



G2M Insight for Cab Investment Firm

By: Jie Heng Yu
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The Business Problem

Our client, XYZ, a United States based private firm, is planning for an investment in the cab industry because of its recent growth. As part of their Go-To-Market strategy, they want to understand the market & our input before making their decision. Provided for us is 4 data sets of two cab companies, Pink Cab company & Yellow Cab company, from which we want to derive our insights & decision.



Objective

Provide data-driven insights to help XYZ identify the best cab company for investment.

Approach

Given 4 data sets:

- Cab_Data.csv
- Customer_ID.csv
- Transaction_ID.csv
- City.csv

We'll combine them into a bigger, final data set for analysis.

Remove duplicates & missing values from the data set.

Find & investigate main outcome measures.

Provide analysis & explanation for each outcome measure investigated.

Finalise analysis with a summary & give my recommendation.

Assumptions

- All customers paid the cab fare after their rides, so there is a realised profit for the cab company.
- The variables/features were all recorded & retrieved following secure protocols such that they were true at the population level.
- Recording equipment is perfectly made so that variables/features can be recorded without error.
- Recorded variables/features one customer's cab ride are independent to recorded variables/features of another customer's cab ride.
- Each company is a conglomerate, where each city that they provide their cab services in is independently operated.

Number of Rides

Rides are the main driving factor behind the business of Cab companies. They can charge any amount per distance travelled or per ride, but if they cannot get any rides, they will not make any profit. We will compare the total number of rides each city has accumulated for each company & see if there is any pattern.

Pink Cabs

City	Num.Rides
ATLANTA GA	1759
AUSTIN TX	1864
BOSTON MA	5180
CHICAGO IL	9351
DALLAS TX	1379
DENVER CO	1393
LOS ANGELES CA	19839
MIAMI FL	2000
NASHVILLE TN	1840
NEW YORK NY	13945
ORANGE COUNTY	1509
PHOENIX AZ	862
PITTSBURGH PA	681
SACRAMENTO CA	1334
SAN DIEGO CA	10659
SEATTLE WA	2726
SILICON VALLEY	3793
TUCSON AZ	797
WASHINGTON DC	3686

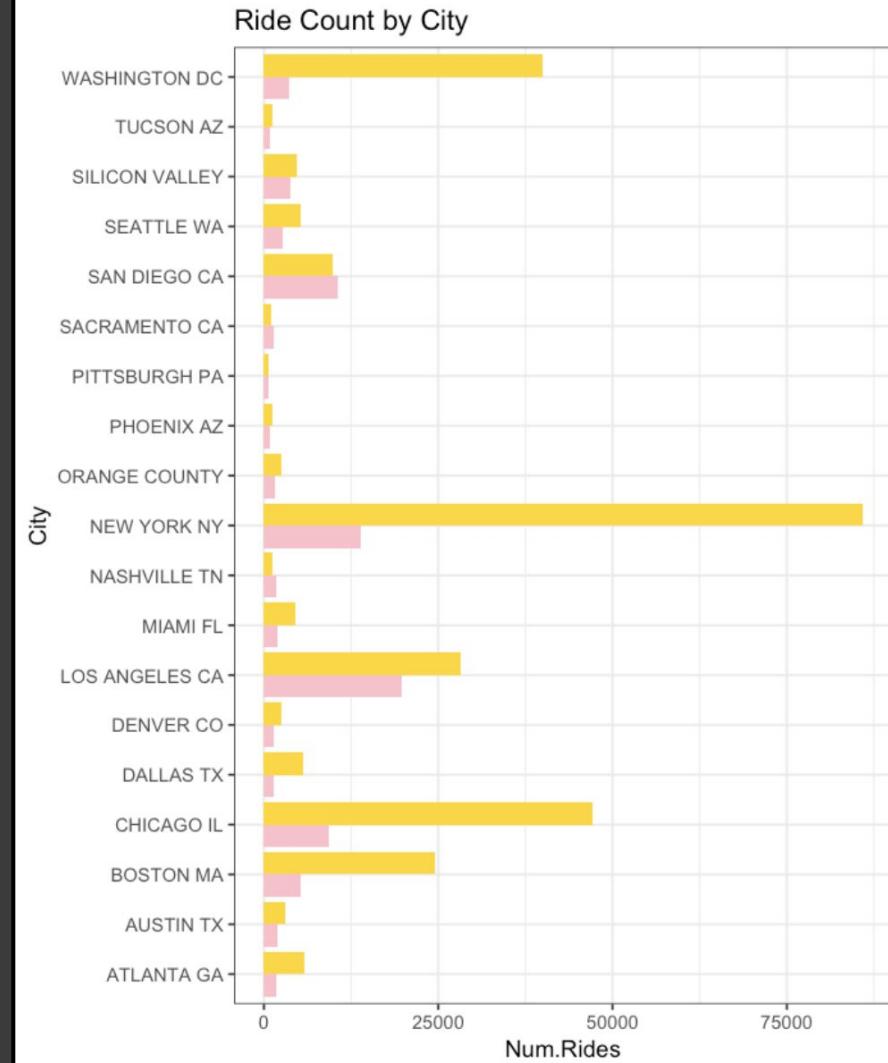
Yellow Cabs

City	Num.Rides
ATLANTA GA	5789
AUSTIN TX	3020
BOSTON MA	24479
CHICAGO IL	47193
DALLAS TX	5622
DENVER CO	2427
LOS ANGELES CA	28127
MIAMI FL	4442
NASHVILLE TN	1167
NEW YORK NY	85799
ORANGE COUNTY	2466
PHOENIX AZ	1199
PITTSBURGH PA	630
SACRAMENTO CA	1030
SAN DIEGO CA	9802
SEATTLE WA	5260
SILICON VALLEY	4714
TUCSON AZ	1129
WASHINGTON DC	39987

Totals

Company	Num.Rides
Pink Cab	84597
Yellow Cab	274282

Ride Count by City



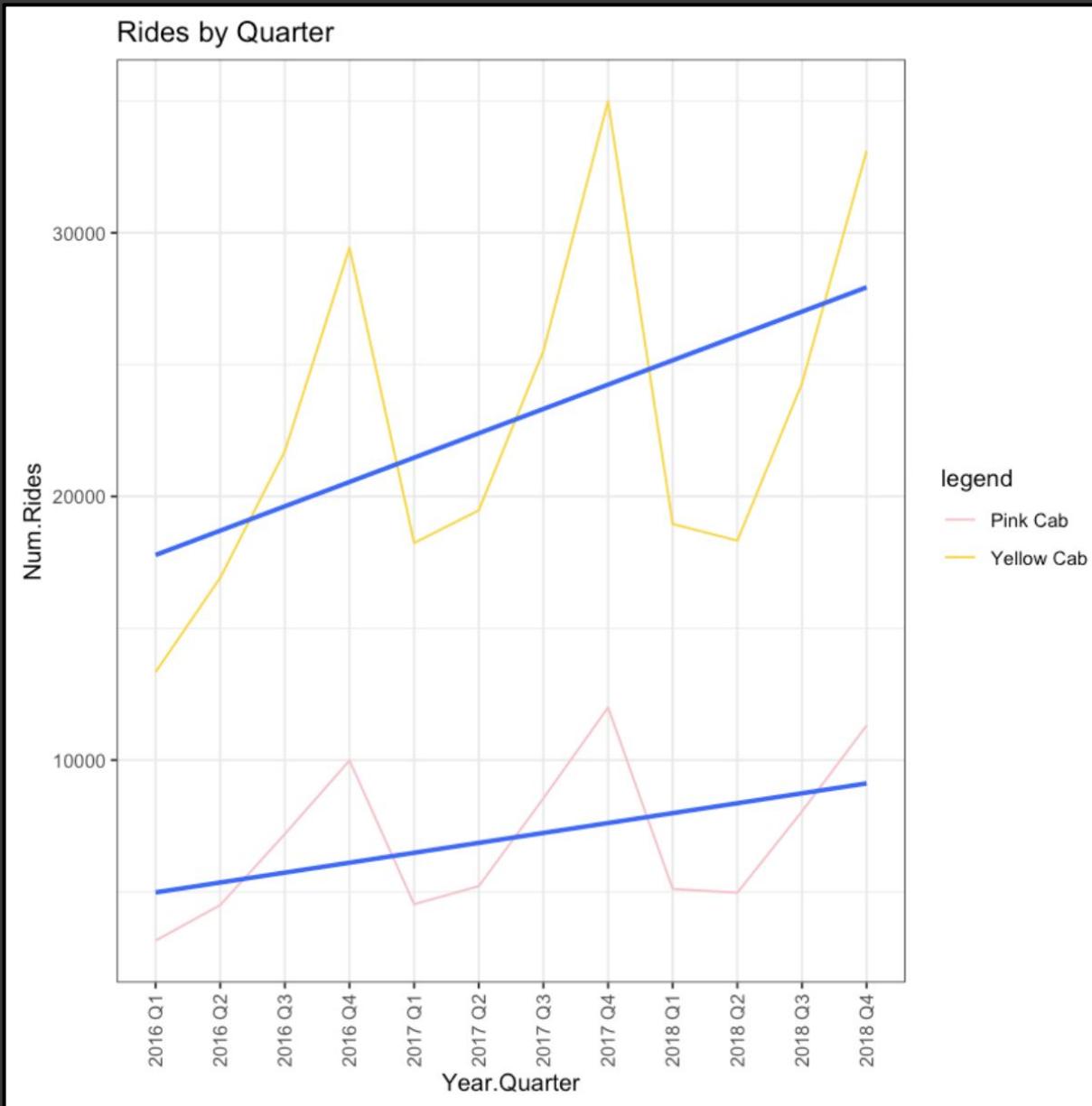
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■ Pink Cab
■ Yellow Cab

Number of Rides (cont'd)

In the nineteen cities where Pink Cab company & Yellow Cab company have offices in, Yellow Cab company performs better at providing rides to their customers in sixteen of them, by a seemingly significant amount. Of the three cities where Pink Cab company leads in ride numbers: San Diego, Nashville, & Sacramento, Pink Cab company does not beat Yellow Cab company significantly. In major cities such as Boston, Chicago, New York, & Washington DC, Yellow Cab company clocks in multiple times more rides than Pink Cab company. Yellow Cab company also totals more than three times the number of rides than Pink Cab company. Since Yellow Cab company totals more rides in a large majority of the cities where both Pink Cab company & Yellow Cab company have offices in, & totals more rides overall, it places Yellow Cab company ahead of Pink Cab company in terms of which company to invest in, for now.

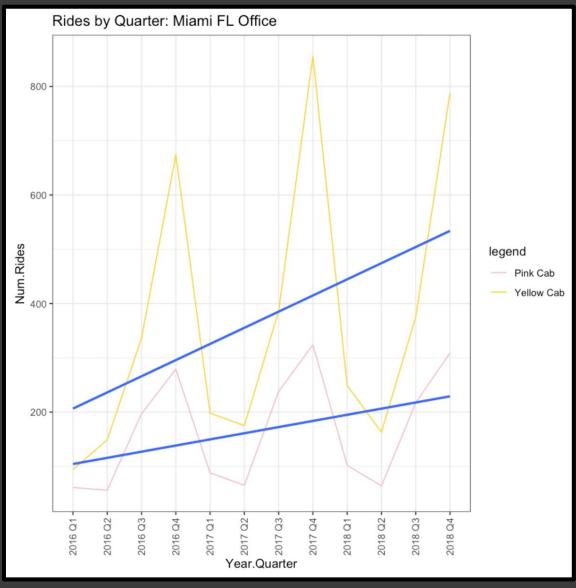
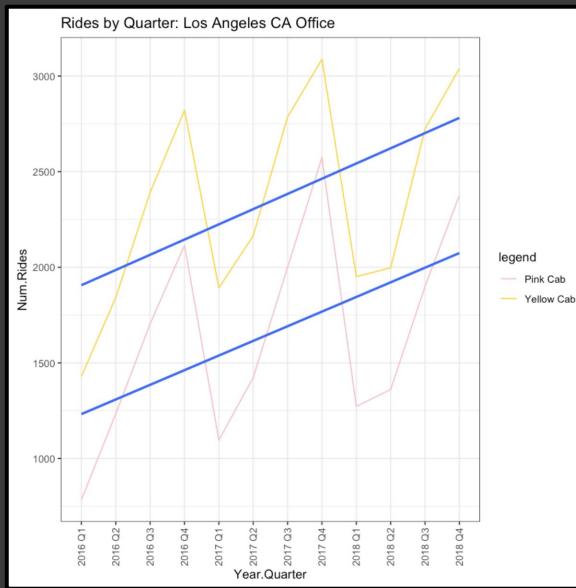
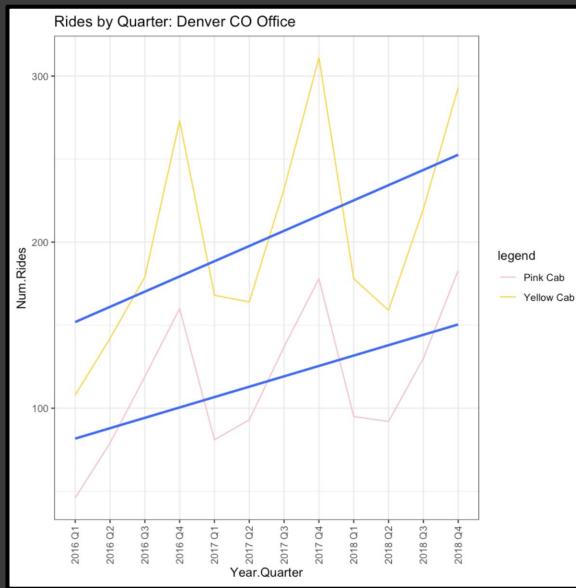
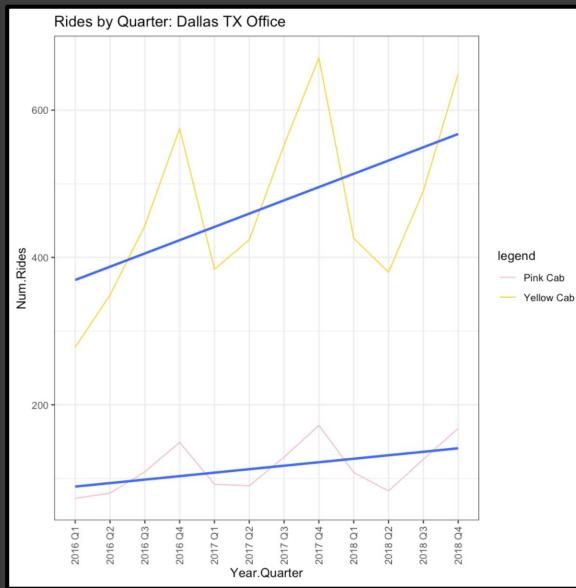
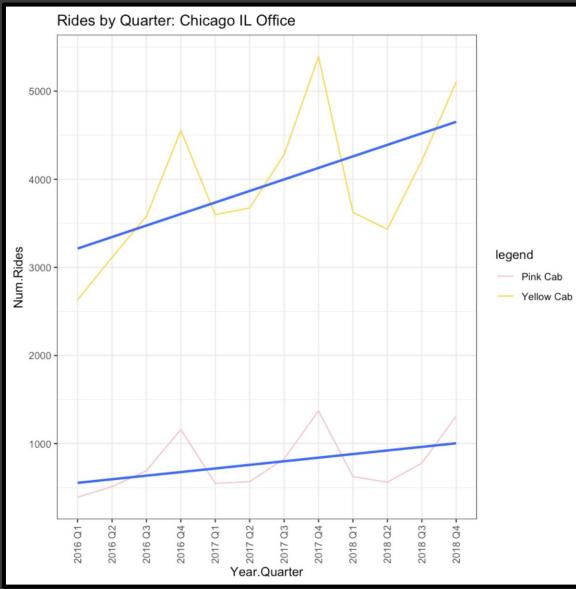
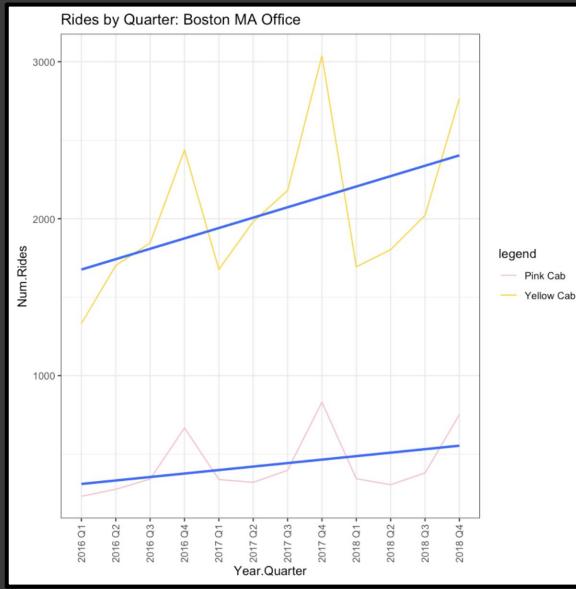
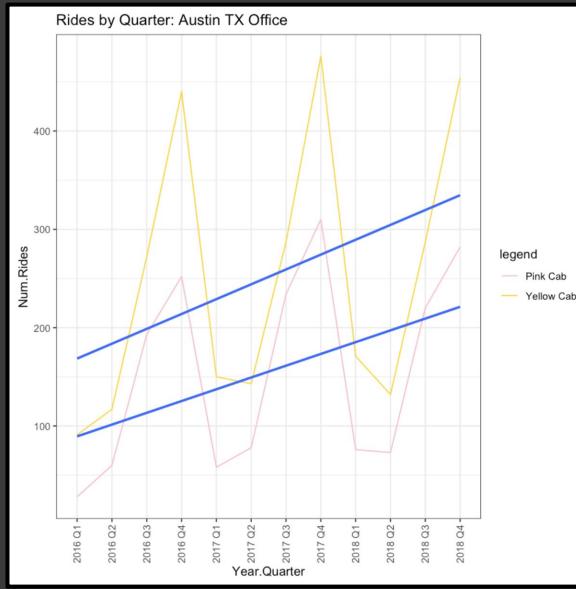
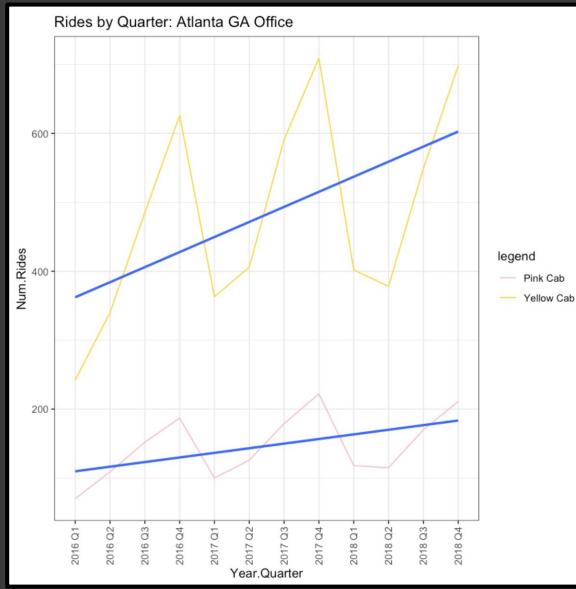
Number of Rides Quarterly

Company	Year.Quarter	Num.Rides
Pink Cab	2016 Q1	3154
Pink Cab	2016 Q2	4504
Pink Cab	2016 Q3	7196
Pink Cab	2016 Q4	9986
Pink Cab	2017 Q1	4533
Pink Cab	2017 Q2	5221
Pink Cab	2017 Q3	8551
Pink Cab	2017 Q4	11996
Pink Cab	2018 Q1	5115
Pink Cab	2018 Q2	4971
Pink Cab	2018 Q3	8057
Pink Cab	2018 Q4	11313
Yellow Cab	2016 Q1	13338
Yellow Cab	2016 Q2	16914
Yellow Cab	2016 Q3	21716
Yellow Cab	2016 Q4	29431
Yellow Cab	2017 Q1	18236
Yellow Cab	2017 Q2	19474
Yellow Cab	2017 Q3	25514
Yellow Cab	2017 Q4	34988
Yellow Cab	2018 Q1	18956
Yellow Cab	2018 Q2	18324
Yellow Cab	2018 Q3	24285
Yellow Cab	2018 Q4	33106

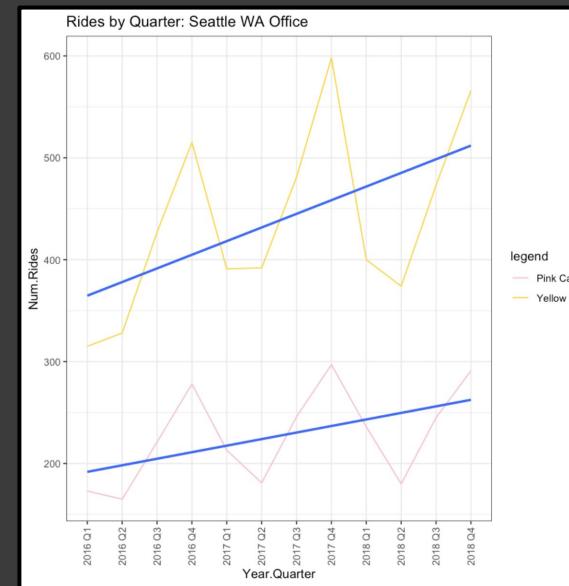
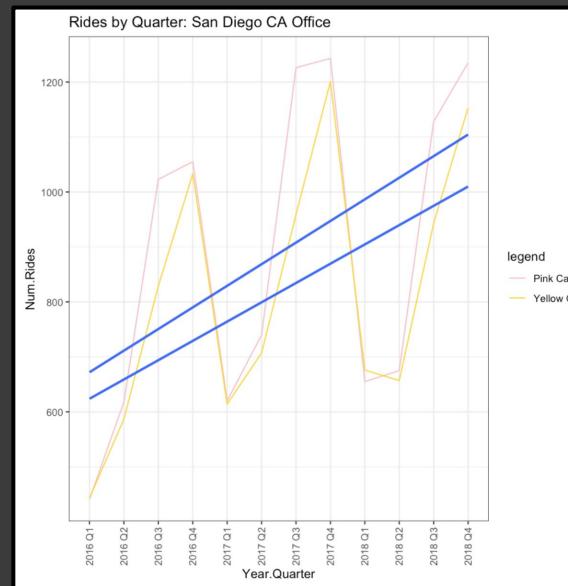
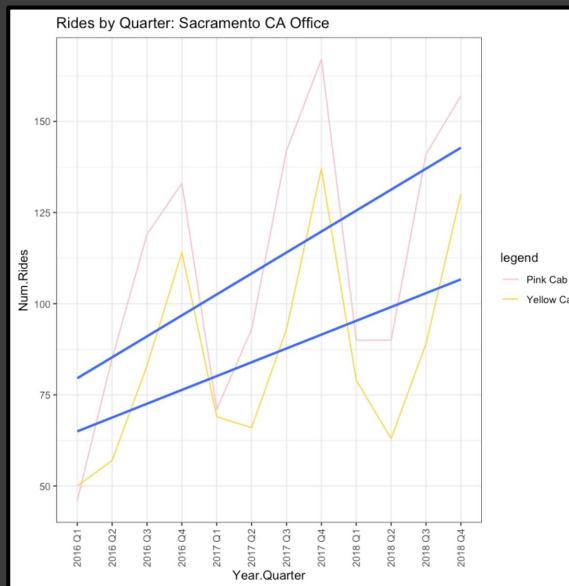
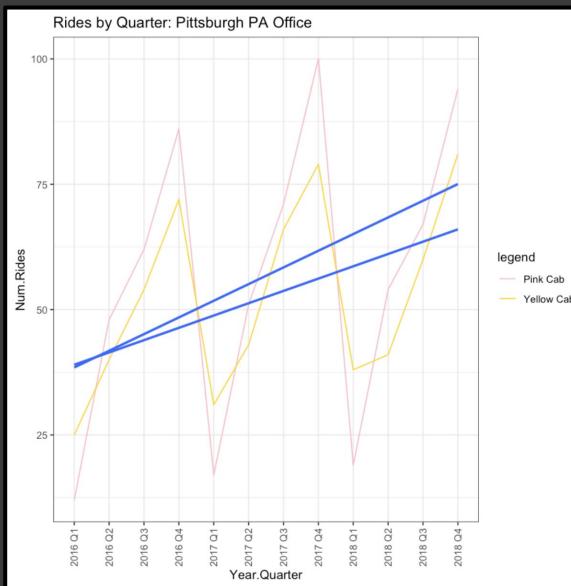
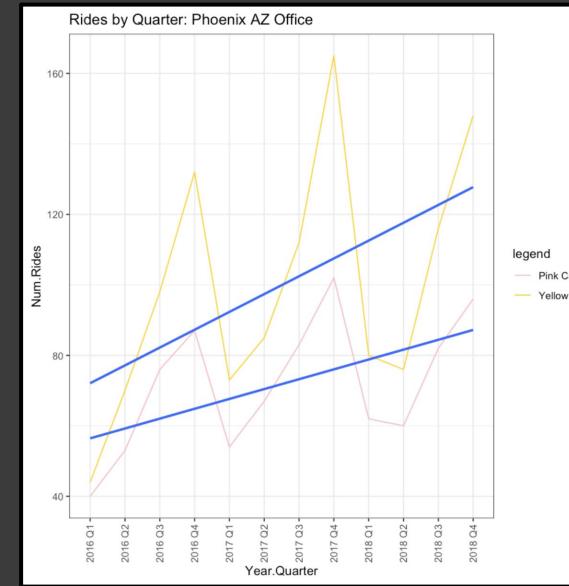
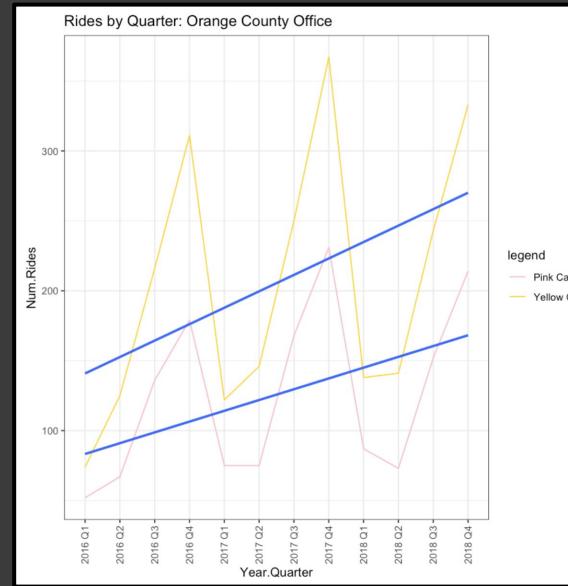
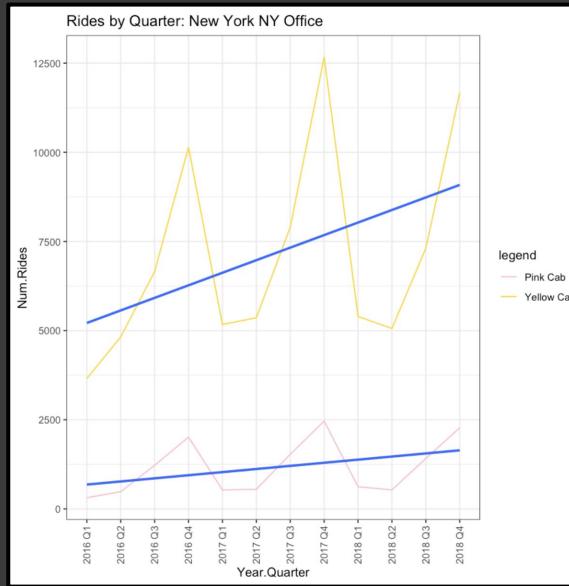
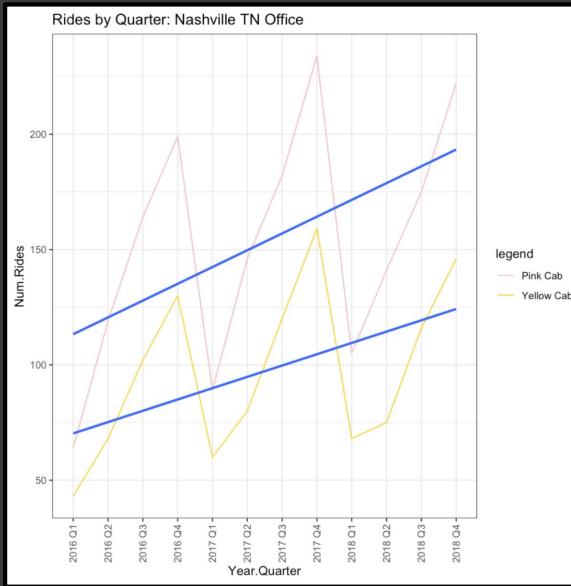


Visualising the change in number of rides given per company quarterly is a great way to see if how the company is performing through time. It is useful to see how the company scales its business because it can tell us what direction the company is headed in. The time scale is separated into quarters to mimic the quarterly financial reports that companies send out for their investors or stakeholders.

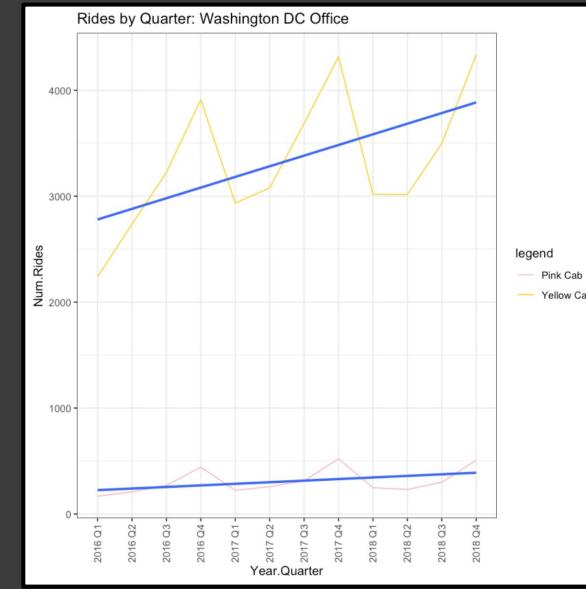
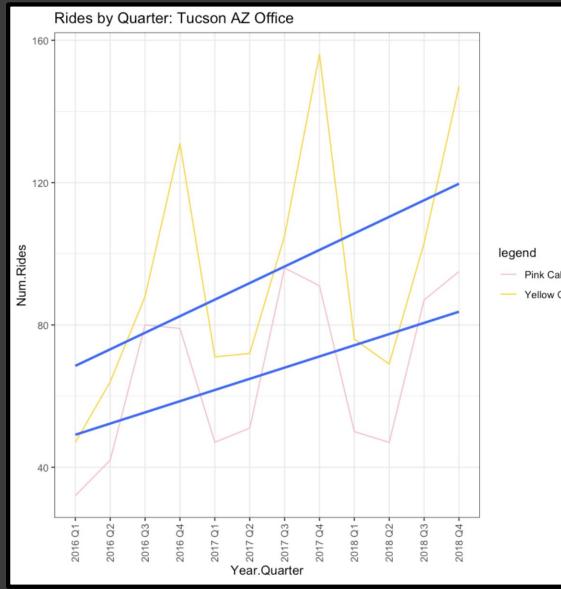
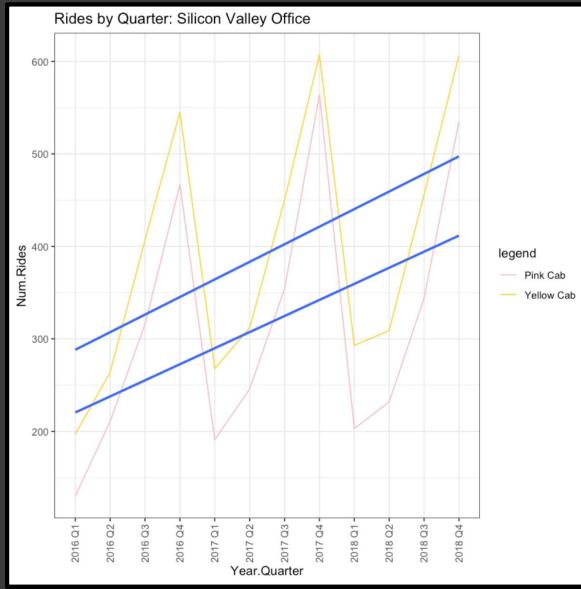
Number of Rides Quarterly (all Cities)



Number of Rides Quarterly (all Cities, cont'd)



Number of Rides Quarterly (all Cities, cont'd)



Number of Rides Quarterly (all Cities, cont'd)

In the nineteen cities where both Pink Cab company & Yellow Cab company have offices in, on average, Yellow Cab company provides more rides to their customers per quarter than Pink Cab company in fifteen of them. Also in said cities, on average, the increase in rides provided quarter-to-quarter is greater than that of Pink Cab company's. In other words, in those fifteen cities, on average, Yellow Cab company is increasing its ride numbers more effectively than Pink Cab company. Of the four cities where, on average, Pink Cab company provides more rides per quarter than Yellow Cab company, – that's Nashville, Pittsburgh, Sacramento, & San Diego; Pink Cab company also increases their number of rides more effectively. However, this has little effect on the number of rides provided by each company quarter-to-quarter, because Yellow Cab company still dominates in that department. Overall, Yellow Cab company is also increasing its ride numbers better too. Comparatively, in this instance, Yellow Cab company pulls ahead of Pink Cab company again as the better company to invest in.

Average Profit per Ride

Giving cab rides to a lot of customers doesn't matter if you're not making a ton of profit for each ride, so profit per ride will be what we will be exploring next. Profit per ride will give an idea of how each company generates its profit, given their ride numbers. Here is the average profit per ride for each company comparatively across all cities.

Pink Cabs

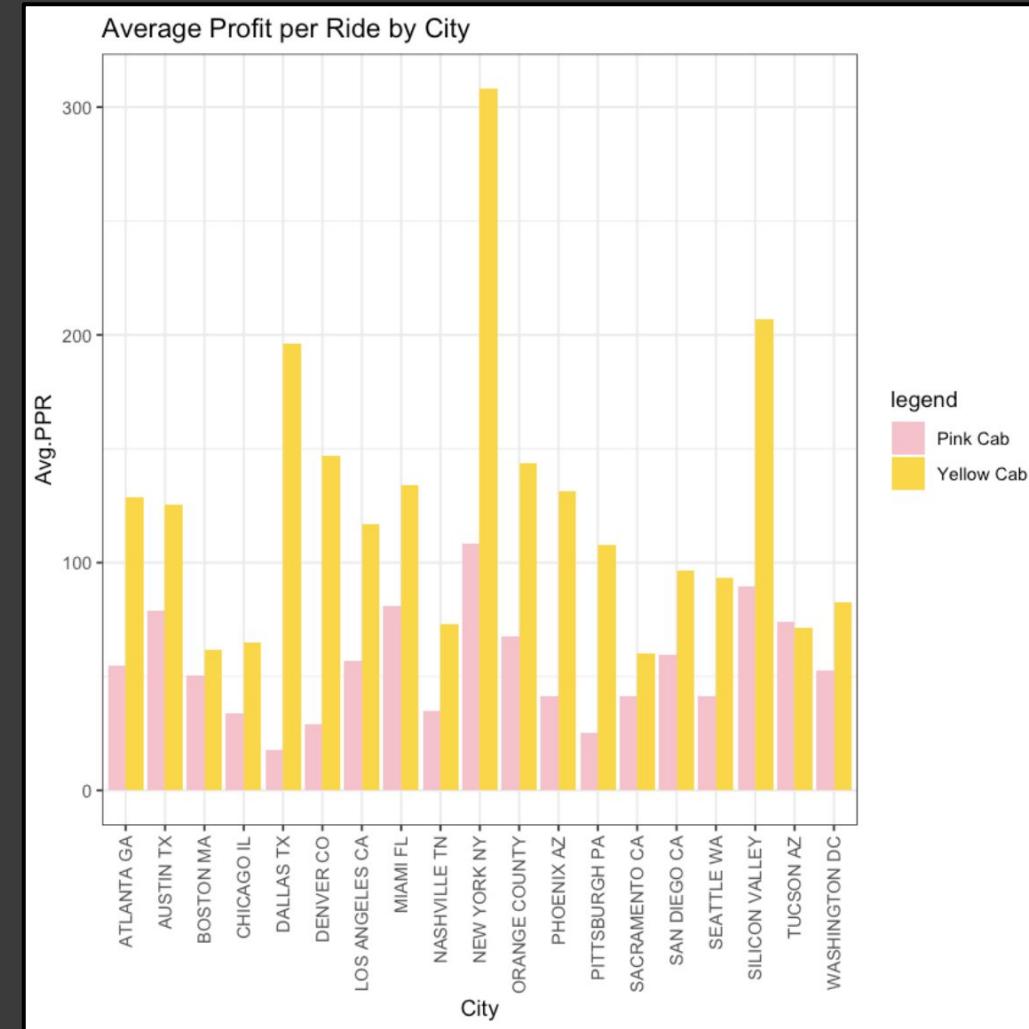
City	Avg.PPR
ATLANTA GA	54.49765
AUSTIN TX	78.88024
BOSTON MA	50.52924
CHICAGO IL	34.05118
DALLAS TX	17.91227
DENVER CO	29.05666
LOS ANGELES CA	56.68565
MIAMI FL	81.14511
NASHVILLE TN	34.91583
NEW YORK NY	108.19286
ORANGE COUNTY	67.41469
PHOENIX AZ	41.19238
PITTSBURGH PA	25.07185
SACRAMENTO CA	41.47220
SAN DIEGO CA	59.76703
SEATTLE WA	41.20161
SILICON VALLEY	89.53569
TUCSON AZ	74.19545
WASHINGTON DC	52.36562

Yellow Cabs

City	Avg.PPR
ATLANTA GA	128.87273
AUSTIN TX	125.45485
BOSTON MA	61.54161
CHICAGO IL	64.99706
DALLAS TX	196.07986
DENVER CO	146.85516
LOS ANGELES CA	116.67952
MIAMI FL	133.99874
NASHVILLE TN	72.86607
NEW YORK NY	308.01909
ORANGE COUNTY	143.87013
PHOENIX AZ	131.12728
PITTSBURGH PA	107.98406
SACRAMENTO CA	60.18260
SAN DIEGO CA	96.77863
SEATTLE WA	93.47737
SILICON VALLEY	206.88310
TUCSON AZ	71.57778
WASHINGTON DC	82.45685

Totals

Company	Avg.PPR
Pink Cab	62.63657
Yellow Cab	160.35690

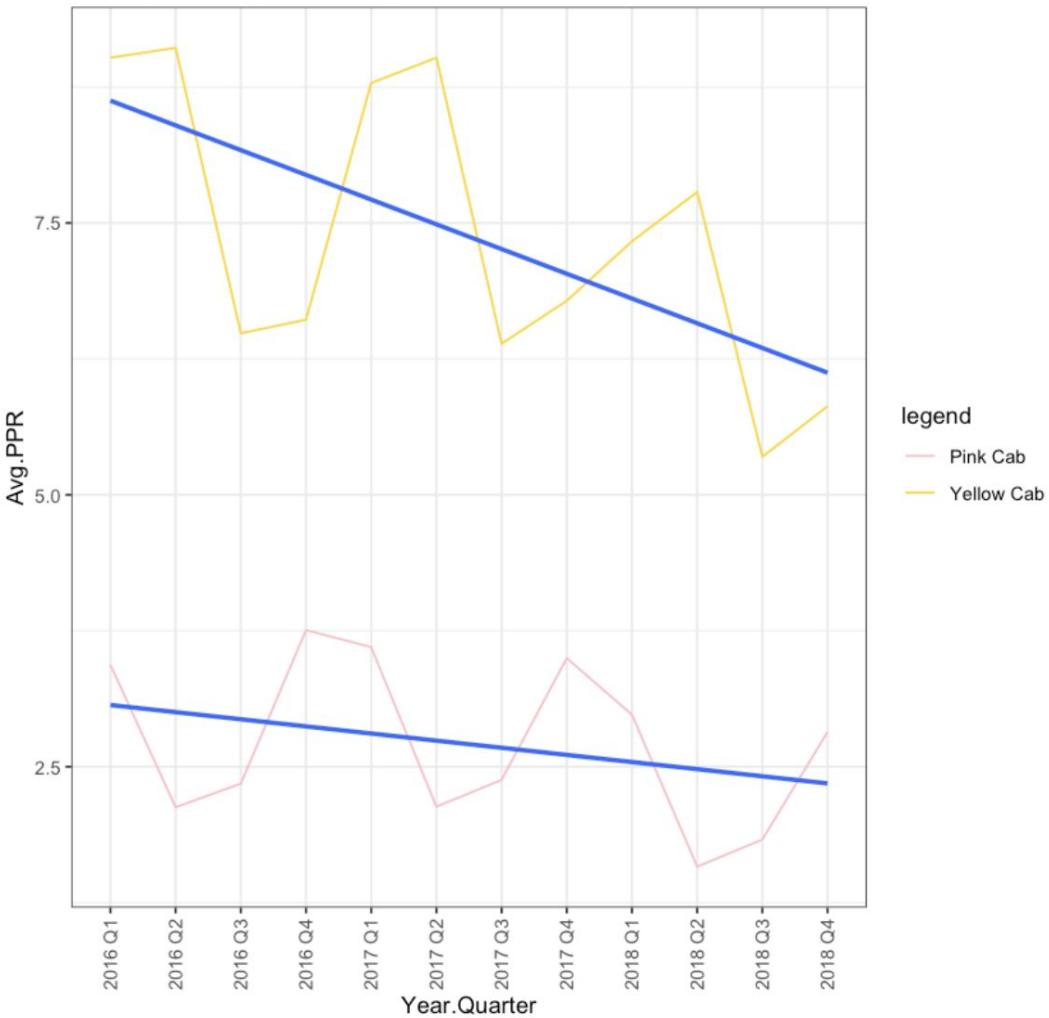


Average Profit per Ride (cont'd)

Of the nineteen cities where both Pink Cab company & Yellow Cab company have offices in, in eighteen of those cities, Yellow Cab company averages more profit per ride than Pink Cab company. The one city where Pink Cab company beats Yellow Cab company in profit per ride is Tucson, Arizona, where the difference is just approximately three dollars, so no by much. For most of the cities though, Yellow Cab company's profit per ride is almost double or more than double than that of Pink Cab company's. Overall, Yellow Cab company averages nearly three times the amount of profit for each ride when compared Pink Cab company. Since Yellow Cab company, on average, generates more profit per ride for mosts of the offices compared to Pink Cab company, Yellow Cab company, once again, seems like the better company to invest in.

Average Profit per Ride Quarterly

Average Profit per Ride by Quarter



Pink Cabs

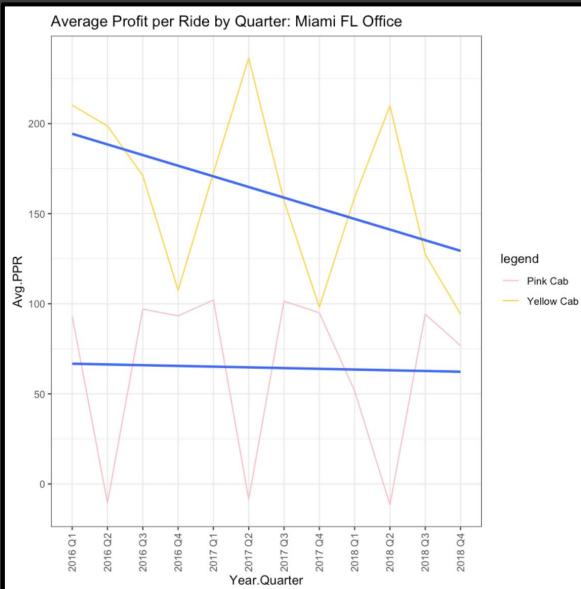
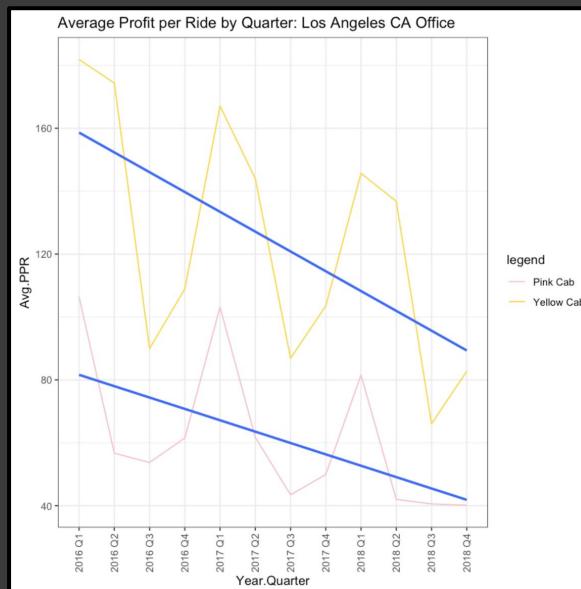
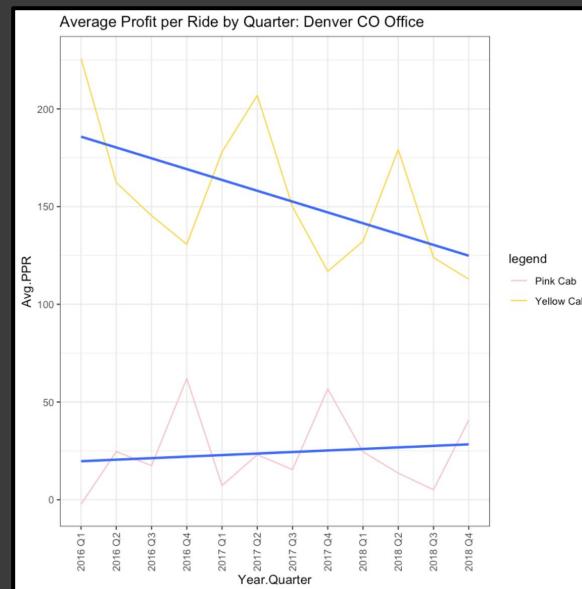
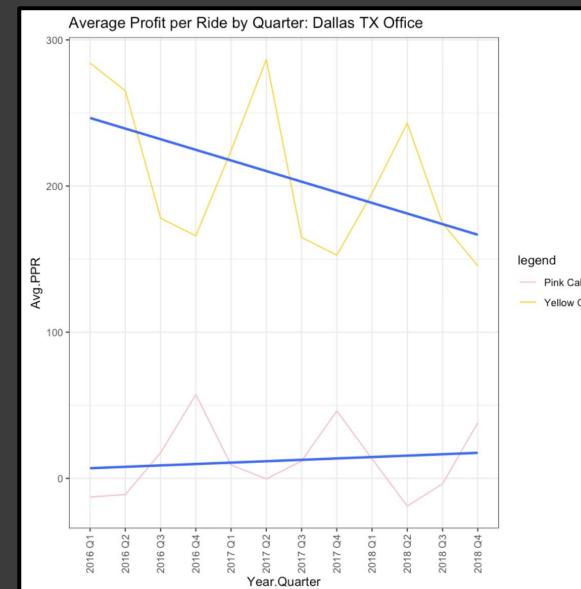
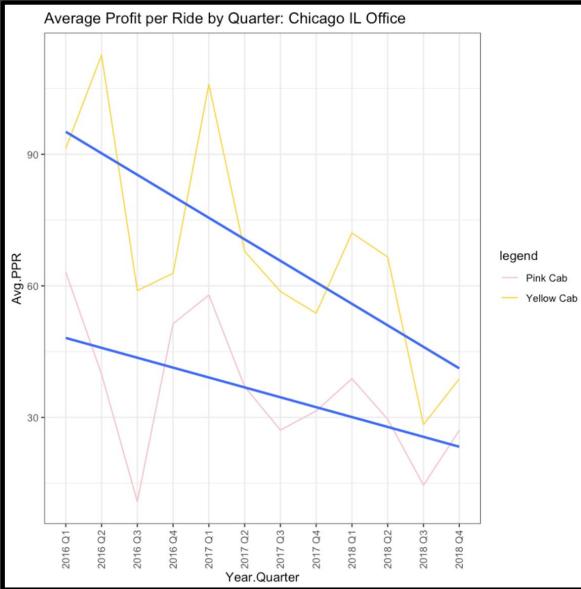
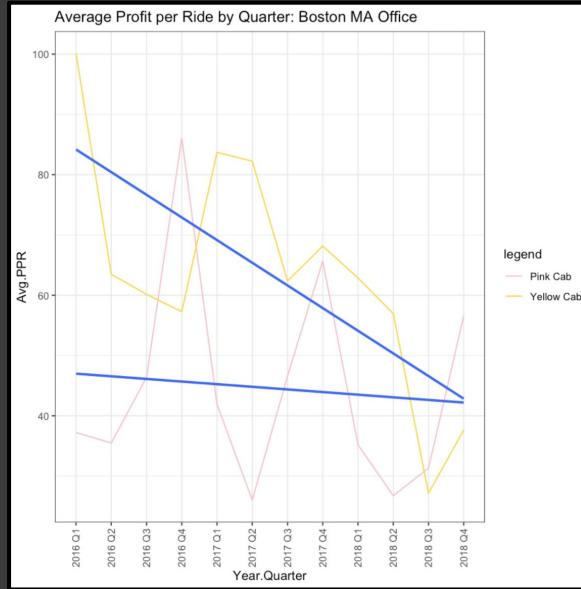
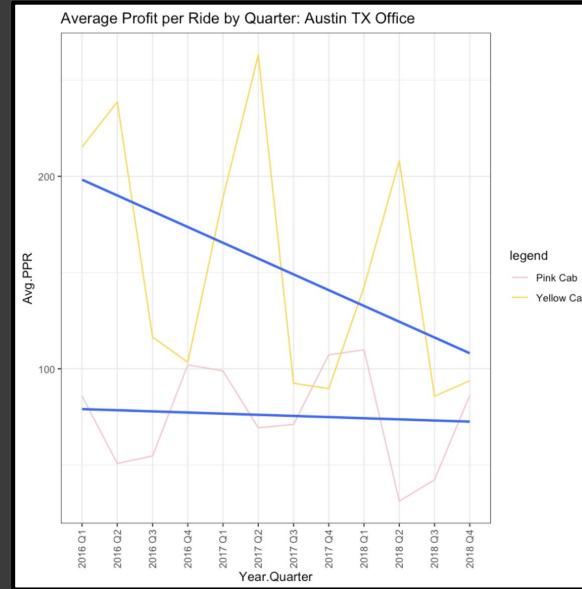
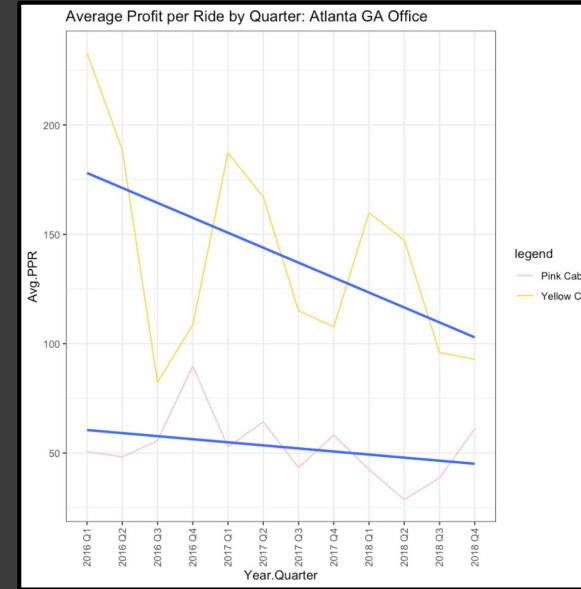
Year.Quarter	Avg.PPR
2016 Q1	78.12914
2016 Q2	47.58123
2016 Q3	52.87149
2016 Q4	84.64544
2017 Q1	82.27201
2017 Q2	49.12607
2017 Q3	53.31920
2017 Q4	79.03276
2018 Q1	67.18658
2018 Q2	36.15755
2018 Q3	41.28272
2018 Q4	63.90513

Yellow Cabs

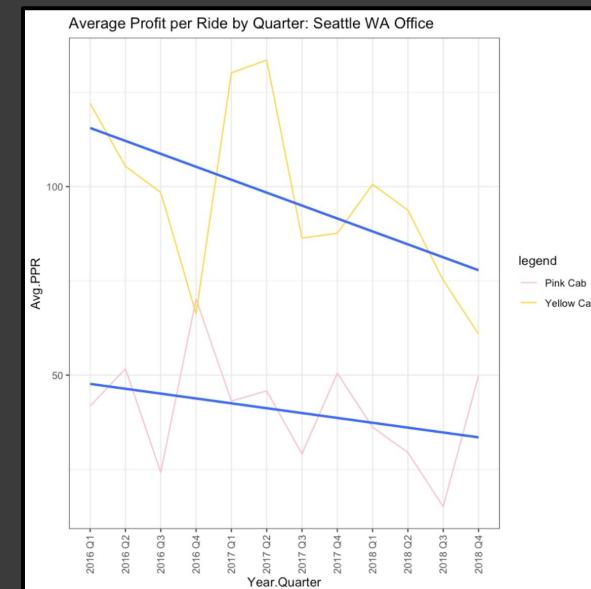
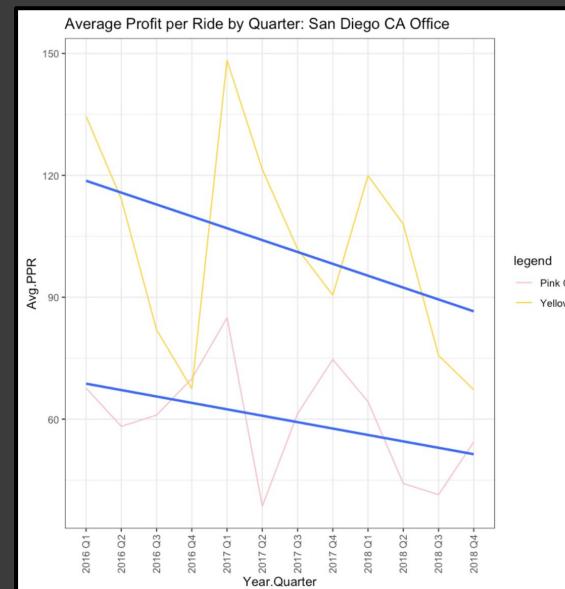
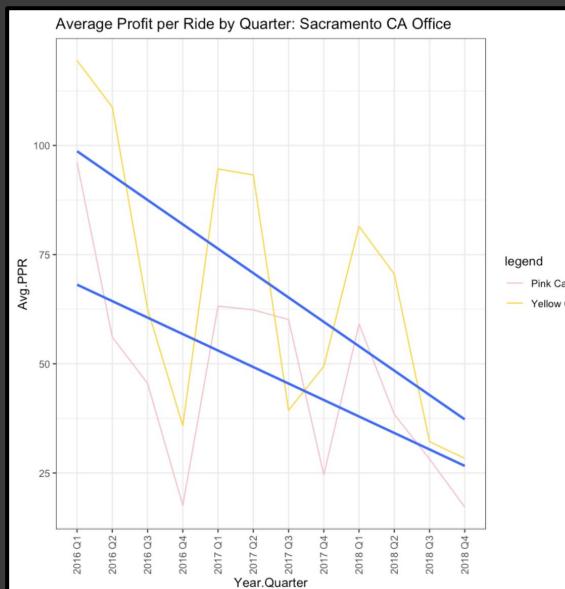
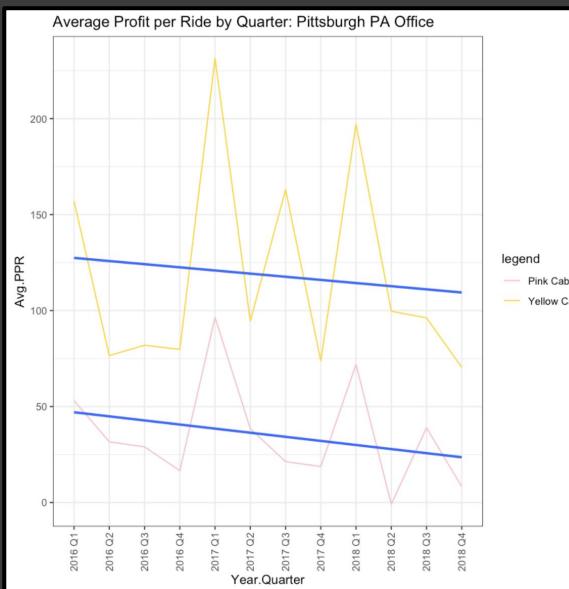
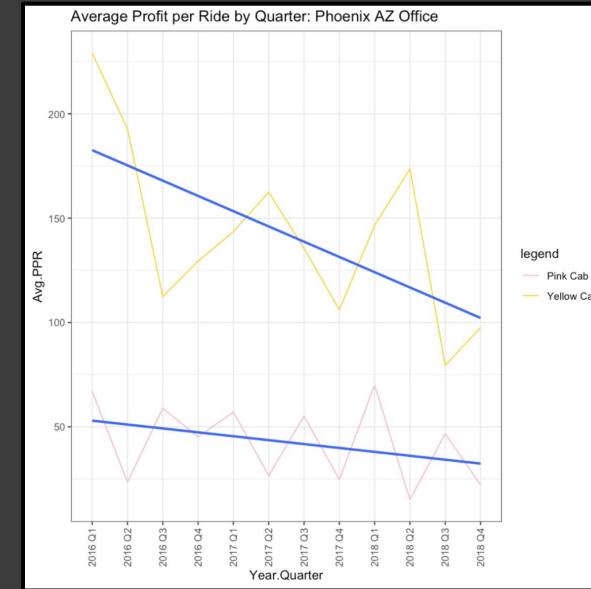
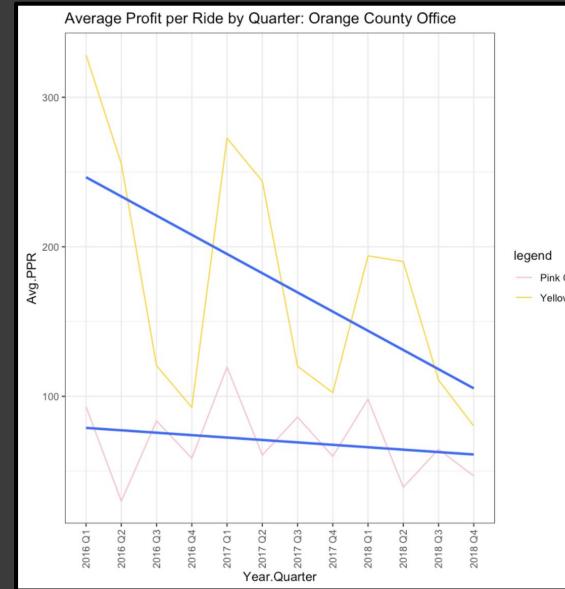
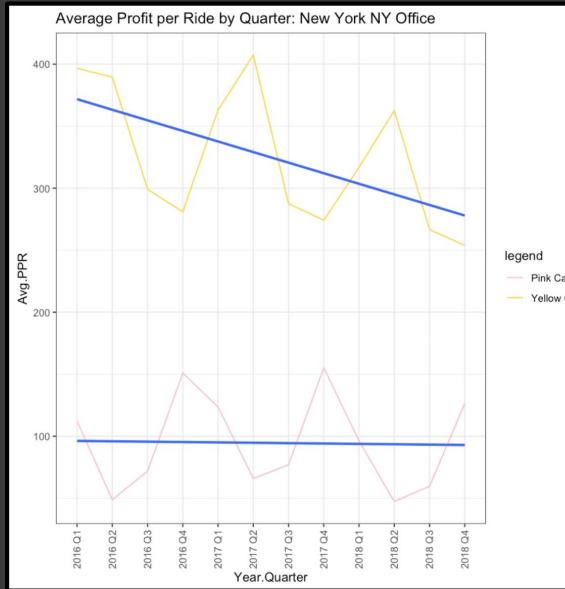
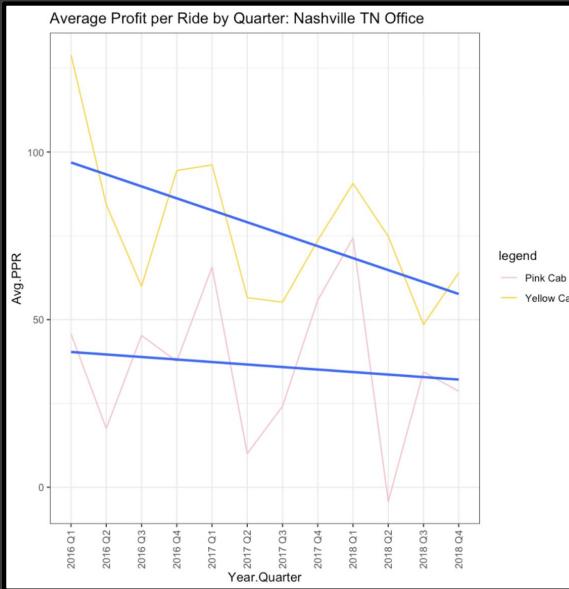
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2018 Q1	67.18658
2018 Q2	36.15755
2018 Q3	41.28272
2018 Q4	63.90513

Visualising profit per ride quarterly is another way to see how each company changes their ride pricing across time, see how they adjust to market shifts, inflation, & other economic factors. It will also start to give us an idea of how much revenue each company generates quarterly, given how we now know that, on average, each company has increased their number of rides quarter-to-quarter.

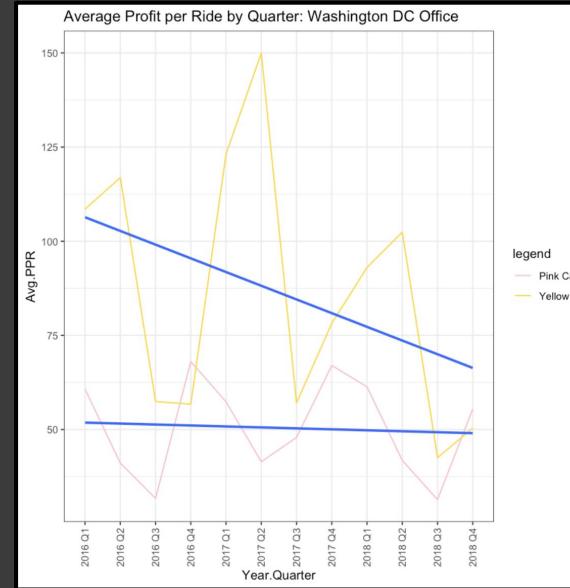
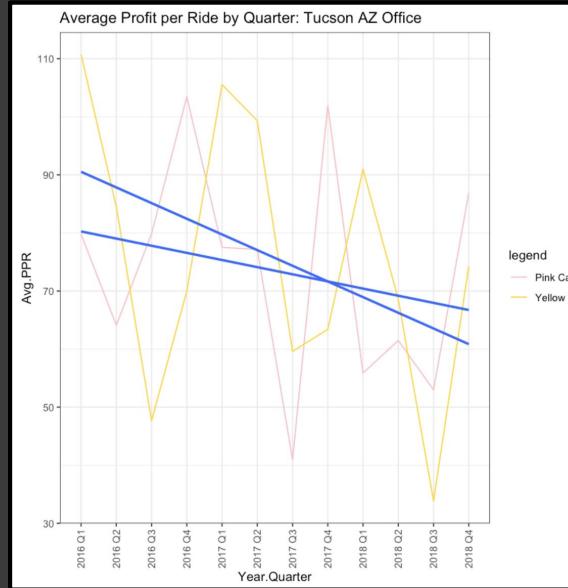
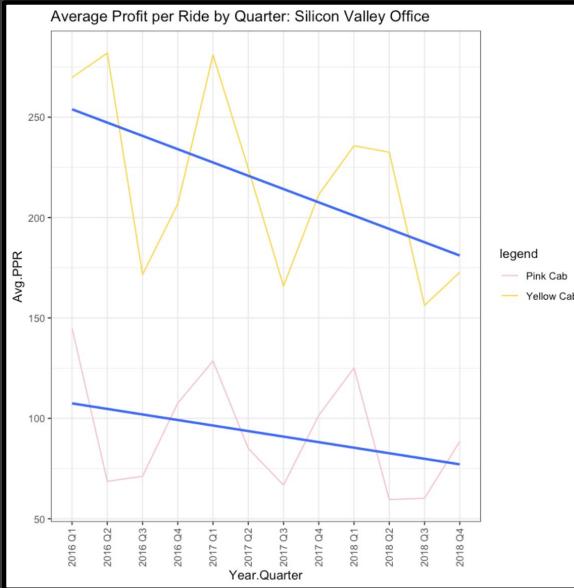
Average Profit per Ride (all Cities)



Average Profit per Ride (all Cities, cont'd)



Average Profit per Ride (all Cities, cont'd)



Average Profit per Ride (all Cities, cont'd)

Across nearly all cities, on average, Yellow Cab company generates more revenue per ride than Pink Cab company does. Only in the Tucson office is where it isn't immediately clear who charges more per ride. If we look back at the average profit per ride for the city of Tucson though, we'll see that Pink Cab company is the winner, but not significantly. In all cities, the amount of profit per ride is, on average, decreasing each quarter. Although Yellow Cab company generates more revenue per ride on average, the rate at which it is decreasing quarter-to-quarter is concerning. The rate at which Yellow Cab company's profit per ride is decreasing is much greater than the rate for Pink Cab company. Only in Pittsburgh is where the rate of decrease is just about equal for both companies. For these reasons, in this comparison, it isn't clear which company is the better one for invest in.

Moment of Reflection & Inference

From the previous section on profit per ride, we have derived that on average, Yellow Cab company generates more profit per ride than Pink Cab company. We also learned that both companies are, on average, generating less profit per ride quarter-to-quarter – the decrease is much more prominent for Yellow Cab company. There are two causal reasons that immediately come to mind:

- (1) On average, Yellow Cab company's profit per ride is greater than Pink Cab company's because their rides go further distances than Pink Cab company rides.
- (2) On average, Yellow Cab company's profit per ride is greater than Pink Cab company's because Yellow Cab company charges more per distance travelled than Pink Cab company.

Regarding the decreasing profit per ride per quarter:

- (1) The decreasing quarterly profit per ride for both companies is because, on average, the distance travelled for each ride is decreasing quarterly.
- (2) The decreasing quarterly profit per ride for both companies is because, on average, the price charged for each kilometer travelled is decreasing quarterly.

The explanation for what we saw could be a mix of both reasons because they are not independent variables. We'll look into profit per kilometer travelled first, because that seems to be the more plausible reason.

Average Profit per Kilometer Travelled (PPKm)

Pink Cabs

City	Avg.PPKm
ATLANTA GA	2.4177371
AUSTIN TX	3.6020218
BOSTON MA	2.2347105
CHICAGO IL	1.5089013
DALLAS TX	0.8251295
DENVER CO	1.2730045
LOS ANGELES CA	2.5019721
MIAMI FL	3.6031114
NASHVILLE TN	1.5208467
NEW YORK NY	4.7892184
ORANGE COUNTY	3.0088597
PHOENIX AZ	1.8932397
PITTSBURGH PA	1.0567403
SACRAMENTO CA	1.8151092
SAN DIEGO CA	2.6389678
SEATTLE WA	1.8233192
SILICON VALLEY	3.8980271
TUCSON AZ	3.2619785
WASHINGTON DC	2.3058458

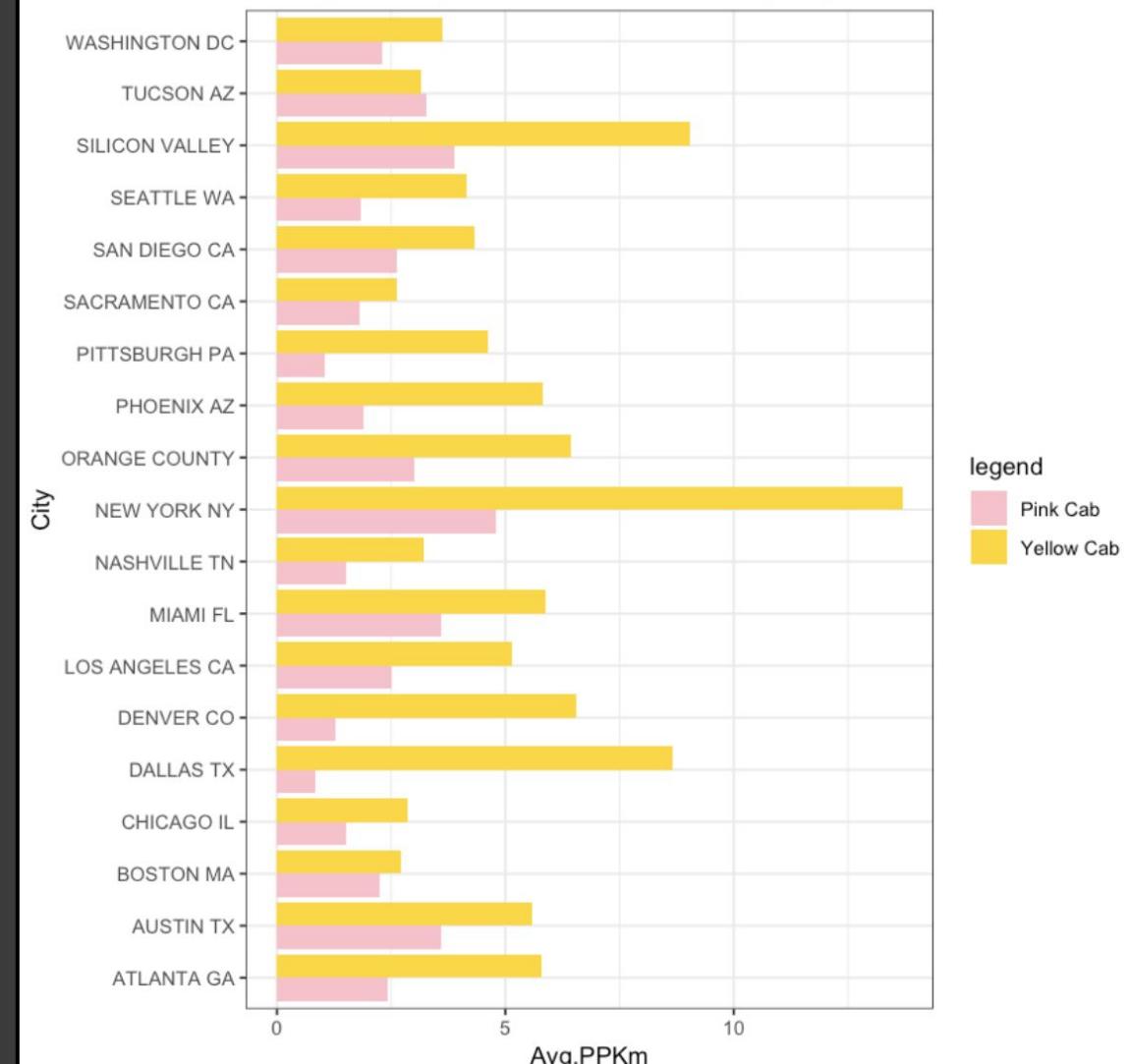
Yellow Cabs

City	Avg.PPKm
ATLANTA GA	5.796296
AUSTIN TX	5.580133
BOSTON MA	2.727056
CHICAGO IL	2.865109
DALLAS TX	8.671421
DENVER CO	6.540091
LOS ANGELES CA	5.145567
MIAMI FL	5.883061
NASHVILLE TN	3.200472
NEW YORK NY	13.685750
ORANGE COUNTY	6.443581
PHOENIX AZ	5.827217
PITTSBURGH PA	4.606505
SACRAMENTO CA	2.615241
SAN DIEGO CA	4.310632
SEATTLE WA	4.136418
SILICON VALLEY	9.049178
TUCSON AZ	3.157256
WASHINGTON DC	3.636515

Totals

Company	Avg.PPKm
Pink Cab	2.769452
Yellow Cab	7.109246

Average Price per Kilometer Travelled by City



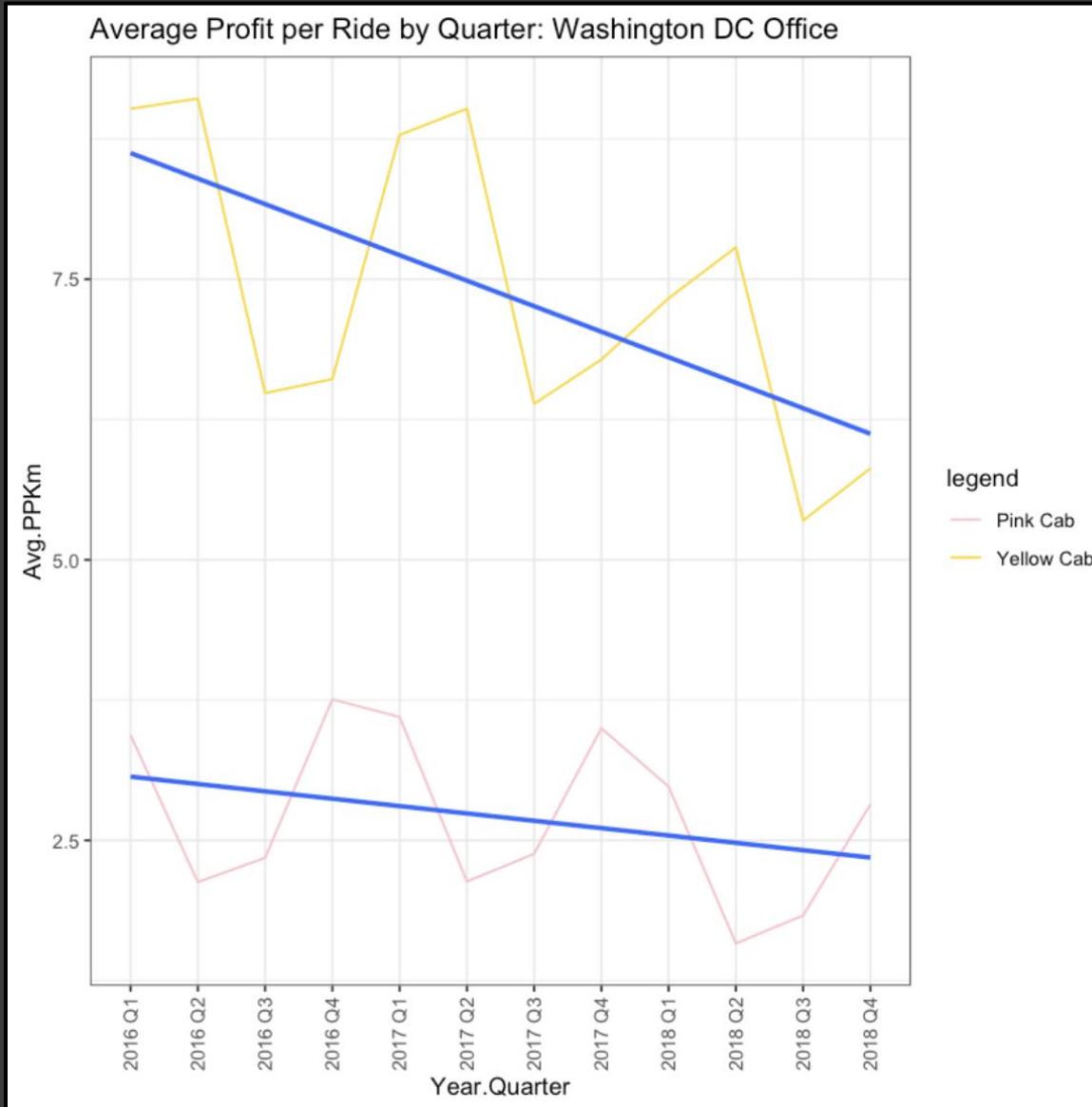
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- Pink Cab
- Yellow Cab

Average PPKm (cont'd)

Yellow Cab company generates more profit per kilometer travelled in eighteen of the nineteen cities where both Yellow Cab company & Pink Cab company's services are provided. This agrees with our previous explanation for Yellow Cab company's higher profit per ride: "On average, Yellow Cab company's profit per ride is greater than Pink Cab company's because Yellow Cab company charges more per distance travelled than Pink Cab company." In Tucson AZ, where Pink Cab company averages more profit per kilometer travelled than Yellow Cab company, the difference is approximately ten more cents per kilometer travelled, so not significant. Because Yellow Cab company's profit per kilometer is greater than that of Pink Cab company in nearly all cities, Yellow Cab company leads in the decision of better investment.

Average PPKm Quarterly



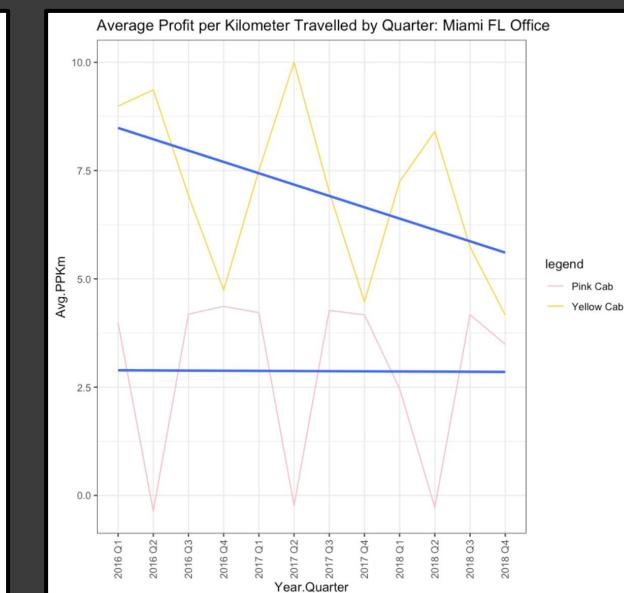
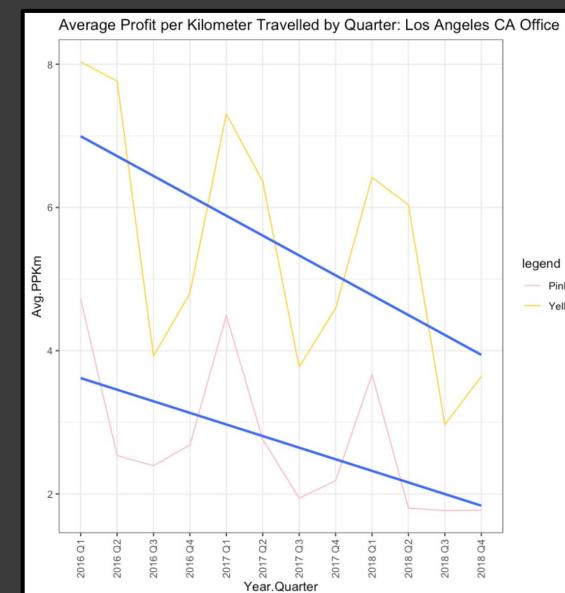
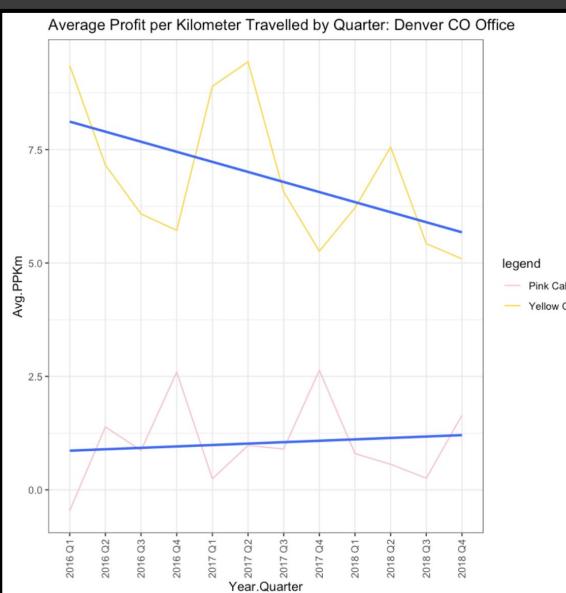
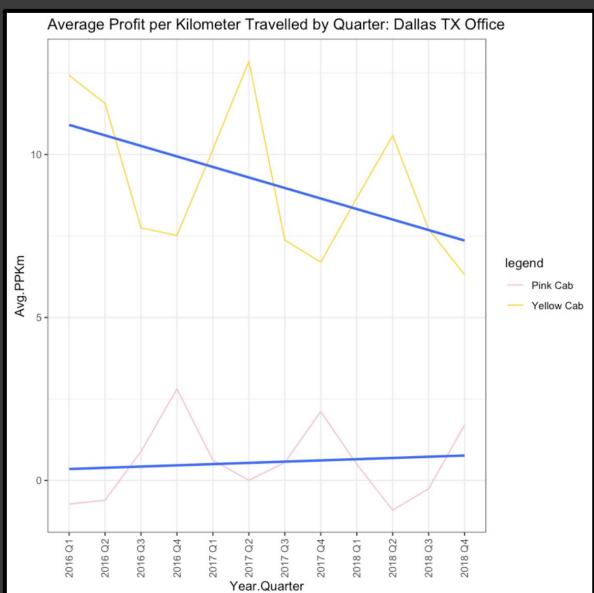
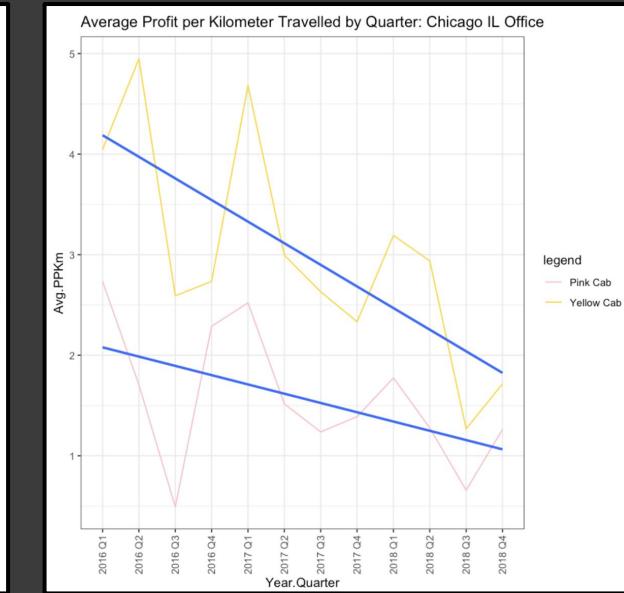
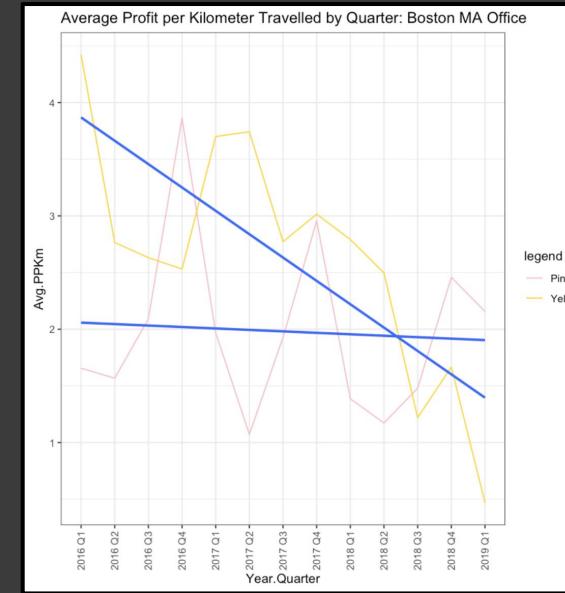
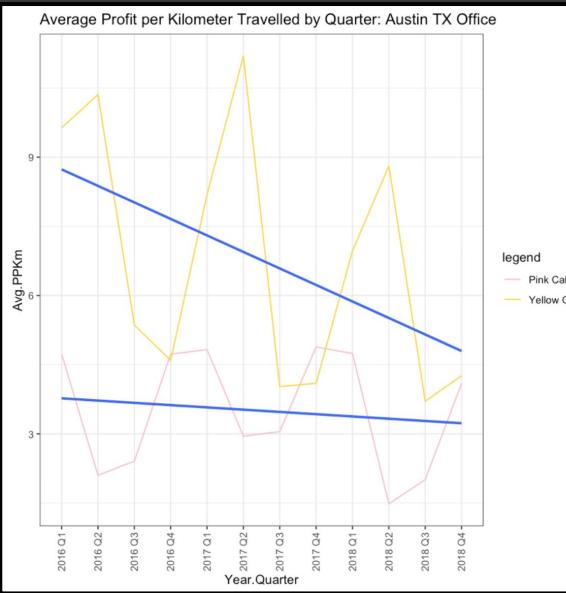
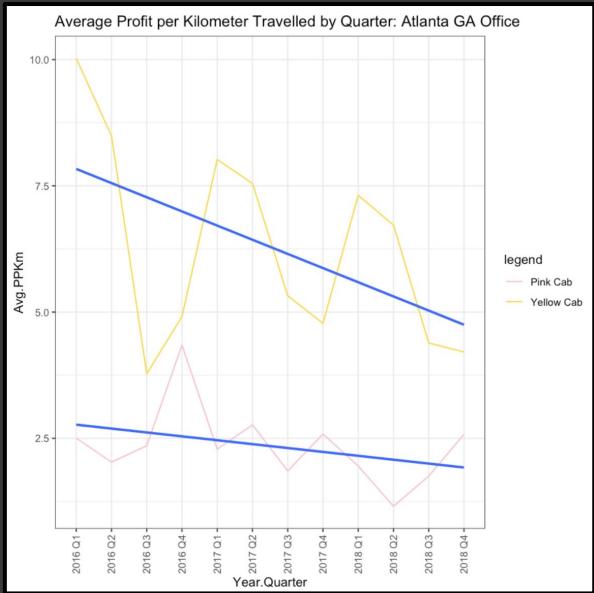
Pink Cabs

Year.Quarter	Avg.PPKm
2016 Q1	3.436960
2016 Q2	2.127103
2016 Q3	2.344255
2016 Q4	3.755434
2017 Q1	3.599408
2017 Q2	2.132410
2017 Q3	2.378565
2017 Q4	3.498026
2018 Q1	2.977892
2018 Q2	1.580503
2018 Q3	1.830911
2018 Q4	2.820168

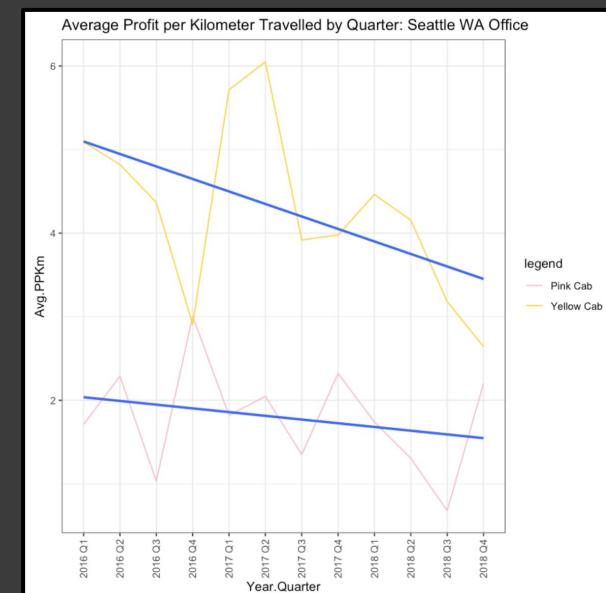
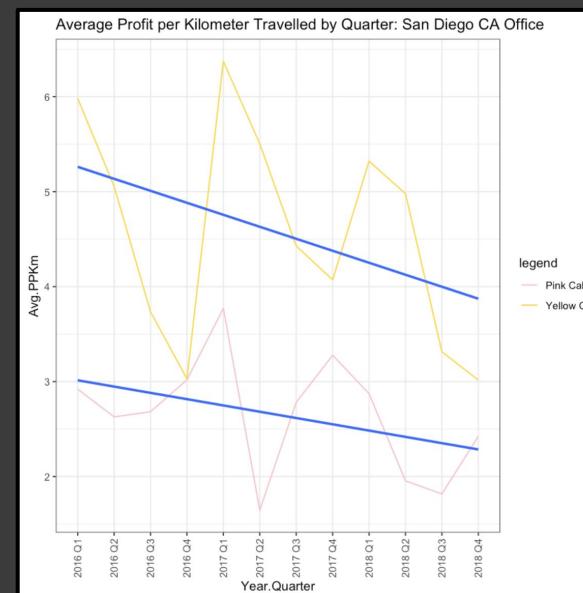
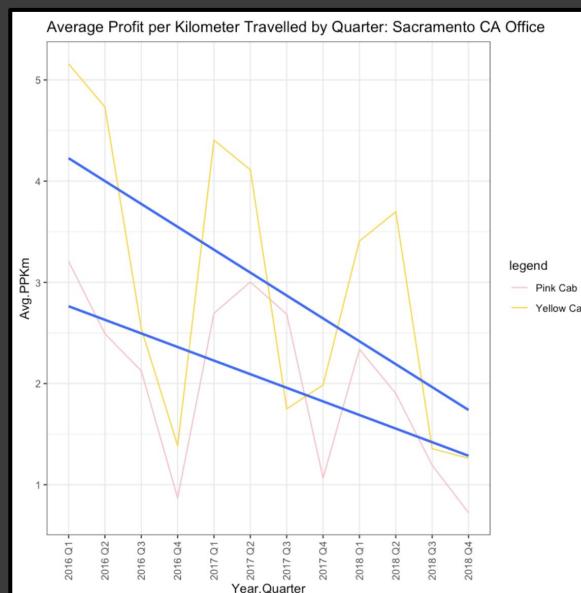
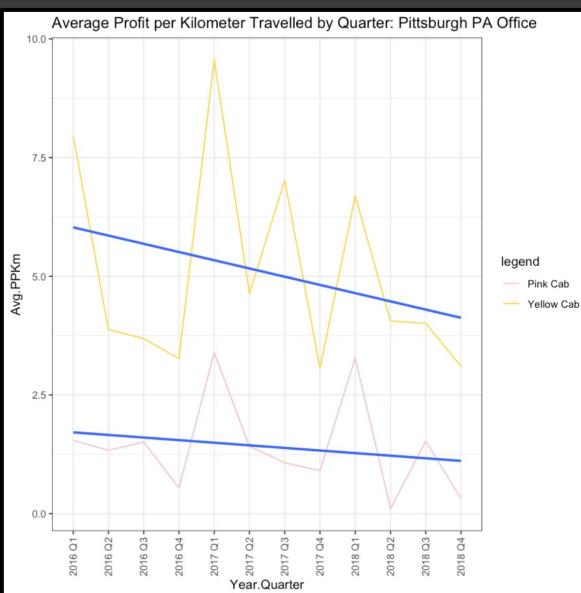
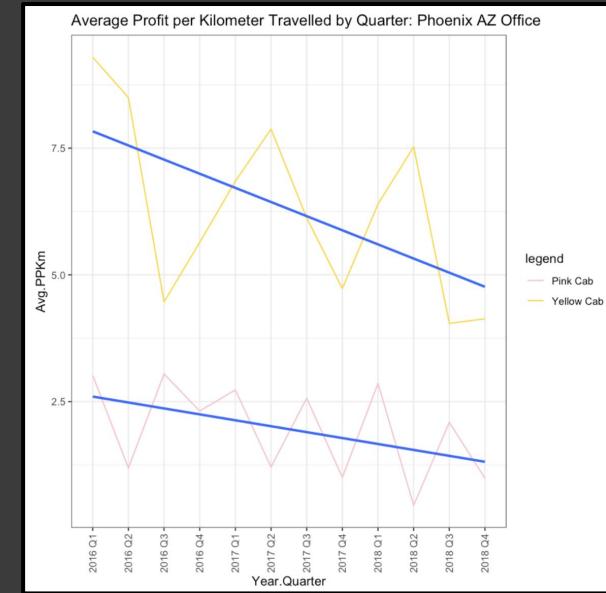
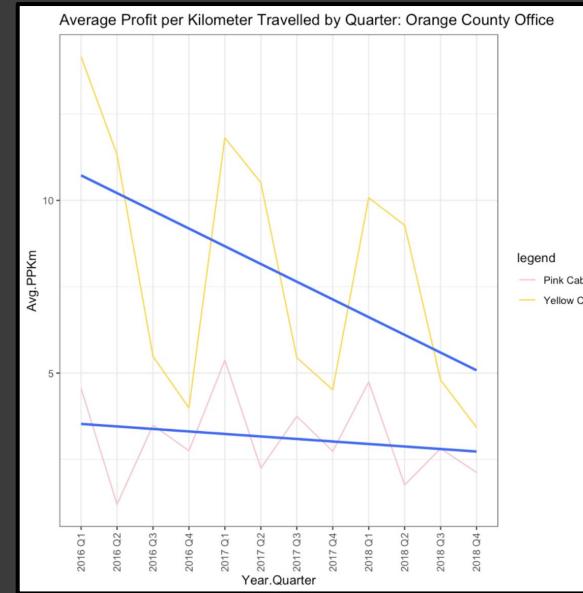
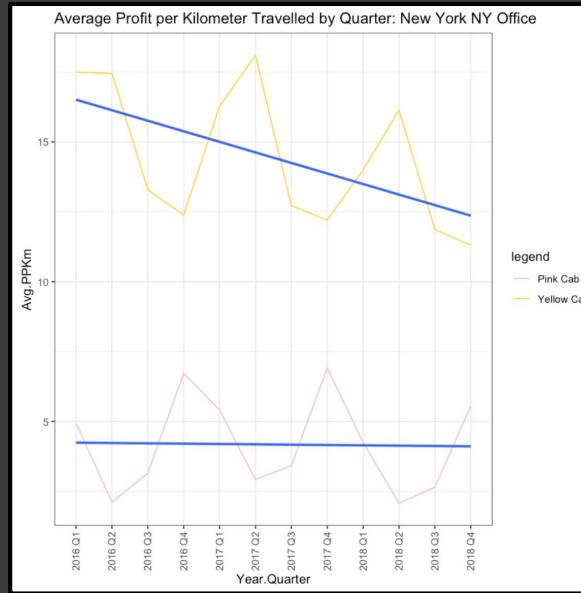
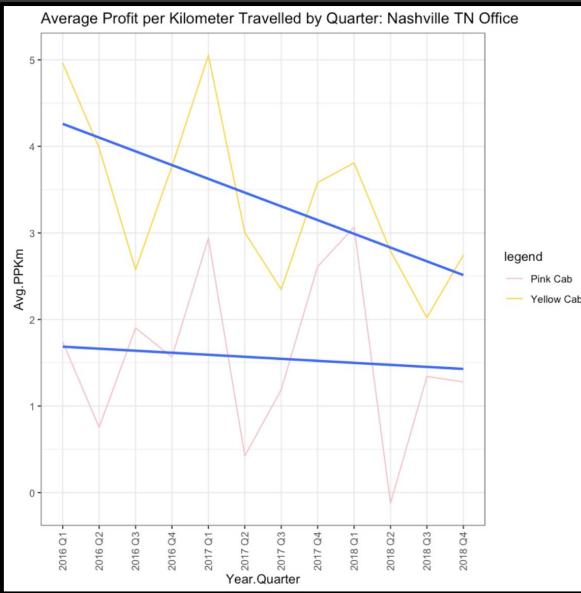
Yellow Cabs

Year.Quarter	Avg.PPKm
2016 Q1	9.018798
2016 Q2	9.109874
2016 Q3	6.485059
2016 Q4	6.609573
2017 Q1	8.785815
2017 Q2	9.018940
2017 Q3	6.389278
2017 Q4	6.784052
2018 Q1	7.330491
2018 Q2	7.783636
2018 Q3	5.349500
2018 Q4	5.814019

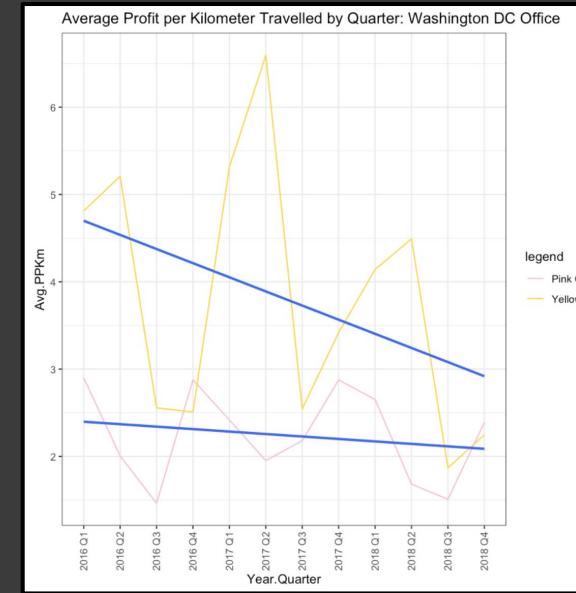
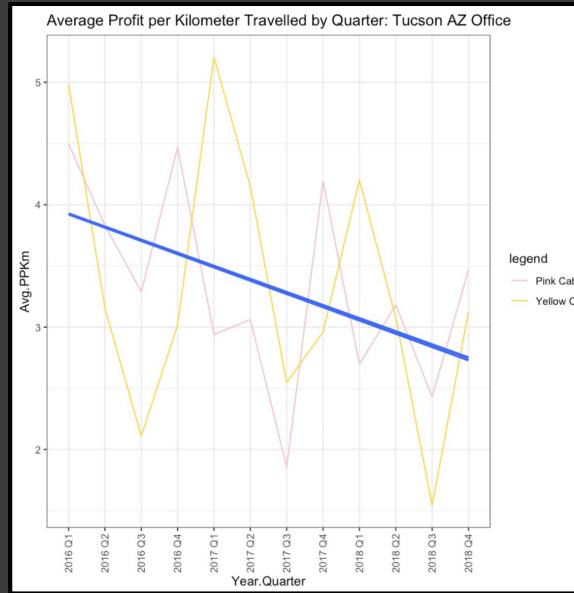
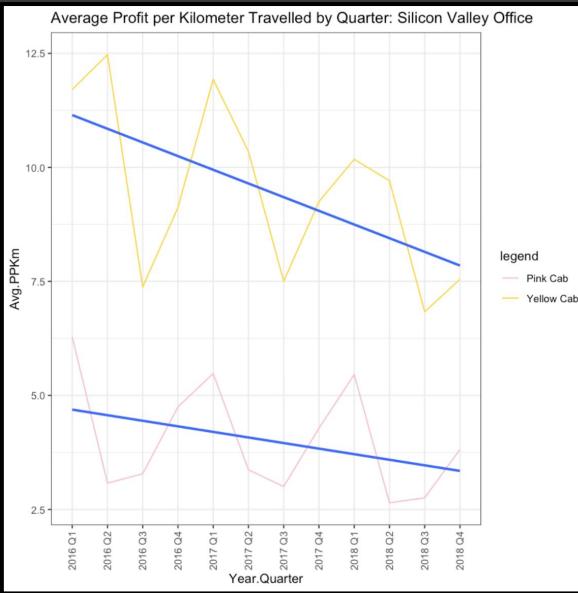
Average PPKm Quarterly (all Cities)



Average PPKm Quarterly (all Cities, cont'd)



Average PPKm Quarterly (all Cities, cont'd)



Average PPKm Quarterly (all Cities, cont'd)

Across eighteen of the nineteen, there is a clear difference between the profit gained per kilometer travelled quarter-to-quarter for each company, Yellow Cab company having more profit gained per kilometer. This is also elucidated in the figure showing quarterly average PPKm for each company. We also see that the rate at which average PPKm decreases for Yellow Cab company is greater than the rate for Pink Cab company. Once again, this agrees with our earlier statement for the explanation of Yellow Cab company's greater rate of decrease in average profit per ride: "The decreasing profit per ride for both companies is because, on average, the price charged for each kilometer travelled is decreasing quarterly." Tucson, AZ is the only exception that is the exception to both these observations. Although Yellow Cab company's average PPKm is greater than Pink Cab company's quarterly for nearly all cities, the rate at which their average PPKm decreases is greater than that rate for Pink Cab company. For that reason, it isn't clear which company is the better investment, using this metric.

Average Kilometers Travelled

Pink Cabs

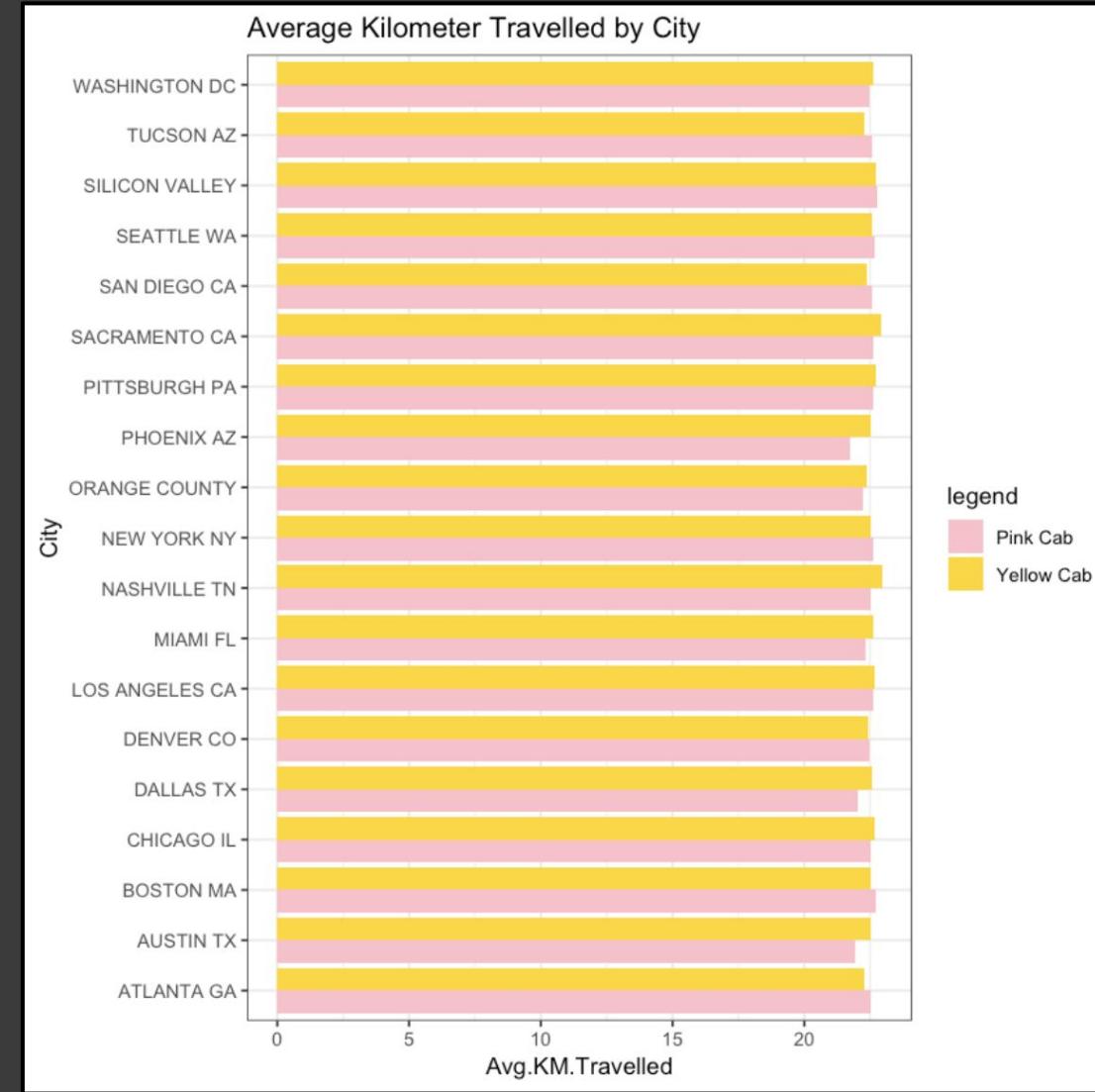
City	Avg.KM.Travelled
ATLANTA GA	22.54403
AUSTIN TX	21.94818
BOSTON MA	22.74185
CHICAGO IL	22.50959
DALLAS TX	22.01942
DENVER CO	22.46100
LOS ANGELES CA	22.63891
MIAMI FL	22.31812
NASHVILLE TN	22.52947
NEW YORK NY	22.62134
ORANGE COUNTY	22.22616
PHOENIX AZ	21.75529
PITTSBURGH PA	22.60814
SACRAMENTO CA	22.60430
SAN DIEGO CA	22.55074
SEATTLE WA	22.68526
SILICON VALLEY	22.77547
TUCSON AZ	22.57509
WASHINGTON DC	22.46616

Yellow Cabs

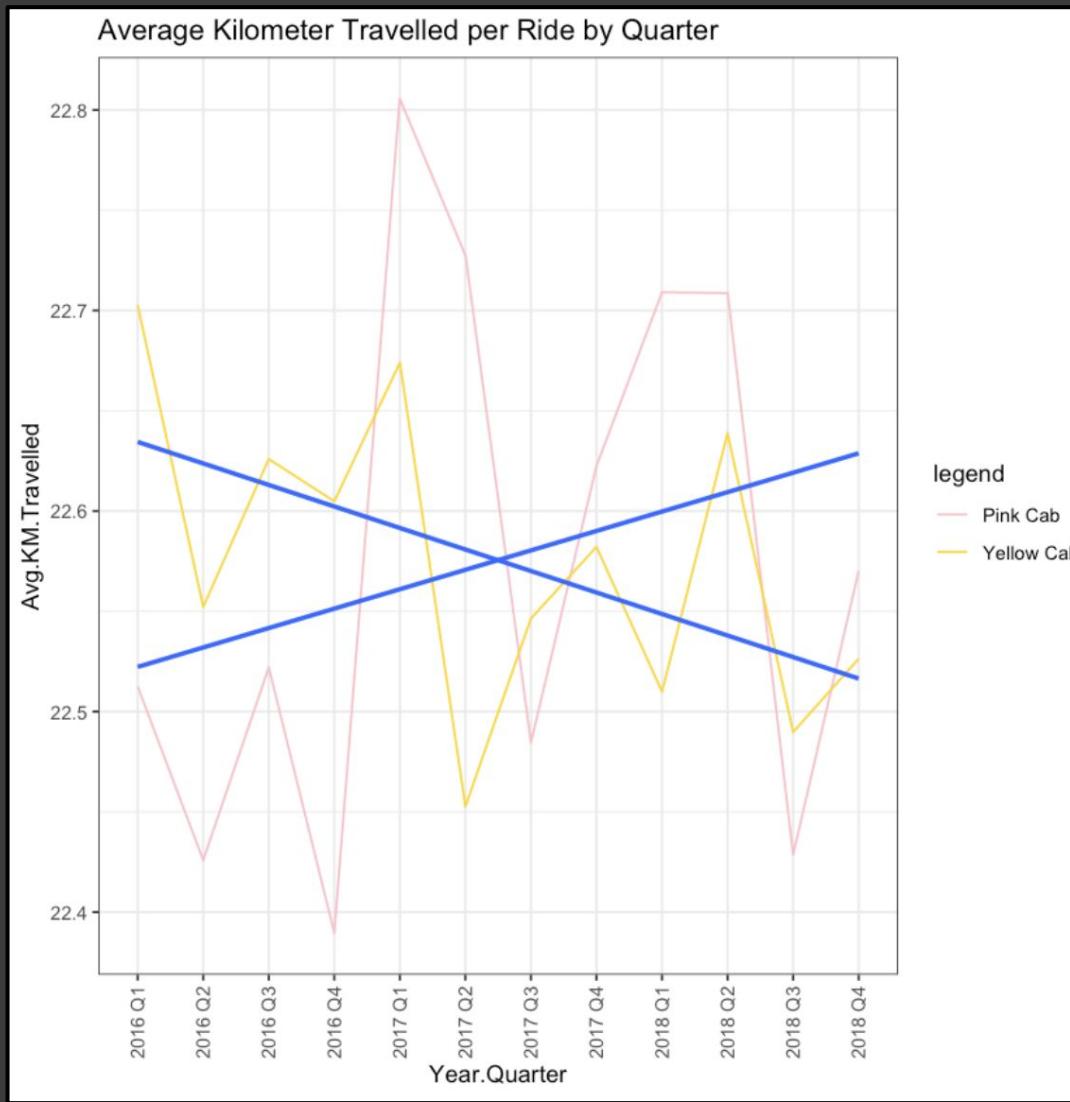
City	Avg.KM.Travelled
ATLANTA GA	22.25407
AUSTIN TX	22.53396
BOSTON MA	22.53784
CHICAGO IL	22.66007
DALLAS TX	22.59227
DENVER CO	22.43935
LOS ANGELES CA	22.68357
MIAMI FL	22.63076
NASHVILLE TN	22.94143
NEW YORK NY	22.50084
ORANGE COUNTY	22.36037
PHOENIX AZ	22.52067
PITTSBURGH PA	22.70010
SACRAMENTO CA	22.92820
SAN DIEGO CA	22.38559
SEATTLE WA	22.57980
SILICON VALLEY	22.70096
TUCSON AZ	22.27977
WASHINGTON DC	22.62416

Totals

Company	Avg.KM.Travelled
Pink Cab	22.55906
Yellow Cab	22.56953



Average Kilometers Travelled Quarterly



Pink Cabs

Year.Quarter	Avg.KM.Travelled
2016 Q1	22.51250
2016 Q2	22.42593
2016 Q3	22.52199
2016 Q4	22.38958
2017 Q1	22.80559
2017 Q2	22.72749
2017 Q3	22.48459
2017 Q4	22.62246
2018 Q1	22.70910
2018 Q2	22.70867
2018 Q3	22.42859
2018 Q4	22.57008

Yellow Cabs

Year.Quarter	Avg.KM.Travelled
2016 Q1	22.70269
2016 Q2	22.55218
2016 Q3	22.62593
2016 Q4	22.60484
2017 Q1	22.67397
2017 Q2	22.45270
2017 Q3	22.54642
2017 Q4	22.58214
2018 Q1	22.50993
2018 Q2	22.63875
2018 Q3	22.48974
2018 Q4	22.52639

Average Kilometers Travelled Quarterly (cont'd)

A quick look into the average kilometers travelled for each ride for each city compared against each company & we see that they are about the same. This is in-line with our expectations, & now we know that our earlier statement: "On average, Yellow Cab company's profit per ride is greater than Pink Cab company's because their rides go further distances than Pink Cab company rides." isn't true. Yellow Cab company's rides travel about the same distance, on average, as Pink Cab company's rides travel. This means that the reason behind Yellow Cab company's higher average profit per ride is because they profit more per kilometer travelled. Surprisingly though, when we visualise average kilometers travelled along a time scale, we see that for Yellow Cab company, their ride distances are, on average, decreasing quarter-to-quarter. For Pink Cab company, their ride distances are, on average, increasing quarterly. This means that our earlier statement: "The decreasing quarterly profit per ride for both companies is because, on average, the price charged for each kilometer travelled is decreasing quarterly." is not true. The decreasing quarterly profit per ride for Yellow Cab company is because the price charged for each kilometer travelled is decreasing quarterly, not for Pink Cab company. Pink Cab company's quarterly profit per kilometer travelled is increasing. Based off of average kilometers travelled, even though Pink Cab company's average ride distance has increased quarterly, ride distance is not something that Pink Cab company can control, so it isn't clear which company is better.

Profit

For Yellow Cab company, their number of rides is increasing quarterly, but their average profit per ride, average kilometers travelled per ride, & average profit per kilometer travelled is decreasing. For Pink Cab company, their number of rides & average kilometers travelled per ride are increasing quarterly, but their average profit per ride & average profit per kilometer travelled is decreasing. With so many moving parts, it could be hard to understand what is going on, which is why we'll look at profit. Profit will give us an idea of how all of the all of these variables harmonise & put the companies in a certain direction.

Pink Cabs

City	TotalProfit
ATLANTA GA	95861.37
AUSTIN TX	147032.77
BOSTON MA	261741.45
CHICAGO IL	318412.58
DALLAS TX	24701.02
DENVER CO	40475.93
LOS ANGELES CA	1124586.56
MIAMI FL	162290.22
NASHVILLE TN	64245.13
NEW YORK NY	1508749.50
ORANGE COUNTY	101728.77
PHOENIX AZ	35507.83
PITTSBURGH PA	17073.93
SACRAMENTO CA	55323.92
SAN DIEGO CA	637056.73
SEATTLE WA	112315.59
SILICON VALLEY	339608.88
TUCSON AZ	59133.77
WASHINGTON DC	193019.67

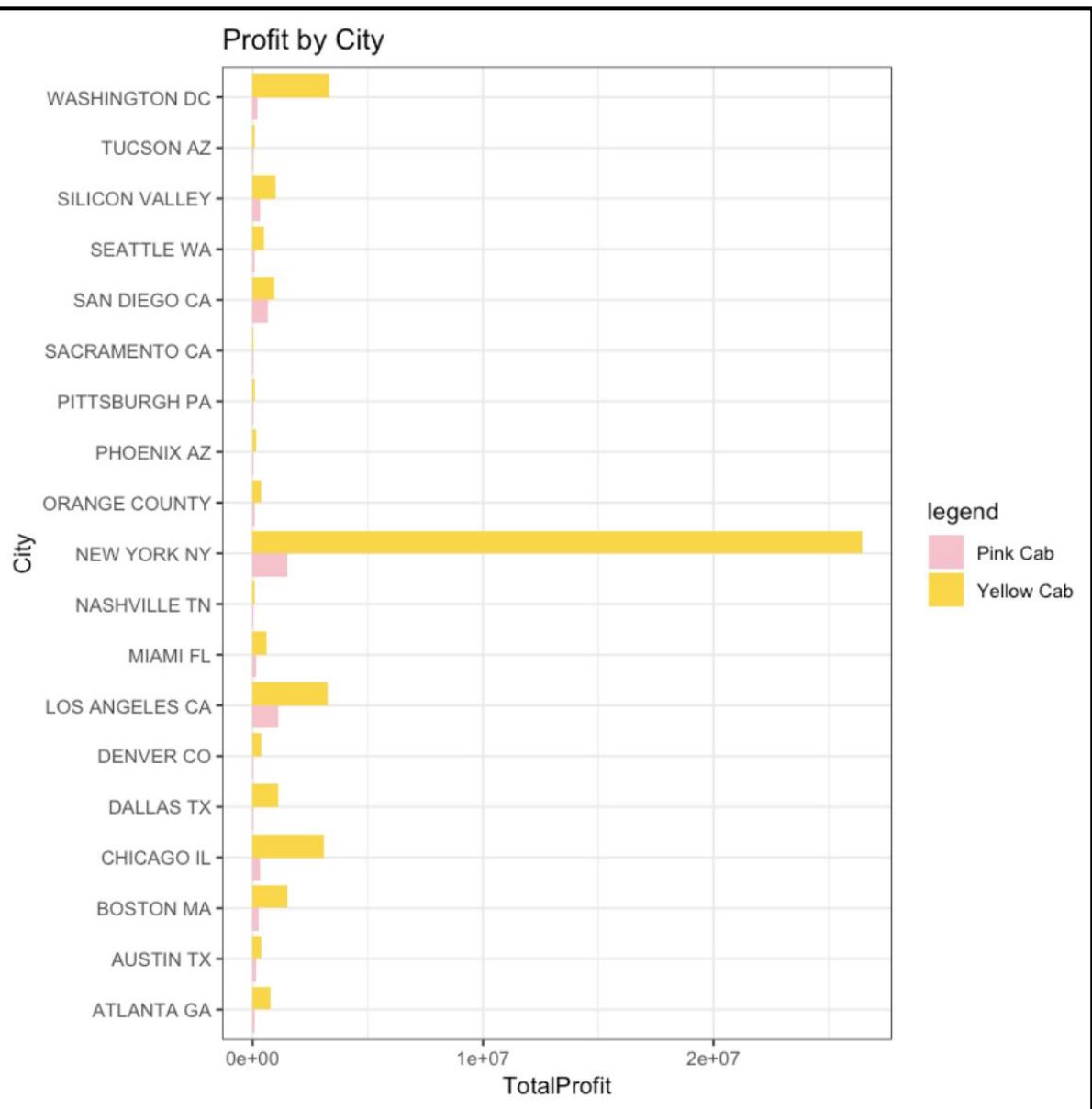
Yellow Cabs

City	TotalProfit
ATLANTA GA	746044.21
AUSTIN TX	378873.65
BOSTON MA	1506477.19
CHICAGO IL	3067406.41
DALLAS TX	1102360.99
DENVER CO	356417.47
LOS ANGELES CA	3281844.92
MIAMI FL	595222.41
NASHVILLE TN	85034.70
NEW YORK NY	26427730.13
ORANGE COUNTY	354783.73
PHOENIX AZ	157221.61
PITTSBURGH PA	68029.96
SACRAMENTO CA	61988.08
SAN DIEGO CA	948624.12
SEATTLE WA	491690.98
SILICON VALLEY	975246.92
TUCSON AZ	80811.31
WASHINGTON DC	3297202.01

Totals

Company	TotalProfit
Pink Cab	5298866
Yellow Cab	43983011

Profit (cont'd)



The visualisation does not do a good job at displaying the differences in total profit earned in each city, but the tables make it clear. It is a complete sweep. In every city, Yellow Cab company has generate more total revenue than Pink Cab company. Overall, Yellow Cab company has generated more than eight times more revenue than Pink Cab company. While it might be great that Yellow Cab company has generate all of this profit, it has little to do with the direction the company is headed in, which is what we are more interested in.

Profit Quarterly

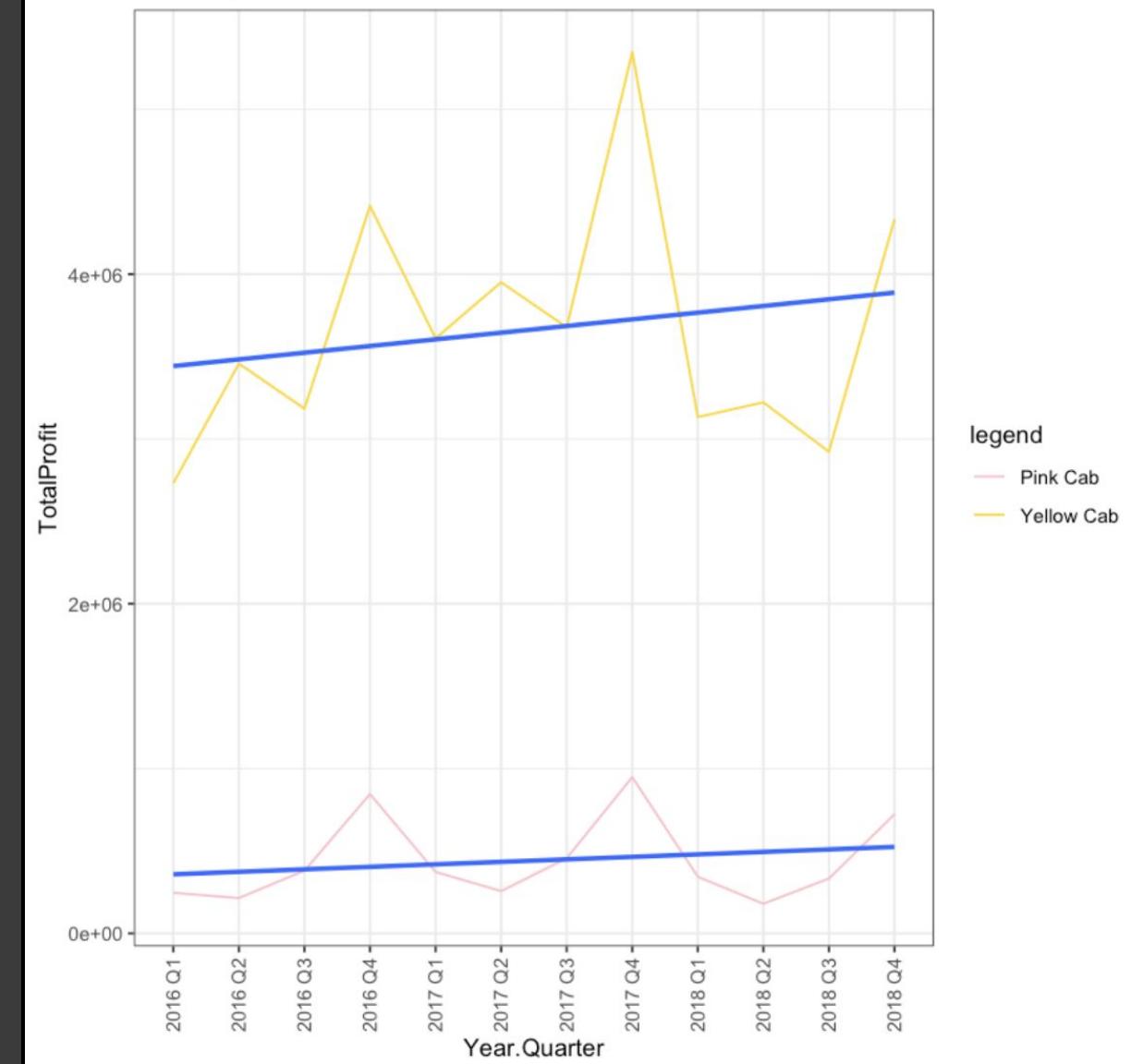
Pink Cabs

Year.Quarter	TotalProfit
2016 Q1	246419.3
2016 Q2	214305.9
2016 Q3	380463.3
2016 Q4	845269.4
2017 Q1	372939.0
2017 Q2	256487.2
2017 Q3	455932.5
2017 Q4	948076.9
2018 Q1	343659.4
2018 Q2	179739.2
2018 Q3	332614.8
2018 Q4	722958.8

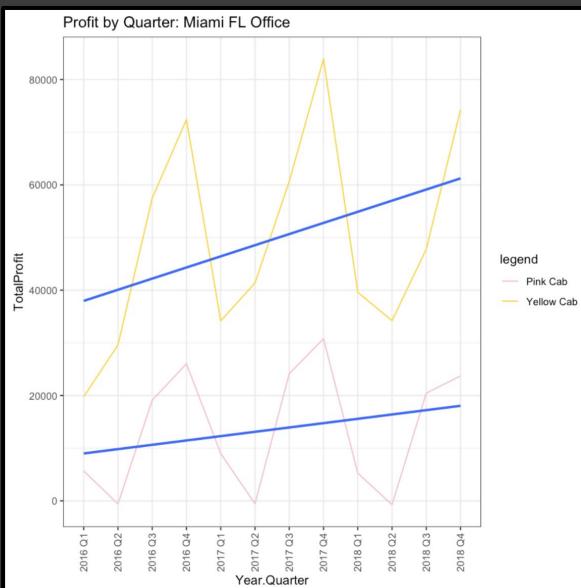
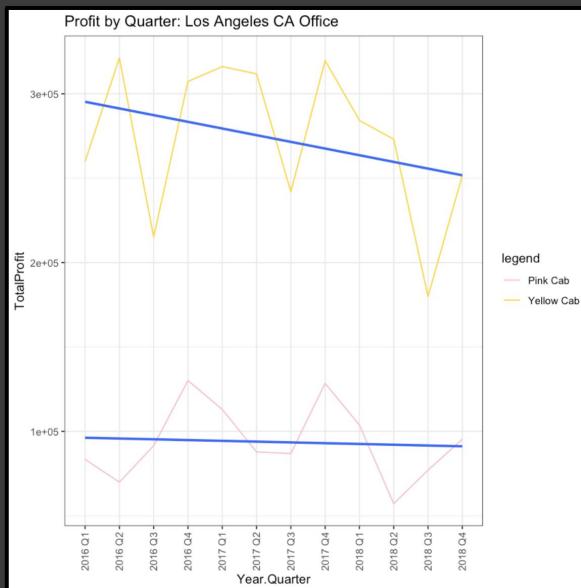
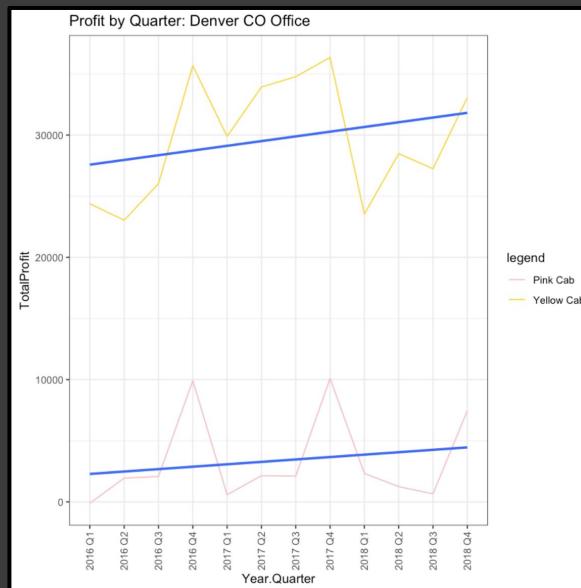
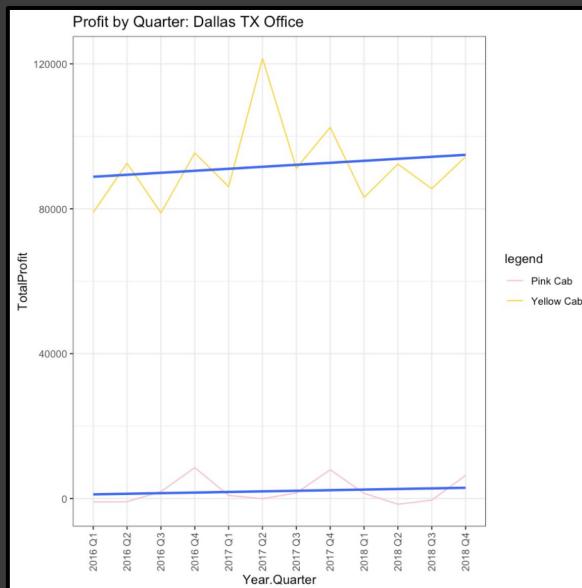
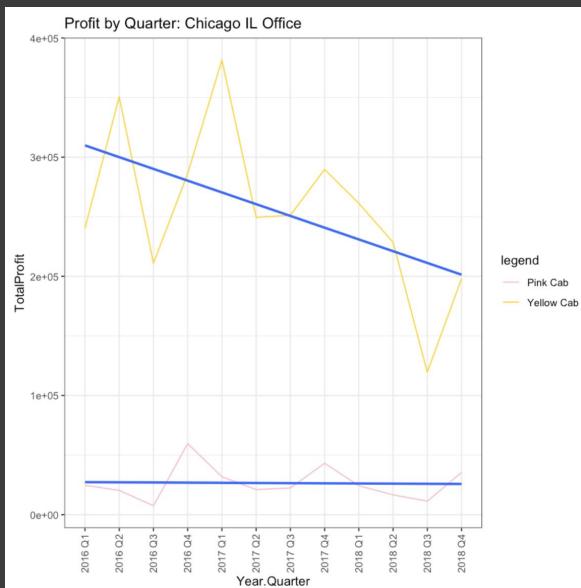
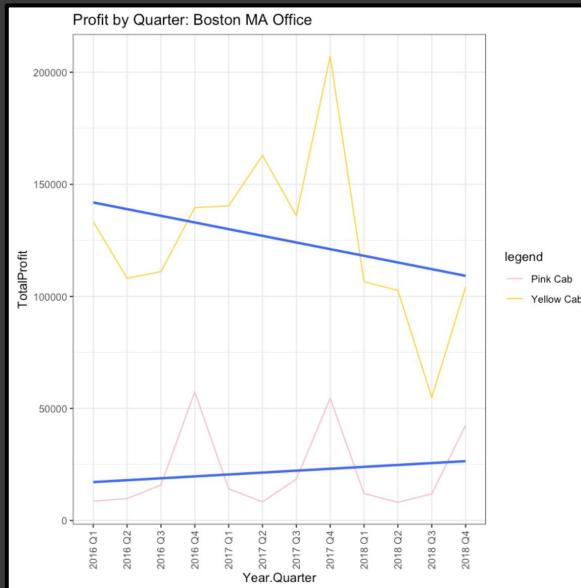
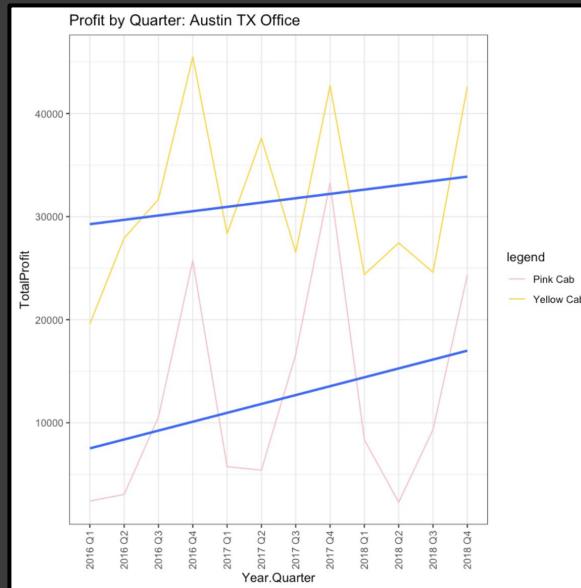
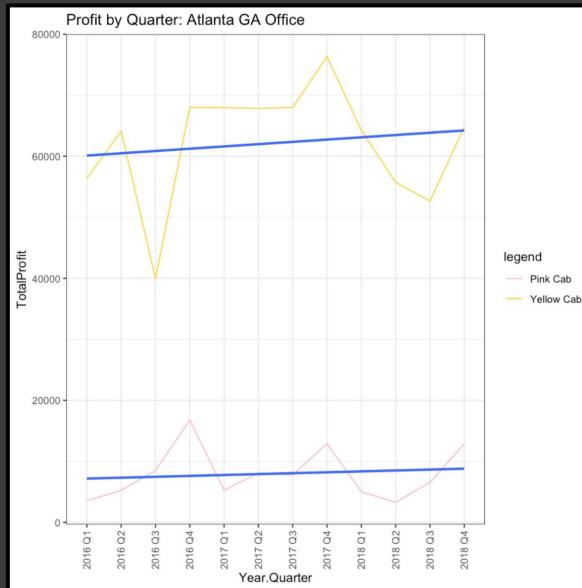
Yellow Cabs

Year.Quarter	TotalProfit
2016 Q1	2731853
2016 Q2	3457295
2016 Q3	3183972
2016 Q4	4413818
2017 Q1	3610597
2017 Q2	3950932
2017 Q3	3677853
2017 Q4	5347232
2018 Q1	3132749
2018 Q2	3222367
2018 Q3	2922728
2018 Q4	4331616

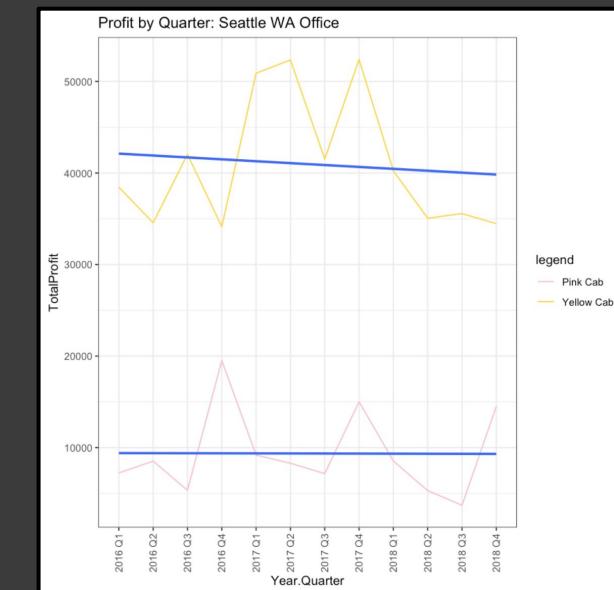
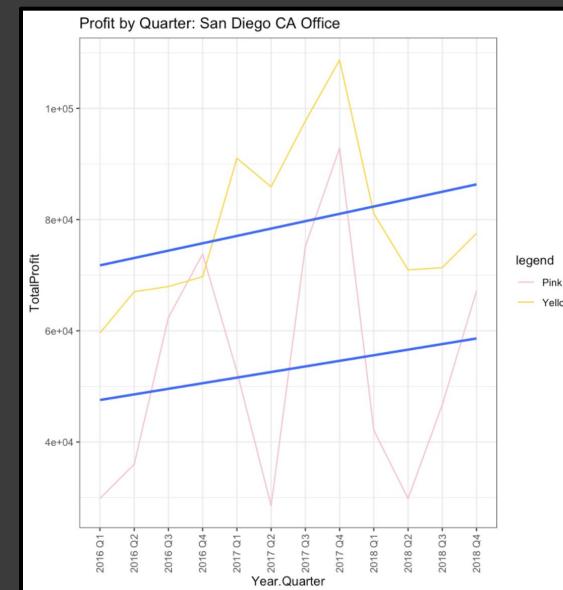
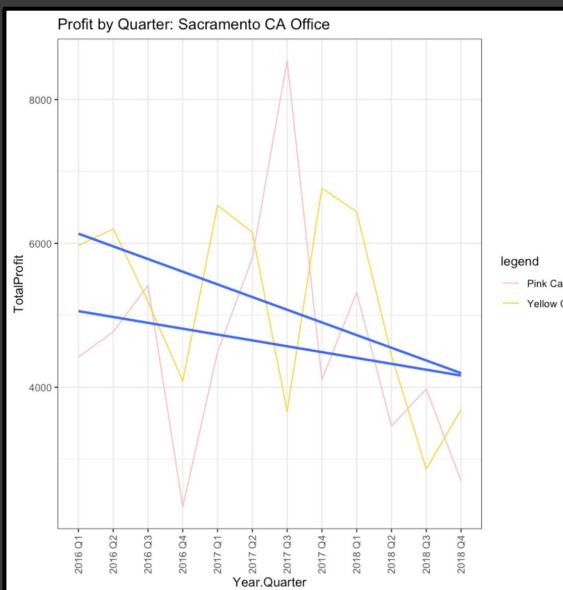
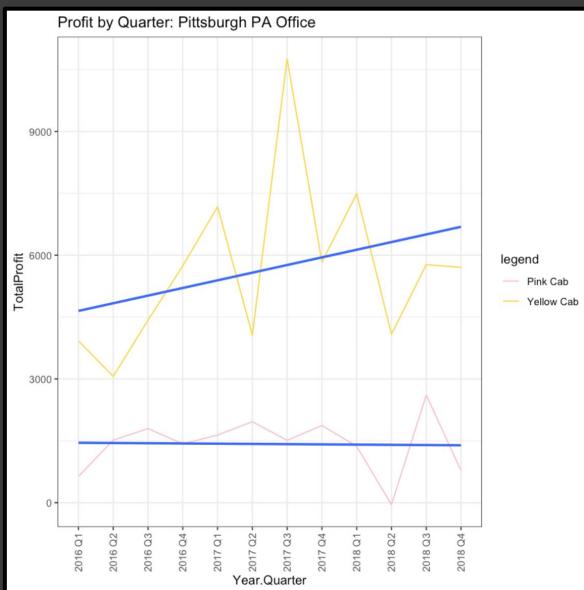
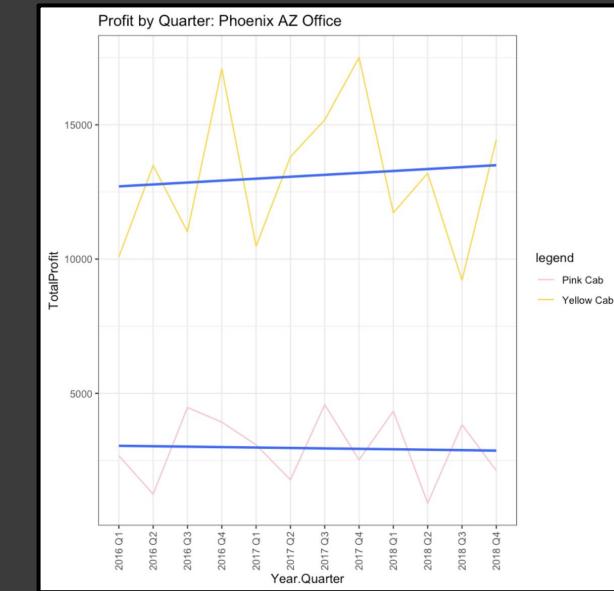
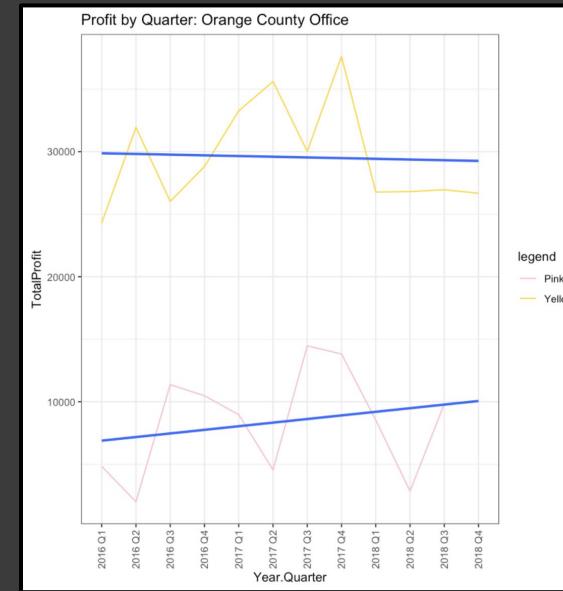
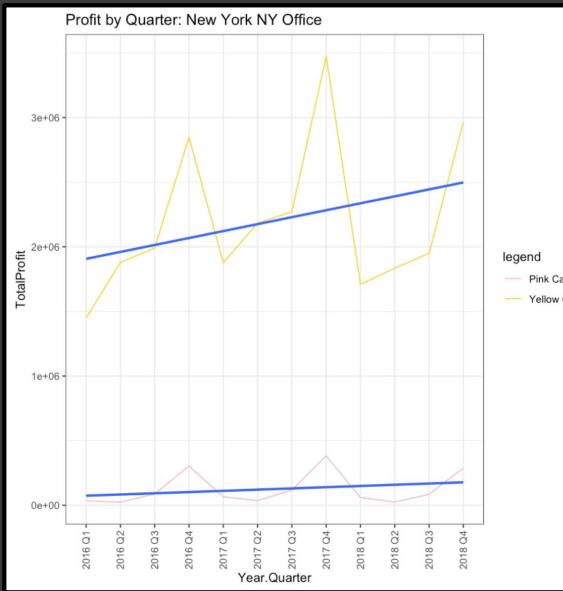
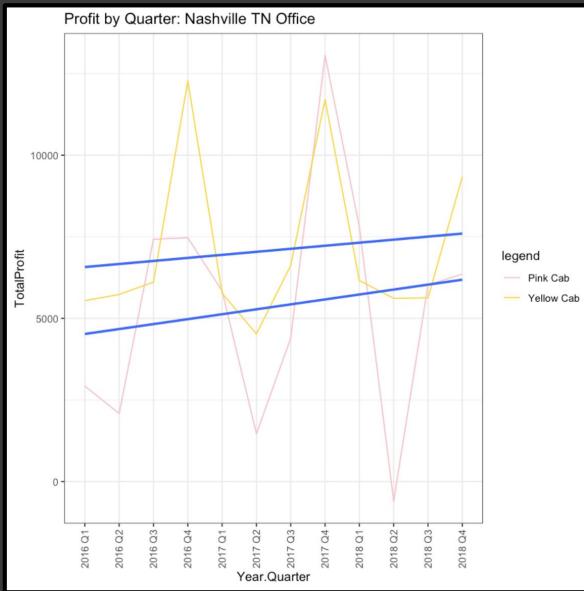
Profit by Quarter



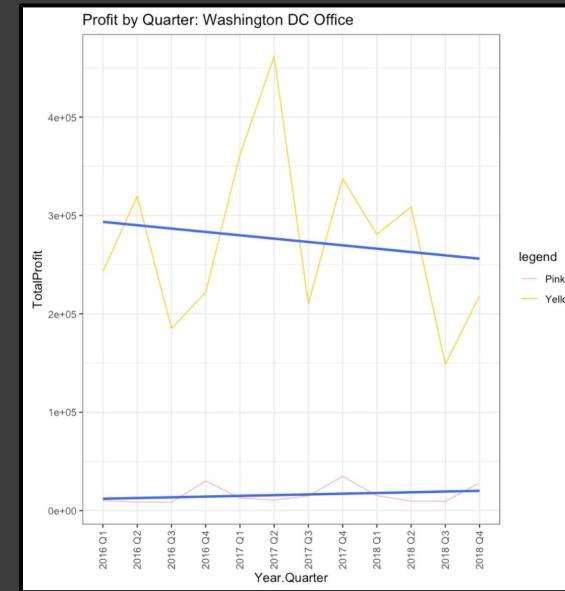
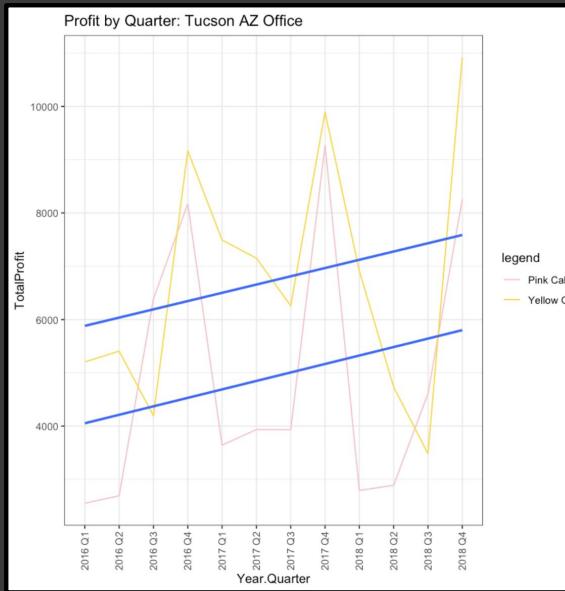
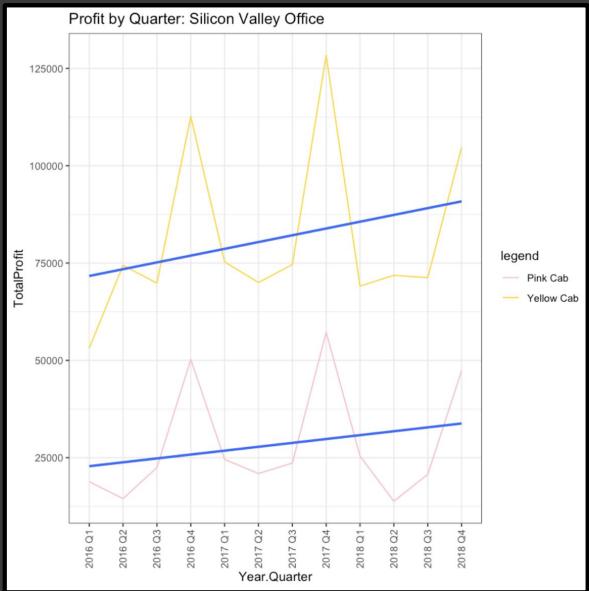
Profit Quarterly (all Cities)



Profit Quarterly (all Cities, cont'd)



Profit Quarterly (all Cities, cont'd)



Profit Quarterly (all Cities, cont'd)

In most cities, both Yellow Cab company & Pink Cab company see increasing profit quarter-to-quarter. In nearly half of the cities: Boston, Chicago, Los Angeles, Orange County, Sacramento, Seattle, & Washington DC, Yellow Cab company is losing profit quarterly. Pink Cab company is losing profit quarterly only in Sacramento. Although Yellow Cab company is losing profit quarterly in more cities than Pink Cab company, Yellow Cab company posts more revenue per quarter than Pink Cab company, overall. Both companies, overall, are posting more profit quarter-to-quarter, the rate of which is greater for Yellow Cab company. For that reason, Yellow Cab company leads Pink Cab company as the better company to invest in.

Rides per Company for each Customer

Totals

Is there a reason why Yellow Cab company generates more profit overall apart from the hard metrics we just looked at? For investments, soft metrics like consumer & market sentiment plays a part in the success of a company too. While there isn't a variable/feature that tells us which company each customer prefers, we can get an idea of customer preference by looking at the average number of rides each customer has taken with each company.

Pink Cabs

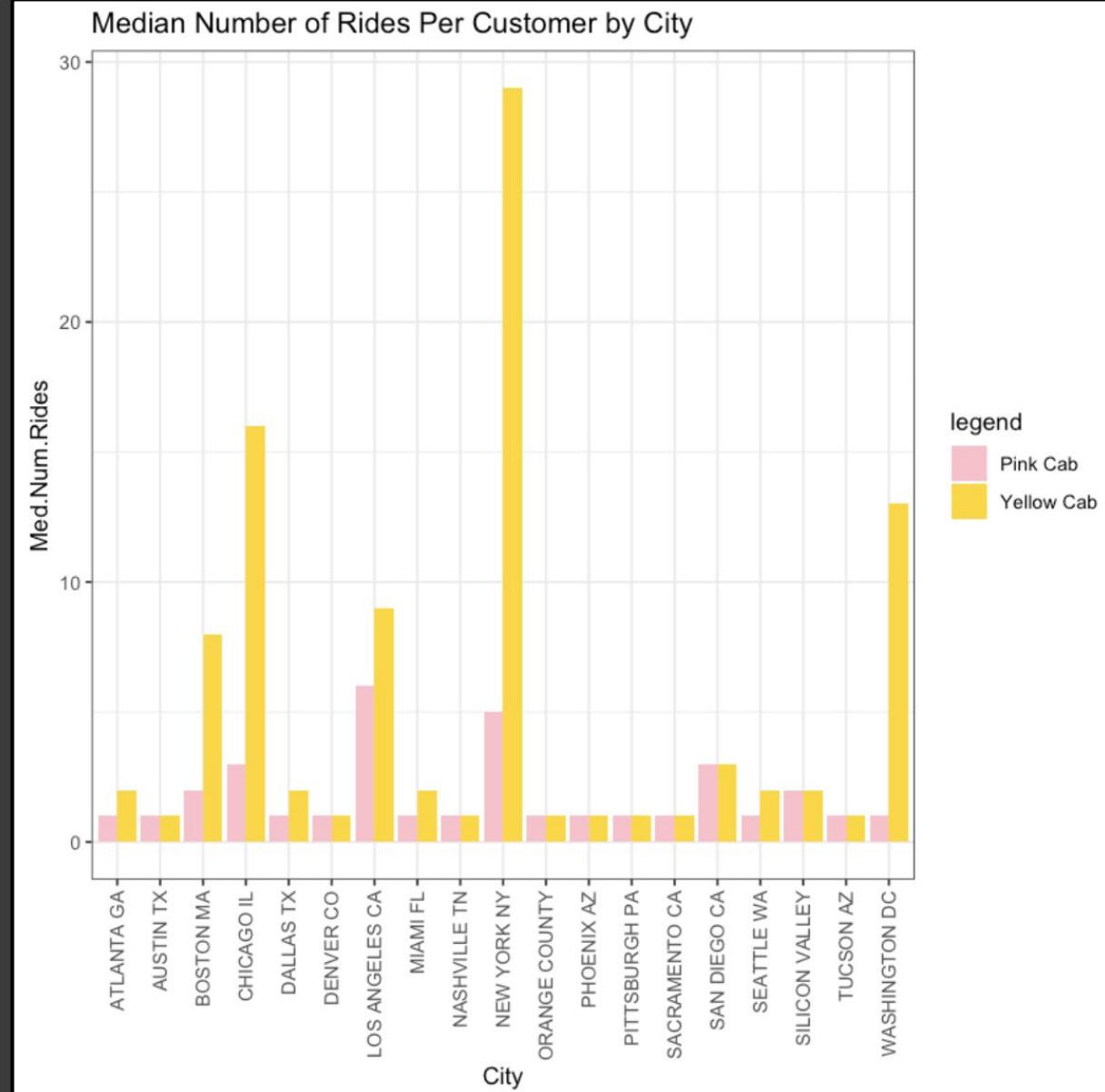
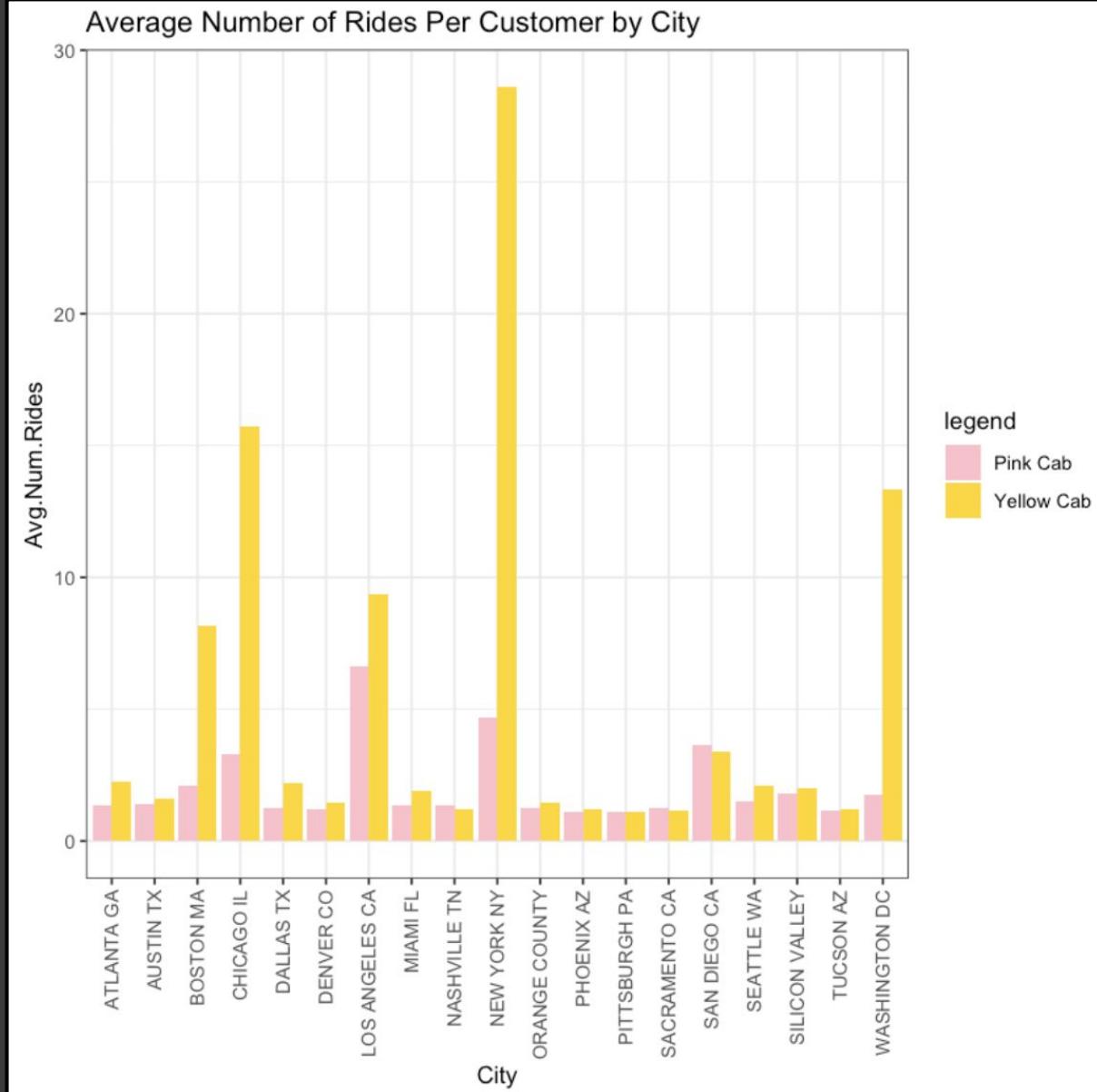
City	Avg.Num.Rides	Med.Num.Rides
ATLANTA GA	1.332576	1
AUSTIN TX	1.379719	1
BOSTON MA	2.103126	2
CHICAGO IL	3.270724	3
DALLAS TX	1.234557	1
DENVER CO	1.216594	1
LOS ANGELES CA	6.621829	6
MIAMI FL	1.353180	1
NASHVILLE TN	1.356932	1
NEW YORK NY	4.693706	5
ORANGE COUNTY	1.263819	1
PHOENIX AZ	1.129751	1
PITTSBURGH PA	1.129353	1
SACRAMENTO CA	1.237477	1
SAN DIEGO CA	3.664146	3
SEATTLE WA	1.524609	1
SILICON VALLEY	1.781588	2
TUCSON AZ	1.168622	1
WASHINGTON DC	1.750237	1

Yellow Cabs

City	Avg.Num.Rides	Med.Num.Rides
ATLANTA GA	2.230829	2
AUSTIN TX	1.580324	1
BOSTON MA	8.167835	8
CHICAGO IL	15.731000	16
DALLAS TX	2.196094	2
DENVER CO	1.444643	1
LOS ANGELES CA	9.381921	9
MIAMI FL	1.905620	2
NASHVILLE TN	1.211838	1
NEW YORK NY	28.599667	29
ORANGE COUNTY	1.442105	1
PHOENIX AZ	1.206237	1
PITTSBURGH PA	1.099476	1
SACRAMENTO CA	1.174458	1
SAN DIEGO CA	3.396396	3
SEATTLE WA	2.117552	2
SILICON VALLEY	1.980672	2
TUCSON AZ	1.210075	1
WASHINGTON DC	13.329000	13

Company	Avg.Num.Rides	Med.Num.Rides
Pink Cab	2.618454	2
Yellow Cab	6.879063	3

Rides per Company for each Customer (cont'd)

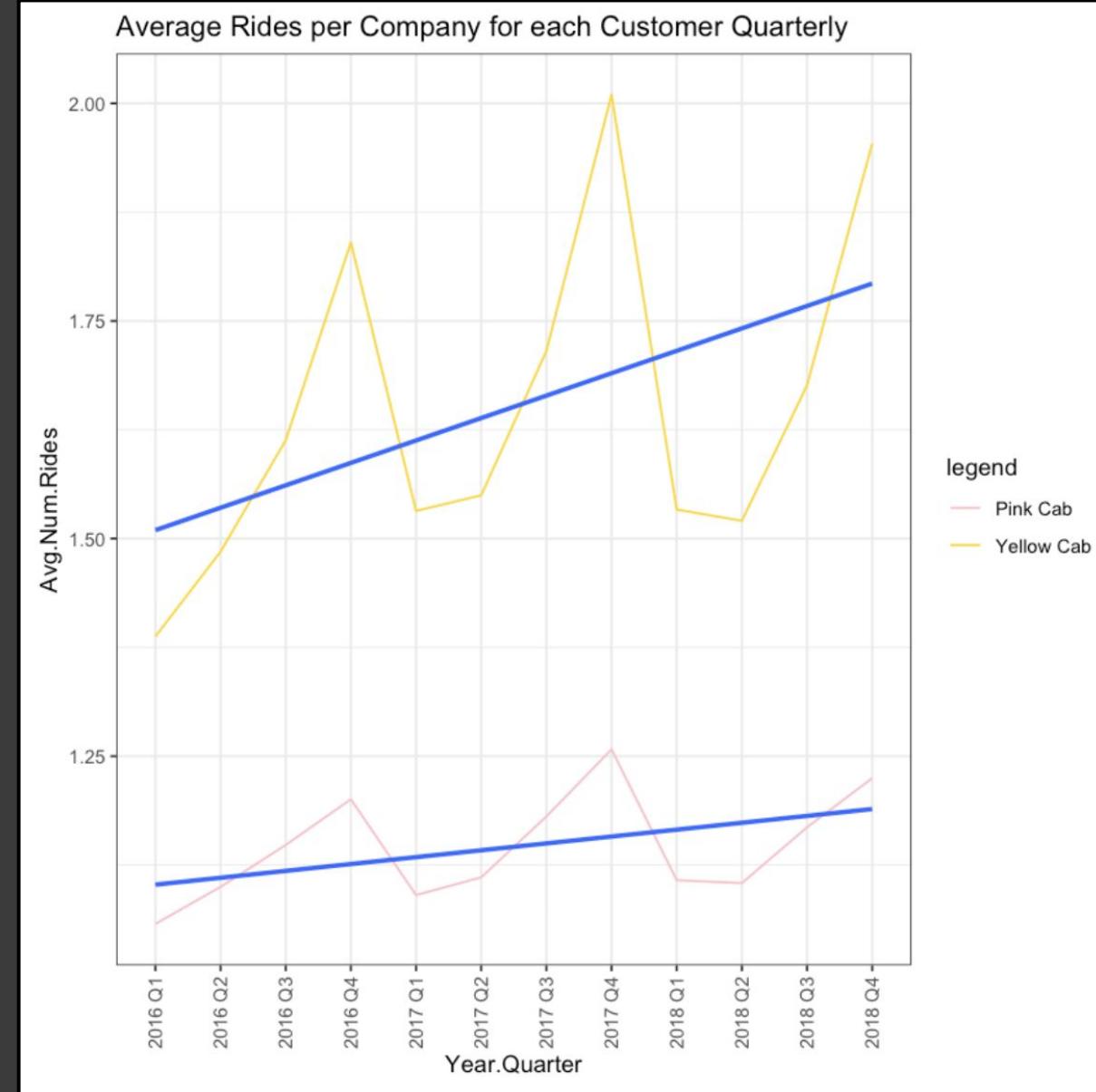


Rides per Company for each Customer (cont'd)

In fifteen of nineteen cities, the average number of rides each customer purchases from Yellow Cab company is greater than from Pink Cab company. In Nashville, Pittsburg, San Diego & Sacramento, the average number of rides per customer from Yellow Cab company is less than Pink Cab company, but not by much. In cities like Boston, Chicago, New York, & Washington DC, the average number of rides each customer purchases from Yellow Cab company dwarfs the average number of rides each customer purchases from Pink Cab company. Provided is also a visualisation of the median number of rides each customer purchases from each company, on the off chance there is a customer who has a strangely high number of cab rides from any company, skewing the average. In none of the cities does Pink Cab company beat Yellow Cab company in median number of rides purchased per customer. They either tie or Yellow Cab company beats Pink Cab company.

Rides per Company for each Customer Quarterly

Year.Quarter	Company	Avg.Num.Rides	Med.Num.Rides
2016 Q1	Pink Cab	1.057325	1
2016 Q1	Yellow Cab	1.387496	1
2016 Q2	Pink Cab	1.099878	1
2016 Q2	Yellow Cab	1.484987	1
2016 Q3	Pink Cab	1.148054	1
2016 Q3	Yellow Cab	1.613013	1
2016 Q4	Pink Cab	1.200529	1
2016 Q4	Yellow Cab	1.840243	1
2017 Q1	Pink Cab	1.090450	1
2017 Q1	Yellow Cab	1.531793	1
2017 Q2	Pink Cab	1.110851	1
2017 Q2	Yellow Cab	1.549737	1
2017 Q3	Pink Cab	1.180751	1
2017 Q3	Yellow Cab	1.715458	1
2017 Q4	Pink Cab	1.257838	1
2017 Q4	Yellow Cab	2.009881	1
2018 Q1	Pink Cab	1.107622	1
2018 Q1	Yellow Cab	1.533409	1
2018 Q2	Pink Cab	1.104176	1
2018 Q2	Yellow Cab	1.520412	1
2018 Q3	Pink Cab	1.168358	1
2018 Q3	Yellow Cab	1.676099	1
2018 Q4	Pink Cab	1.224748	1
2018 Q4	Yellow Cab	1.953733	1



Rides per Company for each Customer Quarterly (cont'd)

In both companies, we see that on average, each customer is taking more rides quarter to quarter. The rate at which each customer is taking more rides quarterly, is greater for Yellow Cab company, on average. However, by this metric, it may not mean Yellow Cab company is the better company. This metric, along with ride numbers, may be biased. When people want to get a cab, they just want to get from A to B. They will wave for a cab & take the one that is first available. It could be, that ride number metrics are just higher for Yellow Cab company, because they have more cabs deployed overall in each city. Thus, because of the higher number of deployed cabs, Yellow Cab companies have higher ride number metrics. There is an incredibly high potential for convenience bias. However, because we don't have access to data on number of cabs deployed, based on this metric. Yellow Cab company is the better company for investment.

Final Reflections & Recommendations

For Yellow Cab company, from their combination of increasing ride numbers & average rides per customer, & decreasing profit per ride, average kilometers travelled per ride, & profit per kilometer travelled, they have seen increased profit quarter over quarter. For Pink Cab company, from their combination of increasing ride numbers, average rides per customer, & average kilometers travelled per ride, & decreasing profit per ride & profit per kilometer travelled, they have also posted increasing profit quarter-to-quarter. However, the magnitude of which each metric is increasing & decreasing is greater for Yellow Cab company. Also, looking back at the visualisations, Yellow Cab company has greater variability in metric numbers quarter-to-quarter. Pink Cab company is more consistent in its metrics. Although it is difficult to measure consumer preferences because of convenience bias & not being provided the number of deployed cabs for each company, based solely on the data provided, both companies would be solid companies to invest in. It would all depend on one's preference.

If each company continues on their respective trajectories for all of the metrics stated above,

Higher profit & volatility quarter-to-quarter: choose **Yellow Cab company**.

Lower profits & volatility quarter-to-quarter: choose **Pink Cab company**.

Thank You