

OUR HEALTH

CCSQ WORLD
USABILITY DAY

An Ounce of Prevention

How Predictable Disasters Are Redefining
Quality Healthcare

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What we'll talk about

Climate changes are turning previously rare events into annual rituals.

- Case Study: The Camp Fire
 - Immediate impacts on senior population
 - Long term impacts on seniors and the healthcare system
- The national landscape of community risk
- Conclusion



The Camp Fire: November 8, 2018



7:30 am

The view from Chico, CA....

The Fire

- Started at 6:30 am on Camp Creek Road
- Spread at 80 football fields per minute
- Within 4 hours, burned down the town of Paradise and surrounding areas





50,000 evacuated

The aftermath



**86 people died,
most over 60 years
old.**

**30,000 people
permanently
displaced**

**Over 19,000
structures
destroyed**

The immediate impact on seniors

Paradise was a retirement community.

A quarter of the population were 65 and older.

- Many left behind medications, wheelchairs, walkers, and essential medical equipment
- Respiratory illnesses increased due to smoke and particulate matter
- Norovirus (stomach virus) swept through the temporary shelters
- Emphasis and support was on physical health and basic needs

2 months later: our community

The need for temporary shelter became permanent

- Hazardous materials, water contamination, and smoke damage prevented residents from returning to Paradise
- Within 2 months, the medium house price increased from \$325K to \$400

Seniors on fixed income didn't have the energy to rebuild or the finances to buy

This isn't just a Medicaid problem....



2 months later: our healthcare system

Butte County lost significant healthcare services

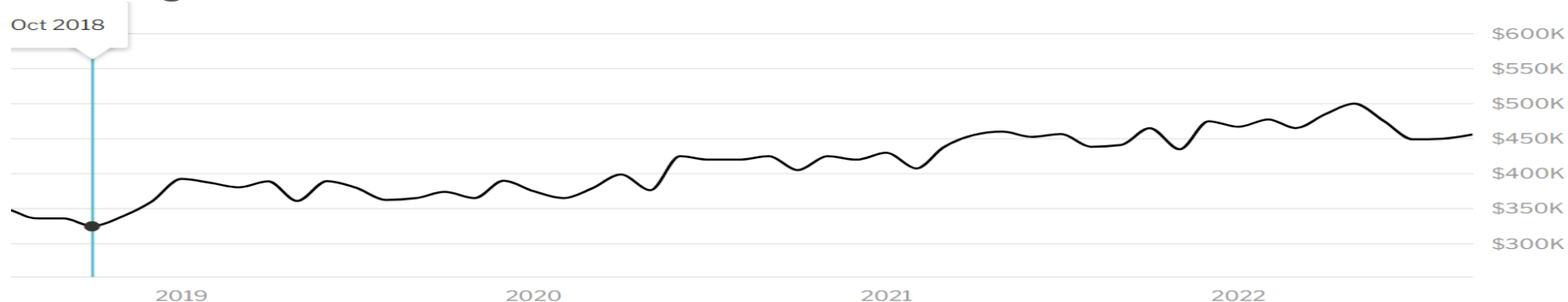
- 101-bed acute hospital (and leading employer)
- All emergency services in Paradise
- Medical offices and providers
- Long term care facilities and care homes

4 years later: our community

The senior population is priced out of housing and rental markets

- 92% of Paradise's population resettled elsewhere
- Medium house price in Chico increased by \$175,000
 - Oct 2018 = \$325,000
 - May 2022 = \$500,000
- One-bedroom apartment rent = \$1,250
- 26% of the homeless population in Butte County is now over 65

Housing has become a MAJOR social determinant of health



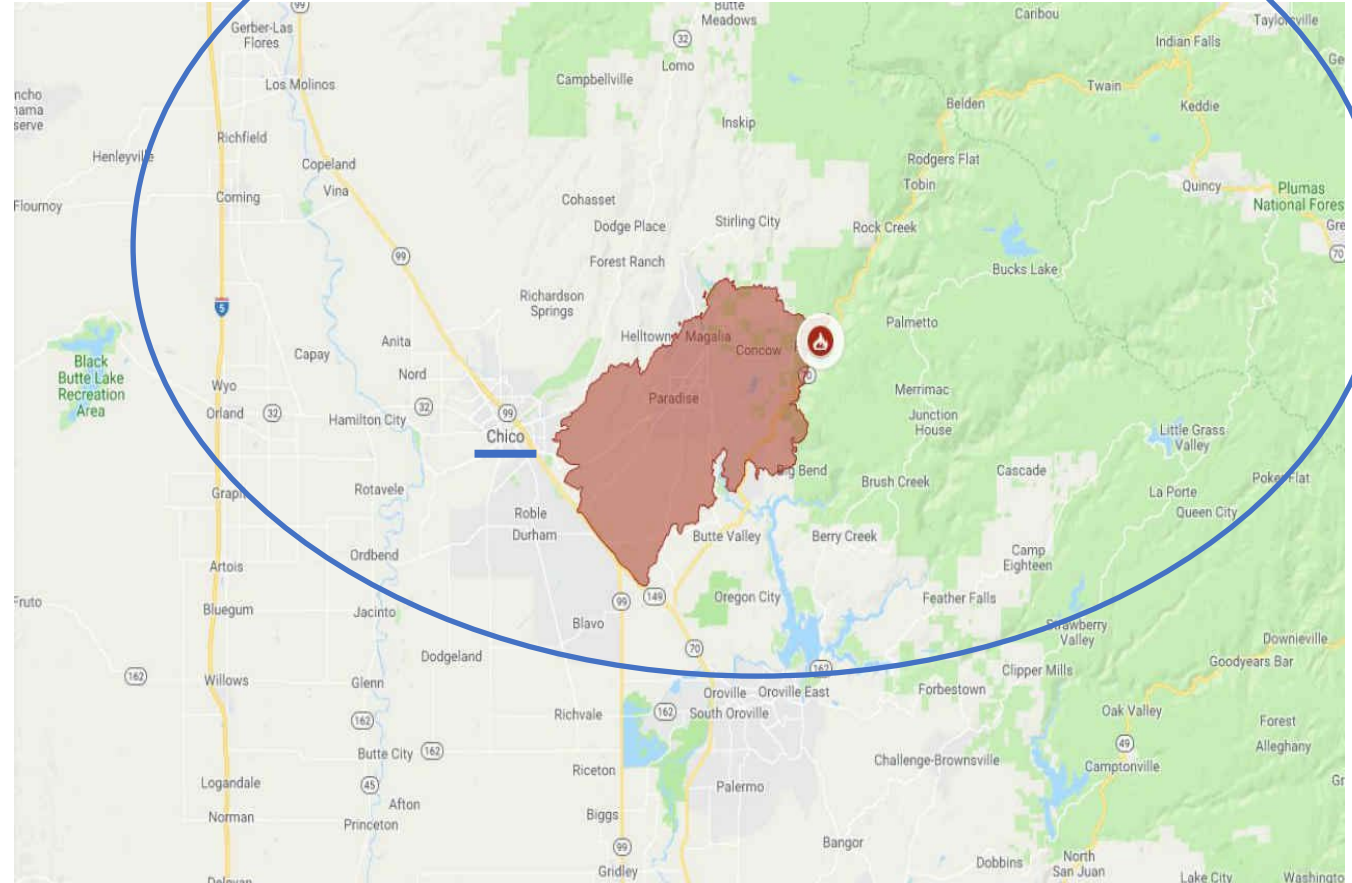
Medium house prices
in Chico, CA

[Redfin](#)

4 years later: our healthcare system

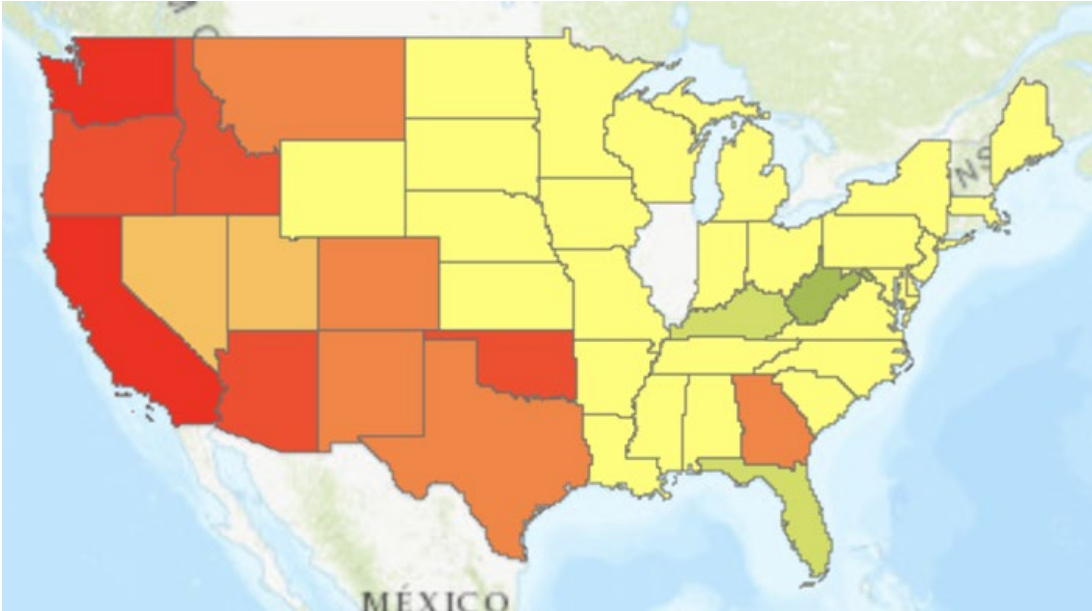
Wildfires create healthcare deserts

- Providers moved out of the area, exacerbating the healthcare shortage
- Rural hospitals lack the bargaining power of larger networks to set rates, yet face increased demand and costs
- Only half the long-term care facilities remain
- Shelters are becoming medical respite sites

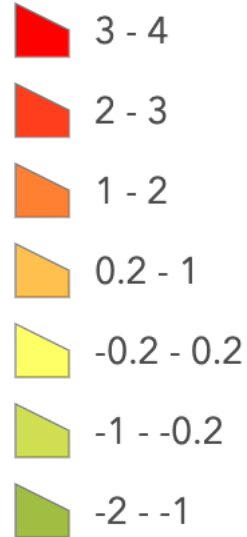


The impacts of natural disasters last for years,
and they aren't anomalies anymore.

Seasonal wildfires in more regions...



Change in Acreage



Monthly Burned Area Due to Wildfires in the United States
Between 1984–2001 and 2002–2020
epa.gov [map viewer](#)

Affect more people...

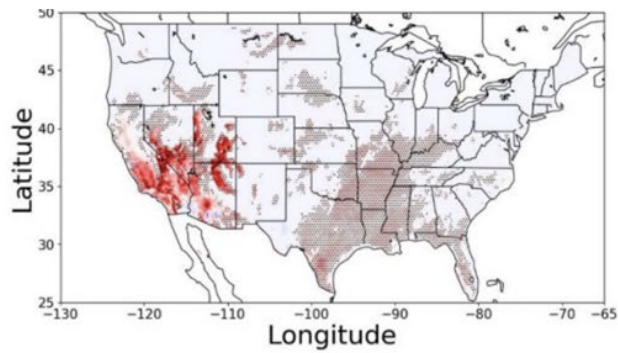
“Around **130 million people or more could be detrimentally impacted by wildfire pollution** from the [Pacific Northwest], comprised of ~34 million in the PNW, ~23 million in Central USA and ~72 million in the Northeast.”

New seasonal pattern of pollution emerges from changing North American wildfires. Buchholz, R.R., Park, M., Worden, H.M. *et al. Nat Commun.* 2022. 13, 2043. [Link](#)

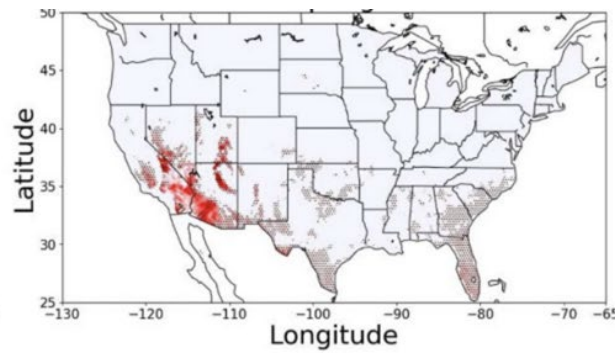


Now and in the future

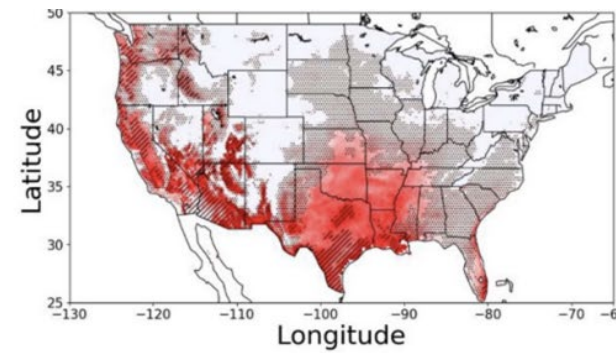
Projected increase in days with high wildfire risk



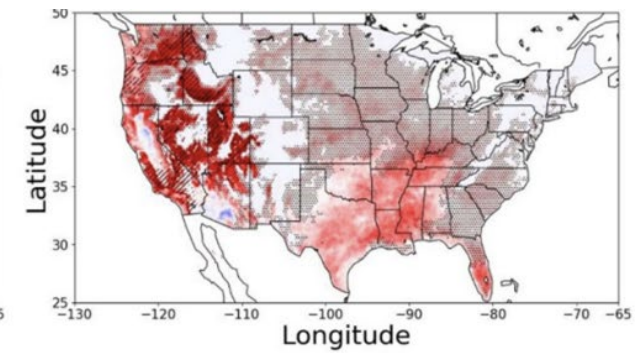
Winter



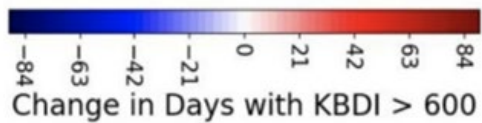
Spring



Summer



Fall



US wildfire potential: a historical view and future projection using high-resolution climate data. Brown, E. et al. 2021 *Environ. Res. Lett.* 16 034060 [Link](#)

What can we do when half the year is fire season?

Disasters are not inevitable

Not all wildfires are disasters. A hazard *becomes* a disaster when its negative effects overwhelm a community's ability to mitigate them.

A disaster is a risk, not a certainty.

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Expected Annual Loss

is a *natural hazards component* that represents the average economic loss in dollars resulting from natural hazards each year.



Social Vulnerability

is a *consequence enhancing risk component and community risk factor* that represents the susceptibility of social groups to the adverse impacts of natural hazards.

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Community Resilience

is a *consequence reduction risk component and community risk factor* that represents the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.

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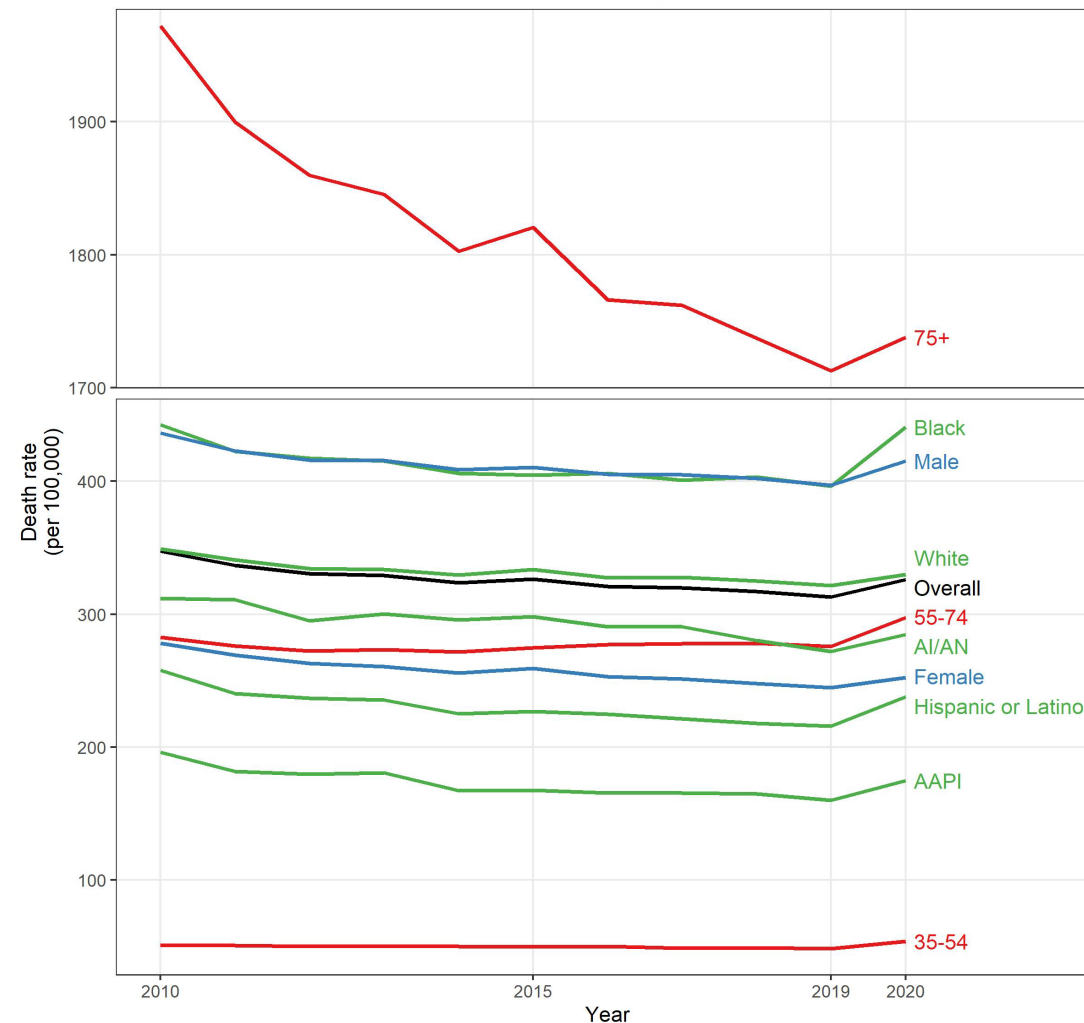


Risk Index

represents the potential for negative impacts resulting from natural hazards.

Healthcare has well-developed frameworks for *individual* health risks

Figure. Heart Disease Death Rates among Adults Aged ≥35 Years by Age, Sex, and Race and Hispanic Ethnicity Group—United States, 2010-2020



Trends in National Death Rates From Heart Disease in the United States, 2010–2020. Woodruff, R.C. et al. AHA Scientific Sessions 2022. [Link](#)

A concluding challenge

How might we all, together, get more resilient in the face of predictable disasters?

Environmental disasters don't end once they are cleaned up

They hit the most vulnerable populations first and hardest.

They damage entire communities as well as healthcare systems.

Healthcare services decrease while the need increases dramatically.

This is a public health crisis.

Our healthcare programs need to continue to evolve

Climate change is a social determinant of health

Shortages of affordable housing, transportation, and food increase exponentially with environmental disasters

Our government healthcare programs need to expand to include health-related social needs



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thank
you!

