1. Identify contributing factors to motor vehicle collision fatality rates near major cities.

Problem: Motor vehicle collision fatalities are a tragic and serious safety concern. This study aims to identify significant factors that contribute to fatalities, with the intent of raising awareness and reducing future fatality rates.

Client and Benefit: Motor Vehicle operators would benefit from this study. These include but are not limited to commuters, taxis, rideshare services, and public transportation. The results of this study could identify predictors for increased risk of collision fatalities. Vehicle operators could use this information to plan their routes accordingly and adjust their driving methods in order to decrease the risk of a fatal collision.

Data sources:

- **Collision Fatality Data:** National Highway Traffic Safety Administration - Fatality Analysis Reporting System
    - **Use FARS FTP -or- Query FARS Data**

2. Predict delays for airline operations at major airports.

NOTE: This project most closely matches my background. I worked for the U.S. DOT in the aircraft wake and weather division. I would only choose this project if I can make it different enough from Aashish Jain's Example Capstone Project

Problem: Flight delays can cause issues for passengers, airlines, and airports. The uncertainty in arrival and departure times can lead to reductions in passenger satisfaction, efficiency of operations, and profits. This study aims to identify the

significant factors that contribute to flight delays, with the intent of predicting the likelihood and duration of potential future flight delays.

Client and Benefit: Many different parties would benefit if flight departure and arrival times could be accurately predicted. The results of this study could improve efficiency of operations at airports, which in turn could improve the experience of the passengers and increase business profits.

Data sources:

- **Weather Data:** **METAR and ASOS**
- **Flight Data:** **Bureau of Transportation Statistics**

3. Model and forecast national energy demand by region.

Problem: Energy consumption is a relevant national topic, especially considering that energy production methods may shift over time. This study aims to identify factors that influence energy consumption rates in various regions, with the goal of modeling predictions for future energy demand.

Client and Benefit: The general public could benefit from the results of this study if national energy demands are consistently predicted and met. In addition, the results may identify ways the public could reduce energy consumption and demand, which could in turn reduce the amount of energy produced by unsustainable or environmentally harmful methods.

Data sources:

- **Energy Data:** **U.S. Energy Information Administration**
- **Census Data:** **American FactFinder**
- **Weather Data:** **METAR and ASOS**