Data Glacier
Your Deep Learning Partner

Exploratory Data Analysis
G2M Case Study

20-Apr-2023

Agenda

Problem Statement

Approach

EDA

EDA Summary

Recommendations

Problem Statement

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.

Objective : Provide actionable insights to help XYZ firm in identifying the right company for making investment.

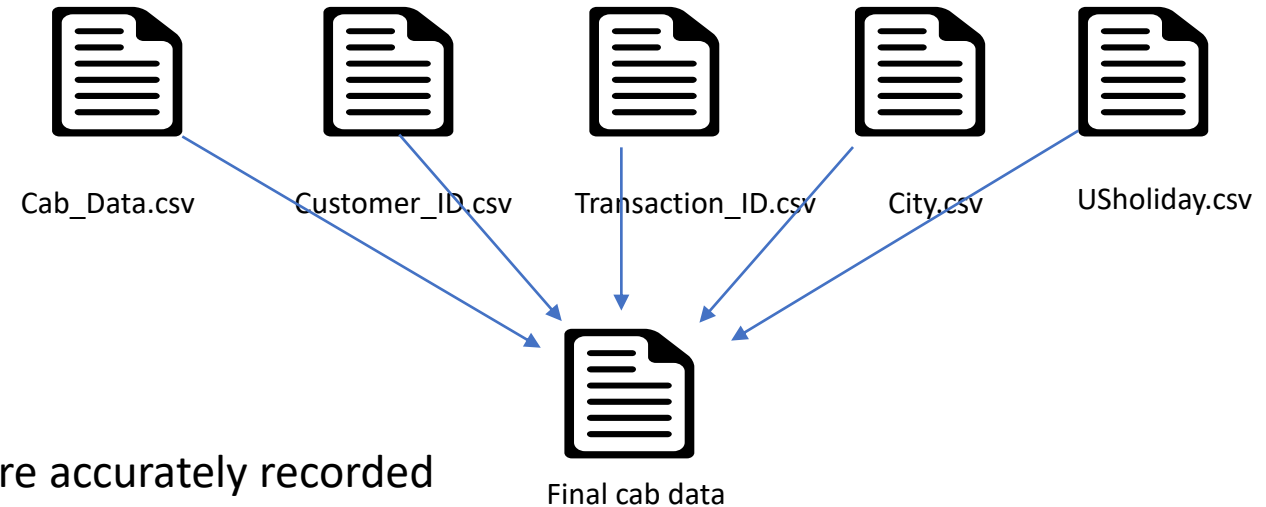The analysis has been divided into four parts:

- Data Understanding

- Exploring profit, number of rides and customer segment for each cab type

- Finding the most profitable Cab company

- Recommendations for investment

Data Exploration

- 22 Features (including 7 derived features)
- Timeframe of the data: 2016-01-31 to 2018-12-31
- Total data points: 359,392

Cab_Data.csv   Customer_ID.csv   Transaction_ID.csv   City.csv   USholiday.csv

Final cab data

Approach:

- The profitability calculations assume that all costs are accurately recorded and accounted for, including fuel costs, maintenance costs, and other expenses associated with running a taxi service.

- Profit of rides are calculated keeping other factors constant and only Price_Charged and Cost_of_Trip features used to calculate profit.

- The data assumes that each ride was completed, and no information is available on the number of cancellations or incomplete rides.
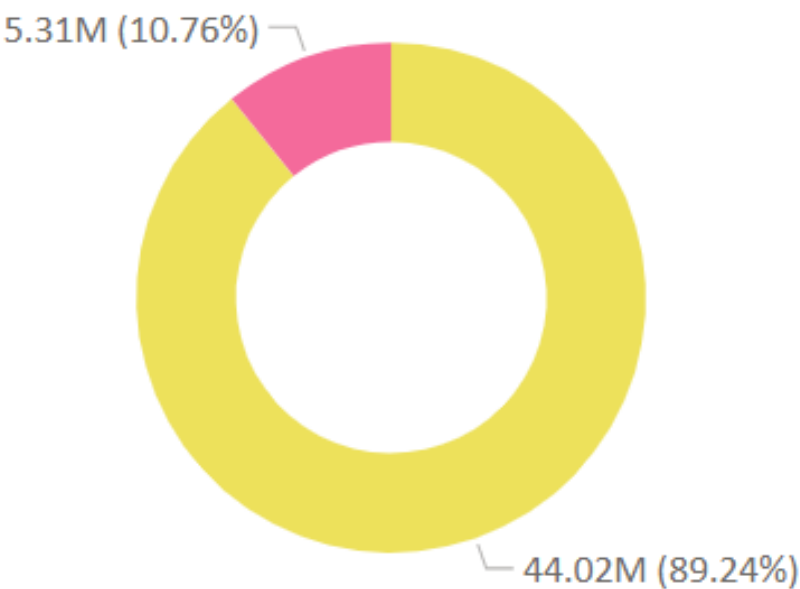
Overview of the cab ride data

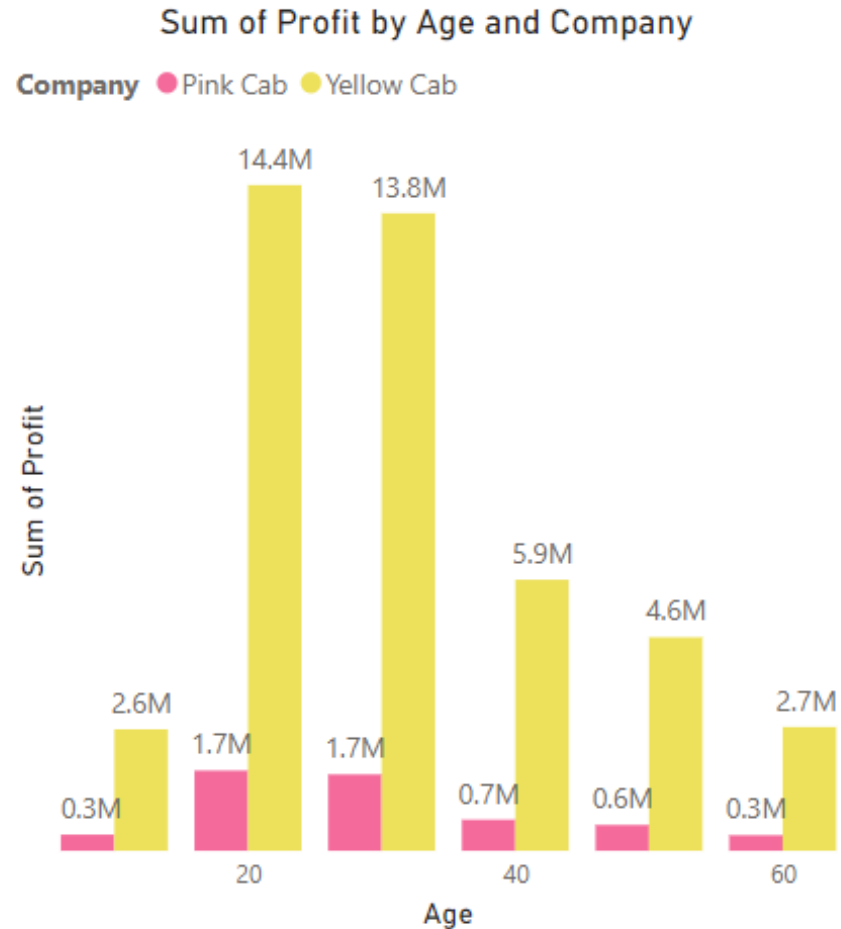The yellow company's profit is 89% of the total profit of the companies

Sum of Profit by Company (USD)

Company ● Yellow Cab ● Pink Cab

5.31M (10.76%)

44.02M (89.24%)

Company	Avg of Cost of Trip	Avg of Price Charged	Total Rides
Pink Cab	248.15	310.80	84711
Yellow Cab	297.92	458.18	274681

Analysis of customer trends

Number of Customers by Company

Company ● Pink Cab ● Yellow Cab

Sum of Profit by Age and Company

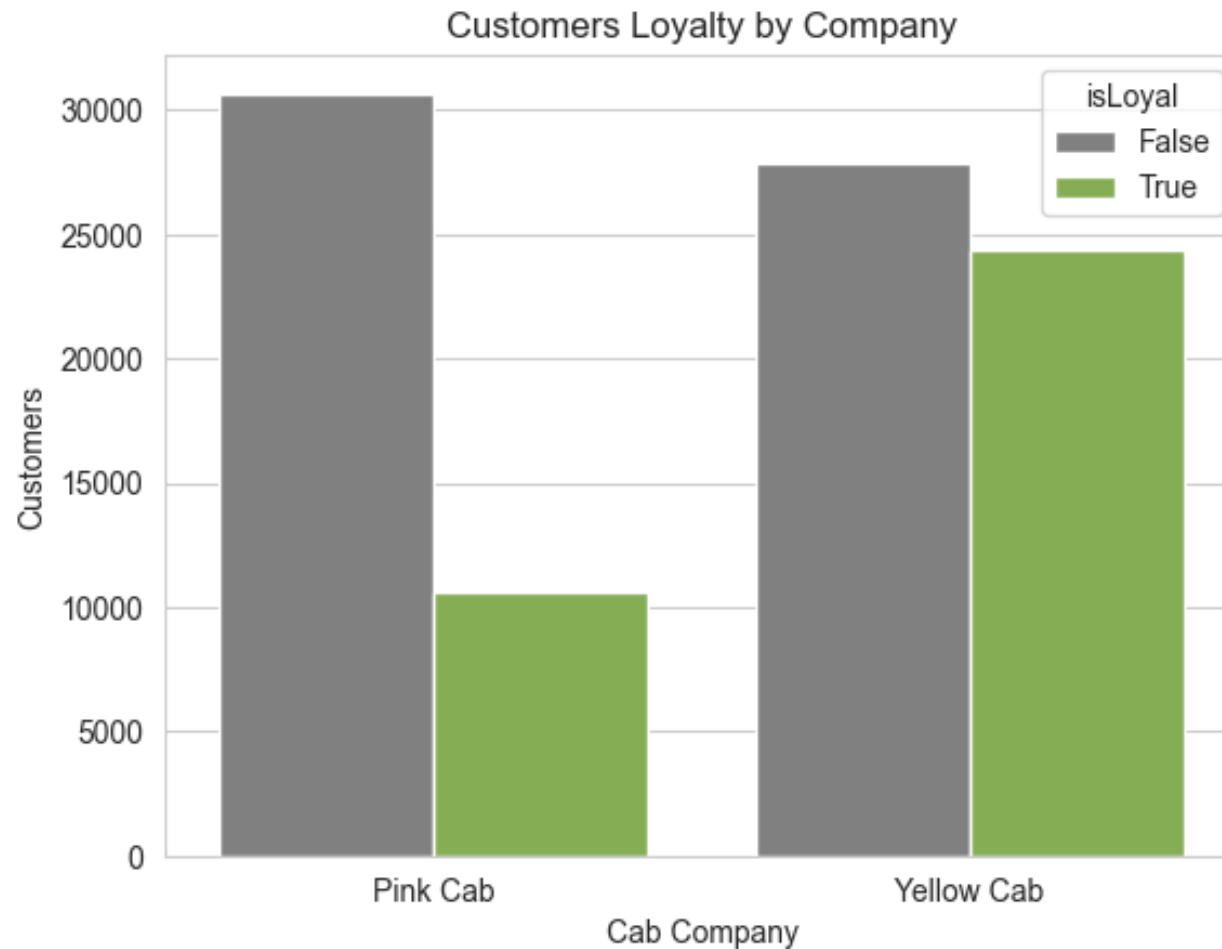Company ● Pink Cab ● Yellow Cab

The Yellow Company has 3 times more customers than the Pink Company

The main age of taxi service clients is between 20 and 40 years.

Most customers of this age prefer Yellow Cab company, as well as the customers of 40+ age.
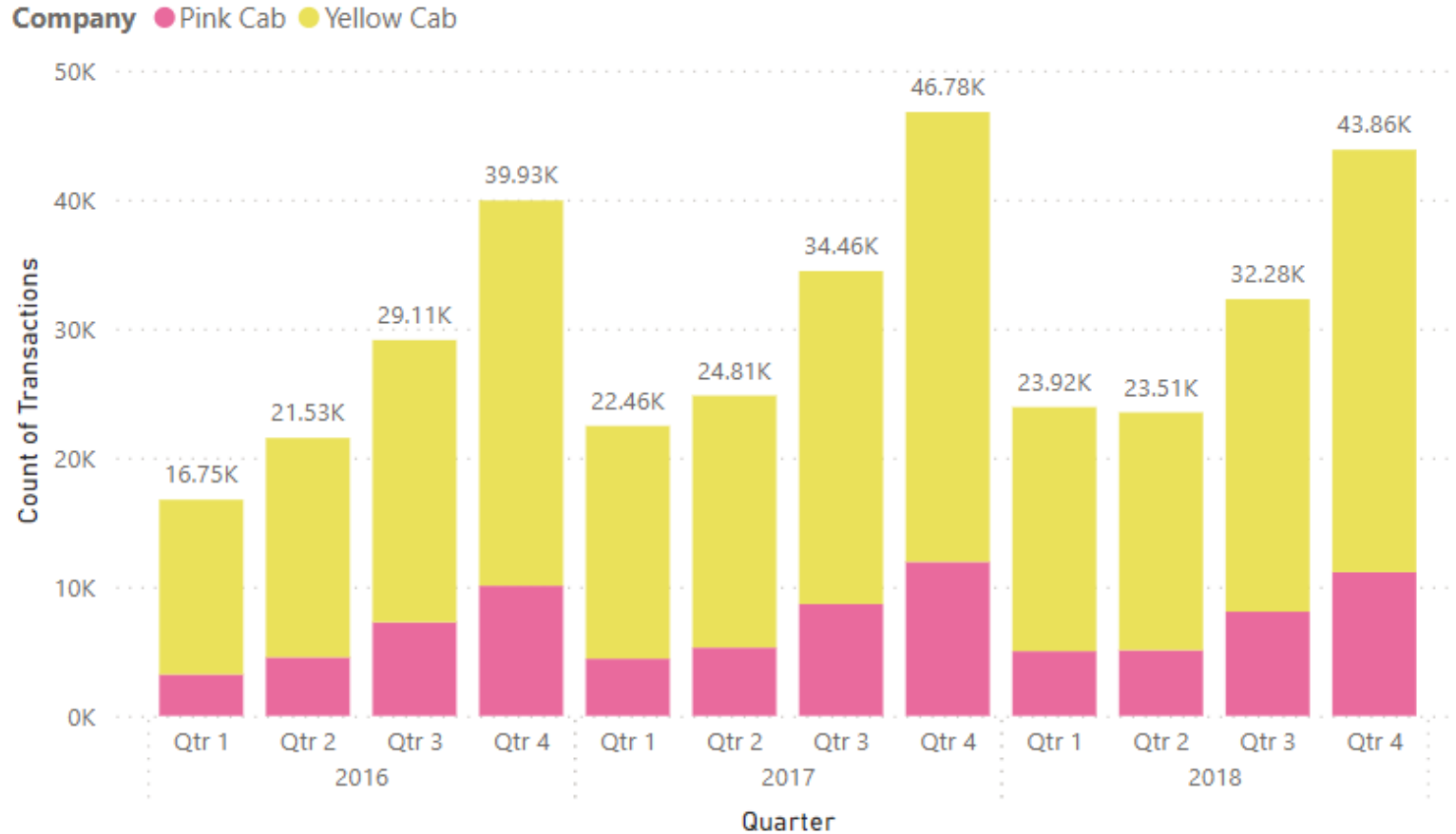
Customers Loyalty Analysis

Customers Loyalty by Company

Customers who have used the services of the same company more than 3 times are considered loyal.

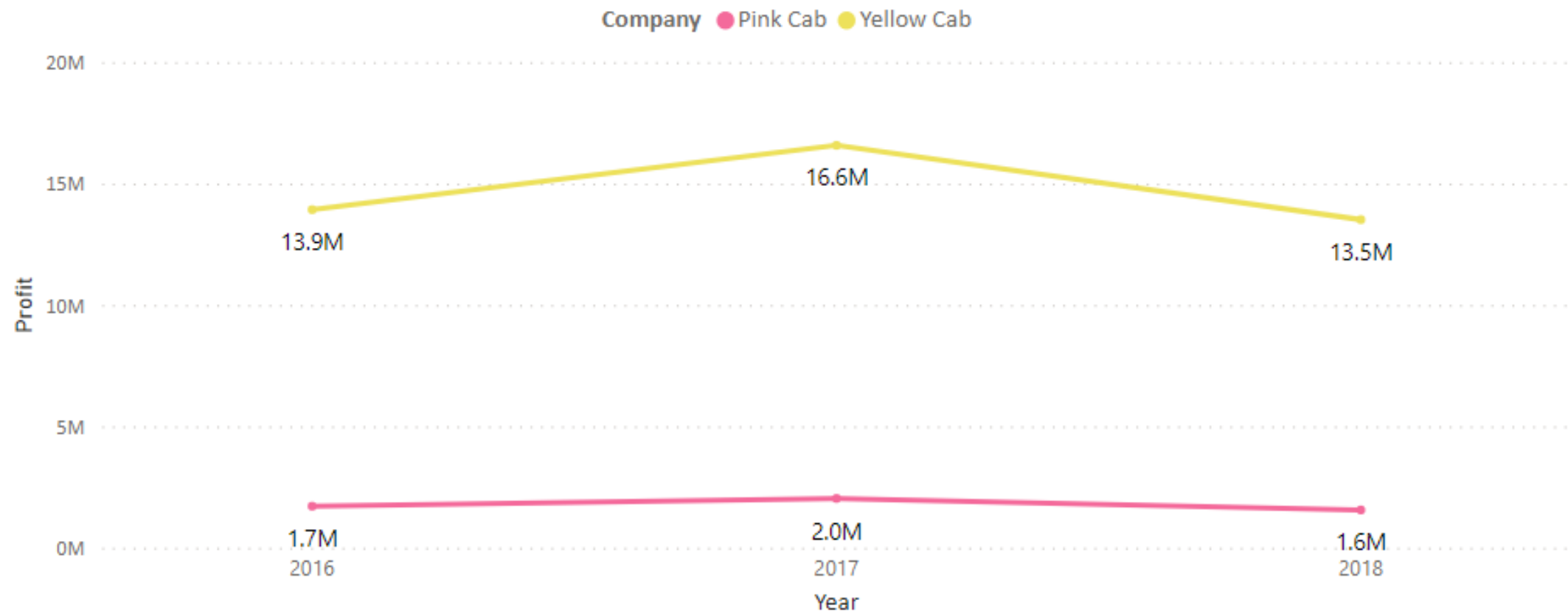Yellow Cab company has 44% of loyal customers, whereas Pink Cab has 24%.

Analysis of the seasonality of cab demand

Company ● Pink Cab ● Yellow Cab

In 3 years, the demand for cab services is seasonal. The minimum value comes in the first quarter, gradually increasing until it peaks in the fourth quarter.

The exception is Q3 2018, when the number of transactions was lower than in the previous quarter.
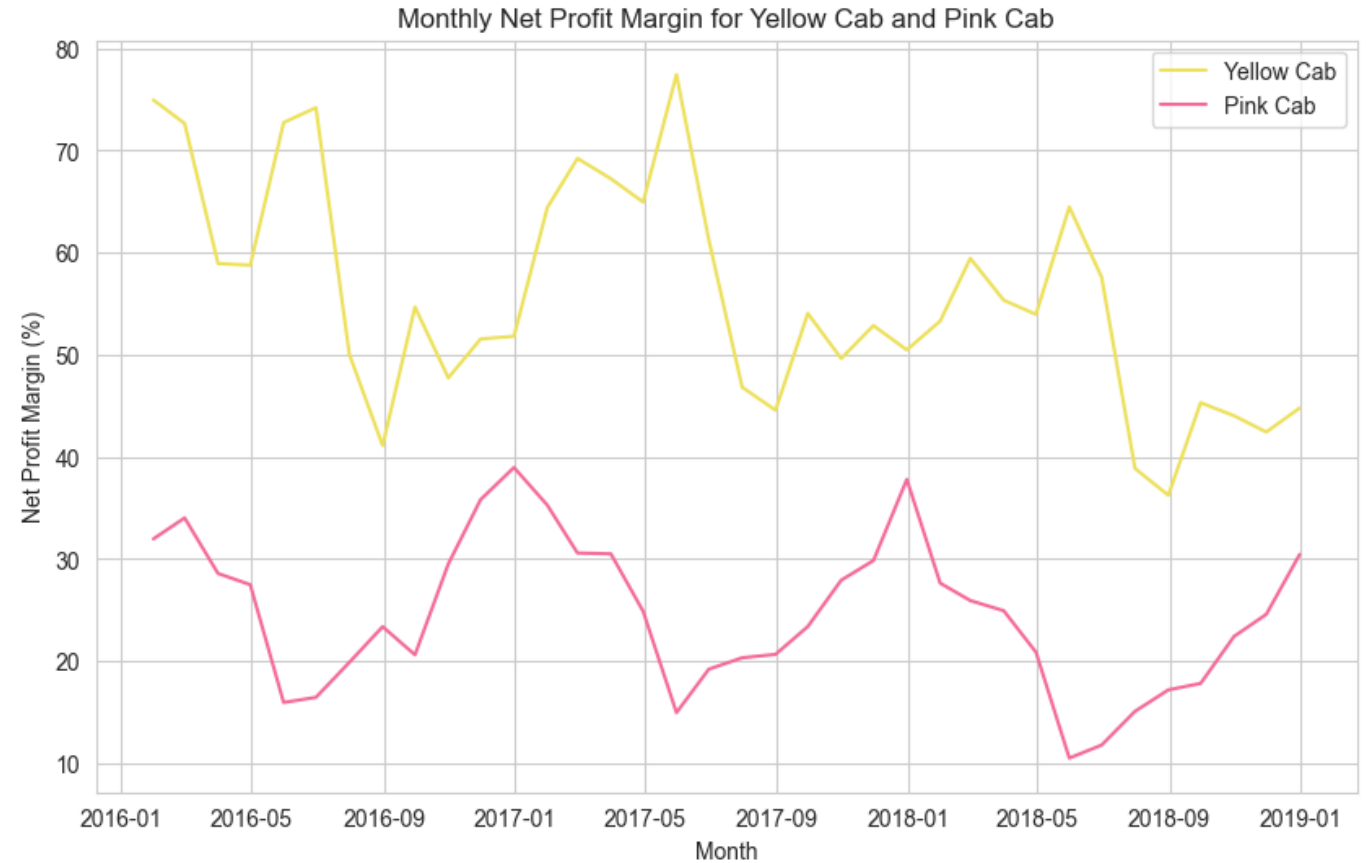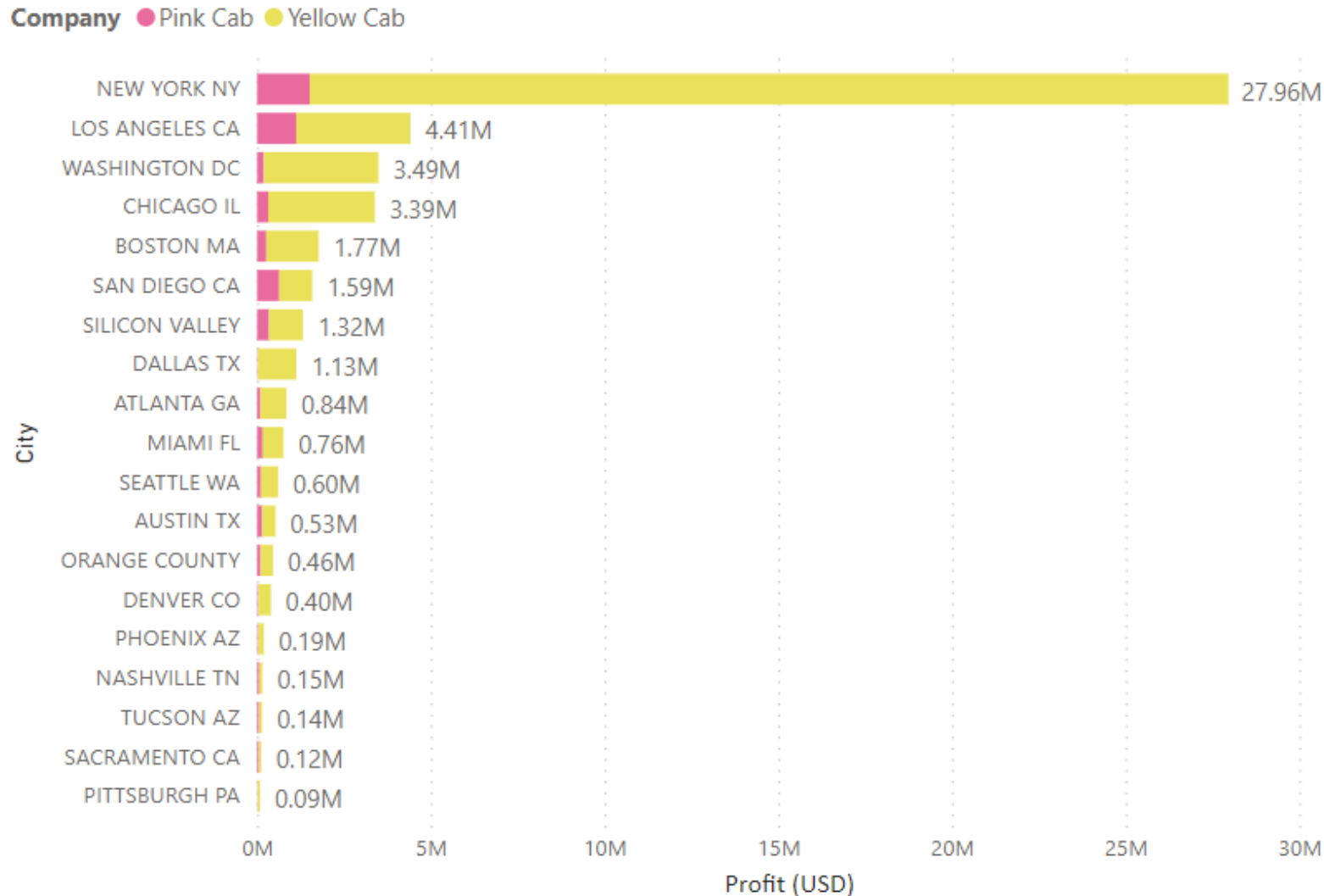
Monthly Net Profit Margin

The average monthly profit of Yellow Cab Company is 1,22M and it's std deviation is 0.28M so, the percentage of the deviation is 23.07 %

The average monthly profit of Pink Cab Company is 0,15M and it's std deviation is 0,09M so, the percentage of the deviation is 61.09 %

Monthly Net Profit Margin for Yellow Cab and Pink Cab

Profit by City Analysis

Company ● Pink Cab ● Yellow Cab

City	Profit
NEW YORK NY	27.96M
LOS ANGELES CA	4.41M
WASHINGTON DC	3.49M
CHICAGO IL	3.39M
BOSTON MA	1.77M
SAN DIEGO CA	1.59M
SILICON VALLEY	1.32M
DALLAS TX	1.13M
ATLANTA GA	0.84M
MIAMI FL	0.76M
SEATTLE WA	0.60M
AUSTIN TX	0.53M
ORANGE COUNTY	0.46M
DENVER CO	0.40M
PHOENIX AZ	0.19M
NASHVILLE TN	0.15M
TUCSON AZ	0.14M
SACRAMENTO CA	0.12M
PITTSBURGH PA	0.09M

Profit (USD)

The most profitable locations for the Yellow Company are New York, Los Angeles, Washington, D.C., and Chicago.

For the Pink Company, the most profitable locations are New York, Los Angeles, and San Diego.

The Yellow Company's profits exceed the Pink Company's profits in each location.

Recommendations

To explore the profitability, number of rides, and customer segment for each cab type, we have examined several aspects of the cab industry:

1. Profit changes over time. Yellow Cab Company's profits are relatively stable compared to Pink Cab Company's. Yellow Cab Company also earns a higher profit over three years. Furthermore, Yellow Cab Company gains a higher profit per kilometer than Pink Cab Company every month.

2. The changes in profitable trips by the city. The profitability percentage of rides changes depending on the city. It was found that Yellow Cab Company has a greater market share in every city.

3. The demand for the cab industry changes over time. The yearly demand for the Yellow Cab Company is about four times greater than the yearly demand for the Pink Cab Company. Additionally, both companies experience seasonality of demand throughout the year.

4. Customer segmentation. Each year, both companies have more customers in the 20-40 age range.

5. Loyalty rates. The Yellow Cab Company has better loyalty rates.

Based on these findings, we recommend investing in Yellow Cab Company as it is more profitable, has a higher market share, and has better loyalty rates than Pink Cab Company.

Thank You