

SQL and Databases: Project Report

By: Jerry TSIBA

Master in Data Sciences, Deakin University, Aug 2023

Great Learning

Business Context:

A lot of people in the world share a common desire: to own a vehicle. A car or an automobile is seen as an object that gives the freedom of mobility. Many are now preferring pre-owned vehicles because they come at an affordable cost, but at the same time, they are also concerned about whether the after-sales service provided by the resale vendors is as good as the care you may get from the actual manufacturers. New-Wheels, a vehicle resale company, has launched an app with an end-to-end service from listing the vehicle on the platform to shipping it to the customer's location. This app also captures the overall after-sales feedback given by the customer

Problem Statement:

New-Wheels sales have been dipping steadily in the past year, and due to the critical customer feedback and ratings online, there has been a drop in new customers every quarter, which is concerning to the business. The CEO of the company now wants a quarterly report with all the key metrics sent to him so he can assess the health of the business and make the necessary decisions.

Objective:

As a data scientist, you see that there is an array of questions that are being asked at the leadership level that needs to be answered using data. Import the dump file that contains various tables that are present in the database. Use the data to answer the questions posed and create a quarterly business report for the CEO.

Business Overview

Avg Rating

2.4 ↓

Avg Days to ship

174 ↑

Last Qtr Revenue

\$ 29.4 m

Total Revenue

\$ 23.4 m ↓

Last Qtr Order

229

Total Orders

199 ↓

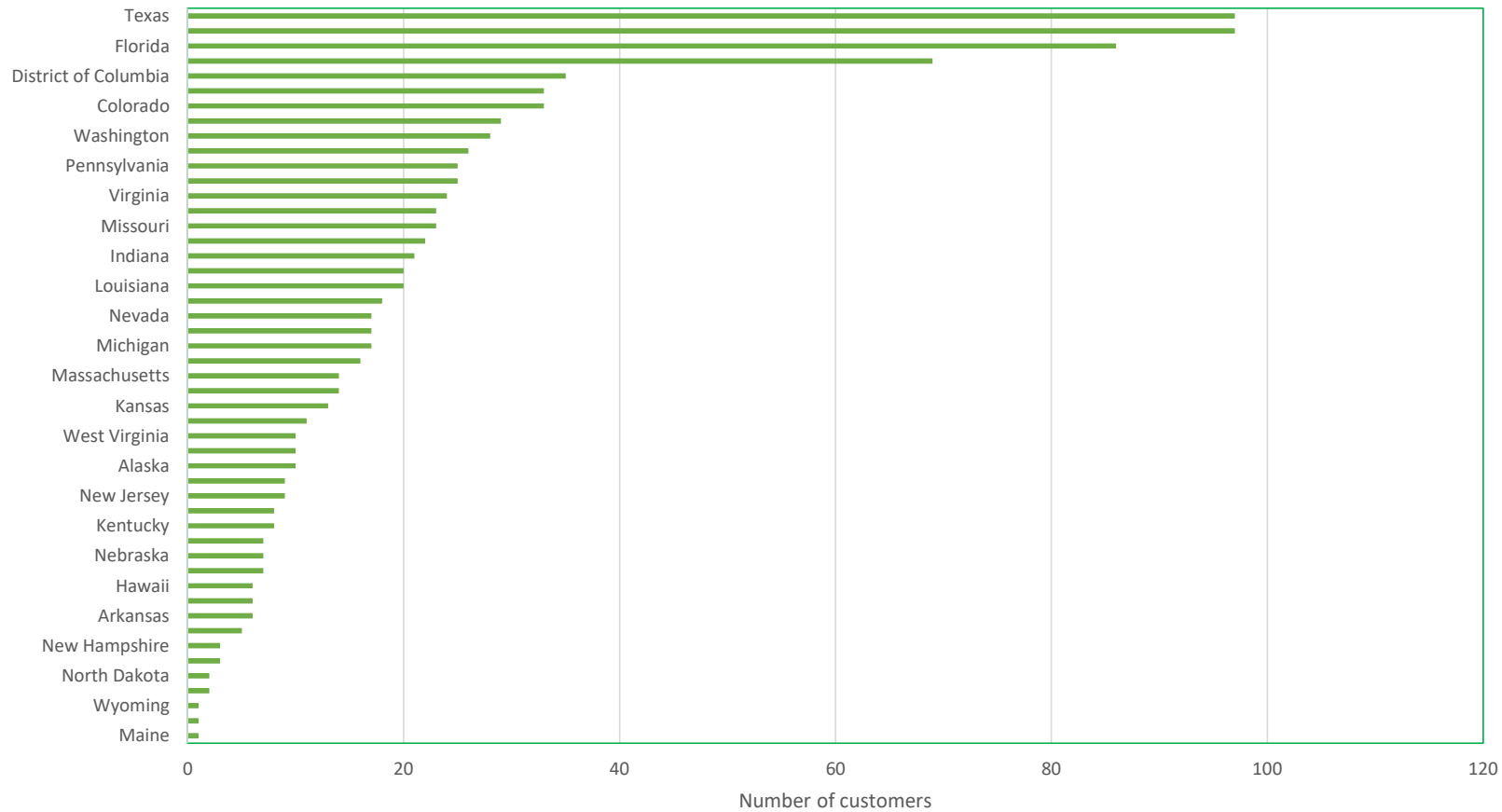
Top State & V. Maker

Texas/Chevrolet

% Positive Feedback

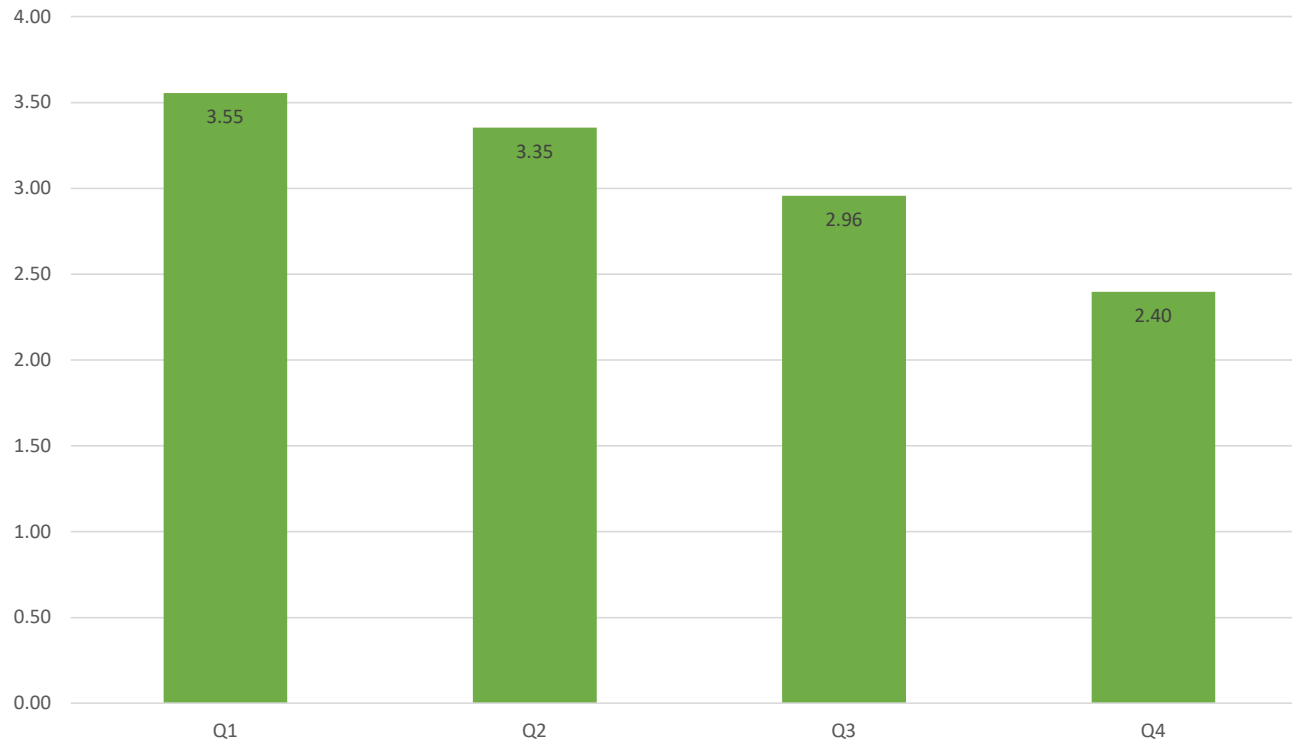
10 ↓

Distribution of customers across States



Top 5 states are Texas (97), California (97), Florida (86), New York (69) and District of Columbia (35)

Average Customer Ratings by Quarter



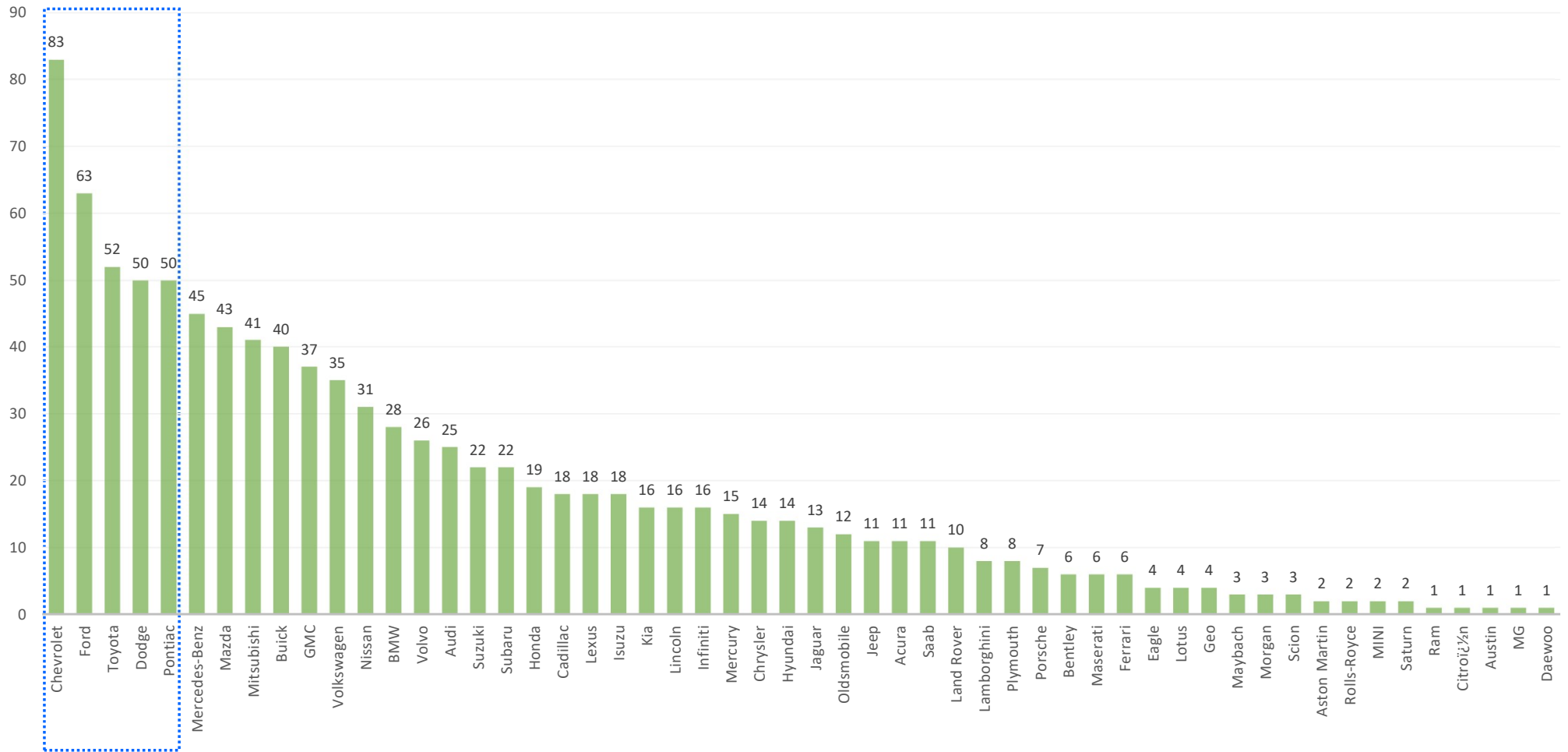
The customer average rating is decreasing by Quarter

Trend of Customer Satisfaction

Quarter	Very_Good	Good	Okay	Bad	Very_Bad	Positive_percentage
Q1	93	89	59	35	34	30
Q2	75	58	53	37	39	28.626
Q3	38	48	50	52	41	16.5939
Q4	20	20	40	58	61	10.0503

The customer positive feedback is decreasing by Quarter

Top vehicle makers preferred by customers



Chevrolet (83), Ford (63), Toyota (52), Dodge (50) and Pontiac (50) are the top 5 vehicles makers preferred by customers

Most preferred vehicle make in each state

State	Vehicle_maker	Numb_of_customer
Texas	Chevrolet	9
Florida	Toyota	7
California	Audi	6
California	Chevrolet	6
California	Dodge	6
California	Ford	6
California	Nissan	6
Ohio	Chevrolet	6
Alabama	Dodge	5
Colorado	Chevrolet	5
Maryland	Ford	5
New York	Toyota	5
New York	Pontiac	5
Virginia	Ford	5
Washington	Chevrolet	5
District of Columbia	Chevrolet	4

Chevrolet is the most preferred vehicle in Texas, Toyota is most preferred in Florida. California equally appreciates Audi, Chevrolet, Dodge, Ford and Nissan. Ohio customers preferred Chevrolet like Texas customers.

Trend of purchases by Quarter



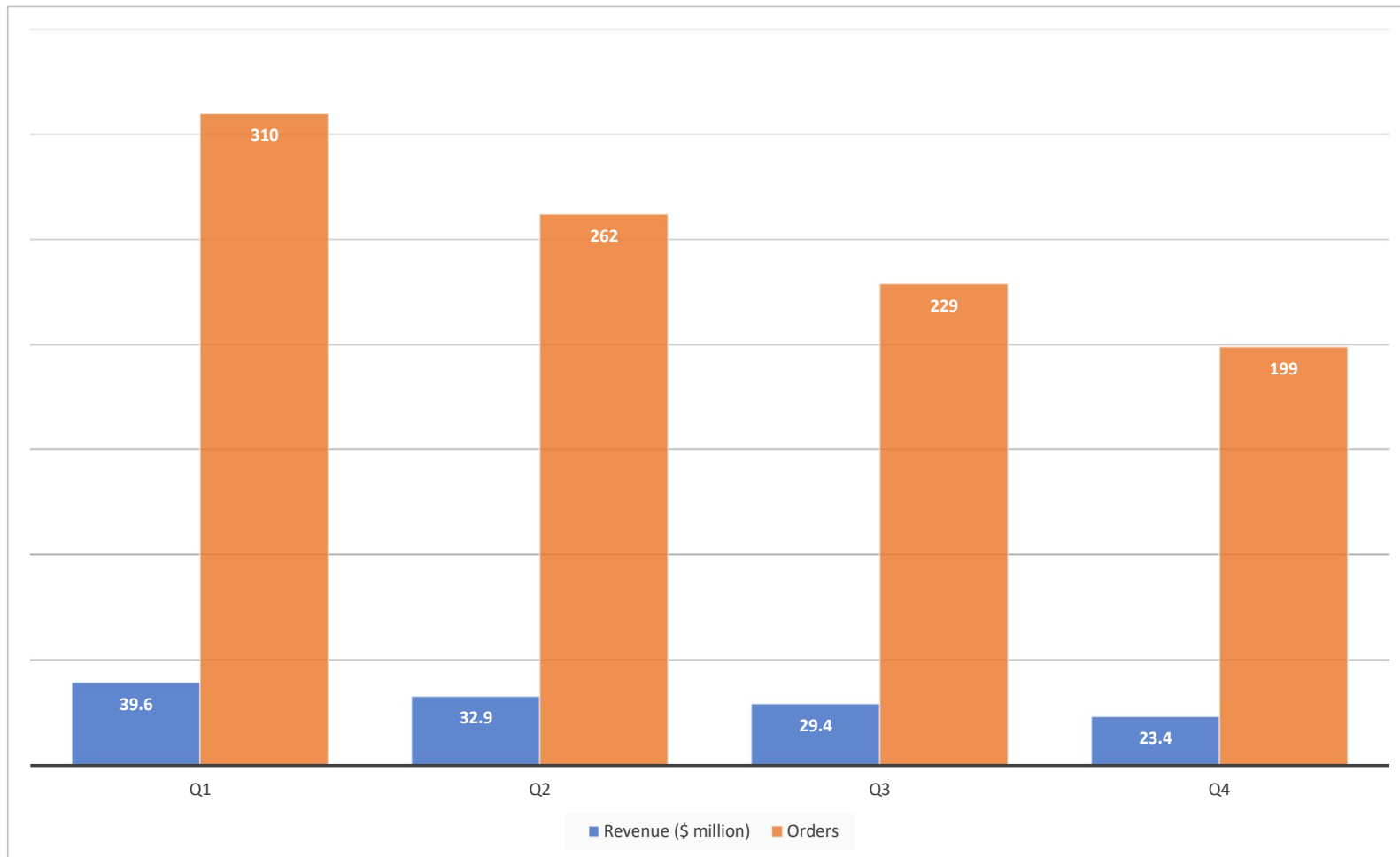
The trend of purchases by Quarter is decreasing

Quarter on Quarter % change in Revenue

Quarter	Current_quarter_revenue (million \$)	previous_quarter_revenue (million \$)	qoq_percentage_change
2	32.9		
3	29.4	39.6	-25.738681
4	23.4	32.9	-28.61337

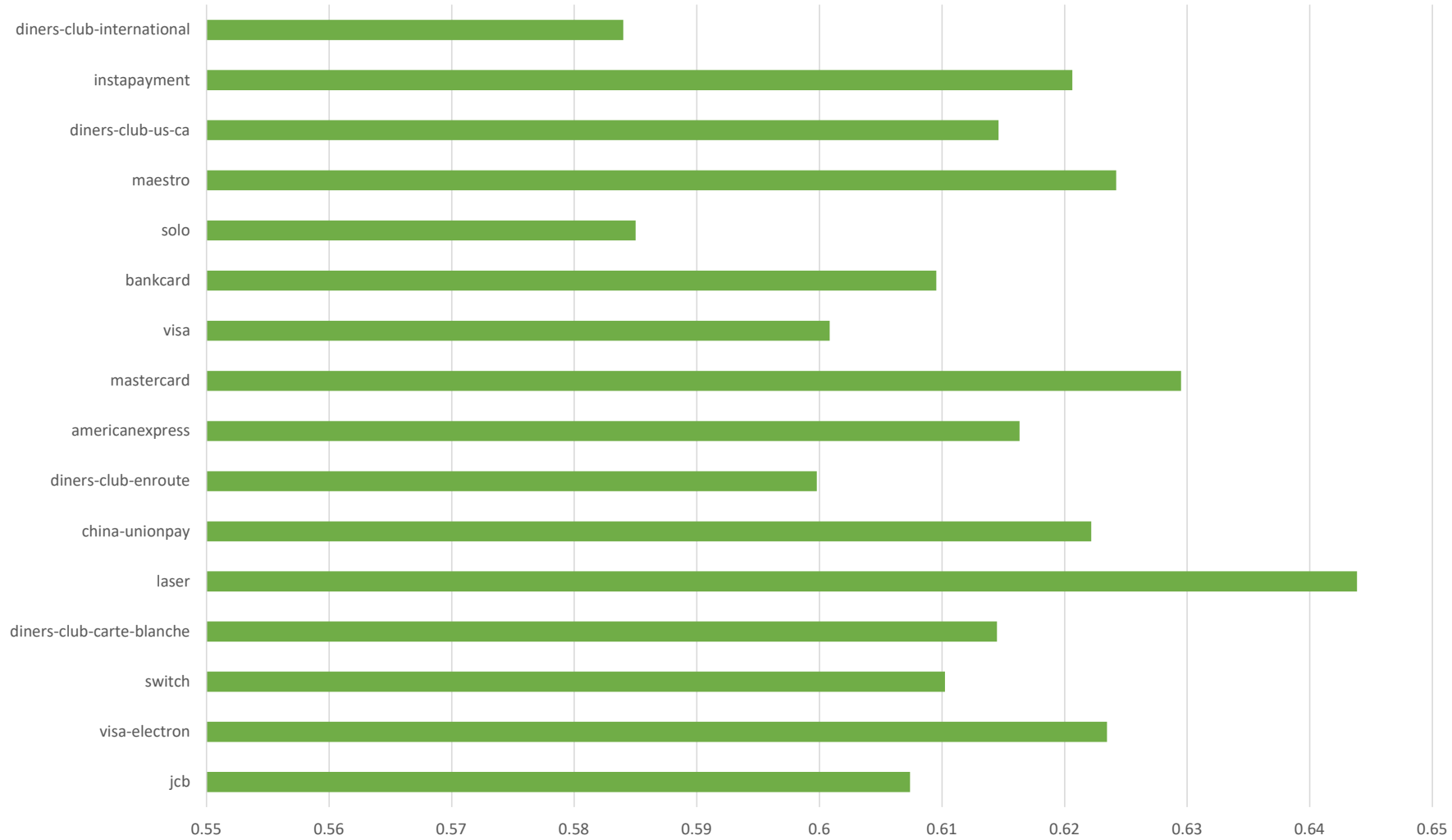
The Quarter on Quarter % change in revenue is drastically going down.

Trend of Revenue and Orders by Quarter



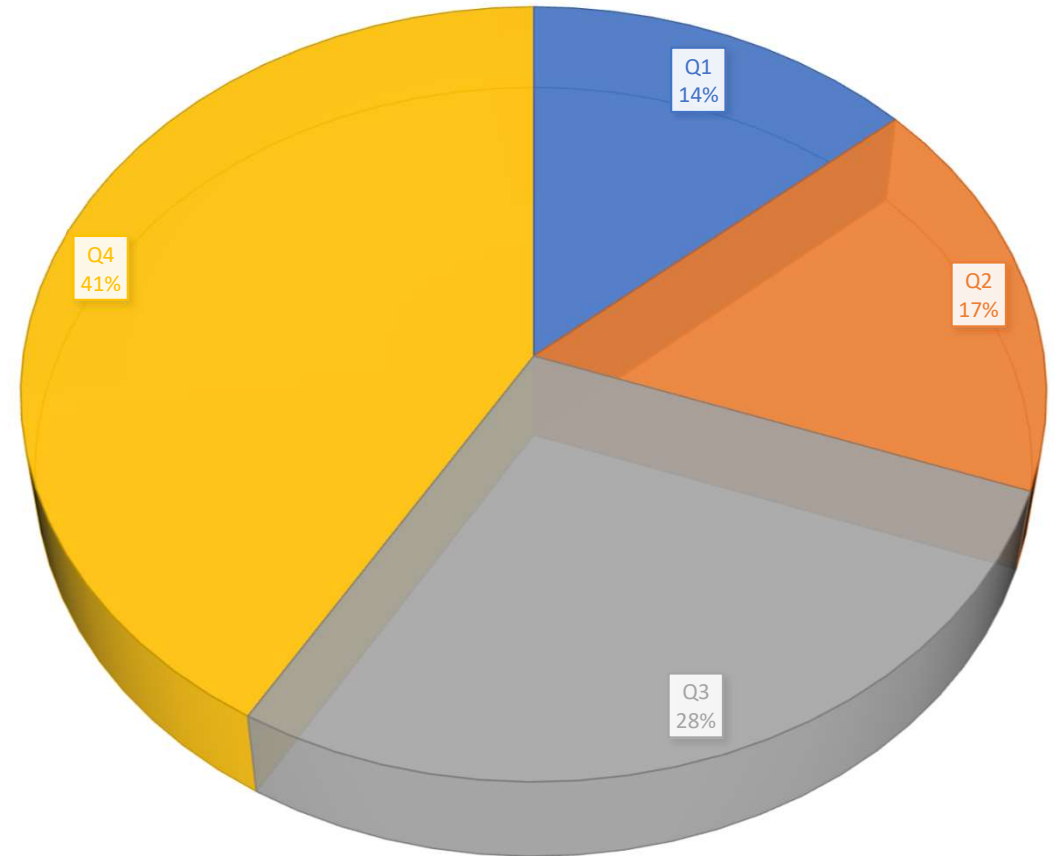
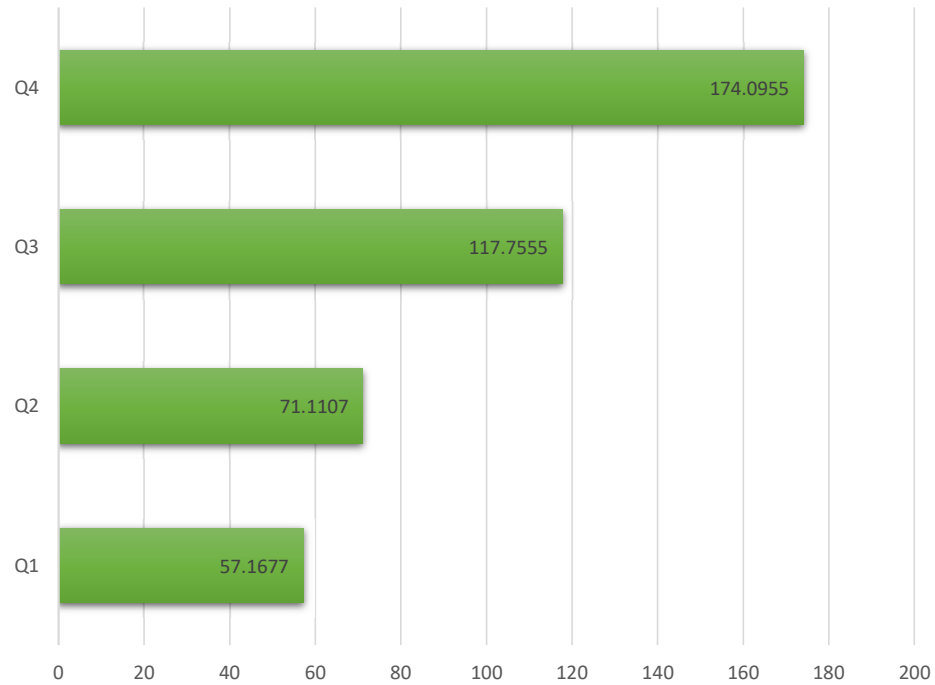
Revenue follows the same trend like the number of orders. Both decrease each quarter.

Average discount offered by Credit Card Type



The average discount offered by Credit Card Type is 60%

Time taken to ship orders by Quarter



The average time to ship the orders has increased from Q1 to Q4

Insights and Recommendations

- In overall, the customer experience is being deteriorated from Q1 to Q4.
- As the average time to ship order increases, I would recommend to investigate internally and see how best this can be improved, maybe by getting more warehouses where we have high demands and where we record long delivery time.
- I would also suggest a transparent process where each customer can track continuously the progress of his/her order. This may minimize customer frustration as they know when to expect their order be delivered.
- I suggest two surveys, one survey to gather employees suggestions as they may know how to unlock company potential; the second survey will be with customers to also gather their suggestions about we can support them.
- Internal process may need to be revised and improved.
- 60% average discount given by credit card type is on the high side, and should be reviewed and specific to some customers.
- I suggest to review our model in states to target based on their consumption.
- Q1 was a better quarter, it worth to have a meeting review with the team to compare what was done during that period vs what is being done now.
- I recommend another study to analyse the market and trend, may be we need to invest in research and development to come up with more environmental friendly wheels, or look into other technology or social evolution.