Introduction:

In recent years, the increasing frequency and intensity of wildfires across the United States, especially in California, have raised concerns about their economic impacts for the future, beyond just the initial destruction. The Los Angeles wildfires in January 2025 served as a grim reminder of the imminent threat of climate change. For most families, their home represents not only security and stability but also a lifelong financial investment. When wildfires damage homes and communities, they also damage the perceived desirability and insurability of entire neighborhoods and regions. Our project seeks to develop an analytical tool to measure these effects by examining both the immediate impacts on housing prices and the long-term recovery patterns following wildfire events.

By analyzing housing prices before and after wildfire events, we intend to isolate the specific impact of fires while avoiding overall trends in the housing market. The findings from this project are intended to provide further context for homeowners, insurance companies, policy makers, and homebuyers to make more informed decisions. As the world continues to face increasing natural disasters due to climate change, understanding their economic implications is becoming more essential than ever for developing legislation and insurance policies that help protect those who have lost everything.

Dataset:

For our proposed visualization project, we will plan to utilize the Zillow Home Value Index (ZHVI) at the neighborhood level to analyze the trends in the housing market following wildfires. The ZHVI dataset has been chosen for the following reasons:

First, the dataset has comprehensive geographic classifiers for each data entry. This includes the neighborhood's names, size rankings, cities, counties, metropolitan area, and state. We believe the multiple magnitudes of classification will allow us to implement different filtered views of the data, helping improve clarity and readability for the viewer.

Second, the dataset has excellent coverage of the housing market as it maintains continuous monthly updates dating back to 2000. Therefore, the ZHVI enables the analysis of both immediate impacts as well as long-term patterns several years after the fire. This is also essential as our wildfire data dates back to well before 2000, so 25 years of data is a lot.

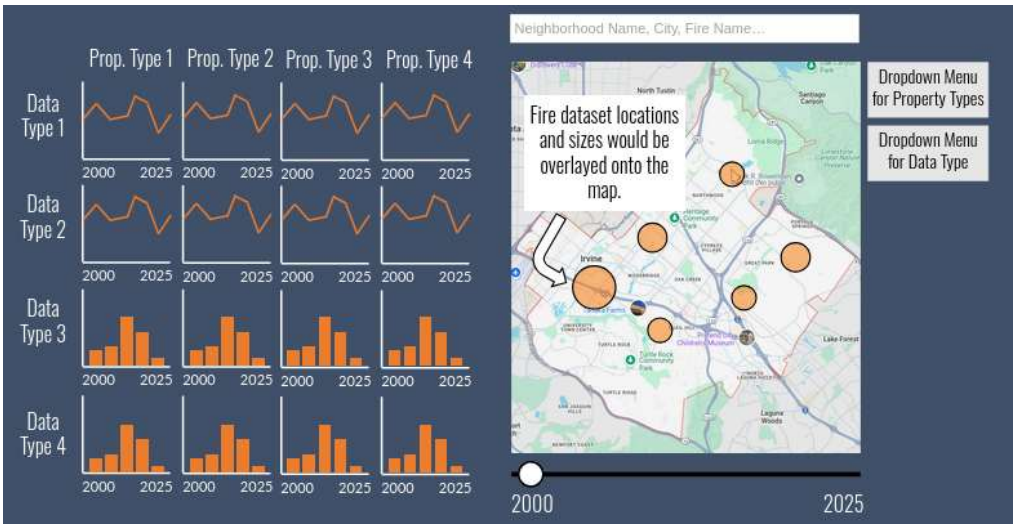
Finally, we believe that the ZHVI is representative of the housing market as it captures the typical home value within the 35th or 65th percentile, helping mitigate the influence of potential outliers.

For the wildfire data, we plan to use data from California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) to display the fires on our map, using the times, sizes, and types as different channels to show their characteristics and effects. Provided in their yearly California Fire Perimeters dataset are the time, location, size in acres, names, complexes, IDs and shapefile data, which through processing can be used to show the geometric shape of the fire on a map. While it will take some formatting to get both datasets in a similar format, it will prove very useful once we do. Based on the shapefile data, we will be able to see which neighborhoods the fires spanned.

Visualization:

Using these 2 main datasets as our sources (and potentially sourcing other supplementary data), we seek to create an interactive map of California displaying fires and their effects on home prices spanning from 2000-2024. This will be our advanced visualization. The map will be divided into navigable and interactable neighborhoods, with a search bar at the top of our map for finding a neighborhood, city, or a specific fire. Clicking on any neighborhood will show an array of graphs

visualizing the home prices for each type of real estate. For these graphs, we will mostly use histograms and/or line charts. Overlaid on top of these neighborhoods will be fire zones, each with a different color depending on the type of fire and the severity of its damage. These will be partially transparent, allowing the user to still see the map below it. Clicking on a fire zone will show data about it, such as the exact date, its name if it has one, and more. At the bottom of our page will be a slider that controls the time scale, allowing us to go year by year and see all of the fires that occured during that period of time. Our goals are to have the visualization be as intuitive as possible while also showing as much information as we can, so users can easily get the information they want out of it. It will take time to balance how much we show to users as we want them to have access to accurate and detailed information without being overwhelmed.



Storytelling Structure

We will be using an Interactive Slideshow storytelling structure to present our story. Each "slide" will be at a different point in time, allowing us to guide the user through our observations of the housing prices and major wildfire events during that time. By showing them in tandem, we can illustrate the relationship between them to the user.

The map will show the perimeters of fires on a choropleth[1] of housing price data from ZHVI. We will have some annotations to emphasize notable events, like significant fires (e.g., the Palisades fire) and big movements in housing prices. We will also have the option for users to get additional information and visualizations, like line graphs, for a selected area or event.

The Interactive Slideshow structure was chosen as our objective of showing the relationship between fires and housing prices is naturally linear temporally. Our dataset also covers all of California, and since our visualization will have the entire state mapped, the interactive slideshow gives the user the freedom to observe relationships anywhere they want. We are not focusing on a particular location, but rather, on the entire state, so neither the Martini Glass nor the Drill-Down structures would serve that purpose as effectively.

[1] A map that uses colors/shades corresponding to variable values