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# Fan Retail Insights

NHL Fan Merchandise  
Purchases: Exploring Trends  
and Fandom Diversity





# Today's Agenda



The Problem Statement

Understanding Fan Features (EDA)

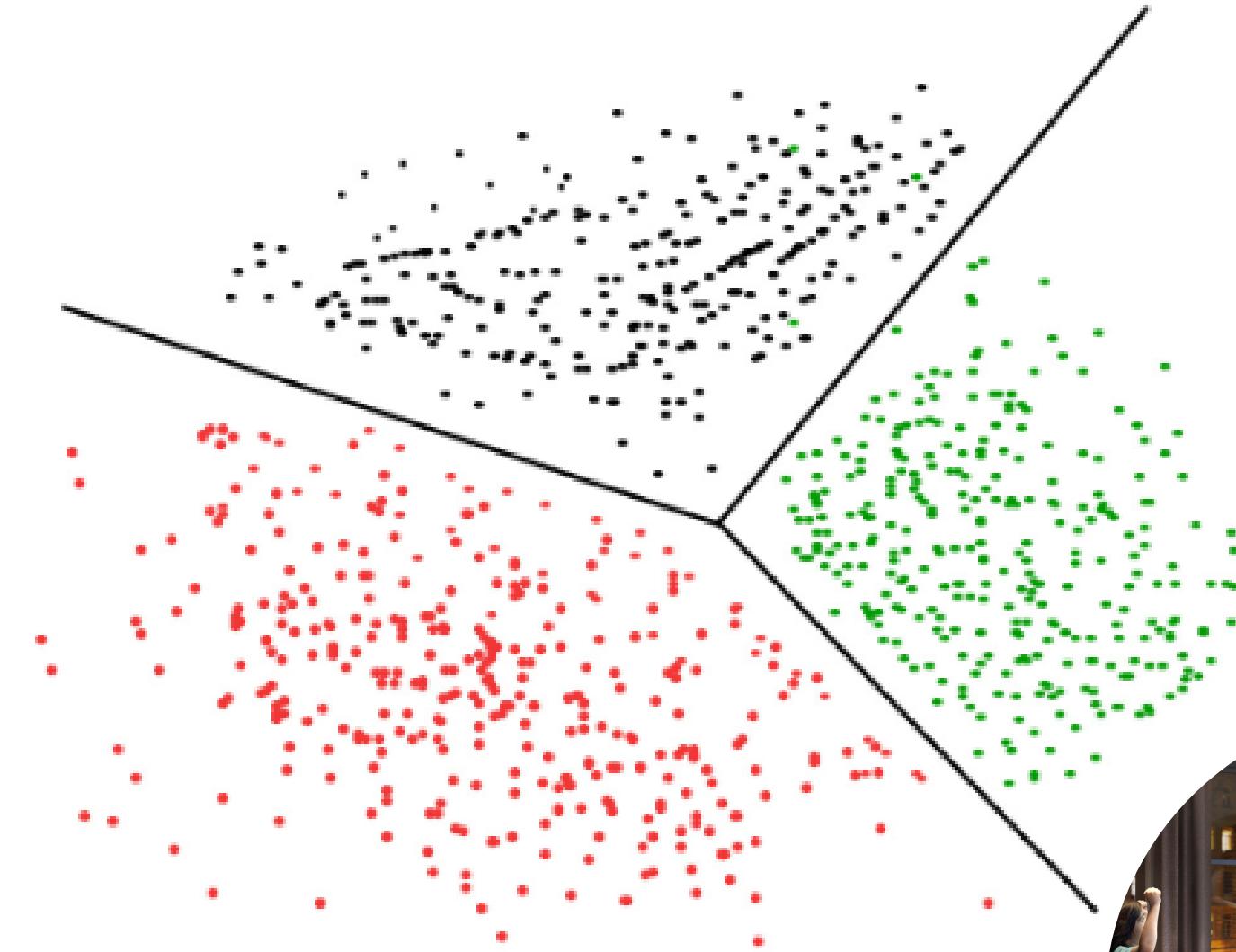
Clustering Model for Fan Segmentation

Actionable Takeaways and Insights



## 1. The Problem

**Identification of meaningful fan segments with distinct purchasing behaviors and preferences.**





## 2. Understanding Fan Features (EDA)

### Feature Selection

The strategic process of identifying the most impactful factors from our data.

#### CLUBS

##### Top 7 Clubs

- Fan ID
- # of Order
- Sum of their purchasing

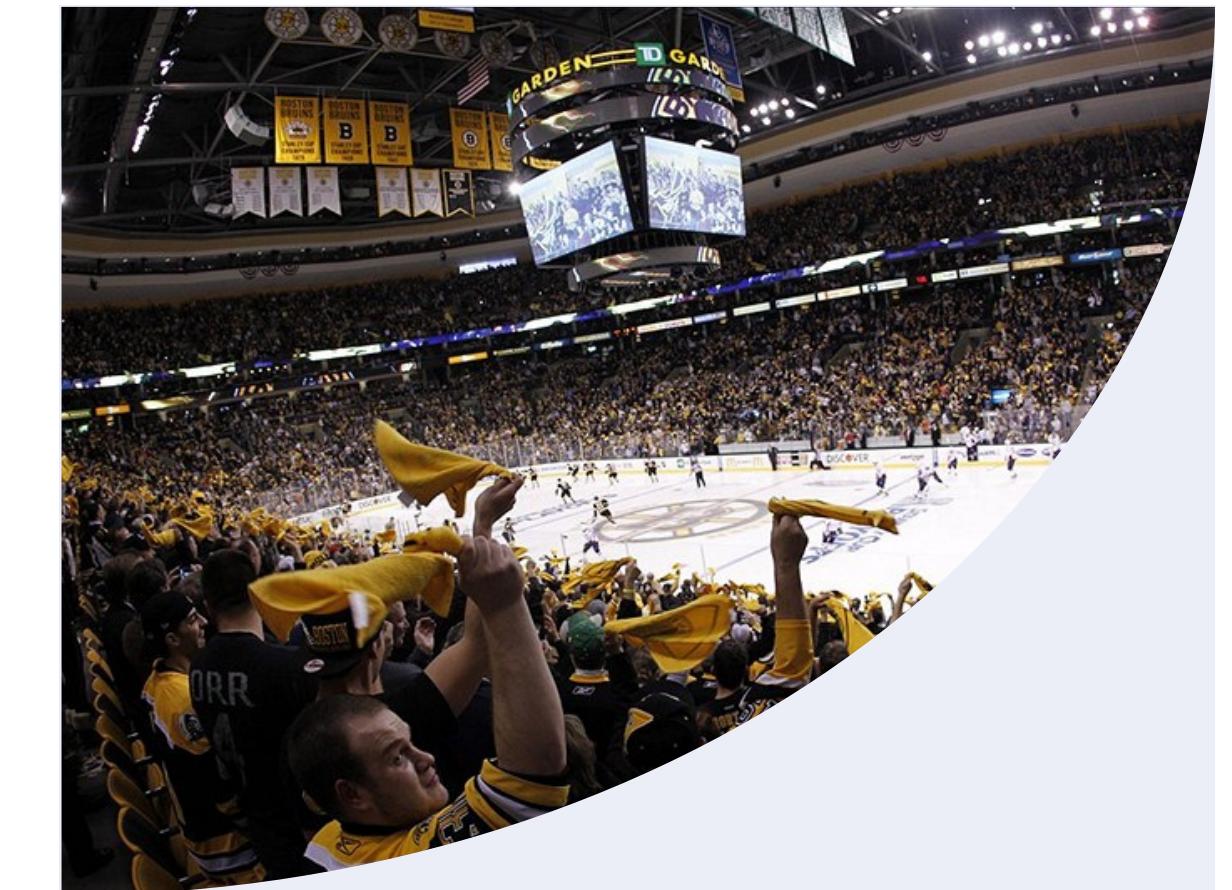
#### FANS

- Location (ZipCode)
- Fandom of buyer (CLUB)
- Team for that product (TEAM)



#### PRODUCTS

- Category
- Class
- Subcategory

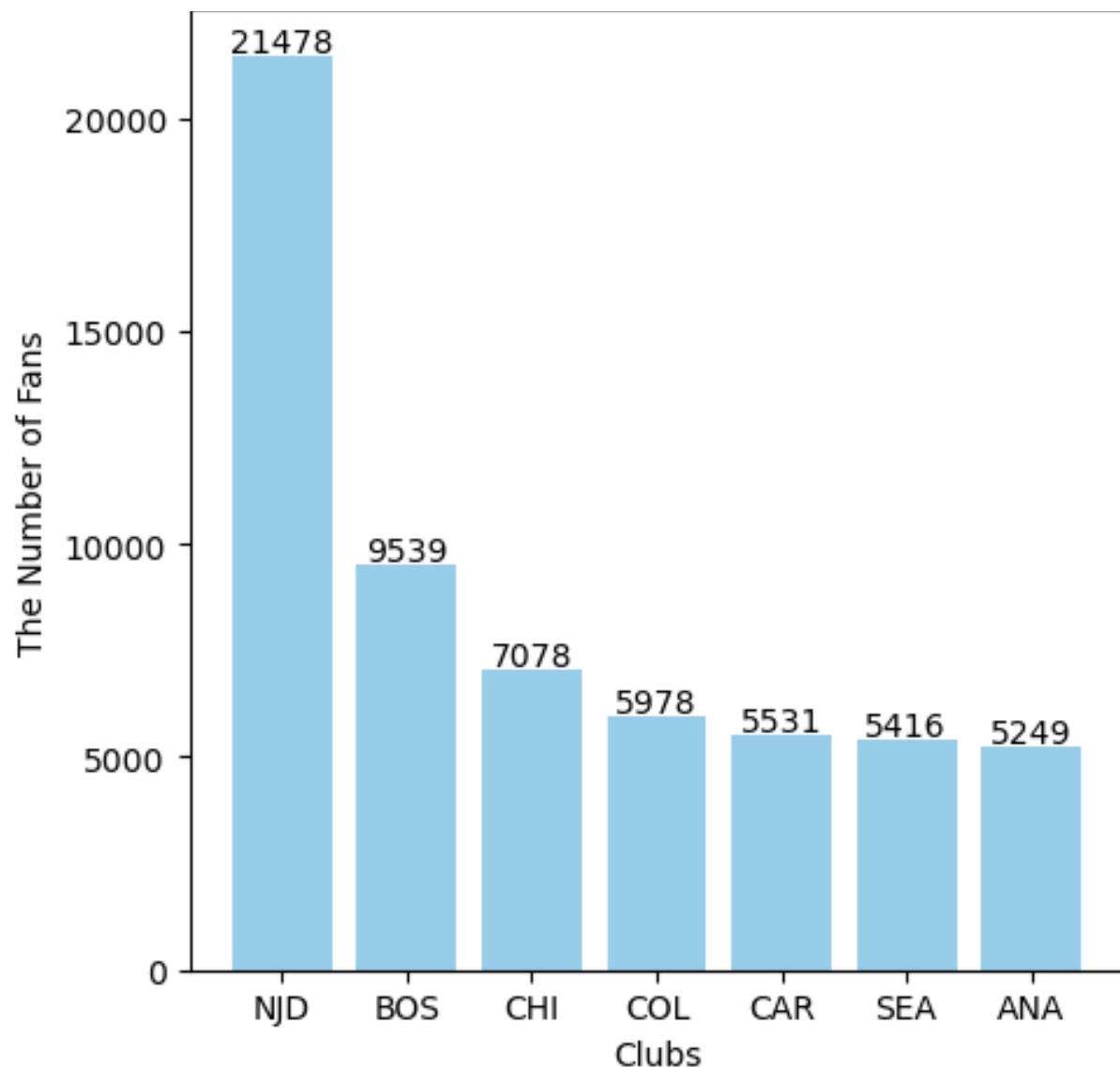




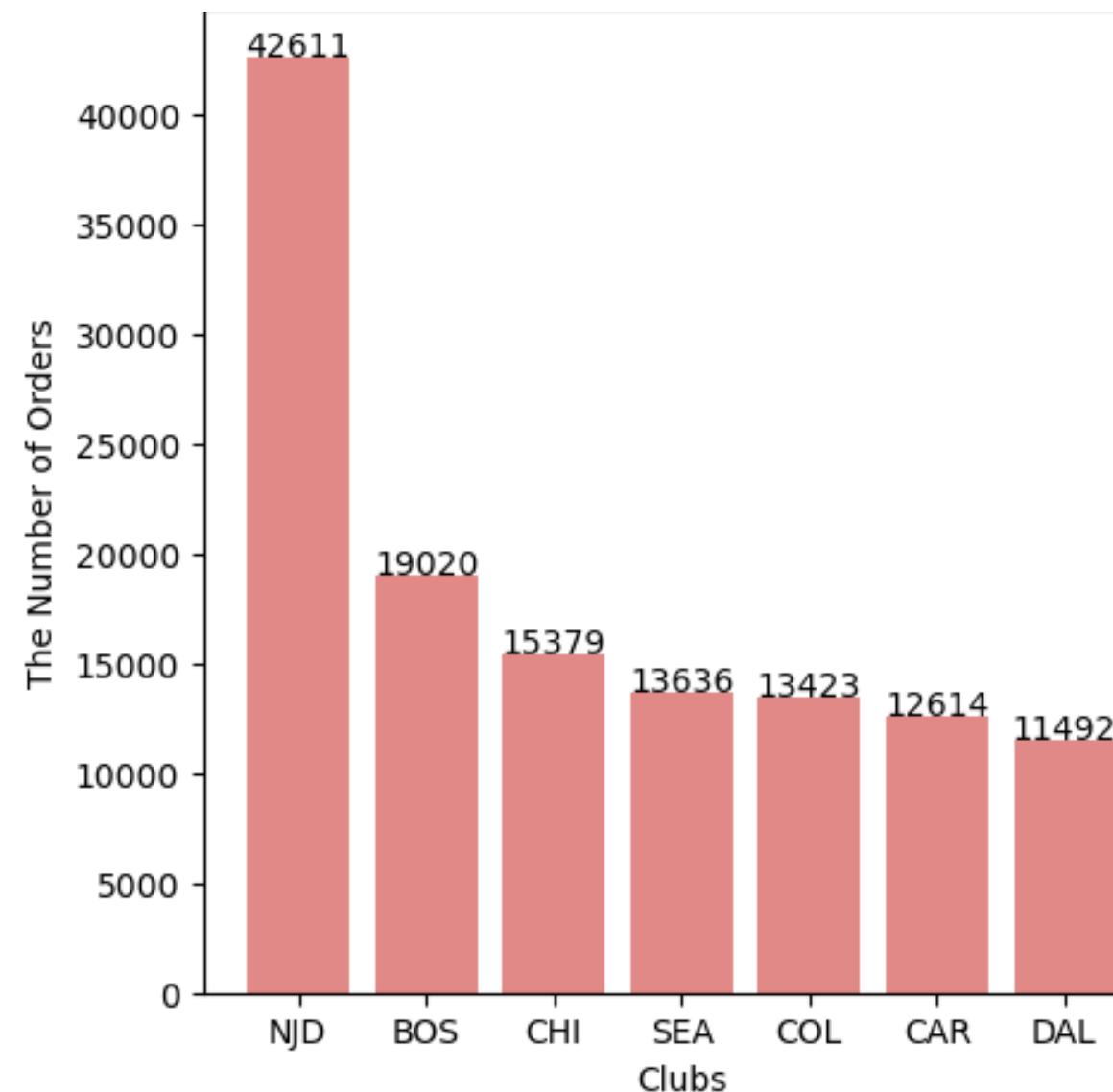
# Top 7 Clubs

- New Jersey Devils, Boston Bruins, and Chicago Blackhawks are at the top across all categories.
- Even though the Colorado Avalanche and Carolina Hurricanes have more fans than the Seattle Kraken, the fans of the Seattle Kraken spend more money. This shows that even though there are fewer Kraken fans, they're really dedicated and willing to spend a lot on supporting their team.

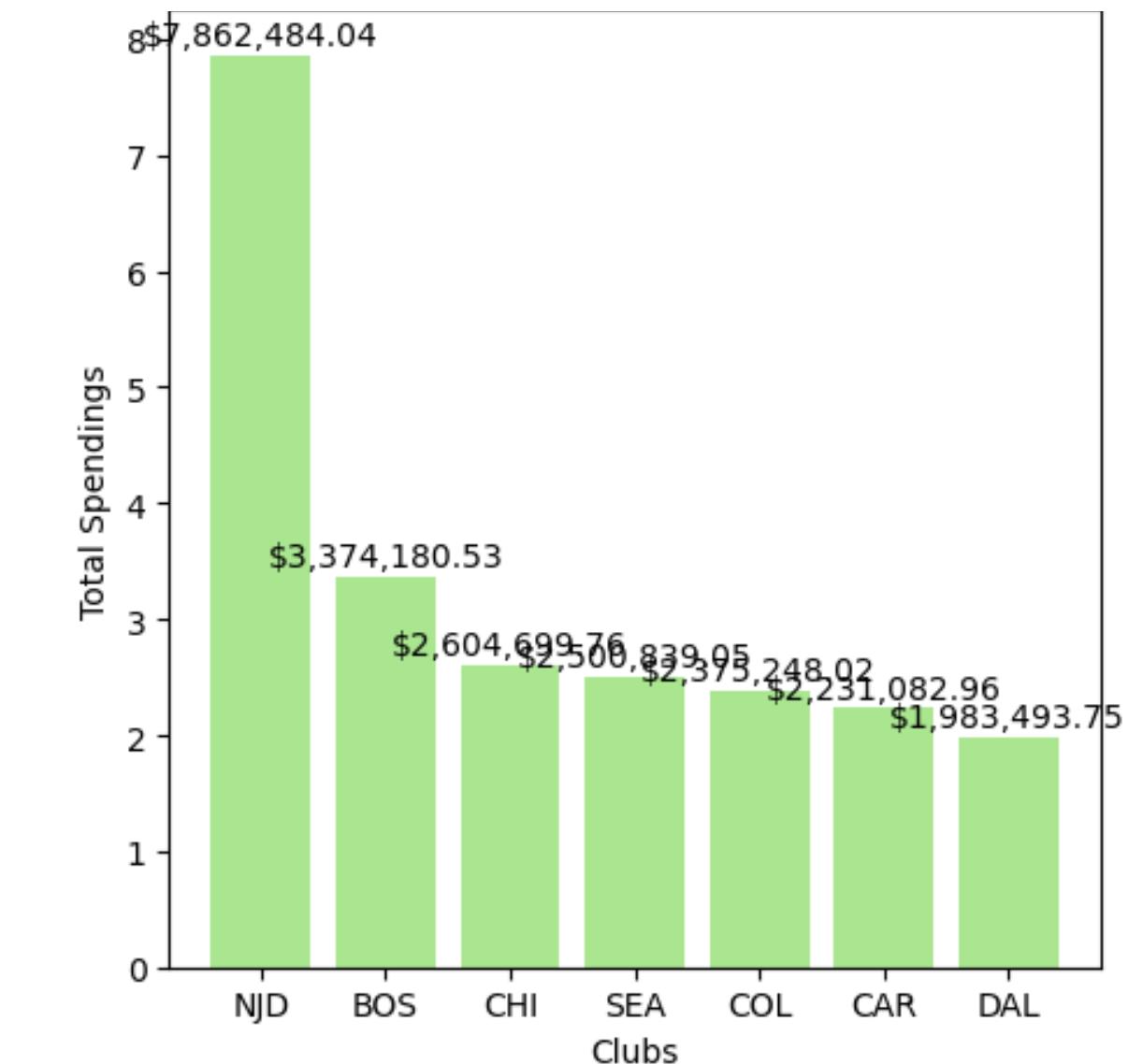
The Number of Fans

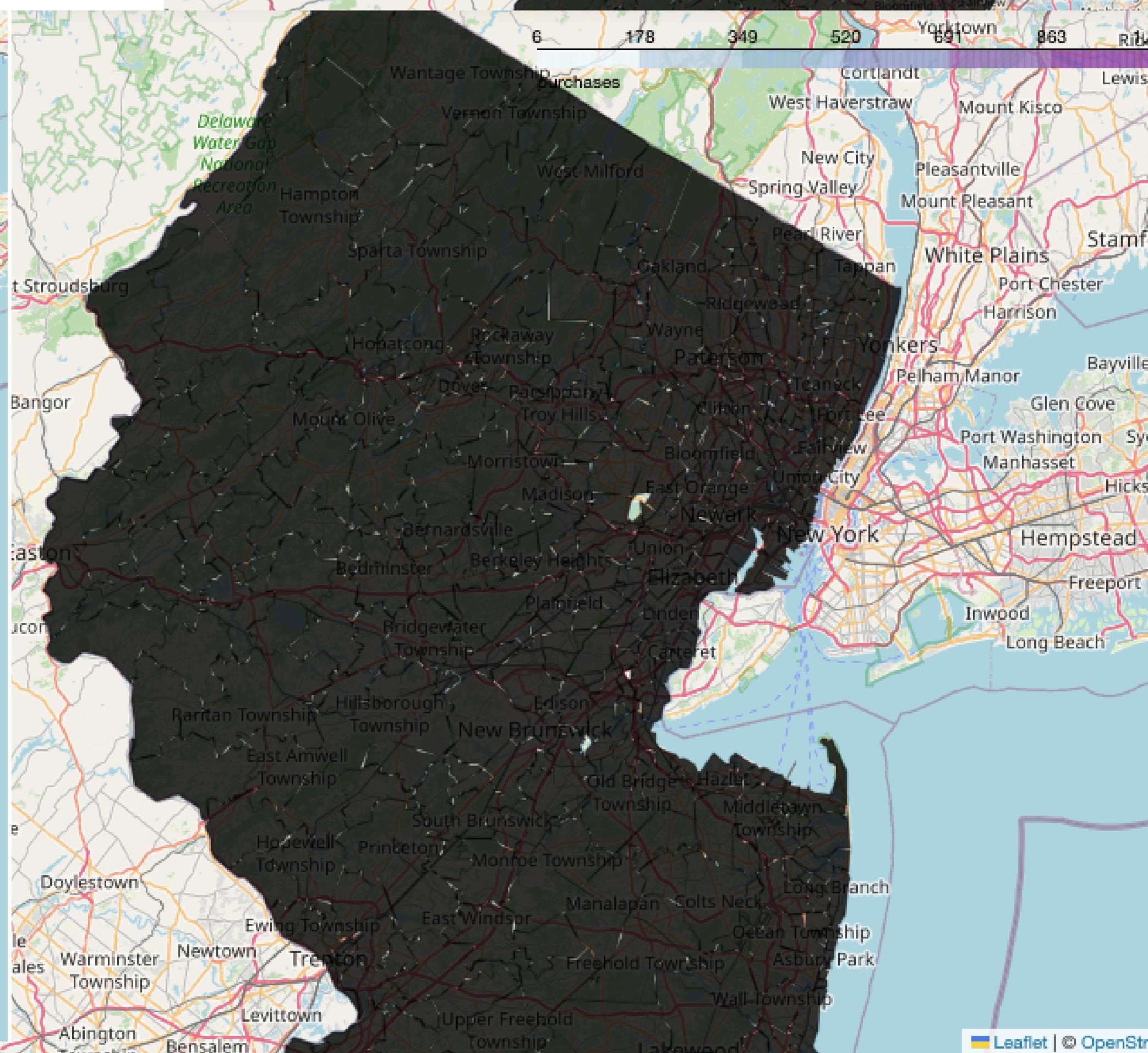
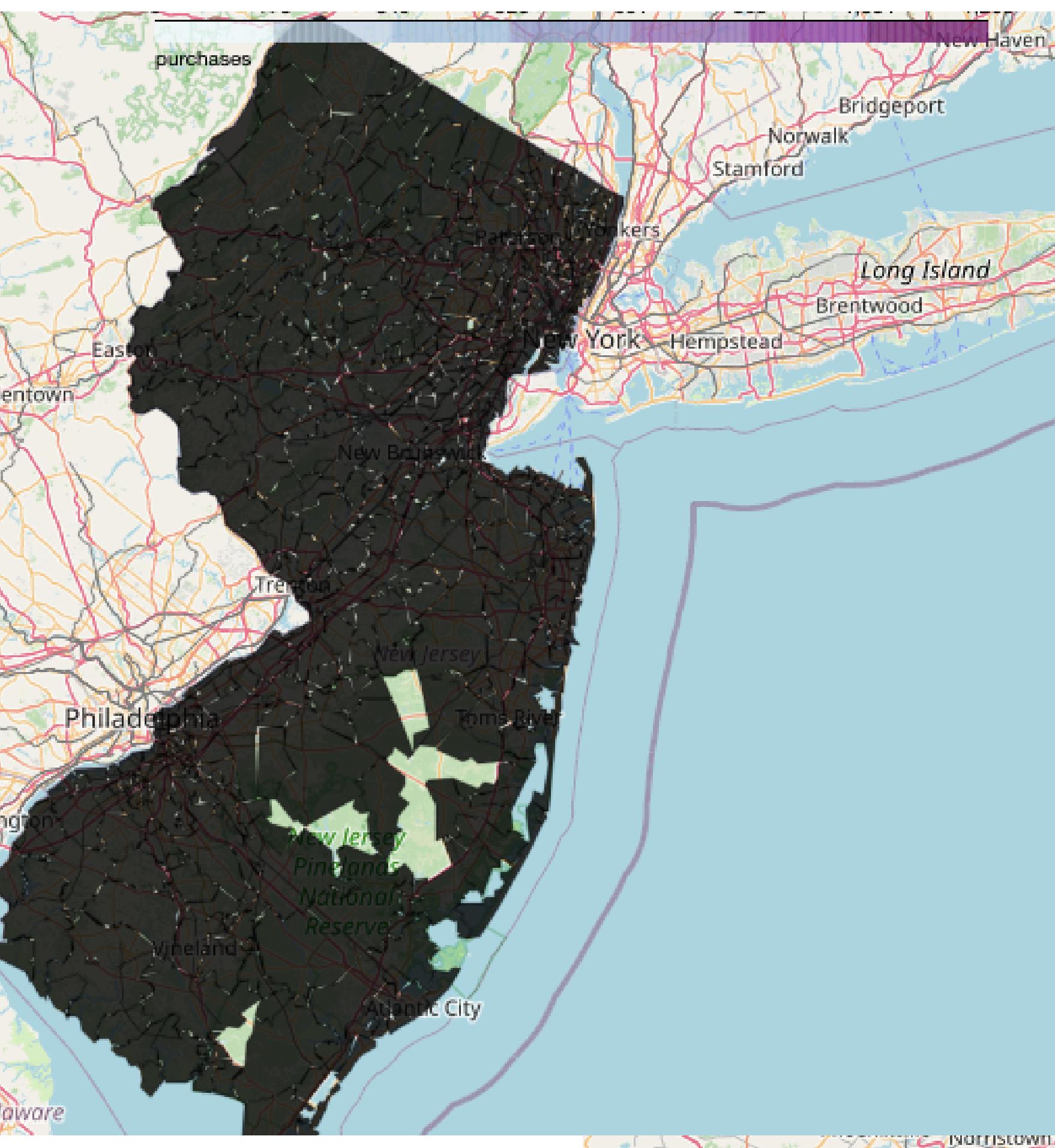


The Number of Orders



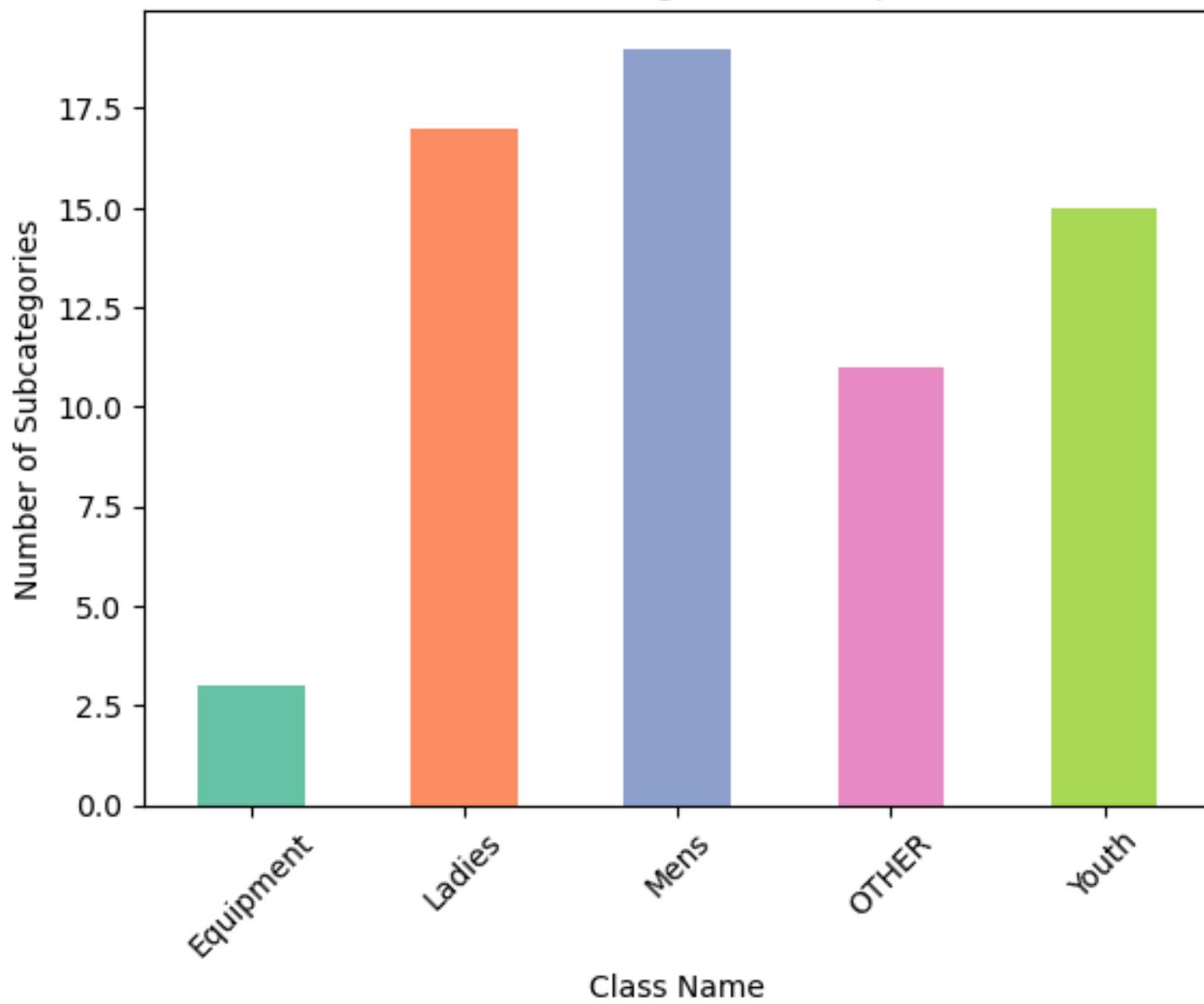
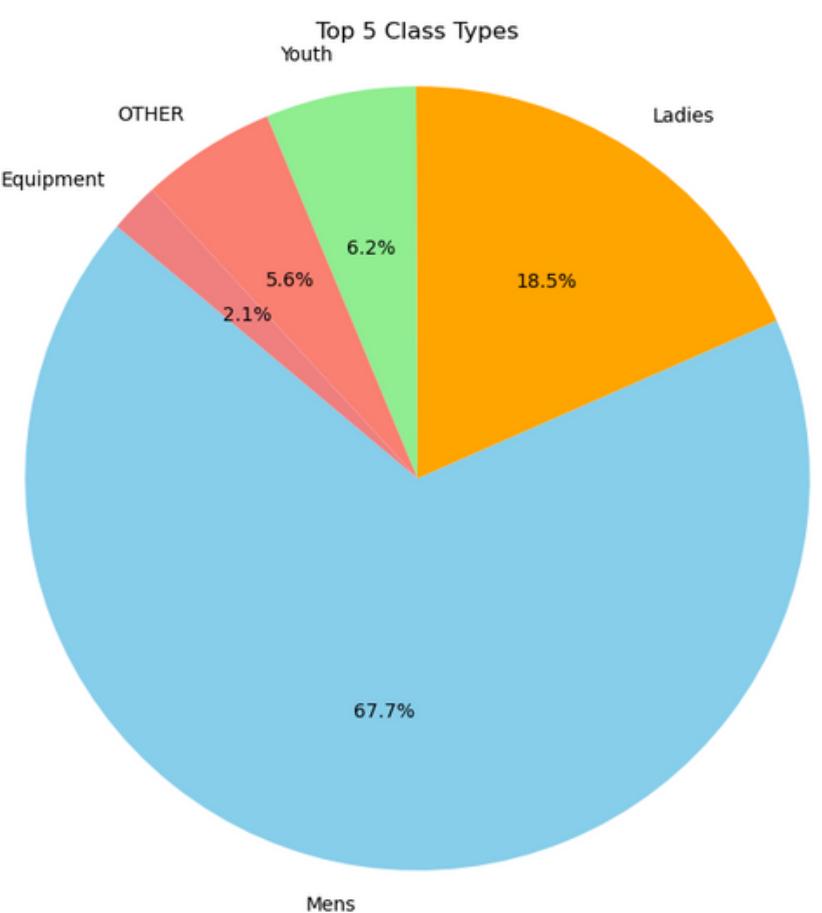
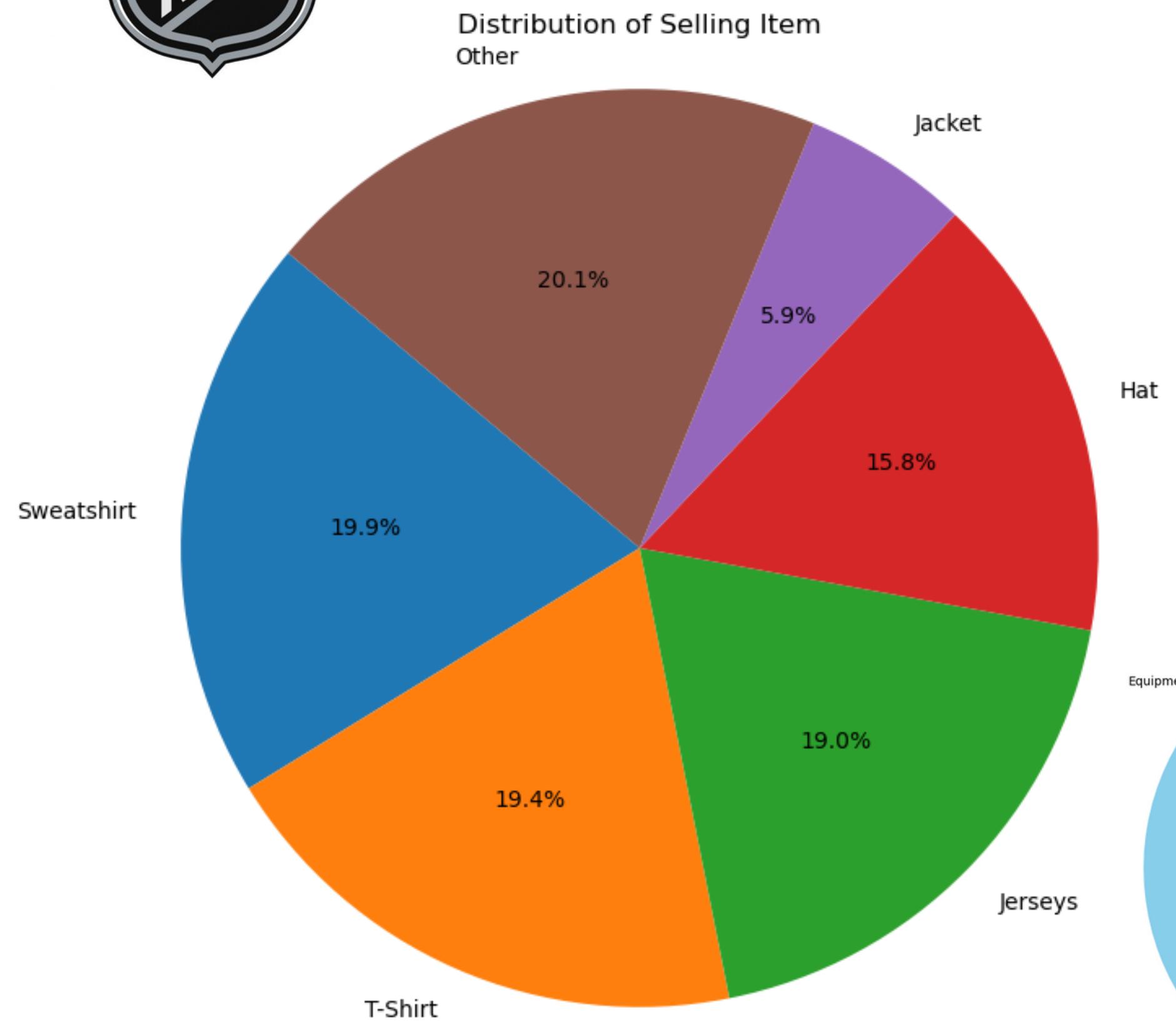
Total Purchases







# Product Analysis



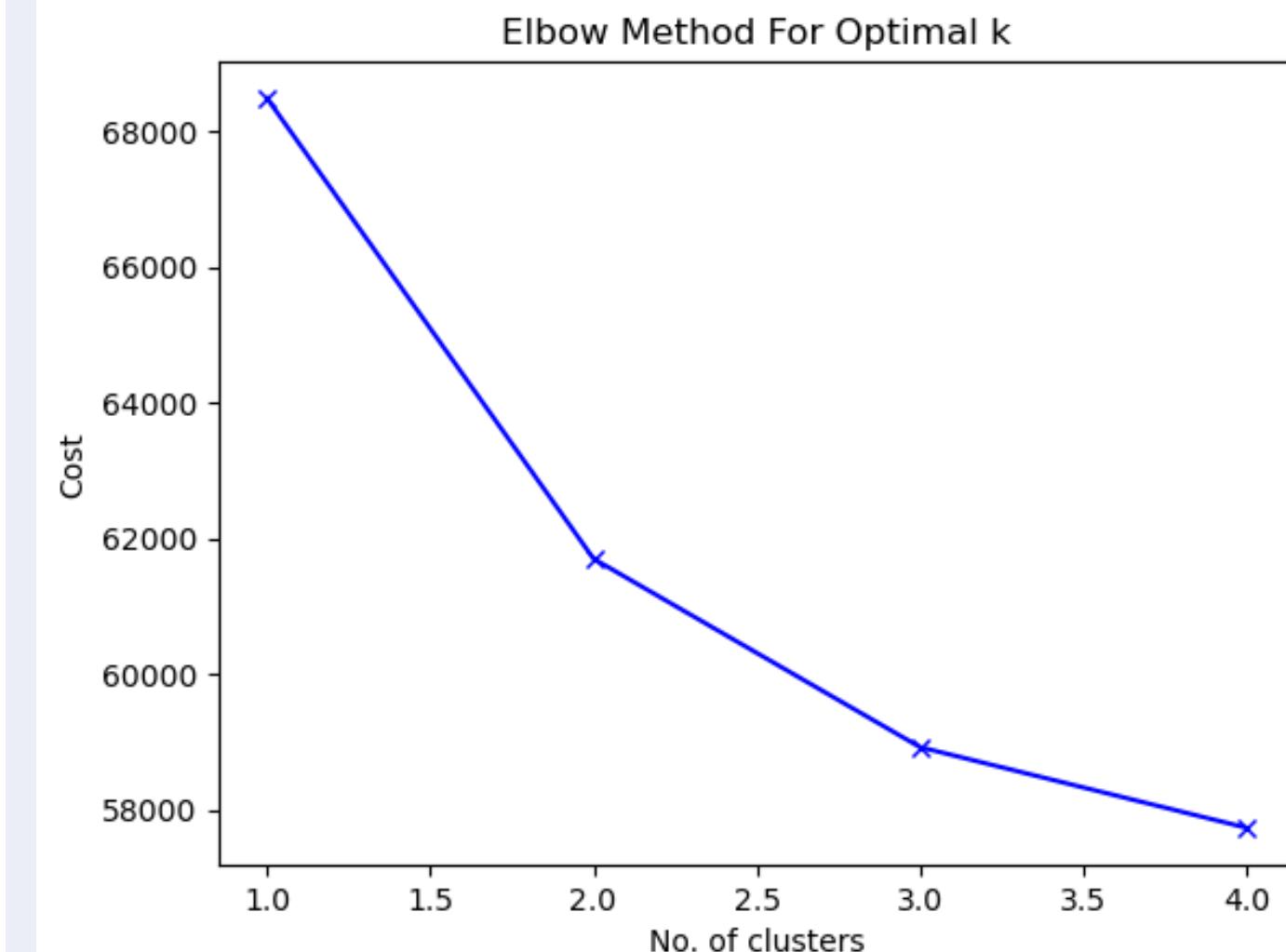


# K-modes Clustering Methods

There is a strong correlation between the "Category" and "Sub-Category" columns, as well as between the "Team" and "Club" columns.

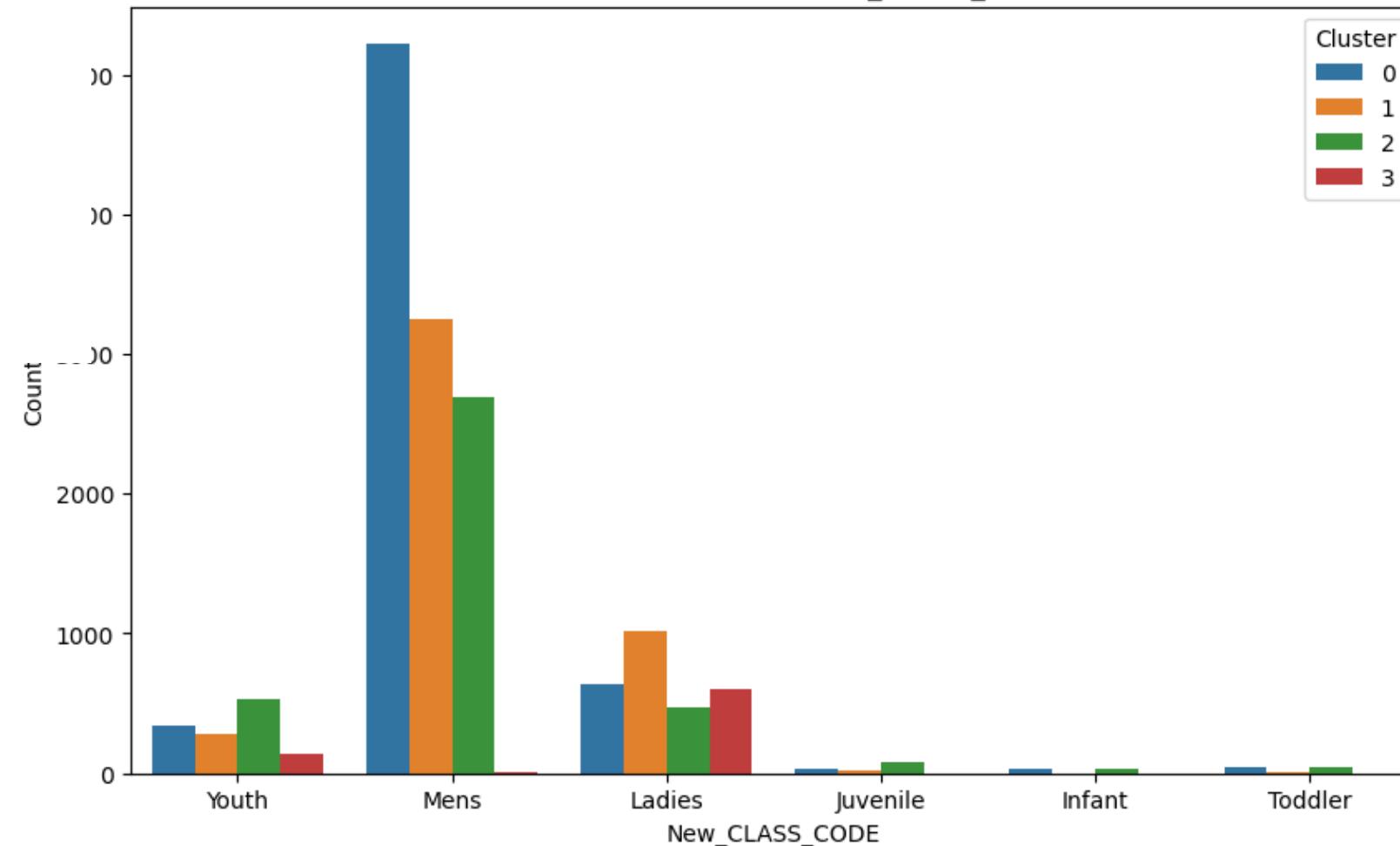
Cluster	Category	Class	PURCHASE_AMOUNT	CLUB	The number of items per order	
0	3	Sweatshirt	Youth	71.23	STL	1
1	1	Tee Shirt	Mens	41.23	NJD	1
2	0	Tee Shirt	Youth	87.14	TBL	4
3	0	Tee Shirt	Youth	87.14	TBL	4
4	0	Tee Shirt	Youth	87.14	TBL	4

## Finding Optimal Cluster Number



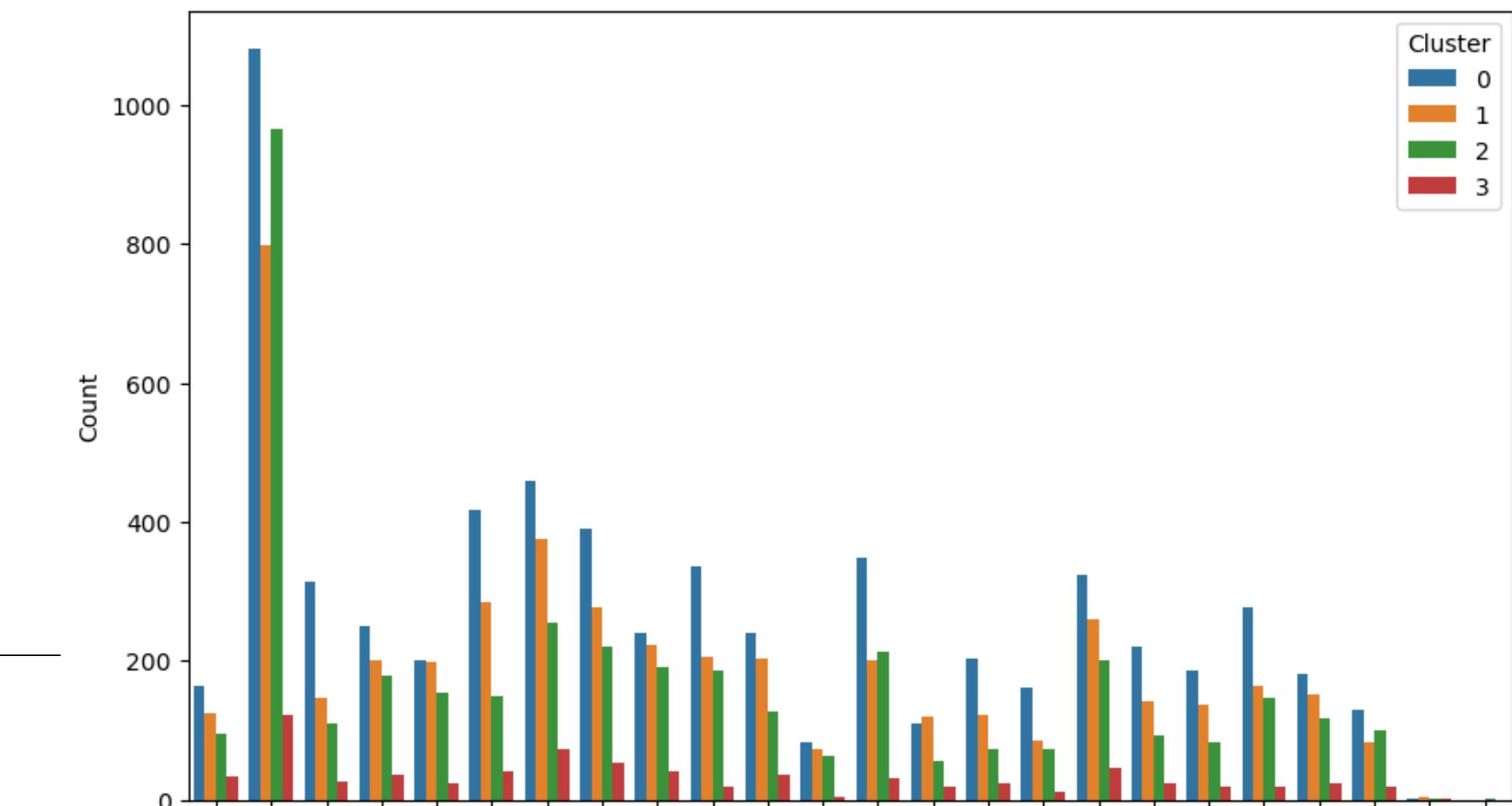
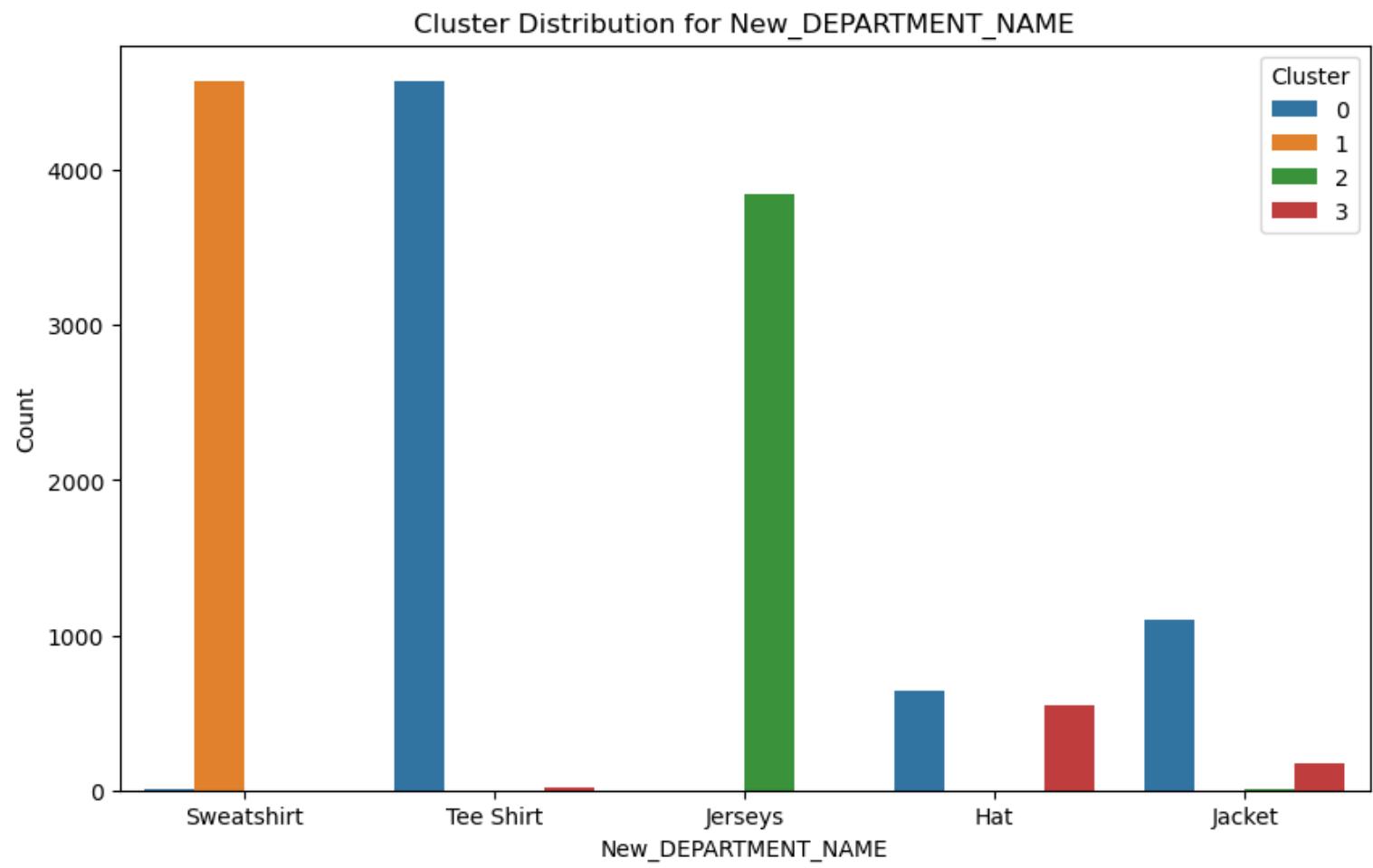


Cluster Distribution for New\_CLASS\_CODE



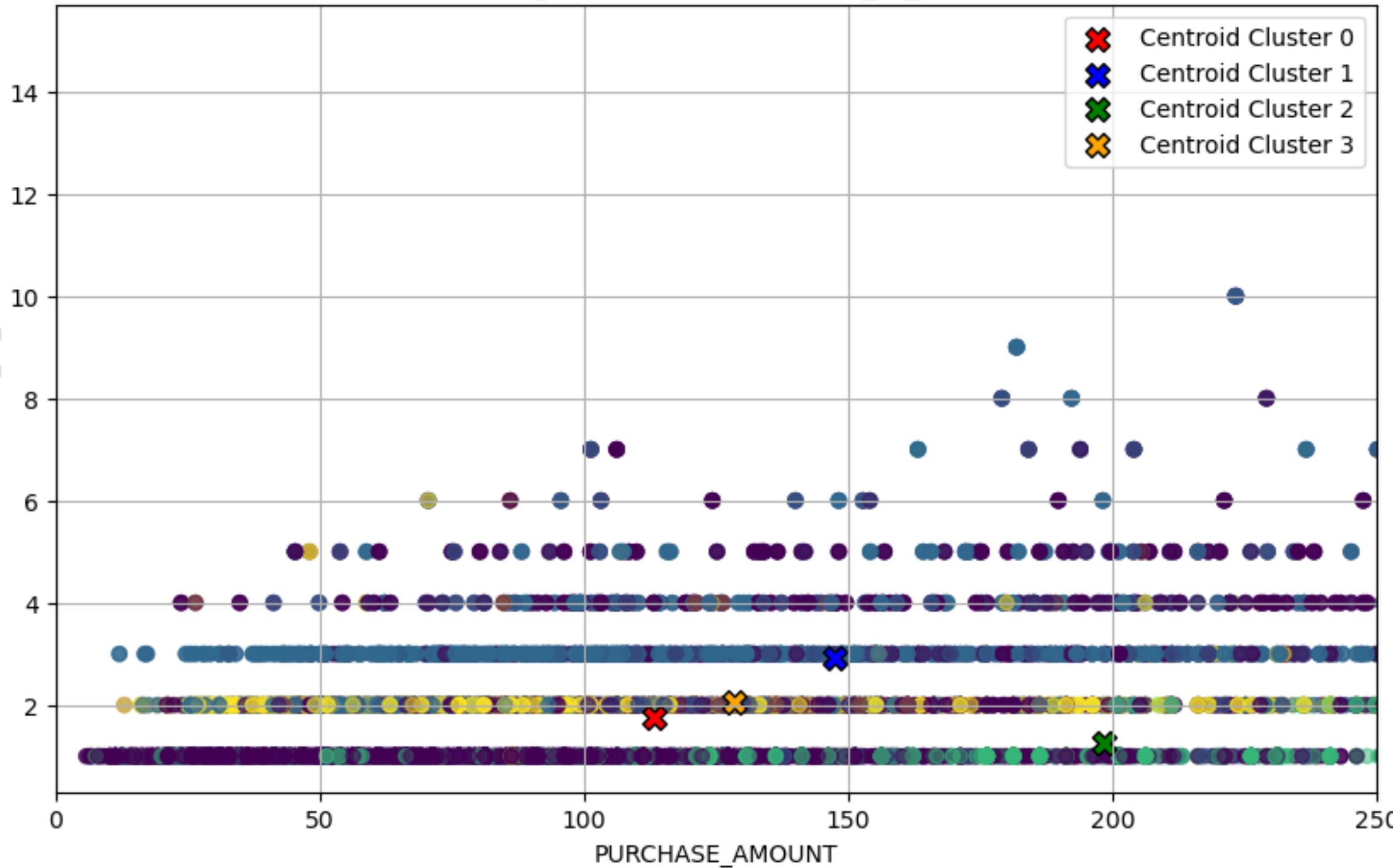
**Cluster 0 primarily consists of male fans who predominantly purchase t-shirts. Across all teams, Cluster 0 constitutes the largest segment of fans.**  
**Cluster 1 comprises mostly female fans who prefer purchasing sweatshirts.**  
**Fans in Cluster 2 are predominantly young individuals who favor buying jerseys.**  
**Cluster 3 consists primarily of young female fans who tend to purchase hats and jackets. Notably, Cluster 3 has the smallest population across all teams.**

Cluster Distribution for CLUB

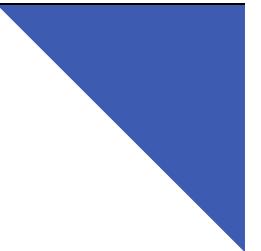




Scatter Plot of PURCHASE\_AMOUNT vs PRODUCT\_ID\_y with Cluster Centroids



- In Cluster 0, fans typically purchase an average of 3 items per order, reflecting a higher level of shopping activity compared to other clusters.
- Clusters 1 and 2 consist of individuals whose orders typically contain 2 items each, and they tend to spend relatively less compared to the other clusters.
- In contrast, fans in Cluster 3 typically place orders for a single item; however, their spending per order is notably higher compared to the other clusters.
- Furthermore, the distribution of fans across the clusters follows the order of Cluster 0 having the highest number of fans, followed by Cluster 1, Cluster 2, and finally Cluster 3.



**For better analysis, it would be helpful to collect these data points for future studies.**

- 1. Response rate to the emails sent to customer in the last 90 days before .**
- 2. The percentage of team winning on the games who the fan attends.**
- 3. Duration of phone calls.**
- 4. Seating .**
- 5. Gender,age etc.**



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## Conclusion Location

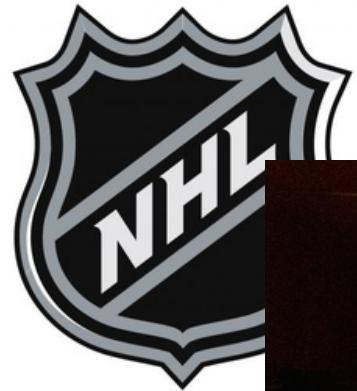


A close-up photograph showing the lower legs and skates of a hockey player in yellow and black gear. The player is standing on an ice rink, with a hockey stick and several pucks visible on the ice in front of them.

I suggest we pay more attention to where our fans live(or where they commute for the game) and how they get to the games. Instead of just looking at the zip codes, let's use the distance to arena to understand their neighborhoods and commuting habits, whether they drive, take public transport, or use ride-sharing like Uber or Lyft, maybe with friends.



Knowing this, we can think about putting up billboards in the right areas or teaming up with Uber and Lyft on game days. This way, we're being super smart about our marketing, focusing exactly where our fans are and how they like to travel.



Seasonal factor to keep customers engaged with the team(Months): Most importantly, what we do in the summer and the first three months of the year, especially leading up to March, from a marketing perspective. These times seem to be when customers are most responsive. Considering it's winter, going to games or supporting the team in the finals could be a great idea—it's always enjoyable to back your team during these exciting times.



# Communication

What matters more is making our messages personal. Like asking about their game day experience or sending a special birthday email with discounts for their friends. So, we'll focus on making our communication more personal to make a better impact on their decision to shopping. Adding Response rate to the emails sent to customer in the last 90 days before the next shopping.( Checking if the email is opened or not)



**Jan 26, 2024**