Retail Sales Case Study

1.Question:

- Analyze customer and product sales data to identify trends, top customers, and category performance.

- Predict future sales and provide insights for marketing, inventory, and promotions.

2. Data Collection:

Source: Retail Sales Dataset

Unveiling Retail Trends: A Dive into Sales Patterns and Customer Profiles

BigQuery: Dataset loaded into flash-precept-466915-d3.data.online

Columns used:

- Customer ID
- Product
- Category
- Total Amount
- InvoiceDate
- Gender

Process:

- SQL queries in BigQuery to aggregate and clean data
- Export table directly in RStudio for visualization

3. Data Cleaning:

- Remove rows with blank or null values.
- Convert InvoiceDate to proper date format (YYYY-MM-DD)

4. Analyze the data:

Sales by Product Category:

```
SELECT Category, SUM(`Total Amount`) AS total_sales
FROM `flash-precept-466915-d3.data.online`
GROUP BY Category
```

Monthly Sales Trend:

```
SELECT EXTRACT(MONTH FROM InvoiceDate) AS month, SUM(`Total Amount`) AS sales
FROM `flash-precept-466915-d3.data.online`
GROUP BY month
ORDER BY month
```

Gender vs Category Sales:

```
SELECT Gender, Category, SUM(`Total Amount`) AS sales
FROM `flash-precept-466915-d3.data.online`
GROUP BY Gender, Category
```

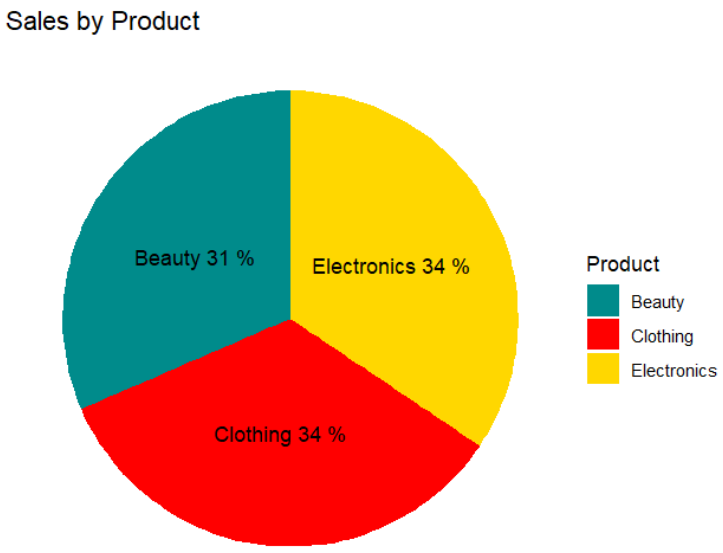
Top 5 Customers by Sales

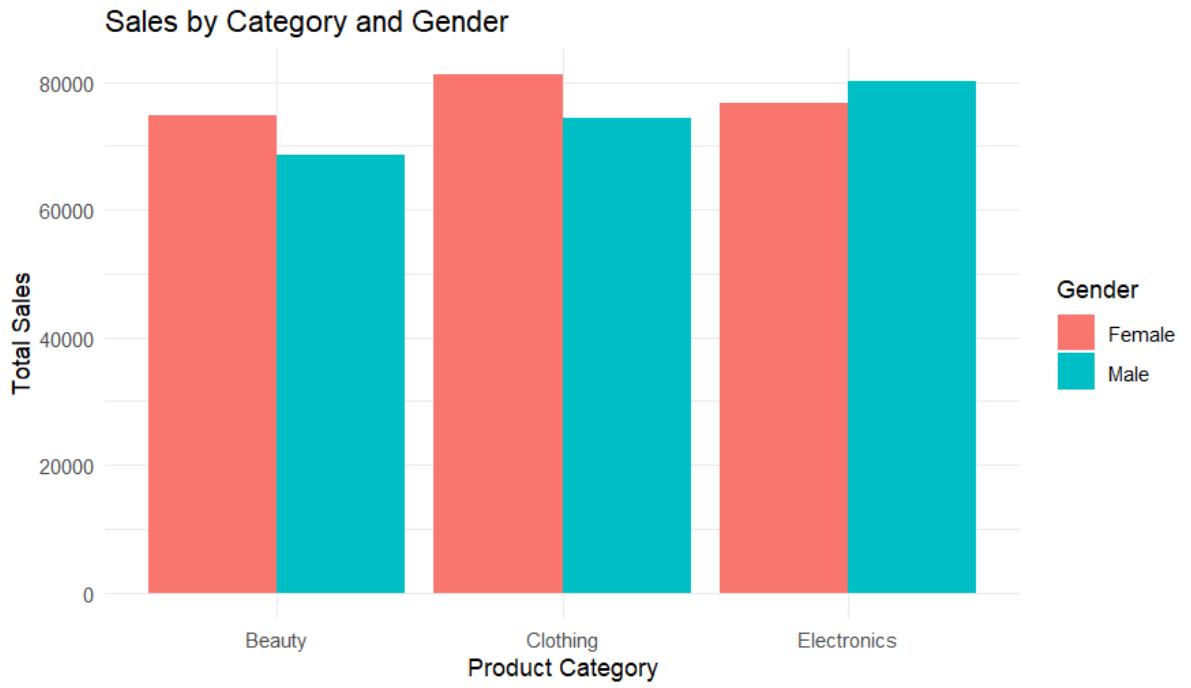
```
SELECT `Customer ID`, SUM(`Total Amount`) AS total_sales
FROM `flash-precept-466915-d3.data.online`
GROUP BY `Customer ID`
ORDER BY total_sales DESC
LIMIT 5
```

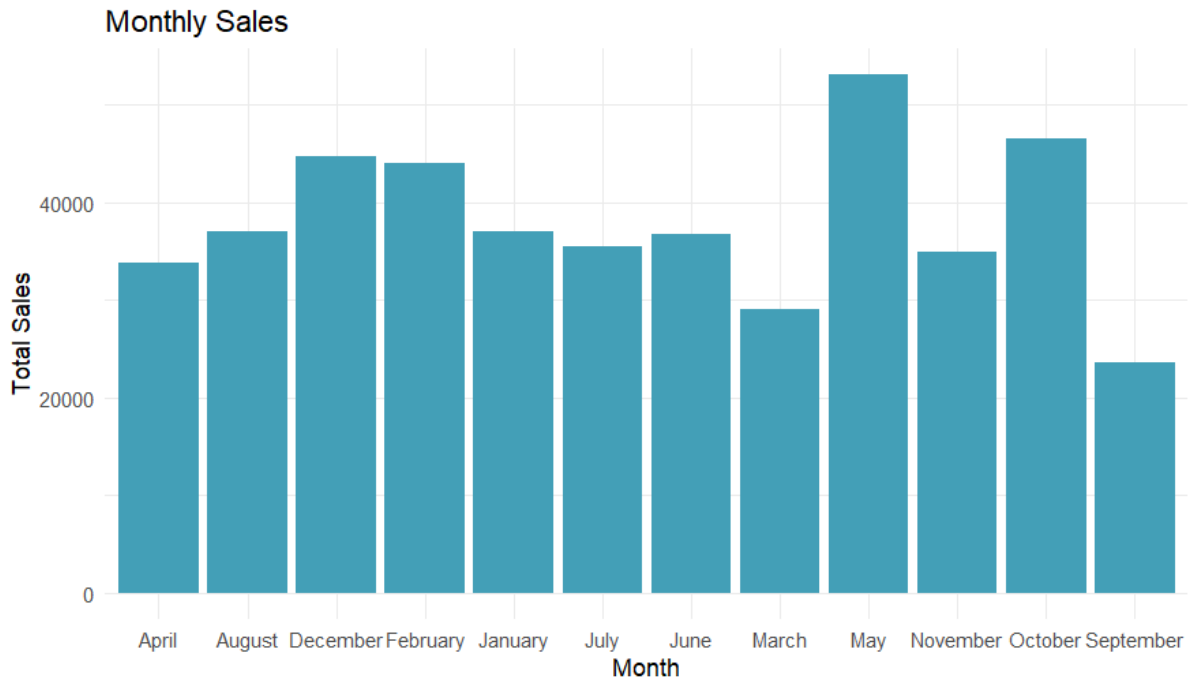
Least 5 Customers by Sales

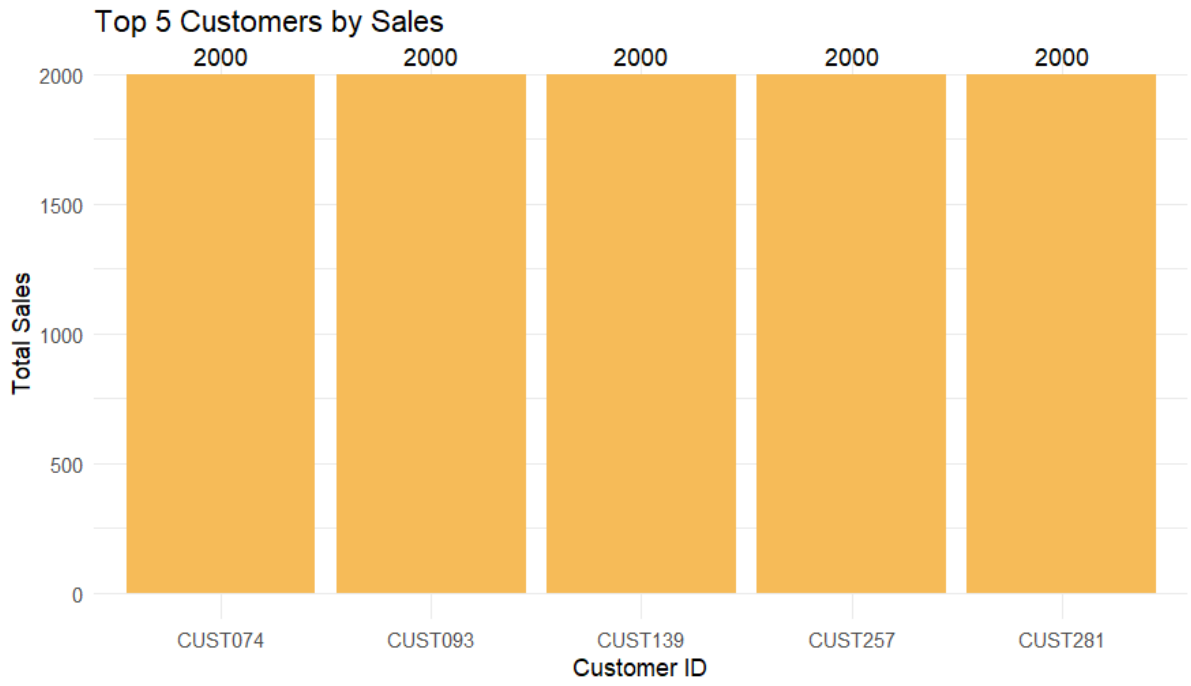
```
SELECT `Customer ID`, SUM(`Total Amount`) AS total_sales
FROM `flash-precept-466915-d3.data.online`
GROUP BY `Customer ID`
ORDER BY total_sales
LIMIT 5
```

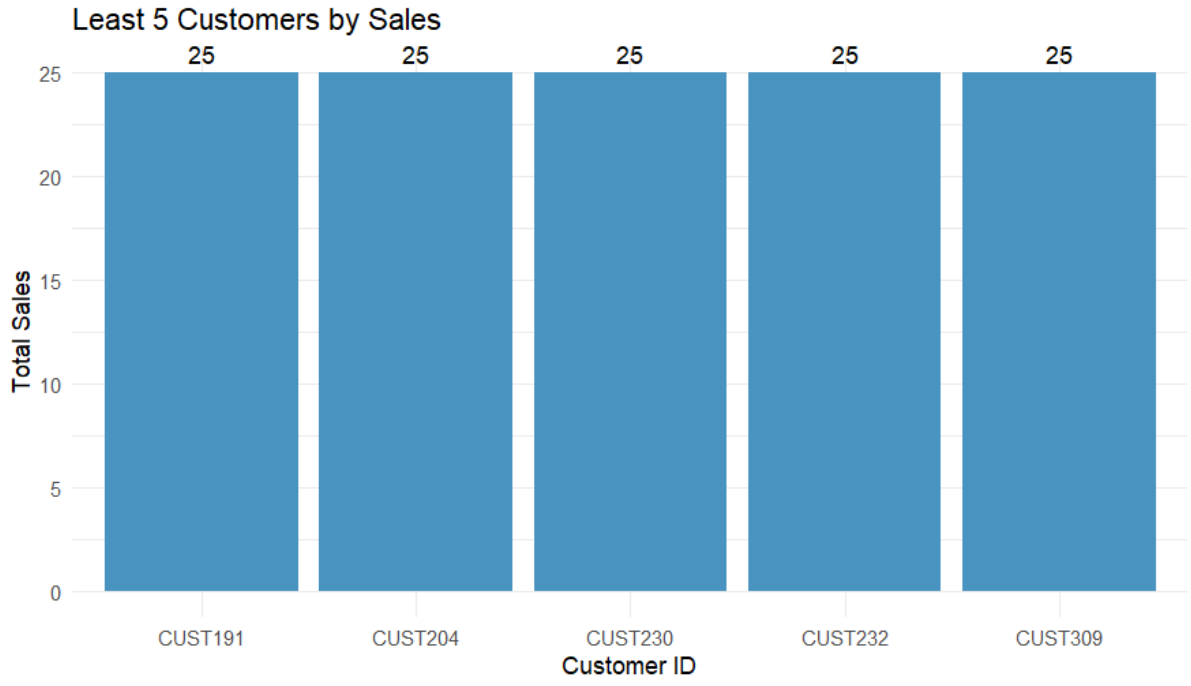
5.Visualization:




Sales by Category and Gender
80000
60000
40000
20000
0
Total Sales
Beauty
Clothing
Electronics
Product Category
Gender
Female
Male


Monthly Sales
40000
20000
0
Total Sales
April
August
December
February
January
July
June
March
May
November
October
September
Month


Top 5 Customers by Sales
2000
2000
2000
2000
2000
2000
1500
1000
500
0
Total Sales
CUST074
CUST093
CUST139
CUST257
CUST281
Customer ID


Least 5 Customers by Sales
25
25
25
25
25
25
20
15
10
5
0
Total Sales
CUST191
CUST204
CUST230
CUST232
CUST309
Customer ID

6. Insights & Analysis:

I. Top-selling product category:

- **Electronics** and **Clothing** each account for **34%** of total sales.
- These two categories dominate customer purchases, indicating strong market demand.

Recommendation:

- Increase inventory levels for Electronics and Clothing.
- Strengthen supplier partnerships and consider expanding product variants to meet demand.

II. Monthly trends:

- **May** is the peak sales month in the dataset.

Recommendation:

- Launch seasonal promotions or discounts in April to build momentum before May.

III. Gender-based preference:

- **Women** primarily purchase Clothing.
- **Men** predominantly purchase Electronics.

Recommendation:

- Target ads and promotional content according to gender-based buying patterns.
- Offer gender-specific bundles (e.g., electronics accessories for men, apparel combos for women).