

G2M insight for Cab Investment Firm

07-19-2022

Agenda

Executive Summary

Problem Statement

Approach

EDA

EDA Summary

Recommendations

Executive Summary

Objective/Problem Statement

As per growing Cab industry market, a private investment firm XYZ is seeking to invest on one of two Cab companies (Pink and Yellow).

The objective of the report is to provide G2M and the Cab industry insight to help the firm identify the right cab industry company to invest on.

Solution Summary

Emphasized on the overall profit of each company and whether the payment type, city-wise visitors rate, age, and income of customers affect the profit.

Data Intake

Data of interests:

Time period of datasets: 31/01/2016 to 31/12/2018

- Cab Data.csv : includes the transaction details for 2 cab companies
 - **Total number of observations** 359492, **Total number of features** 7, **Size of the data** 62.8 MB
- Customer ID.csv : includes the customers' demographic details
 - **Total number of observations** 49171, **Total number of features** 4, **Size of the data** 4.2 MB
- Transaction ID.csv : contains transaction to customer mapping and payment mode
 - **Total number of observations** 440098, **Total number of features** 3, **Size of the data** 33.9 MB
- City.csv : list of US cities, their population and number of cab users
 - **Total number of observations** 20, **Total number of features** 3, **Size of the data** 4.2 KB
- Overseas.csv : includes the average number of overseas visitors in each city
 - **Total number of observations** 20, **Total number of features** 2, **Size of the data** 1.7 KB
 - *Oversea.csv file is extracted from the information provided by*
<https://www.bankrate.com/finance/credit-cards/merchants-guide-to-credit-card-processing-fees/>

Approach

Hypothesis:

1. Users of higher income class would have higher cab usage.
2. The average cost of trip per km travelled affects the profit significantly.
3. Using the payment mode of Card can affect the profit significantly.
4. The cities with more overseas visitors would have higher cab usage.

Assumptions:

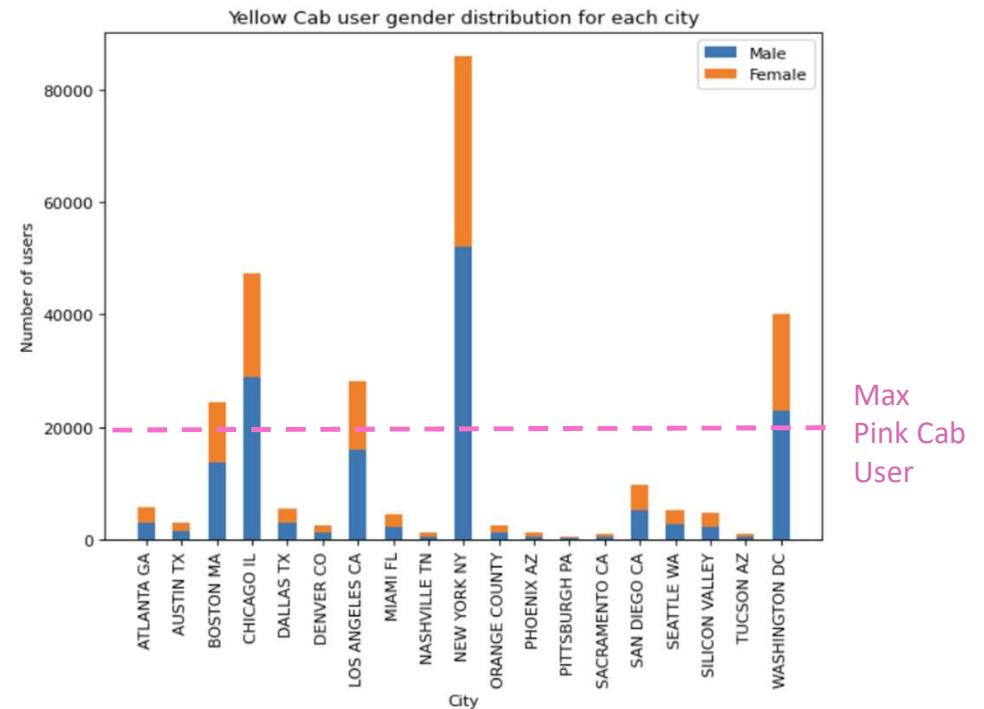
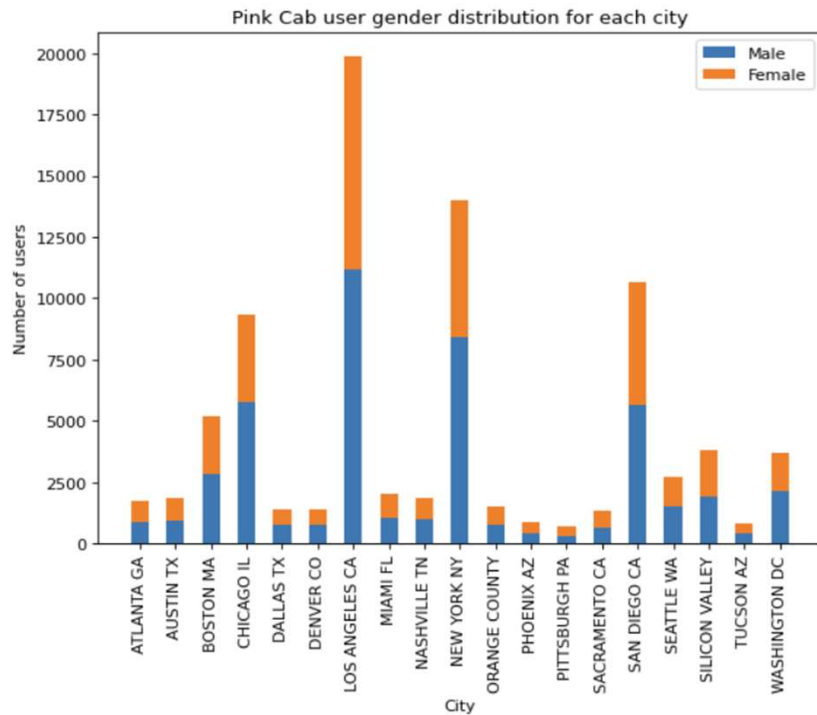
1. Assumed net yearly profit is determined by the difference of charged price and cost of trip.
2. Assumed the payment card type is Visa and the average processing fee is 2.4%. (taken from <https://www.bankrate.com/finance/credit-cards/merchants-guide-to-credit-card-processing-fees/>)
3. Neglected all NA values
4. > 66th percentile (2/3rd) considered higher income group. 33rd - 66th percentile considered middle class group and < 33rd percentile considered lower income group.

EDA

EDA of this report contains two parts:

1. Market research
 - a. Gender distribution
 - b. Income distribution
2. Profit comparison
 - a. Yearly profit and factors of profit difference
3. Relationship with Overseas visitors

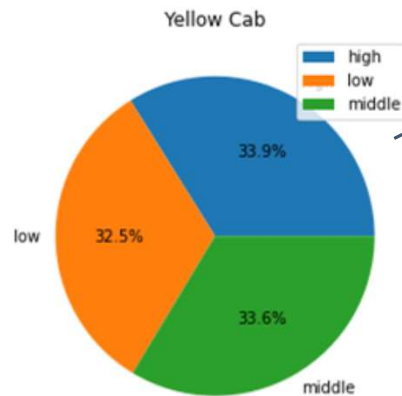
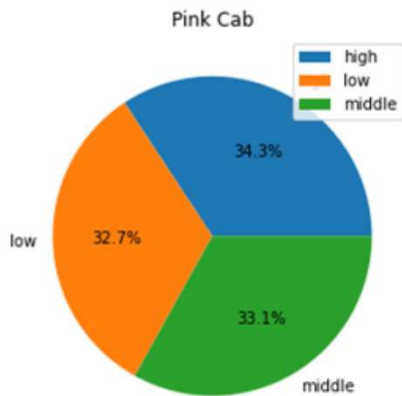
Market Demographic Research - Gender



Overall, more Yellow cab users than Pink Cab users. For both companies, the number of male users are slightly greater than the number of female users in the cities of major cab usage (Los Angeles, New York, Washington DC, Chicago, San Diego, etc.)

Market Demographic Research - Income

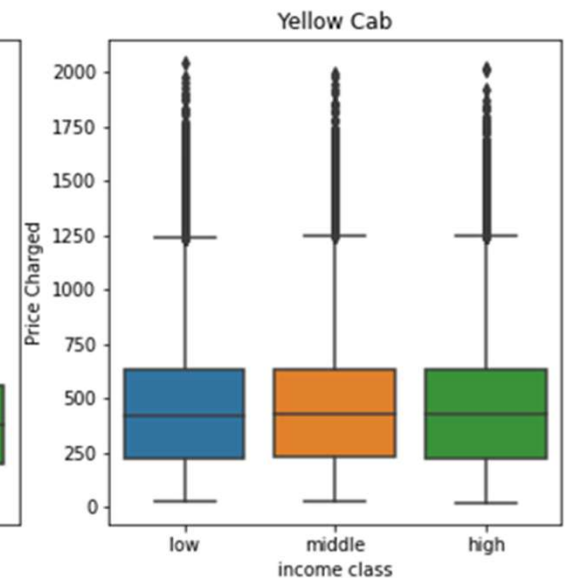
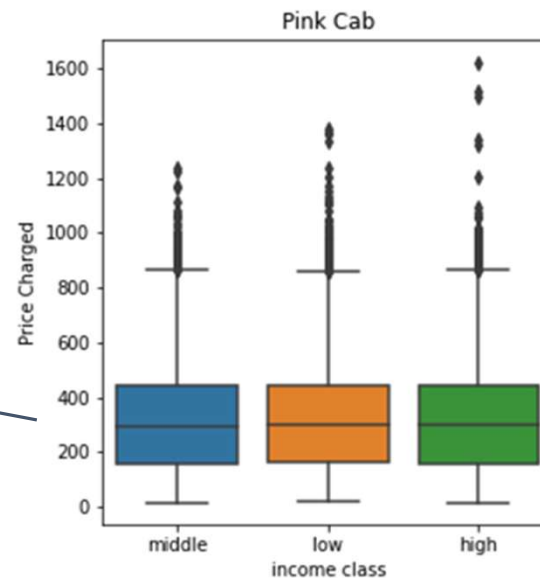
User Income Distribution



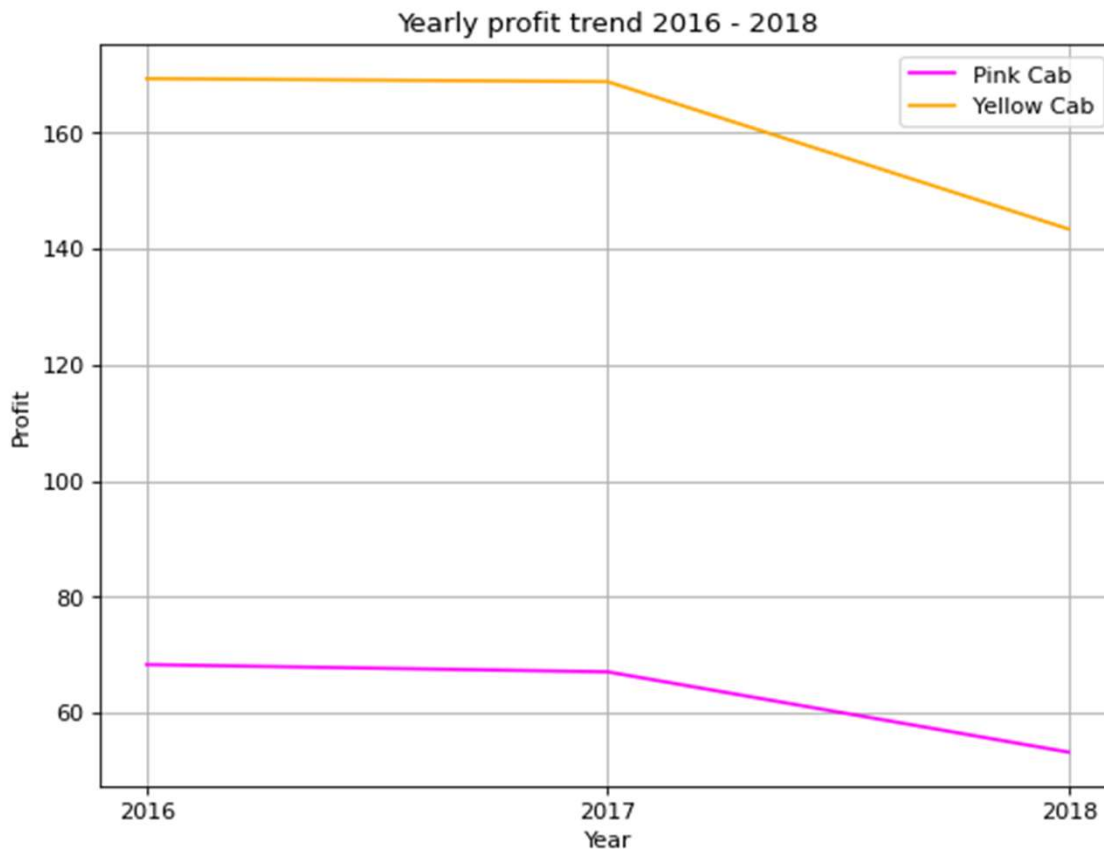
For both companies, user income group almost equally distributed.

Cab price charged does not differ significantly by users' income group. Therefore the hypothesis 1 does not support. For all income classes, the users using Yellow Cab paid higher,

User Income Distribution



Profit Comparison - Yearly Profit

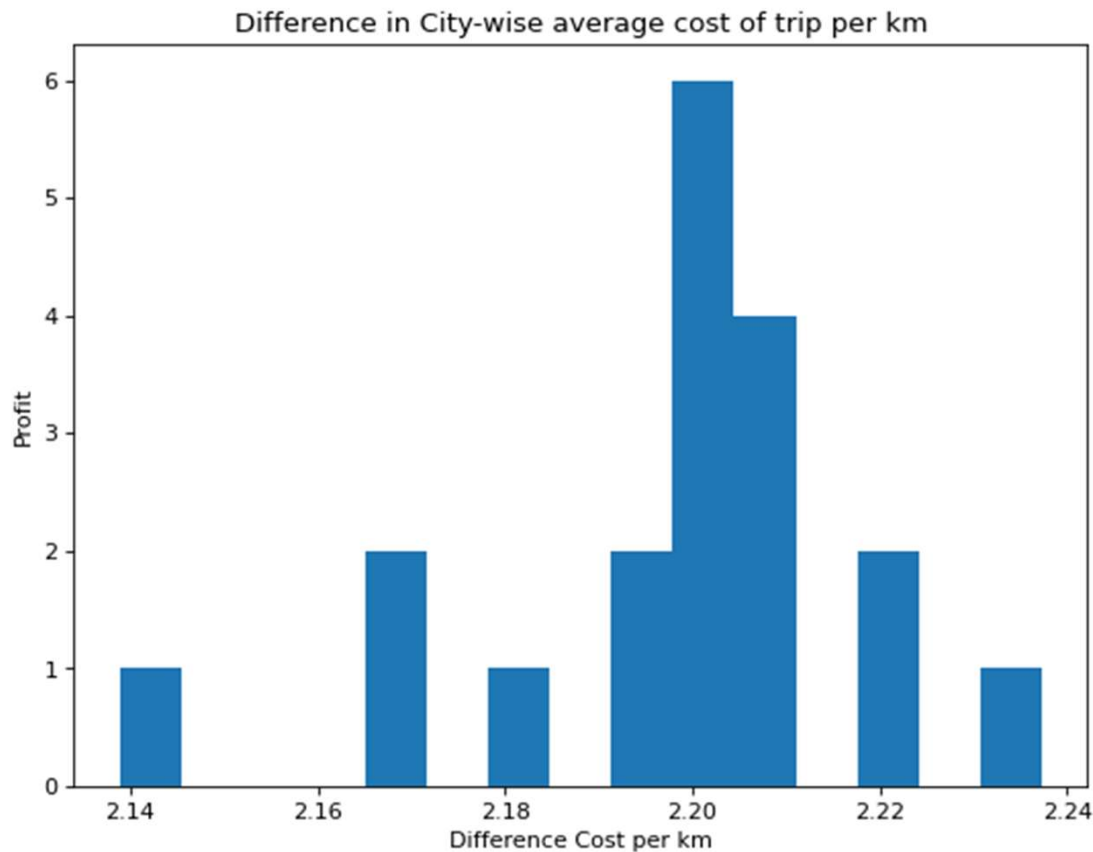


Profit of the Yellow Cab Company is about 3x the profit of the Pink Cab Company over 2016 to 2018.

Some possibilities of significant difference:

1. Significant difference in the average cost per km travelled.
2. Significantly different payment type considering the card transaction fees.

Profit Comparison - 1. Cost per km travelled



Mean of difference in cost per km \cong 2.20

Median \cong 2.20

Histogram shows the value of :
cost per km of Yellow Cab - cost per km
of Pink Cab

Average city-wise cost/km of Yellow Cab
is about

\$ 2.2 greater than that of the Pink Cab.

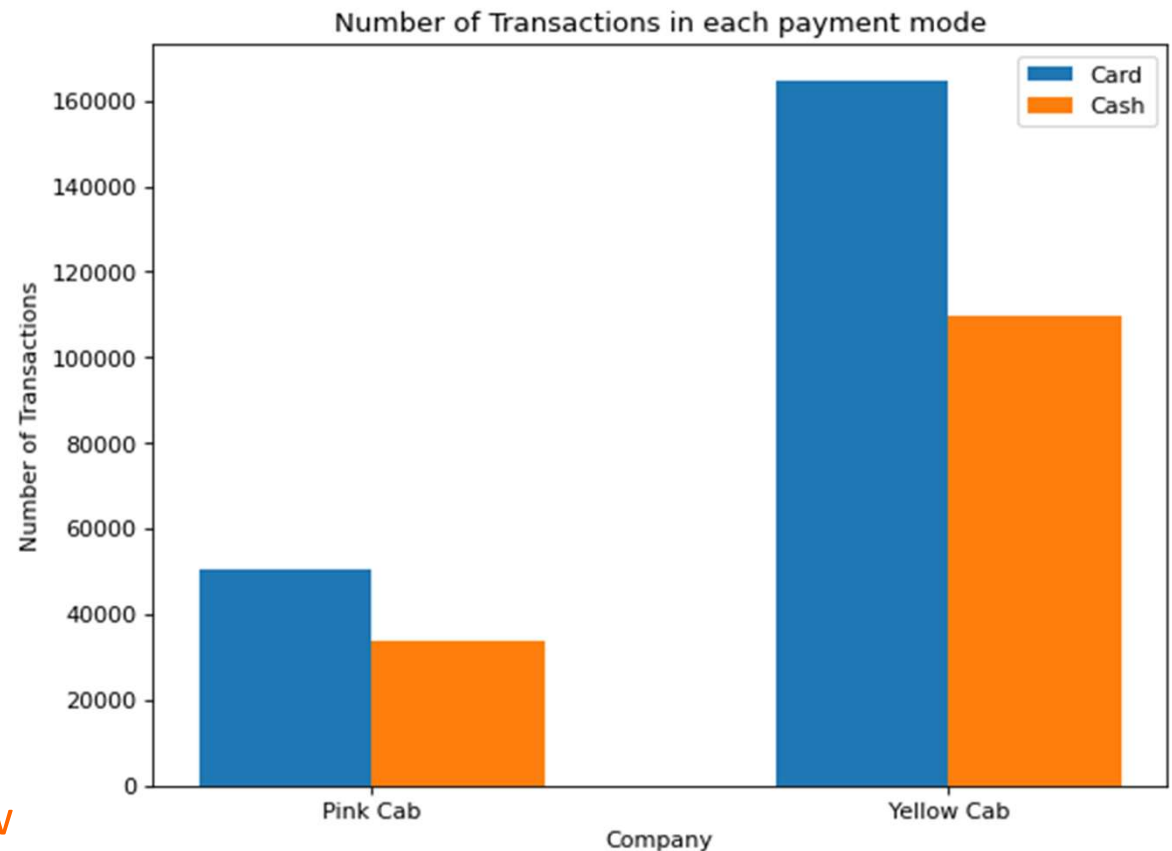
This shows that despite the higher cost of
trip, Yellow

Cab maintains greater profit. Thus, the
hypothesis 2 is not supported.

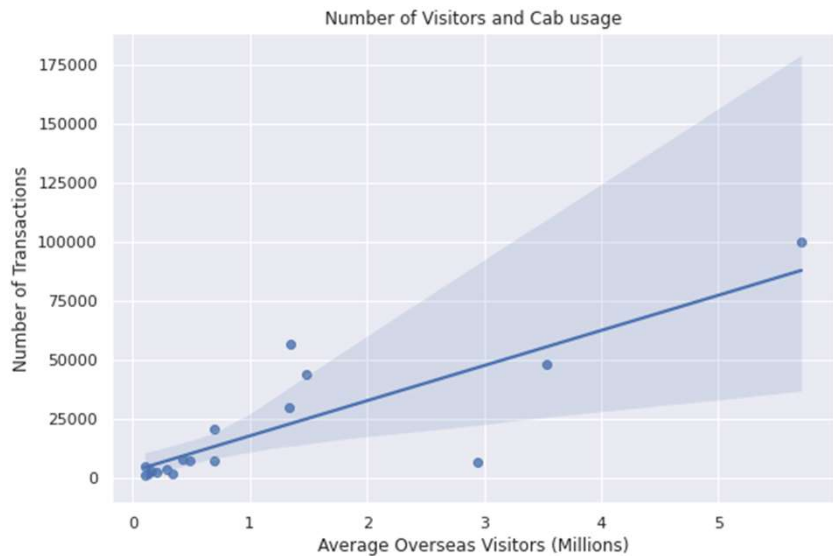
Profit Comparison - 2. Payment type

The ratios of Card and Cash payment mode for Pink Cab and Yellow Cab company are 1.492 and 1.499 respectively. Assuming the processing fee is 2.4% and paid via visa card, the estimated average profit of Yellow Cab is still about 2.7 times greater than Pink Cab.

Hypothesis 3 is not supported and the Yellow Cab maintains higher profit.
ratio of card and cash payment (Yellow Cab) $\cong 1.499$



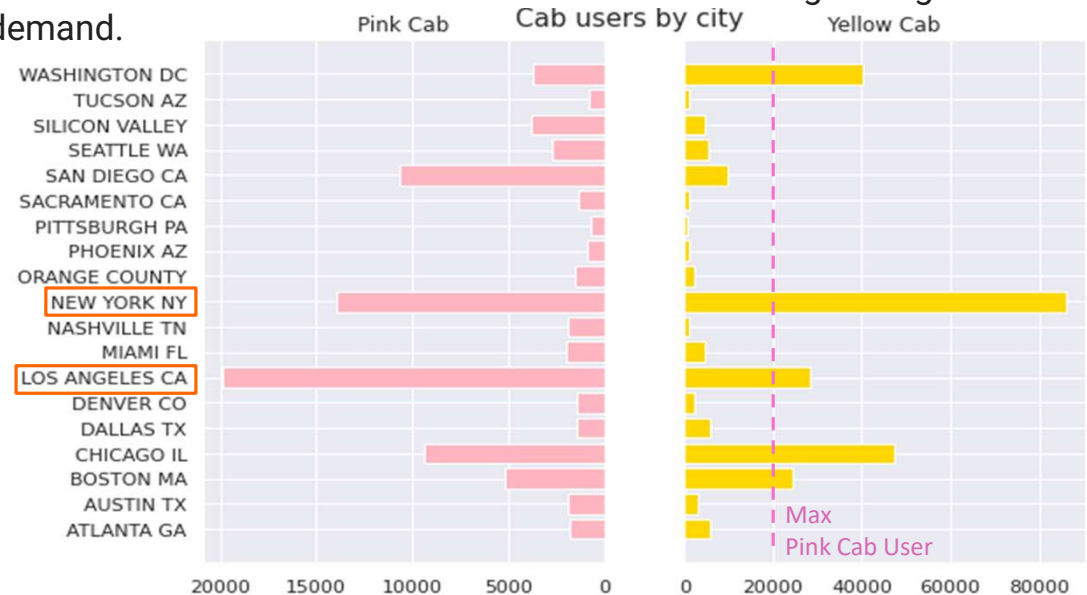
Relationship with Overseas visitors



correlation coefficient = 0.8387862760794225

The scatter plot and the correlation coefficient shows there is a positive relationship between the number of overseas visitors of each city and the

NY and LA scored as the cities with the most overseas visitors (90th percentile) and the Yellow Cab engross the cab market in both cities. As per scatterplot, Yellow cab having more users in such cities with higher number of overseas visitors foretells Yellow cab usage is higher in demand.



EDA Summary

Market research:

- Both Yellow Cab and Pink Cab companies had almost equal distribution of gender and income. For cities with major cab usage, the number of male users were slightly higher than the number of female users.
- Users' spending on Cab services is not related to their income status.

Profit Comparisons:

- Average cost per travel was higher in Yellow Cab than Pink Cab for \$2.2. This is not significant to explain the huge profit gap between the two companies.
- Card payment was popular for both companies, but considering the card processing fee again does not explain the profit gap.
- Considering the card processing fee, the yearly profit of Yellow Cab was about 2.7 times greater than that of the Pink Cab.

Recommendations

Based on the data extracted from EDA, Yellow Cab company seems to be more demanding.
Therefore, we recommend investigating on Yellow Cab company.

Thank You