



Data Analysis Report:

Sales Intelligence Console

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used :DAX query , Sales Forecasting table

Data analysis is a multi-step process that involves transforming raw data into meaningful insights and actionable information.

Objective:

The objective of this project is to conduct a comprehensive data analysis of the sales dataset using Power BI. A leading retail company operating in multiple regions, generates a vast amount of sales data from various customer interactions.

The project's context arises from the need to leverage this data to gain valuable insights that will drive data-driven decision-making and optimize the company's overall business performance.

Data-Rich Environment: The Superstore possesses a vast and diverse dataset, comprising details on orders, customers, products, and sales across various regions. This wealth of data offers a prime opportunity to derive actionable insights that can guide the company's future strategies and operations.

Business Performance Optimization: The project aims to maximize the Superstore's business performance through data-driven decision-making. By analyzing sales patterns, customer behavior, and product performance, the project seeks to identify areas of improvement, uncover operational inefficiencies, and enhance profitability.

Customer-Centric Insights: Understanding customer preferences and behavior is paramount for the Superstore's success. By conducting customer segmentation and analyzing customer purchase patterns, the project aims to tailor marketing efforts, improve customer targeting, and deliver personalized shopping experiences.

Product Portfolio Optimization: By analyzing sales data across product categories and sub-categories, the project seeks to identify high-demand products, assess the profitability of each category, and optimize the product assortment to cater to customer preferences.

Strategic Planning: The insights gained from the data analysis will serve as a foundation for the Superstore's strategic planning. By aligning business goals with data-driven insights, the project aims to set realistic sales targets, forecast future trends, and identify potential expansion opportunities.

Data collection:

Used the source from: <https://www.kaggle.com/>

Dataset given below::

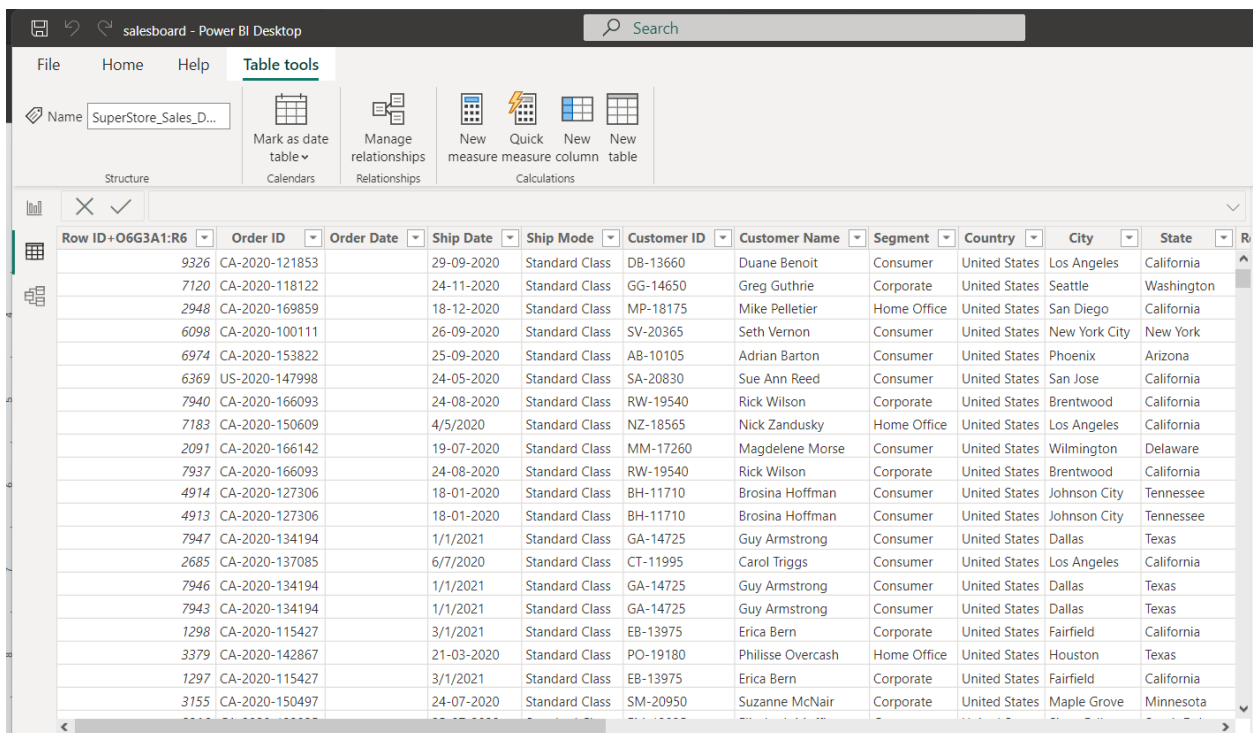
Row ID	Order ID	Order Date	Ship Date	Ship Mode	Customer	Customer Segment	Country	City	State	Region	Product ID	Category	Sub-Category	Product Name	Sales	Quantity	Profit	Returns	Payment Mode	
4918	CA-2019-1	1/1/2019	1/7/2019	Standard	BM-11575	Brendan N Corporate	United Sta	Gaithersbu	Maryland	East	FUR-BO-1f	Furniture	Bookcases	Bush West	73.94	1	28.2668	#N/A	Online	
4919	CA-2019-1	1/2/2019	1/7/2019	Standard	BM-11575	Brendan N Corporate	United Sta	Gaithersbu	Maryland	East	FUR-BO-1f	Furniture	Bookcases	Bush West	173.94	3	38.2668	#N/A	Online	
4920	CA-2019-1	1/2/2019	1/7/2019	Standard	BM-11575	Brendan N Corporate	United Sta	Gaithersbu	Maryland	East	TEC-PH-1c	Technolog	Phones	GE 30522E	231.98	2	67.2742	#N/A	Cards	
3074	CA-2019-1	1/3/2019	1/5/2019	First Class	LR-16915	Lena Radf Consumer	United Sta	Los Angele	California	West	OFF-ST-10	Office Sup	Storage	Recycled S	114.46	2	28.615	#N/A	Online	
8604	US-2019-1	1/3/2019	1/8/2019	Standard	CA-12310	Christine A Corporate	United Sta	San Antoni	Texas	Central	TEC-AC-1c	Technolog	Accessorie	Imation Cl	30.08	2	-5.264	#N/A	Online	
8605	US-2019-1	1/3/2019	1/8/2019	Standard	CA-12310	Christine A Corporate	United Sta	San Antoni	Texas	Central	TEC-AC-1c	Technolog	Accessorie	WD My Pa	165.6	3	-6.21	#N/A	Online	
8606	US-2019-1	1/3/2019	1/8/2019	Standard	CA-12310	Christine A Corporate	United Sta	San Antoni	Texas	Central	TEC-PH-1c	Technolog	Phones	AT&T 179	180.96	5	13.572	#N/A	Cards	
9494	CA-2019-1	1/3/2019	1/8/2019	Standard	BO-11350	Bill Overfe Corporate	United Sta	Broken Arr	Oklahoma	Central	FUR-TA-1c	Furniture	Tables	Hon Practi	1592.85	7	350.427	#N/A	COD	
9495	CA-2019-1	1/3/2019	1/8/2019	Standard	BO-11350	Bill Overfe Corporate	United Sta	Broken Arr	Oklahoma	Central	OFF-BI-10f	Office Sup	Binders	Storex Dur	11.88	2	5.346	#N/A	COD	
2898	US-2019-1	1/4/2019	1/9/2019	Standard	EB-13975	Erica Bern Corporate	United Sta	Charlotte	North Car	South	TEC-CO-1c	Technolog	Copiers	Hewlett Pa	959.968	4	119.996	#N/A	Online	
5868	CA-2019-1	1/4/2019	1/8/2019	Standard	BP-11185	Ben Peterr Corporate	United Sta	Philadelph	Pennsylvan	East	OFF-AR-1c	Office Sup	Art	Newell 31	4.672	1	0.584	#N/A	Online	
5869	CA-2019-1	1/4/2019	1/8/2019	Standard	BP-11185	Ben Peterr Corporate	United Sta	Philadelph	Pennsylvan	East	OFF-BI-10f	Office Sup	Binders	Avery Arch	104.58	6	-80.178	#N/A	Online	
863	CA-2019-1	1/5/2019	1/7/2019	Second Cl	AJ-10795	Anthony Jc Corporate	United Sta	Jacksonvill	Florida	South	TEC-AC-1c	Technolog	Accessorie	Logitech N	191.472	6	40.6878	#N/A	COD	
864	CA-2019-1	1/5/2019	1/7/2019	Second Cl	AJ-10795	Anthony Jc Corporate	United Sta	Jacksonvill	Florida	South	OFF-AR-1c	Office Sup	Art	Newell 33	5.248	2	0.5904	#N/A	Online	
865	CA-2019-1	1/5/2019	1/7/2019	Second Cl	AJ-10795	Anthony Jc Corporate	United Sta	Jacksonvill	Florida	South	TEC-PH-1c	Technolog	Phones	Logitech B	59.184	2	5.1786	#N/A	COD	
2162	CA-2019-1	1/7/2019	#####	Standard	DW-13480	Dianna Wi Home Offi	United Sta	Oakland	California	West	OFF-AR-1c	Office Sup	Art	Panasonic	34.58	1	10.0282	#N/A	COD	
8031	CA-2019-1	1/7/2019	#####	Standard	CNM-18520	Neoma Mi Consumer	United Sta	Amarillo	Texas	Central	FUR-FU-1c	Furniture	Furnishing	Executive	23.076	3	-10.9611	#N/A	COD	
8032	CA-2019-1	1/7/2019	#####	Standard	CNM-18520	Neoma Mi Consumer	United Sta	Amarillo	Texas	Central	OFF-PA-10	Office Sup	Paper	Xerox 212	25.92	5	9.072	#N/A	Cards	
6851	US-2019-1	1/8/2019	#####	Standard	CJO-15145	Jack O'Brie Corporate	United Sta	Franklin	Wisconsin	Central	FUR-BO-1f	Furniture	Bookcases	Atlantic M	1565.88	6	407.1288	#N/A	Online	
6852	US-2019-1	1/8/2019	#####	Standard	CJO-15145	Jack O'Brie Corporate	United Sta	Franklin	Wisconsin	Central	OFF-BI-10f	Office Sup	Binders	Plastic Bin	106.05	7	49.8435	#N/A	Cards	
7808	US-2019-1	1/8/2019	#####	Standard	CVS-21820	Vivek Sund Consumer	United Sta	Raleigh	North Car	South	OFF-BI-10f	Office Sup	Binders	Xtralife Cl	30.828	7	-24.6624	#N/A	Cards	
7809	US-2019-1	1/8/2019	#####	Standard	CVS-21820	Vivek Sund Consumer	United Sta	Raleigh	North Car	South	OFF-AR-1c	Office Sup	Art	Newell 31	47.616	3	5.952	#N/A	COD	
7810	US-2019-1	1/8/2019	#####	Standard	CVS-21820	Vivek Sund Consumer	United Sta	Raleigh	North Car	South	TEC-PH-1c	Technolog	Phones	Avaya 541	108.784	2	10.8784	#N/A	COD	

Data cleaning:

Clean the data to address issues like missing values, outliers, duplicates, and inconsistencies.

Action: In the dataset data type of column “order data”, “ship data” has been rectified and cleaned null values also converted to date type format as required. In returns “#N/A” changed to 0 as per requirement and rest of items in column as 1.

So data look like this now:



The screenshot displays the Power BI Desktop interface with the 'Table tools' ribbon active. The data table is titled 'SuperStore_Sales_D...' and contains the following columns: Row ID, Order ID, Order Date, Ship Date, Ship Mode, Customer ID, Customer Name, Segment, Country, City, and State. The data is sorted by Row ID in descending order.

Row ID+O6G3A1:R6	Order ID	Order Date	Ship Date	Ship Mode	Customer ID	Customer Name	Segment	Country	City	State
9326	CA-2020-121853		29-09-2020	Standard Class	DB-13660	Duane Benoit	Consumer	United States	Los Angeles	California
7120	CA-2020-118122		24-11-2020	Standard Class	GG-14650	Greg Guthrie	Corporate	United States	Seattle	Washington
2948	CA-2020-169859		18-12-2020	Standard Class	MP-18175	Mike Pelletier	Home Office	United States	San Diego	California
6098	CA-2020-100111		26-09-2020	Standard Class	SV-20365	Seth Vernon	Consumer	United States	New York City	New York
6974	CA-2020-153822		25-09-2020	Standard Class	AB-10105	Adrian Barton	Consumer	United States	Phoenix	Arizona
6369	US-2020-147998		24-05-2020	Standard Class	SA-20830	Sue Ann Reed	Consumer	United States	San Jose	California
7940	CA-2020-166093		24-08-2020	Standard Class	RW-19540	Rick Wilson	Corporate	United States	Brentwood	California
7183	CA-2020-150609		4/5/2020	Standard Class	NZ-18565	Nick Zandusky	Home Office	United States	Los Angeles	California
2091	CA-2020-166142		19-07-2020	Standard Class	MM-17260	Magdelene Morse	Consumer	United States	Wilmington	Delaware
7937	CA-2020-166093		24-08-2020	Standard Class	RW-19540	Rick Wilson	Corporate	United States	Brentwood	California
4914	CA-2020-127306		18-01-2020	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Johnson City	Tennessee
4913	CA-2020-127306		18-01-2020	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States	Johnson City	Tennessee
7947	CA-2020-134194		1/1/2021	Standard Class	GA-14725	Guy Armstrong	Consumer	United States	Dallas	Texas
2685	CA-2020-137085		6/7/2020	Standard Class	CT-11995	Carol Triggs	Consumer	United States	Los Angeles	California
7946	CA-2020-134194		1/1/2021	Standard Class	GA-14725	Guy Armstrong	Consumer	United States	Dallas	Texas
7943	CA-2020-134194		1/1/2021	Standard Class	GA-14725	Guy Armstrong	Consumer	United States	Dallas	Texas
1298	CA-2020-115427		3/1/2021	Standard Class	EB-13975	Erica Bern	Corporate	United States	Fairfield	California
3379	CA-2020-142867		21-03-2020	Standard Class	PO-19180	Philisse Overcash	Home Office	United States	Houston	Texas
1297	CA-2020-115427		3/1/2021	Standard Class	EB-13975	Erica Bern	Corporate	United States	Fairfield	California
3155	CA-2020-150497		24-07-2020	Standard Class	SM-20950	Suzanne McNair	Corporate	United States	Maple Grove	Minnesota

Data visualization

Data visualization transforms complex sales data into intuitive and actionable insights. It presents information in a visually manner, allowing stakeholders to easily interpret trends, patterns, and relationships within the dataset. By creating an interactive Power BI dashboard, the project seeks to provide a comprehensive and user-friendly platform understanding key sales metrics.

Enhanced Data Understanding: Through visually appealing charts, graphs, and maps, data visualization enables stakeholders to quickly grasp the overall sales performance, customer behavior, and product insights.

Interactive Exploration: By incorporating filters, slicers, and drill-down capabilities, users can interact with the data and customize the analysis based on specific regions, product categories, or time periods.

Sales Trend Analysis: Data visualization presents sales trends over time, facilitating Year-over-Year (YOY) comparisons to identify seasonality and growth patterns. Interactive line charts allow users to spot fluctuations and align sales strategies accordingly.

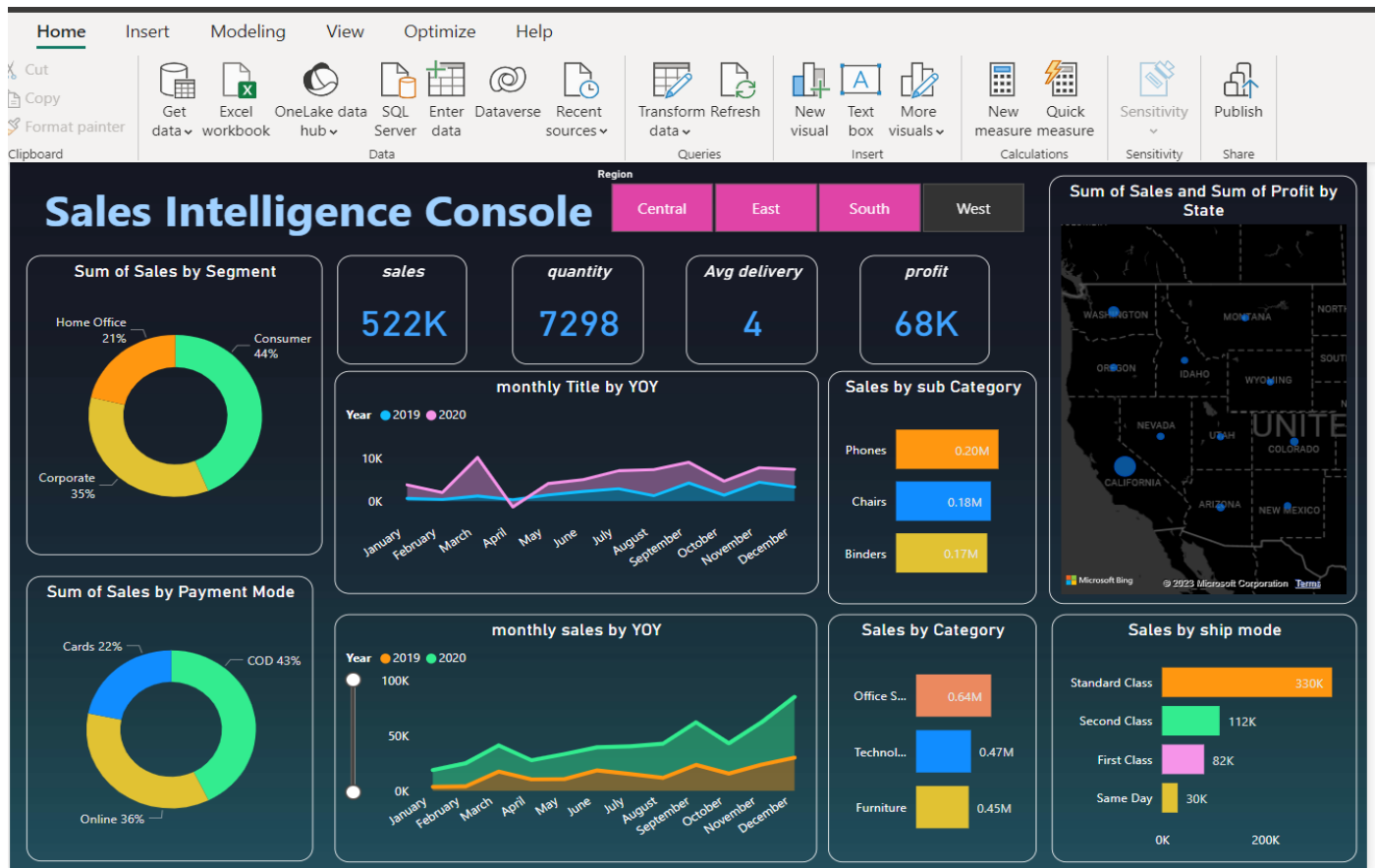
Regional Insights: Maps provide a geographic representation of sales and profit distribution across different states and regions. Visualizing sales data geographically assists in identifying high-performing areas and potential untapped markets.

Product Performance Comparison: Visualization tools like bar charts and treemaps allow users to compare sales and profit metrics across various product categories and sub-categories.

Customer Segmentation Analysis: Visualizing customer segments with pie charts or stacked bar charts helps in understanding customer preferences and tailoring marketing strategies accordingly.

Performance Metrics at a Glance: Utilizing KPI cards, stakeholders can get a quick snapshot of essential performance metrics such as total sales, total profit, average delivery time, and more.

Here's my Dashboard Looks like:



Sales forecasting

Sales forecasting and regional sales analysis are components of the insights presented in the Power BI dashboard. These components provide valuable information to the Superstore for strategic planning, resource allocation, and decision-making.

Sales Forecasting for Planning: By utilizing historical sales data and advanced forecasting techniques, the Superstore can predict future sales trends and anticipate demand patterns. The sales forecasting line chart visualizes sales by order date and includes a prediction for the next 15 days.

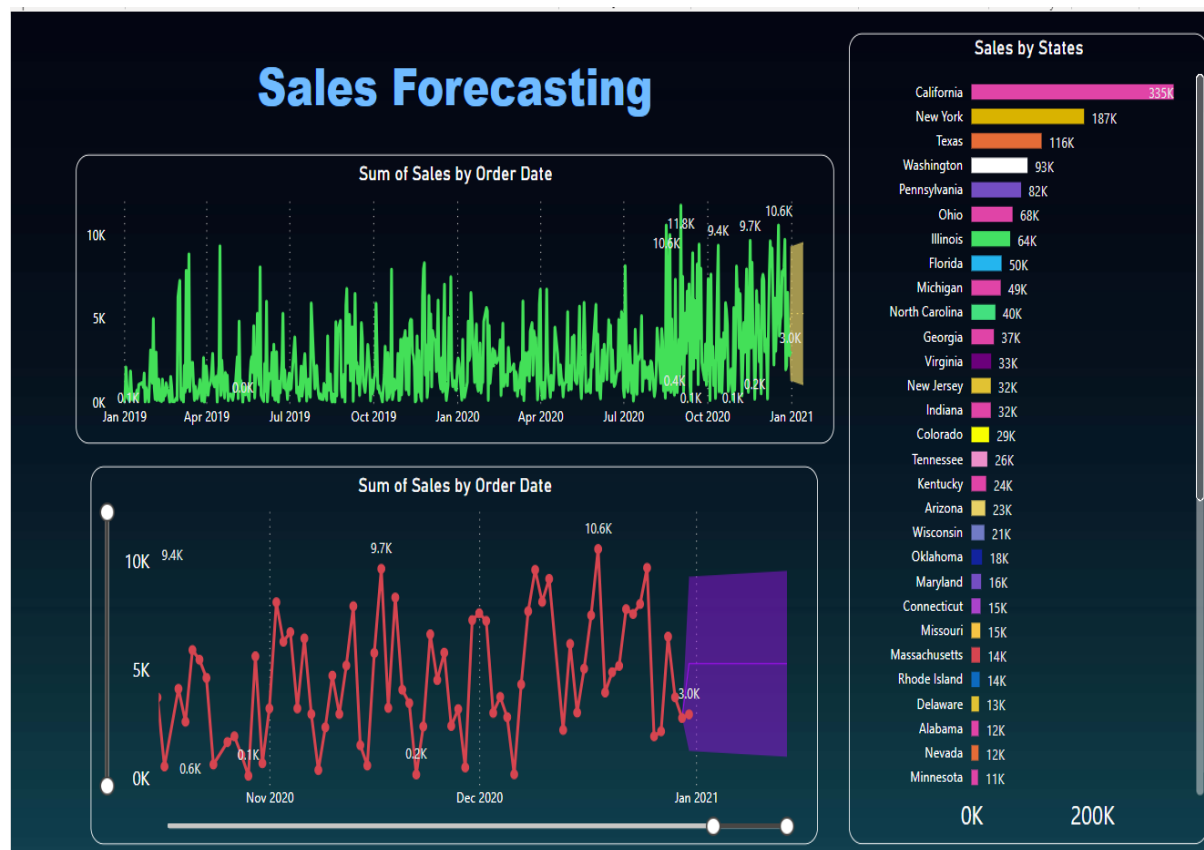
Insights for Inventory and Supply Chain Management: Sales forecasting allows the Superstore to optimize inventory levels and streamline supply chain operations. By having a clear understanding of expected sales volumes, the Superstore can ensure sufficient stock levels to meet customer demand, minimize stockouts, and avoid overstocking.

Identifying Seasonal Patterns: The sales forecasting line chart enables stakeholders to identify seasonal patterns and trends in sales data. This information is valuable for adjusting marketing strategies, promotional activities, and inventory planning to align with specific peak periods or seasonal fluctuations.

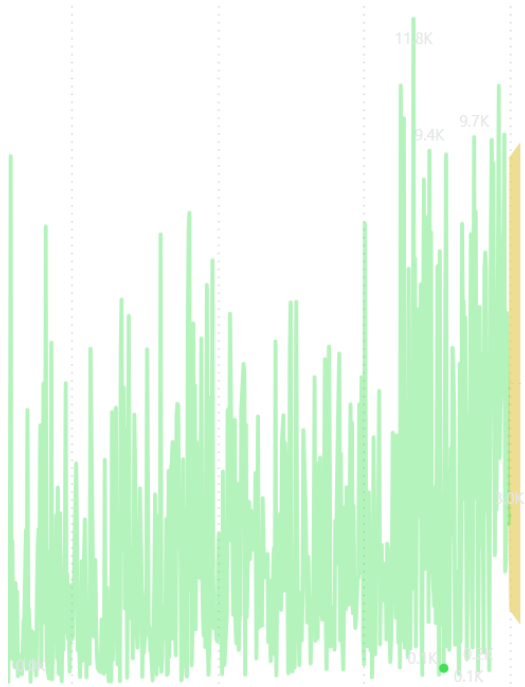
Regional Sales Analysis: The bar chart visualizes sales by state, offering insights into regional sales performance. This analysis helps identify high-performing states and potential growth opportunities.

Market Expansion Opportunities: By analyzing sales by state, the Superstore can identify regions that may benefit from targeted marketing efforts, expansion initiatives, or operational improvements.

Monitoring Sales Performance: Sales forecasting and regional sales analysis allow stakeholders to monitor sales performance against targets and benchmarks.



SUM OF SALES BY ORDER DATE



Order Date	Sum of Sales	forecastValue	confidenceHighBound
	679342		
Saturday, January 02, 2021	5304.189156	9353.460372975373	679342
Sunday, January 03, 2021	5304.189156	9373.261328300294	679342
Monday, January 04, 2021	5304.189156	9392.966393531035	679342
Tuesday, January 05, 2021	5304.189156	9412.576948421141	679342
Wednesday, January 06, 2021	5304.189156	9432.094339949612	679342
Thursday, January 07, 2021	5304.189156	9451.519883400575	679342
Friday, January 08, 2021	5304.189156	9470.854863397673	679342
Saturday, January 09, 2021	5304.189156	9490.10053489545	679342
Sunday, January 10, 2021	5304.189156	9509.258124129887	679342
Monday, January 11, 2021	5304.189156	9528.328829530146	679342
Tuesday, January 12, 2021	5304.189156	9547.313822593436	679342
Wednesday, January 13, 2021	5304.189156	9566.214248724802	679342
Thursday, January 14, 2021	5304.189156	9585.031228043528	679342