



# Inventory Analysis

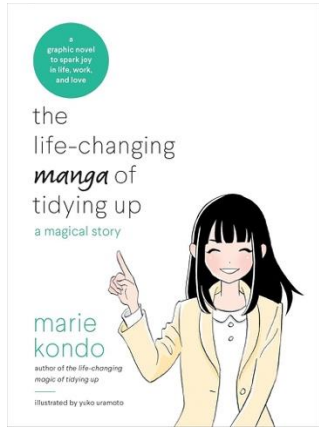
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" Sennan Li "

Jan 2015

→ Dec 2017

# Introduction



Life-changing  
magic of tidy up

Marie Kondo

**“Keep only what sparks joy.”**

- You assess each item individually.
- If it doesn't bring you joy or have clear utility, you thank it and let it go.

Tidy up with  
Marie Kondo



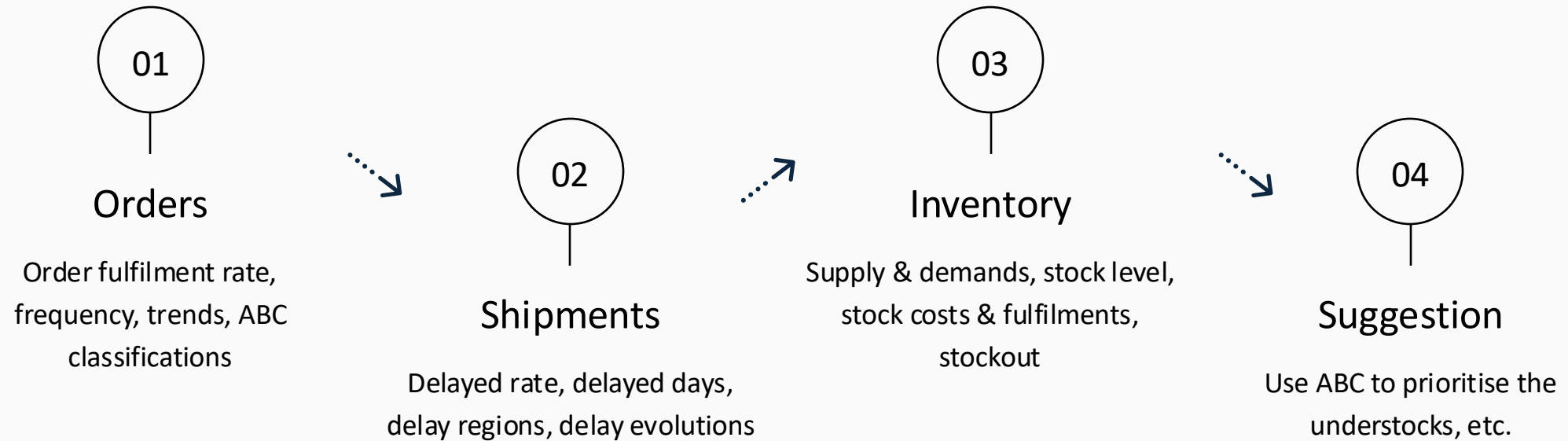
## Why Inventory management

- Identifying unbalanced stocks and achieve better efficiency and profitability.
- Managing food in the fridge, to avoid food waste.



# Workflow

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1

# Orders

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# Orders Overview

01



Orders Fulfilment Rate

39%

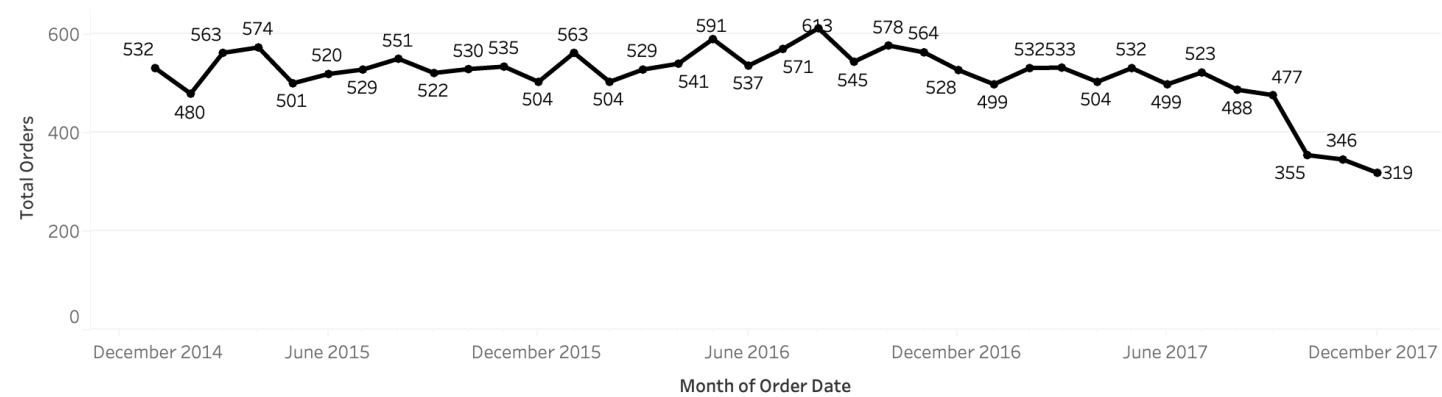
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Monthly Orders

517

Order Frequency Trend



# ABC Classifications

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ABC classification is used to categorise products based on their importance (sales value).

## A Products

Account for 70% of total sales.

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Fishing, Cleats, Camping & Hiking,  
Cardio Equipment, Women's  
Apparel

## B Products

Account for 25% of total sales.

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Water Sports, Indoor/Outdoor  
Games, Men's Footware

## C Products

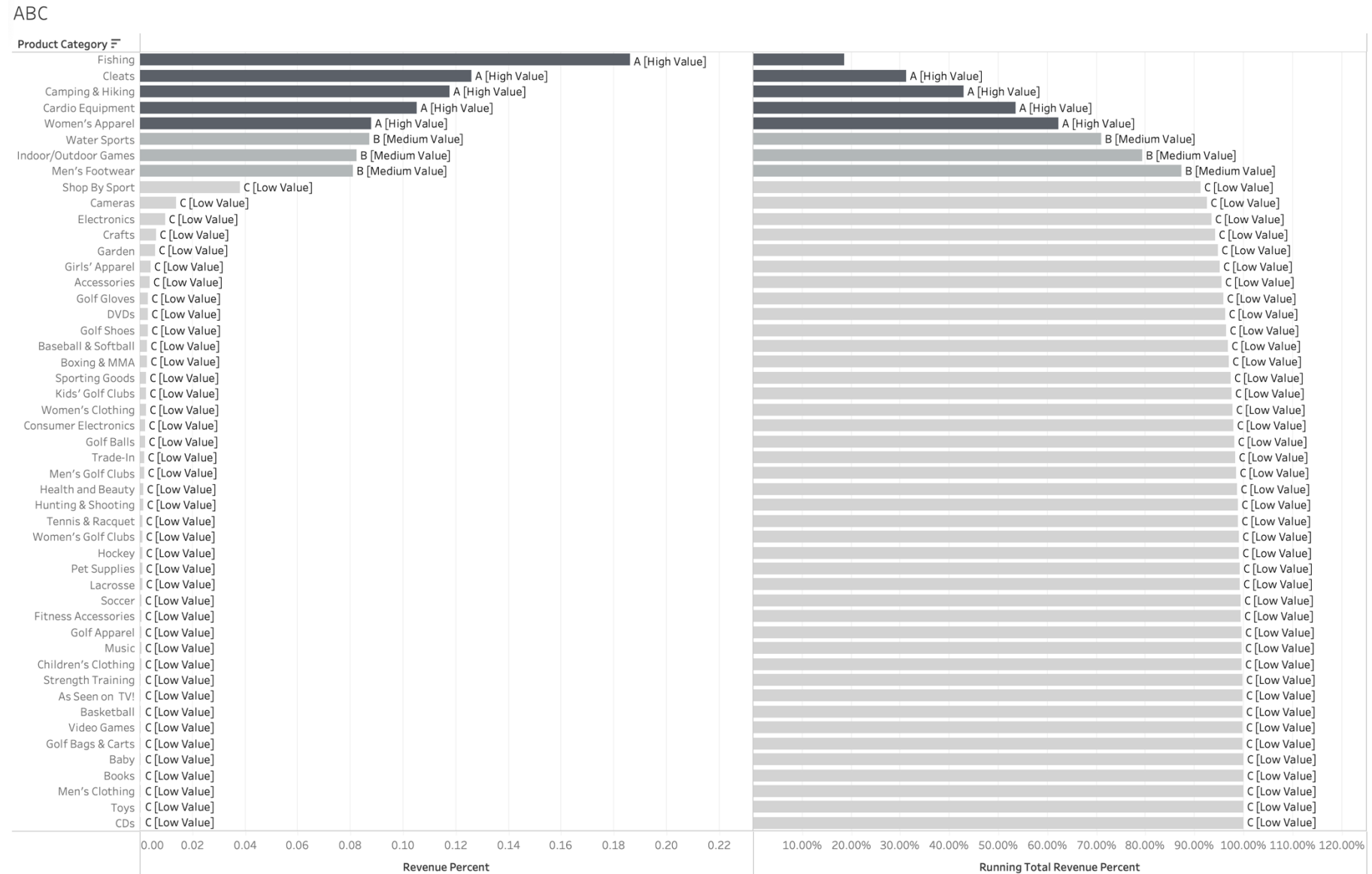
Contribute only 5% of total sales.

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Cameras, Electronics, Crafts,  
Garen, ....., etc.



# ABC Classifications



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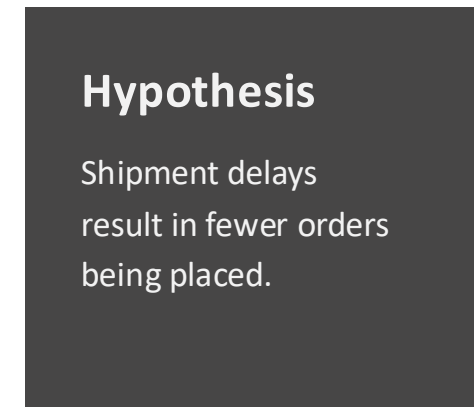
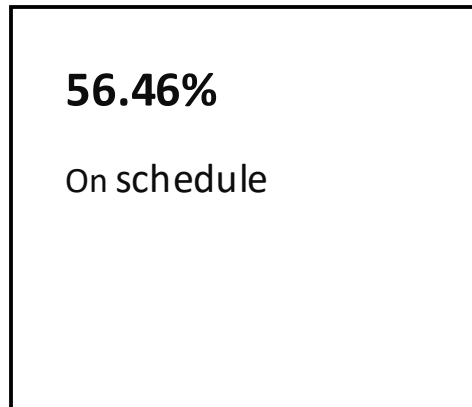
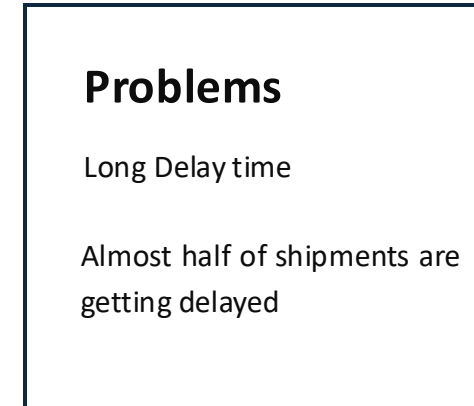
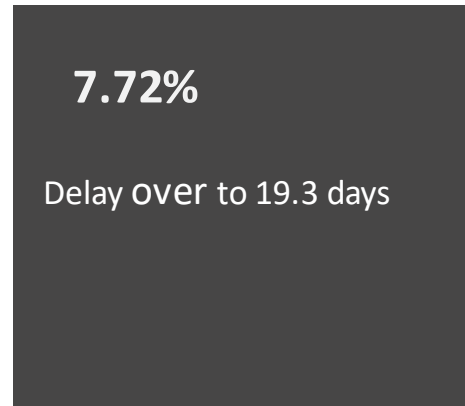
# Shipments

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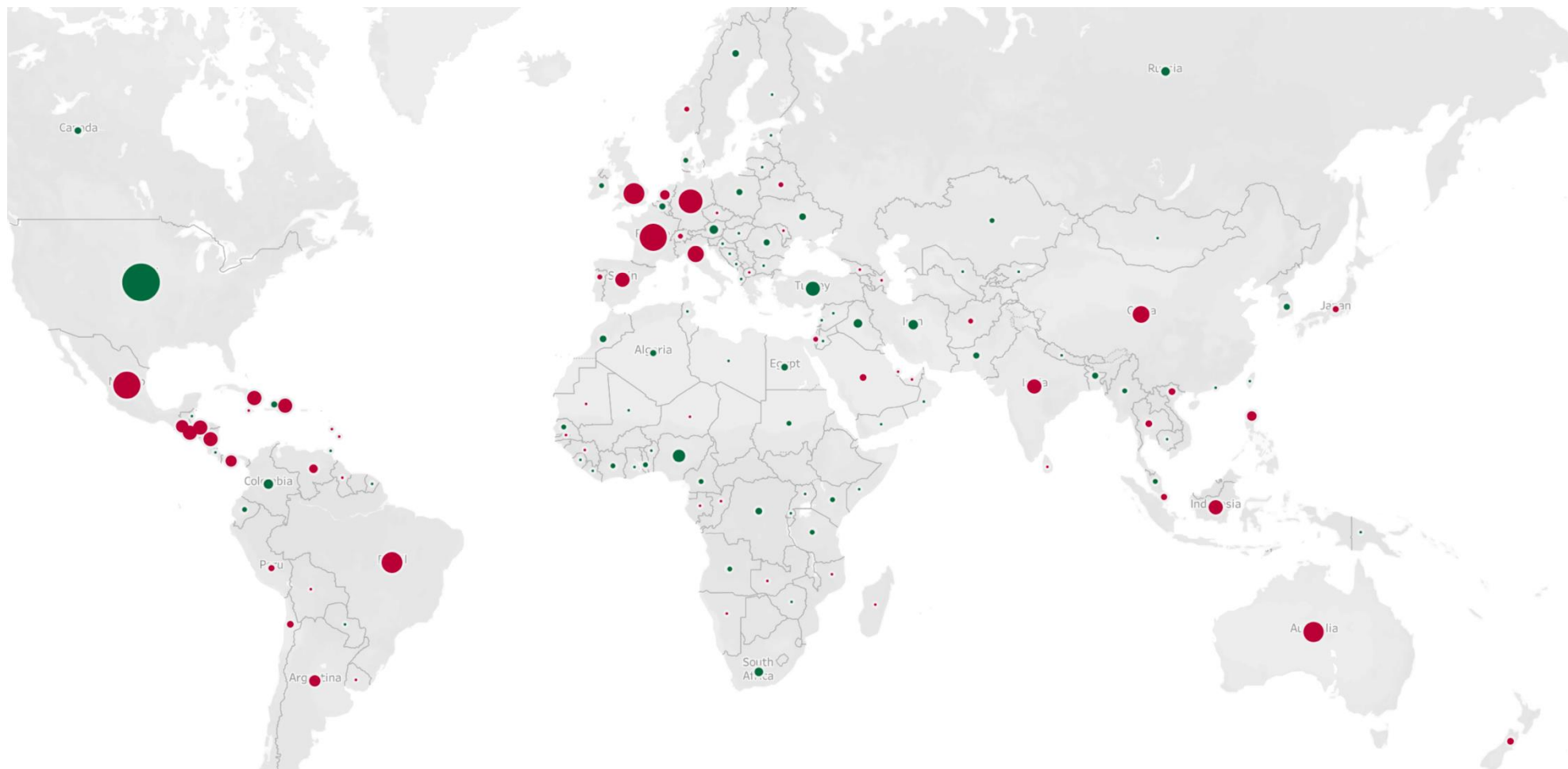




# Challenges



# Delay Maps

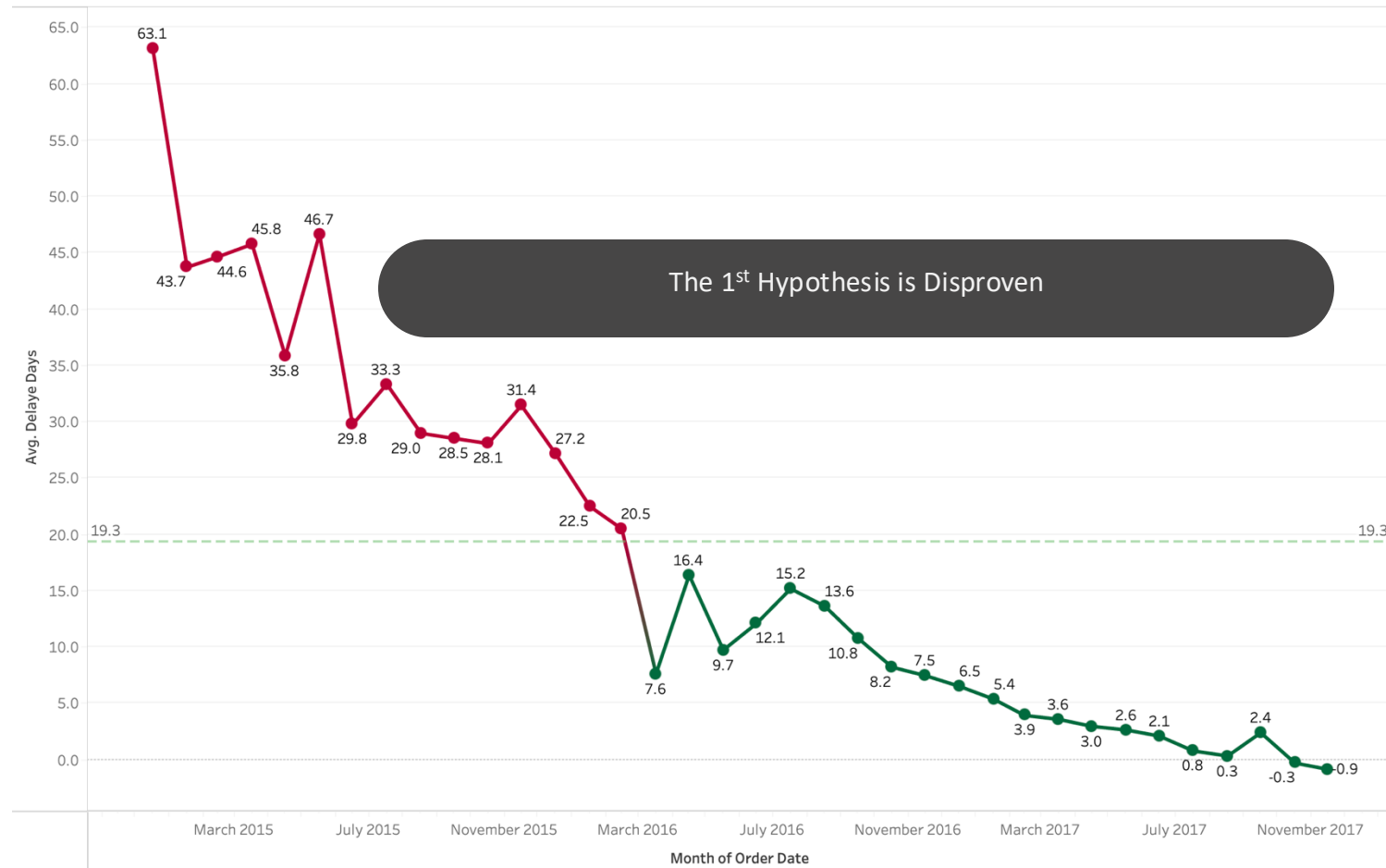


Circle sizes represent sales volume



Circle colours represent delay days

# Delays Evolution



While shipping delays are gradually improving



Order volume continues to decline over time

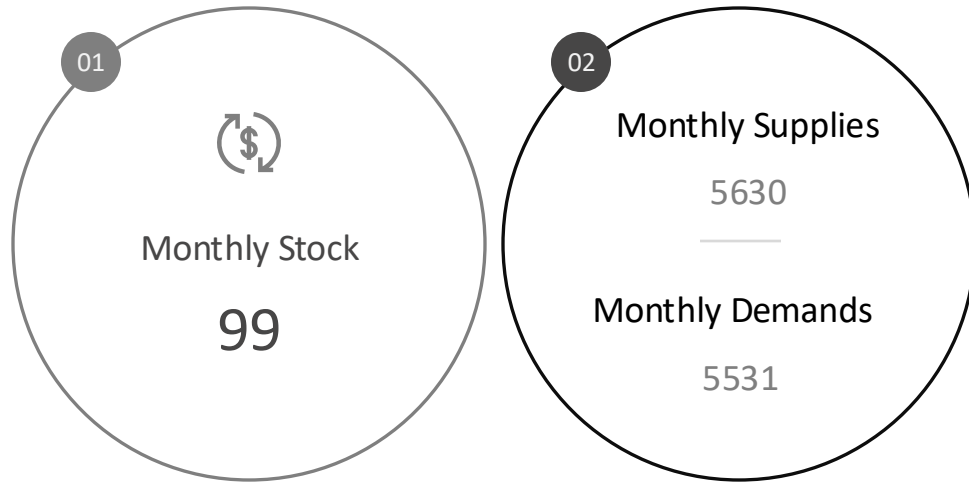
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# Inventory

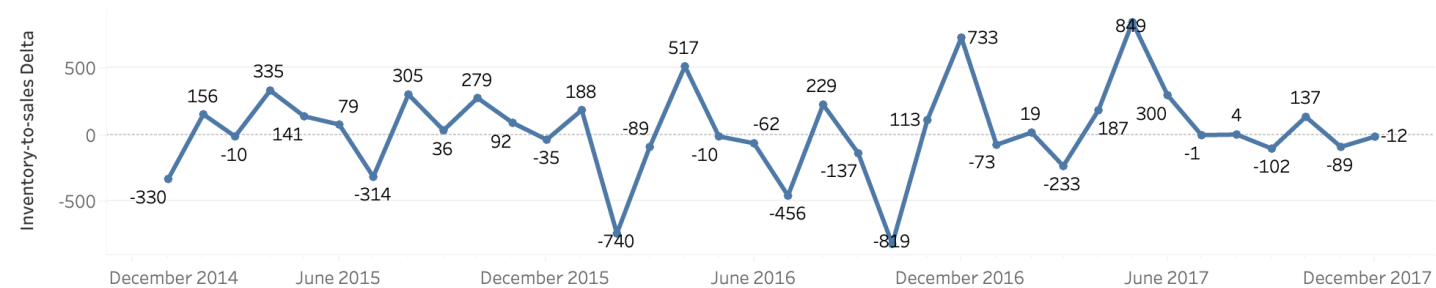
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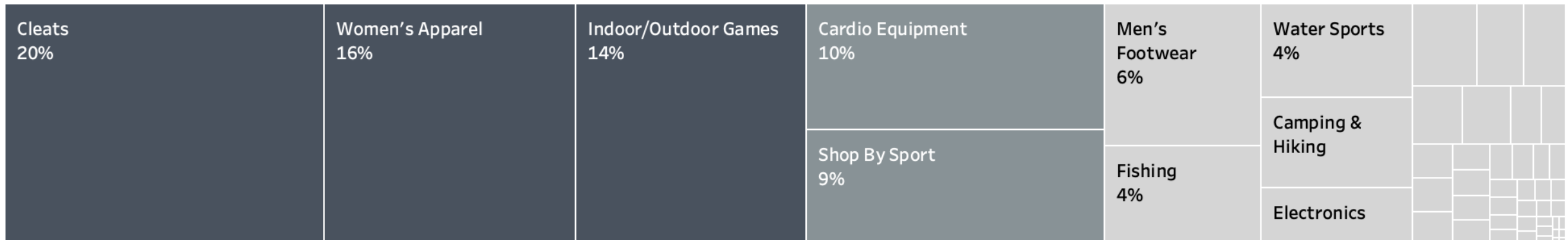
# Inventory Overview



Stock Trend

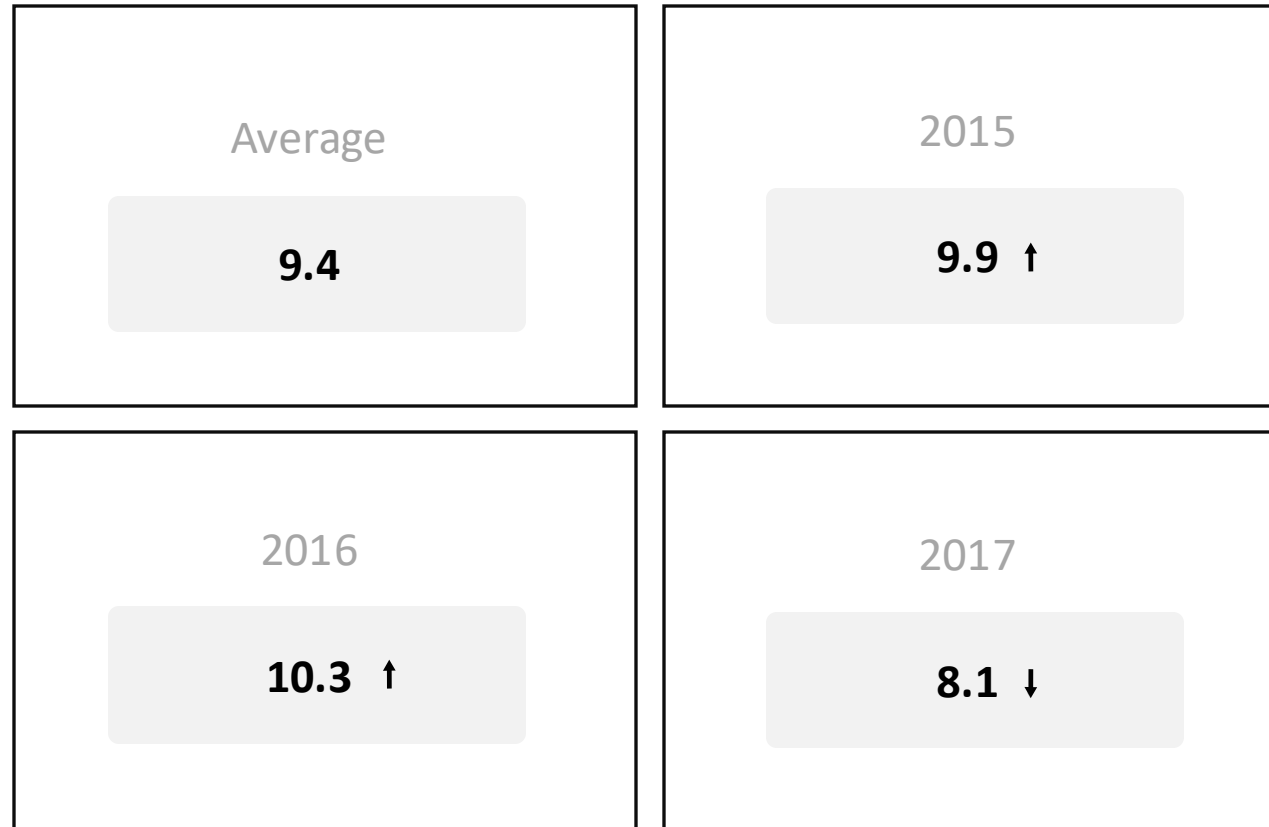


## Popular Products



# Inventory Turnover

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Turnover measures how many times a company sells and replaces its inventory over a specific period, typically a year.

In retail, a turnover ratio above 8 is considered good.



# Over/Under Stock

Avg. Inventory Cost Per Unit: \$1.2

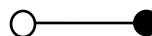
## Monthly Overstock

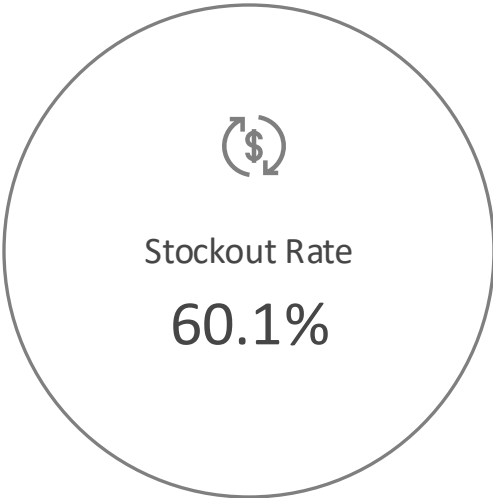
Product Cate..	Stock Level	Inventory Costs	Warehouse Fulfilment
Cleats	127.1	\$163.84	4.8 day(s)
Shop By Sport	44.1	\$47.76	5.7 day(s)
Men's Footwear	22.0	\$24.52	7.0 day(s)
Cameras	14.3	\$17.85	3.5 day(s)
Toys	60.0	\$12.00	3.7 day(s)
Books	6.4	\$9.21	5.2 day(s)
Sporting Goods	8.0	\$7.83	9.1 day(s)
DVDs	3.9	\$4.86	6.6 day(s)
Trade-In	3.3	\$3.91	4.9 day(s)
Cardio Equipment	2.8	\$3.38	6.1 day(s)
Camping & Hiking	2.6	\$2.94	6.9 day(s)
Music	2.7	\$2.41	9.3 day(s)
Baseball & Softball	1.8	\$2.31	5.9 day(s)
Golf Balls	1.8	\$2.28	6.5 day(s)
Golf Apparel	1.5	\$1.92	6.6 day(s)
Tennis & Racquet	1.6	\$1.81	6.6 day(s)
Women's Golf Clu..	1.1	\$1.78	6.2 day(s)
Soccer	1.4	\$1.56	8.4 day(s)
Electronics	1.2	\$1.49	5.2 day(s)
Baby	1.5	\$1.41	7.9 day(s)
Hunting & Shooting	1.0	\$1.26	3.5 day(s)
Fitness Accessories	1.0	\$1.12	6.4 day(s)
Golf Gloves	0.8	\$0.96	5.8 day(s)
Lacrosse	0.4	\$0.41	6.9 day(s)
Hockey	0.1	\$0.11	4.7 day(s)
Grand Total	312.3	\$318.90	6.1 day(s)

Avg. Warehouse Fulfilment: 5.4 days

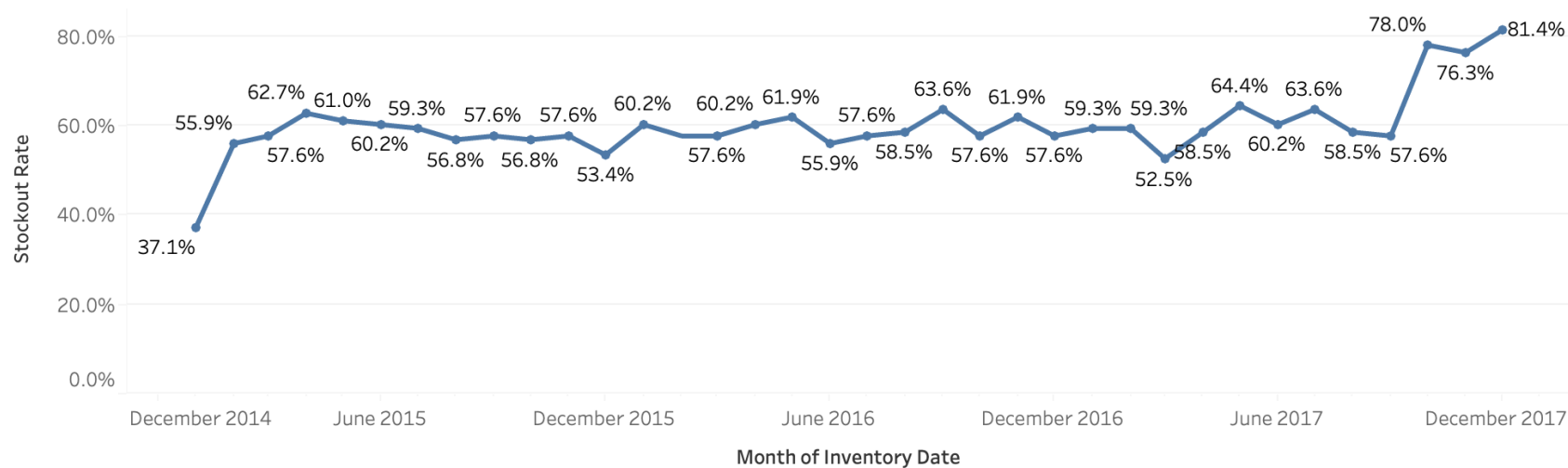
## Monthly Understock

Product Category	Stock Level	Warehouse Fulfilment
Indoor/Outdoor Games	-45.6	5.5 day(s)
Water Sports	-27.8	2.1 day(s)
Fishing	-20.7	4.9 day(s)
Women's Apparel	-15.0	6.6 day(s)
Pet Supplies	-12.3	6.9 day(s)
Garden	-8.0	2.1 day(s)
Consumer Electronics	-7.8	5.3 day(s)
Video Games	-7.6	8.8 day(s)
Women's Clothing	-6.8	6.9 day(s)
Health and Beauty	-3.7	2.3 day(s)
CDs	-2.8	3.5 day(s)
Accessories	-2.6	5.9 day(s)
As Seen on TV!	-2.0	3.3 day(s)
Golf Shoes	-2.0	5.8 day(s)
Kids' Golf Clubs	-1.6	3.6 day(s)
Basketball	-1.5	2.7 day(s)
Children's Clothing	-1.0	2.7 day(s)
Golf Bags & Carts	-1.0	6.6 day(s)
Boxing & MMA	-0.8	4.6 day(s)
Men's Golf Clubs	-0.7	5.2 day(s)
Crafts	-0.2	7.1 day(s)
Girls' Apparel	-0.2	5.2 day(s)
Men's Clothing	0.0	6.5 day(s)
Strength Training	0.0	6.7 day(s)
Grand Total	-171.4	5.0 day(s)





Stockout Trend

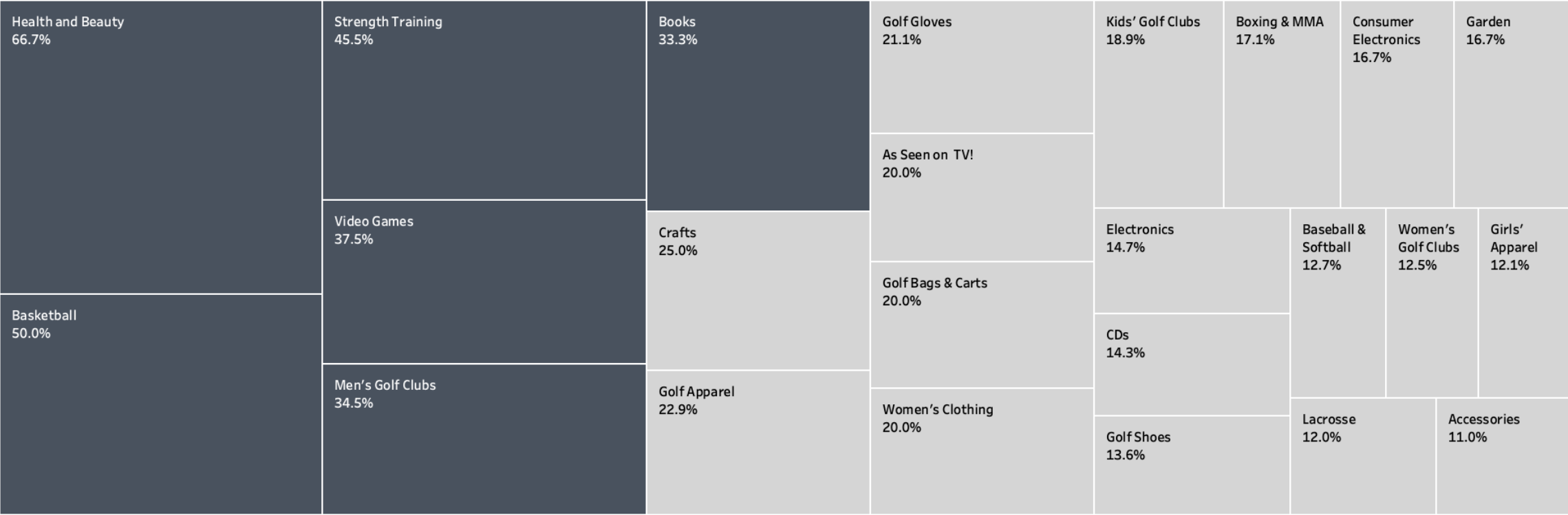


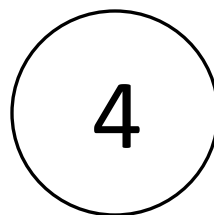
The 2<sup>nd</sup> Hypothesis is confirmed





# Stockout Products



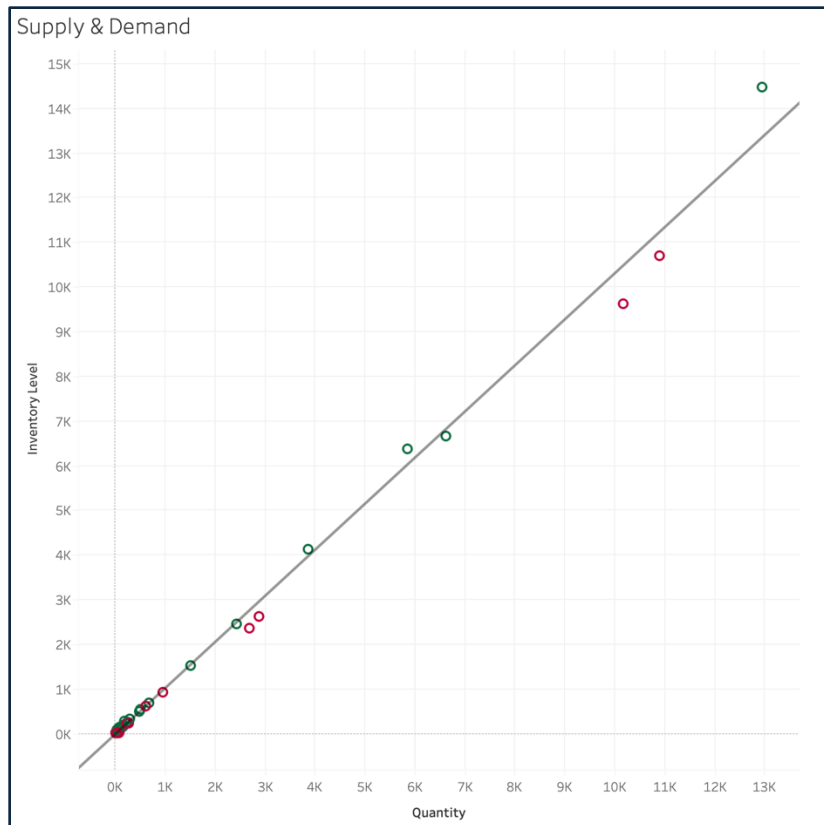


# Suggestions

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# Suggestions



## Methods

Warehouse fulfilment days can be used to adjust the stock level

Prioritise the stock level of Category A products, followed by B, C

For similar products, use historical sales value to rank them

Use historical sales data to forecast demand

Make good use of ML for more accurate demand forecasting



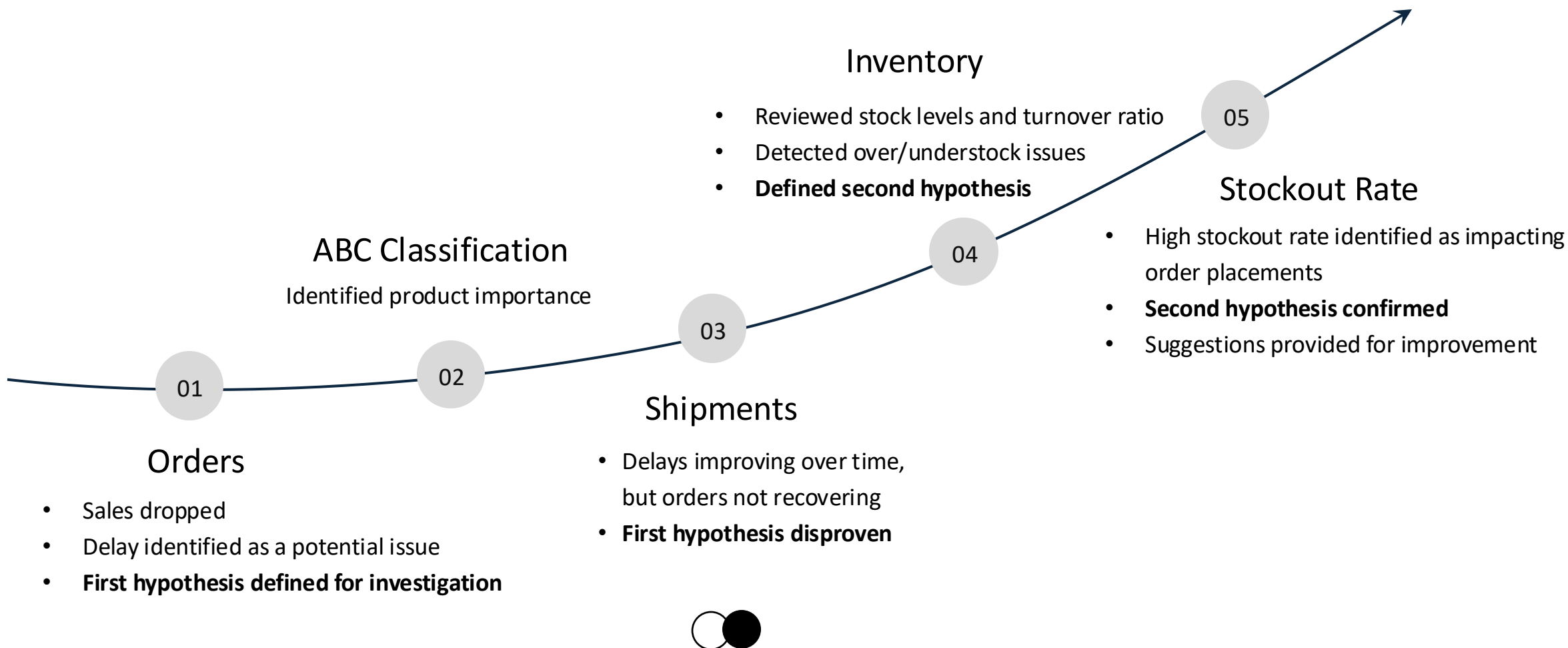
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# Summary

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# Summary





Thank you for your time!