

# **E-Commerce Behavior**

**Data for two months from a  
medium cosmetics online  
store**

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# OVERVIEW

**01**

## **Ads & Promotions**

Which products to feature in the next advertising campaigns and promotions?

**02**

## **Brand Loyalty**

Which brands are customers most loyal to?

**03**

## **Most Valuable Customers**

Most valuable customers based on their purchase history

**04**

## **Price Trends**

Are there any price trends for a particular product over time?

**05**

## **Loyalty KPIs**

Define a KPI that measures customer loyalty from the data.

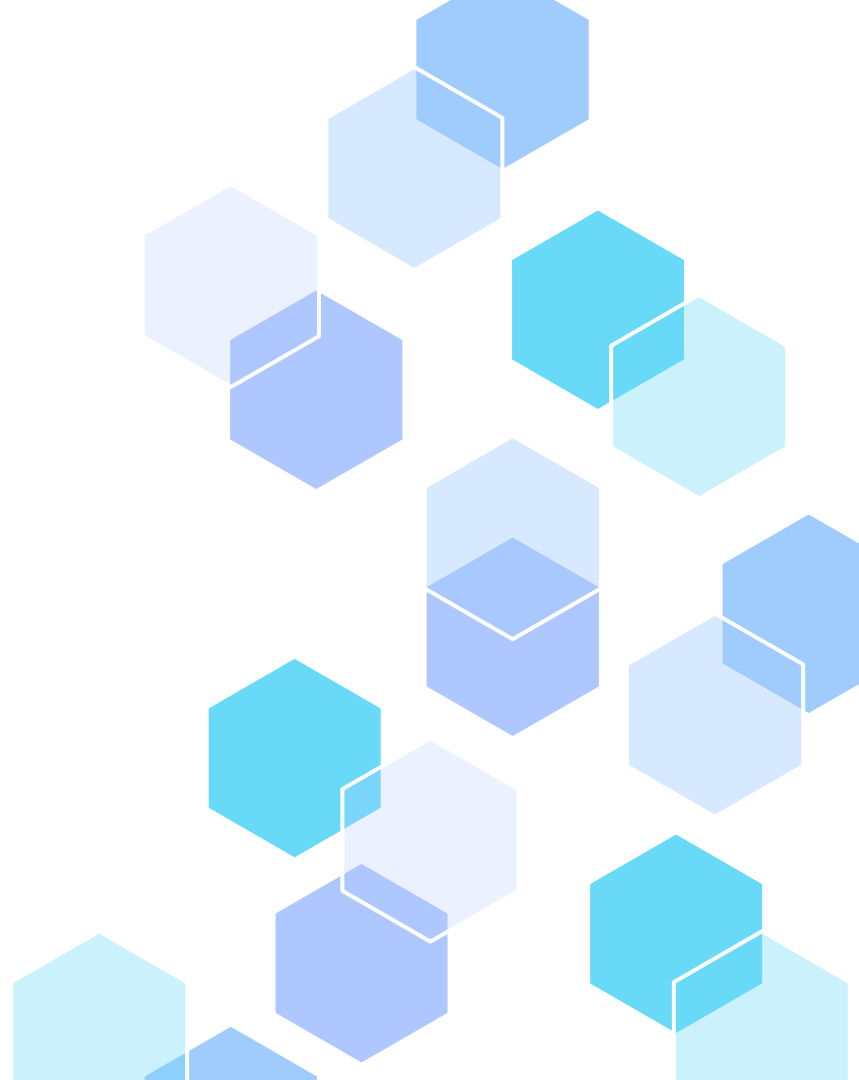
**06**

## **Association Analysis & Modelling**

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# 01

## Ads & Promotions



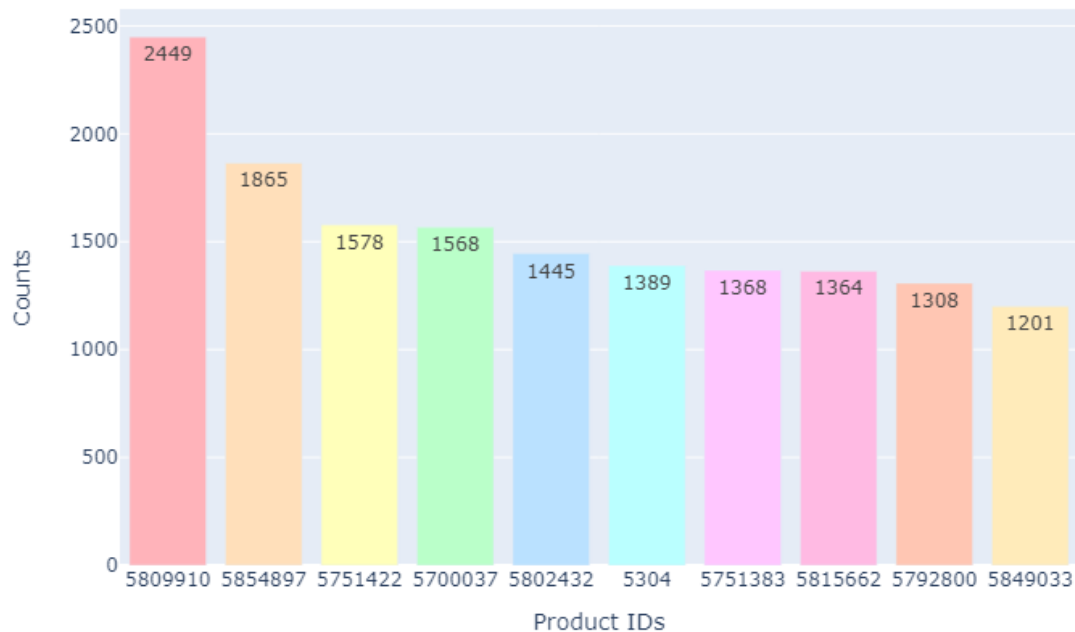
# Advertising & Promoting Strategy

- **What are the Top 10 Most Sold Products**
- **What are the Top 10 Most Profitable Products**
- **What are the Top 10 Most Purchased Product Combinations**
- **What are the Top 10 Products that have been removed from Cart**

# Top 10 Most Sold Products

- Out of 45,960 products, 33,172 were purchased within those two months
- Product no 5809910 was the most sold product within this period

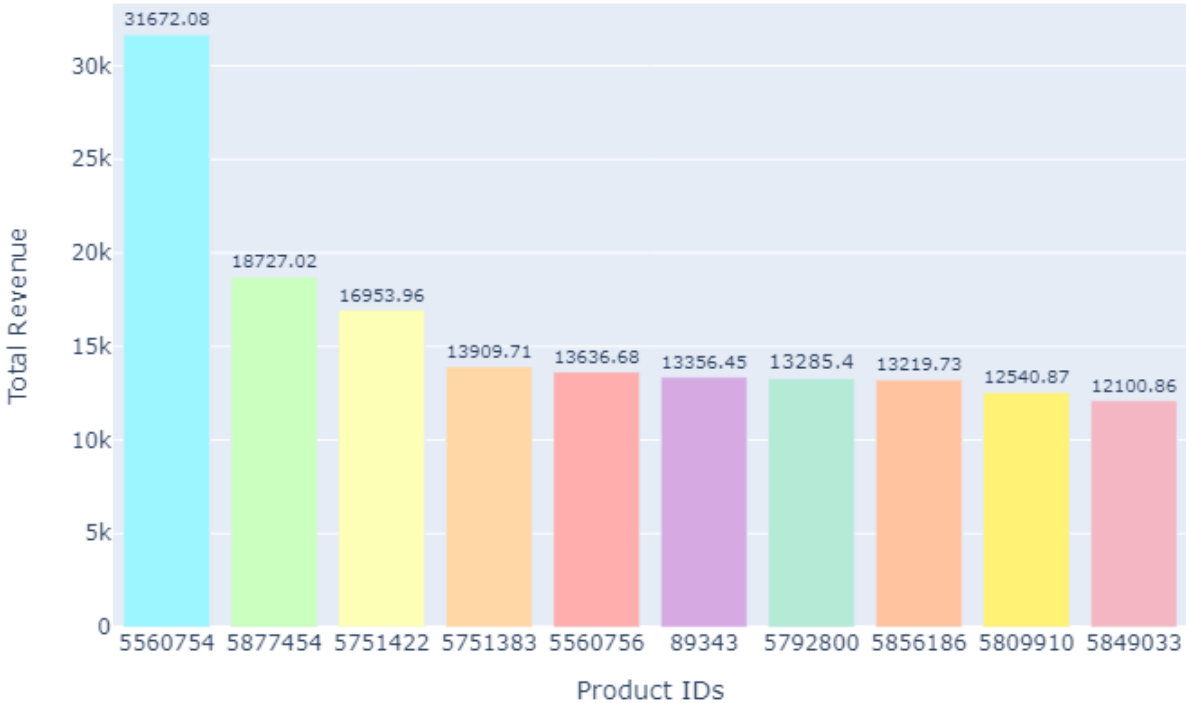
Top 10 Most Sold Products



# Top 10 Most Profitable Products

Top 10 Most Profitable Products

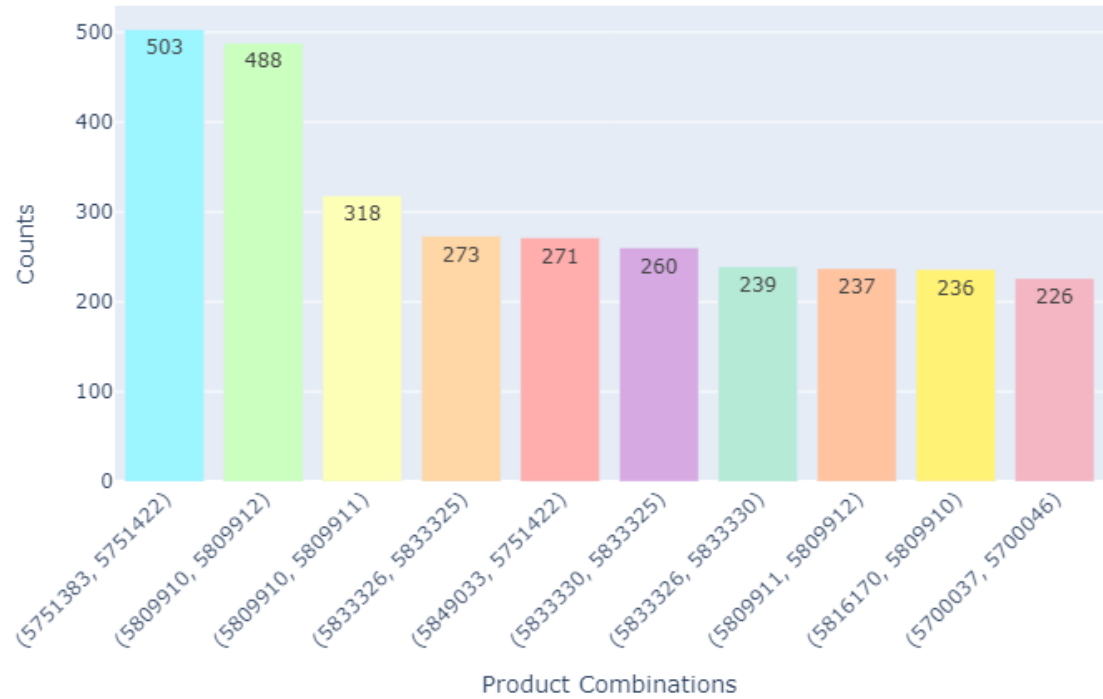
- **Product 5560754 Generated the Highest Revenue During This Period, Nearly Doubling the Revenues of the Second Most Profitable Product.**



# Top 10 Most Purchased Product Combinations

Top 10 Most Purchased Product Combinations and Their Counts

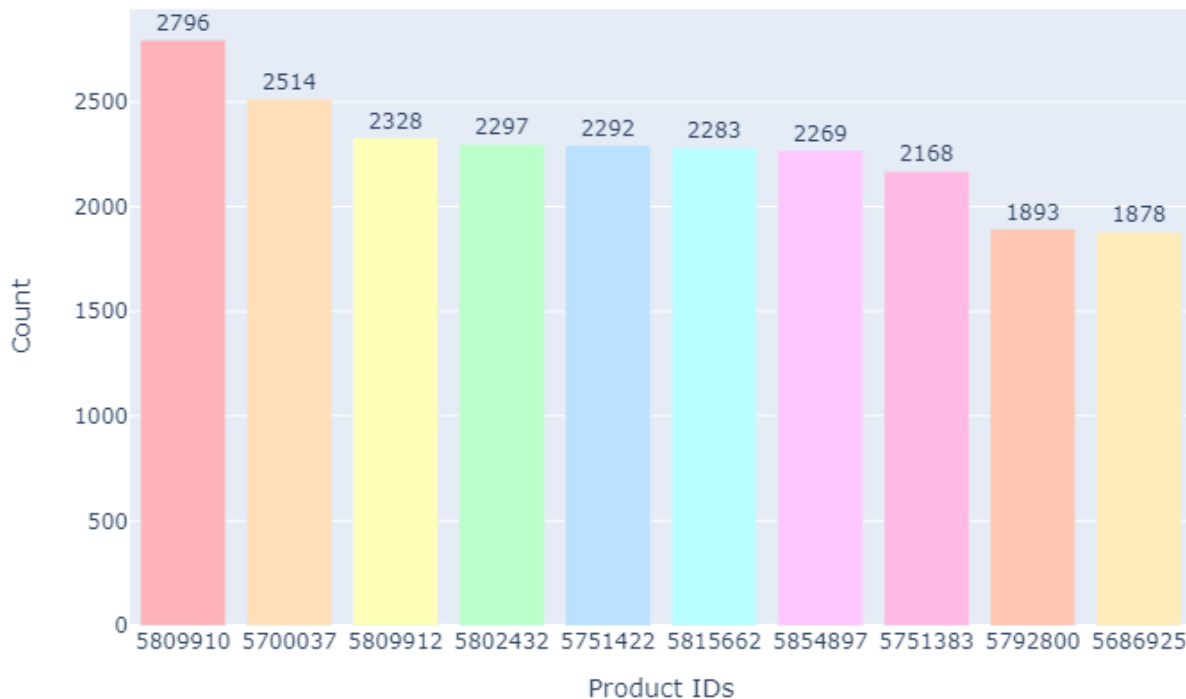
● Combinations (5751383, 5751422) & (5809910,5809912) Have a Remarkably Higher Purchase Counts Than Other Combinations



# Top 10 Products that have been removed from Cart

Top 10 Products that have been removed from Cart

- There is a Slight Increase in Product 5809910 Count of How Many Times it Has Been Removed From Cart. Maybe A Pricing Problem?

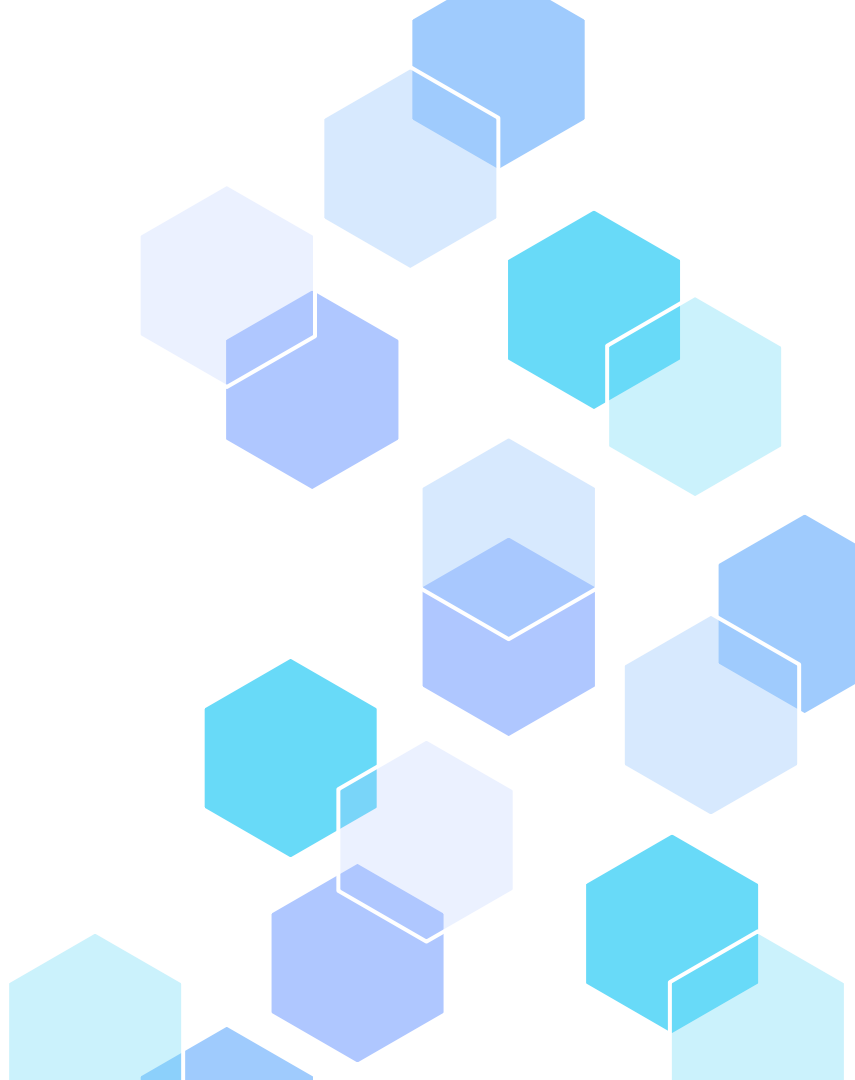




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02

# Brand Loyalty



# Which brands are customers most loyal to?

- Brand loyalty measurement
- What are the Top 10 brands are customers most loyal to?



# Brand loyalty measurement

- **Repeat Purchase Rate (RPR)**



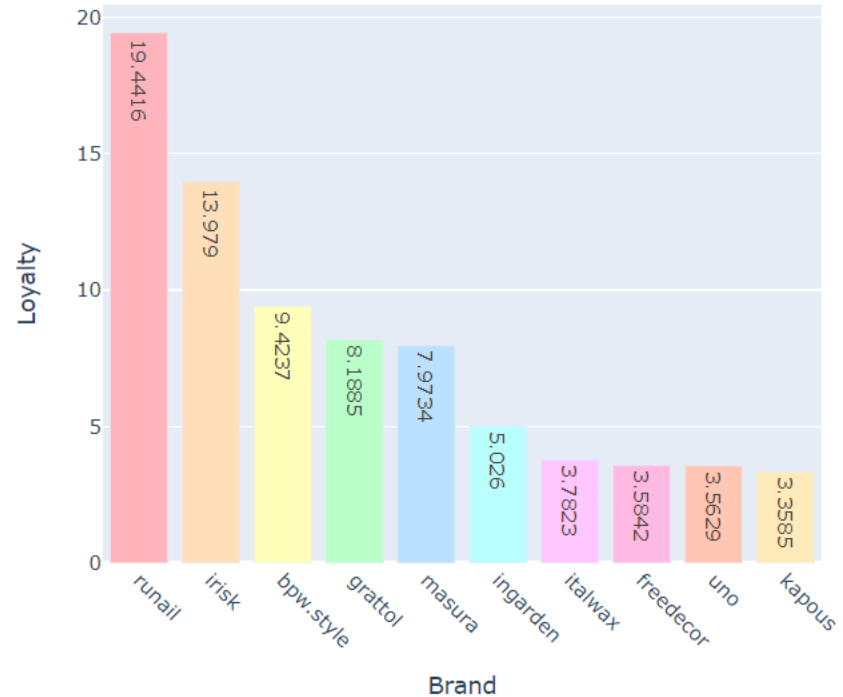
A line-art icon of a shopping cart with two wheels. A curved arrow starts from the top of the cart, goes up and around, and points back down into the cart, symbolizing a repeat purchase.

$$\text{Repeat purchase rate} = \frac{\text{Number of customers who made repeat purchases (365 days)}}{\text{Total number of customers (365 days)}}$$

# What Are the Top 10 brands are customers Most Loyal To?

the top 10 brands are customers most loyal to

- Out of 244 brand 218 were purchased within those two months.
- Brand runail is the most brand are customers loyal to.
- Some of brands name is missing ( recommended )



# Shopping Cart Abandonment Rate

- Shopping cart abandonment rate: 16 %

## CART ABANDONMENT RATE

$$CAR = \frac{\text{\# of abandoned shopping carts}}{\text{\# of initiated checkouts}} \times 100$$

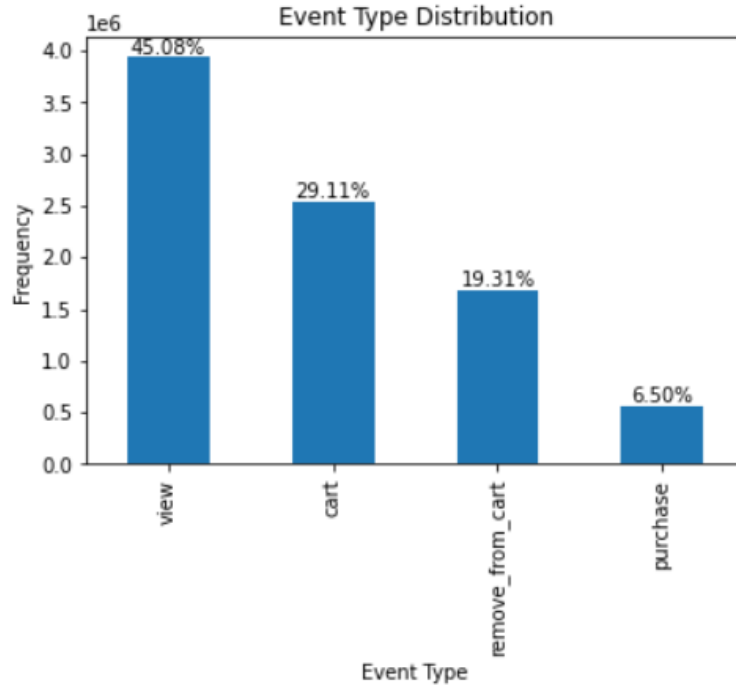
# Website Traffic Analysis

- **Reaches**: Reach of users who made 'view' events: 693009.
- **Pageviews**: 8276943
- **Unique Visitors**: 713025
- **Sessions**: 1814075
- **Bounce Rate**: 69.03132450422392
- **Average Session Duration**: 30 minutes



# Event Type Distributions

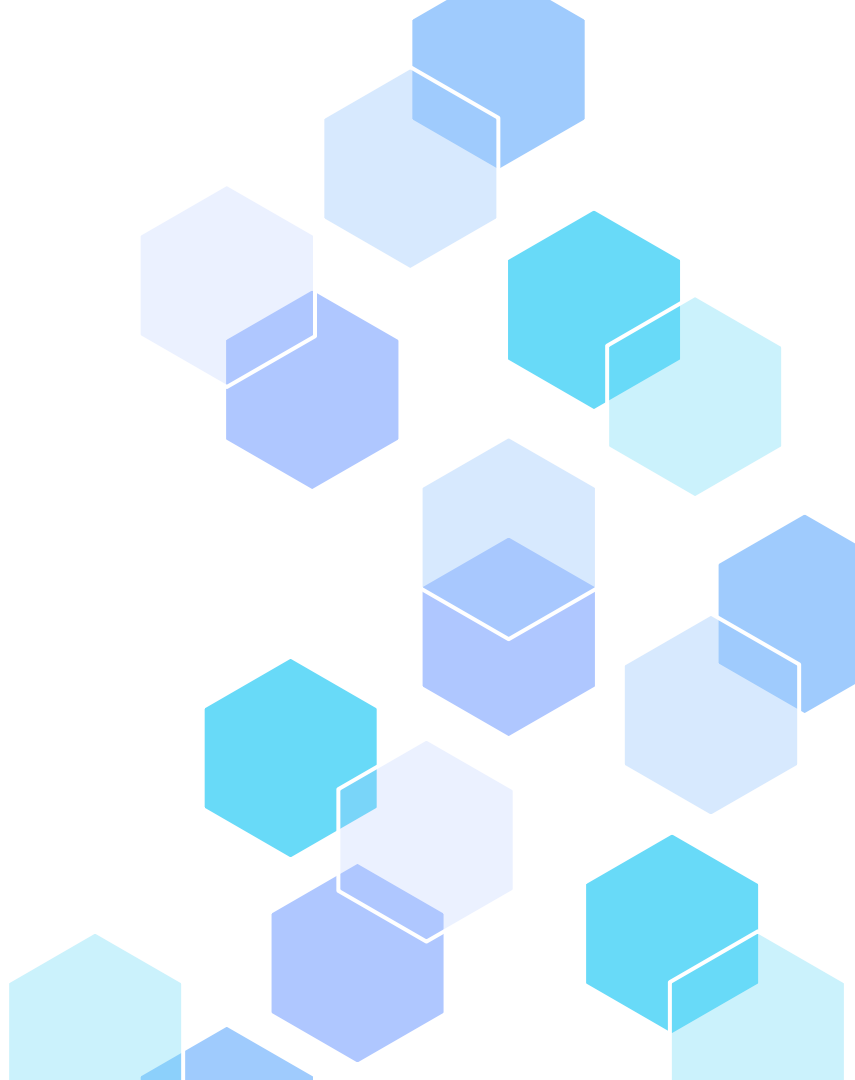
- **View** : 45%
- **cart**: 29%
- **Remove from cart** : 19%
- **purchase** : 6.5%



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**03**

# **Most Valuable Customers**

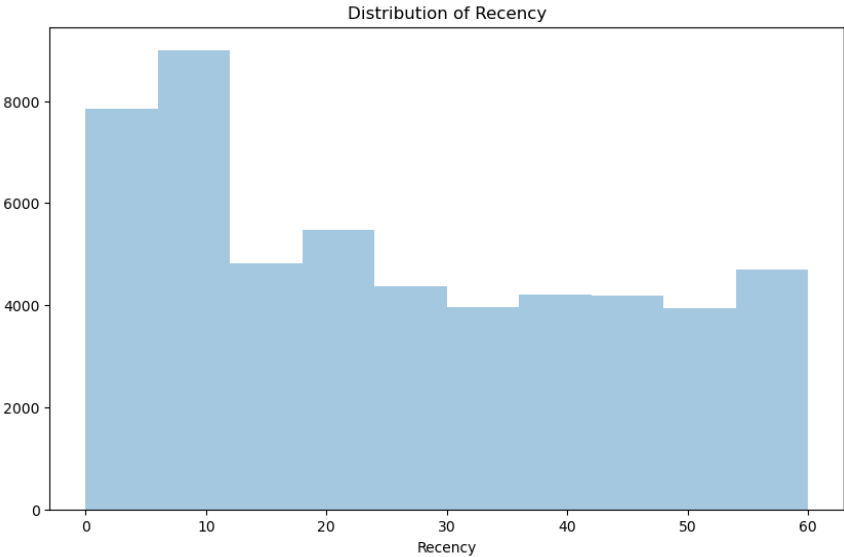
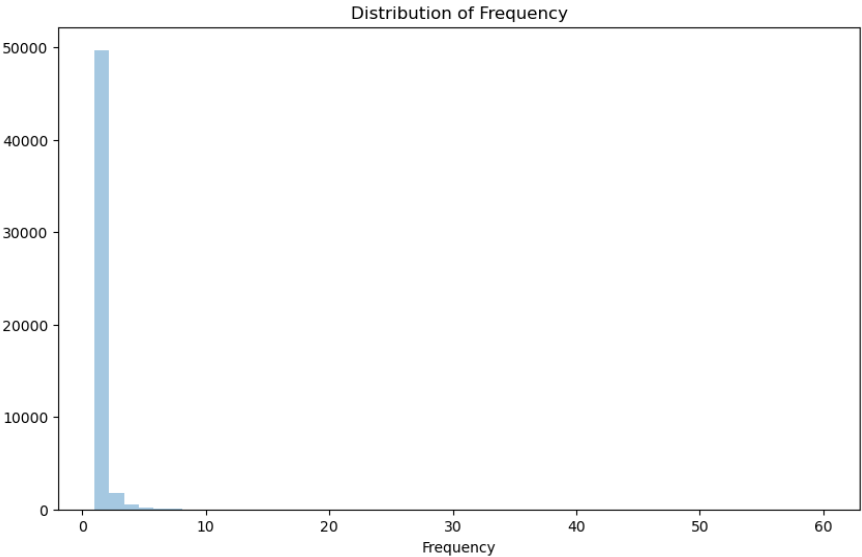
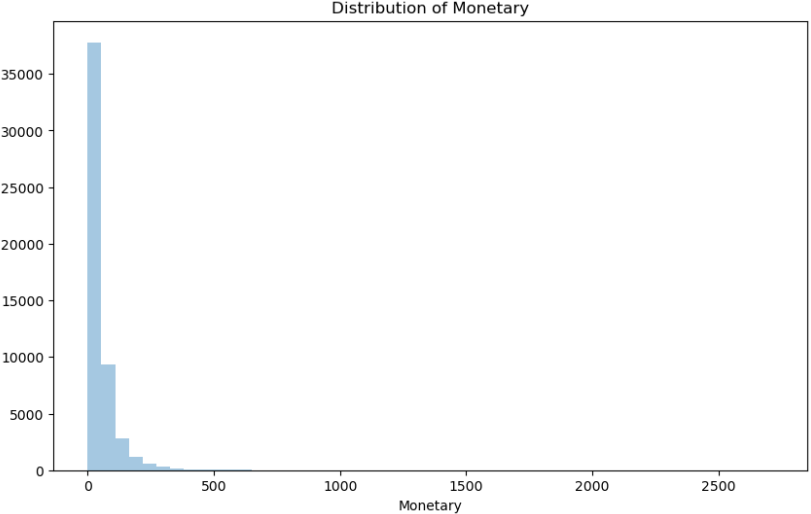




# Defining The Most Valuable Customers

- Who has the most recent transaction
- Who is the most frequent buyer
- Who is the most profitable customer
- Who has the higher RFM score
- Customer segmentations

# Metrics Distribution



# Top Most Frequent, Recent and Profitable Customers

Number of Last Day Buyers :  
1419

- These are not necessarily the most most valuable customers

Number of most frequent buyers: Frequency

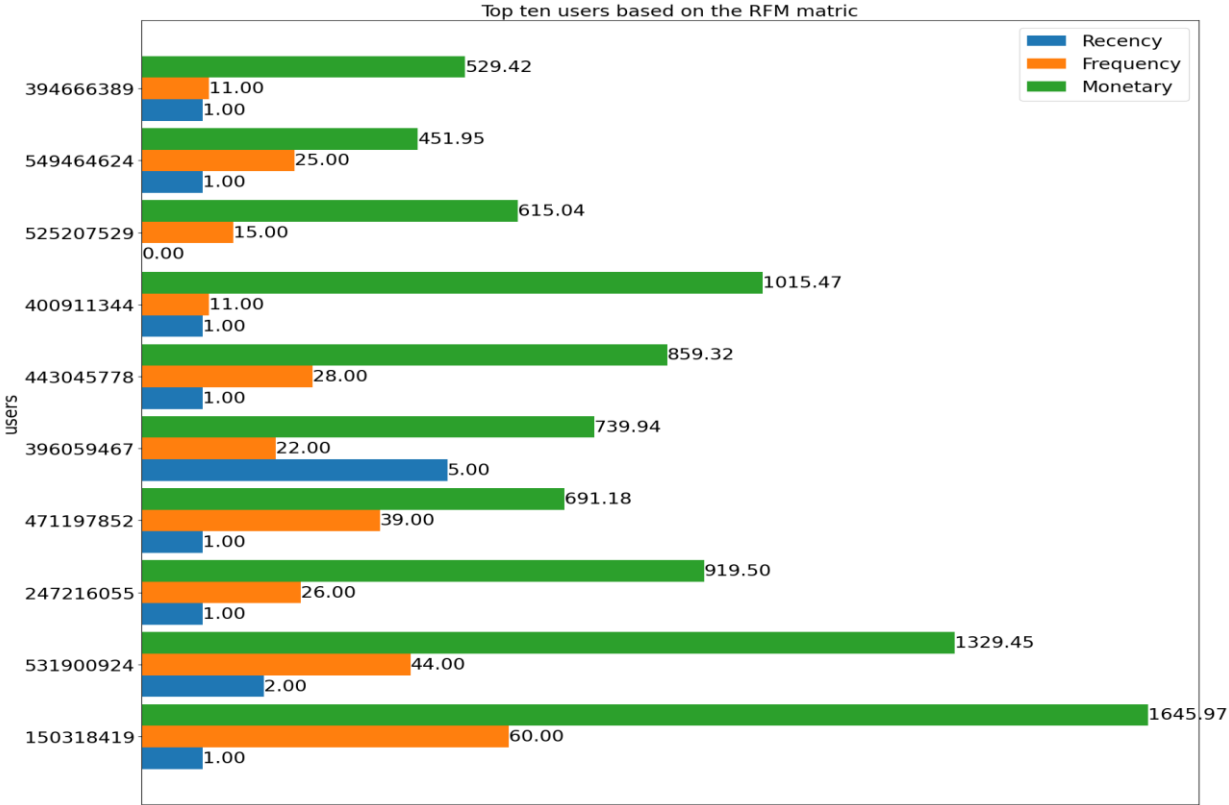
26	3
60	1
44	1
39	1
28	1
25	1
22	1
20	1

Number of most profitable buyers: Monetary

1645.97	1
1329.45	1
691.18	1
859.32	1
919.50	1
927.01	1
500.00	1
451.95	1
739.94	1
613.69	1

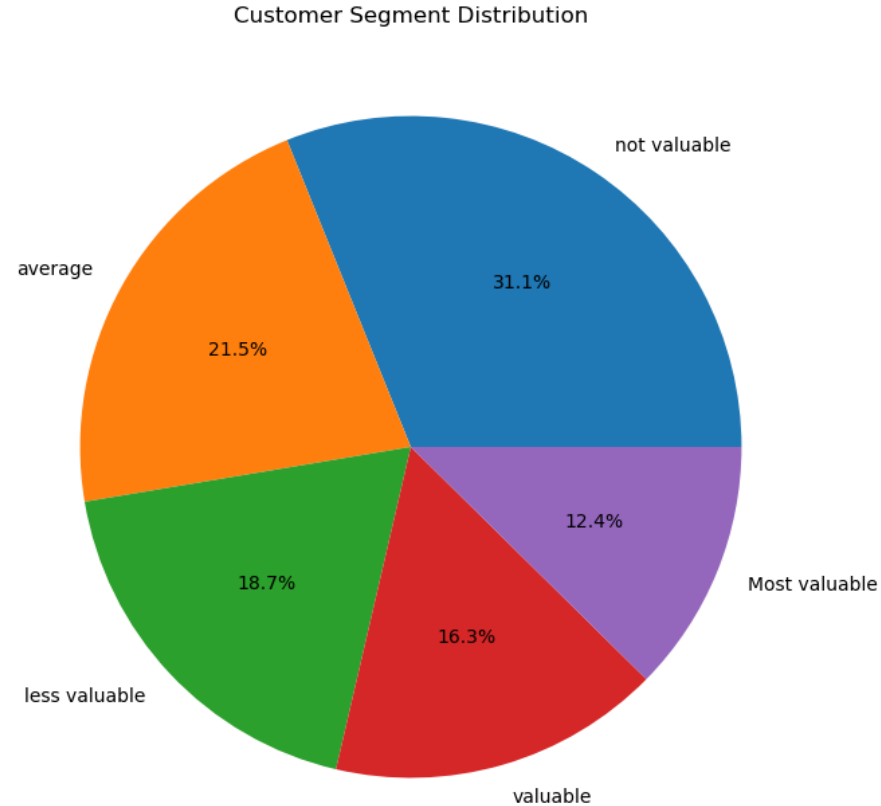
# Top 10 Most Valuable Customers With Highest RFM Score

- Consider providing special offers or coupons as a special treatment



# Customer Segmentation

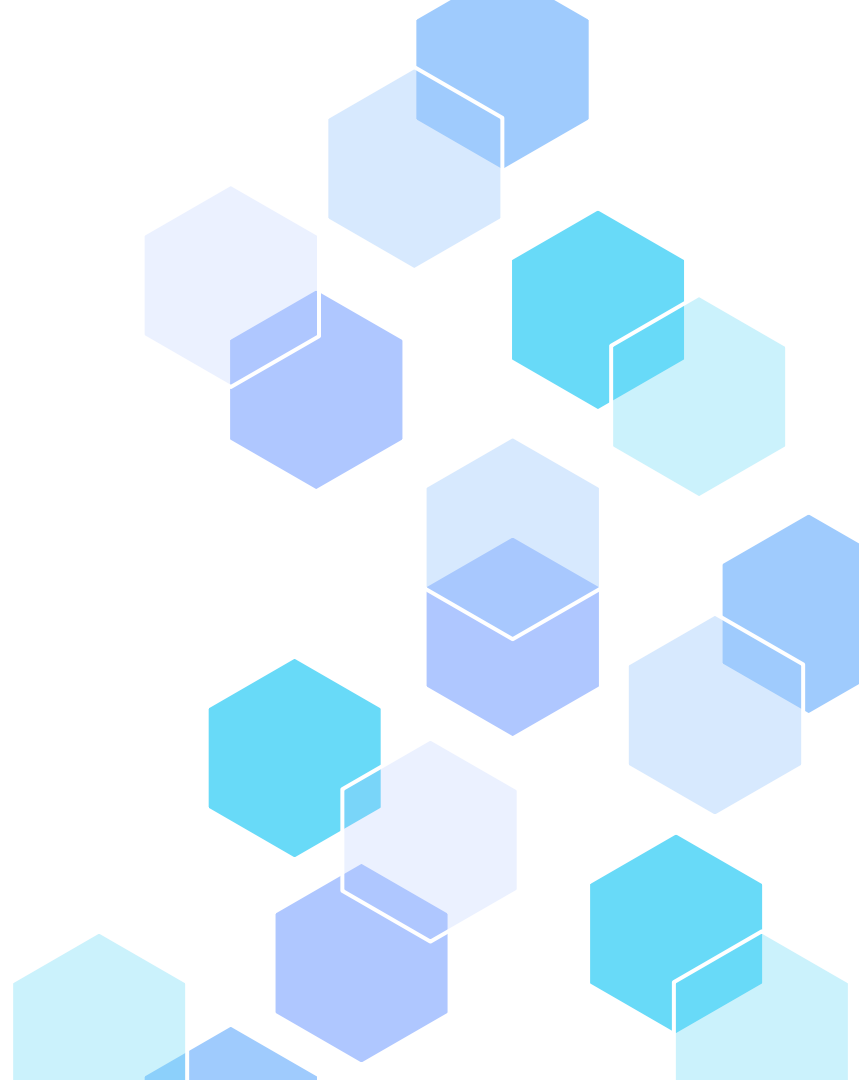
- These segments are for the business based on the spending history



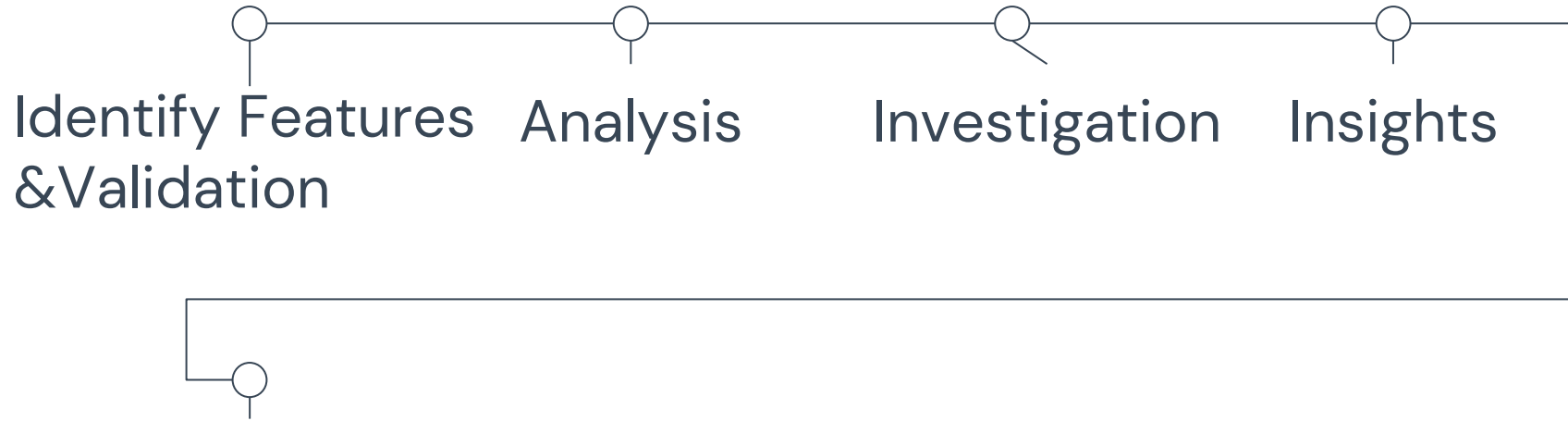
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# 04

## Price Trends

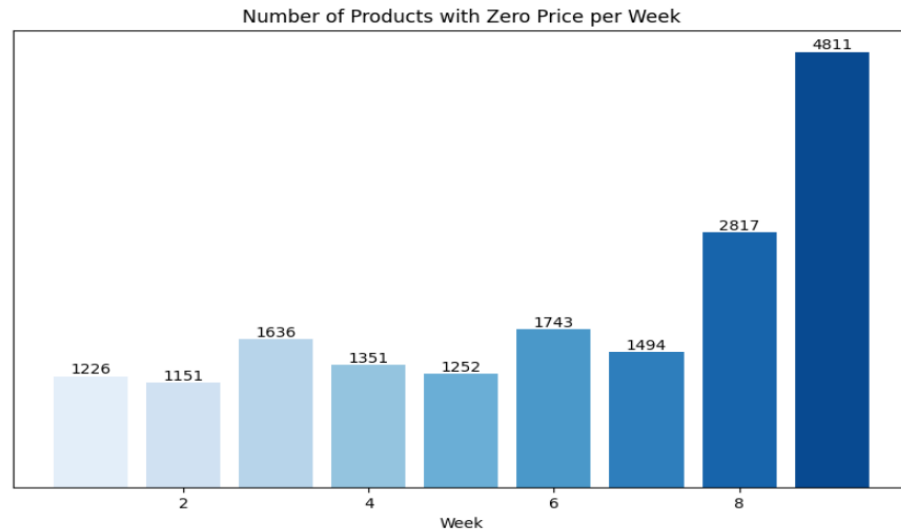
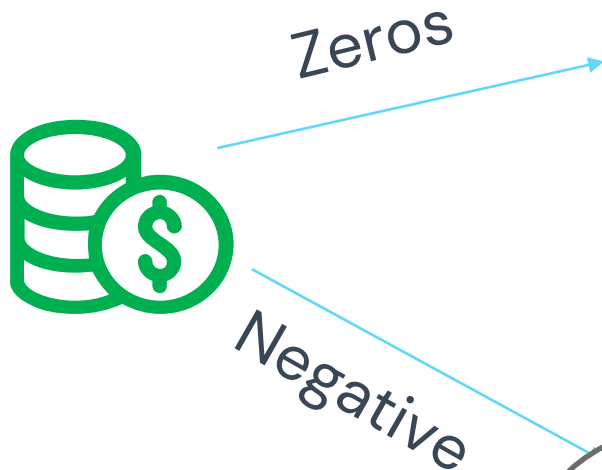


# Are there any price trends for a particular product over time?



Recommendations

# Identify Features & Validation



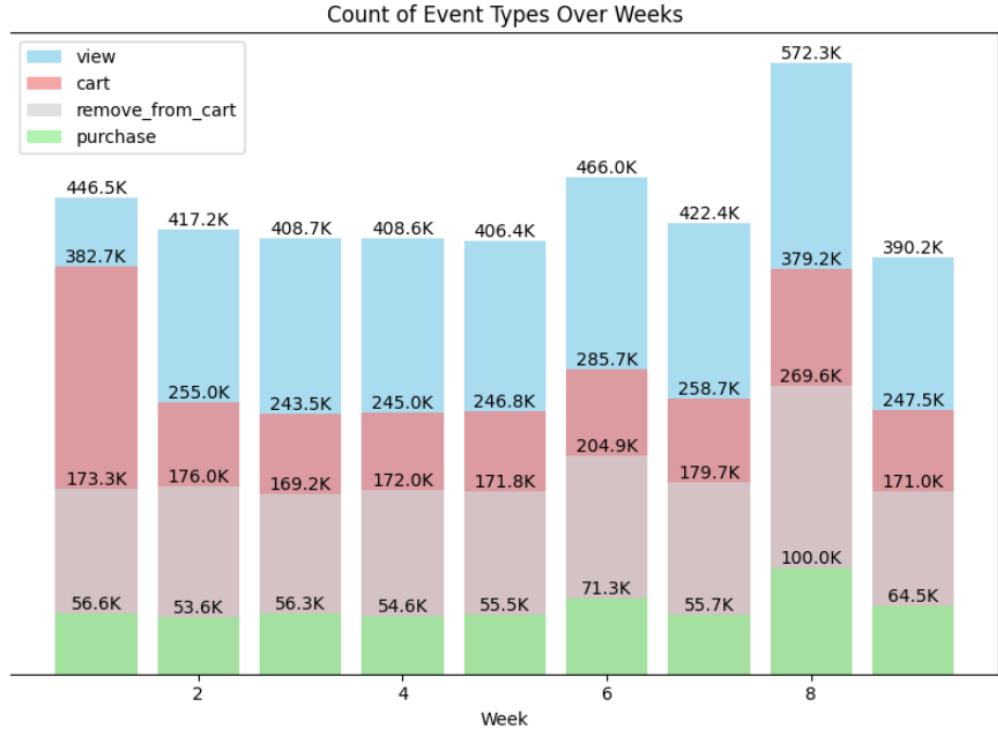
37





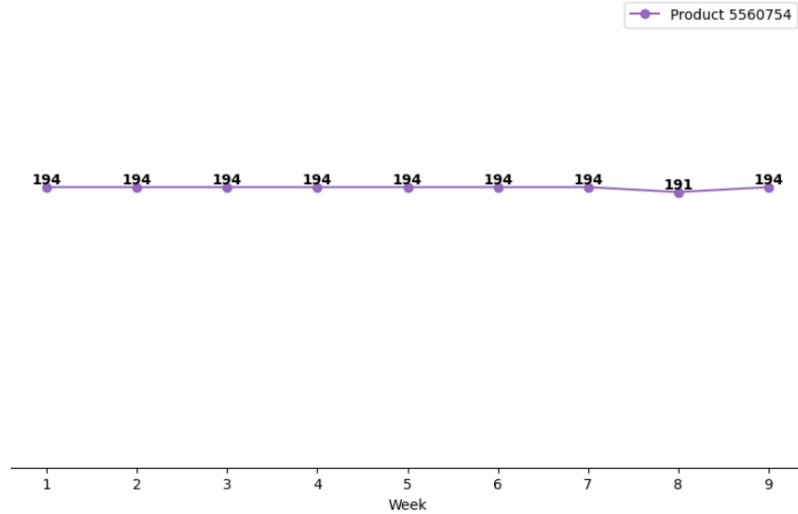
# Analysis

- Week 8 saw a significant surge in purchase events, with over 99,000 purchases recorded. Additionally, Week 6 experienced a spike in activity.

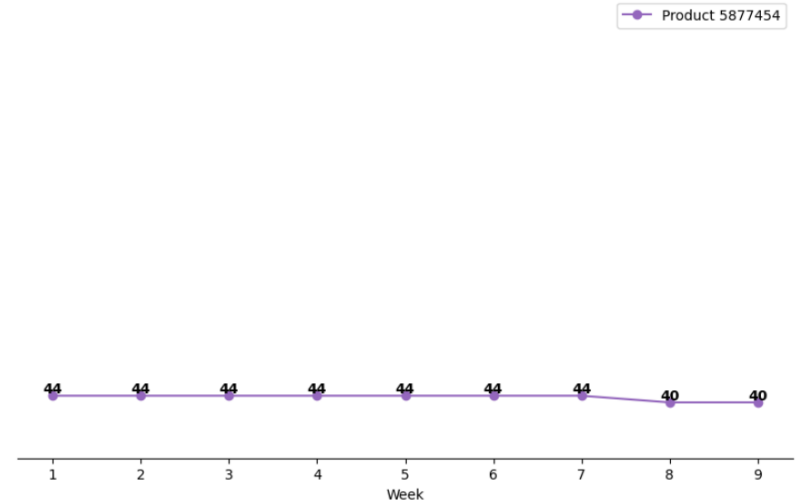


# Investigation

Average Price of Product 5560754 Over 9 Weeks

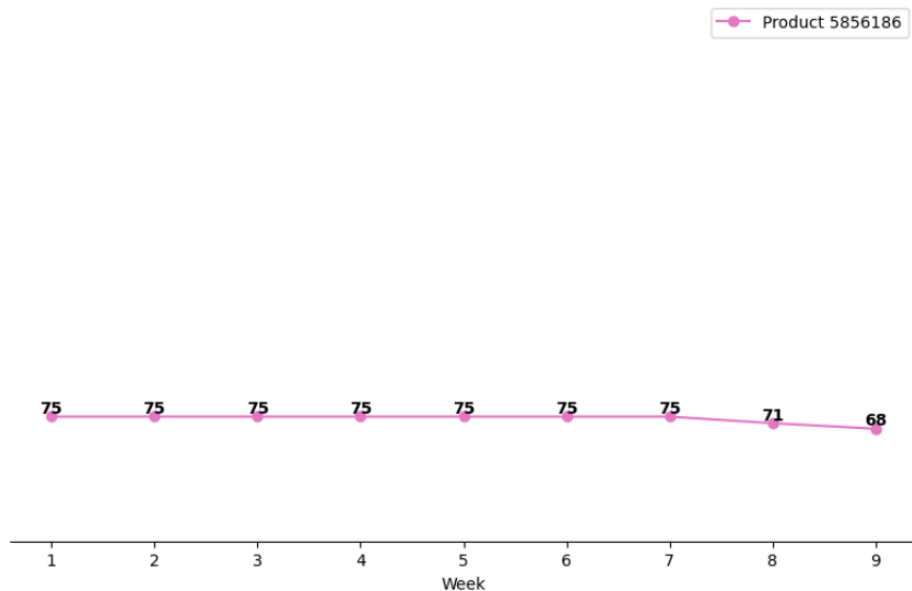


Average Price of Product 5877454 Over 9 Weeks

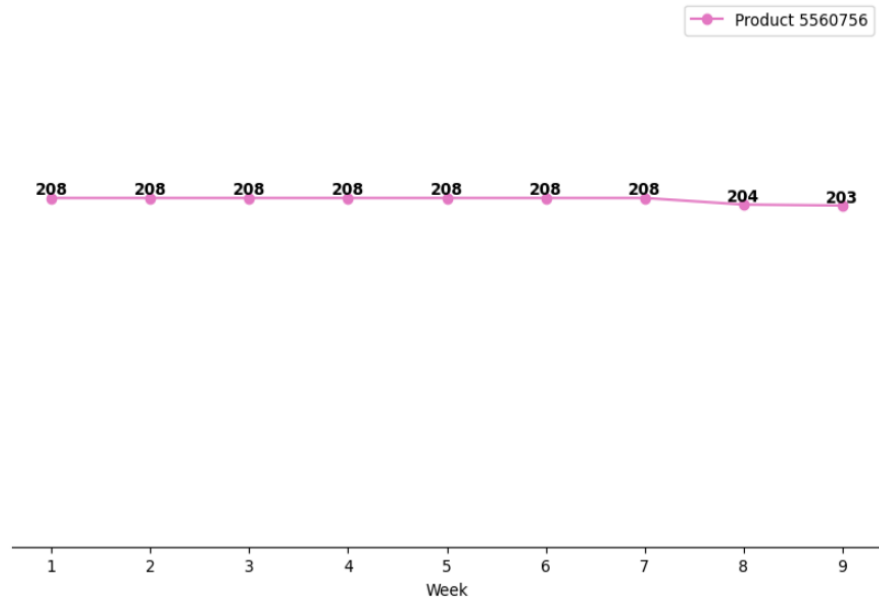


# Investigation

Average Price of Product 5856186 Over 9 Weeks



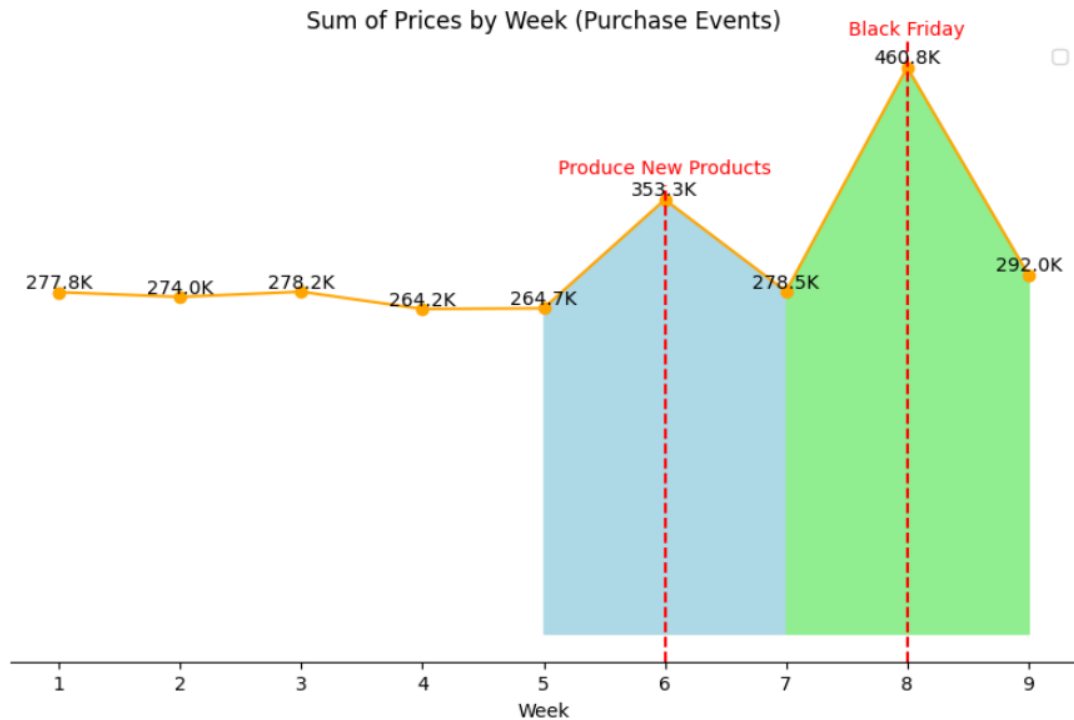
Average Price of Product 5560756 Over 9 Weeks



# Insights

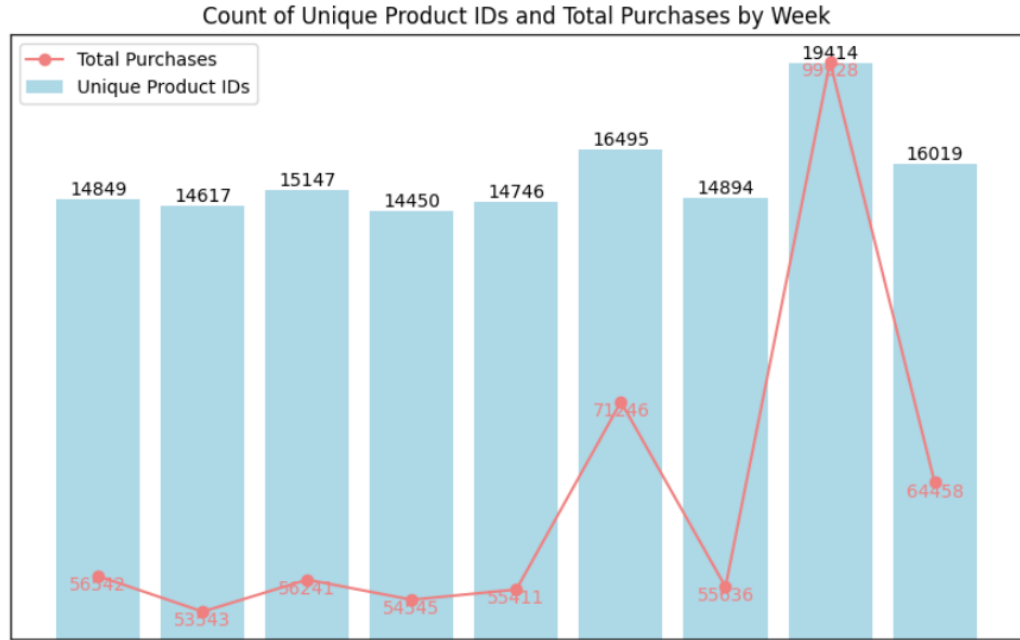
- Black Friday

- New Products !



# Insights

- Number of products existing only in week 6 and not before week 6: 6339



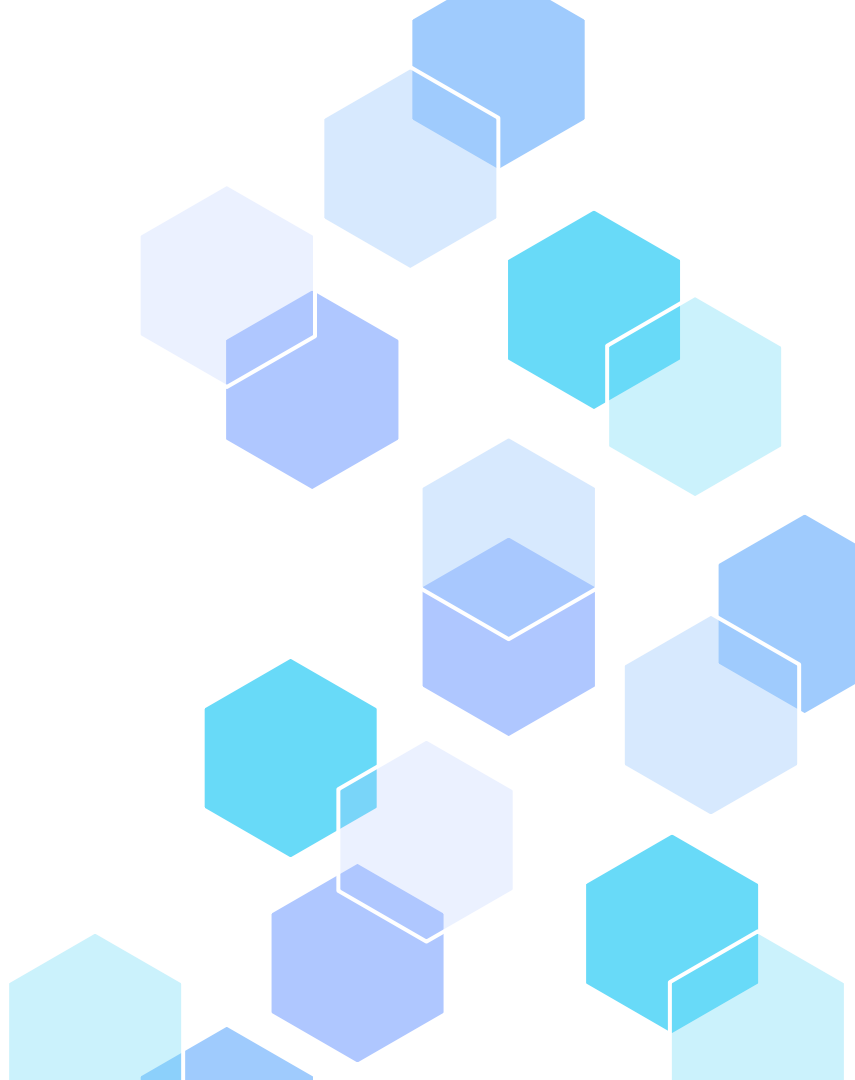
# Recommendations



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05

# Loyalty KPIs



# Define a KPI that measures customer loyalty from the data.

Customer loyalty is the likelihood of a customer repeatedly making purchases from our e-commerce website.





# Customer Lifetime Value (CLTV)



**Customer  
Lifetime  
Value**

=



**Average  
Order  
Value**

×



**Purchase  
Frequency  
Rate**

×



**Average  
Customer  
Lifetime**

October  
10.16 \$

November  
11.38 \$



# Customer Retention Rate (CRR)

**25,762**

Number of Customers in October

**31,524**

Number of Customers in November

**4763**

Number of Retained Customers from  
October to November

# Customer Retention Rate (CRR)

$$\text{Customer Retention Rate} = \frac{\text{End} - \text{Acquired}}{\text{Start}} \times 100$$

The equation is illustrated with icons: a speedometer for 'Customer Retention Rate', an hourglass for 'End', a shopping cart with a checkmark for 'Acquired', and another hourglass for 'Start'.

CRR = 18.4 %

# Average Order Value (AOV)

$$\text{Average Order Value (AOV)} = \frac{\text{Total Revenue}}{\text{Number of Orders Placed}}$$

Average number of items sold per transaction:  
5.00 items

\$4.83

# Returning Customer Rate (RCR)

$$\text{CRR} = \frac{\text{\# of repeat customers}}{\text{total \# of customers}} \times 100$$

Returning Customer Rate (RCR) for purchases:  
90.79%

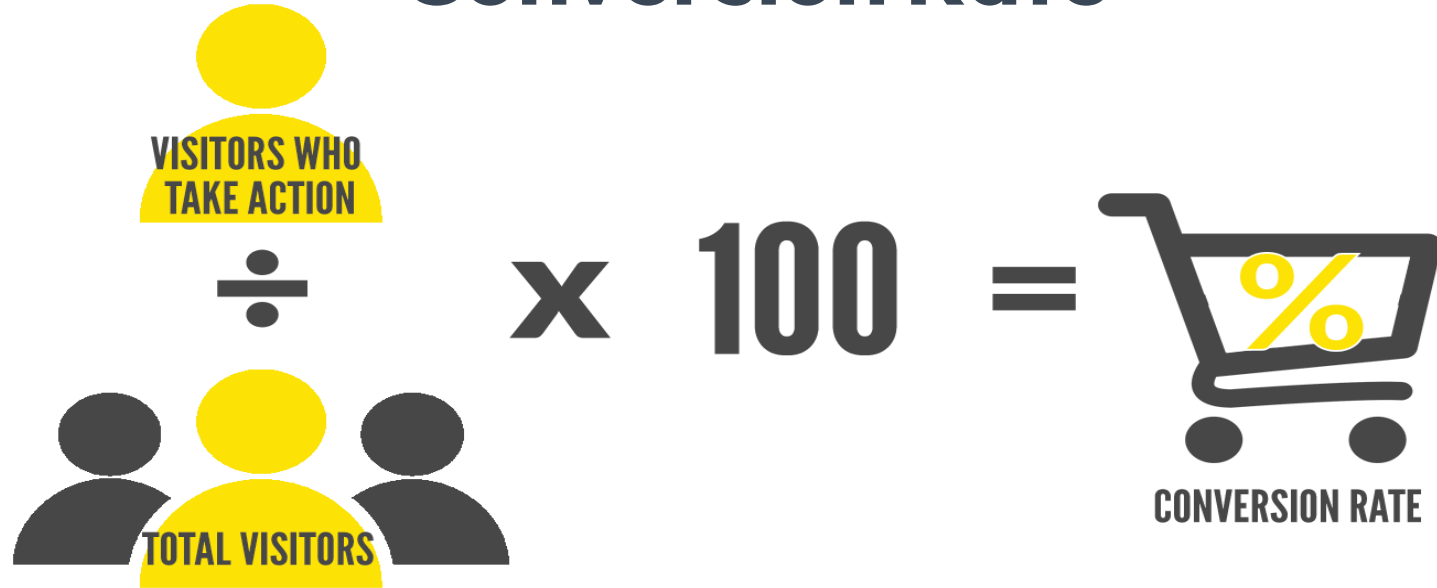
# Bounce Rate

$$\text{Bounce Rate} = \frac{\text{\# of One-Page Visits}}{\text{\# of Total Entrance Visits}}$$

Bounce Rate: 69.0%

# WHAT IS CONVERSION RATE?

## Conversion Rate



The diagram illustrates the formula for calculating the conversion rate. It features a yellow circle icon labeled "VISITORS WHO TAKE ACTION" above a division symbol ( $\div$ ). Below the division symbol is a group of three person icons, with the central one highlighted in yellow and labeled "TOTAL VISITORS". To the right of the division symbol is a multiplication symbol ( $\times$ ) followed by the number "100". This is followed by an equals sign (=) and a shopping cart icon containing a yellow percentage symbol (%), labeled "CONVERSION RATE".

$$\frac{\text{VISITORS WHO TAKE ACTION}}{\text{TOTAL VISITORS}} \times 100 = \text{CONVERSION RATE}$$

Conversion Rate: 22.3%

# RECOMMENDATIONS

**1 - Offer interesting discounts and promocodes to customers who purchase products once (to increase Customer Retention Rate and Returning Customer Rate)**

**2 - Enhance the quality of the design of the website to enhance the user experience (to decrease Bounce Rate)**

**3 - Offer a first-time discount for the new users to encourage the first purchase (also to decrease the Bounce Rate)**

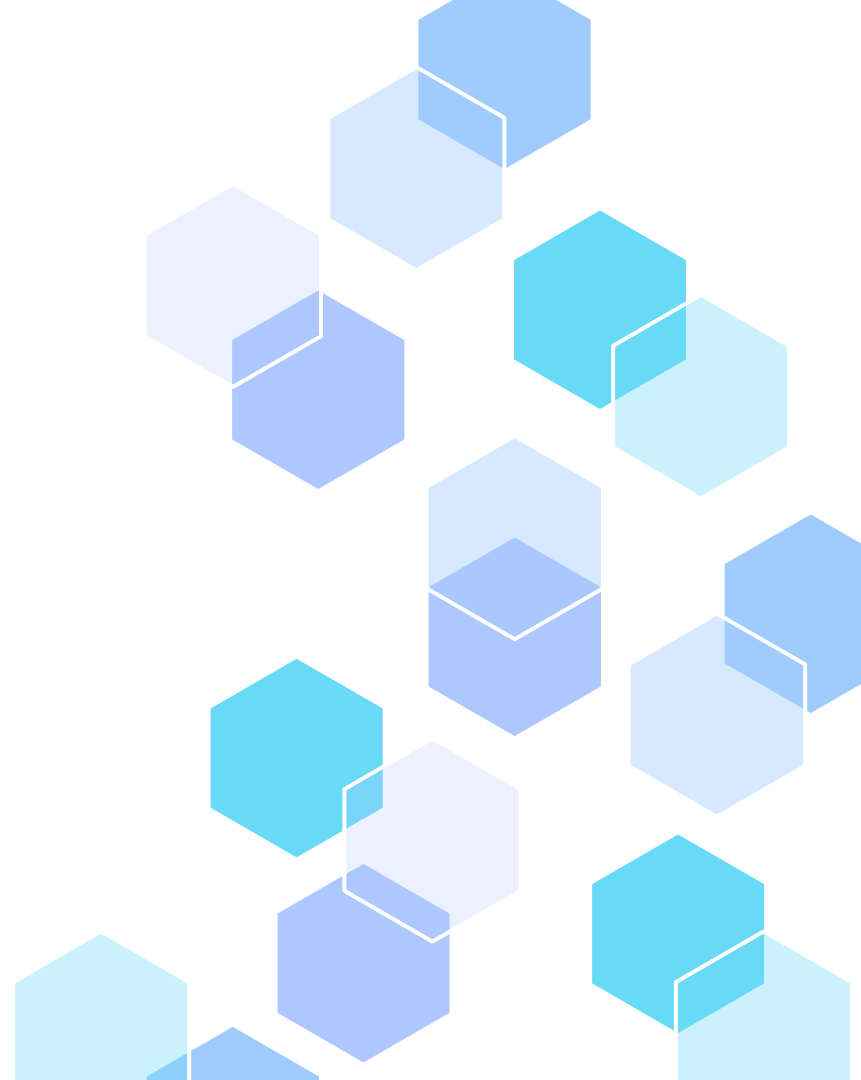
**3 - Simplify the design of the checkout page (to increase Conversion Rate)**



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**06**

# **Association Analysis & Modelling**



# Association Analysis Methodology

- What are the most frequent purchased set of products
- Modeling using apriori algorithm
- Evaluation metrics : Support, Confidence, Lift and Conviction

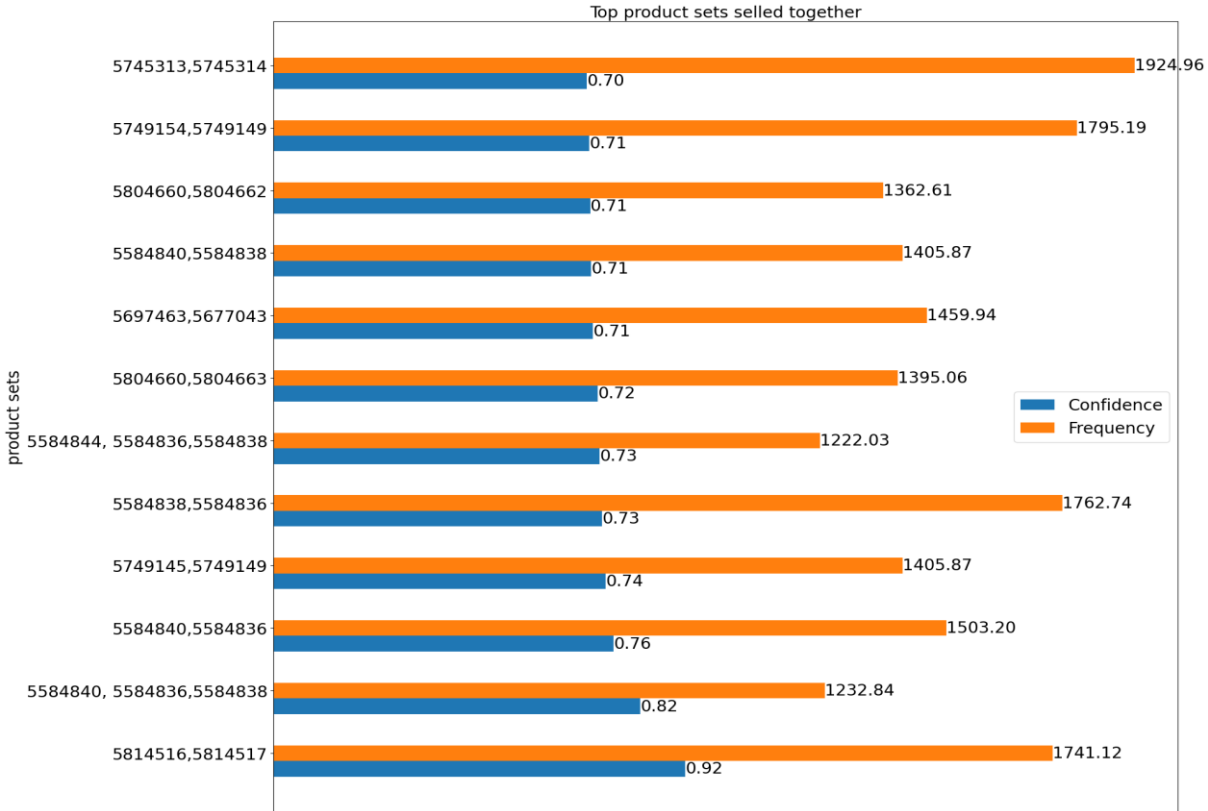
# Top Most Frequent Purchased Set Of Products

- These are based on a minimum confidence of 70% and minimum support of 0.2% (1136 repetition)

	Antecedent	Consequent	Support	Confidence	Lift	Conviction
9	5814516	5814517	0.003065	0.920000	274.552045	12.461683
10	5584840, 5584836	5584838	0.002170	0.820144	194.037916	5.547932
1	5584840	5584836	0.002646	0.759563	159.578077	4.148084
5	5749145	5749149	0.002475	0.742857	63.649406	3.879263
0	5584838	5584836	0.003103	0.734234	154.256739	3.751035
11	5584844, 5584836	5584838	0.002151	0.729032	172.481808	3.682536
8	5804660	5804663	0.002456	0.724719	147.536517	3.623731
3	5697463	5677043	0.002570	0.714286	102.224601	3.491004
2	5584840	5584838	0.002475	0.710383	168.069463	3.444284
7	5804660	5804662	0.002399	0.707865	203.165040	3.414865
6	5749154	5749149	0.003161	0.706383	60.524230	3.395033
4	5745313	5745314	0.003389	0.700787	111.200776	3.330779

# Top Most Frequent Purchased Set Of Products

- Consider making bundles of these pairs of items





Thank you