



PRDA – 05

CUSTOMER DATA ANALYSIS



ABOUT ME

Team ID : PTID-CDA-DEC-25-961

Project ID : PRDA-05

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This project analyzes real customer shopping data using SQL and Power BI to understand buying behavior, revenue patterns, category performance, and payment trends across malls.

Key Focus Areas:

- Gender-based buying patterns
- Age-wise performance
- Category-level sales
- Payment method trends
- Monthly revenue and seasonality

PROJECT OVERVIEW



Customer Data Analysis

Tools used:

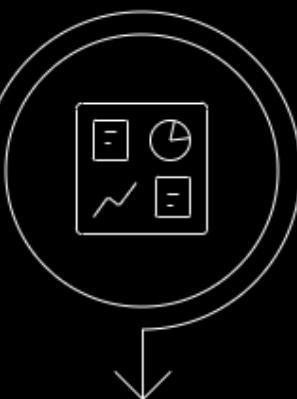
1.  SQL : Data exploration, querying, aggregations
2. Power BI : Dashboard design, visuals, KPI tracking
3. Power Query : Data cleaning & transformation
4.  DAX : Measures for dynamic analysis
5.  Excel : Exporting data from SQL

Data Analysis Tools



SQL

Used for data exploration, querying, and aggregations.



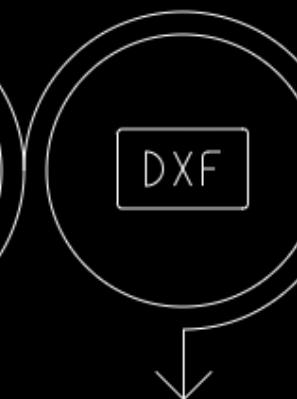
Power BI

Used for dashboard design, visuals, and KPI tracking.



Power Query

Used for data cleaning and transformation.



DAX

Used for creating measures for dynamic analysis.

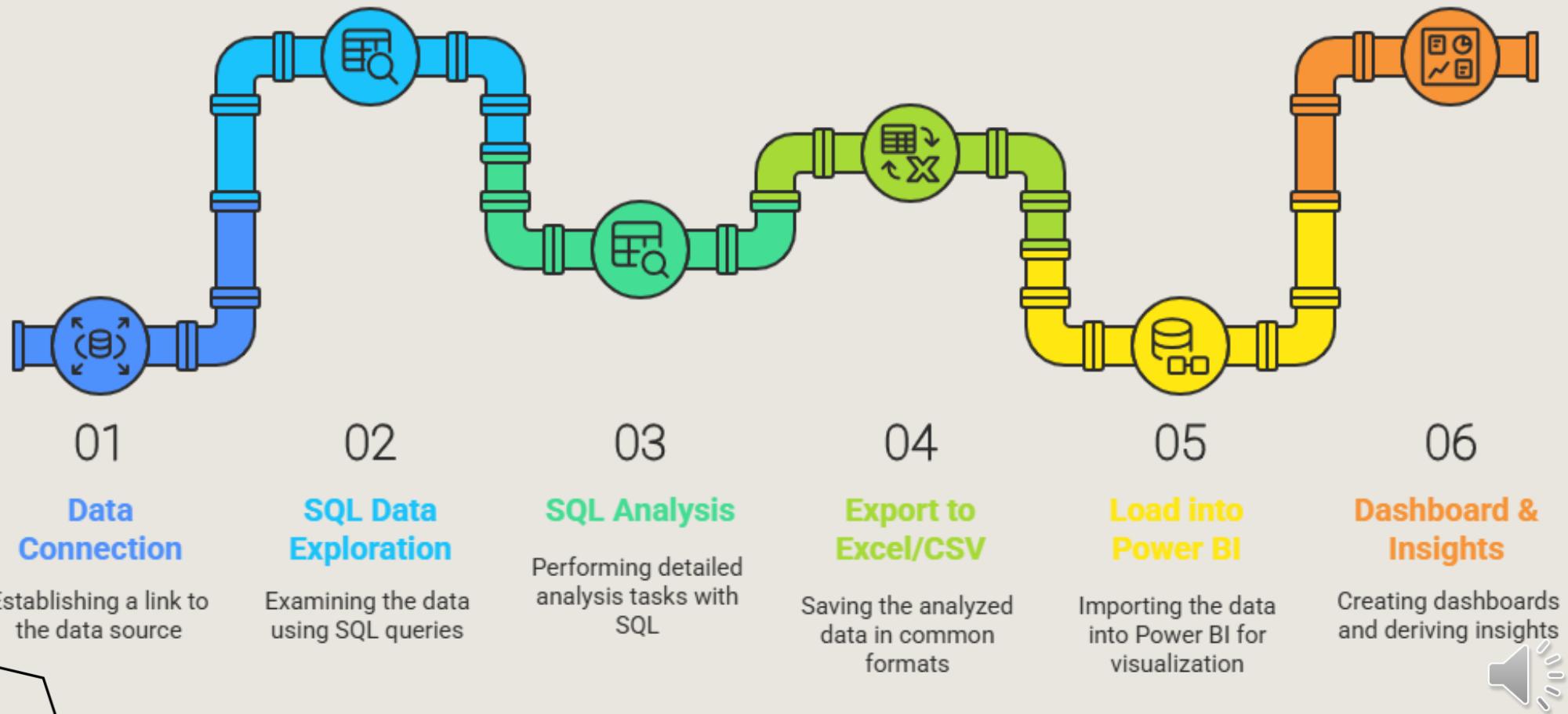


Excel/CSV

Used for exporting data from SQL.



DATA PREPEATION WORKFLOW



PROJECT TASKS

Task 1 : How is the shopping distribution according to gender?

Task 2 : Which gender did we sell more products to?

Task 3 : Which gender generated more revenue?

Task 4 : Distribution of purchase categories relative to other columns?

Task 5 : How is the shopping distribution according to age?

Task 6 : Which age category did we sell more products to?

Task 7 : Which age category generated more revenue?

Task 8 : Distribution of purchase categories relative to other columns?

Task 9 : Does the payment method have a relation with other columns?

Task 10: How is the distribution of the payment method?

Task 11: Visualize the data using Tableau / Power BI and derive insights and give your inputs/suggestions to the company?



Task 1: How is the shopping distribution according to gender?

Gender	Sum of quantity
Female	1853
Male	1128
Grand Total	2981

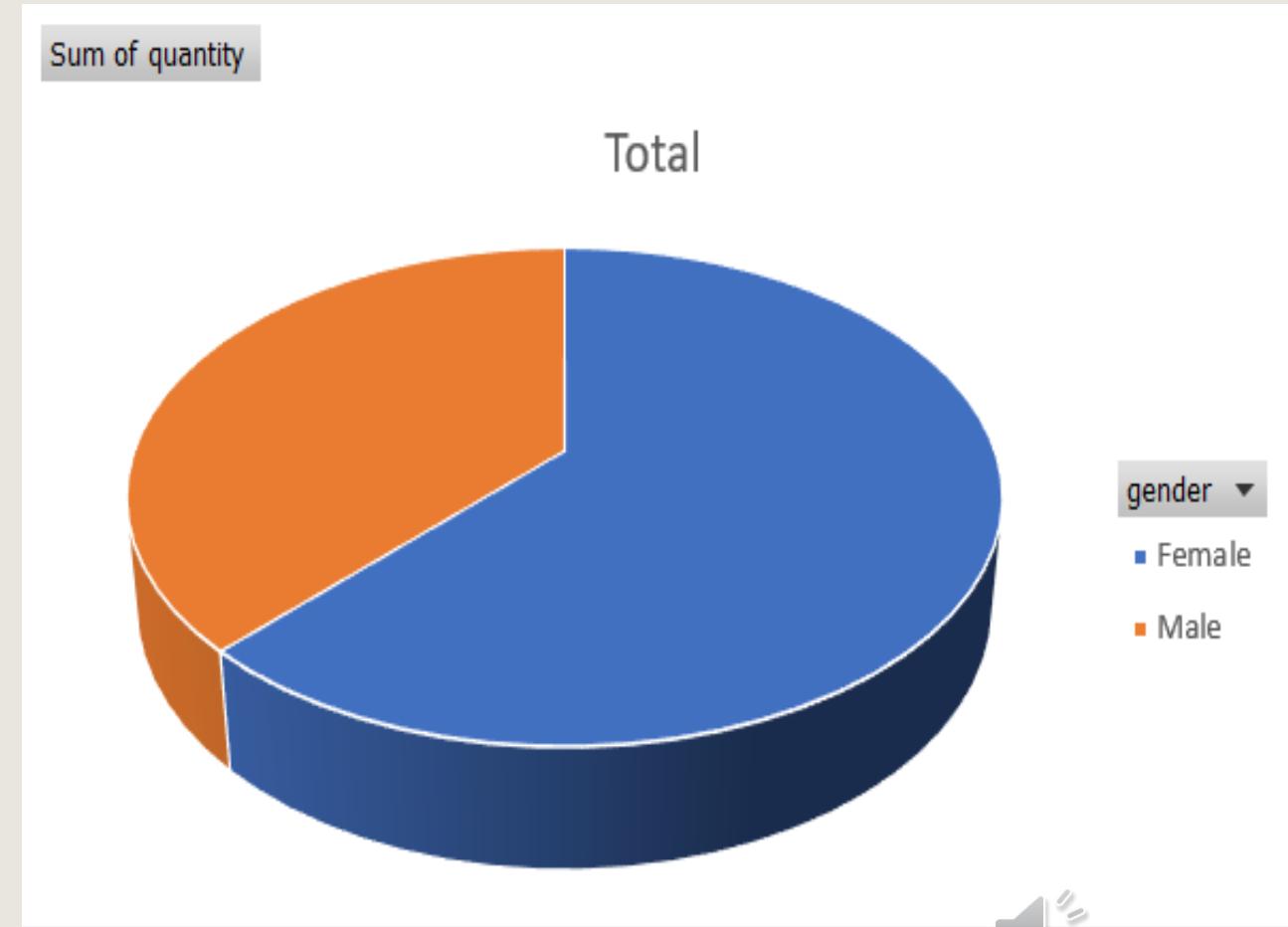
The Pivot Table and pie chart show how many products were purchased by each gender.

From the data:

- Female customers purchased 1,853 items
- Male customers purchased 1,128 items
- Total items purchased: 2,981

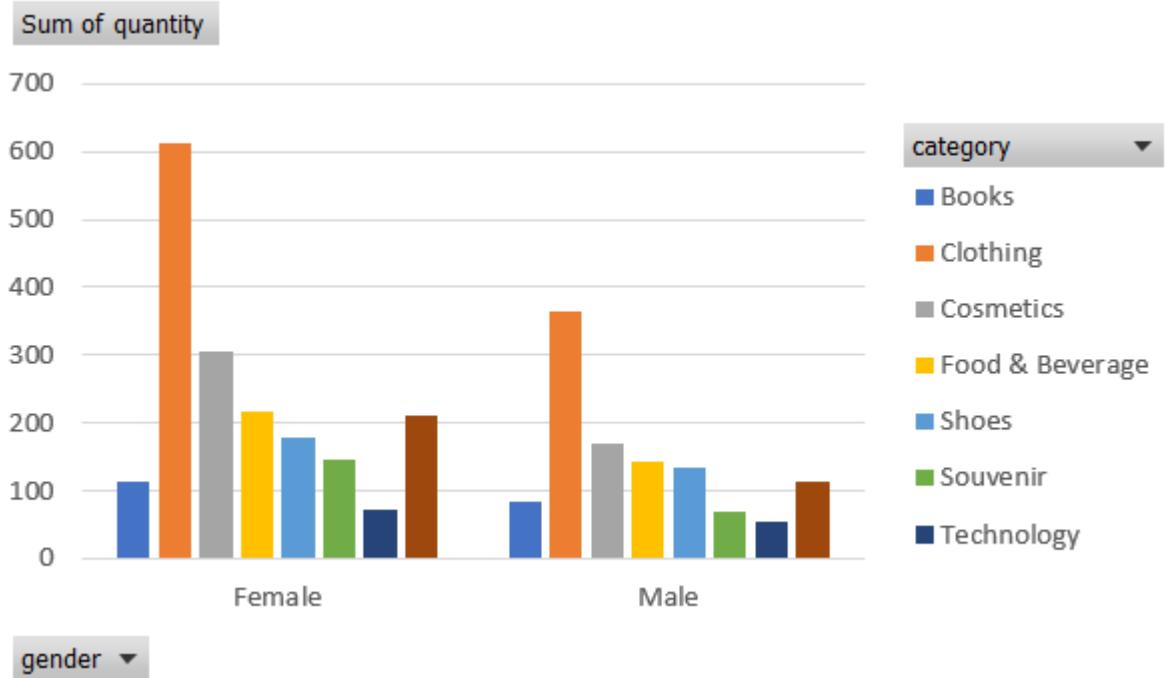
This means **female customers bought significantly more products than male customers.**

The pie chart visually highlights this difference, showing a larger portion for females and a smaller portion for males.



TASK 2 : WHICH GENDER DID WE SELL MORE PRODUCTS TO?

Books	Clothing	Cosmetics	Food & Beverage	Shoes	Souvenir	Technology	Toys	Grand Total
112	612	305		216	178	145	73	212
84	365	168		142	134	68	55	112
196	977	473		358	312	213	128	324
								2981



The Pivot Table and bar chart show the total quantity of products sold to each gender across all product categories.

Insights from the Data:

- Female customers purchased a total of 1,853 products, which is significantly higher than males.
- Male customers purchased 1,128 products.

Category-wise Breakdown:

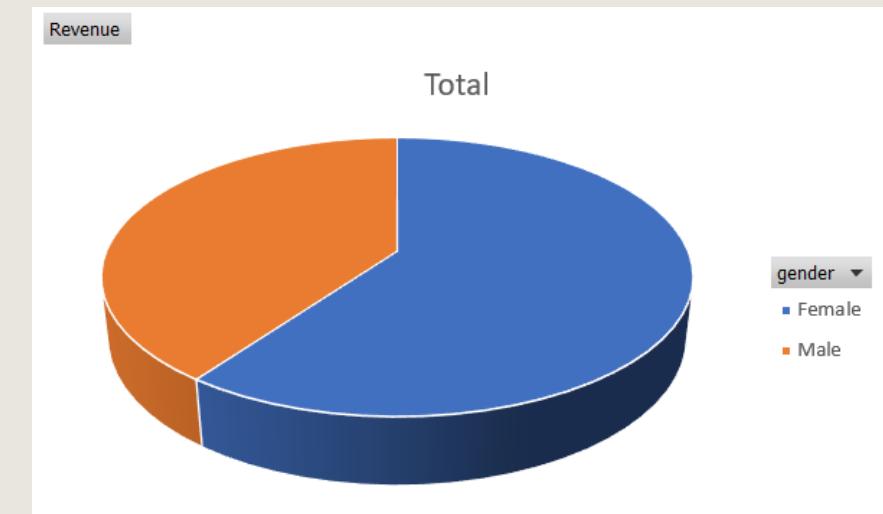
Female customers bought more in almost every category, including:

- Clothing (612 vs 365)
- Cosmetics (305 vs 168)
- Food & Beverage (216 vs 142)
- Shoes (178 vs 134)
- Souvenir (145 vs 68)
- Toys (212 vs 112)



TASK 3: WHICH GENDER GENERATED MORE REVENUE?

Gender	Revenue
Female	391655.93
Male	261359.84
Grand Total	653015.77



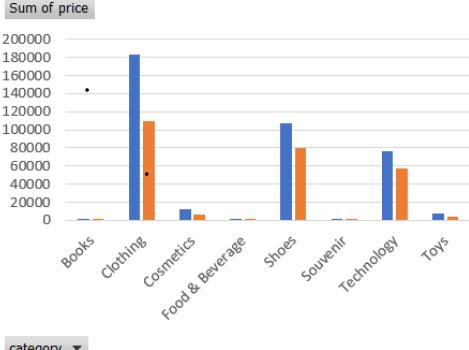
The Pivot Table shows the total revenue generated by each gender:

- **Female revenue:** 391,655.93
- **Male revenue:** 261,359.84

The pie chart also highlights that **female customers contribute a much larger share of total revenue.**

TASK 4: DISTRIBUTION OF PURCHASE CATEGORIES RELATIVE TO OTHER COLUMNS?

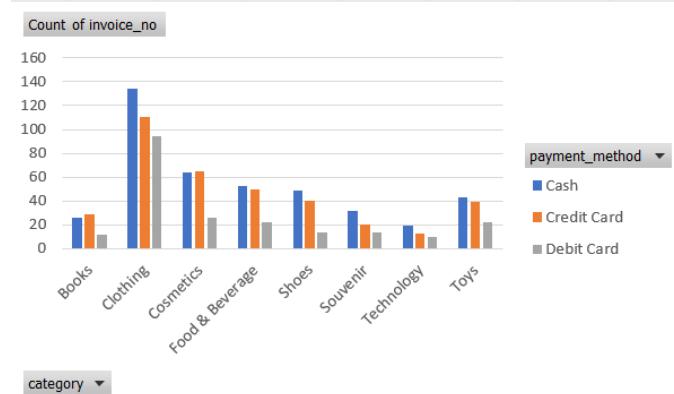
Category	Sum of price		
	Female	Male	Grand Total
Books	1696.8	1272.6	2969.4
Clothing	183648.96	109529.2	293178.16
Cosmetics	12401.3	6830.88	19232.18
Food & Beverage	1129.68	742.66	1872.34
Shoes	106830.26	80422.78	187253.04
Souvenir	1700.85	797.64	2498.49
Technology	76650	57750	134400
Toys	7598.08	4014.08	11612.16
Grand Total	391655.93	261359.84	653015.77



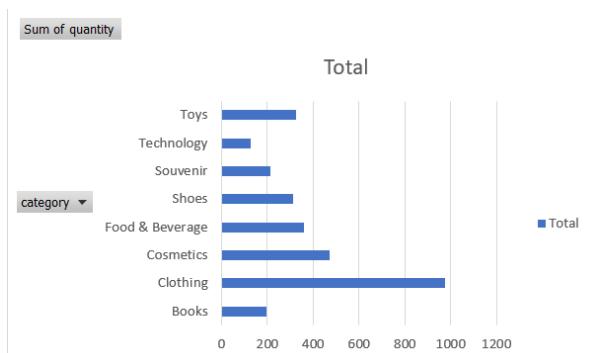
Category vs Gender

Category	Count of invoice_no			
	Cash	Credit Card	Debit Card	Grand Total
Books	26	29	12	67
Clothing	134	110	94	338
Cosmetics	64	65	26	155
Food & Beverage	53	50	22	125
Shoes	49	40	14	103
Souvenir	32	20	14	66
Technology	19	13	10	42
Toys	43	39	22	104
Grand Total	420	366	214	1000

Category vs Payment Method



Category	Sum of quantity	
	Total	Grand Total
Books	196	2981
Clothing	977	
Cosmetics	473	
Food & Beverage	358	
Shoes	312	
Souvenir	213	
Technology	128	
Toys	324	
Grand Total	2981	



Category vs quantity

This analysis compares product categories with gender, payment methods, and total quantity purchased.

Category vs Gender

- Females generated higher revenue across almost all categories, especially **Clothing, Cosmetics, and Shoes**.

- Males contributed less revenue in every product category.

Category vs Payment Method

- Cash** is used most for Clothing and Cosmetics.
- Credit Card** and **Debit Card** also show steady usage but vary by category.
- Different product types attract different payment behaviors.

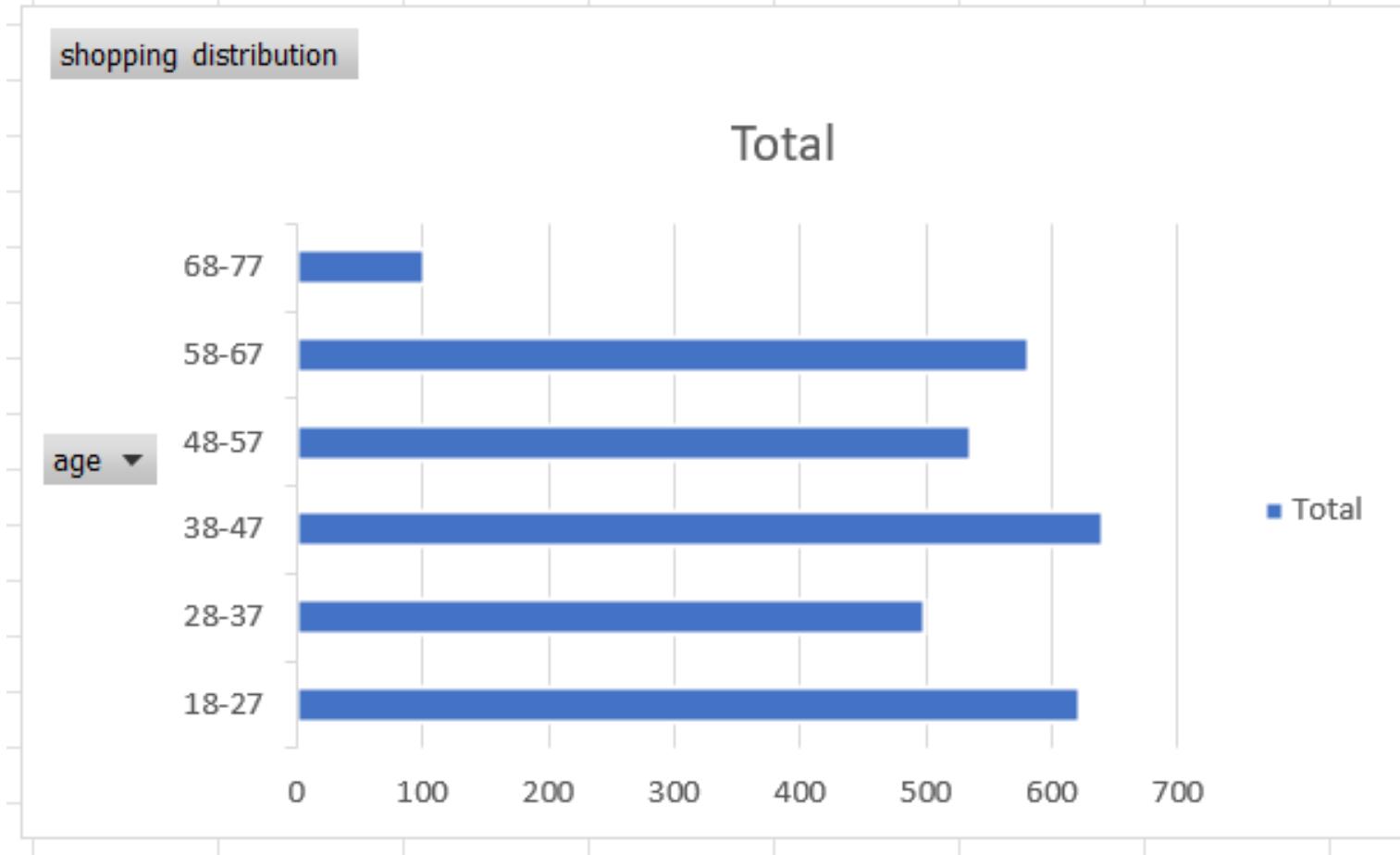
Category vs Quantity

- Clothing** has the highest quantity sold (977 units).
- Toys, Cosmetics, Food & Beverage also show strong sales.
- Technology and Souvenir categories have the lowest quantities.



TASK 5 : HOW IS THE SHOPPING DISTRIBUTION ACCORDING TO AGE?

Age	shopping distribution
18-27	622
28-37	499
38-47	640
48-57	536
58-67	582
68-77	102
Grand Total	2981



The data shows that shopping activity varies across age groups.

The **38-47** age group has the highest shopping distribution, followed closely by **18-27** and **58-67** age groups.

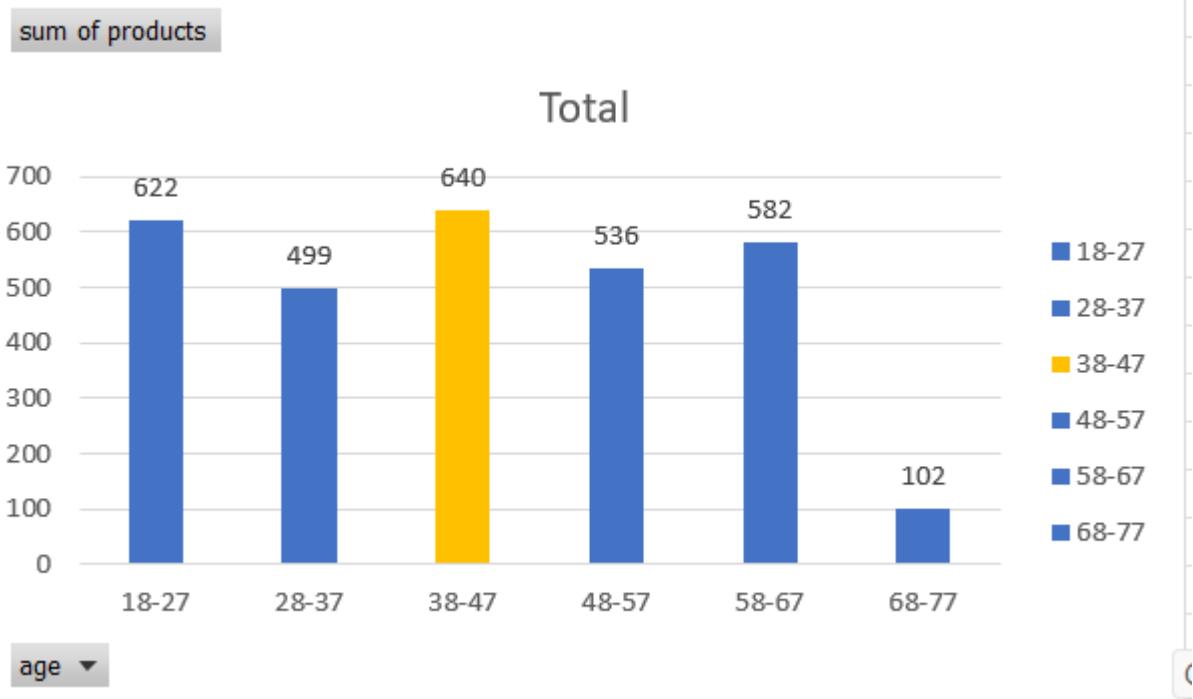
The **28-37** and **48-57** groups show moderate purchase activity.

The **68-77** group has the lowest shopping distribution.



TASK 6 : WHICH AGE CATEGORY DID WE SELL MORE PRODUCTS TO?

Age	sum of products
18-27	622
28-37	499
38-47	640
48-57	536
58-67	582
68-77	102
Grand Total	2981



The Pivot Table and bar chart show the total number of products sold across different age groups.

The **38-47 age category** purchased the highest number of products (**640 units**), making it the top-performing group.

This is followed by the **18-27 age group (622 units)** and **58-67 (582 units)**.

The **68-77 age group** recorded the lowest product purchases.



TASK 7 : WHICH AGE CATEGORY GENERATED MORE REVENUE?

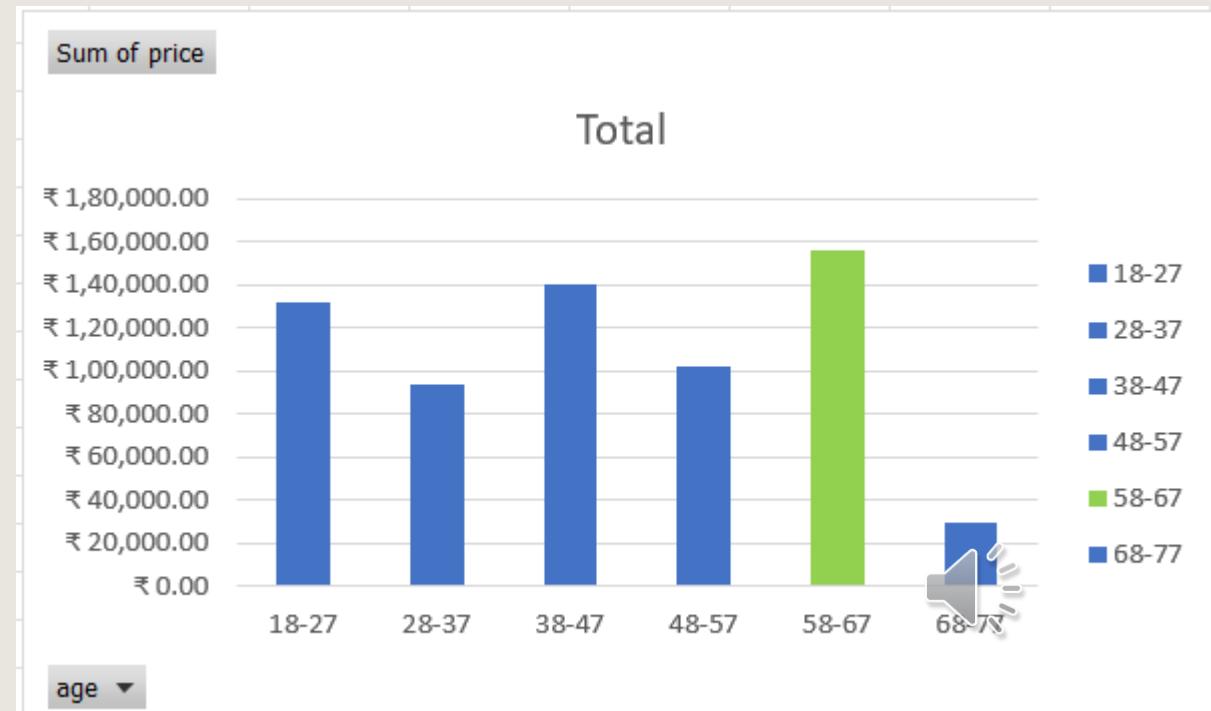
The Pivot Table and bar chart show the total revenue generated by each age group.

The **58–67 age category** generated the **highest revenue (₹1,56,130.89)** among all groups.

This is followed by the **38–47** and **18–27** age groups with strong revenue contribution.

The **68–77** age group generated the least revenue.

Age	Sum of price
18-27	₹ 1,31,553.35
28-37	₹ 93,440.41
38-47	₹ 1,40,012.78
48-57	₹ 1,02,436.95
58-67	₹ 1,56,130.89
68-77	₹ 29,441.39
Grand Total	₹ 6,53,015.77

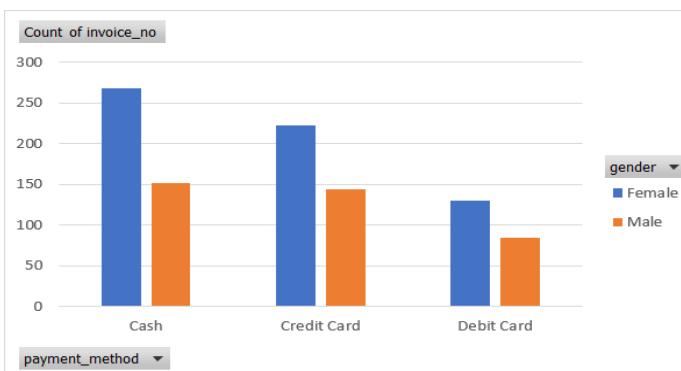


TASK 9 : DOES THE PAYMENT METHOD HAVE A RELATION WITH OTHER COLUMNS?

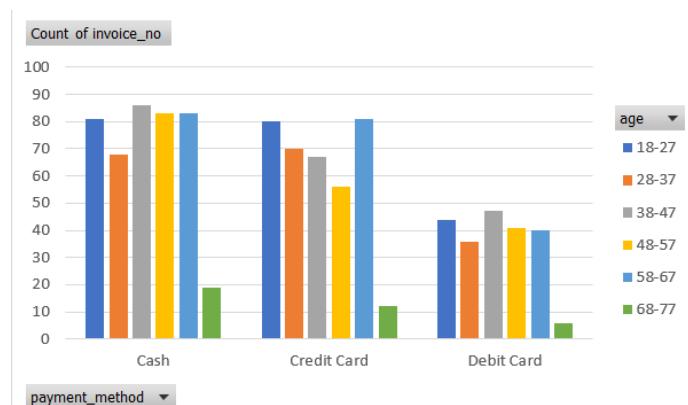
Count of invoice_no	Column Labels		Male	Grand Total
	payment method	Female		
Cash		268	152	420
Credit Card		222	144	366
Debit Card		130	84	214
Grand Total		620	380	1000

Count of invoice_no	AGE GROUP		18-27	28-37	38-47	48-57	58-67	68-77	Grand Total
	PAYMENT METHO	D							
Cash			81	68	86	83	83	19	420
Credit Card			80	70	67	56	81	12	366
Debit Card			44	36	47	41	40	6	214
Grand Total			205	174	200	180	204	37	1000

Count of invoice_no	Shopping Mall			
Payment Method	Cevahir AVM	Emaar Square Mall	Forum Istanbul	Istinye Park
Cash	25	17	17	43
Credit Card	14	26	17	33
Debit Card	12	10	9	20
Grand Total	51	53	43	96



Payment Method vs Gender



Payment Method vs Age Group



Payment Method vs Shopping Mall

Payment method usage varies clearly across **gender, age group, and shopping mall**.

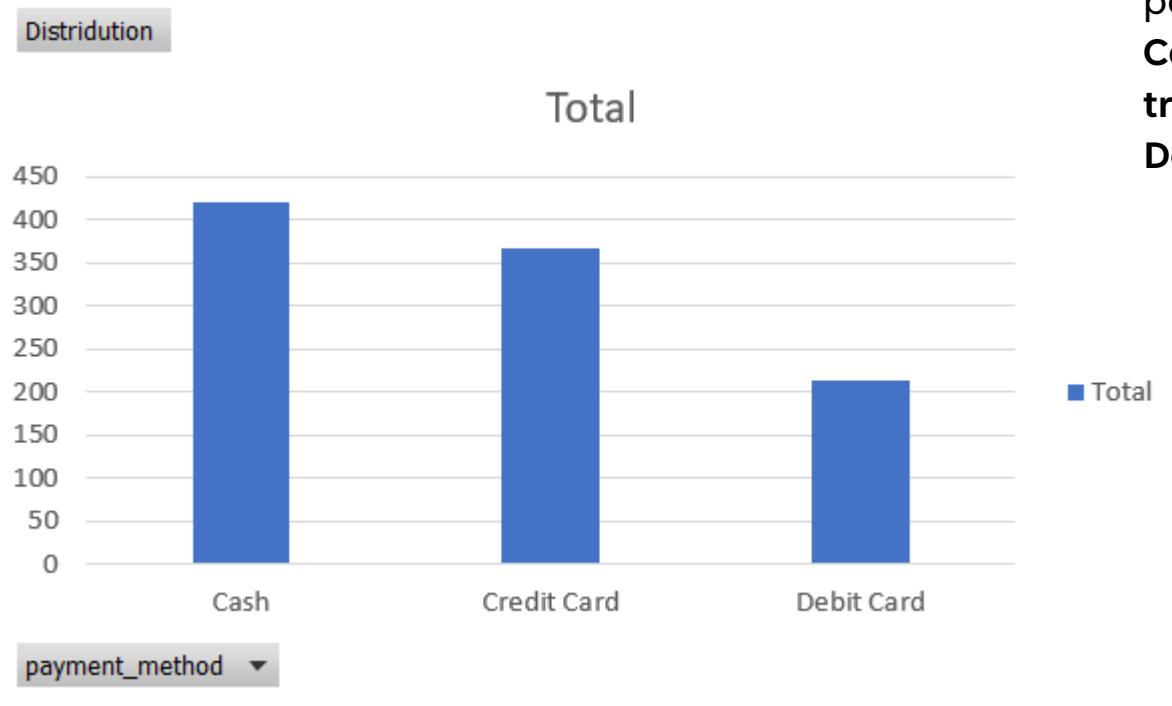
Cash is the most commonly used payment method across different demographics, followed by Credit Card., followed by **Credit Card**, while **Debit Card** usage is lower.

This shows that payment method has a strong relationship with customer characteristics and shopping locations.



TASK 10: HOW IS THE DISTRIBUTION OF THE PAYMENT METHOD?

Payment Method	Distribution
Cash	420
Credit Card	366
Debit Card	214
Grand Total	1000



The Pivot Table and bar chart show the overall usage of different payment methods.

Cash is the most widely used payment method (**420 transactions**), followed by **Credit Card** (**366 transactions**).

Debit Card is the least used payment method (**214 transactions**).



Task 11: Visualize the data using Tableau / Power BI and derive insights and give your inputs/suggestions to the company?

Insights Derived

The dashboard shows a **Total Revenue of 2.37M** with **3K products sold**, indicating steady overall sales performance.

Female customers contribute higher sales volume and revenue compared to male customers.

Middle-aged customers (21–40) contribute the highest sales volume and revenue.

Revenue is strongest in **economically active age groups**, while very young and senior customers contribute comparatively less.

Clothing and Shoes categories generate the highest revenue among all product categories.

Monthly revenue analysis shows **seasonal variations**, with noticeable peaks in certain months.

Inputs / Suggestions to the Company

Focus marketing campaigns on Middle-aged customers (38–57), as they are the most valuable customer segment.

Introduce **targeted offers and loyalty programs for female customers** to further boost revenue.

Increase inventory and promotions for **high-performing categories like Clothing and Shoes**.

Design **special discounts or bundles** to improve sales among low-contributing age groups (below 18 and 60+).

Use **monthly revenue trends** to plan seasonal promotions and manage stock efficiently.

Continue using **Power BI dashboards** for real-time monitoring and data-driven decision making.



Customer Sales Dashboard

Total Revenue

2.37M

Total Quantity

3K

gender

Female

Male

age

18

69

category

Books

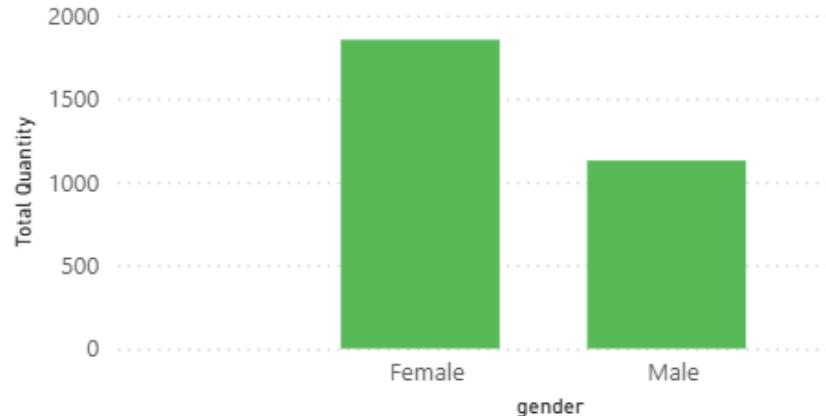
Clothing

Cosmetics

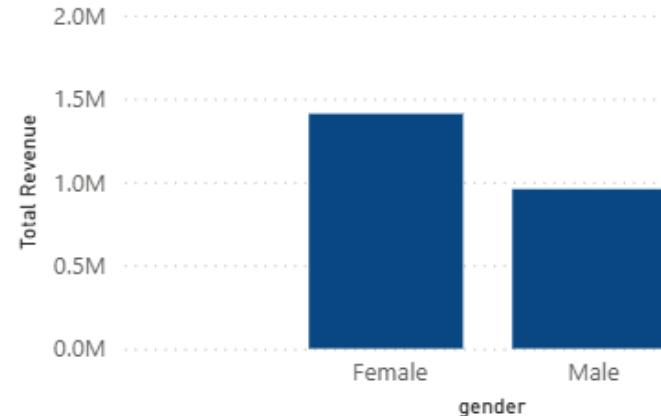
Food & Beverage

Shoes

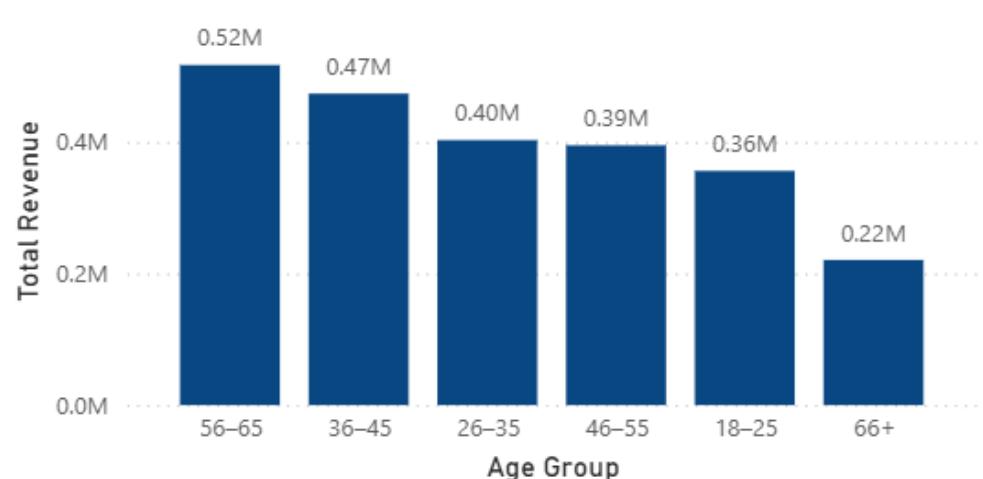
Products Sold by Gender



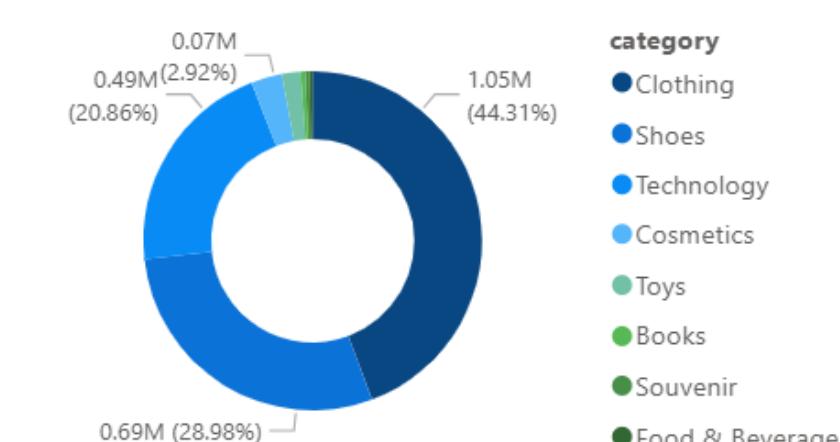
Revenue by Gender



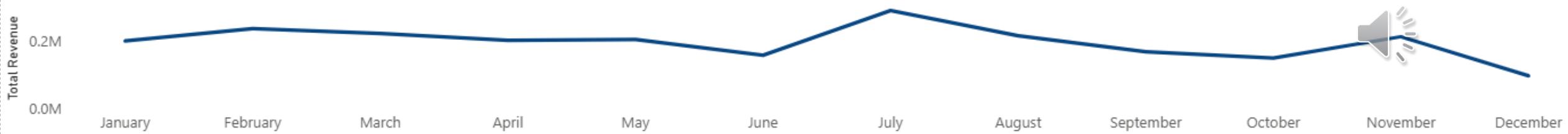
Total Revenue by Age Group

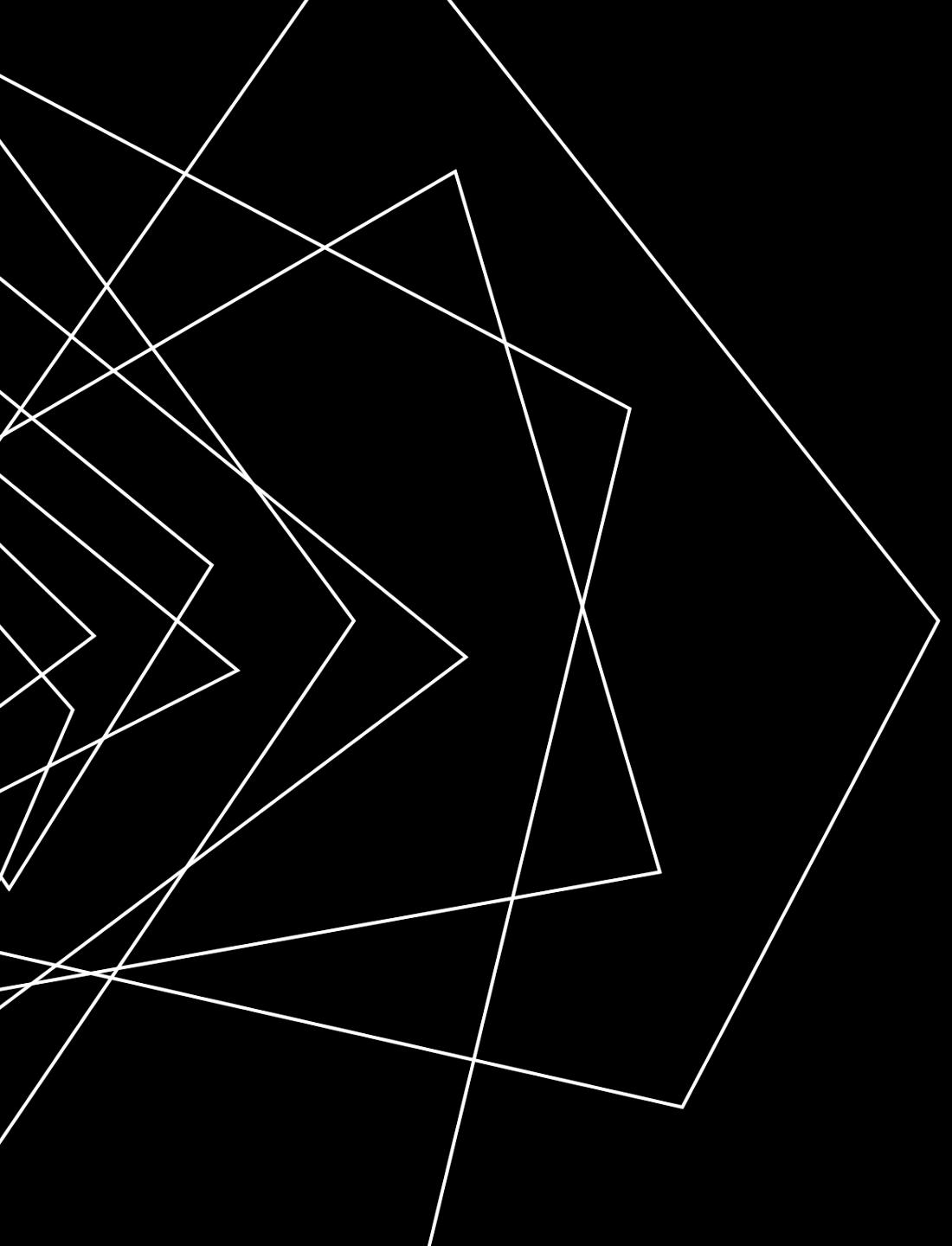


Total Revenue by category



Total Revenue by Month





THANK YOU

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