Weather Temperatures Case Study Rubric

DS 4002
Due Date: Dec 8
Submission Format: Upload GitHub Link to Canvas

Individual Assignment

Why am I doing this? This case study will allow you to explore rising temperatures in the Charlottesville area by using a seasonal ARIMA (Auto Regressive Integrated Moving Average) time series model. This will help expose you to the way time series models, and data analysis in general, can help solve real world problems. Given that climate change and rising temperatures has been a hot topic of debate for policymakers, this case study allows you to explore one of these real-world problems with some high stakes.

What am I going to do? For this case study, you will obtain forecasts (predictions) of the future for however many months in the future you would like to predict using the ARIMA model produced. In order to do this, you will have to follow the code scripts and use the data found in the GitHub repository linked here: https://github.com/2014cb22-del/CS3. After running the forecasts, you will then be required to submit the output tables of these forecasts and write a reflection on what these predictions mean in terms of rising temperatures, and how sure we can be that the predictions will be accurate. To summarize what will need to be turned in for this assignment, the deliverables include:

- Full output table and visualizations of the forecasts with point estimates and prediction interval values
- One page reflection on trends seen in the forecasts
- GitHub repository with all the materials used and produced

Tips for Success:

- Make sure to read the reference materials given to understand the material
- Since the coding environment for this case study is R, make sure you understand the basics of R in order to get the output table of the forecasts and fit the ARIMA model
- Talk with professors or other instructors if you run into issues with anything

How will I know I have succeeded? You will meet expectations on this case study when you follow the criteria in the rubric below.

Spec Category	Spec Details
Formatting	• One GitHub repository containing all materials ○ README.md (auto displays)

	○ LICENSE.md (use MIT as default) ○ Data folder ○ Scripts folder ○ Output folder ○ Reflection pdf
README.md	• Goal: Familiarize the reader with the contents of the repo • List the software and packages used for analysis • Explain contents within the data, scripts, and output folders using a documentation map • Explain how results can be replicated • Include references at the end
LICENSE.md	• Goal: The explains the terms that a visitor can use and cite the repository • Use the MIT license here
Data Folder	• Goal: This folder contains all of the data for the project • This should include the separate csv files for the maximum and minimum temperatures
Scripts Folder	• Goal: This folder will contain all of the source code from the case study. • This should mainly include the slightly edited version of ModelBuilding.Rmd ○ It should be edited by changing h in the forecasts and getting the forecast output table
Output Folder	• Goal: This folder works as a way to showcase your forecasts. • For the minimum and maximum temperatures, include the output tables for the forecasts with the point estimates and prediction interval values. ○ Also include the visualizations of the forecasts and the prediction interval widths
Reflection	• Goal: Summarize your findings and explain possible effects on policies • One page pdf file

	• Reflect on what the forecasts mean in terms of climate change as well as looking at if we are certain this will happen. How can this impact policies made in the future?

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