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GIS 5571

Final Project – Prospectus

Wildfires are a nearly annual occurrence in the wildlands of Southern California. The threat to populated areas and protected habitat alike has been significantly increased by climate change, prolonged droughts and urban sprawl. At the same time, the region faces a housing crisis, with a critical need for new dwellings near jobs and transportation. This pressure for development had led to new construction in the fire prone areas of the foothills, hillsides, and even mountain communities. Although wildfire mitigation measures have long been required in the most sensitive areas, the introduction of suburban-style development and density has put lives and property at risk. On a personal note, I grew up in the foothills of Southern California and my parents and many friends still live there. While my old suburban community has remained relatively safe, the number of evacuations and impacts from heavy smoke have seemingly increased.

With my final project, I am hoping to identify potential conflict zones where wildfire risk intersects with areas of high housing demand. I will seek to use available wildfire maps, fire risk severity maps, land use data and areas identified for potential housing development. I will hope to graphically demonstrate this conflict and gain some insight as to how delicate this balance really is. My final project will also use the tools and methods learned in this class to demonstrate what I have learned in GIS!

While this project could be applicable for much of California and even much of the western US, I need to limit the study area for feasibility. The urbanized Los Angeles area is defined by the local Council of Governments (COG) as a six-county area comprising of most of Southern California, minus San Diego County. The Southern California Association of Governments (SCAG) maintains a platform of GIS data, where political boundary, land use, and housing data used for this project will come from. Further, the California Dept. of Forestry maintains much GIS data covering fire hazard areas and current & historic wildfire locations.

Source: **Southern California Association of Governments (SCAG) – Regional Data Platform**

Dataset:	County Boundary - SCAG Region
Updated:	2/14/22
Type:	Feature Service with boundaries
Notes:	Map of the six county SCAG Region. Used to identify county boundaries for reference, and to clip other data for useability.

Dataset:	Land Use (2019) - HELPR 2.0
Updated:	2/14/22
Type:	Web map app
Notes:	Used to identify parcels with the potential for housing development based on land use and other user defined criteria (lot size, development status, hazard area, etc.)

Source: **California Department of Forestry and Fire Protection**

Dataset:	Fire Hazard Severity Zones
Updated:	8/24/24
Type:	Feature Service with polygons
Notes:	Fire Hazard Severity Zones mapped by the State of California and local governments. Dataset clipped to only SCAG region counties. Fire hazard zones are defined as: - Very High Fire Hazard Severity Zone (VHFHSZ) - High Fire Hazard Severity Zone (HFHSZ) - Moderate Fire Hazard Severity Zone (MFHSZ) Each zone has defined criteria for development based on the wildfire risk.

Dataset:	CA Perimeters NIFC FIRIS public view
Updated:	9/13/24
Type:	Feature Service with polygons
Notes:	Map of wildfires in 2024. Dataset clipped to only SCAG region counties.

Dataset:	California Historical Fire Perimeters
Updated:	8/30/24
Type:	Feature Service with polygons
Notes:	Map of historic wildfires from the 1800s. Dataset clipped to only SCAG region counties and wildfires will be filtered to an appropriate time range for useability.

I will use spatial analysis techniques learned in this class and elsewhere to identify areas where wildfire risk and housing demand conflict in Southern California. This will involve the use of clip, intersect, union and other GIS operations. I will use available tools in ArcGIS Pro and Python to automate the extraction and filtering of data. Further, I will use the “extract, transform, and load” (ETL) process in GIS and Python to process and analyze what I have found. Ultimately, I hope to provide a visually interesting and technically competent product!