

# **SQL and Databases:**

## **Project Report**

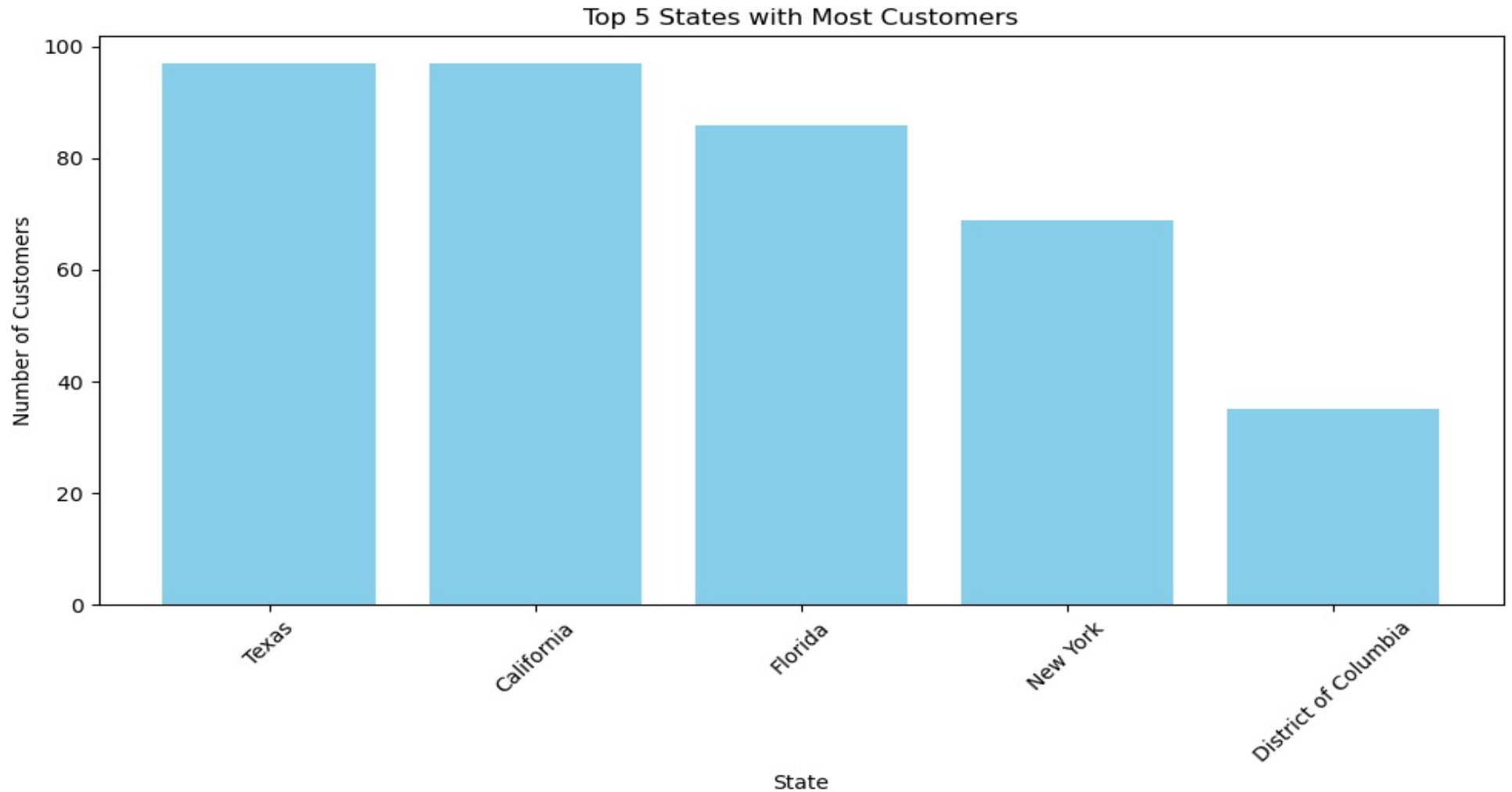
**By Bhavya G and PGAIML Online batch**

## Business Overview

<b>Total Revenue</b> <b>39421580</b>	<b>Total Orders</b> <b>1000</b>	<b>Total Customers</b> <b>994</b>	<b>Avg Rating</b> <b>3.3550</b>
<b>Last Qtr Revenue</b> <b>23346780</b>	<b>Last Qtr Orders</b> <b>199</b>	<b>Avg Days to Ship</b> <b>174</b>	<b>% Good Feedback</b> <b>28.71 %</b>

# **Customer Metrics**

# Distribution of Customers across States

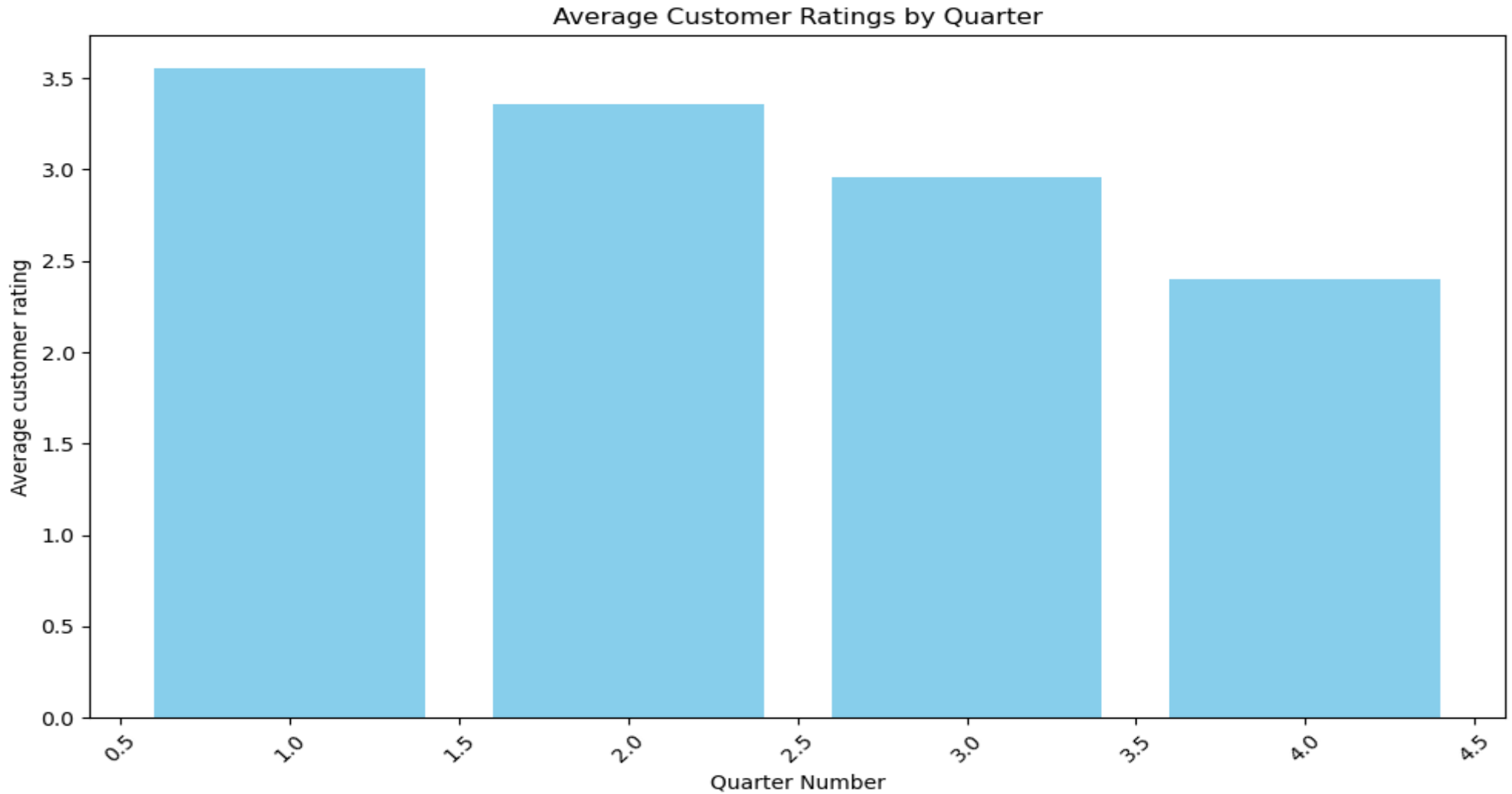


**Hint:** You can use a bar chart to show the top 5 states with most customers. State in the x-axis and Customer Count as the y-axis

## **Observations / Findings**

- California has the highest number of customers among the top 5 states, indicating a significant customer base.
- Texas follows closely behind California in terms of customer count, showcasing a substantial consumer presence.
- Florida, while in the top 5, displays slightly fewer customers compared to California and Texas.
- New York and District of Columbia also demonstrate a considerable number of customers, although slightly lower than the leading states.
- Overall, these top 5 states collectively represent a significant customer base, highlighting key regions of high consumer activity for the business.

# Average Customer Ratings by Quarter

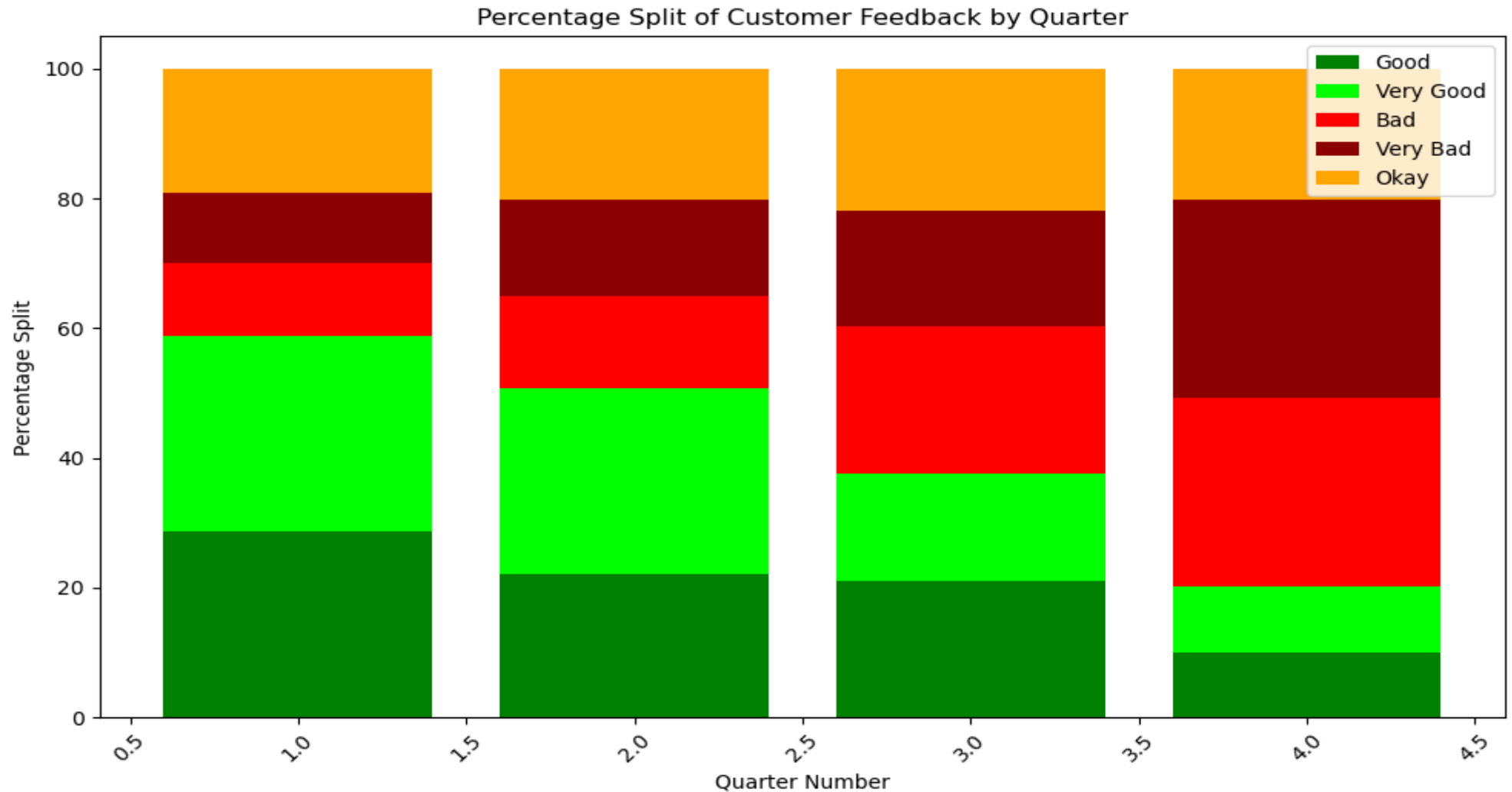


**Hint:** You can make a bar chart with Quarter Number on the x-axis and the average customer rating in the y-axis

## **Observations / Findings**

- There appears to be a consistent trend in the average customer ratings across quarters, with relatively stable scores.
- If there are significant fluctuations in average ratings, they might indicate changes in customer satisfaction or experience.
- Consistent high ratings could imply a consistent quality of service or product satisfaction over time.
- Sudden drops or spikes in ratings may warrant further investigation into factors influencing customer experiences during those periods.
- A consistent upward or downward trend in ratings could indicate changes in overall customer satisfaction or dissatisfaction over time.
- These observations provide insights into the overall sentiment of customers over different quarters, aiding in understanding customer perceptions and potential areas for improvement.

# Trend of Customer Satisfaction



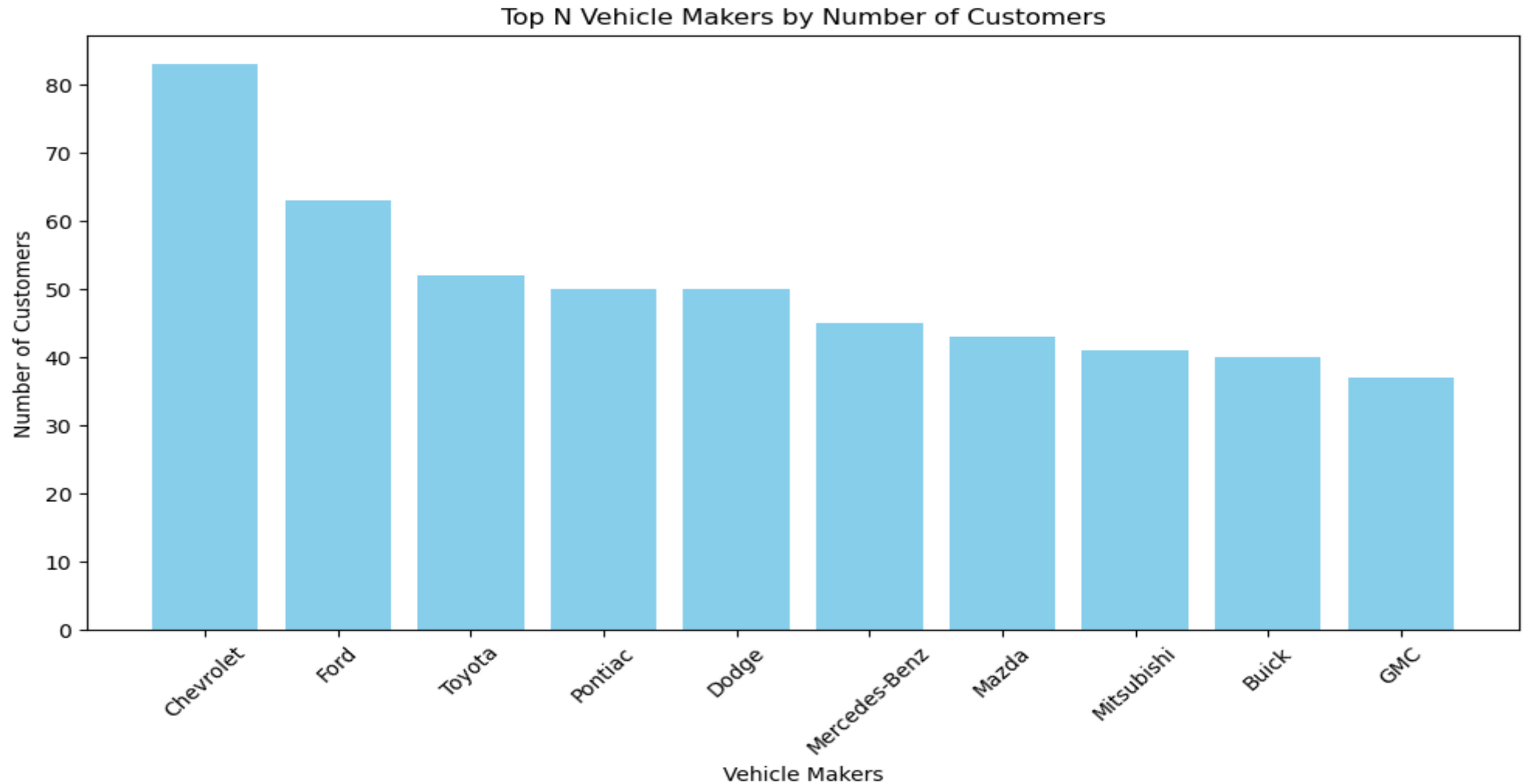
**Hint:** You can make a 100% Stacked bar chart with Quarter Number on the x-axis and percentage split of customer feedback [good, very good, bad, very bad, okay] in the y-axis



## **Observations / Findings**

- Consistency in positive feedback (good and very good) percentages across quarters indicates a sustained level of satisfaction.
- A sudden rise in negative feedback (bad and very bad) percentages might signal emerging issues or dissatisfaction among customers.
- Fluctuations in "okay" feedback percentages may suggest varied experiences, potentially indicating areas for improvement.
- If there's a consistent increase in positive feedback percentages, it could reflect enhancements in product/service quality or customer service.
- Consistent negative trends in feedback categories might indicate systemic issues requiring immediate attention.
- Monitoring these feedback variations over quarters allows for identifying trends and taking proactive measures to address concerns or maintain positive trends.

# Top Vehicle makers preferred by customers

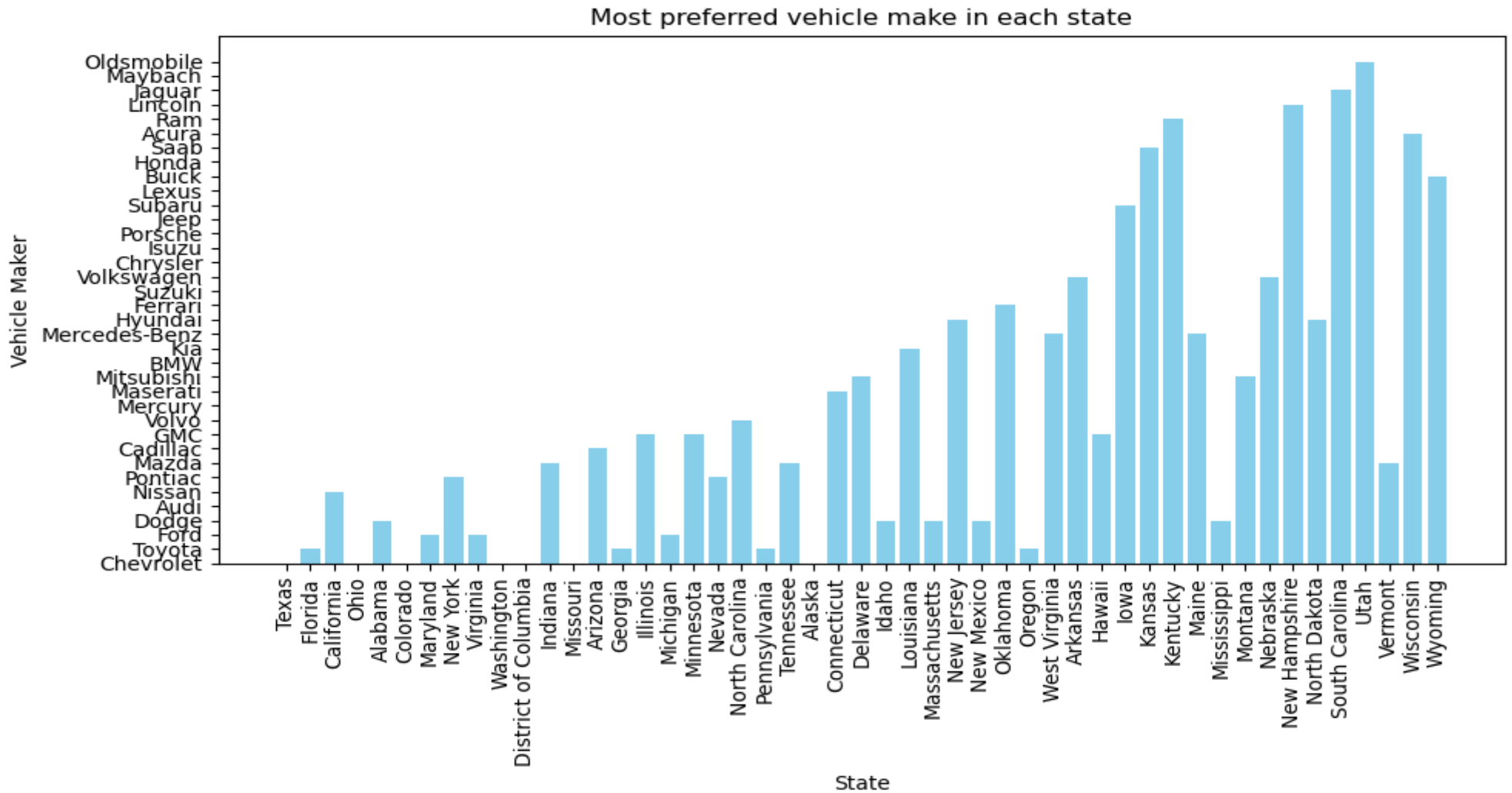


**Hint:** You can make a bar chart with top N vehicle makers on the x-axis and the number of customers in the y-axis

## **Observations / Findings**

- The top N vehicle makers with the highest customer count indicate the most popular brands among consumers.
- High customer counts for specific vehicle makers suggest strong brand loyalty or market demand for those brands.
- Variations in customer counts among different vehicle makers might highlight diverse consumer preferences or market segments.
- A considerable difference in customer counts between top N vehicle makers could indicate market dominance by certain brands.
- Changes in customer counts for specific vehicle makers over time might reflect shifts in consumer preferences or market dynamics.
- Understanding customer preferences for top vehicle makers can aid in targeted marketing strategies or product/service improvements.

# Most preferred vehicle make in each state



**Hint:** You can provide a list of states and the with the vehicle make most preferred there in the form of text or a neatly formatted table

	State	Vehicle Maker
0	Alabama	Dodge
1	Alaska	Chevrolet
2	Arizona	Pontiac
3	Arkansas	Suzuki
4	California	Ford
5	Colorado	Chevrolet
6	Connecticut	Chevrolet
7	Delaware	Mitsubishi
8	District of Columbia	Chevrolet
9	Florida	Toyota
10	Georgia	Toyota

11	Hawaii	Ford
12	Idaho	Dodge
13	Illinois	Ford
14	Indiana	Mazda
15	Iowa	Chrysler
16	Kansas	GMC
17	Kentucky	Acura
18	Louisiana	BMW
19	Maine	Mercedes-Benz
20	Maryland	Ford
21	Massachusetts	Dodge
22	Michigan	Ford

+-----+-----+-----+		
23	Minnesota	GMC
+-----+-----+-----+		
24	Mississippi	Dodge
+-----+-----+-----+		
25	Missouri	Chevrolet
+-----+-----+-----+		
26	Montana	Chevrolet
+-----+-----+-----+		
27	Nebraska	Chevrolet
+-----+-----+-----+		
28	Nevada	Pontiac
+-----+-----+-----+		
29	New Hampshire	Chrysler
+-----+-----+-----+		
30	New Jersey	Mercedes-Benz
+-----+-----+-----+		
31	New Mexico	Dodge
+-----+-----+-----+		
32	New York	Toyota
+-----+-----+-----+		
33	North Carolina	Volvo
+-----+-----+-----+		
34	North Dakota	Hyundai
+-----+-----+-----+		

35	Ohio	Chevrolet	
36	Oklahoma	Toyota	
37	Oregon	Toyota	
38	Pennsylvania	Toyota	
39	South Carolina	Acura	
40	Tennessee	Mazda	
41	Texas	Chevrolet	
42	Utah	Maybach	
43	Vermont	Mazda	
44	Virginia	Ford	
45	Washington	Chevrolet	
46	West Virginia	Mercedes-Benz	
47	Wisconsin	Pontiac	
48	Wyoming	Buick	

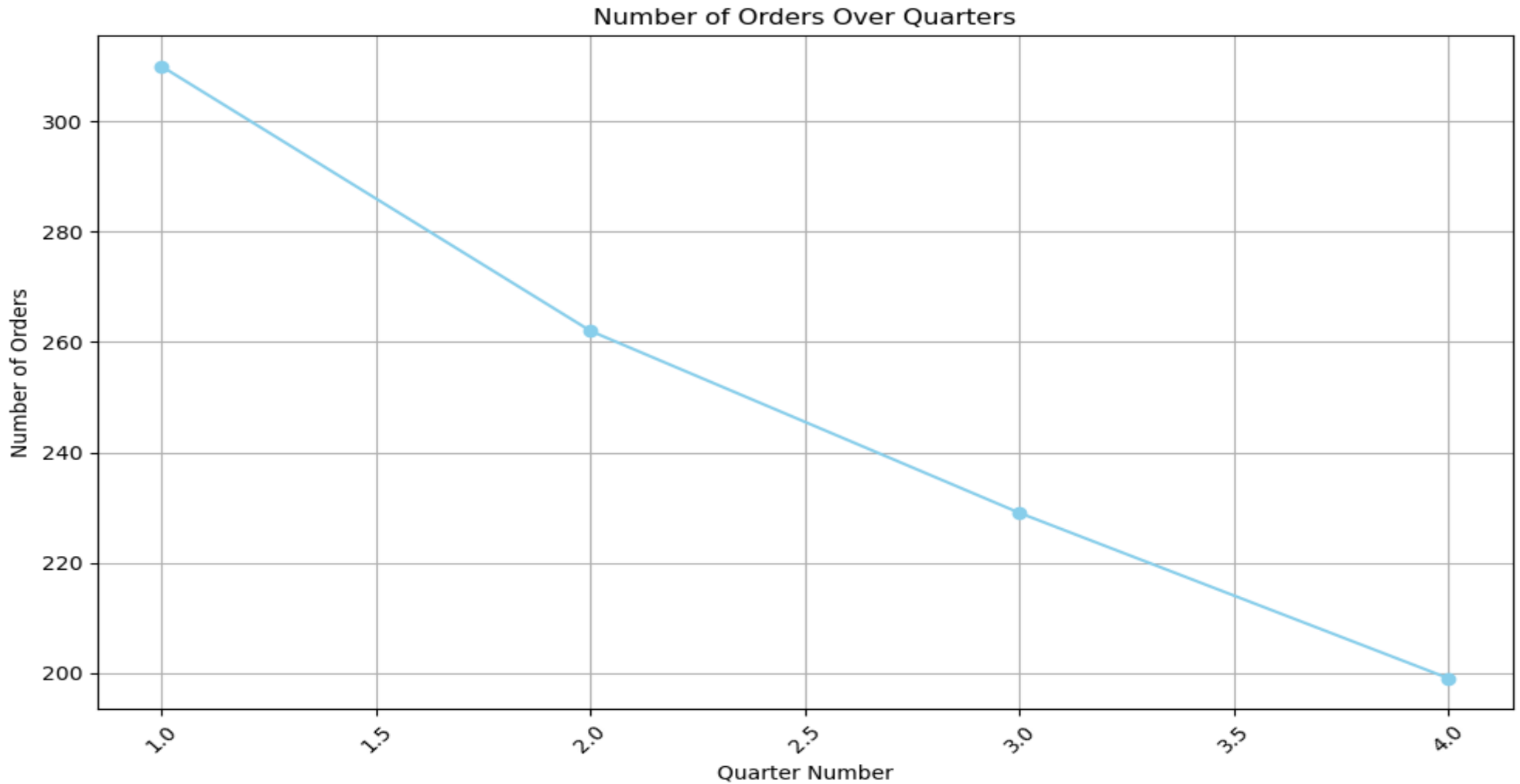


## **Observations / Findings**

- Regional preferences for vehicle makes are apparent, with specific brands being favored in different states.
- Certain vehicle makes might have a strong-hold in particular regions, indicating localized consumer preferences.
- Variations in preferred vehicle makes among states might relate to factors like marketing strategies, cultural influences, or brand reputation.
- Understanding the most preferred vehicle makes in each state allows for targeted marketing or inventory decisions catering to local demand.
- Differences in preferred vehicle makes across states can offer insights into diverse consumer tastes or lifestyle preferences.
- Analyzing state-wise vehicle preferences aids in crafting customized approaches for sales or dealership strategies per region.

# **Revenue Metrics**

# Trend of purchases by Quarter

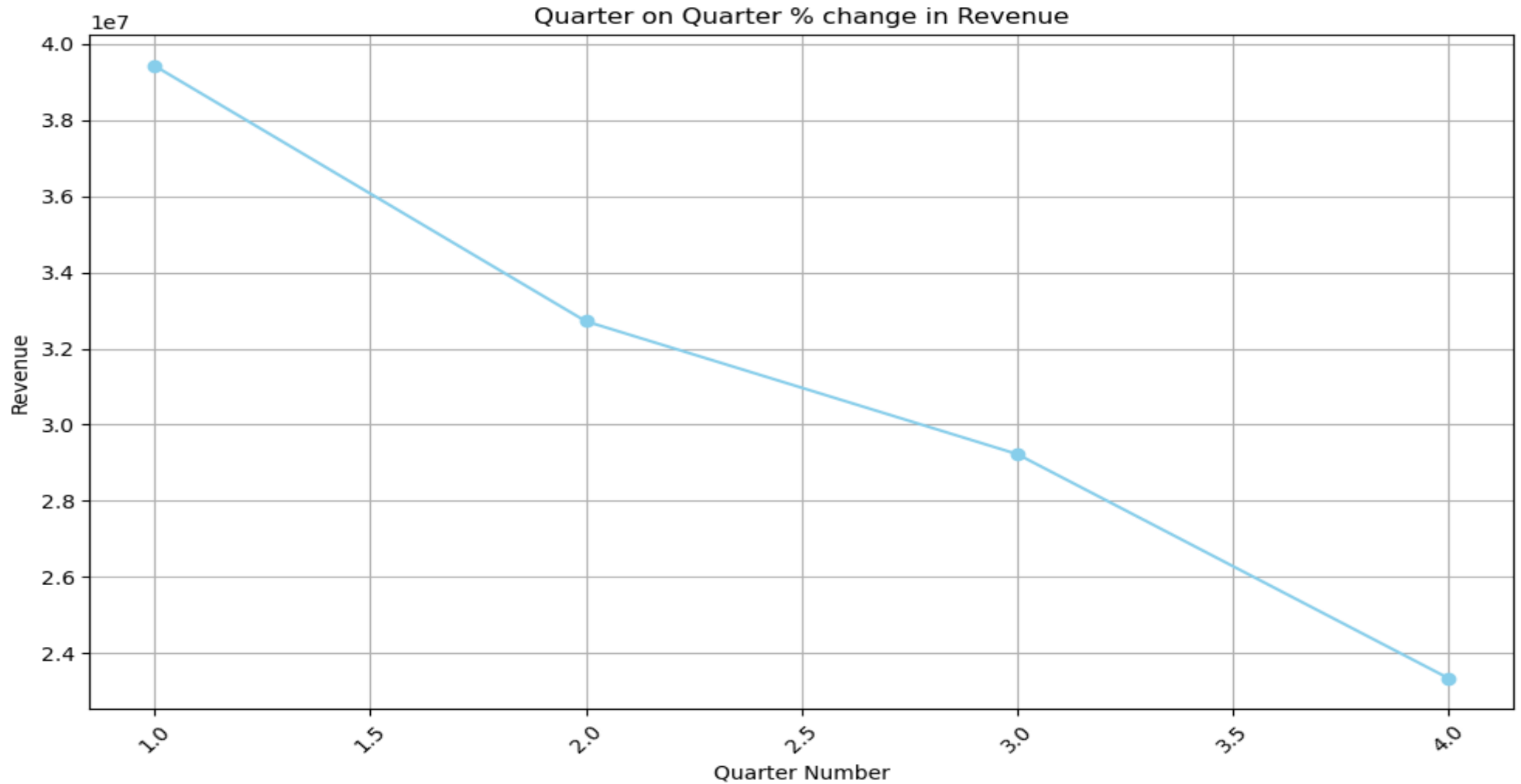


**Hint:** You can use a line chart with Quarter Number in the x-axis and No of Orders in the y-axis

## **Observations / Findings**

- Seasonal trends might be visible, with certain quarters consistently showing higher or lower order volumes.
- Sudden spikes or drops in the number of orders could correlate with marketing campaigns, promotions, or external factors.
- Consistent growth or decline in order numbers across quarters might signify business expansion or contraction.
- Peaks in order volumes during specific quarters could indicate periods of high demand or successful sales initiatives.
- Declining order numbers might suggest market saturation, changing consumer preferences, or operational challenges.
- Analysis of order volumes per quarter allows for strategic planning, such as inventory management or resource allocation.

# Quarter on Quarter % change in Revenue

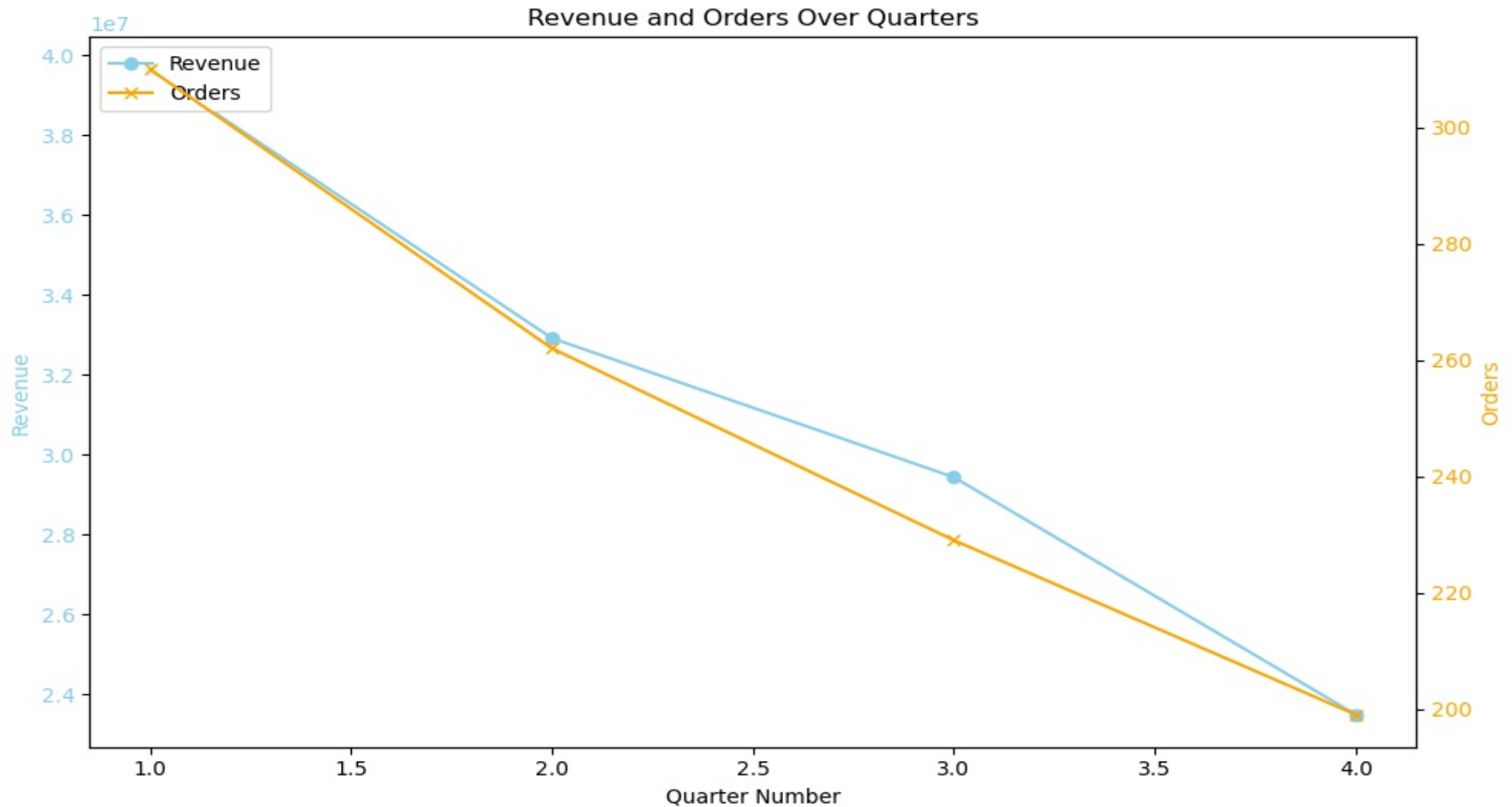


**Hint:** You can use a line chart with Quarter Number in the x-axis and revenue in the y-axis, and give the % change as text at each point, OR you can just have a neatly formatted table with the % changes, if that would look cleaner

## **Observations / Findings**

- Positive percentage change indicates revenue growth between consecutive quarters, signifying business expansion or increased sales.
- Negative percentage change represents a decline in revenue, potentially indicating market challenges or operational issues.
- Consistent positive trends in percentage change suggest sustained revenue growth, reflecting business stability or successful strategies.
- Fluctuations in percentage change might align with seasonal variations, market fluctuations, or shifts in consumer behavior.
- Sharp changes in percentage change could signify external factors impacting revenue, like economic changes or industry-specific events.
- Understanding revenue fluctuations and their corresponding percentage changes aids in forecasting and adapting business strategies.

# Trend of Revenue and Orders by Quarter



**Hint:** You can create a dual axis line chart with Quarter Number in the x-axis, and Revenue as the 1st y-axis and Orders as the 2nd y-axis in the same chart.

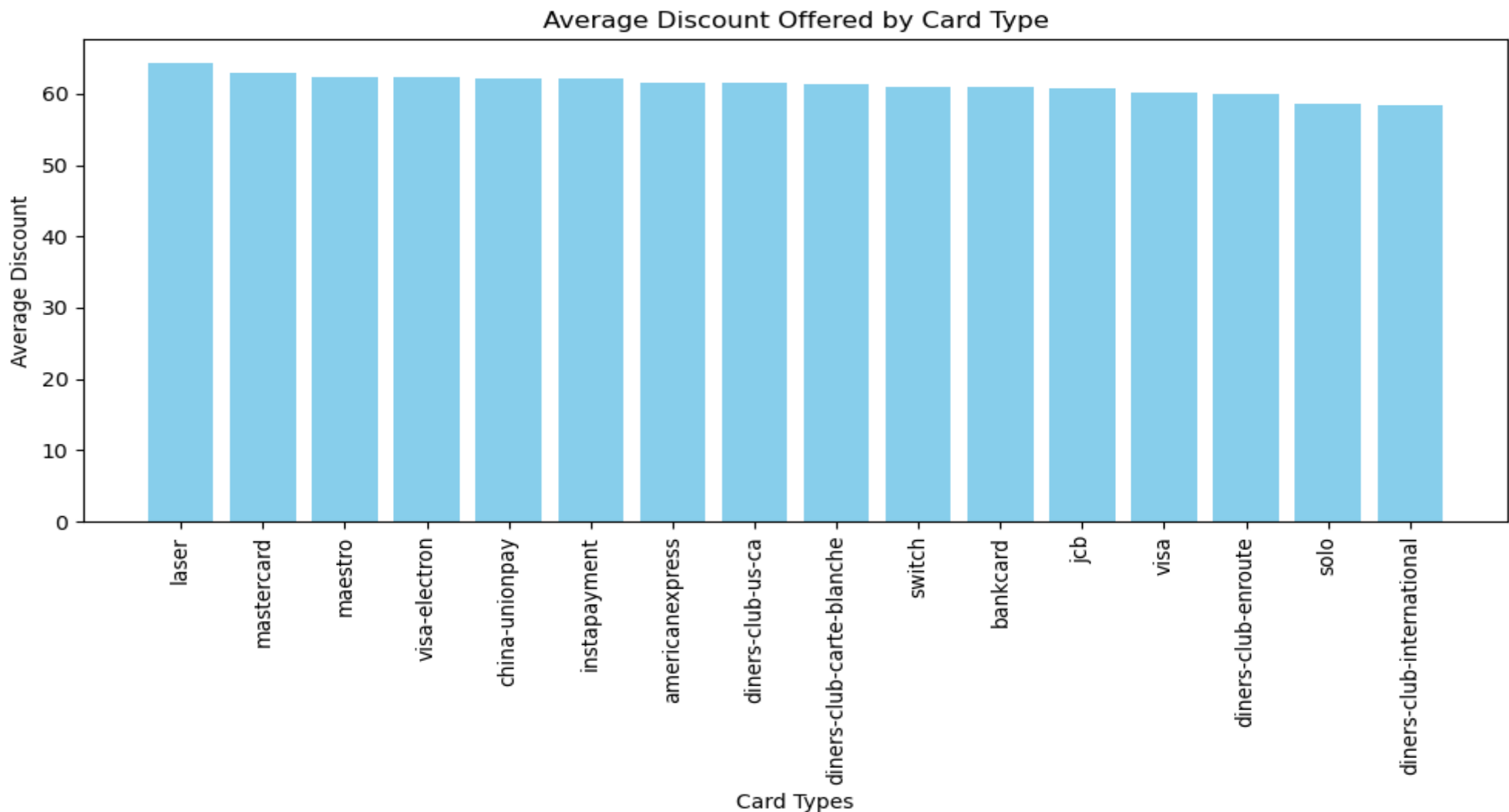
## **Observations / Findings**

- Correlation between revenue and orders might demonstrate how changes in sales volumes impact overall revenue.
- Corresponding peaks in both revenue and orders may indicate successful sales campaigns or high-demand periods.
- Divergence between revenue and order trends might suggest variations in average order value or changes in pricing strategies.
- Discrepancies between revenue and order volumes might also highlight changes in product mix or variations in product pricing.
- Consistent growth or decline in both revenue and orders may indicate stable market conditions or consistent business performance.
- Understanding the relationship between revenue and order volumes aids in forecasting and strategizing sales initiatives.



# Shipping Metrics

# Average discount offered by Credit Card type

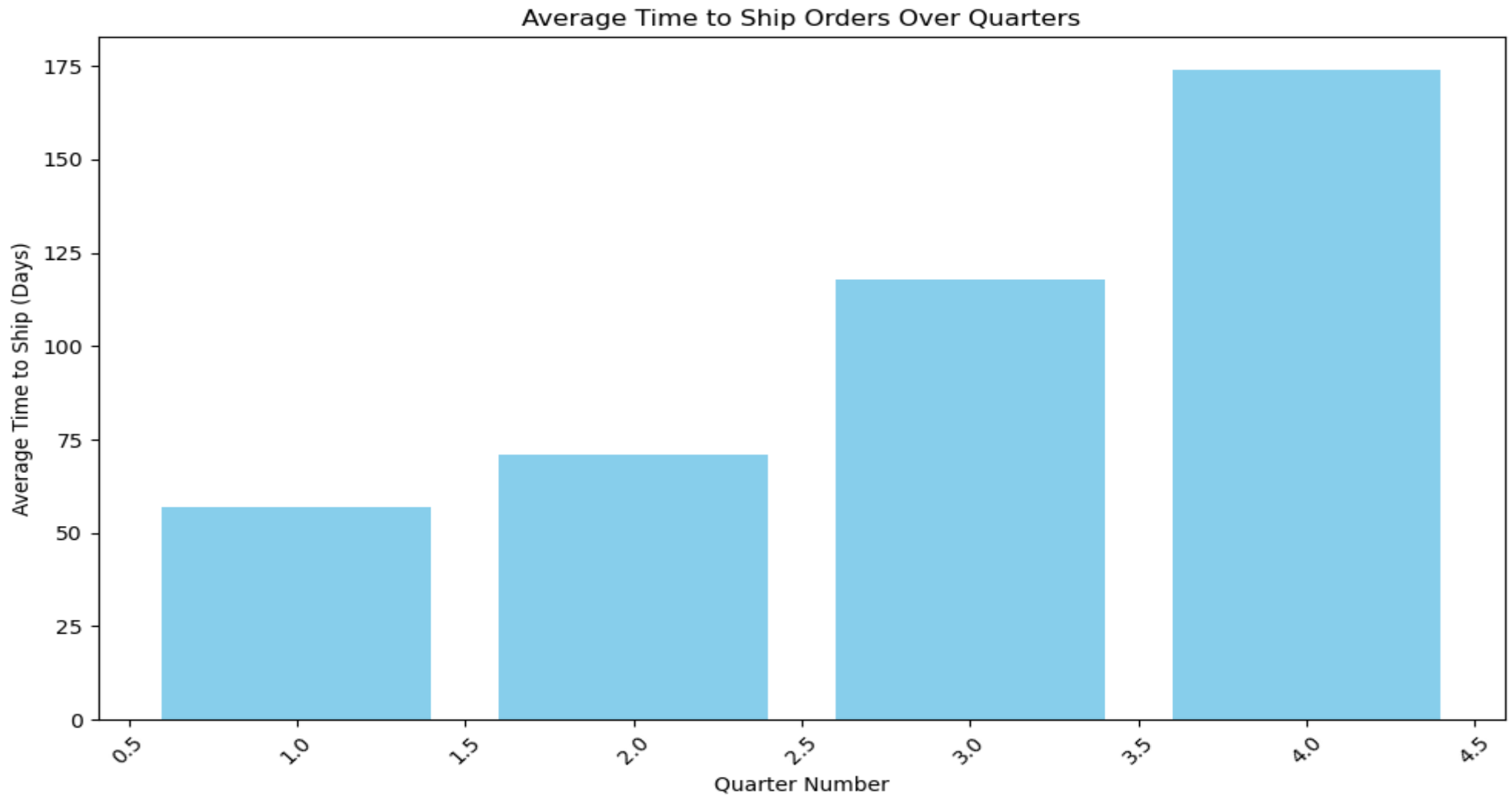


**Hint:** You can make a bar chart with Card Types on the x-axis and average discount offered in the y-axis OR a well formatted table can convey the message

## **Observations / Findings**

- Variances in average discounts among different card types may indicate targeted promotions or loyalty programs.
- Higher average discounts for specific card types might reflect incentives to encourage card usage or attract new customers.
- Lower average discounts for certain card types could suggest higher profitability or a focus on retaining existing loyal customers.
- Consistent average discounts across card types might signify standardized pricing strategies or uniform promotional offers.
- Understanding discount variations per card type helps in optimizing marketing strategies and improving customer engagement.
- Differences in average discounts per card type might align with customer preferences or purchasing behaviors related to card usage.

# Time taken to ship orders by Quarter



**Hint:** You can make a bar chart with Quarter Number on the x-axis and average time to ship in the y-axis

## **Observations / Findings**

- Consistent or decreasing average time to ship over quarters indicates improved operational efficiency or logistics management.
- Increases in average time to ship might suggest challenges in order processing, inventory management, or shipping logistics.
- Seasonal fluctuations in average time to ship could align with demand surges or operational constraints during peak periods.
- Higher average time to ship may impact customer satisfaction, leading to potential customer dissatisfaction or order cancellations.
- Understanding trends in average time to ship aids in identifying operational bottlenecks and streamlining order fulfillment processes.
- Monitoring changes in average time to ship allows for adjustments to maintain service levels and enhance customer experiences.

## **Insights**

- Certain states exhibit higher customer concentrations, indicating market significance or potential growth opportunities.
- Variations in customer numbers across states suggest diverse consumer behaviors, preferences, and market dynamics.
- Consistent ratings across quarters suggest stable customer satisfaction, while fluctuations may indicate changes in service quality or customer experiences.
- Sudden increases or decreases in ratings might correlate with changes in products, services, or operational processes during specific quarters.
- Seasonal variations in ratings could align with specific periods, such as holiday seasons, where customer experiences might differ.
- Consistently high ratings indicate satisfaction, while declining ratings might prompt the need for service improvements or addressing underlying issues.
- Top vehicle makers with higher customer counts signify strong market presence and consumer affinity.
- Consistent preferences for specific vehicle makers suggest strong brand loyalty among customers.
- Variances in customer preferences among different vehicle makers indicate diverse consumer tastes or product preferences.
- Understanding the reasons behind customer preferences helps in assessing the competitive landscape and market positioning.
- Higher discounts for certain card types may drive increased usage or customer acquisition for those cards.

## **Recommendations**

- Continuously monitor and analyze customer trends across states to adapt strategies and cater to evolving consumer needs.
- Investigate fluctuations or declines in ratings to identify underlying causes and address them effectively.
- Actively seek and respond to customer feedback to gauge satisfaction levels and implement improvements based on suggestions.
- Implement a culture of continuous improvement by consistently evaluating and refining services or products.
- Develop targeted marketing strategies that highlight unique selling points of preferred vehicle makers to enhance brand visibility and customer engagement.
- Continuously innovate and improve products or services based on customer feedback and preferences to maintain brand relevance.
- Strategically offer higher discounts for specific cards to attract new customers or increase usage among existing users.
- Implement loyalty programs or incentives for cards with lower discounts to maintain customer retention and satisfaction.
- Regularly evaluate competitors' discounting strategies to stay competitive and identify areas for improvement.
- Use transactional data to analyze the correlation between discount rates and customer behaviors to optimize strategies.