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Introduction:

CapMetro MetroBike (Bikeshare), Austin City's bike rental program, offers eco-friendly commuter transportation for trips around Austin, promoting bike ridership while addressing the prominent rise in air pollution from transportation. With three-quarters of work commutes held through private cars, the CapMetro Metrobikes system takes a unique, affordable approach with 79 stations and 800+ classic and electric bikes (Get There ATX). Hence, our main subject of this project is dealing in Central Austin with our local student population in the area of Capital Station to see its efficiency with its duration for other stations around Austin—the trends will reveal the average time it takes for those located in this area and if MetroBikes allow for convenient transportation for the desired location. Additionally, MetroBikes have Electric Vehicles, which include a motor to enable the users to travel faster with less physical exertion (BikeShare Metro Net), compared to Classic Vehicles; with this, our motivation lies in how the different bikes would affect the duration of a trip.

Our Austin Metrobike bicycle sharing database, derived from data.texas.austin.gov, contains the City of Austin public datasets, includes 559 rows for unique trips made by riders, and 14 columns that represent one unique property of the trip done (Check Out, Stations, Year, Month, Bike Types.. etc.). Excluded from this data are trips under 2 minutes, as well as maintenance or rebalancing trips performed by MetroBike staff. Excluded from this data are trips under 2 minutes, as well as maintenance or rebalancing trips performed by MetroBike staff. Key variables of interest include Trip Duration Minutes', Bike_type and Stations

Research Questions:

1. *"How do trip duration vary between Capitol Station and other stations in the Austin Metro Bike dataset, and what patterns emerge in travel time across different routes?"*
2. *"What impact does vehicle type—electric versus classic—have on trip duration between Capitol Station and Metro-Area destinations in the Austin Metrobike stations?"*

Our hypothetical expectation for the trend is that Electric bikes will have the least duration of the trip, and consequently, the farther the distance, the greater the trip duration is.

Austin MetroBike Database : https://data.austintexas.gov/Transportation-and-Mobility/Austin-MetroBike-Trips/tyfh-5r8s/about_data (https://data.austintexas.gov/Transportation-and-Mobility/Austin-MetroBike-Trips/tyfh-5r8s/about_data)

Methods:

```
# Upload the package
library(tidyverse)
library(readr)

# Upload the Information contained in Dataset
# MetroBike_Trip >- read_csv(:C:/SDS322E/Austin_MetroBike_Trips_20409210.csv)
```

Rows and Columns in Dataset:

```
# Calculate the number of Rows  
#nrow(MetroBike_trips)
```

```
# Calculate the number of Columns  
#ncol(MetroBike_trips)
```

Results:

Upload the dataset to the server, in the same folder as this R Markdown file. Click on the name of the dataset and click on **Import Dataset** : the code for importing the dataset is given to you. Copy/paste the code in the following code chunk. *Note: Make sure to NOT include the Open Data Viewer, i.e., do NOT include the piece of code with `View()` .*

Numerical Variable

```
# your code goes below (replace this comment with something meaningful)
```

Categorical Variable

How many rows and columns does your dataset have? What does one row represent?

```
# your code goes below (replace this comment with something meaningful)
```

Your answer goes here. Write sentences in bold.

Discussion:

Your answer goes here. Write sentences in bold.

Reflection, Acknowledgments, and References 4: (2 pts)

Anything you are curious about, that you could explore with this dataset? Write a research question specifying the variables involved.

Your answer goes here. Write sentences in bold.

Formatting: (1 pt)

Make sure the names of all group members are included at the beginning of the document.

Knit your file! You can knit into pdf directly or into html. Once it knits in html, click on **Open in Browser** at the top left of the window pops out. Print your html file into pdf from your browser.

Any issue? Ask other classmates or TA!

Finally, remember to select pages for each question when submitting your pdf to Gradescope and to identify your group members.