Tornadoes Case Study Rubric

Due: TBD.
Submission Format: upload a pdf and GitHub repository link to Canvas.

General Description: Investigate how tornado frequency and property damage due to tornadoes has evolved overtime in Minnesota, and forecast tornado frequency and property damage for the next 10 years. Submit a written report and reflection along with your GitHub repository to Canvas.

Why am I doing this? The goal of this assignment is for you to develop and demonstrate technical data science skills relating to time series data and become familiar with types of models used in time series forecasting such as the ARIMA model. The goal of this assignment is to inspire students with real-world applications of Data Science.

- Course Learning Objective: use the scientific method and time series data to practice addressing a real-world problem in the field of data science.

What am I going to do? You will research time series models, if needed, to effectively model tornado behavior in the state of Minnesota to inform insurance and safety. Then, you will write a written report and reflection on your analyses plan, results, and performance.

Tips for success:

- Make sure to take the time to research time series models if necessary, such as important concepts such as stationarity.
- Leverage experts in the School of Data Science to lack any skills you may initially lack.
- Document your code so that no ideas or work is lost during the analytical process.
- Outline an analysis plan beforehand, but embrace the non-linear data science life cycle and be open to shifting and adapting as necessary

How will I know if I succeeded?
You will have succeeded on this case study when you follow and complete the criteria outlined in the rubric below:

Spec Category	Spec Details

Formatting	Submit each component listed in the rest of this rubric as advised below. ● Written Portion ○ Submit the written portion as a PDF file. ● Data & Code ○ Submit a link to your GitHub repository containing all code and data used ● References ○ References should be included on a separate page at the end of the Written Portion PDF file using the IEEE citation style
Written Portion	Discuss your interpretation of the study and thought process by answering the questions below. (Tip: It may be advisable to write around one paragraph per bullet point, but adapt as necessary). **Report:** ● What was the problem this case study sought to address? Why is it an important research question? ● What was your plan to meet the demands of the deliverable? ● What were your results? How far can you generalize your conclusions? What are the limitations? **Reflection:** ● What was challenging about this case study? ● How did you address any challenges you faced? ● What would you do differently if you were to do the case study again, or how might you tailor your approach to similar work in the future?
Data & Code	Your GitHub repository should be organized with the following: ● README.Rmd ○ Brief summary of the problem this case study seeks to address along with a description of contents of your repository so that people know how to navigate through the GitHub repo ● DATA folder ○ Contains all data needed for replicating your work. ● OUTPUT folder ○ Contains any image outputs from your code (for example, EDA plots or other figures) ● SCRIPTS folder ○ Contains all code needed to replicate your analysis