

Climate Change, Health, and Equity

Linda Rudolph, MD, MPH

BayREN

June 11, 2019

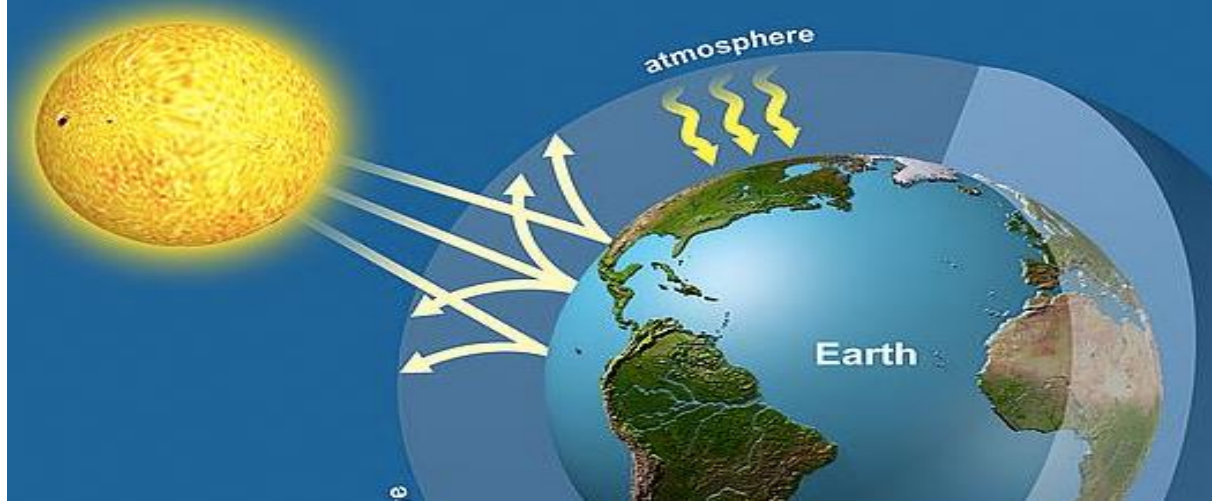


Center for
Climate Change & Health

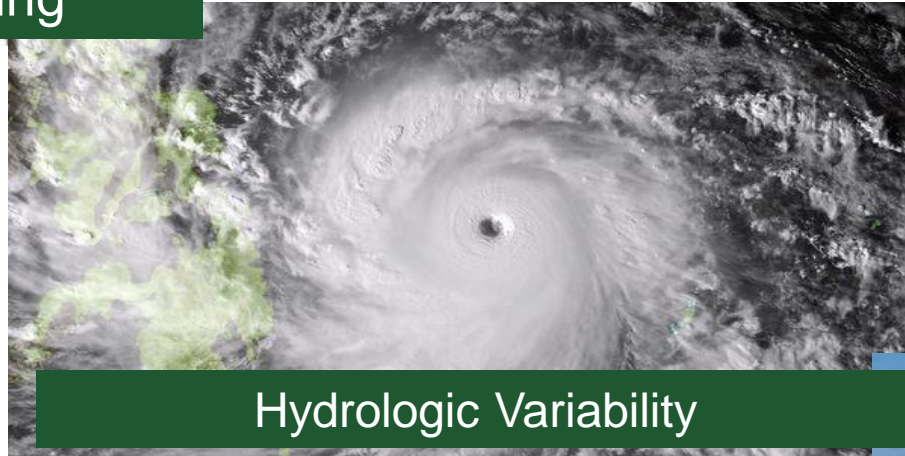
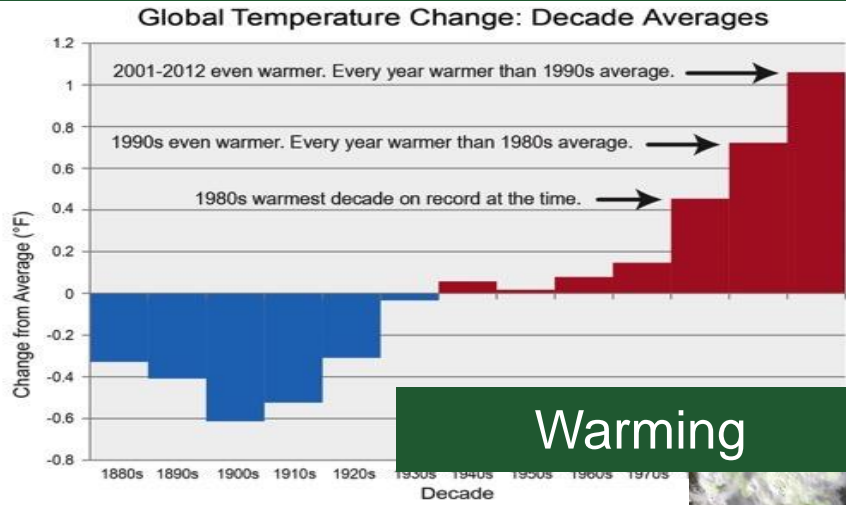


Energy Efficiency Benefits

- Health benefits
 - Reduce exposure to temperature extremes, pests, moisture, CO
 - Identify/mitigate other risks (e.g. lead, radon, fall hazards, missing smoke detectors)
 - Reduce burden of asthma and other respiratory illnesses
- Reduce “energy poverty” – heat vs. eat
- Improve housing conditions
- Create economic opportunities
- Reduce greenhouse gas emissions
 - **Reduce or prevent health harms of climate change**



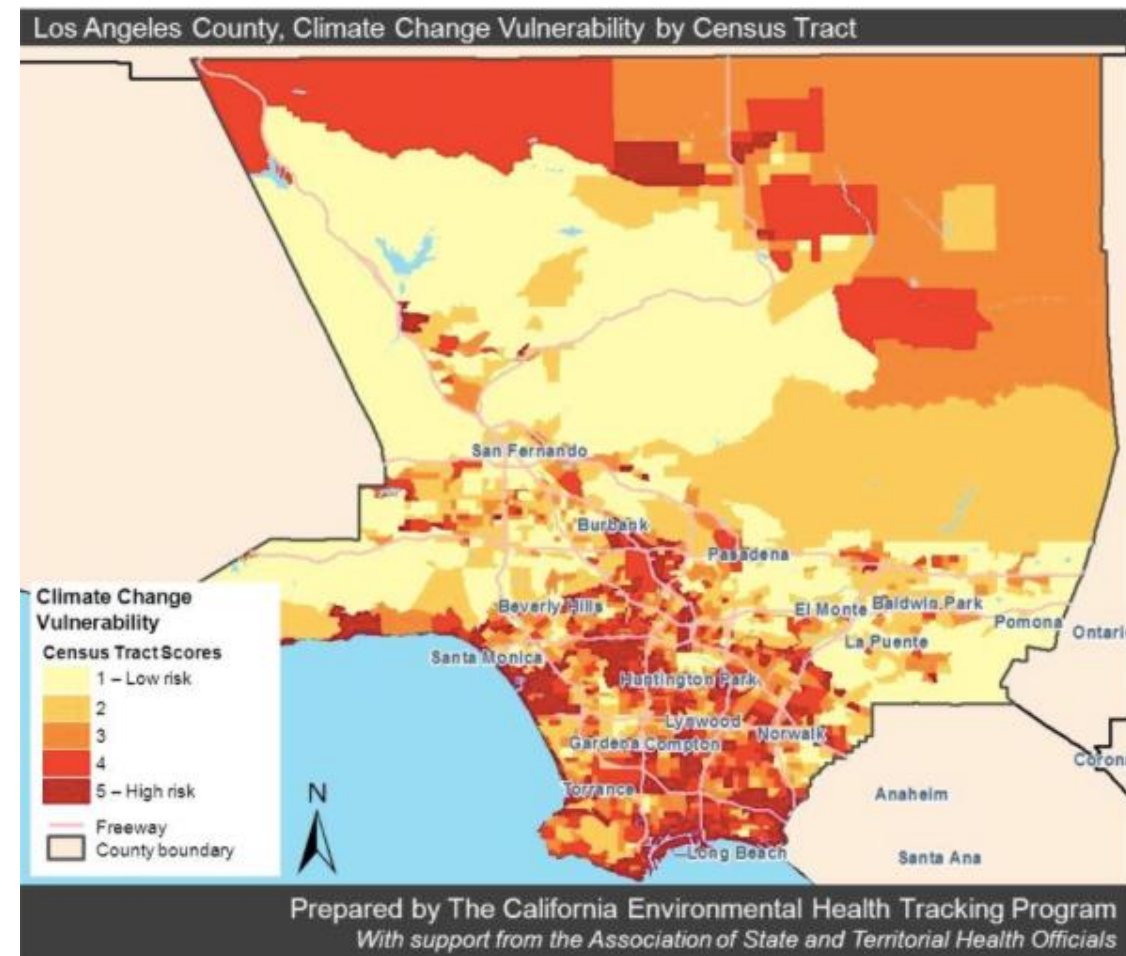
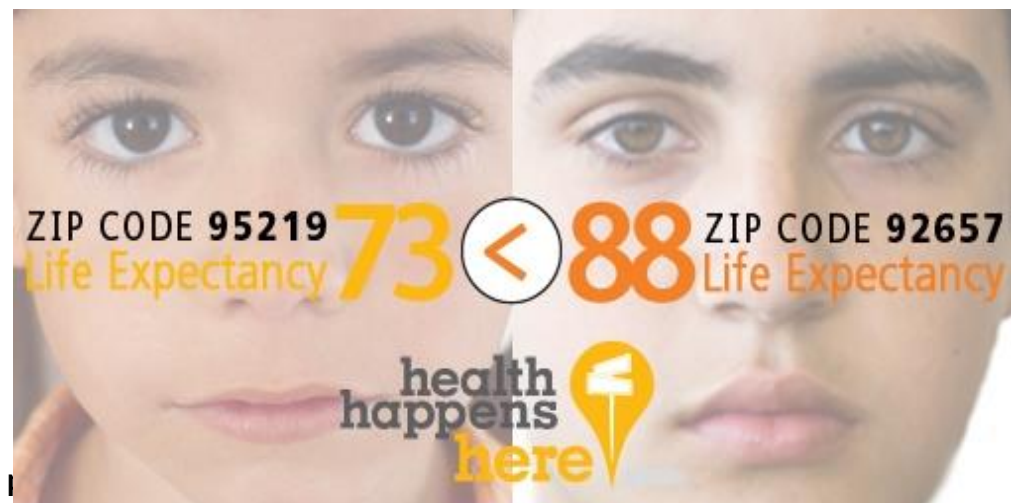
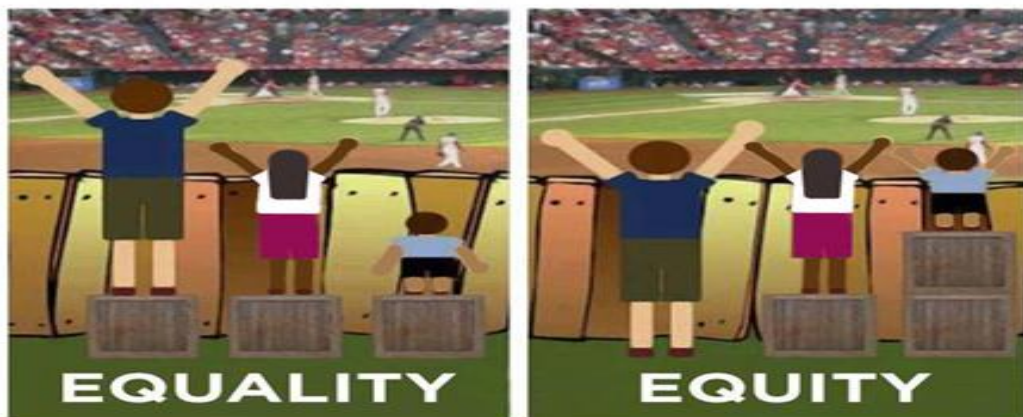
Global Climate Impacts



Climate Change and Health Equity: The Climate Gap

"Social injustice is killing people on a grand scale."

WHO Commission on the Social Determinants of Health, 2008



"...climate change is a 'threat multiplier'... [that] will intensify the challenges of global instability, hunger, poverty and conflict."

Health Impacts of Climate Change

- Heat
- Air Quality
- Wildfires
- Allergens
- Drought
- Storms and Flooding
- Infectious Disease
- Nutrition and Food Security
- Mental Health



Extreme Heat & Rising Temperatures

Top 10 Cities Facing the Most Danger Days

Rank	City	Danger Days by 2050
1	Brownsville, TX	167
1	Phoenix, AZ	167
2	Miami, FL	157
3	Corpus Christi, TX	150
4	Tampa, FL	145
5	Tucson, AZ	140
6	San Antonio, TX	138
7	Austin, TX	137
8	Las Vegas, NV	131
9	Houston, TX	129
10	New Orleans, LA	125

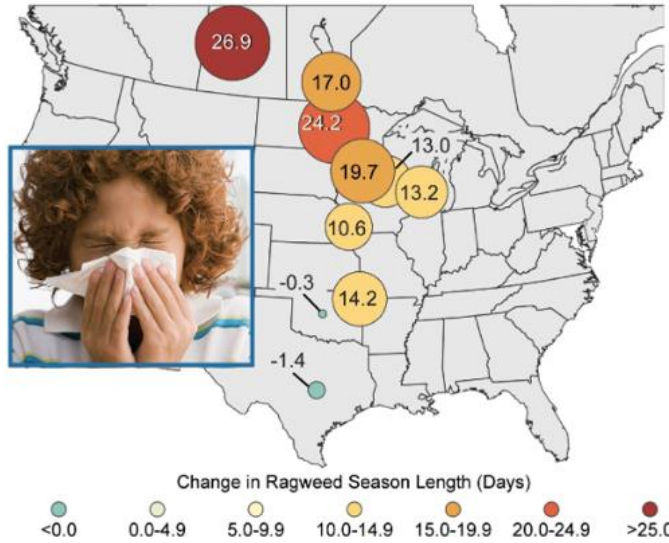
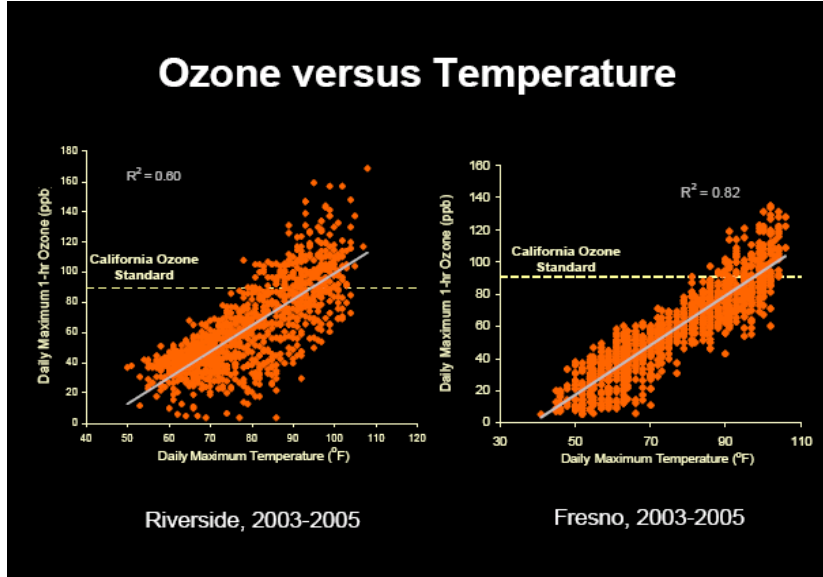
FAST FACT:

African Americans in Los Angeles are more than twice as likely to die in a heat wave than other residents.

By 2025, rising average temperatures will result in 2,100-4,300 excess deaths in California.



Air Quality



DID YOU KNOW?

- California has 7 of the top 10 most polluted cities in the country for year-round particle pollution.
- Smoke from wildfires in Quebec traveled more than 1,000 miles downwind, causing a 30-fold increase in Baltimore's air pollution in 2002.



Drought



Community showers, East Porterville, CA



Myanmarlife.com



European Union External Action

Food Security and Nutrition



! FAST FACT:

Almost 40% of the food grown in the U.S. is wasted.



Rainfall, Storms, Floods, and Sea Level Rise

FAST FACT:

Excessive rainfall has been a significant contributor to historical waterborne disease outbreaks. In 1993 following extreme rainfall, *Cryptosporidium* affected over 400,000 Milwaukee residents



FAST FACT:

The U.S. government has allocated \$48 million to relocate the entire community of Isle de Jean Charles, LA. The island's inhabitants, members of the Biloxi-Chitimacha-Choctaw tribe, are the first official American climate refugees.



Infectious Disease



Anadolu Agency via Getty Images



<http://www.latimes.com/local/lanow/la-me-ln-mayor-garcetti-water-infrastructure-20140804-story.html>



<http://www.esa.org/esablog/guest-posts/zika-are-outbreaks-in-u-s-cities-avoidable/>

Climate Change and Mental Health

- Economic stress
- Displacement, trauma, PTSD, anxiety, depression
- At risk
 - First responders
 - Women and children
 - Low income



Solastalgia

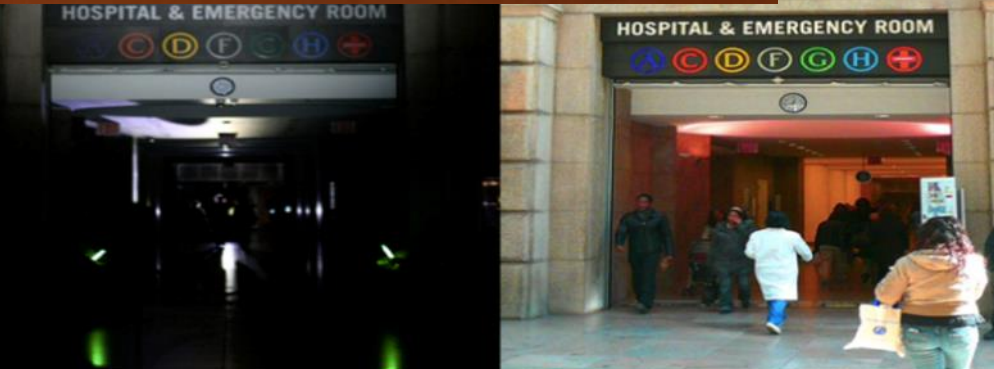
1. feeling of loss at demise of Earth; mourning for Gaia; profound ennui
2. lost connection to nature, an eco-psychological imbalance

Health Care System at Risk

- Increased patient visits (e.g. heat, air quality)
- Extreme weather events
 - Overwhelm capacity
 - Disrupt services
 - Damage facility infrastructure
 - Evacuations
- Disruptions in critical services
 - Electricity
 - Clean drinking water
 - Food service delivery
 - Waste disposal and treatment
- Financial impacts



Memorial Hospital in New Orleans during Hurricane Katrina (Photo courtesy of USA Today)



Bellevue Hospital's entrance atrium during Sandy, left, and a year later, right. (credit: Bellevue Hospital Center)

CLIMATE POLICY RESPONSES FOR HEALTH

“Responding to climate change could be the **greatest global health opportunity** of the 21st century”



[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(15\)60854-6/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(15)60854-6/fulltext)

Active Transportation



- Active transportation and transit
 - ✓ Heart disease, stroke, diabetes, obesity, depression, osteoporosis, asthma, cancers premature death
 - ✓ Social cohesion
 - ✓ Transportation costs
 - ✓ Access to essential services

Less meat, less food waste, sustainably produced food



- ✓ Food security, CVD, diabetes, cancer, antibiotic resistance, pesticide exposure, water contamination



Urban Greening & Green Infrastructure



- Urban greening & green infrastructure
 - ✓ Heat illness, flood risk, air pollution, physical activity, social cohesion, water capture / filtration, carbon capture, healthy foods



Low & zero-emission vehicles, fuel efficiency



- Low carbon driving
 - ✓ Asthma, CVD, premature death
 - ✓ Transportation costs



Safe. Clean. Renewable Energy & Energy Efficiency



- Clean energy & energy efficiency
 - ✓ Respiratory disease, cardiovascular disease, adverse birth outcomes,, neurodevelopment impacts
 - ✓ Fuel poverty



COP24 SPECIAL REPORT

HEALTH & CLIMATE CHANGE



LANCET COUNTDOWN:
TRACKING PROGRESS
ON HEALTH AND
CLIMATE CHANGE

U.S. Global Change
Research Program

Fourth National Climate Assessment



Volume II

Health, Equity, and Adaptation in the United States
Report-in-Brief

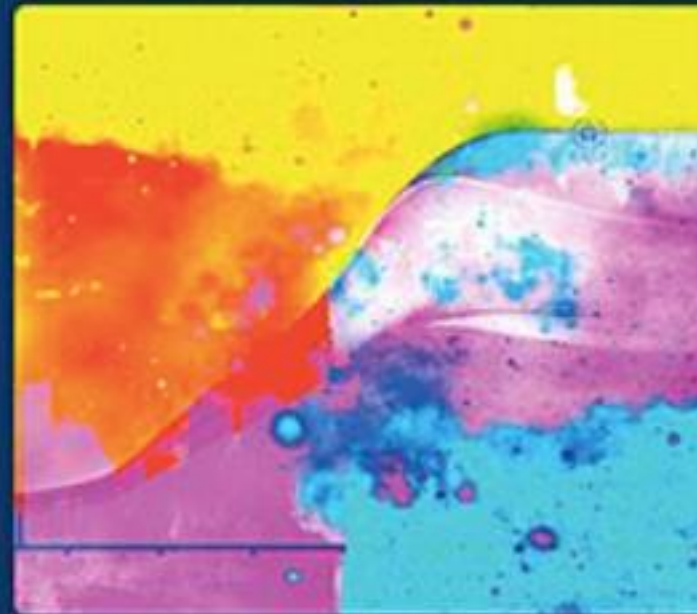
ipcc

International Panel on Climate Change



Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.



International Panel on Climate Change: Special Report on Global Warming of 1.5°C



- We're already at 1.0° warming above pre-industrial levels
- How much more is up to us
- Under Paris Agreement, warming projected to exceed 3°C
- There's a big difference between 1.0° and 1.5°
- There's a huge difference between 1.5° and 2.0°
- The window to keep warming below 1.5° closes in 2030
- Need to cut GHGE in half by 2030 and entirely by 2040 to avoid catastrophic effects
- Greater warming = greater risks to health overall
- Strong public health case for limiting warming to the greatest extent possible
- Stringent mitigation can prevent millions premature deaths and alleviate poverty

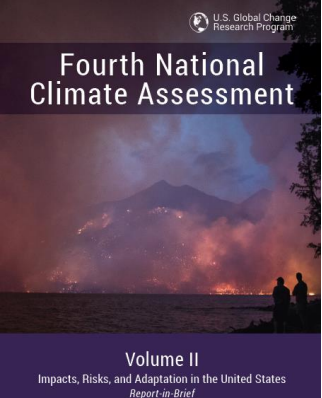


Key 2018 Messages

- Current changes are early warnings of overwhelming PH impacts if temperatures keep rising
- Climate exacerbates health and social inequalities
- Nature and scale of response to climate change will be determining factor in shaping the health of nations for centuries to come
- Potential huge health benefits of climate action



- “Maintaining the global average temperature rise to well below 2°C necessitates wide-reaching transformations across all sectors of society, including power generation, transport, spatial infrastructure, food and agriculture, and the design of health systems. These transformations, in turn, offer levers to help tackle the root causes of the world’s greatest public health challenges.”



Fourth National Climate Assessment

- Climate change affects health of all Americans; health/well-being of Americans already affected
- Greater health risks: children, older adults, low-income communities, some communities of color.
- Adverse health consequences will worsen with more climate changes
- Neither global efforts to mitigate the causes of climate change nor regional efforts to adapt to the impacts currently approach the scales needed to avoid substantial damages to the U.S. economy, environment, and human health and well-being over the coming decades



COP24 SPECIAL REPORT

HEALTH & CLIMATE CHANGE

World Health Organization
2018

- Climate change is the greatest health challenge of the 21st century
- A changing, more variable climate is now recognized as the most likely, highest-impact global risk to society as a whole and which presents a clear and present danger to health security
- Delay in action increases risks to human lives and health
- Massive health benefits from tackling climate change

What did the reports say?

- Climate change impacting our health now.

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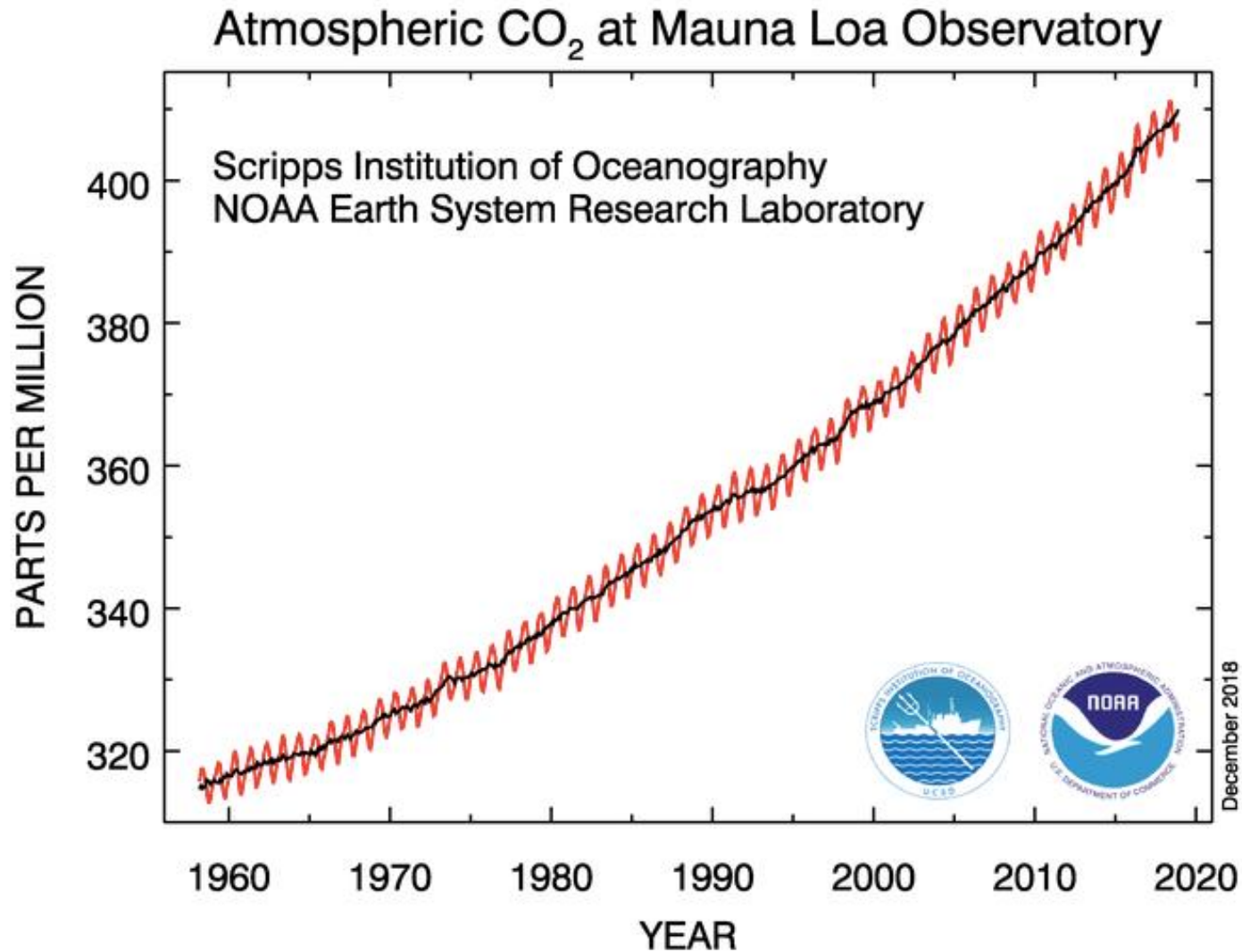
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- Failure to take transformative action with great urgency risks catastrophic effects on human health and well-being, and possibly on survival of human civilization

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- Failure to take transformative action with great urgency risks catastrophic effects on human health and well-being, and possibly on survival of human civilization

Climate change is a global health emergency.

Highest levels CO₂ in at least 800,000 years



“The findings are clear and the stakes could not be higher. We cannot delay action on climate change. We cannot sleepwalk through this health emergency any longer.”

Tedros Adhanom Ghebreyesus, WHO Director General



“Because if climate change has to stop, then we must stop it. It is black and white. There are no grey areas when it comes to survival. Either we continue as a civilisation or we don’t. One way or another, we have to change... But instead of talking about this, all our politicians go on about is economic growth, energy prices and shareholder value. What value is there in a future where hundreds of millions of people suffer?....Some say I should be in school. But why should any young person be made to study for a future when no one is doing enough to save that future? What is the point of learning facts when the most important facts given by the finest scientists are ignored by our politicians?.... You say you love your children above all else, and yet you are stealing their future in front of their very eyes.”

Greta Thunberg, age 15, Sweden



CALIFORNIA CALL TO ACTION ON CLIMATE, HEALTH, AND EQUITY



2019

- Climate change is a global health emergency.
- Equity must be central to climate action.
- Action to reduce climate change can dramatically improve health.
- Ten priority actions to move toward our vision

Healthy people in healthy places on a healthy planet.

Climate Action for Health – Health Action for Climate

- Strengthen GHGE reduction commitments; support Paris Agreement.
- Transition away from the use of coal, oil and natural gas to clean, safe, and renewable energy and energy efficiency.
- Emphasize active transportation in the transition to zero-carbon transportation systems.
- Build local, healthy, and sustainable food and agricultural systems.
- Ensure that all Californians have access to safe and affordable drinking water and a sustainable water supply.
- Invest in policies that support a just transition for workers and communities adversely impacted by the transition to a low-carbon economy
- Engage the health sector voice in the call for climate action.
- Incorporate climate solutions into all health care and public health systems.
- Build resilient communities
- Invest in climate and health with resources to enable health sector to respond

Health Role in Climate Change, Health and Equity



Individual actions



Green hospitals
Provider education



Patient education
Care plans and protocols
Home assessments



Community outreach and
education



Data and health assessments
Community capacity & power
Preparedness and response



Intersectoral collaboration
Health in All Policies

Thank you.

Linda Rudolph, MD, MPH

linda.rudolph@phi.org



“You say you love your children above all else, and yet you are stealing their future in front of their very eyes.”
Greta Thunberg

Resources

IPCC 1.5 Health Report

https://www.who.int/globalchange/181008_the_1_5_healthreport.pdf

Lancet Countdown 2018

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)32594-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)32594-7/fulltext)

WHO COP-24 Special Report: health and climate change

<https://apps.who.int/iris/bitstream/handle/10665/276405/9789241514972-eng.pdf?sequence=1&isAllowed=y>

Fourth National Climate Assessment

<https://nca2018.globalchange.gov>

California Fourth Assessment

<http://www.climateassessment.ca.gov>

www.climatehealthconnect.org

Direct Energy Efficiency Benefits for Health

- Weatherization (insulation/sealing) can reduce exposures
 - Temperature extremes
 - Allergy-triggering pests
 - Excessive moisture (mold)
- Repair/replacement old, malfunctioning appliances
 - Eliminate backdraft that introduces CO
- Identify and mitigate risks
 - Malfunctioning smoke detectors, lead paint, radon exposure, trip and fall hazards
- BUT: improvements that decrease air exchange can increase exposure to indoor pollutants, including radon and toxic emissions, or excessive moisture (IOM – Climate Change, Indoor Air and Health)

“Saving Energy, Saving Lives

The Health Impacts of Avoiding Power Plant Pollution with Energy Efficiency”

ACEEE-PSR, 2018

- Used AVERT tool (Environmental Protection Agency’s Avoided Emissions and geneRation Tool)
 - Scenario: 15% reduction in annual energy consumption across U.S.
 - Identify reduction in PM2.5, NOx, SO2 due to electricity savings from energy efficiency
- Used EPA’s CO-Benefits Risk Assessment (COBRA) health impacts screening and mapping model to assess avoided illness due to improved ambient air quality

ACEEE-PSR Results

- Reduced electricity consumption would decrease pollution by millions of *tons in a single year*, including
 - An 11% reduction in PM2.5 pollution (a total of more than 20,000 tons)
 - A decrease in NOx emissions of 18% and in SO2 emissions of 23% (approximately 192,000 and 267,000 tons, respectively)
 - A 14% reduction in carbon dioxide (CO2) pollution (approximately 285 million tons)
- Nationwide, reducing electricity consumption by 15% for a single year would result in
 - More than six lives saved each day
 - Up to \$20 billion in avoided health harms
 - Nearly 30,000 fewer asthma episodes
- Benefits accrue more significantly to regions/cities with greater exposure to coal-fired power plants

ALA State of the Air, 2019

County	Ozone	Particulate Matter	Pediatric Assthma	Adult Asthma	Cardio-vascular Disease	Poverty Estimate
Alameda	F	F	21,391	103,924	80.088	152,087
Contra Costa	F	F	16,262	70,569	59,547	103,883
Marin	A	D	16,965	11,437	16,970	20,222
Napa	B	F	8,916	5,535	8,041	9,301
S.F.	A	D	60,044	32,761	45,753	87,314
San Mateo	C	D	48,602	28,543	40,690	31,826
Santa Clara	F	F	26,693	118,941	91,785	132,603
Solano	D	F	27,514	16,054	22,833	43,452
Sonoma	B	C	32,419	20,239	29,443	41,165

Will Dominie, BARHII
Policy Manager for
Housing and Equitable
Development

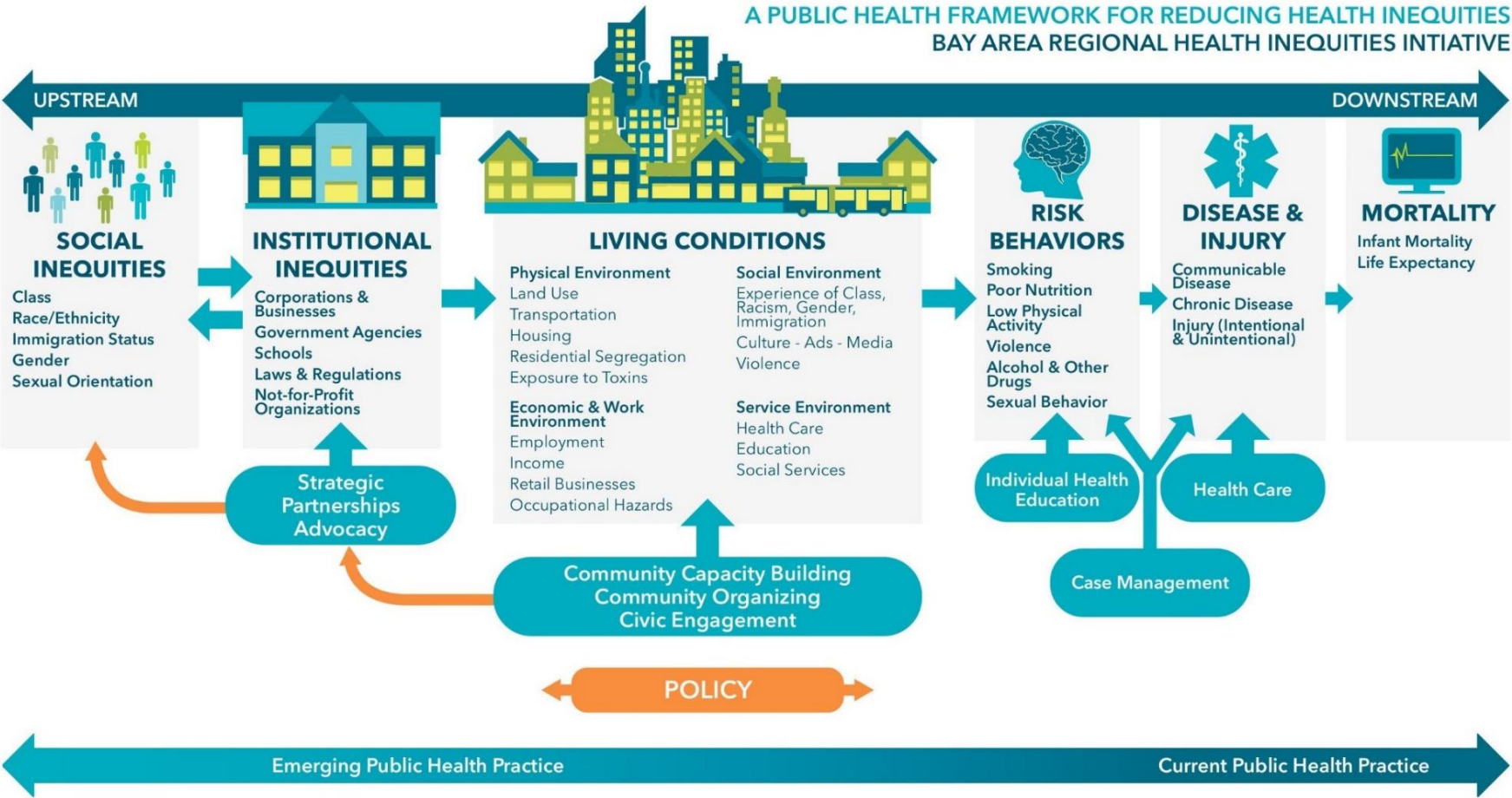
Housing, Energy Efficiency and Health Equity

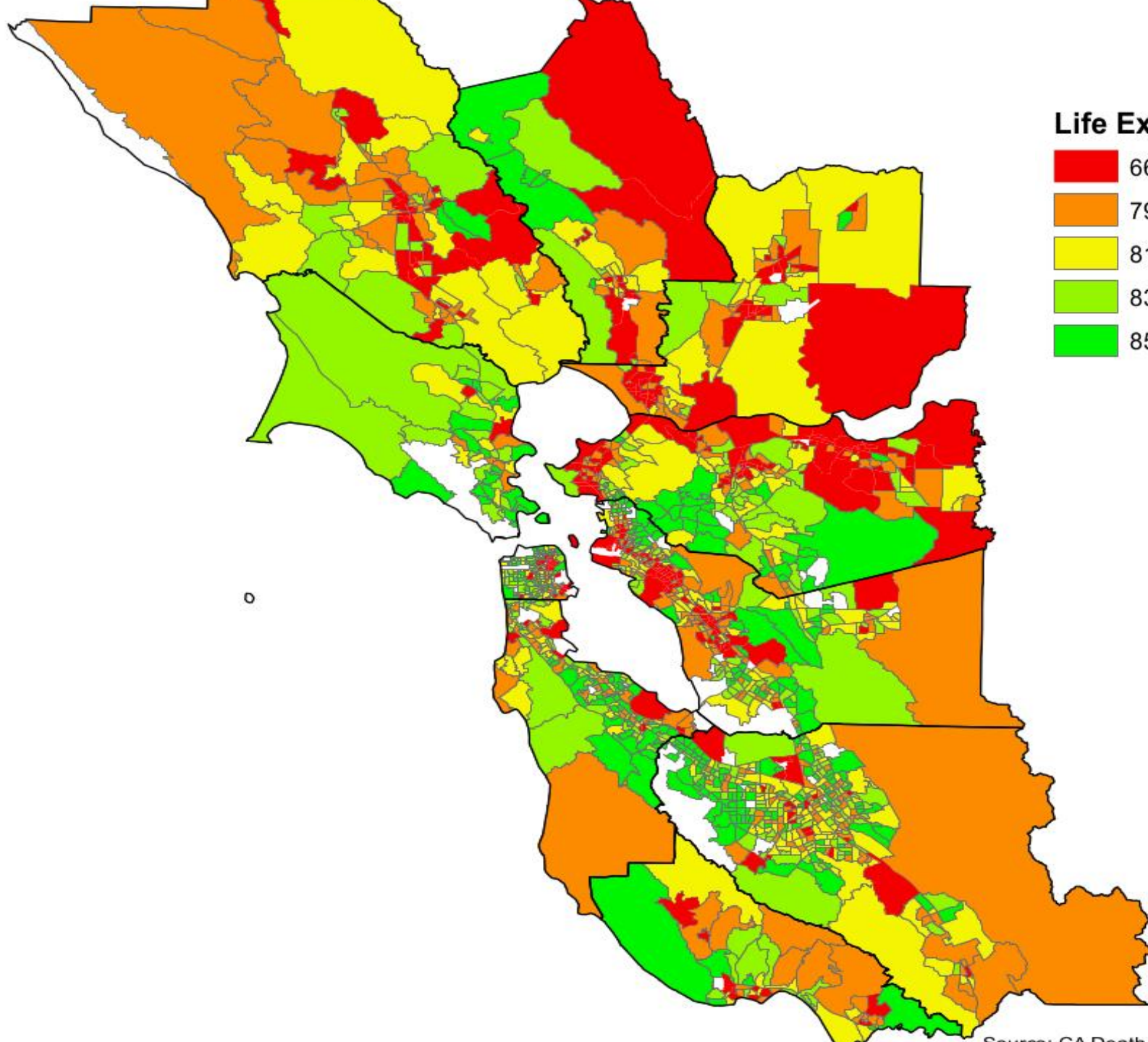
BARHII



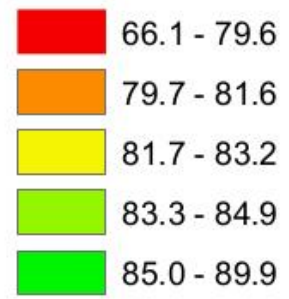
It is our mission to transform public health practice for the purpose of eliminating health inequities using a broad spectrum of approaches that create healthy communities.

The BARHII Framework





Life Expectancy at Birth



ALTHOUGH DEATH RATES IN CALIFORNIA HAVE DECLINED, DISPARITIES PERSIST WITH AFRICAN AMERICANS HAVING HIGHER DEATH RATES THAN THOSE OF OTHER RACIAL/ETHNIC GROUPS

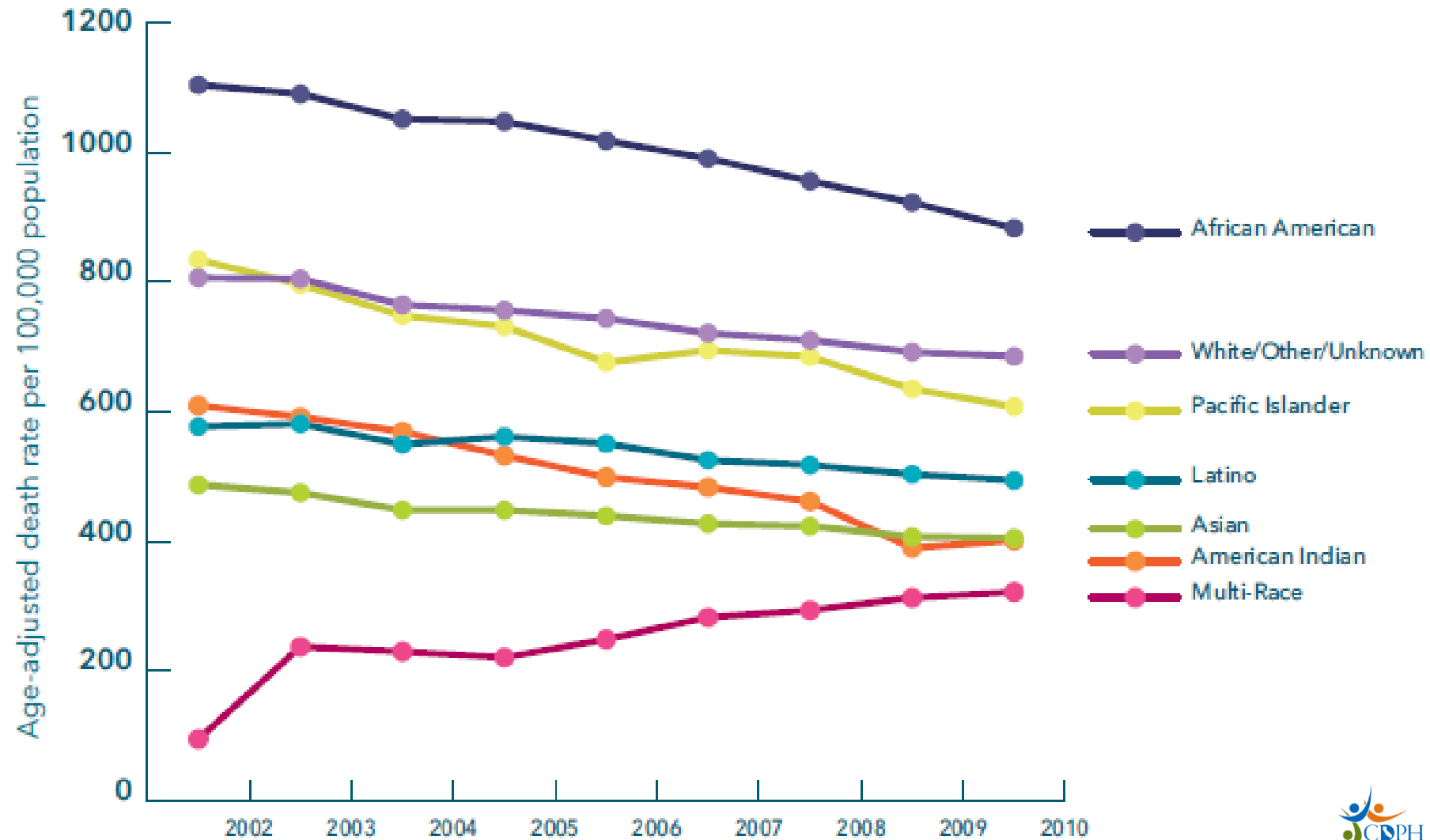


FIGURE 2: Death rates, by race/ethnicity, California, 2002 to 2010.

Source: California Department of Public Health, Death Records; and California Department of Finance, Race and Ethnic Population with Age and Sex Detail, 2000-2050. Sacramento, California, July 2007.

Note: Age-adjusted rates are calculated using year 2000 U.S. standard population.



Climate Change IS Exacerbates Existing Health Inequities NOW

Climate Impacts

- Extreme Heat
- Air Pollution
- Wildfire
- Severe Weather/Storms
- Drought
- Agricultural Disruptions



Health Impacts

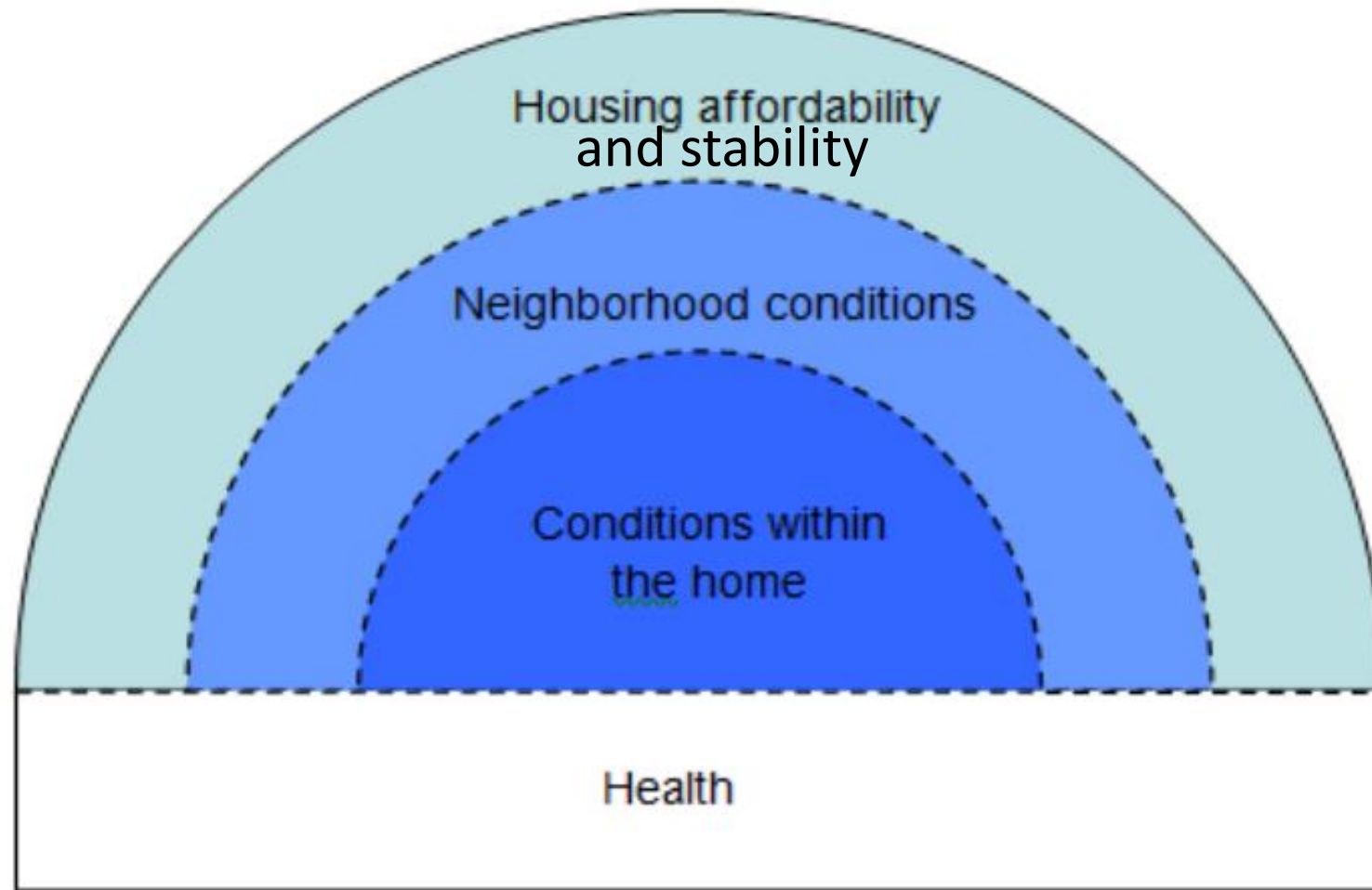
- Death
- Cardiovascular Stress and Failure
- Disease
- Hunger; malnutrition
- Increased cost of water, food and energy
- Illnesses such as Heat Stroke, Heat Exhaustion
- Mental health disorders



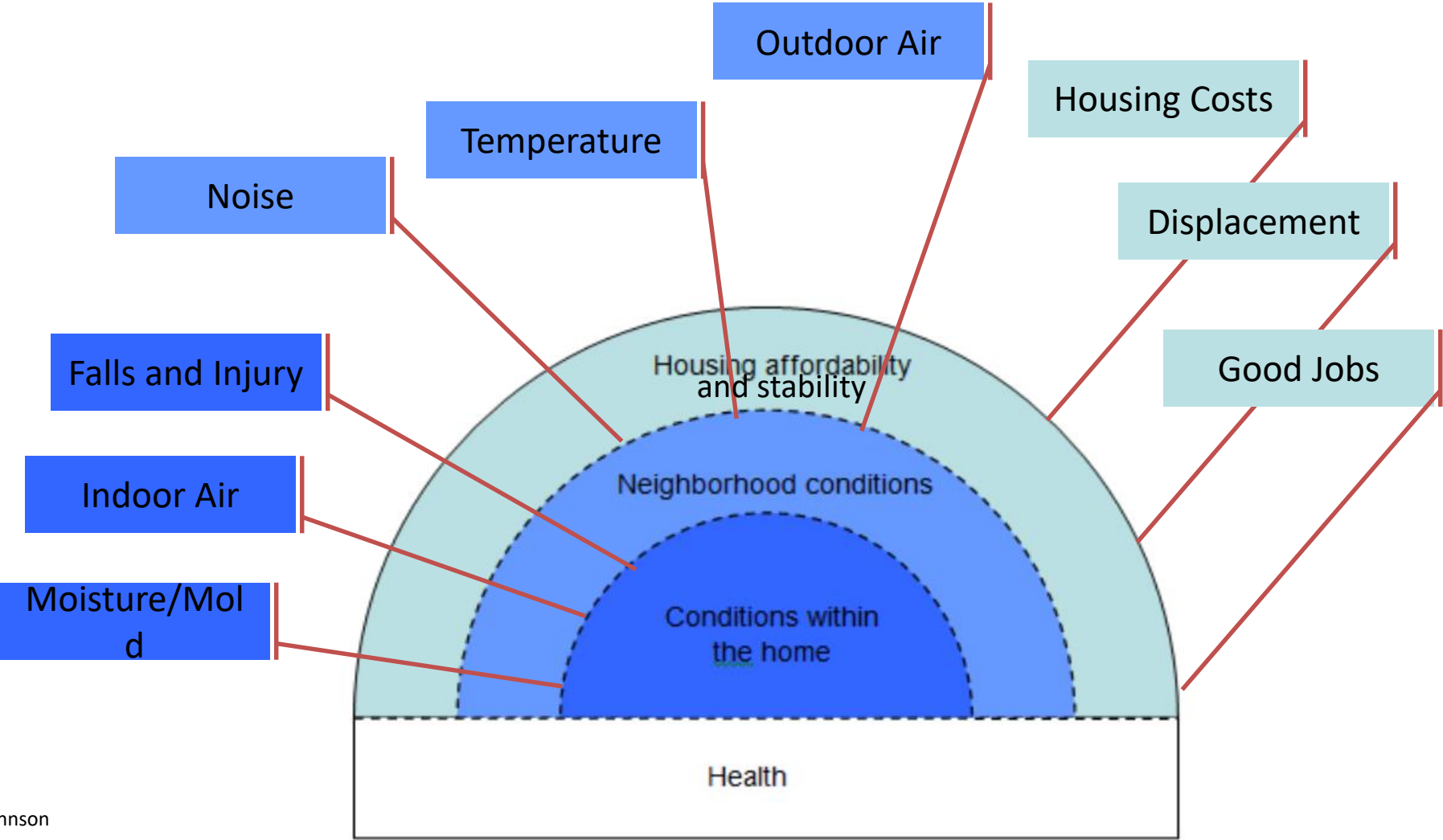
Groups Most Impacted

- Elderly
- Children
- Farm/Outdoor Workers
- Diabetics
- Low-Income Urban Residents
- People with Respiratory Diseases

Housing and Health



Housing, Energy Efficiency and Health

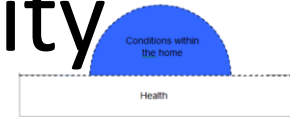


Credit: Robert Wood Johnson

Public Health Roles

- Targeted Investments
 - By Neighborhood, Tenure and Housing Conditions
 - Specific, Medically Vulnerable Households
- Outreach
 - In client's homes
 - Trusted spokespeople
 - Building power with community
- Maximizing multiple benefits and avoiding harms

Housing and Health: Habitability



Q Enter a location...



Details

Back Housing Habitability

View Indicators

Rank

Pool

Create Custom Score

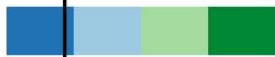
Data Upload

Report/Export

About

How does this tract compare?

This tract



Less More

Healthy Conditions

This tract has a higher percent of households with basic kitchen facilities and plumbing than just **21.5%** of other California census tracts.

What does this indicator measure?

Percent of households with basic kitchen facilities and plumbing

In this tract, **97.86%** of households have basic kitchen facilities and plumbing.

What is the connection to health?

Everyone should be able to live in a safe and habitable home. Poor quality and unstable housing quality has been linked to asthma, injury, poisoning, depression, behavioral problems and educational delays, low birth weights, communicable disease, skipped meals and medical care, and food insecurity.

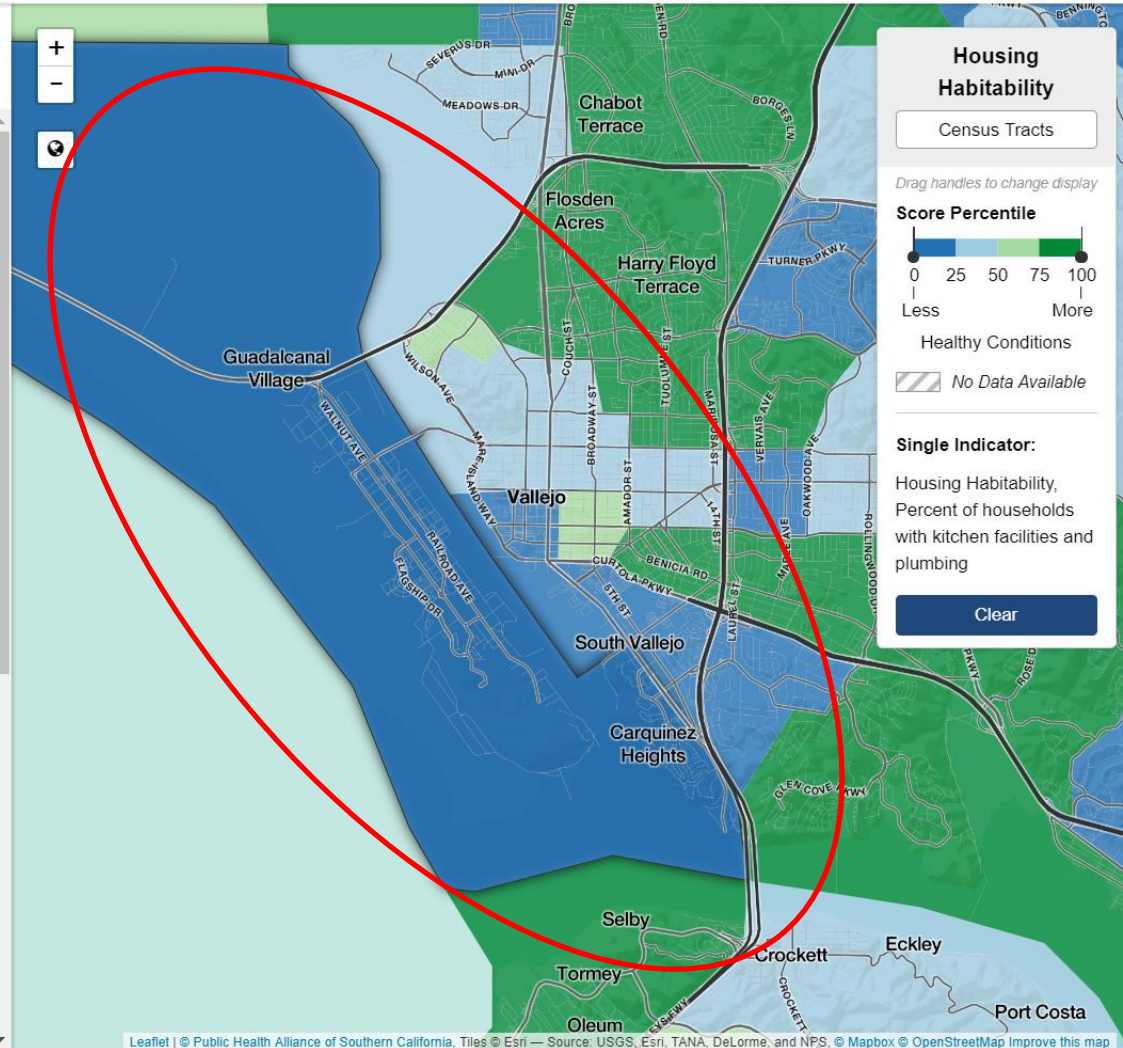
Policy actions to address this indicator

Food Access

- [Improve Healthy Food Access](#)

Housing

- [Preserve and Improve Existing Housing](#)
- [Stabilize Residents and Neighborhoods](#)

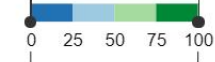


Housing Habitability

Census Tracts

Drag handles to change display

Score Percentile



Less More

Healthy Conditions

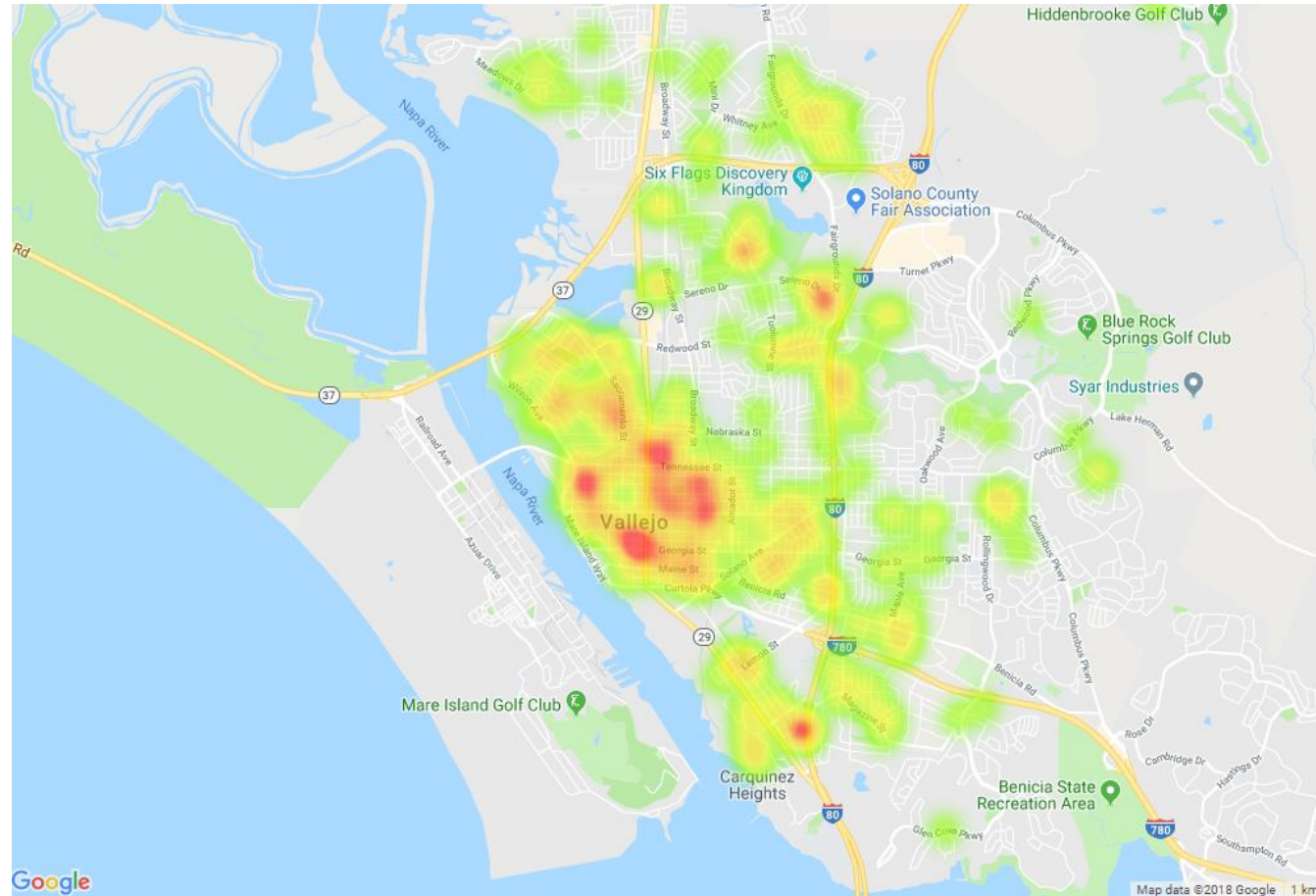
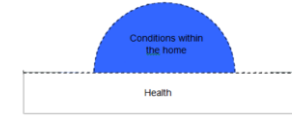
No Data Available

Single Indicator:

Housing Habitability, Percent of households with kitchen facilities and plumbing

Clear

Code Enforcement Complaints



Health and Housing Preservation Strategy

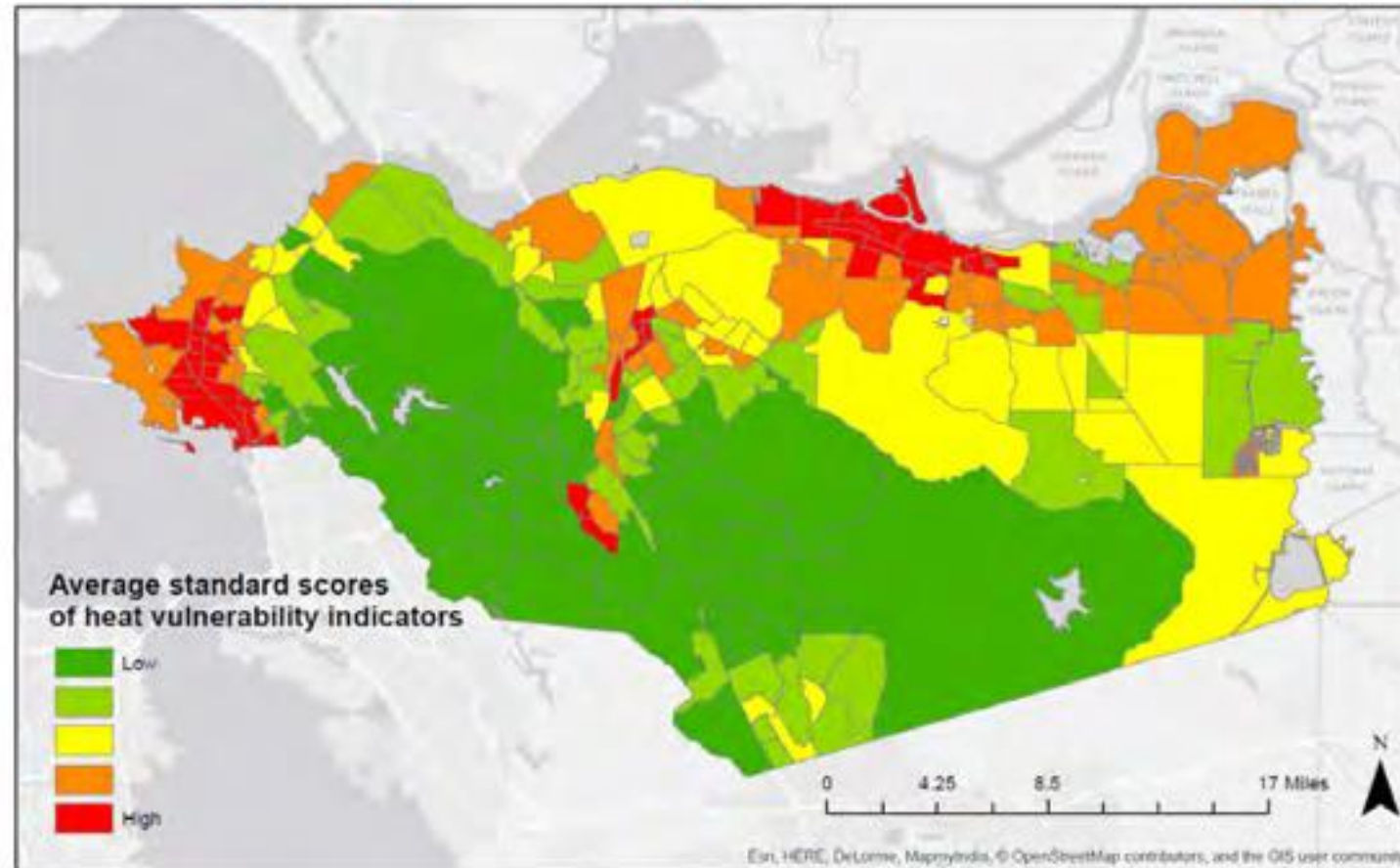


Healthy communities

- Better food
- Lower asthma, allergies
- Less ER visits
- Reduction of homelessness
- Higher school performance
- Higher mental health
- Less driving



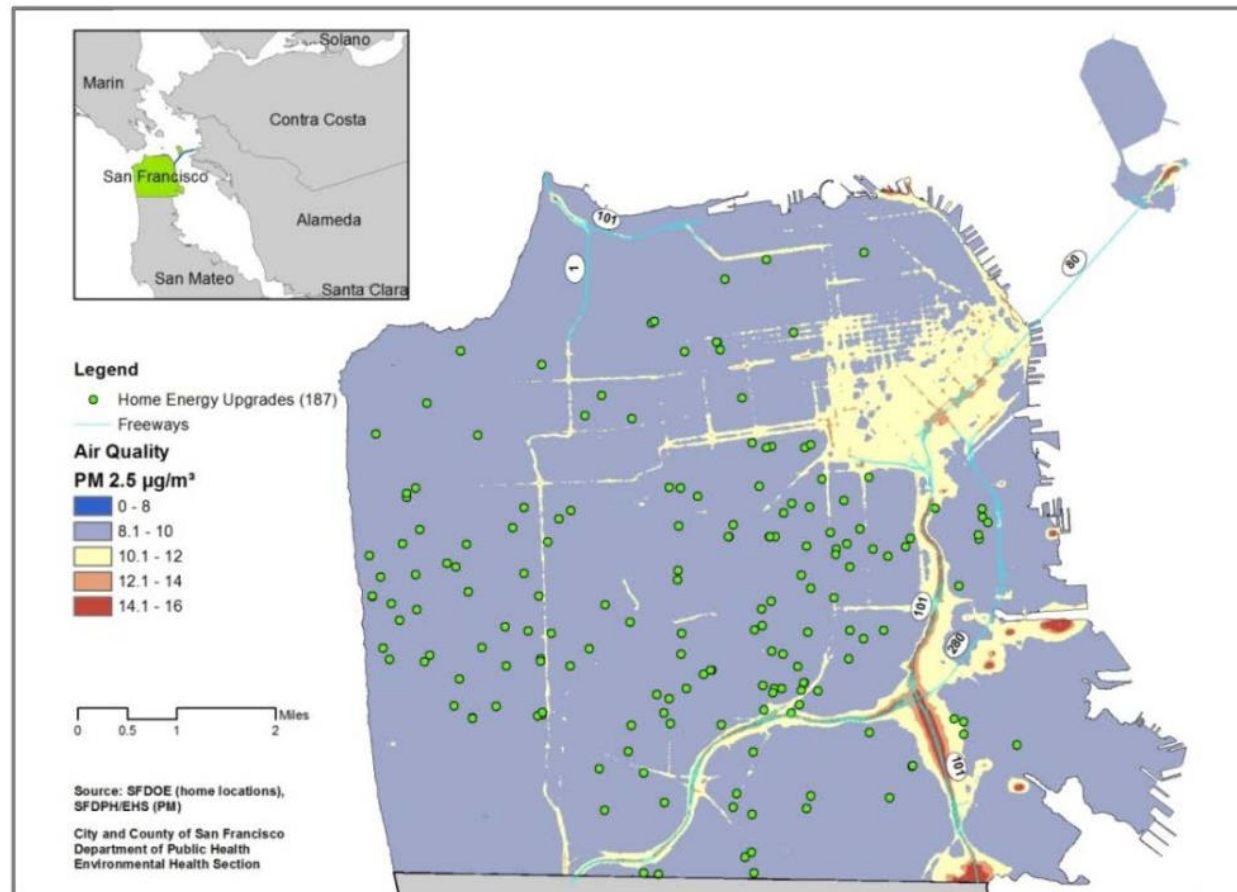
Figure 21: Average Z-Scores Of Heat Vulnerability Indicators By Census Tract, Showing An Equal Number Of Census Tracts In Each Category.



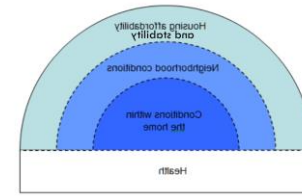
Air Quality



Map 1. SFHIP energy efficiency upgrade locations (187 homes) and average ambient annual $PM_{2.5}$ concentration from all sources ($\mu g/m^3$).



Housing Affordability Impacts Spending on Healthcare and Food



Low-Income Households that can comfortably afford housing are able to spend:



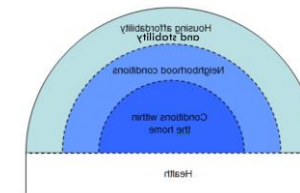
More on Childcare



1/3rd more on Healthy Food



5x as much on Healthcare

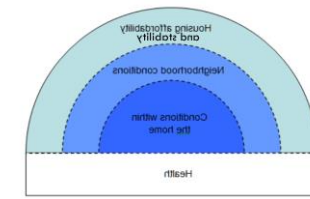


Displacement in the Bay Area



COUNTY	AT RISK	ONGOING or ADVANCED
Alameda	35%	36%
Contra Costa	24%	18%
Marin	22%	25%
Napa	28%	28%
Sacramento	35%	23%
San Francisco	35%	47%
San Joaquin	36%	24%
San Mateo	27%	38%
Santa Clara	22%	37%
Santa Cruz	33%	31%
Solano	18%	16%
Sonoma	20%	24%
Yolo	27%	22%
Bay Area Total	29%	31%

Evictions



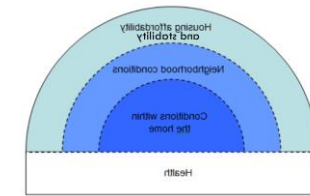
In 2014-2016, there were approximately as many formal evictions filings in Contra Costa County as there are seats in the Concord Pavilion. This is likely only a small part of total evictions that took place.

Eviction is a leading cause of homelessness.

Tenants Together: <https://actionnetwork.org/groups/tenants-together/files/23632/download>

Image Credit: The Concord Pavilion

Tenant/Homeowner Protections



NORTHERN CALIFORNIA TENANT PROTECTIONS MAP



California LEGISLATIVE INFORMATION

skip to content home accessibility FAQ feedback login

Quick Search: Bill Number go

Home Bill Information California Law Publications Other Resources My Subscriptions My Favorites

Bill Information >> Bill Search >> Text

[PDF](#) | [Add To My Favorites](#) | [Track Bill](#) | Version: 04/25/19 - Amended Assembly

AB-1232 Affordable housing: weatherization. (2019-2020)

Text Votes History Bill Analysis Today's Law As Amended Compare Versions Status Comments To Author

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AMENDED IN ASSEMBLY APRIL 25, 2019
AMENDED IN ASSEMBLY APRIL 11, 2019
AMENDED IN ASSEMBLY MARCH 26, 2019

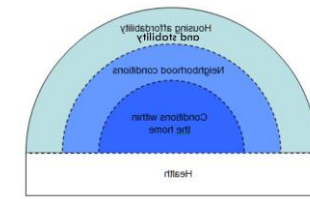
CALIFORNIA LEGISLATURE— 2019–2020 REGULAR SESSION

ASSEMBLY BILL **No. 1232**

Introduced by Assembly Member Gloria

February 21, 2019

Co-Benefits: Job Training

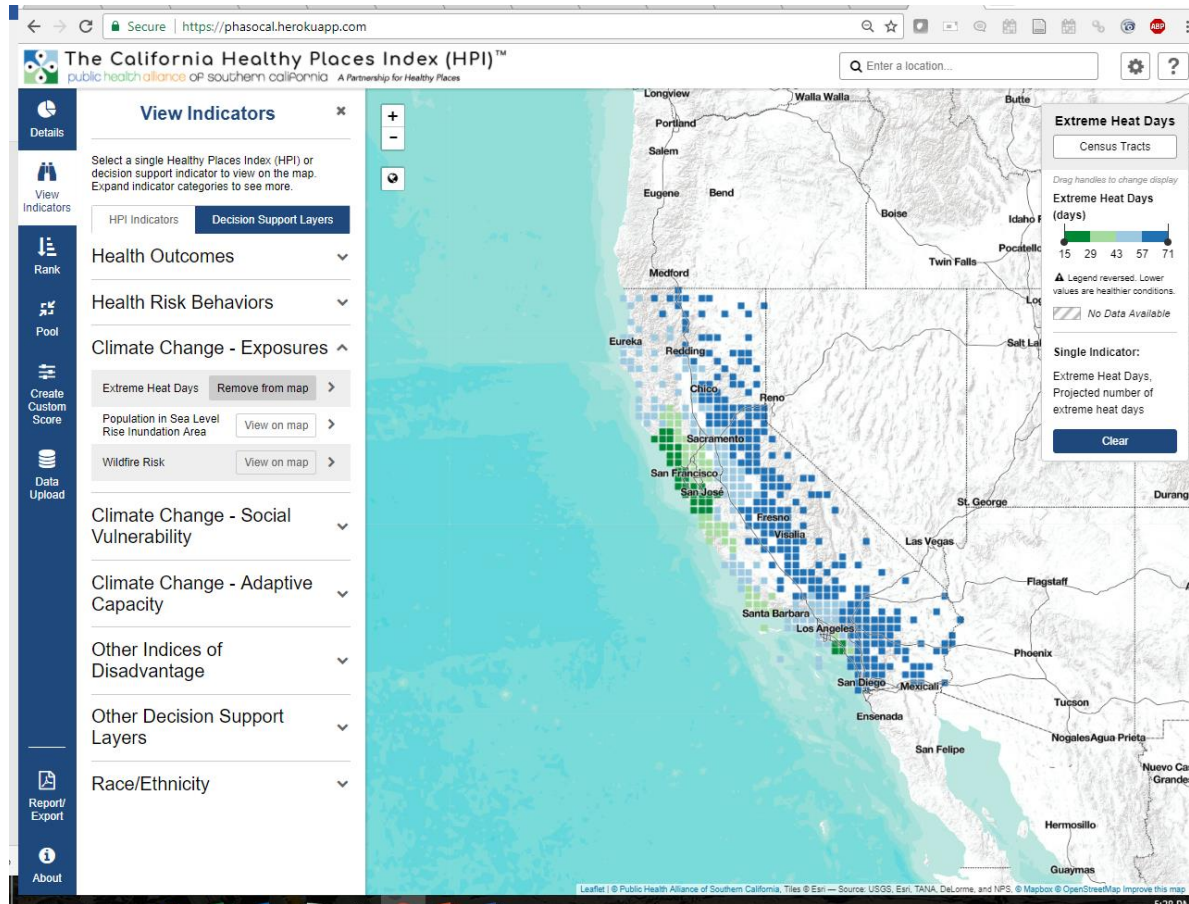


Thank You!

Contact us for More Information:

wdominie@barhii.org

Public Health Resources: Healthy Places Index



g/policy-actions/extreme-heat/#heat_resilient_households

Prevention

Heat Resilient Households

Help residents prepare and stay healthy during heat events through home weatherization, air conditioning, education, and other programs.

Find the policies that are right for you.

Weatherization Programs help low-income residents ensure that their homes are energy efficient and weatherproof, usually at low or no cost to residents. Some programs will install air conditioning for medically vulnerable residents. Weatherization programs can include cool roof coatings, insulation and other treatments that work to keep homes cool when temperatures are high and to save residents money. To maximize public health co-benefits, weatherization programs may also operate in conjunction with programs to address asthma triggers and improve indoor air quality, or include job training and employment opportunities for people with barriers to employment. In making homes more airtight, weatherization can increase the need for well-maintained ventilation systems. In areas with high proportions of renters, some programs allow tenants to request weatherization services with the consent of their landlords, and pay for improvements from savings on energy bills. There are a number of funding sources/programs for low-income weatherization in California, including the Low Income Home Energy Assistance Program, Weatherization Assistance Program, and the Low-income Weatherization Program. For more information, see The U.S. Environmental Protection Agency's Reducing Urban Heat Islands Compendium of Strategies: Heat Island Reduction Activities, the California Department of Public Health's Healthy Homes, San Francisco's Assessing the Health Co-Benefits of San Francisco's Climate Action Plan and Enhancing Health Benefits of Residential Energy Efficiency Programs.

Energy and Air Conditioner Subsidies and Protections assist households who cannot afford air conditioners and energy costs. While studies of past heat events have shown that access to air conditioning can be essential to preventing heat-related health impacts, many low-income households cannot afford to purchase air conditioning or run air conditioning units without incurring high energy bills. These programs target heat-vulnerable households, and help them pay for air conditioning. Some programs ensure that utilities are not shut off during heat events regardless of ability to pay for the service. For more information, see The California Climate Action Team's Preparing for Extreme Heat: Guidance and Recommendations and the Pacific Institute's Community Based Climate Adaptation Planning, and the U.S. Environmental Protection Agency's Excessive Heat Events Guidebook.

Cool Communities

Reduce the heat-island effect, and help residents stay safe with cool infrastructure and recreation facilities.

Find the policies that are right for you.

Cool Roofs are made of materials that reflect and shed heat to keep buildings cool. Traditional roofs may be as much as 55.85 degrees hotter than daytime air temperatures, while cool roofs are typically only 10-20 degrees warmer! Local governments can install cool roofs on public buildings, lowering community temperatures and helping drive demand and capacity for cool roof installation firms. Jurisdictions can explore partnerships with energy companies, to use public dollars to offer cool roof incentives. California already has cool roof standards in its Statewide Title 24 standards, but local jurisdictions can build on top of these standards in their local energy codes. For more information, see The U.S. Environmental Protection Agency's Reducing Heat Islands: Compendium of Strategies: Cool Roofs, Climate Resilient's Cool Roofs Initiative, and Los Angeles' Cool Roof Ordinance.

Cool Pavements are paving materials designed to reflect solar energy, speed up evaporation or otherwise stay cooler than traditional pavements. Cool pavements include seals that can be added over existing paving, traditional materials like concrete, modified asphalt or other newer materials. They can also be permeable pavements with or without plant elements (e.g. grass pavers or porous concrete, respectively) to increase water absorption or support urban greening. Local governments can adopt cool pavements in their own operations, provide incentives, or include them in development and parking standards. For more

PUBLIC HEALTH RESOURCES: CLIMATE QUICK GUIDES

GUIDE 01 Taking Action on Climate Change for Health

Climate Change: What's Public Health Got to Do With It?

DEFINITIONS

Greenhouse Gases (GHG)
Gases which absorb infrared radiation and trap its heat in the atmosphere. Both natural and industrial gases exhibit these greenhouse properties, like carbon dioxide and methane.

What is Climate Change?
Global warming refers to the rise in global average temperature near Earth's surface. It is one aspect of climate change, which refers to major changes in temperature, precipitation, or wind patterns that last for a long time.

Why is Climate Change a Public Health Issue?
Climate change is a threat to human health and well-being in both direct and indirect ways, including through impacts on food systems, water resources, human settlements, physical health, and environmental quality. It also exacerbates existing health inequities and can contribute to the emergence of new health threats.

How does Climate Change Affect Public Health?
Climate change has a wide range of impacts on human health, including through impacts on air quality, food systems, water resources, human settlements, physical health, and environmental quality. It also exacerbates existing health inequities and can contribute to the emergence of new health threats.

Getting Involved in Climate Change Action Planning

Spotlight on Santa Clara County
As part of its CDC-funded Communities Putting Prevention to Work Obesity Prevention Initiative, the Santa Clara County Public Health Department (SCCPHD) worked with jurisdictions and community organizations on environmental strategies to increase the use of active transportation and the consumption of local fresh food. Some of the strategies were: creation of a city Community Supported Agriculture (CSA) project, expansion of the acceptance of Cal Fresh EBT cards at farmers' markets, adoption of Safe Routes to School policies in school districts and cities, creation of a bilingual bike map, development of zoning standards to implement active transportation policies in a city general plan, and amendment of a city code to reduce parking requirements. SCCPHD also embarked on a new collaboration with the Office of Planning to create a Health Element, which will be the first of its kind in the County and will help shape other elements of the General Plan.

GUIDE 02 Taking Action on Climate Change for Health

Health and Equity Co-Benefits of Addressing Climate Change

DEFINITIONS

Health Co-benefits
The health benefits that result from strategies that are intended to address a non-health issue.

Mitigation
As related to climate change: reducing greenhouse gas emissions.

Climate change mitigation and readiness measures are being implemented in land use, transportation, water, energy, waste, agriculture, and more. Many climate action strategies also have significant beneficial effects on public health and equity, known as **co-benefits**, making climate change action a "win-win". Some health co-benefits of strategies to reduce greenhouse gas emissions from transportation include: decreases in obesity, cardiovascular disease, respiratory illness, osteoporosis, and

Climate Change Will Not Affect All Communities in the Same Way
Whether through sea level rise, droughts, or heat waves, the populations most vulnerable to climate-related health impacts are the same communities that experience **health inequities**, the unjust and avoidable disparities in health outcomes. These include the elderly, children, communities of color, and those unable to afford food, quality shelter, fuels for cooking and transportation, or lacking alternatives to contaminated drinking water.

Mitigation Strategies Can Support Health Equity Efforts
Reducing greenhouse gas (GHG) emissions is essential to reduce the impact of climate change. Actions to mitigate further climate change can also address health inequities. More than 60% of adults do not achieve the amount of regular physical activity. The highest rates of physical inactivity are among California's low-income households and communities of color. These communities have the least access to safe places to exercise and play. Rates of chronic diseases such as diabetes and heart disease are also highest in these communities.

Climate Change Mitigation Law, Senate Bill 375, requires regional housing, and other land use planning to lower greenhouse gas emissions. As a result, regional agencies are planning for **built environments** that are walkable with jobs, affordable housing, schools, and basic services close to one another and easily accessible by public transportation. This includes: encouraging residents to drive less, placing jobs, enriched public schools, and other goods and services, such as grocery stores, with housing that is close to public transit. This approach provides increased opportunities for physical activity and helps decrease health inequities.

GUIDE 03 Taking Action on Climate Change for Health

Climate Change and Health Equity

DEFINITIONS

Health Inequities
The unjust and avoidable differences in health status seen within and between populations and places.

Built Environment
Environments in which people live, work, and play.

Mitigation Strategies Can Support Health Equity Efforts
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GUIDE 04 Taking Action on Climate Change for Health

How Public Health can Address Climate Change

Greenhouse gas emissions from human activity are increasing the earth's temperature, resulting in extreme weather events that have serious health consequences. Vulnerable communities will likely have some of the greatest exposure to climate-related health impacts and the fewest resources to confront them. This is a public health issue and public health professionals can play a key role in addressing it.

We Can Address Climate Change. We Can Impact Health.
The following are suggested actions public health staff can take to address climate change at work. We urge you to carry out some of these and encourage your leadership or staff to implement them so that your organization is doing its part to confront this threat to public health.

Research

- Complete internal needs assessments and community vulnerability assessments to gather baseline data.
- Map geographic areas for impacts over time.
- Partner with other agencies to monitor key data changes (i.e., weather, neighborhood, and health outcomes). Include health data and maps on County or City website for use by others.
- Work with relevant agencies in your jurisdiction to examine emissions related to your health department's purchasing policy, building energy use, and staff travel.

Education and Outreach

- Conduct trainings on the health impacts of climate change for department staff, medical professionals, staff in related departments, and community-based organizations.
- Post climate change web links and information to your department's website, professional network list-serves and email lists.
- Use local data to identify opportunities to address climate change.
- Empower all staff working with the community to integrate messages into existing prevention programs about the health co-benefits of addressing climate change. For example, did you know global warming affects pollen season, which can lead to an increase in asthma and other respiratory problems?

Spotlight on Alameda County
The Adapting to Rising Tides (ART) project is a collaborative planning project evaluating how Bay Area communities can improve their resilience to sea level rise and storm events. The project was initiated in 2010 by the San Francisco Bay Conservation and Development Commission (BCDC) with NOAA Coastal Services Center. This cross-jurisdictional project is focused on a Bay Area sub-region, which includes a portion of the Alameda County shoreline from Emeryville to Union City. Alameda County Public Health Department was invited to participate from the inception. Public Health staff attended planning meetings / strategy sessions and helped to ensure a public health equity focus was included. Public Health staff provided consultation to BCDC staff in scoping of the project to ensure hazardous materials, community land use, and vulnerable population issues were included and edited community land use and equity reports. In addition, Public Health staff facilitated linkages to County and community-based organization staff and provided data.

GUIDE 05 Taking Action on Climate Change for Health

Getting Involved in Climate Change Action Planning

Public health employees have an important role to play in shaping policies and plans designed to address climate change. As experts on the health of our communities and on the needs of vulnerable communities, public health staff can ensure that these needs are addressed while we prepare to adapt to a changing climate. Policy work can include collaborating with local or regional planning agencies, writing letters or providing testimony to advocate for healthy policies, or participating on boards or commissions that address climate change issues.

Opportunities abound for raising health equity concerns in planning processes to address climate change. California's Senate Bill 375 requires each region to develop a Sustainable Communities Strategy (SCS) – an integrated transportation and land-use strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. The participation of public health staff in this recent, regional process helped create a more equitable and health-focused plan for the Bay Area.

There are also opportunities to get involved at the local level as municipalities use the SCS guidance to plan for their future housing and land use development via agencies that are accountable to local boards of supervisors, such as:

- City and county transportation commissions
- County congestion management agencies (CMAs)
- Transit agencies
- Sales tax authorities

Cities across California are also adopting voluntary plans to reduce their greenhouse gas (GHG) emissions. These include amendments to General Plans, comprehensive sustainability plans, and Climate Action Plans, among others.


In all these planning efforts, public health can educate planners, engineers, and policy-makers about the links between active transportation, housing, and health outcomes and ensure that the needs of the most vulnerable and least resourced communities are addressed. BARHII created a set of downloadable resources that can assist public health staff to participate in planning efforts: (1) *The Healthy Planning Guide* and (2) *Partners in Public Health*.





BayREN Forum: Connecting Health & Energy
June 11, 2019




The Burden of Unhealthy and Energy Inefficient Homes

30M families live in unhealthy homes  Homes with environmental hazards are making their residents sick

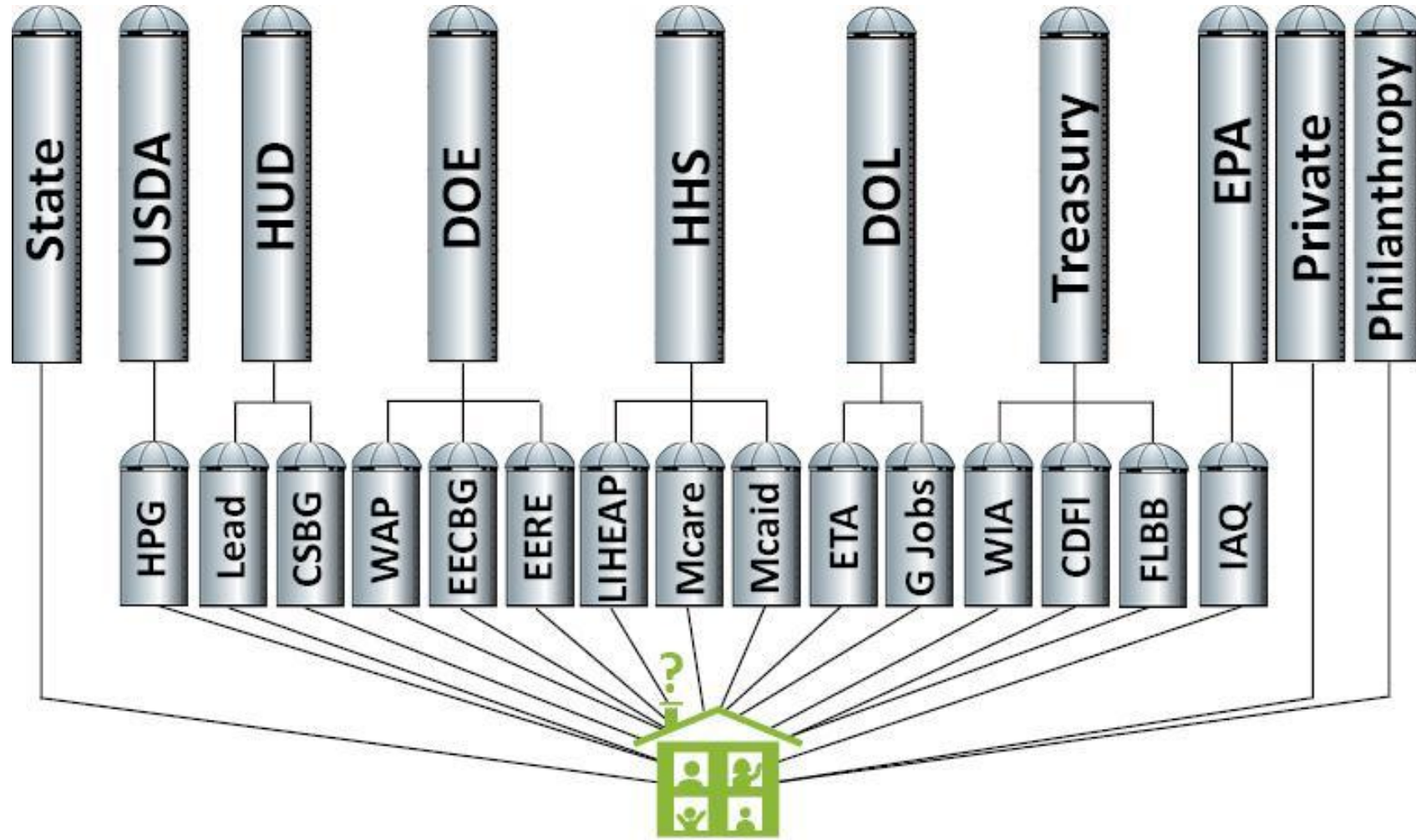
14.4M missed days of school each year  Asthma is the top reason students miss school

14.2M missed days of work each year  Collateral burden of sick children is missed days of work for parents and caretakers

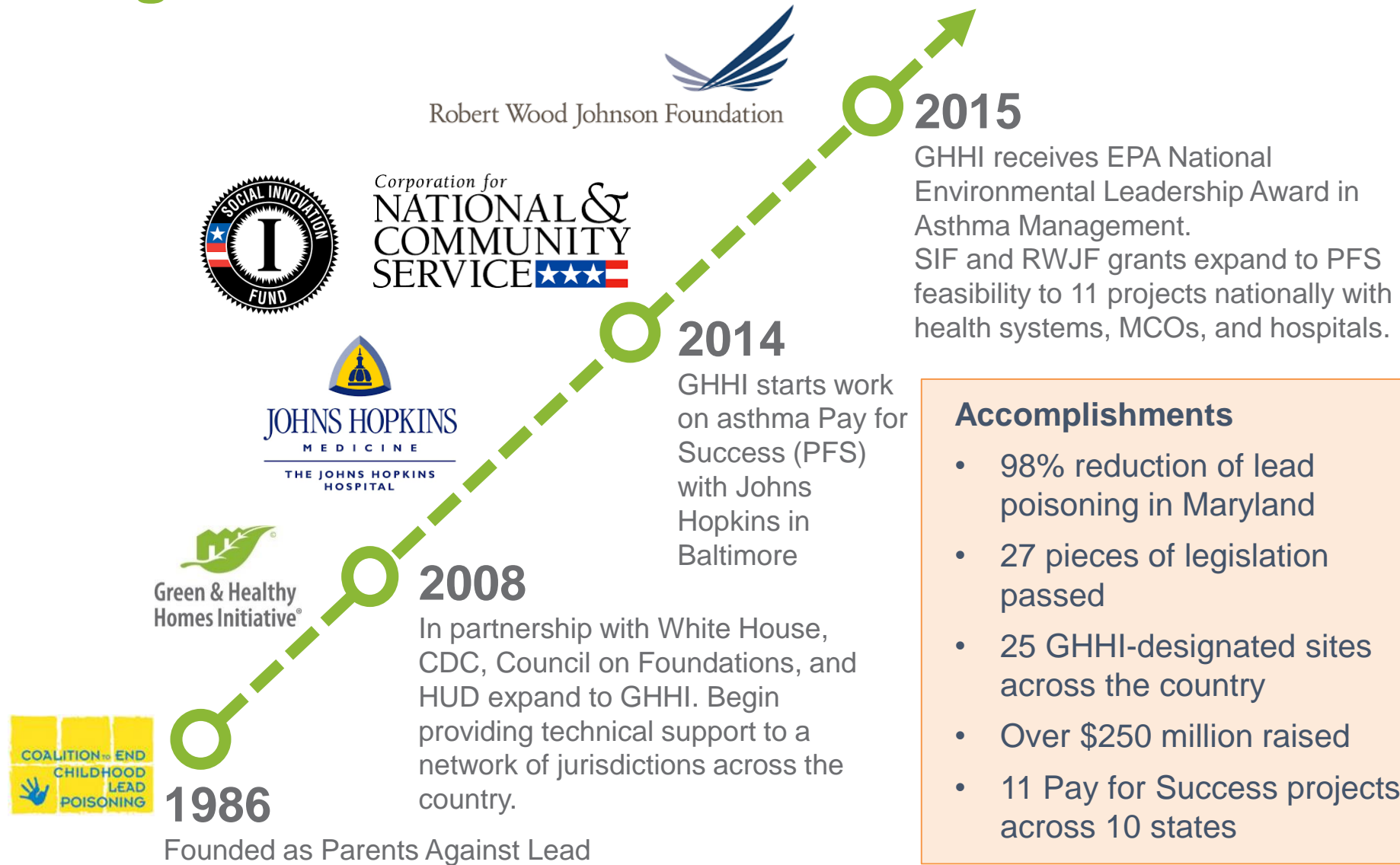
Low income families spend 20% of monthly income on energy costs 
VS.
3.5% in other households

\$51B+ spent on asthma  \$31B+ spent on slip & fall injuries  \$43B+ spent on lead poisoning  Over \$100B in taxpayer funding is spent each year to address the impact of these hazards

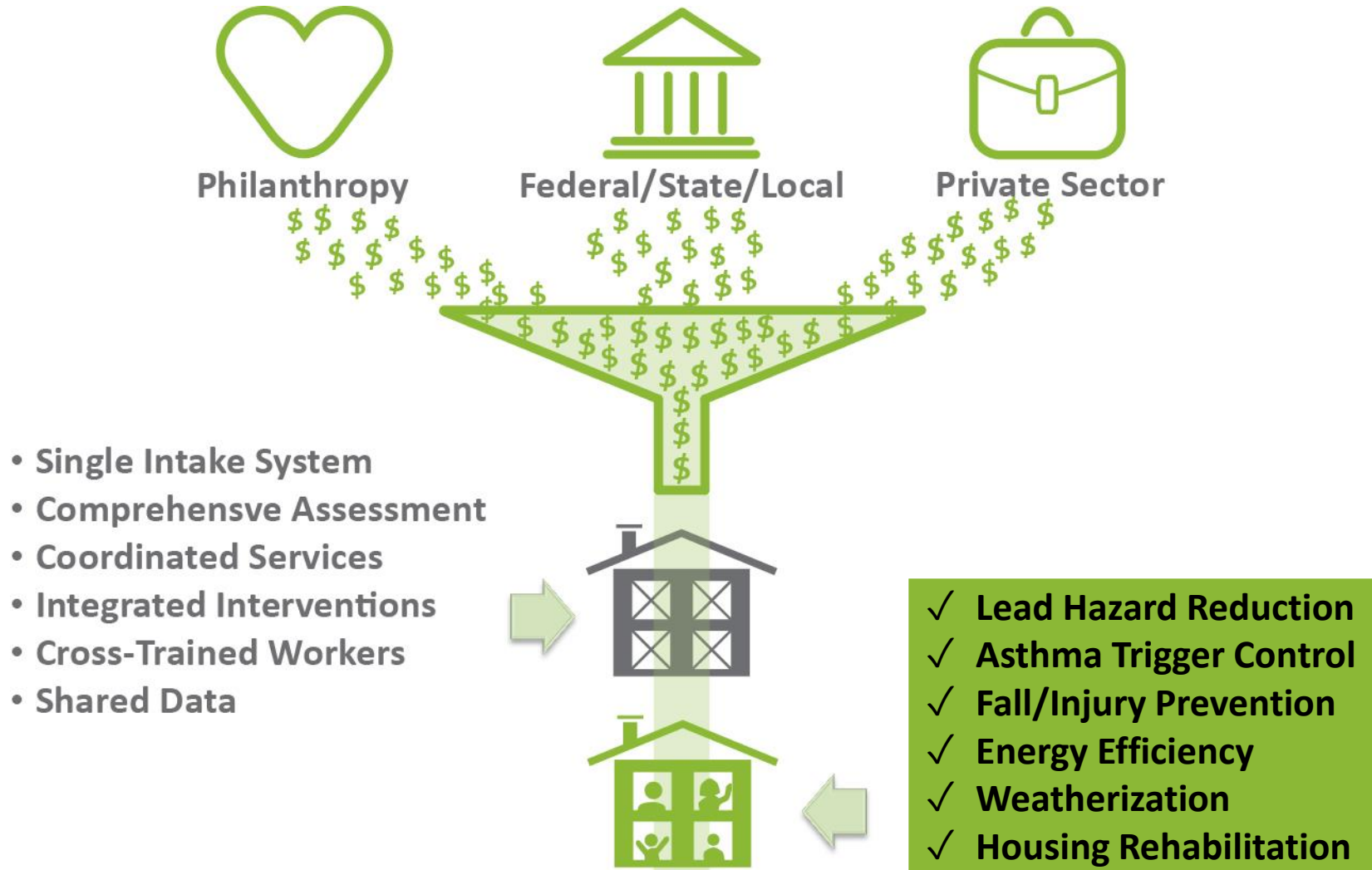
A Fractured Delivery System



GHHI Background



The GHHI Model: No Wrong Door

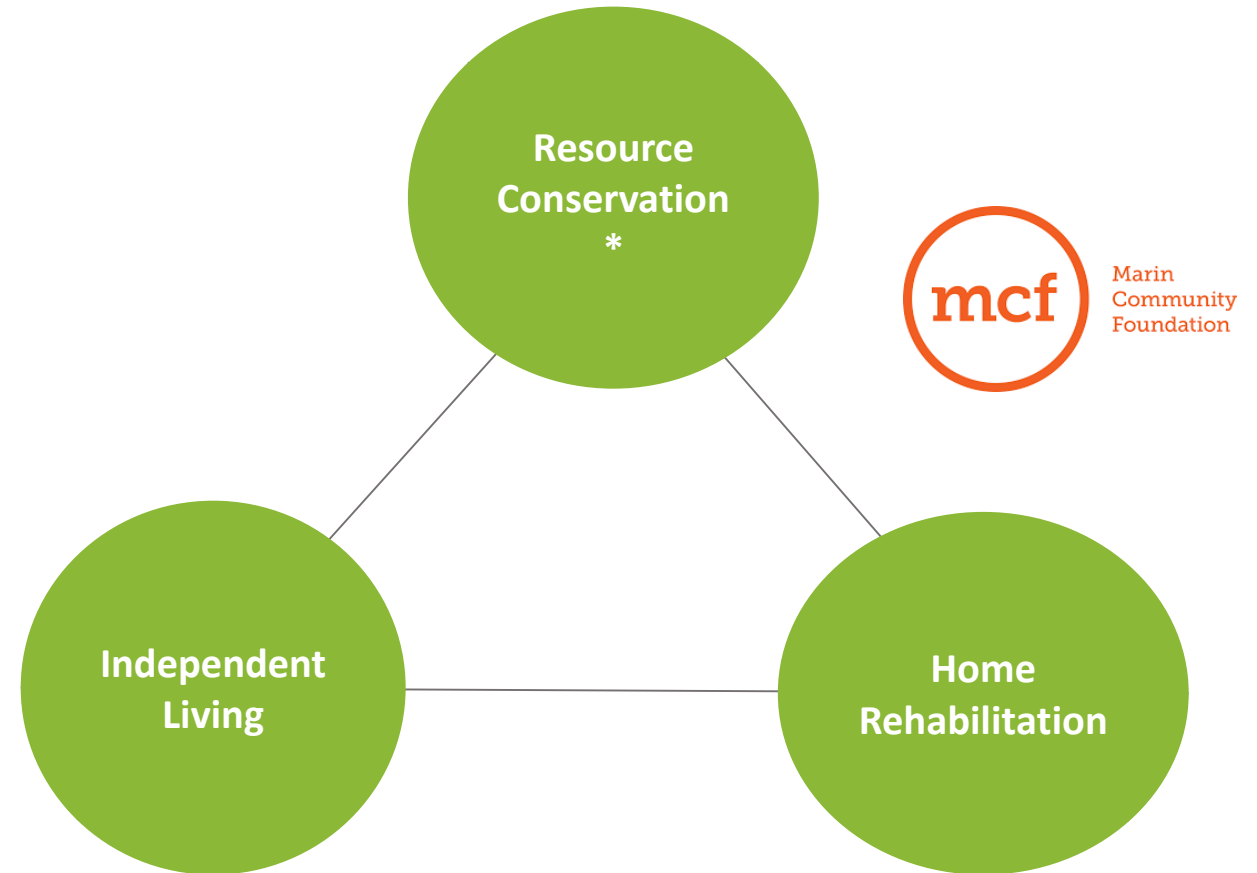


GHHI Marin:

a collaborative approach

Guided by *Theory of Change*

- ➔ Seamless access to information, incentives, and services
- ➔ More residents to utilize related programs and services
- ➔ Reduce energy/water consumption, waste generation, and greenhouse gas emissions
- ➔ Enable more residents to experience improved health and safety within their home



Serving:

- Low income residents (up to 80% AMI, HUD)
- Single family, multi family, mobile homes and floating homes
- Owners and renters

Funding:

- Leveraging partner programs and resources
- MCF grant funding
 - \$5,000 per single family unit
 - \$2,250 per multifamily unit



Current model:

MULTIFAMILY



- Comprehensive GHGI assessment
- Comprehensive SOW
- Pipeline project management
- Partner referrals

SINGLE FAMILY



- Comprehensive GHGI assessment
- Comprehensive SOW
- Pipeline project management
- Partner referrals



Lessons learned:

- **Partner buy in and support**
- Project management is key for appropriate timelines and service coordination
- Data sharing requires systems build out and can be slow moving
- Coordinated vs. comprehensive approach: program resources and capacity are unknown
- Residents trust in programs and willingness to share information
- Flexible funding is a must!
- Education and training is needed for all parties

Sir Francis Drake Boulevard:



Fairfax, Marin County



4 Section 8 Units



2 senior tenants
2 tenants with special needs



Home rehab, energy efficiency, safety
and accessibility work needed



Resource Conservation/Energy Efficiency (Green)

- Replace windows
- Install crawlspace and roof insulation
- Install tankless water heater
- Direct install measures: LED lighting, faucet and shower aerators

Accessibility, Health, and Safety (Healthy)

- Pest remediation
- Security lighting
- Bathroom ventilation

- Tree work
- Deck repair
- Fencing and gate repair
- Carport repair

- Bathroom ADA
- Handrails ADA

Increased comfort

Removed trip and fall hazards

Increased accessibility

Lowered utility bills (projected)

**Saving 2,271 Therms per year
(projected)**

Increased indoor air quality

Marin Villa:



Canal, Marin County



12 low income units



Home rehab, energy efficiency and
safety and work needed

Program Resources

- \$600 Multifamily Energy Savings Program
- \$14,400 Low Income Families and Tenants (LIFT) Program
- \$13,228 Low Income Solar
- \$27,000 GHHI Marin



Green and Healthy Measures

- Electrical panel upgrades
- Structural upgrades (dry rot)
- CO monitors
- T24 compliant windows
- LED light bulbs
- Low flow faucets
- 32.26 kW solar system (49,598 kWh annual production)



Increased comfort

Removed fire hazard

Increased structural safety

Lowered utility bills

**Saving 3,386.5 kWh per year
(projected)**

Increased indoor air quality

Haverhill Court:



Novato, Marin County



Single family home



2 senior residents, 1 uses a wheelchair one uses a walker, both have respiratory health needs



Home rehab, energy efficiency, safety and accessibility work needed

Program Resources

- Marin County LIHEAP (CCES)
- Bob Roberts Client Assistance Program (MCIL)
- GHHI Marin
- Wood Smoke Program (County of Marin CDA)*

Green and Healthy Measures

- ADA accessible bathroom*
- Removal and replacement of wood burning fireplace*
- Weatherstripping
- LED light bulbs
- Low flow faucets
- Smoke alarm

Increased comfort

Improved accessibility

**Lowered utility bills
(projected)**

Increased indoor air quality

Thank You

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415.464.6657



Focus areas:

- Reduced use of natural resources
- Sustained independence within the home
- Increased safety within the home
- Decreased waste generation

Independent Living

Resource Conservation

Home Rehabilitation

- Improved health outcomes
- Increase in local workers trained in green and healthy home practices
- Reduced greenhouse gas emissions & energy costs



Local Governments Empowering Our Communities



Linking Health & Energy Efficiency to Energy Code Compliance

Demian Hardman, Senior Energy Planner

Department of Conservation & Development

June 11, 2019

Health & Energy Efficiency



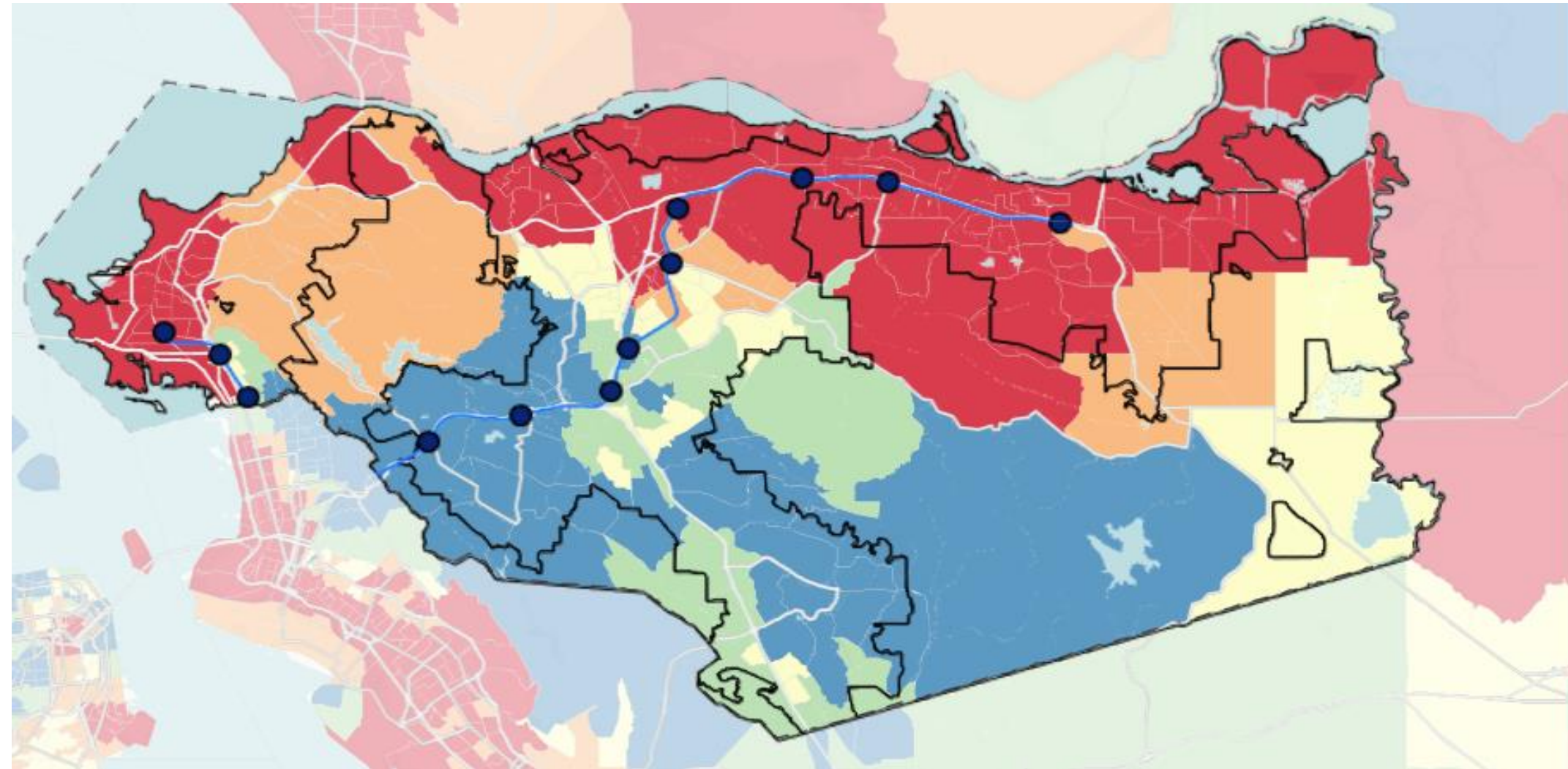
Our Vision

- ✓ Improved Quality of Life
- ✓ Improved Living Conditions
- ✓ Convening Local Government to Increase Access to Resources
- ✓ Meeting Community Needs for a Sustainable Future
- ✓ Education, Education, Education...

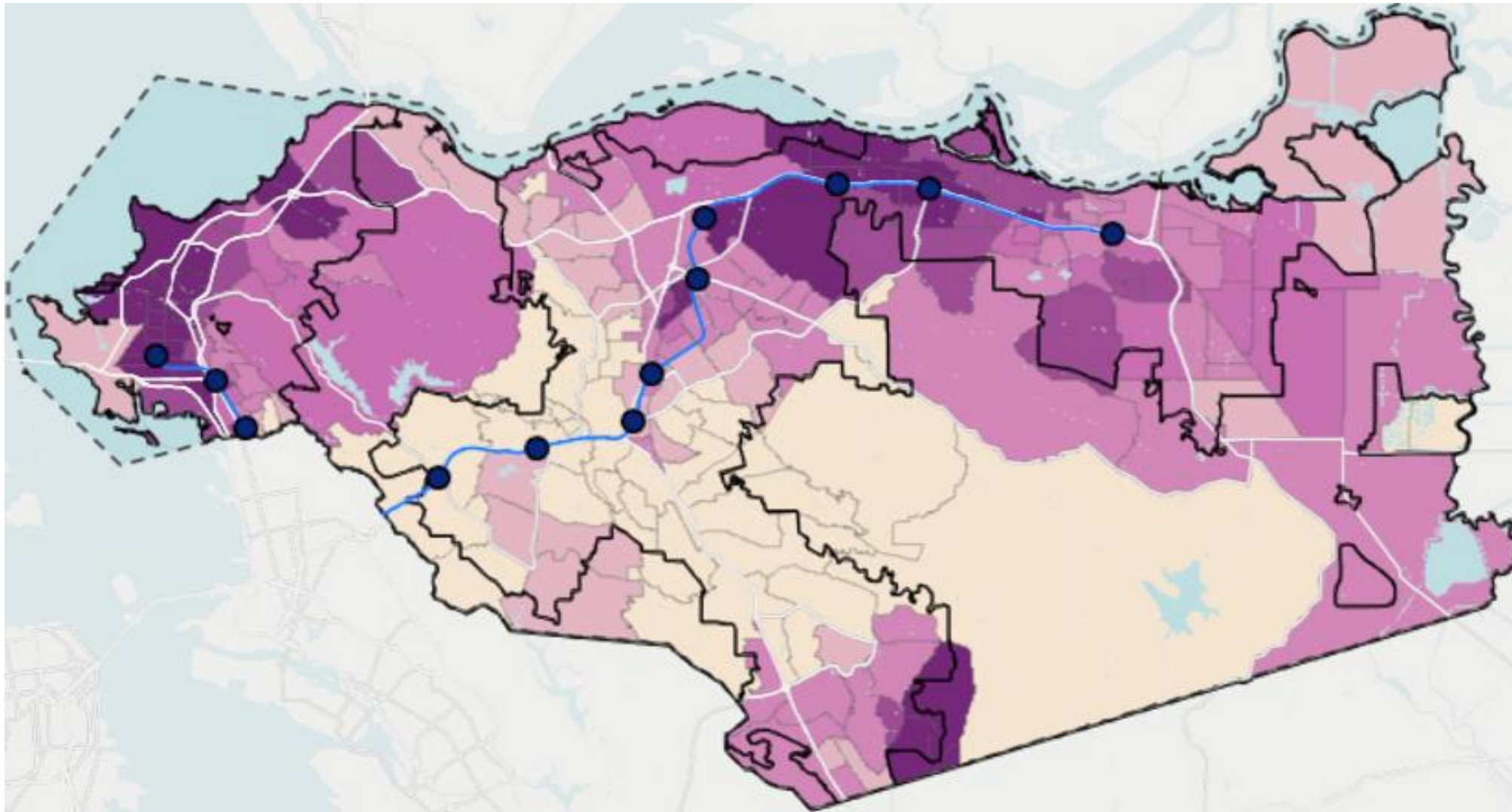
Rate of Emergency Department Visits for Asthma by Census Tract



Rate per 10,000 Population



Minority Populations

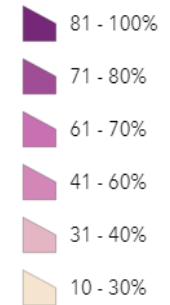


Urban Limit Line

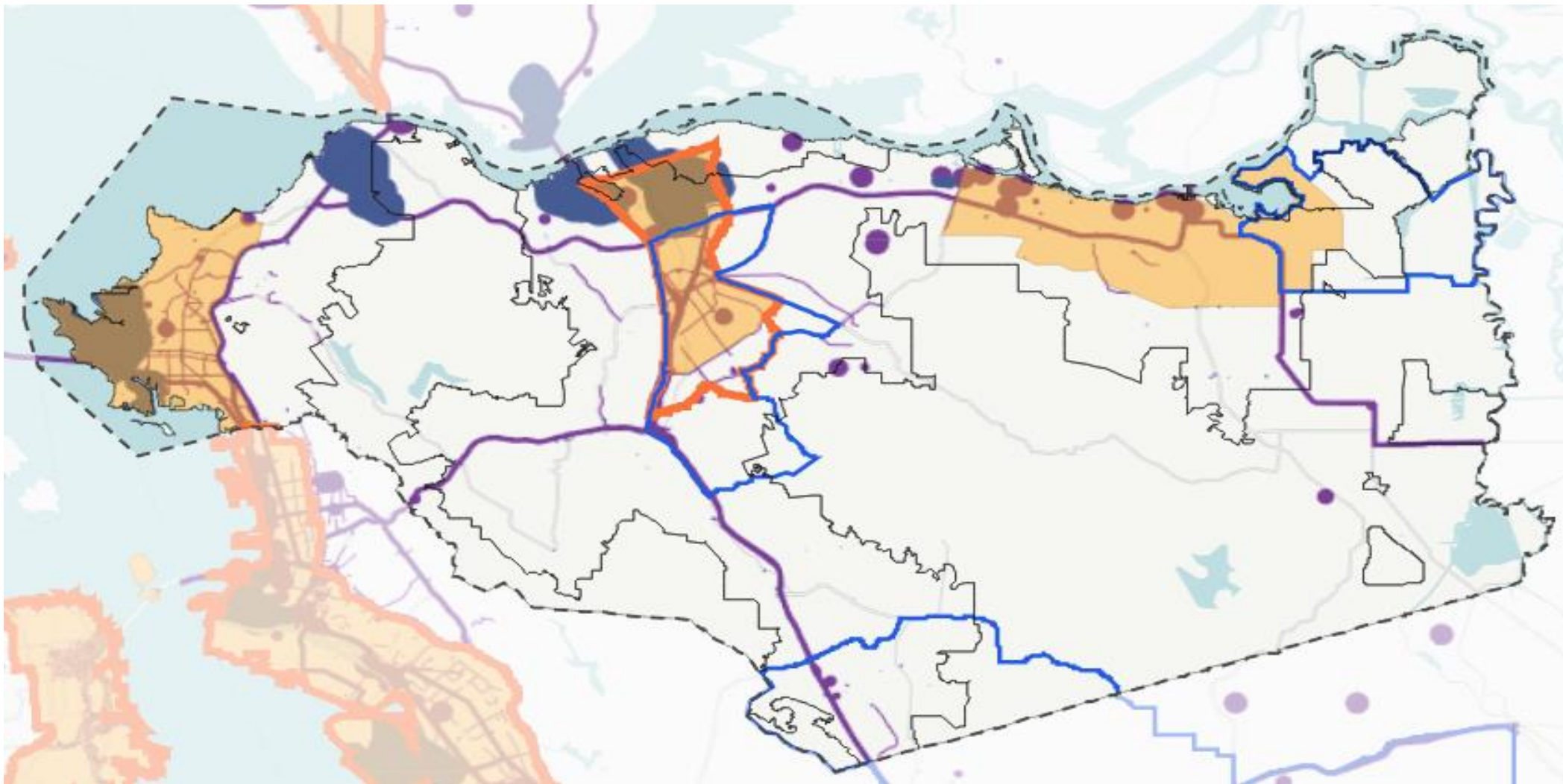


Percent Minority Population By Census Tract (2018)

Percent Minority



Air Quality Impacts on Health



- Urban Limit Line
- 8 Hour Ozone Exceedance Area
- 24 Hour PM2.5 Exceedance Area
- BAAQMD-identified area with greatest impacts on health
- Elevated Levels of Air Pollution (2016)
- All_Further_Study_FINAL

A Business Case for EE and Health?



- ✓ EE Code Compliance = EE Improvements
- ✓ EE Improvements = Improved Health
- ✓ Improved Health = Reduces Health Costs
- ✓ Reduces Health Costs = Better Quality of Life

Questions?

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