

# G2M INSIGHT FOR CAB INVESTMENT FIRM

## Introduction

This project aims to provide valuable insights for a cab investment firm by analyzing data from two cab companies: Yellow Cab and Pink Cab. The dataset includes information about cab transactions, customer demographics, and trip details. The goal is to understand the performance of each company and identify potential areas for investment or improvement.

## Data Loading and Preprocessing

- The data is loaded from CSV files containing information about cab transactions, city details, customer IDs, transaction IDs, and holidays.
- Data from different sources are merged into a single DataFrame for analysis.
- Date columns are converted to datetime format for easier manipulation.
- Additional columns such as "Is Holiday" and "Profit on Trip" are created to enhance analysis.

## Exploratory Data Analysis (EDA)

### Univariate Analysis

- Distribution of numerical columns such as KM Travelled, Cost of Trip, Age, Profit on Trip, Profit per KM, and Income (USD/Month) is analyzed for both Yellow Cab and Pink Cab companies.
- Bar charts are used to visualize key performance indicators (KPIs) by company, year, month, day of the week, and city.

### Bivariate Analysis

Scatter plots are used to explore relationships between variables such as Profit on Trip vs. Kilometer T3ravelled, Profit on Trip vs. Price Charged, and Profit on Trip vs. Cost of Trip.

## Hypothesis Testing

### Parametric Test Assumptions

Random, Independent, Normal, Equal Variance

- Normality is tested using QQ plots and Shapiro-Wilk test.
- Homogeneity of Variance is tested using Levene's test.

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## Non-Parametric Test Assumptions

Random, Independent, Distributions have the same shape

- Mann-Whitney U test is performed to compare Yellow Cab and Pink Cab datasets.

Significant differences are observed in Cost of Trip, Price Charged, Profit per KM, and Profit on Trip between the two companies.

## Conclusion

- Significant differences are identified between Yellow Cab and Pink Cab in terms of Cost of Trip, Price Charged, Profit per KM, and Profit on Trip.
- These insights can guide investment decisions and strategies for the cab investment firm. For example, areas with higher profitability or potential for improvement can be targeted for investment or operational enhancements.

## Recommendations

- Further analysis could explore factors contributing to the observed differences and identify actionable insights for improving performance.
- Strategies for optimizing pricing, cost management, customer targeting, and service quality can be developed based on these insights.

## Future Work

- Continual monitoring and analysis of cab performance metrics can provide ongoing insights and opportunities for adaptation and improvement.
- Exploring external factors such as economic trends, regulatory changes, and competitive dynamics can provide additional context for decision-making.

By leveraging these insights and recommendations, the cab investment firm can make informed decisions to drive business growth and success in the competitive cab industry.