health. For example, extreme heat exposure causes heat exhaustion and associated mental health consequences. Persons with severe mental illness, such as schizophrenia, are also at risk because their medications may interfere with self-regulation of body temperature. People with low income, children, elderly, people with previous traumas or multiple losses, and those with existing mental health conditions are at increased risk of the mental health impacts of climate change. Long-term mental health services are needed to prevent mental disabilities in the face of climate-related extreme weather events, particularly for low-income disaster survivors.

Summary of Evidence for Climate and Health

Physical Disability: A retrospective study among elderly population in Italy found that the following were significant risk factors for heat-related death: living in a nursing home or requiring assistance, cognitively impaired, taking a large number of drugs, and having a higher degree of disability.⁶ Persons with a disability were found to be 1.22 times more likely to be unprepared for an emergency; in addition, belonging to communities of color and having less education, less income, and living in an urban area increased the likelihood of being unprepared for an emergency.³ A literature review investigating school planning for climate change in relation to ecological disruptions and disasters revealed that inadequate attention was given to the special needs of children with disabilities and their caregivers.⁴

Mental Disability: A growing body of research has focused on the association between climate change and mental health disabilities. Extreme weather events dramatically impact individuals and communities. Adverse health consequences of Hurricane Katrina persisted for a year or more, and mental health effects were most severe for those experiencing the greatest degree of stressors and loss.¹³ Increasing heat exposure can also worsen the clinical condition of people with pre-existing chronic diseases and mental health problems. There is concern in Australia that droughts substantially increase the incidence of suicide in rural populations, particularly among male farmers and their families.¹⁴ There are direct physiological effects of heat strain that can reduce the ability to work at full capacity and to carry out various daily activities, which can impact mental health as well as livelihood.⁹ Pre-existing dementia is a risk factor for hospitalizations and death during heat waves.¹⁵

Key References:

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Detailed Definition:

- Total Disability Indicator (percent) = $\frac{\text{Total Population with disability}}{\text{Total Population}}$
- Physical Disability Indicator (percent) = $\frac{\text{Total Population with physical disability}}{\text{Total Population} \geq 5 \text{ years old}}$
- Mental Disability Indicator (percent) = $\frac{\text{Total Population with mental disability}}{\text{Total Population} \geq 5 \text{ years old}}$
- Stratification: Physical Disability, Mental Disability, Total Disability
- Interpretation: Population with disability are more sensitive to health impacts of climate change

Data Description and Methodology

- [American Community Survey \(ACS\)](http://factfinder2.census.gov) (<http://factfinder2.census.gov>).
 - Years available: 2008-2012
 - Geographies available: census tract, city, county, county division, region (derived), state

Data were downloaded from American Community Survey (Table S1810). Total disability category is defined as population living with a disability including any persons with at least one of the following disabilities: vision, hearing, cognitive, ambulatory, self-care, or independent living disability. Physical disability category is defined as population living with ambulatory disability. Mental disability is defined as population living with cognitive disability. Physical and mental disability questions were administered only to population aged 5 years or older. Standard errors of the estimates were obtained from the margin of error provided by the ACS. Population-weighted regional estimates and standard errors were calculated. Regions in the CalBRACE 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

The sample population includes noninstitutionalized civilians. Some types of group quarters populations have disability distributions that are different from the household population. The inclusion of the noninstitutionalized group quarters population could therefore have a noticeable impact on the disability distribution. This is particularly true for areas with a substantial noninstitutionalized group quarters population. The ACS 2012 disability data are not comparable to 2007 and earlier ACS disability data due to a change in survey questions.

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Examples of Maps, Figures, and Tables:

Table 1. Percent of Population with Mental Disabilities*, San Diego County, California, 2008-2012

Location	Percent	Total Population
San Diego County	4%	2,791,538
California	4%	34,240,024

*Mental disability in this analysis is defined as cognitive disability (having difficulty remembering, concentrating, or making decisions (DREM) because of a physical, mental, or emotional problem) among noninstitutionalized persons ages 5 years or older.

This estimate is likely an underestimate since populations with mental health conditions or other disabilities (such as self-care, or independent living difficulties) are not included in this analysis but would also be vulnerable to the health impacts of climate change.

Source: U.S. Census Bureau, American Community Survey (ACS), 2008-2012

