Scope of Work

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Submitted to: Dr. Wissam Kontar

Project Goals:

The goal of this project is to organize and visualize data from NHTS and NGSIM on transportation, with the aim of performing analysis on the use and system performance of the US transportation system. The visualizations will include a bar chart, histogram, boxplot, and time-series plots.

Project Tasks:

Task 1: Produce a Gantt Chart

To ensure that the project remains on task, we will create a Gantt chart with various tasks and due dates. This Gantt chart will show task dependencies as well as people responsible for each task.

Task 2: Create a time sheet

To track the amount of time spent on the data analysis, we will create an Excel sheet that tracks each intern's time spent working on the code.

Task 3: Organize the given data and choose variables

To analyze transportation systems in the US in the most effective way, we will sift through the data to find the variables that will best show data trends. The variables used are shown in the tables below.

NGSIM Data

Time	time interval in seconds
leader_position(m)	position of the leading vehicle at every time step
follower_position(m)	position of the follower vehicle at every time step
leader_speed(m/s)	speed of the leading vehicle at every time step
follower_speed(m/s)	speed of the following vehicle at every time step
leader_acc(m/s^2)	acceleration of the leading vehicle at every time step

follower_acc(m/s^2)	acceleration of the following vehicle at every time step
trajectory_number	an id representing a leader-follower pair dataset

NHTS Data

census_division	Census division classification for home address
household_income	Household income
vehicle_age	Age of vehicle
vehicles_per_household	Number of vehicles per household

Task 3: Create visualizations based on the data

A bar series of graphs, including bar chart, histogram, boxplot, and time-series, will be created based on the given data files. The visuals that will be created include the following:

- Stacked Bar Chart: Number of Cars by Household Income
- Histogram: Speed Distribution of Leader and Follower Vehicles
- Boxplot: Vehicle Age by Census Division
- Time Chart 1: Leader and Follower Acceleration vs. Time
- Time Chart 2: Leader and Follower Position over Time with Speed Indication

Task 4: Create an annotated code document

We will create an annotated code document, in which we will write comments to ensure that the code can be used and understood by the client. We will write in complete sentences to complete this task.

Task 5: Create final report

We will create a report summarizing all our findings on the usage and performance of transportation systems in the US. We will include the chosen variables, information on how we plot each graph, along with discussions on our key findings and how they are relevant.

Project Deliverables:

The deliverables and due dates for this project are summarized in the following table:

Deliverable	File Name	Date Due to Client
Gantt Chart	CIVE202_Spring2025_GroupA_Project#3_Gantt Chart.xlsx	4-1-2025

Scope of Work	CIVE202_Spring2025_GroupA_Project#3_ScopeofWork.docx	4-1-2025
Time Sheet	CIVE202_Spring2025_GroupA_Project#3_TimeSheet.docx	4-1-2025
Python Code	CIVE202_Spring2025_GroupA_Project#3_PythonCode.ipyn	4-1-2025
Data File 1	CIVE202_Spring2025_GroupA_Project#3_NHTSDate.ipyn`	4-1-2025
Data File 2	CIVE202_Spring2025_GroupA_Project#3_NGSIMData.ipyn`	4-1-2025
Annotated Code Document	CIVE202_Spring2025_GroupA_Project#3_ACD.pdf	4-1-2025
Final Report	CIVE202_Spring2025_GroupA_Project#3_FinalReport.docx	4-1-2025