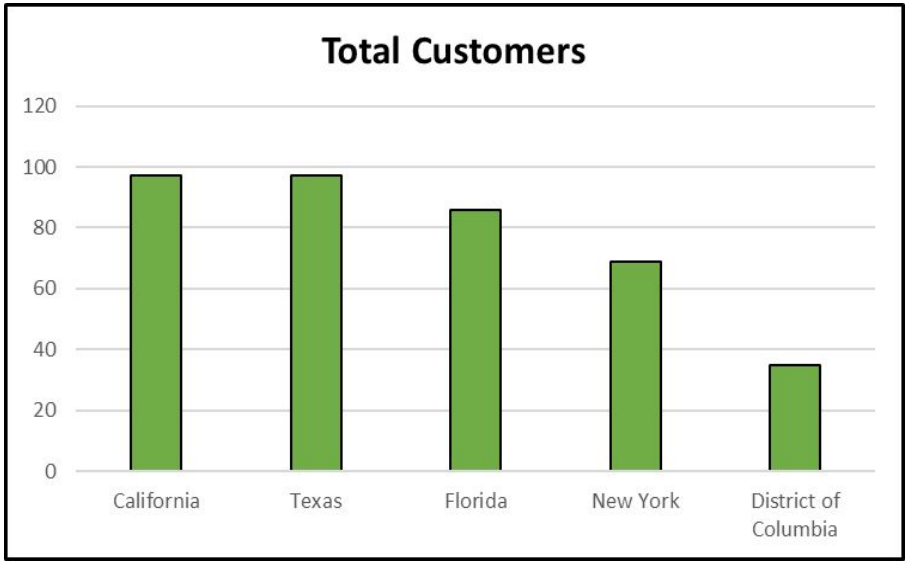
SQL and Databases:
Project Report

Business Overview

125.4M	Total Revenue	2.9M	Last Qtr Revenue
1K	Total Orders	199	Last Qtr Orders
994	Total Customers	105	Average Days to Ship
3.1	Avg Rating	21%	% Good Feedback

Customer Metrics

Distribution of Customers across States



Observations/Findings

- Most customers reside in California, Texas, Florida, New York, and the District of Columbia
- California and Texas have the highest total customers (97)

Distribution of Customers across States SQL Code

```sql
SELECT
    state,
    COUNT(customer_id) AS total_customers
FROM customer_t
GROUP BY 1
ORDER BY 2 DESC;
```

Average Customer Ratings by Quarter

Observations/Findings

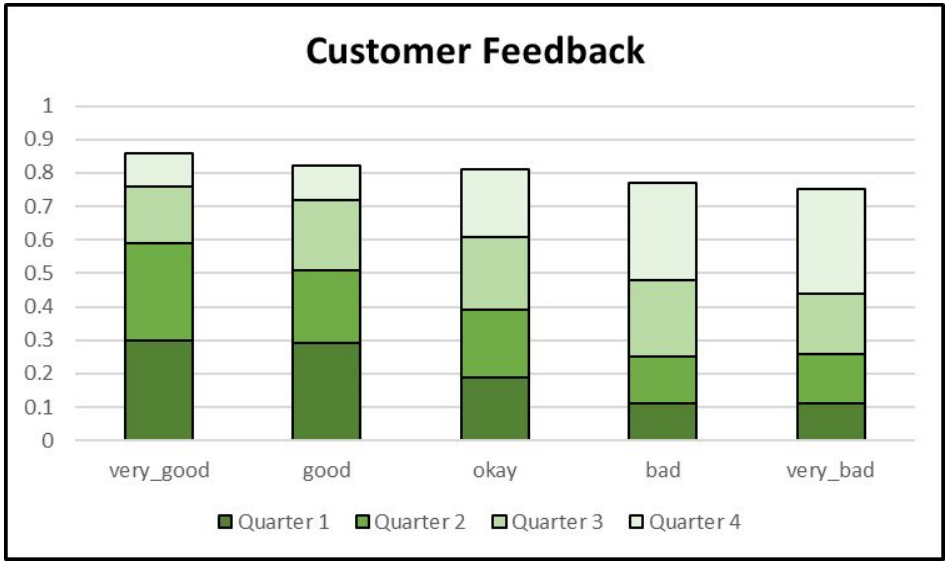
- Negative trend of customer ratings
- -1.15 customer rating decrease from Q1 to Q4
- Recent Q4 customer ratings are in the ‘bad’ range

Average Customer Ratings by Quarter SQL Code

```sql
WITH rating AS
(
    SELECT
        customer_feedback,
        quarter_number,
    CASE
        WHEN customer_feedback = 'very bad' THEN '1'
        WHEN customer_feedback = 'bad' THEN '2'
        WHEN customer_feedback = 'okay' THEN '3'
        WHEN customer_feedback = 'good' THEN '4'
        WHEN customer_feedback = 'very good' THEN '5'
    END AS total_rating
    FROM order_t
)

SELECT
        quarter_number,
    ROUND(AVG(total_rating), 2) AS average_rating
FROM rating
GROUP BY 1
ORDER BY 1 ASC;
```

Trend of Customer Satisfaction



Observations/Findings

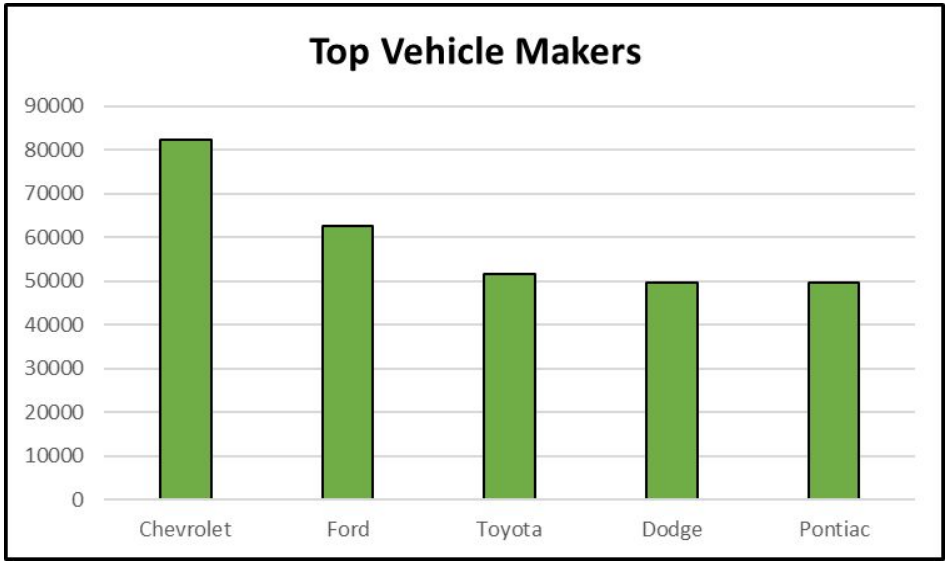
- Declining trend
- Q1 to Q4 reveals a -20% in very good ratings, a -19% in good ratings, a -1% in okay ratings, a +18% in bad ratings, and a +20% in very bad ratings

Trend of Customer Satisfaction SQL Code

```sql
WITH cust_feed AS
(
    SELECT
        quarter_number,
        ROUND(SUM(CASE WHEN customer_feedback = 'very good' THEN 1 ELSE 0 END), 2) AS very_good,
        ROUND(SUM(CASE WHEN customer_feedback = 'good' THEN 1 ELSE 0 END), 2) AS good,
        ROUND(SUM(CASE WHEN customer_feedback = 'okay' THEN 1 ELSE 0 END), 2) AS okay,
        ROUND(SUM(CASE WHEN customer_feedback = 'bad' THEN 1 ELSE 0 END), 2) AS bad,
        ROUND(SUM(CASE WHEN customer_feedback = 'very bad' THEN 1 ELSE 0 END), 2) AS very_bad,
        ROUND(COUNT(customer_feedback), 2) AS total_feedback
    FROM order_t
    GROUP BY 1
    ORDER BY 1 ASC
)

  SELECT
        quarter_number,
        ROUND((very_good/total_feedback), 2) AS very_good,
        ROUND((good/total_feedback), 2) AS good,
        ROUND((okay/total_feedback), 2) AS okay,
        ROUND((bad/total_feedback), 2) AS bad,
        ROUND((very_bad/total_feedback), 2) AS very_bad
    FROM cust_feed
    GROUP BY 1
    ORDER BY 1 ASC;
```

Top Vehicle Makers Preferred by Customers



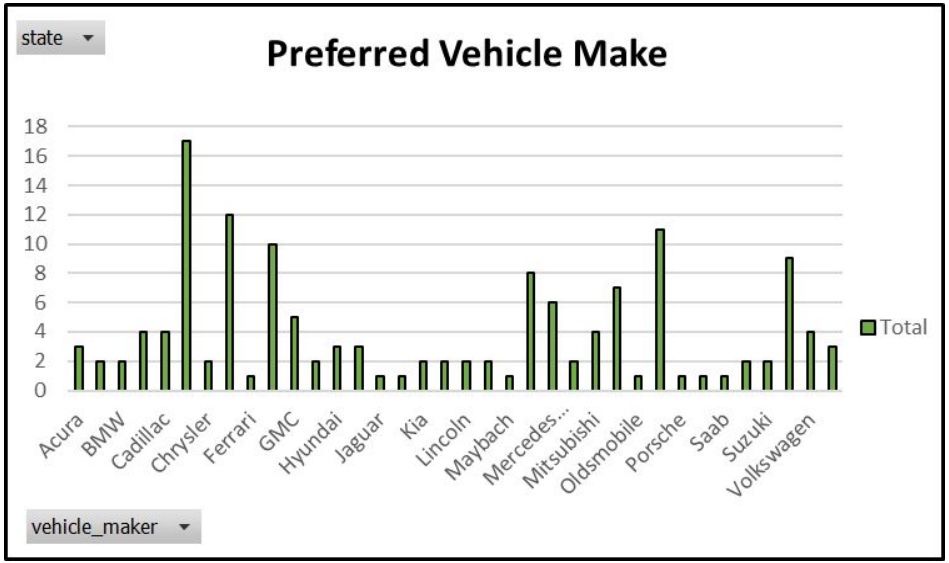
Observations/Findings

- Top 5 vehicle makers preferred by customers are Chevrolet, Ford, Toyota, Dodge, and Pontiac
- Most preferred vehicle maker is Chevrolet

Top Vehicle Makers Preferred by Customers SQL Code

```sql
SELECT
    vehicle_maker AS top_vehicle_makers,
    COUNT(customer_id) AS total_customers
FROM product_T JOIN customer_t
GROUP BY 1
ORDER BY 2 DESC
LIMIT 5;
```

Most Preferred Vehicle Make in each State



Observations/Findings

- The most preferred vehicle make in each state is Chevrolet
- California and Texas have the highest customers

Most Preferred Vehicle Make in each State SQL Code

```sql
SELECT *
FROM
(
    SELECT
        state,
        vehicle_maker,
        COUNT(customer_id) AS total_customers,
    RANK() OVER (PARTITION BY state ORDER BY COUNT(customer_id) DESC) AS ranking
    FROM product_t
    JOIN order_t USING(product_id)
    JOIN customer_t USING(customer_id)
    GROUP BY 1, 2
) AS preferred_vehicle
WHERE ranking = 1
ORDER BY 3 DESC;
```

Revenue Metrics

Trend of Purchases by Quarter

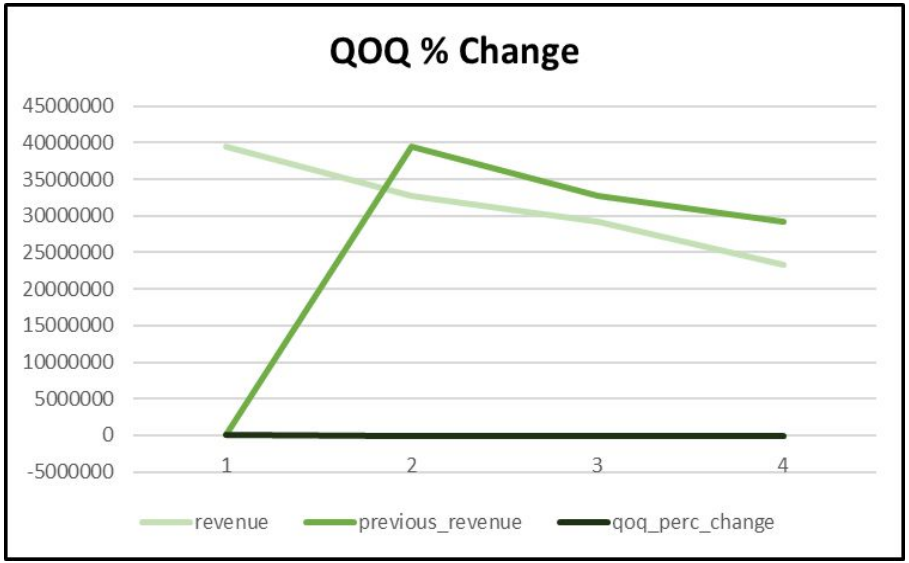
Observations/Findings

- Consistent declining trend of total orders
- -111 decrease of total orders from Q1 to Q4 comparatively

Trend of Purchases by Quarter
SQL Code

```sql
SELECT
    quarter_number,
    COUNT(order_id) AS total_orders
FROM order_t
GROUP BY 1
ORDER BY 1;
```

Quarter on Quarter % Change in Revenue



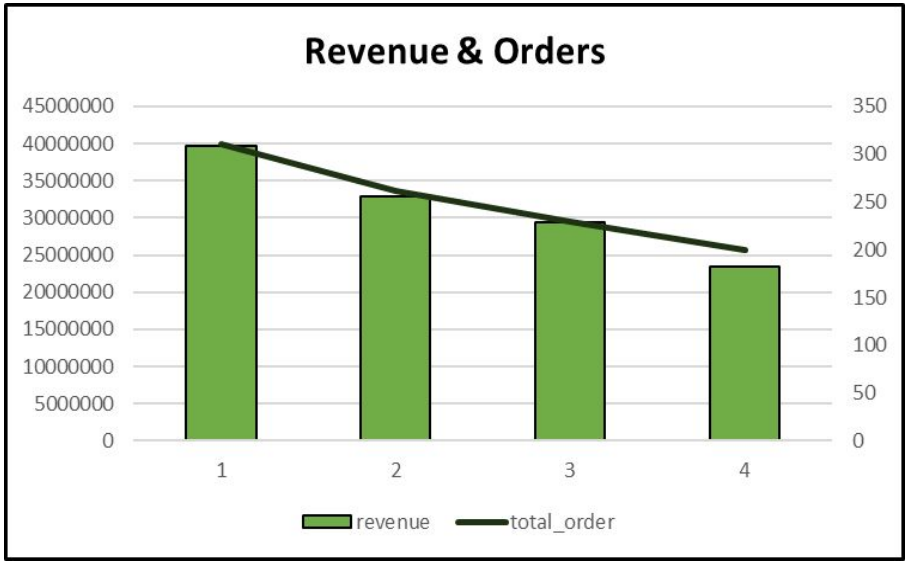
Observations/Findings

- Decline in the change in revenue when comparing subsequent to previous quarters
- Decrease in revenue -17%, -11%, and -20% per quarter

Quarter on Quarter % Change in Revenue SQL Code

```sql
WITH QoQ AS
(
    SELECT quarter_number,
        ROUND(SUM(quantity * (vehicle_price - ((discount/100)*vehicle_price))), 0) AS revenue
    FROM order_t
    GROUP BY quarter_number)
SELECT quarter_number, revenue,
ROUND(LAG(revenue) OVER(ORDER BY quarter_number), 2) AS previous_revenue,
ROUND((revenue - LAG(revenue) OVER(ORDER BY quarter_number))/LAG(revenue) OVER(ORDER BY quarter_number), 2) AS qoq_perc_change
FROM QoQ;
```

Trends of Revenue and Order by Quarter



Observations/Findings

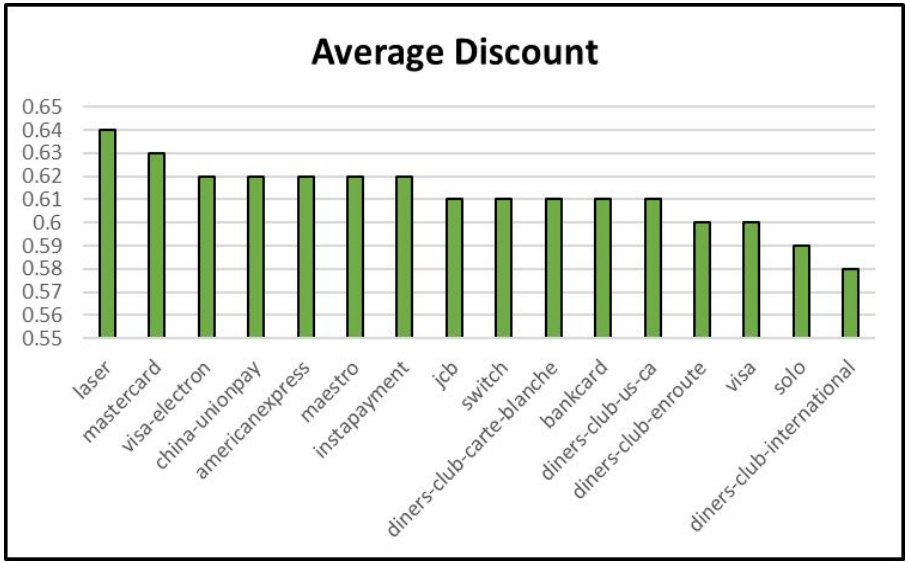
- Declining trend of revenue and total orders
- -59% in revenue from Q1 to Q4
- -64% in total orders from Q1 to Q4

Trends of Revenue and Order by Quarter SQL Code

```sql
SELECT
    quarter_number,
    ROUND(SUM(quantity*vehicle_price), 0) AS revenue,
    COUNT(order_id) AS total_order
FROM order_t
GROUP BY 1
ORDER BY 1;
```

Shipping Metrics

Average Discount Offered by Credit Card Type



Observations/Findings

- Average discount for credit card types range from 58% to 64%
- Lowest discount is Diners Club International (58%)
- Highest discount is Laser (64%)

Average Discount Offered by Credit Card Type SQL Code

```sql
SELECT
    credit_card_type,
    ROUND(AVG(discount), 2) AS average_discount
FROM order_t t1
INNER JOIN customer_t t2
 ON t1.customer_id = t2.customer_id
GROUP BY 1
ORDER BY 2 DESC;
```

Time Taken to Ship Orders by Quarter

Observations/Findings

- Consistent delay in the average shipping time from Q1 to Q4 totaling to 117 more days
- Average days to ship increase by 33% from Q1 to Q4

Time Taken to Ship Orders by Quarter SQL Code

```sql
SELECT
    quarter_number,
    ROUND(AVG(DATEDIFF(ship_date, order_date)), 0) AS average_shipping_time
FROM order_t
GROUP BY 1
ORDER BY 1;
```

Insights

Recommendations

- Analyze customer ratings patterns to find the root cause of declining ratings.
- Conducting customer surveys to provide feedback on strengths and weaknesses.
- Identify negative trends in customer feedback to improve satisfaction.
- Review purchasing data to find causes of declining orders per quarter.
- Pinpoint revenue loss causes in data to generate greater revenue in following quarters.
- Analyze top-selling items and revenue generators per quarter for better supply management.
- Determine the cause of revenue and order loss by examining least popular items.
- Identify reasons for shipment delays to improve shipping times.

Thank you