G2M Case Study

Virtual Internship

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Background –G2M(cab industry) case study

- 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:

- Exploratory Data Analysis
- Market Research
    1. Profit Analysis
    2. Demand Analysis
    3. Customers Analysis
- Finding the most profitable Cab company
- Recommendations for investment

Data Intake & Hypothesis

Four Datasets

	Nº of Features	Nº of Instances	Base format of File	Size of the Data
Cab_Data	7	359.392	.csv	20,663 KB
City	3	20	.csv	1 KB
Customer_ID	4	49.171	.csv	1,027 KB
Transaction_ID	3	440.098	.csv	8,788 KB

Hypothesis :

1. Is there any seasonality ?
2. The percentage of profitable trips change by city.?
3. How the demand varies according to agewise?
4. Loyalty Rates.
5. Does the payment method fluctuate yearwise? Agewise? Citywise?

Exploratory Data Analysis

Master Database

- 14 Features
- Timeframe of the data: 2016-01-01 to 2018-12-31
- Total data points :359.392

Assumptions:

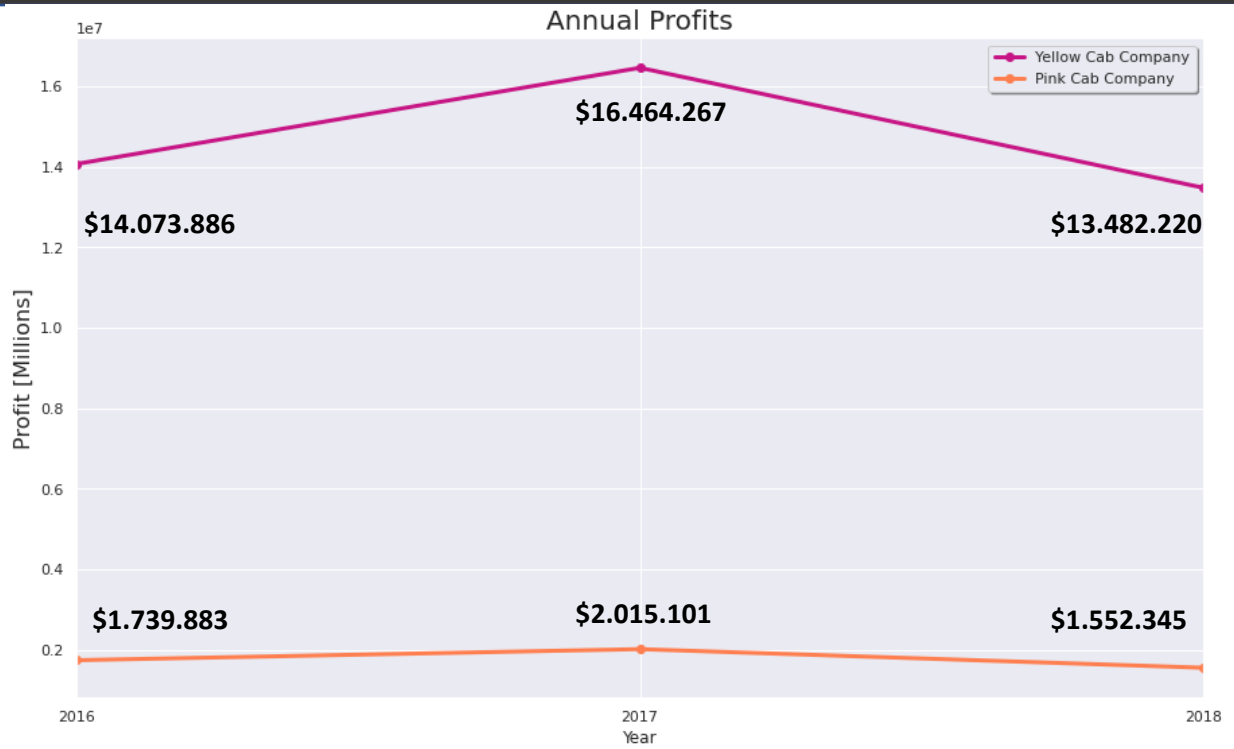
- Outliers are present in Price_Charged feature but due to unavailability of trip duration details ,we are not treating this as outlier.

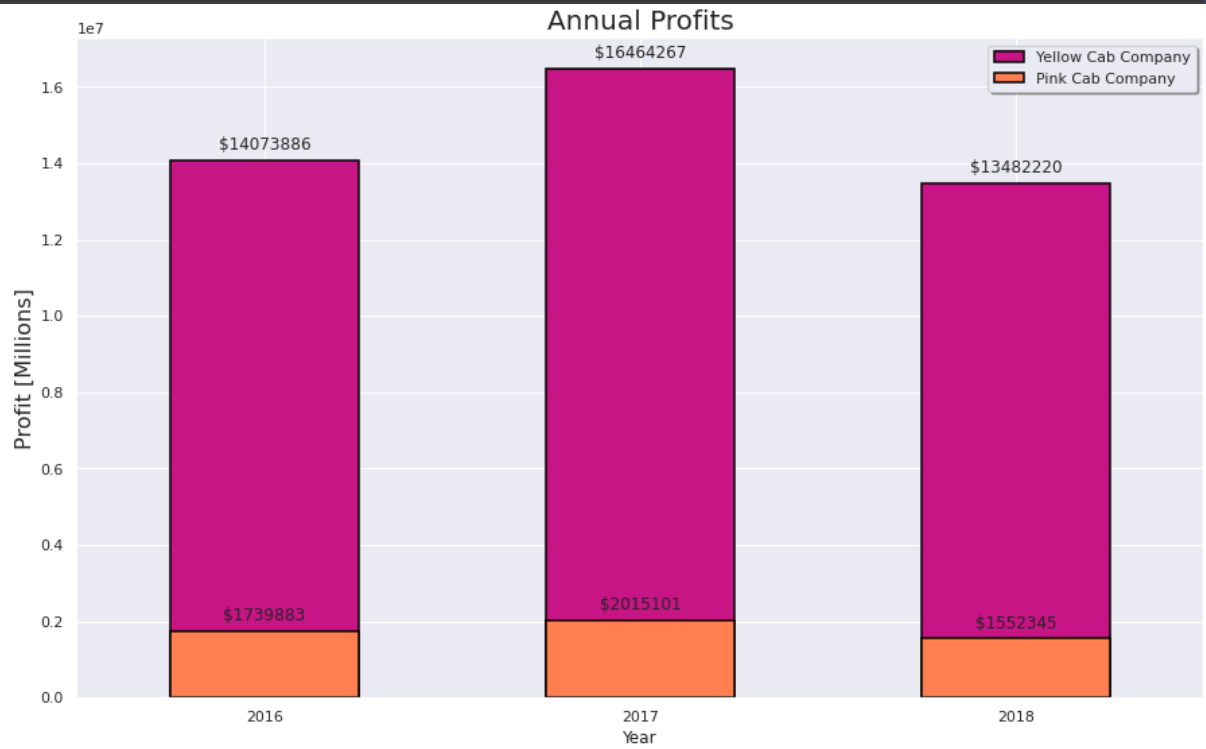
- Profit of rides are calculated keeping other factors constant and only Price_Charged and Cost_of_Trip features used to calculate profit.

- Users feature of city dataset is treated as number of cab users in the city. we have assumed that this can be other cab users as well(including Yellow and Pink cab)

Profit Analysis

Yearly Profit





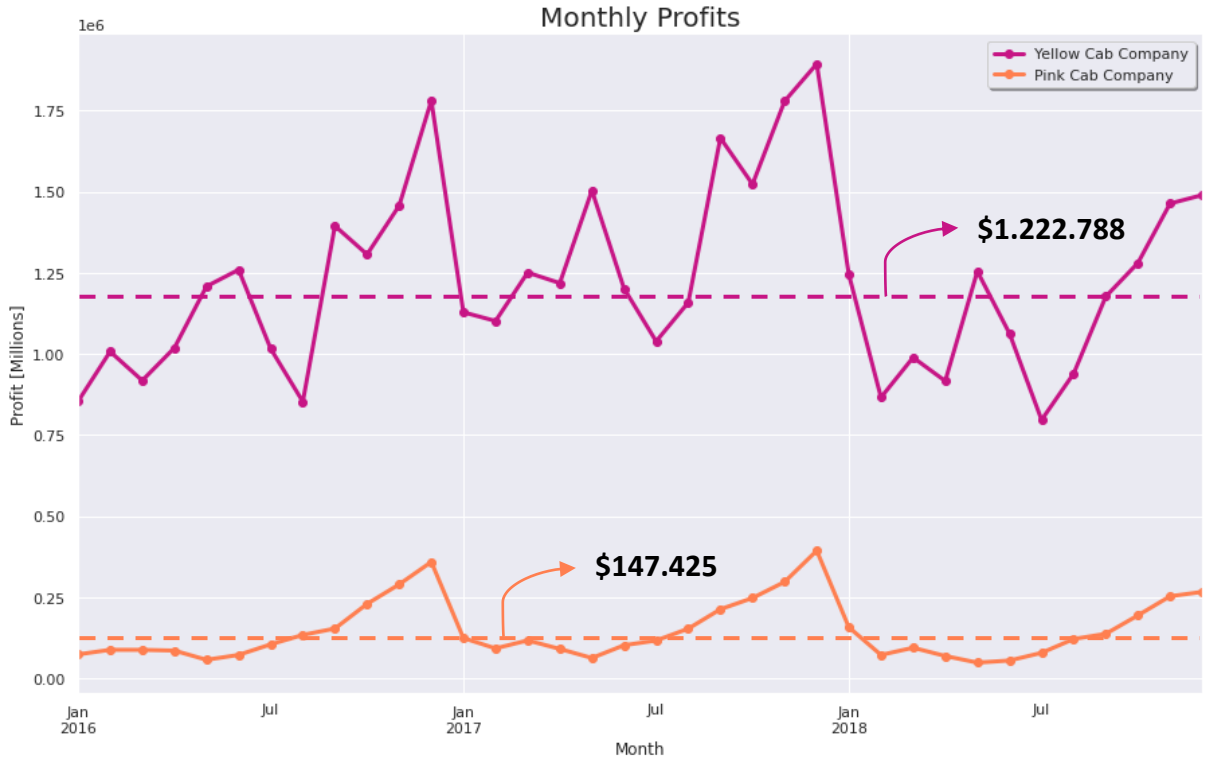
Company	Total Profit
Pink Cab	5307328.0
Yellow Cab	44020373.0

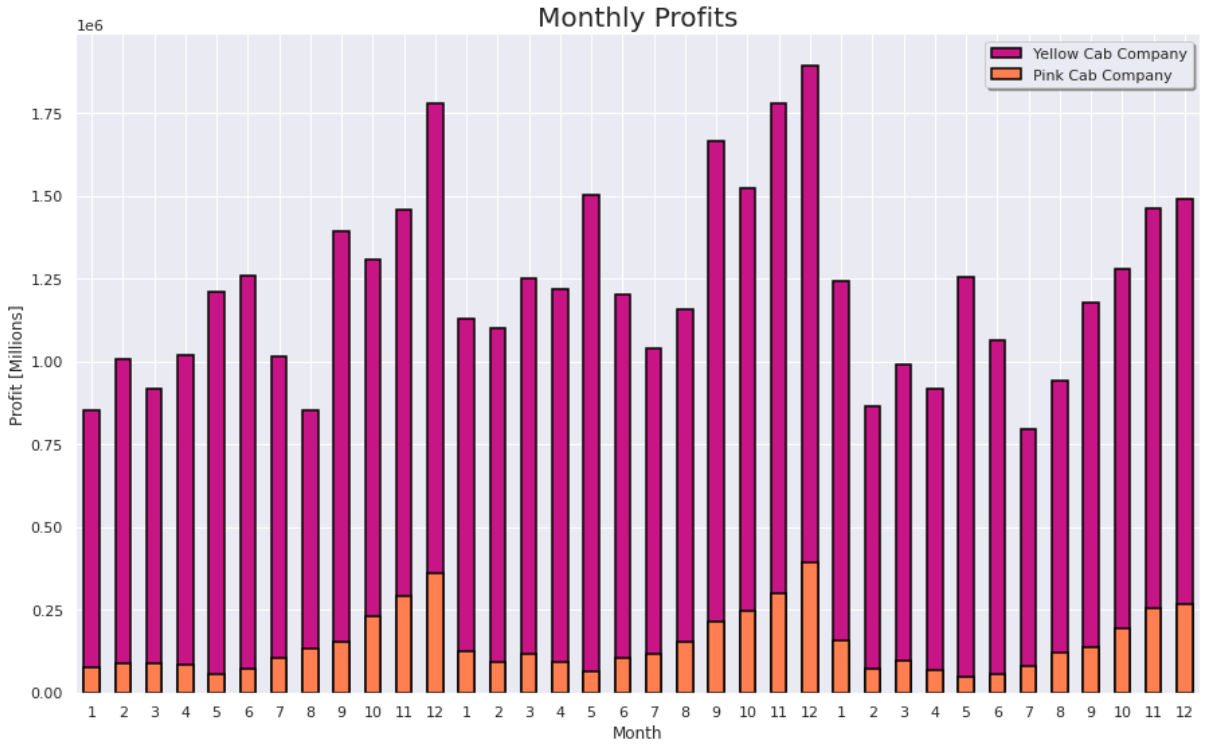
Company	Year of Travel	Profit
Pink Cab	2016	1739883.0
	2017	2015101.0
	2018	1552345.0
Yellow Cab	2016	14073886.0
	2017	16464267.0
	2018	13482220.0

YellowCab's profits over the last 3 years are eight (8) times greater than PinkCab's company.

Let's look at this in more detail and in different perspectives…

Monthly Profit



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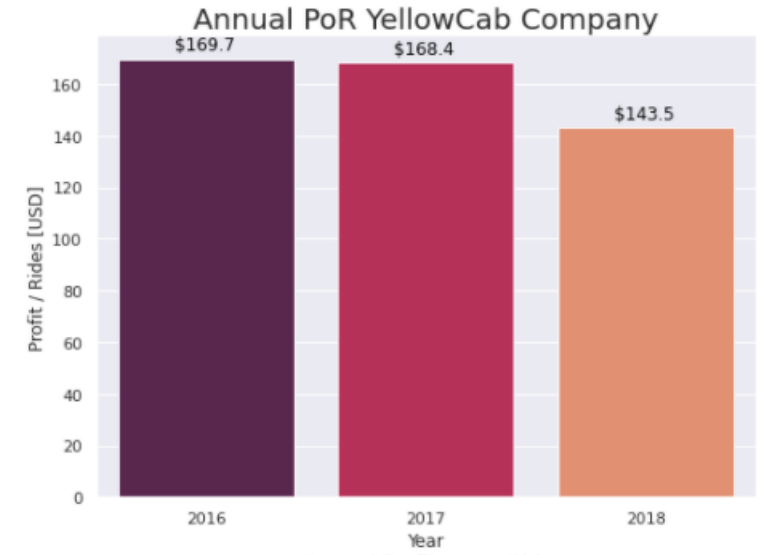
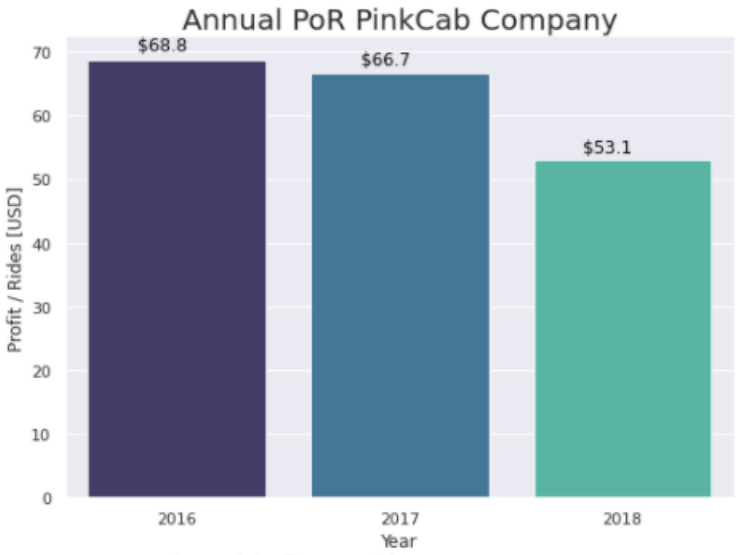
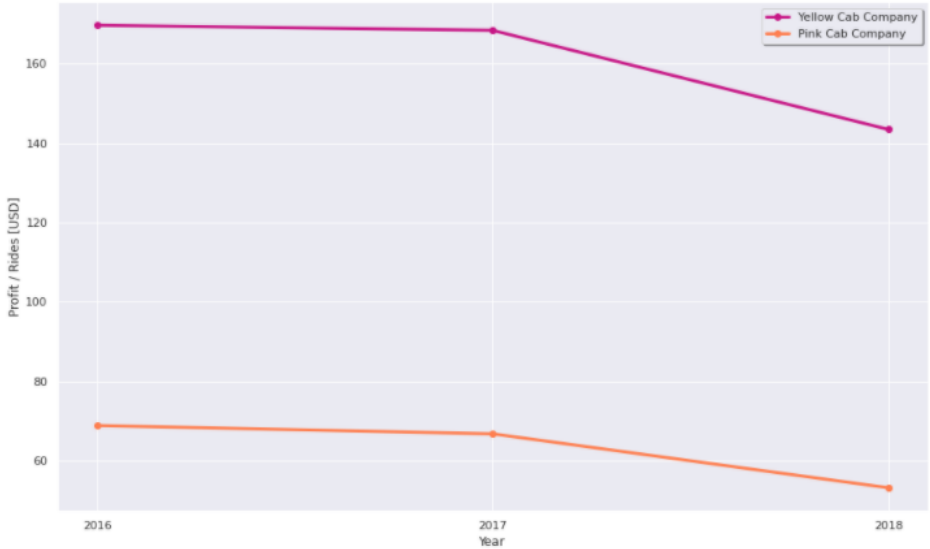
YellowCab Company mean monthly profit =  1222788.1   and it's std deviation is =  282187.72 so, the percentage of the deviation is 23.08 %
PinkCab Company mean monthly profit =  147425.8   and it's std deviation is =  90258.28 so, the percentage of the deviation is 61.22 %
```

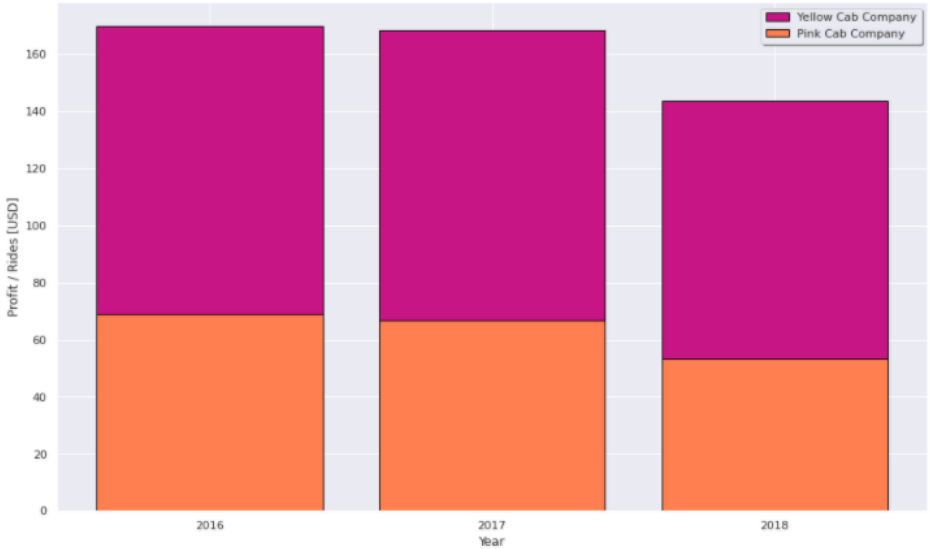
We can see that over the months, the **Yellowcab company's** earnings are more stable, with fluctuations of **23,08%,** while those of the **Pinkcab company** vary in the order of **61,22%**

Yearly Profit per Ride







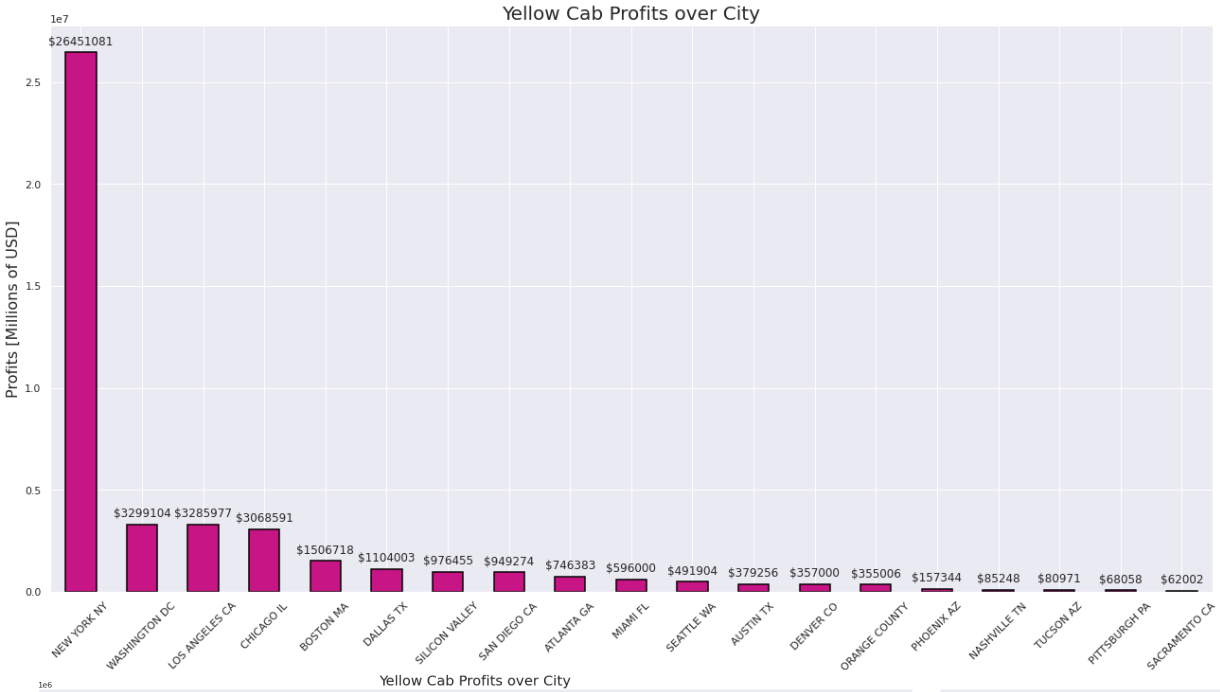


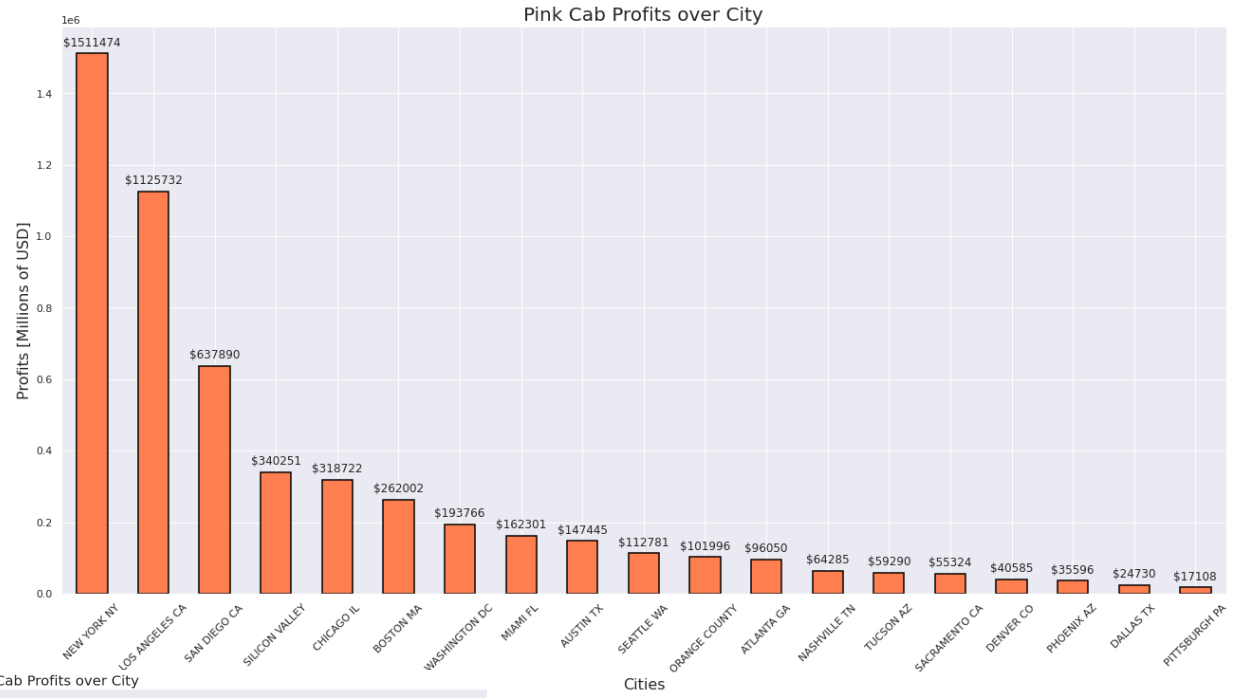
Profit per Ride is an indicator that measures how efficient the company is, in terms of operational costs

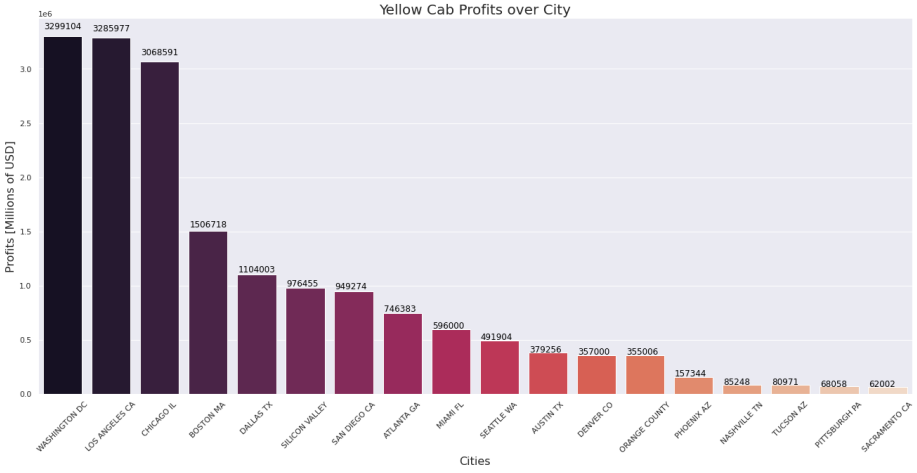
YellowCab is doing far better in profits per rides.

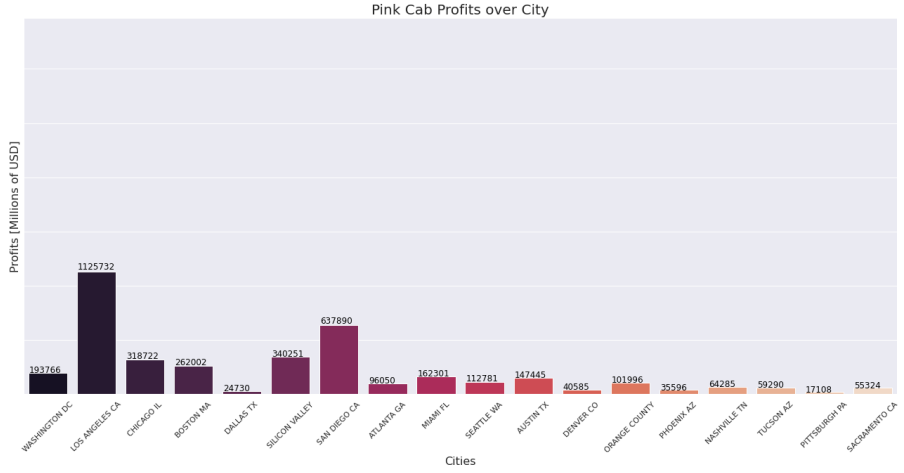
Both companies shows the same behaviour; decrease over time… tends to decrease this efficiency

Profit Citywise





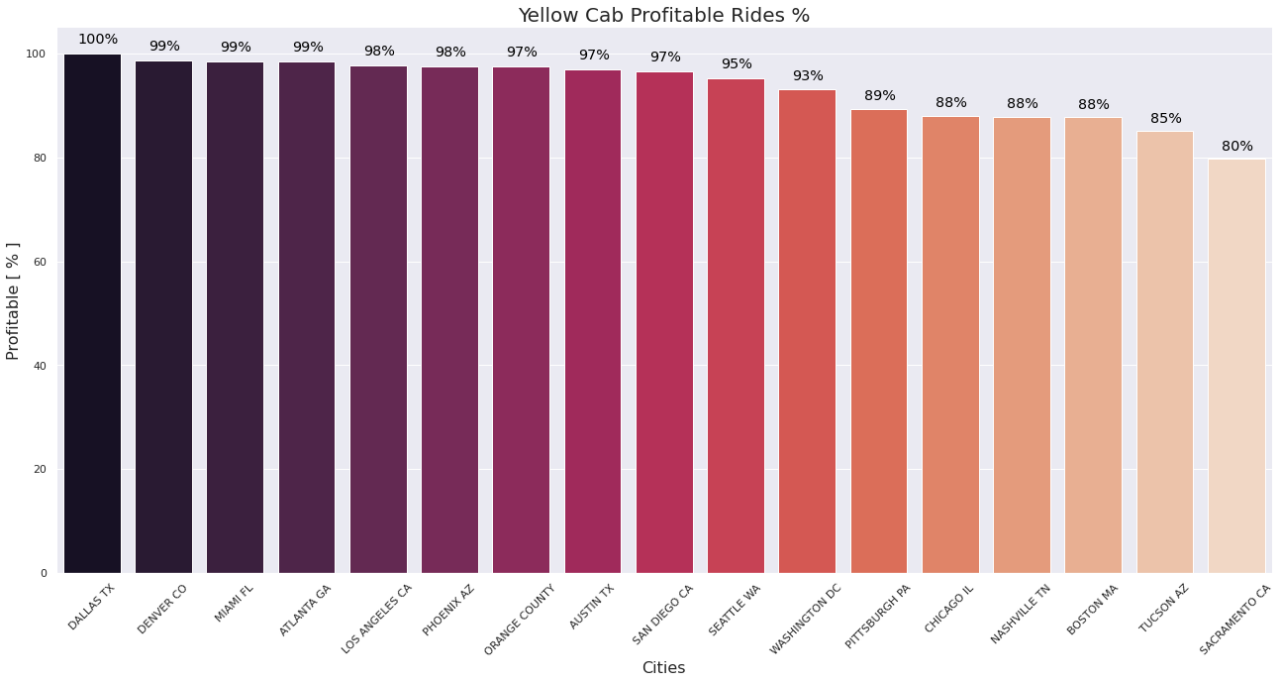


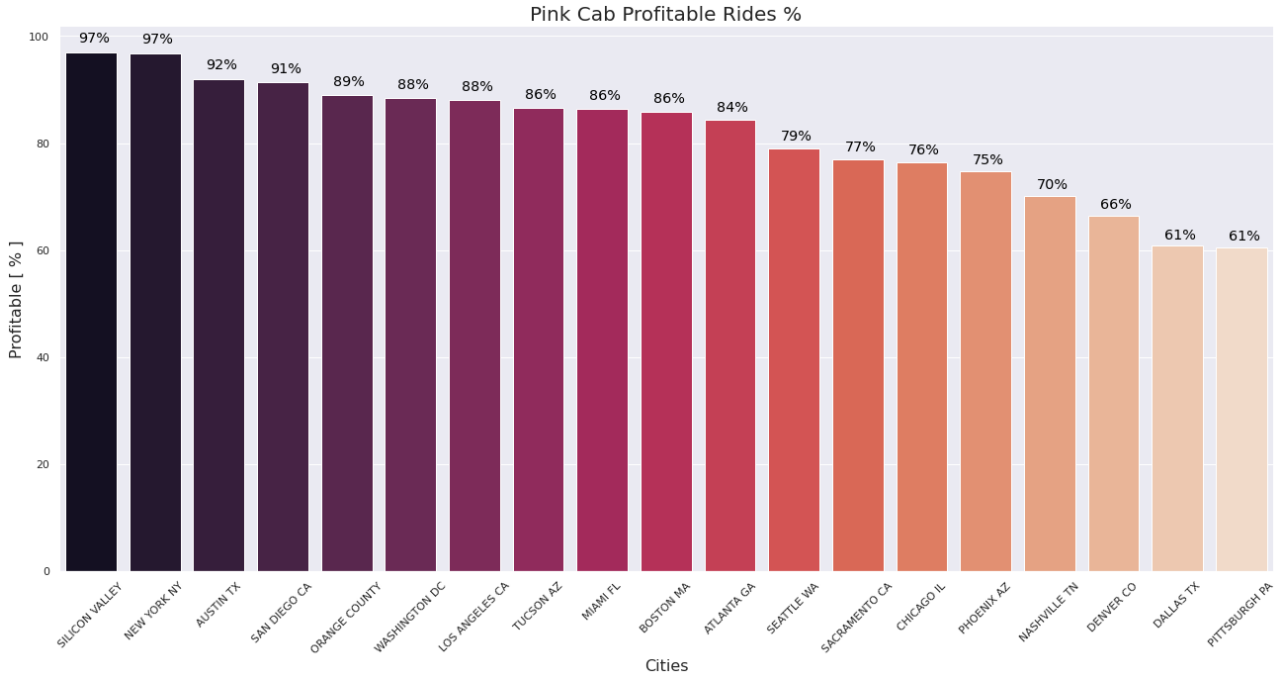


We can conclude that Yellow Cab has greater marketshare in **every** City.

In this picture New York has been removed from both companies to get a better sight of the other cities

Profitable Rides Citywise





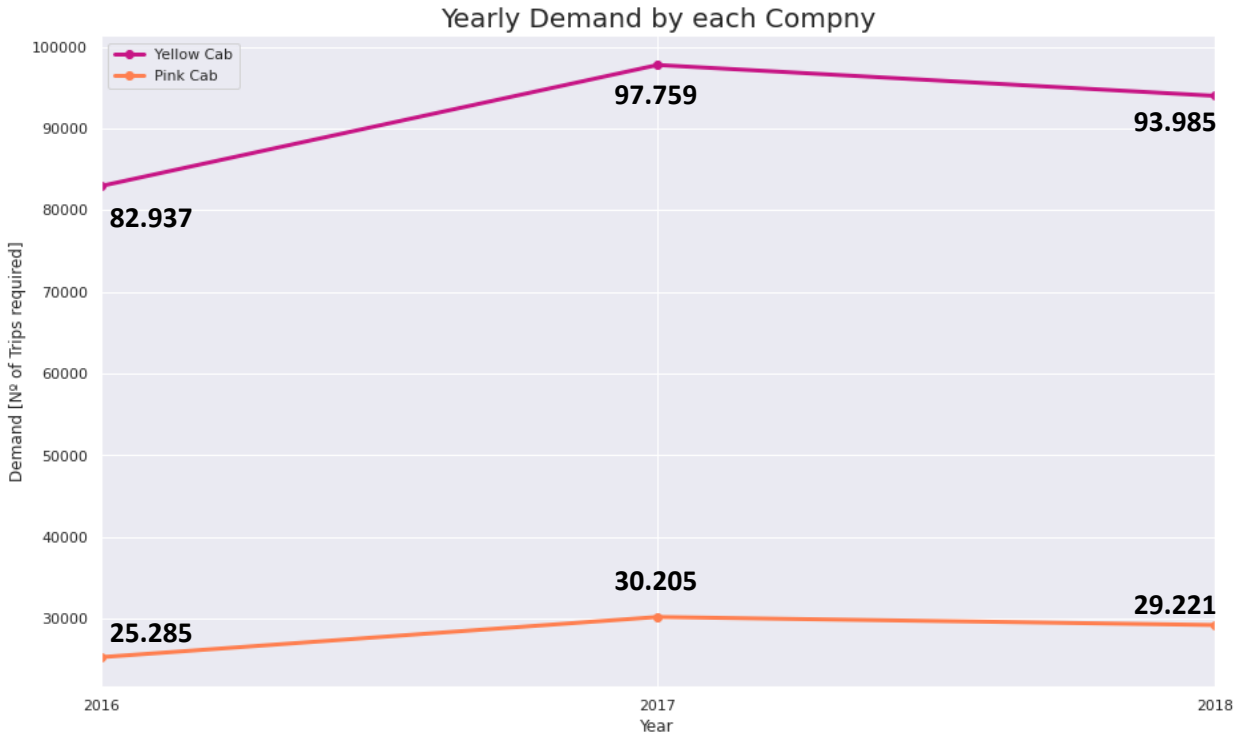
Now, we can answer the third hypothesis. Profitable Rides change by cities, and of course, according to the Company we can see some differences. Assuming that at a profitable drive rate of 80% the operation performs well; we can see that ...

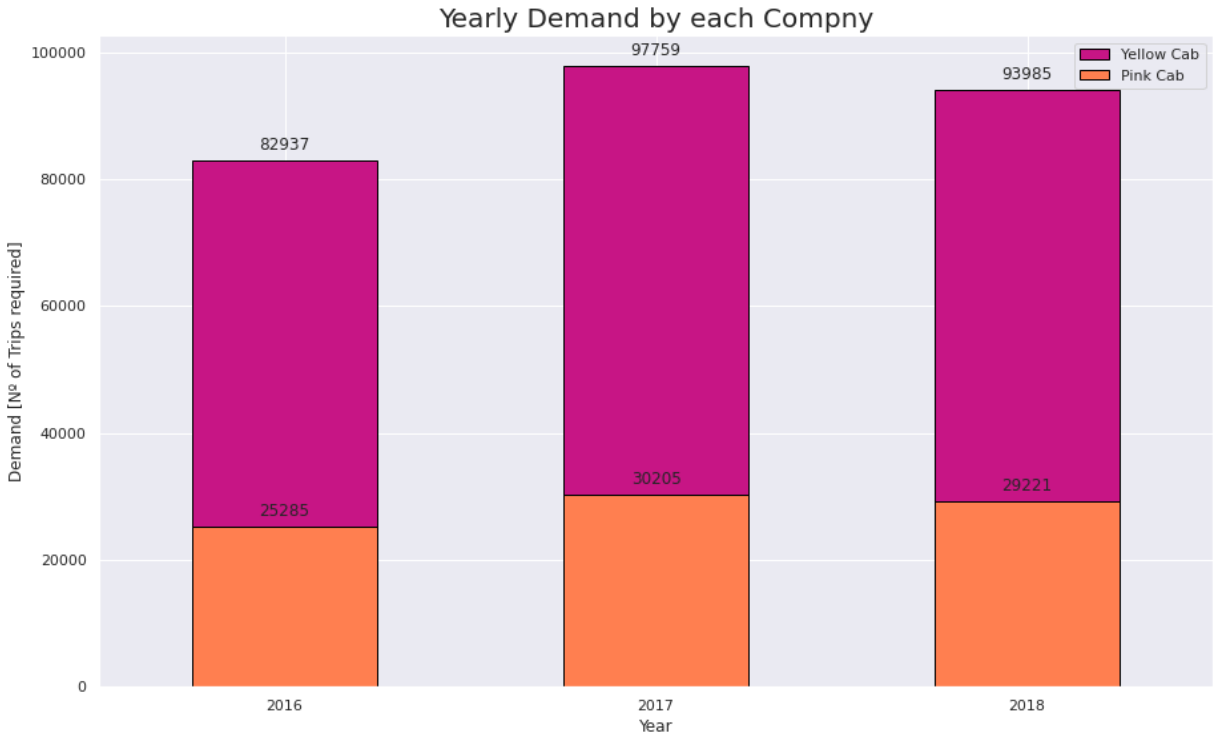
YellowCab has a high performance acording to it's operations, mantaining a high level of Profitable Rides in every City.

Pink Cab has a great too, except in Seattle to Pittsburgh. Moreover, Pittsburgh and Dallas performance are not Good at all, with a percentage of 61%. This means that in those cities, every 10 rides, almost 4 rides are not profitables...

Demand Analysis

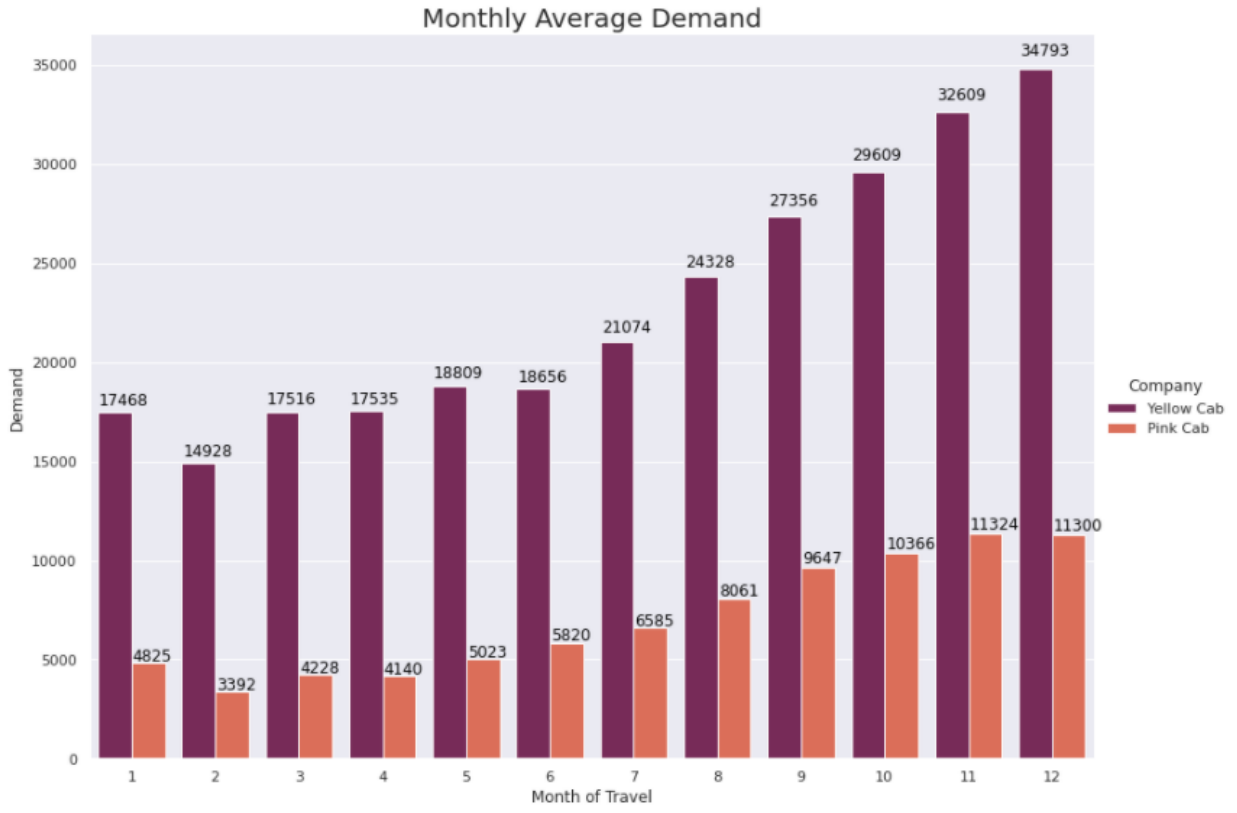
Yearly Demand





As expected, YellowCab Company has a little more than triple the demand of PinkCab Company

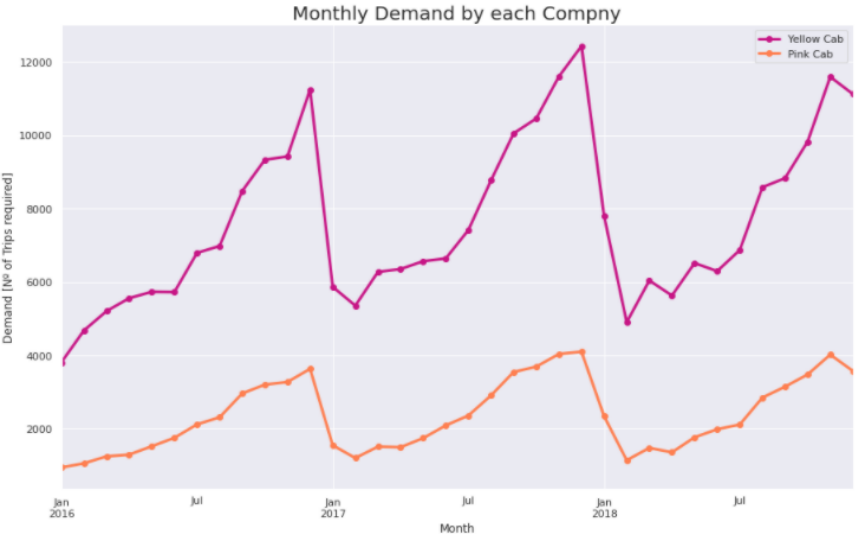
Monthly Demand

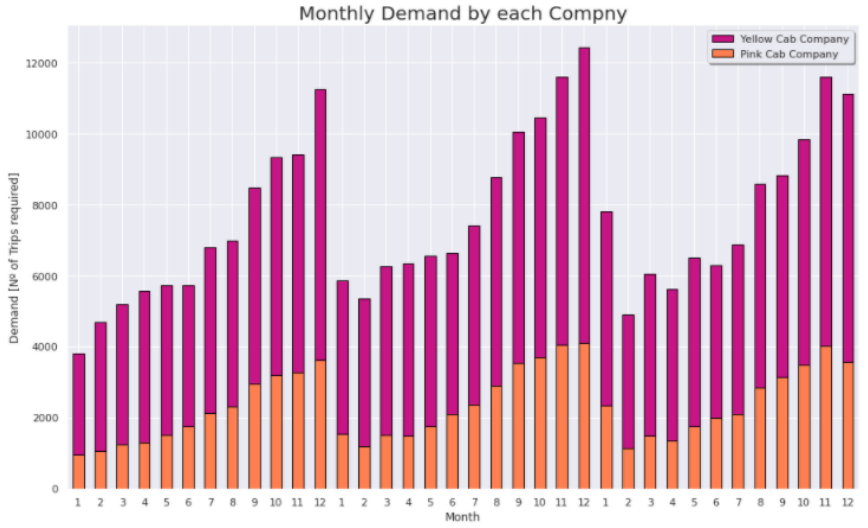


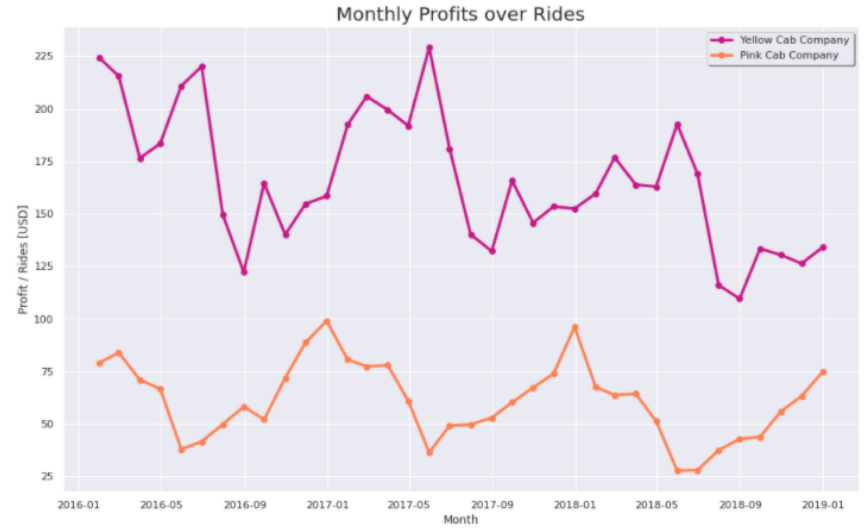
We can answer the first hypothesis here.
Both Companys presents a seasonality between the last four months of the year. With a marked drop in the first month of the year

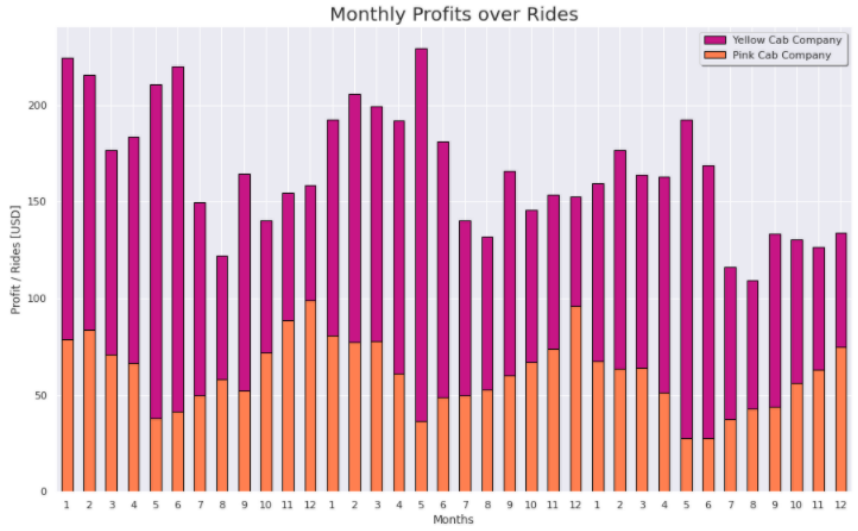
Yellow Cab Company present almost 3 times higher demand over every month

Monthly Demand vs Monthly Profits per Ride



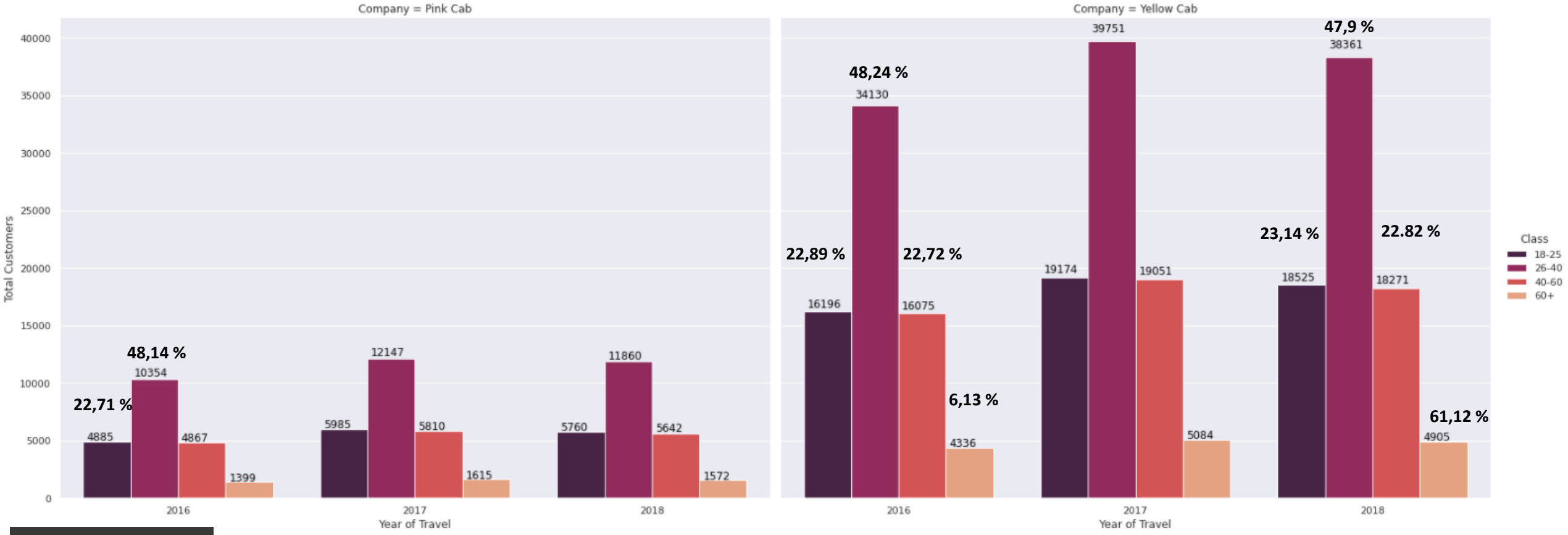






Comparing **Monthly demand** beahviour against **Monthly PoR**, we can see that the lower the demand, the more efficient the company in terms of PoR.

Demand Agewise

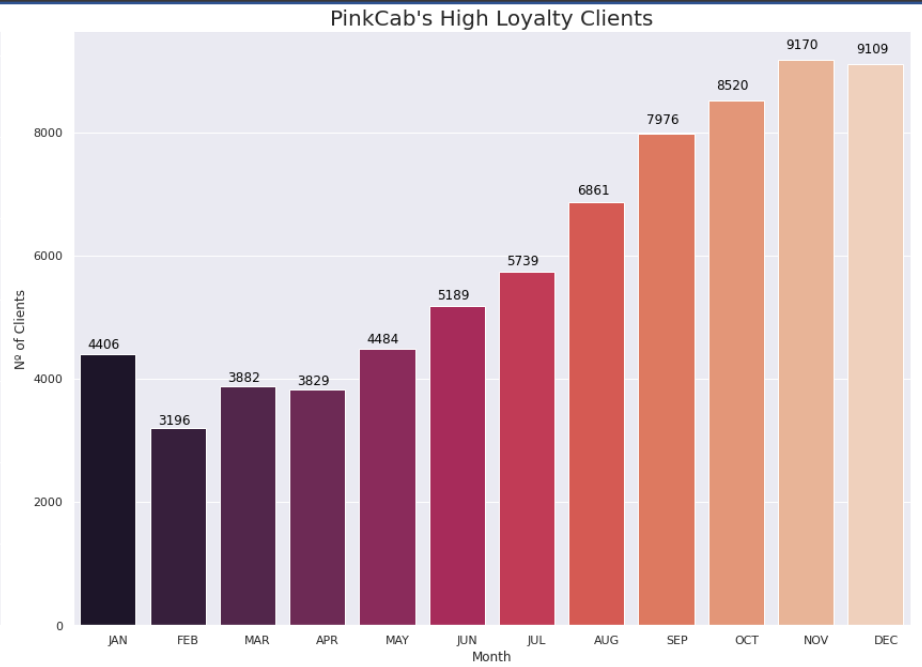


Company	Year of Travel	Total
Pink Cab	2016	21505
	2017	25557
	2018	24834
Yellow Cab	2016	70737
	2017	83060
	2018	80062

Answering the third hypothesis, the demand according the age group, is steady over the time, and over the company .

Customer Analysis

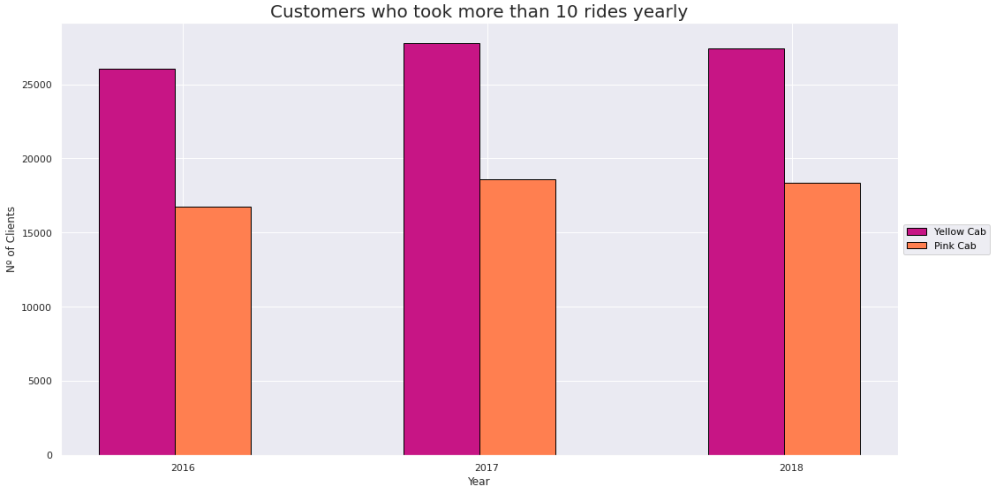
Loyalty Rates



To analyze the Loyalty rates, I define 2 classes:

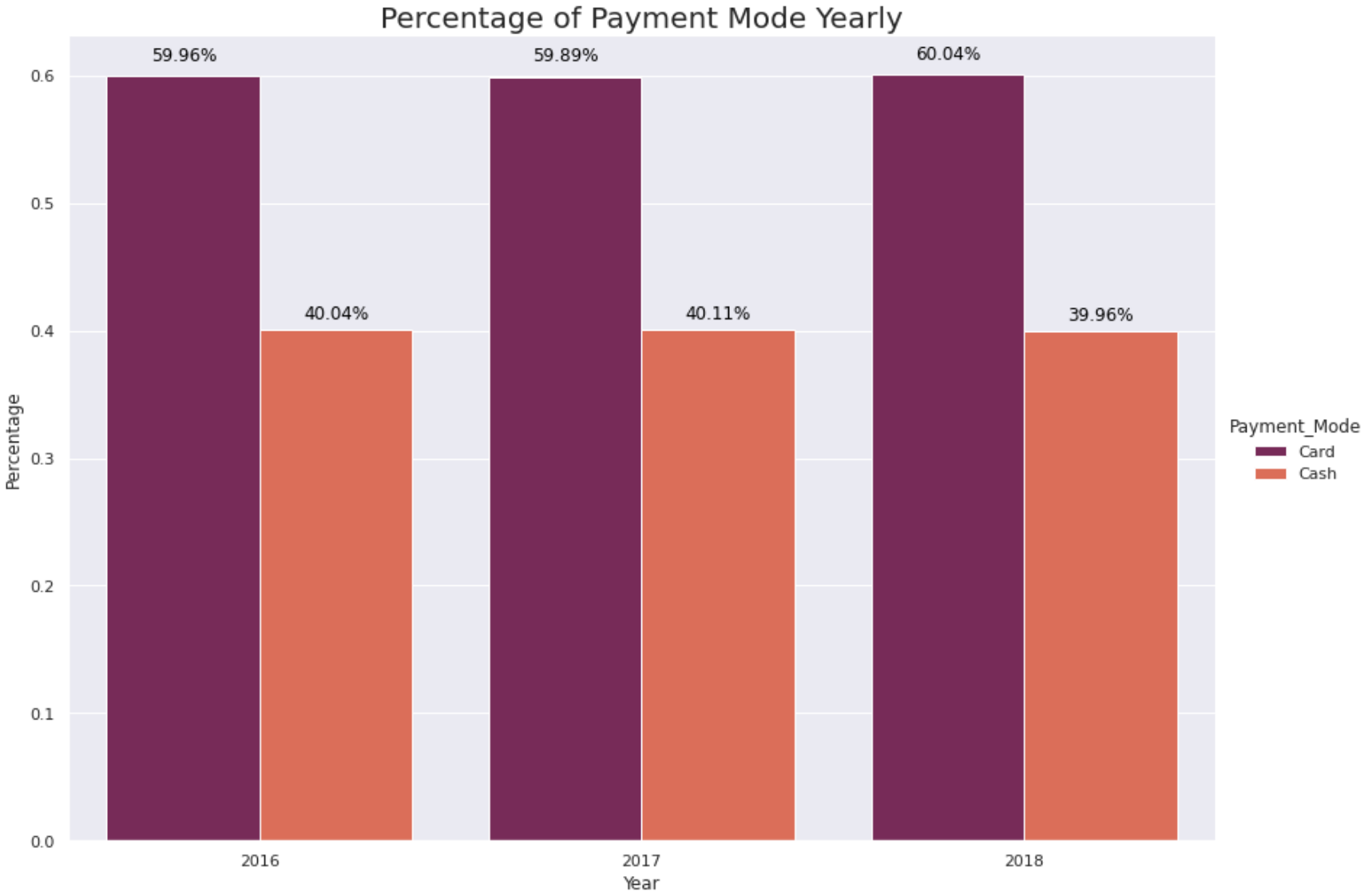
Medium Loyalty Customers: Customers who took more than 10 rides yearly

High Loyalty Customers: Customers who took more than 10 rides monthly



YellowCab Company has **better Loyalty Rates over both classes.**

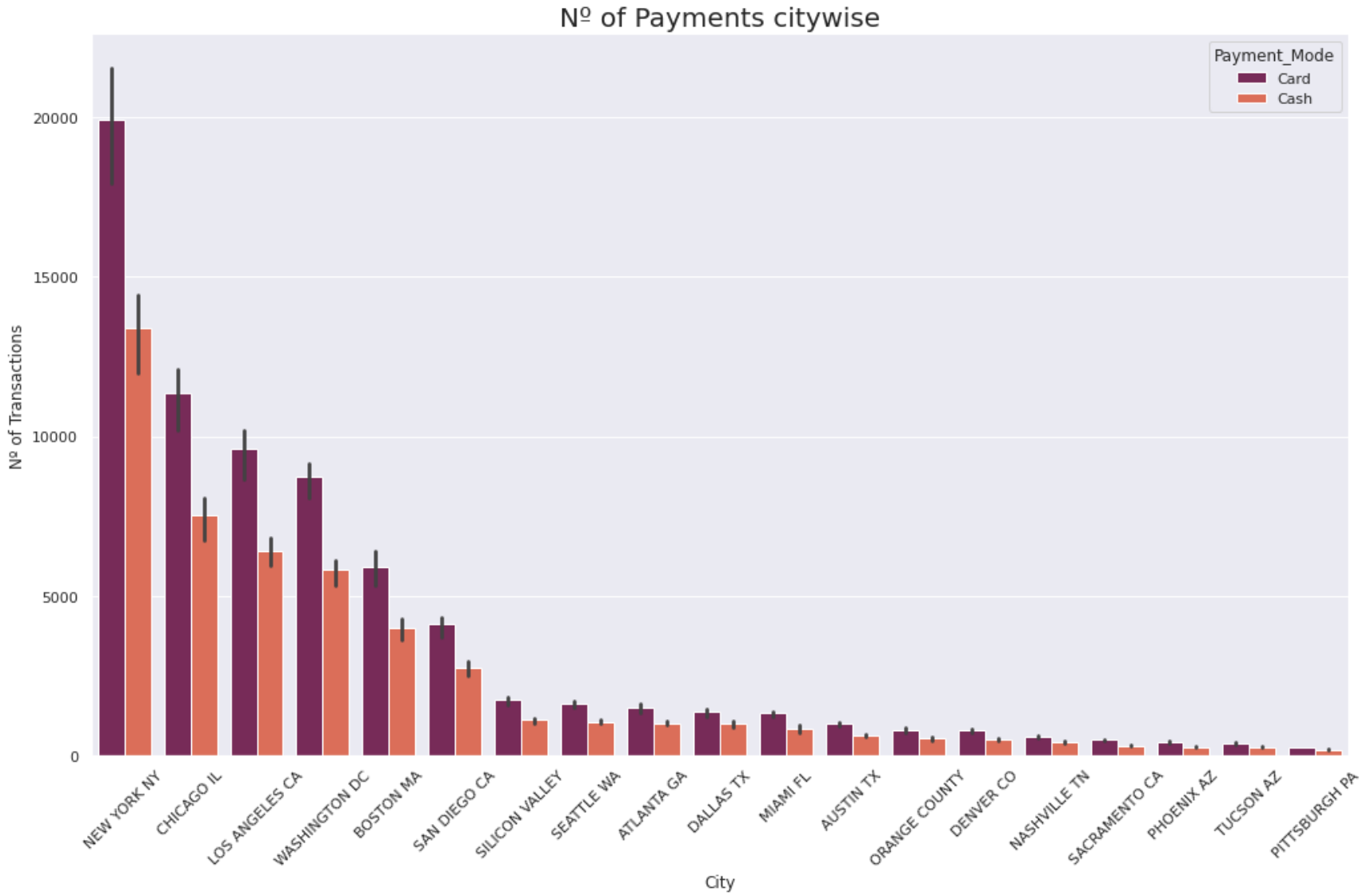
Payment Mode Distributions – Over Time



Minimal deviations over time.

60% Card
40% Cash

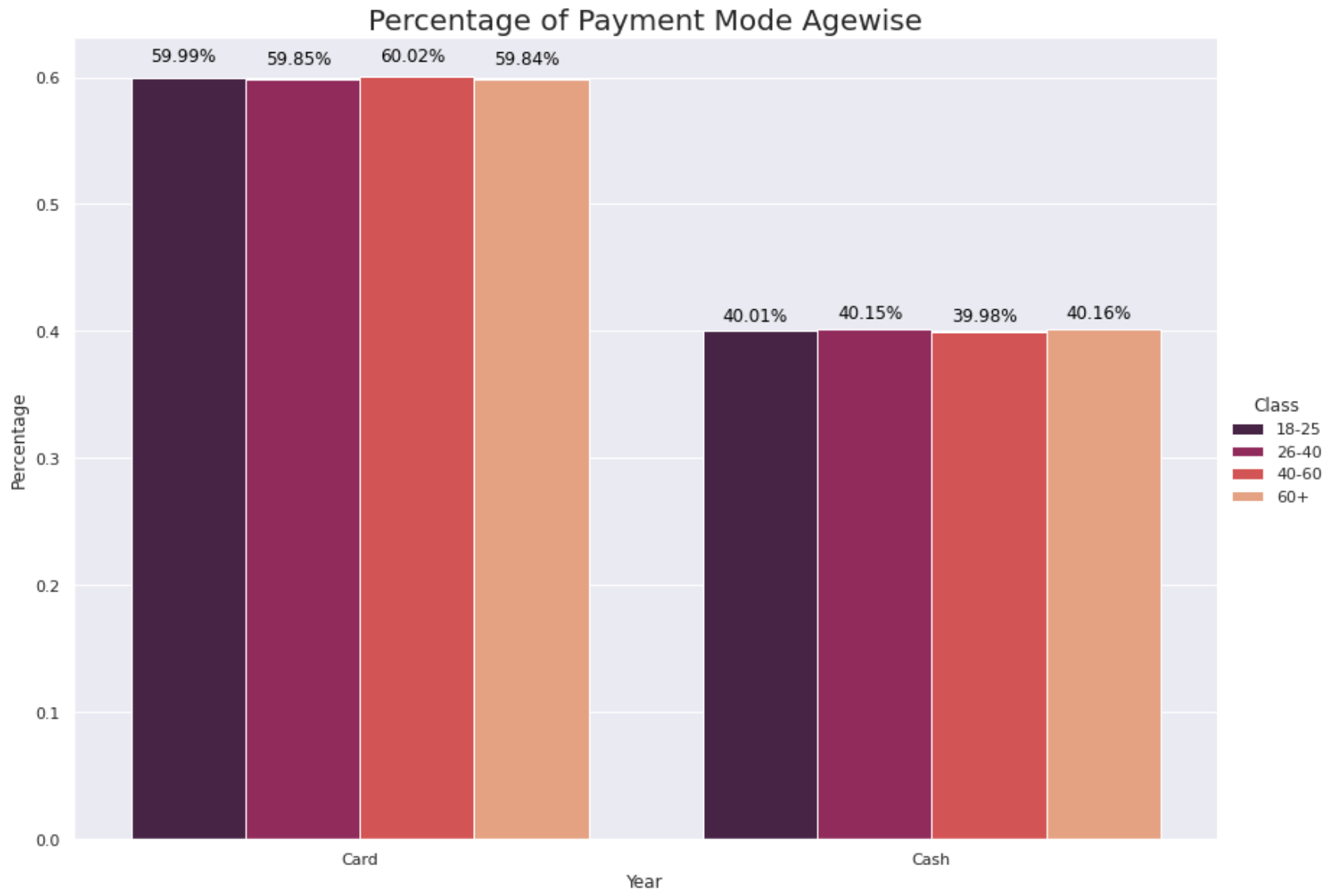
Payment Mode Distributions – Citywise



Minimal deviations citywise…

60% Card
40% Cash

Payment Mode Distributions – Agewise



Finally, minimal deviations agewise…

60% Card
40% Cash

Recommendations

I have evaluated both the cab companies on following points and found Yellow cab better than Pink cab:

1. **Profit Analysis**
    - **Profits:** Higher Profits over the time and less fluctuations monthly
    - **Profits over Rides:** Better PoR rate among time. Yellow Cab has 2.5 more Profits over Ride
    - **Profits Citywise:** Yellow Cab has greater market share in every City.
    - **Profitable Rides:** Assuming that over a rate of 80% PR, the company performs well. Yellow Cab has a high performance among every city. In contrast, Pink Cab does not perform well in 8 cities.
2. **Demand Analysis**
    - **Demand:** Yellow Cab has more than triple the demand of Pink Cab Company
    - **Demand Agewise:** Both companies present the same distribution of Demand Agewise
3. **Customer Analysis**
    - **Loyalty Rates:** Assuming both classes, Yellow Cab has a higher High Loyalty Rate and Medium Loyalty Rate
    - **Payment Mode Distributions:** Both companies present the same distribution of Payment Mode over time, citywise and agewise.

On the basis of above point , I will recommend Yellow cab for investment.

Thank You

Data Glacier

Your Deep Learning Partner