Instructions for running code:

Before running any code, ensure the code and data folders are extracted and in the same directory i.e. 'C:\Users\example\Code' and 'C:\Users\example\Data'. Otherwise the code will not be able to read the data without amending directories manually.

The code can be run in any preferred IDE. Spyder was used for running this code in development.

The steps to run the code are separated in to two sections. It is **critical to run section 1 first** in order for section 2 to work. Please ensure the latest versions of the python libraries are installed.

Python libraries required:

- Pandas
- Numpy
- Scipy
- Statsmodels
- Matplotlib
- Pypi
- Convertbng
- Shapely
- Datetime
- Geopandas
- Geopy
- Seaborn

Section 1 – QGIS data:

The following code must be executed to pre-process the data for QGIS and also provides the base .csv files for the analysis code.

Census data:

1. Run 'CensusPreprocessing.py'.
2. Output file is in the extracted data folder as 'preprocessed_census.csv'.

Train station entries data:

1. Run 'TrainData.py'.
2. Temporary output file is 'TrainWeekday.csv' in the data folder.
3. Run 'stationfile.py'.
4. Output file for QGIS is in the extracted data folder as 'stationtime.csv'.

Train station exits data:

1. Run 'TrainDataExit.py'.
2. Temporary output file is 'TrainWeekdayExits.csv'' in the data folder.
3. Run 'stationfileexit.py'.
4. Output file for QGIS is in the extracted data folder as 'stationtimeexits.csv'.

Uber Data:

1. Run 'ubertrajectory.py'.
2. Boundary output file is in data folder as 'uberboundary.csv'.
3. Run 'uberweekdayv3.py' and 'uberweekend.py'.

4. The respective output files are in the data folder as ‘uberweekdayM.csv' and ‘uberweekendM.csv'.

Cycle Data:

1. Run ‘JulyCycleWeek.py’ and ‘DecCycleHire.py’ for the summer and winter cycle data.
2. Output file for PostgreSQL are ‘JulyCycleHire.csv’ and ‘DecCycleHire.csv’ respectively.

Bus Data:

1. Run ‘BusData.py’.
2. Output files are in the extracted data folder as ‘bus_with_count_wkday.csv' and ‘bus_with_count_wkend.csv'.

Section 2 – Statistical analysis code:

Train Station Analysis:

1. Run ‘StationAnalysis.py’.

Uber Analysis:

1. Run ‘PreprocessedAnalysisUber.py’ and ‘PreprocessedAnalysisUberWeekend.py’.
2. For weekday analysis, run ‘UberAnalysisWeekday.py’.
3. For weekend analysis, run ‘UberAnalysisWeekend.py’.
4. For comparative analysis, run ‘UberWeekendvsWeekday.py’.*

*Requires that 2 and 3 were ran prior to this.

Cycle Analysis:

1. For summer cycle analysis, run ‘CycleAnalysis.py’.
2. For winter cycle analysis, run ‘CycleAnalysisDec.py’.

Bus Analysis:

1. Run ‘BusAnalysis.py’.