



RFM Customer Analysis

This analysis is based on a dataset containing 14 columns and 17,416 records, capturing detailed customer information and purchasing behaviors from January 1, 2020 to June 30, 2022. By applying the RFM (Recency, Frequency, Monetary) segmentation model, the study aims to classify customers into meaningful groups. The ultimate goal is to identify potential customer segments, enable more targeted business strategies, and drive sustainable revenue growth.

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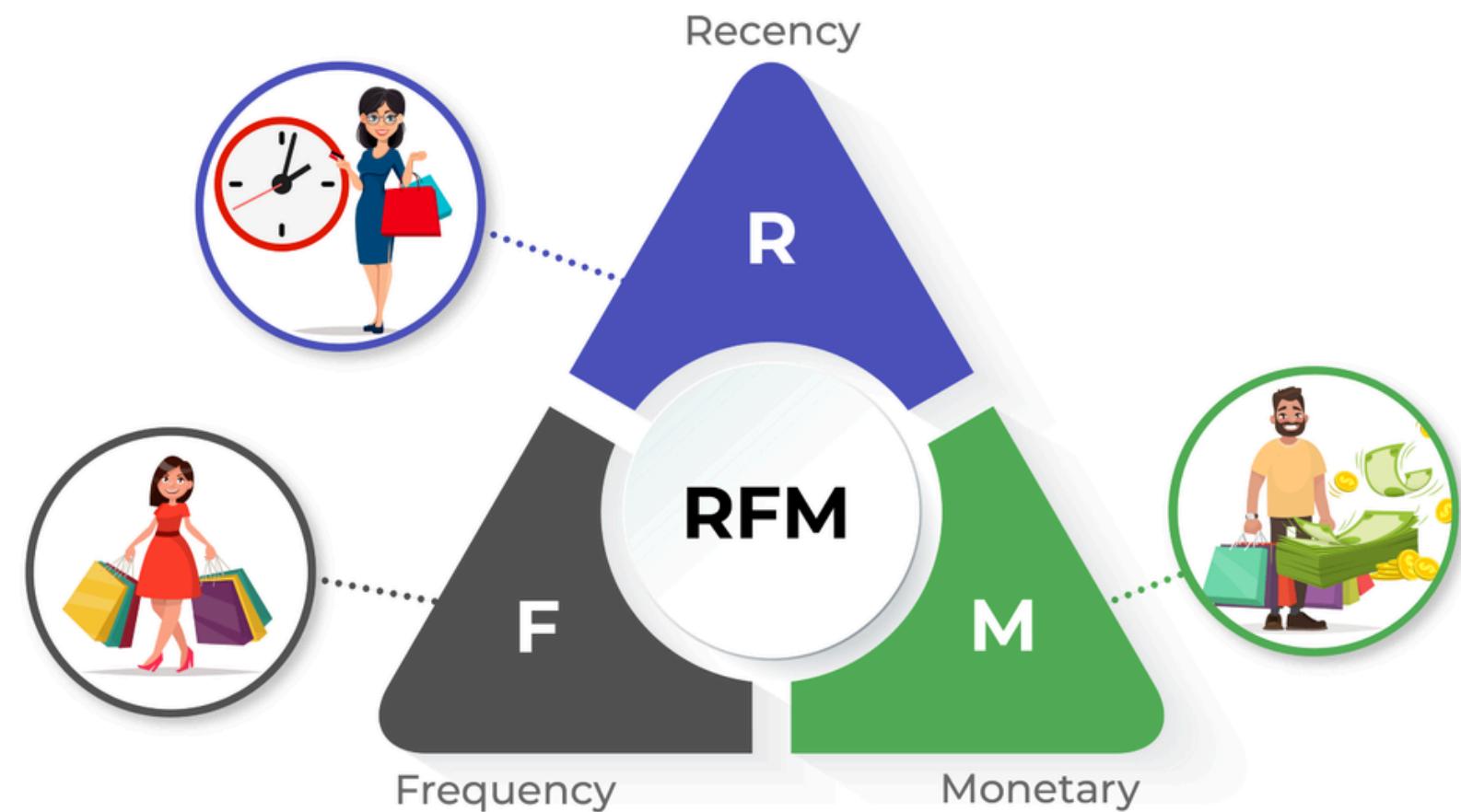
RFM Model in Customer Analysis

The RFM model analyzes customer-centric transaction data, encompassing all information and examining various aspects of each customer. It provides a comprehensive view of customer behavior, helping companies gain deeper insights into their customers. RFM represents three key metrics:

- **Recency (R):** The most recent purchase date
- **Frequency (F):** The purchase frequency
- **Monetary (M):** The total spending amount

Each R, F, M metric is divided into 4 levels (1–4) reflecting customer behavior from least to most positive (or vice versa):

- **Recency (R):** Days since last purchase (as of 01-09-2022).
 - **R=1:** Most recent purchases (best).
 - **R=4:** Longest time since last purchase (worst).
- **Frequency (F):** Average number of purchases per year.
 - **F=1:** Fewest purchases.
 - **F=4:** Most frequent purchases.
- **Monetary (M):** Average annual spending.
 - **M=1:** Lowest spending group.
 - **M=4:** Highest spending group.



Worst -----> Best

Applying RFM Analysis in Bicycle Retail

The bicycle retail industry has the following characteristics:

- **Long product life cycle:** Customers typically buy only **1–2 bikes** over several years → Frequency thresholds need to be set lower to accurately reflect purchasing behavior.
- **Longer Recency gaps:** The time between purchases is usually **much longer** compared to other industries → Recency segmentation should account for this slower purchase cycle.
- **Skewed Monetary distribution:** Customer spending **varies widely**, with few high-value customers. To address this, we use fixed spending thresholds aligned with actual price ranges, making segmentation clearer for business decisions and easier to track over time.

SOLUTION

Recency (R):

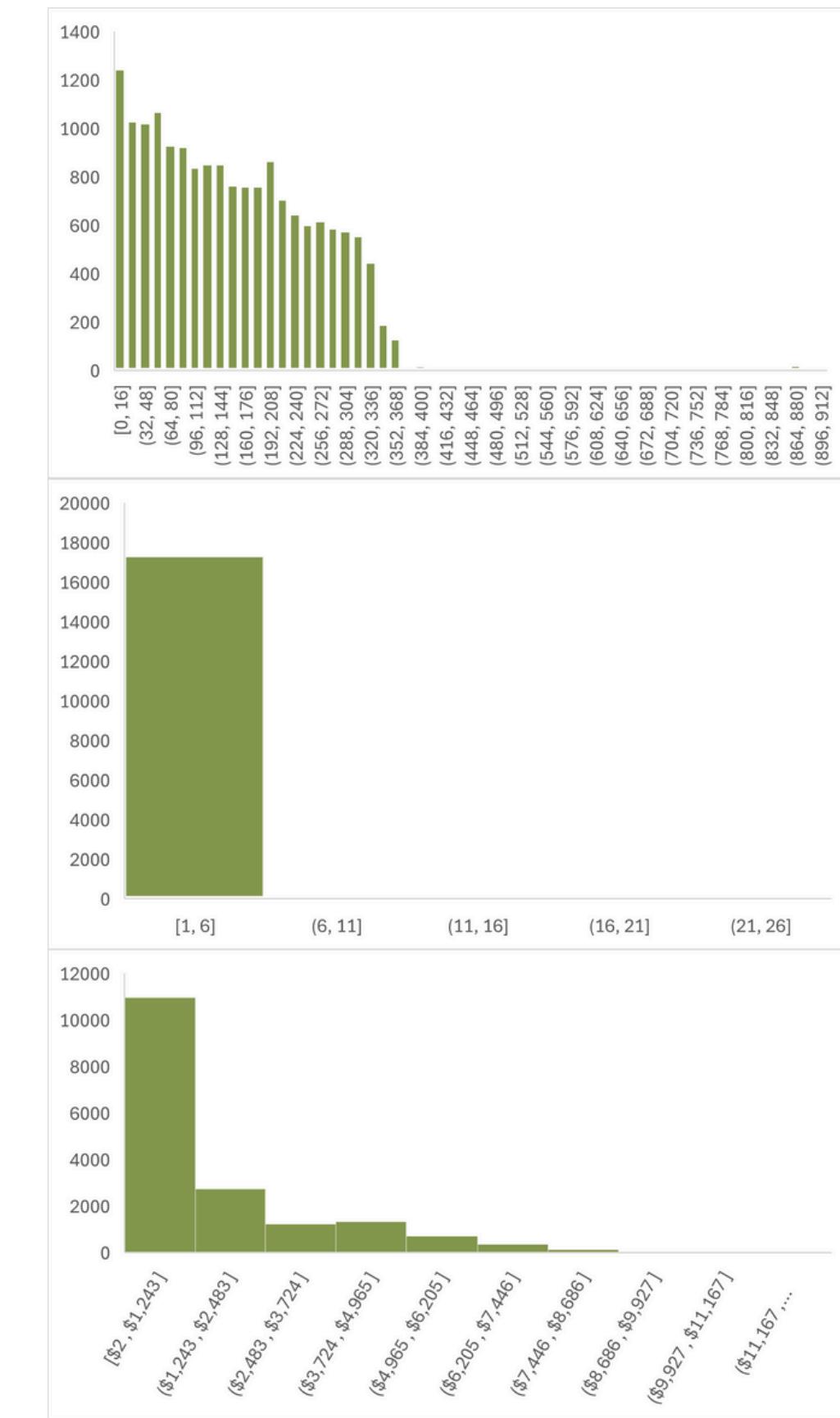
- 4: 0–60 days (recent)
- 3: 61–180 days
- 2: 181–365 days
- 1: >365 days (inactive)

Frequency (F):

- 1: 1 purchase (trial)
- 2: 2–3 purchases (potential)
- 3: 4–5 purchases (loyal)
- 4: ≥6 purchases (VIP)

Monetary (M):

- 1: Under 500 USD
- 2: 500 – 2,000 USD
- 3: 2,000 – 5,000 USD
- 4: Over 5,000 USD



Recency (R)

98.14% of customers have not returned after more than 2 months

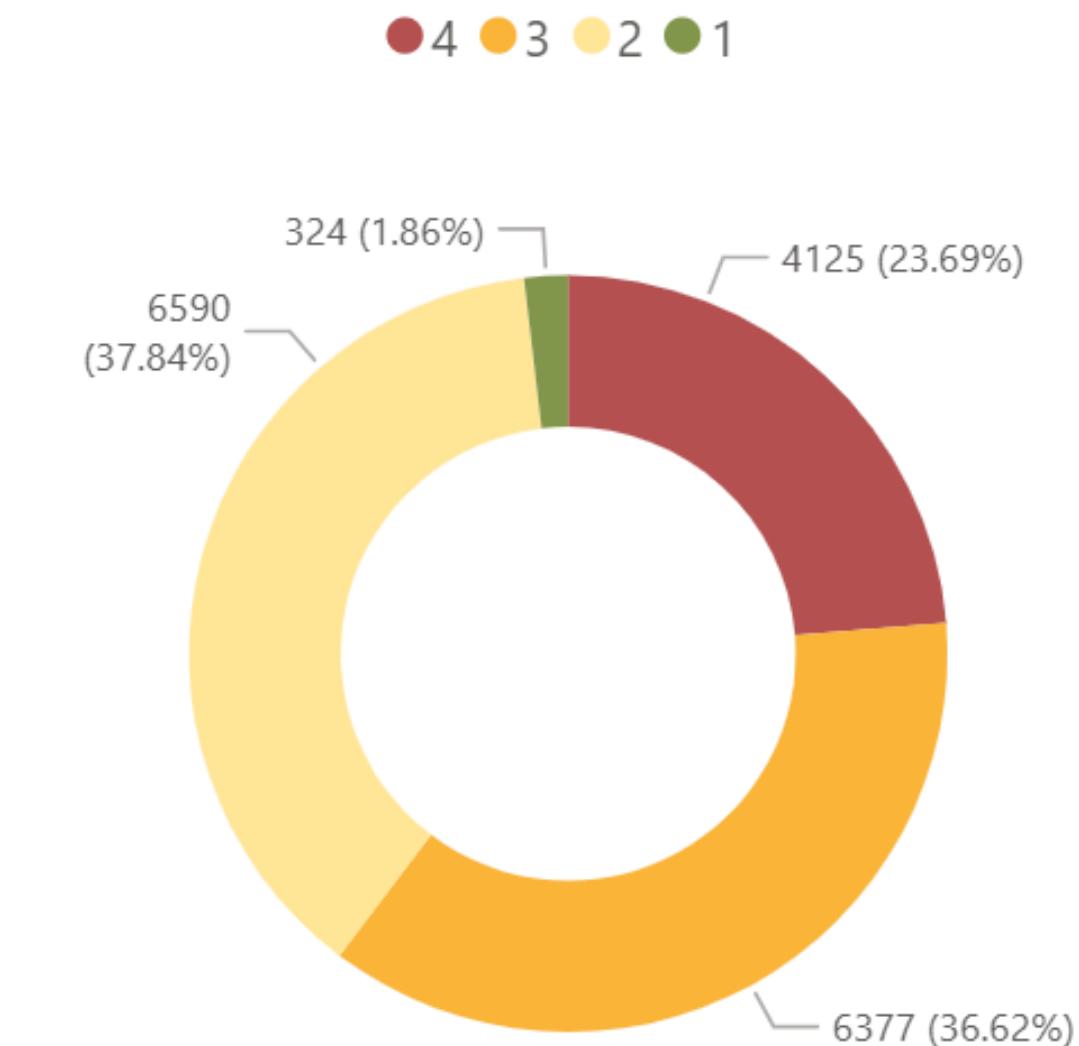
There are **4,125** customers in **Score 4** (accounting for **23.69%**) who have not returned for over 1 year, with some recorded as not returning for more than 900 days.

The **Score 3** group makes up **36.62%**, consisting of customers who have not returned for 6 months to 1 year.

The **Score 2** group accounts for the largest share at **37.84%**, representing customers who have not returned for 2 to 6 months.

The final group, **Score 1**, represents only **1.86%** of customers — those who are still “active” and made purchases within the last 2 months.

Most customers have not returned for over 2 months to 1 year, which is a negative sign. In addition, the fact that one-quarter of customers have not returned for more than a year is an alarming indicator of customer churn.



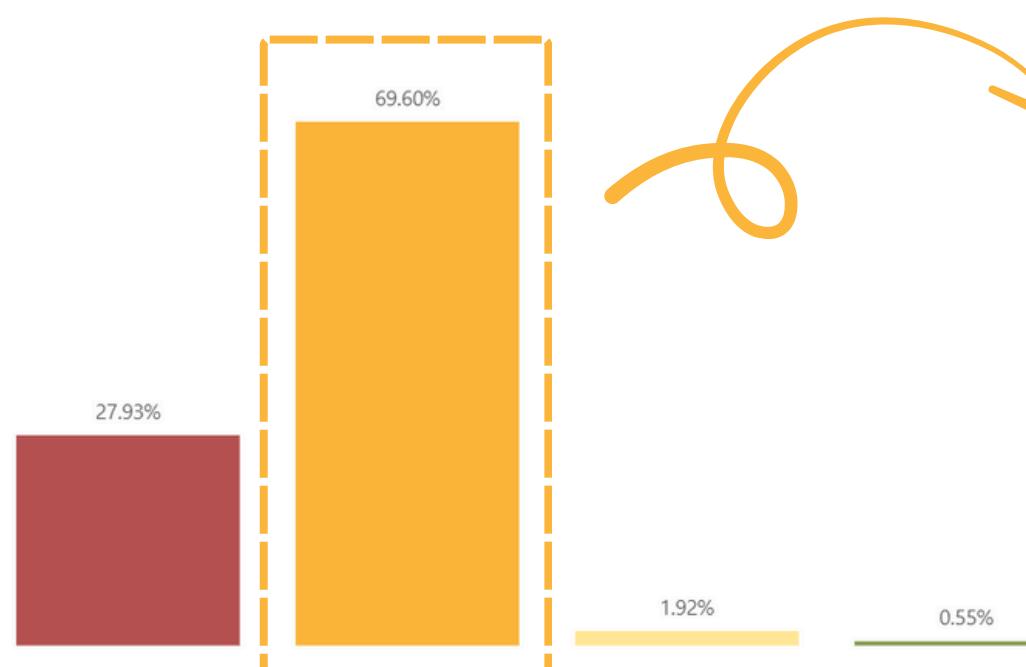
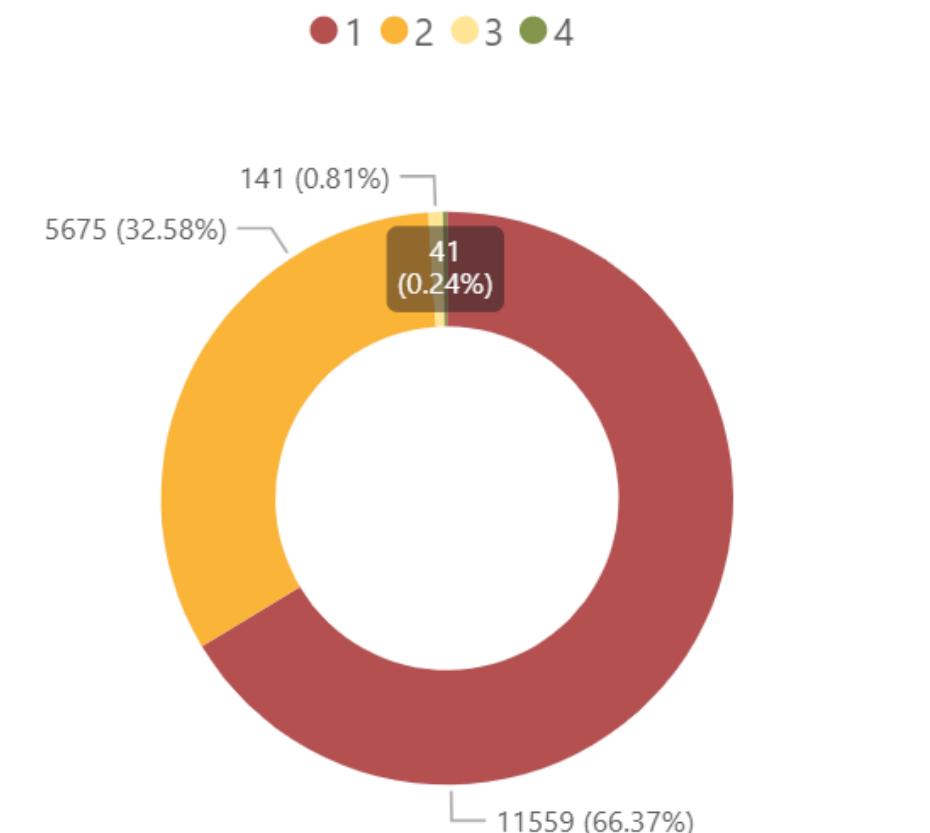
Frequency (F)

98.95% of customers made only one or a few (2–3) purchases

66.37% of customers made only one purchase (**Score 1**), which can be considered as the trial group with a high risk of churn.

32.58% made 2–3 purchases (**Score 2**), representing a high-potential group with the possibility of becoming loyal customers.

Customers with 4–5 purchases (**Score 3**) and those with 6 or more purchases (**Score 4**) account for only **0.81%** and **0.24%**, respectively, forming the highly loyal segment but with a very small proportion.

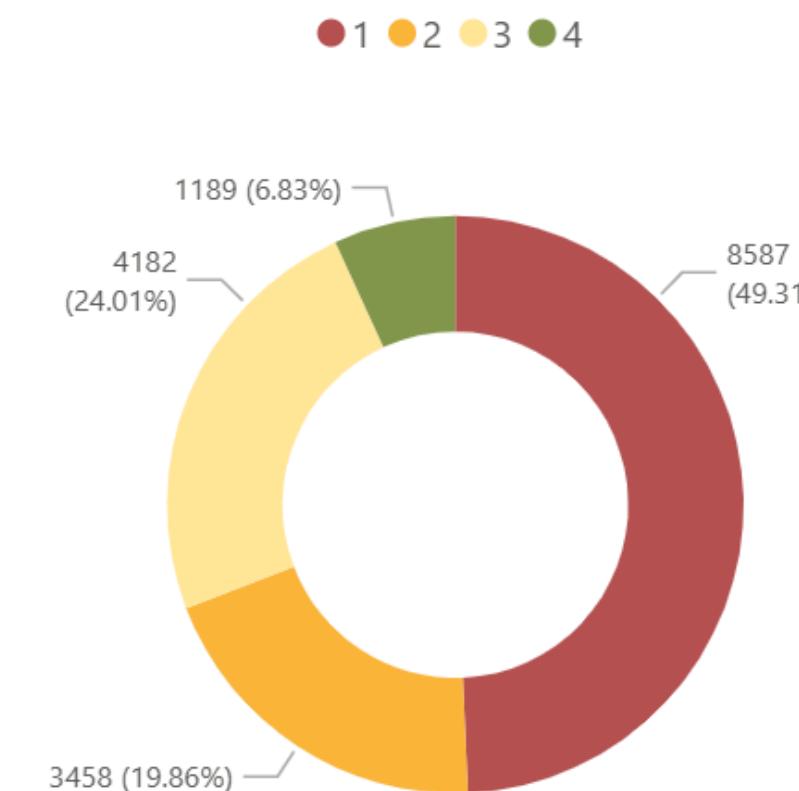
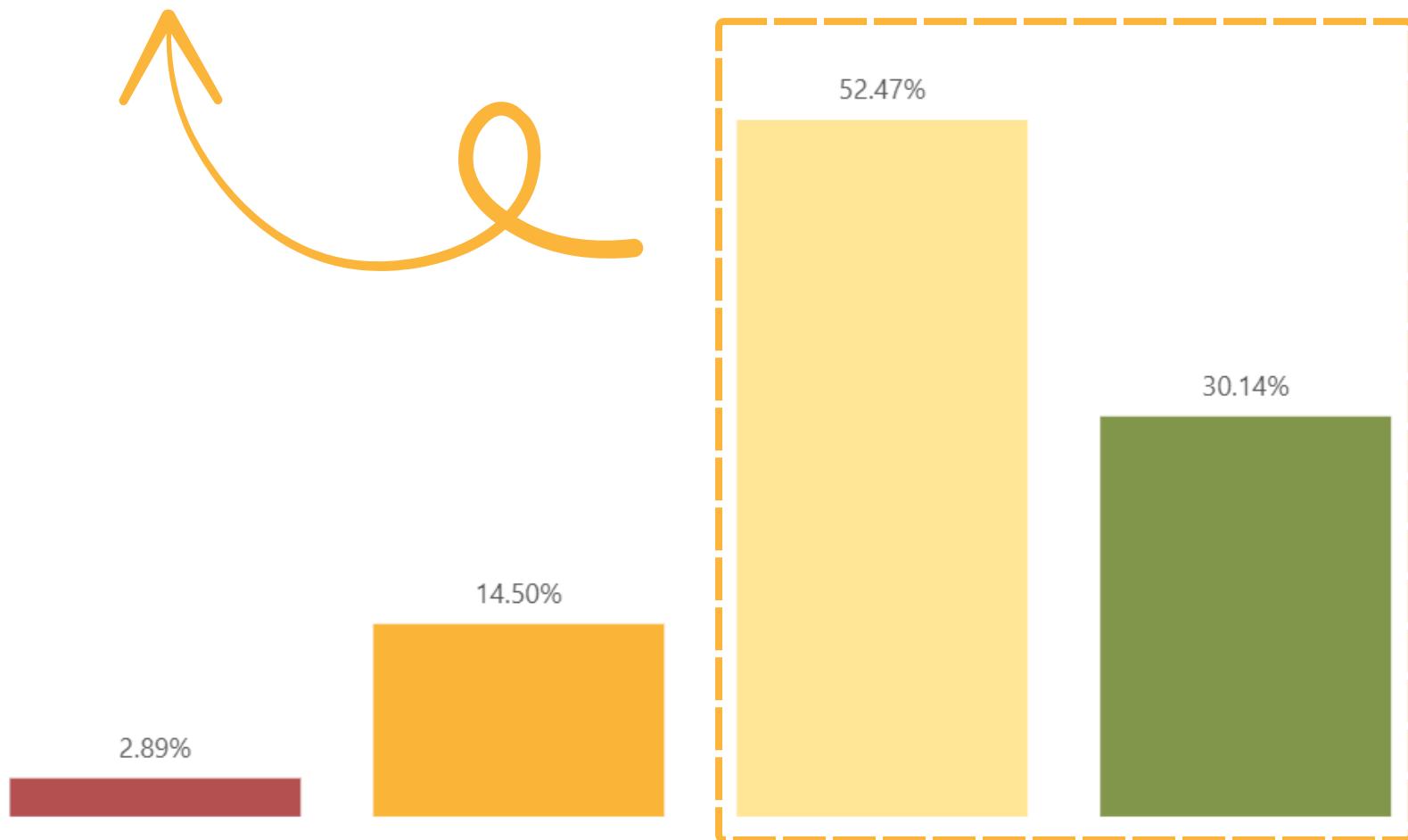


69.60% of the total revenue comes from **Score 2**, ranking the highest in terms of value contribution to the business, even though it represents only the second-largest customer group.

Only **2.47%** of revenue comes from **Score 3 & 4**. These groups are expected to become loyal and highly engaged customers, but currently account for only a very small proportion of the customer base.

Monetary (M)

82.61% of total revenue comes from only 30.84% of customers



Revenue heavily depends on **a small customer segment**, creating potential risk if they churn. Strengthening loyalty programs for high-value customers while activating low-value customers could balance and grow future revenue streams.

A small group of customers (**Score 3 & 4**) drives over **82% of total revenue**, even though they represent only **30.84% of the customer base**. These are the company's most valuable customers and critical for revenue growth.

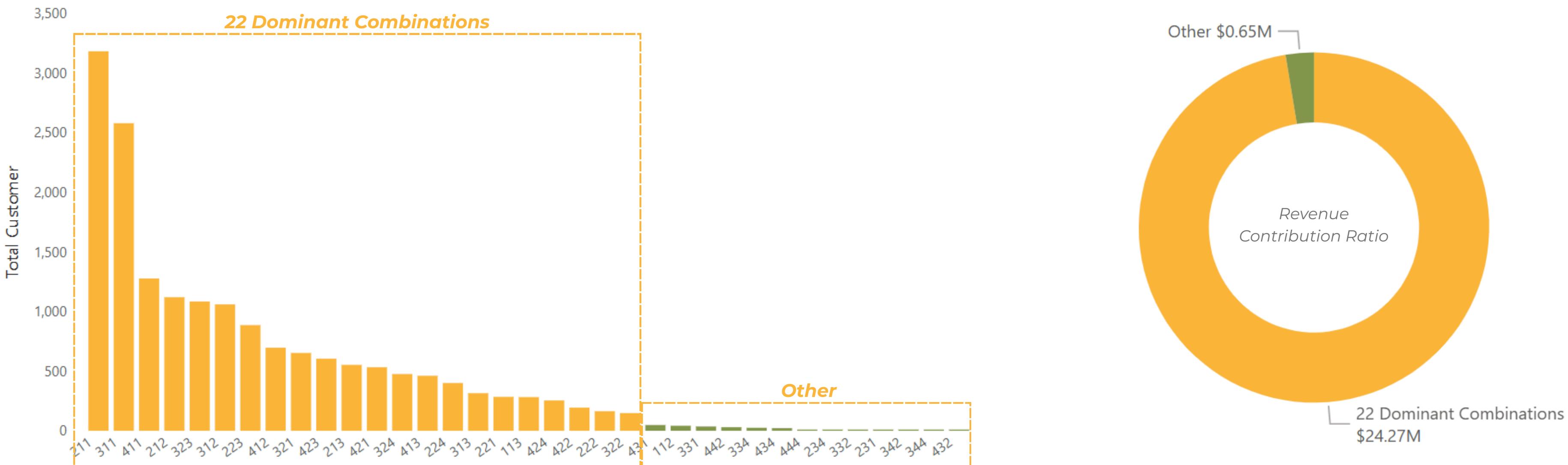
The majority of customers (**Score 1 & 2**) make up nearly **70% of the customer base** but contribute **less than 20% of total revenue**. This highlights an untapped opportunity for increasing engagement and spending.

Overview for Customer Segmentation

22 Combinations with more than 100 Customers

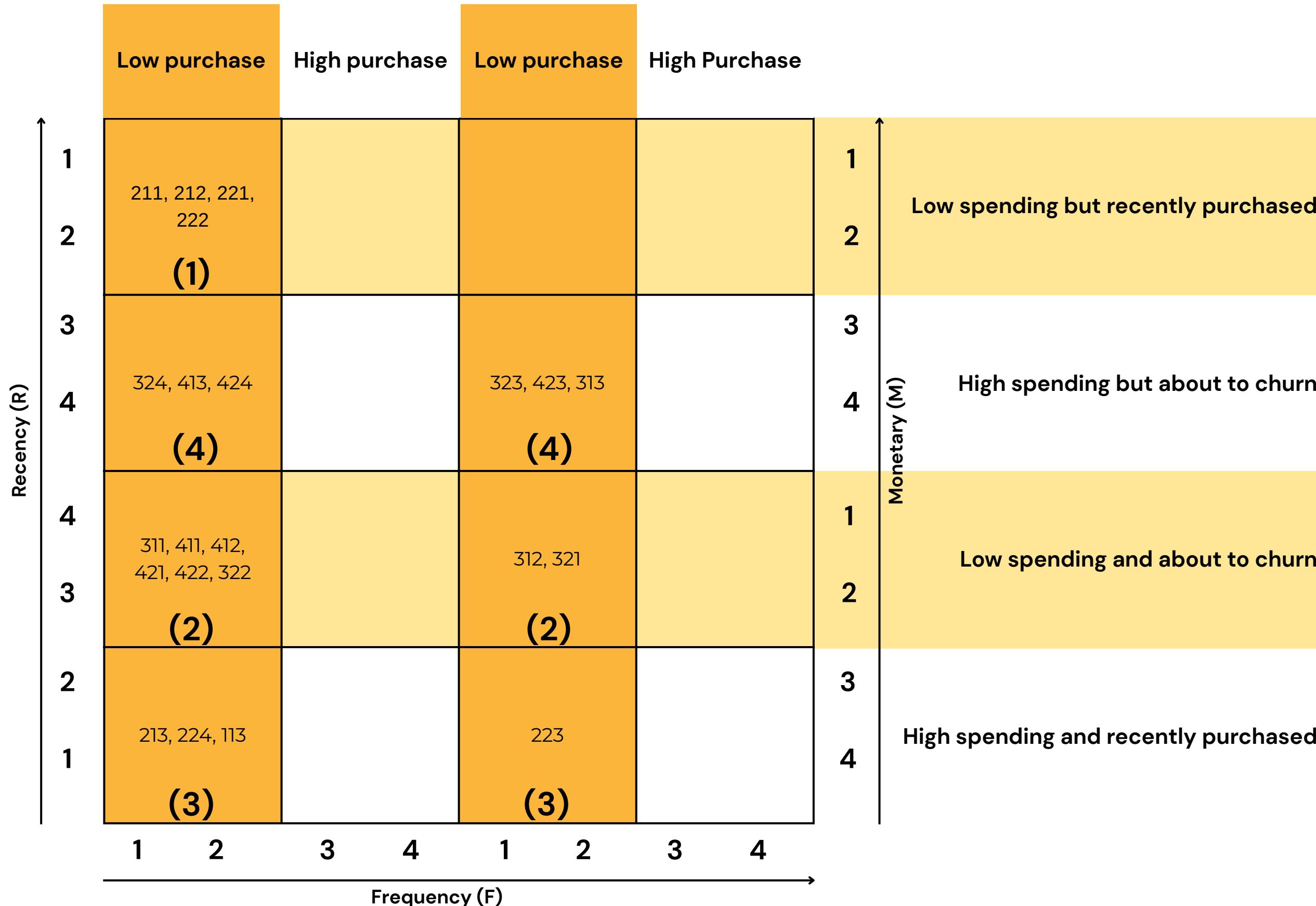
The **22 Dominant Combinations** account for the majority of total customers, with the 211 and 311 combinations alone having over **5,500** customers, far surpassing all other combinations.

This group contributes **97.4%** of total revenue (**24.27M USD**), while the remaining “**Other**” combinations with fewer customers generate only **2.6%** of revenue, indicating a very high concentration of revenue within the 22 main combinations.



*This report focus on analyzing the 22 dominant combinations.

Who Are They?

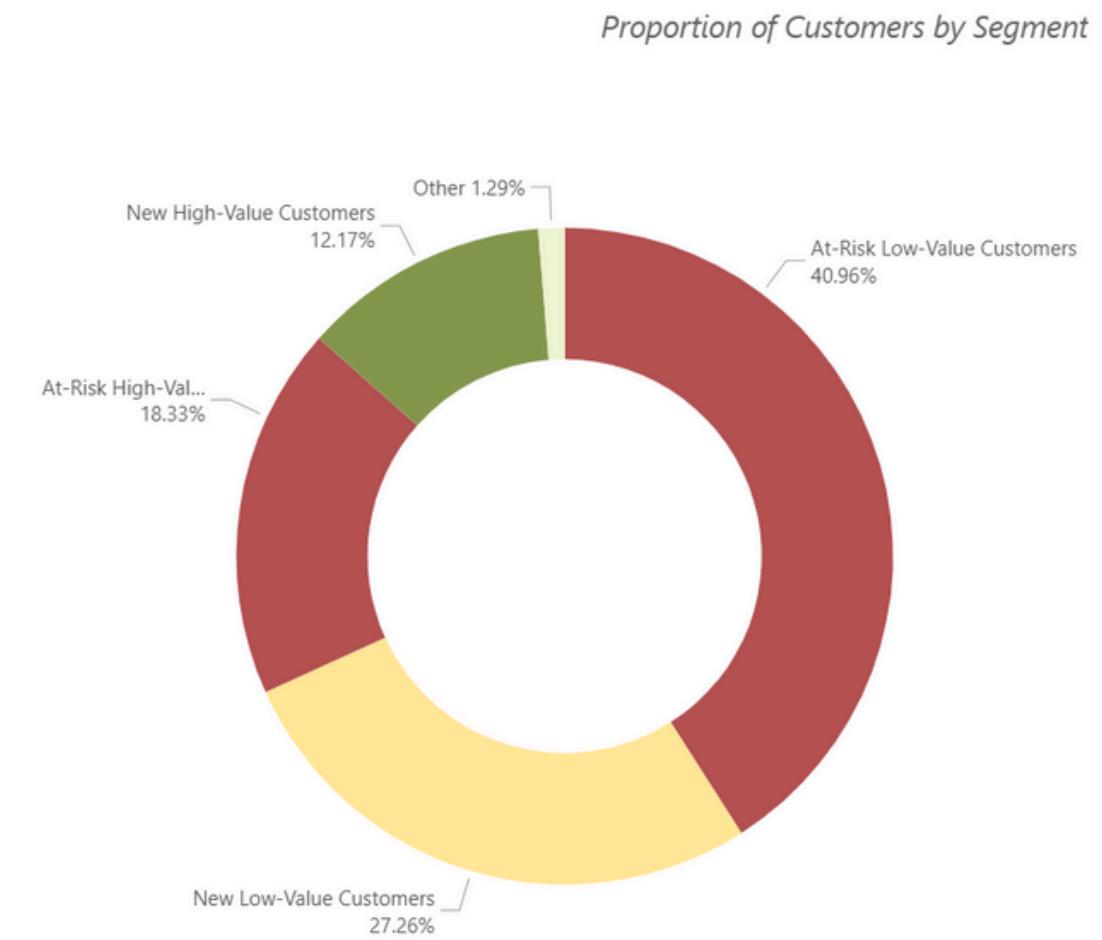
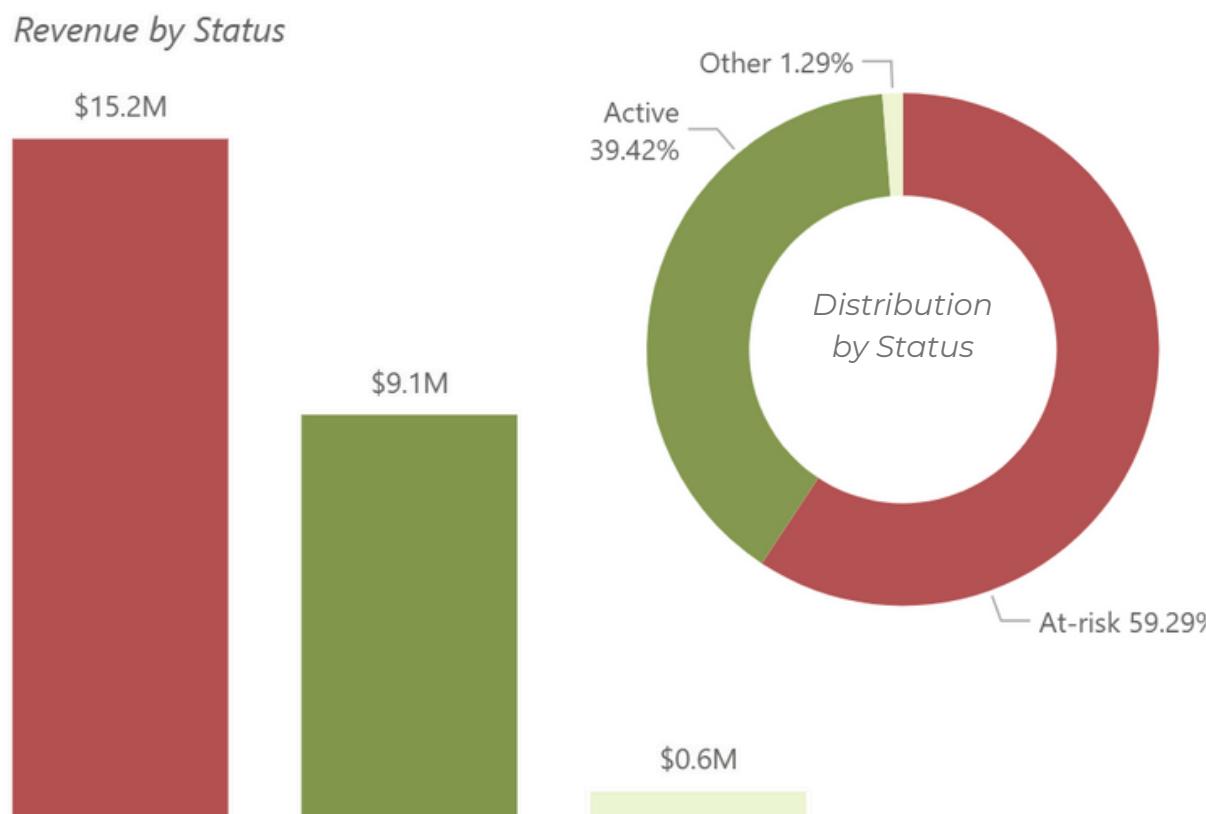


Who Are They?

10,326 customers have not made a purchase for more than half a year

40.96% (7,134 customers) fall into the **At-Risk Low Value Customers** segment. These customers are characterized by Low Purchase amount, Low Frequency, and Long Inactivity.

18.33% (3,192 customers) belong to the **At-Risk High Value Customers segment**. They share the same behavioral traits (Low Purchase and Low Frequency) but have historically generated significant revenue (scoring 3–4 in the Monetary).



Both customer groups are categorized as **At-Risk**, meaning they have a high potential to churn, accounting for **59.29%** of the total customer base. Despite this, they represent the largest revenue contribution, amounting to **15.2M USD**.

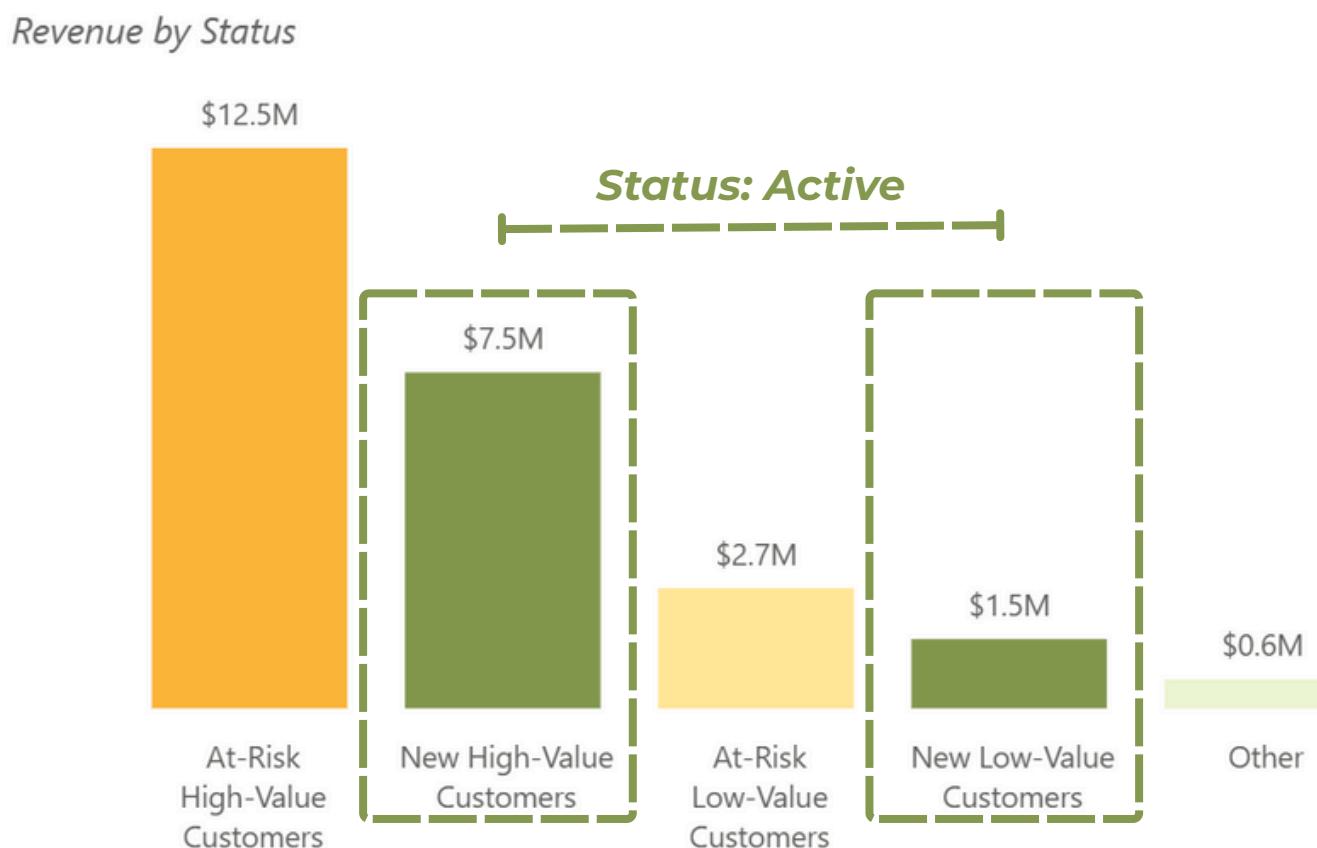


Who Are They?

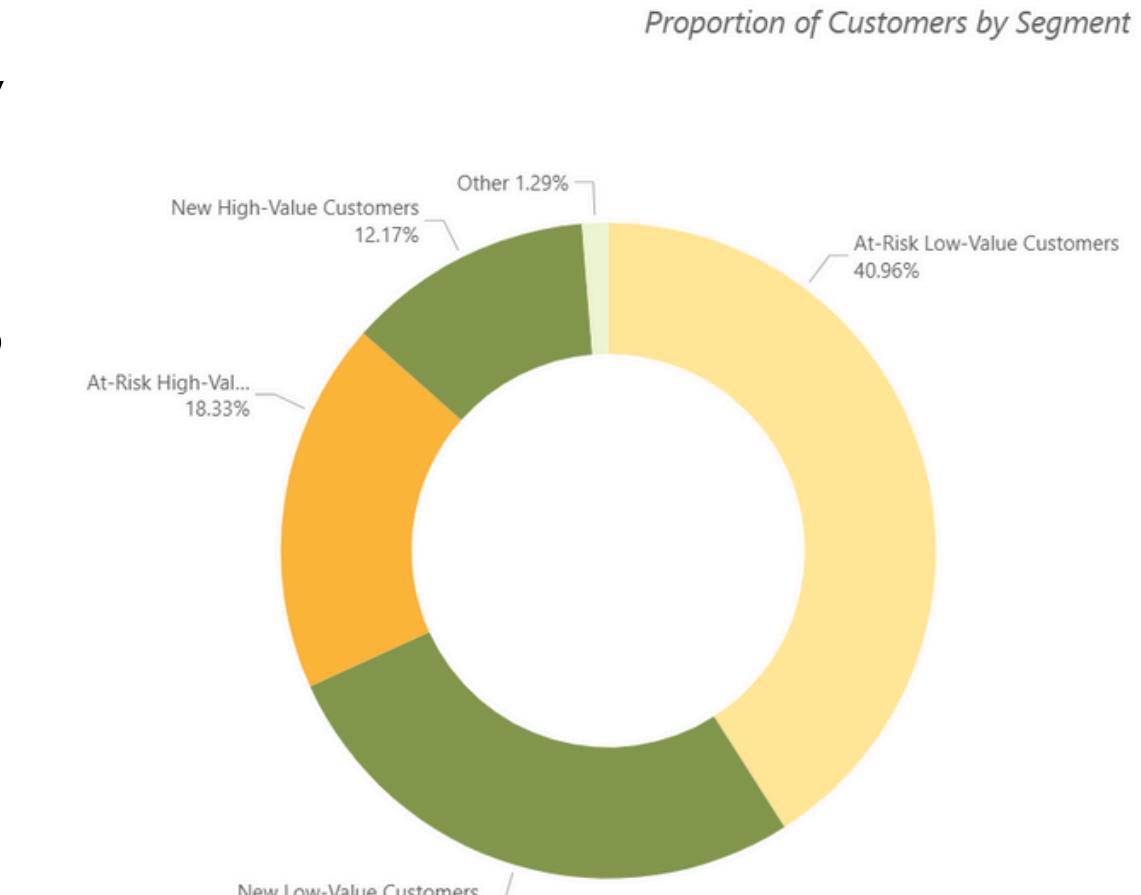
6,866 customers have made a purchase for under six months

27.26% (4,747 customers) belong to the **New-Low Value Customers** segment. They have recently made purchases, but with low spending and low purchase volume.

12.17% (2,119 customers) are classified as **New-High Value Customers**. Although also new buyers, this group has already generated high transaction values despite being only trial customers.



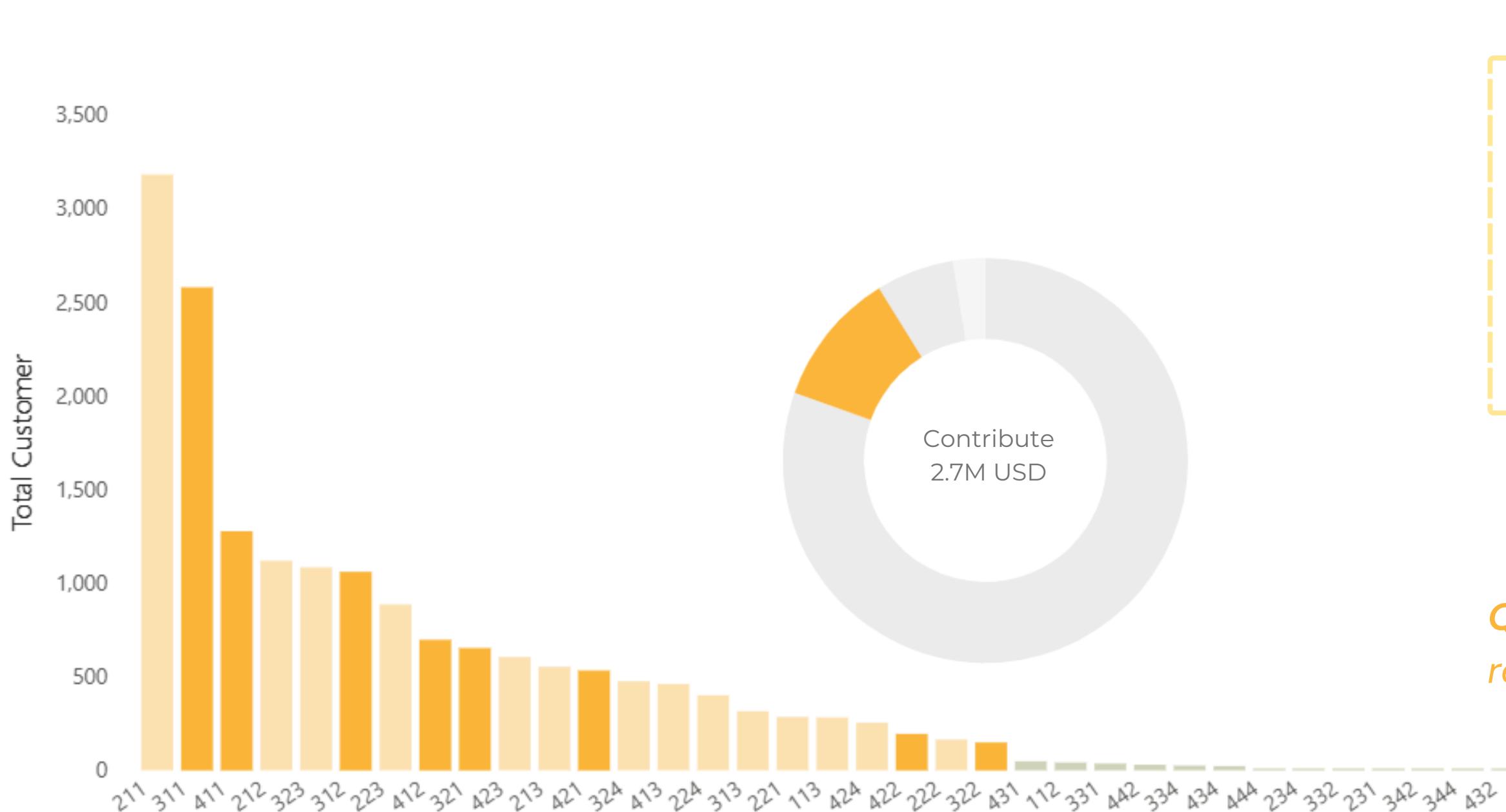
Both segments are classified as **Active**, meaning they have made purchases within the last six months, accounting for **39.42%** of the total customer base, contributing nearly **9.1M USD** in revenue.



At-risk Low Value Customers

Accounting for 40.96% of the company's customer base.

Ranked Top 1 in customer volume, this segment accounts for only **10.77%** of revenue (approximately **2.7M USD**). It includes combinations such as 411, 312, 412, 321, 421, 422, 322, with a major cluster at 311.



Customer Segment Characteristics:

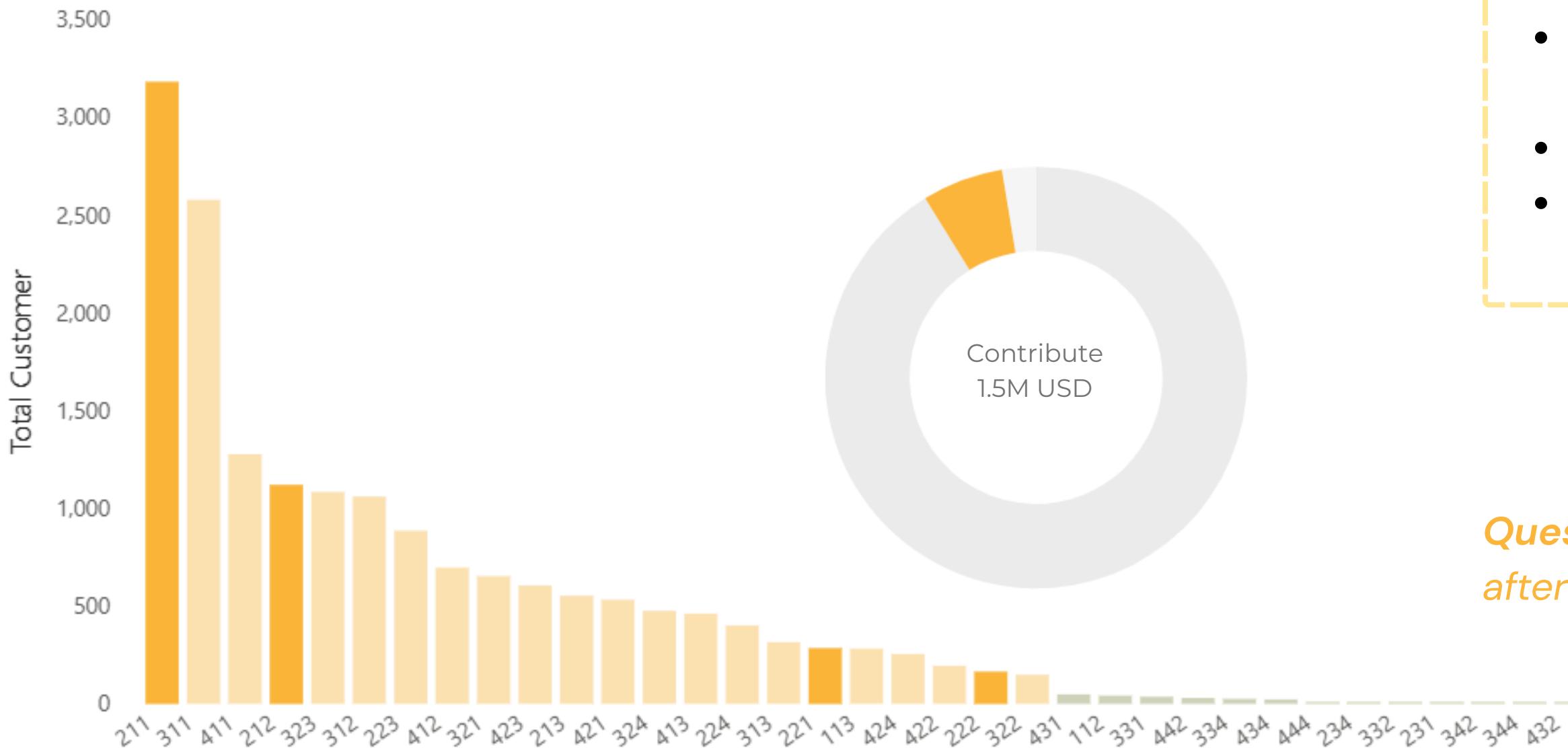
- Have not returned for more than 6 months, having high churn risk.
- Low purchase frequency: 1–3 times.
- Low revenue contribution: ranging from 0–2,000 USD.

Question: "Why Low Value Customers didn't return after making their initial purchases?"

New Low Value Customers

Accounting for 27.26% of the company's customer base.

This segment has **4,747 customers** (ranked 2nd in size) but contributes only **1.5M USD (6.21% of total revenue)**. It includes combinations 212, 221, 222, with the largest cluster being 211.



Customer Segment Characteristics:

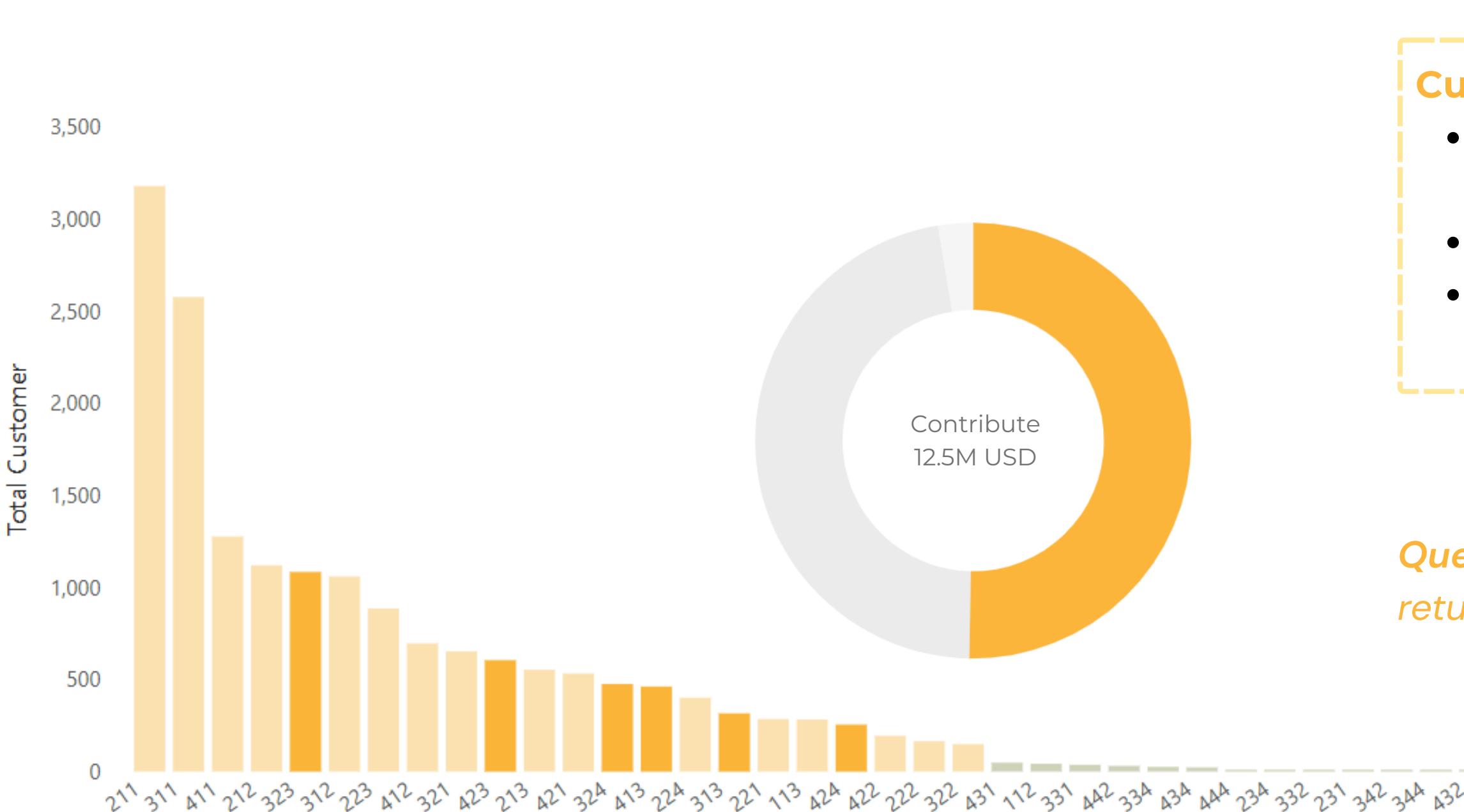
- Purchases within 6 months, indicating that the customers are still active.
- Low purchase frequency: 1–3 times.
- Very high revenue contribution: ranging from USD 2,000 to over USD 5,000.

Question: "How can we encourage them to return after their initial purchases?"

At-risk High Value Customers

50.28% of total revenue is contributed by 18.33% of total customers

Although this segment has only **3,192 customers** (ranked 3rd in size), it contributes **more than 50%** of total revenue. The segment combinations include: 323, 423, 324, 413, 313, and 424.



Customer Segment Characteristics:

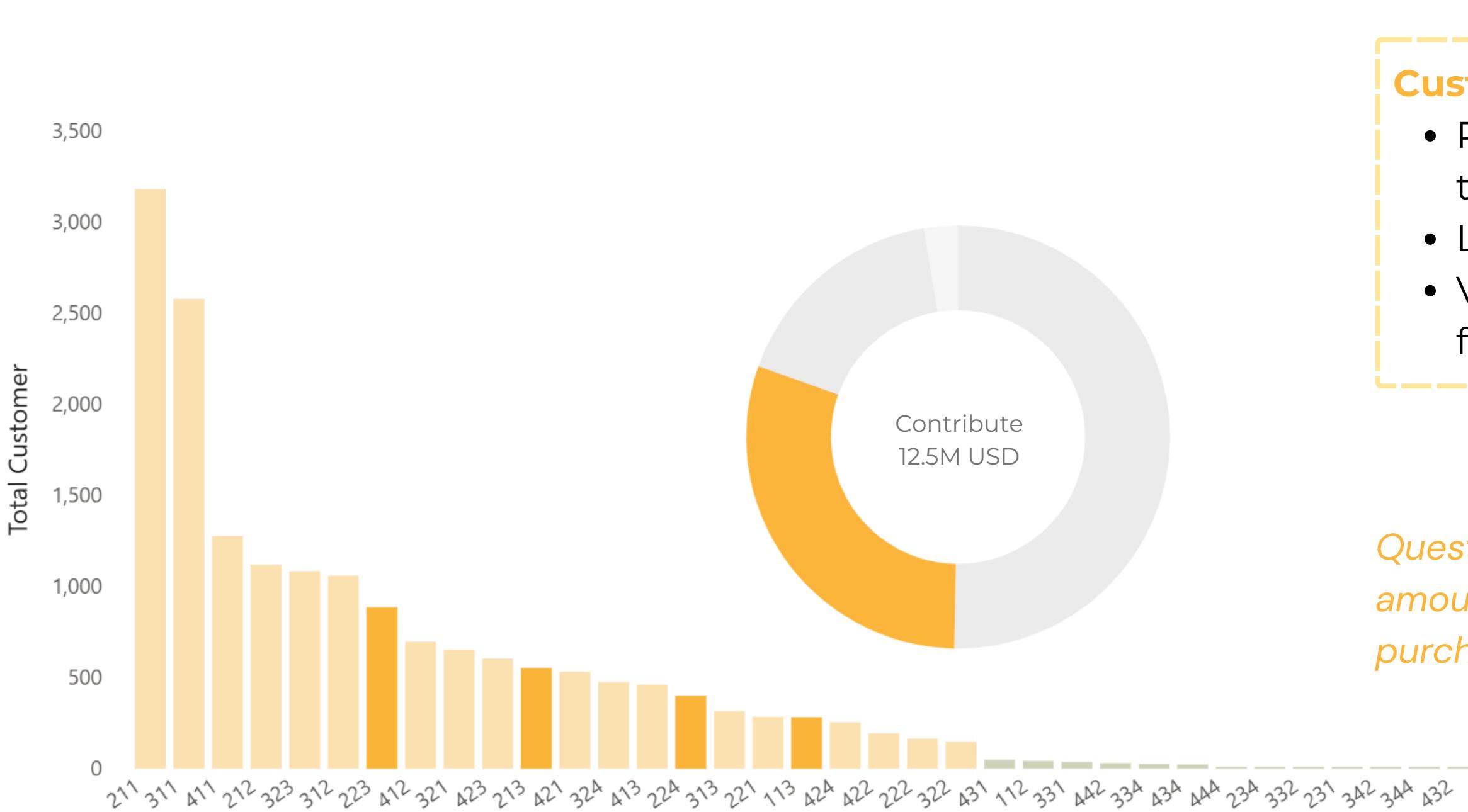
- Have not returned for more than 6 months → high churn risk.
- Low purchase frequency: 1–3 times.
- Very high revenue contribution: ranging from USD 2,000 to over USD 5,000.

Question: "Why High Value Customers didn't return after making their initial purchases?"

New High Value Customers

30.14% of total revenue is contributed by 12.17% of total customers

This is the segment with the **smallest customer base**, yet it contributes **7.5M USD (30.14%)**, ranking just behind the At-Risk High Value Customers. The segment includes combinations: 233, 213, 224, and 113.



Customer Segment Characteristics:

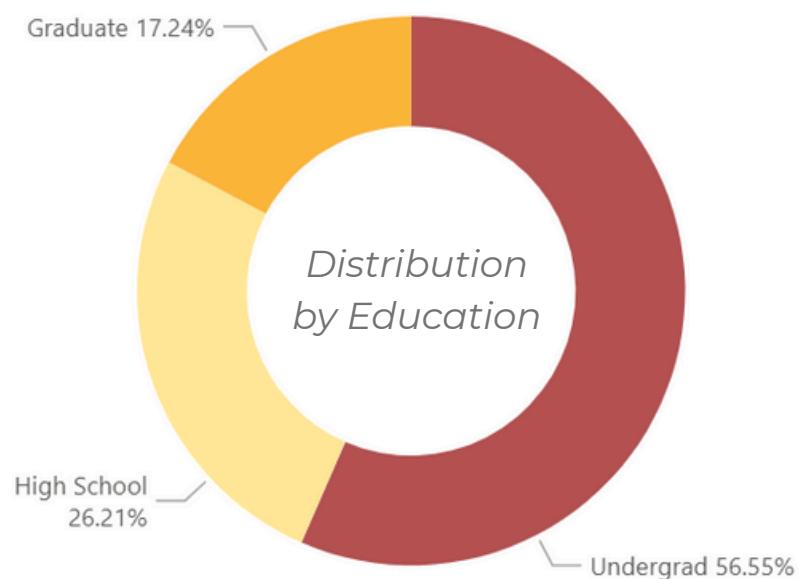
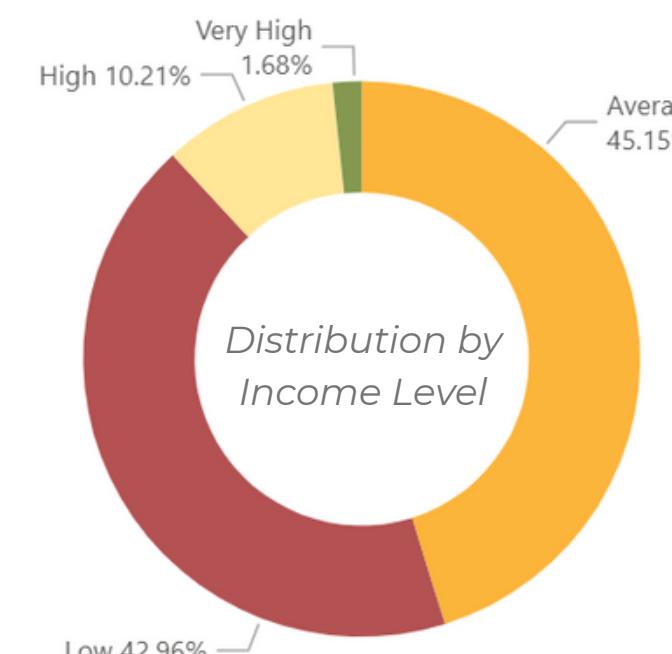
- Purchases within 6 months, indicating that the customers are still active.
- Low purchase frequency: 1–3 times.
- Very high revenue contribution: ranging from USD 2,000 to over USD 5,000.

Question: *"What made customers spend a large amount of money right from their initial purchases?"*

Customer profiling: Overall

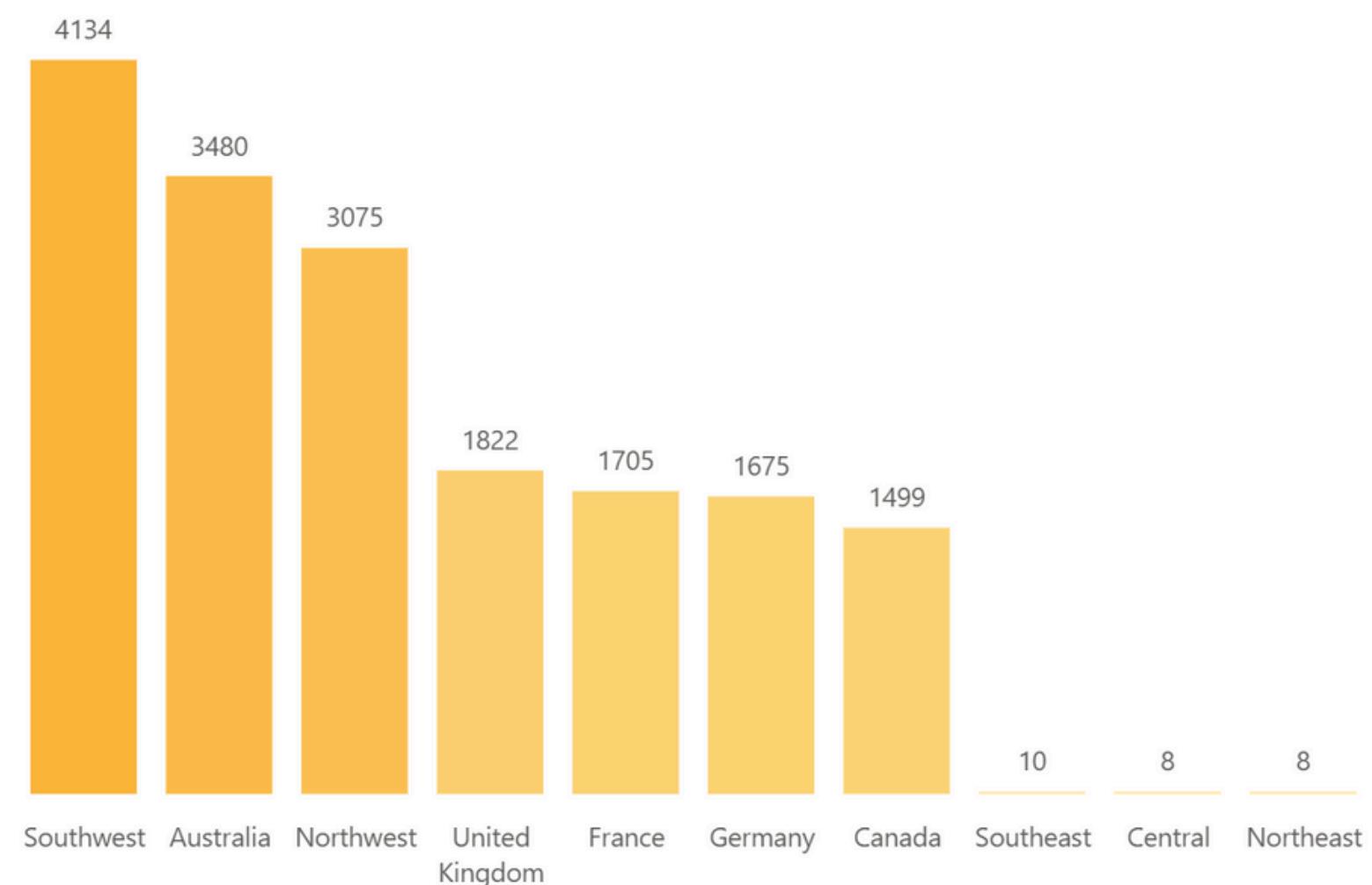
Income Level:

- Nearly 90% of the total base is contributed by Average (45.15%) and Low (42.96%) categories.
- Customers with High and Very High income account for only about 12%, indicating that the business primarily serves the mid-to-low income segment.



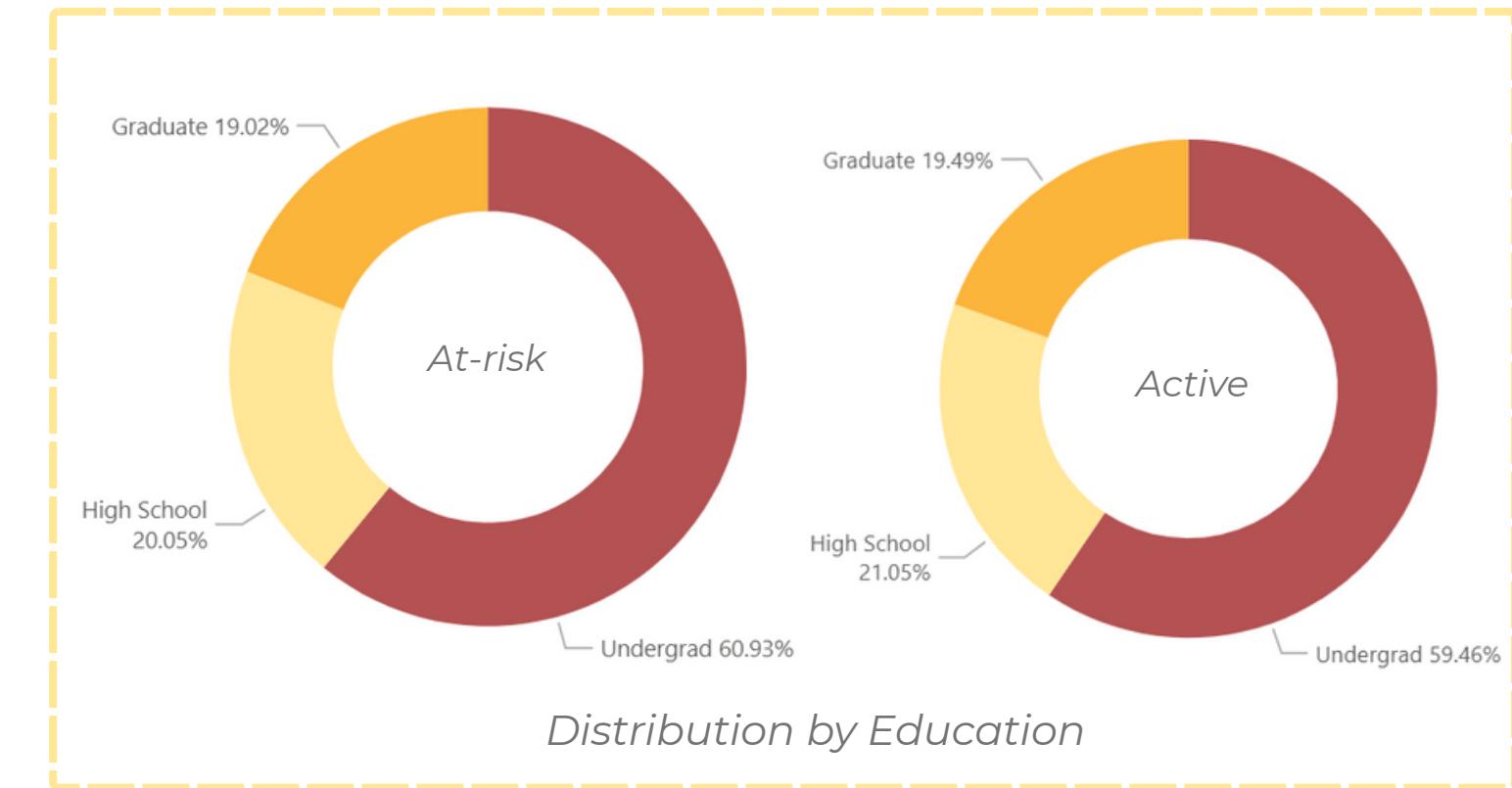
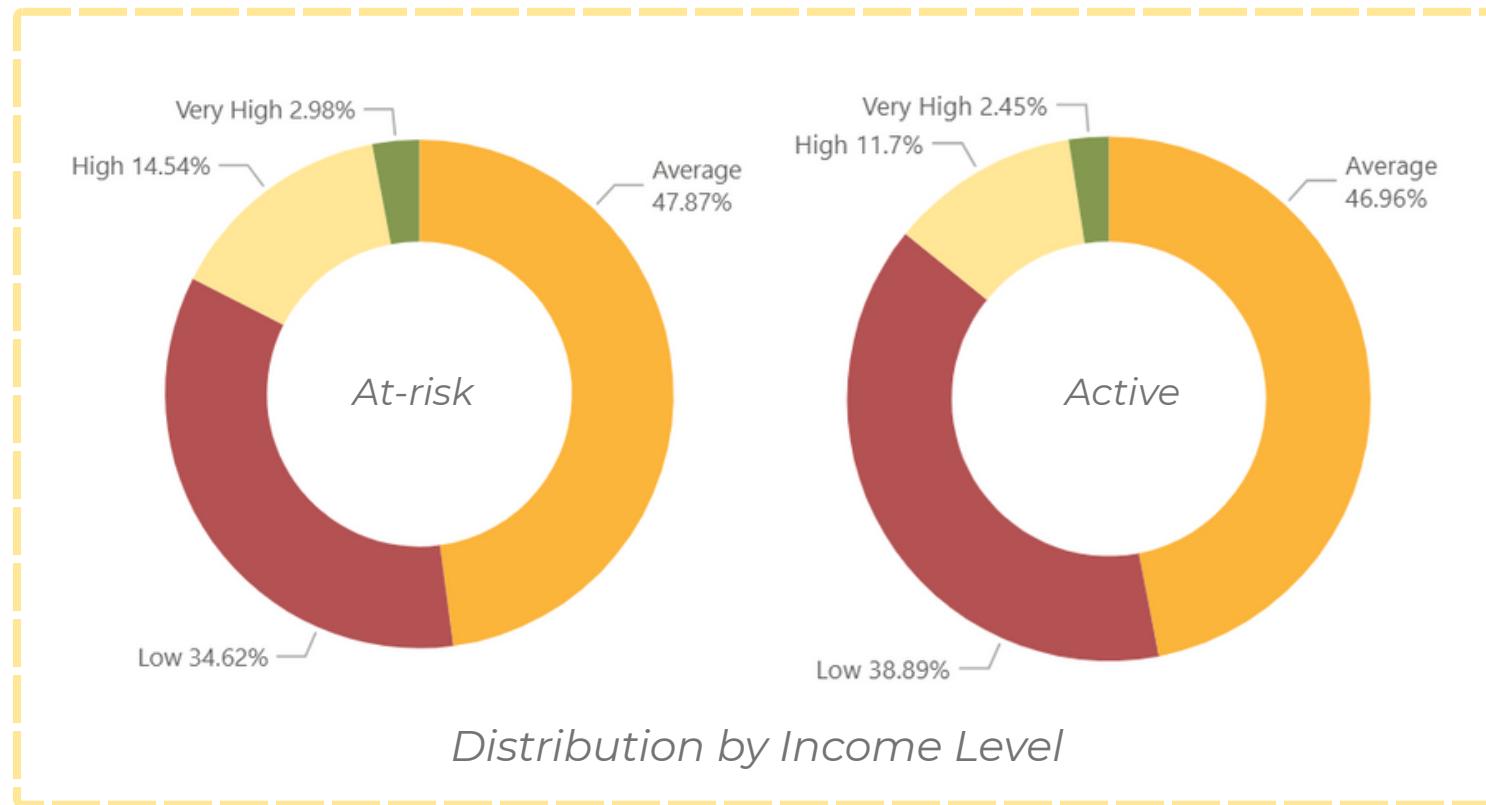
Education Level:

- The majority of customers are Undergraduates (56.55%), followed by High School graduates (26.21%).
- Graduates represent only 17.24%, showing that highly educated customers are not the main segment.



Region: Southwest, Australia, and Northwest are the top three regions, with Southwest leading at 4,134 customers. Meanwhile, Southeast, Central, and Northeast contribute very little, with fewer than 15 customers.

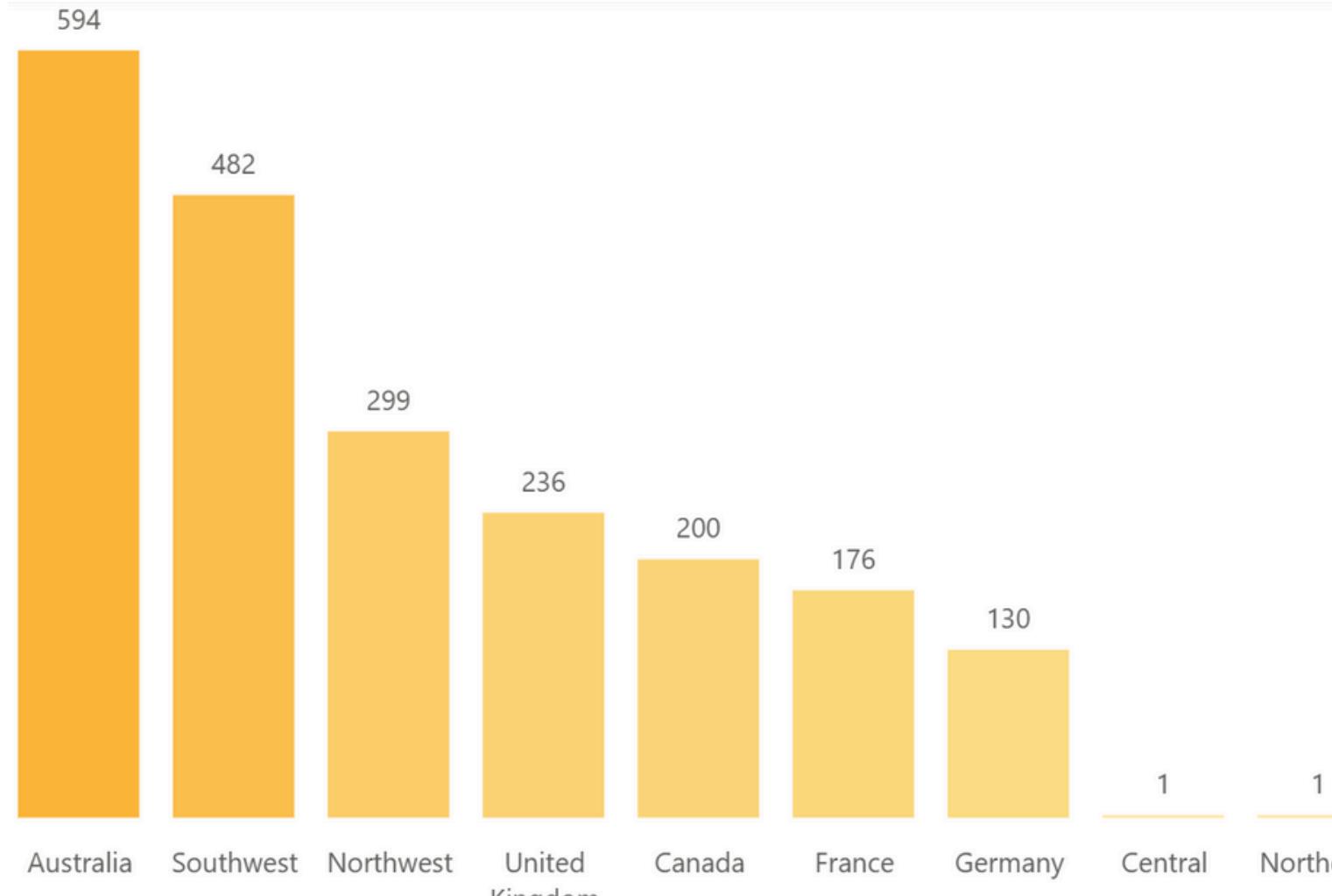
Customer profiling: High-Value Customers



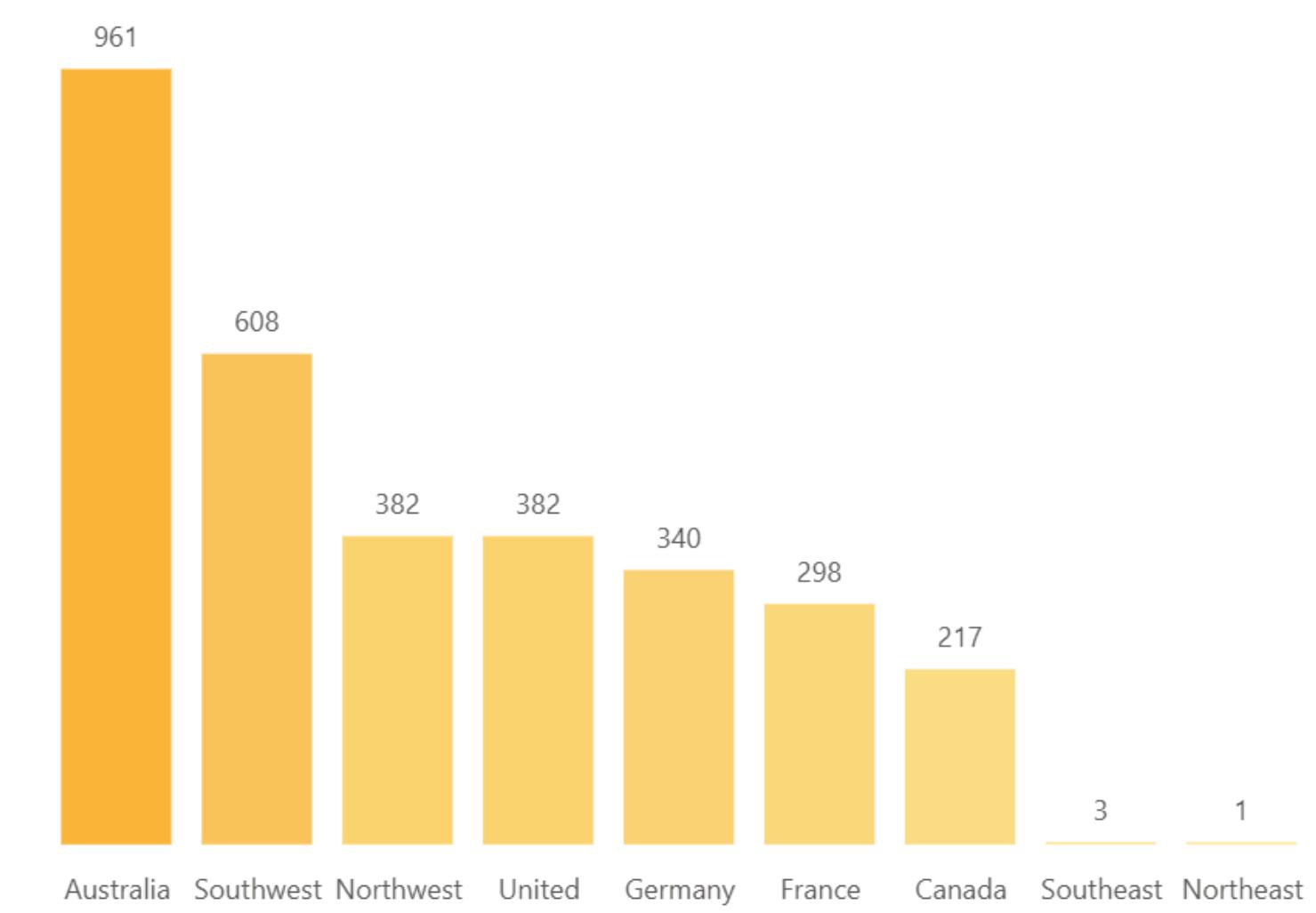
Income Level: Both customer states show that over **80% of customers fall into the Average and Low income groups**. This indicates that the majority of purchases come from mid-to-low income segments, which also carry the highest churn risk. Meanwhile, the High and Very High income groups represent only a small proportion of the customer base.

Education: Both At-risk and Active customers have more than **59% in the Undergrad group**, followed by High School (~20%) and Graduate (~19%). This indicates that the business primarily serves customers with mid-level education (Undergrad, High School), while the Graduate segment accounts for a smaller proportion.

Customer profiling: High-Value Customers



New High -Value Customers Segment



At-risk High -Value Customers Segment

New High-Value Customers are mainly concentrated in **Australia (594)** and **Southwest (482)**, followed by Northwest, UK, Canada, France, and Germany. Central and Northeast contribute almost none.

At-risk High-Value Customers are also concentrated in **Australia (961)** and **Southwest (608)**, with smaller shares in Northwest, UK, Germany, France, and Canada. Southeast and Northeast are negligible.

Customer profiling: High-Value Customers

Top 10 Product they bought

CategoryName	SubcategoryName	Total Orders	CategoryName	SubcategoryName	Total Orders
Accessories	Bottles and Cages	1,045	Accessories	Bottles and Cages	508
Accessories	Fenders	564	Accessories	Fenders	225
Accessories	Helmets	1,280	Accessories	Helmets	649
Accessories	Tires and Tubes	921	Accessories	Tires and Tubes	447
Bikes	Mountain Bikes	2,893	Bikes	Mountain Bikes	1,119
Bikes	Road Bikes	2,147	Bikes	Road Bikes	1,909
Bikes	Touring Bikes	1,196	Bikes	Touring Bikes	475
Clothing	Caps	402	Clothing	Caps	218
Clothing	Gloves	224	Clothing	Gloves	104
Clothing	Jerseys	537	Clothing	Jerseys	293
Total		6,236	Total		3,503
At-risk			Active		

At-risk customers generate **nearly double the orders** of active customers (6,236 vs 3,503), dominating high-value categories and premium subcategories; losing them would significantly impact revenue, **making retention strategies crucial**. 

At-risk customers (6,236 orders): Strongly concentrated in **Bikes with Mountain Bikes (2,893) and Road Bikes (2,147)**, plus significant Accessories including Helmets (1,280) and Bottles & Cages (1,045). Clothing is smaller with Jerseys (537), Caps (402), and Gloves (224).

Active customers (3,503 orders): Still **focus on Road Bikes (1,909)**, but show sharp declines in Mountain Bikes (1,119) and Accessories such as Helmets (649) and Bottles & Cages (508). Clothing is lower overall with Jerseys (293), Caps (218), and Gloves (104).

Recommendation



Retaining customers through low-cost mass campaigns such as small promotions like free shipping or vouchers. Segment low-value customers to identify those with potential to move up, focusing resources on them while using automated campaigns for the rest.

**LOW
VALUE**



Encourage new low-value customers to spend more through cross-sell (affordable add-on products), upsell (higher-value versions or premium packages), and bundle/combo deals that increase order value and promote repeat purchases.

HIGH

VALUE

Running re-engagement campaigns via SMS, email, or social media with "We miss you" messages, personalized promotions, and loyalty programs to encourage customers to return and purchase as soon as possible.



Conducting surveys to gather feedback and satisfaction levels, and design engagement strategies to minimize the risk of new customers not returning for example, by enrolling them early in loyalty programs to let them experience VIP benefits sooner and feel special.



Summary

Overview

Deep-Dive

Conclusion