



... UnderFit ...

Improvement Plan for Growth & Efficiency



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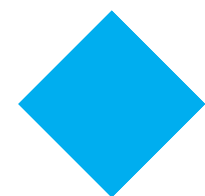
11 March, 2025

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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

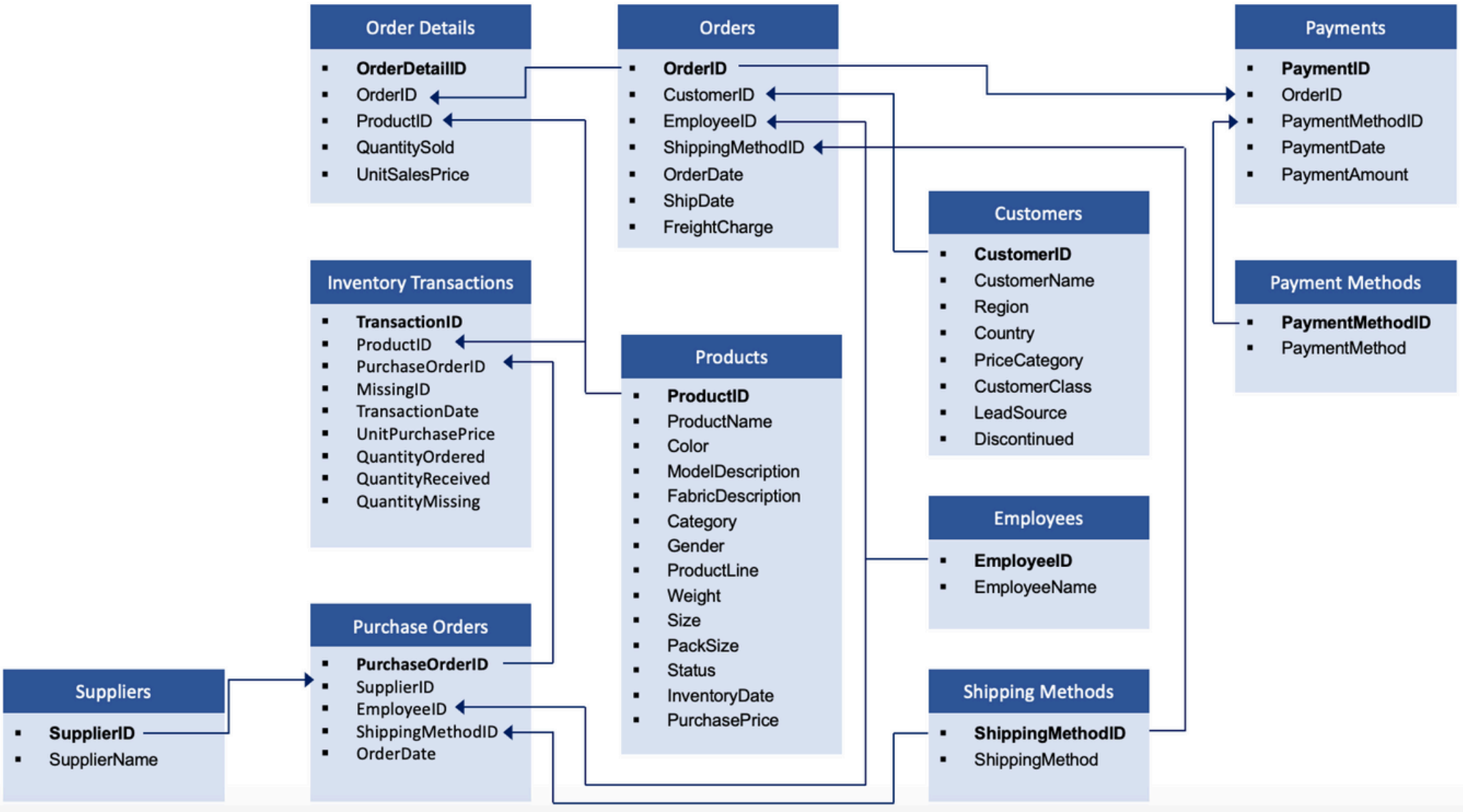
Inventory optimization

2

Data-driven sales growth through consumer behavior analysis



Data



225
Customers

4169
Products

2286
Orders

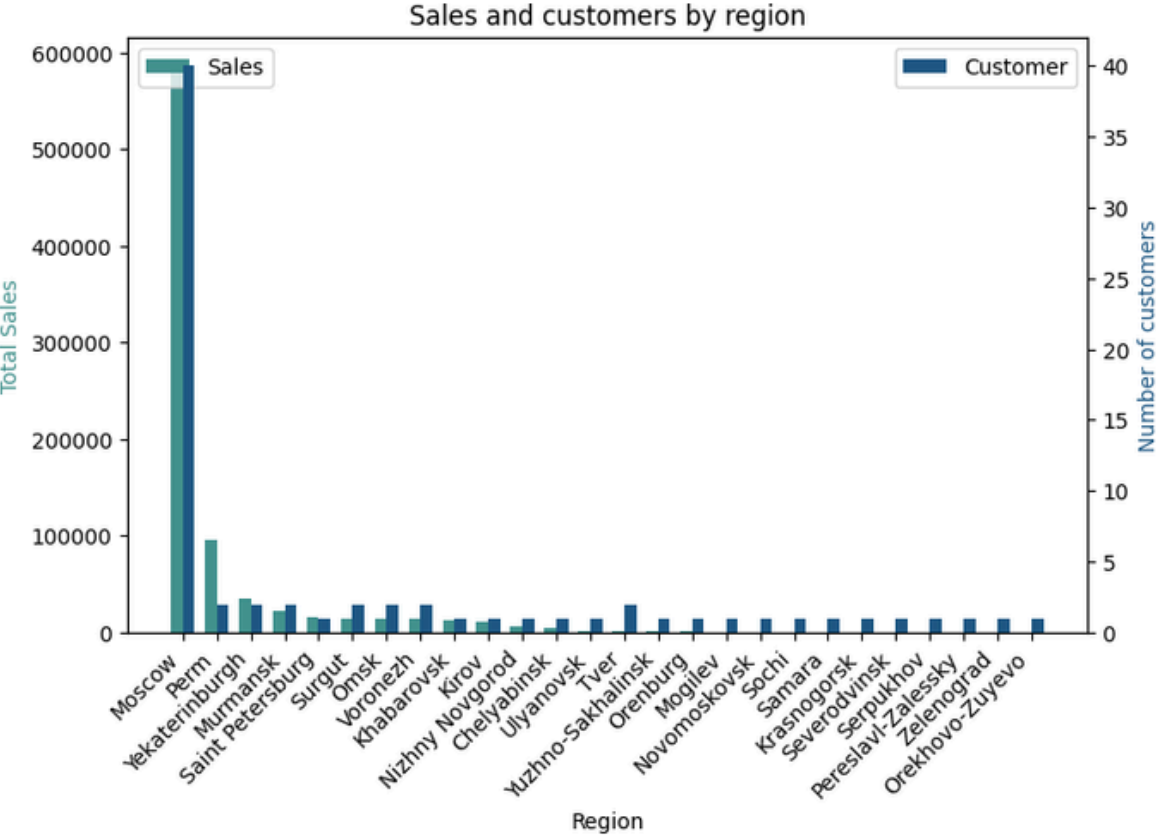
105757
Sold Products

2003-
2006
Period analysed

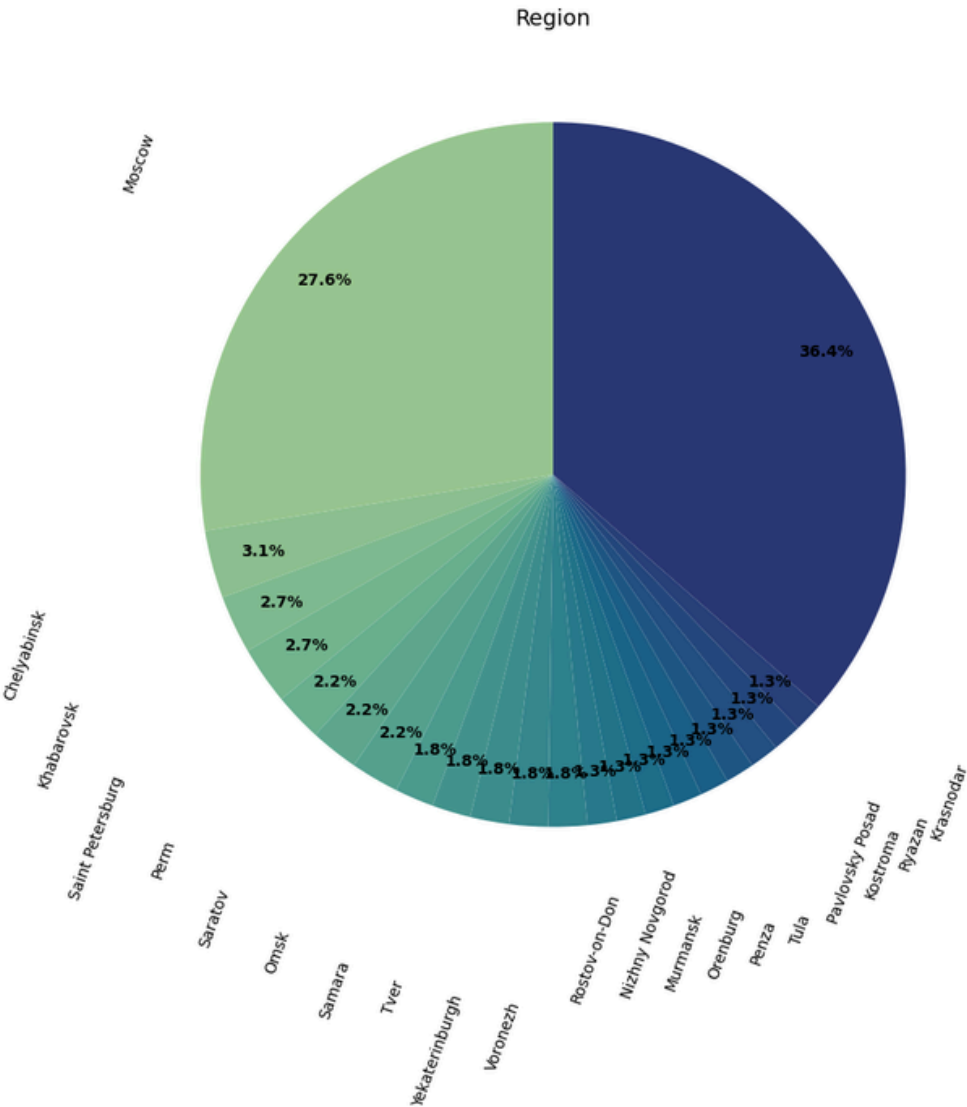
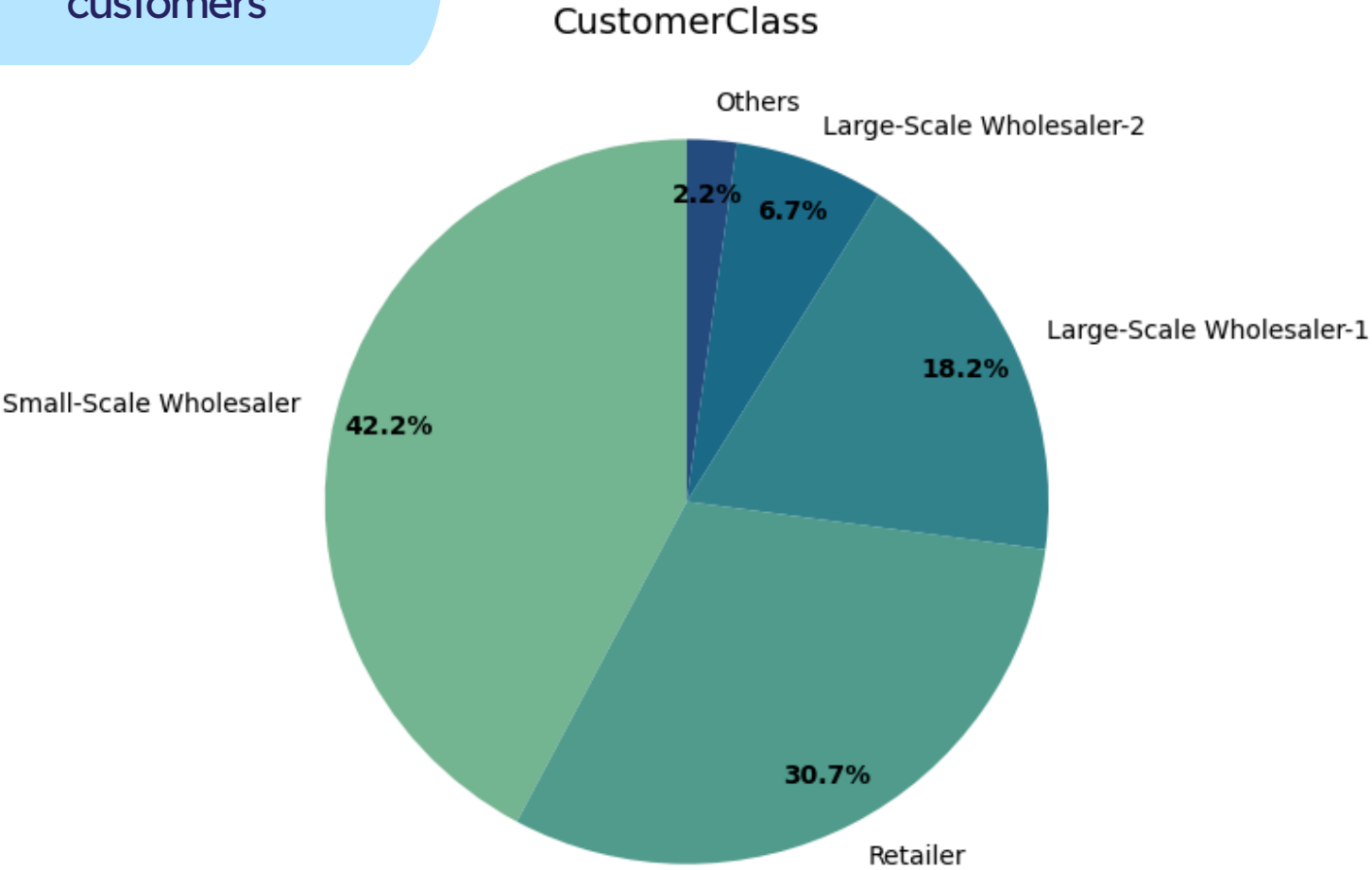
€3.950.215
Total Sales

Customers

Moscow
The region with more customers and sales



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

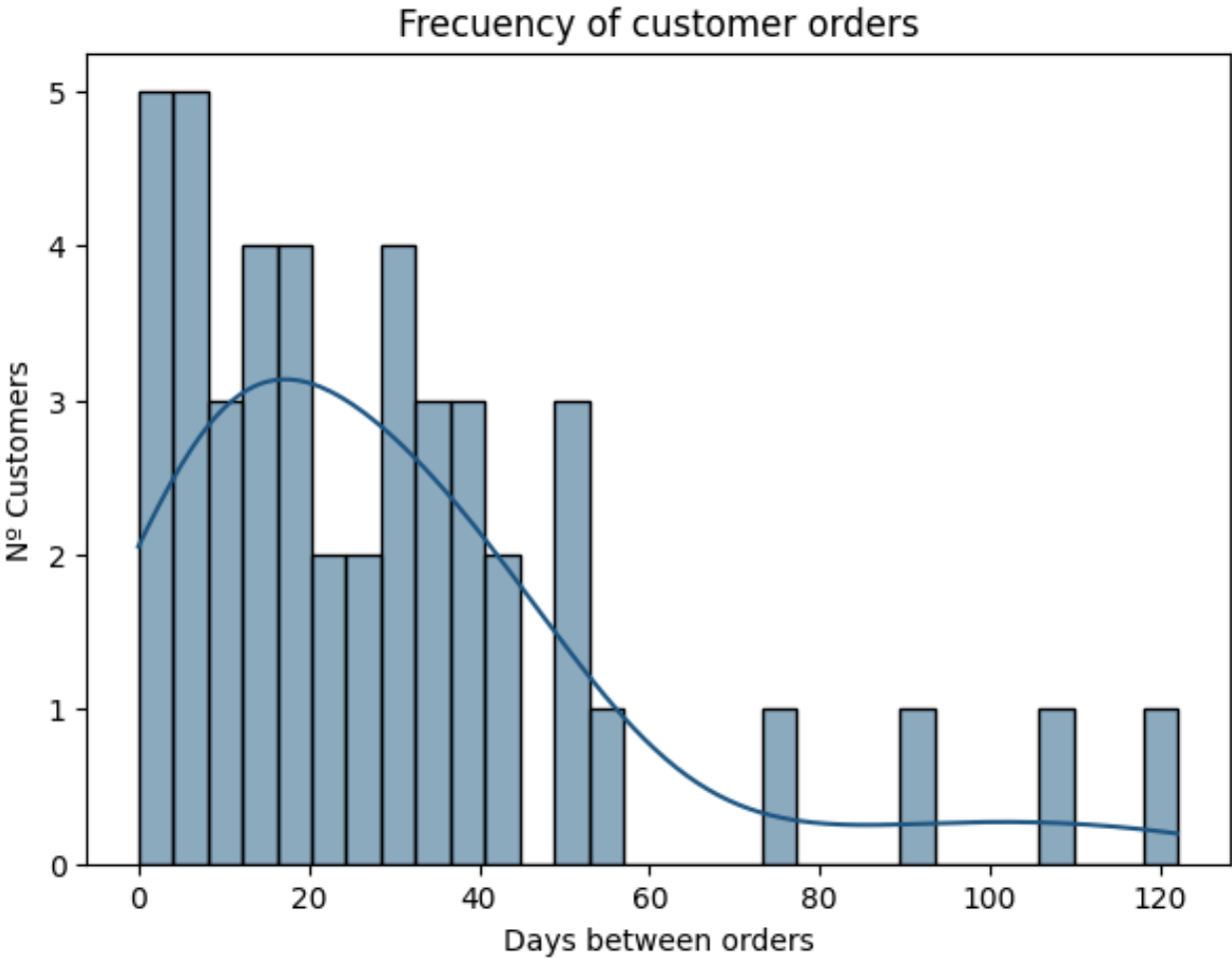


Referral by the Central Office
is the most cost-effective lead source

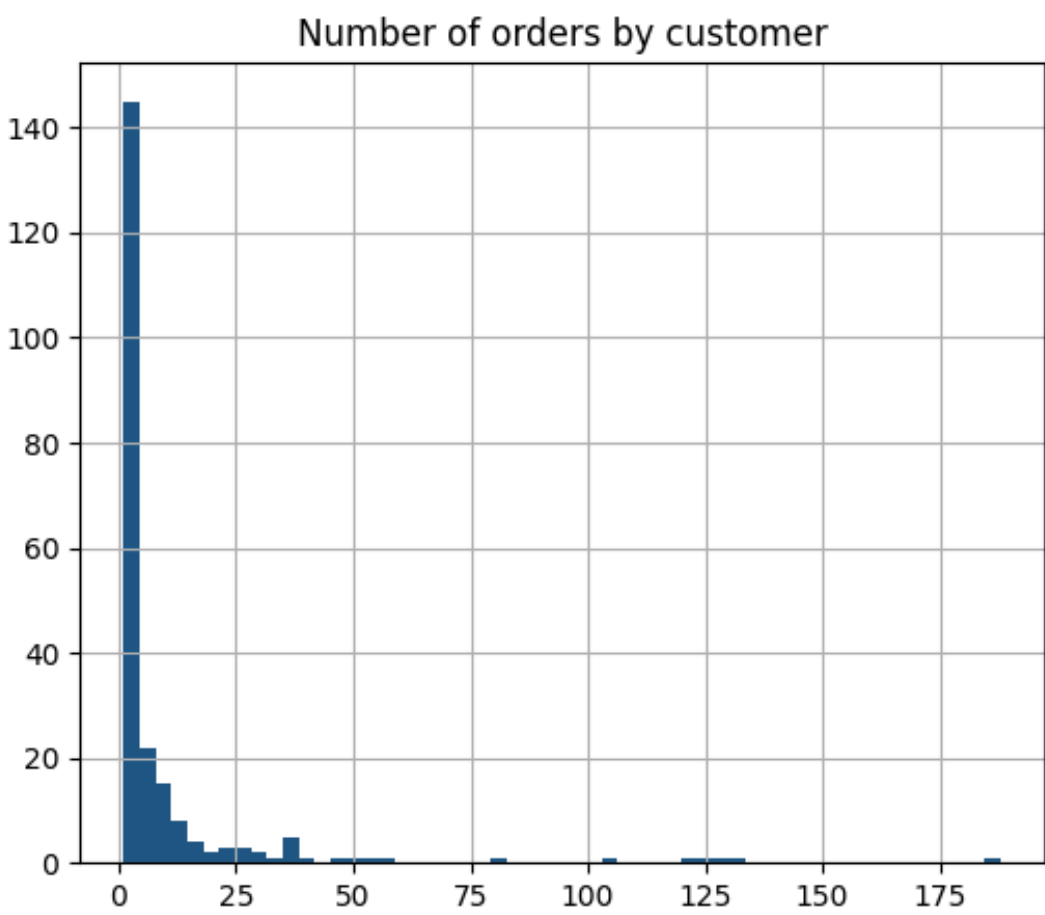
	LeadSource	# TotalSales	# NumberOrders	# Ratio
2	Referral by the Central Office	44623911.19	16716	2669.5328541517106
0	Advertisement in National Wholesale	10806299.49	4315	2504.3567763615297
1	Other	235391.53	806	292.0490446650124
3	Sales Calls or Visits	156806.15	239	656.0926778242678



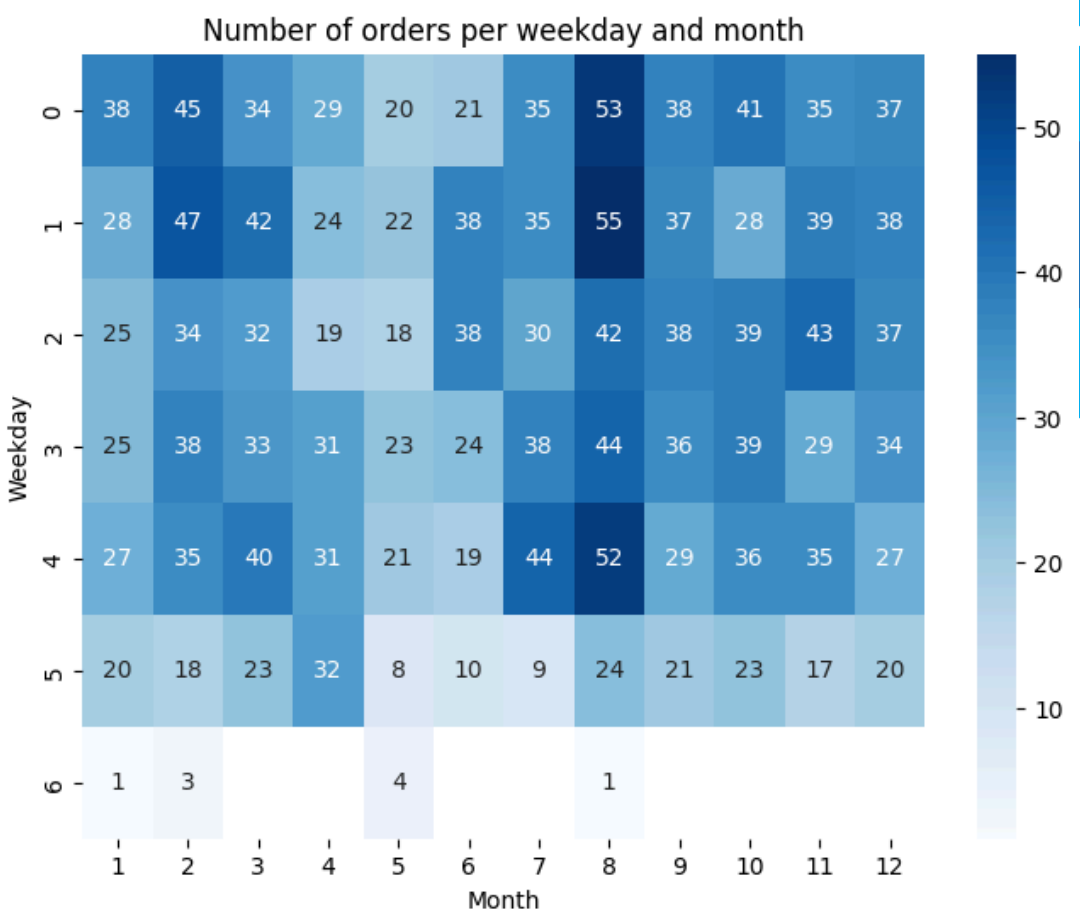
Orders



30
Average of days
between orders

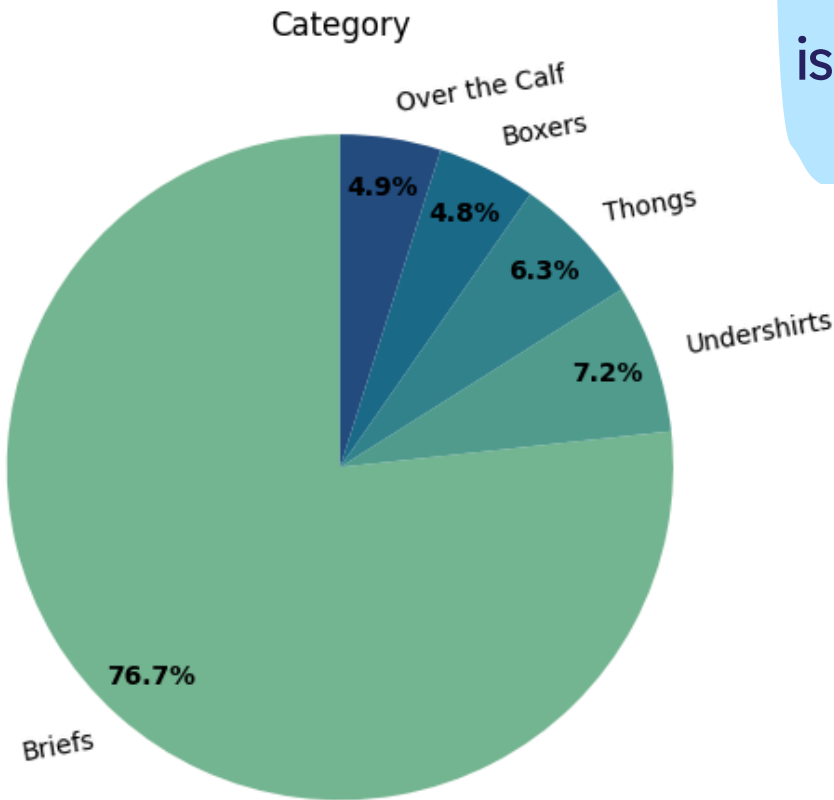


10
Average of
orders by
customer



August
The month with
more sales

Products



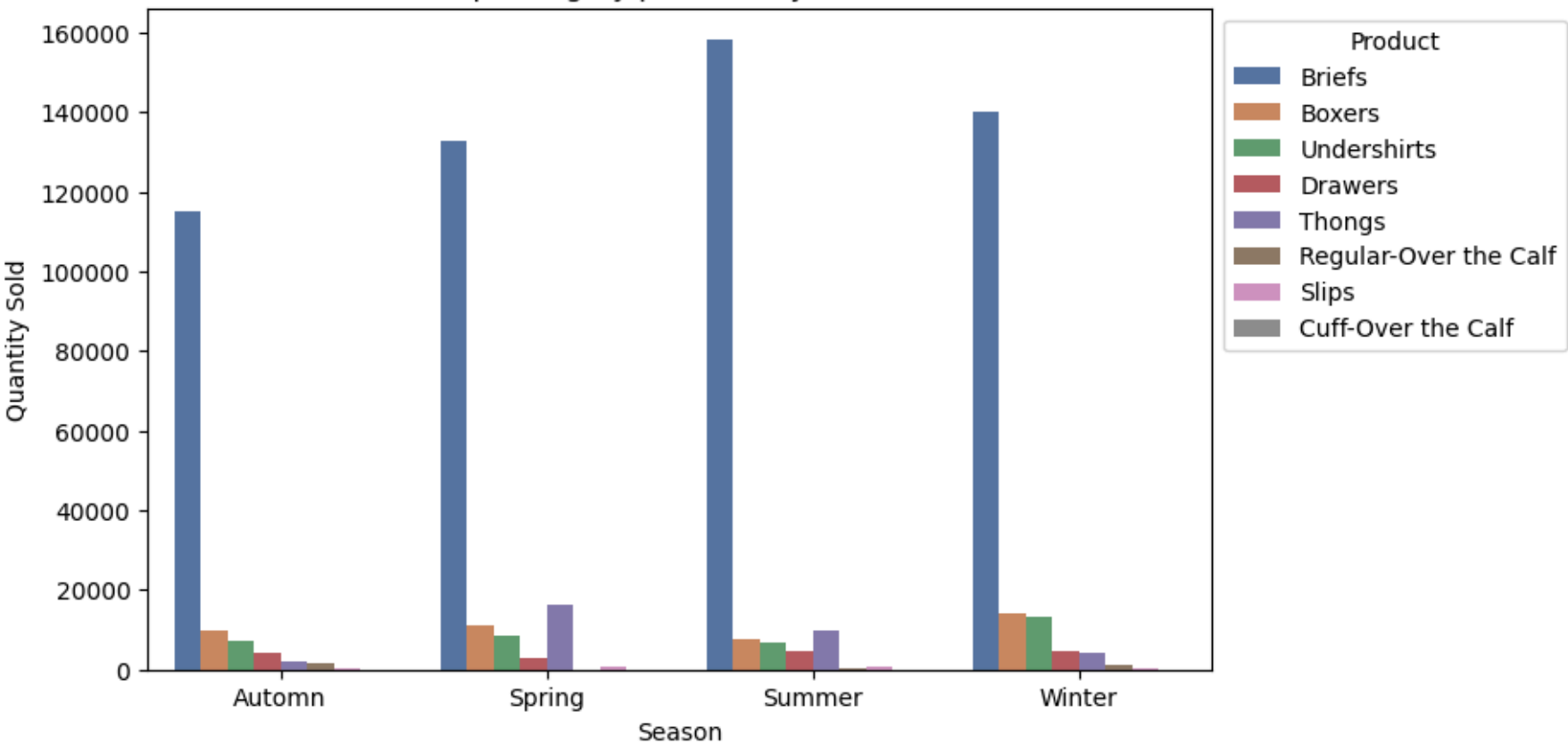
Briefs
is the most popular
category

Women
is the best-selling
gender

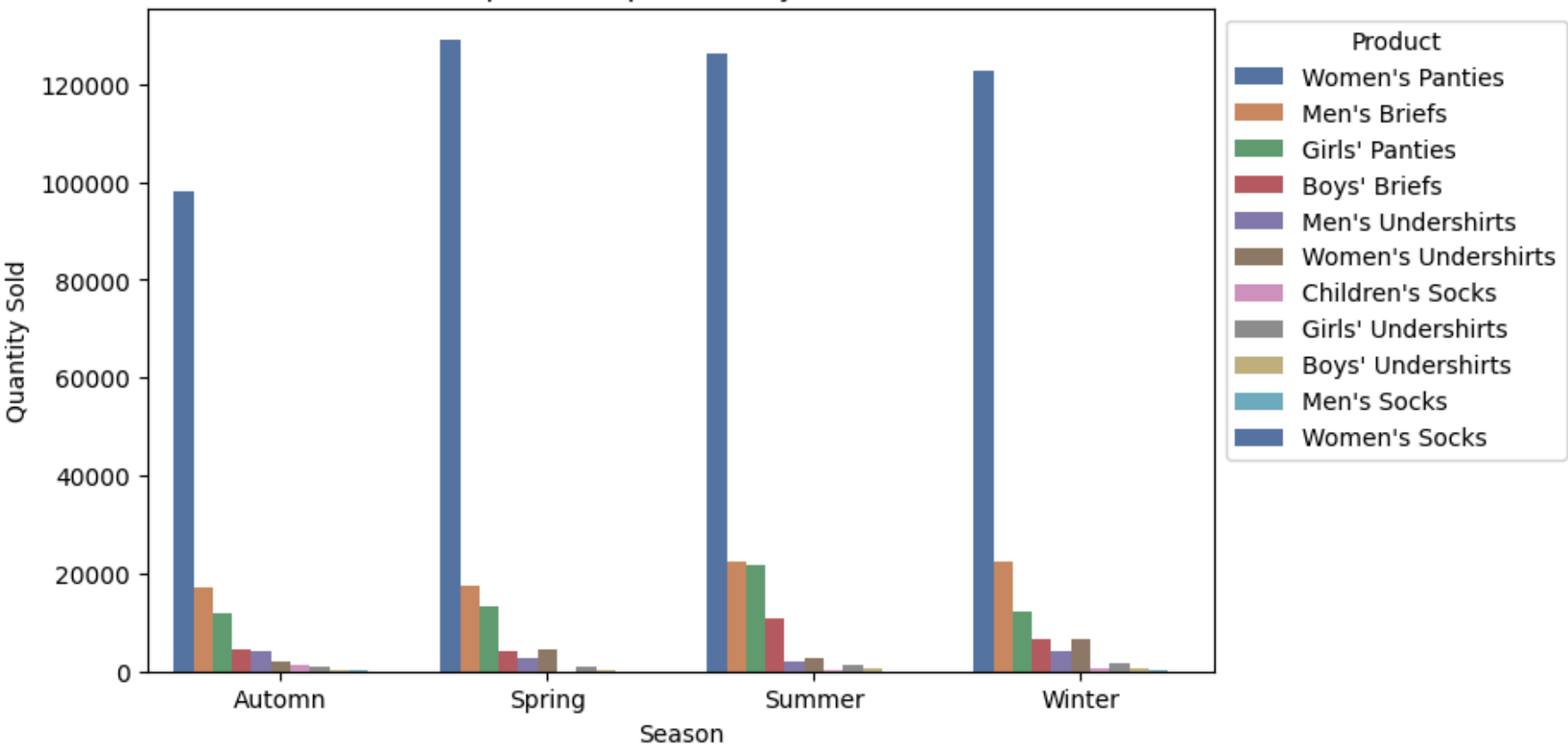
Over the Calf
are the most profitable
category but the least sold.

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	35.2261822257109
Boxers	67259.8	21177.5	43174	31.48611800808209
Briefs	3264478.37	932497.13	548363	28.56496580187174
Drawers	159861.2	40285.51	16211	25.200305014600165

Top Category products by season



Top Gender products by season

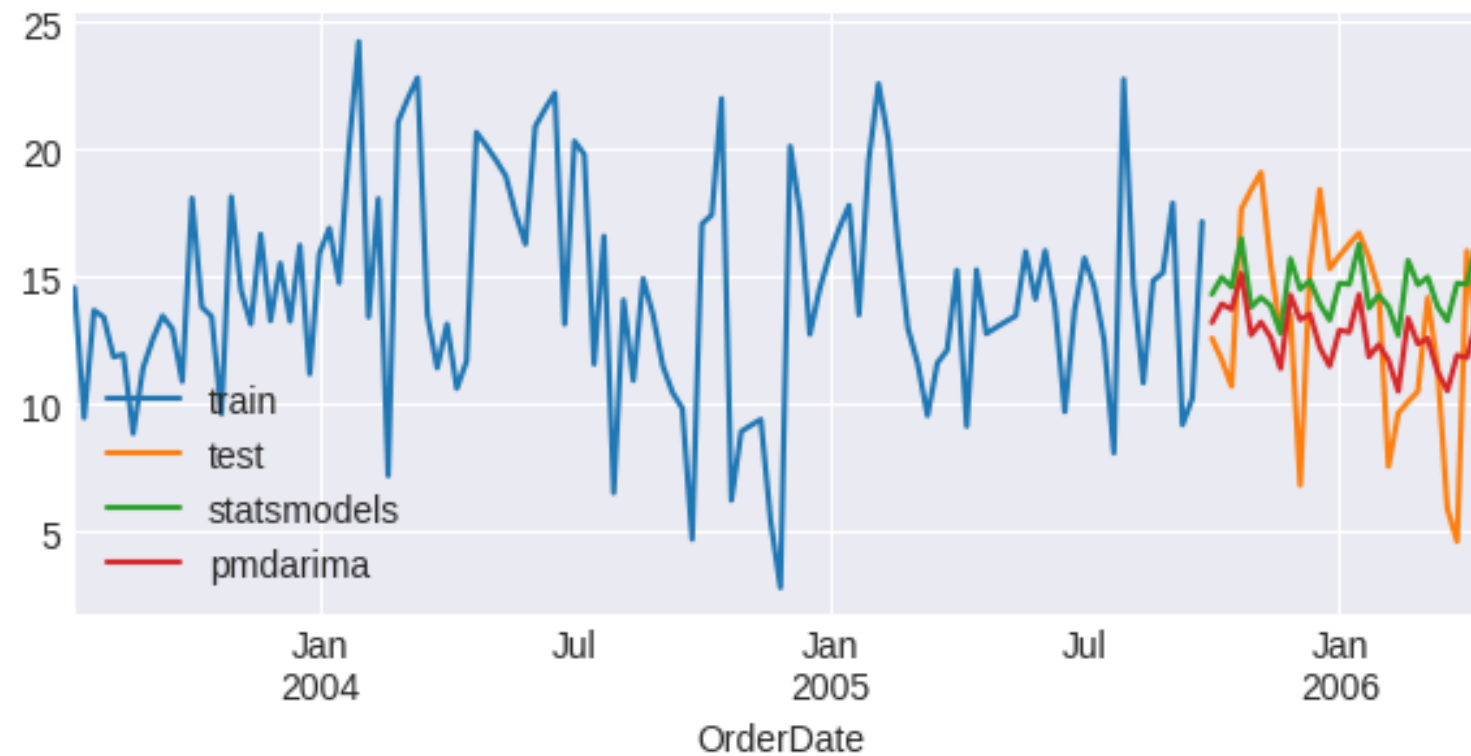


Sales Forecast

AIC: 153.002
BIC: 164.909



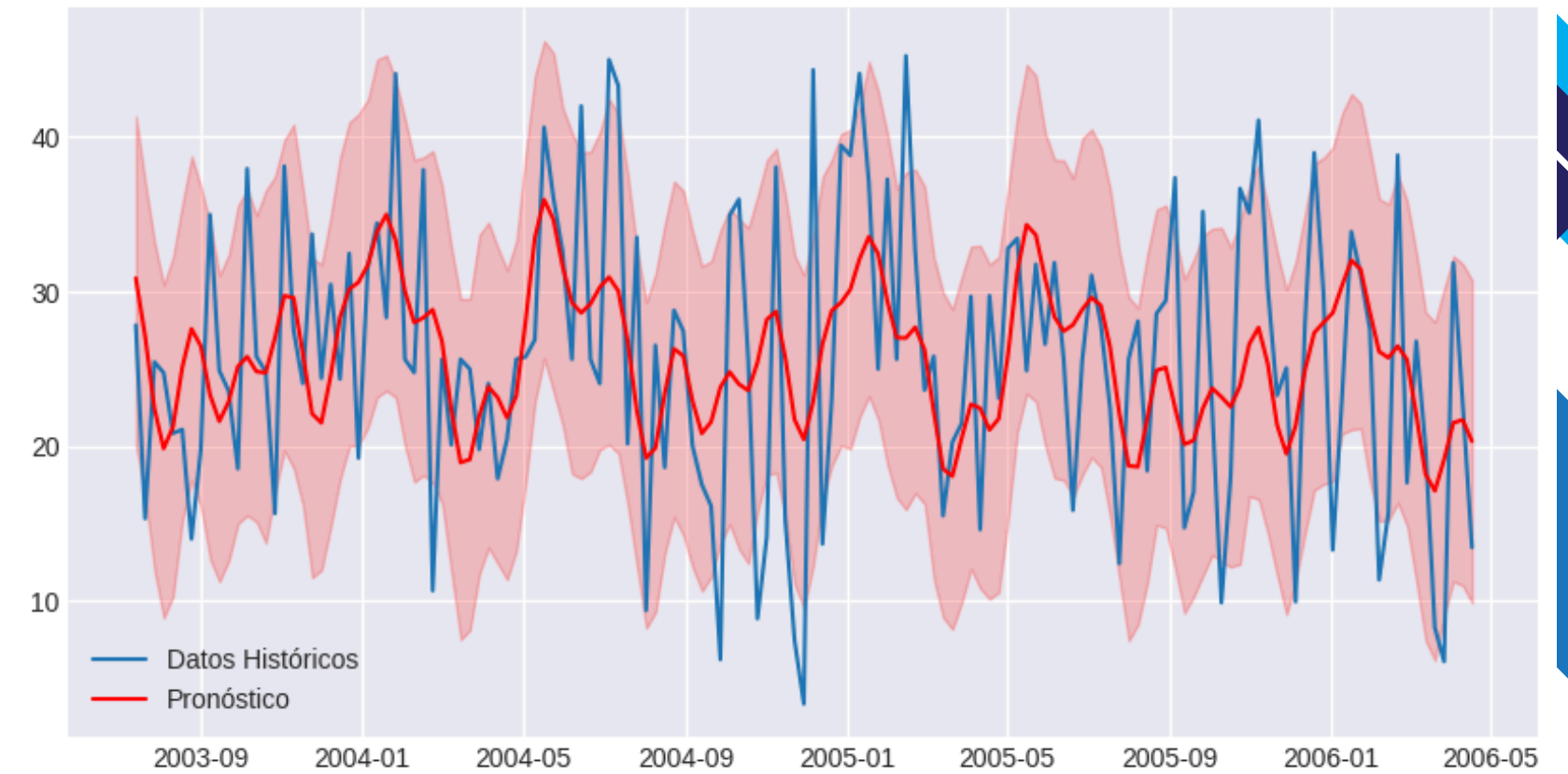
Predicciones con modelos ARIMA



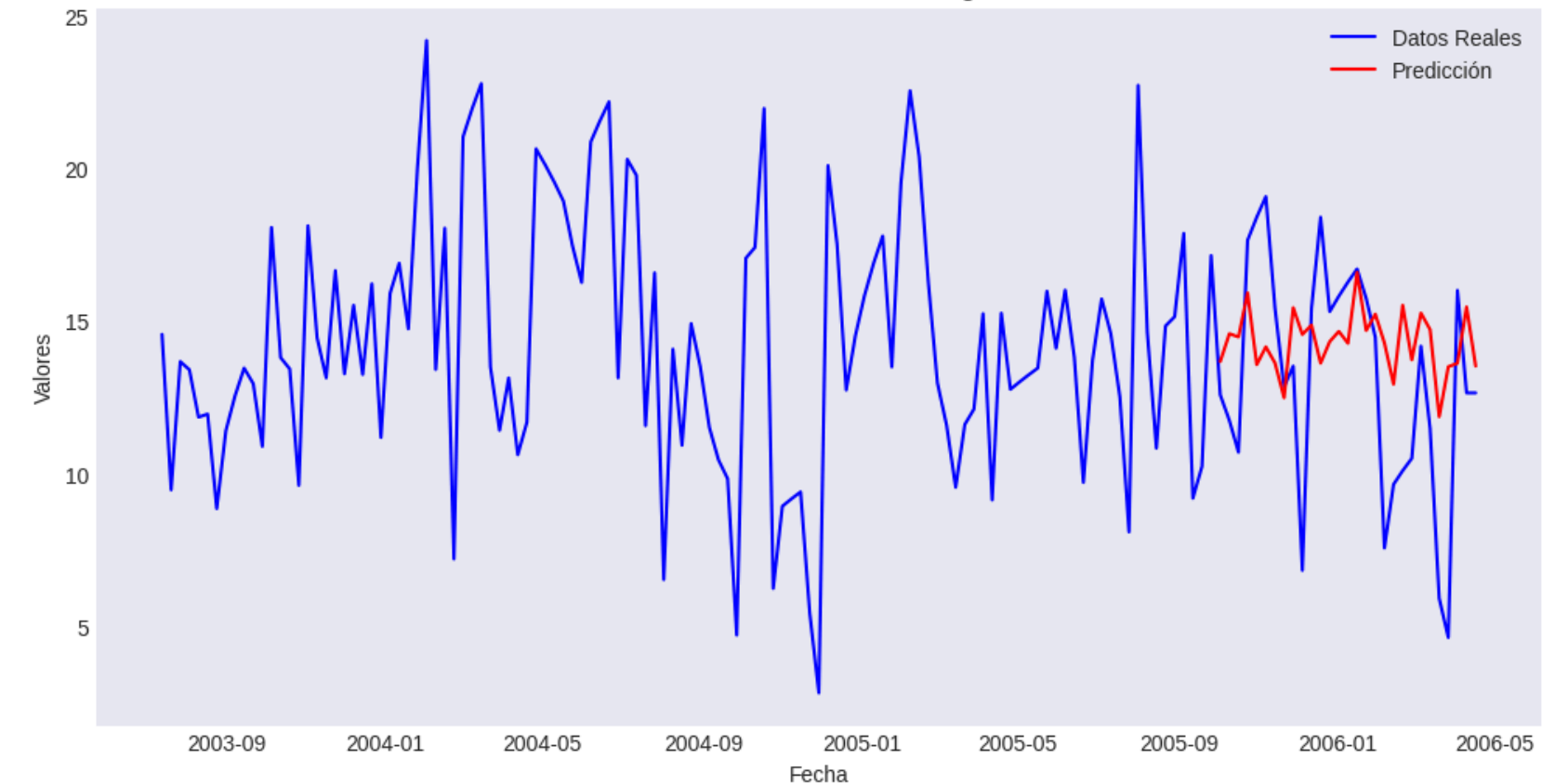
AIC: 631.015
BIC: 627.366

AIC: 627.366
BIC: 637.944

Pronóstico de Ventas Futuras



Predicción con Backtesting



Sales Forecast

Classification ABC

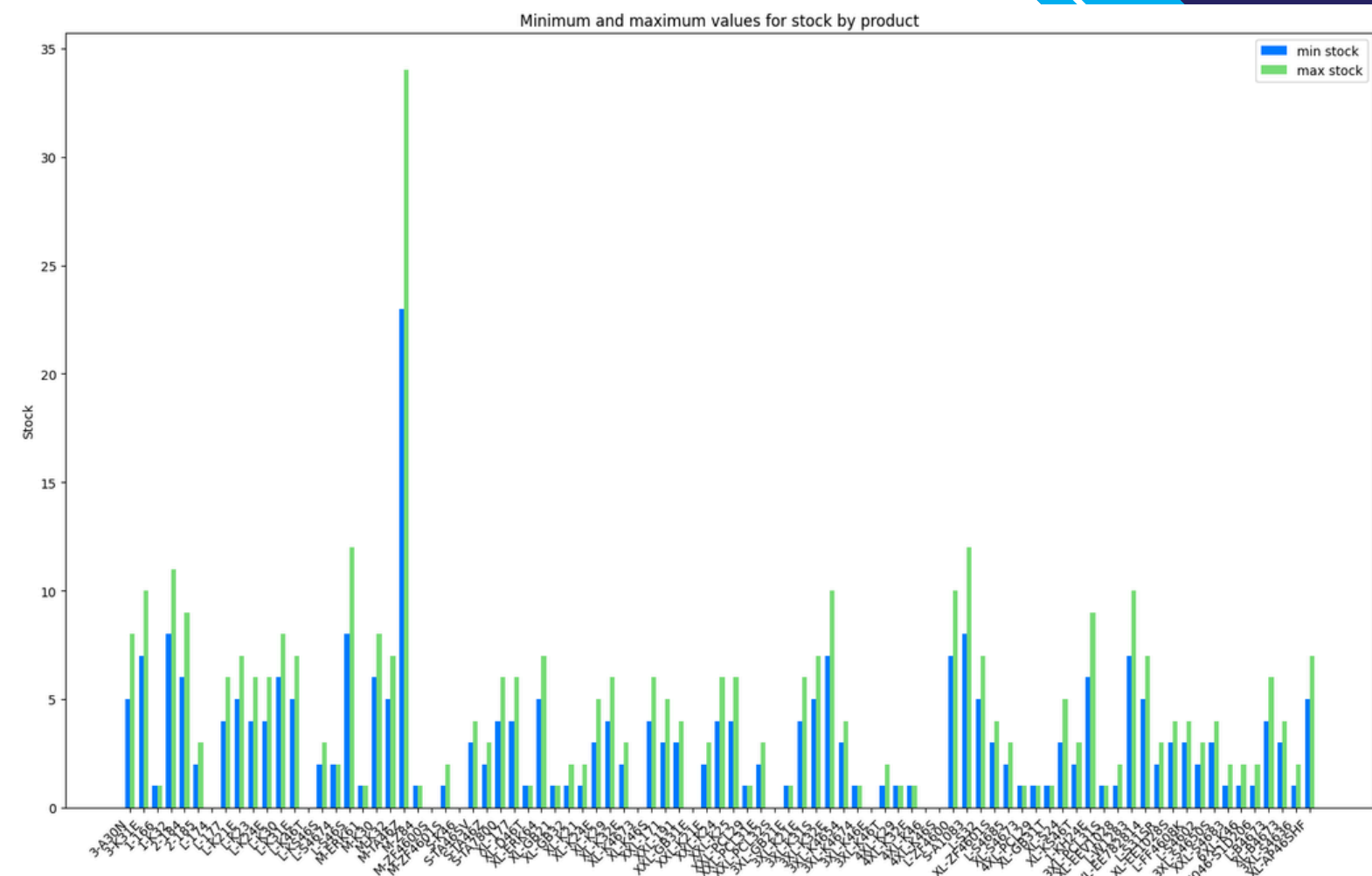
- Class A: Represent 60% of revenues.
- Class B: Represent 30% of revenues.
- Class C: Represent the remaining 10%.

High and Low Demand

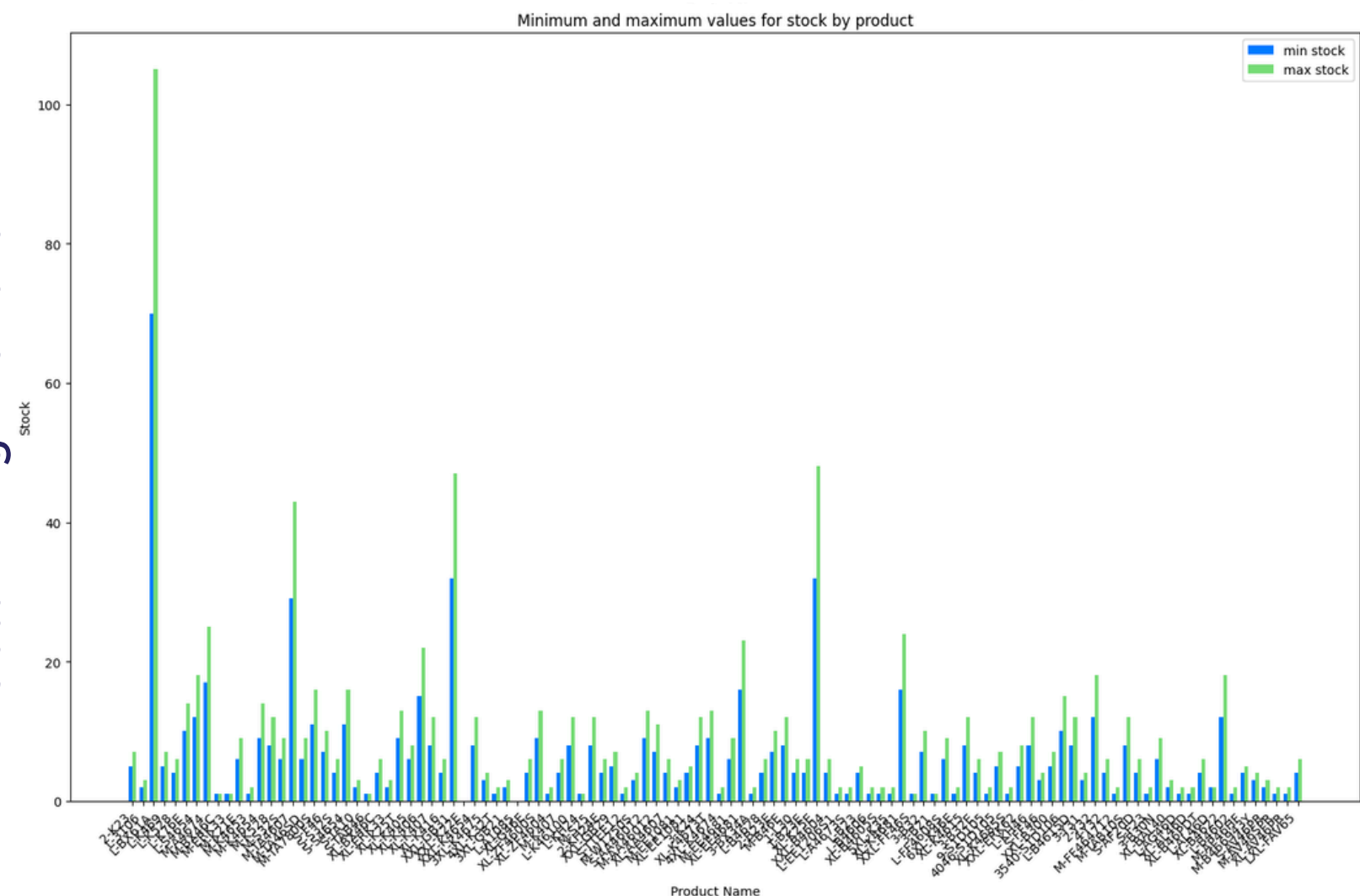
Products with less than 10 units (median) of monthly demand or with more than 30% of months without sales will be classified as low demand.

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

Class A - High Demand



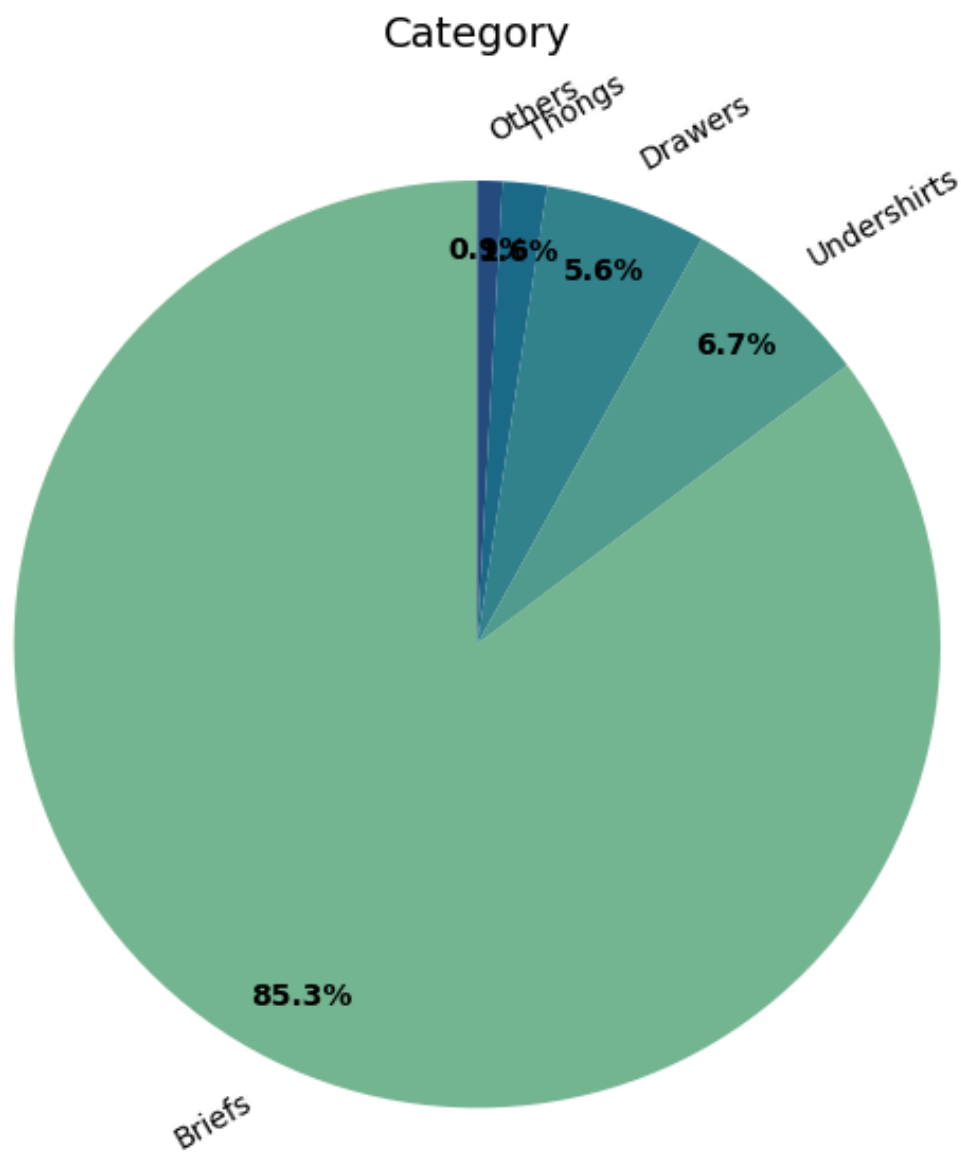
Class B - High Demand



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.

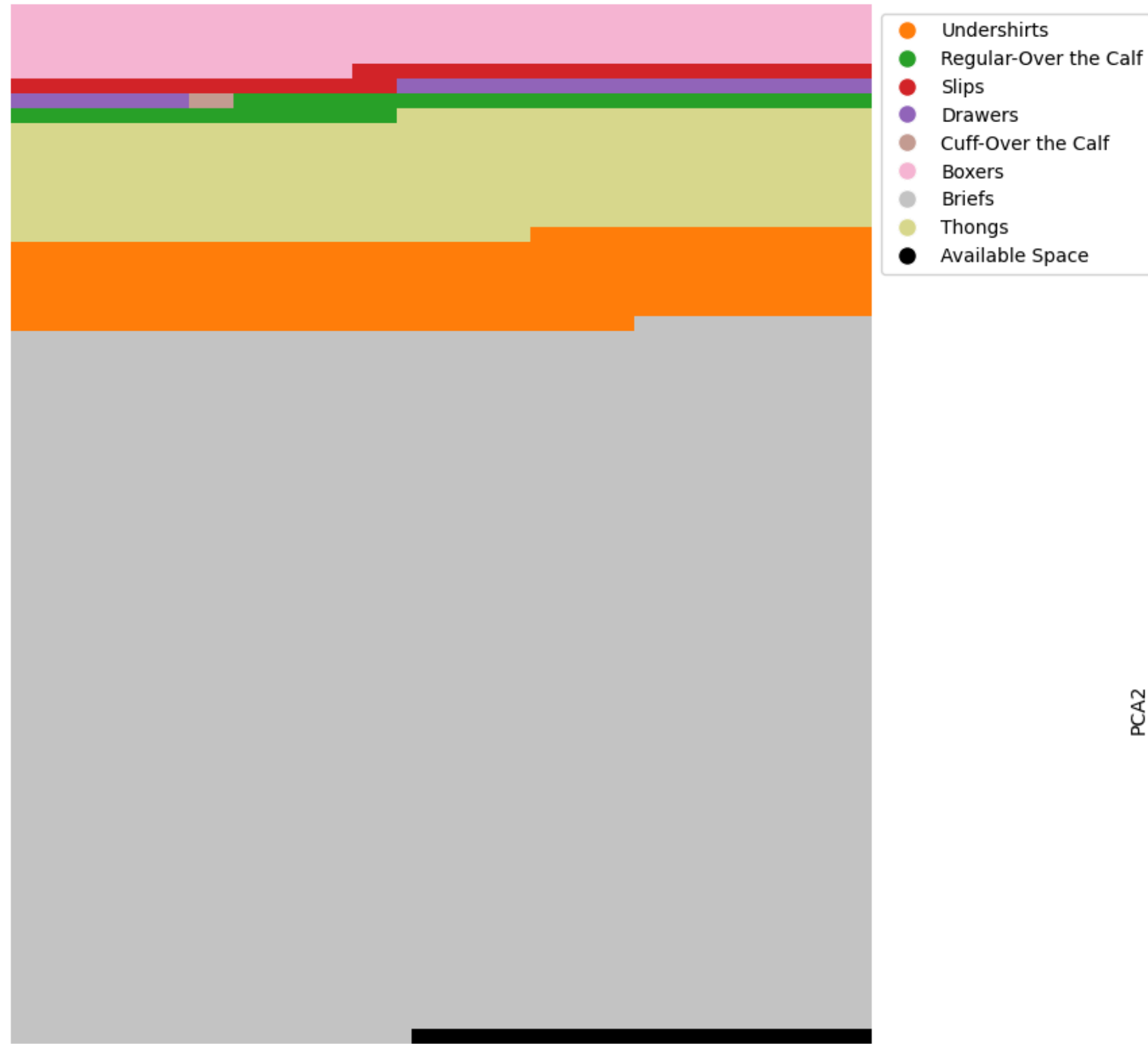
ProductID	Product Name	Category	Lead time (avg)	Lead time (std)	ROP	Security Stock	Percentage profit
427	M-ERK61	Briefs	1.65	7.41	327.02	298.72	21.62%
861	XL-K4673	Briefs	0.23	1.45	39.14	36.71	27.95%
865	XL-K465	Briefs	0.29	1.69	61.05	56.88	24.69%
830	XL-K29	Briefs	0.32	1.70	55.47	51.50	26.905%

Distribution Warehouse

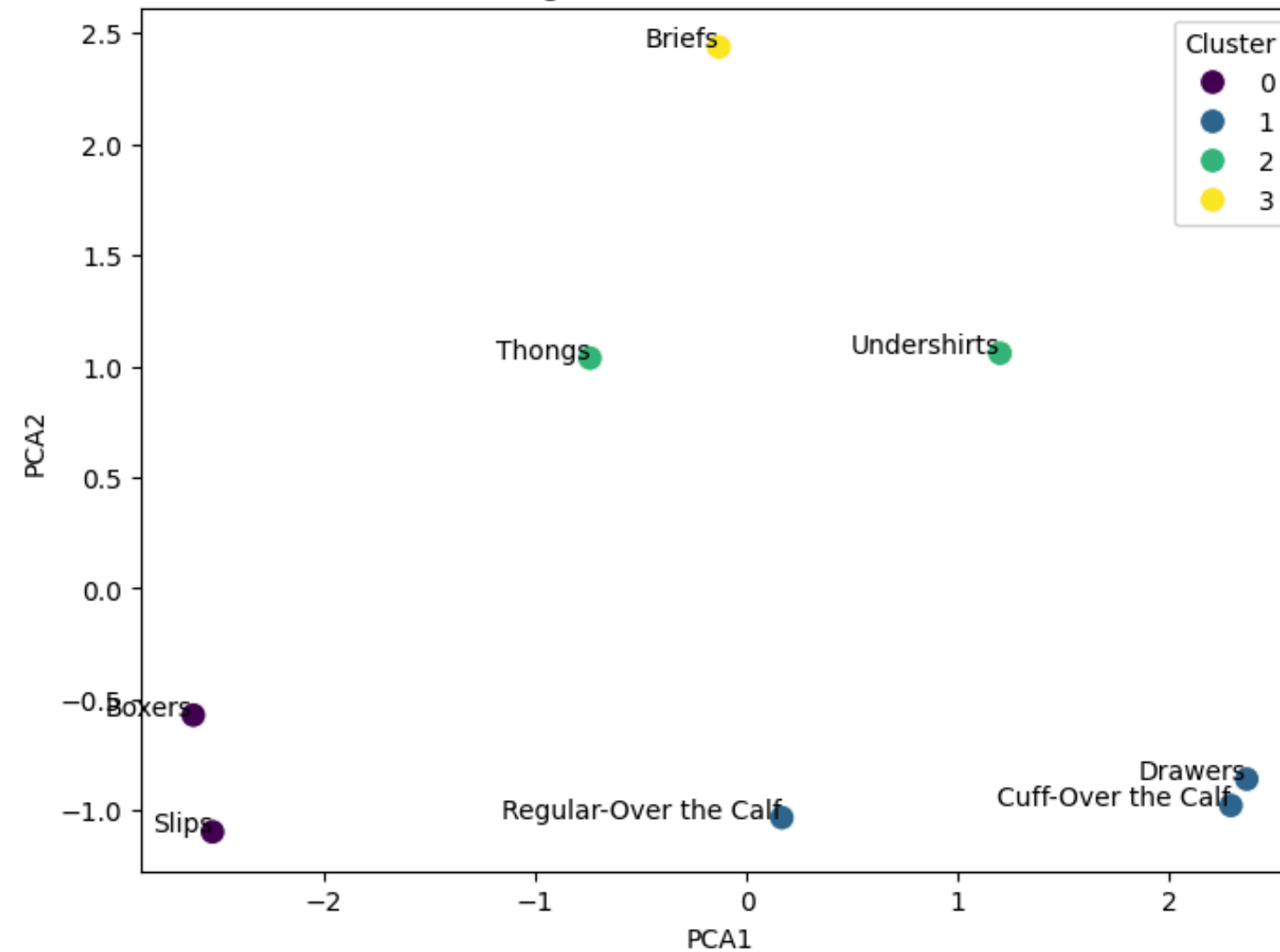
1 slot
per product

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:

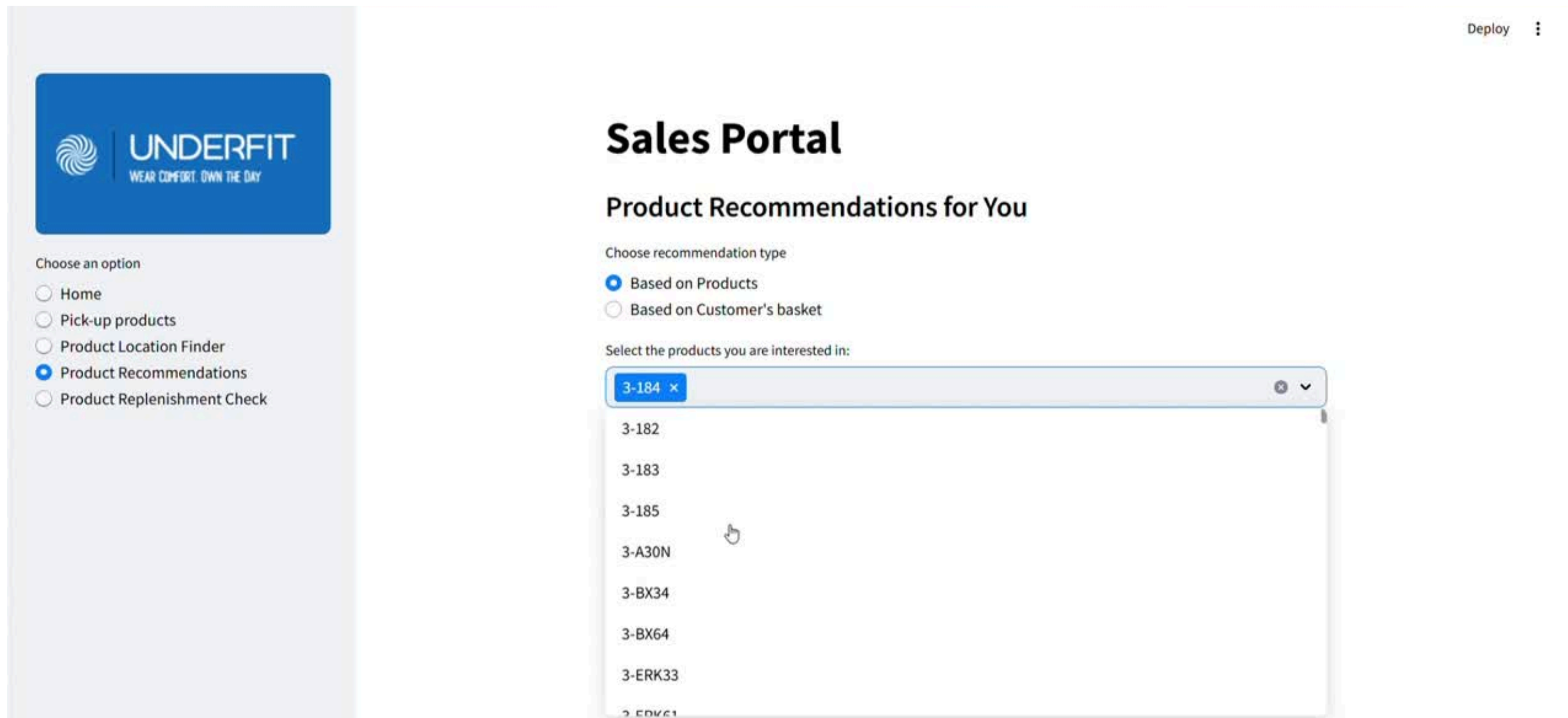
Choose an option

Selected products:

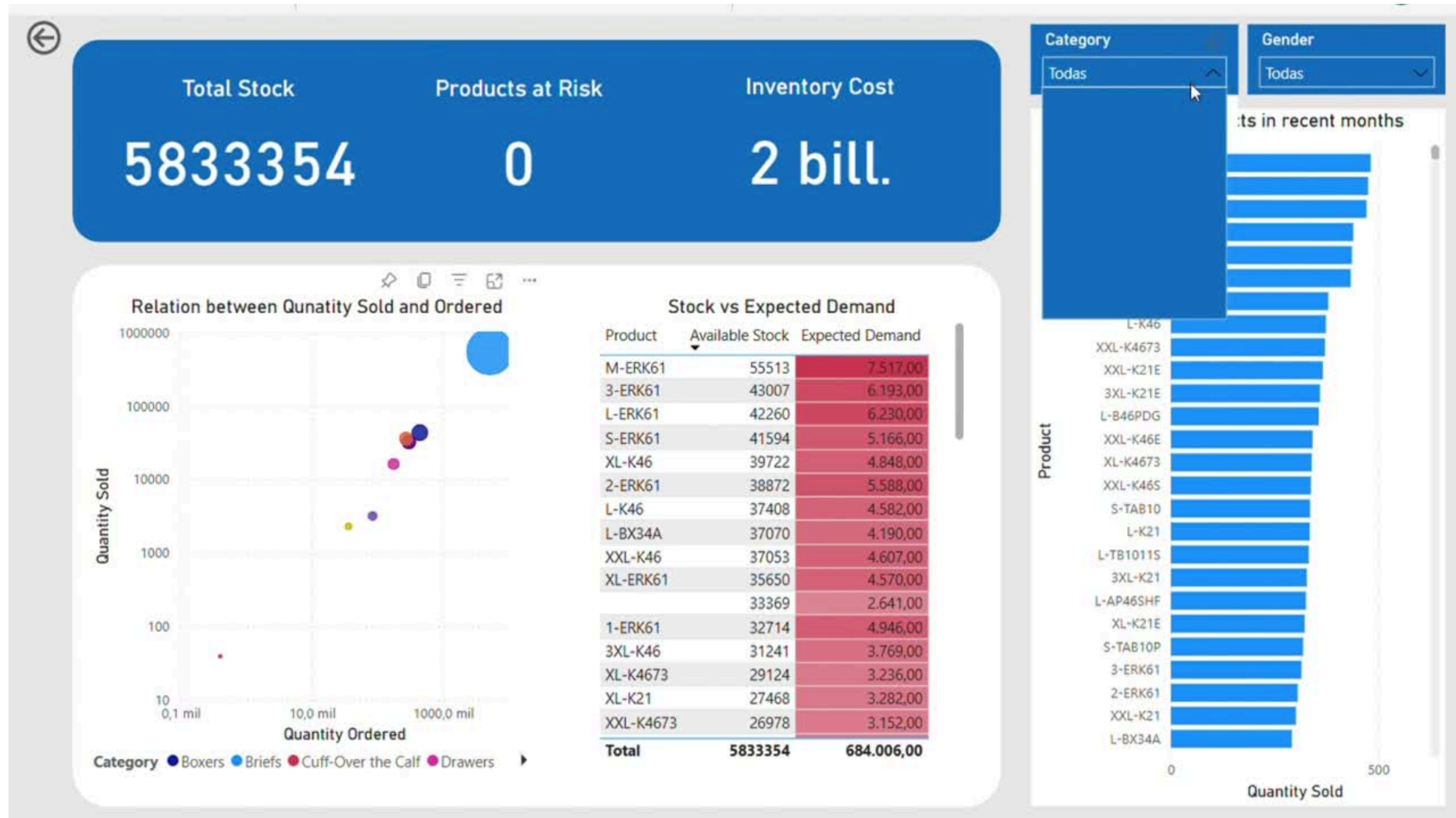
Calculate the optimal route

System Recommendations

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



PowerBI



Conclusion



Forecast Sales

Precise demand forecasting using the Prophet model enables better inventory management, reducing losses from overstocking and shortages. This ensures optimal stock levels, improving cost efficiency and product availability.

Warehouse distribution

Optimising warehouse organisation through product clustering and efficient routing minimises picking times and enhances operational efficiency. This leads to faster order fulfillment and lower operational costs.

Increased Sales and Loyalty

A personalised recommendation system based on purchase history and product similarity increases average order value and enhances customer experience, fostering brand loyalty.

Enhanced Decision-Making with Power BI & Streamlit

Integrating Power BI and Streamlit provides dynamic and interactive dashboards for real-time data analysis. This combination enhances visibility, streamlines operations, and empowers data-driven strategies.

The image features decorative geometric patterns in the corners, consisting of overlapping diagonal stripes in dark blue, medium blue, and light blue. The central text is flanked by three light blue dots on each side.

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Thank you

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