
Walmart Customer Purchase Behavior Analysis

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Walmart

Business Problem: Marketing Optimization

- **Goal:** How can Walmart optimize marketing & promotions to drive more targeted, profitable sales?
- **Why it Matters?**
 - Increased customer acquisition, loyalty, and overall sales performance
 - Boosts ROI
- **Who Benefits:**
 - Marketing
 - Sales
 - Customers



Dataset Selection

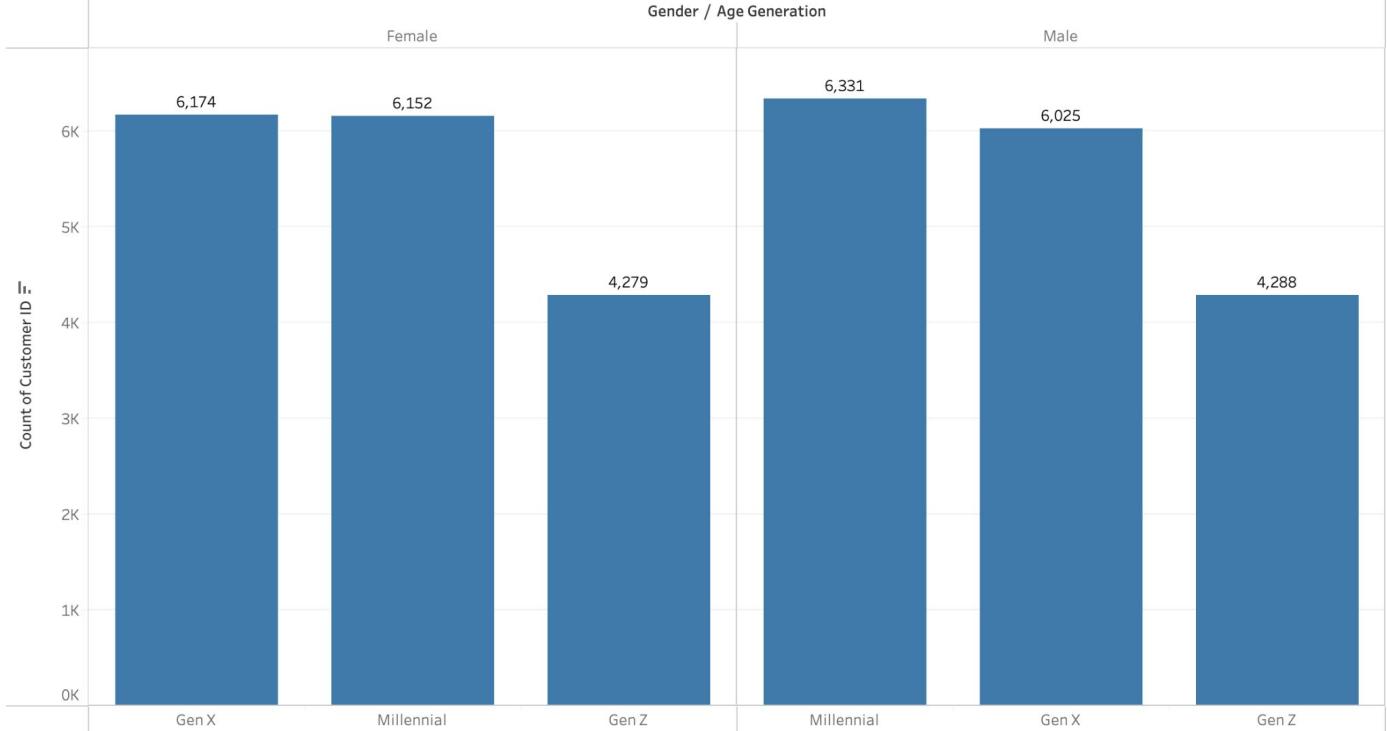
- Walmart Customer Purchase Behavior Dataset (Kaggle)
 - 50,000 customer transactions
 - 12 features
- Filtered out ages 61+ and the “Other” gender

Features:

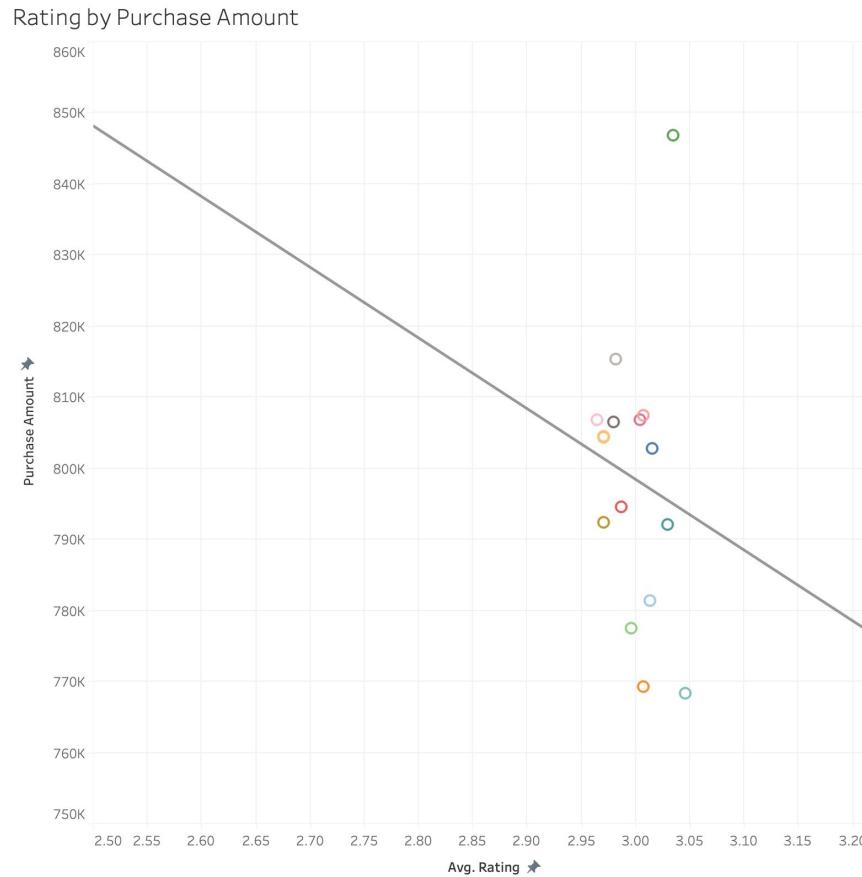
- Customer_ID
- Age
- Gender – (Male/Female/Other)
- City
- Category – Product category (Electronics, Clothing, Groceries, etc.).
- Product_Name
- Purchase_Date
- Purchase_Amount
- Payment_Method – (Credit Card, Cash, Digital Wallet, etc.).
- Discount_Applied – (Yes/No).
- Rating – Customer rating of the purchase (1-5).
- Repeat_Customer – Whether the customer has purchased before (Yes/No).

Situation

Customer Distribution by Generation and Gender

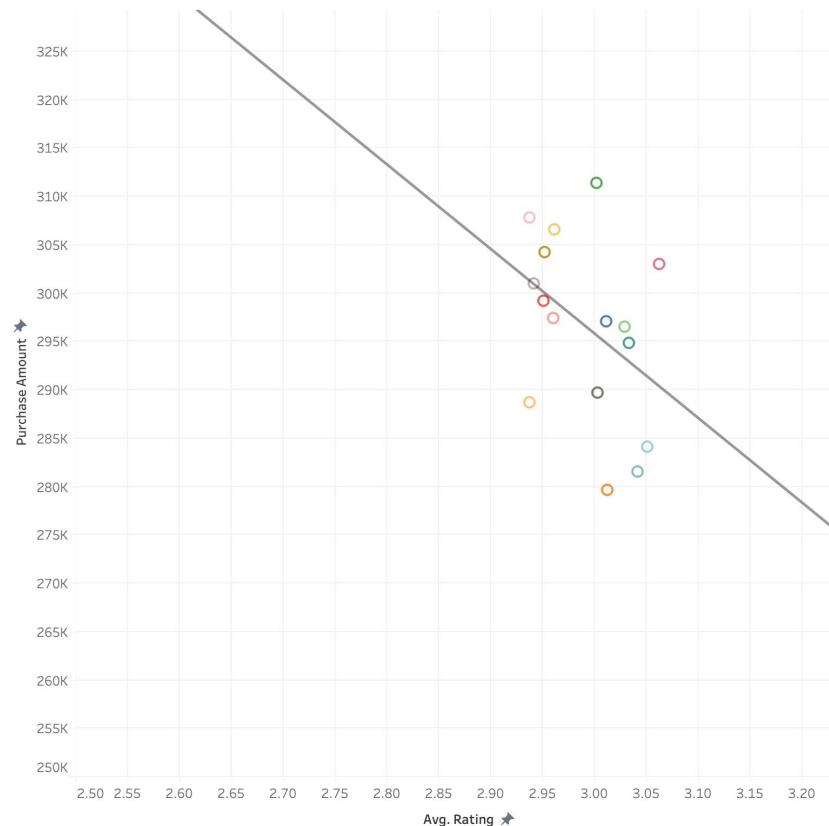


Using Ratings to Predict Purchase Amount?

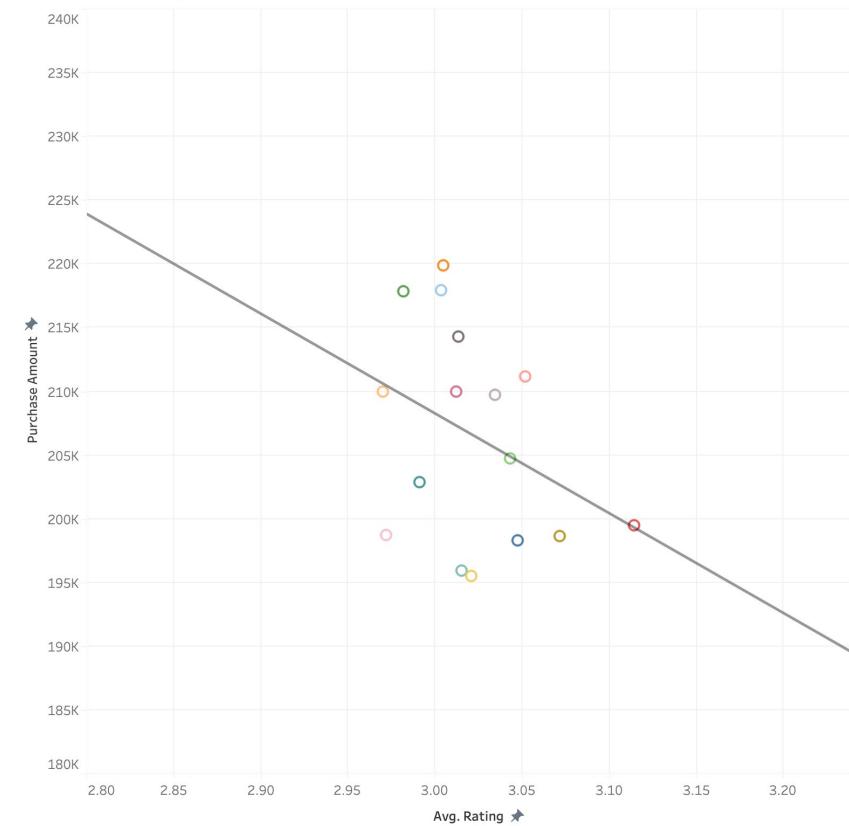


Using Ratings to Predict Purchase Amount?

Millennials - Rating by Purchase Amount



Gen X - Rating by Purchase Amount



Millennials

Male

Purchase By Product

Product Name	
Lamp	\$108,474.73
Smartwatch	\$107,058.25
Shampoo	\$106,914.89
Sofa Cover	\$106,667.66
Headphones	\$106,346.30
T-Shirt	\$104,200.06
Laptop	\$103,036.16
Jeans	\$102,970.72
Smartphone	\$102,514.95
Perfume	\$99,305.26
Face Cream	\$98,765.27
Jacket	\$97,445.82
Cookware	\$97,215.21
Dress	\$94,415.87
Curtains	\$93,842.83
Lipstick	\$87,795.00

Count By Product

Product Name	
Headphones	421
T-Shirt	416
Sofa Cover	413
Lamp	410
Smartwatch	409
Shampoo	406
Jeans	405
Face Cream	401
Perfume	398
Laptop	394
Smartphone	393
Cookware	382
Jacket	378
Dress	374
Curtains	371
Lipstick	360

Female

Purchase By Product

Product Name	
Perfume	\$107,002.81
Lamp	\$105,488.01
Headphones	\$103,341.75
Jacket	\$102,712.37
Laptop	\$102,477.94
Lipstick	\$100,991.97
Shampoo	\$98,823.36
Curtains	\$98,659.58
Cookware	\$98,580.90
T-Shirt	\$96,230.57
Dress	\$95,016.16
Sofa Cover	\$94,764.22
Face Cream	\$94,612.53
Jeans	\$93,601.99
Smartphone	\$90,657.02
Smartwatch	\$89,329.63

Count By Product

Product Name	
Lamp	417
Perfume	415
Laptop	402
T-Shirt	400
Jacket	396
Cookware	394
Sofa Cover	385
Jeans	384
Face Cream	384
Lipstick	380
Shampoo	375
Headphones	375
Curtains	370
Smartphone	363
Dress	360
Smartwatch	352

Gen X

Male

Purchase By Product

Product Name	
Laptop	\$105,871.32
Headphones	\$104,934.90
Lamp	\$103,789.47
Smartwatch	\$101,374.60
Face Cream	\$100,726.76
Perfume	\$100,191.13
Cookware	\$99,266.81
Shampoo	\$98,450.15
Sofa Cover	\$95,757.89
Lipstick	\$95,167.75
Jeans	\$94,370.86
T-Shirt	\$92,867.62
Smartphone	\$86,468.19
Dress	\$84,031.60
Jacket	\$83,389.17
Curtains	\$75,662.44

Count By Product

Product Name	
Laptop	422
Headphones	420
Face Cream	413
Cookware	403
Lamp	402
Perfume	398
Smartwatch	390
Lipstick	377
Jeans	376
Shampoo	373
T-Shirt	363
Sofa Cover	363
Dress	347
Smartphone	338
Jacket	335
Curtains	305

Female

Purchase By Product

Product Name	
Face Cream	\$109,850.28
T-Shirt	\$108,908.10
Smartphone	\$107,406.82
Headphones	\$104,821.44
Jacket	\$103,059.16
Cookware	\$102,275.16
Lipstick	\$100,918.39
Sofa Cover	\$99,658.32
Lamp	\$99,429.97
Perfume	\$95,902.35
Shampoo	\$95,246.79
Jeans	\$94,421.17
Smartwatch	\$92,690.34
Laptop	\$92,366.64
Curtains	\$91,813.08
Dress	\$87,698.60

Count By Product

Product Name	
Face Cream	436
T-Shirt	421
Jacket	418
Headphones	412
Smartphone	403
Sofa Cover	394
Lamp	390
Cookware	389
Shampoo	386
Lipstick	380
Curtains	369
Laptop	368
Perfume	362
Smartwatch	351
Dress	348
Jeans	347

Gen Z

Male

Purchase By Product

Product Name	Value
Smartphone	\$74,552.80
Dress	\$72,054.99
Sofa Cover	\$72,032.77
Shampoo	\$71,652.29
Headphones	\$71,638.78
Curtains	\$71,132.15
Smartwatch	\$69,056.17
Face Cream	\$68,637.26
Perfume	\$68,419.84
Jacket	\$66,458.33
Jeans	\$65,290.33
Laptop	\$65,214.67
Cookware	\$64,556.38
Lipstick	\$64,511.34
Lamp	\$63,909.15
T-Shirt	\$63,011.17

Count By Product

Product Name	Value
Smartphone	289
Shampoo	284
Perfume	278
Dress	278
Sofa Cover	277
Smartwatch	274
Laptop	269
Face Cream	266
Headphones	265
Curtains	265
Cookware	265
Jacket	263
Jeans	261
T-Shirt	255
Lamp	251
Lipstick	248

Female

Purchase By Product

Product Name	Value
Headphones	\$74,313.90
Cookware	\$73,477.45
Curtains	\$72,534.53
Shampoo	\$72,490.95
Dress	\$72,330.92
Jacket	\$70,664.96
T-Shirt	\$68,410.34
Sofa Cover	\$68,266.20
Perfume	\$68,179.27
Lamp	\$67,356.46
Face Cream	\$67,007.55
Smartwatch	\$66,336.62
Lipstick	\$65,972.02
Jeans	\$65,293.02
Smartphone	\$63,458.65
Laptop	\$62,378.82

Count By Product

Product Name	Value
Headphones	295
Dress	283
Shampoo	281
Cookware	280
Curtains	279
Smartwatch	275
Jacket	275
T-Shirt	274
Perfume	270
Lipstick	266
Sofa Cover	264
Lamp	261
Face Cream	255
Laptop	246
Jeans	245
Smartphone	230

Top Products

Millennial Males:

1. Lamp
2. Smartwatch
3. Shampoo
4. Sofa Cover
5. T-Shirt

Millennial Females:

1. Perfume
2. Lamp
3. Jacket
4. Laptop
5. Headphones

Gen X Males:

1. Laptop
2. Headphones
3. Lamp
4. Face Cream
5. Smartwatch

Gen X Females:

1. Face Cream
2. T-Shirt
3. Smartphone
4. Headphones
5. Jacket

Gen Z Males:

1. Smartphone
2. Dress
3. Sofa Cover
4. Shampoo
5. Smartwatch

Gen Z Females:

1. Headphones
2. Cookware
3. Curtains
4. Shampoo
5. Dress

Product Categories

Beauty:

- Face Cream
- Lipstick
- Perfume
- Shampoo

Clothing:

- Dress
- Jacket
- Jeans
- T-Shirt

Electronics:

- Headphones
- Laptop
- Smartphone
- Smartwatch

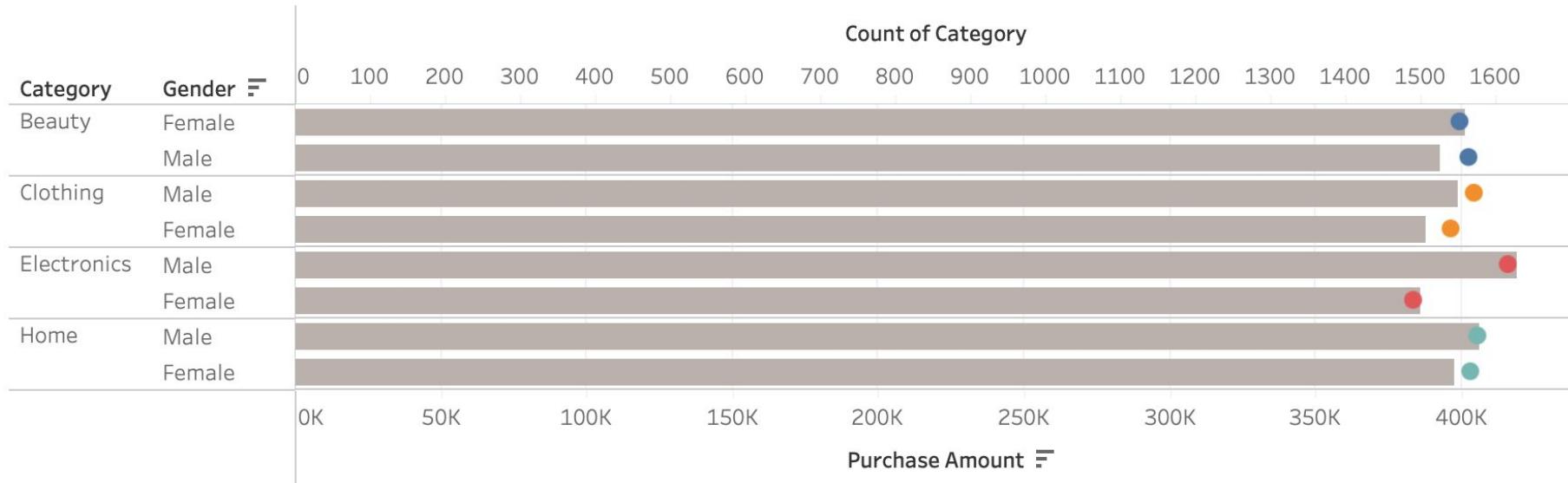
Home:

- Cookware
- Curtains
- Lamp
- Sofa Cover



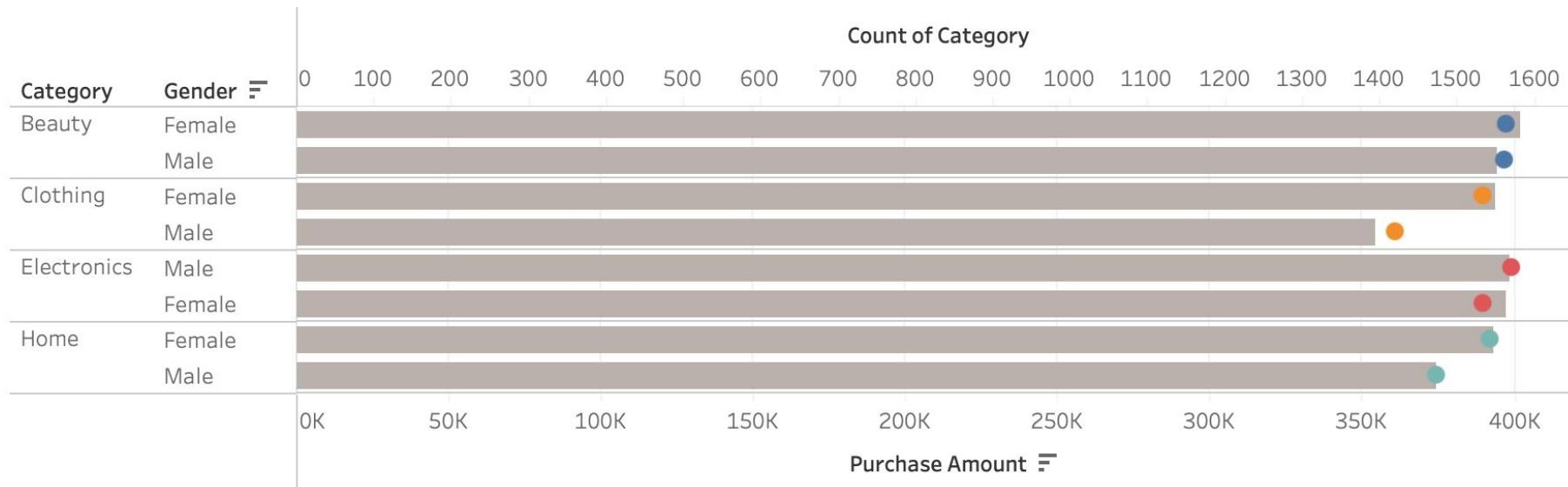
Millennials

Purchase Amount & Count by Category



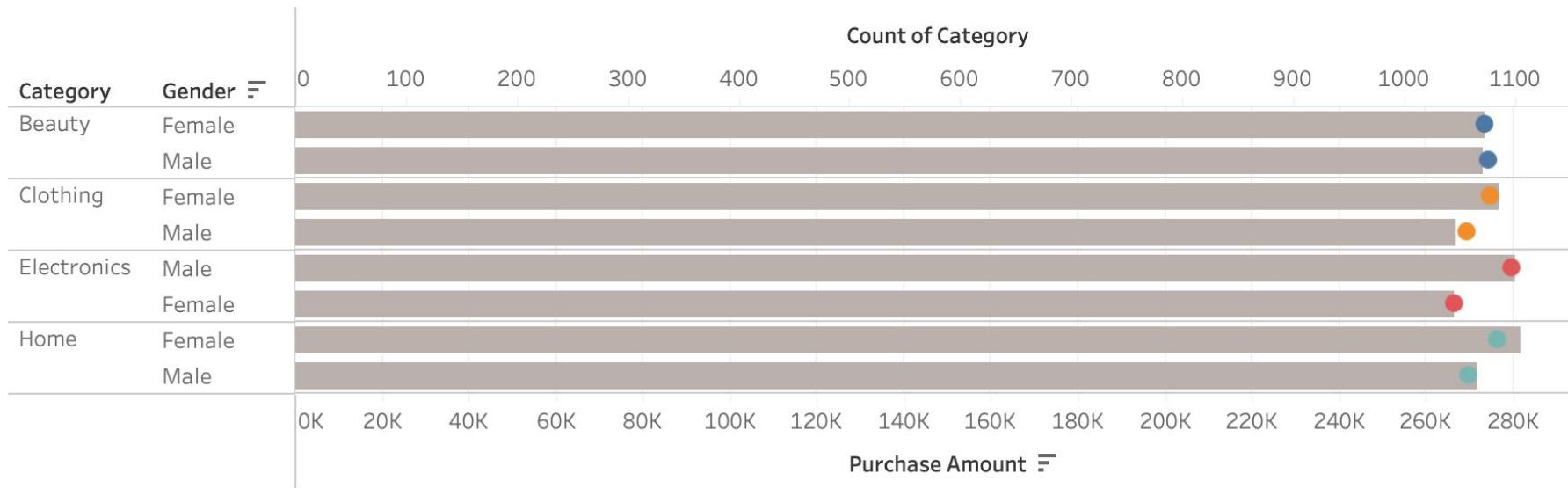
Gen X

Purchase Amount & Count by Category



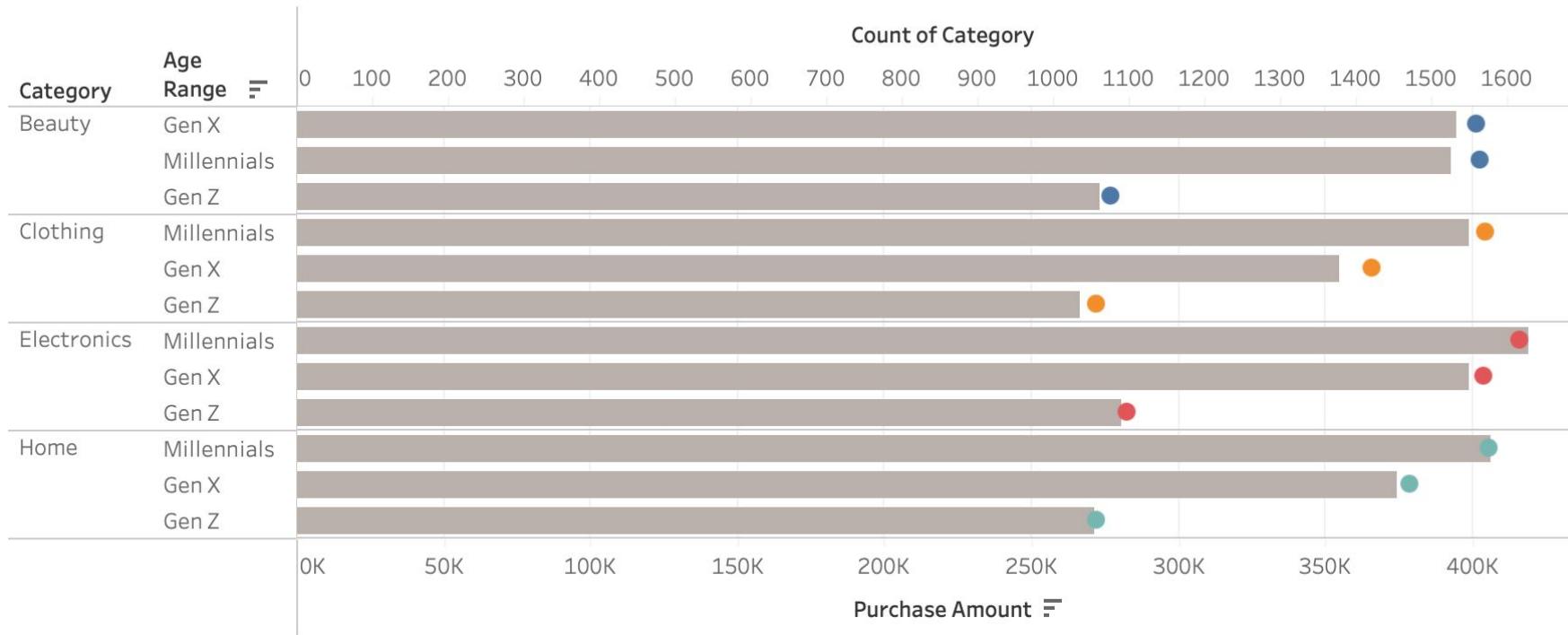
Gen Z

Purchase Amount & Count by Category



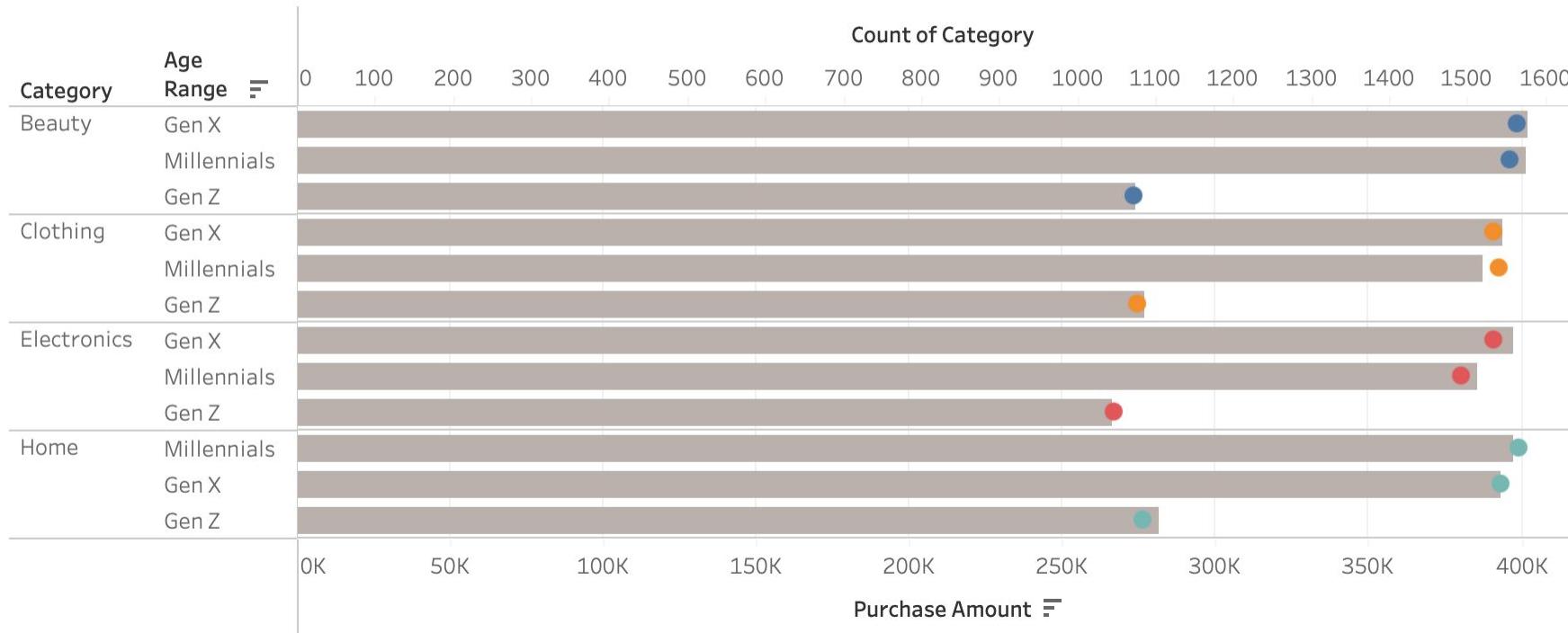
Male

Purchase Amount & Count by Category



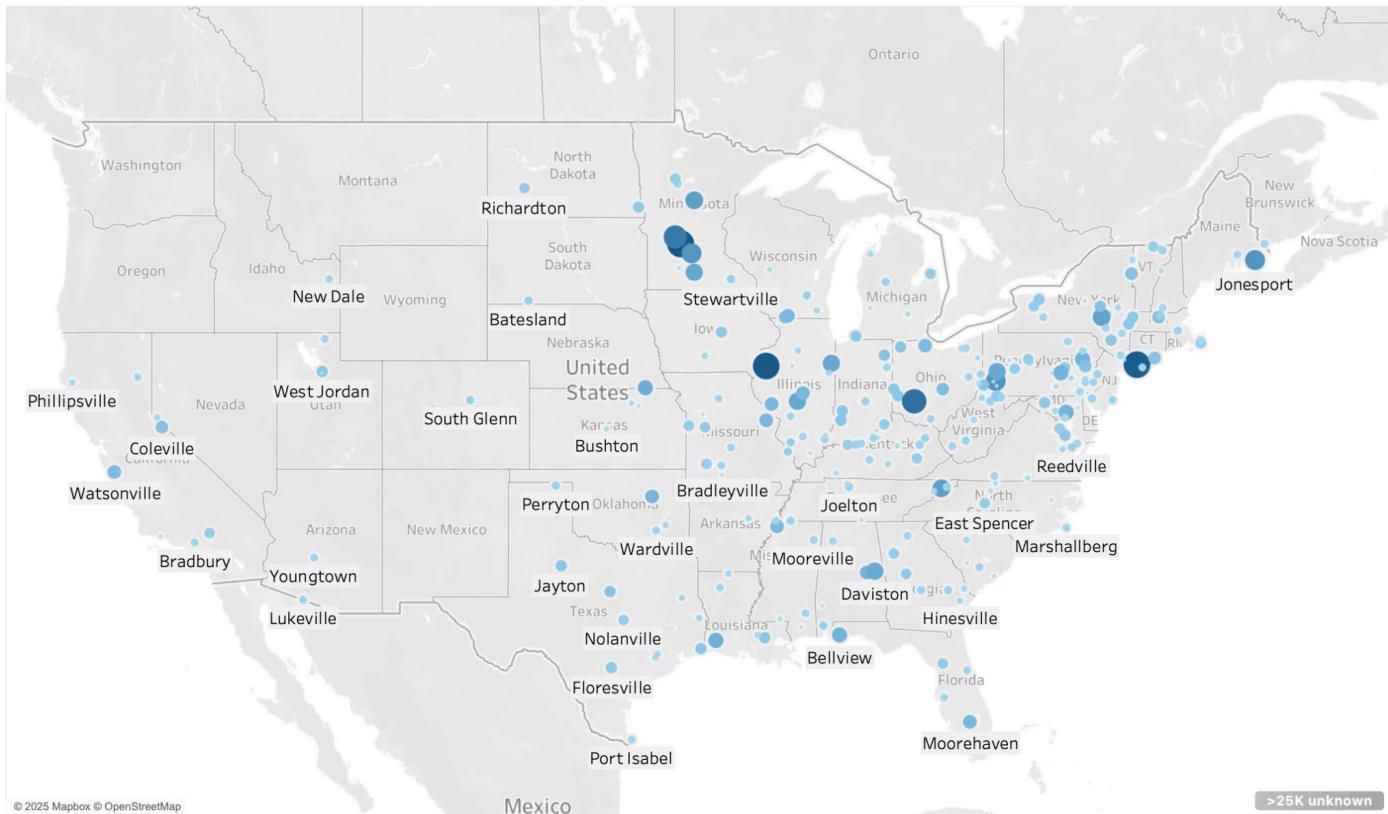
Female

Purchase Amount & Count by Category



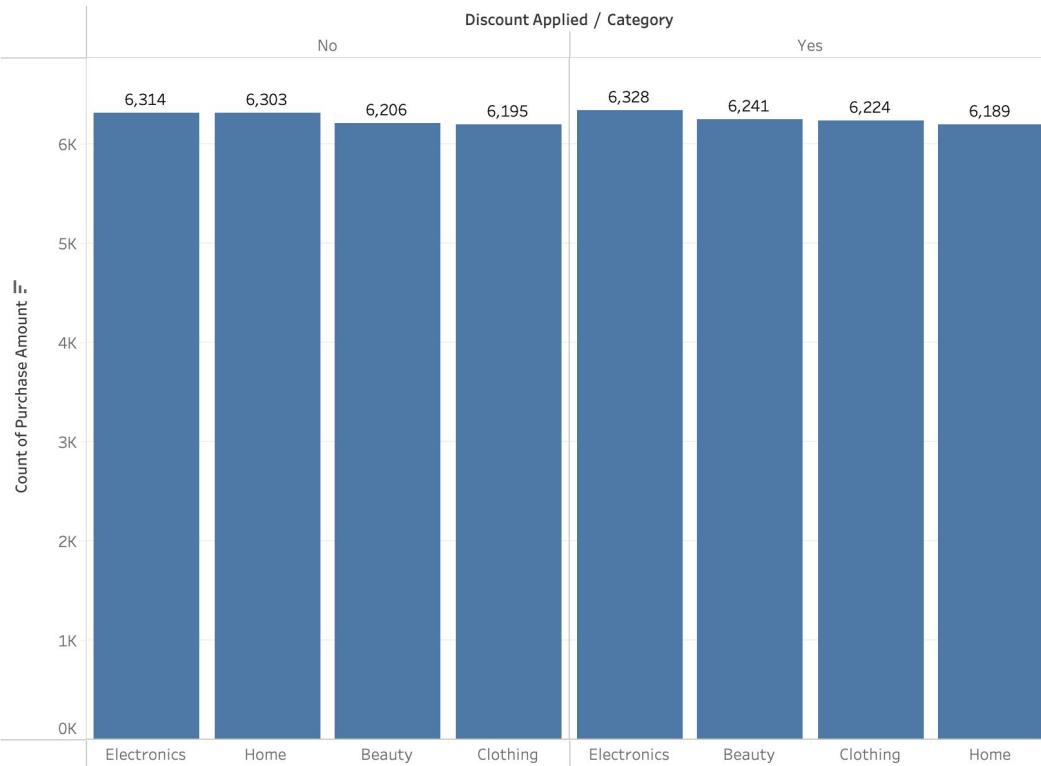
Regional Sales Analysis

Regional Distribution of Customer Purchases



Impact of Discounts on Product Sales

Purchase Count by Discount Applied and Category



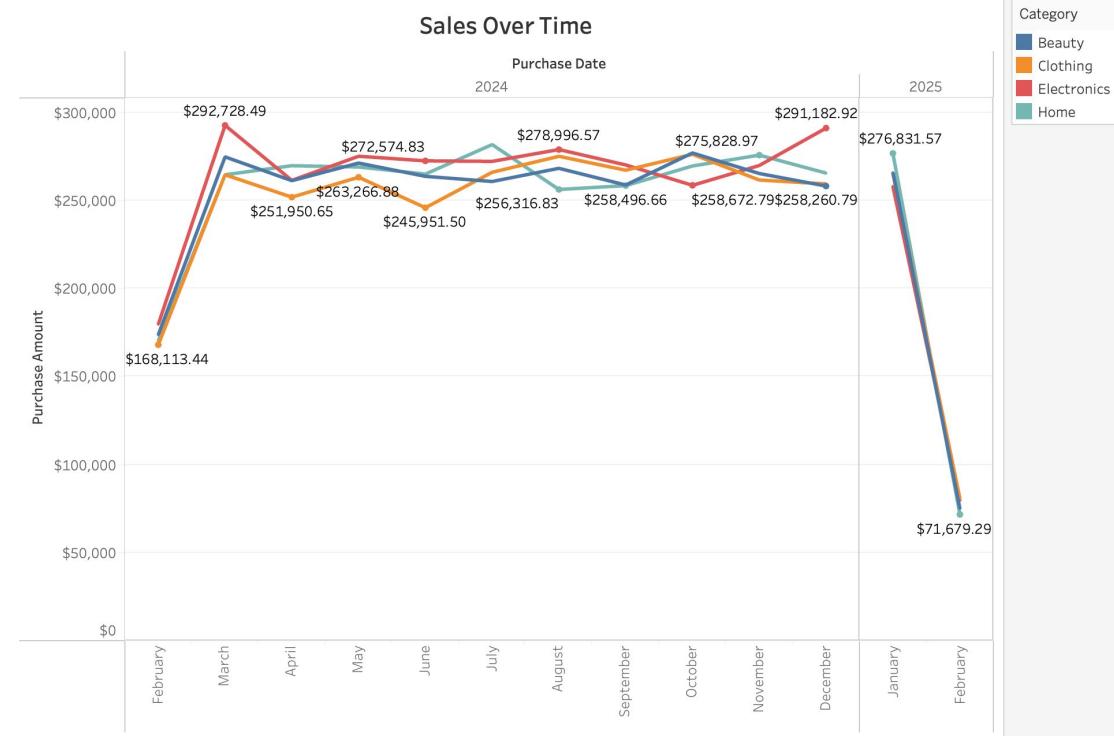
Purchase Amount by Discount Applied and Product

Category	Product Na..	Discount Applied	
		No	Yes
Beauty	Face Cream	1,561	1,613
	Lipstick	1,504	1,508
	Perfume	1,564	1,552
	Shampoo	1,577	1,568
Clothing	Dress	1,570	1,471
	Jacket	1,524	1,581
	Jeans	1,517	1,550
	T-Shirt	1,584	1,622
Electronics	Headphones	1,657	1,604
	Laptop	1,522	1,588
	Smartphone	1,543	1,551
	Smartwatch	1,592	1,585
Home	Cookware	1,575	1,580
	Curtains	1,561	1,482
	Lamp	1,579	1,559
	Sofa Cover	1,588	1,568

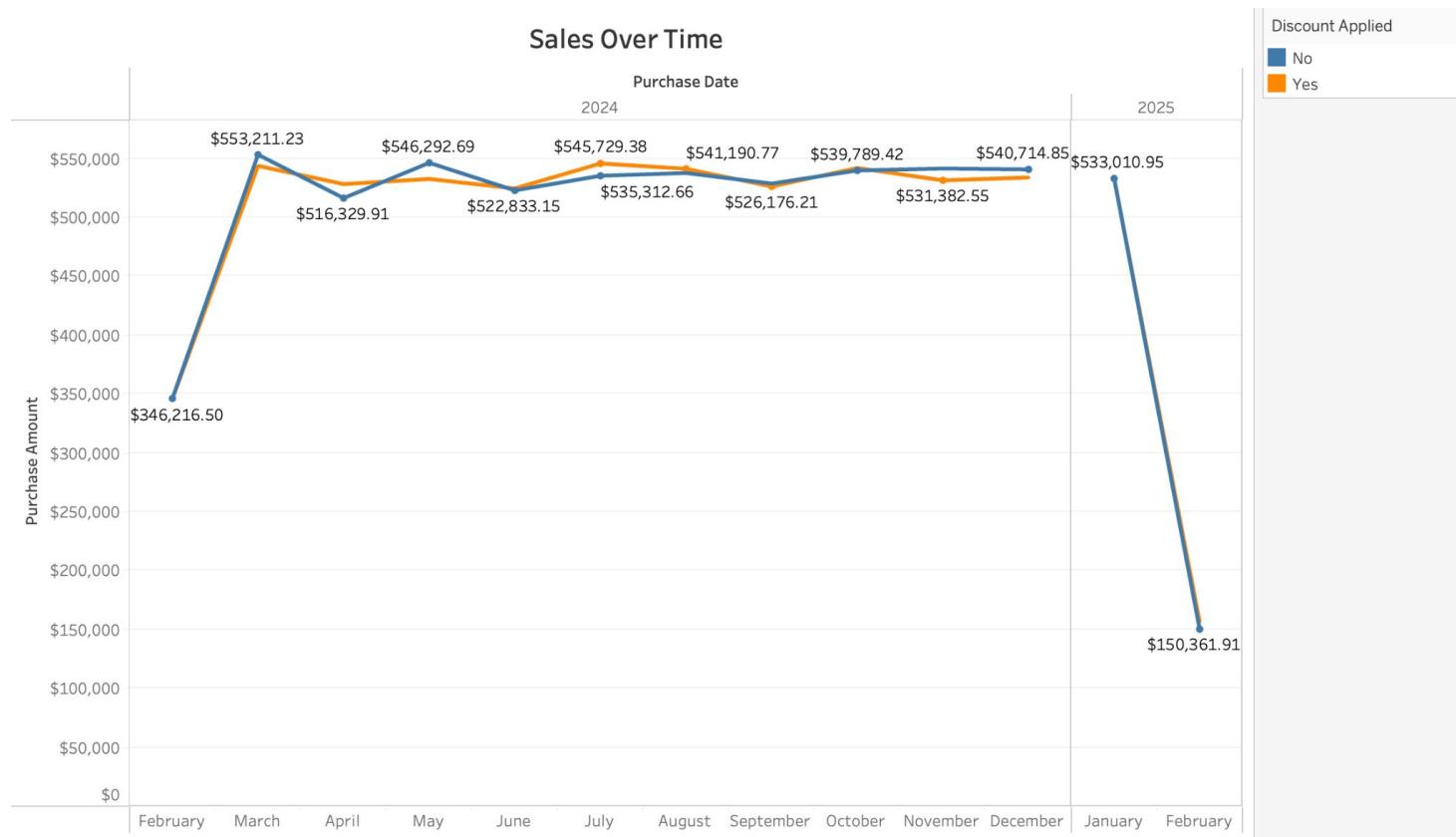
Sales Trends from 2024-2025 by Category

Seasonal Patterns:

- Electronics peak at \$292k in March
- Surge in Electronics sales in Nov-Dec
- Major decline in sales in February post-holiday



Sales Trends from 2024-2025 by Discount



Summarize Findings

- Top audiences are ages 29-60 years old (Millennials - Gen X) in the Midwest region
- Ratings have no prediction on Purchase Amount
- Product popularity varies between Age Range & Gender
- Product categories are mostly consistent with Gender across Age Range
- Discounts are *not* being applied significantly more
 - People are spending nearly the same amount when discounts are applied



Insights & Recommendations

Personalize Campaigns: Target key demographics (Gen X males with Electronics, Gen Z females with Beauty) via email, app, and social media.

Smart Discounting: Apply discounts in low-sales months to avoid over-discounting during peak periods.

Leverage Repeat Customer Data: Offer loyalty rewards and personalized offers to boost retention.

Regional Targeting: Focus marketing efforts on high-performing regions; experiment in weaker areas.

A/B Test Campaigns: Continuously test formats and types of discounts strategically to optimize ROI.