



... UnderFit ...

# Improvement Plan for Growth & Efficiency



Carlota Gordillo Álvarez

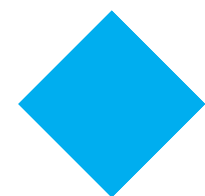
11 March, 2025

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# Objective

In a highly competitive market, operational efficiency and customer personalisation are differentiating factors for any retail company. UnderFit, as an underwear supplier, faces two key challenges: inventory management that balances availability and profitability, and a commercial strategy that drives loyalty and average ticket.



How can we make UnderFit more efficient and profitable?

1

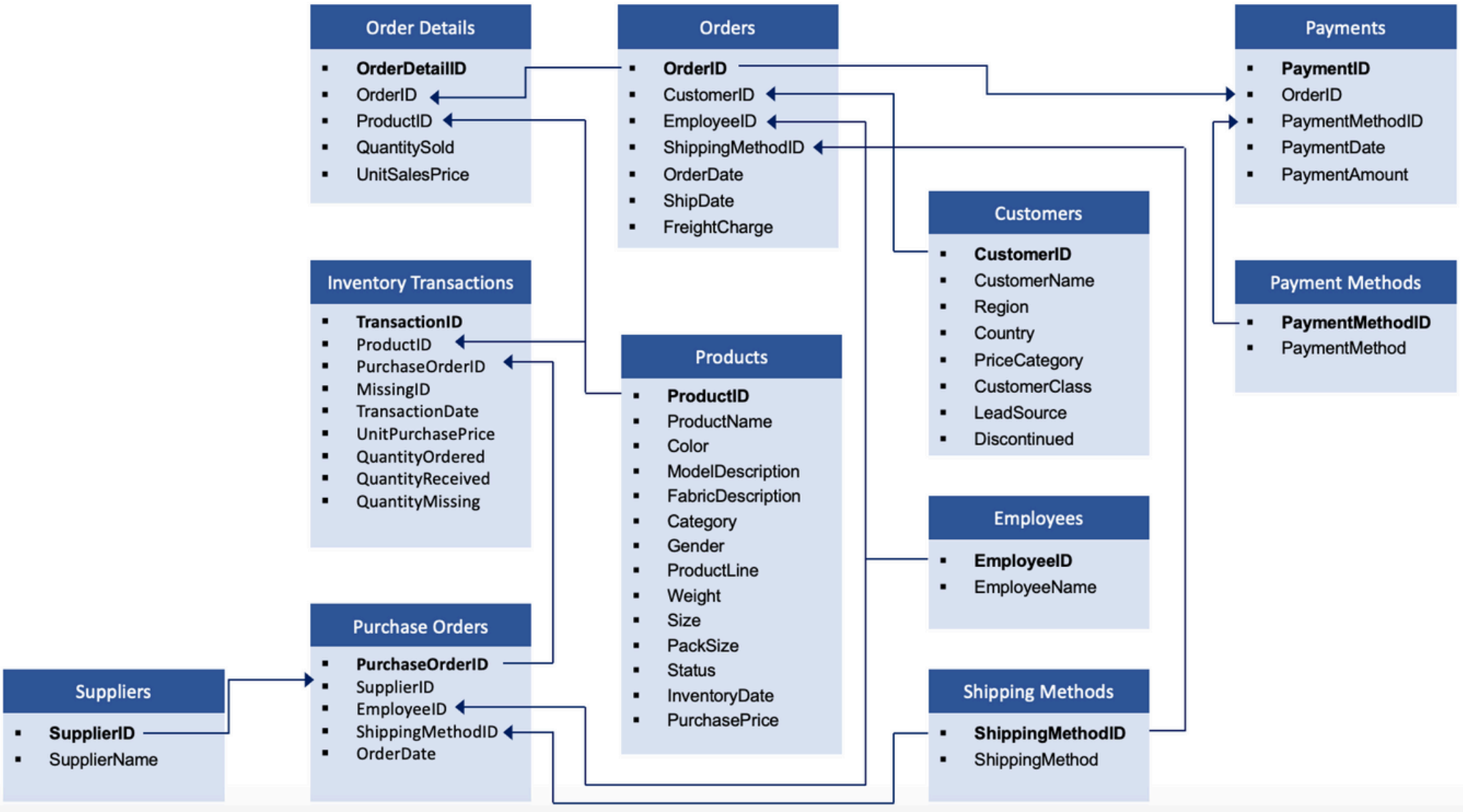
Inventory optimization

2

Data-driven sales growth through consumer behavior analysis



# Data



225  
Customers

4169  
Products

2286  
Orders

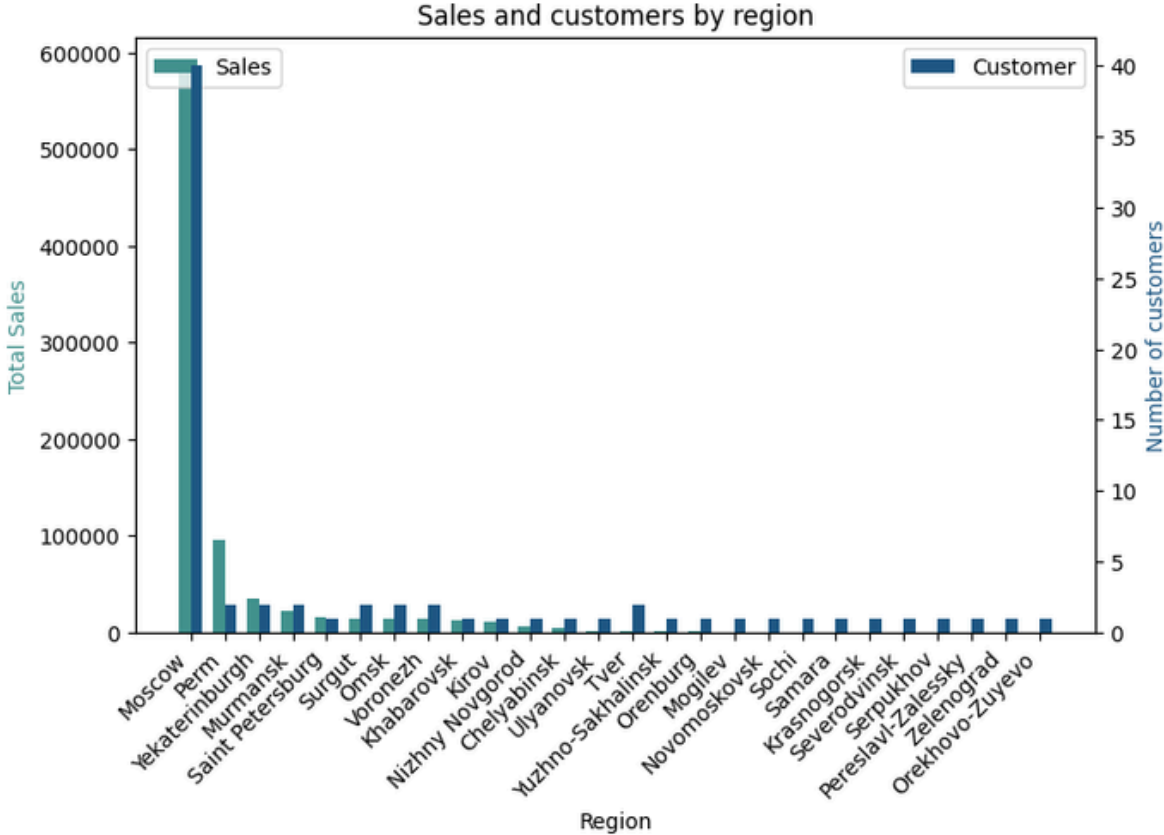
105757  
Sold Products

2003-  
2006  
Period analysed

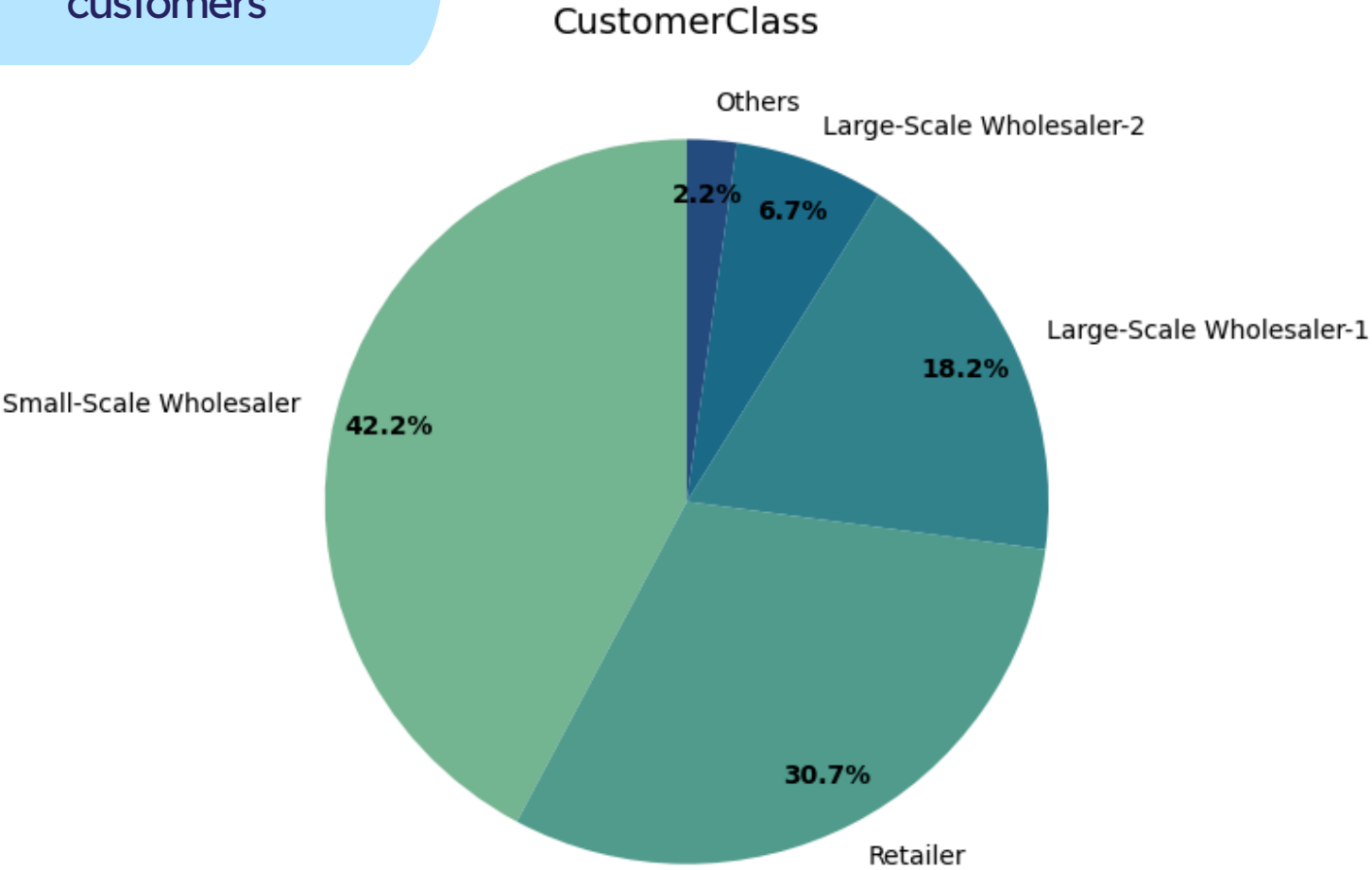
€3.950.215  
Total Sales

# Customers

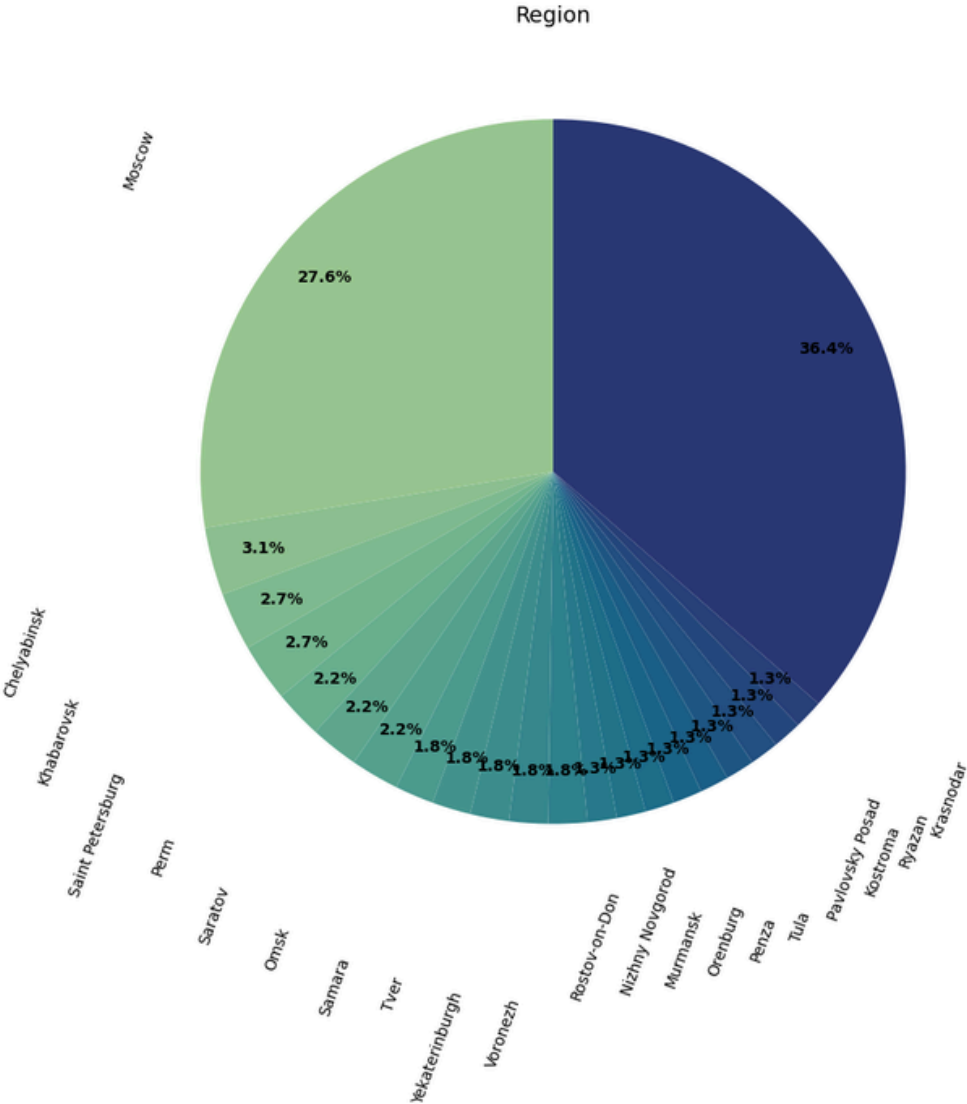
Moscow  
The region with more customers and sales



Small-Scale Wholesaler and Retailer  
are the majority of our customers



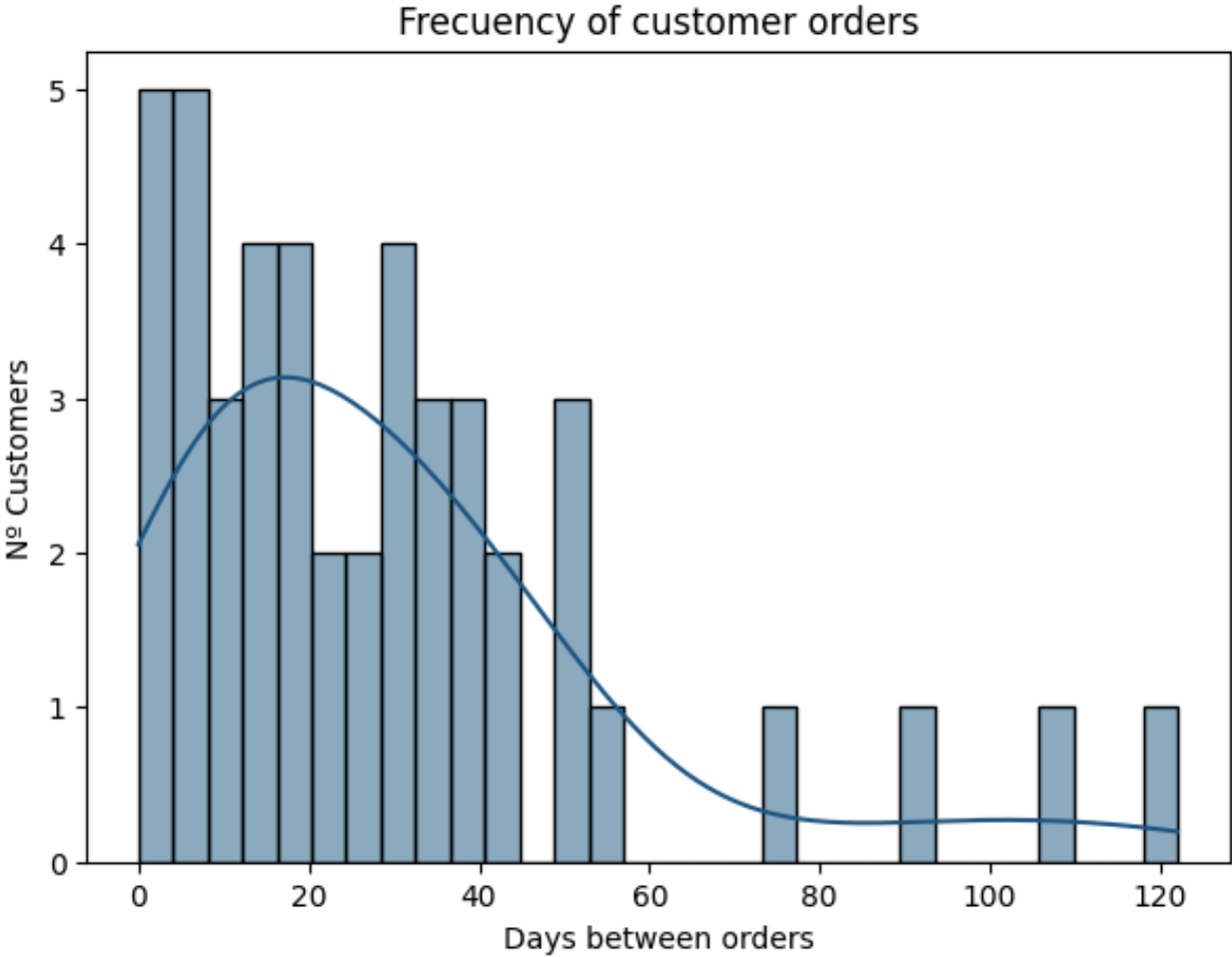
Referral by the Central Office  
is the most cost-effective lead source



|   | LeadSource                          | # TotalSales | # NumberOrders | # Ratio            |
|---|-------------------------------------|--------------|----------------|--------------------|
| 2 | Referral by the Central Office      | 44623911.19  | 16716          | 2669.5328541517106 |
| 0 | Advertisement in National Wholesale | 10806299.49  | 4315           | 2504.3567763615297 |
| 1 | Other                               | 235391.53    | 806            | 292.0490446650124  |
| 3 | Sales Calls or Visits               | 156806.15    | 239            | 656.0926778242678  |



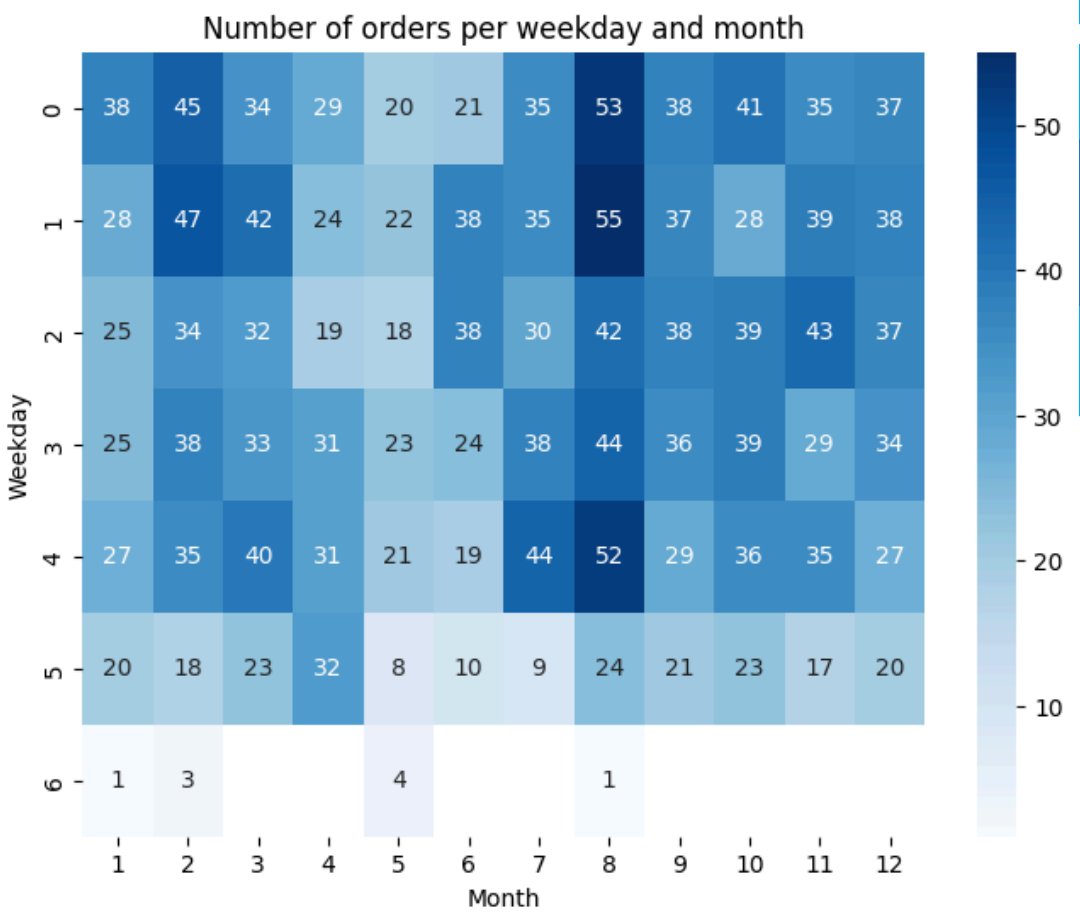
# Orders



30  
Average of days  
between orders

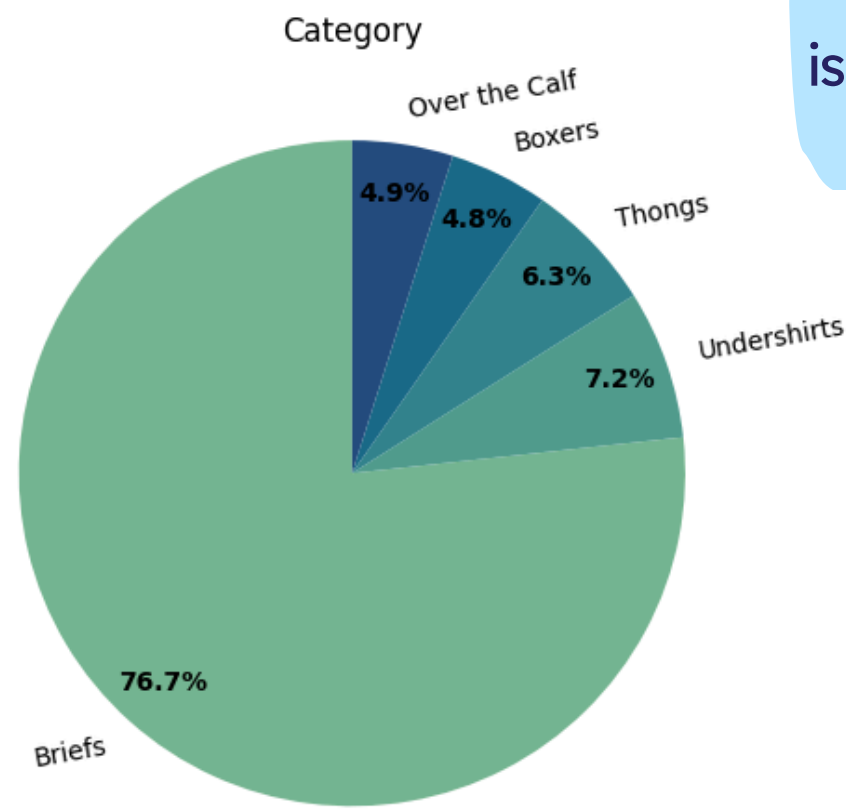


10  
Average of  
orders by  
customer



August  
The month with  
more sales

# Products

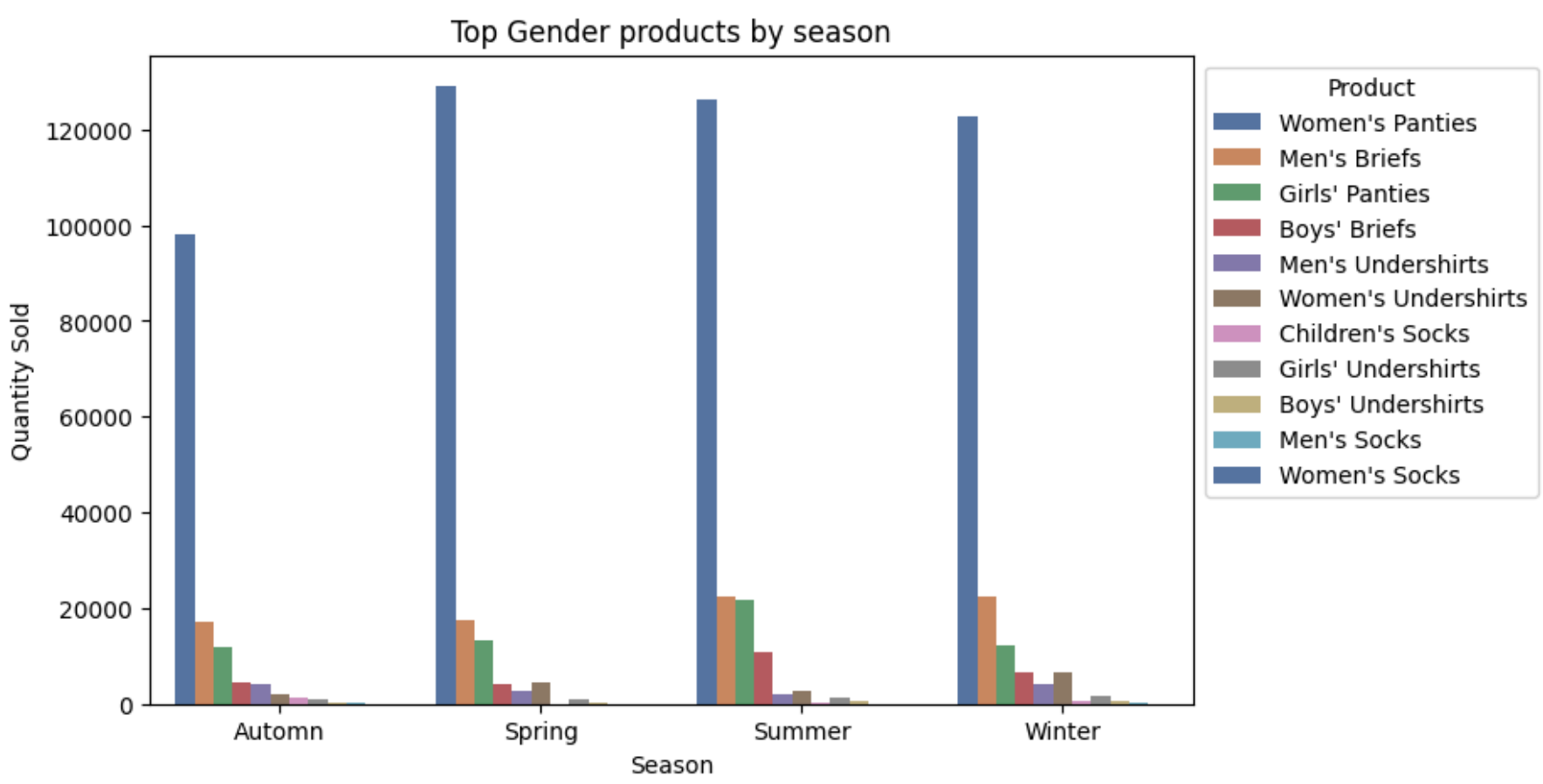
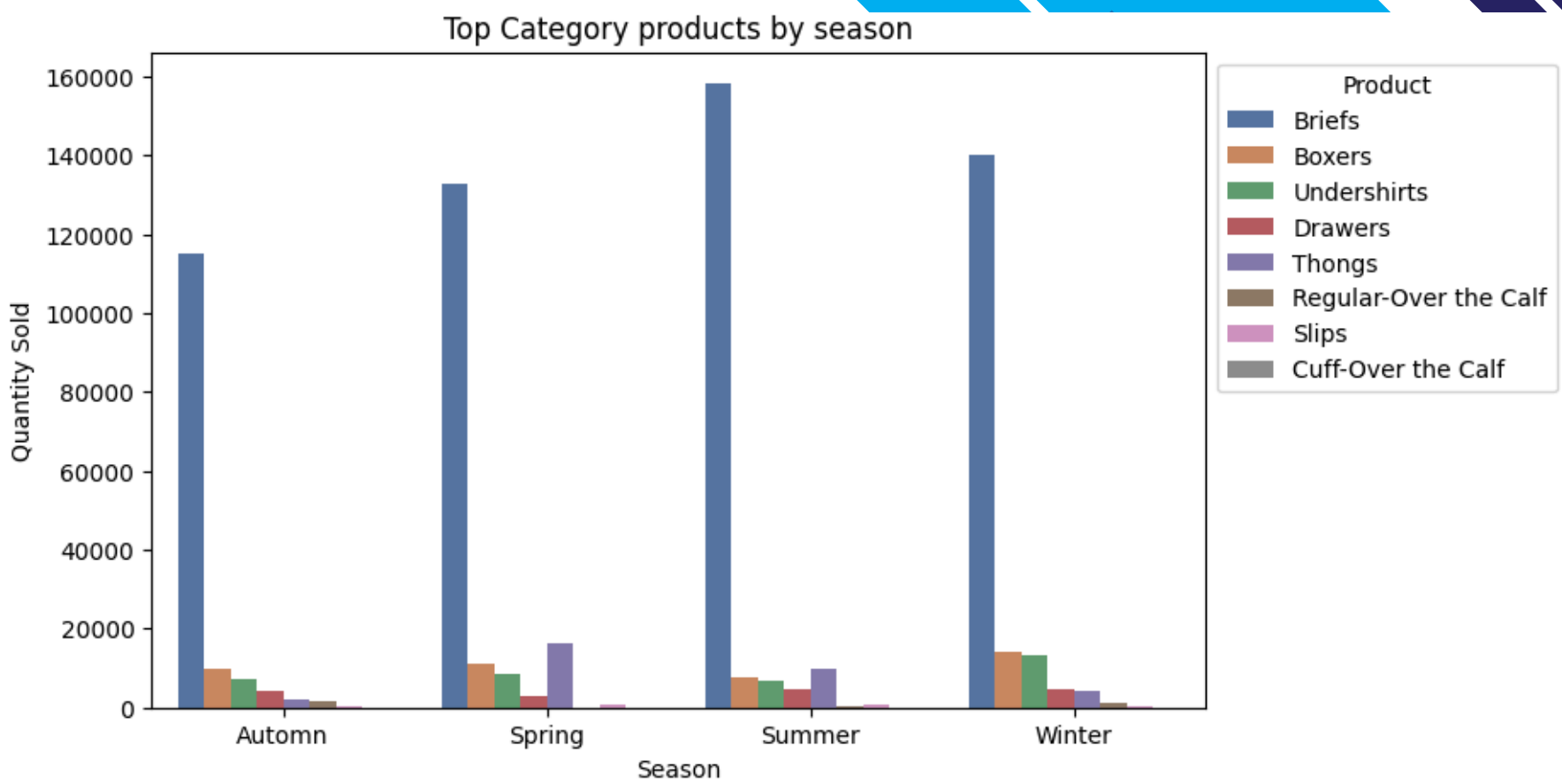


Briefs  
is the most popular  
category

Women  
is the best-selling  
gender

Over the Calf  
are the most profitable  
category but the least sold.

| Category              | # TotalSales | # RealProfit       | # TotalQuantity | # ProfitMargin%    |
|-----------------------|--------------|--------------------|-----------------|--------------------|
| Cuff-Over the Calf    | 407.8        | 177.69999999999996 | 39              | 43.57528200098086  |
| Regular-Over the Calf | 25922.2      | 11166.2            | 3180            | 43.07581918201387  |
| Slips                 | 2336.1       | 929.15             | 2300            | 39.77355421428877  |
| Thongs                | 171333.1     | 60479.05           | 32245           | 35.29910449294386  |
| Undershirts           | 258616.7     | 91100.79000000001  | 35853           | 35.22618222257109  |
| Boxers                | 67259.8      | 21177.5            | 43174           | 31.48611800808209  |
| Briefs                | 3264478.37   | 932497.13          | 548363          | 28.56496580187174  |
| Drawers               | 159861.2     | 40285.51           | 16211           | 25.200305014600165 |

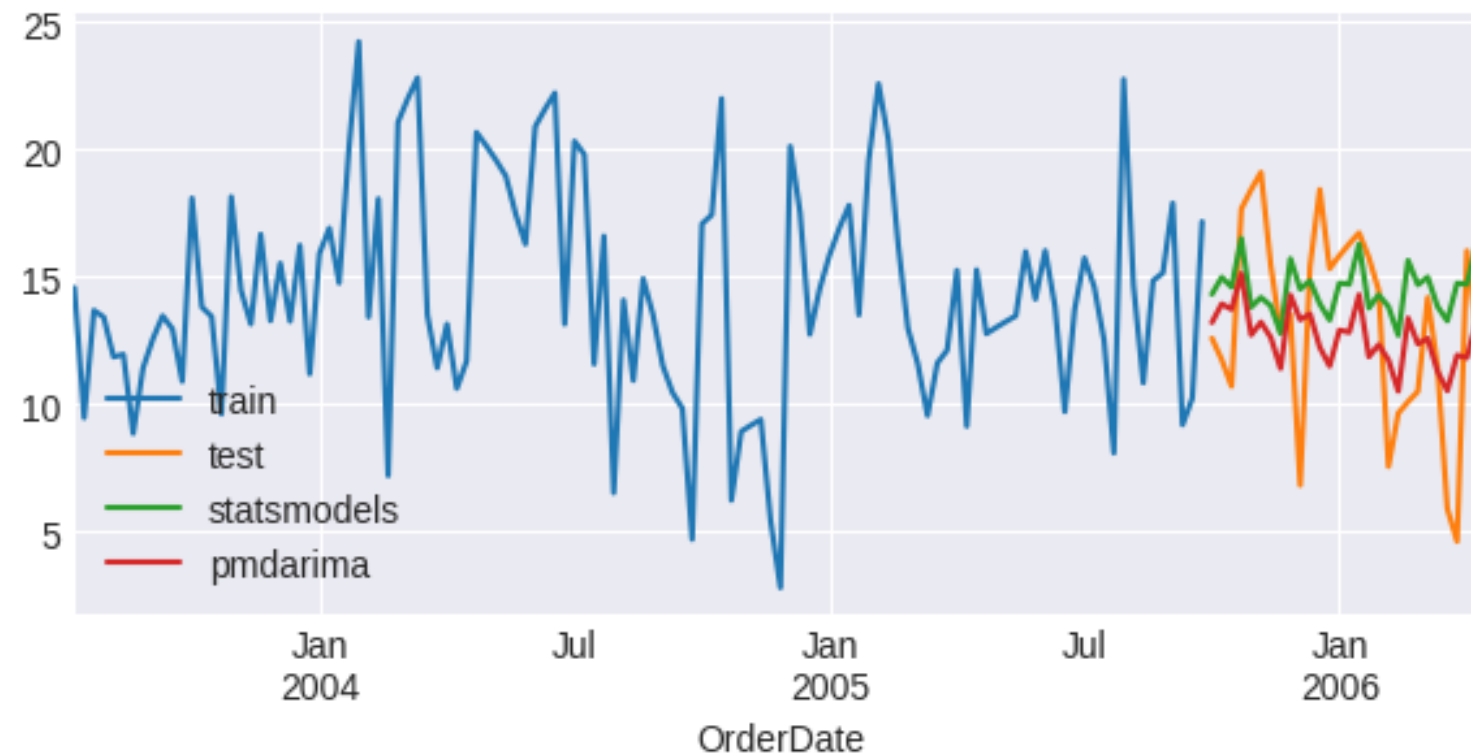




# Sales Forecast

AIC: 153.002  
BIC: 164.909

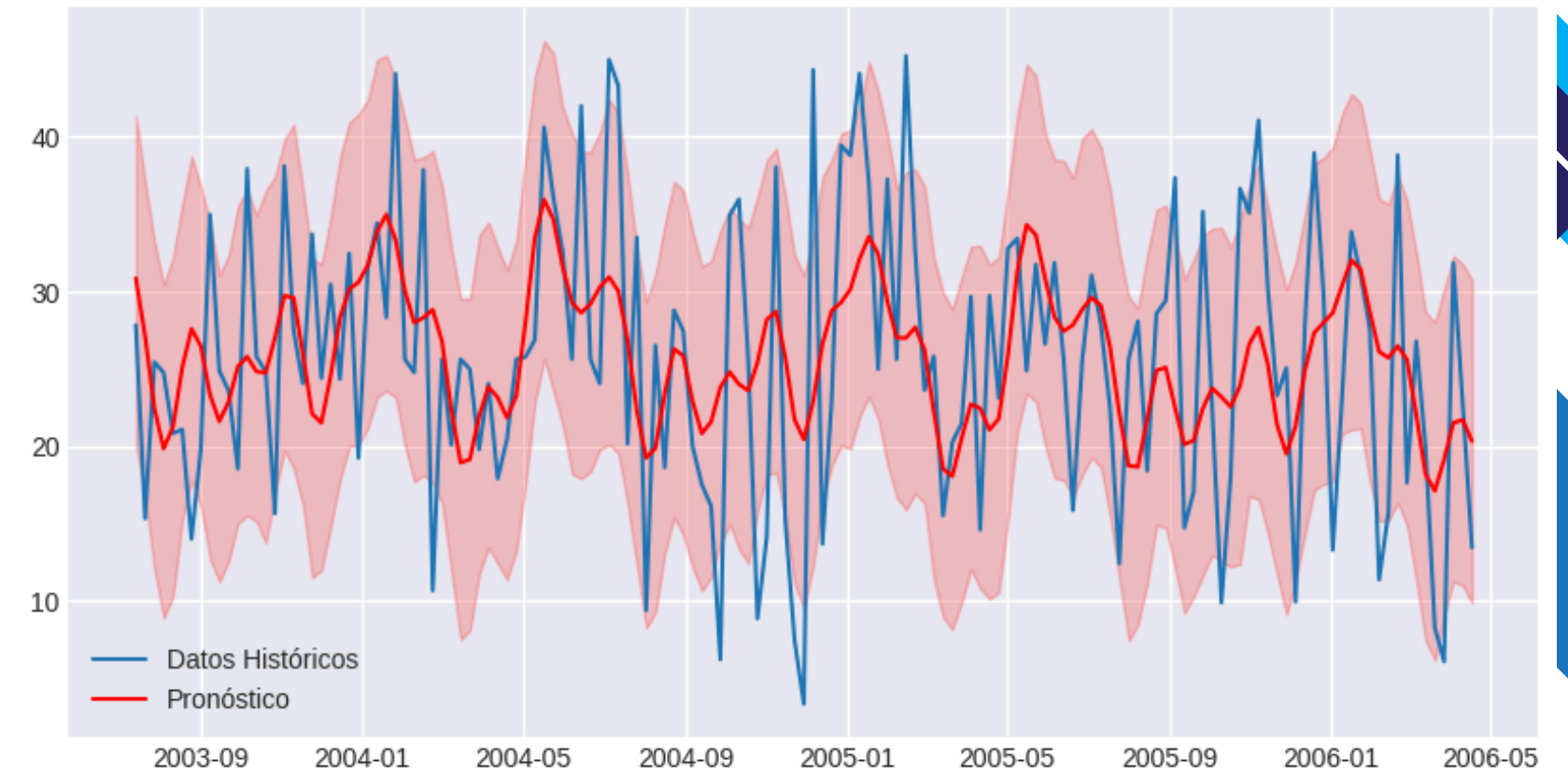
Predicciones con modelos ARIMA



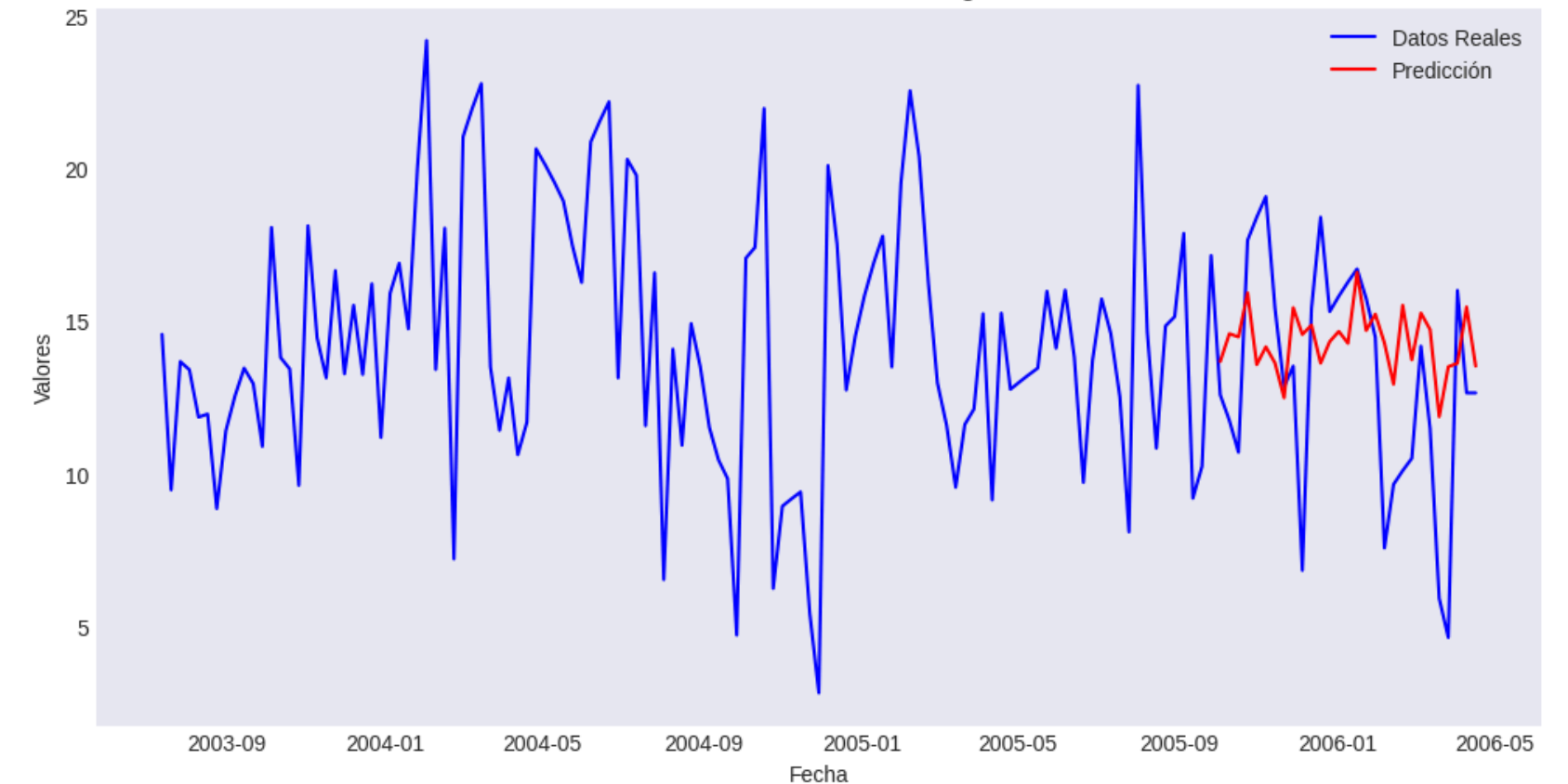
AIC: 631.015  
BIC: 627.366

AIC: 627.366  
BIC: 637.944

Pronóstico de Ventas Futuras



Predicción con Backtesting





# Sales Forecast

## Classification ABC

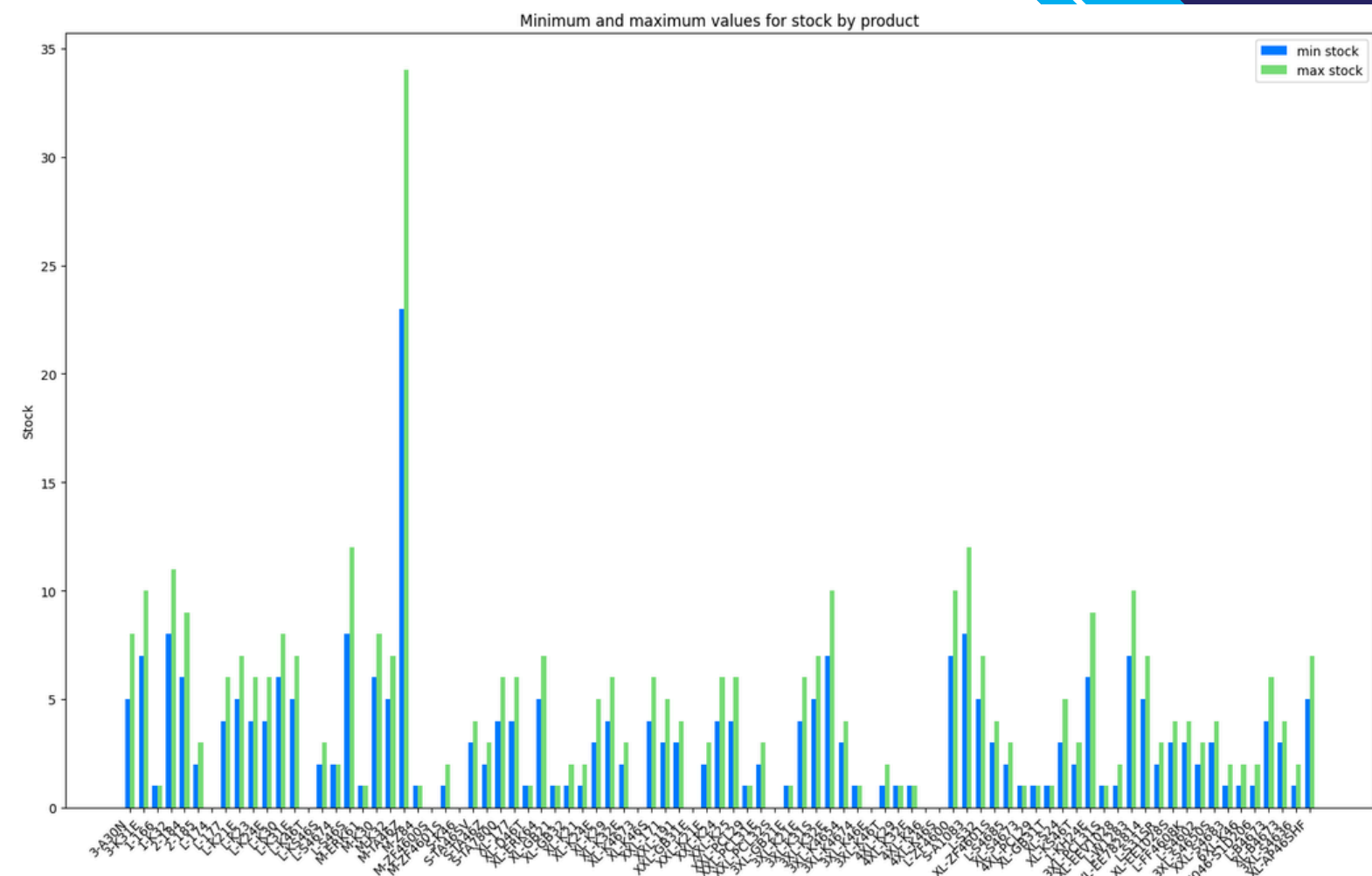
- Class A: Represent 60% of revenues.
- Class B: Represent 30% of revenues.
- Class C: Represent the remaining 10%.

## High and Low Demand

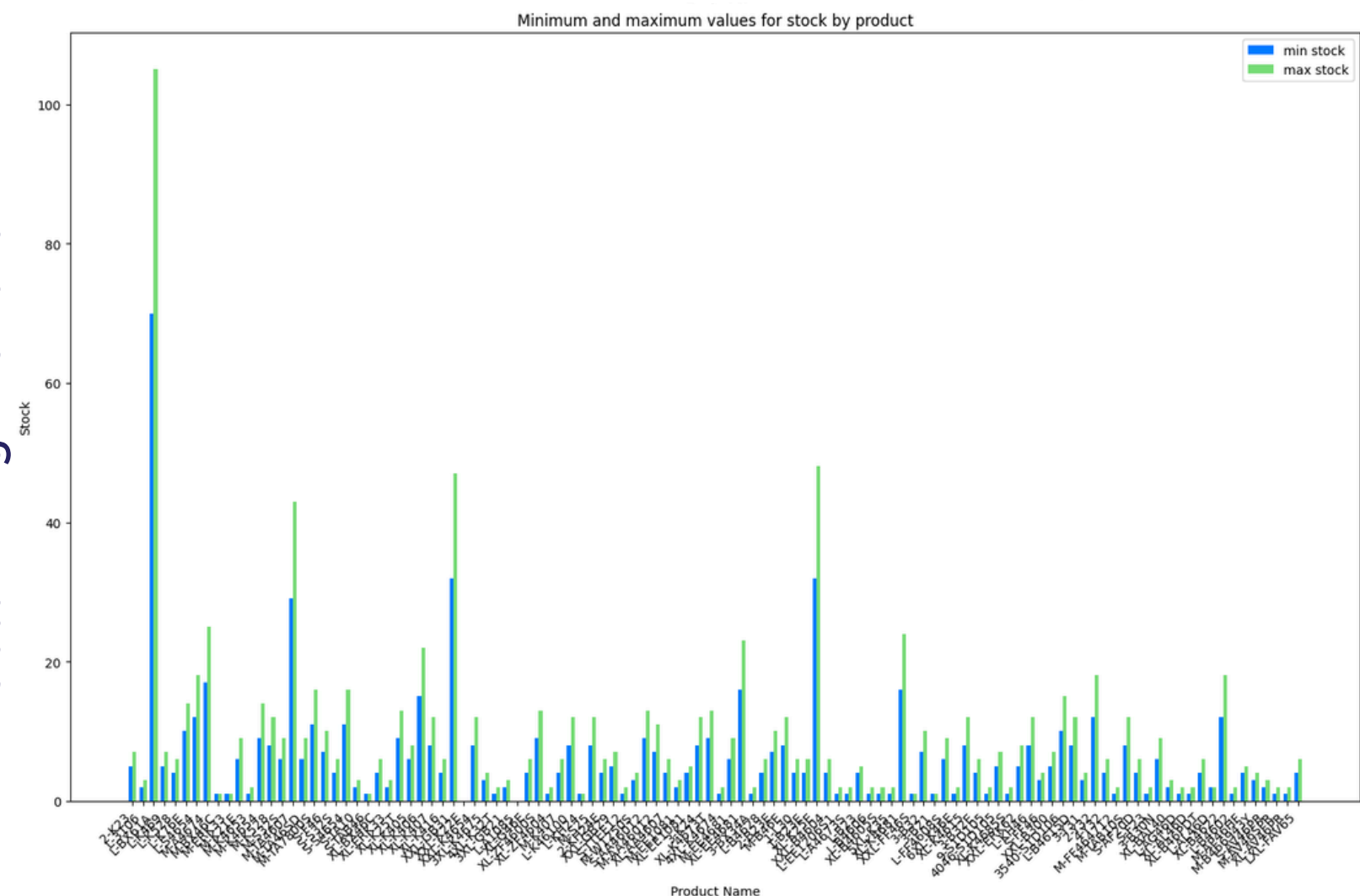
Products with less than 10 units (median) of monthly demand or with more than 30% of months without sales will be classified as low demand.

| Classification / Demand | A   | B   | C    |
|-------------------------|-----|-----|------|
| High Demand             | 438 | 928 | 827  |
| Low Demand              | 11  | 497 | 1340 |

Class A - High Demand



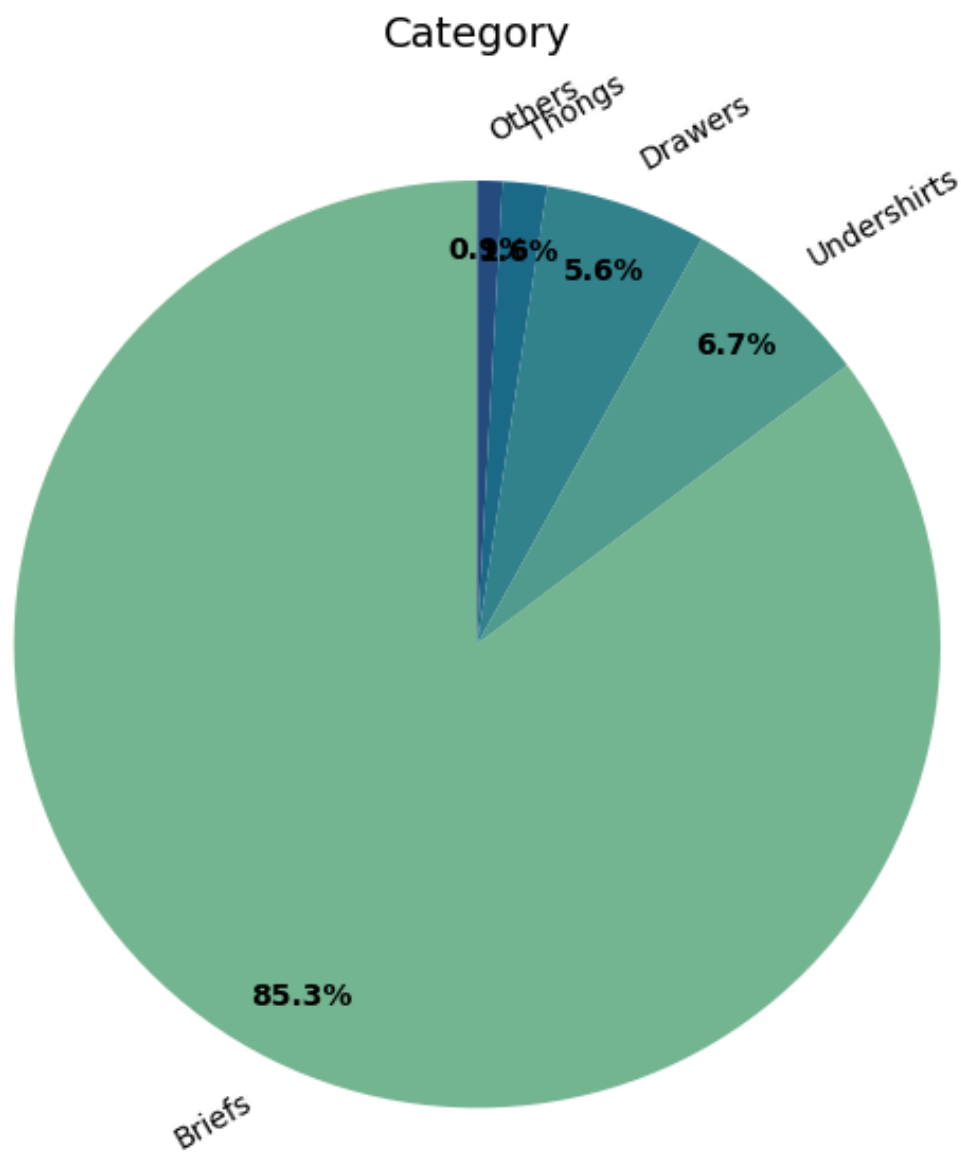
Class B - High Demand



# Sales Forecast



## Select 4 products from Class A - High Demand



- Security Stock: is the additional amount of inventory held to cover uncertainty in demand or delivery times.
- Reorder Point (ROP) is the level of inventory at which an order must be placed to avoid running out of stock.

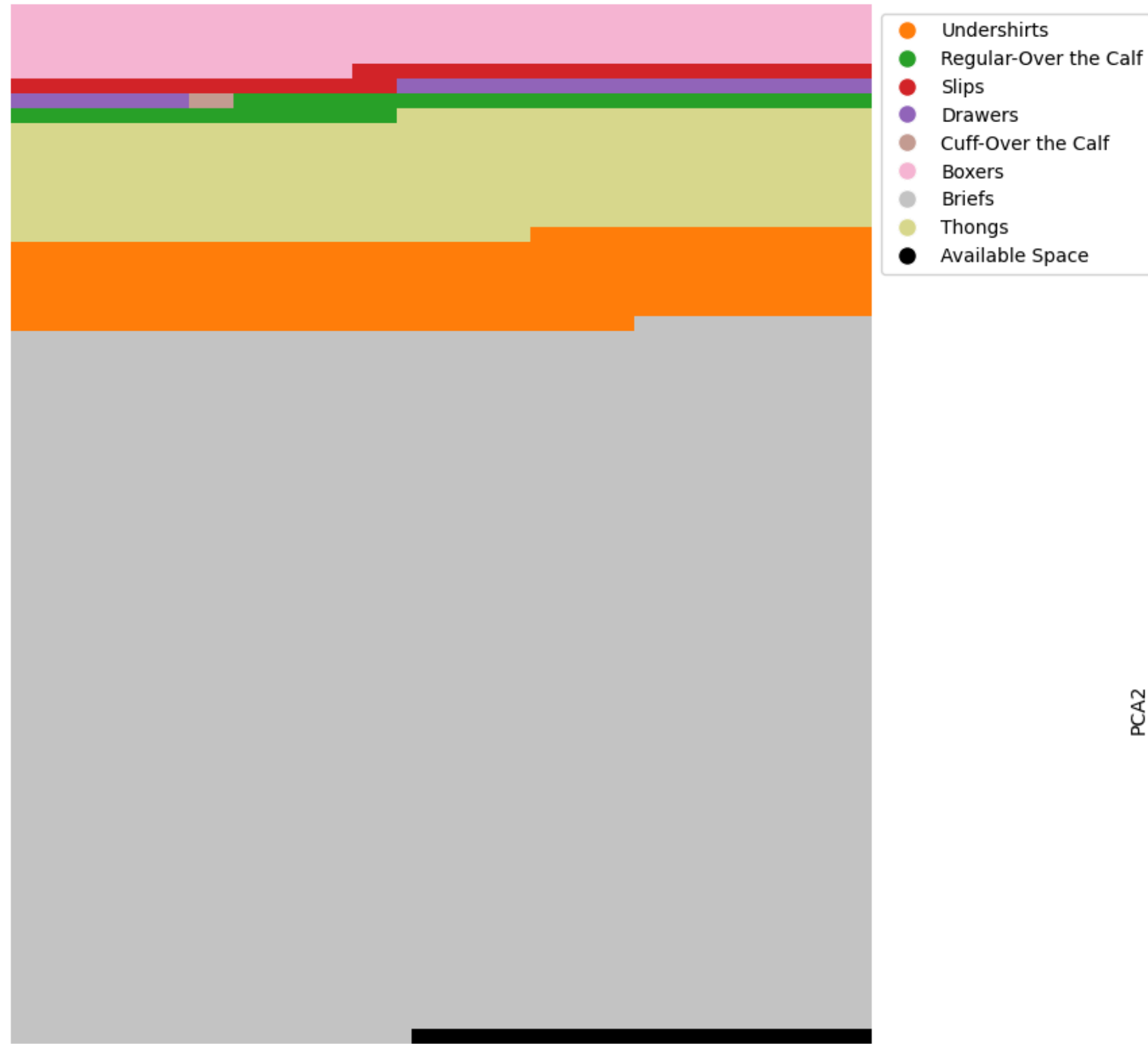
| ProductID | Product Name | Category | Lead time (avg) | Lead time (std) | ROP    | Security Stock | Percentage profit |
|-----------|--------------|----------|-----------------|-----------------|--------|----------------|-------------------|
| 427       | M-ERK61      | Briefs   | 1.65            | 7.41            | 327.02 | 298.72         | 21.62%            |
| 861       | XL-K4673     | Briefs   | 0.23            | 1.45            | 39.14  | 36.71          | 27.95%            |
| 865       | XL-K465      | Briefs   | 0.29            | 1.69            | 61.05  | 56.88          | 24.69%            |
| 830       | XL-K29       | Briefs   | 0.32            | 1.70            | 55.47  | 51.50          | 26.905%           |

# Distribution Warehouse

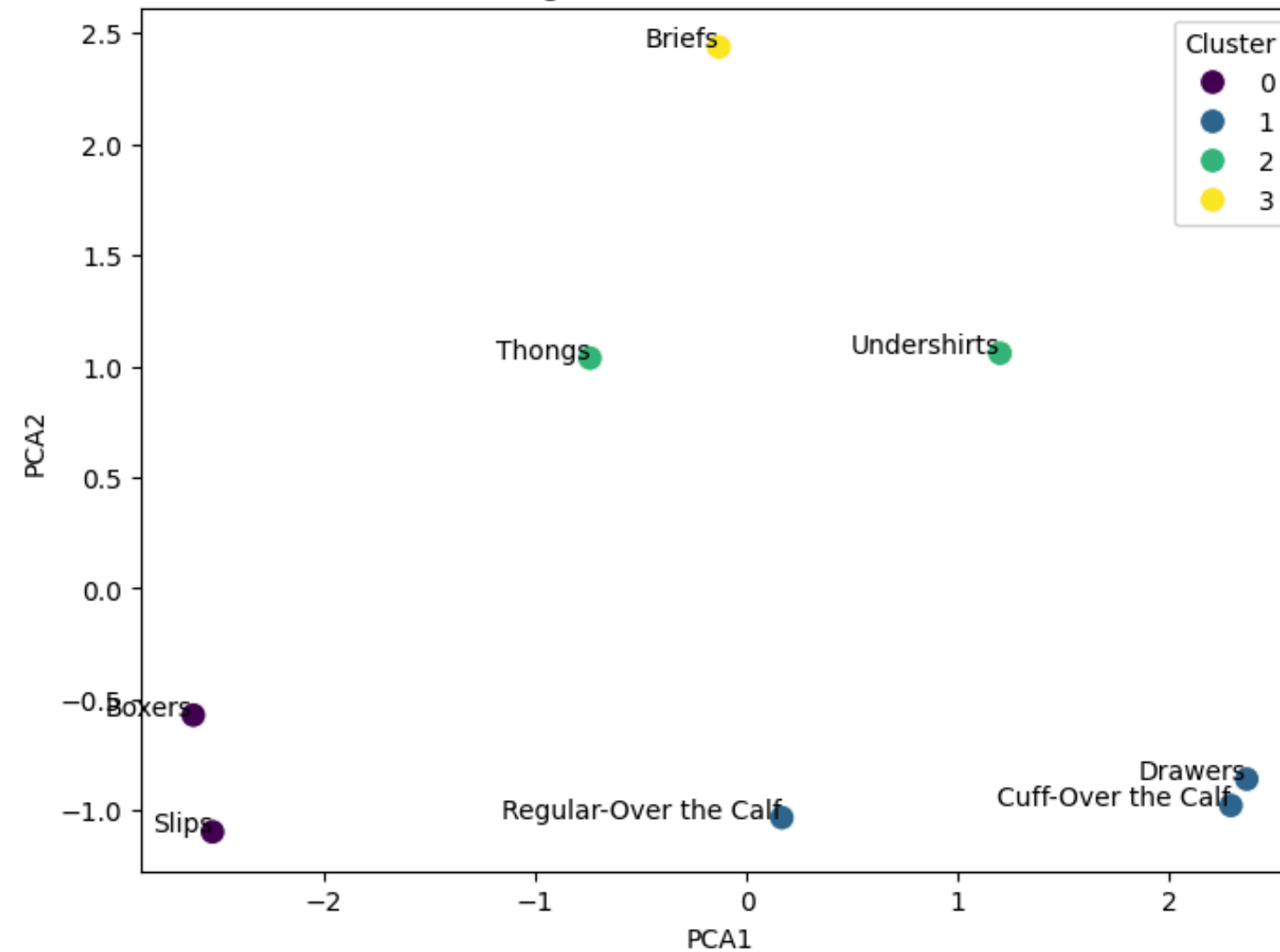
1 slot  
per product

**K=4**  
is the optimum value  
determined using the  
elbow method

Warehouse Distribution




Categories Cluster with K-Means



# Route optimisation in the warehouse

Based on Simplex algorithm to calculate the optimal picking route.

 **UNDERFIT**  
WEAR COMFORT. OWN THE DAY

Choose an option

☐ Home

☒ Pick-up products

☐ Product Location Finder

☐ Product Recommendations

☐ Product Replenishment Check

Deploy

|     |          |        |           |                 |     |   |       |    |
|-----|----------|--------|-----------|-----------------|-----|---|-------|----|
| 432 | L-TFF46  | Thongs | Underwear | Women's Panties | 205 | L | Dozen | 10 |
| 433 | M-TFF46  | Thongs | Underwear | Women's Panties | 190 | M | Dozen | 10 |
| 434 | S-TFF46  | Thongs | Underwear | Women's Panties | 160 | S | Dozen | 20 |
| 435 | L-TFF46S | Thongs | Underwear | Women's Panties | 205 | L | Dozen | 10 |
| 436 | M-TFF46S | Thongs | Underwear | Women's Panties | 215 | M | Dozen | 2  |
| 437 | S-TFF46S | Thongs | Underwear | Women's Panties | 175 | S | Dozen | 20 |
| 438 | L-TV46   | Thongs | Underwear | Women's Panties | 195 | L | Dozen | 10 |
| 439 | S-TV46   | Thongs | Underwear | Women's Panties | 155 | S | Dozen | 20 |
| 440 | L-TV46S  | Thongs | Underwear | Women's Panties | 215 | L | Dozen | 20 |
| 441 | M-TV46S  | Thongs | Underwear | Women's Panties | 195 | M | Dozen | 17 |

Select the products:

Choose an option

Selected products:

Calculate the optimal route

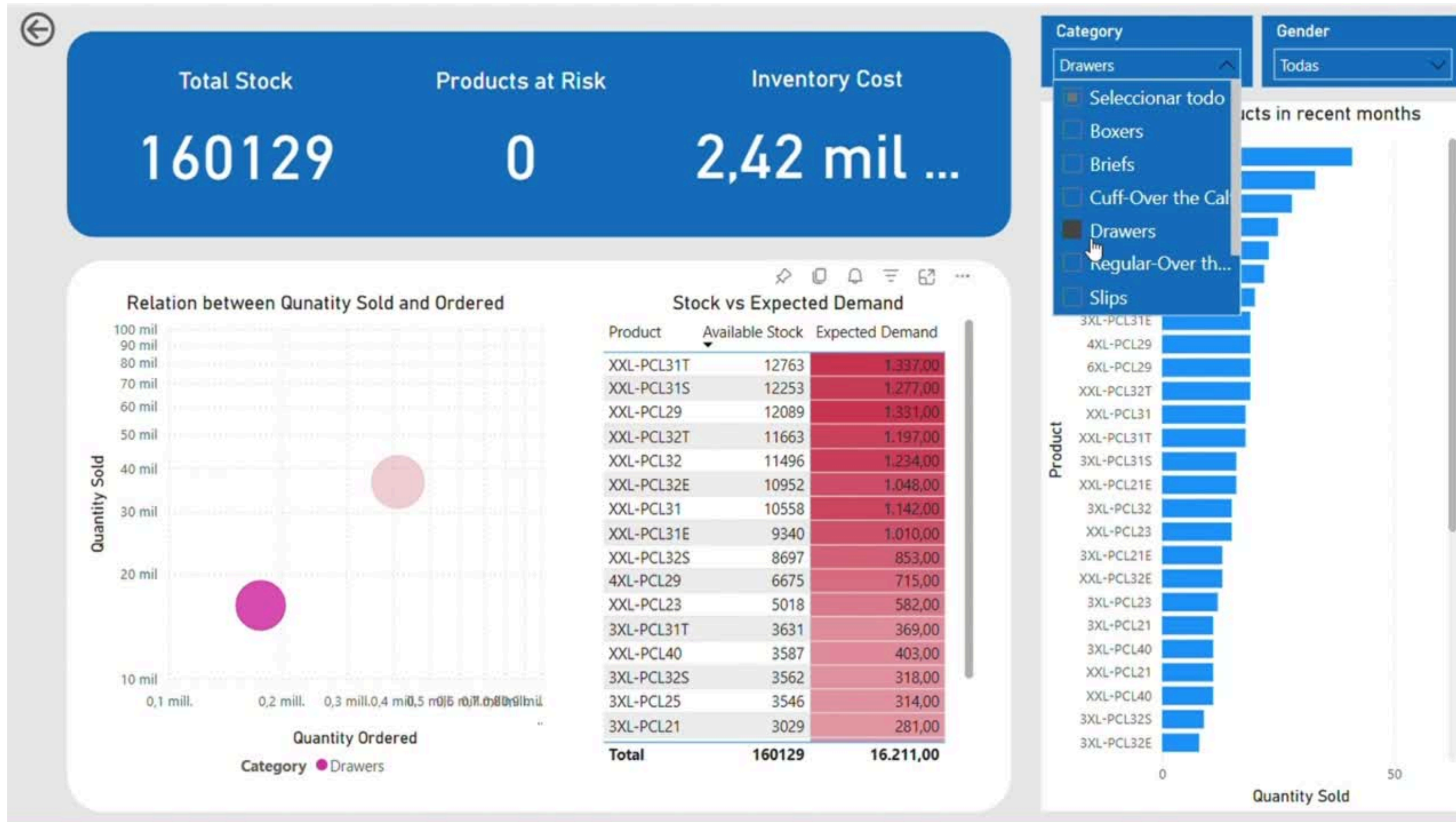
# System Recommendations

- Cosine similarity - recommends products based on similar customer purchases
- Purchase history - suggests products based on the user's previous purchases

The screenshot displays the 'Sales Portal' interface for 'UNDERFIT'. The header includes the company logo and tagline 'WEAR COMFORT. OWN THE DAY'. A sidebar on the left offers navigation options: Home, Pick-up products, Product Location Finder, Product Recommendations (selected), and Product Replenishment Check. The main content area is titled 'Product Recommendations for You' and features a 'Choose recommendation type' section with two radio buttons: 'Based on Products' (selected) and 'Based on Customer's basket'. Below this, a search bar labeled 'Select the products you are interested in:' contains the input '3-184'. A dropdown menu lists several product codes: 3-182, 3-183, 3-185, 3-A30N, 3-BX34, 3-BX64, 3-ERK33, and 3-ERK61. A mouse cursor is positioned over the '3-185' option. In the top right corner, there is a 'Deploy' button and a menu icon.



# PowerBI





# Conclusion



## Forecast Sales

Accurate demand forecasting using the Prophet model to optimise inventory and reduce losses due to overstocking or shortages.

## Warehouse distribution

Optimising warehouse organisation through product clustering and efficient routing reduces picking times and improves operational efficiency.

## Increased Sales and Loyalty

Personalised recommendation system based on purchase history and product similarity, increasing average purchase value and improving customer experience.

The image features decorative geometric patterns in the corners, consisting of overlapping diagonal stripes in shades of blue and dark blue. The central text is flanked by three blue dots on each side, and a single blue diamond is positioned below the text.

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Thank you

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