



# RESEARCH BRIEF

## KEY POINTS FOR DECISIONMAKERS

- ▶ **Reported damages of wildfires drastically underestimate their real costs.** Of the \$149 billion in losses due to 2018 California wildfires, only 19% were related to destroyed infrastructure. 22% of costs are health damages related to air pollution and 59% were indirect damages due to the broader disruption of economic supply chains.
- ▶ **The bulk of damages occur far from the fires.** Health damages are concentrated in population centers downwind and indirect losses are even more widespread. Indeed, roughly a third of all losses due to 2018 California fires occurred *outside California*.
- ▶ **The full magnitude and far-reaching impacts of recent fires may justify substantially greater allocation of resources to mitigating fire risks.** Such resources may include not only fire suppression efforts, but land and forest management and stricter regulation of development patterns.

## The economic footprint of California wildfires is far larger than previously reported

*Understanding the costs of past fires can inform efforts to cost-effectively minimize the impacts of future fires.*

The frequency and size of wildfires in the western U.S. has been increasing for decades, driven by climate change, land and fire management, and population and economic growth—especially at the wildland–urban interface. The combined result has been ever increasing wildfire risks, which culminated in a series of enormously damaging California fires in 2017, 2018, and 2020.

We combined physical, epidemiological and economic models to estimate the economic impacts of the state's 2018 wildfires, including not just the value of destroyed and damaged capital, but health costs related to air pollution exposure and indirect losses due to broader economic disruption cascading along with regional and national supply chains.

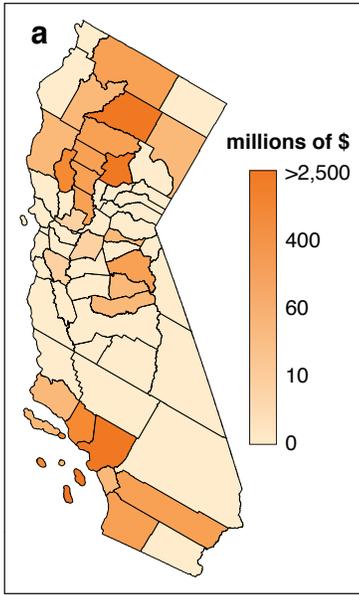
Our results reveal that the costs of fires is much greater and more dispersed than the destroyed infrastructure. Indeed, the majority of economic impacts are related to health and supply chain disruptions far from the actual fires. Recognizing the magnitude and distribution of such impacts may inform plans and responses to future fires, and emphasize that fire risks are a regional and national concern.



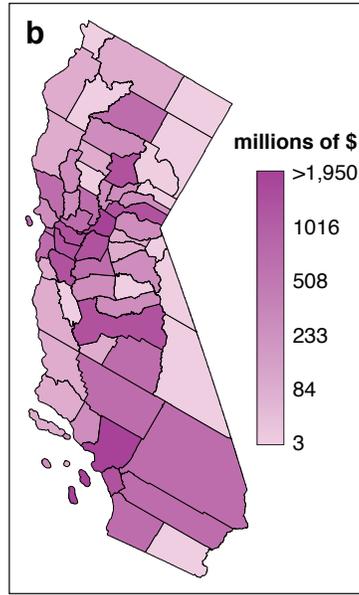
Smoky sunset over the city of Santa Rosa in Sonoma county, CA



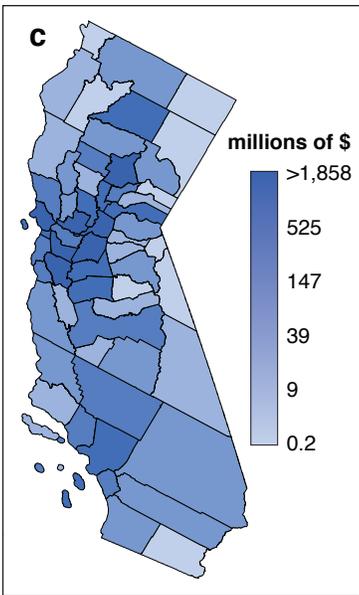
Capital Loss



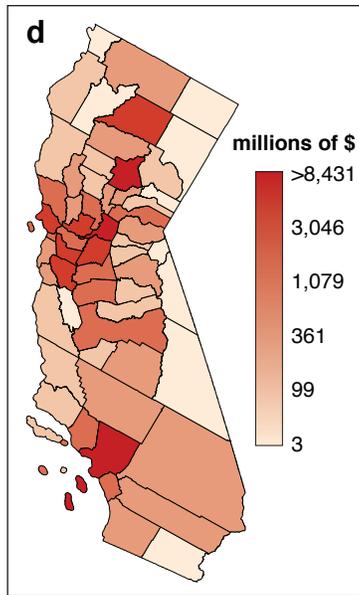
Health Costs



Indirect Loss



Total Damages



Economic damages of 2018 wildfires. Maps show estimates of county-level losses in millions of dollars related to destroyed capital (a), health impacts (b), indirect losses due to disruption of economic supply chains (c), and total combined losses (d).

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Smoky streets of San Francisco in 2020

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