

# California's Wildfire Impact on Community Economics

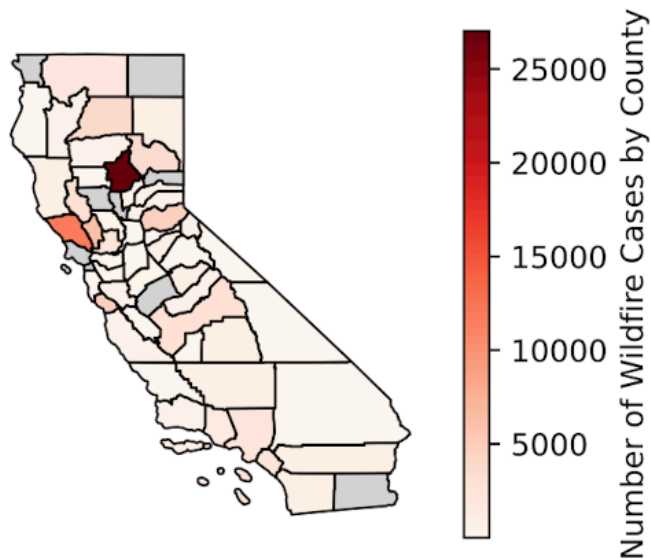
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## Wildfire Trends

Review of increasing frequency and severity of wildfires in California. This first graph shows the incidence of the wildfires by country with a heat map. It is the first step in the process

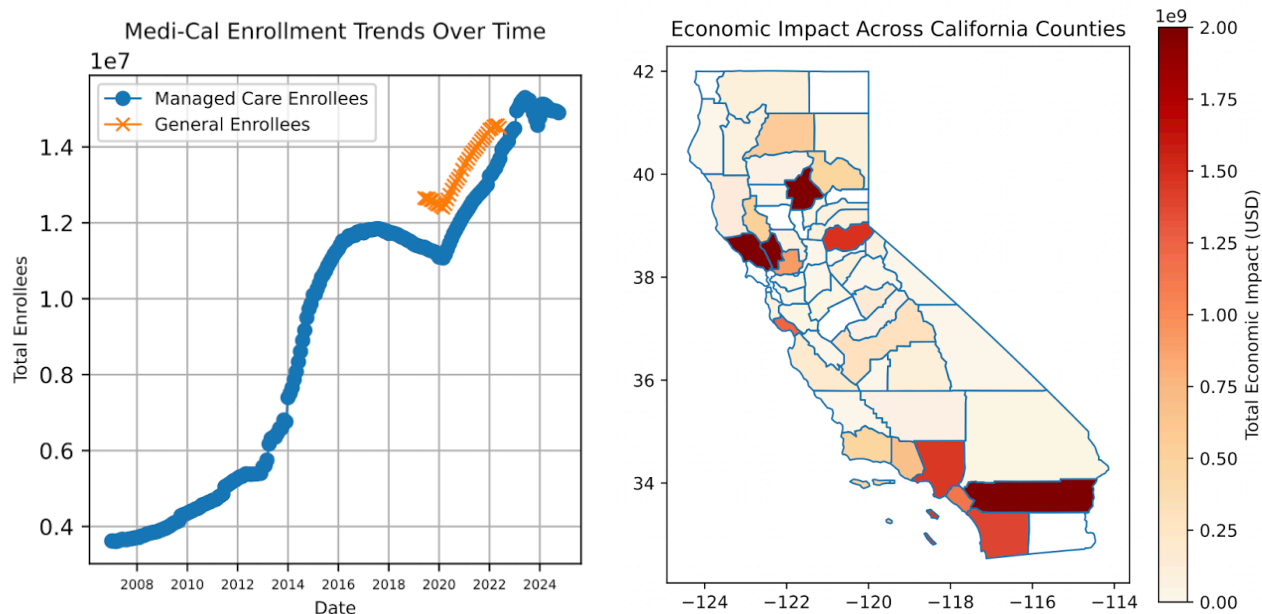
## Wildfire Cases in California by County



Counties without data shown in grey

## Medi-Cal Enrollment by Region

Here, we have Medi-Cal enrollment by region. It is expected that areas with larger population will have larger enrollment rates. # Load datasets



## Economic Impact Map

Now, we see a heat map based on economic impact

Introduction California's susceptibility to wildfires has significant health and economic repercussions. With the ongoing climate crisis, these events are becoming more frequent and severe, emphasizing the need for effective policies to mitigate their impact. This study evaluates the effectiveness of Medi-Cal, California's public health insurance program, in responding to these challenges, particularly through its expansions during wildfire emergencies. This rise in wildfire incidents correlates with deteriorating air quality and increased health issues across the state, particularly respiratory diseases from heightened PM2.5 levels. Our analysis aims to understand the role of Medi-Cal in buffering these health risks during wildfire episodes.

### Key findings

Impact of Wildfires on Air Quality and Health: Graphical analysis reveals that PM2.5 concentrations peak during wildfire seasons, with severe years like 2018 and 2020 marking significant increases. Respiratory disease prevalence correlates with these spikes, underscoring the health impacts of poor air quality. Healthcare Response and Insurance Enrollment: Medi-Cal enrollment trends, notably increasing post-2018 and during the 2020 COVID-19 pandemic, suggest

that public health emergencies, compounded by wildfires, drive up the demand for healthcare. The analysis of enrollment by region and type indicates that areas most affected by wildfires see a substantial uptick in Medi-Cal sign-ups, affirming the program's role in enhancing healthcare access during crises. Economic and Mortality Impacts: Wildfire-related mortality and its economic implications, assessed using the EPA's Value of a Statistical Life model, indicate a significant burden, with losses amounting to hundreds of billions of dollars due to health-related impacts. The decline in mortality rates following Medi-Cal enhancements post-2020 highlights the policy's effectiveness in safeguarding public health against wildfire-induced risks.

#### Health Financial Burden Based on Mortality Rate Calculation

The economic valuation is calculated using the formula mortality burden times EPA's Value of a Statistical Life (VSL), adjusted to \$8.7 million in 2015 dollars. The VSL is adjusted for inflation and income growth up to 2015 using publicly available data. Here, we applied a 3% discount rate to the sum of estimated values over the 11-year period to calculate the net present value (NPV). This discounting reflects the time value of money, making future benefits worth less today.

The graph shows a significant upward trend in the financial burden from 2010 to 2022, peaking in recent years. This increase likely correlates with both a rise in wildfire frequency and severity, as well as improvements in how we value statistical lives over time.

Economic Impact Map In this Economic Impact Map, we use the column Assessed Improved Value (AIV) to see the impact. AIV is assigned by a county assessor to improved structures on a parcel. In high-risk wildfire areas, the AIV could be indicative of higher property values and consequently higher potential economic losses from wildfires. By comparing the trends in health financial burdens from the mortality rates with the AIV across counties, we know that areas with higher property values indeed face higher financial impacts from wildfires. This could be due to higher property damages or greater costs associated with health impacts in these areas.

The alignment of data showing increased mortality-related financial burdens and high AIV in certain counties supports targeted policy interventions. Policies could be designed to enhance fire prevention measures, improve healthcare accessibility during wildfires, and offer financial aids to mitigate losses in high-value areas.

Limitations Our study acknowledges potential biases due to overlapping crises, such as the COVID-19 pandemic, which might skew data interpretations related to healthcare needs and enrollments in 2020. Conclusion As wildfires continue to pose a significant threat to public health and economic stability in California, the Medi-Cal program's role becomes increasingly vital. Our findings advocate for the expansion of health insurance coverage as a critical component of the state's disaster response strategy, enhancing community resilience and reducing the adverse impacts of wildfires on vulnerable populations.