

SQL and Databases Project Report

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AIML Online October 2023-A Batch

05-May-2024



Business Overview



Total Revenue

125M

Total Orders

1000

Total Customers

994

Average Rating

3.14

Good feedback

44%

Average ship time

98 Days

Quarter#1

\$39.63M

Orders: 310

Avg Feedback: 3.55

Avg Ship Time: 57 Days

Top Performing Maker :
Chevrolet

Top Performing State :
California

Discount Offered : 0.54

Very Good : 30%
Good : 29%
Okay: 19 %
Bad: 11%
Very Bad: 11%

Quarter#2

\$32.91M

Orders: 262

Avg Feedback: 3.36

Avg Ship Time: 71 Days

Top Performing Maker :
Chevrolet

Top Performing State :
California

Discount Offered : 0.60

Very Good : 29%
Good : 22%
Okay: 20 %
Bad: 14%
Very Bad: 15%

Quarter#3

\$29.43M

Orders: 229

Avg Feedback: 2.96

Avg Ship Time: 118 Days

Top Performing Maker :
Chevrolet

Top Performing State :
California

Discount Offered : 0.70

Very Good : 17%
Good : 21%
Okay: 22 %
Bad: 23%
Very Bad: 18%

Quarter#4

\$23.49M

Orders: 199

Avg Feedback: 2.40

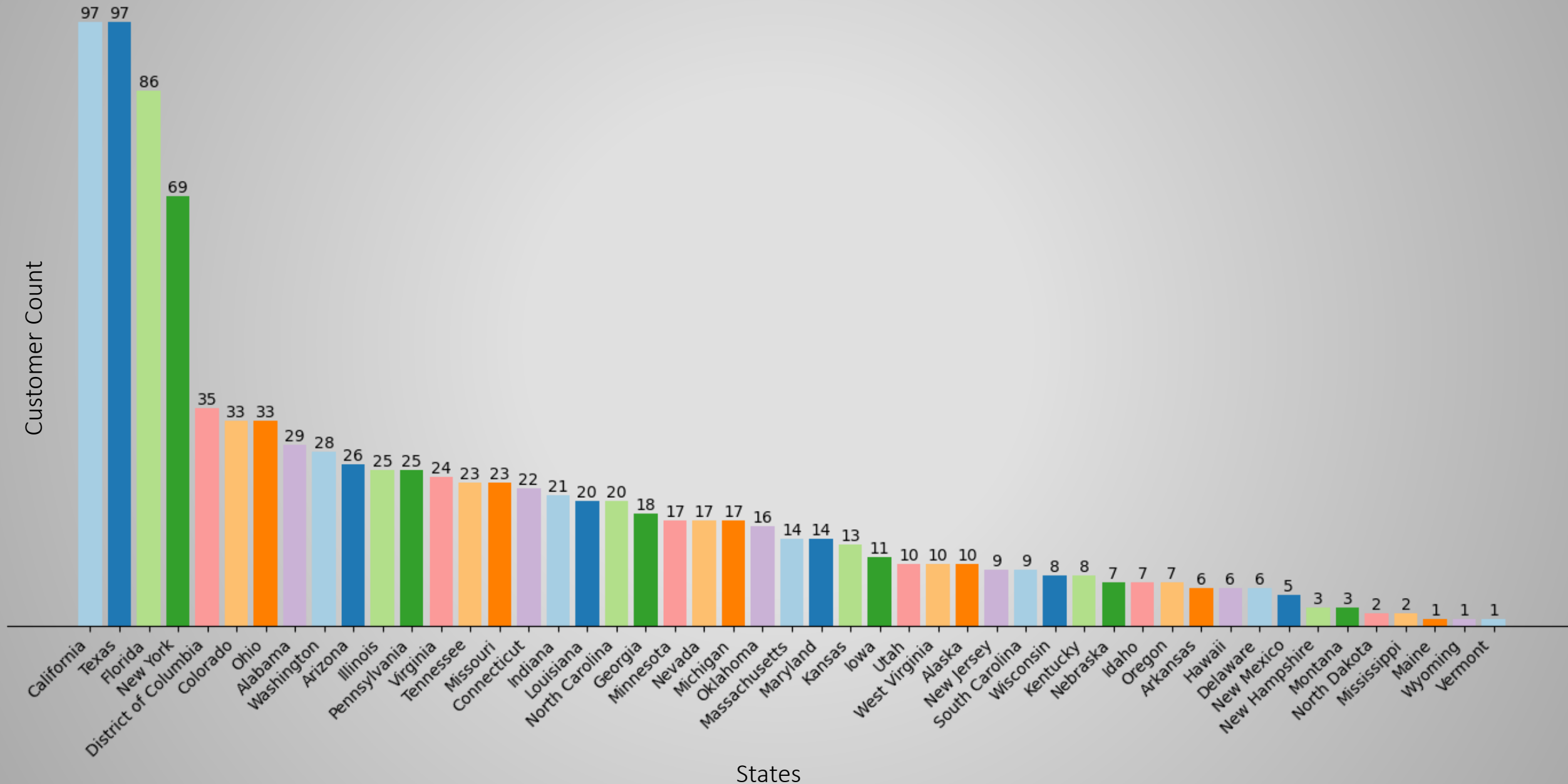
Avg Ship Time: 174 Days

Top Performing Maker :
Chevrolet

Top Performing State :
California

Discount Offered : 0.64

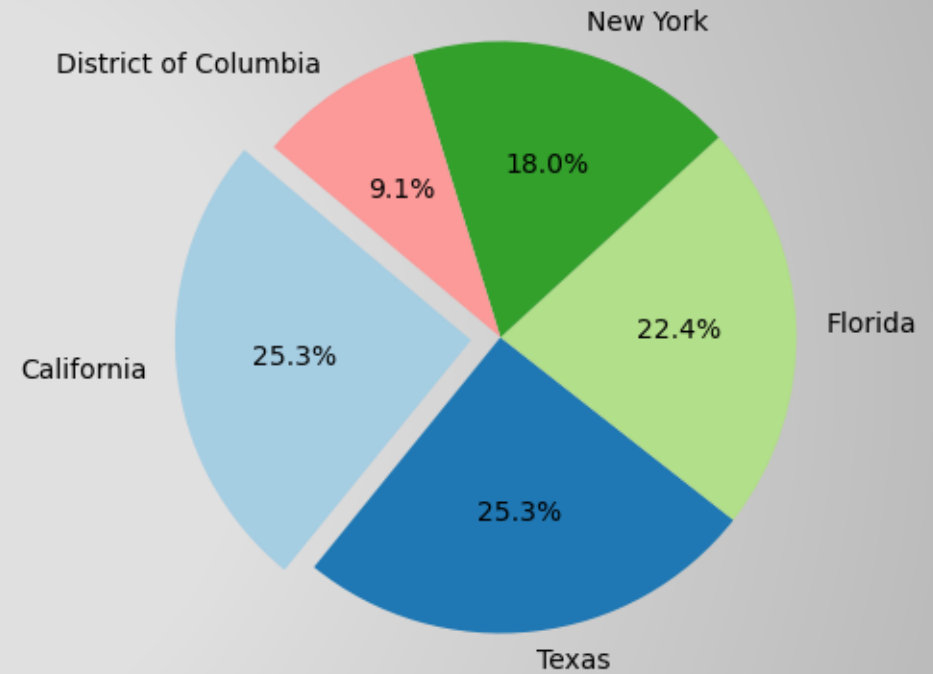
Very Good : 10%
Good : 10%
Okay: 20 %
Bad: 29%
Very Bad: 31%





Observations

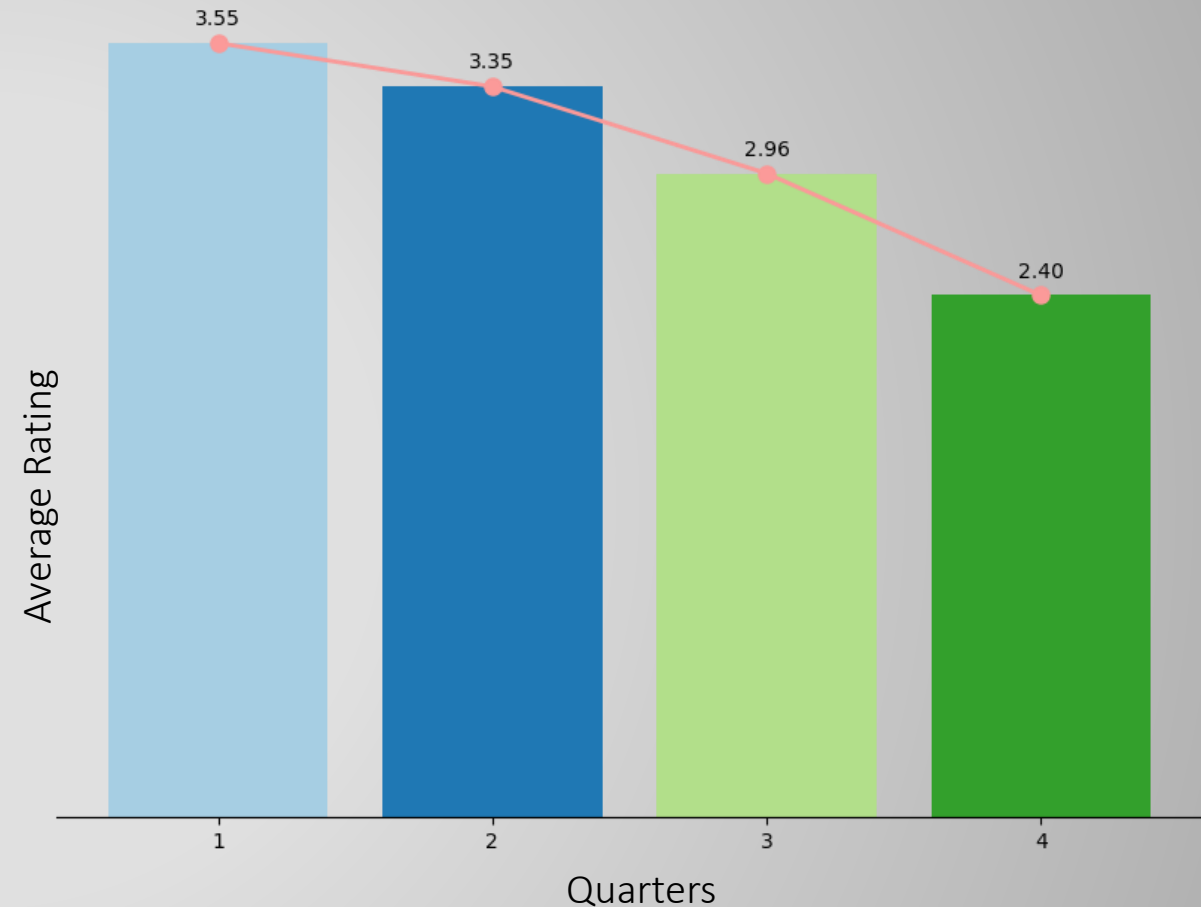
- Bar chart shows diversity of customers across various states. Though most of the share is lead by California, Texas, Florida and New York.
- California and Texas emerge as the top states with the highest customer counts, suggesting a strong market presence or popularity of the product/service in these regions
- States like Florida, New York, and Texas, which are known for their dense populations, also feature prominently in the top 10, indicating the potential for a large customer base
- States like Alabama, Washington, and Arizona also make it to the top 10, indicating potential opportunities for market expansion or targeting specific regional markets
- The inclusion of the District of Columbia in the top 10 suggests a concentration of customers in urban centers or metropolitan areas



Top 5 states with maximum customer base

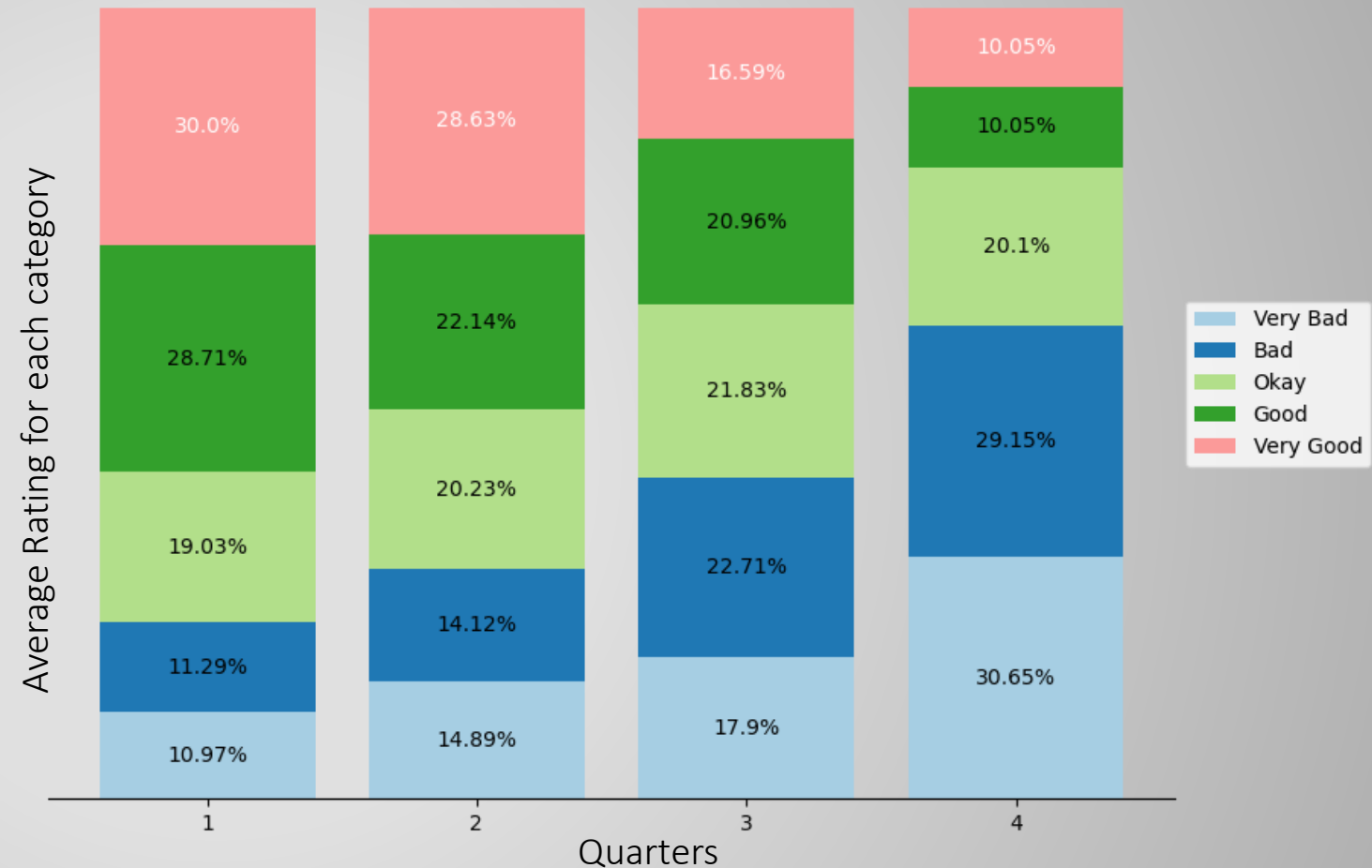
Observations

- Gradual Decline: There is a gradual decline in average ratings from the first quarter to the fourth quarter. This decline suggests a decreasing level of satisfaction or perceived quality of products or services over time
- Significant Drop: The most significant drop in average ratings occurs between the third and fourth quarters, indicating a potential issue or dissatisfaction among customers during that period
- Average rating varies from 3.55 to 2.4
- The decreasing trend in average ratings underscores the need for action to address any underlying issues affecting customer satisfaction. This could involve improving product quality, enhancing customer service, or addressing any other factors contributing to the decline in ratings



Observations

- Clear indication of gradual drop in positive feedback and increase in negative feedback over each quarter
- Good and Very Good rating has been dropped whereas Bad and very bad ratings has been increased consistently. Okay rating is consistent across quarters.
- Eventually shows increase in customers dissatisfaction with each quarter
- This decline suggests a potential decrease in customer engagement or participation in providing feedback over time
- The trends in feedback distribution underscore the importance of taking proactive measures to address any issues highlighted by negative feedback and to reinforce positive aspects of the business to maintain customer satisfaction and loyalty.
- Maybe conducting customer surveys/interviews could be beneficial



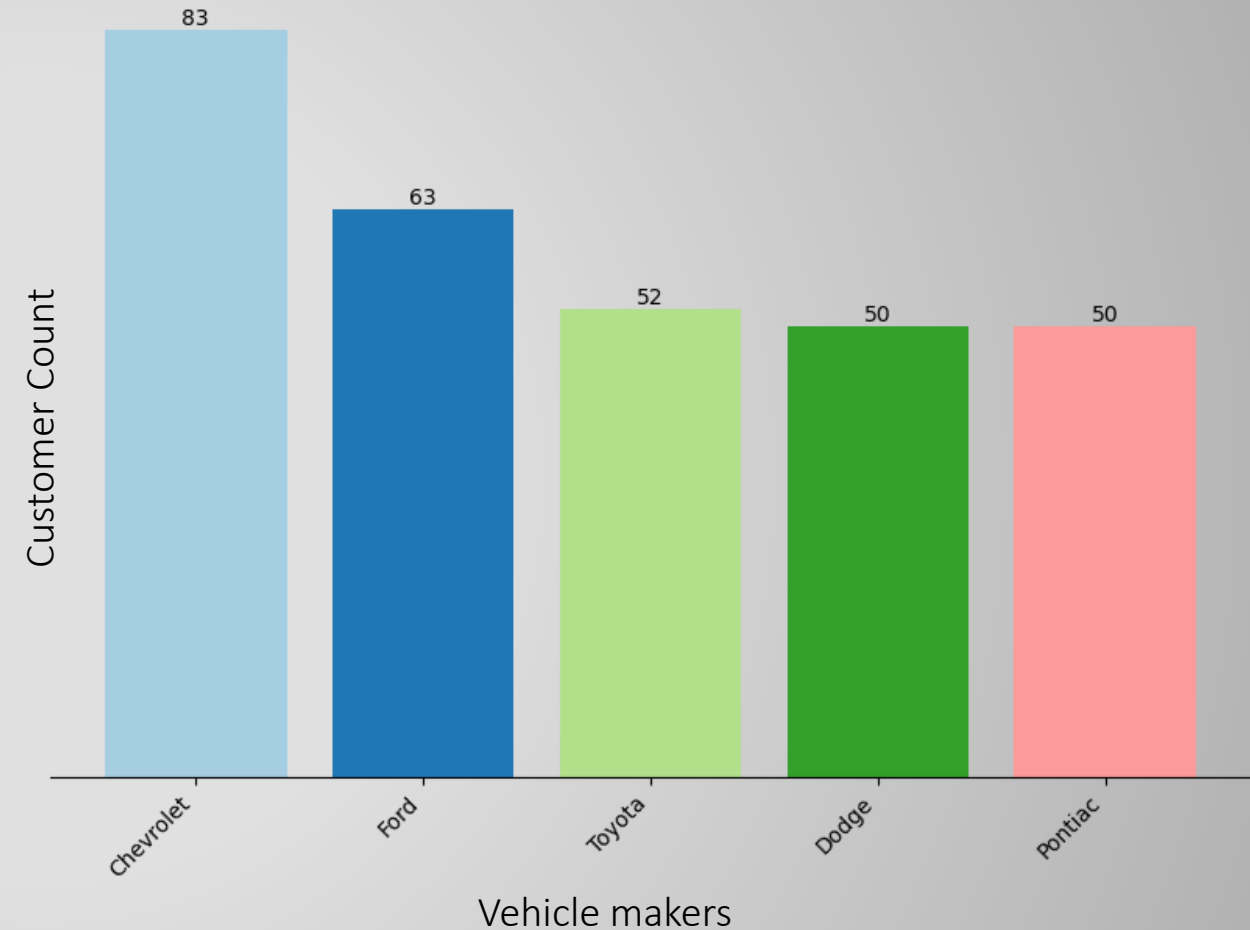
Note:

- Above Bar chart shows quarter-wise percentage of each customer feedback category



Observations

- List indicates top 5 brands on the basis of customer counts
- Chevrolet leads in terms of customer count, indicating a strong presence and potentially a higher market share. Ford follows Chevrolet closely in customer count.
- Chevrolet, Ford seems to be most favored brands when compared to others
- Toyota, Dodge and Pontiac are also favoured by customer and have almost equal distribution among them

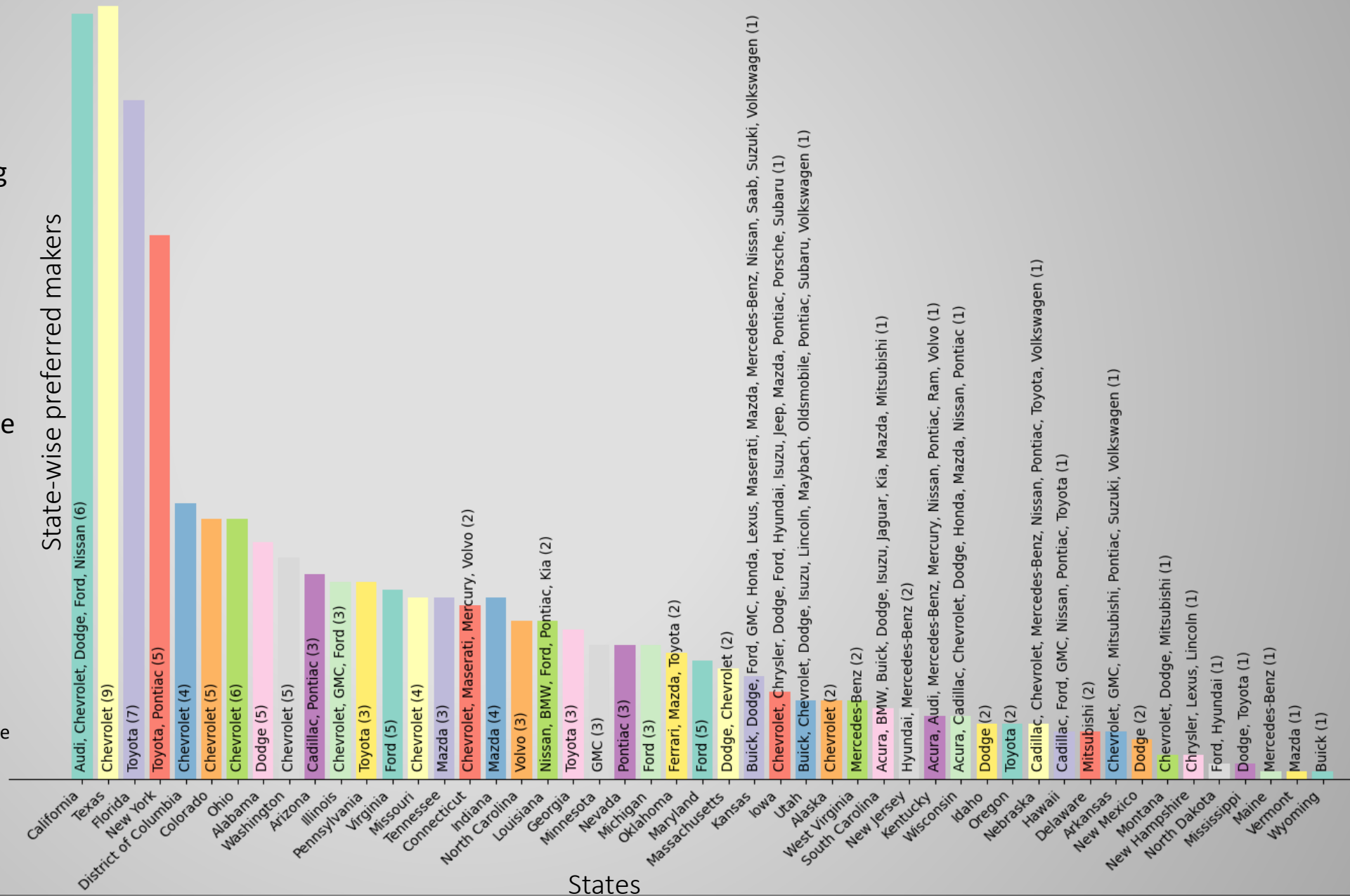


Observations

- Chart display state wise top vehicle makers on the basis of customer count
- Chevrolet lead the list by topping in most of the (17) states. Clear indication being market leader and most favoured brand by customers.
- Dodge, Ford, Toyota also topped in certain states
- While some states exhibit a single dominant vehicle maker, others showcase a diverse range of top brands.

Note: Adjacent Bar plot shows:

- State wise overall customer count
- State wise preferred vehicle makers (text inside bars) those having maximum customer counts
- State wise customer count for top vehicle makers (text inside bars)
- Y axis represents overall state wise customer count where as count inside bars are of top vehicle makers



Most preferred vehicle make in each state



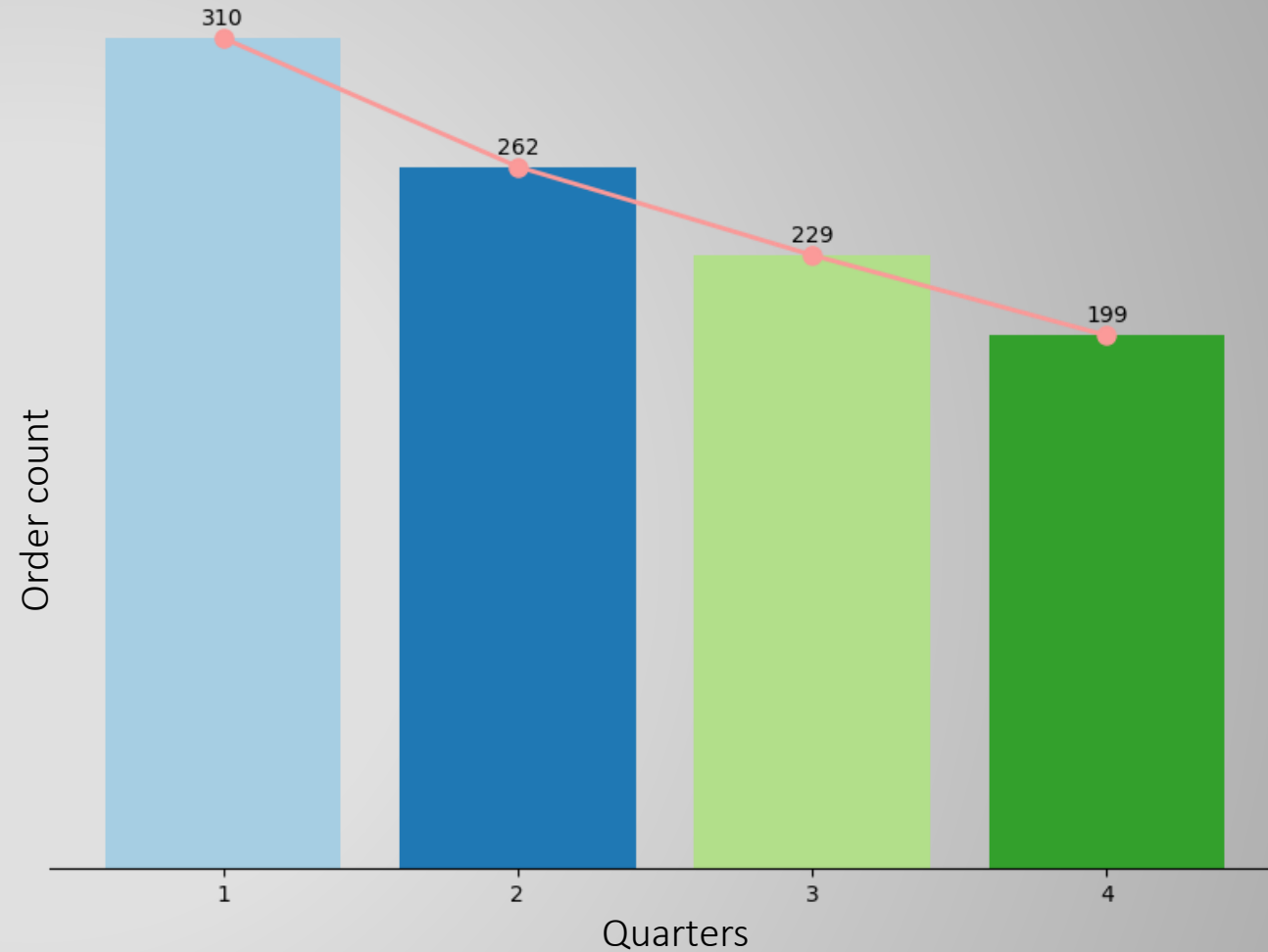
State	Top Vehicle makers	Count
California	Audi, Chevrolet, Dodge, Ford, Nissan	6
Texas	Chevrolet	9
Florida	Toyota	7
New York	Toyota, Pontiac	5
District of Columbia	Chevrolet	4
Colorado	Chevrolet	5
Ohio	Chevrolet	6
Alabama	Dodge	5
Washington	Chevrolet	5
Arizona	Cadillac, Pontiac	3
Illinois	Chevrolet, GMC, Ford	3
Pennsylvania	Toyota	3
Virginia	Ford	5
Missouri	Chevrolet	4
Tennessee	Mazda	3
Connecticut	Chevrolet, Maserati, Mercury, Volvo	2
Indiana	Mazda	4
North Carolina	Volvo	3
Louisiana	Nissan, BMW, Ford, Pontiac, Kia	2
Georgia	Toyota	3
Minnesota	GMC	3
Nevada	Pontiac	3
Michigan	Ford	3
Oklahoma	Ferrari, Mazda, Toyota	2
Maryland	Ford	5
Massachusetts	Dodge, Chevrolet	2

State	Top vehicle makers	Count
Kansas	Buick, Dodge, Ford, GMC, Honda, Lexus, Maserati, Mazda, Mercedes-Benz, Nissan, Saab, Suzuki, Volkswagen	1
Iowa	Chevrolet, Chrysler, Dodge, Ford, Hyundai, Isuzu, Jeep, Mazda, Pontiac, Porsche, Subaru	1
Utah	Buick, Chevrolet, Dodge, Isuzu, Lincoln, Maybach, Oldsmobile, Pontiac, Subaru, Volkswagen	1
Alaska	Chevrolet	2
West Virginia	Mercedes-Benz	2
South Carolina	Acura, BMW, Buick, Dodge, Isuzu, Jaguar, Kia, Mazda, Mitsubishi	1
New Jersey	Hyundai, Mercedes-Benz	2
Kentucky	Acura, Audi, Mercedes-Benz, Mercury, Nissan, Pontiac, Ram, Volvo	1
Wisconsin	Acura, Cadillac, Chevrolet, Dodge, Honda, Mazda, Nissan, Pontiac	1
Idaho	Dodge	2
Oregon	Toyota	2
Nebraska	Cadillac, Chevrolet, Mercedes-Benz, Nissan, Pontiac, Toyota, Volkswagen	1
Hawaii	Cadillac, Ford, GMC, Nissan, Pontiac, Toyota	1
Delaware	Mitsubishi	2
Arkansas	Chevrolet, GMC, Mitsubishi, Pontiac, Suzuki, Volkswagen	1
New Mexico	Dodge	2
Montana	Chevrolet, Dodge, Mitsubishi	1
New Hampshire	Chrysler, Lexus, Lincoln	1
North Dakota	Ford, Hyundai	1
Mississippi	Dodge, Toyota	1
Maine	Mercedes-Benz	1
Vermont	Mazda	1
Wyoming	Buick	1



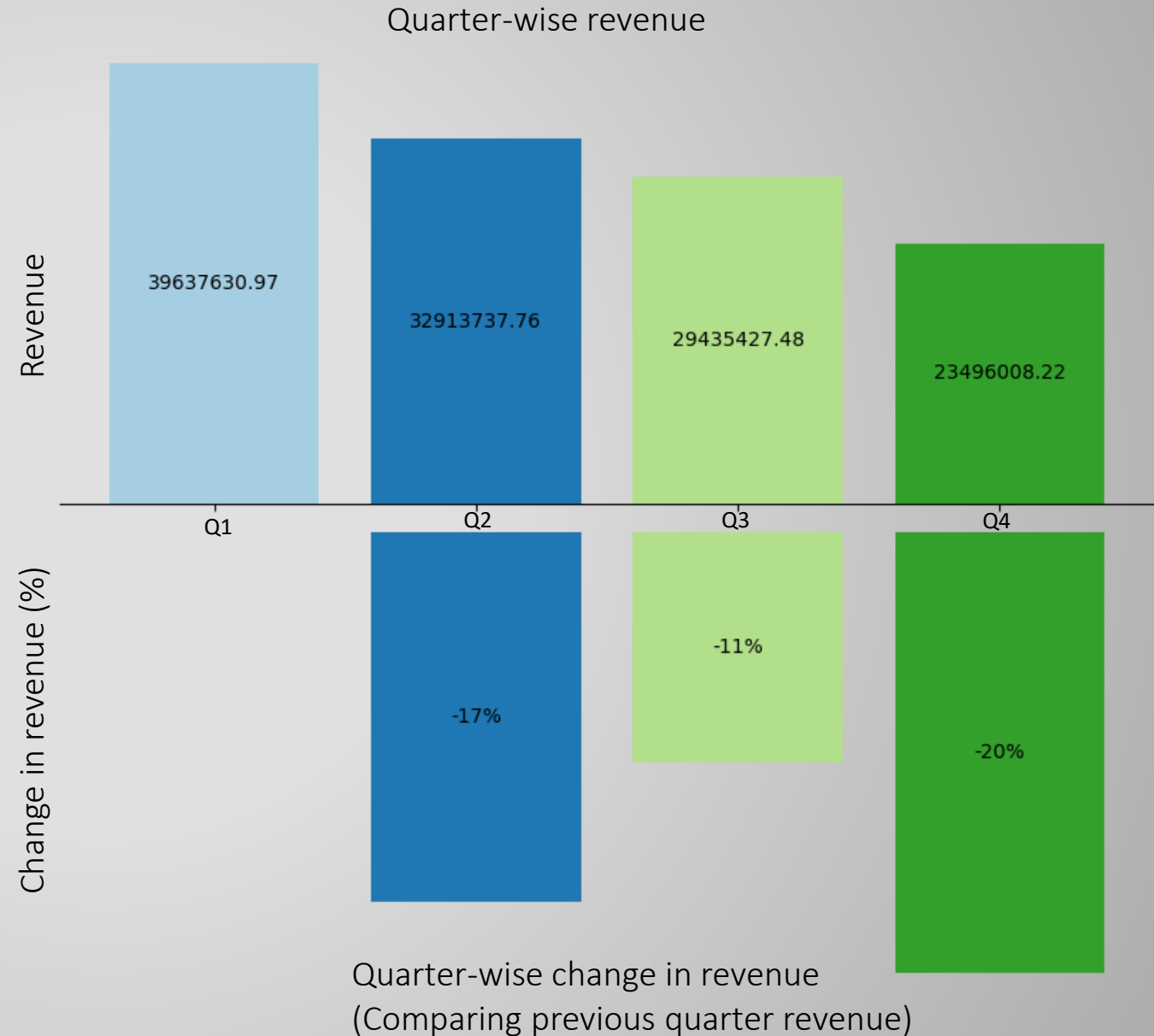
Observations

- Chart shows quarter wise order counts
- There is a noticeable decrease in the number of orders as the quarters progress, indicating a declining trend in orders.
- This clearly shows issue either with product quality or other issues like customer experience
- Decline in orders can be due to external factors such as economic conditions, market dynamics.
- Relating this result with quarterly average rating, it seems like decline is due to customer dissatisfaction.



Observations

- Chart shows quarter wise revenue at the top and percentage change of revenue at bottom
- Clear decline in the revenue with every quarter noticed
- This clearly shows issue either with product quality or other issues recession or bad financial crisis.
- Relating this result with quarterly average rating, it seems like decline is due to customer dissatisfaction.
- Last quarter has highest decline in the revenue highlighting major issues.





Observations

- Chart indicates clear decline in the revenue and order counts with every quarter.
- Relating this result with quarterly average rating, it seems like decline is due to customer dissatisfaction.
- Last quarter has highest decline 20% for revenue whereas order decline has stayed at 13%.
- Gradual decrease in orders and revenue highlight possibility of product quality issues or bad customer experience. It could be impacted due to other factors like Market condition.

Note: Adjacent Chart Overview

Top Section:

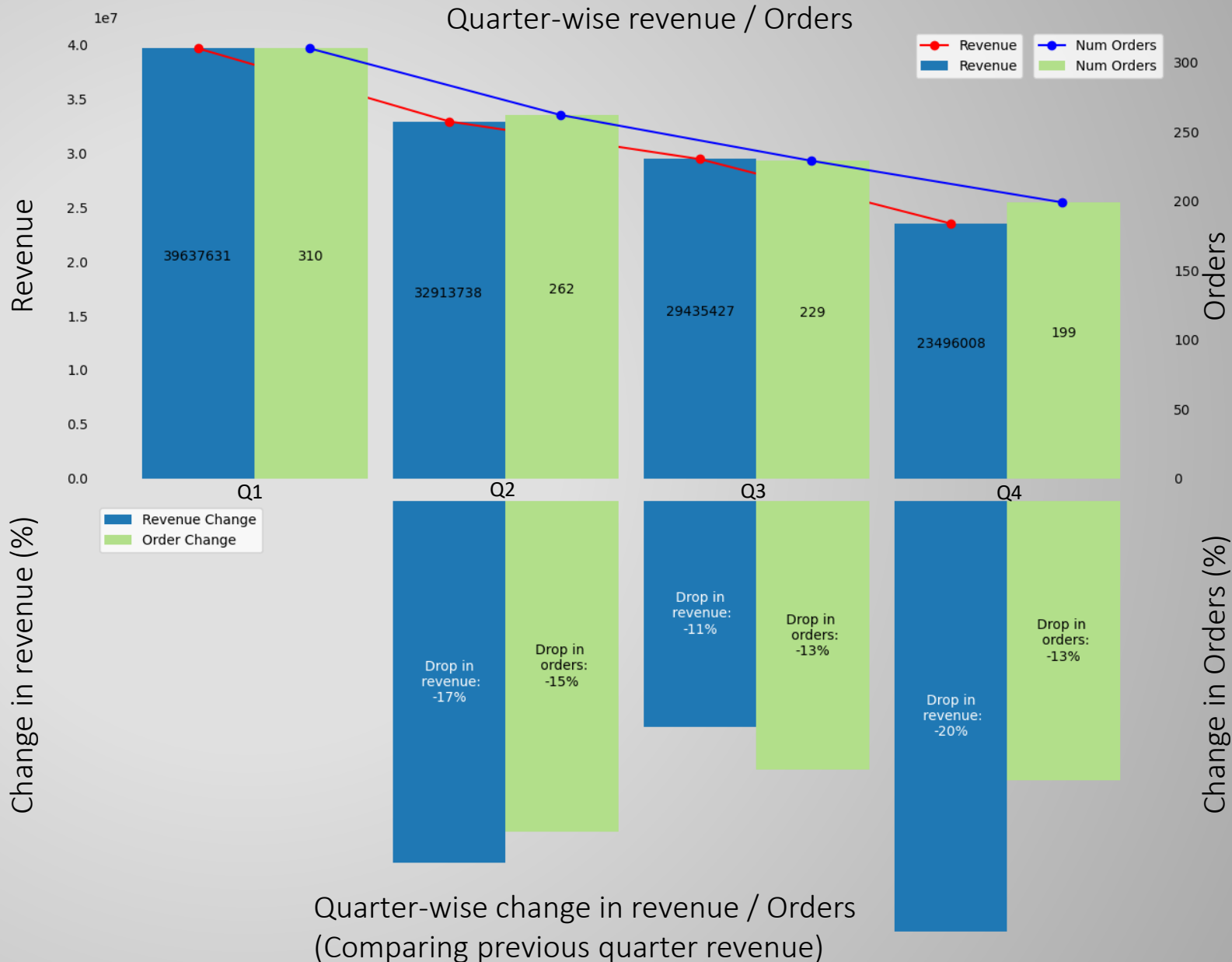
Blue Bars: Quarterly Revenue Trend (Y-axis: Left-hand side)

Green Bars: Quarterly Order Trend (Y-axis: Right-hand side)

Bottom Section:

Blue Bars: Quarterly Revenue Percentage Change

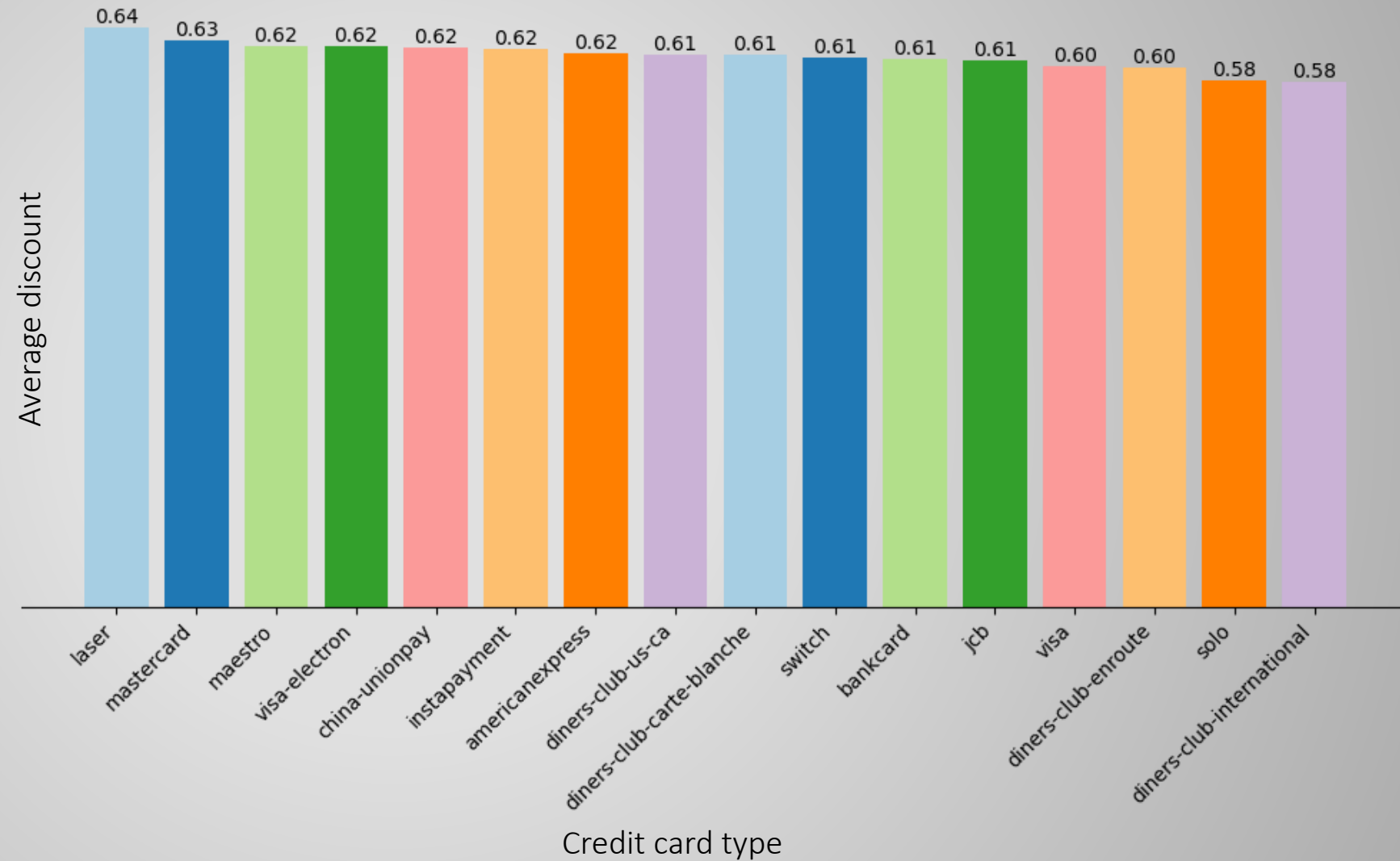
Green Bars: Quarterly Order Count Percentage Change





Observations

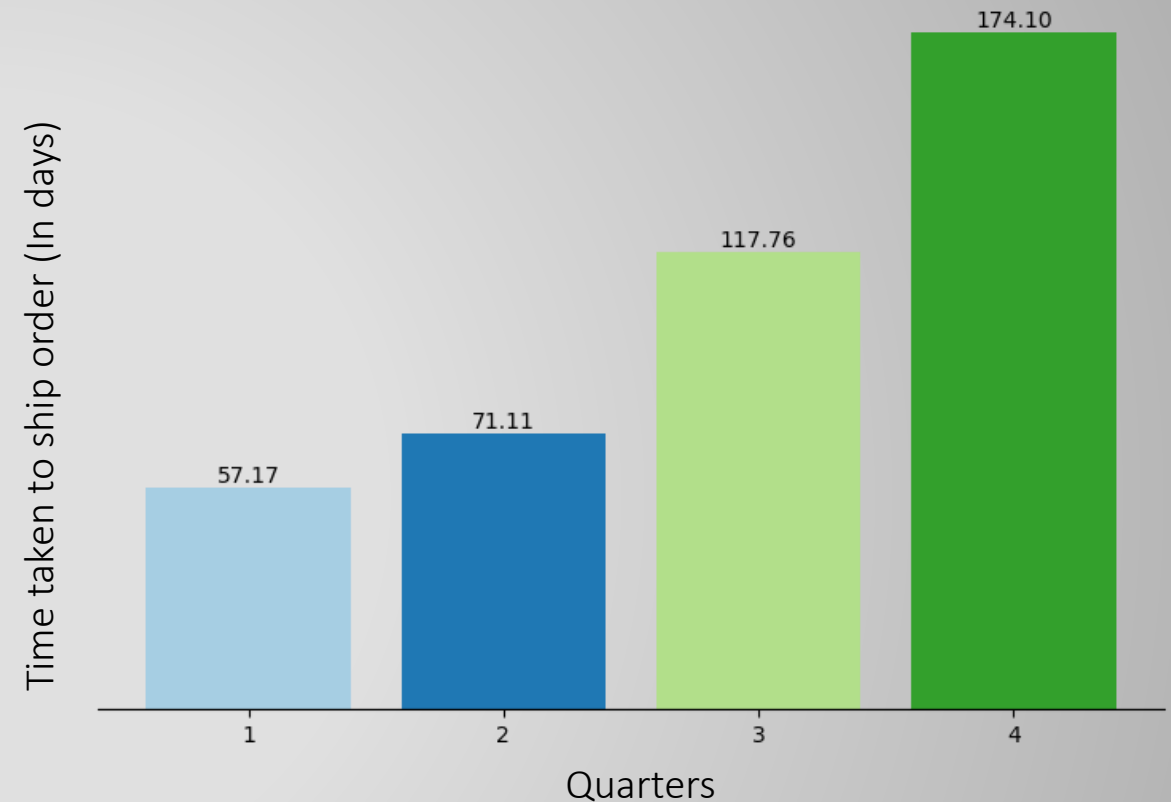
- Discounts offered on various cards could be good marketing strategy
- Laser type offering maximum average discount (0.64) followed by mastercard (0.63)
- Average discount ranges between 0.58 to 0.64
- Diners club international is offering lowest discount
- Customers have plenty of alternatives available as many of the credit cards are offering good discounts





Observations

- Significant increase in shipping time with every quarter
- Last quarter has seen maximum increase in order shipping time
- Huge difference between average order ship time between quarter#1 and quarter#4 stating severe issues in managing the orders
- This indicates possible production issues or shortage of spare parts. This can be also impacted due to market condition of supply chain issues



Consistent Performing Vehicle Maker



Vehicle Maker	Q1 Revenue	Q1 Order Count	Q2 Revenue	Q2 Order Count	Q2 Revenue Change%	Q3 Revenue	Q3 Order Count	Q3 Revenue Change%	Q4 Revenue	Q4 Order Count	Q4 Revenue Change %	Total Revenue [Q1+Q2+Q3+Q4]	Total Orders [Q1+Q2+Q3+Q4]	Average Revenue Change
Chevrolet	3290302.53	28	2768288.36	23	-15.87	2336264.00	18	-15.61	1963054.01	14	-15.97	10357908.90	83	-15.82
Ford	2849474.12	20	2524824.95	21	-11.39	1576875.05	13	-37.55	1103735.60	9	-30.00	8054909.72	63	-26.31
Toyota	1773390.02	16	1446958.71	11	-18.41	1345744.53	13	-6.99	1791688.25	12	33.14	6357781.51	52	2.58
Pontiac	2435034.42	20	1273362.58	11	-47.71	1365054.83	11	7.20	953682.73	8	-30.14	6027134.56	50	-23.55
Dodge	1729345.01	15	1436896.59	11	-16.91	1285538.62	10	-10.53	1475766.67	14	14.80	5927546.89	50	-4.22
Mercedes-Benz	1018803.11	10	1181672.11	9	15.99	2128728.53	15	80.15	1177666.10	11	-44.68	5506869.85	45	17.15
Mitsubishi	954247.58	8	1932551.30	15	102.52	1181043.89	9	-38.89	1117387.05	9	-5.39	5185229.82	41	19.41
Mazda	1732165.91	15	1923708.97	16	11.06	833850.70	6	-56.65	630792.21	6	-24.35	5120517.79	43	-23.32
Buick	1942083.50	17	513347.10	4	-73.57	1521977.96	12	196.48	940495.81	7	-38.21	4917904.37	40	28.24
GMC	1525626.66	9	1506327.59	13	-1.26	992854.21	7	-34.09	856097.78	8	-13.77	4880906.24	37	-16.38
Volkswagen	1243347.56	10	1442835.31	10	16.04	1199201.26	9	-16.89	747866.71	6	-37.64	4633250.84	35	-12.83
Nissan	1430112.70	11	1027928.77	8	-28.12	695601.91	5	-32.33	668563.31	7	-3.89	3822206.69	31	-21.45
Volvo	1098290.10	8	478885.91	4	-56.40	1343911.19	11	180.63	435456.44	3	-67.60	3356543.64	26	18.88
BMW	1126207.06	10	747910.17	5	-33.59	727442.18	6	-2.74	754105.15	7	3.67	3355664.56	28	-10.89
Audi	1293896.55	9	1067295.69	8	-17.51	488146.36	4	-54.26	379187.35	4	-22.32	3228525.95	25	-31.37
Suzuki	921901.87	6	680129.22	5	-26.23	1152416.90	8	69.44	391778.04	3	-66.00	3146226.03	22	-7.60

Note:

- Above data shows change in revenue/orders over quarters for vehicle makers whose minimum total revenue exceeds 30M

Observations

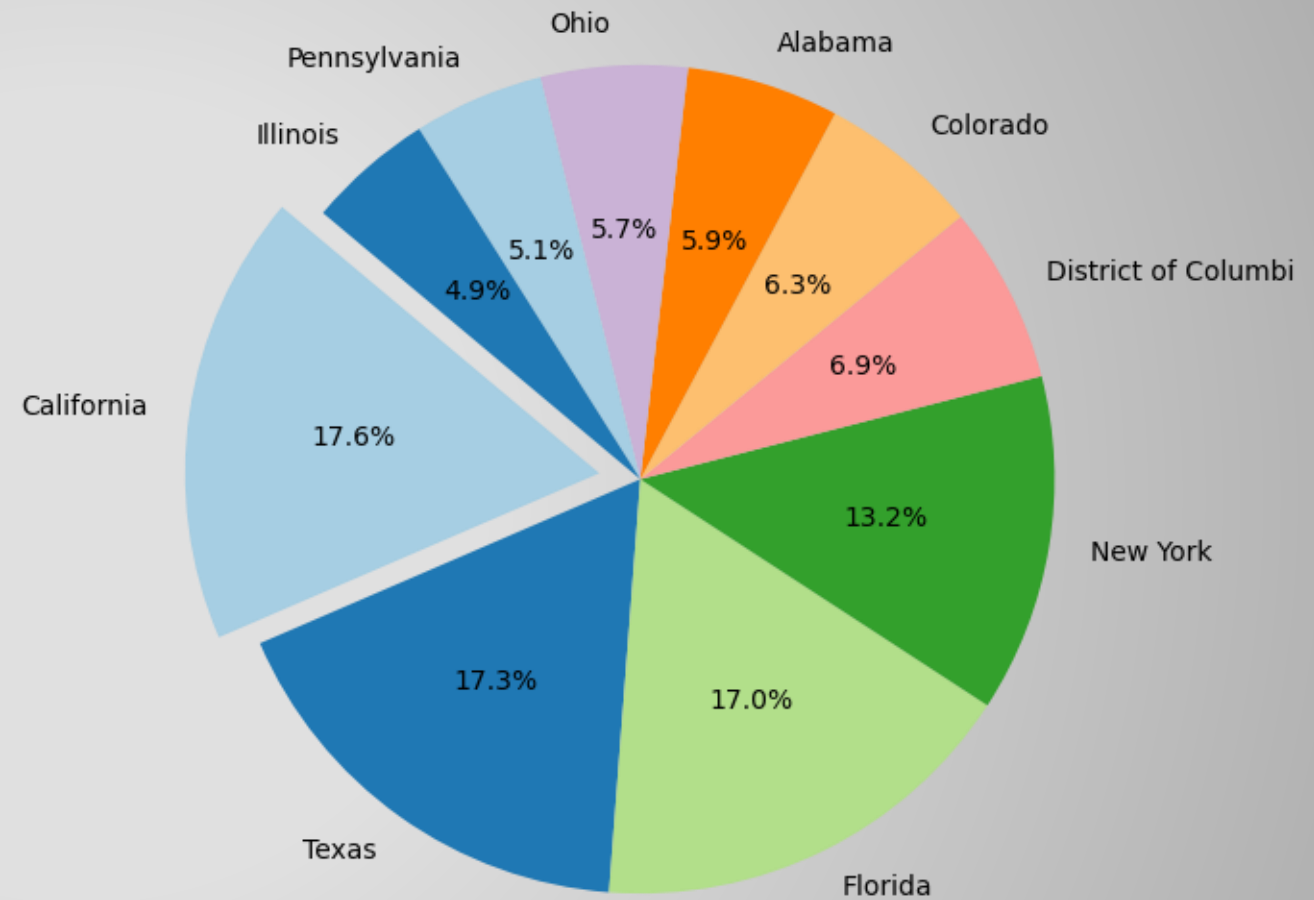
- In this analysis, we explore the quarterly revenue, order volumes, and their percentage changes for various vehicle makers. We focus on makers whose total revenue exceeds \$30 million. While overall revenue has experienced a consistent decline, there are makers demonstrating resilience in maintaining their revenue streams. Our focus is directed towards these consistent performers
- Toyota, Dodge, Chevrolet, Mitsubishi, Buick (highlighted) are some of the brands maintaining or even increasing revenues especially in last quarters
- These brands present an opportunity for focused attention, with the potential to maximize sales and ultimately improve overall profitability. Management can focus on these brands and can intend to maximize their sales.

Top revenue generator states



Observations

- Top Revenue States: California, Texas, and Florida are the top three states in terms of total revenue generated, with California leading the list.
- Contribution of Top States: The top three states (California, Texas, and Florida) contribute significantly to the total revenue, accounting for a substantial portion of the overall revenue.
- Distribution of Revenue: There is a notable disparity in revenue among states, with some states like California generating substantially higher revenue compared to others like Maine and Wyoming.
- Regional Economic Disparities: The data suggests that there may be regional economic disparities, with states like California, New York, and Texas having higher economic activity compared to states with lower revenue figures.
- Market Potential: States with higher revenue figures may present greater market potential or higher consumer demand for the products or services offered. This information is relevant with state-wise customer count analysis

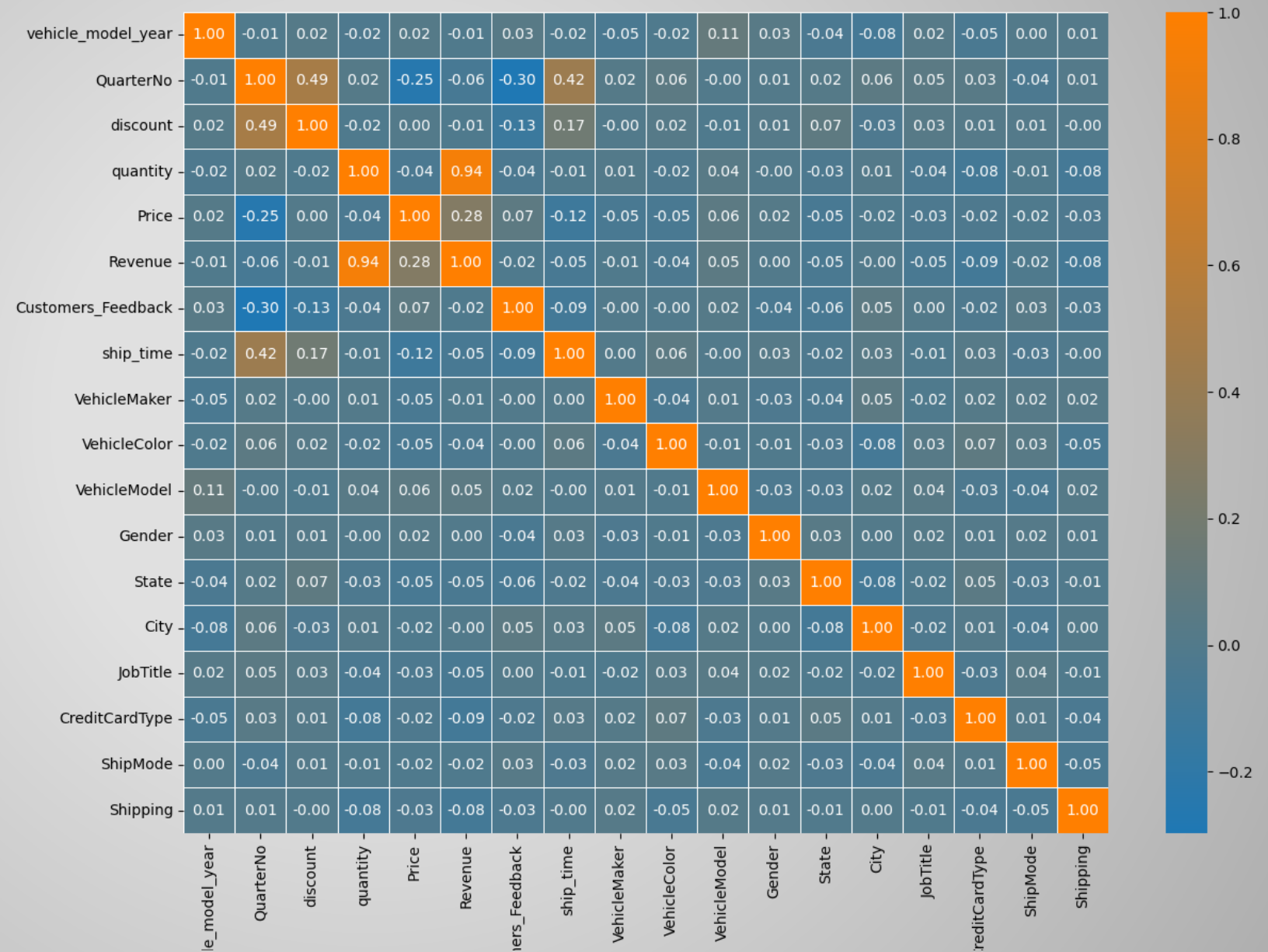


Correlation analysis



Observations

- Positive correlation of quarters with customers feedback and ship_time is highlighted again
- Change in discount (increase) and price (drop) with quarters can be seen
- Relation between quantity and revenue is obvious
- No much correlation found in the data that could be considered as impacting factors on decline in revenue, feedback.



Note:

Legend:

- 1/Dark Orange indicate maximum correlation (Impact)
- 1/Dark blue indicate maximum negative correlation

Conclusion



Insights

- Both order counts and revenue have shown a consistent downward trend.
- Customer dissatisfaction has been on the rise continuously.
- The delay in vehicle shipping time has been steadily increasing.
- Despite price drops and increased discounts, sales have continued to decline.
- However, amidst the overall sales decline, some brands are managing to maintain relatively better performance.
- It's important to consider external factors such as economic conditions, market dynamics, or promotional campaigns, as they may significantly impact business performance in each quarter.

Recommendations

- Initiate customer surveys and interviews to pinpoint pain points and areas for enhancement in the customer experience.
- Prioritize efforts to enhance delivery times by diagnosing and resolving the underlying causes of delays.
- Allocate resources towards brands such as Toyota, Chevrolet and Dodge, which exhibit consistent quarterly revenue generation. Minimizing involvement with consistently underperforming brands can offer benefits.
- Focus on high performing brands and increase sale
- Focus on optimizing business strategies in low-performing states to potentially boost performance.
- Evaluate opportunities for enhancing customer experience across various touchpoints.
- Analyze the impact of market dynamics to forecast demand fluctuations and tailor strategies accordingly.
- Some research and brainstorming on understanding customer feedback, product quality and shipping delay time would be crucial for sustainability

Thank You!

