**Project Title**: Air Traffic Analysis of Schiphol Amsterdam

**Overview**:

The Airport Traffic Analysis project aims to analyse and predict key metrics related to airport operations, focusing on Amsterdam Airport Schiphol. The primary objectives include understanding historical trends in aircraft movements, passenger numbers, and cargo and mail activities. The project utilizes data analysis, statistical testing, and predictive modelling techniques to gain insights into traffic patterns and make informed forecasts for future periods.

**Features:**

**Descriptive Analysis**: Explore and understand the historical trends in aircraft movements, passenger numbers, and cargo and mail activities at Amsterdam Airport Schiphol.

**Statistical Testing**: Conduct hypothesis testing to assess the significance of differences in key metrics, providing insights into changes over time.

**Predictive Modeling**: Develop predictive models to forecast future trends in airport traffic, leveraging machine learning techniques such as linear regression or time series forecasting.

**Objectives:**

* Analysis on Aircraft Movement traffic ,Passengers Movement, Cargo and Mail transport
* Forecasting Passenger Movement, Flights traffic and Cargo transport (Time Series Analysis)
* Hypothesis Tests
* Most popular destinations (Inbound and outbound travellers)

**Getting Started:**

To get started with the project, extract the real time data from the CBS.nl and convert it into xlxs format. Need to do some formatting so that the file could be readable in Python notebook and can have data in a dataframe. We can do data cleaning with some fields specially with the Period column. Performed EDA process followed by linear regression, scatter plot and time series analysis and did Hypothesis tests as well. Finally got the final dataframe which could be converted to CSV file saved in the same working folder with the notebook. Then used this csv file in tableau for further analysis.

**Usage:**

The project is designed for our Midbootcamp project. Since it is based on real time data its final findings can assist airport authorities, analysts, and stakeholders in making data-driven decisions related to airport operations. Users can explore historical trends, perform statistical tests to validate hypotheses, and employ predictive models to anticipate future traffic patterns.

**Data:**

The project relies on a real time data provided through **CBS NL**  on aircraft movements, passenger numbers, cargo activities and other relevant variables. The data is then pre-processed for the project analysis.

**Models and Analysis:**

The analysis involves descriptive statistics, hypothesis testing, and predictive modelling. Analysis of Passenger movement, Flight traffic, Cargo and Mail Transport, Most popular destinations has been done on Tableau by using Bar Chart for the previous year from January 2019 to Aug 2023. Then forecasting is applied to check the forecasting flight traffic, passenger movement , cargo and mail transport for the next two years.

Apart from this I tried to do the analysis using scatter plot, linear regression model. And time series analysis on the python notebook as well.

**Results:**

Results of the analysis and predictive modelling are presented in visualizations, performance metrics, and key findings. Users can interpret the results to make informed decisions regarding airport operations and planning.

**Project Deliverables:**

A python notebook in github

Power point presentation of the project

Analysis on Tableau of different parameters and in dashboard for the comparison.

Tableau Link: https://public.tableau.com/app/profile/preeya.singh.chauhan/viz/AmsterdamAirportSchiphol/YearlyPassengerandTotalFlight