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Exploratory Data Analysis

Investment Opportunity Analysis for Cab Industry

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Executive Summary

XYZ is a private equity firm in US. Due to remarkable growth in the Cab Industry in last few years and multiple key players in the market, it is planning for an investment in Cab industry.

As per their Go-to-Market(G2M) strategy they want to understand the market before taking final decision.

XYZ is interested in having and using actionable insights to help them identify the right company to make their investment.

- Objective : Use EDA(Exploratory Data Analysis) to provide actionable insights to help XYZ in making investment in the cab industry.

Problem Statement & Approach

The problem lies with the investment choice of XYZ.

Finding the right company to invest in is crucial especially when it comes to market growth. We then have the two companies, the Yellow cab and Pink cab, which are the better options among others to invest in. Our goal here is to provide insight into which of the two XYZ should invest in.

The analysis has been divided into four parts:

- Data Understanding, Cleaning, Exploration and Integration

- Depiction of the profit and number of rides for each cab type

- Finding which is the most profitable Cab company to invest in

- Recommendations for investment

EDA

Descriptive Statistics and Initial Visualizations

Number of Trips Over Time
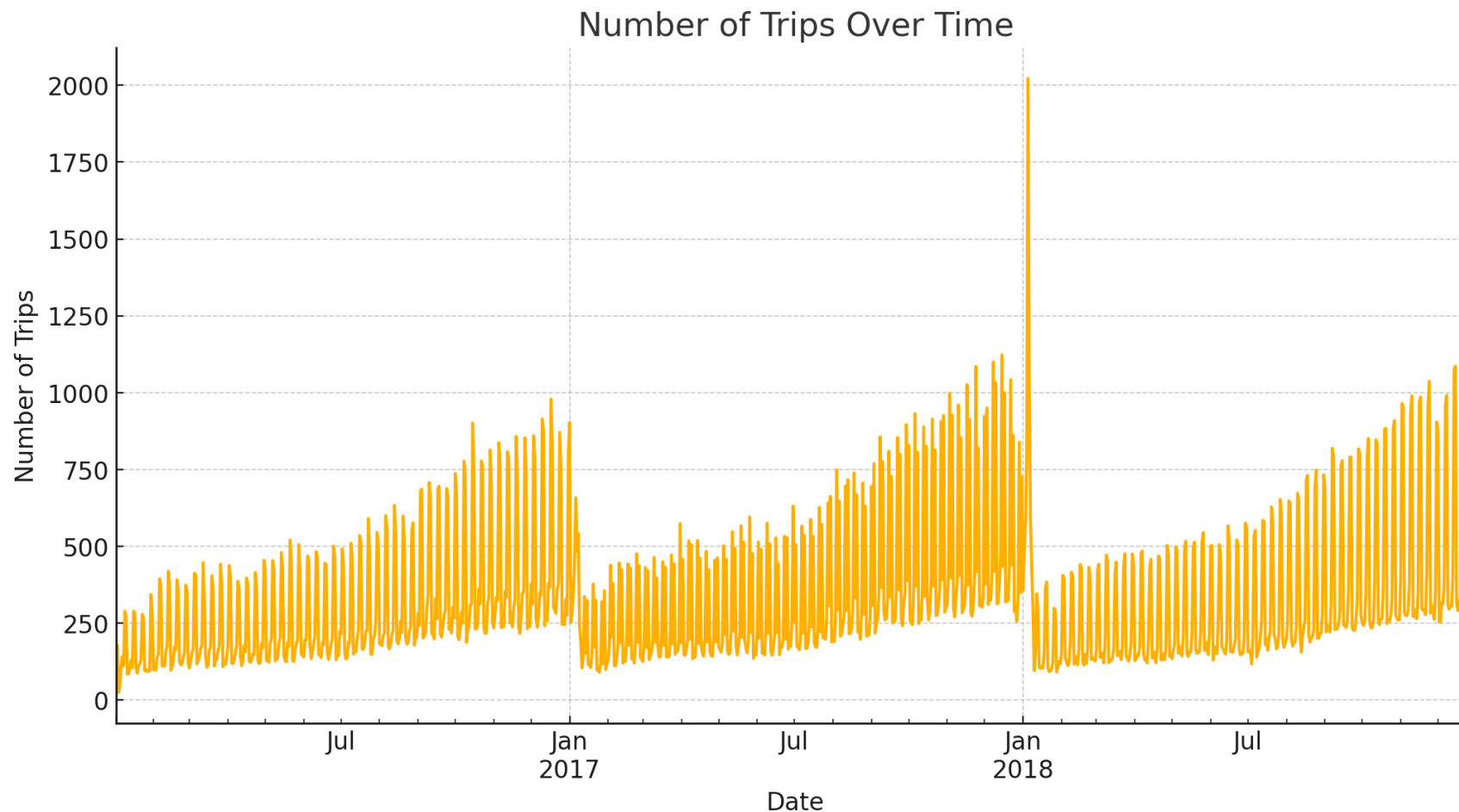
Seasonality in Cab Usage

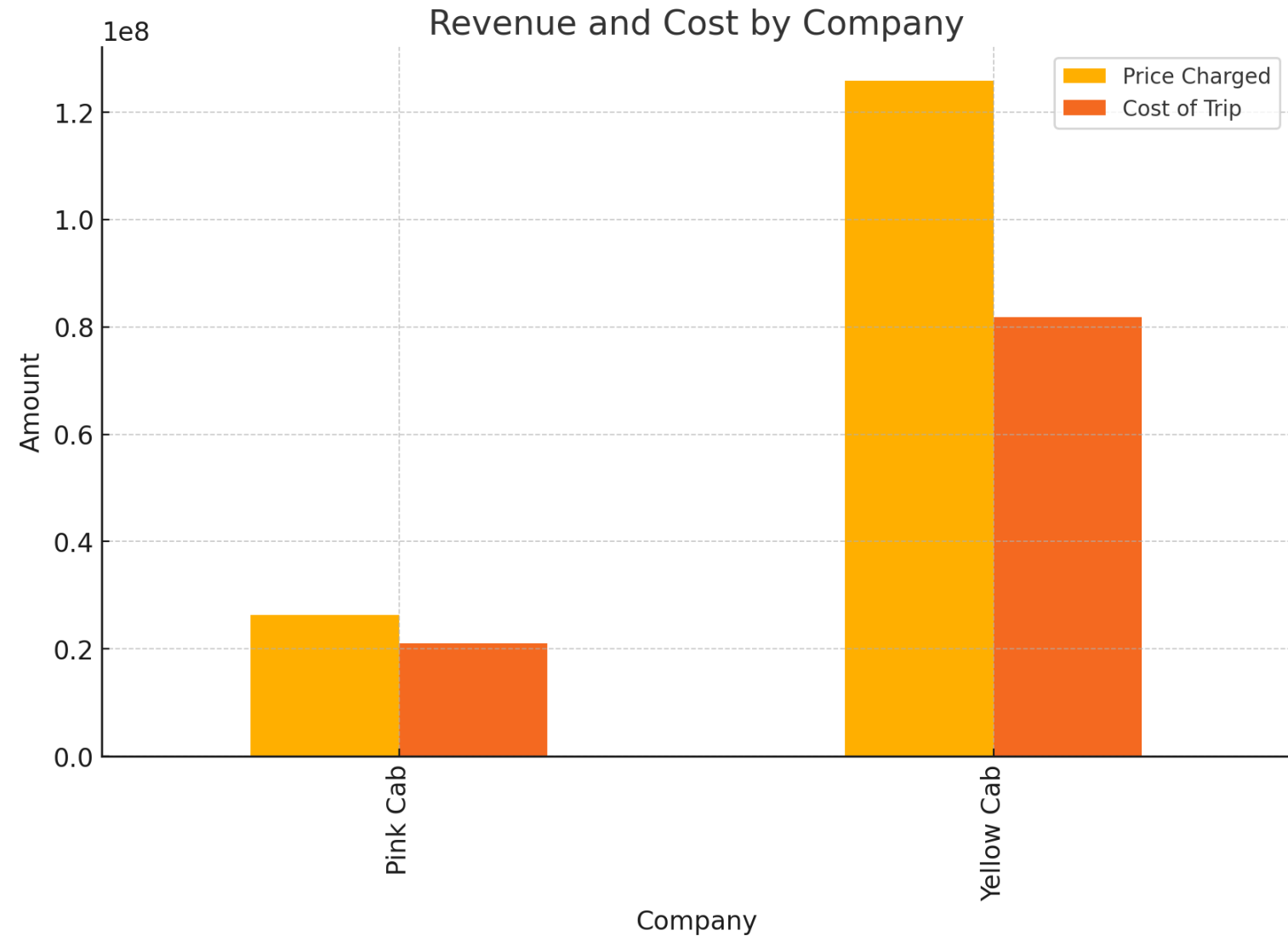Shows trends and seasonality in cab usage.

Monthly Patterns in Cab Usage

- Key Insight: Identified patterns of increased cab usage during certain months, indicating seasonality.

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Descriptive Statistics and Initial Visualizations

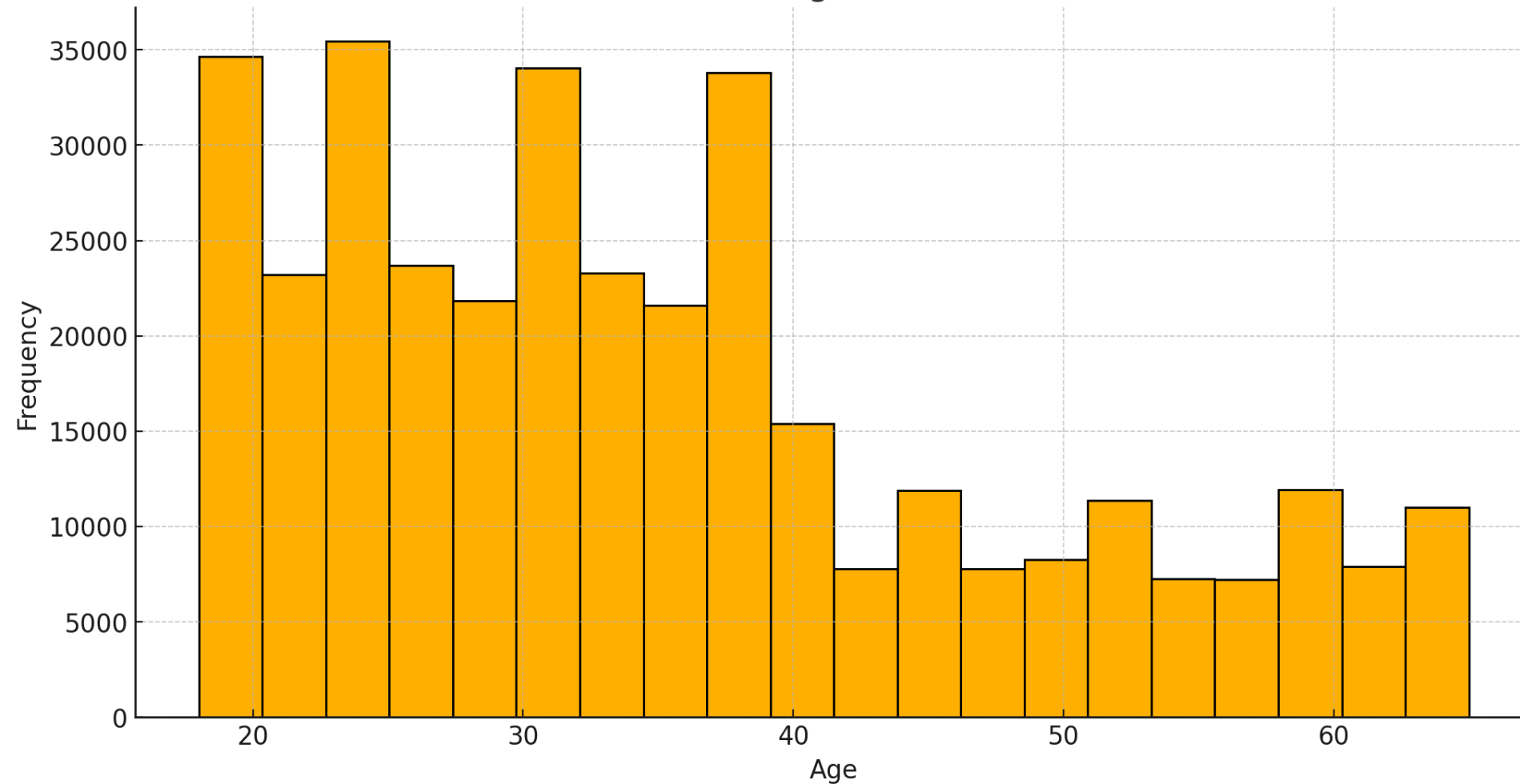- Total Revenue: Pink Cab: $26,328,250, Yellow Cab: $125,853,900

  Comparison of total revenue and cost for Pink Cab and Yellow Cab.

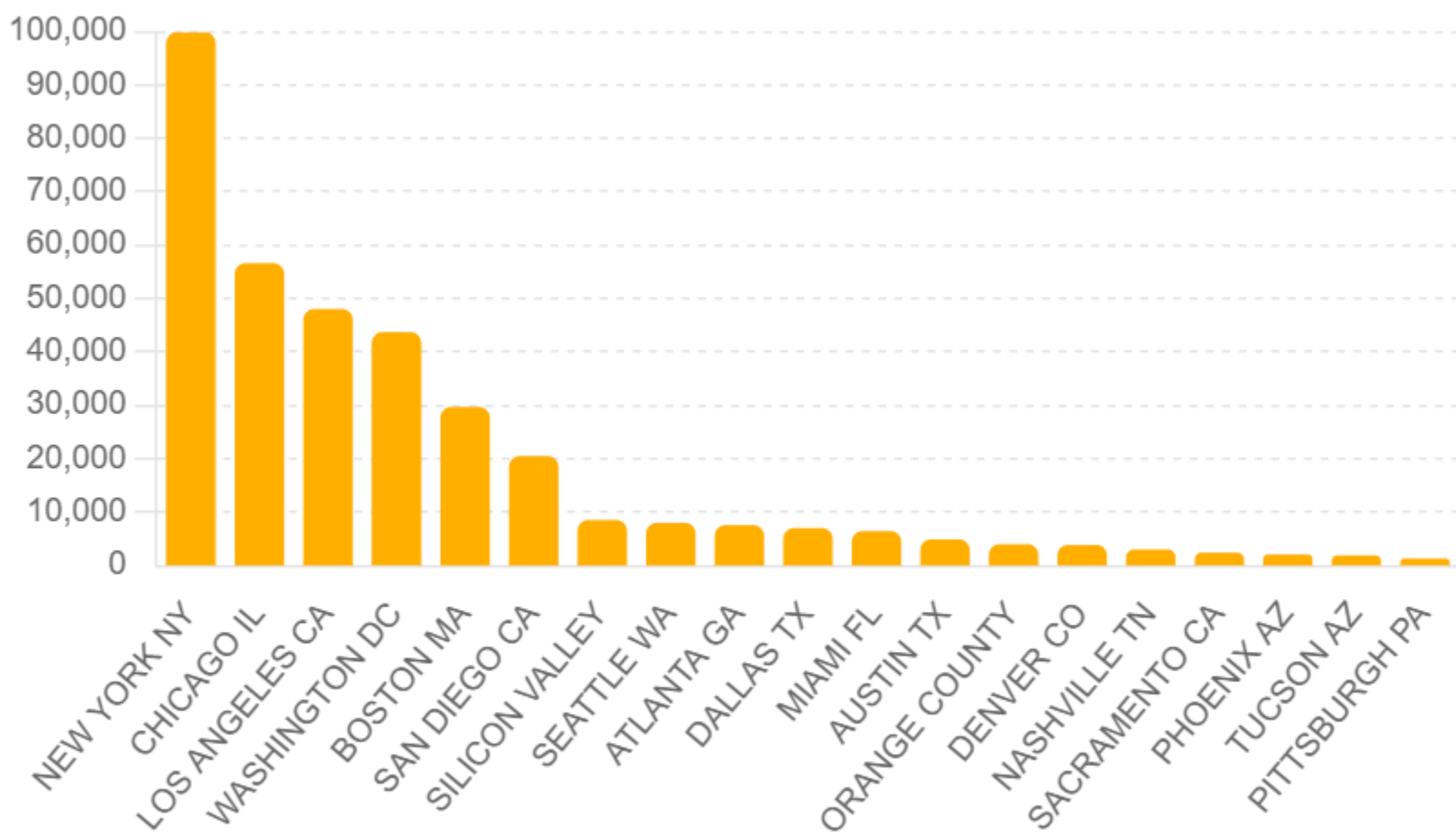# EDA

Descriptive Statistics and Initial Visualizations

Customer Age Distribution

Distribution of customer ages, showing the most common age groups.

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Descriptive Statistics and Initial Visualizations

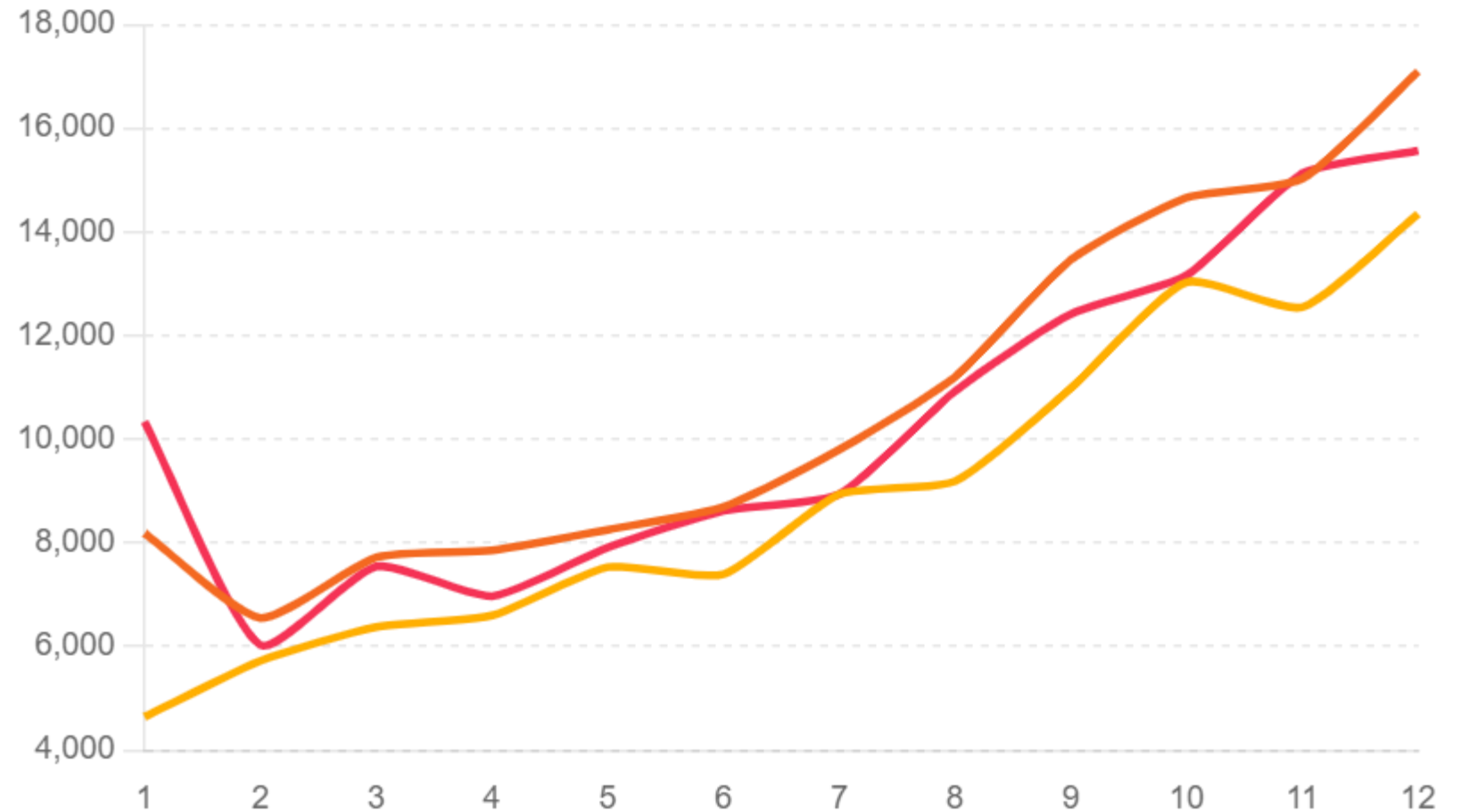Highlights cities with the highest cab usage.

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Growth Trends

Number of Trips Over the Years

- 2016: Pink Cab (25,080), Yellow Cab (82,239)
- 2017: Pink Cab (30,321), Yellow Cab (98,189)
- 2018: Pink Cab (29,310), Yellow Cab (94,253)

Number of Trips by Month

2016, 2017, and 2018

The plot above shows the number of trips per month for each year from 2016 to 2018. This visualization helps us understand if there are any seasonal patterns in cab usage.
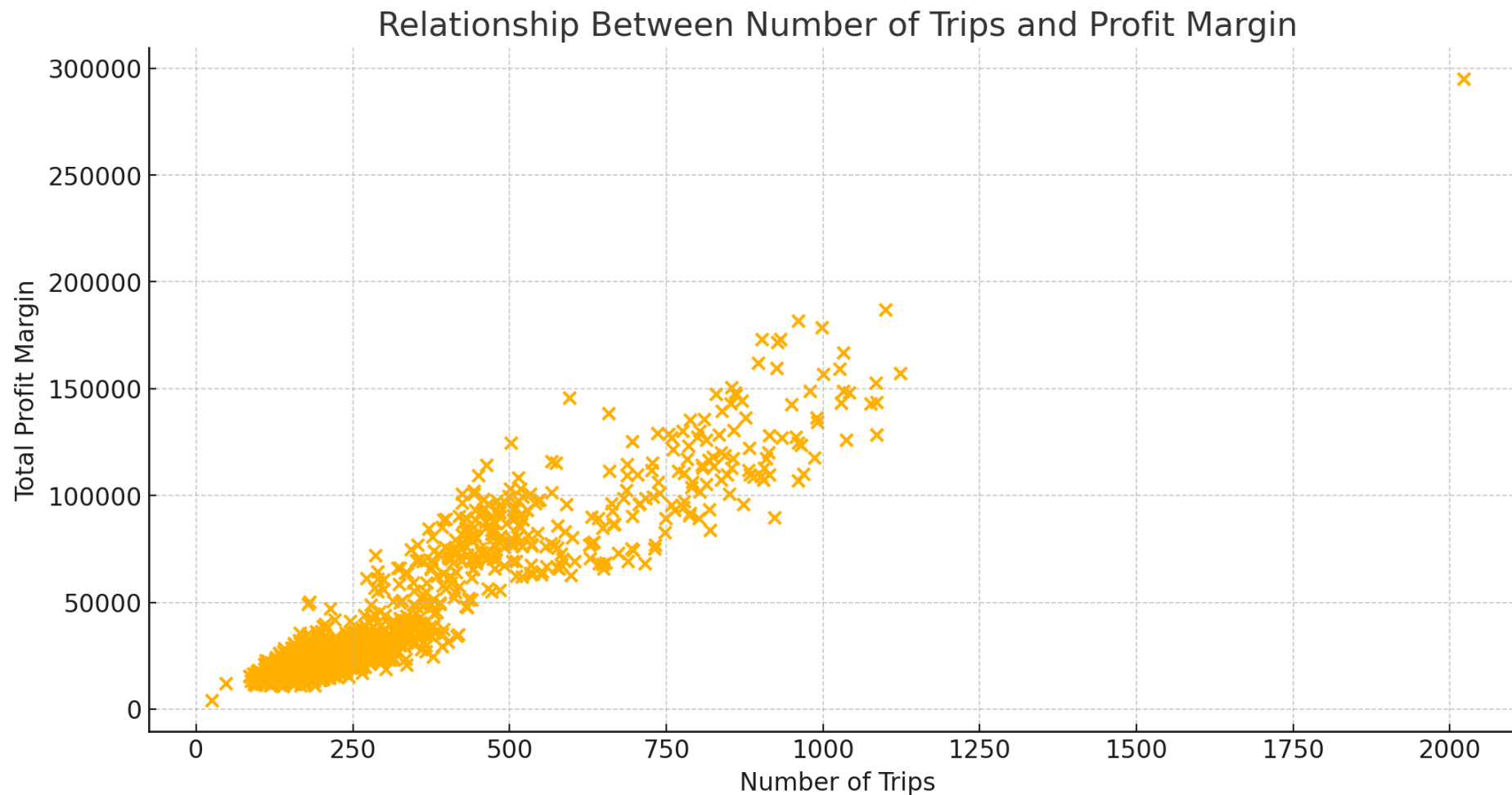
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Comparison of Trips by Year

Key Insight: Yellow Cab generally has more trips over time compared to Pink Cab

Company Performance Over Time

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Relationship Between Number of Trips and Profit Margin
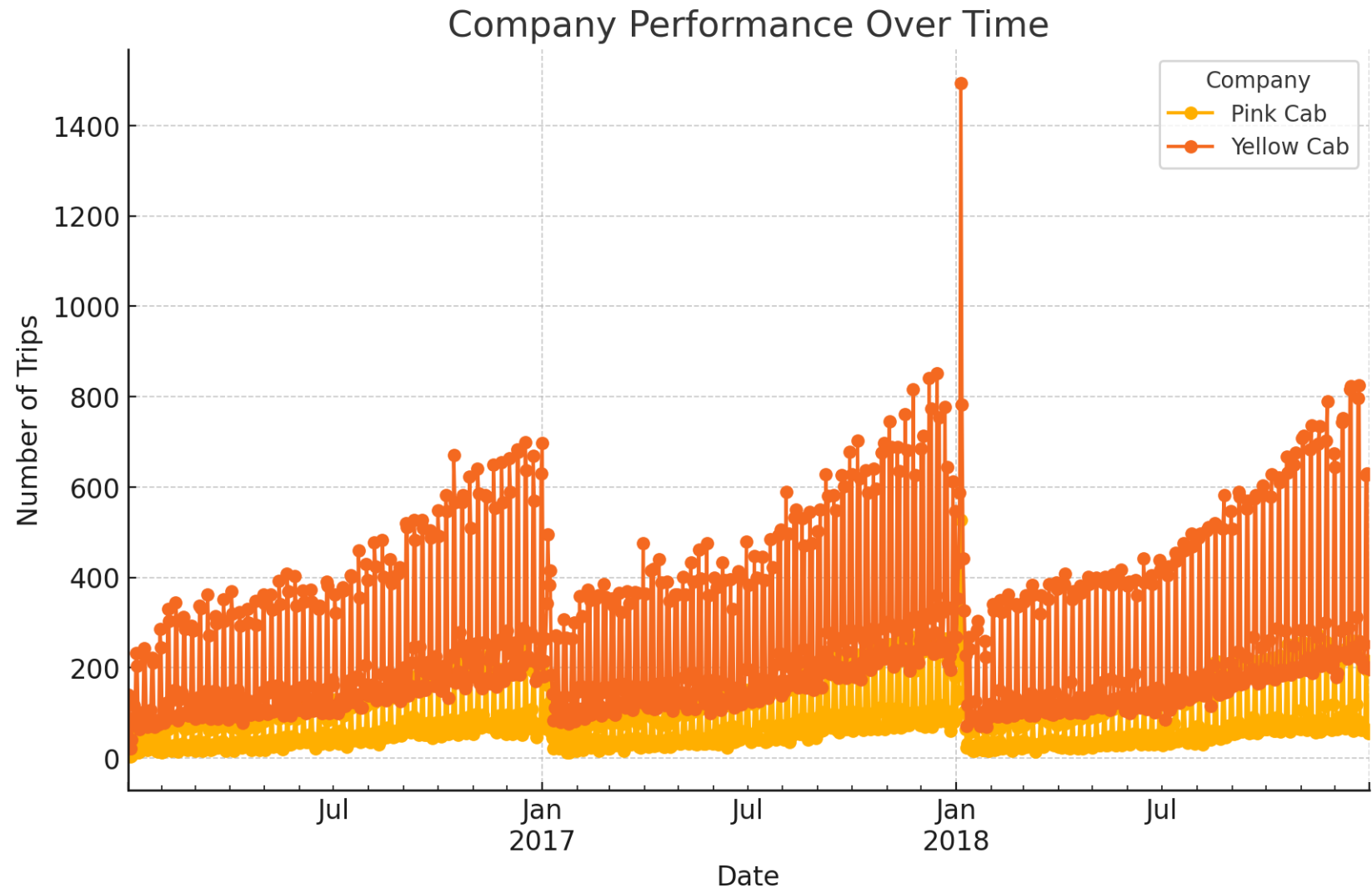
Profit Margin Analysis

Detailed Profit Trends

- Average Profit Margin per Trip: Pink Cab: $62.65, Yellow Cab: $160.26
- Profit Margin Percentage: Pink Cab: 20.16%, Yellow Cab: 34.98%
- Total Profit Margin: Pink Cab: $5,307,328, Yellow Cab: $44,020,370
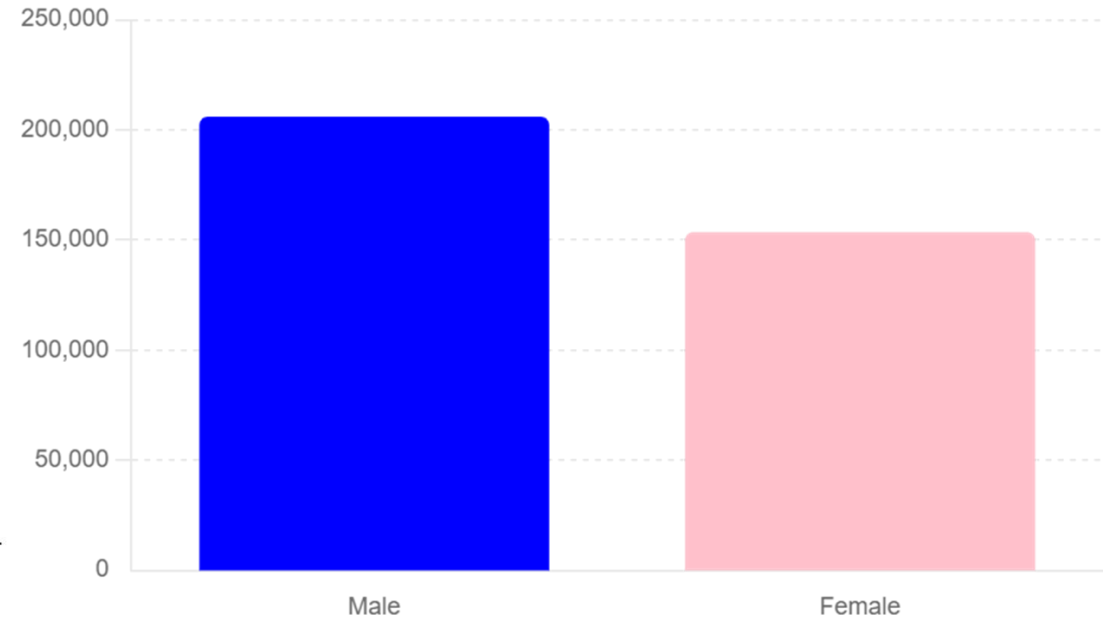
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Customer Segments

Demographics and Key Segments

- Demographics: Predominantly male customers.
- Key Segments: Based on age and income.
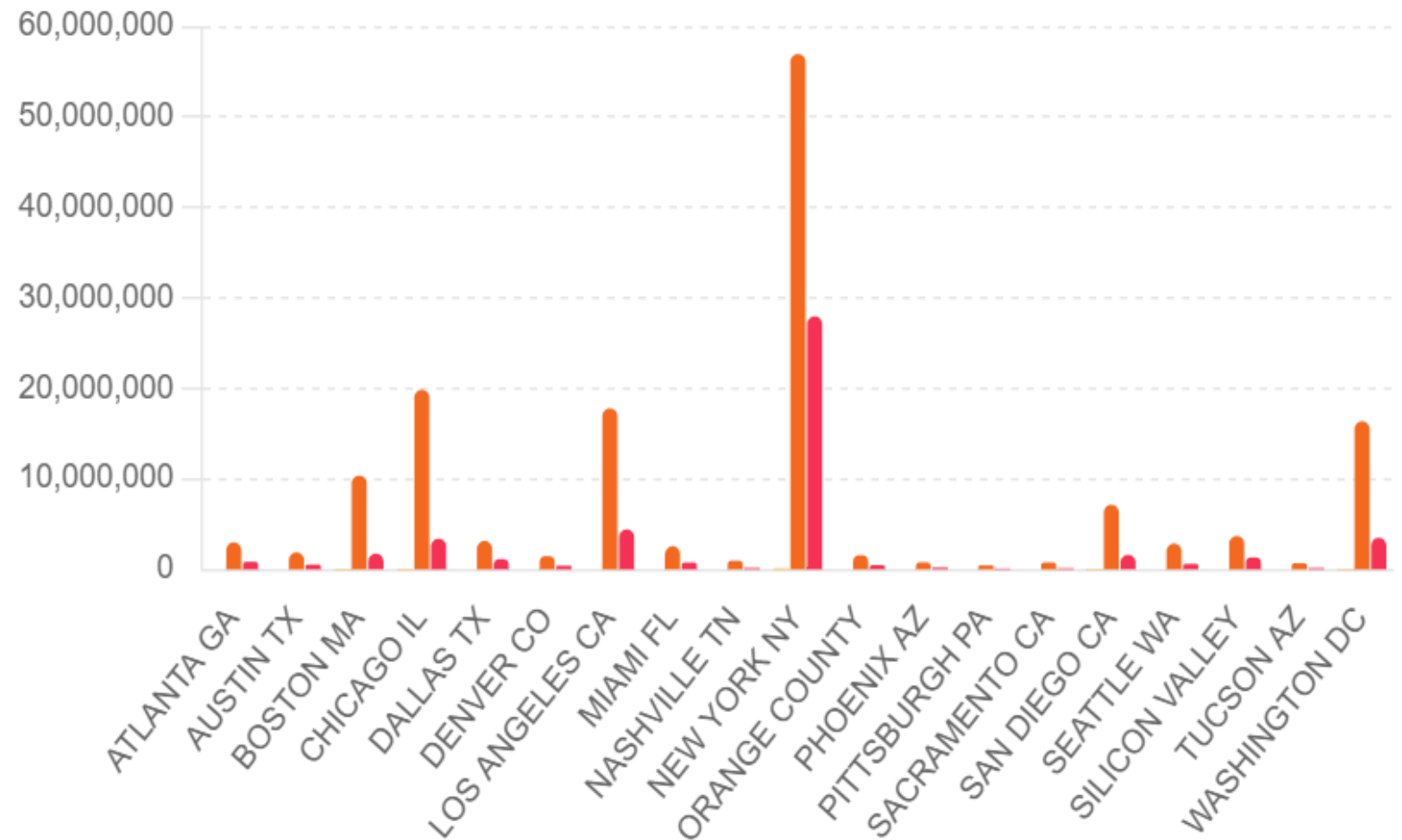

Customer Segments by Age and Income

Number of Trips by Gender
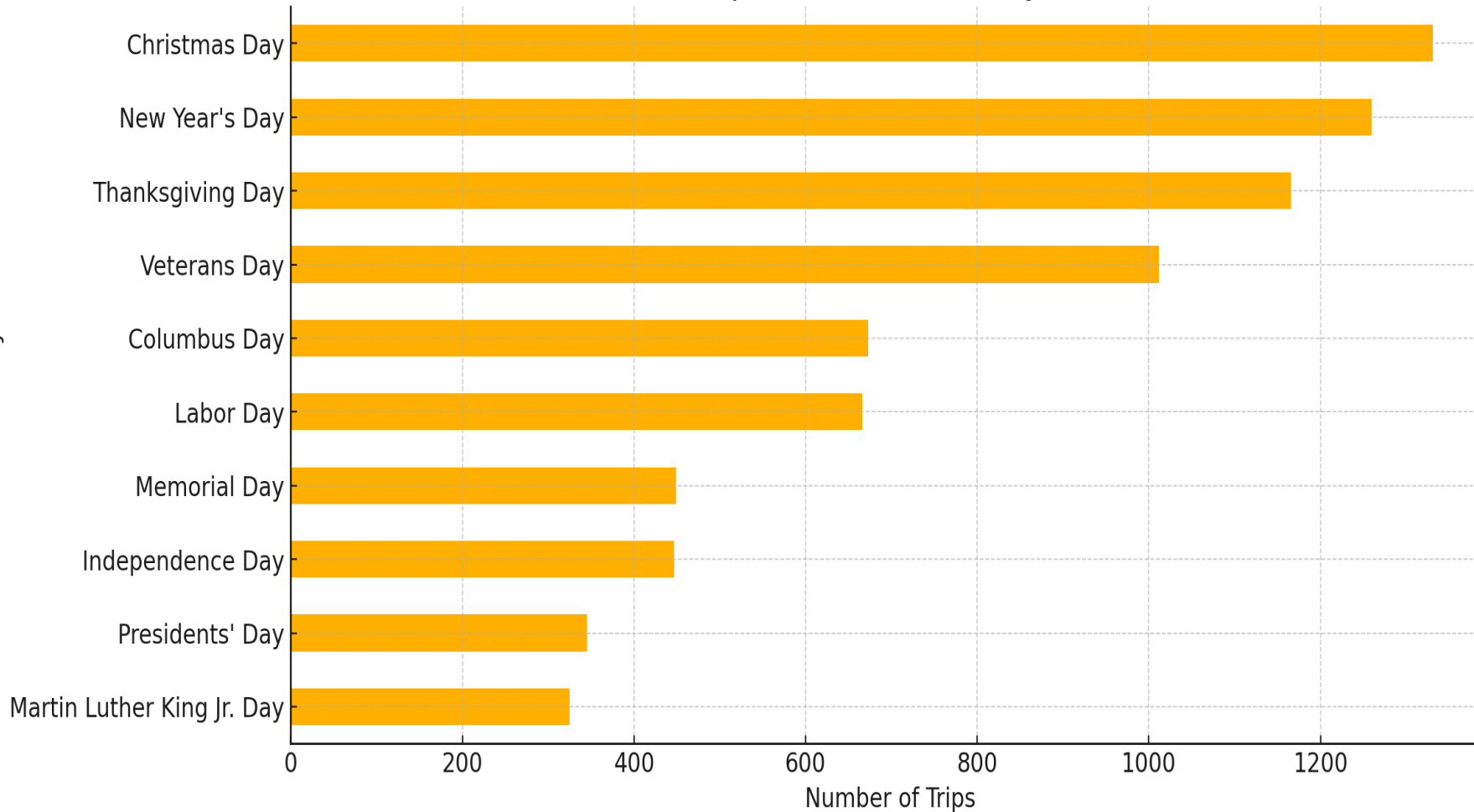
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City-wise Performance

Analysis of Top Cities

- Top Cities: New York, Chicago, Los Angeles.
- Metrics: Number of trips, total revenue, and profit margin

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Number of Trips Around US Holidays (2016-2018)

Holiday Impact

Cab Usage During Major US Holidays

Analysis: Significant increase in cab usage around major holidays such as New Year's Day and Thanksgiving

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Here are some observations:

1.Consistency: Yellow Cab consistently maintains higher profit margins compared to Pink Cab across most months.

2.Seasonal Peaks: Both companies experience peaks and troughs in profit margins, likely corresponding to seasonal demand variations and holidays.

3.Growth Over Time: Yellow Cab shows a more pronounced growth trend in profit margins over the years, particularly in 2017 and 2018.

Insights

•**Yellow Cab**: Demonstrates higher and more consistent profit margins, indicating robust operational efficiency and market presence.

•**Pink Cab**: While it has lower profit margins, it shows stable performance with some seasonal peaks.
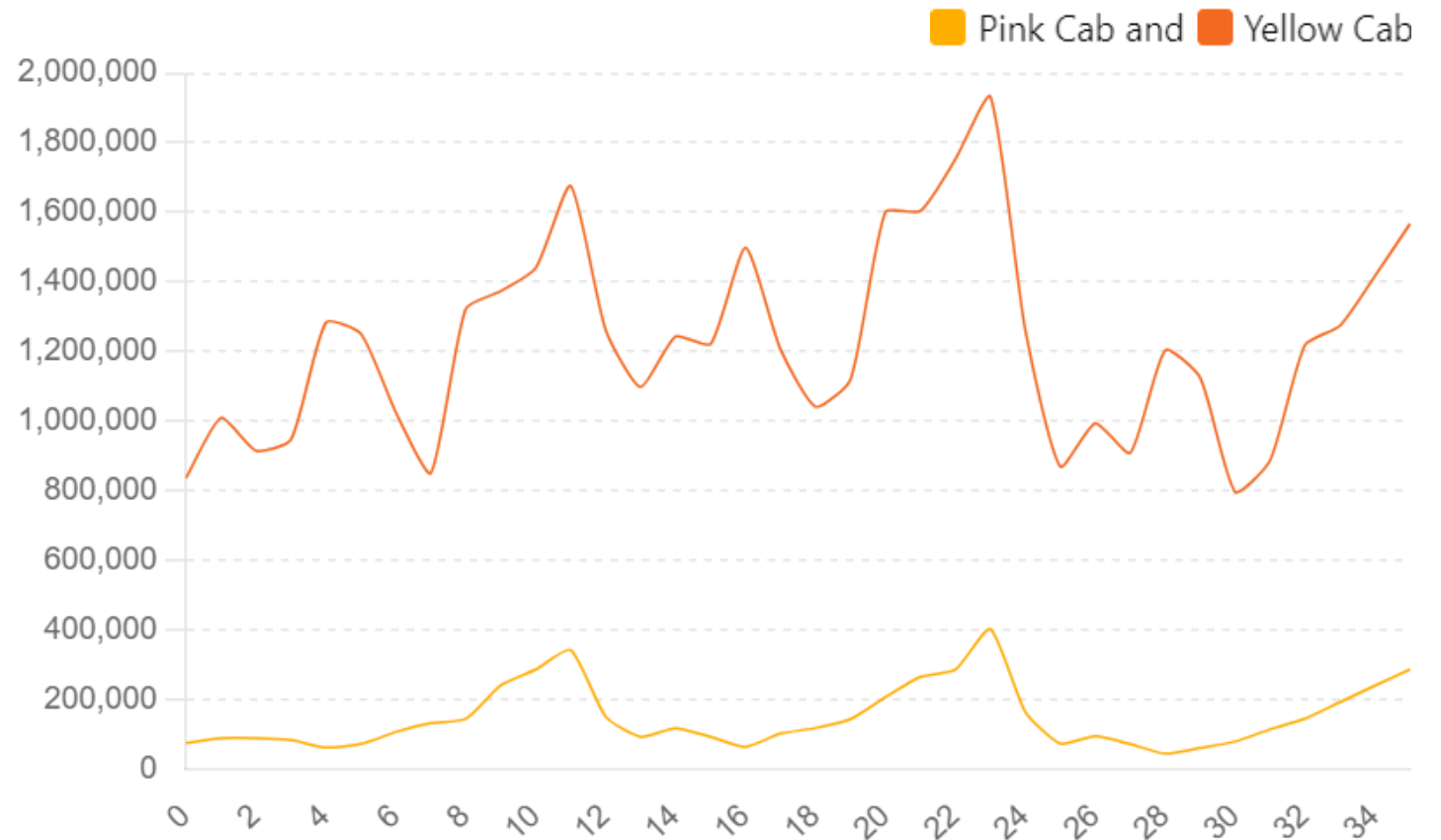
The line chart above shows the monthly profit trends for Pink Cab and Yellow Cab from 2016 to 2018.

EDA Summary

- **Key Insights**

1. **Seasonality in Cab Usage**: Identified patterns of increased cab usage during certain months, indicating seasonality.

2. **Company Performance**: Yellow Cab generally has more trips over time compared to Pink Cab.

3. **Profit Margin Analysis**: Profit margins do not always increase proportionally with the number of trips, indicating other influencing factors.

4. **Customer Segments**: Predominantly male customers, with key segments identified based on age and income.

5. **City-wise Trends**: Highest cab usage and profitability observed in major cities like New York and Chicago.

6. **Holiday Impact**: Significant increase in cab usage around major holidays such as New Year's Day and Thanksgiving.

EDA Summary

- **Key Metrics Comparison**

1. Total Number of Trips:
   1. **Pink Cab**: 84,711 trips
   2. **Yellow Cab**: 274,681 trips

2. Total Revenue:
   1. **Pink Cab**: $26,328,250
   2. **Yellow Cab**: $125,853,900

3. Total Profit Margin:
   1. **Pink Cab**: $5,307,328
   2. **Yellow Cab**: $44,020,370

4. Average Profit Margin per Trip:
   1. **Pink Cab**: $62.65
   2. **Yellow Cab**: $160.26

5. Profit Margin Percentage:
   1. **Pink Cab**: 20.16%
   2. **Yellow Cab**: 34.98%

- **Growth Trends (Number of Trips Over the Years)**

1. Pink Cab:
   1. 2016: 25,080 trips
   2. 2017: 30,321 trips
   3. 2018: 29,310 trips

2. Yellow Cab:
   1. 2016: 82,239 trips
   2. 2017: 98,189 trips
   3. 2018: 94,253 trips

EDA Summary

Analysis

- **Total Number of Trips**: Yellow Cab significantly outperforms Pink Cab with over three times the number of trips.

- **Total Revenue**: Yellow Cab generates substantially higher revenue compared to Pink Cab.

- **Total Profit Margin**: Yellow Cab's total profit margin is considerably higher, making it more profitable overall.

- **Average Profit Margin per Trip**: Yellow Cab also has a higher profit margin per trip.

- **Profit Margin Percentage**: Yellow Cab has a higher profit margin percentage, indicating better cost management and profitability.

- **Growth Trends**: Yellow Cab shows consistent growth over the years, maintaining a higher number of trips each year compared to Pink Cab.

Conclusion & Recommendations

Based on the analysis, Yellow Cab is the better-performing company and presents a more attractive investment opportunity for XYZ. Yellow Cab has demonstrated higher total trips, revenue, profit margins, and consistent growth trends, making it a stronger candidate for investment.

These are some recommendations based on the analysis:

• **Targeted Marketing**: Focus marketing efforts during peak months and major holidays to maximize customer engagement.
• **Optimize Operations**: Improve operational efficiency in cities with high cab usage to increase profitability.
• **Customer Retention**: Develop loyalty programs for key customer segments to enhance customer retention.
• **Expand Services**: Consider expanding services in high-demand cities to capture more market share.

Thank You