Time Series Project: Summer 2019

Due Date: Thursday August 15 at 11:59pm.

Important:

If you want to have your final exam grade replace your midterm grade then you will simply take the final and you don’t need to do the project. You will receive full credit for the project.

If you are replacing the final grade with your midterm grade then you do not need to take the final (obviously) but must complete the project.

The project:

1. Pick a data set that has two or more variables recorded over time (similar to the Schumway LA air quality data from Unit 12. (dataset: *lap* from package: *astsa*) (can’t use this one ☺ )

2. Select a response from the data set.

3. Be creative and come up with a scenario as to why a client would want to analyze this data and why this response is important! Or better yet, use a real problem that you are interested in!

4. Fit at least one model from each of the following four categories (provide all plots and tables needed to ID these models: acfs, spectral density, factor tables, etc.):

a. ARMA / ARIMA / ARUMA / Signal Plus Noise

b. VAR with at least one explanatory model.

c. Neural Network

d. Ensemble model using at least two of the above.

5. Compare all models with the ASE… this does not mean you have to choose the model with the lowest ASE.

6. Pick a forecast horizon based on your “problem” from part 3 above and provide the forecasts and prediction limits.

7. Create a ppt and a 5 minute video describing your analysis and steps 1 – 6 above.

8. Post that video to you-Tube and the (private) link to the Google-Doc and submit your ppt and Rmd File (or Jupyter notebook) to 2DS.

You are encouraged to help each other out but make sure that each student is doing most/all of the work. Everyone should pick there own data and if two students pick the same data set at random that is ok… however, these students should not discuss the project till after it is turned in.

Deliverables:

Please submit

a. your pptx (or slides in whatever form (pdf, Prezi, etc.) (Put in “Final Project Presentation.”)

b. an R markdown or Jupyter notebook or equivalent (Put in “Final Project Documentation.”)

this file should contain all of your EDA, modeling and forecasting code and be very organized and commented.

c. Please make sure your link is on your pptx and the Google Doc.