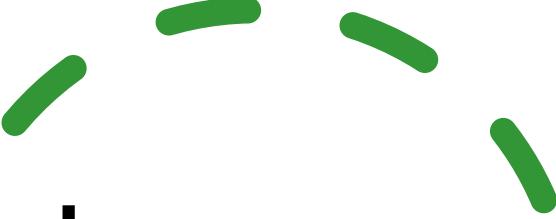


Task 1

Presentation to the executive board of the first conclusions of data analysis.

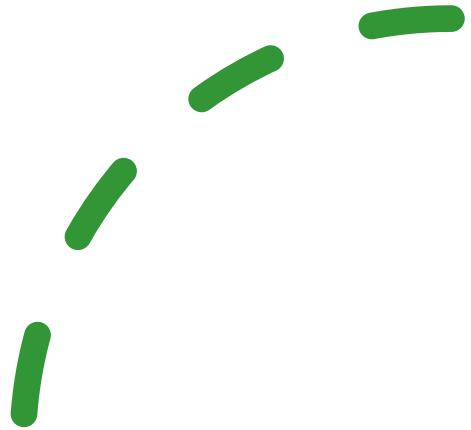




Data for the next generation store

First approach to a
complete analysis of the
data of the Company





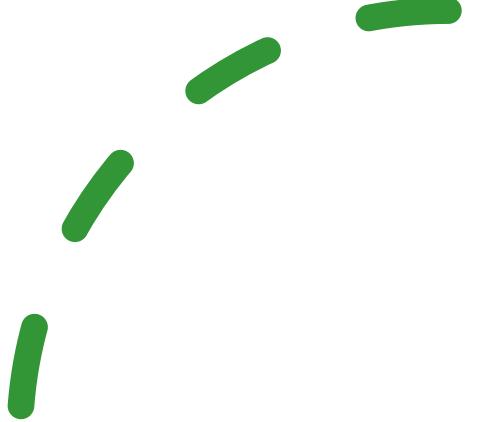
Introduction

Data source and information available. Objectives of the analysis.

Available information and objectives

- Sales, calendar and prices for years 2011 to 2016.
- Information from 10 stores across 3 regions: New York, Boston and Philadelphia.
- Go from global trends to understand the angles of the business.
- Achieve a deeper understanding on how our sales behave.

This is just the starting point of a journey to discover how our data exploring can help us improving and optimizing our results.

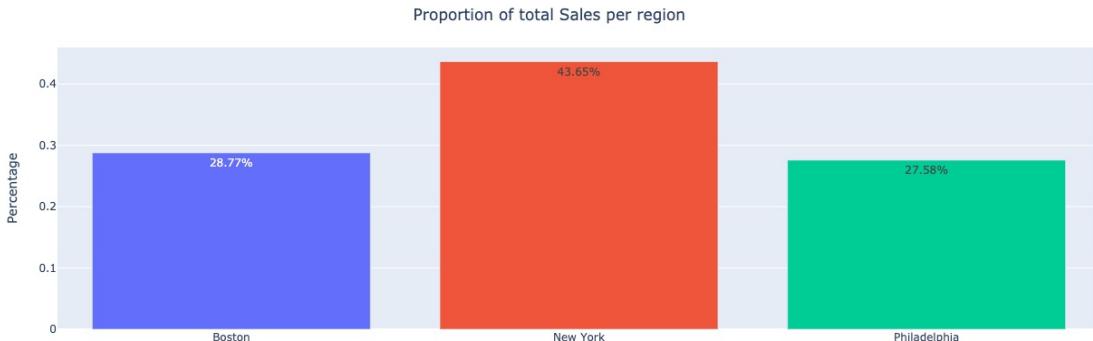


Sales analysis.

Discovering differences, similarities and key points across our network.

Units sold and revenue per region (%)

Distribution of sales (units) per region



Distribution of revenue (\$) per region



As we can see, the proportion of total sales and items sold are aligned, meaning that the revenue of the business is stable across regions. We can see a slight difference in the New York and Philadelphia percentages, meaning that same number of sales in NY and PH have a slightly higher revenue in NY.

Units sold and revenue per region (absolute)

Total sales (units) per region



Total revenue (\$) per region



The absolute numbers graphs lead us to the same conclusion.

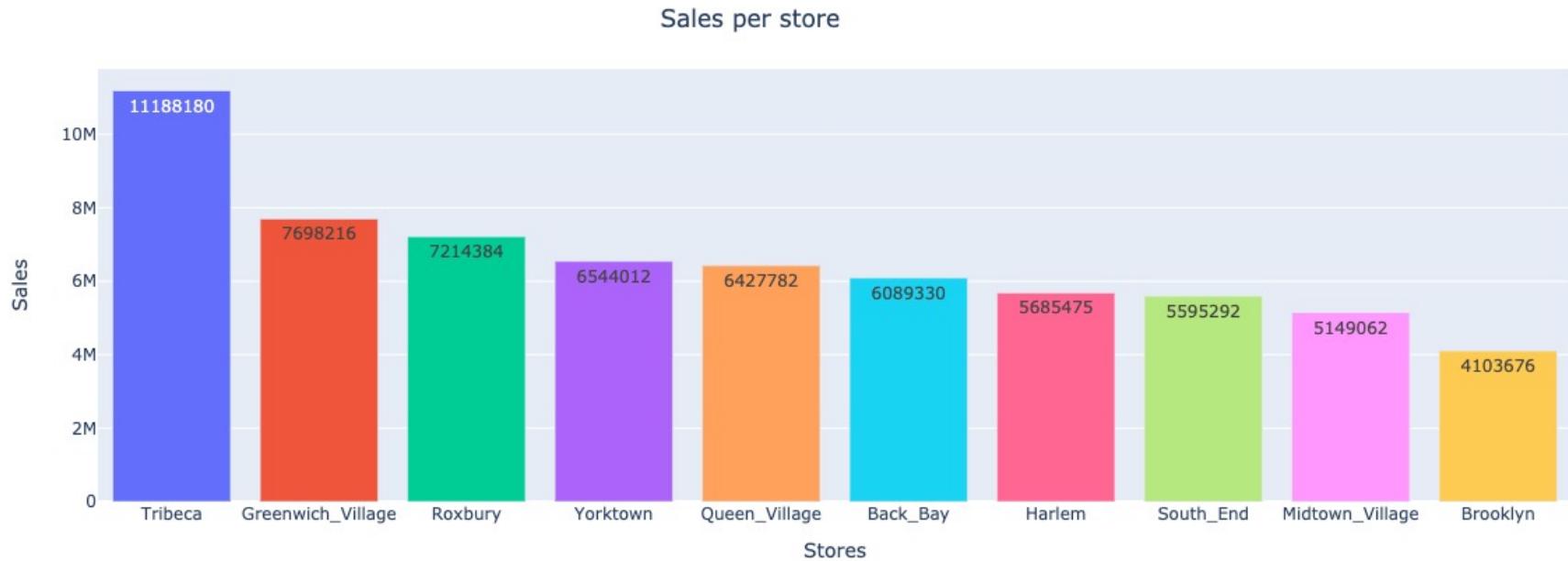
New York accounts for the 43% of the sales across this 3 regions, which lead us to consider it a **key region**.

Sales per store in each region (units)



Here we can see how Tribeca is pushing up the sales of the NY area, being Greenwich_Village the best 2nd shop , Harlem an average store and Brooklyn the one with the lower sales number across the three regions. We also need to consider **Tribeca as a key store.**

Sales per store (units)



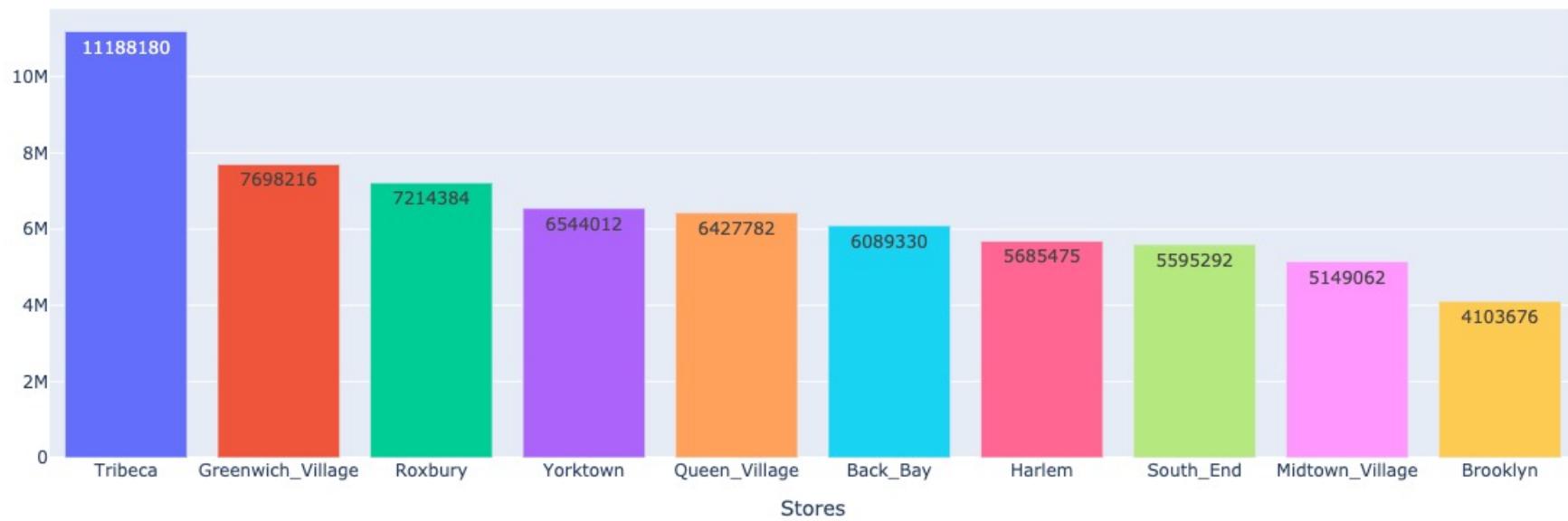
When considering the stores without the region context, we can see how average stores sold between 5M and 7M items in the periods, while Tribeca and Brooklyn have a more extreme behavior.

Sales per store (\$)



There is an interesting finding when comparing the sales per item and revenue across stores. As we have seen in the first graphs (sales across regions), some of our regions make a higher revenue with less sales (and others make a smaller revenue with more sales). We cannot affirm that the first ones are more profitable stores since we do not have enough information (purchase price, COL...)

Sales per store

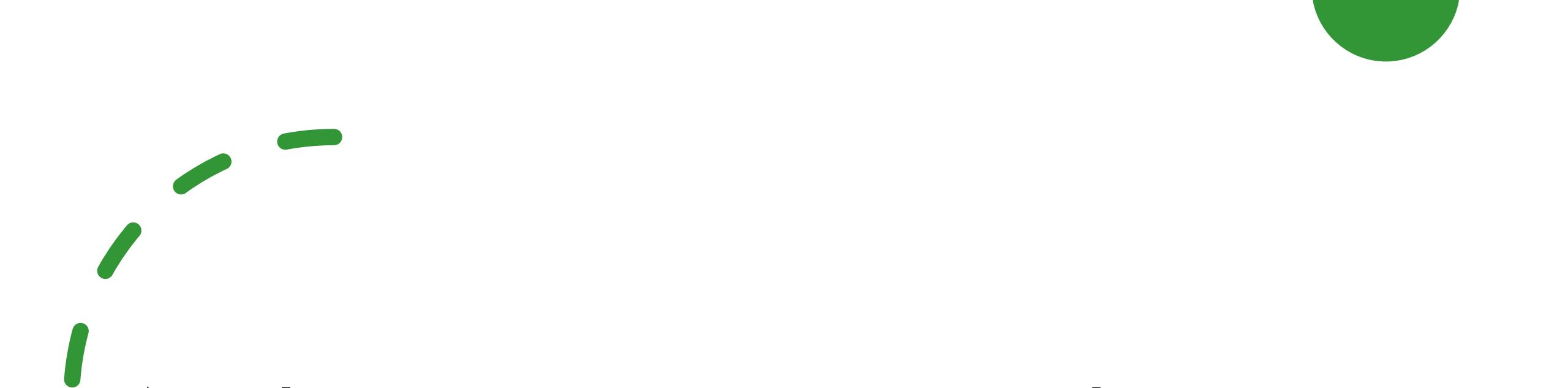


Yorktown, Queen Village and Midtown Village

are our shops in PH. Being Yorktown and Queen Village the 4th and 5th stores by items sold, these are the 5th and 7th by revenue .

Revenue per store





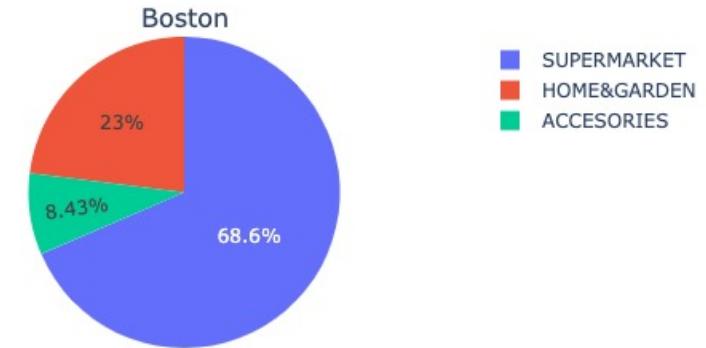
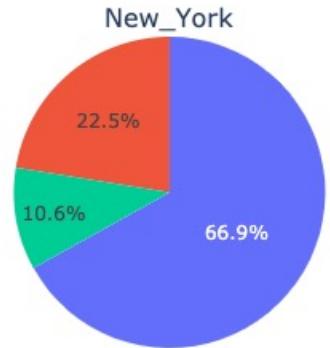
Analysing categories and products

How our shops can relate and differ to each other considering their products' sales.

Sales mix per category

We can see that "ACCESSORIES" have a higher quota in NY, while Boston has the highest percentage of "HOME&GARDEN" across the 3 areas. Philadelphia percentage of "SUPERMARKET" items sold is significantly higher when compared to NY.

Category sales mix



When comparing products, we are taking top 10 and top 5 in order to get general insights about differences and similarities across our stores. We are aware that these don't account for a significant sales amount. We are working in a broader approach to be presented as a second stage of our analysis.



Most sold items across all regions (units)



All most sold items (units) are supermarket products. 090 and 586 have significantly higher sales (the 3rd product has already half the sales than those 2). We are now comparing this information with the revenue figures.

Products with the higher contribution to total sales (\$)

Total revenue



color

- SUPERMARKET_3_586
- SUPERMARKET_3_120
- SUPERMARKET_3_090
- SUPERMARKET_3_202
- SUPERMARKET_3_587
- SUPERMARKET_3_252
- SUPERMARKET_3_555
- ACCESORIES_1_354
- SUPERMARKET_3_444
- SUPERMARKET_1_096

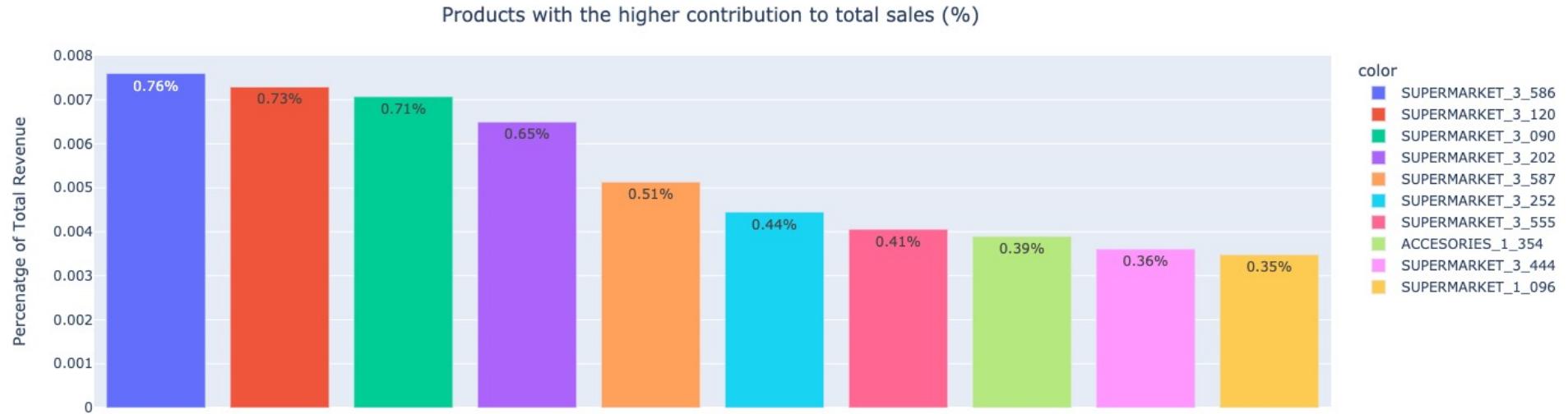
color

- SUPERMARKET_3_090
- SUPERMARKET_3_586
- SUPERMARKET_3_252
- SUPERMARKET_3_555
- SUPERMARKET_3_714
- SUPERMARKET_3_587
- SUPERMARKET_3_694
- SUPERMARKET_3_226
- SUPERMARKET_3_202
- SUPERMARKET_3_723

Products with the higher contribution to total revenue.

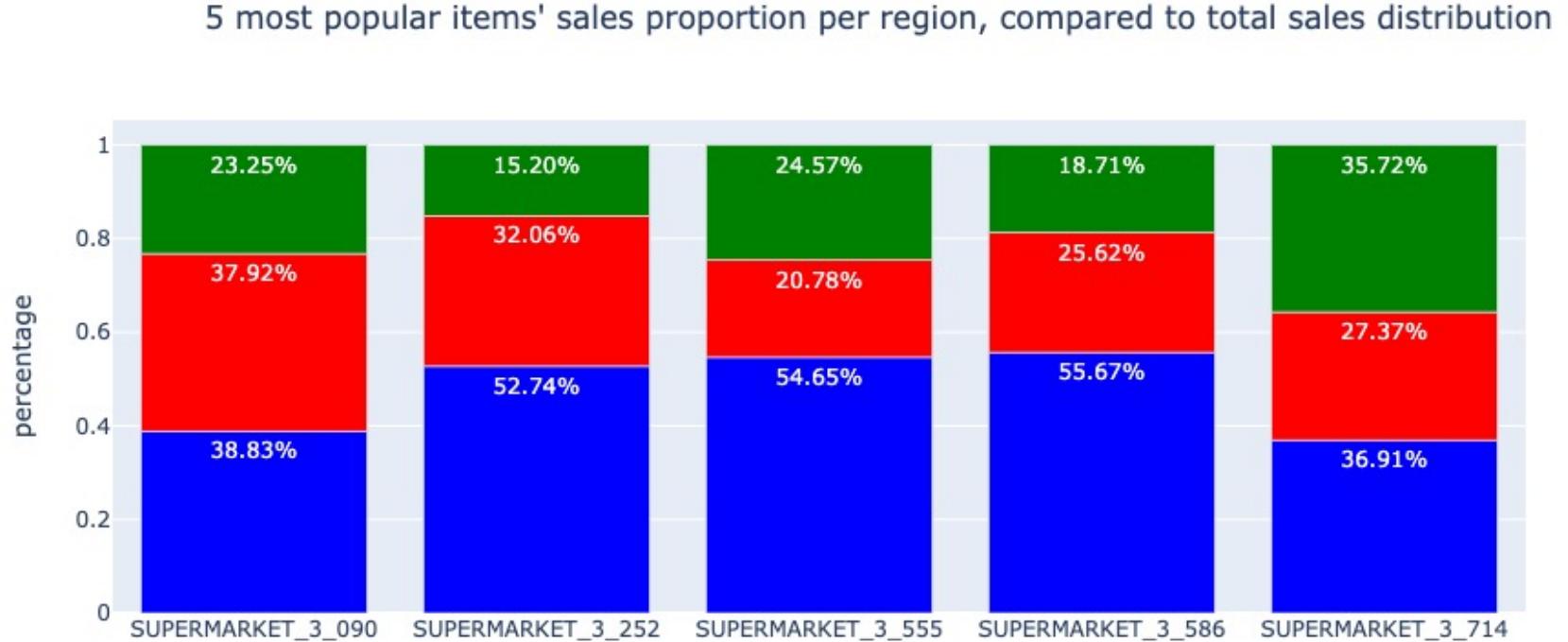
The 1st item considering revenue is 586, which is the 2nd by item sold. **The 2nd** product with the highest contribution **is not on the top 10** products by units sold. When considering revenue, one item of the **Accessories** department goes to the 8th position.

Products with the higher contribution to total sales (%)



Top 10 products account for around 5% of the total sales.

Item sales % per region



We can see that products 2 to 4 have a higher percentage of sales in Boston. It is significant that the sales of 555 are percentually higher in Philadelphia than in NY. 714 has almost the same weight in Philadelphia than in NY.

Most sold items in NY



Top 3 products in NY are the same than the general top 10 products by units sold. The first one accounts for almost half the total of the product sales.

Top 10 most sold items (units) in Boston



The top 4 products are within the top 4 globally, but with a different order. The sales of 586 in Boston (the n°1 by revenue product) accounts for half of the global sales of the product.

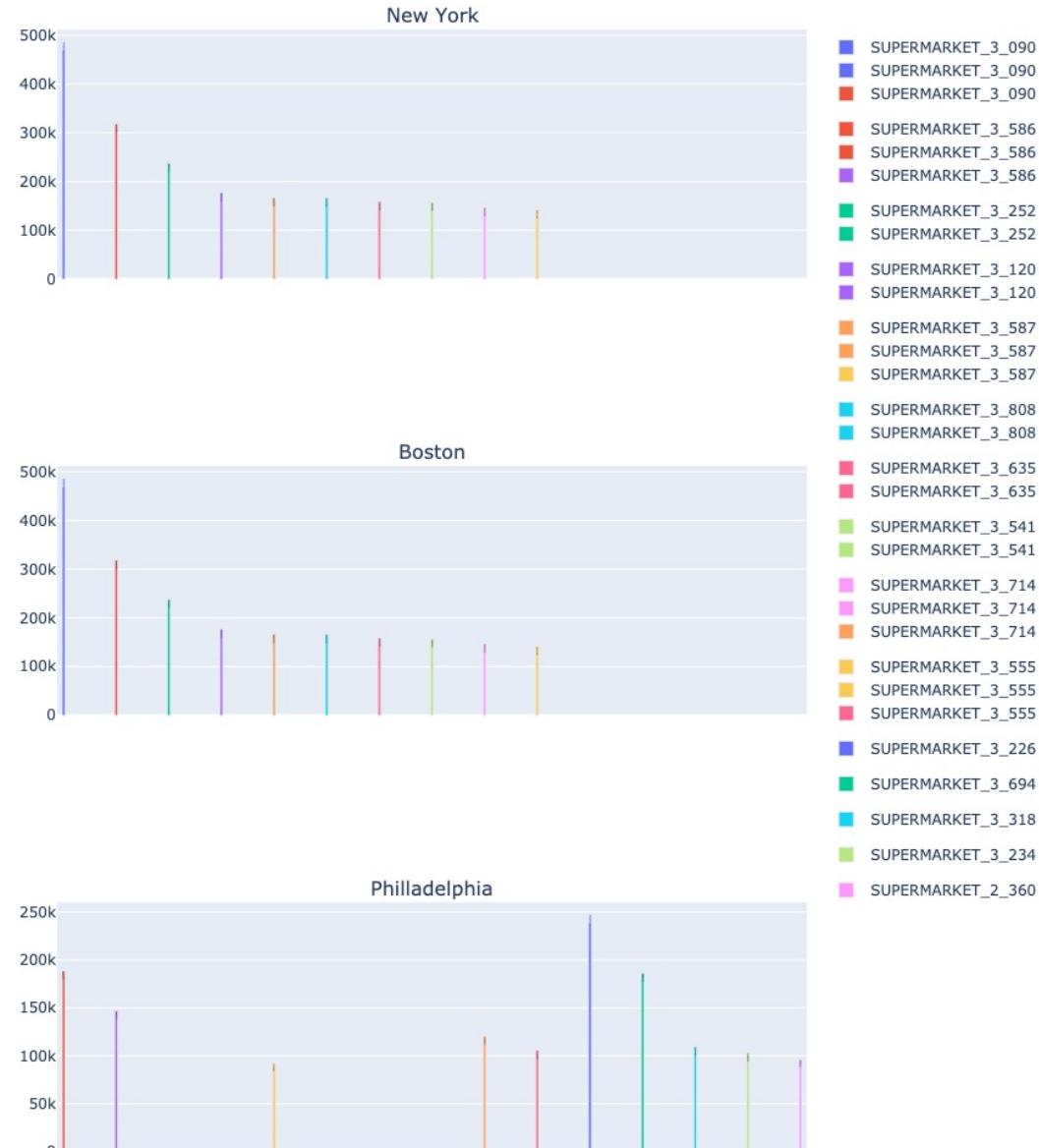
Most sold items (units) in Philadelphia



The top item in Philadelphia is not on the global Top Ten nor in any other top product classification.

This is a good example of how thinking globally but acting locally can improve the results of the business.

Most Popular items



Despite not being a very aesthetic graph, it allows us to visually see how most popular items vary across regions.

We can also see how Boston and New York regions are more alike than Philadelphia, in terms of which of products are more sold.

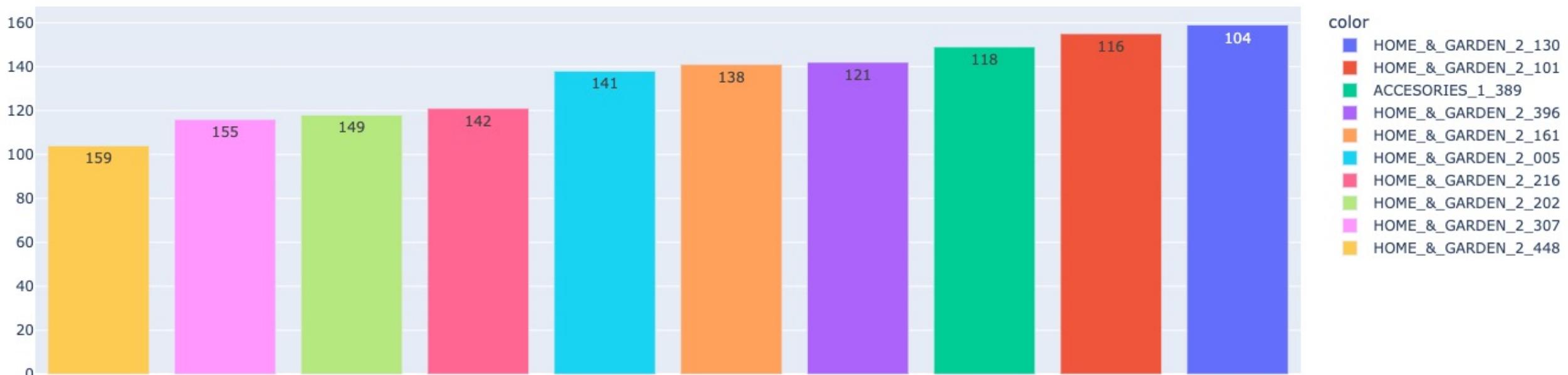
Less sold items

For less sold items we just find some common points, but establishing analogies is difficult even for Boston and NY.



Less sold items in Philadelphia

Less sold items in Philadelphia

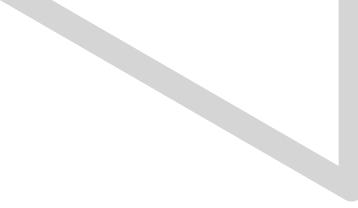


While Boston and NY have some Supermarket products among the less sold, the majority or less sold items in Philadelphia are in the home & garden category.

least Popular items

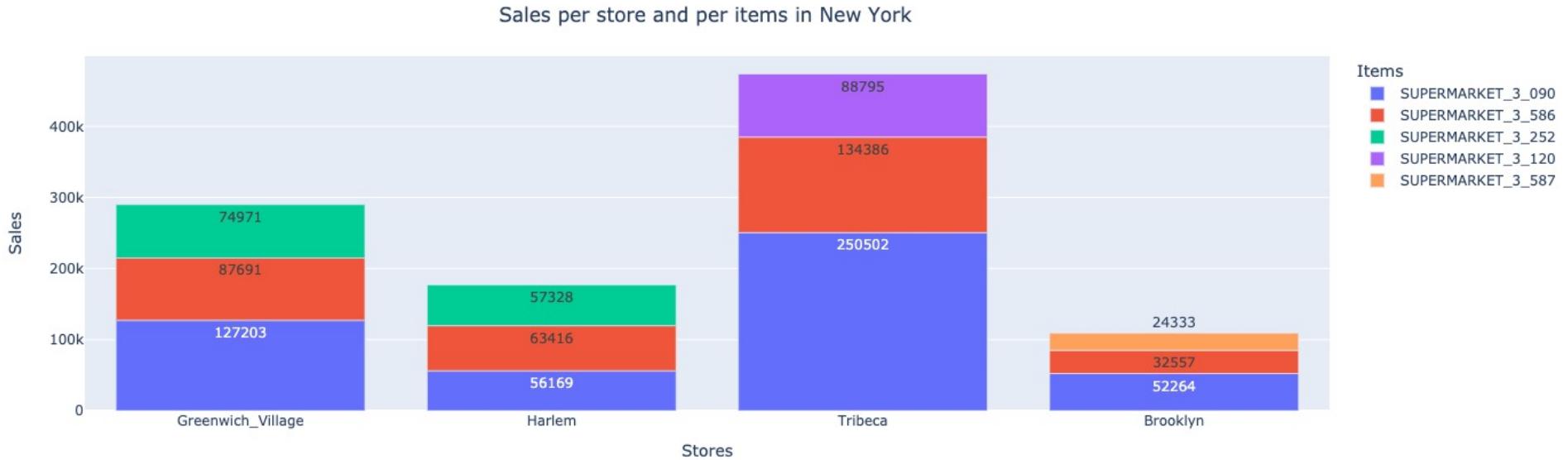


This format of graph shows again in a very visual way the differences between the top 10 less sold products across regions.



To finish with this first analysis,
we have some graphs
representing the sales
distribution among stores of
the most sold products.

New York top items per store



Even in the same region, we can see how the stores don't even share the top 5 selling products. The most sold item in Tribeca is the 3rd in Harlem, which shares its top 3 products with Greenwich Village. Tribeca and Brooklyn have a different product among the best sellers, that they do not share.

Boston top items per store



Boston shops are more like each other, but still there is a different product in the top 3 in the South End store.

Philadelphia top items per store



Supermarket 090, which is the most sold item globally, and within the top 3 of all the rest of stores, it's not in the top 3 of Yorktown.

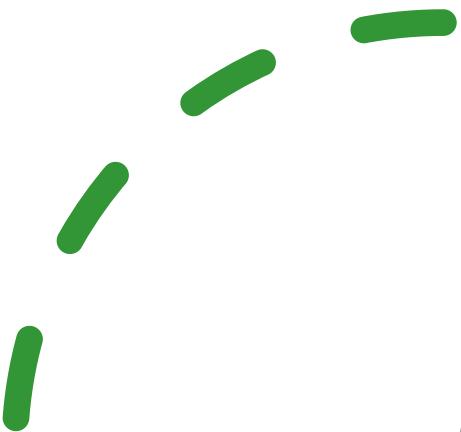


With just a sample of data
and this first analysis, we
can already reach some
prior conclusions.

Highlights

Store by
store
approach.

Go global act
local.

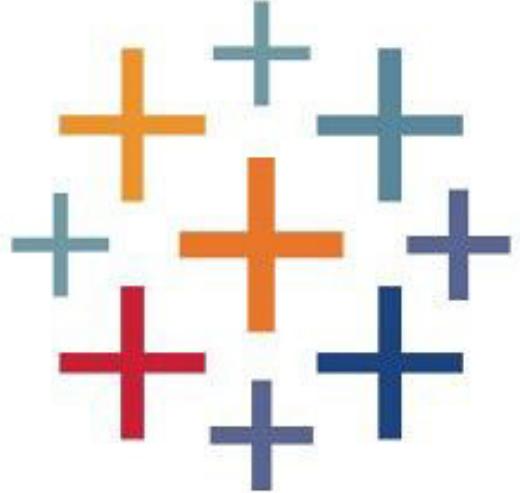


Our next natural steps:

From programming tools to a more usable solution

BI solution implementation

For data analysis to be useful within an organization, it needs to be accessible to all stakeholders. The steps toward a data driven decision company must include an easy and powerful way to access the available information.



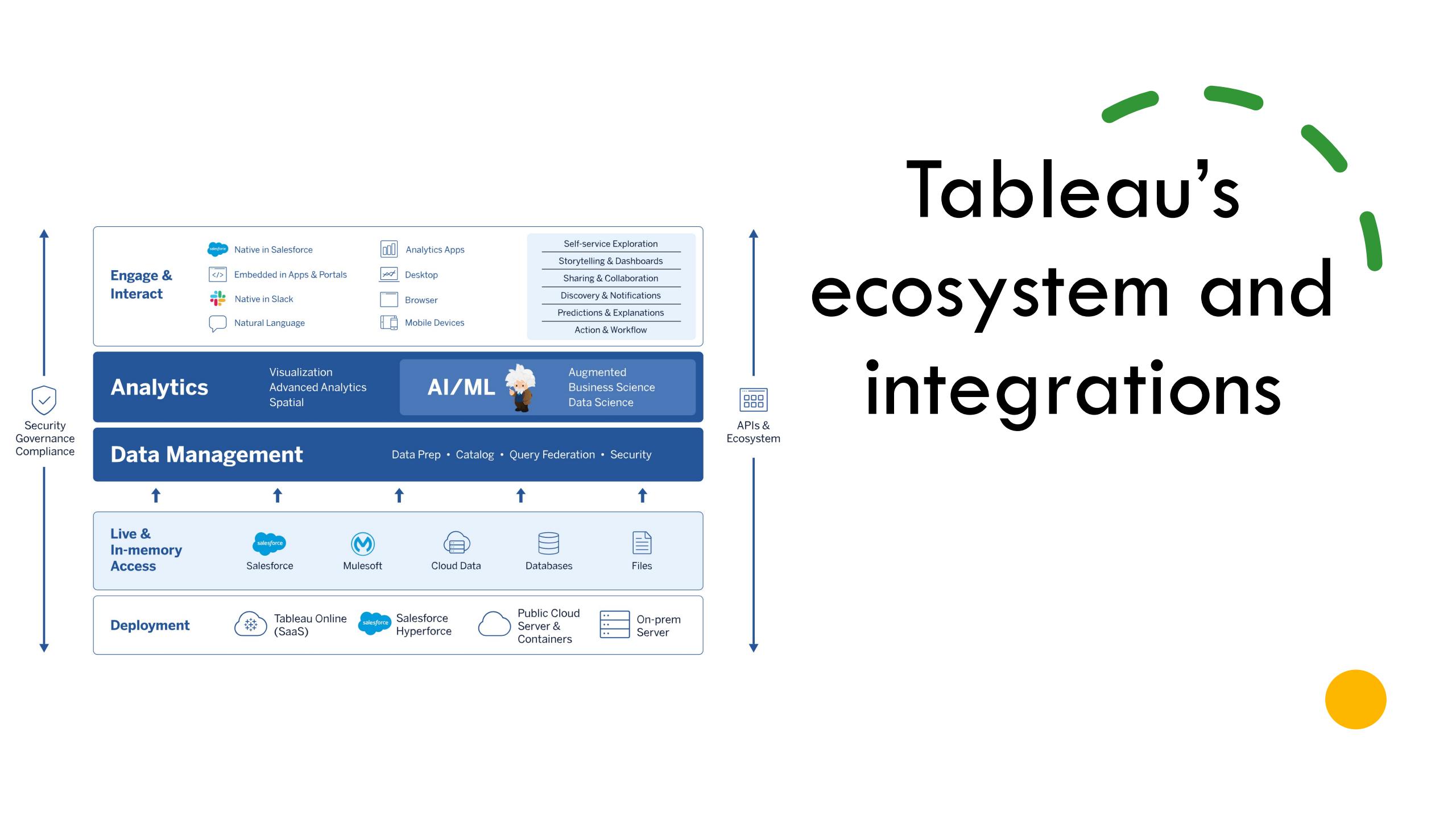
Our proposal: Tableau

It's a leader of the BI market with strong partnerships and integrations.

Has different roles and licence prices for each person within the company.

It has free learning resources, and a whole community to look for inspiration.

It has ready to use dashboards for retail and wholesale.



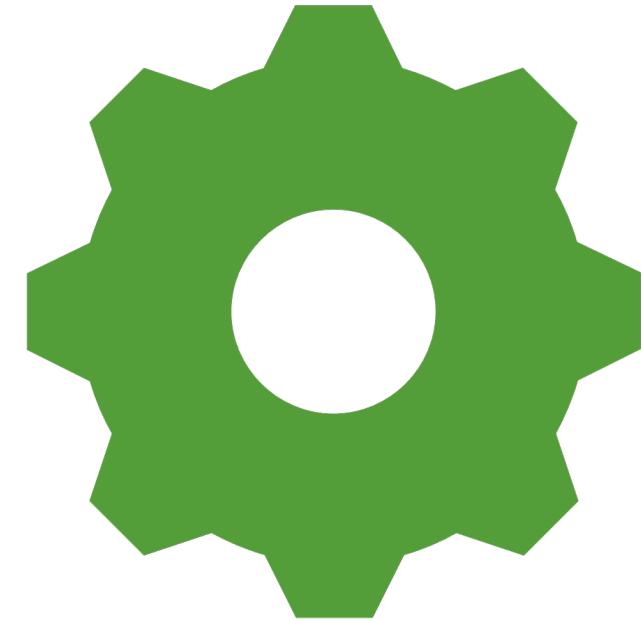
Tableau's ecosystem and integrations

The diagram illustrates Tableau's ecosystem and integrations across five main layers:

- Engage & Interact:** Includes Native in Salesforce, Embedded in Apps & Portals, Native in Slack, Natural Language, Analytics Apps, Desktop, Browser, and Mobile Devices. Sub-categories include Self-service Exploration, Storytelling & Dashboards, Sharing & Collaboration, Discovery & Notifications, Predictions & Explanations, and Action & Workflow.
- Analytics:** Includes Visualization, Advanced Analytics, Spatial, and AI/ML (Augmented Business Science, Data Science).
- Data Management:** Includes Data Prep, Catalog, Query Federation, and Security.
- Live & In-memory Access:** Includes Salesforce, Mulesoft, Cloud Data, Databases, and Files.
- Deployment:** Includes Tableau Online (SaaS), Salesforce Hyperforce, Public Cloud Server & Containers, and On-prem Server.

Vertical arrows on the left indicate "Security Governance Compliance" and "APIs & Ecosystem". A large yellow circle is located in the bottom right corner.

To share with you the potential of the tool, we have created some dashboards with the information that we have just analyzed.



Top 12 performance

Top 12 Items performance (revenue)												
item	Semana de dates											
	18 May 2015	25 May 2015	1 June 2015	8 June 2015	15 June 2015	22 June 2015	29 June 2015	6 July 2015	13 July 2015	20 July 2015	27 July 2015	
ACCESORIES_1_158	1,963	9,603	8,348	9,763	9,422	8,995	10,799	9,752	9,058	10,142	9,595	
ACCESORIES_1_354	2,528	14,053	12,974	12,417	12,943	10,630	12,574	12,669	12,361	11,838	12,111	
HOME_& GARDEN_1_110	579	3,894	4,449	4,004	3,780	3,990	4,240	3,964	4,350	3,798	4,185	
SUPERMARKET_1_096	568	4,430	5,071	5,061	4,733	5,103	6,164	7,522	6,516	5,489	5,834	
SUPERMARKET_3_090	5	10	16	1,548	7,260	6,521	7,331	6,793	7,412	7,163	6,204	
SUPERMARKET_3_120	1,810	10,549	12,054	13,393	12,897	11,158	13,320	11,863	11,229	11,589	11,880	
SUPERMARKET_3_202	1,178	5,902	7,323	15	66	46	66	8,767	9,101	8,049	8,320	
SUPERMARKET_3_252	496	3,497	4,132	4,722	4,557	4,450	4,864	4,309	5,232	5,280	5,606	
SUPERMARKET_3_282	463	3,136	3,611	4,459	4,841	3,593	4,053	4,784	3,359	2,820	3,037	
SUPERMARKET_3_444	1,245	3,816	86	78	78	78	63					
SUPERMARKET_3_586	927	5,460	6,504	6,808	6,293	6,249	6,808	7,061	7,038	6,822	7,019	
SUPERMARKET_3_587	808	5,075	5,971	6,792	5,938	4,737	4,867	5,800	5,896	5,515	5,560	

Top 12 Item movement (units sold)												
item	Semana de dates											
	18 May 2015	25 May 2015	1 June 2015	8 June 2015	15 June 2015	22 June 2015	29 June 2015	6 July 2015	13 July 2015	20 July 2015	27 July 2015	
SUPERMARKET_3_090	3	6	10	947	4,436	3,984	4,478	4,154	4,531	4,377	3,785	
SUPERMARKET_3_586	484	2,851	3,396	3,555	3,286	3,263	3,555	3,687	3,675	3,562	3,665	
SUPERMARKET_3_252	272	1,917	2,265	2,588	2,498	2,439	2,666	2,362	2,868	2,894	3,073	
SUPERMARKET_3_120	303	1,766	2,018	2,242	2,159	1,868	2,230	1,986	1,880	1,940	1,989	
SUPERMARKET_3_587	269	1,687	1,987	2,259	1,978	1,576	1,619	1,927	1,964	1,830	1,844	
SUPERMARKET_3_282	154	1,043	1,201	1,483	1,610	1,195	1,348	1,591	1,117	938	1,010	
SUPERMARKET_3_202	231	1,159	1,437	3	13	9	13	1,717	1,784	1,579	1,633	
HOME_& GARDEN_1_110	127	854	976	878	829	875	930	869	954	833	918	
SUPERMARKET_1_096	63	516	578	577	545	583	696	854	719	623	653	
ACCESORIES_1_354	82	456	421	403	420	345	408	411	401	384	393	
ACCESORIES_1_158	66	323	282	328	316	301	362	328	304	339	323	
SUPERMARKET_3_444	157	481	11	10	10	10	8					

This dashboard can lead us to conclusions like:

- Top 12 items vary over different time ranges.

- Different stores have different top 12 items.

- Specific products may start and stop selling at a given time.

- There is high seasonality with some products: they may be top sellers at one point and be at the bottom at some other.

- There are some products that were popular at a given time but are not selling any more.

Sales by store (revenue)

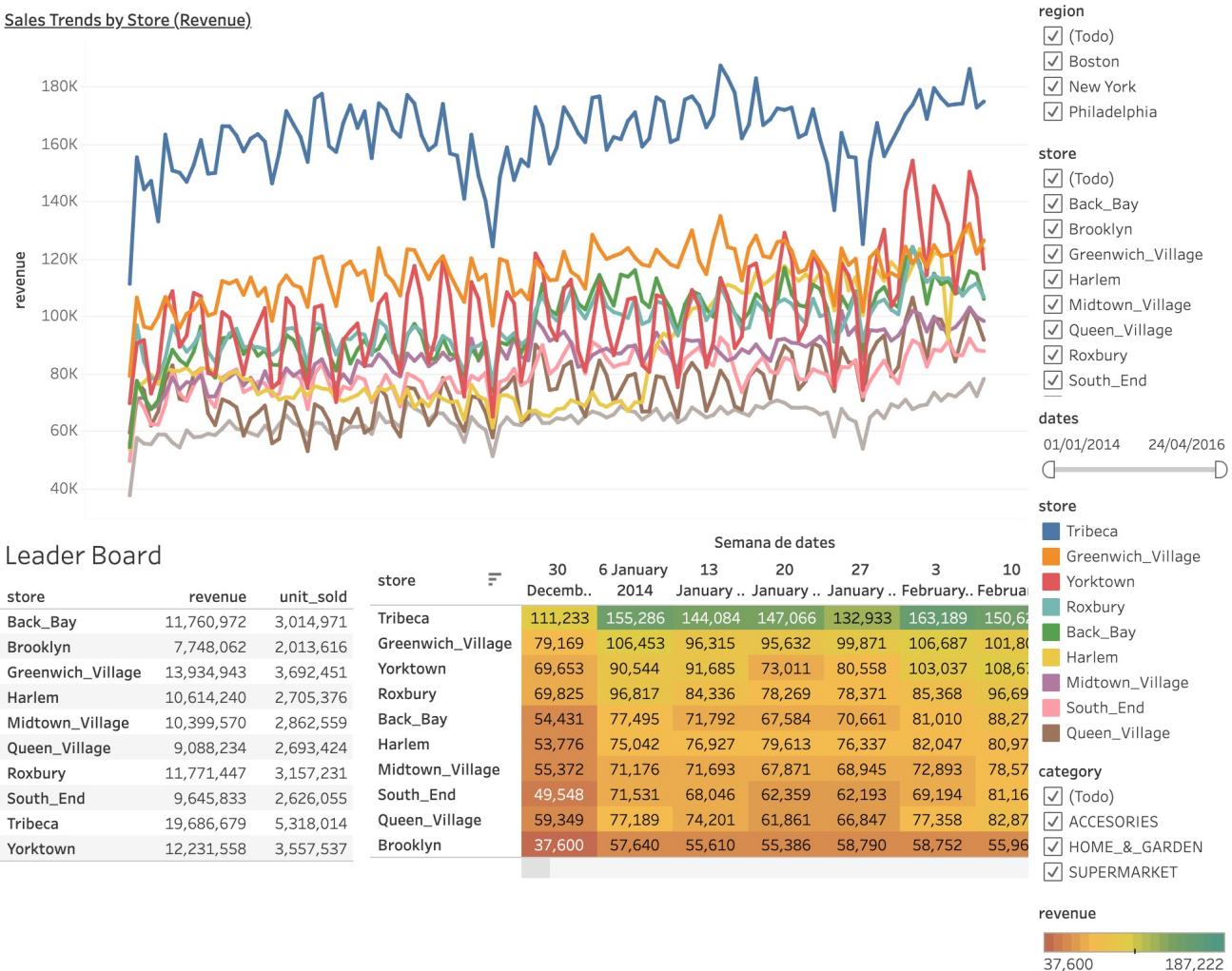
This dashboard :

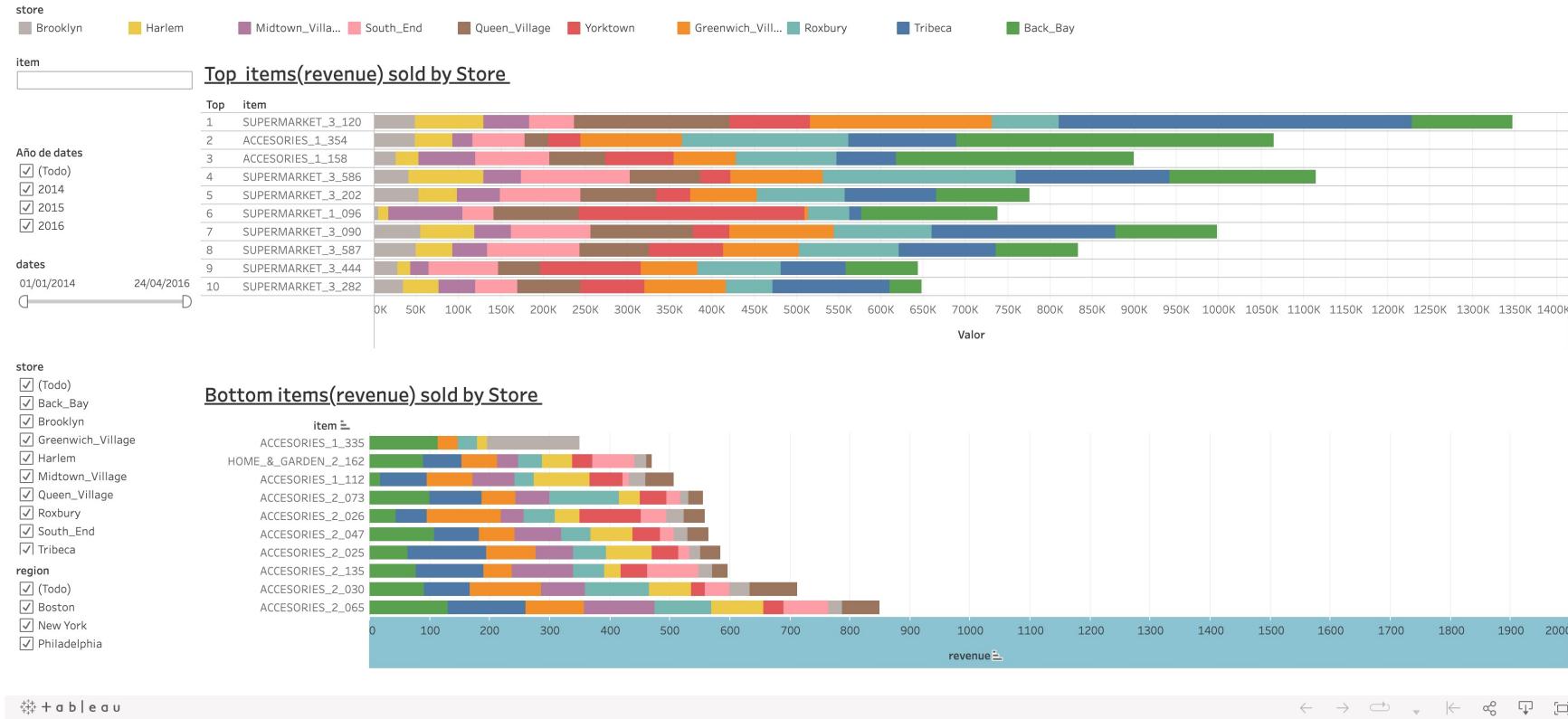
Shows Top 12 items and how they vary over different time ranges and stores.

It allows to interpret that specific products may start and stop selling at any given time.

Also that there is high seasonality with the different products, some products may be top sellers at one point and be at the bottom at some other

Sales Trends by Store (Revenue)

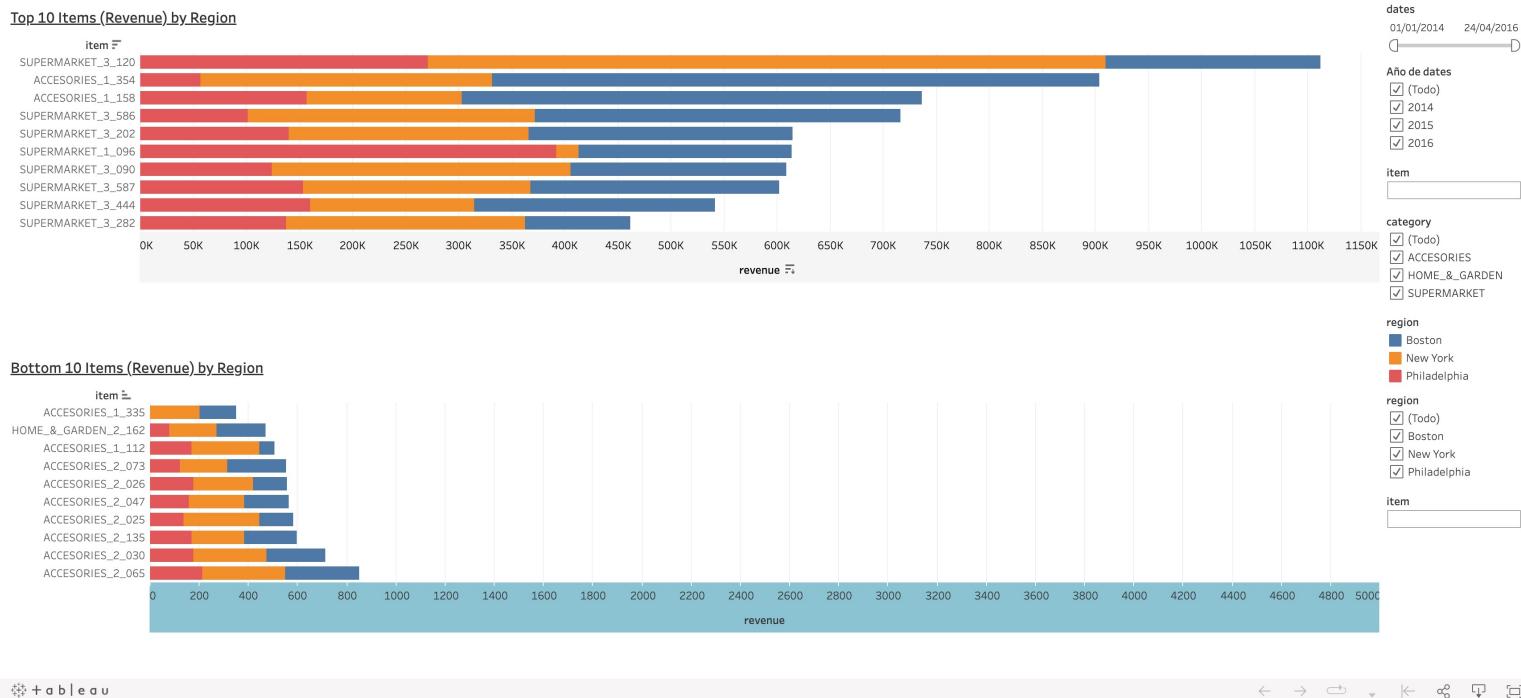




Sales by store (revenue)

This dashboard :
Shows total revenue and unit sold of Top 10 and Bottom 10 items by Store.

We can select different time periods to see change in top and bottom items and break this down by store



Sales by store (revenue)

This dashboard :

Shows total revenue and units sold of Top 10 and Bottom 10 items by region.

We can select different time periods to see change in top and bottom items and break this down by store.

Example of dashboard insights:

Unit Sales Trends by Day of Week | Tableau Public Date Range :

24/05/2015 – 04-24-2016

Tops **Revenue Sales** occur from Friday to Monday.

Around 650.000 USD was earned on all the Sundays versus 462.000 USD on all Wednesdays of the selected date range.

Average **revenue** across all stores on Sundays is 132 USD compared to lowest average of 97 USD on Wednesdays.

Around 147.000 **units** were sold on all the Sundays versus 100.000 **units** were sold on all Wednesdays of the selected date range.

An average of 30 units were sold on Sundays versus 21 units sold on Tuesdays and Wednesdays

Saturday is the peak day for Roxbury, Yorktown and Midtown Village

Top Days over time can spike up and down, this can significantly be seen during holidays such as Thanksgiving, Christmas and New Years



Aditional information

From the available data we have also developed global units and revenue sales predictions, with dashboards also accessible via Tableau.

In the next slide we add a table with all the available dashboards at the moment.



Link	Description	Possible applications
Global Sales by Day of the week Tableau Public	Actual Average of Revenue sales by Day of the week compared against the forecasted average per day of week.	Weekly Tactical operational management benchmarking across stores and regions Target setting
Global Revenue and Unit Sales predictions Tableau Public	Global Revenue predictions. Global Unit Sales predictions .	Strategic Global forecasting Top-Down goal setting Global budget and stock procurement allocation
Revenue trends by Store Tableau Public	This shows store trends and comparison of store performance over selected periods of time.	Store sales performance management Trend analysis Sales step goals and kpi's
Top 12 Items Performance Tableau Public	<ul style="list-style-type: none"> -Top 12 items vary over different time ranges -Different stores have different top 12 items -Specific products may start and stop at any given time -There is high seasonality with the different products, some products may be top sellers at one point and be at the bottom as some 	Sales bundles for items that are likely to sell together Sales campaigns for items that have high affluence to seasons or events
Top and Bottom revenue earners by Store Tableau Public	<p>Shows total revenue and unit sold of Top 10 and Bottom 10 items by Store</p> <p>You can select different time periods to see change in top and bottom items and break this down by store</p>	store product performance management operational sales / mktg management customer insights top / bottom by item
Top and Bottom Items (Revenue) by Region Tableau Public	<p>Shows total revenue and unit sold of Top 10 and Bottom 10 items by region</p> <p>You can select different time periods to see change in top and bottom items and break this down by store</p>	regional product performance management operational sales / mktg management customer insights top / bottom by item
Unit Sales Trends by Day of Week Tableau Public	Shows Trends over time of Unit Sales per day of the week	Evaluation. Model evaluation to see if day of the week campaigns are still relevant for both Stock replenishment and per store.
Global Units Sales Dashboard Tableau Public	This Dashboard shows different reports representing actual unit sales values over different time breakdowns.	Evaluation of Inventory management against unit sales.

Improvement areas

- We could only access to a **limited part of the data**. Accessing the company's database would help us evaluate possible optimizations in the process of data cleaning and preparation and identify additional potentially useful information.
- Having **additional information**, like the **commercial name** of the items, would have helped us in our analysis. Data is powerful, but **understandable human context** is necessary for a complete analysis. **Purchase price** would have helped us studying profitability.

1st phase

We will keep working with the available data.

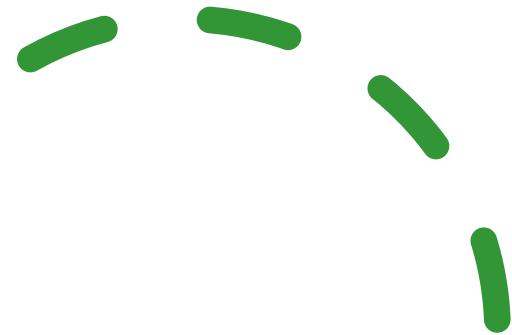
Next steps:

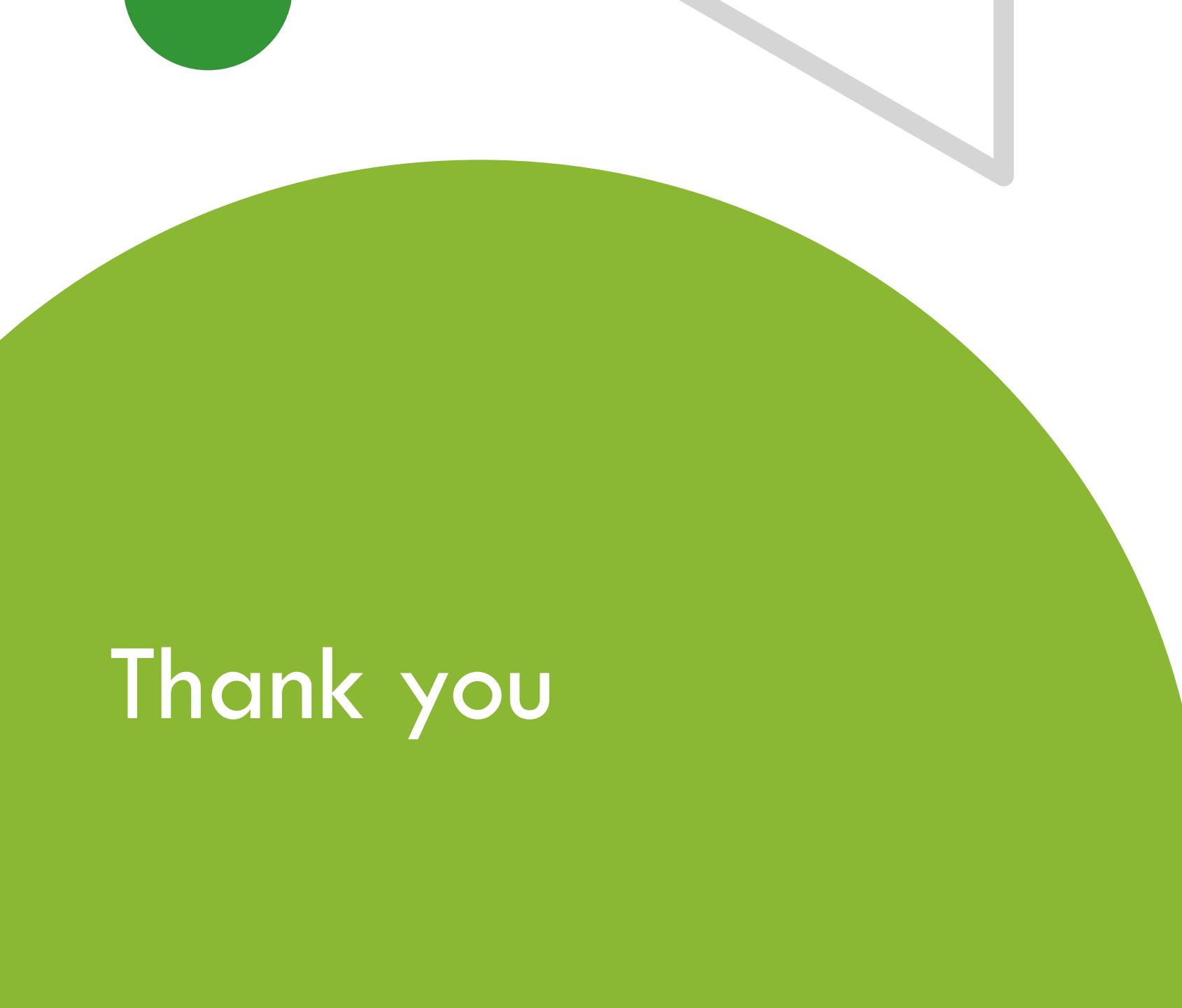
Product clusters and predictions.





Questions?





Thank you

