

ADDRESSING SOCIAL ASPECTS OF FIRE RISK

Backstory

Wildland fire needs no backstory, but this externship does. I am a PhD student studying wildfire, but rarely do I get to leave my office and talk to anyone. This externship was designed to create an opportunity to listen to many Coloradans who address this issue. Unfortunately, with COVID-19 we were forced to take travel off the table. Much like Colorado though we were resilient and worked with folks over the phone and investigate the social aspects of wildfire. The index we created will be used by the Colorado State Forest Service and has become a major part of my thesis.

The Wildland Urban Interface

Colorado has a large set of diverse communities, many of which reside in the Wildland Urban Interface (WUI). The WUI is an area defined by fire researchers indicating areas where human settlement are mixed with forest or other landscapes. A map of WUI areas in CO is included for reference. Communities within the WUI do share a common attribute, risk from wildland fire.

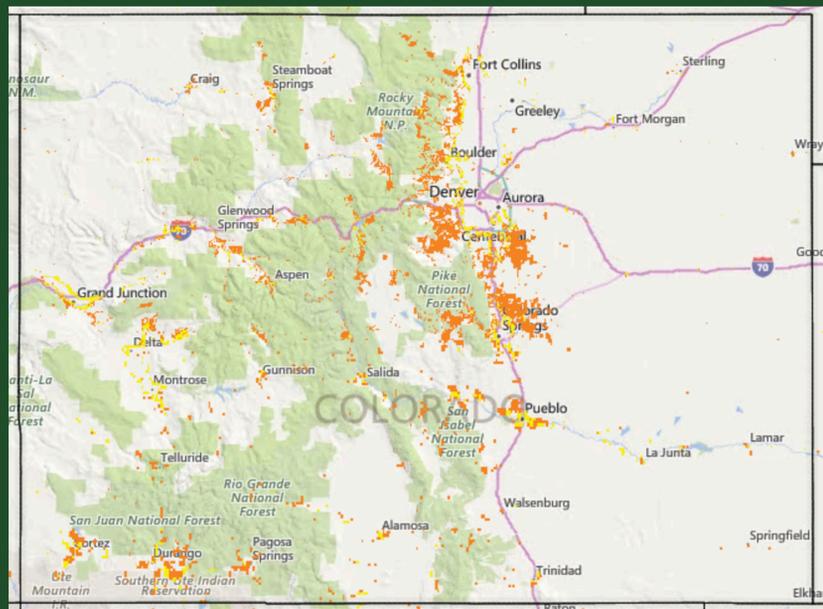
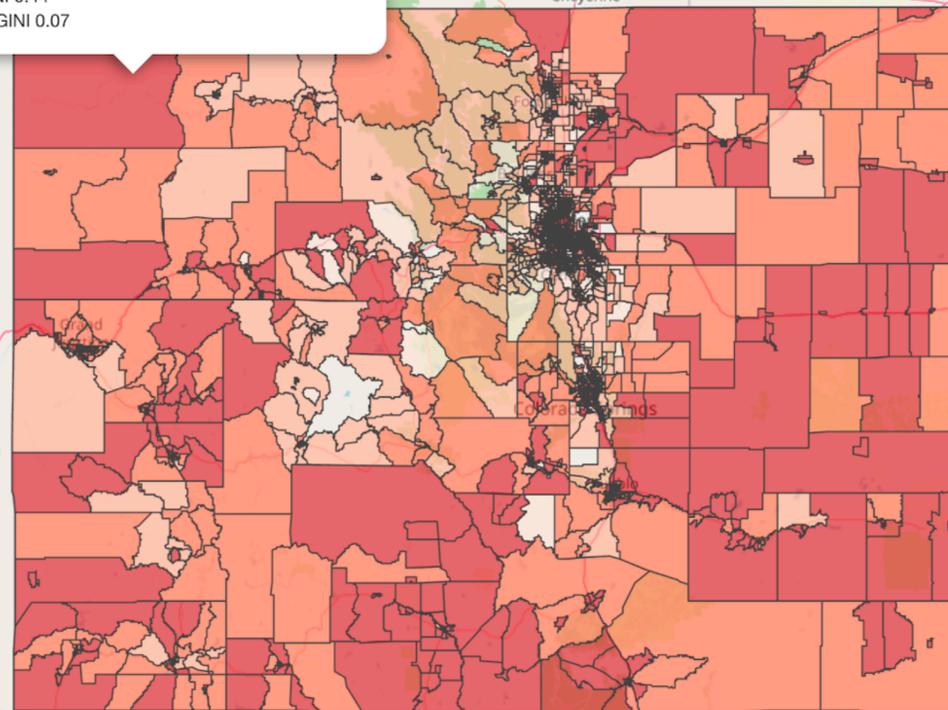


Figure 1: This WUI layer captures most communities in Colorado with the exception of urban areas. The definition used comes from the Silvix Lab.

Social Aspects of Fire Risk

We can all think about things that might cause higher fire risk: a dry year, trees close to a home, or wood roof. Smokey the Bear taught us well, but we don't often think about who might be at risk. There are many attributes of people in communities that affect the risk that communities face. I explored this remotely and created a Social Vulnerability Index (SVI) specific to wildfire.

units 0 %
Percent of housing units that are mobile homes 26 %
Percent of households with more people than rooms 4.36 %
Percent of households with no vehicle 2.18 %
Percent of people who live in group housing 0.6 %
Income GINI 0.44
Education GINI 0.07



The Social Vulnerability Index

In the map above we see the SVI rankings across the Census Block Groups of CO. The SVI is bounded between (0,1), where 1 is the highest. The darkest red color indicates high social vulnerability (above .75). These areas may be less able to manage wildfire risk through tree clearing and building improvements. They may also recover more slowly from property destruction.

What constitutes Social Vulnerability?

If pressed what might make people more vulnerable to wildfire we might first guess money, and that is part of it. Those with lower purchasing power typically live in homes with more susceptible exteriors, have fewer discretionary funds to spend on mitigation, etc. The literature has also identified ability to speak English, which can be a major barrier to gaining knowledge about fire, number of elderly and young, who require care and transportation, mobility issues, and education as some of the factors that affect vulnerability to a disaster.

I have adapted the index created by Flanagan and coauthors. I have updated it to include measures of equity within communities to reflect Colorado's spatially diverse population. As more seasonal homes and tourism enter the state it is important to ensure that longstanding Colorado communities still receive the aid that they need.

Using the Social Vulnerability Index

As a result of this externship I was able to think less about publication and more about how my work could be used. A version of the map pictured here is getting placed on the CSFS website. It allows users to zoom in on their area and see their SVI rating at a very local level. It also allows them to see the information about their area as well by clicking on a CBG. This index is going to be used by the CSFS to identify areas of the state that will qualify for increased match on wildland fire risk reduction projects.

If you have thoughts or questions about the index or its use email me at cdimke@colostate.edu

Stewart, S.I., V.C. Radeloff, R.B. Hammer, and T.J. Hawbaker. 2007. Defining the Wildland Urban Interface. *Journal of Forestry* 105:201-207

Flanagan, Barry E., Edward W. Gregory, Elaine J. Hallisey, Janet L. Heitgerd, and Brian Lewis. 2011. "A Social Vulnerability Index for Disaster Management." *Journal of Homeland Security and Emergency Management* 8 (1). <https://doi.org/10.2202/1547-7355.1792>.