

Sample Super Store Data Analytics Using Ibm Cognos Analytics

A PROJECT REPORT

Submitted by:

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INTRODUCTION

OVERVIEW

This project is to Analyse and Visualize Superstore data.

Using the Sample Superstore Analysis dataset,we plan to create a dashboard showing the sales and profits for different segments and Sub-Category of products across all the region.

Dashboard Link

https://us3.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FSample-Superstore_Present&action=view&mode=dashboard&subView=model0000018117928d1e_00000000

PURPOSE

To create data visualization charts like those mentioned below:

- Build A Bar Chart Showing The Regional Sales By Year
- Build A Text Table Showing The Regional Sales By Year And Category
- Build A Line Chart Showing The Sales And Profit Forecasts
- Build The Sales Vs Profit Scatter Plot
- Build A Heat Map Showing The Regional, Segment And Sub-Category Wise Profits
- Build A Bullet Chart Showing Sales Analytical Values Across Different Sub-Categories
- Build maps to show profit, sales according to region

EXISTING PROBLEMS

- If we are finding unusual patterns within our data analysis or our statistical significance is not strong enough, we might not have enough data to make valid conclusions
- Without doing data analysis, we won't get the opportunity to evaluate the data before making actionable plans
- Data is meaningless without context and without context, we cannot turn data into information
- Information is useless without being able to apply to something

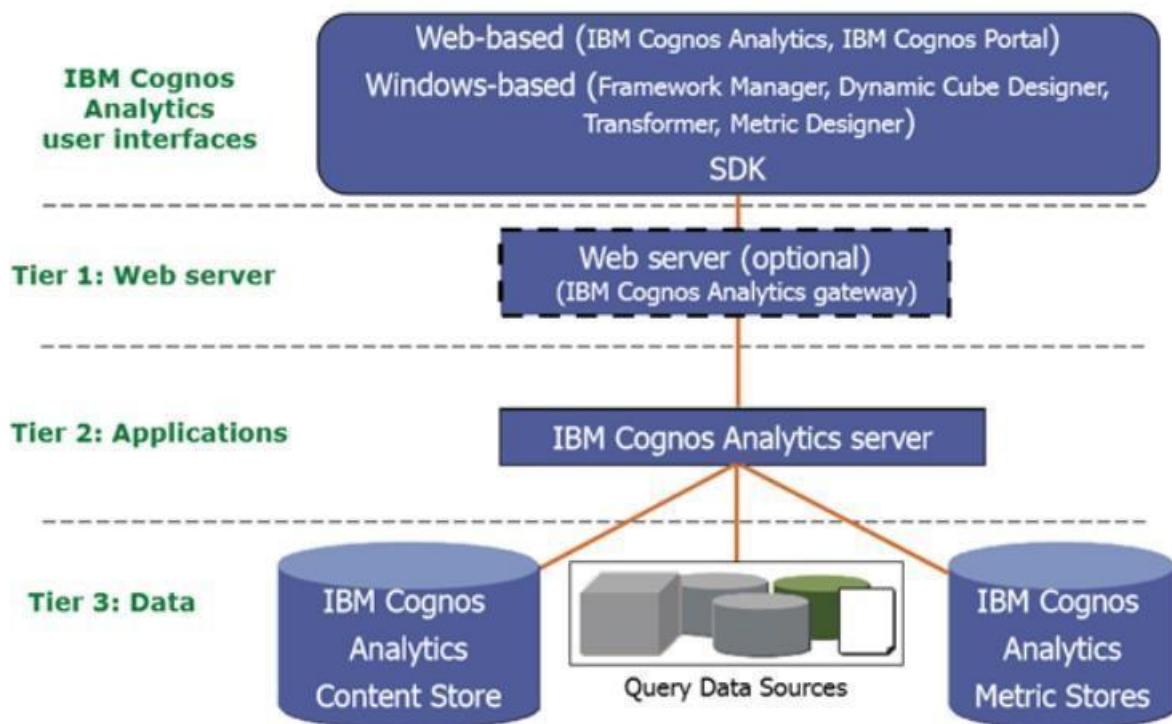
PROPOSED SOLUTIONS

- To create various data visualizations using IBM Cognos
- To make a dashboard using IBM Cognos
- Making dashboards can revolutionize both our success and enjoyment in running our business

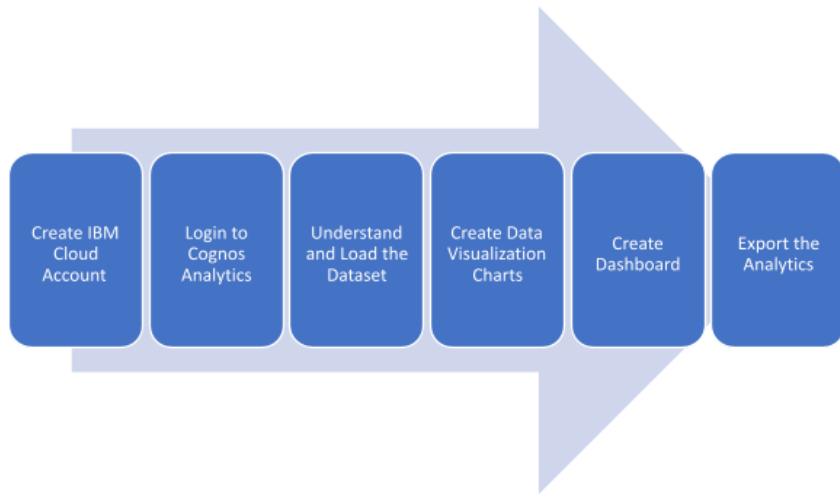
THEORETICAL ANALYSIS

BLOCK DIAGRAM

IBM Cognos Analytics architecture (high level)



FLOWCHART



RESULT

- Data Preparation:

The screenshot shows the IBM Cognos Analytics with Watson interface. The left sidebar displays the 'Data module' tree, which includes 'Sample-Superstore_DataPrep' and its sub-nodes: 'Navigation paths', 'Orders', 'People', and 'Returns'. The main area is a 'Grid' view showing a list of 9 rows from the 'Orders' table. The columns are: Row ID, Row ID, Order ID, Order Date, Ship Date, Ship Mode, and Customer ID. The data is as follows:

Row ID	Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer ID
1	1	CA-2019-152156	11/8/19	11/11/19	Second Class	CG-12520
2	2	CA-2019-152156	11/8/19	11/11/19	Second Class	CG-12520
3	3	CA-2019-138688	6/12/19	6/16/19	Second Class	DV-13045
4	4	US-2018-108966	10/11/18	10/18/18	Standard Class	SO-20335
5	5	US-2018-108966	10/11/18	10/18/18	Standard Class	SO-20335
6	6	CA-2017-115812	6/9/17	6/14/17	Standard Class	BH-11710
7	7	CA-2017-115812	6/9/17	6/14/17	Standard Class	BH-11710
8	8	CA-2017-115812	6/9/17	6/14/17	Standard Class	BH-11710
9	9	CA-2017-115812	6/9/17	6/14/17	Standard Class	BH-11710

The bottom status bar shows 'Guided_Project_Re...pdf' and 'Streamlabs+Deskt...', the date '6/2/2022', and the time '8:43 PM'.

- Calculations:

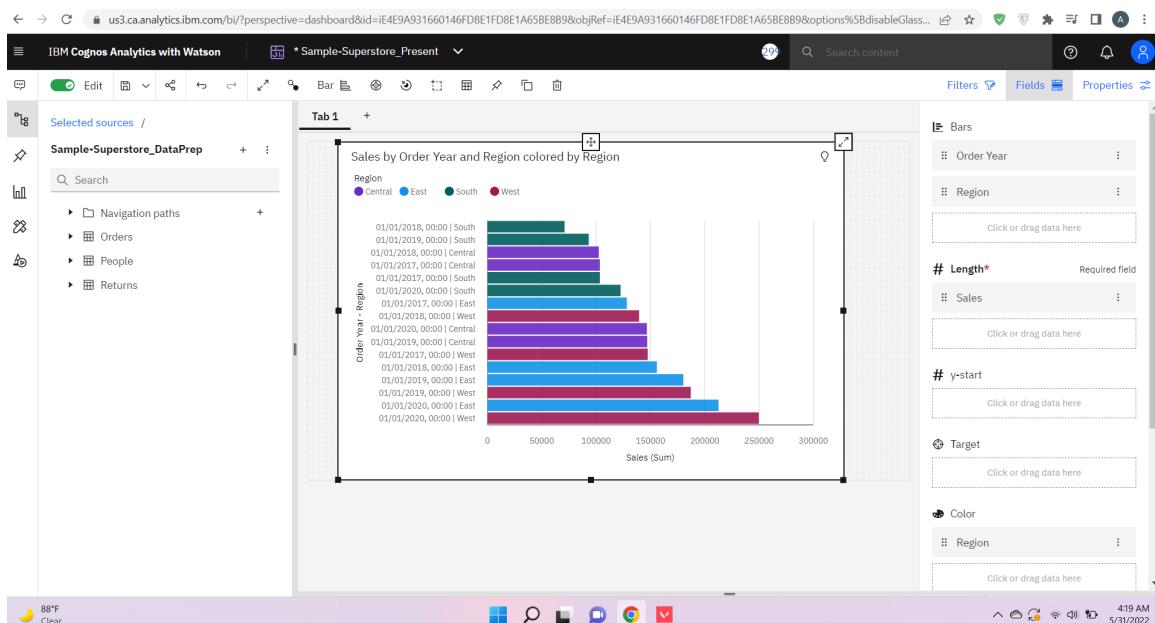
The screenshot shows the IBM Cognos Analytics with Watson interface. The left sidebar displays the 'Selected sources' tree, which includes 'Sample-Superstore_DataPrep' and its sub-nodes: 'Navigation paths', 'Orders', 'Max Sales', 'Min Sales', 'Target Sales', 'Shipping Day', 'Shipping Month', 'Shipping Year', 'All', 'Order Day', and 'Order Month'. The main area shows a visualization titled 'Sales by Order' with a chart and a table. The chart has two series: 'Central' (purple) and 'East' (blue). The table lists dates from '01/01/2018, 0' to '01/01/2020, 0'. The bottom status bar shows 'Guided_Project_Re...pdf' and 'Streamlabs+Deskt...', the date '6/2/2022', and the time '8:47 PM'.

● Navigations:

The screenshot shows the IBM Cognos Analytics with Watson interface. On the left, the 'Selected sources' pane displays a tree view of navigation paths under 'Sample-Superstore_DataPrep'. The 'Orders' node is expanded, showing sub-items like 'Max Sales', 'Min Sales', 'Target Sales', 'Shipping Day', and 'Shipping Month'. To the right, a data preview titled 'Sales by Order' is shown, listing sales data grouped by 'Order Year - Region'. The interface includes a top navigation bar with tabs, a search bar, and various tool icons.

● Data Presentation:

Build A Bar Chart Showing The Regional Sales By Year

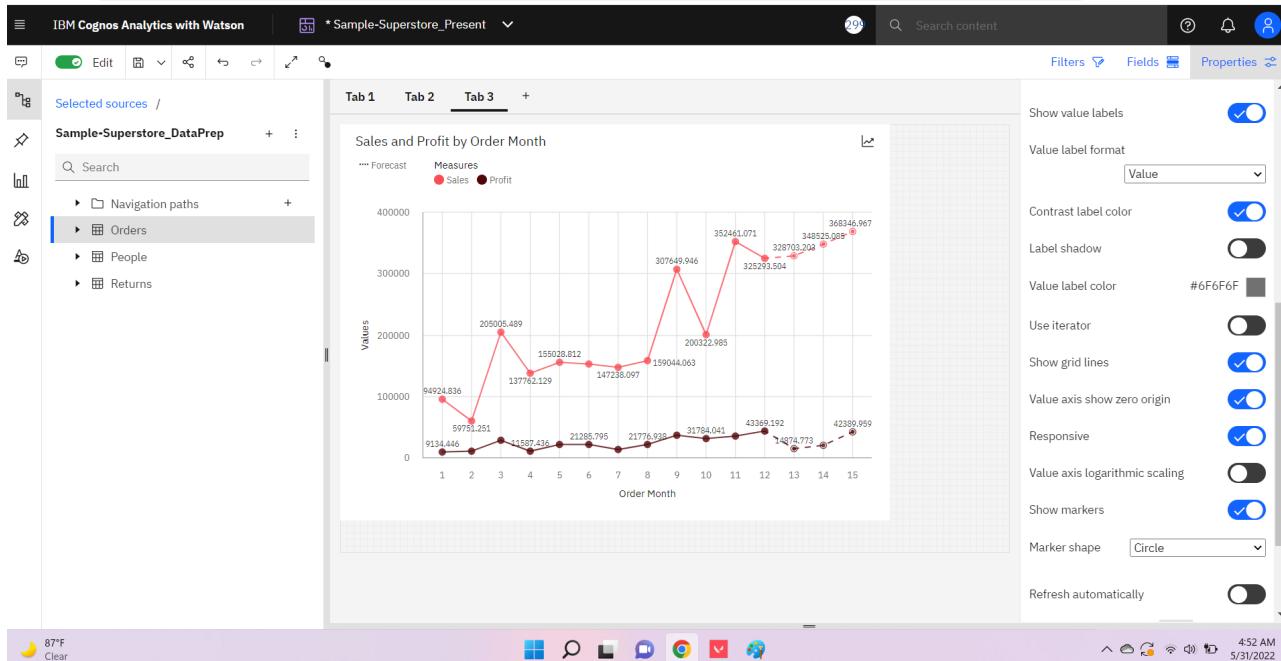


Build A Text Table Showing The Regional Sales By Year And Category

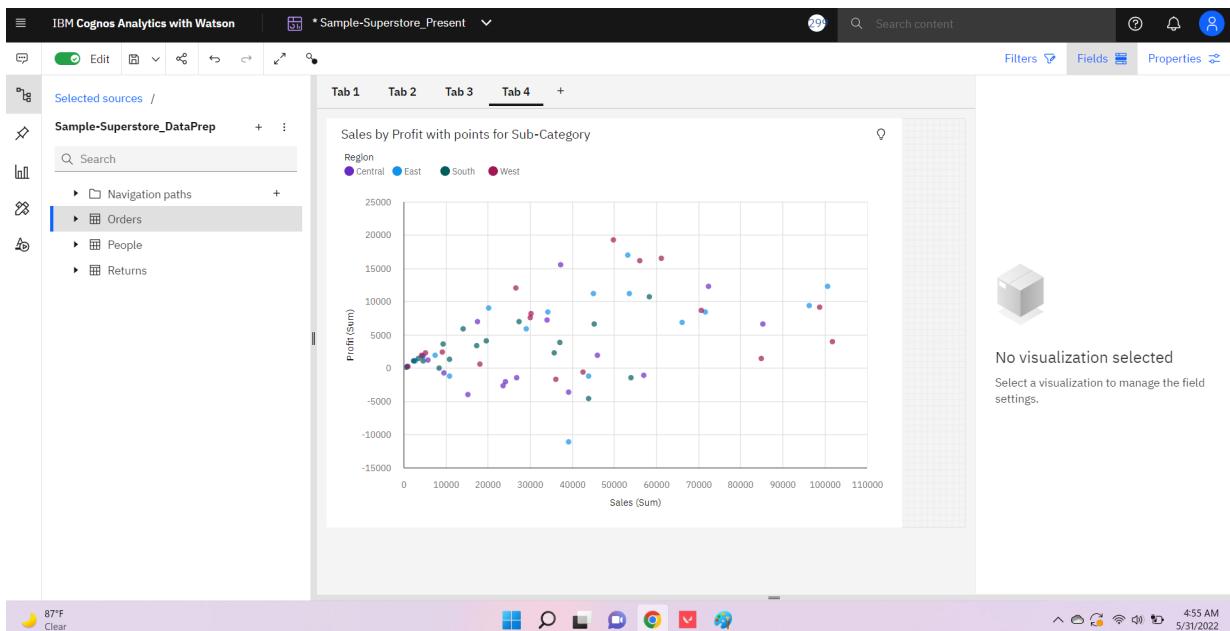
The screenshot shows a dashboard titled "Sample-Superstore_Present" in IBM Cognos Analytics with Watson. The main content area displays a table titled "Region sales by Year and Category". The table has columns for Sales, Central, East, South, West, and Summary. The data is grouped by year (2017, 2018, 2019, 2020) and category (Furniture, Office Supplies, Technology). The table includes summary rows for each year and a total summary row at the bottom.

Sales	Central	East	South	West	Summary
Furniture	32909.664	47232.739	26968.003	50082.448	157192.853
Office Supplies	37001.691	35968.909	25958.878	52846.854	151776.412
Technology	33926.81	45478.729	50918.963	44953.731	175278.233
Summary	103838.165	128680.457	103845.844	147883.033	484247.498
Furniture	35592.047	53817.432	24103.814	57004.944	170538.237
Office Supplies	25461.391	42655.245	31253.295	37863.532	137233.463
Technology	41820.784	59859.38	16002.871	45097.774	162780.809
Summary	102874.222	156332.057	71359.98	139966.25	470532.509
Furniture	50773.182	46387.172	27921.441	73819.64	198901.436
Office Supplies	45792.789	61801.206	28666.628	47679.357	183939.982
Technology	50863.405	72497.442	37022.154	65981.179	226364.18
Summary	147429.376	180685.822	93610.223	187480.277	609205.598
Furniture	44522.271	60853.861	38305.425	71705.711	215387.269
Office Supplies	58770.544	65090.613	39772.512	82463.506	246097.175
Technology	43805.313	87138.43	44827.92	95959.148	271730.811
Summary	147098.128	233082.904	122905.857	250128.365	733215.255
Summary	501239.891	678781.24	391721.905	725457.825	2297200.86

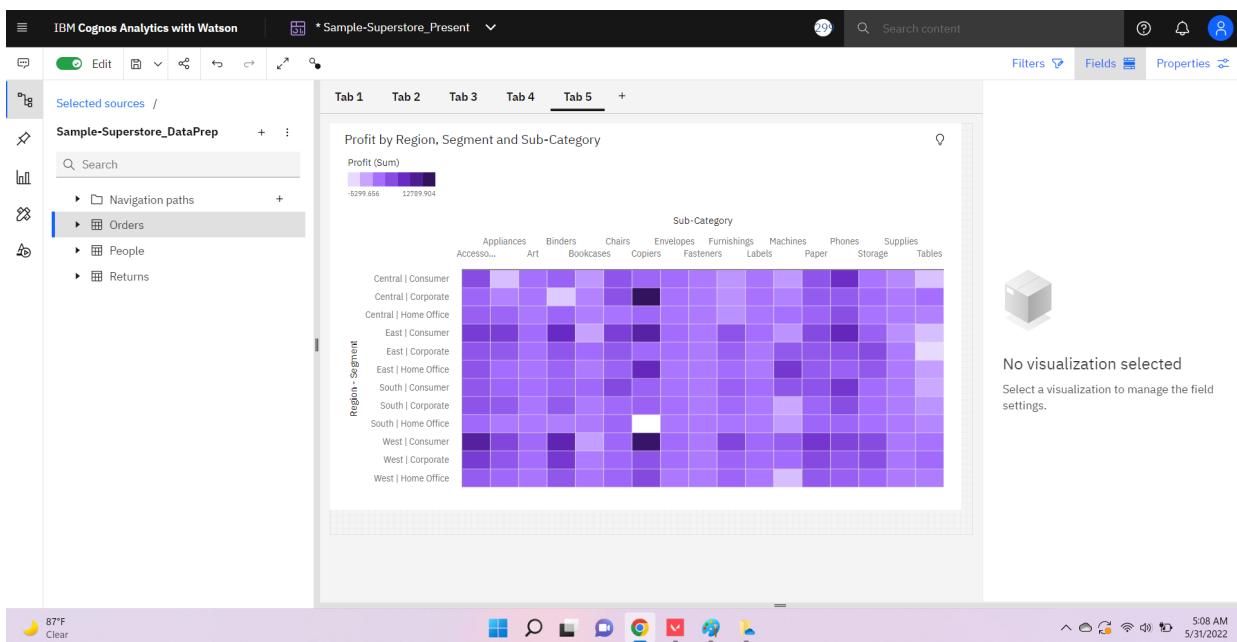
Build A Line Chart Showing The Sales And Profit Forecasts



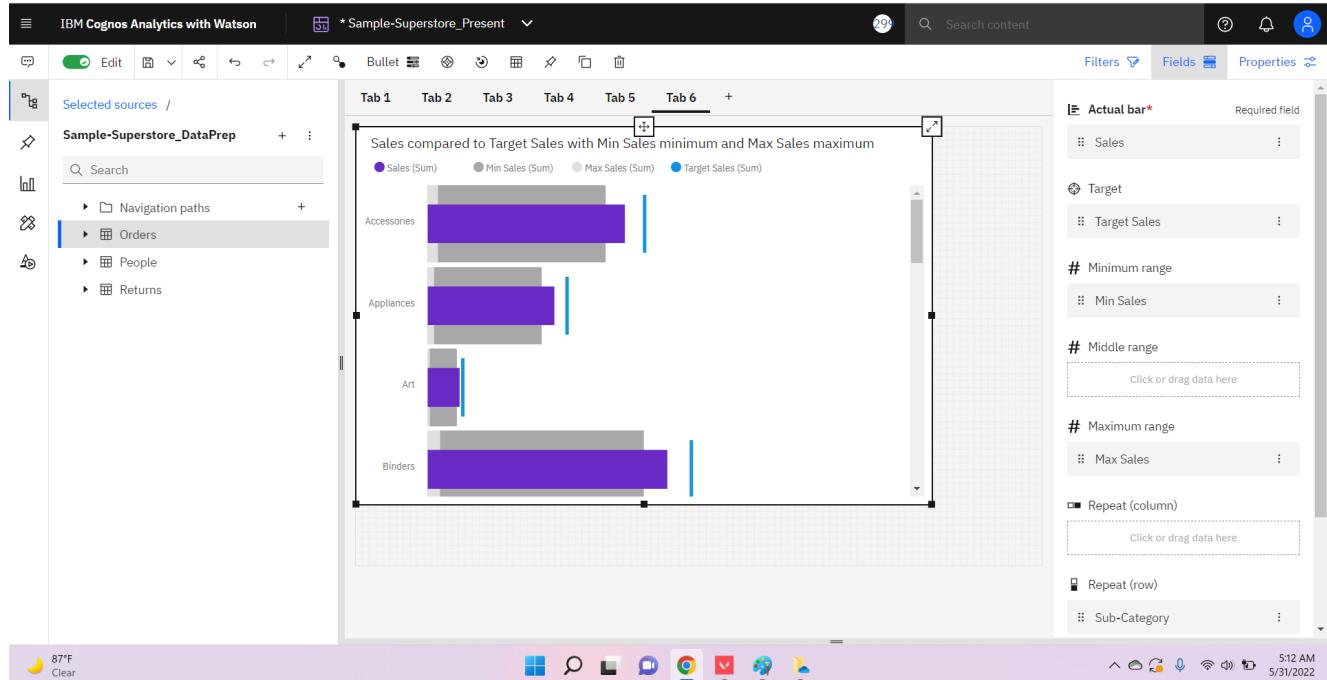
Build The Sales Vs Profit Scatter Plot



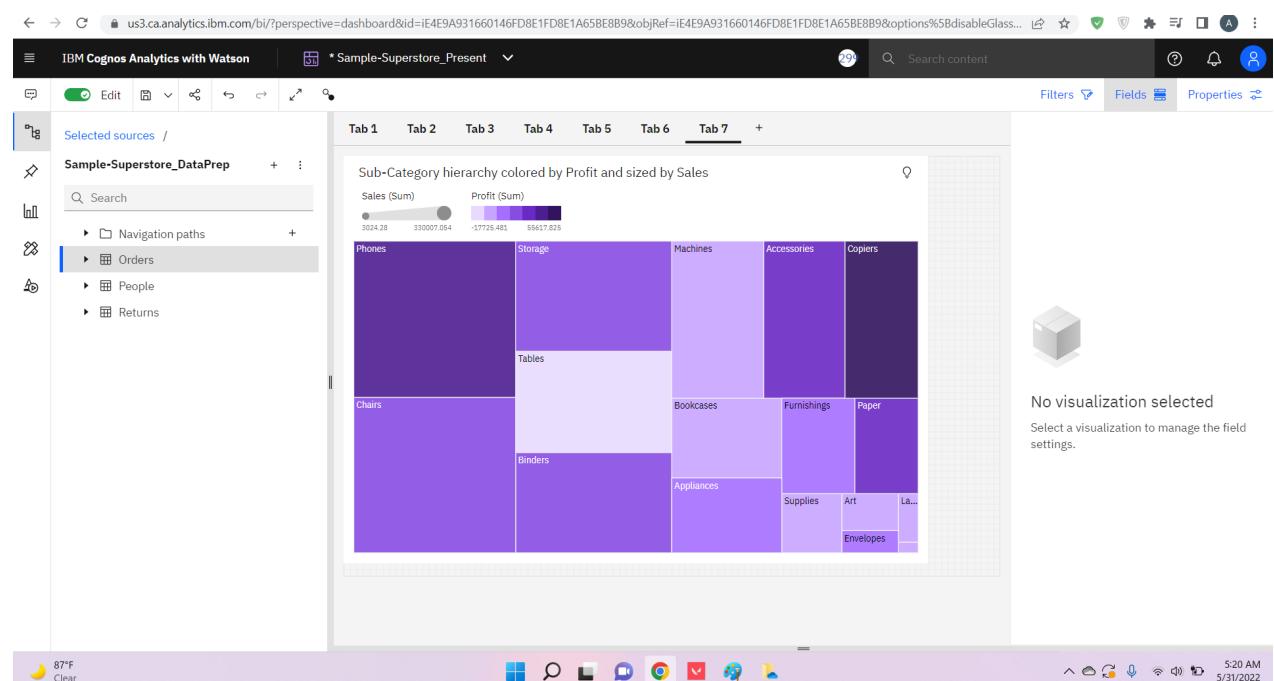
Build A Heat Map Showing The Regional, Segment And Sub-Category Wise Profits



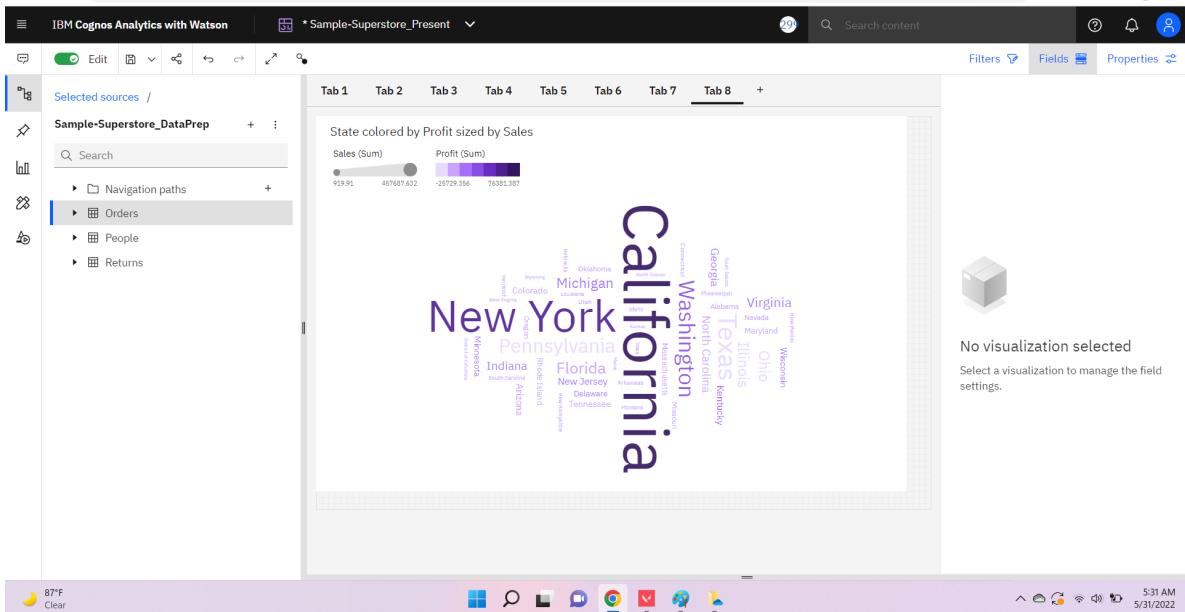
Build A Bullet Chart Showing Sales Analytical Values Across Different Sub-Categories



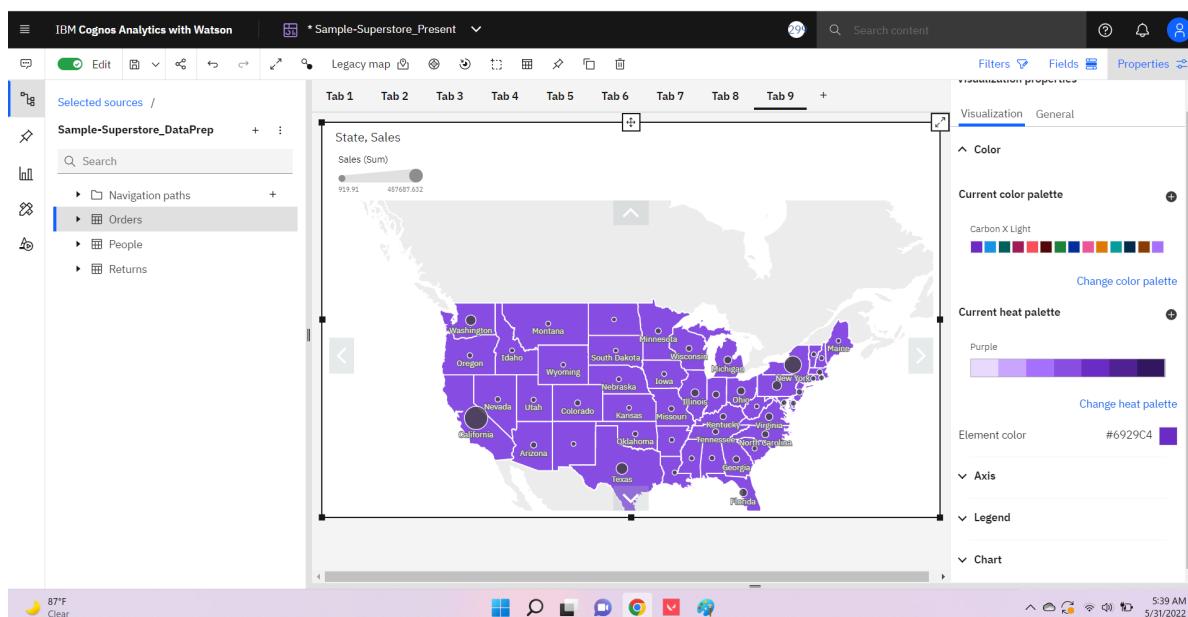
Build A Tree Map By Sub-Category Of Sales



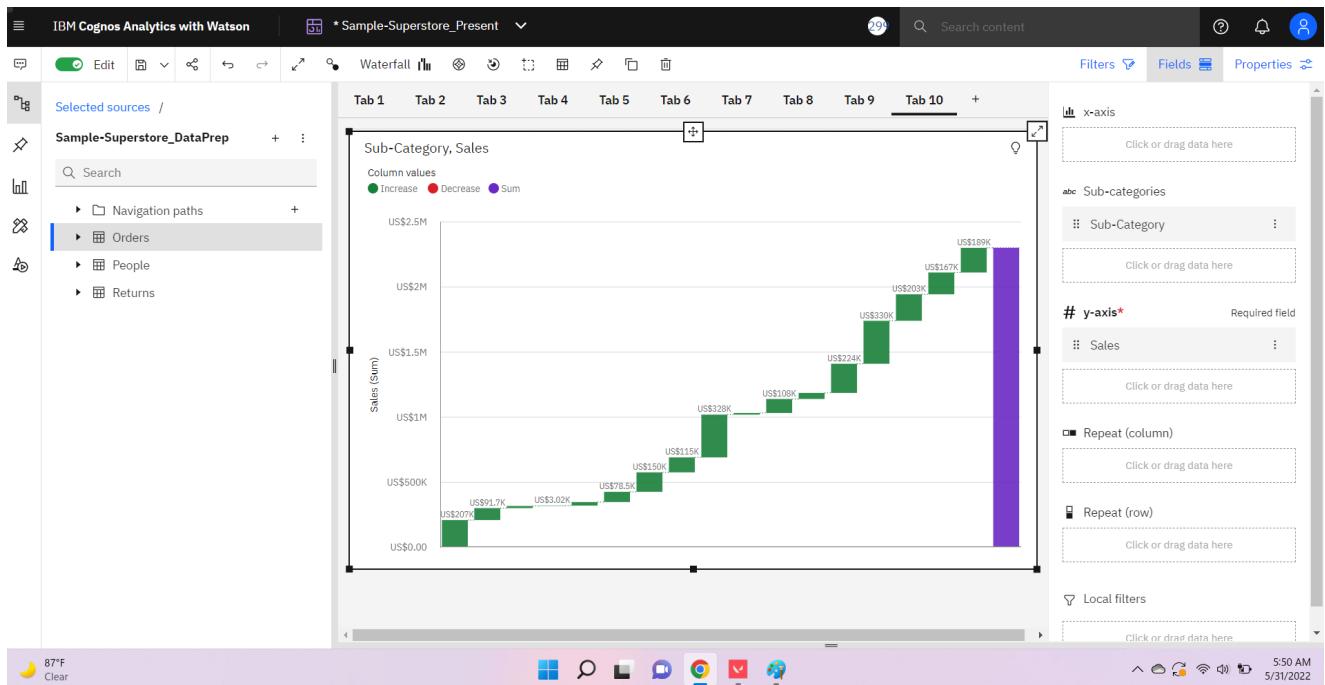
Build A Word Cloud Showing The Sales And Profits



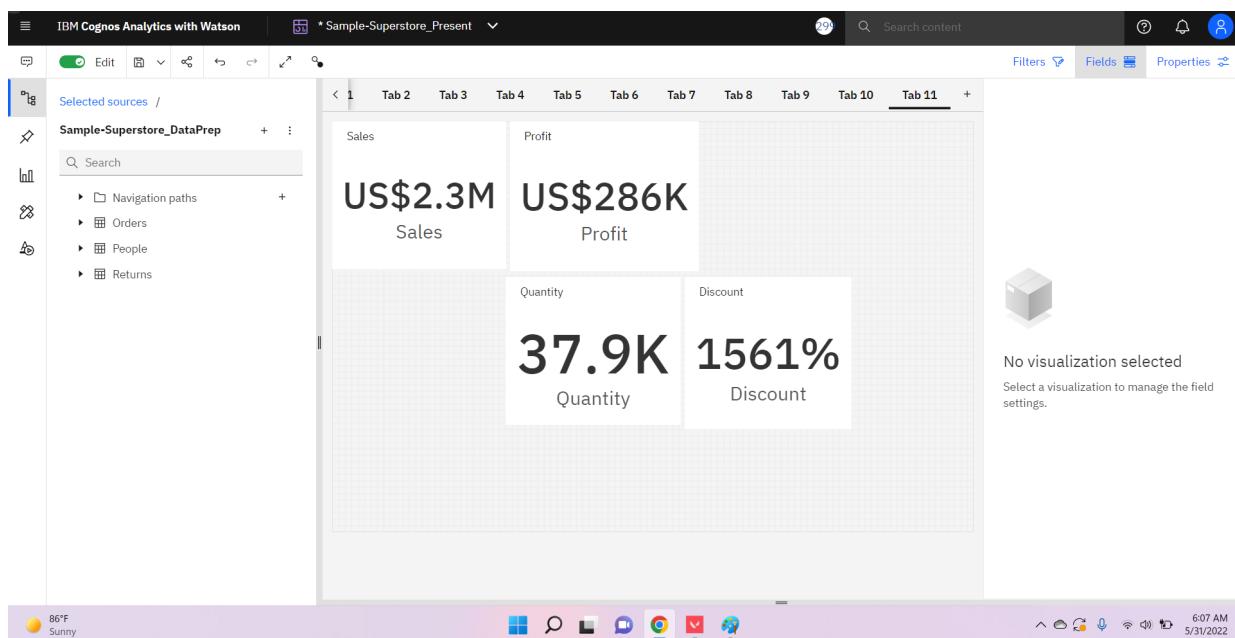
Build A Geographical Map Showing The Sales By States



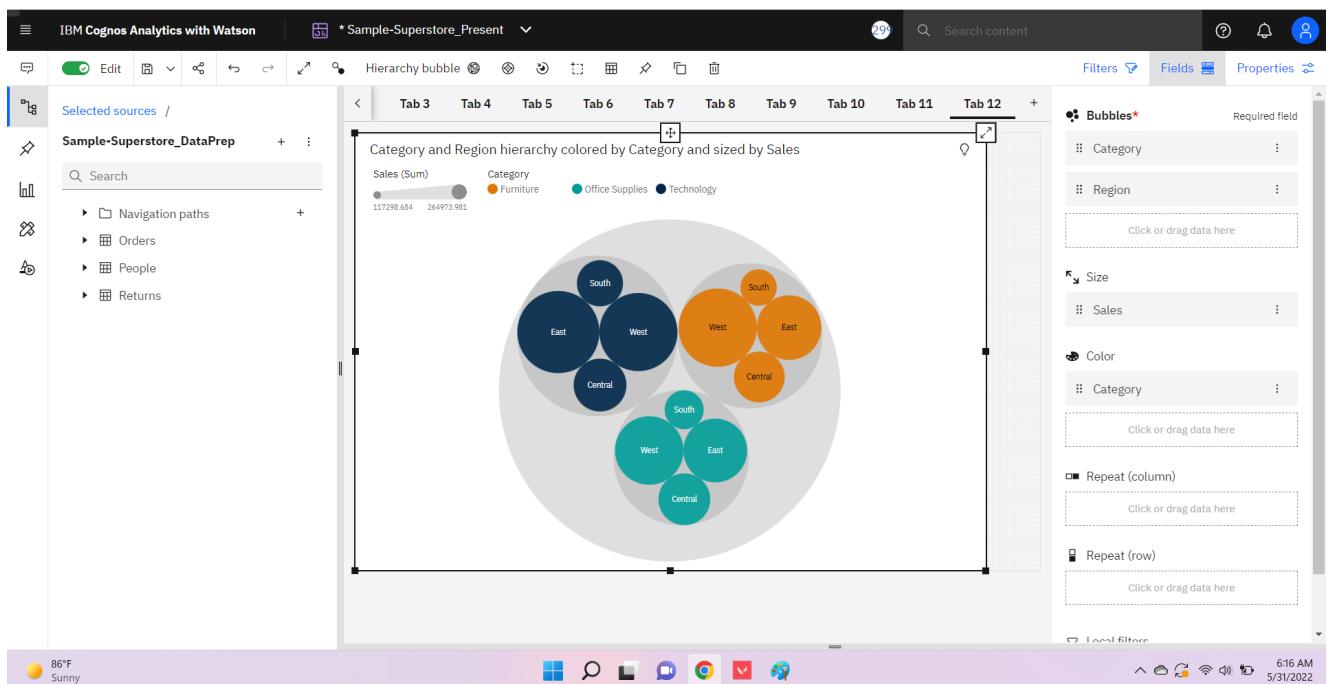
Build A Waterfall Chart Showing The Sub-Category Wise Sales



Build Summary Cards Of Sales, Profit, Quantity And Discounts



Build A Hierarchical Bubble Chart To Show Case Category-Wise Regional Sale



ADVANTAGES AND DISADVANTAGES OF CREATING DASHBOARD

ADVANTAGES

- Enhanced Visibility: Dashboards provide greater visibility with information available whenever it is required to ensure businesses are better placed to respond to changing market conditions
- Timesaving Efficiency: With dashboards, we are no longer wasting valuable time generating reports from multiple systems. Instead, data is drawn from a source and displayed as an easy to interpret visual overview
- Better Forecasting: With greater insight into the data, future demand can be more accurately predicted using historic information. Businesses can be more effectively planned for demand fluctuations, setting measurable goals and deliverables for greater success
- Better Decision Making: Whether you're providing reporting and analysis for the entire organization or functional areas of the business, a dashboard allows companies to analyze key data quickly and meticulously. Visualized interactivity serves to deliver overwhelming amounts of data in a way that is easy to understand. With the ability to easily identify what the data really means; better decisions can be made relevant to the business.

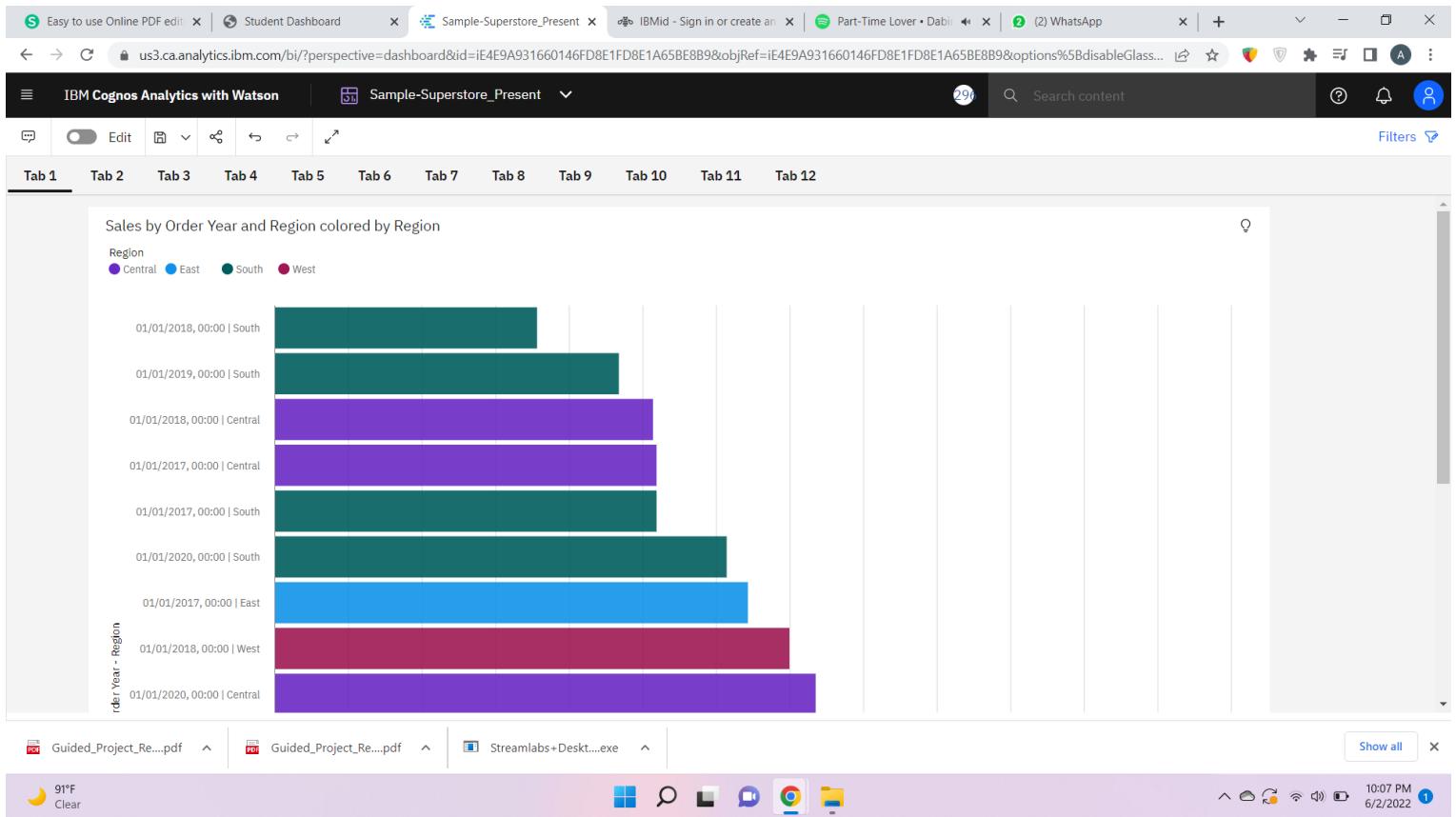
DISADVANTAGES

- Flashy or cluttered design, with users attempting to incorporate too much information without understanding constraints or considering their specific needs from the range of different measurables detailed data analysis provides.
- The technology used in the development of dashboards differs from other software solutions already employed in organizations and can be initially difficult to understand.
- The business has no predetermined rules and hierarchies for how dashboard metrics are used. This means each employee can use the metrics in different ways, resulting in a diverse set of data being reported.

APPLICATIONS

- If you manage complex campaigns, you usually end up having several analytics solutions for each platform and needing to consult them separately, which hinders the overall view. Instead, the dashboard displays data from different sources, like web analytics solutions, social media metrics. This way makes it much easier to compare them and see how they develop.
- A good dashboard clearly shows you many key metrics so you don't need to be an analytics expert to understand them. If you want to look further into a particular data set, you always have the option of employing more specific tools.
- If you synchronize your dashboard automatically in the cloud, you can create different users so that your entire team can access the same information from anywhere. It's even possible to project the dashboard onto a screen in your office so that the whole team can see what is going on in real-time.
- Having a centralized dashboard will save you a lot of time. Instead of collecting data from different sources and making charts on your own, dashboards do all this work for you. You just need to invest some time, in the beginning, to set up the metrics and decide how to present them. From that point on, the reports are created automatically.

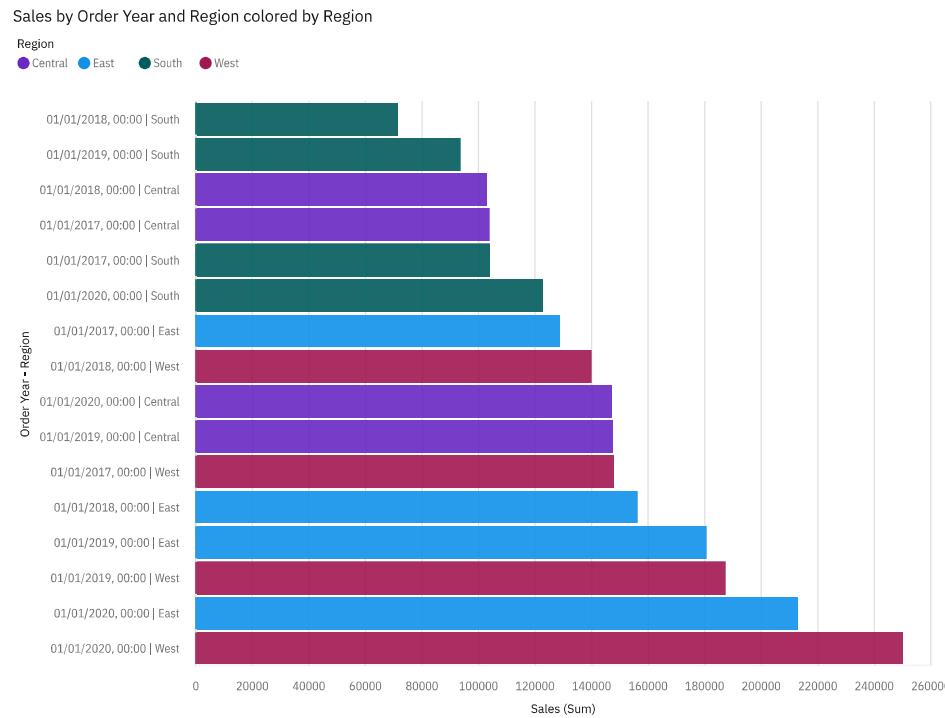
DASHBOARD



CONCLUSION

This way, with the help of diagrams, graphs, and maps we can understand given data. This understanding of data allows us to ask the right questions to reach our desired goals by optimizing methods. With this project, we learned how to upload and prepare data. We also statistical concepts which helped in calculations and plotting of graphs and maps to make a dashboard.

Tab 1



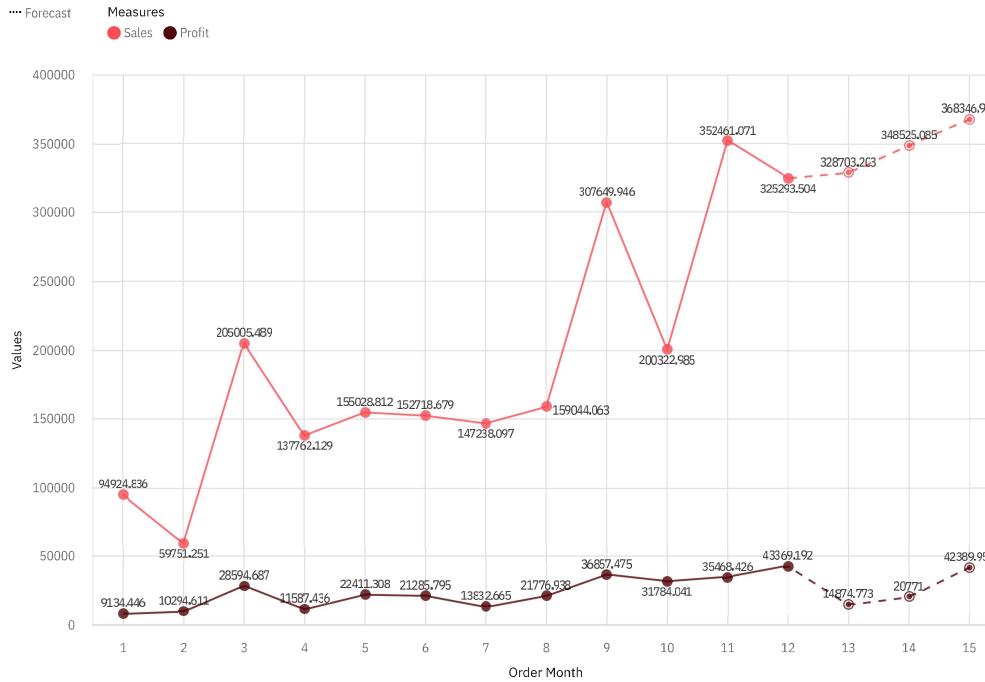
Tab 2

Region sales by Year and Category

Sales		Central	East	South	West	Summary
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Tab 3

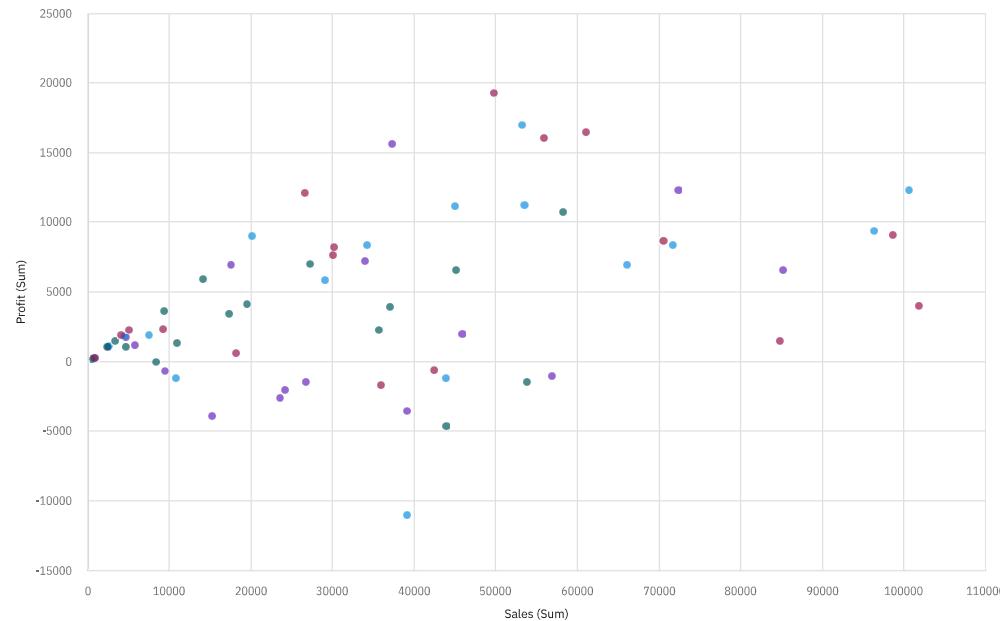
Sales and Profit by Order Month



Tab 4

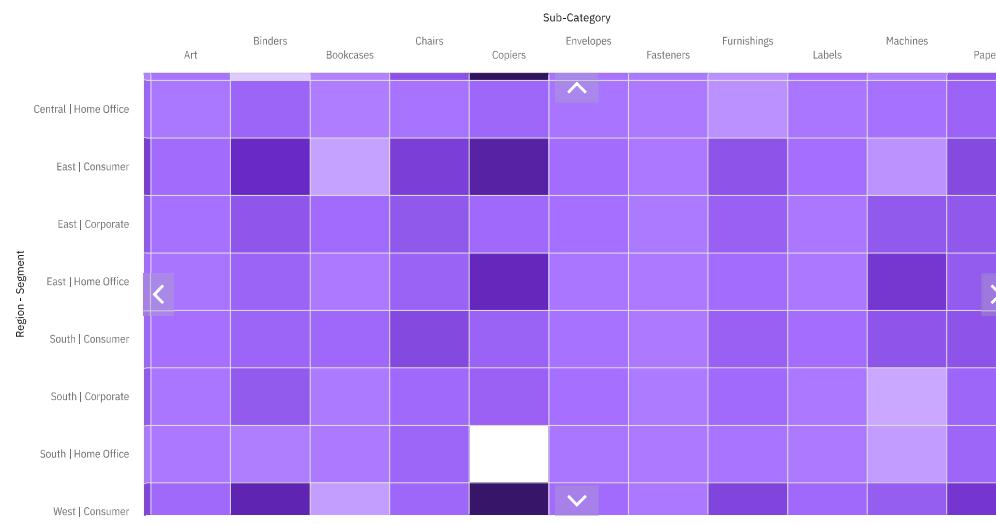
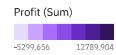
Sales by Profit with points for Sub-Category

Region
Central (Purple) East (Blue) South (Green) West (Red)



Tab 5

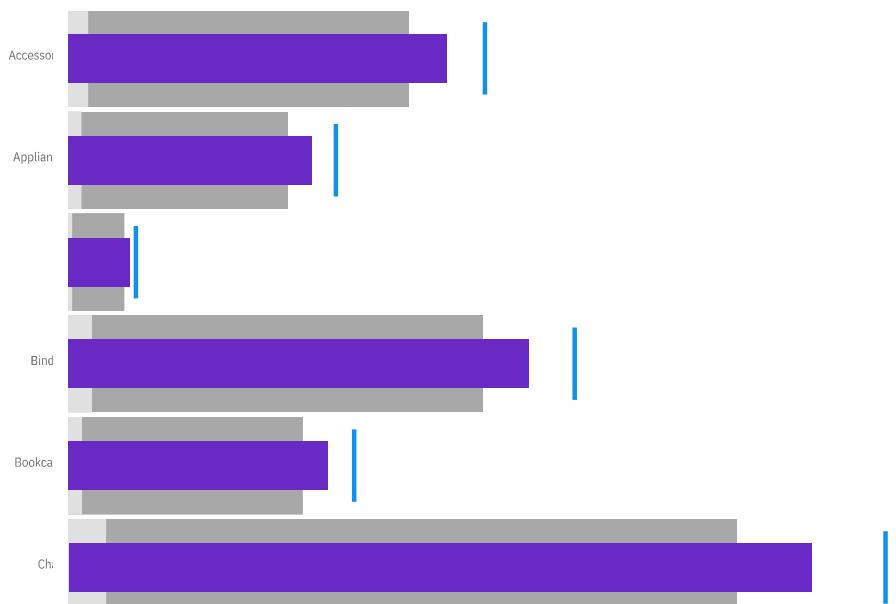
Profit by Region, Segment and Sub-Category



Tab 6

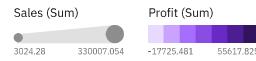
Sales compared to Target Sales with Min Sales minimum and Max Sales maximum

- Sales (Sum)
- Min Sales (Sum)
- Max Sales (Sum)
- Target Sales (Sum)



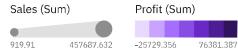
Tab 7

Sub-Category hierarchy colored by Profit and sized by Sales



Tab 8

State colored by Profit sized by Sales

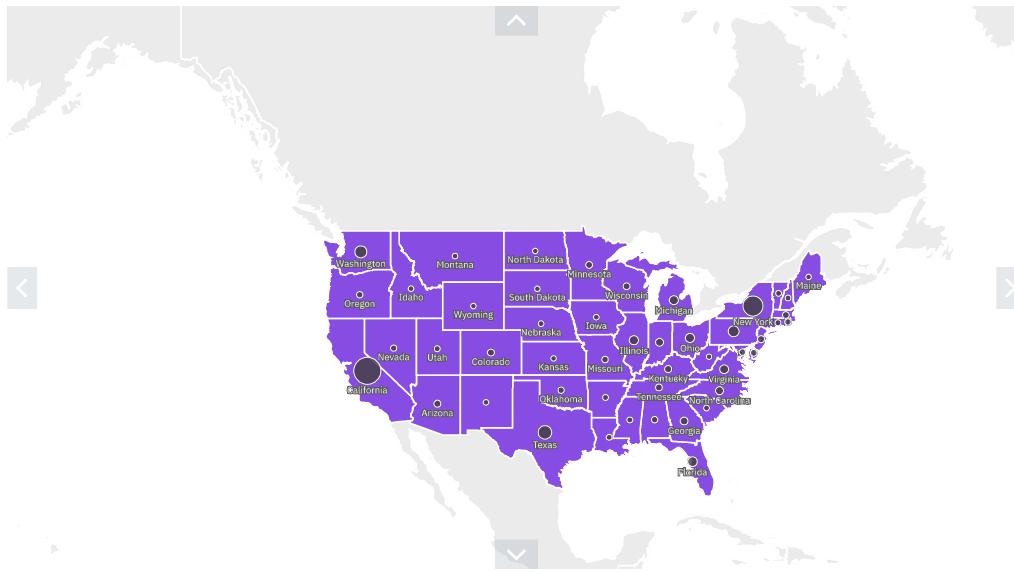


Tab 9

State, Sales

Sales (Sum)

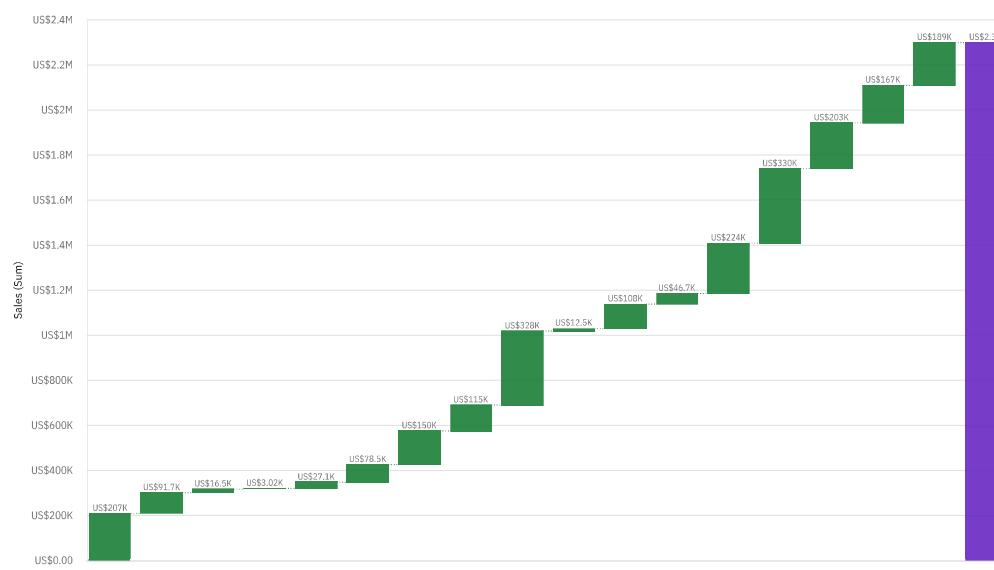
919.91 - 457687.632



Tab 10

Sub-Category, Sales

Column values
● Increase ● Decrease ● Sum



Tab 11

Sales

Profit

US\$2.3M US\$286K

Sales

Profit

Quantity

Discount

37.9K 1561%

Quantity

Discount

Tab 12

Category and Region hierarchy colored by Category and sized by Sales

