

*Using Machine Learning to predict*

---

# California Wildfires

---

Pete Plass

---



*It's a CL-415*

## Real Impacts: 2018

- ❖ Over \$3.5 Billion
- ❖ 21,900 acres
- ❖ 22,751 homes
- ❖ 97 Civilians
- ❖ 6 Firefighters

*Getting the data...*

---

## In short, I got lucky

---

Current data is considered somewhat sensitive as the US geological survey is restricting how they store the 'climate-related' data.



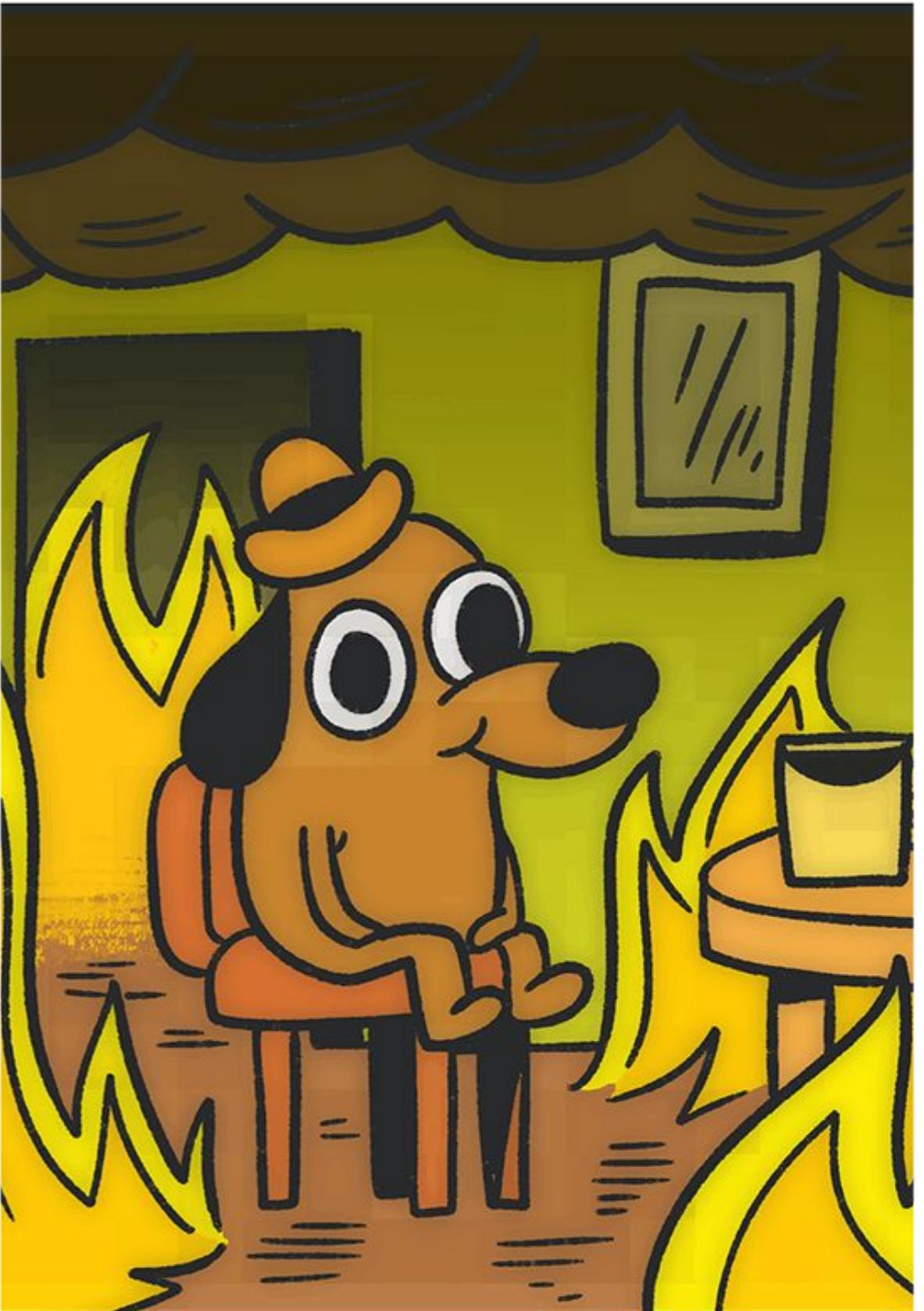
*Data Issues*

---

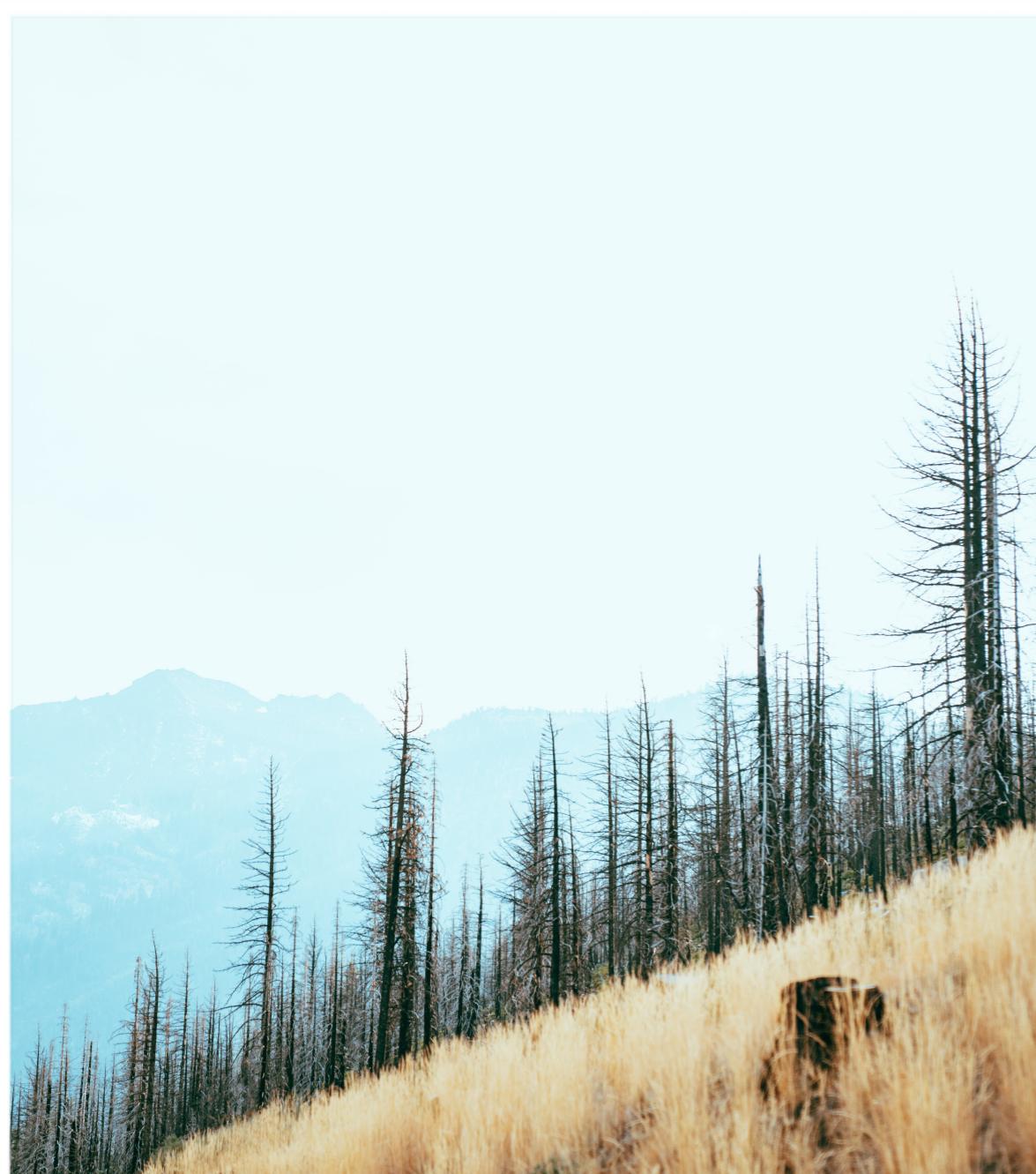
...but not THAT  
lucky

---

- ❖ 626 different fire departments
- ❖ 58 counties
- ❖ 134,000 fire incidents

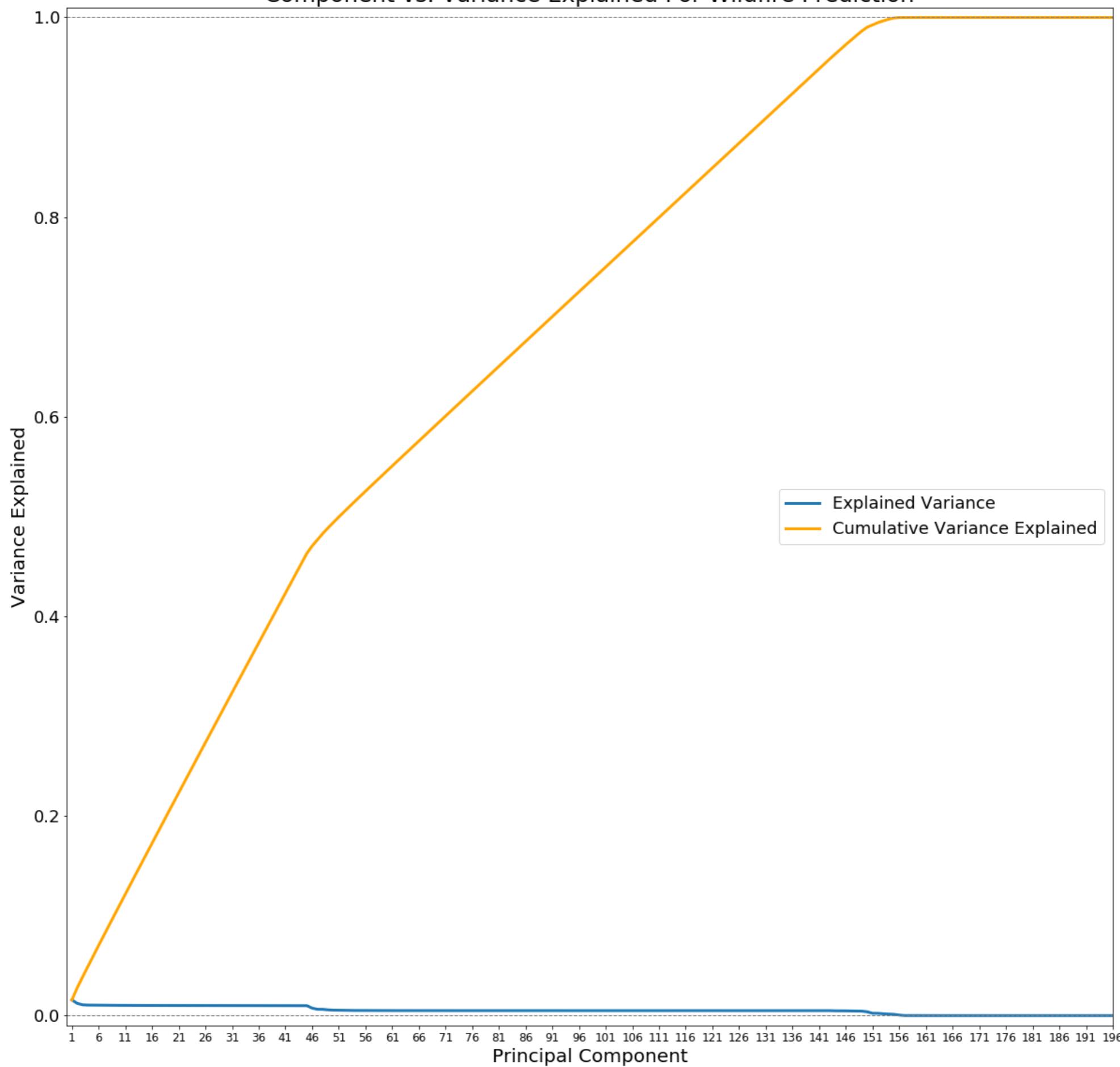


# Classifying Fires



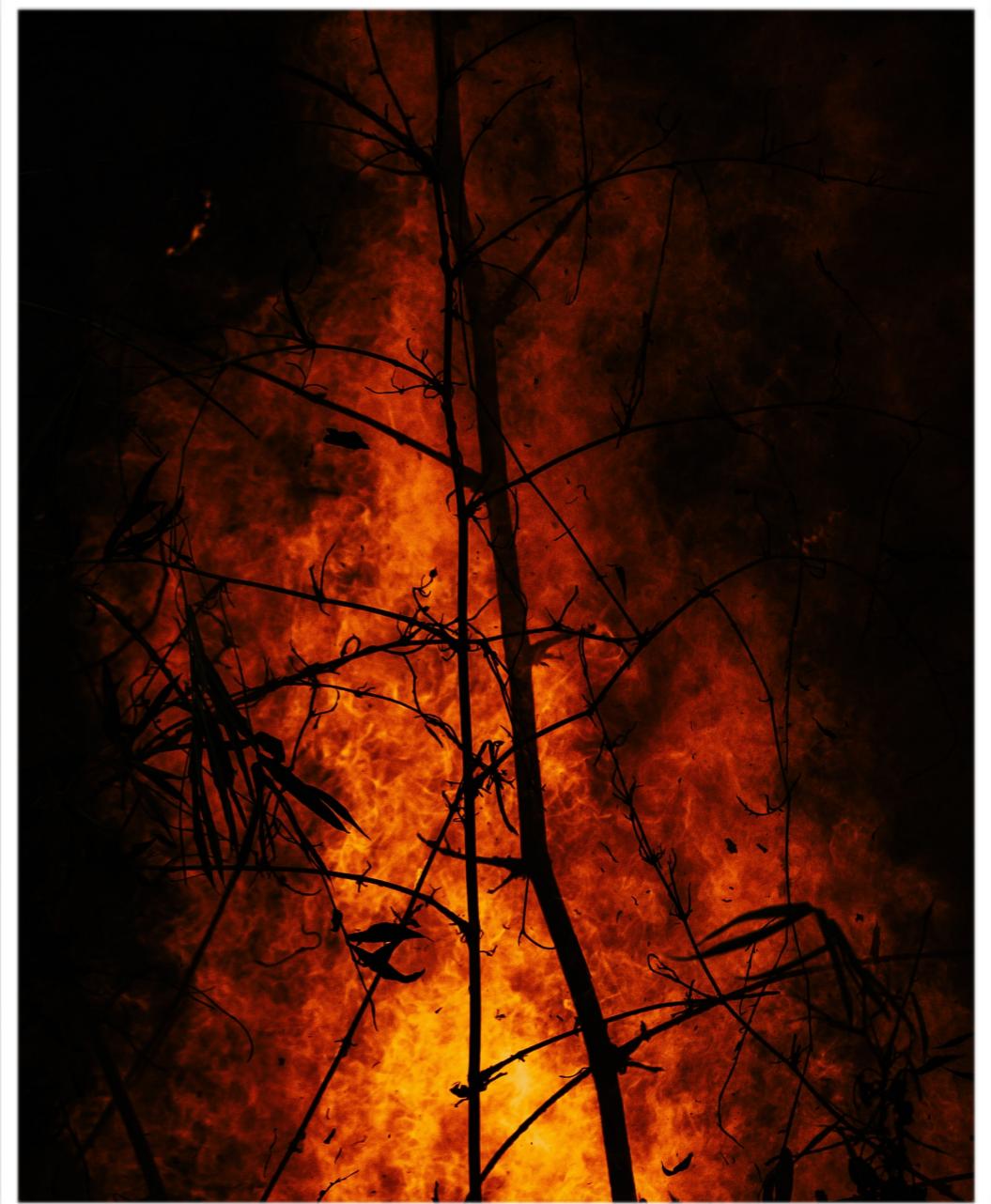
- ❖ By Kind (Grass, Brush, Cultivated Grass, Orchard...)
- ❖ By Cause (Unauthorized Burn, Campfire, CHILDREN)
- ❖ By Lat/Long
- ❖ By Fire Department
- ❖ Burn Time
- ❖ Burn Duration

### Component vs. Variance Explained For Wildfire Prediction

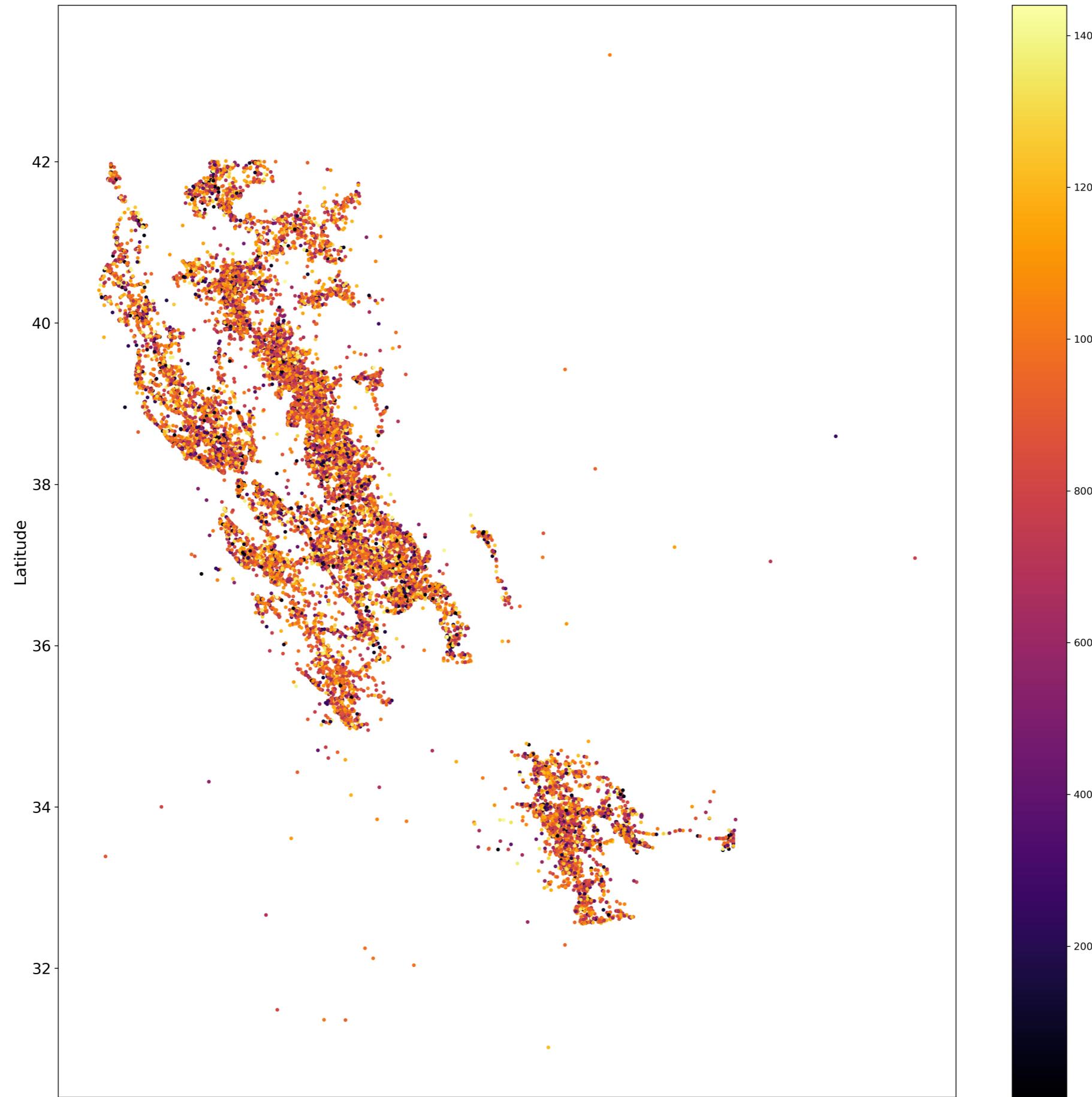


# R2s Of Nightmares

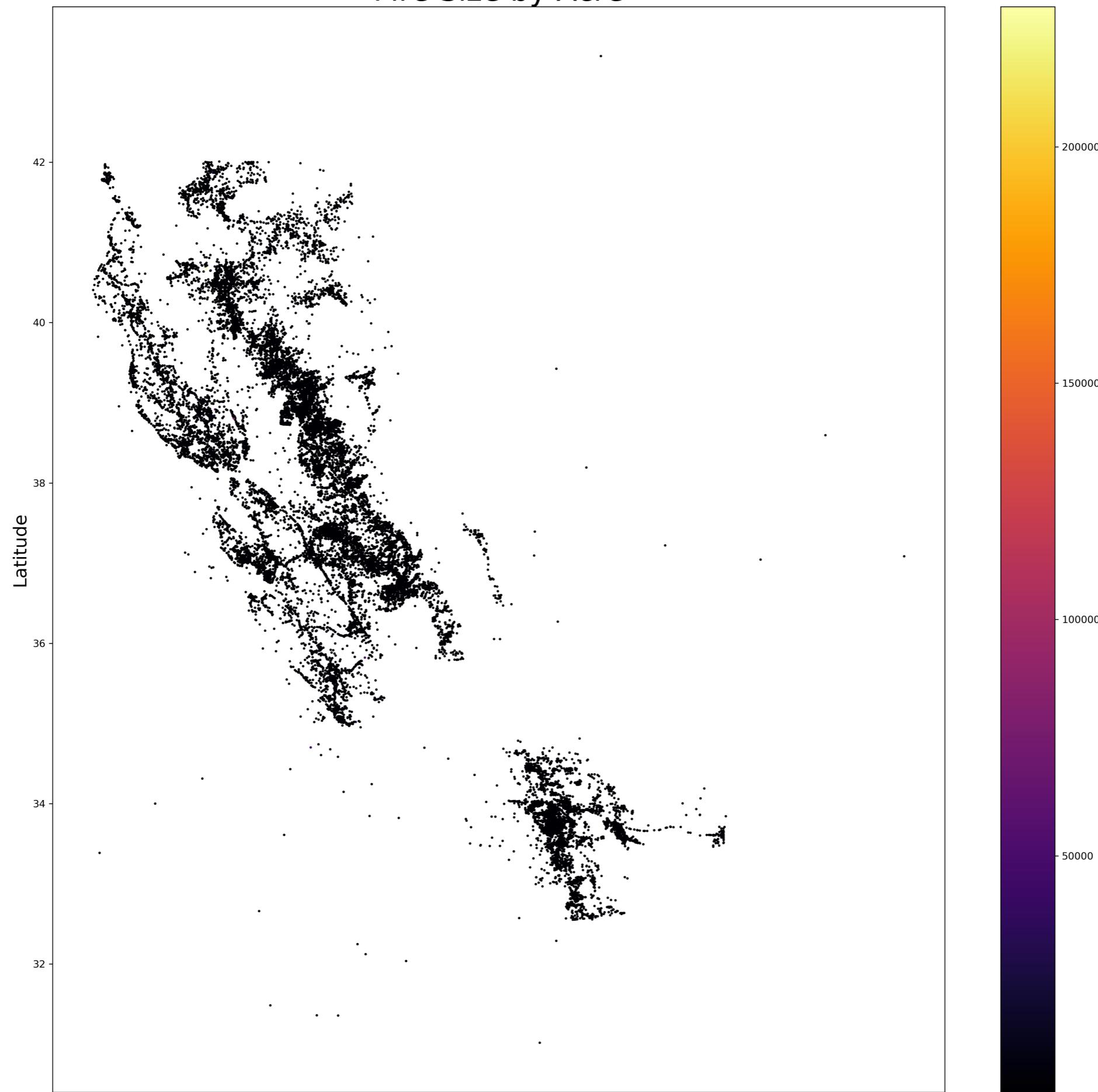
- ❖ Linear Regression: -.0043
- ❖ Random Forest Regressor:  
-.1315
- ❖ KNeighbors : -.1715



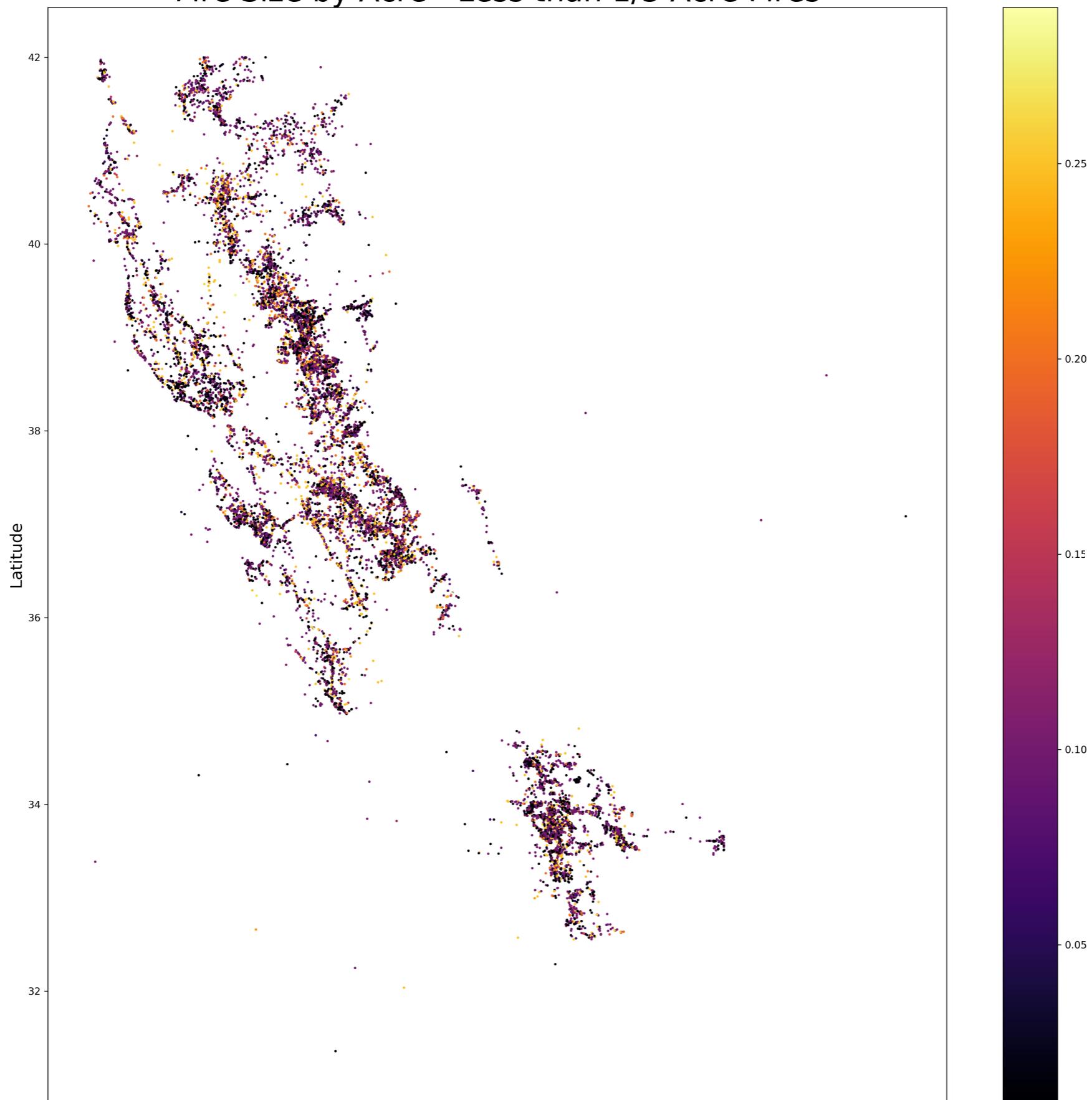
# Burn Duration of CA Fires 2013-2019



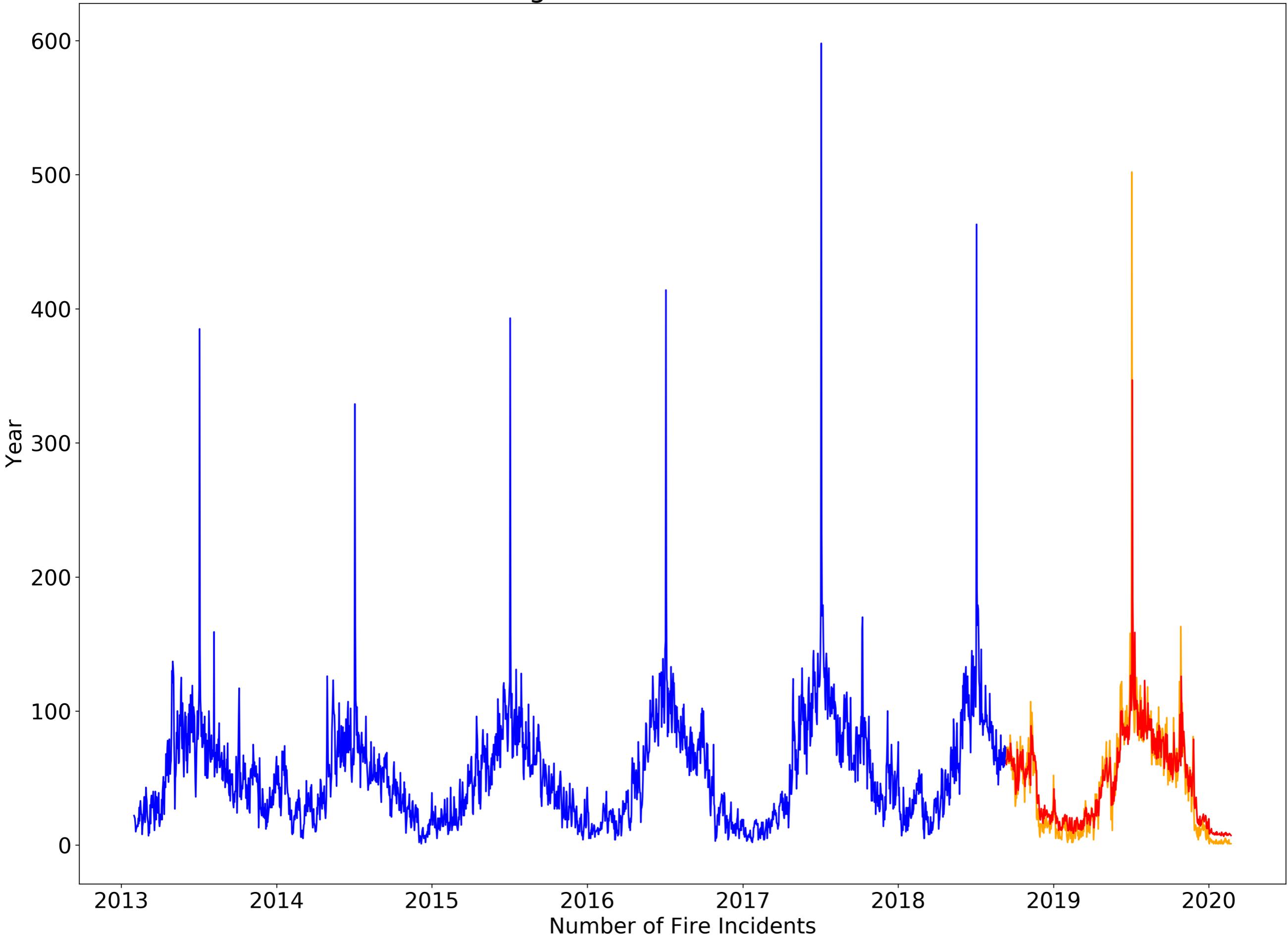
# Fire Size by Acre



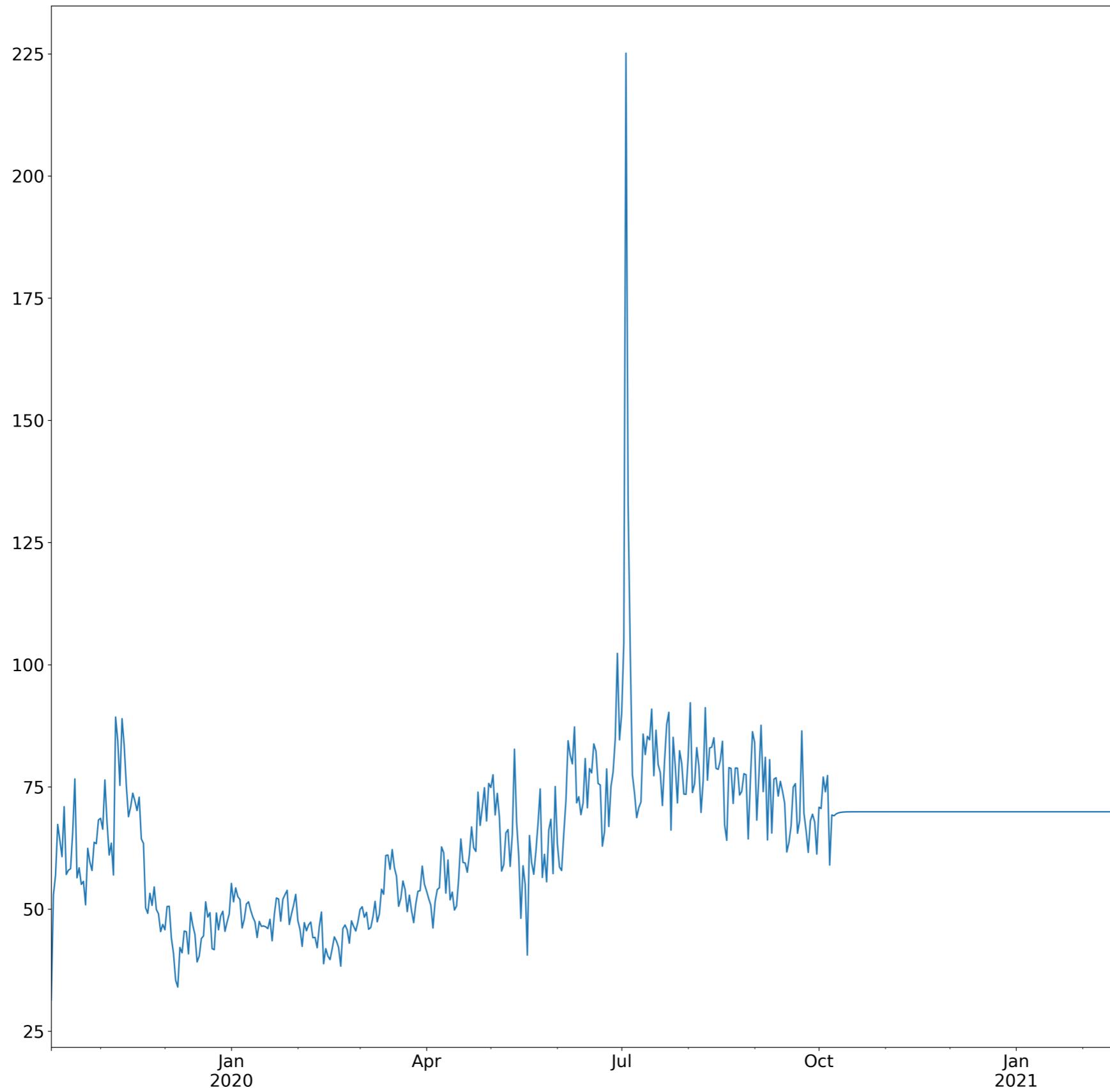
### Fire Size by Acre - Less than 1/3 Acre Fires



# Forecasting California Wildfires 2013-2020



# CA Wildfire Predictions



“Go to the flask app.”

*–Unknown*

# Why is this Useful?



Big thanks to the US Geological Survey and CalFire

