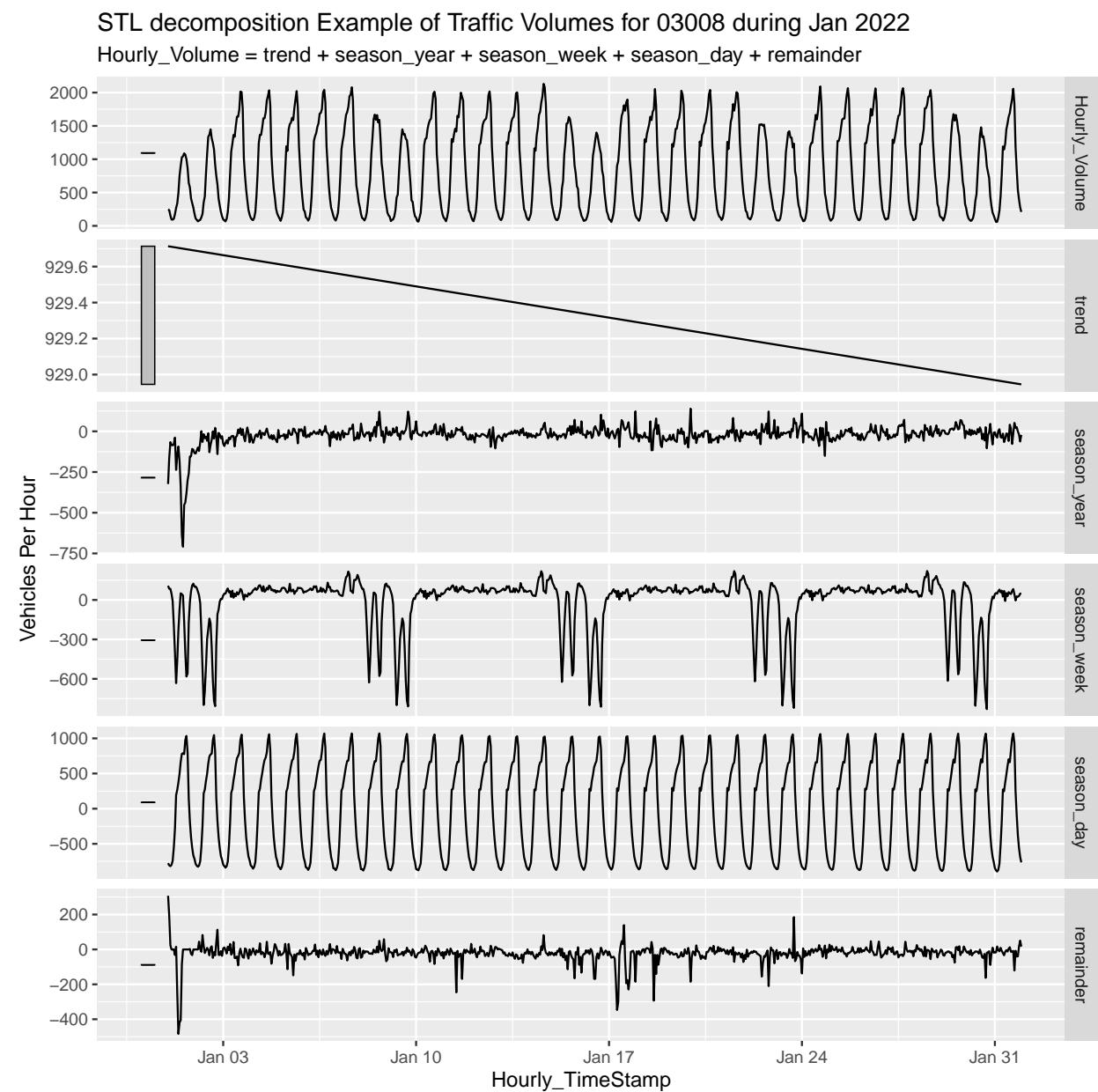


Final Project Part 2: Predicting Automobile Traffic

Sreeti Ravi, Shawn Strasser

3/26/2022

1. Time Series Decomposition

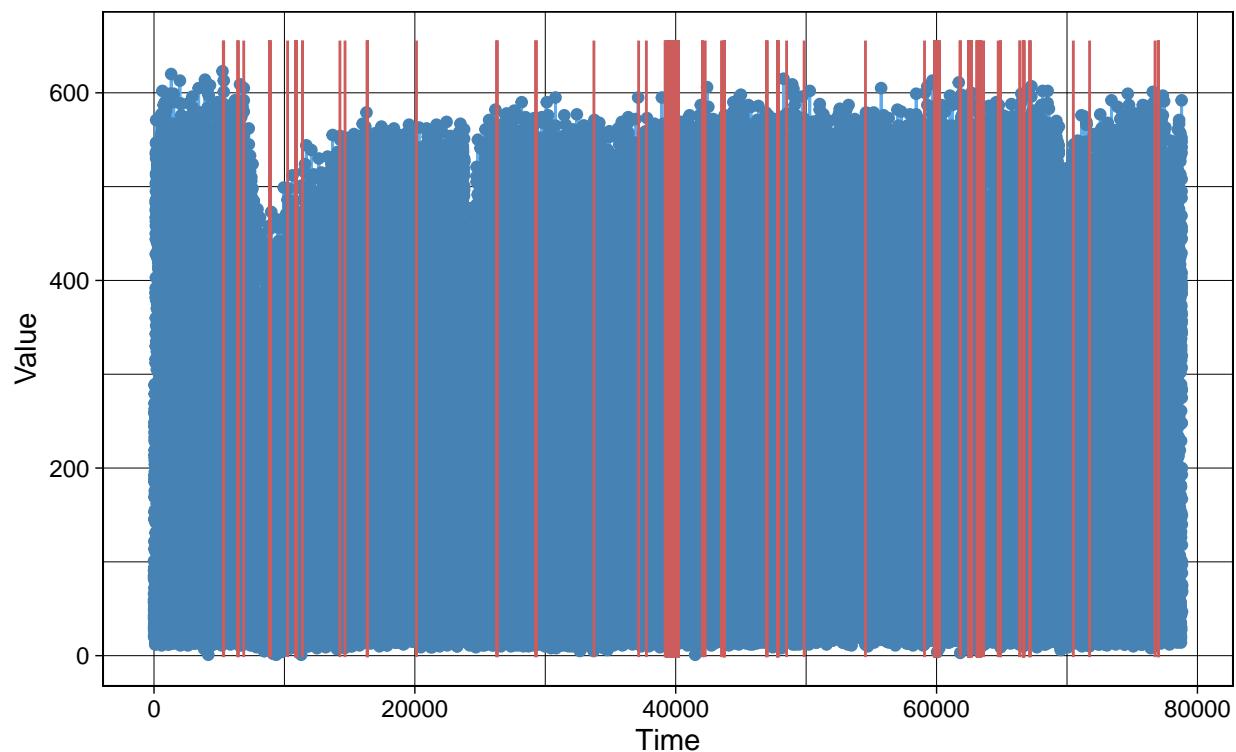


2. Time Series Visualization

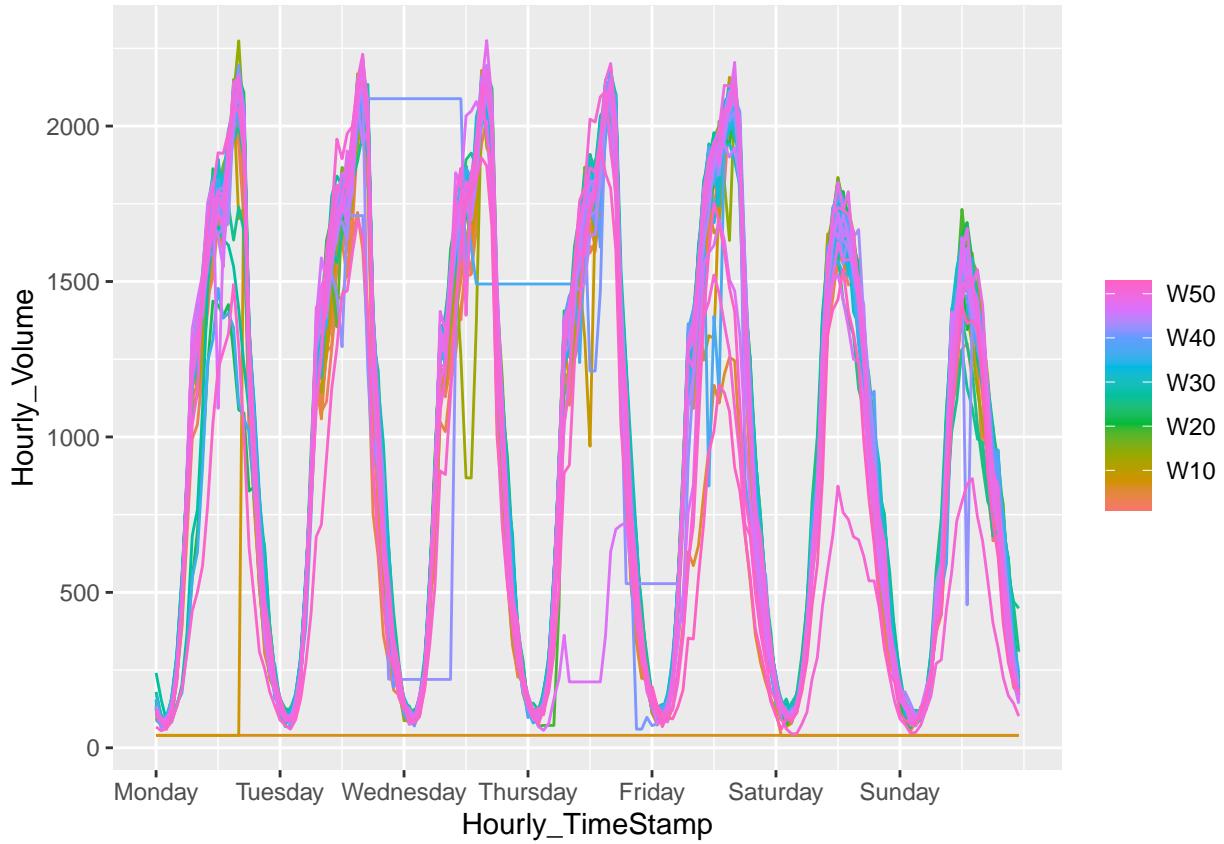
This plot reveals some gaps in the data.

Distribution of Missing Values

Time Series with highlighted missing regions

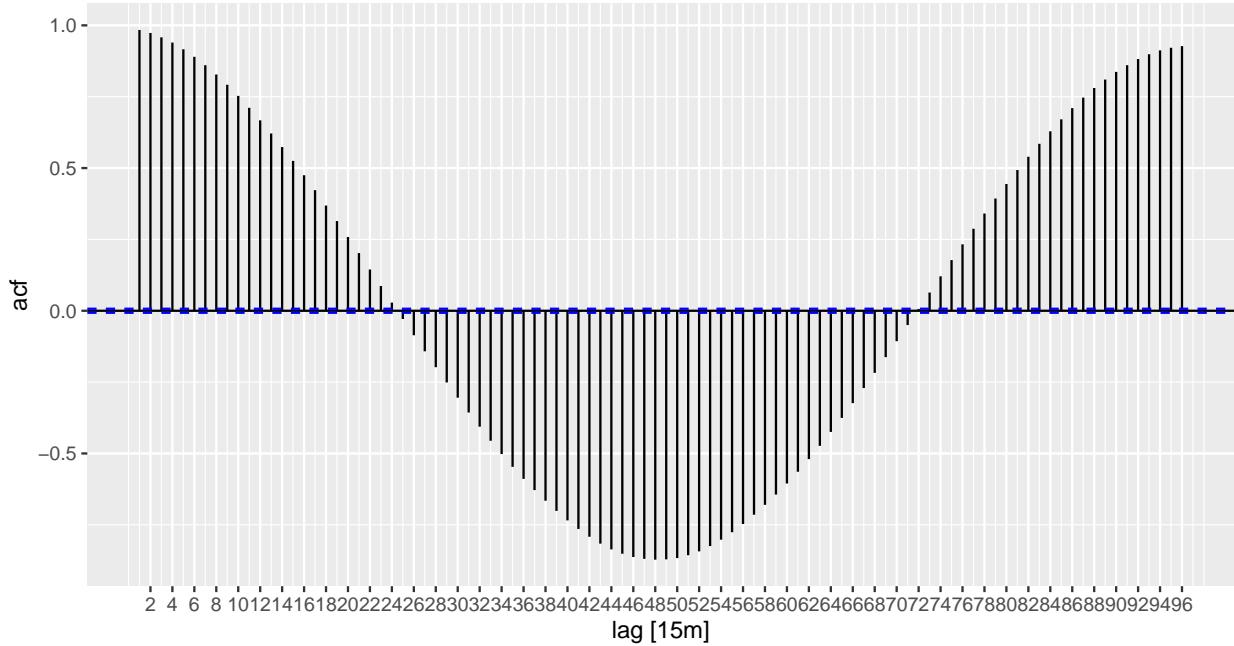


With the exception of holidays and unexpected events, the traffic at this locations is pretty consistent throughout the year. This visual also makes the gaps in data become more apparent.

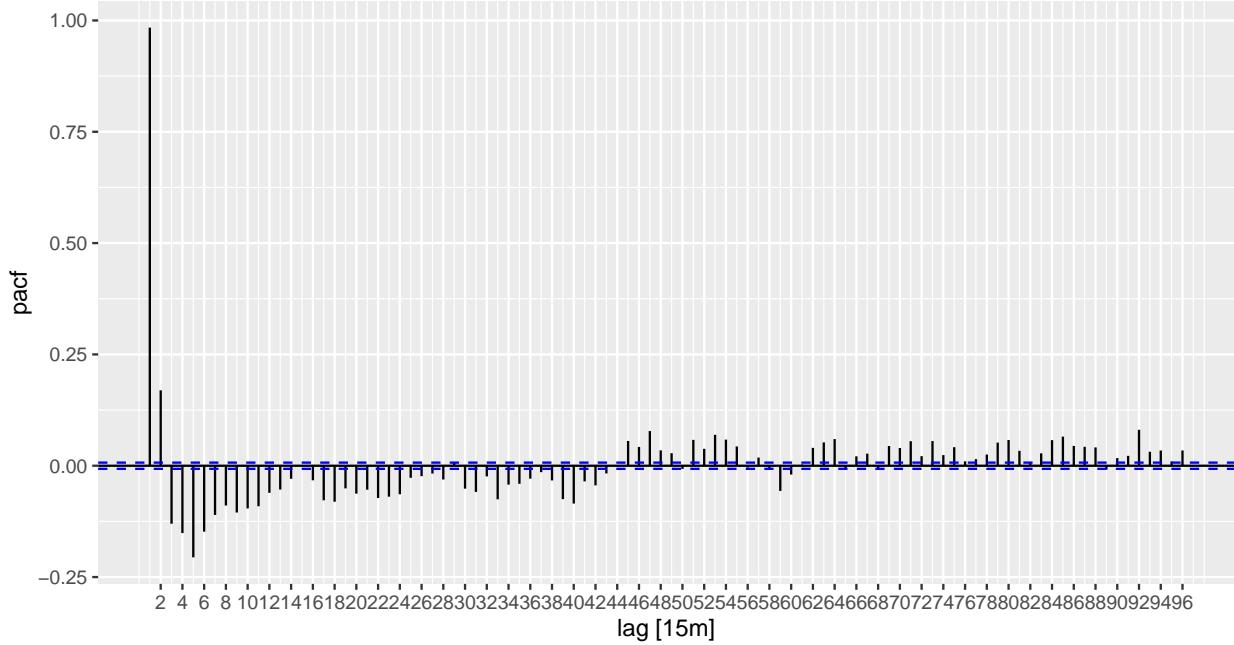


ACF plots reveal strong and persistent autocorrelation over days and weeks

ACF of Volumes for 1 day (96 15–minute periods)



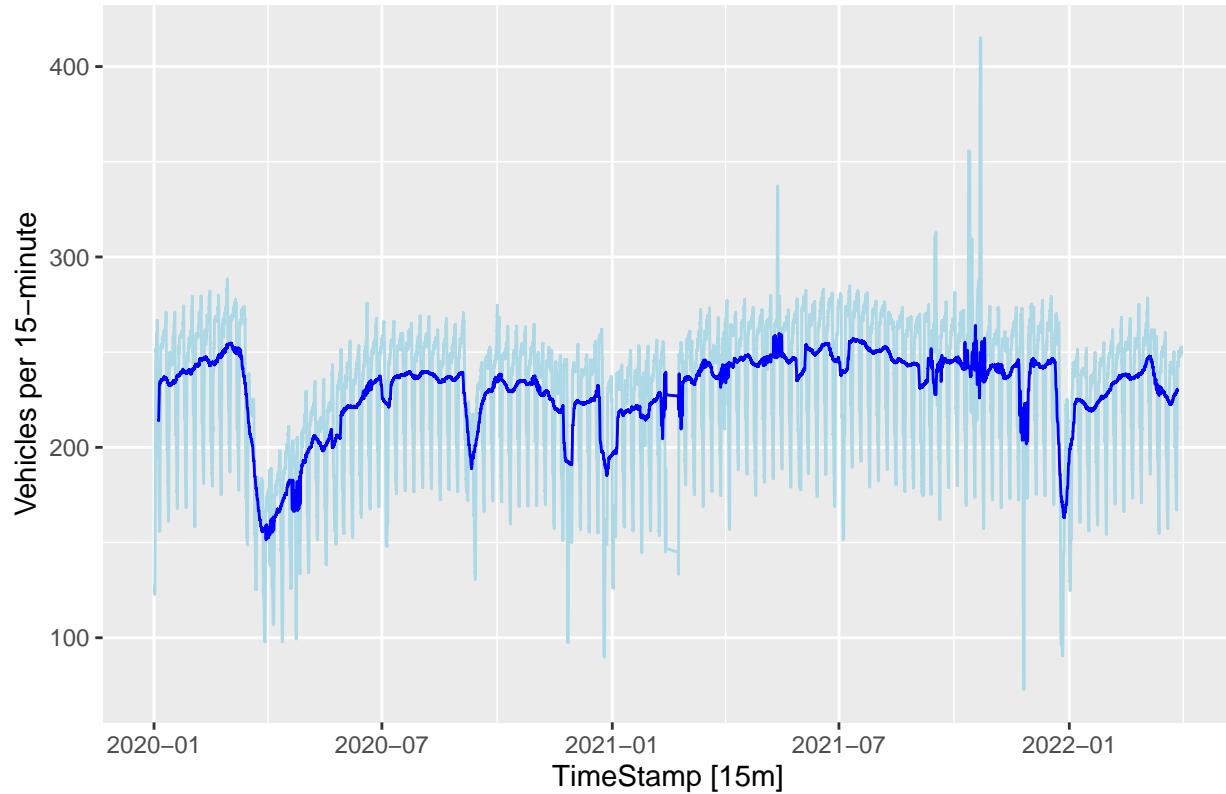
PACF of Volumes for 1 day (96 15–minute periods)



3. Description of Time Series

This plot gives an overview of how traffic volumes change seasonally at a particular location in Salem, OR.

7-day and 1-day Moving Average Volume for 03008



Traffic went down during COVID lockdowns March 2020, and again dropped during a wildfire in September 2020. There are regular dips during holidays in the winter and summer, with occasional unexpected dips due to snow on the road. There is not a strong long term trend present for this location, but there will likely be a trend at other locations.

There is strong seasonality at the levels of day, week, and year. There tends to be more traffic on average during the summer than winter. Weekday traffic is higher than weekend traffic, and midday traffic is higher than night time.

This time series is not stationary and will require some differencing to become stationary.

4. Model – apply several models (transformations if needed), explain decisions

