

KJ MoChroi

## Predicting Interstate Traffic Volume

10 Questions from the audience:

1. What has been done here compared to the current traffic volume models out there?

Currently there are extraordinarily complex and effective models out there that are utilized in apps like Google Maps which far exceed the work I was able to do here.

2. Why did the VAR model generate a flat line prediction?

Because the data was stationary, the VAR model minimized its error when the prediction was flatline. I don't know much more than that.

3. Why did the ARIMA model generate a flat line prediction?

Similarly, with the ARIMA model which features a moving average component, the error was minimized with a flatline prediction.

4. What data could be added to the dataset to generate better results?

Expanding the area of data collection could generate better results as we would be able to input information about traffic in adjacent areas.

5. How could you change the RFR model to improve results?

I would improve the RFR model by changing the method of feature selection and train-test split.

6. Why an RFR model over a different type of standard regression model?

I was more familiar with an RFR model because I had done it in the past. I decided to train the RFR model only after the VAR and ARIMA models failed so I was short on time to learn a new regression model.

7. Why is there a dip in the top of the sine wave of the traffic volume data?

I am assuming the dip is the lull between the two peaks of morning rush hour and evening rush hour when people are going to and from work.

8. What were the parameters of the optimal ARIMA model?

Auto-ARIMA determined that the best SARIMA model had the parameters  $ARIMA(5,0,2)(0,0,0)[0]$  which is interpreted as no seasonality terms, no differencing term, and AR value of 5 and MA value of 2.

9. What was the OOB score of the random forest regression?

The Out-of-bag score for the RFR regressor was 0.9469373959325946.

10. Which features were retained after Granger's causality test?

- temp
- clouds\_all
- holiday\_None
- weather\_main\_Clear
- weather\_main\_Clouds
- weather\_main\_Fog
- weather\_main\_Mist
- weather\_description\_broken clouds
- weather\_description\_few clouds

- weather\_description\_fog
- weather\_description\_light intensity drizzle
- weather\_description\_mist
- weather\_description\_overcast clouds
- weather\_description\_scattered clouds
- weather\_description\_sky is clear
- weather\_description\_proximity shower rain
- traffic\_volume