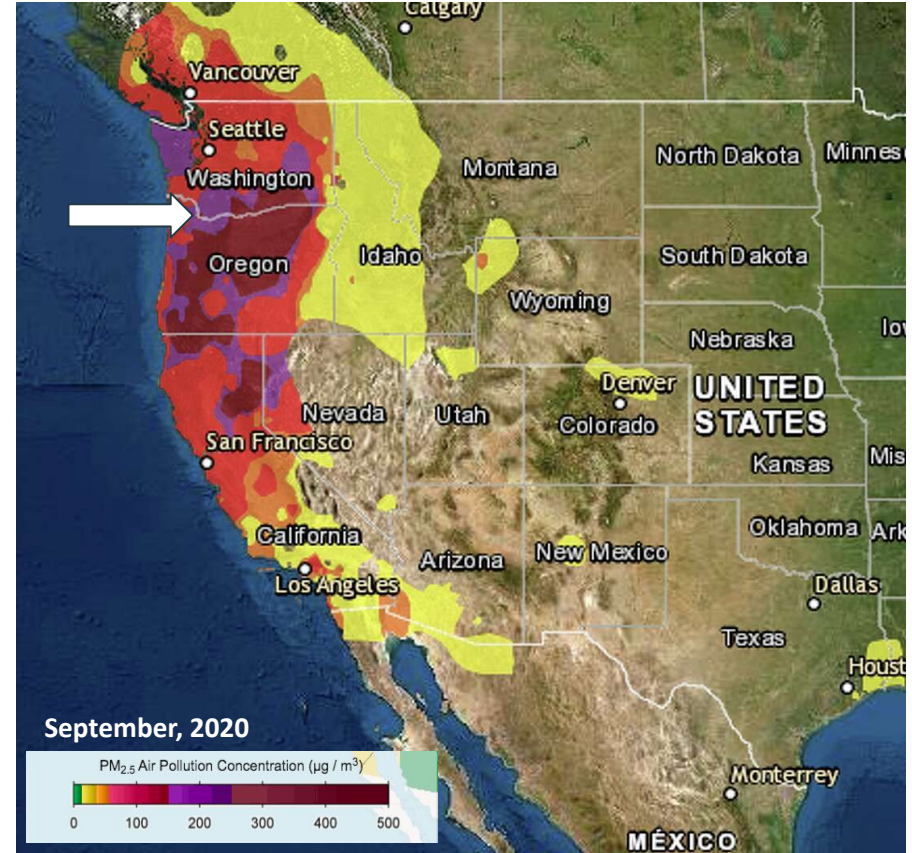


Vancouver, WA





Estimate Smoke Impact

Examine the relationship between smoke exposure and respiratory mortality rates

Impact of smoke exposure on poverty, unemployment, and premature deaths



Data Acquisition

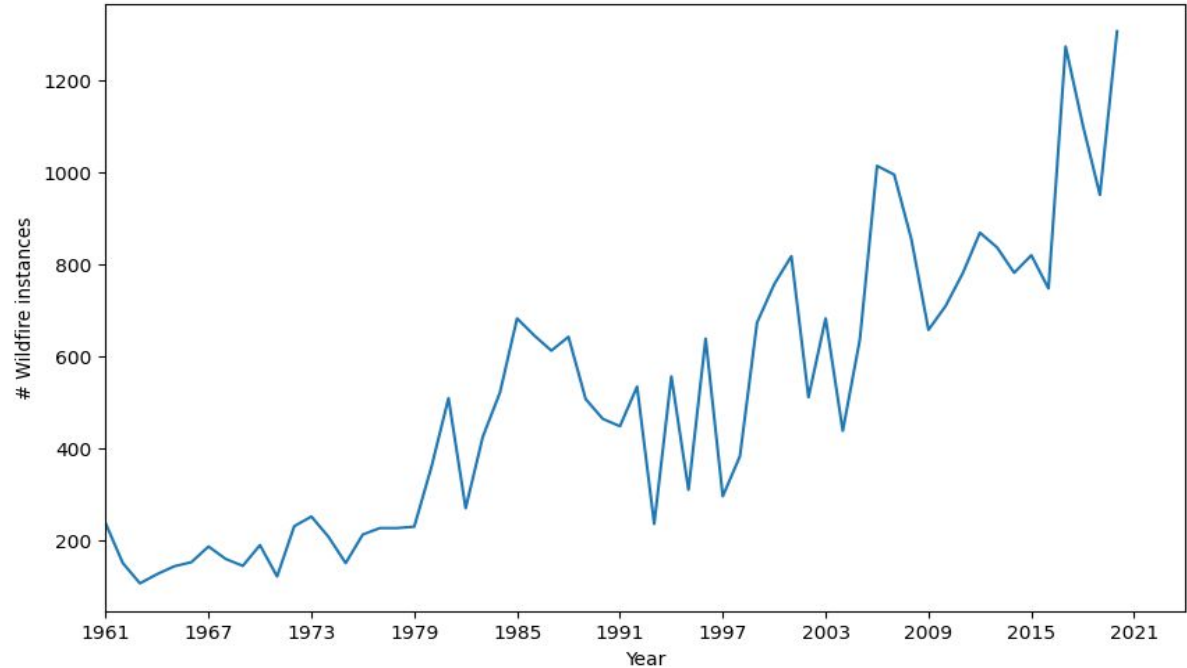
Data Processing

Statistical Analysis

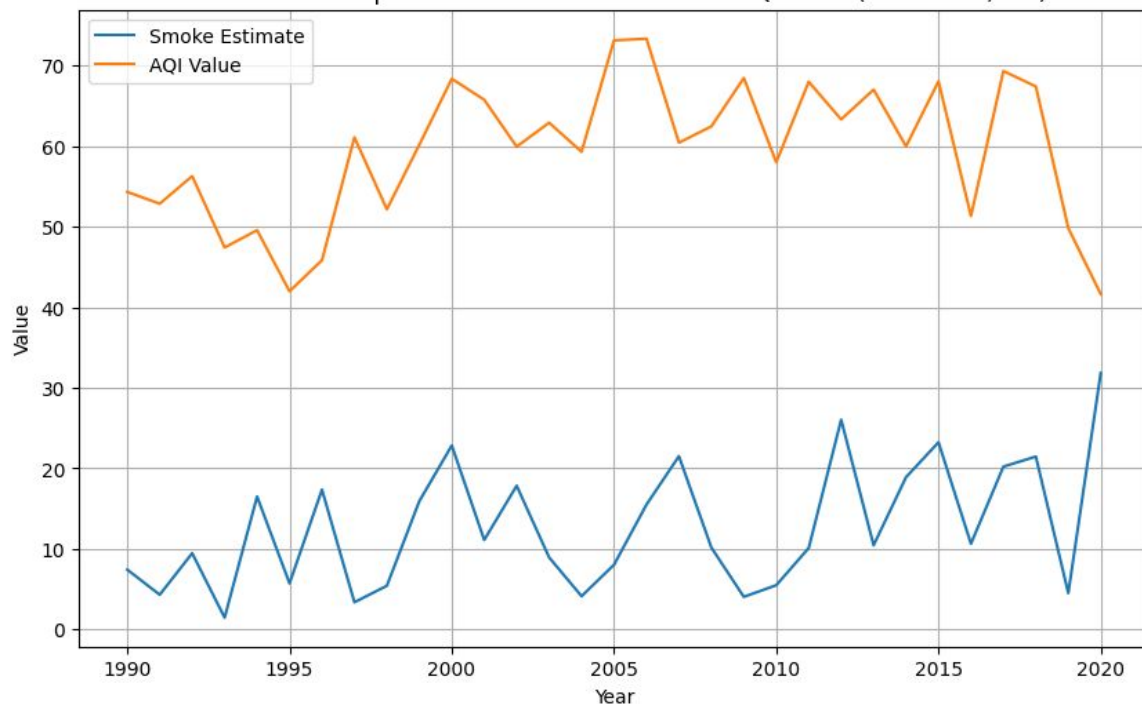
Predictive Modeling



Number of Wildfire instances each Year



Time Series Comparison of Smoke Estimate and AQI Value (Vancouver, WA)



Spearman Correlation: 0.23

p-value: 0.22

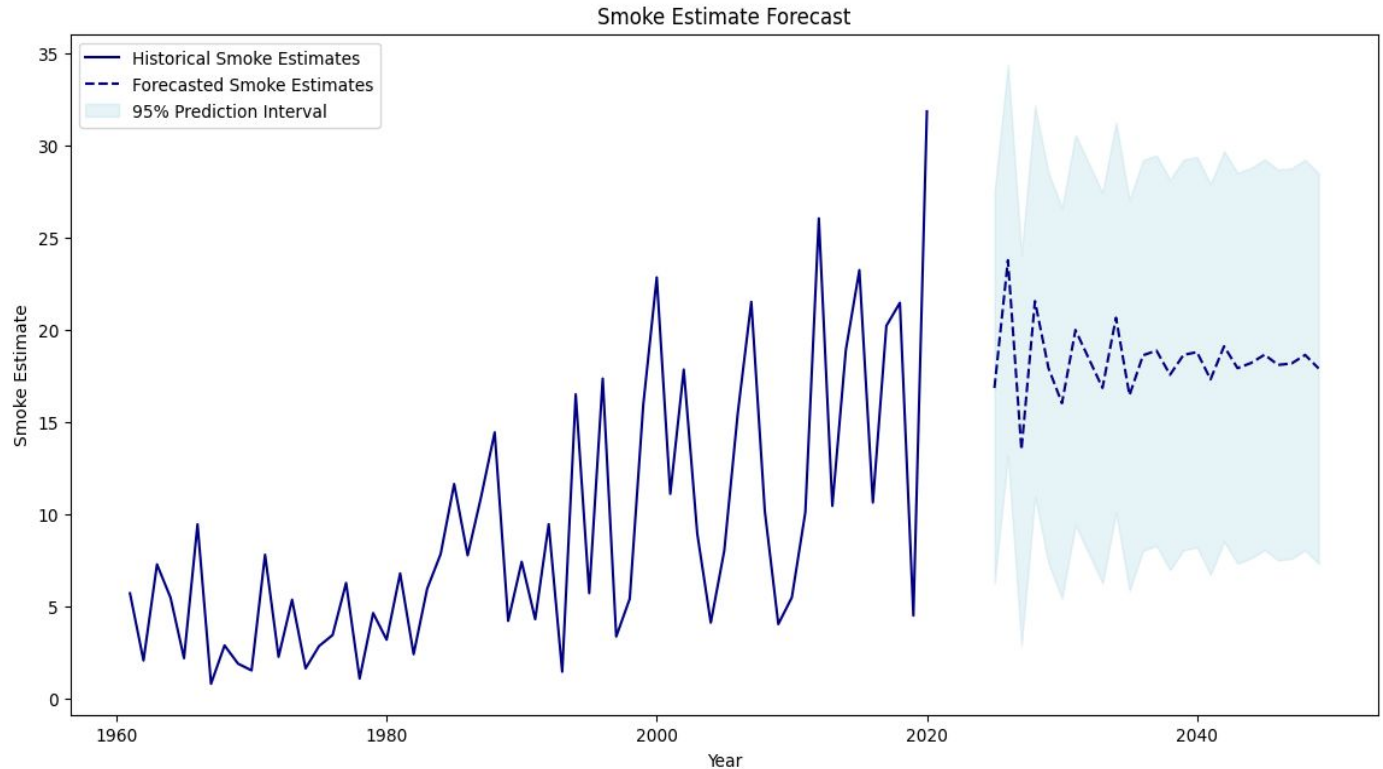
$$\text{Smoke Estimate} = \frac{\text{weight_based_on_fire_type} * \text{GIS_SqMiles}}{\text{average_distance}} * 1000$$

Smoke Estimate Forecast (ARIMA)

After Differentiating:

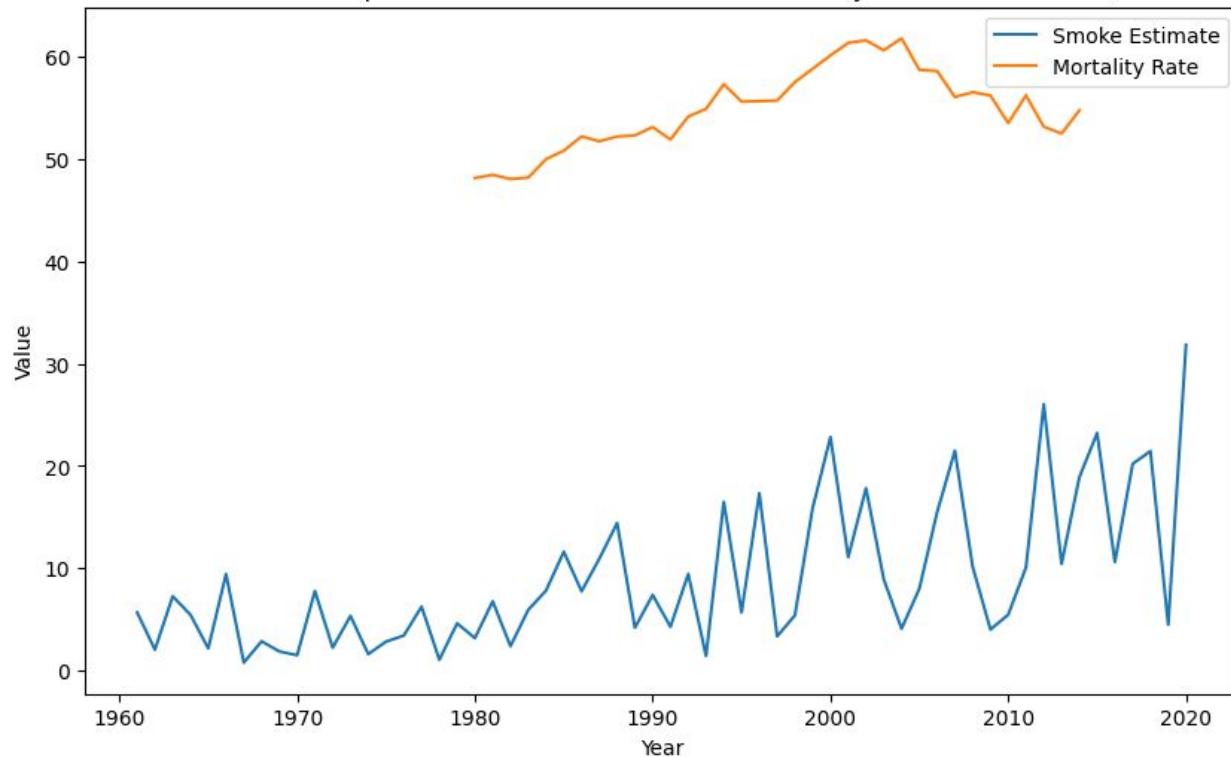
ADF Statistic: -7.42

p-value: 9.43e-11



Respiratory Mortality Rate

Time Series Comparison of Smoke Estimate and Mortality Rate for Vancouver, WA

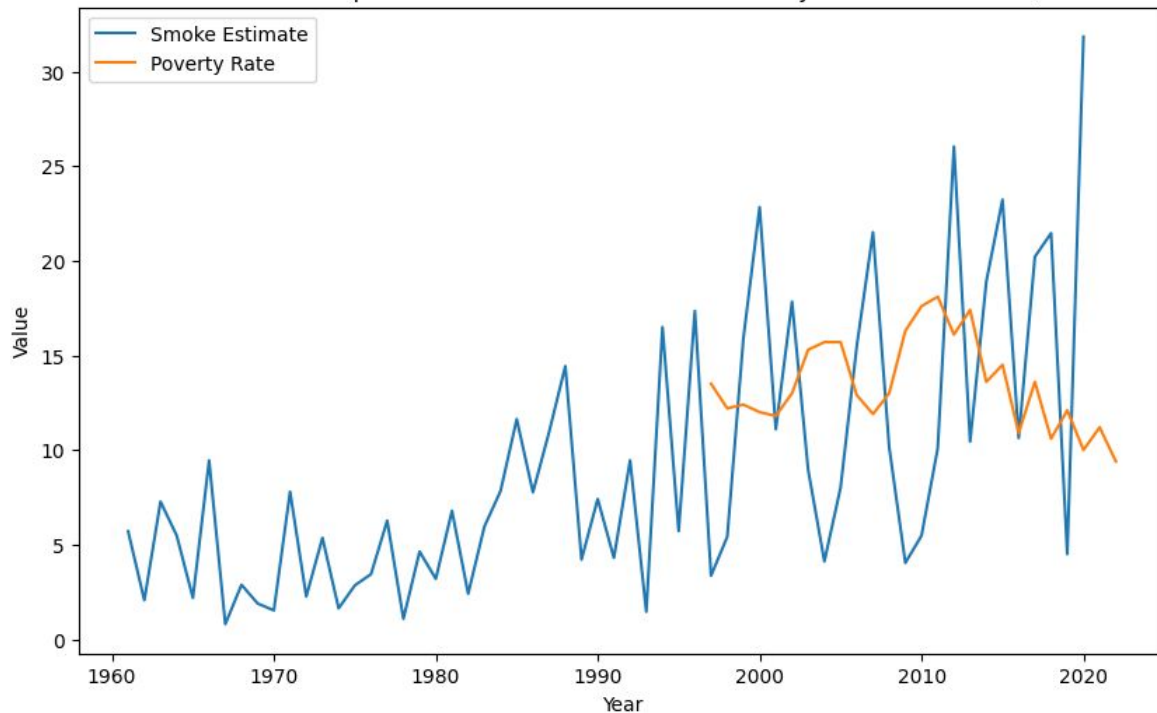


Spearman Correlation: 0.32

p-value: 0.063

Poverty Rate

Time Series Comparison of Smoke Estimate and Poverty rate for Vancouver, WA

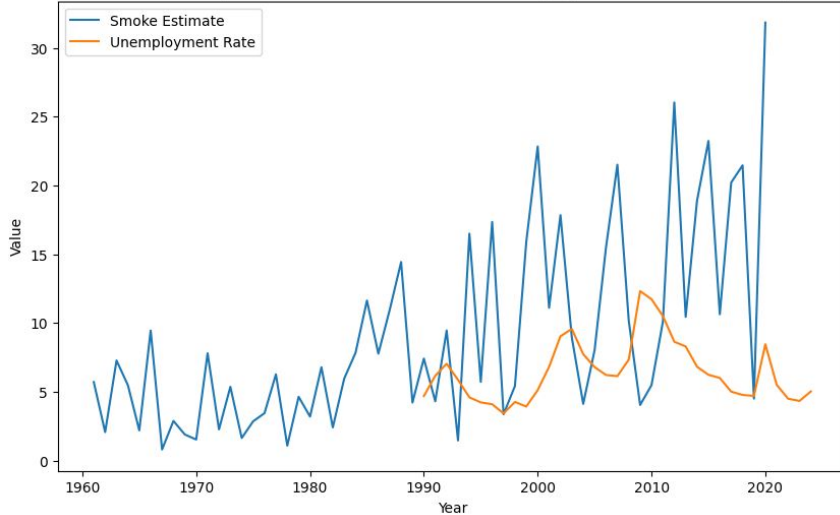


Spearman Correlation: -0.41

p-value: 0.03

Unemployment Rate

Time Series Comparison of Smoke Estimate and Unemployment rate for Vancouver, WA

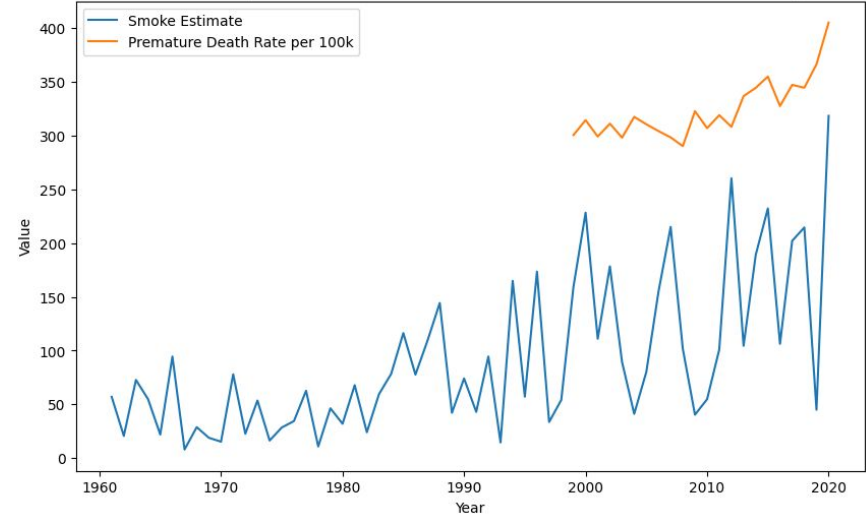


Spearman Correlation: 0.045

p-value: 0.809

Premature Deaths

Time Series Comparison of Smoke Estimate and Premature Deaths for Vancouver, WA



Spearman Correlation: 0.193

p-value: 0.391

Historical and Forecasted Data with 95% Prediction Intervals

