

Data Visualization

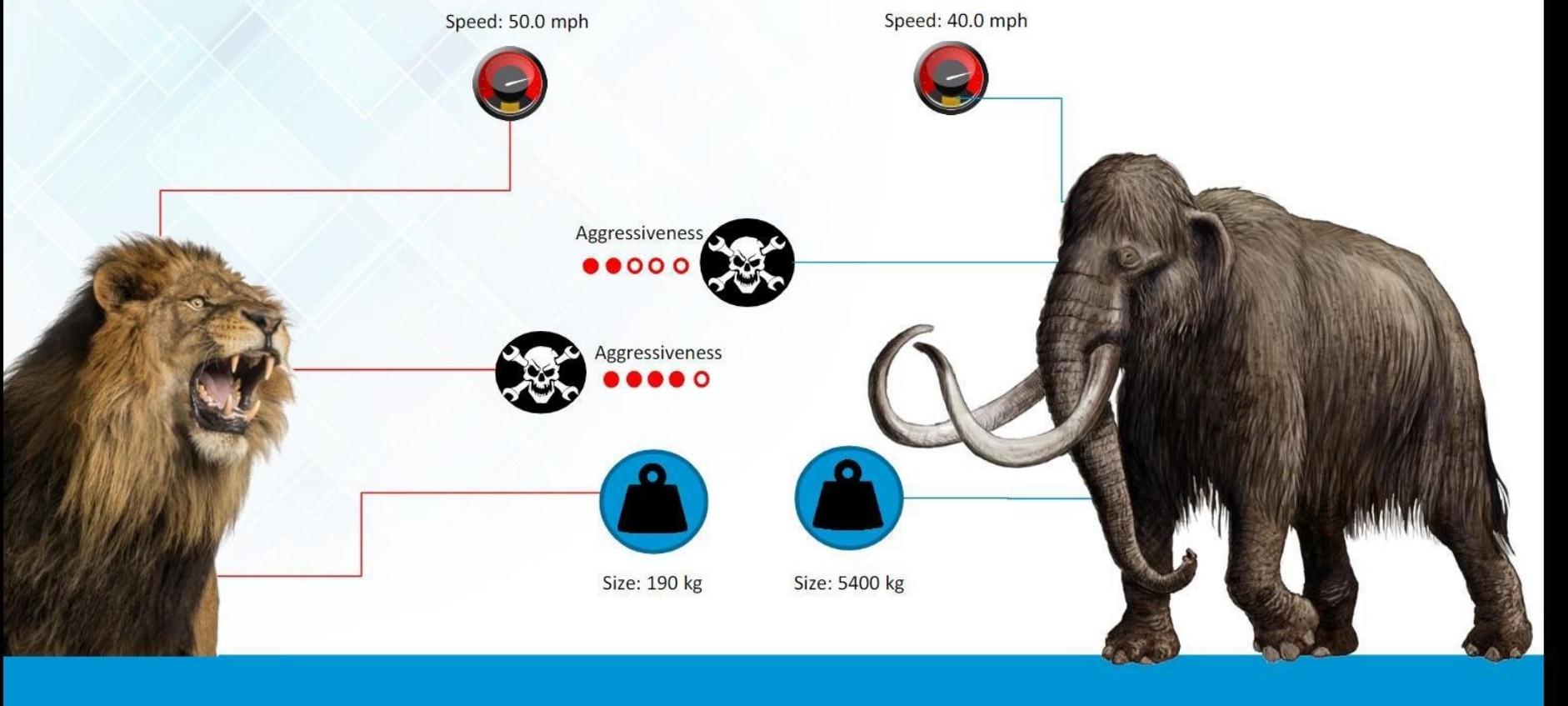
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Why Data Visualization ?

- Visualization allows **visual access** to huge amounts of **data** in easily digestible visuals
- Well designed **data** graphics are usually the simplest and at the same time, the most powerful

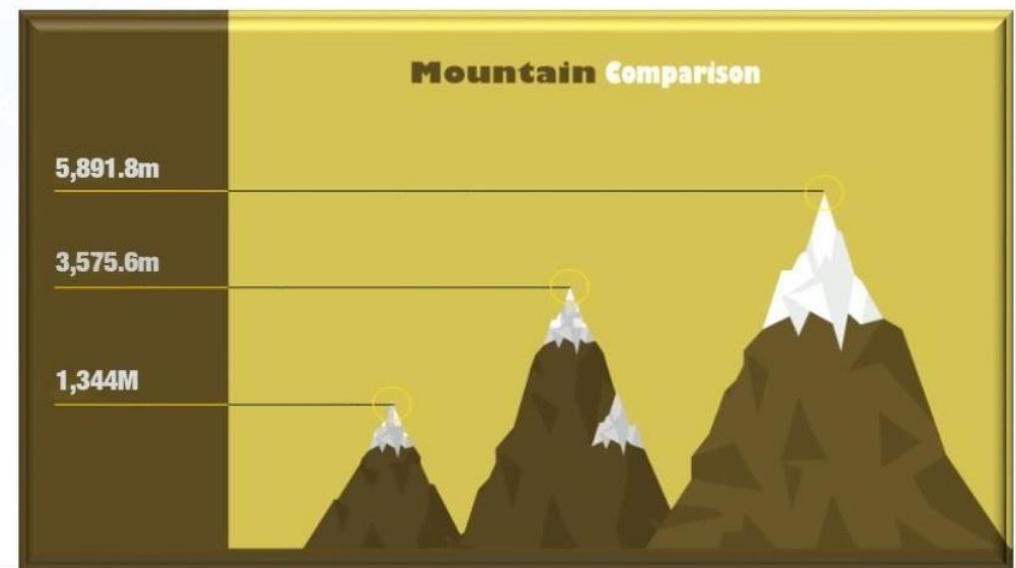


Data Visualization Example



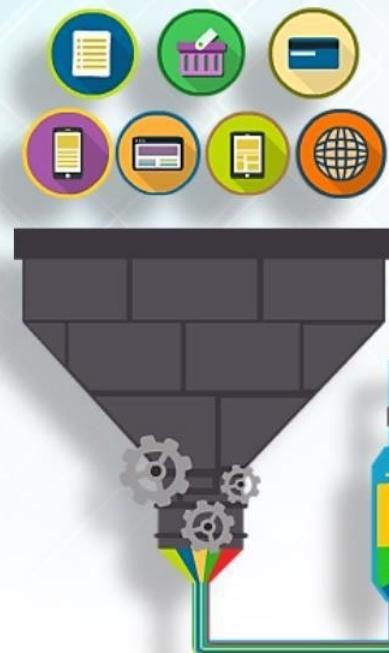
What is Data Visualization?

- In simple words, **Data visualization** is the presentation of **data** (*from one or many sources*) in a **pictorial or graphical format**.
- It enables decision makers to see analytics presented visually, so they can grasp difficult concepts or identify new patterns.

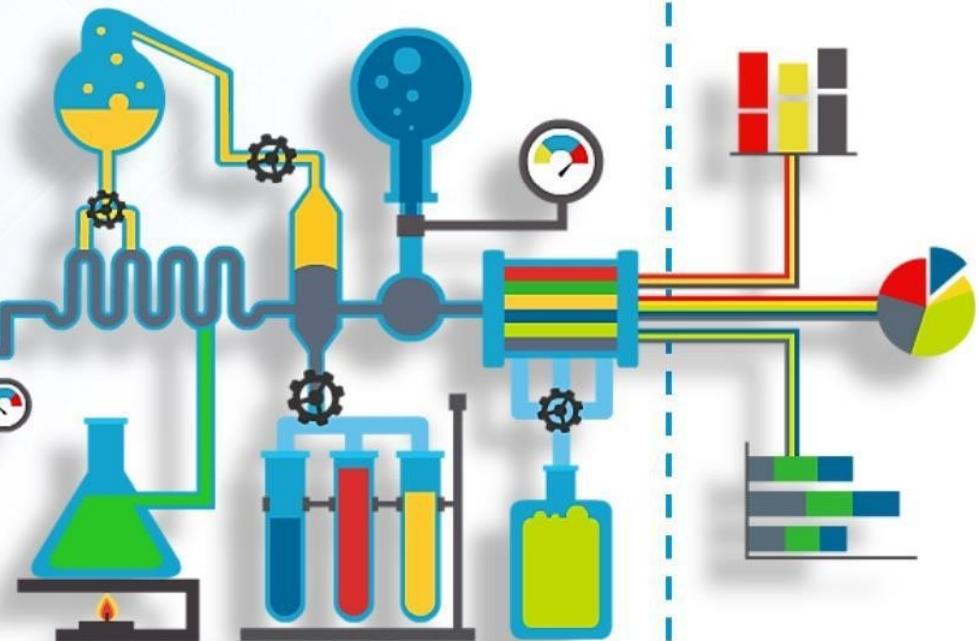


How to achieve Data Visualization ?

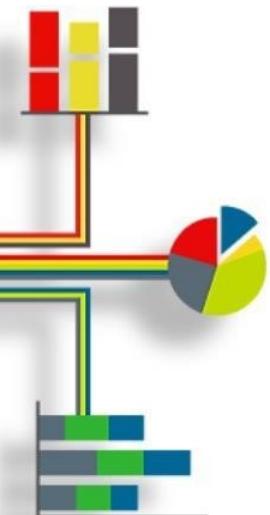
Integrate Different Data Sets



Analyze



Visualize



Popular Data Visualization Tools



Power BI



GoodData



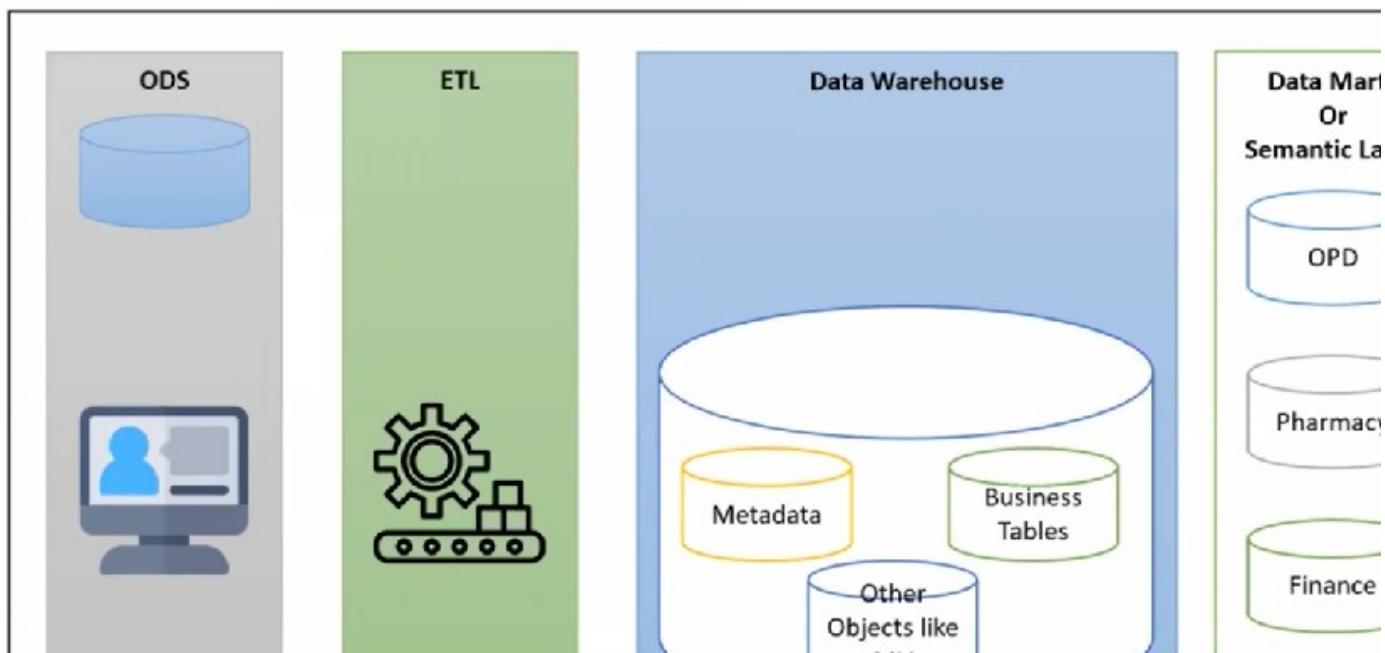
QlikView



MICROSTRATEGY
ANALYTICS DESKTOP

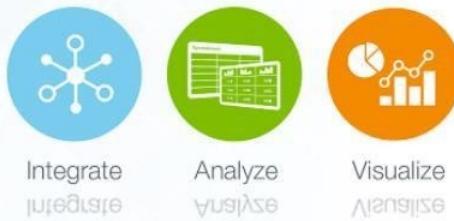


Data warehouse Architecture



Tableau

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- Tableau was founded in Mountain View, California in January 2003, by **Chris Stolte, Christian Chabot and Pat Hanrahan**
- Tableau helps the world's largest organizations unleash the power of their most valuable assets: **their data and their people**
- Tableau empowers users to see and understand their data. It harnesses people's natural ability to spot visual patterns quickly, revealing everyday opportunities and eureka moments alike
- It allows the customers to spend more time on **data analysis** and less on "data wrangling"

Products of Tableau

- **Tableau Desktop** is the authoring and publishing tool that is used to create shared views on Tableau Server
- **Tableau Server** is a business analytics platform that can scale up to thousands of users.
It is mainly designed to publish, store and schedule automatic refreshes on the web
- **Tableau Online** is hosted in cloud version of SaaS
- **Tableau Public** is a free product from Tableau, allowing visualization enthusiast to play with data with some restrictions
- **Tableau Reader** is a free application that lets anyone view and interact with Tableau packaged workbooks

Confused? Don't worry we will be discussing it in detail



Note: Tableau Desktop is used to create the visualization and if you need it to be shared among 1000's of user you can publish it on tableau server (tableau server which looks like a web page).

Why +a b | e a u® ?

- **Access to Multiple Data Connection**
 - Tableau connects easily to nearly any data source, be it corporate Data Warehouse, Microsoft Excel or web-based data
- **Live Analysis**
 - Tableau allows you to connect to your live data and perform various analysis on it
- **Maps**
 - Most tools requires an extreme amount of work to make map data work correctly. Tableau made it pretty seamless

Why +a b | e a u® ?

- **Shelves Section**

- Want to filter? Drag the column into the filter shelf. Want to see the rows of data? Drag it to the rows shelf.

Tableau has made it simple and easy to understand even for the non technical people

- **Show Me Tool**

- Tableau is awesome at recommending which visualization to use. Just hitting the *ShowMe* tool from the toolbar menu helps you get best possible suggestion for the selected Dimension and Measure

Note: “All these features are available in other tools, but not all together in a single tool.”

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Tableau Architecture

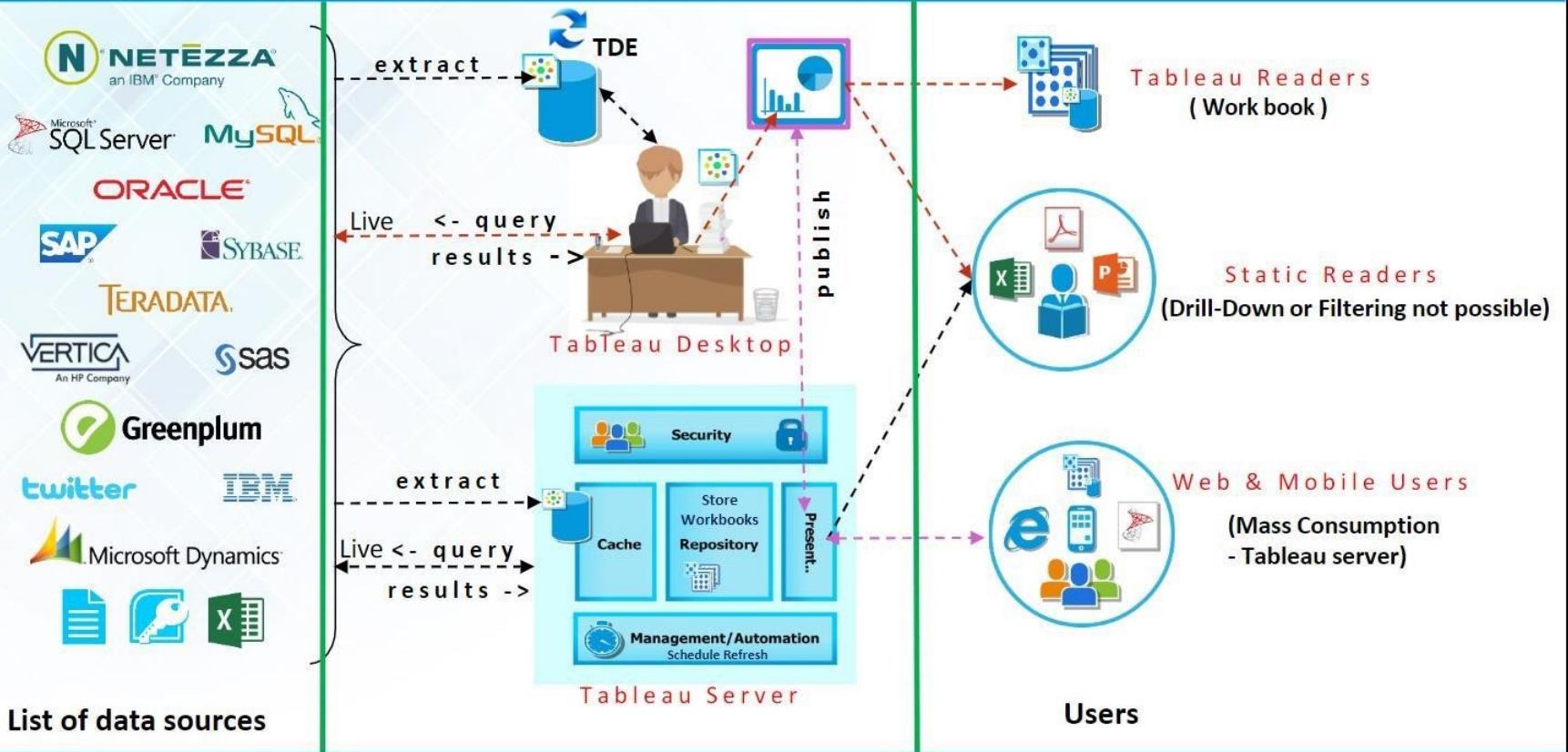


Tableau First Look

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Home Screen

File Server Help

Connect

To a File

- Excel
- Text file
- Access
- JSON file
- Statistical file
- More...

To a Server

- Tableau Server
- Microsoft SQL Server
- MySQL
- Oracle
- Amazon Redshift
- More... >

Saved Data Sources

- Sample - Superstore
- World Indicators

Open



Book2 managing_meta... Book1

Discover

Open a Workbook

Training

- Getting Started
- Connecting to Data
- Visual Analytics
- Understanding Tableau

More training videos...

VIZ OF THE WEEK



Scottish Index of Multiple Deprivation (2012) →
241 Datazones
SIMD Score between 0 to 25

More Samples

Blog - How to add an animated GIF to your Tableau viz (and make it rain)

Tableau Conference 2017

Forums

Sample Workbooks



Superstore Regional World Indicators

Various Servers available

The screenshot shows the 'Connect' interface of Tableau. On the left, there's a sidebar with 'File', 'Server', and 'Help' menu items. Below them, under 'Connect', are sections for 'To a File' (Excel, Text file, Access, JSON file, Statistical file, More...) and 'To a Server' (Tableau Server, Microsoft SQL Server, MySQL, Oracle, Amazon Redshift, More...). A red box highlights the 'More...' link under 'To a Server'. Another red box highlights the 'Search' bar at the top right. The main area lists various servers in three columns:

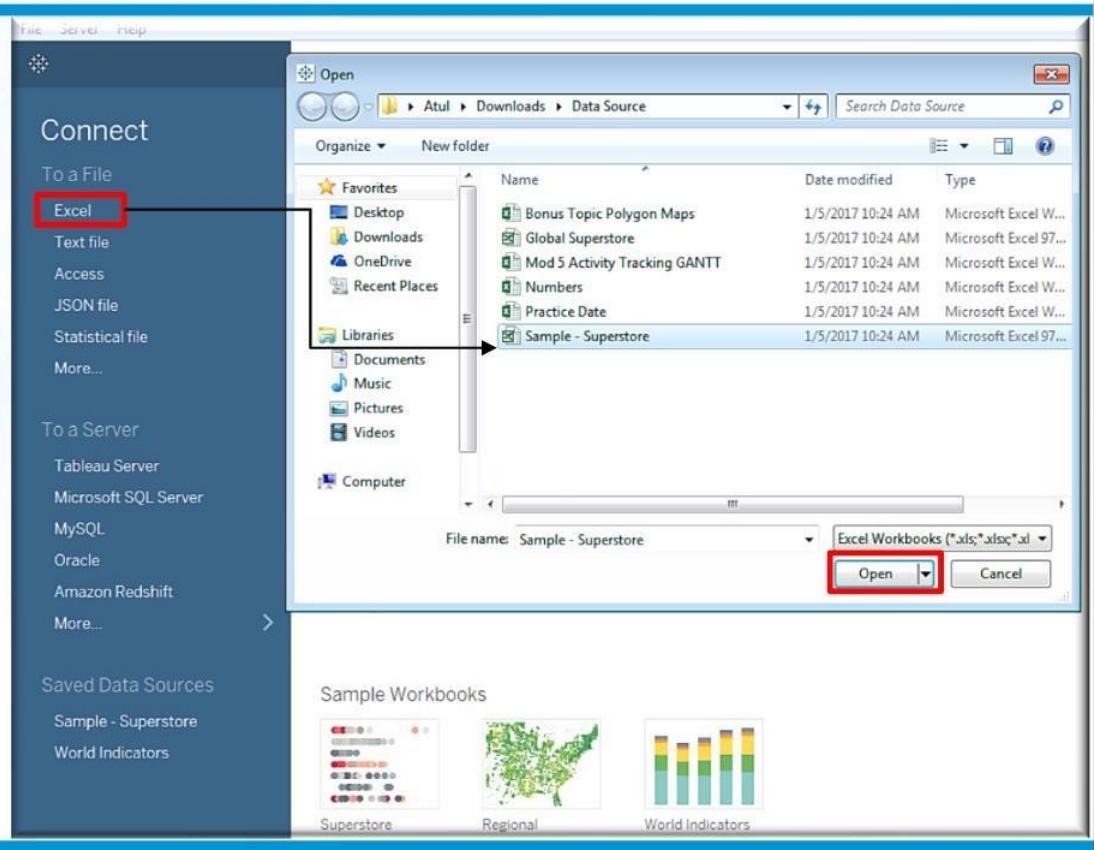
Column 1	Column 2	Column 3
Tableau Server	IBM DB2	QuickBooks Online
Action Matrix	IBM PDA (Netezza)	Salesforce
Action Vector	Kognitio	SAP HANA
Amazon Aurora	MapR Hadoop Hive	SAP NetWeaver Business Warehouse
Amazon EMR	Marketo	SAP Sybase ASE
Amazon Redshift	MarkLogic	SAP Sybase IQ
Anaplan	MemSQL	Snowflake
Aster Database	Microsoft Analysis Services	Spark SQL
Cisco Information Server	Microsoft PowerPivot	Splunk
Cloudera Hadoop	Microsoft SQL Server	Teradata
DataStax Enterprise	MonetDB	Teradata OLAP Connector
EXASolution	MySQL	Web Data Connector
Firebird	OData	Other Databases (ODBC)
Google Analytics	Oracle	
Google BigQuery	Oracle Eloqua	
Google Cloud SQL	Oracle Essbase	
Google Sheets	Pivotal Greenplum Database	
Hortonworks Hadoop Hive	PostgreSQL	
HP Vertica	Presto	
IBM BigInsights	Progress OpenEdge	

Connect To a File

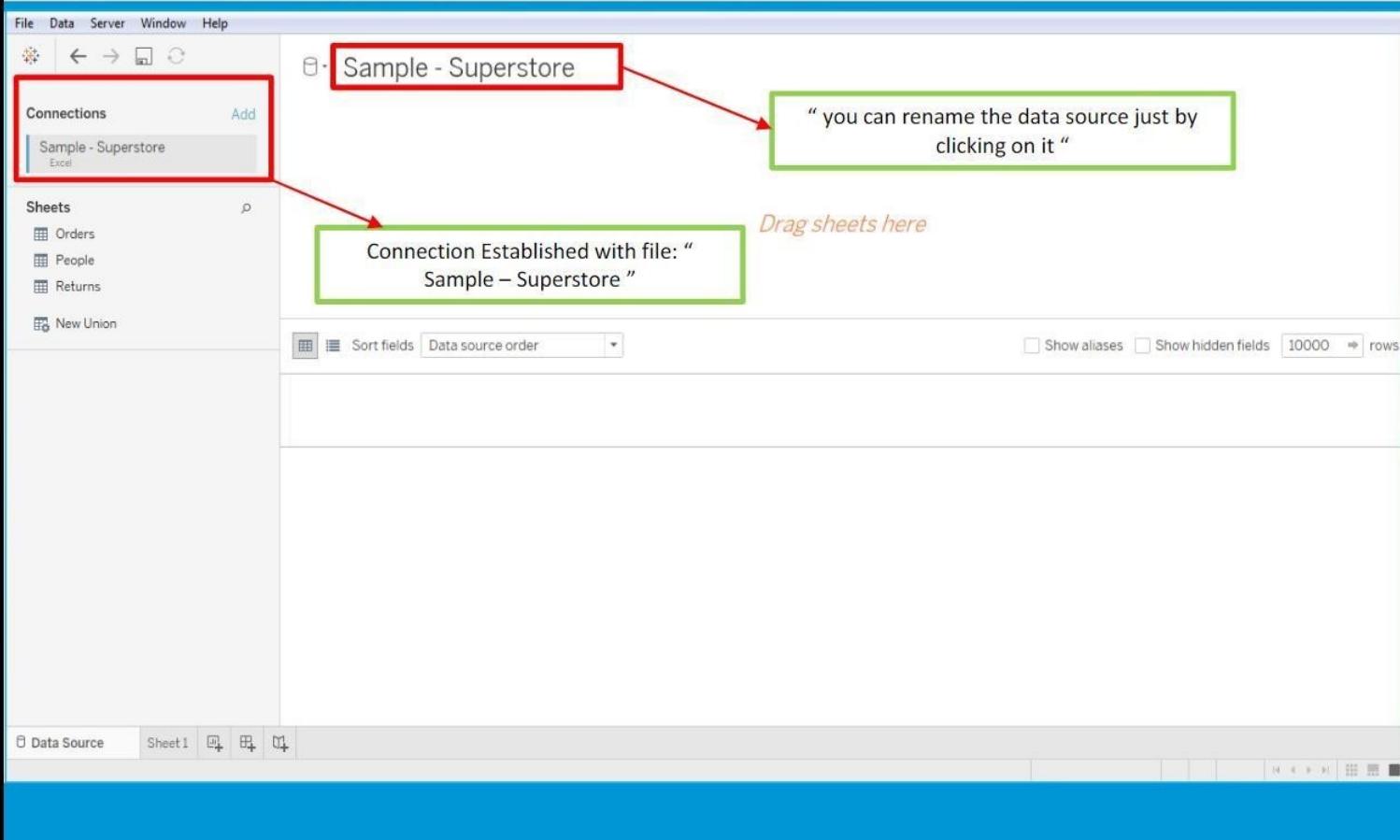
Multiple file options are available for establishing a connection.

Just for reference we are taking a excel file

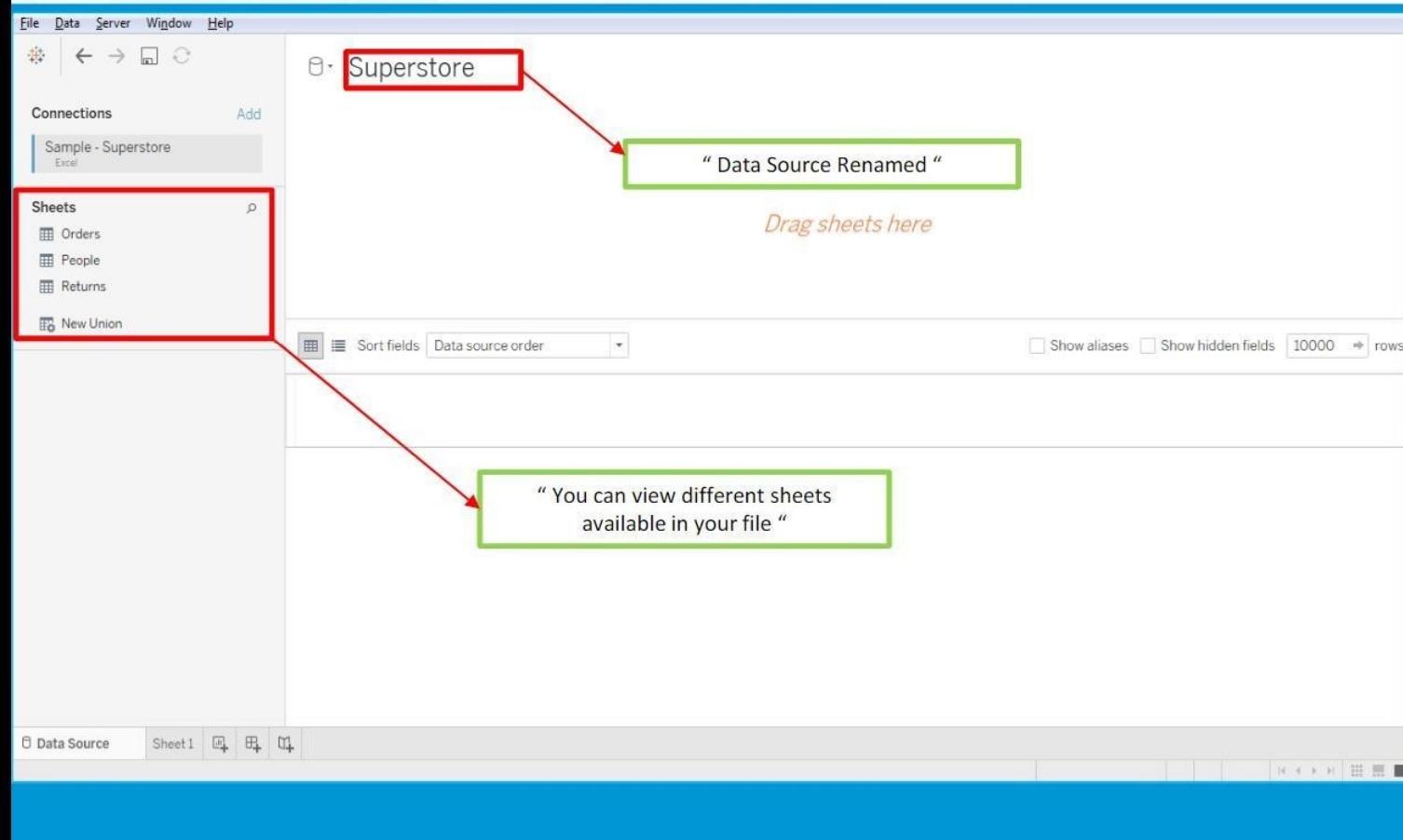
- Connect
 - To a File
 - Select Excel
 - Select File Name



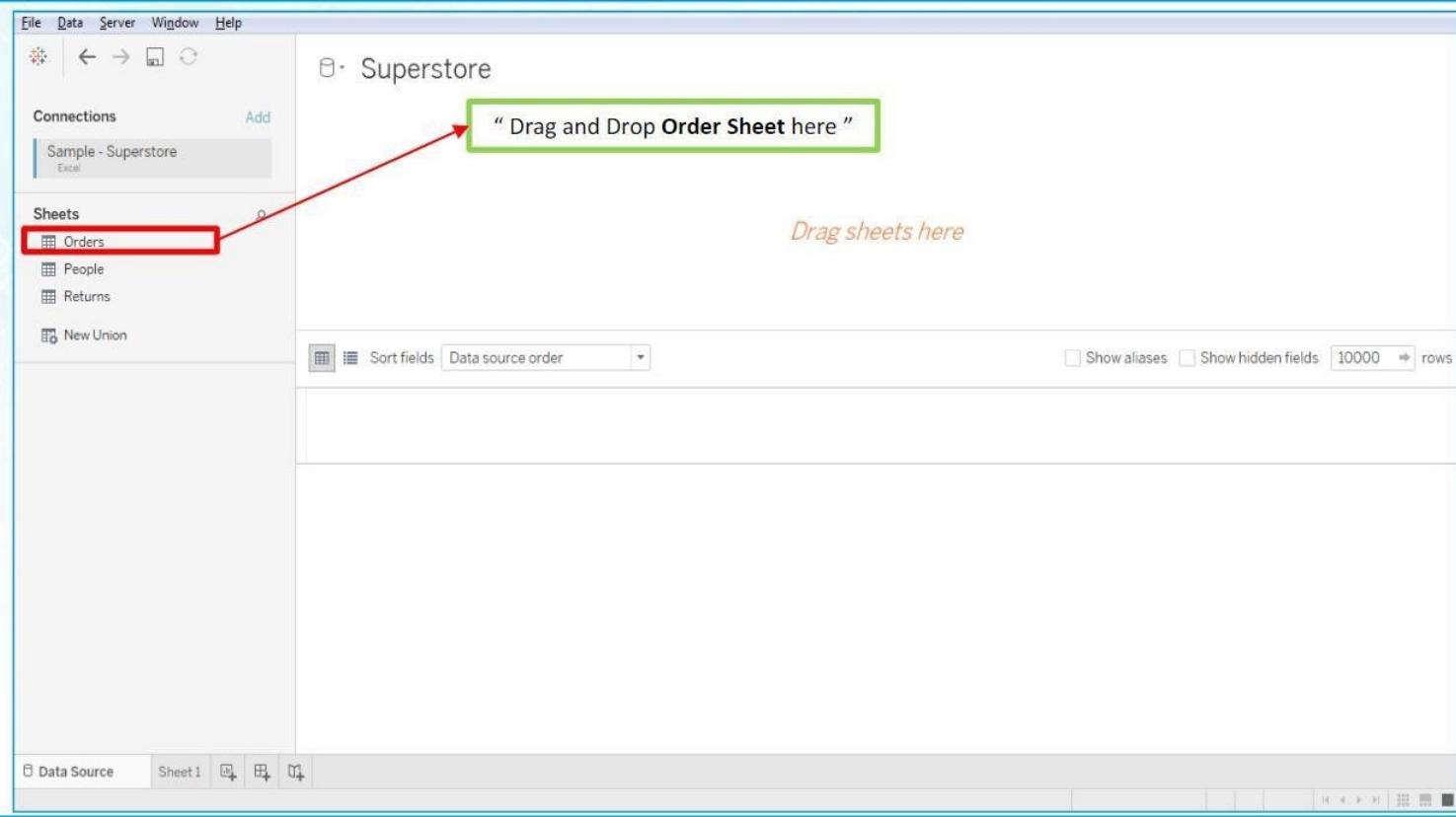
Connect To a File contd...



Connect To a File contd...



Connect To a File contd...



Connect To a File contd...

The screenshot shows the Microsoft Power BI desktop interface. A red box highlights the 'Orders' table in the main workspace. A green callout box with the text 'View which appears after dragging order here' points to the workspace area. The 'Connections' pane on the left shows a connection named 'Sample - Superstore' from 'Excel'. The 'Sheets' pane lists 'Orders', 'People', 'Returns', and 'New Union'. The top right shows connection settings for 'Superstore' with 'Live' selected. The bottom navigation bar includes 'Data Source' (unchecked), 'Sheet1' (selected), and other sheet icons.

#	Abc Orders Order ID	Abc Orders Order Date	Abc Orders Ship Date	Abc Orders Ship Mode	Abc Orders Customer ID	Abc Orders Customer Name	Abc Orders Segment	Abc Orders Country
1	CA-2013-152156	11/9/2013	11/12/2013	Second Class	CG-12520	Claire Gute	Consumer	United States
2	CA-2013-152156	11/9/2013	11/12/2013	Second Class	CG-12520	Claire Gute	Consumer	United States
3	CA-2013-138688	6/13/2013	6/17/2013	Second Class	DV-13045	Darrin Van Huff	Corporate	United States
4	US-2012-1089...	10/11/2012	10/18/2012	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
5	US-2012-1089...	10/11/2012	10/18/2012	Standard Class	SO-20335	Sean O'Donnell	Consumer	United States
6	CA-2011-115812	6/9/2011	6/14/2011	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
7	CA-2011-115812	6/9/2011	6/14/2011	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States
8	CA-2011-115812	6/9/2011	6/14/2011	Standard Class	BH-11710	Brosina Hoffman	Consumer	United States

Tableau UI Components

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Tableau's UI

The screenshot illustrates the Tableau User Interface (UI) with various components highlighted by colored boxes:

- Data Pane** (Red Box): Located on the left side, it contains sections for Data, Dimensions, and Measures. The Data section shows "Orders (Sample - Superstore)". The Dimensions section lists fields like Customer ID, Customer Name, Order Date, etc. The Measures section lists Profit, Sales, and Number of Records.
- Marks Card** (Green Box): A floating card in the center-left area showing settings for Marks, including Automatic, Color, Size, Label, Detail, and Tooltip.
- Column/Row Shelves** (Green Box): Located at the top center, it contains "Columns" (Sub-Category) and "Rows" (SUM(Profit)).
- Toolbar** (Yellow Box): At the top, it includes standard icons for file operations and a dropdown menu for "Standard".
- Canvas/View Pane** (Blue Box): The main workspace where a bar chart is displayed. The chart shows Profit on the Y-axis (ranging from -20K to 50K) and Sub-Category on the X-axis. The data points are: Accessories (~42K), Appliances (~18K), Art (~7K), Binders (~32K), Bookcases (~2K), Chairs (~28K), Copiers (~52K), Envelopes (~8K), Fasteners (~2K), Furnishings (~15K), Labels (~5K), Machines (~4K), Paper (~35K), Phones (~45K), Storage (~22K), Supplies (~1K), and Tables (~-15K).

At the bottom, there are tabs for "Data Source" and "Sheet 1", along with other navigation and status controls.

Sub-Category	Profit
Accessories	~42K
Appliances	~18K
Art	~7K
Binders	~32K
Bookcases	~2K
Chairs	~28K
Copiers	~52K
Envelopes	~8K
Fasteners	~2K
Furnishings	~15K
Labels	~5K
Machines	~4K
Paper	~35K
Phones	~45K
Storage	~22K
Supplies	~1K
Tables	~-15K

Tableau's UI contd...

This screenshot illustrates the Tableau User Interface (UI) with several annotations:

- Data pane (left):** Shows the data source "Orders (Sample - Superstore)". It is divided into **Dimensions** and **Measures**. A red box highlights the Dimensions section, with a green callout pointing to it stating: "This shows your attributes from the data source".
- Pages pane (top center):** Displays the current page structure: **Columns** (Sub-Category) and **Rows** (SUM(Profit)). A pink box highlights this area, with a green callout pointing to it stating: "This box is known as pill".
- Marks card (center left):** A floating card titled "Marks" with options: Automatic, Color, Size, Label, Detail, and Tooltip.
- Chart Area (center right):** A bar chart titled "Sheet 1" showing Profit (Y-axis, ranging from -20K to 50K) versus Sub-Category (X-axis). The chart displays various product categories with their corresponding profit values.
- Annotations:**
 - A green box with a black arrow points to the chart area, containing the text: "Various visualization improvement options available as Marks card".
 - A purple arrow points from the bottom navigation bar to the "Switch Between/ Add sheets" button.
- Bottom Navigation Bar:** Includes buttons for Data Source, Sheet 1, and other sheet navigation.

Tableau's UI contd...

The screenshot illustrates the Tableau user interface with several annotated components:

- Data Pane**: The leftmost pane, highlighted with a red border, contains the Data, Dimensions, and Measures sections. It lists various fields such as Customer ID, Customer Name, Order Date, etc., under Dimensions, and Profit, Quantity, Sales, etc., under Measures.
- Marks Card**: A floating card in the center-left, highlighted with a green border, shows the current marks settings: Automatic for the mark type, and Color, Size, Detail, and Tooltip for the available options.
- Toolbars**: A yellow arrow points from the top toolbar to a green callout box labeled "Region from where you can Select Various Toolbars".
- Attributes**: A pink arrow points from the Columns and Rows shelf items to a green callout box labeled "Area where you will drag and drop your attributes".
- Visual Area**: The main right-hand area displays a bar chart titled "Sheet 1". The Y-axis is labeled "Profit" and ranges from -20K to 50K. The X-axis is labeled "Sub-Category" and lists categories like Accessories, Appliances, Art, Binders, Bookcases, Cables, Envelopes, Fasteners, Furnishings, Lab, Machines, Paper, Photo, Store, Supplies, and Tables. The bars show profit values for each category, with some categories having negative profit values.
- Data Visualization**: A green arrow points from the bottom of the chart area to a green callout box labeled "This region shows area where you will get your data visualized".

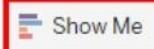
Tableau's UI – Show Me

The screenshot shows the Tableau Data pane. On the left, under 'Dimensions', fields include Customer Name, Order Date, Order ID (selected), Postal Code, Product ID, Product Name, Region, Row ID, Segment, Ship Date, Ship Mode, State (selected), Sub-Category, and Measure Names. Under 'Measures', fields include Discount, Profit (selected), Quantity, Sales (selected), Latitude (generated), Longitude (generated), Number of Records, and Measure Values.

Select fields in the **Data** pane that you want to analyze. Hold the Ctrl key to make multiple selections

Theory
Show Me smartly highlights view types (graphs) that work best with the field types (Attributes) in your data

Open Show Me by clicking Show Me on the toolbar



The screenshot shows the Tableau Show Me interface. It displays a grid of visualization preview cards. A red box highlights the first row of cards, which represent symbol maps. Below the grid, text provides instructions: 'For symbol maps try 1 geo Ⓛ Dimension, 0 or more Dimensions, 0 to 2 Measures'.

Tableau – Data Type

Icon	Data type
Abc	Text (string) values
>Date	Date values
Time	Date & Time values
#	Numerical values
T F	Boolean values (relational only)
Location	Geographic values (used with maps)

Dimensions

- Abc Category
- Location City
- Location Country
- Abc Customer ID
- Abc Customer Name
- Date Order Date
- Abc Order ID
- Location Postal Code
- Abc Product ID
- Abc Product Name
- Abc Region
- # Row ID
- Abc Segment
- Date Ship Date

Measures

- # Discount
- # Profit
- # Quantity
- # Sales
- Location *Latitude (generated)*

Tableau – File Types

File Type	File Extension	Use
Tableau Workbook	.twb	It contains information on each sheet and dashboard that is present in a workbook
Tableau Packaged Workbook	.twbx	This file format contains the details of workbook as well as the local data that is used in the analysis. Its purpose is to be share with other Tableau desktop or Tableau reader
Tableau Data source	.tds	The details of the connection used to create the tableau report are stored in this file. In the connection details it stores the source type(excel/relational/sap etc.) as well as the data types of the columns

Understanding MetaData



Real Data
(Earth)
Physical Appearance of earth



Meta Data
(political globe with information about earth)
Latitudes, Longitudes, States-Name, Ocean Name

MetaData Contd...



Meta Data

- Name of the Book
- Author of the Book
- Publisher of the Book
- Price of the Book
- ISBN
- Page numbers

Data and MetaData in Tableau

Orders

Real Data

Sort fields Data source order ▾

Show aliases \$

# Row ID	Abc Orders Order ID	Orders Order Date	Orders Ship Date	Abc Orders Ship Mode	Abc Orders Customer ID	Abc Orders Customer Name
32298	CA-2012-124891	7/31/2012	7/31/2012	Same Day	RH-19495	Rick Hansen
26341	IN-2013-77878	2/5/2013	2/7/2013	Second Class	JR-16210	Justin Ritter
25330	IN-2013-71249	10/17/2013	10/18/2013	First Class	CR-12730	Craig Reiter
13524	ES-2013-15793...	1/28/2013	1/30/2013	First Class	KM-16375	Katherine Murray
47221	SG-2013-4320	11/5/2013	11/6/2013	Same Day	RH-9495	Rick Hansen
22732	IN-2013-42360	6/28/2013	7/1/2013	Second Class	JM-15655	Jim Mitchum
30570	IN-2011-81826	11/7/2011	11/9/2011	First Class	TS-21340	Toby Swindell
31192	IN-2012-86369	4/14/2012	4/18/2012	Standard Class	MB-18085	Mick Brown

Dimensions

Country

Category

City

Customer ID

Customer Name

Market

Order Date

Order ID

Order Priority

Postal Code

Product ID

Product Name

Region

Metadata in Tableau

What is Visual Analytics?

Visual analytics is an interactive graphical display of data which is used to generate analytical results and insights.



Why use Visual Analytics ?



Aggregating and Disaggregating Data

Data Aggregation

Information is gathered and expressed in a summary form. Generally used for statistical analytics

Ex: Cluster

Data Disaggregation

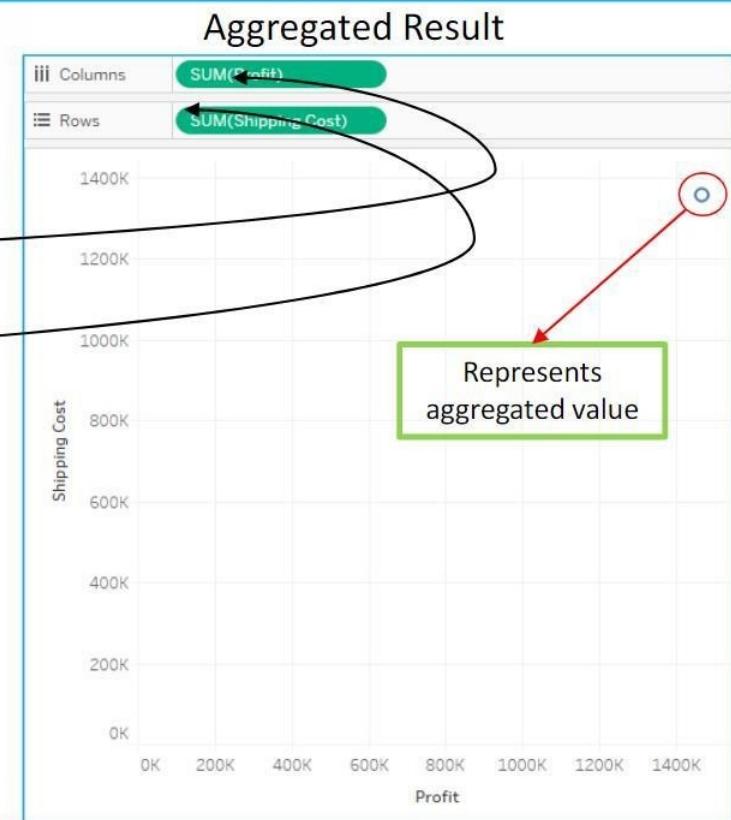
Disaggregate means to separate (an aggregate or mass) into its component parts



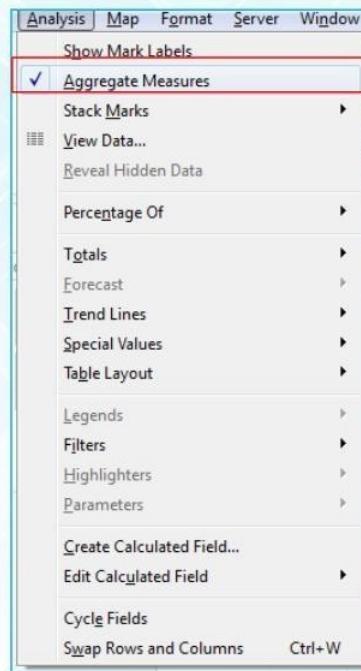
Aggregating Data in Tableau

Measures
Discount
Profit
Quantity
Sales
Shipping Cost
Latitude (generated)
Longitude (generated)
-# Number of Records
Measure Values
Measure Values
Number of Records
Longitude (Generated)
Latitude (Generated)

On selecting two measures for the analysis
data aggregation is done by default



Disaggregating Data



Uncheck the Aggregated
Measures to view
Disaggregated Result



Data Granularity

Using Marks Card

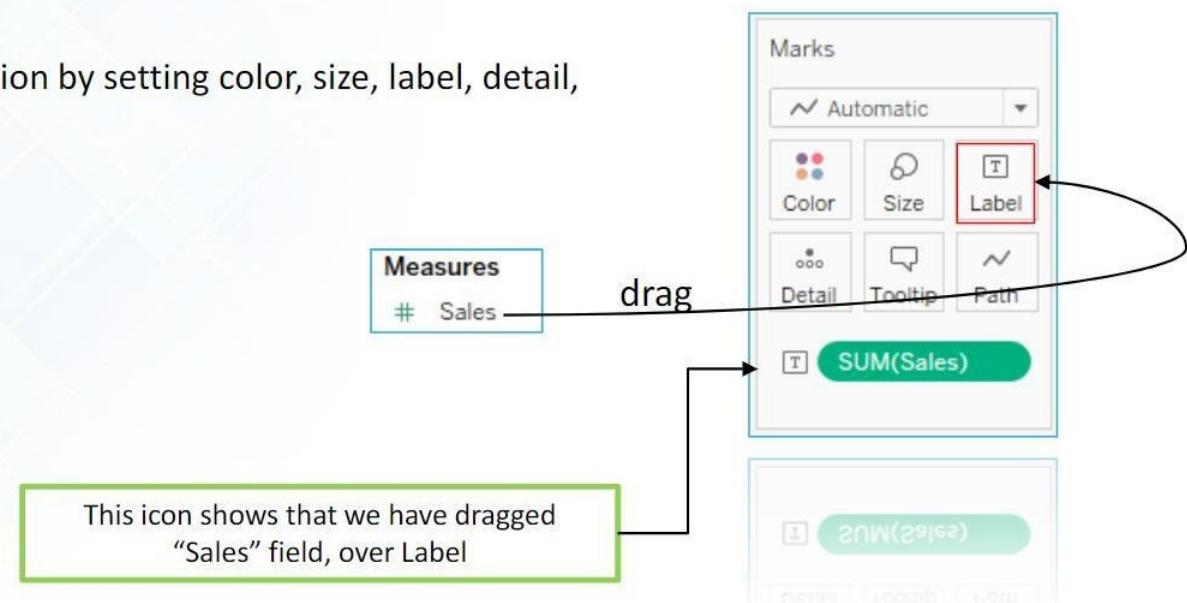
Data Granularity

- **Granularity** is the level of depth represented by the data, in a fact or dimension table
- **High granularity** means a detailed view of data and transactions
- **Low granularity** zooms out into a summary view of data and transactions
- In Tableau, Measures, are automatically aggregated to the granularity of the view

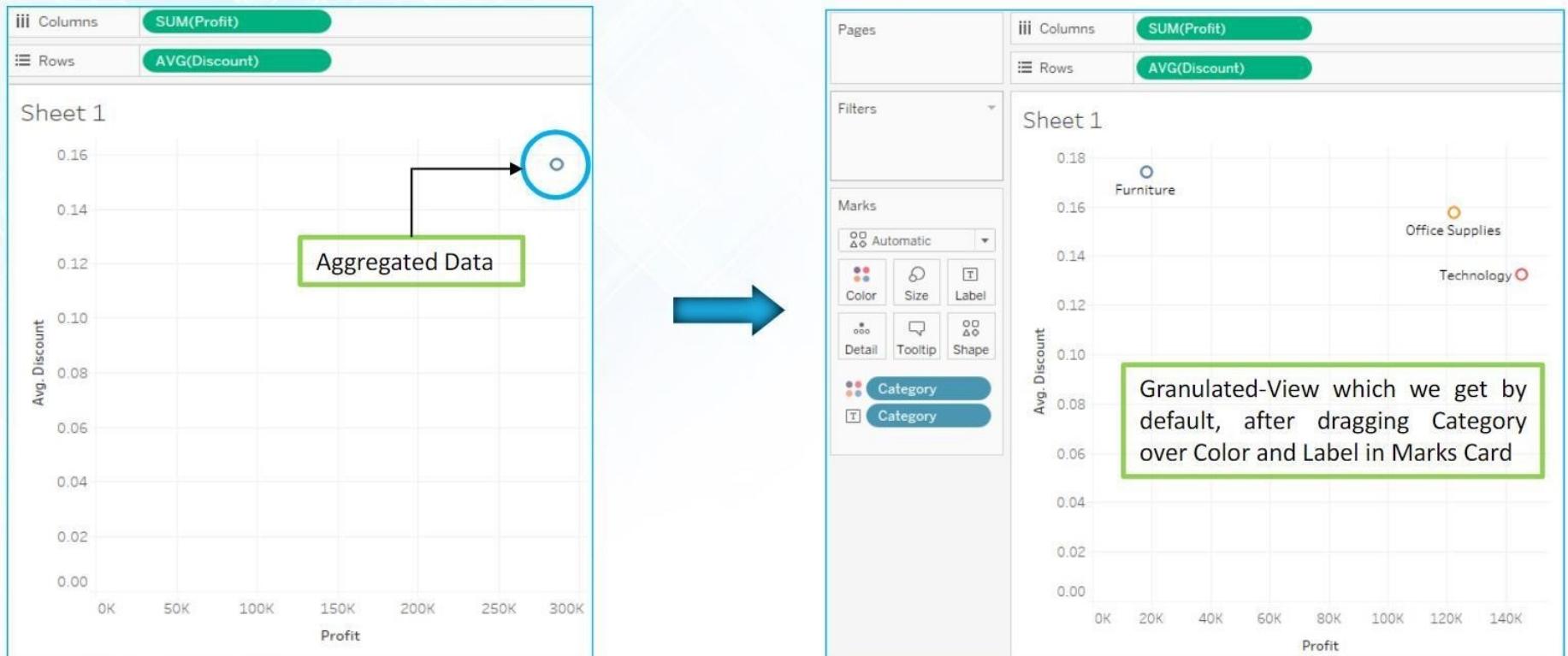


Marks Card in Tableau

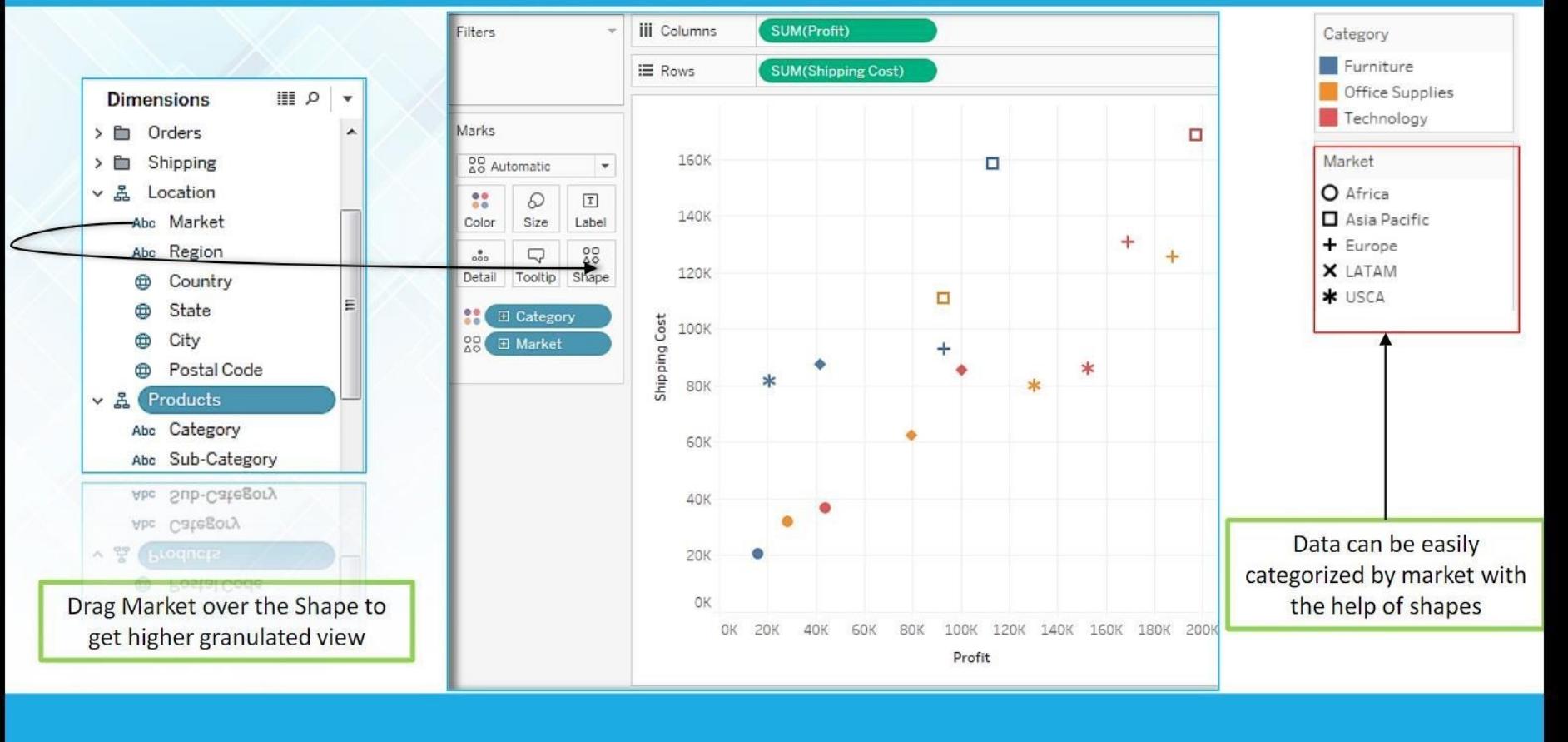
- It is a region in Tableau where you can drag your fields to set mark properties
- It helps you in enhancing visualization by setting color, size, label, detail, path or shapes



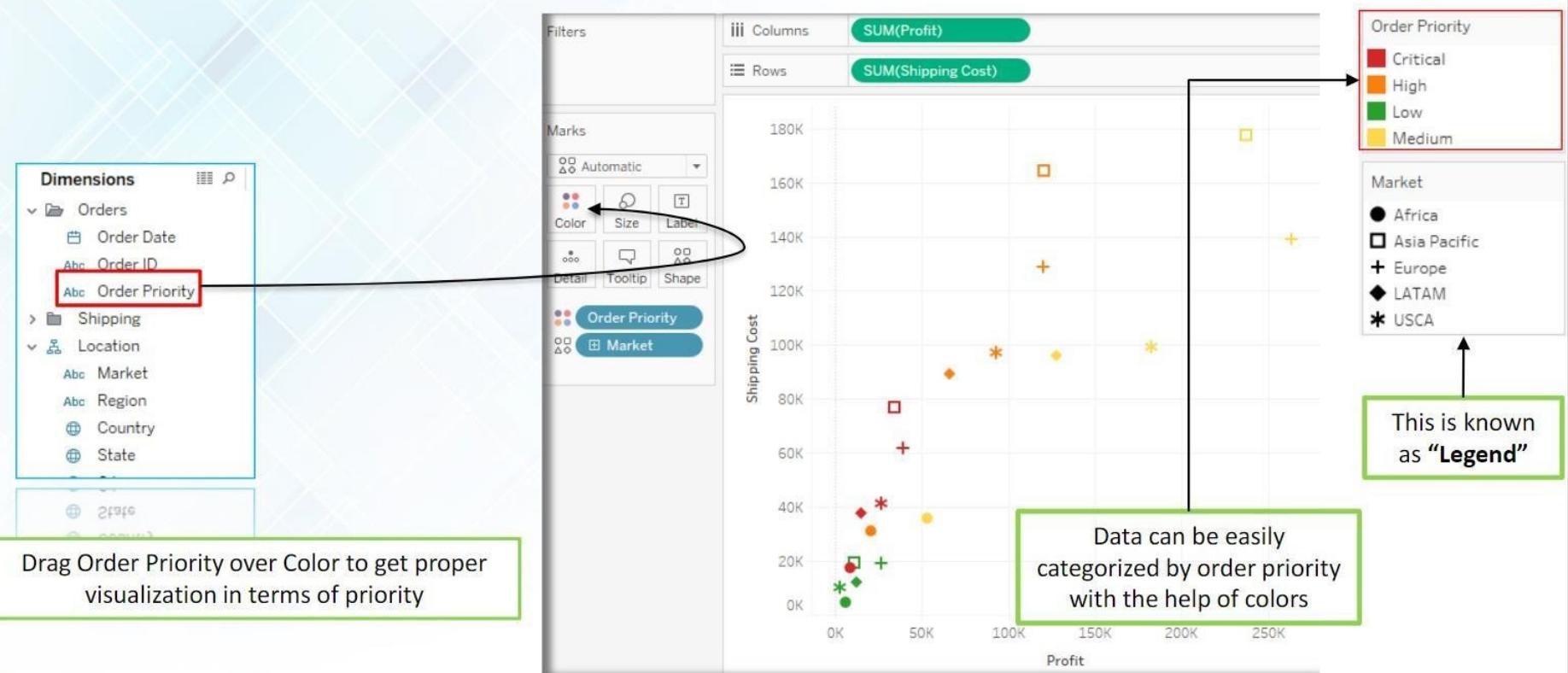
Data Granularity in Tableau



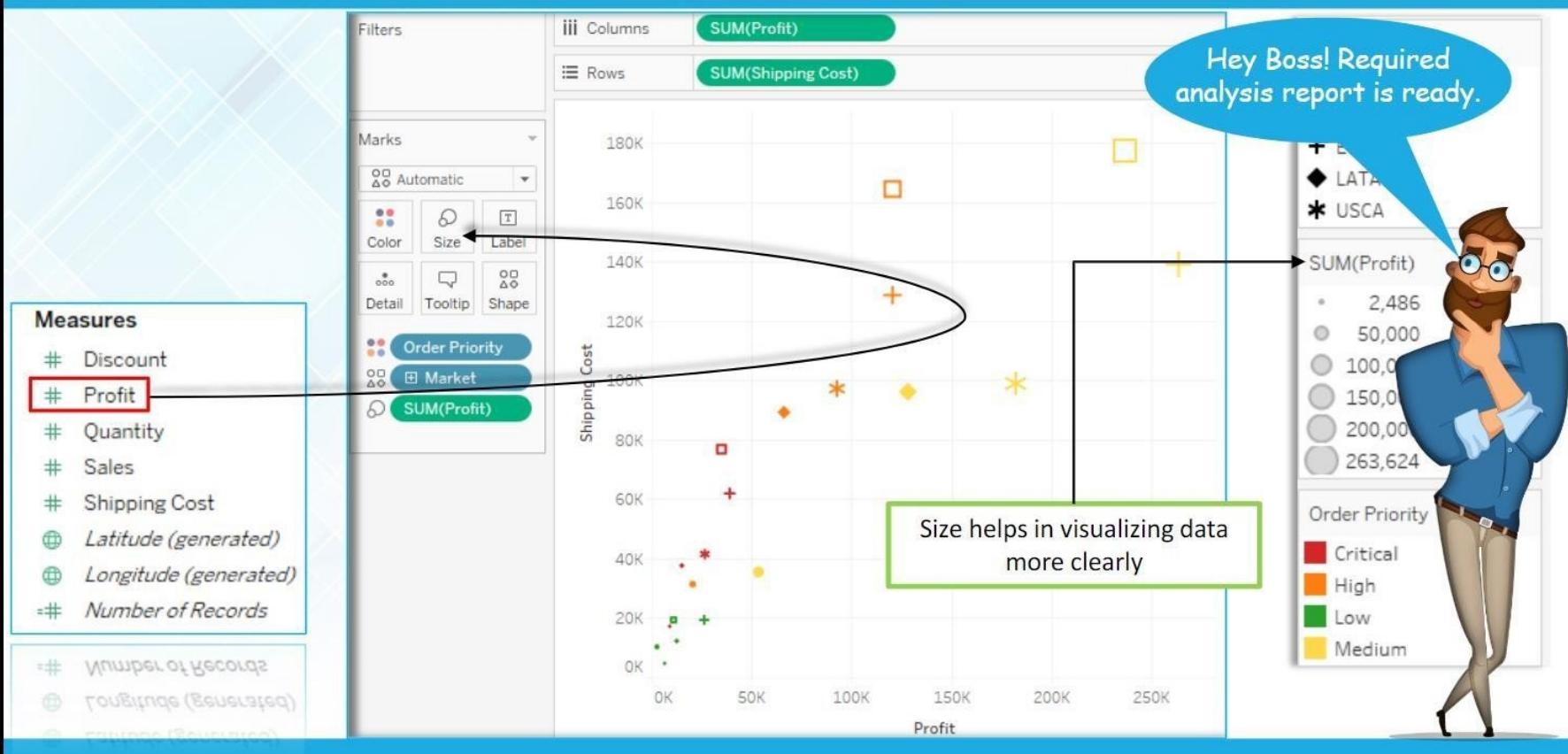
Data Granularity in Tableau - Shapes



Data Granularity in Tableau - Colors



Data Granularity in Tableau - Size



Highlighting – using legend



Click on this icon to turn on the highlighter

Filters

Marks

Automatic

Color Size Label

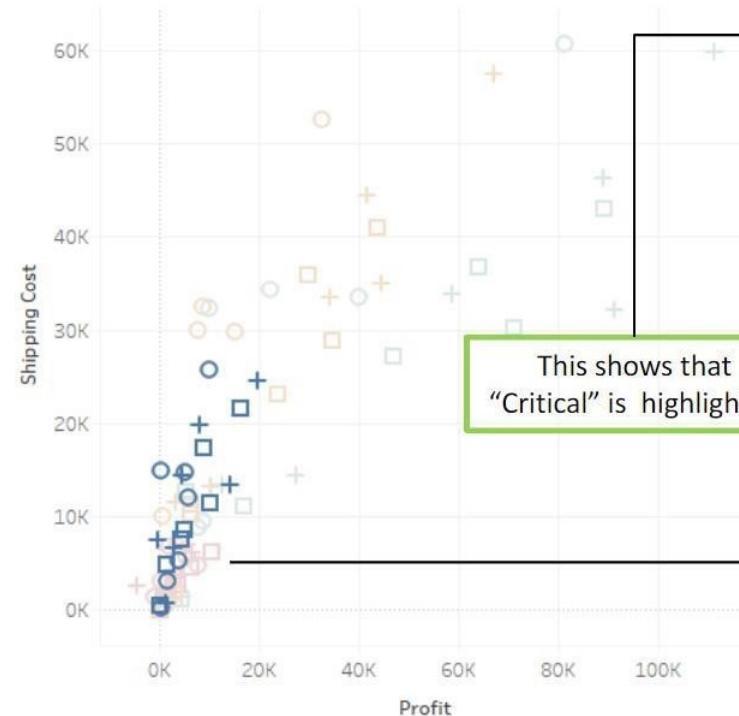
Detail Tooltip Shape

Order Priority

Category

Market

Sheet 1

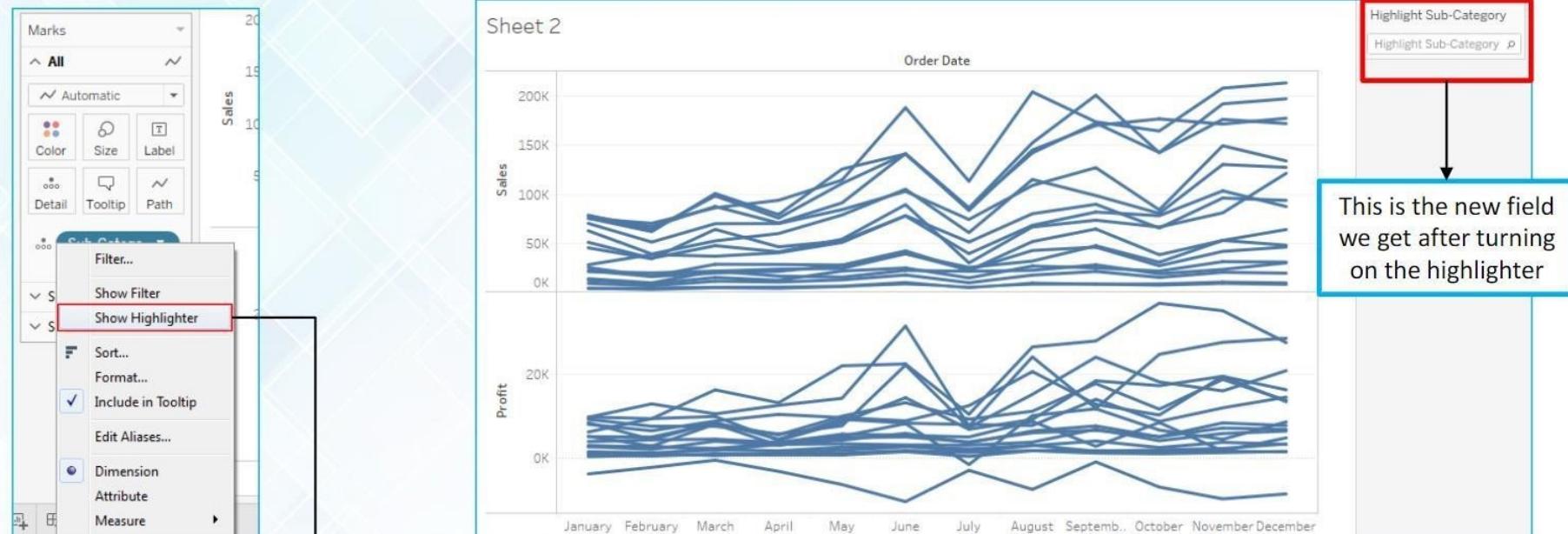


Order Priority	Critical
High	
Low	
Medium	

Category	Furniture
Office Supplies	
Technology	

This shows the highlighted graphical representation

Highlighting Solution

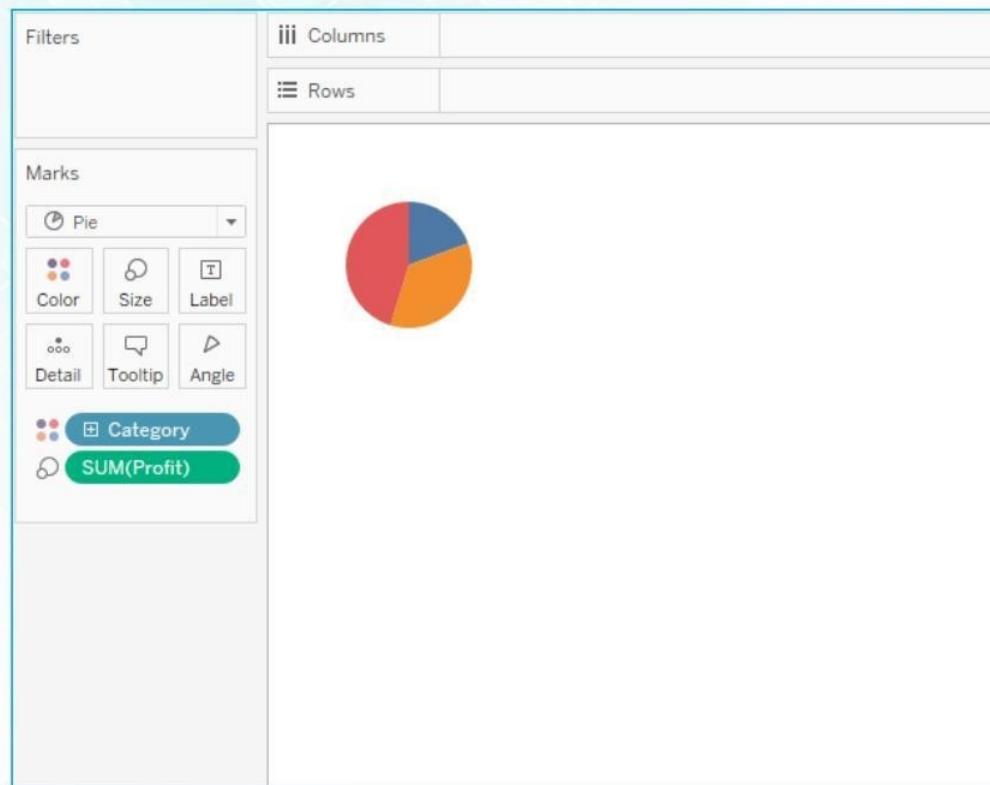


Click the option to turn on the Highlighter

Highlight Sub-Category
Highlight Sub-Category

This is the new field
we get after turning
on the highlighter

Pie Chart



Pie charts are best to use when you are trying to compare parts of a whole

Pie Chart do not show changes over time.
Representing negative value is one of its drawback

Business Problem

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Operations you can do with

1. Take data from multiple sources
2. Clean the data
3. Transform data
4. Create new calculations

Business Problem:

It's the end of tough year and somehow business manage to earn some profit. Many of the employees are still employed but the company has decided to give a bonus to all the employees. Given the slab of Bonus based on the performance. (Performance is based on total sales in a year)

Sales	%Bonus
\$5001+	30%
\$2000 – \$5000	20%
Less than \$2000	10%

Business Problem

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Business Problem:

One of the retail chains in USA looking to implement Tableau as its business intelligence tool. However, they have following requirements which they want to know if that is possible with Tableau.

The requirements are as follows:

1. Business looking for a quick reporting solution and as per them their data will go on basis but that refresh will happen after 15 hours after the previous load. Now the requirement is that they does not want to have the connection with the live data and they want to use the cached data which can be used while reporting.
2. One of the requirements is they need to filter the data at the very start so that they can generate different reports for different types of user, lets say if you are a manager of East region

Business Problem
Show Profitability by Region

	A	B	C	D	E	F	G	H	I	J	K
1	Row ID	Order Priority	Discount	Unit Price	Shipping Cost	Customer ID	Customer Name	Ship Mode	Customer Segment	Product Category	Product Sub-Category
2	18606	Not Specified	0.01	2.88	0.5	2	Janice Fletcher	Regular Air	Corporate	Office Supplies	Labels
3	20849	High	0.01	2.84	0.93	3	Bonnie Potter	Express Air	Corporate	Office Supplies	Pens & Art Supplies
4	23086	Not Specified	0.03	6.68	6.15	3	Bonnie Potter	Express Air	Corporate	Office Supplies	Paper
5	23087	Not Specified	0.01	5.68	3.6	3	Bonnie Potter	Regular Air	Corporate	Office Supplies	Scissors, Rulers and T
6	23088	Not Specified	0	205.99	2.5	3	Bonnie Potter	Express Air	Corporate	Technology	Telephones and Com
7	23597	Medium	0.09	55.48	14.3	3	Bonnie Potter	Express Air	Corporate	Office Supplies	Paper
8	25549	Low	0.08	120.97	26.3	3	Bonnie Potter	Delivery Truck	Corporate	Technology	Office Machines
9	20228	Not Specified	0.02	500.98	26	5	Ronnie Proctor	Delivery Truck	Home Office	Furniture	Chairs & Chairmats
10	19483	Low	0.08	6.48	6.81	5	Ronnie Proctor	Regular Air	Home Office	Office Supplies	Paper
11	24782	High	0.01	90.24	0.99	6	Dwight Hwang	Regular Air	Home Office	Office Supplies	Appliances
12	24563	Critical	0.07	6.48	6.6	6	Dwight Hwang	Regular Air	Home Office	Office Supplies	Paper
13	24564	Critical	0.01	4.84	0.71	6	Dwight Hwang	Regular Air	Home Office	Office Supplies	Pens & Art Supplies
14	24565	Critical	0.1	85.99	0.99	6	Dwight Hwang	Regular Air	Home Office	Technology	Telephones and Com
15	21866	High	0.05	12.28	4.86	7	Leon Gill	Regular Air	Home Office	Office Supplies	Paper
16	20876	Medium	0.08	140.98	36.09	8	Melanie Garner	Delivery Truck	Home Office	Furniture	Bookcases
17	20877	Medium	0.1	286.85	61.76	9	Lorraine Houston	Delivery Truck	Home Office	Furniture	Tables
18	22241	Critical	0.06	15.57	1.39	10	Meredith Norris Thomas	Regular Air	Home Office	Office Supplies	Envelopes
19	21776	Critical	0.06	9.48	7.29	11	Marcus Dunlap	Regular Air	Home Office	Furniture	Office Furnishings
20	23328	High	0.04	10.98	3.37	12	Kara Pace	Regular Air	Home Office	Office Supplies	Scissors, Rulers and T
21	24844	Medium	0.09	78.69	19.99	14	Gwendolyn F Tyson	Regular Air	Small Business	Furniture	Office Furnishings
22	24846	Medium	0.08	3.28	2.31	14	Gwendolyn F Tyson	Regular Air	Small Business	Office Supplies	Pens & Art Supplies
23	24847	Medium	0.05	3.28	4.2	14	Gwendolyn F Tyson	Regular Air	Small Business	Office Supplies	Pens & Art Supplies
24	24848	Medium	0.05	3.58	1.63	14	Gwendolyn F Tyson	Regular Air	Small Business	Office Supplies	Rubber Bands
25	24845	Medium	0.01	6.48	7.86	14	Gwendolyn F Tyson	Regular Air	Small Business	Office Supplies	Paper
26	18181	Critical	0	4.42	4.99	15	Timothy Reese	Regular Air	Small Business	Office Supplies	Envelopes

Orders Returns Users

	Name	Date modified	Type	Size
	Sample-Superstore-Subset-Excel- (1)	9/10/2016 1:44 PM	Microsoft Excel Worksheet	1,477 KB
	Sample-Superstore-Subset-Excel-	9/10/2016 1:43 PM	Microsoft Excel Worksheet	1,477 KB

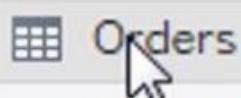
File name: Sample-Superstore-Subset-Excel-

Sheets

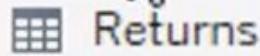


Use Data Interpreter

Data Interpreter might be able to clean your Excel workbook.



Orders



Returns



Users



New Union

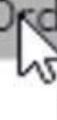


Sort fields

Data source o



Orders



Drag sheets here



Sort fields

Data source order



Orders

#	Abc	#	#	#	#	Abc
Orders	Orders	Orders	Orders	Orders	Orders	Orders
Row ID	Order Priority	Discount	Unit Price	Shipping Cost	Customer ID	Customer Name
18606	Not Specified	0.010000	2.88	0.500	2	Janice Fletcher
20847	High	0.010000	2.84	0.930	3	Bonnie Potter
23086	Not Specified	0.030000	6.68	6.150	3	Bonnie Potter
23087	Not Specified	0.010000	5.68	3.600	3	Bonnie Potter
23088	Not Specified	0.000000	205.99	2.500	3	Bonnie Potter
23597	Medium	0.090000	55.48	14.300	3	Bonnie Potter
25549	Low	0.080000	120.97	26.300	3	Bonnie Potter



Orders

able to
k.

Sort fields Data source order ▾ Show aliases Show hidden fields 1,000 ➔ rows

#	Orders	Orders	Orders	#	Orders	#	Orders	#
	Postal Code	Order Date	Ship Date	Profit	Quantity ordered ...	Sales	Order ID	
ison	60101	5/28/2012	5/30/2012	1.32	2	5.90	88525	
cortes	98221	7/7/2010	7/8/2010	4.56	4	13.01	88522	
cortes	98221	7/27/2011	7/28/2011	-47.64	7	49.92	88523	
cortes	98221	7/27/2011	7/28/2011	-30.51	7	41.64	88523	
cortes	98221	7/27/2011	7/27/2011	998.20	8	1,446.67	88523	
cortes	98221	11/9/2011	11/11/2011	1,388.05	37	2,011.67	88524	
cortes	98221	7/1/2013	7/8/2013	1,001.45	12	1,451.37	88526	

⊕田田⊕



File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region
- Row ID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows Product Container

Sheet 1

Product Co..

Jumbo Box	Abc
Jumbo Drum	Abc
Large Box	Abc
Medium Box	Abc
Small Box	Abc
Small Pack	Abc
Wrap Bag	Abc

For text tables try

1 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics

Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region
- Row ID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows Product Container

Sheet 1

Product Co..

Product Co..	SUM(Sales)
Jumbo Box	1,591,842
Jumbo Drum	2,115,605
Large Box	1,187,511
Medium Box	435,550
Small Box	3,115,625
Small Pack	323,173
Wrap Bag	182,626

For horizontal bars try
0 or more Dimensions
1 or more Measures

Data Source Sheet 1

The screenshot shows a Tableau desktop interface. The top menu bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Window, and Help. On the left, there's a sidebar with 'Data' and 'Analytics' tabs, followed by a list of dimensions and measures. The dimensions listed are Order Priority, Postal Code, Product Category, Product Container, Product Name, Product Sub-Category, Region, Row ID, and Ship Date. The measures listed are Discount, Product Base Margin, Profit, Quantity ordered new, Sales (which is selected and highlighted in green), Shipping Cost, Unit Price, Latitude (generated), Longitude (generated), Number of Records, and Measure Values. In the center, there's a 'Pages' section with 'Product Container' selected, and a 'Rows' section. Below that is a table titled 'Sheet 1' with the heading 'Product Co..'. The table lists various product containers with their corresponding sales values. To the right of the table is a 'Show Me' panel containing numerous icons representing different types of charts and maps. At the bottom, there are tabs for 'Data Source' and 'Sheet 1', along with some additional buttons.



Standard



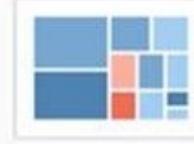
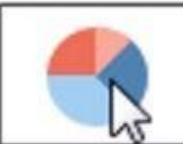
Show Me

Container

1734	626
308	3034
2629	2599
971	322

1234	545
308	3030
2629	2599

1234	545
308	3030
2629	2599



Standard

Show Me

Pages

iii Columns

Rows

Filters

Marks

Pie

Color

Size

Label

Detail

Tooltip

Angle

Product Container

SUM(Sales)

SUM(Sales)

Sheet 1

For horizontal bars try

0 or more Dimensions

1 or more Measures

The screenshot shows a data visualization interface, likely Tableau. The top navigation bar includes icons for file, edit, and standard tools. The left sidebar contains sections for Pages, Filters, and Marks. The Marks section is currently set to 'Pie' and includes options for Color, Size, Label, Detail, Tooltip, Angle, and a dropdown for 'Product Container'. A tooltip is displayed over the 'Product Container' dropdown, showing two options: 'SUM(Sales)' and 'Product Container'. The main workspace is titled 'Sheet 1' and displays a pie chart with four segments. To the right, there is a large library of visualizations and a guide for horizontal bars.

Sheet 1



Product Container: Small Box
Sales: 3,115,625

Marks

Pie

Color Size Label

Detail Tooltip Angle

Product Container

SUM(Sales)

SUM(Sales)

Abc Order Priority
@ Postal Code
Abc Product Category
Abc Product Container
Abc Product Name
Abc Product Sub-Category
Abc Region
Row ID
Ship Date

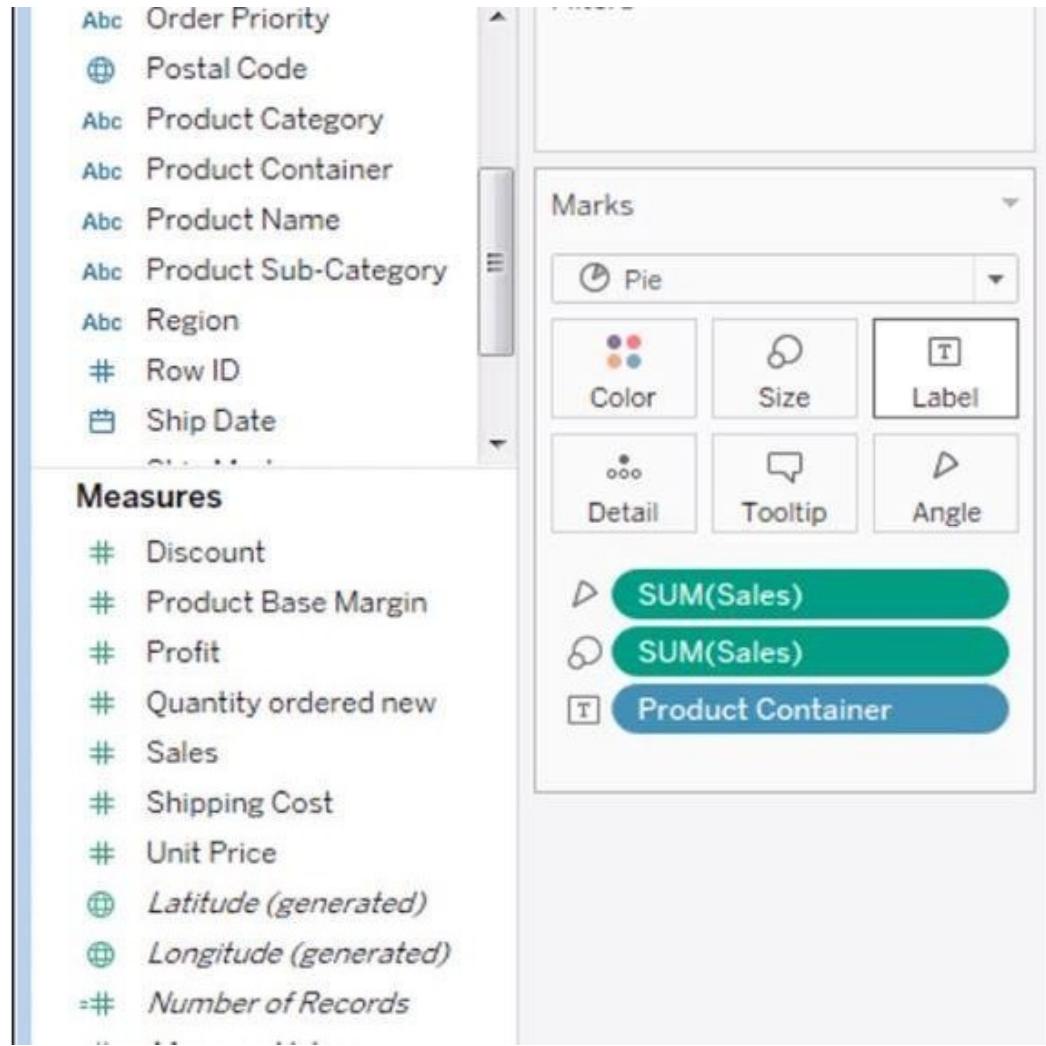
Measures

Discount
Product Base Margin
Profit
Quantity ordered new
Sales
Shipping Cost
Unit Price
@ Latitude (generated)
@ Longitude (generated)
-# Number of Records

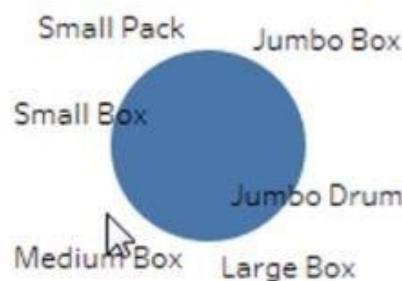
Sheet 1

The screenshot shows the Tableau Data Prep interface. On the left, there's a sidebar with various columns listed under 'Dimensions' and 'Measures'. In the center, there's a large orange rectangular area representing a data source or view. To the right of this area is a 'Marks' card. The 'Marks' card has a dropdown menu set to 'Pie'. Below this, there are six options: 'Color', 'Size', 'Detail', 'Tooltip', 'Angle', and 'Product Container'. The 'Product Container' option is highlighted with a blue selection bar and a cursor icon. Below the selection bar, there are three green bars representing measures: 'Product Container', 'SUM(Sales)', and 'SUM(Sales)'. The 'Product Container' bar is also highlighted with a blue selection bar.





Sheet 1



Abc Order Priority
@ Postal Code
Abc Product Category
Abc Product Container
Abc Product Name
Abc Product Sub-Category
Abc Region
Row ID
Ship Date

Measures

Discount
Product Base Margin
Profit
Quantity ordered new
Sales
Shipping Cost
Unit Price
@ Latitude (generated)
@ Longitude (generated)
-# Number of Records

Marks

Pie

Color
Size
Label
Detail
Tooltip
Angle

► SUM(Sales)
○ SUM(Sales)
T Product Container

Sheet 1



Abc Order Priority
@ Postal Code
Abc Product Category
Abc Product Container
Abc Product Name
Abc Product Sub-Category
Abc Region
Row ID
Ship Date

Measures

Discount
Product Base Margin
Profit
Quantity ordered new
Sales
Shipping Cost
Unit Price
@ Latitude (generated)
@ Longitude (generated)
-# Number of Records

The screenshot shows the Tableau Data Source pane. On the left, there are two sections: 'Dimensions' and 'Measures'. The 'Dimensions' section lists: Order Priority, Postal Code, Product Category, Product Container, Product Name, Product Sub-Category, Region, Row ID, and Ship Date. The 'Measures' section lists: Discount, Product Base Margin, Profit, Quantity ordered new, Sales, Shipping Cost, Unit Price, Latitude (generated), Longitude (generated), and Number of Records. The right side of the pane shows a 'Marks' card with options: Pie, Color, Size, Label, Detail, Tooltip, and Angle. Below the marks card, three items are listed: SUM(Sales) (highlighted in green), SUM(Sales) (highlighted in green), and Product Container (highlighted in blue).

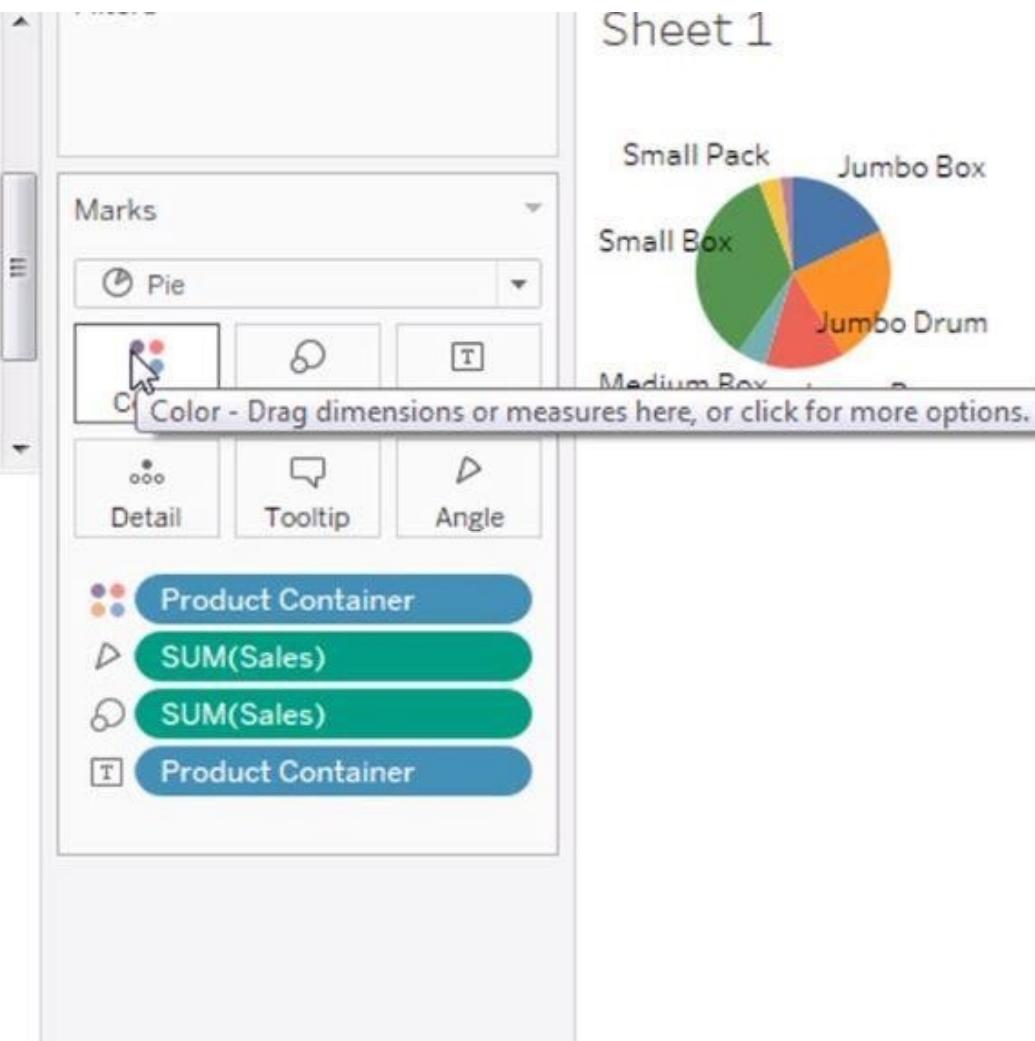
Sheet 1



Abc Order Priority
@ Postal Code
Abc Product Category
Abc Product Container
Abc Product Name
Abc Product Sub-Category
Abc Region
Row ID
Ship Date

Measures

Discount
Product Base Margin
Profit
Quantity ordered new
Sales
Shipping Cost
Unit Price
@ Latitude (generated)
@ Longitude (generated)
Number of Records



Abc Order Priority
@ Postal Code
Abc Product Category
Abc Product Container
Abc Product Name
Abc Product Sub-Category
Abc Region
Row ID
Ship Date

Measures

Discount
Product Base Margin
Profit
Quantity ordered new
Sales
Shipping Cost
Unit Price
@ Latitude (generated)
@ Longitude (generated)
-# Number of Records

Sheet 1

Marks

Pie

Color Size Label

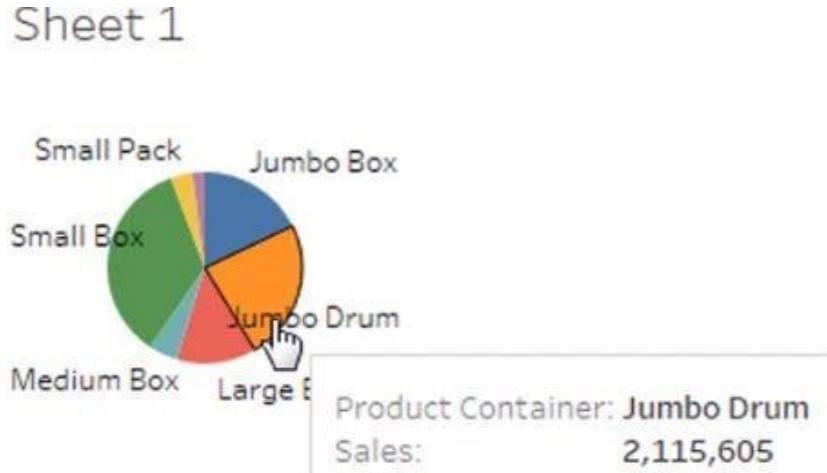
Detail Tooltip Angle

Product Container

SUM(Sales)

SUM(Sales)

Product Container



Abc Order Priority

⊕ Postal Code

Abc Product Category

Abc Product Container

Abc Product Name

Abc Product Sub-Category

Abc Region

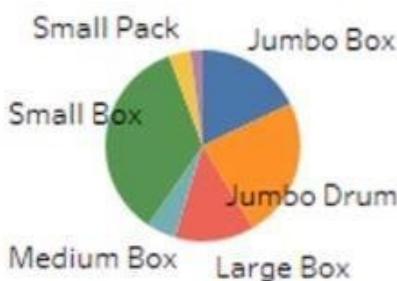
Row ID

Ship Date

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- ⊕ Latitude (generated)
- ⊕ Longitude (generated)
- # Number of Records

Sheet 1



**See a separate pie
chart for each region**

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region**
- # RowID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows

Entire View

Sheet 1

Product Container	Approximate Proportion
Small Pack	~25%
Small Box	~20%
Jumbo Box	~15%
Jumbo Drum	~15%
Medium Box	~10%
Large Box	~5%

Marks

- Pie
- Color
- Size
- Label
- Detail
- Tooltip
- Angle

Product Container

SUM(Sales)

SUM(Sales)

Product Container

Horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region**
- RowID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows Region

Entire View

Sheet 1

Region

Central

Box Type	Count
Small Pack	1
Jumbo Box	1
Small Box	1
Jumbo Drum	1
Medium Box	1
Large Box	1

East

Box Type	Count
Small Pack	1
Jumbo Box	1
Small Box	1
Jumbo Drum	1
Medium Box	1
Large Box	1

South

Box Type	Count
Small Pack	1
Jumbo Box	1
Small Box	1
Jumbo Drum	1
Medium Box	1

West

Box Type	Count
Small Pack	1
Jumbo Box	1
Small Box	1
Jumbo Drum	1
Medium Box	1

For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region
- Row ID
- Ship Date

Measures

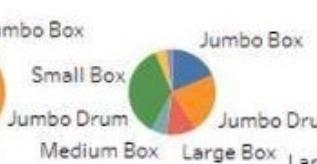
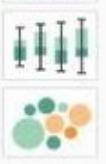
- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Region Rows

Entire View

Sheet 1

Region

Central	East	South	West
			

Marks

Pie

Color Size Label

Detail Tooltip Angle

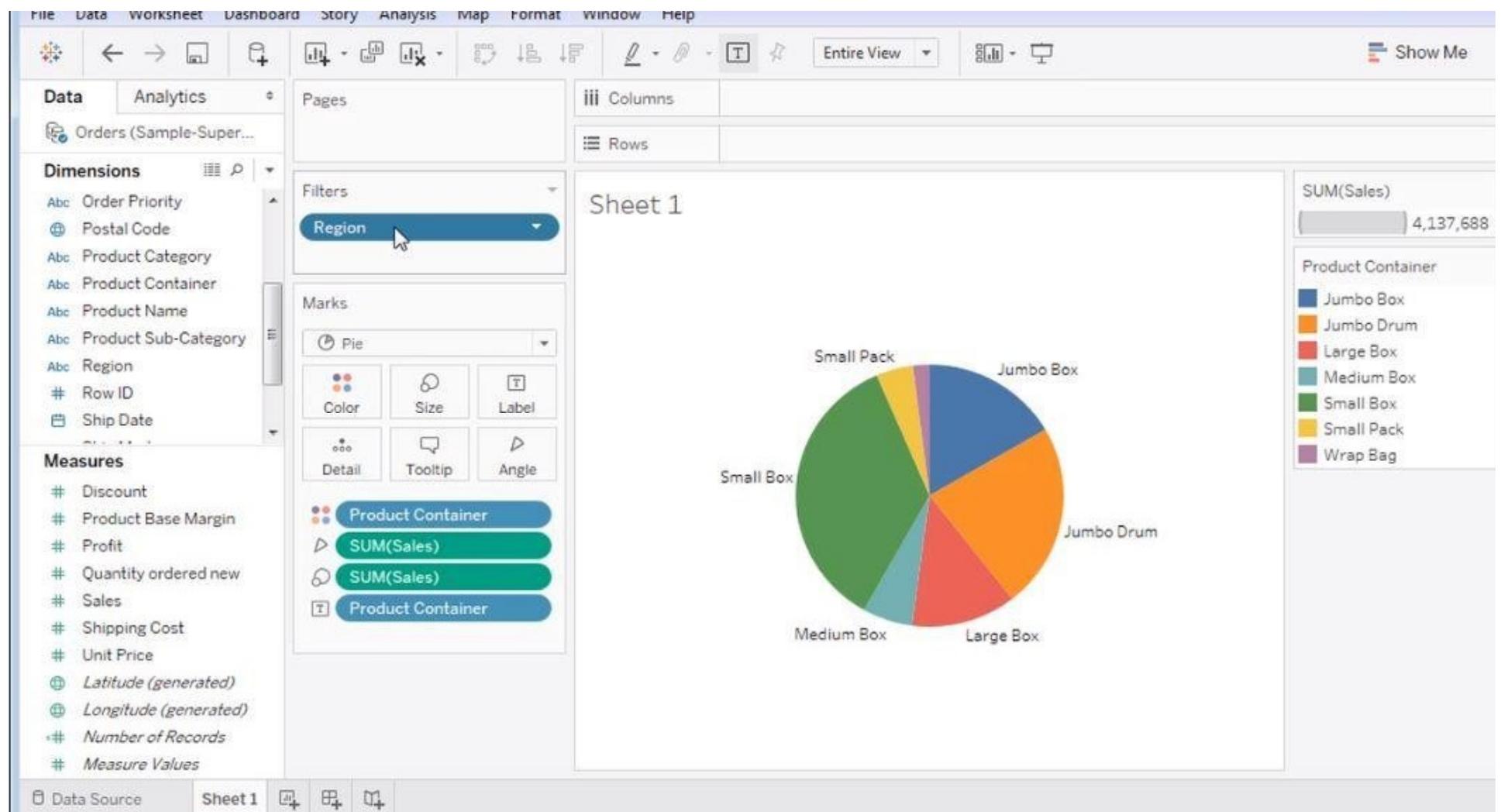
Product Container SUM(Sales) SUM(Sales) Product Container

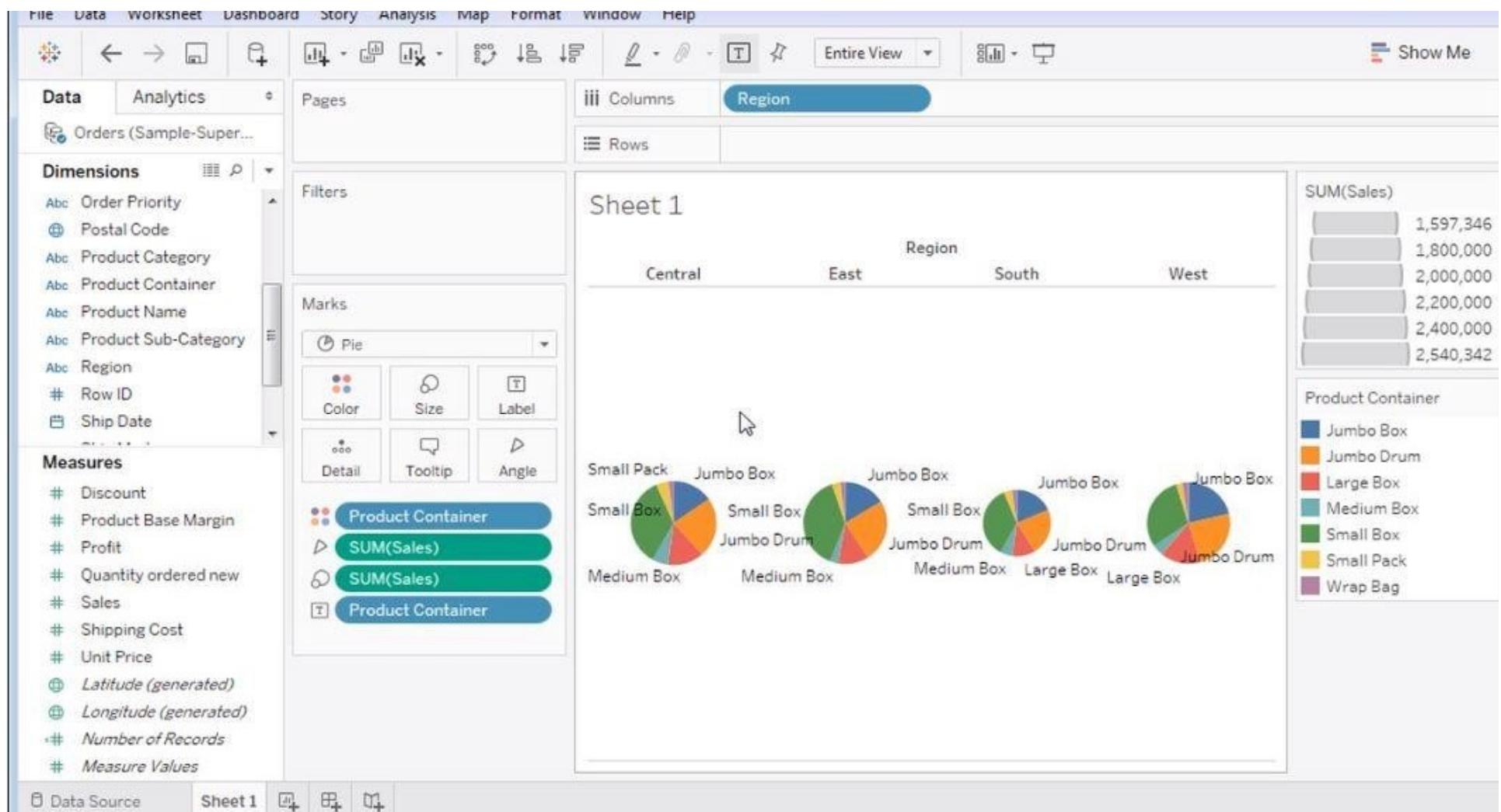
For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1





File Data Worksheet Dashboard Story Analysis Map Format Window Help

Show Me

Data Analytics Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region
- Row ID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows Region

Sheet 1

Region

Central

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

East

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

South

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

West

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

SUM(Sales)

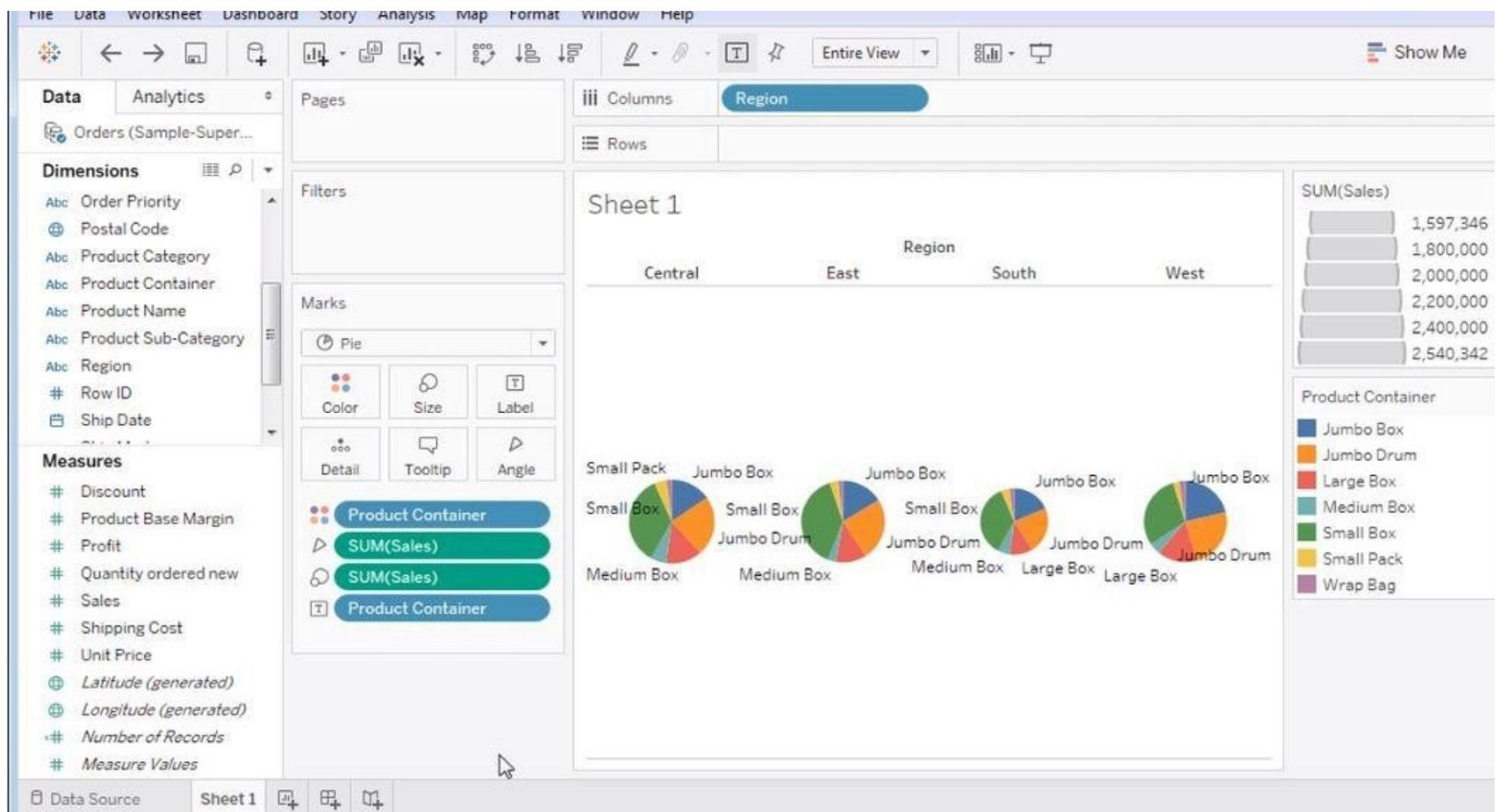
1,597,346
1,800,000
2,000,000
2,200,000
2,400,000
2,540,342

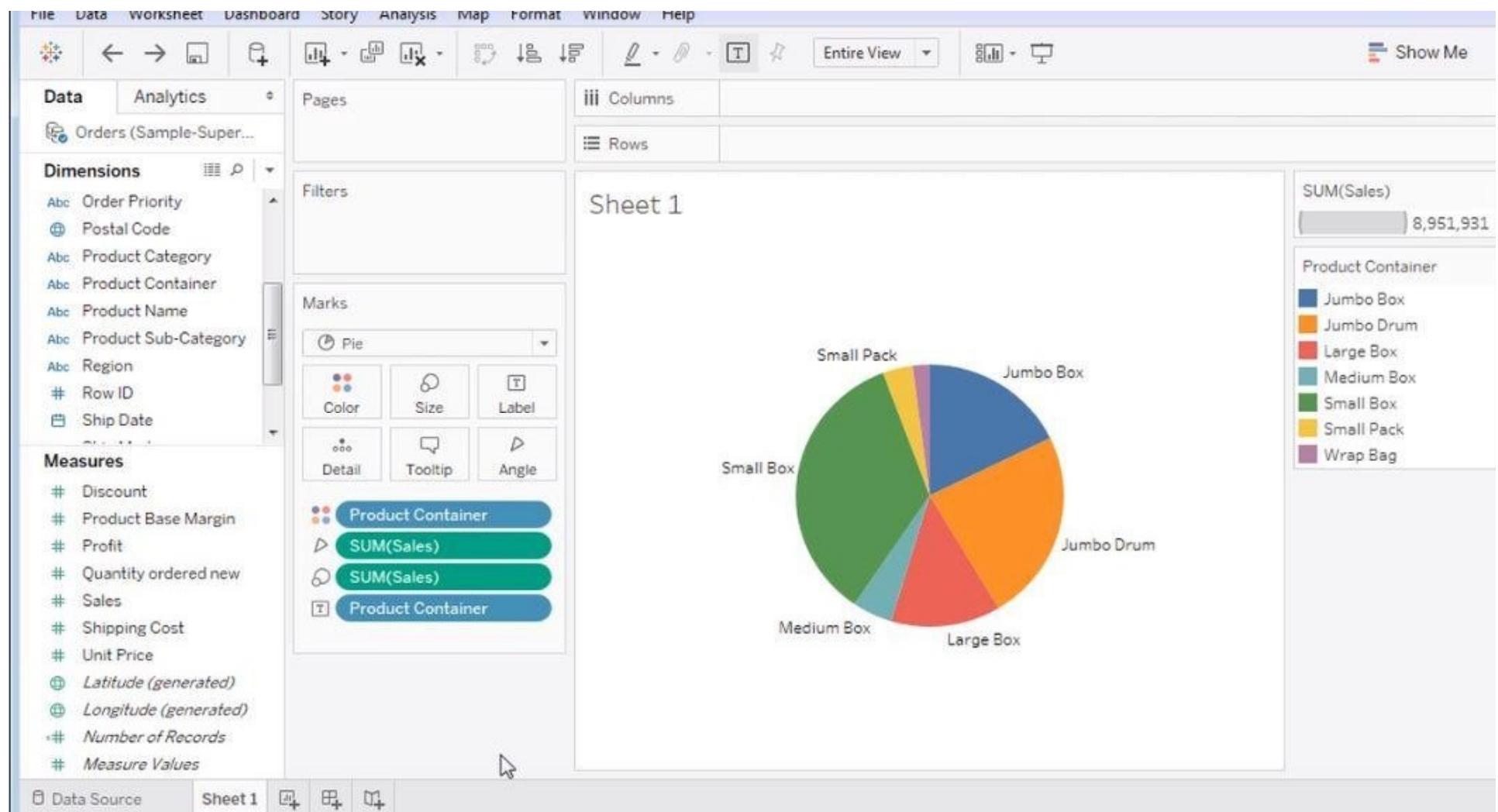
Product Container

- Jumbo Box
- Jumbo Drum
- Large Box
- Medium Box
- Small Box
- Small Pack
- Wrap Bag

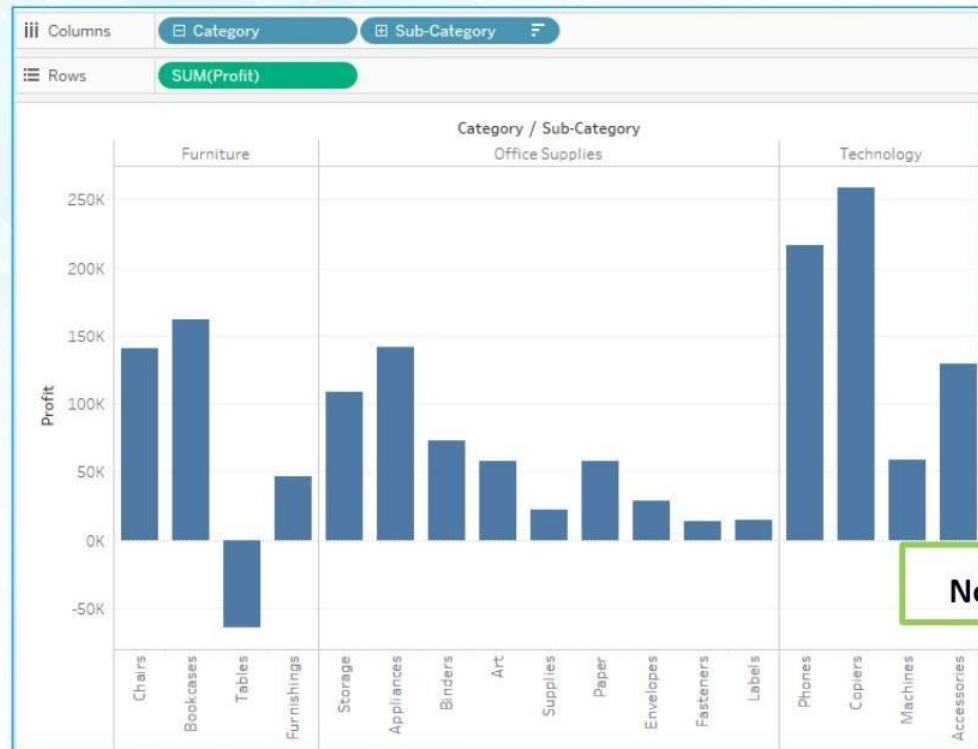
Data Source Sheet 1

**Control-Z will undo
your previous change**



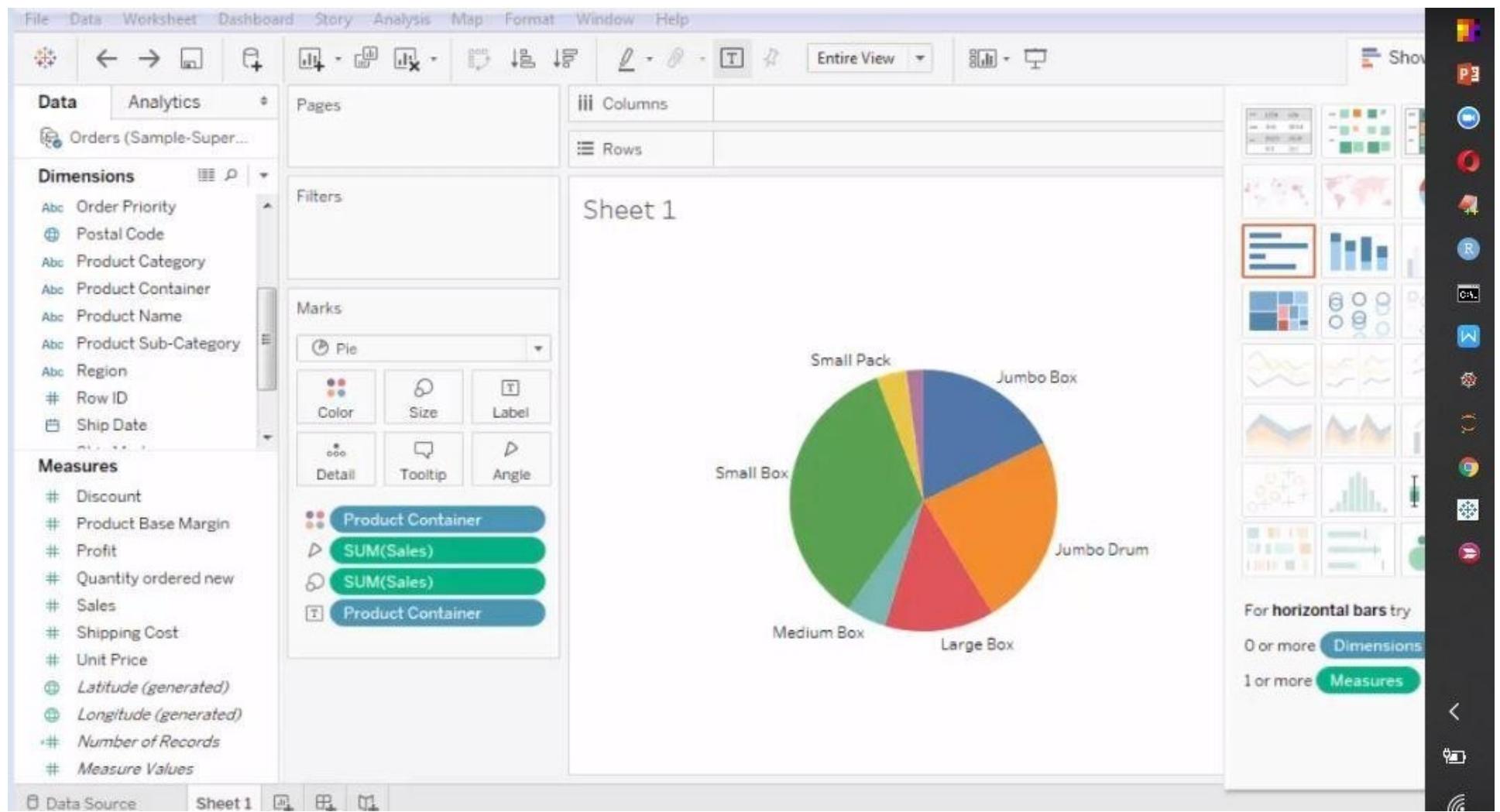


Bar Graph



Bar graphs are better for comparing larger changes or differences in data among groups

Note: bar graphs are best when the changes are larger



File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Order Priority
- Postal Code
- Product Category
- Product Container
- Product Name
- Product Sub-Category
- Region
- Row ID
- Ship Date

Measures

- Discount
- Product Base Margin
- Profit
- Quantity ordered new
- Sales
- Shipping Cost
- Unit Price
- Latitude (generated)
- Longitude (generated)
- Number of Records
- Measure Values

Pages Columns Rows Region

Entire View

Show

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

Product Container

SUM(Sales)

SUM(Sales)

Product Container

Sheet 1

Region

Central

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

East

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

South

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

West

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc **Ship Mode**
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows **Region**

Entire View

Sheet 1

Region

Central

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

East

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box Large Box

South

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

West

Small Pack Jumbo Box
Small Box Jumbo Drum
Medium Box

Marks

Pie

Color Size Label
Detail Tooltip Angle

Product Container
SUM(Sales)
SUM(Sales)
Product Container

For stacked bars try
1 or more Dimensions
1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages

Entire View

Region

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

For Shipment Container

SUM(Sales)

SUM(Sales)

Product Container

Sheet 1

Region

Central

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Large Box

East

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Large Box

South

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box

West

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box

For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows Region

Entire View

Show

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

SUM(Sales)

SUM(Sales)

Product Container

Sheet 1

Region

Central

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Jumbo Drum

East

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Medium Box

South

Small Pack Jumbo Box

Medium Box Jumbo Drum

West

Small Pack Jumbo Box

Medium Box Jumbo Drum

For stacked bars try

1 or more Dimensions

1 or more Measures

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- ABC Product Container
- ABC Product Name
- ABC Product Sub-Category
- ABC Region
- # Row ID
- Ship Date
- ABC Ship Mode
- State or Province
- ABC Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows Region

Entire View

Show

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

SUM(Sales)

SUM(Sales)

Product Container

Sheet 1

Region

Central

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Jumbo Drum

East

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Medium Box

South

Small Pack Jumbo Box

Medium Box Jumbo Drum

West

Small Pack Jumbo Box

Medium Box Jumbo Drum

For stacked bars try

1 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows Region

Entire View

Show

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

SUM(Sales)

SUM(Sales)

Pre-Ship Modeener

Sheet 1

Region

Central

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Jumbo Drum

East

Small Pack Jumbo Box

Small Box Jumbo Drum

Medium Box Medium Box

South

Small Pack Jumbo Box

Medium Box Jumbo Drum

West

Small Pack Jumbo Box

Medium Box Jumbo Drum

For stacked bars try

1 or more Dimensions

1 or more Measures

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

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Pages Columns Rows Region

Entire View

Show

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

SUM(Sales)

SUM(Sales)

Ship Mode

Sheet 1

Region

Central

Regular Air Delivery Truck Express Air

East

Regular Air Delivery Truck Express Air

South

Regular Air Delivery Truck Express Air

West

Regular Air Delivery Truck Express Air

For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows Region

Entire View

Show

Filters

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

SUM(Sales)

SUM(Sales)

Ship Mode

Sheet 1

Region

Central

East

South

West

Delivery Truck

Regular Air Express Air

Regular Air Delivery Express Air

Delivery Truck

Regular Air Express Air

Delivery Truck

Regular Air Express Air

Region: Central
Ship Mode: Express Air
Sales: 196,850

For horizontal bars try

0 or more Dimensions

1 or more Measures

Data Source Sheet 1

What's the problem?



File Data Worksheet Dashboard Story Analysis Map Format Window Help

Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (Latitude (generated))
- (Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Rows Region

Entire View

Sheet 1

Region

Central

Delivery Method	Percentage
Delivery Truck	~50%
Regular Air	~30%
Express Air	~20%

East

Delivery Method	Percentage
Delivery Truck	~50%
Regular Air	~30%
Express Air	~20%

South

Delivery Method	Percentage
Delivery Truck	~50%
Regular Air	~30%
Express Air	~20%

West

Delivery Method	Percentage
Delivery Truck	~50%
Regular Air	~30%
Express Air	~20%

Marks

Pie

Color Size Label

Detail Tooltip Angle

Ship Mode

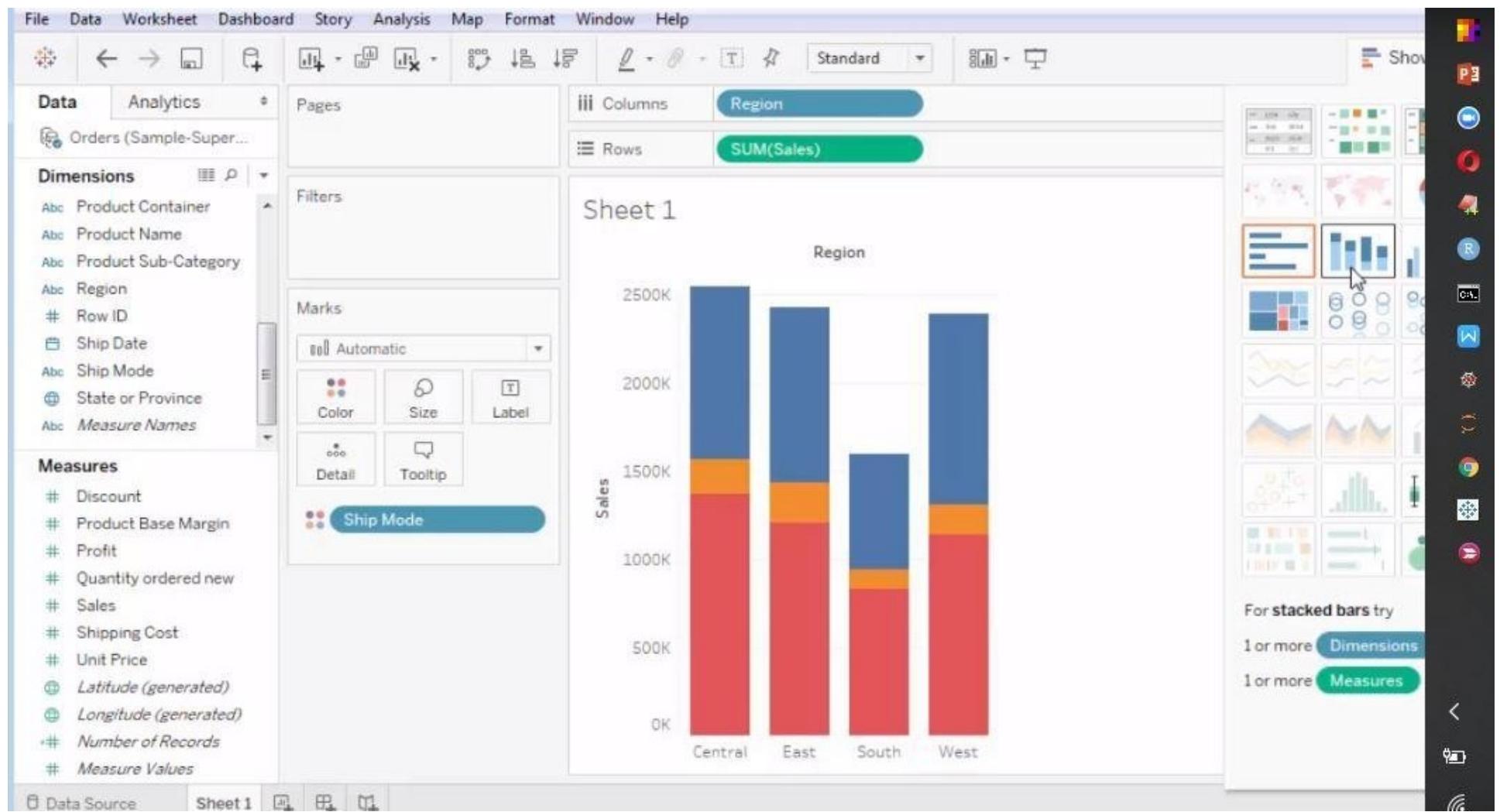
SUM(Sales)

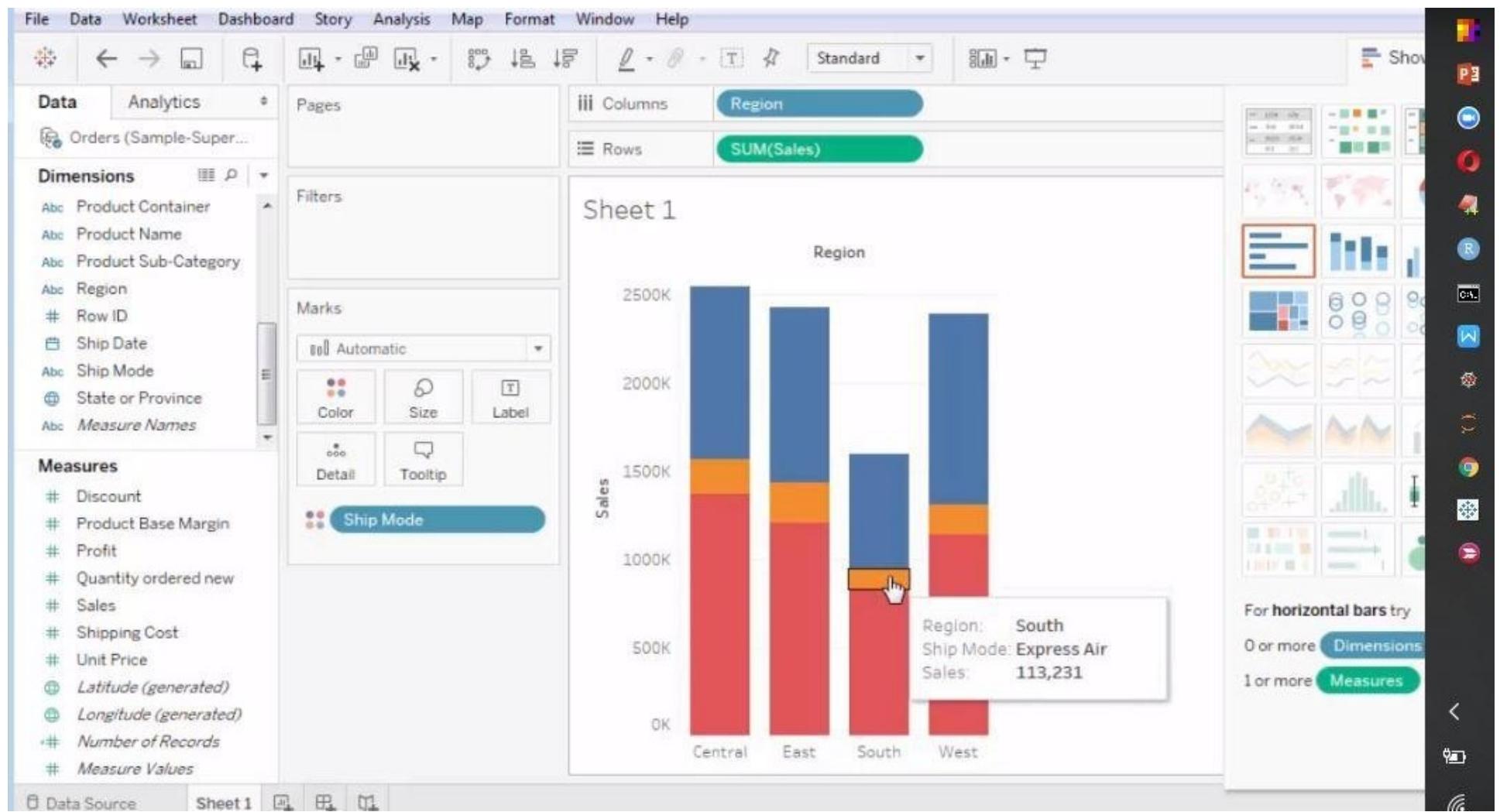
SUM(Sales)

Ship Mode

For stacked bars try
1 or more Dimensions
1 or more Measures

Data Source Sheet 1





Side-by-Side Bars

taroonreddy.com

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Show

Data Analytics

Orders (Sample-Super...)

Dimensions

- Abc Product Container
- Abc Product Name
- Abc Product Sub-Category
- Abc Region
- # Row ID
- Ship Date
- Abc Ship Mode
- @ State or Province
- Abc Measure Names

Measures

- # Discount
- # Product Base Margin
- # Profit
- # Quantity ordered new
- # Sales
- # Shipping Cost
- # Unit Price
- (@ Latitude (generated))
- (@ Longitude (generated))
- # Number of Records
- # Measure Values

Pages Columns Ship Mode Region

Rows SUM(Sales)

Filters

Marks

Automatic

Color Size Label

Detail Tooltip

Region

Sheet 1

Ship Mode / Region

Region	Delivery Truck	Express Air	Regular Air
Central	~1000K	~1000K	~1000K
East	~200K	~200K	~200K
South	~100K	~100K	~100K
West	~100K	~100K	~100K

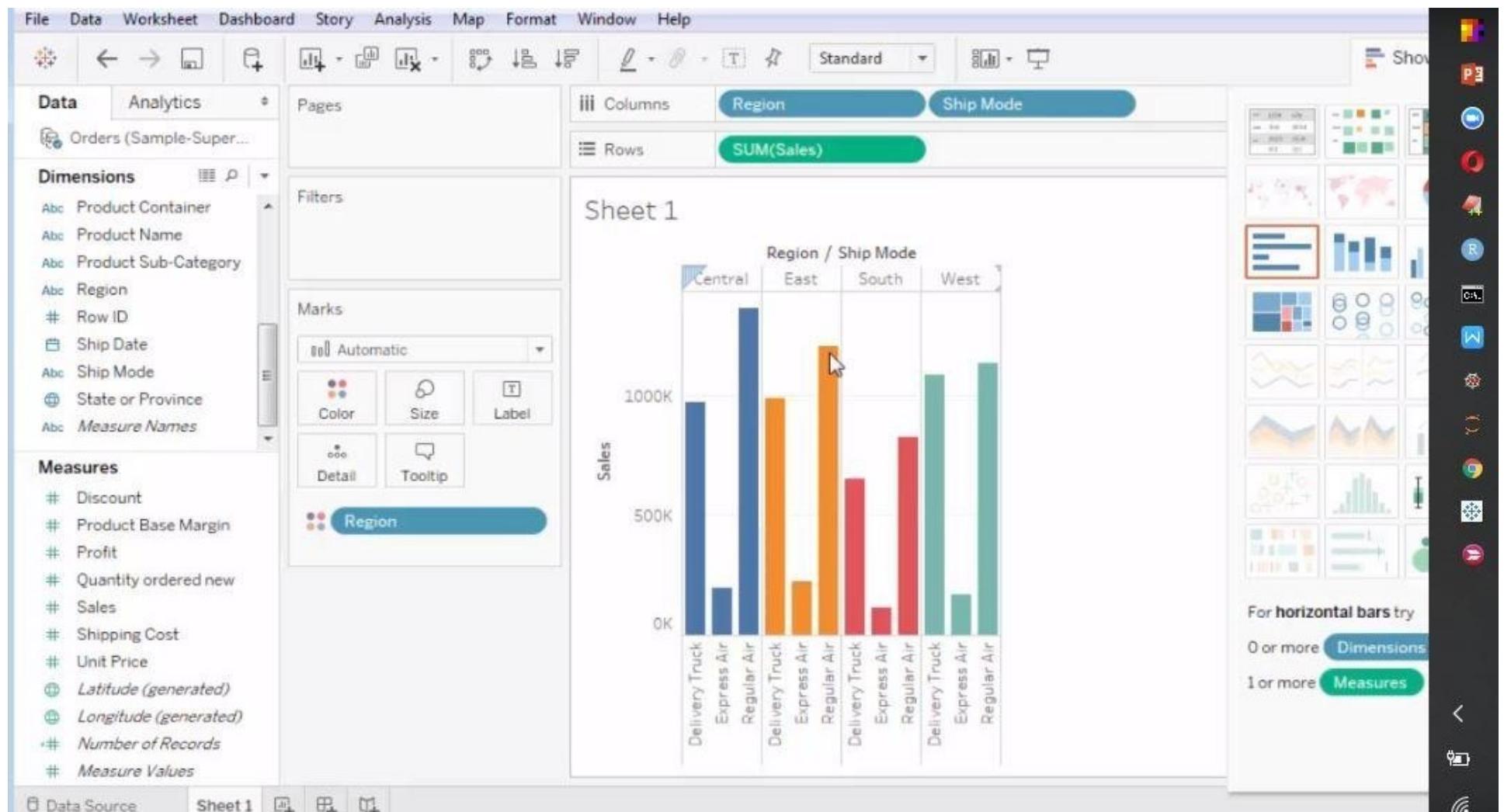
Sales

For horizontal bars try

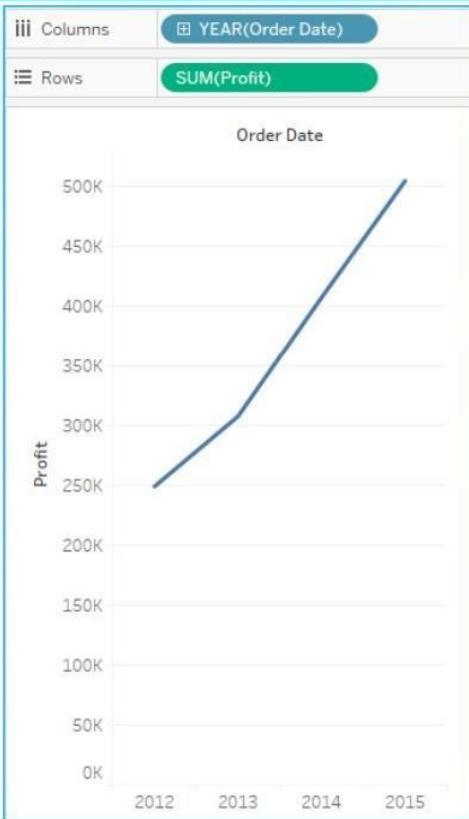
0 or more Dimensions

1 or more Measures

Data Source Sheet 1



Line Graph

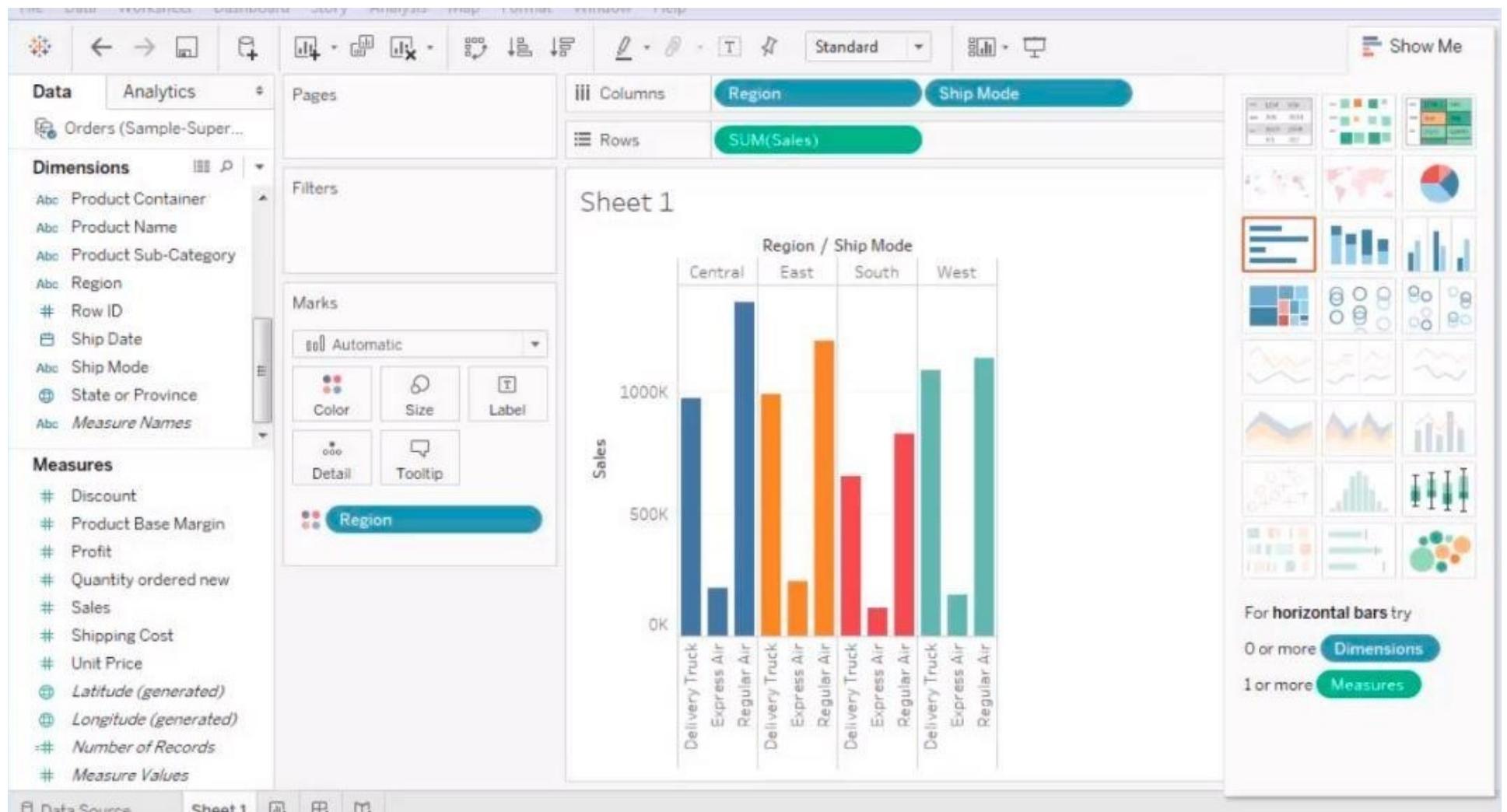


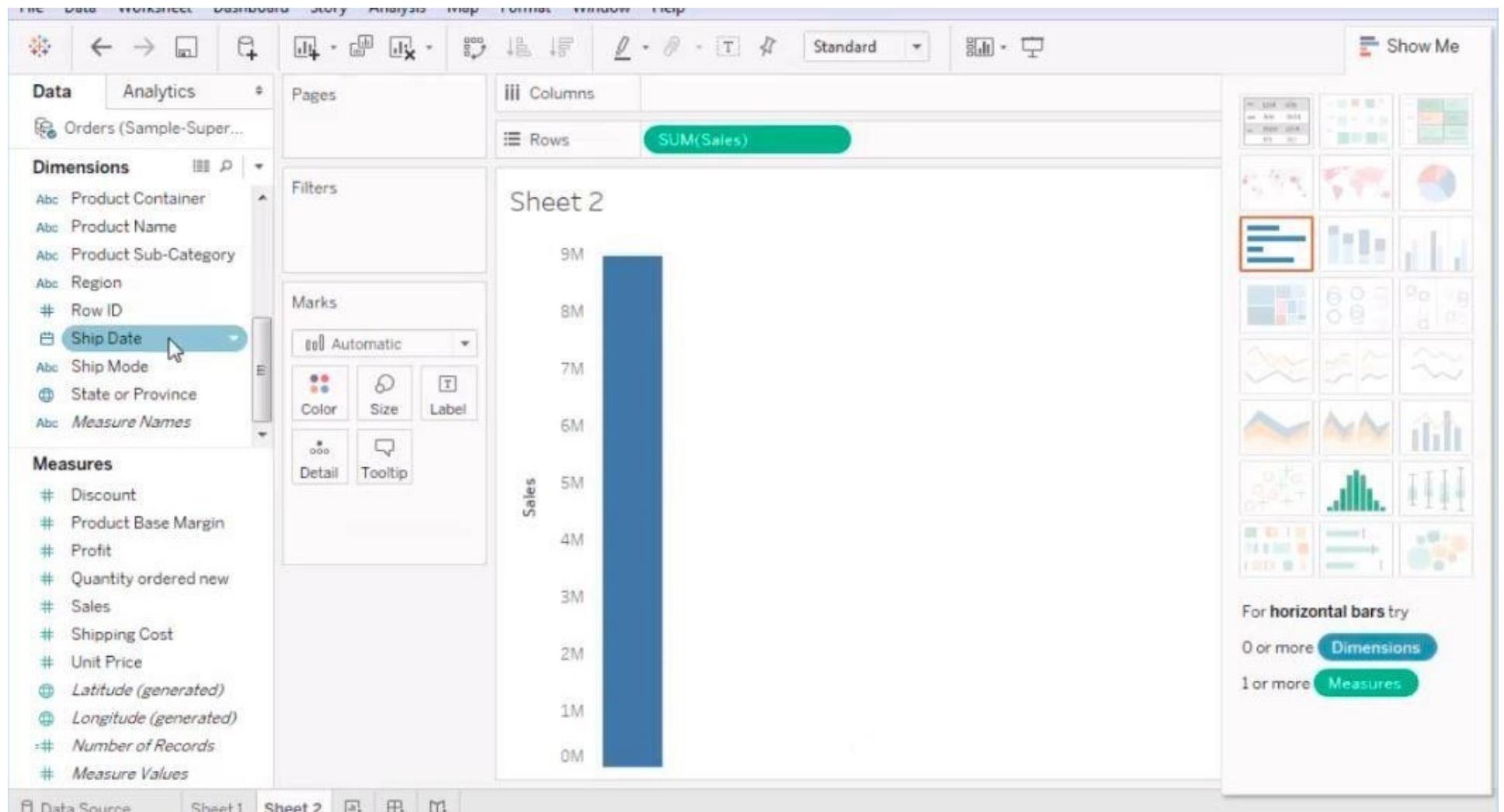
Line graphs are generally used to show time series data. It shows how one or more variables vary over a continuous period of time

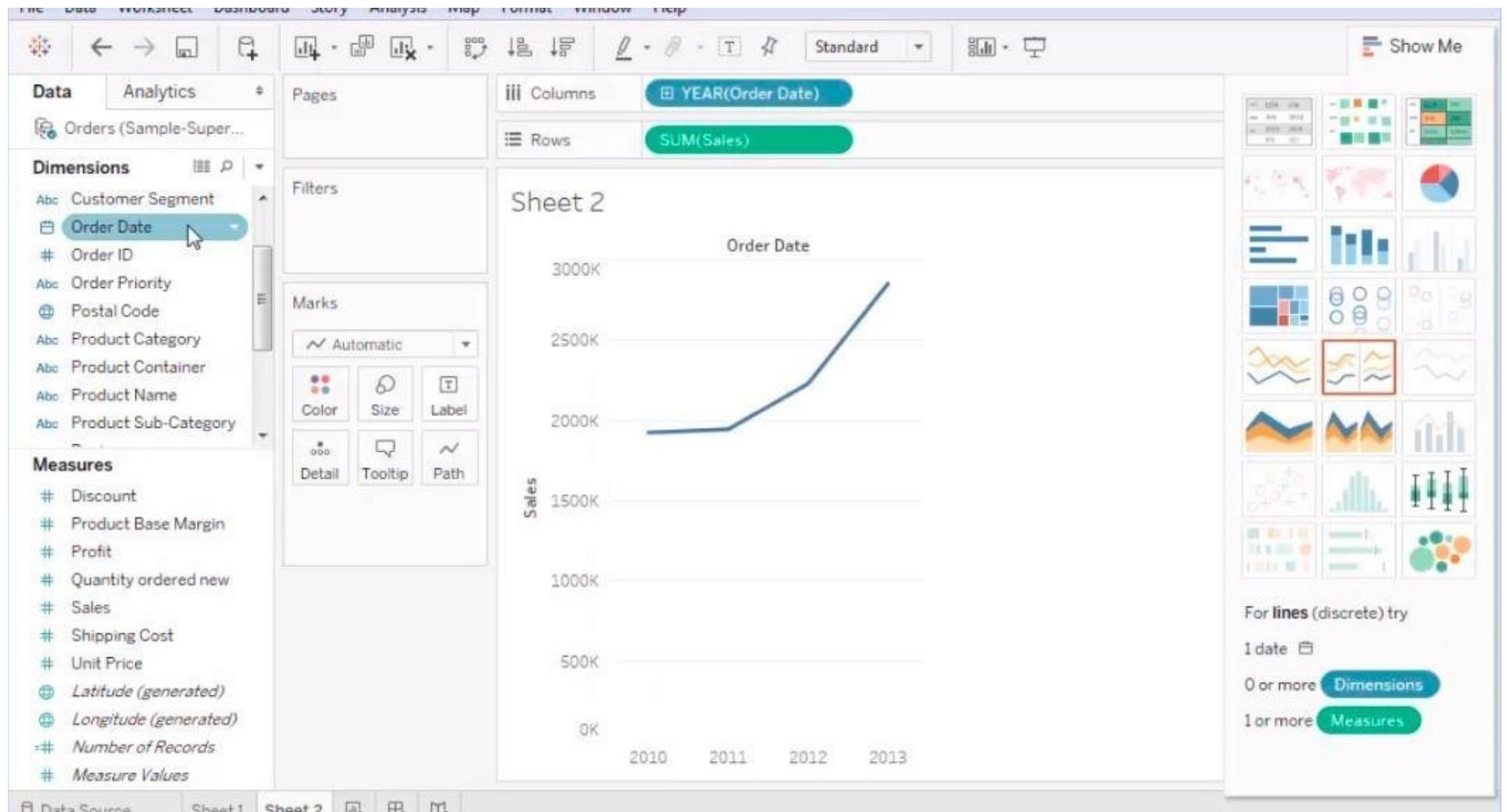
Note: When smaller changes exist, line graphs are better to use than bar graphs

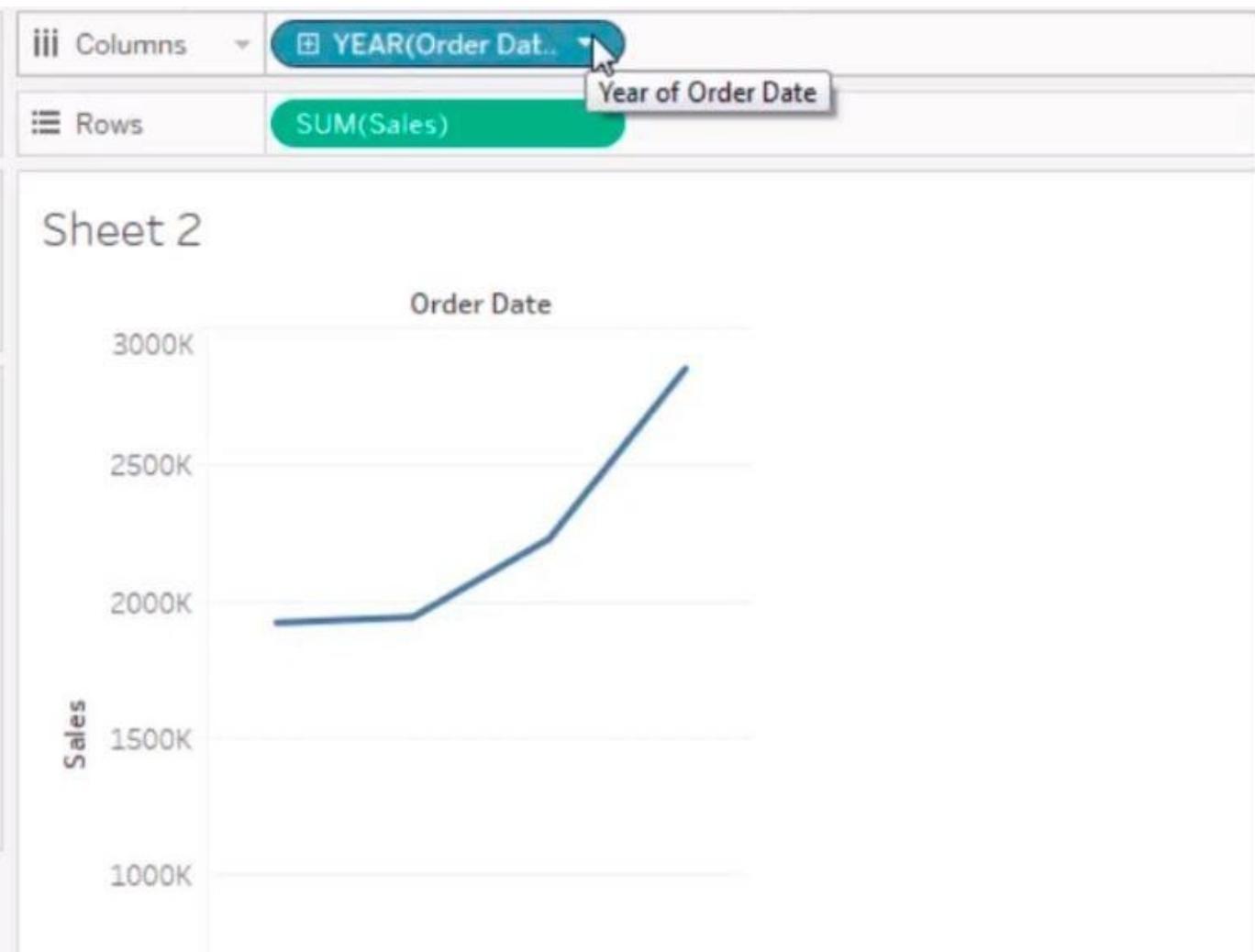
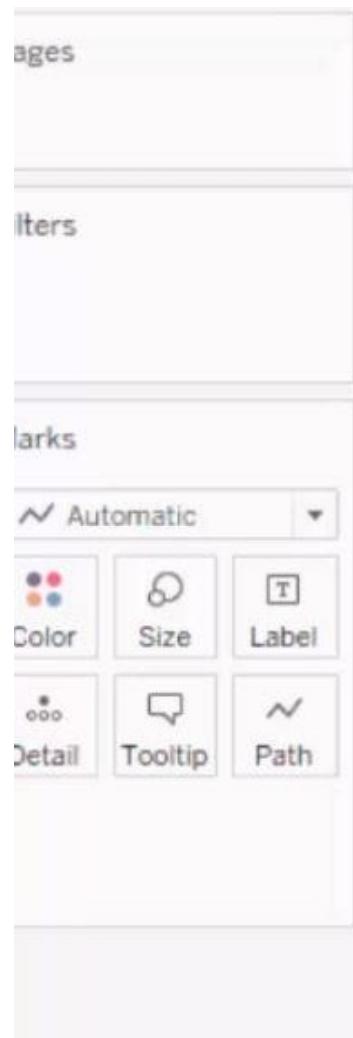
Bar Charts show how
a measure varies by
one or more dimension

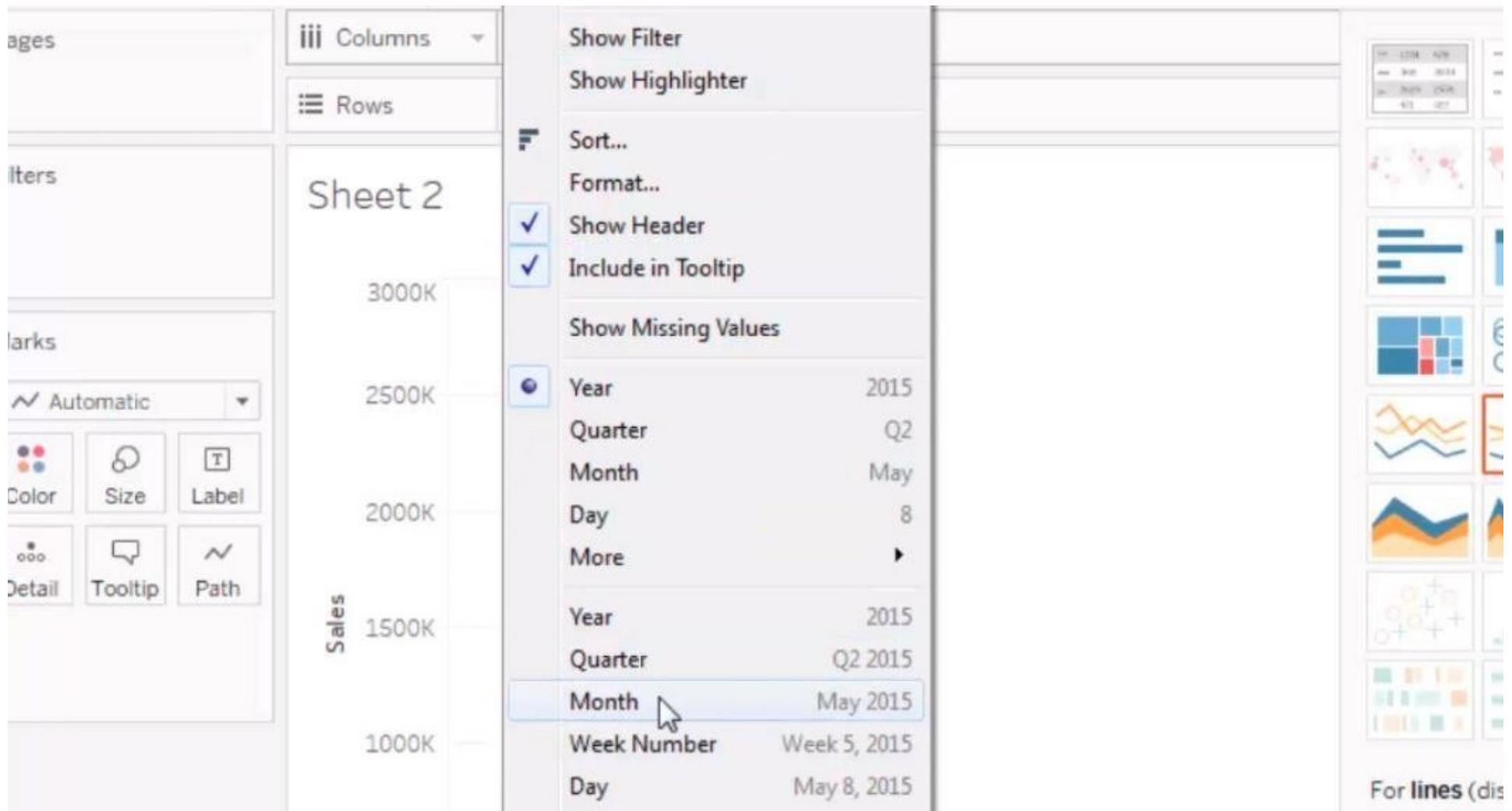
Line and Area Charts
Can be used to show
How a numeric
Variable changes
Over time.

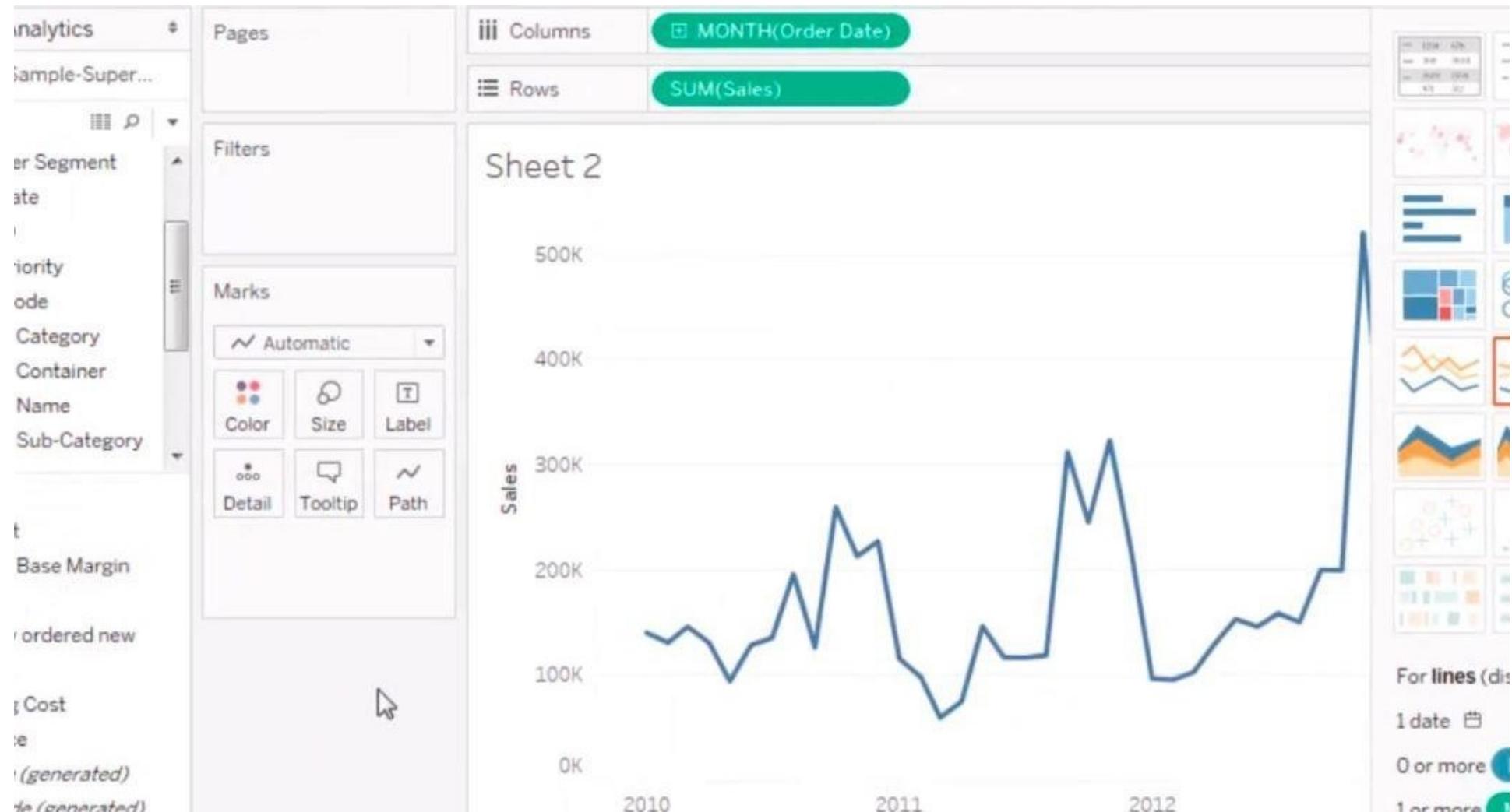


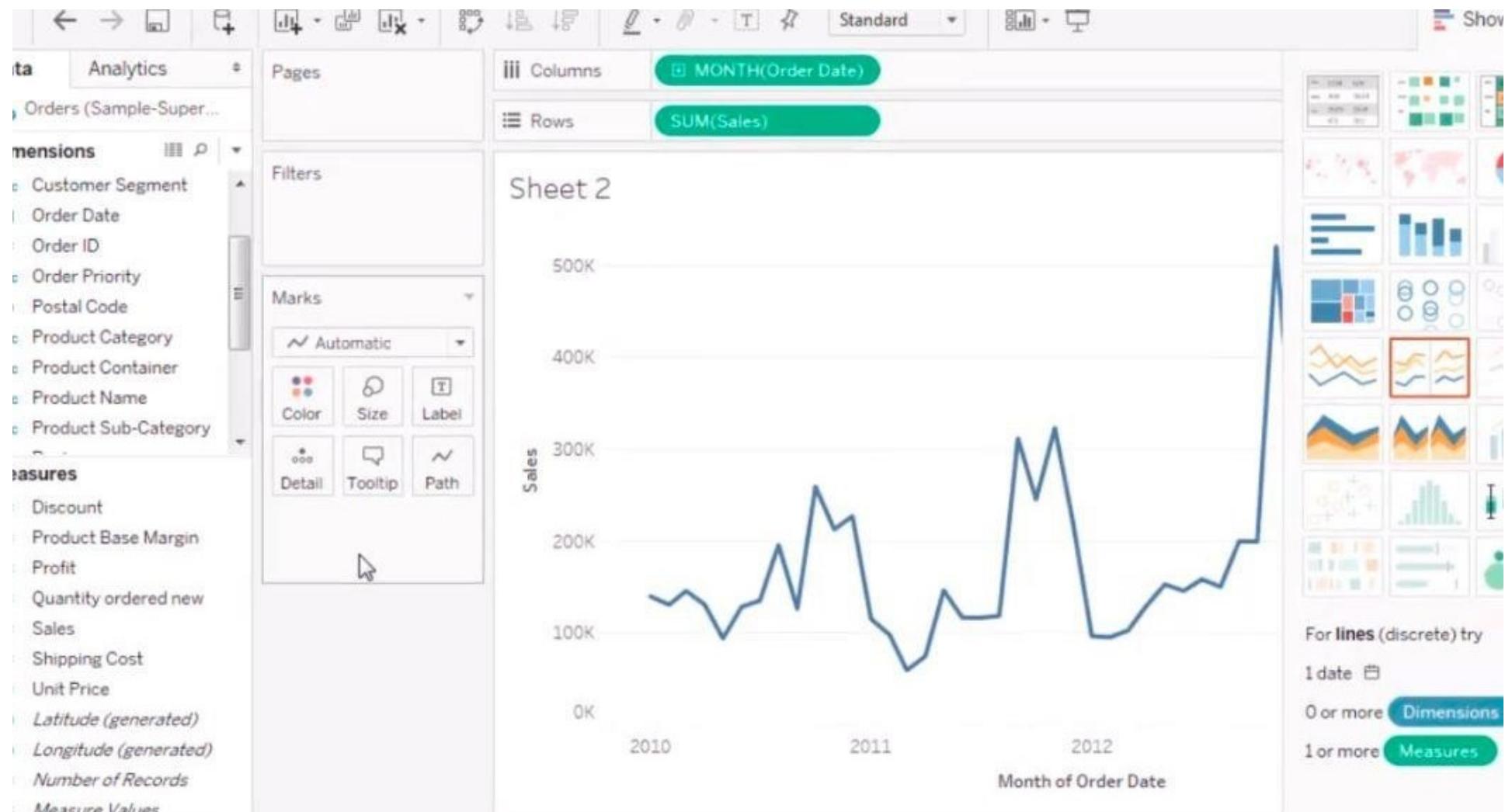


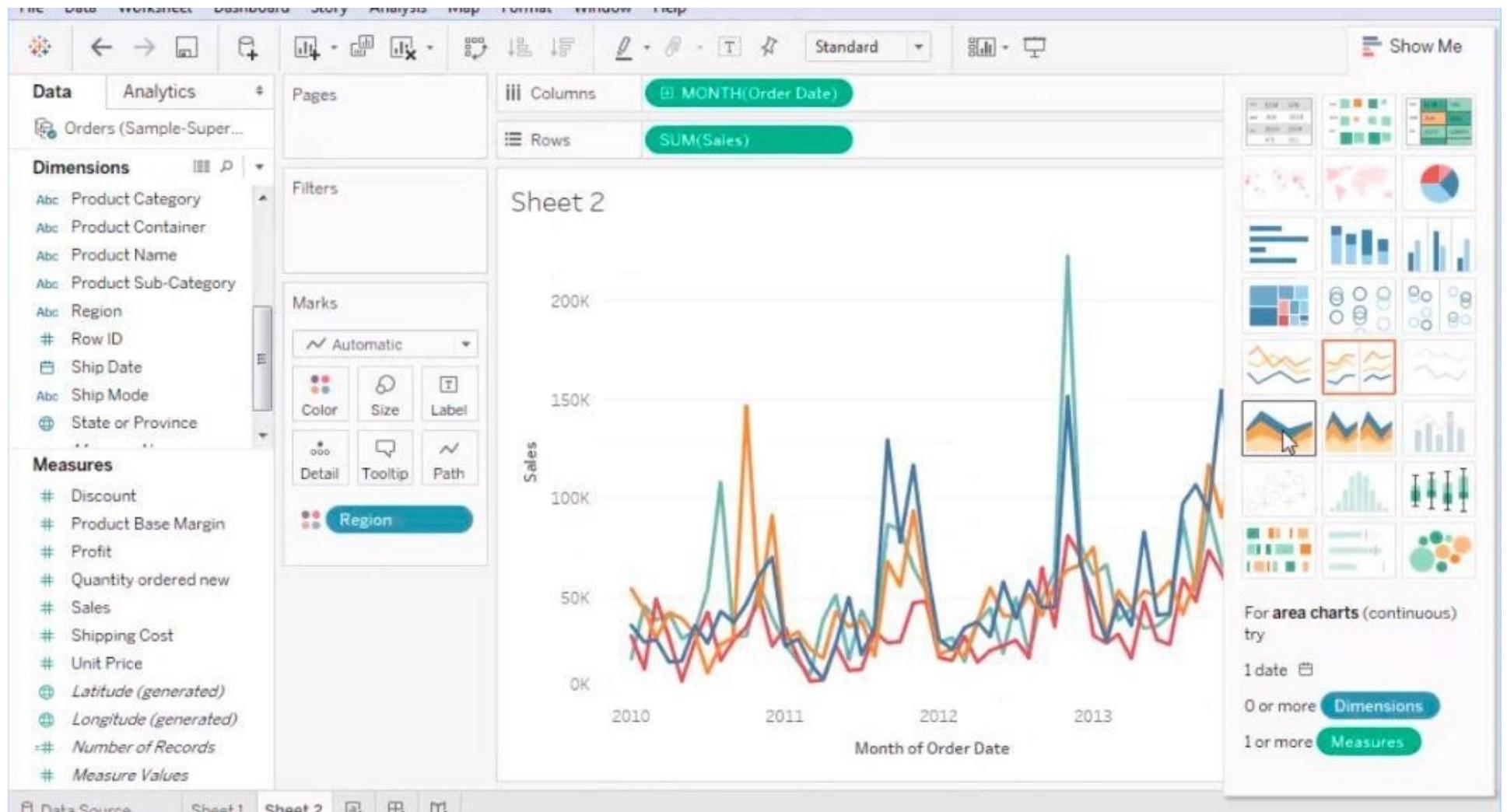


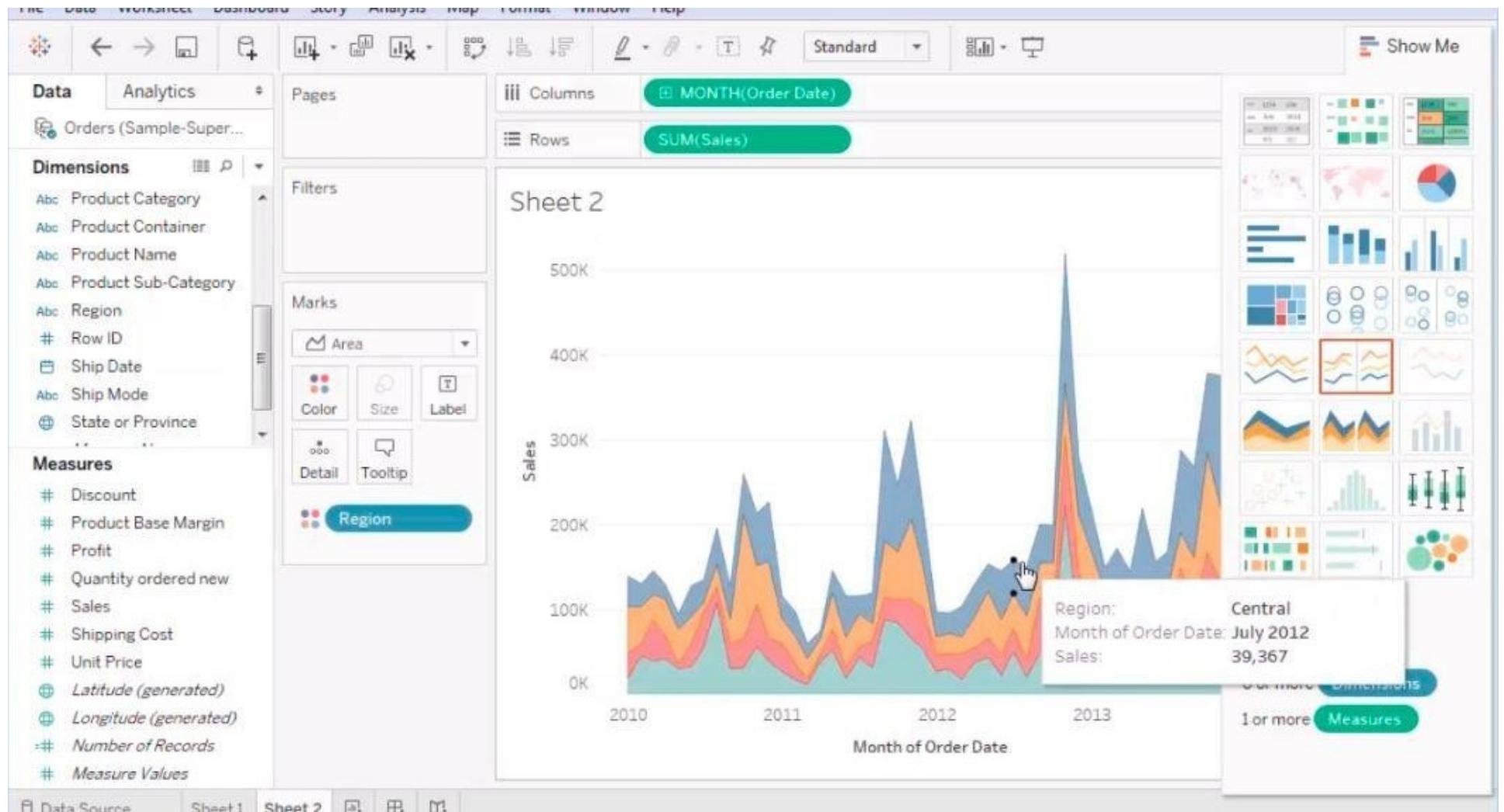


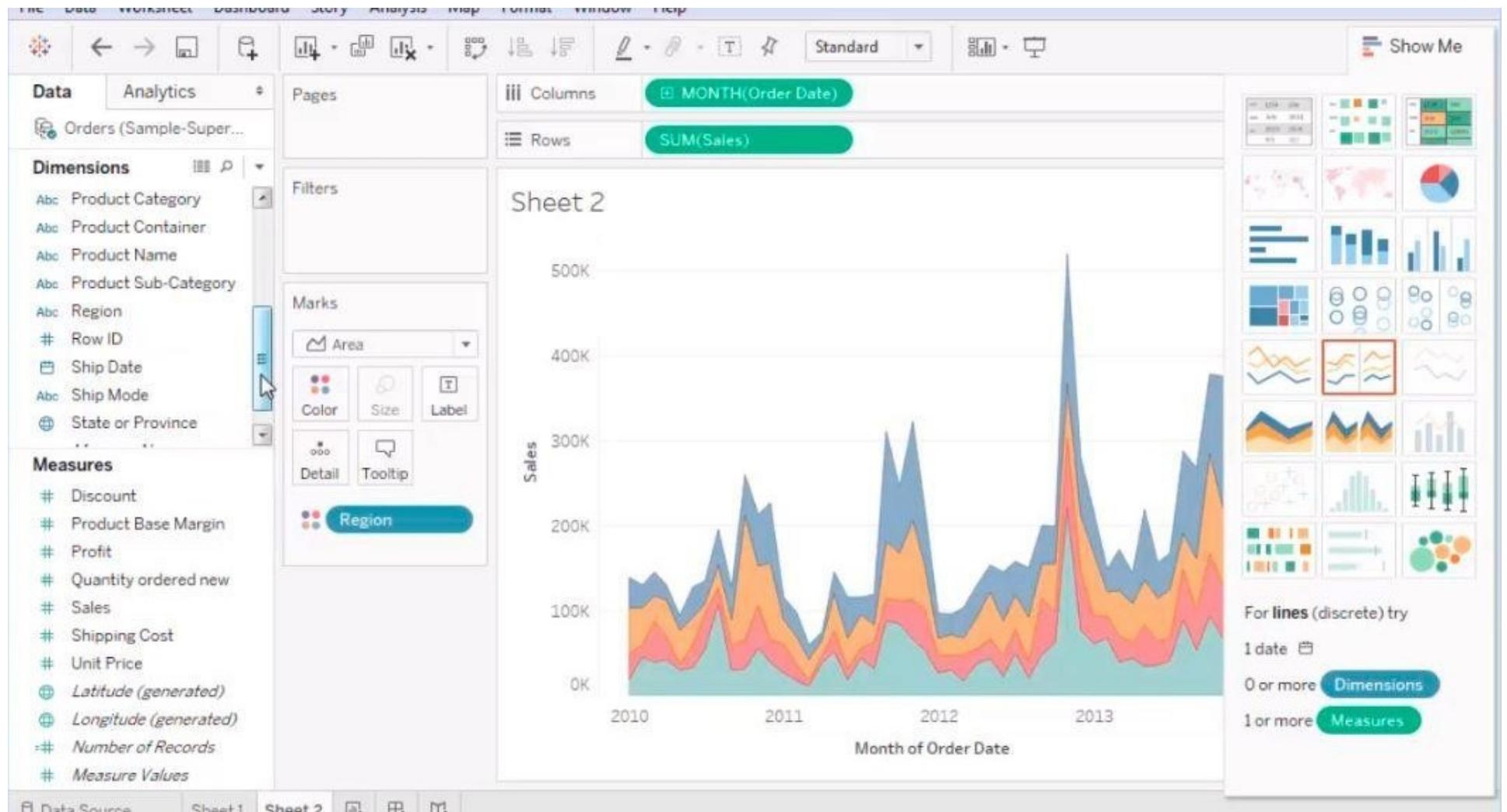


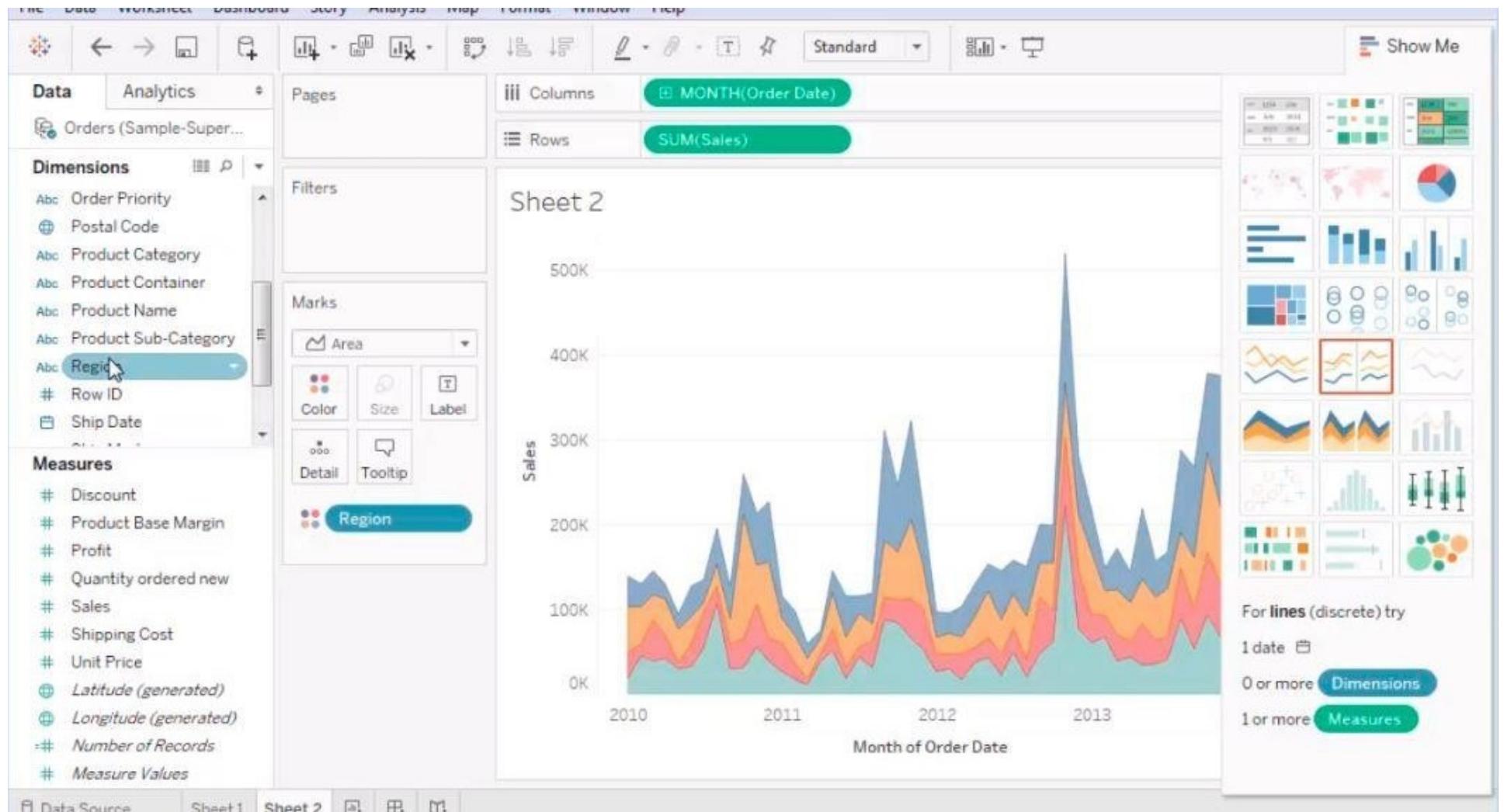


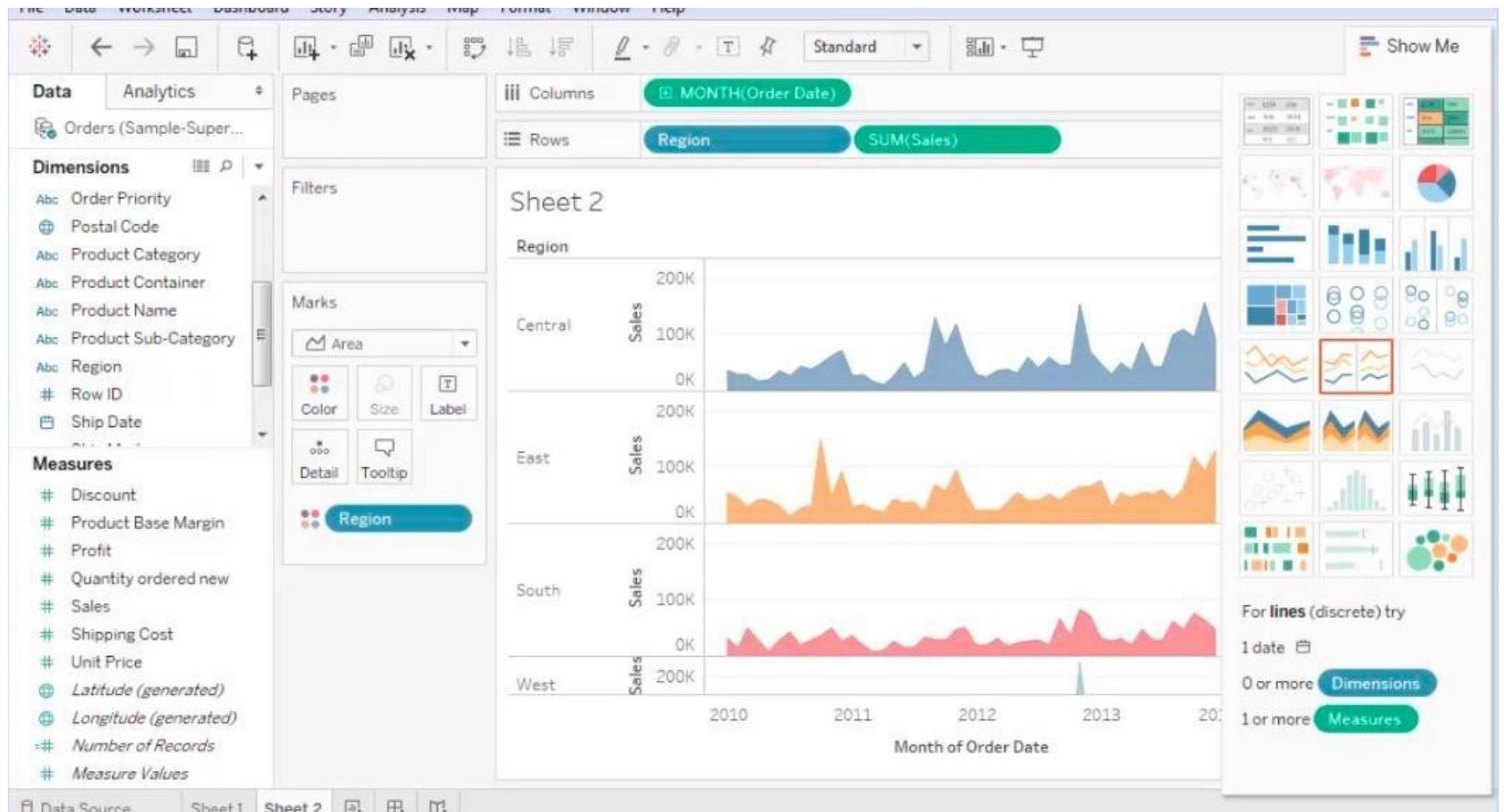


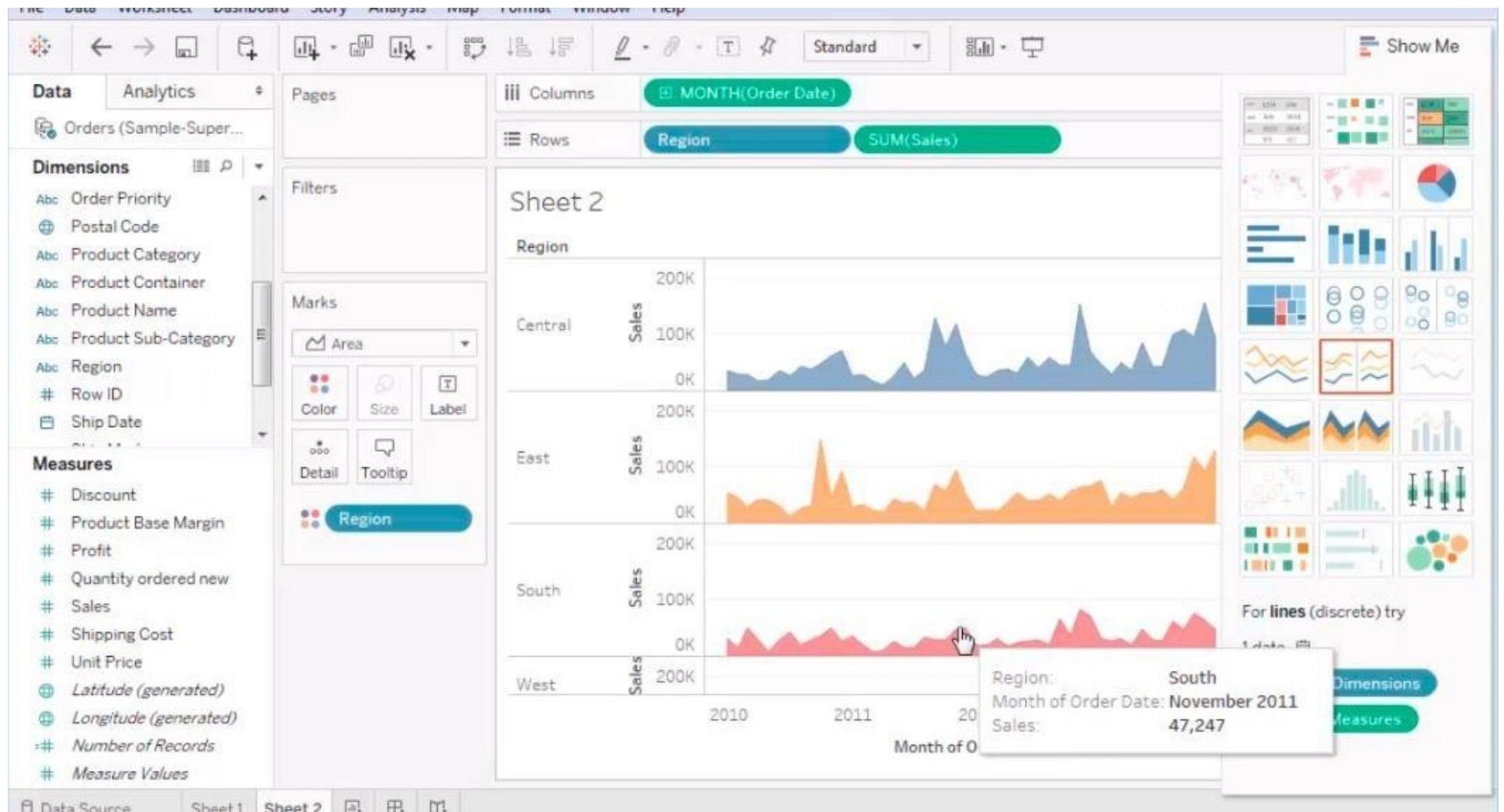


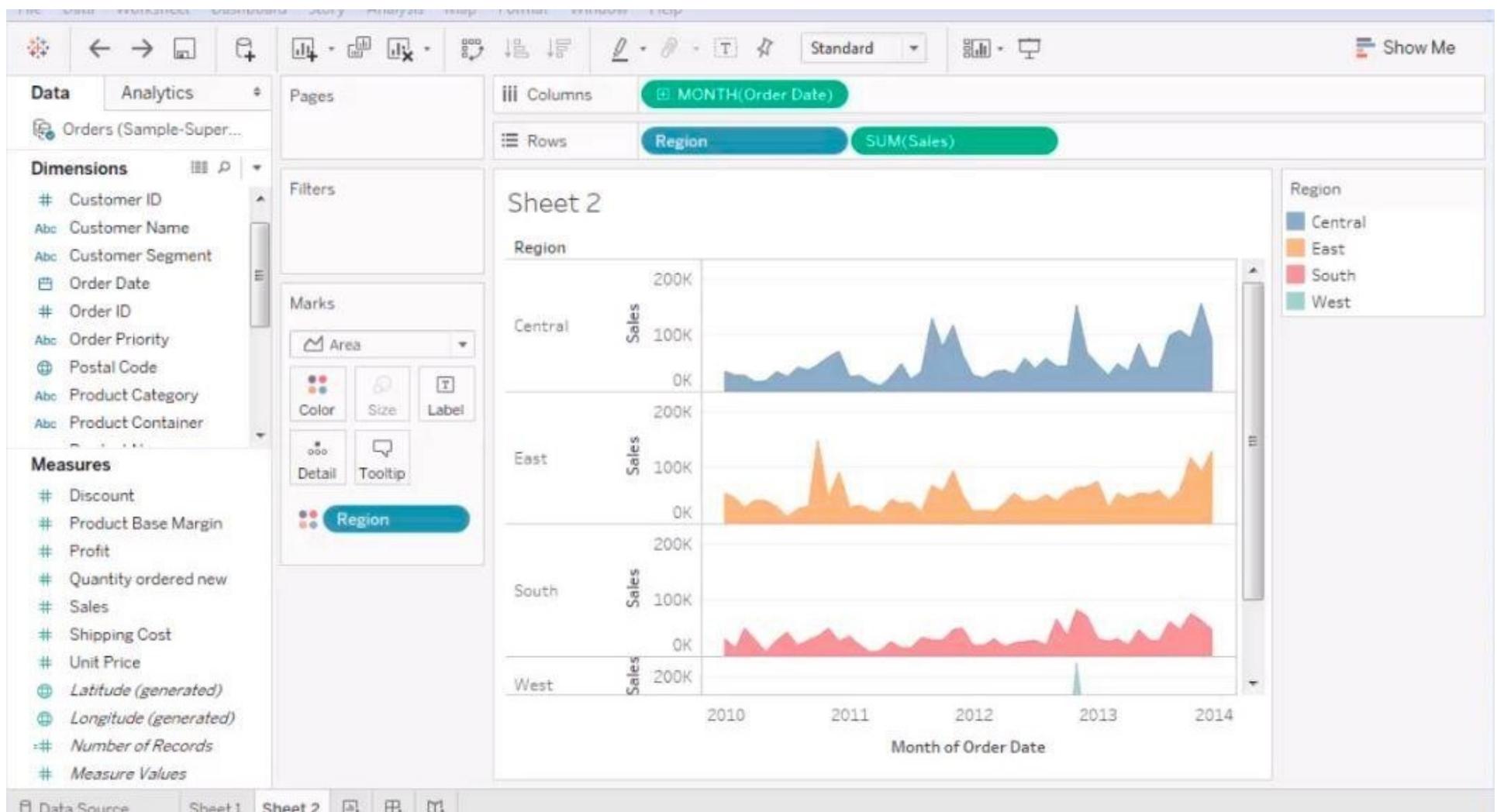


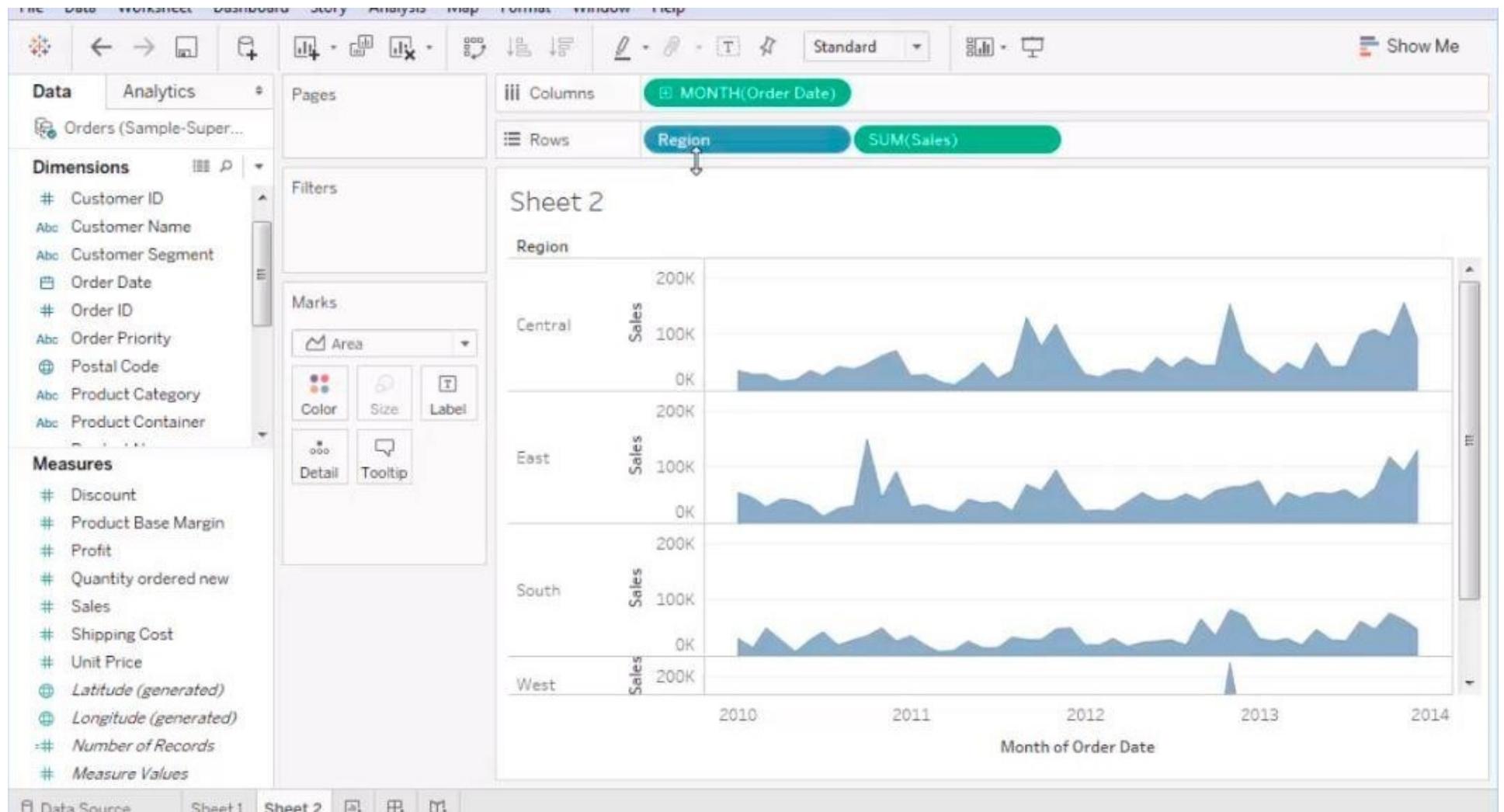


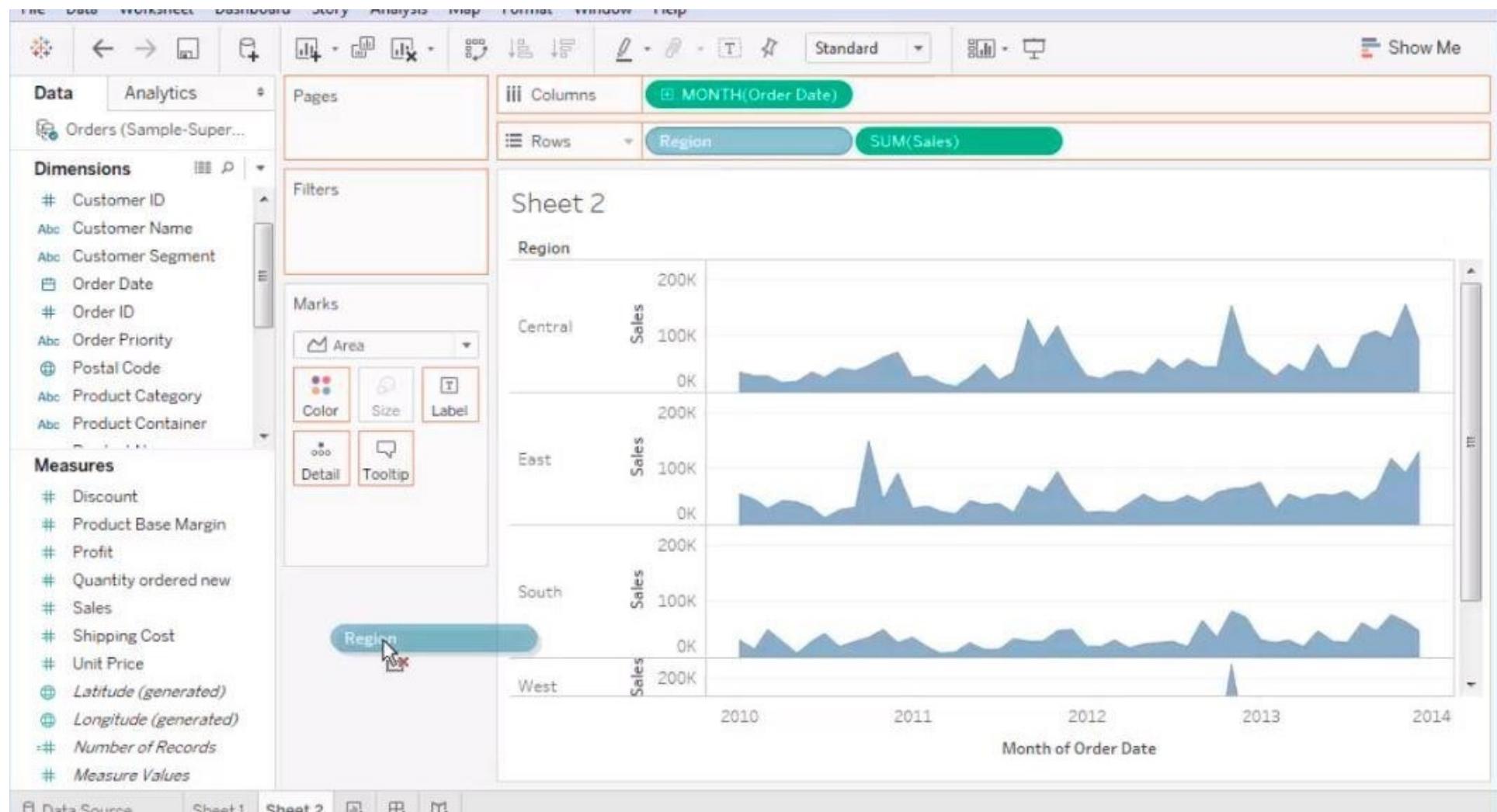


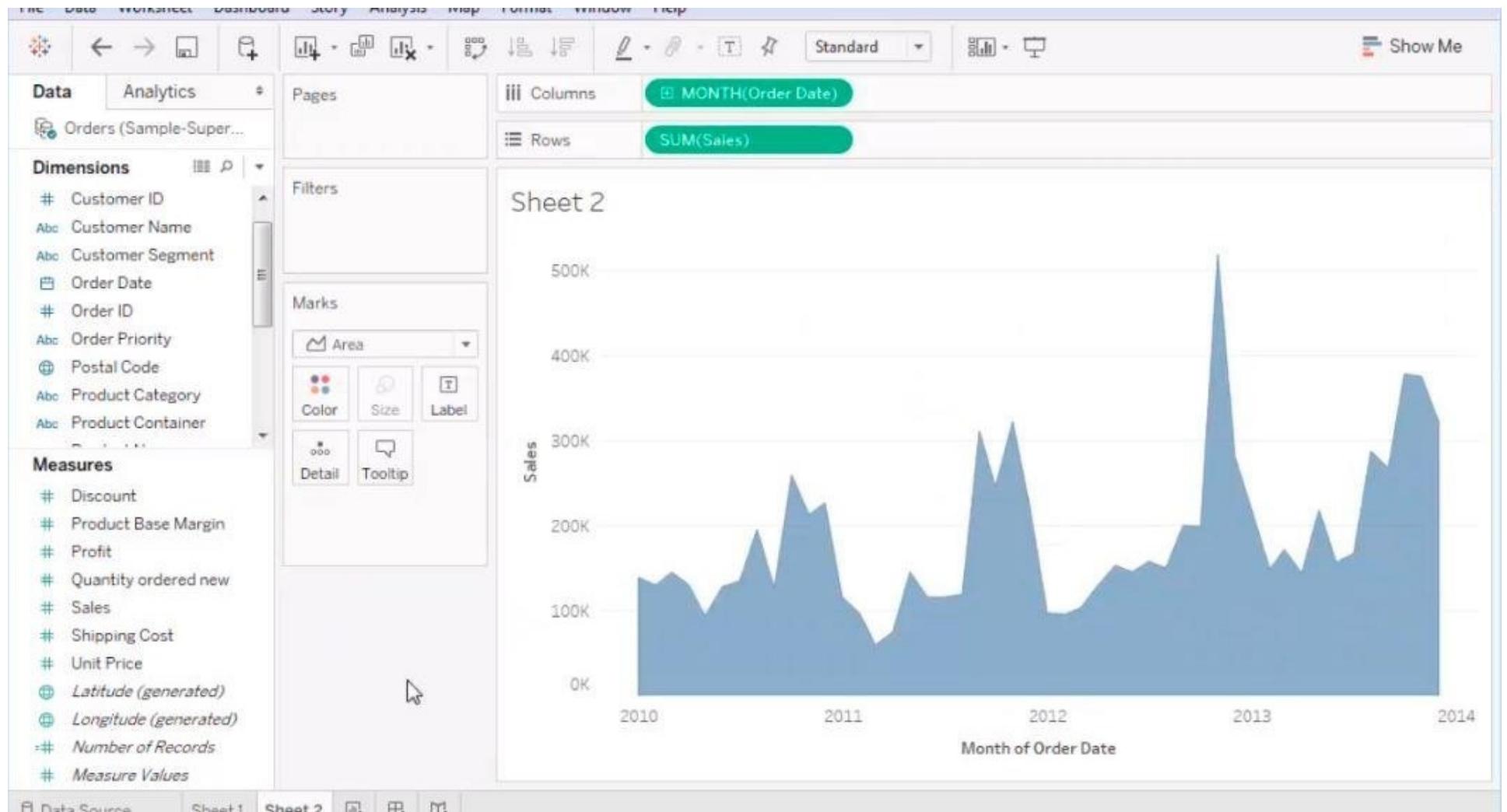


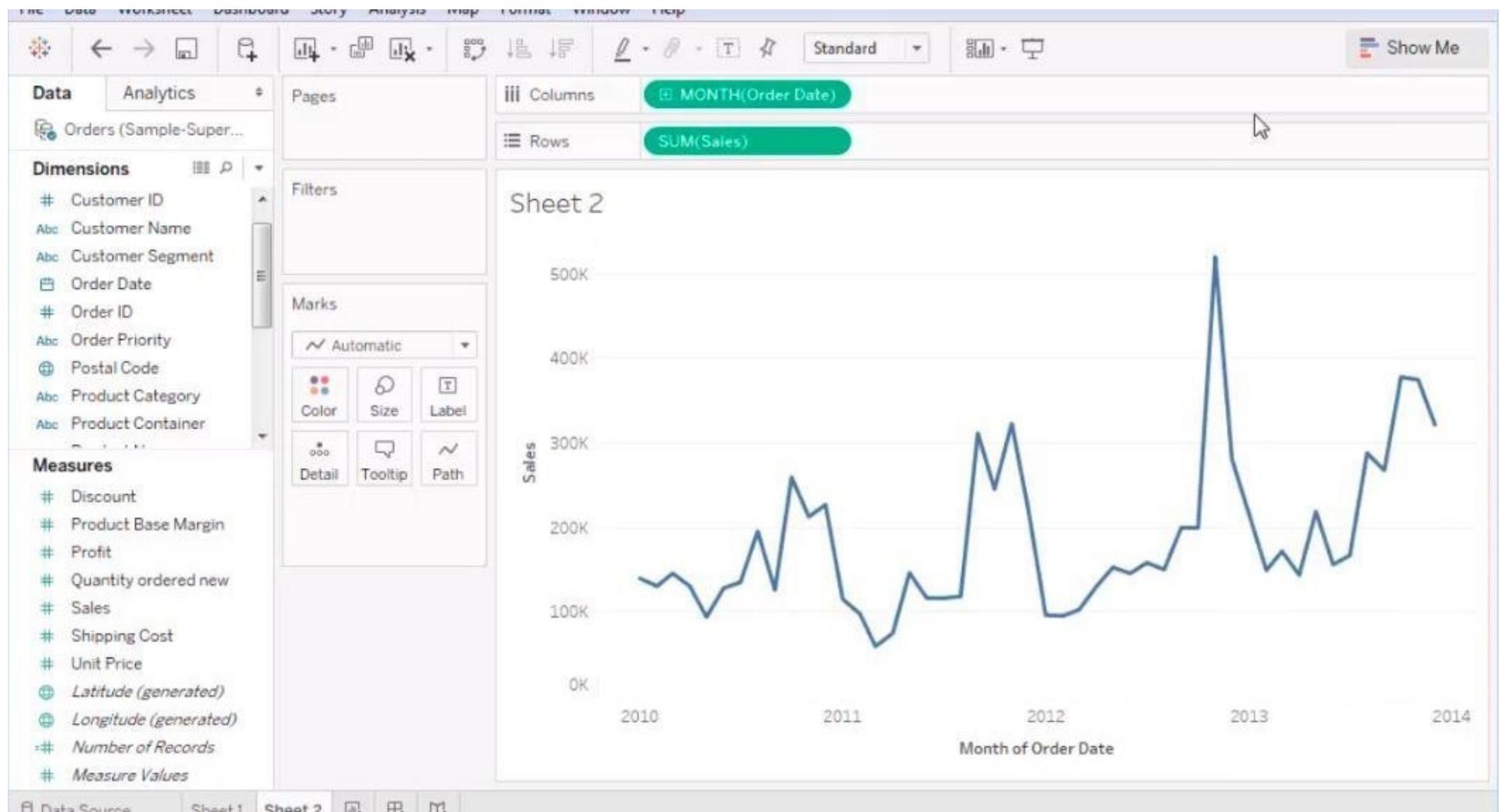


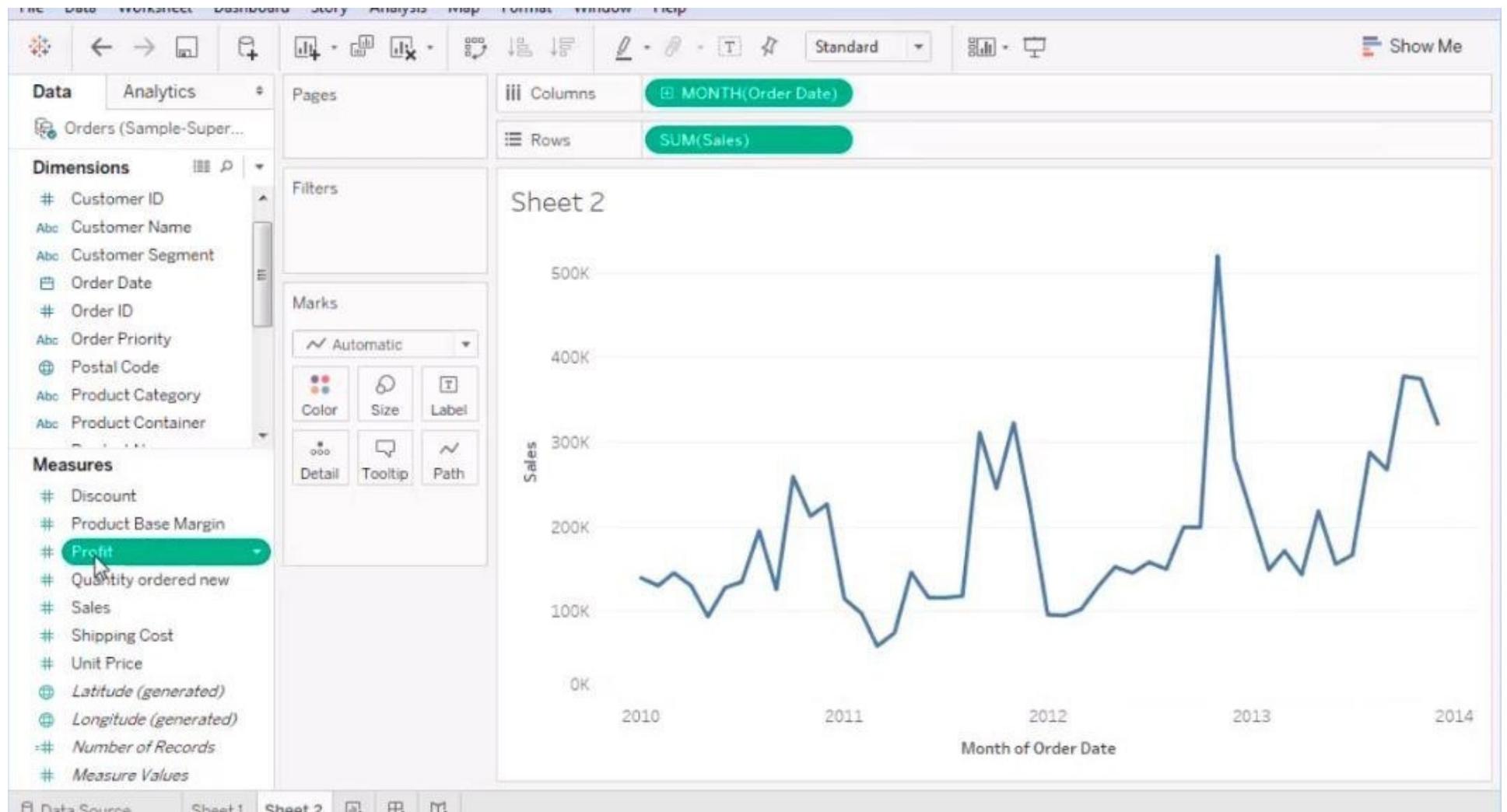


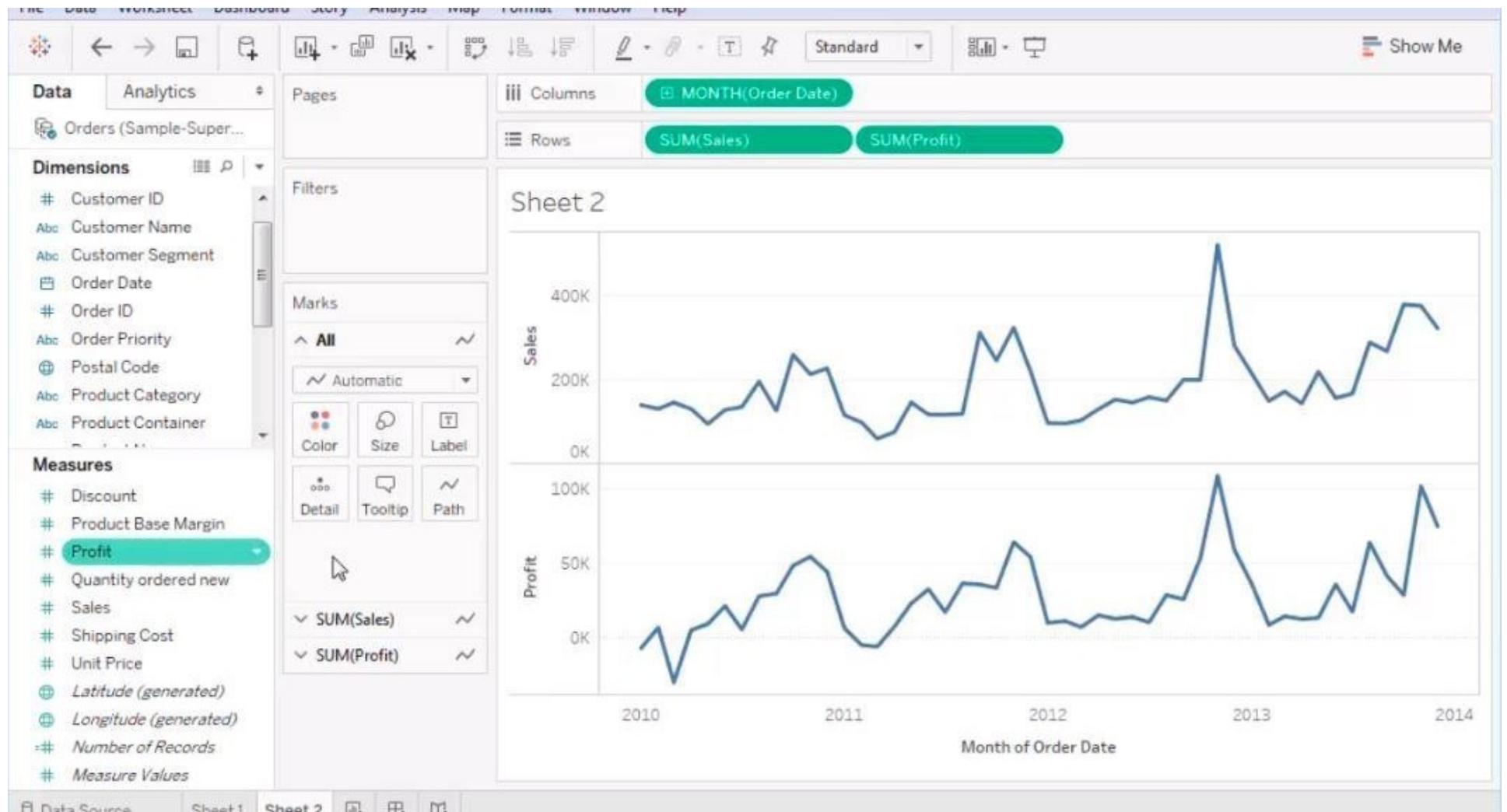










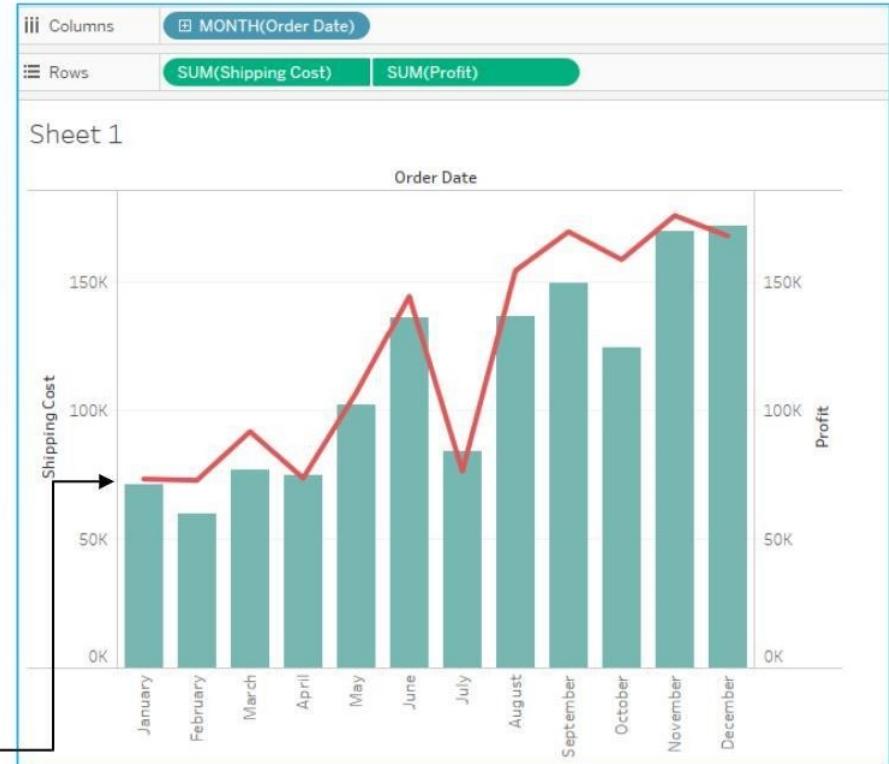


Dual axis Graph

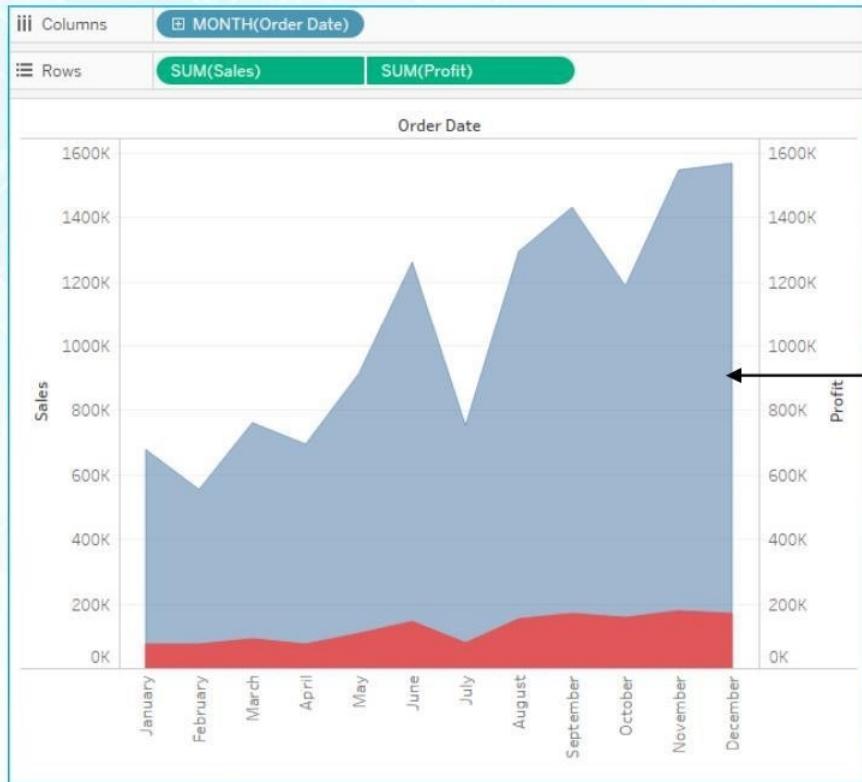


Dual Axis graph allows for more than one measure to be represented with two different axis ranges

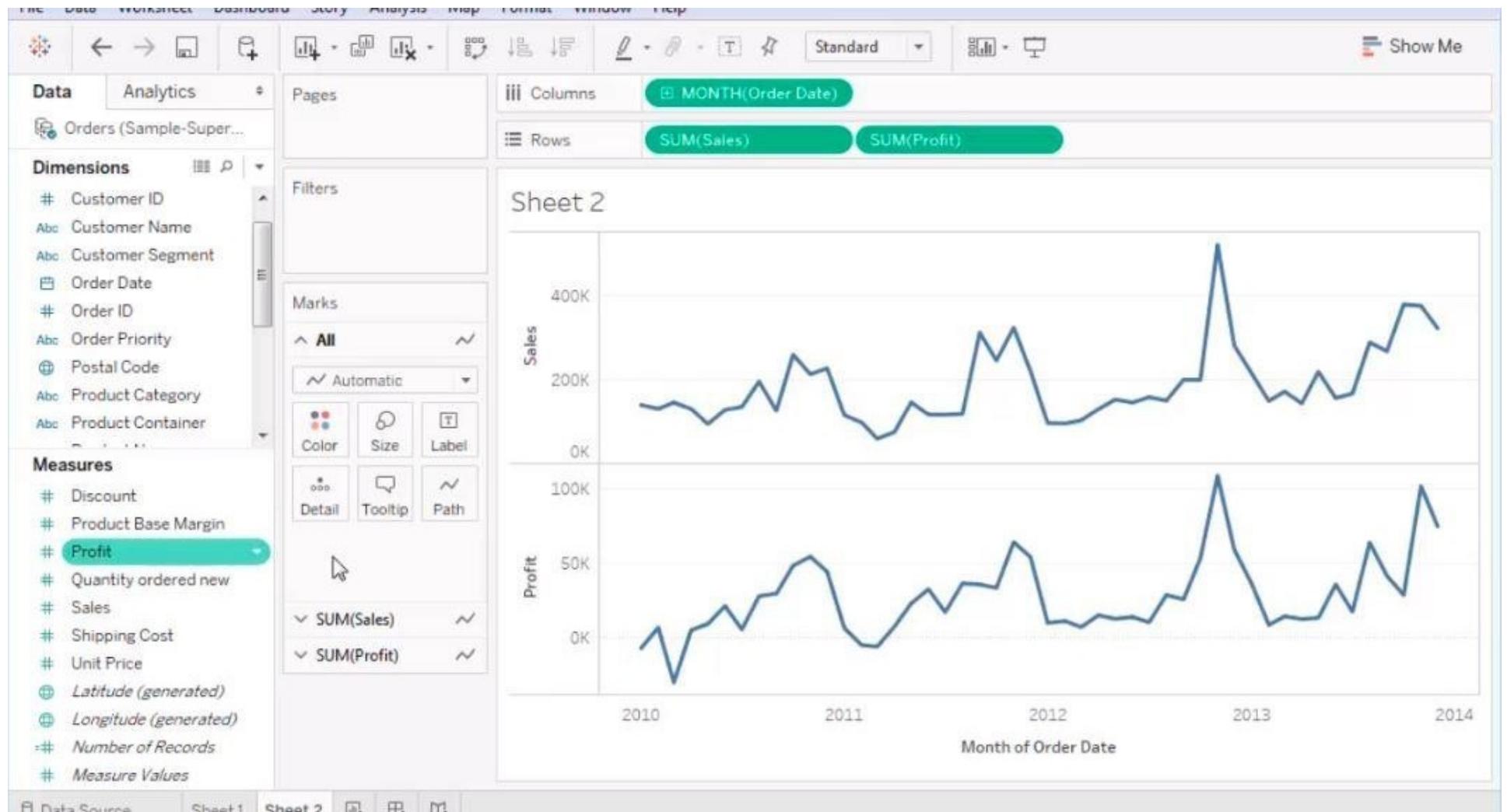
By using different mark types for both the measures a dual line can be converted into Dual Combination

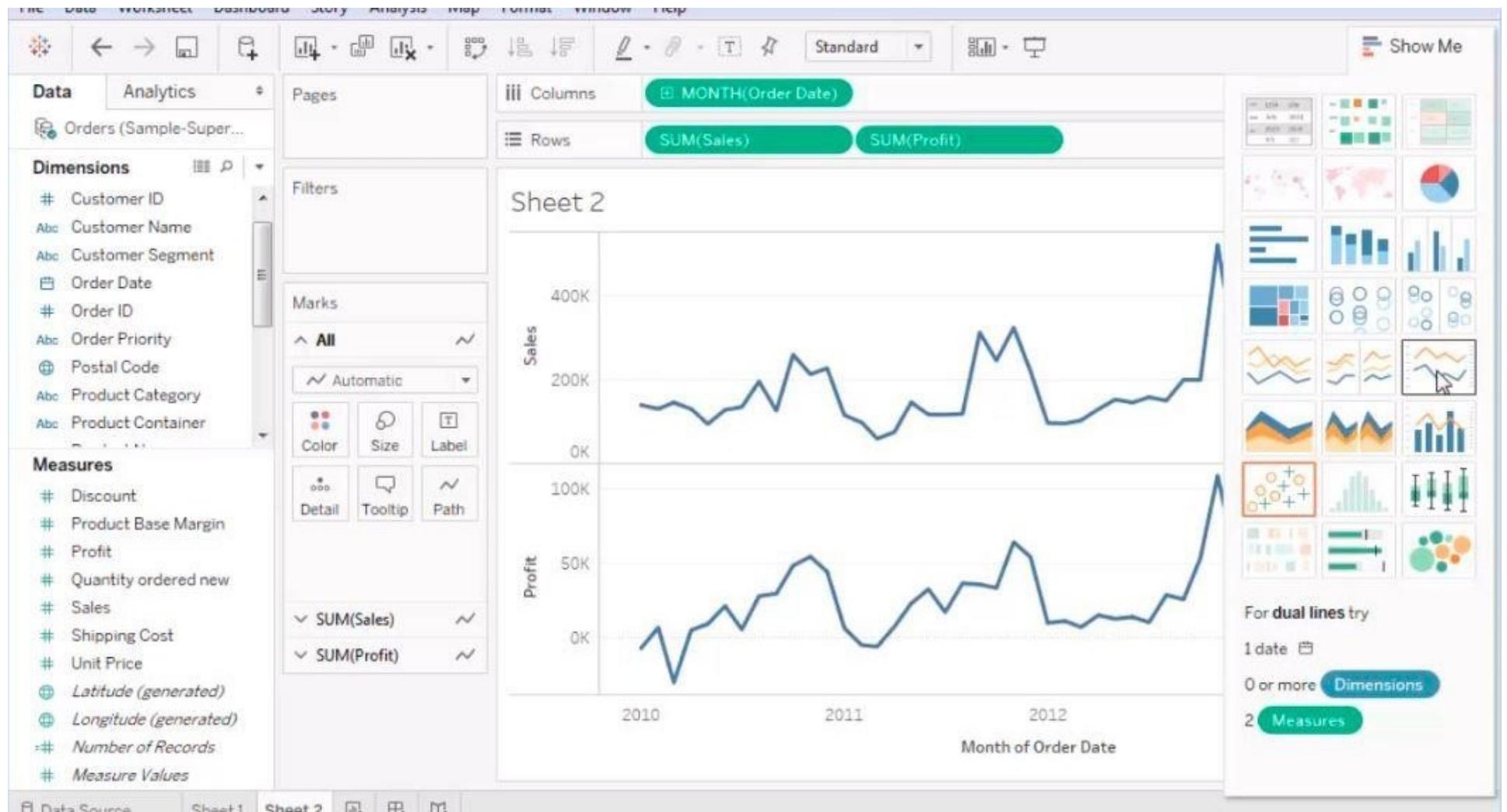


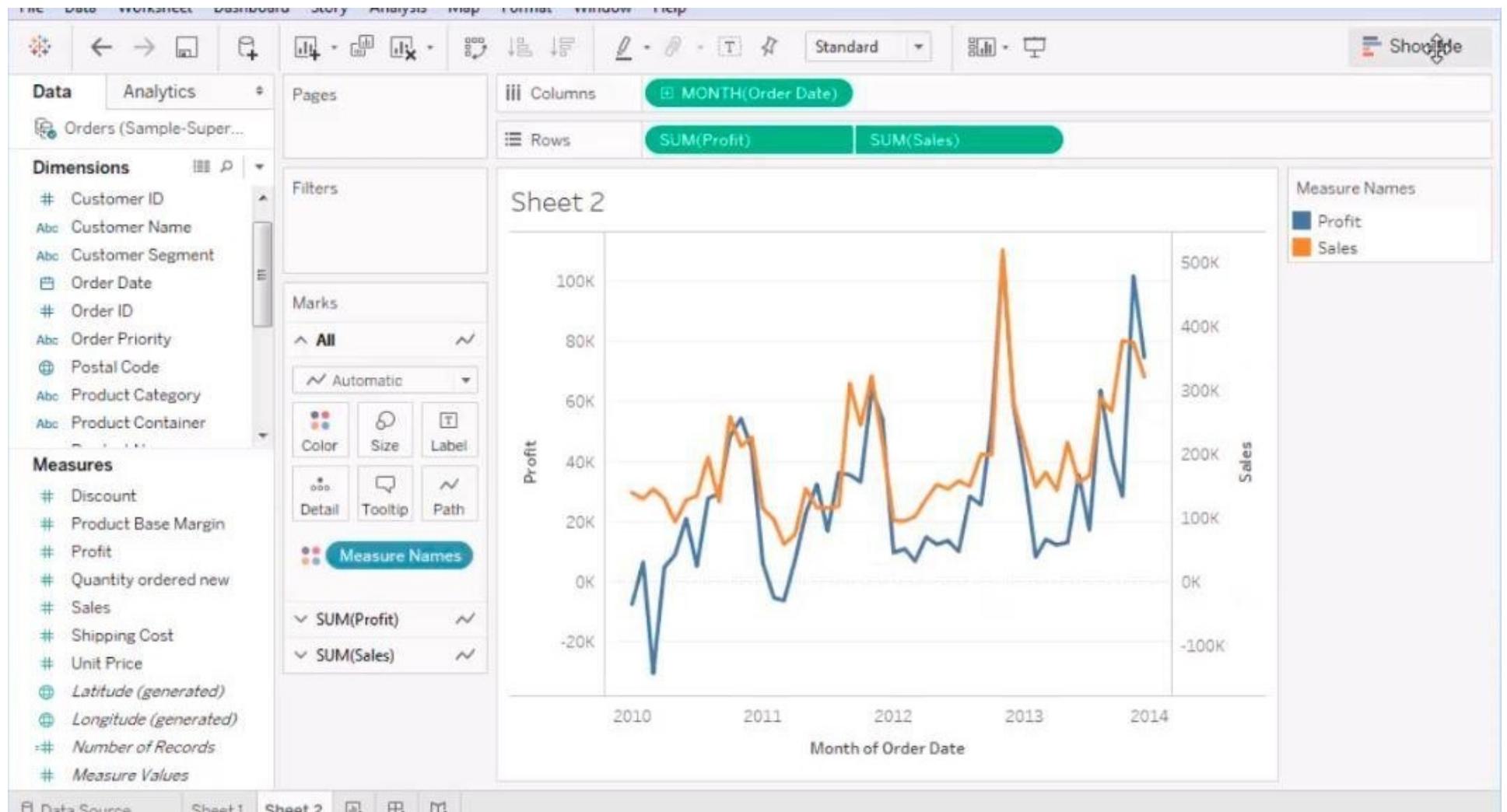
Area Graph with Dual Axis



The area chart is great for showing a total trend with relative performances of individual components







Sheet 2

Measure Names

Profit

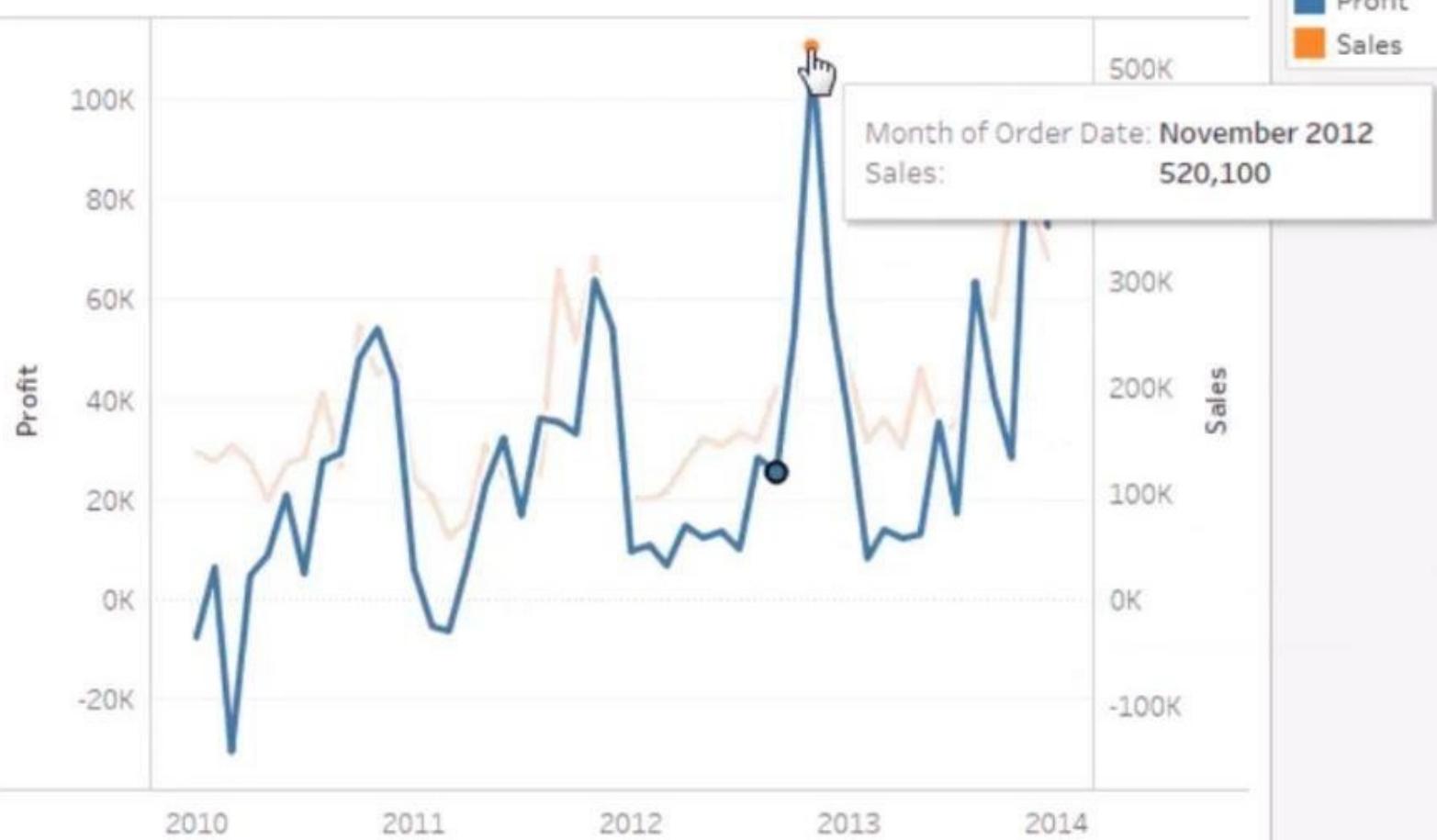
Sales



Sheet 2

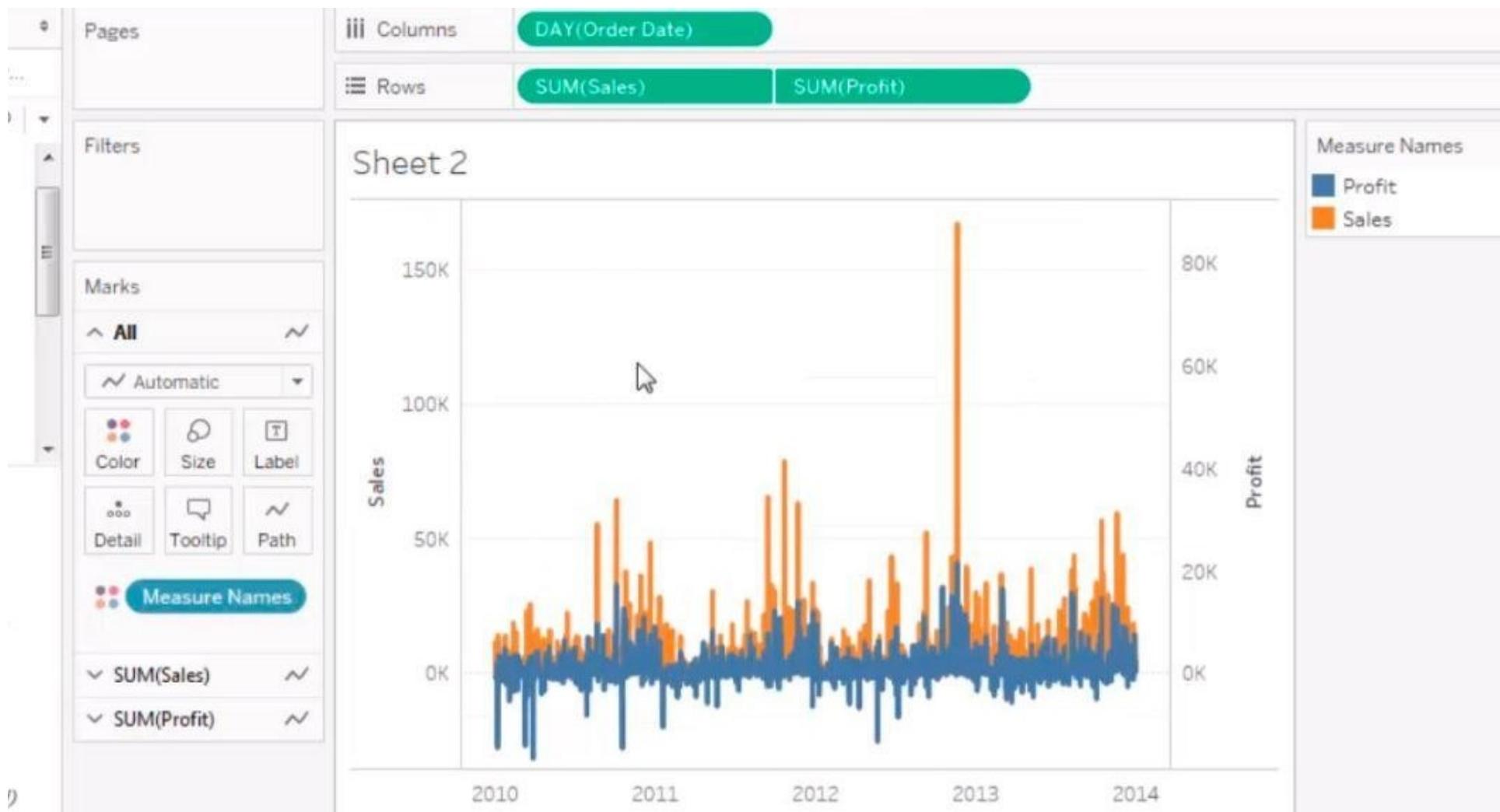
Measure Names

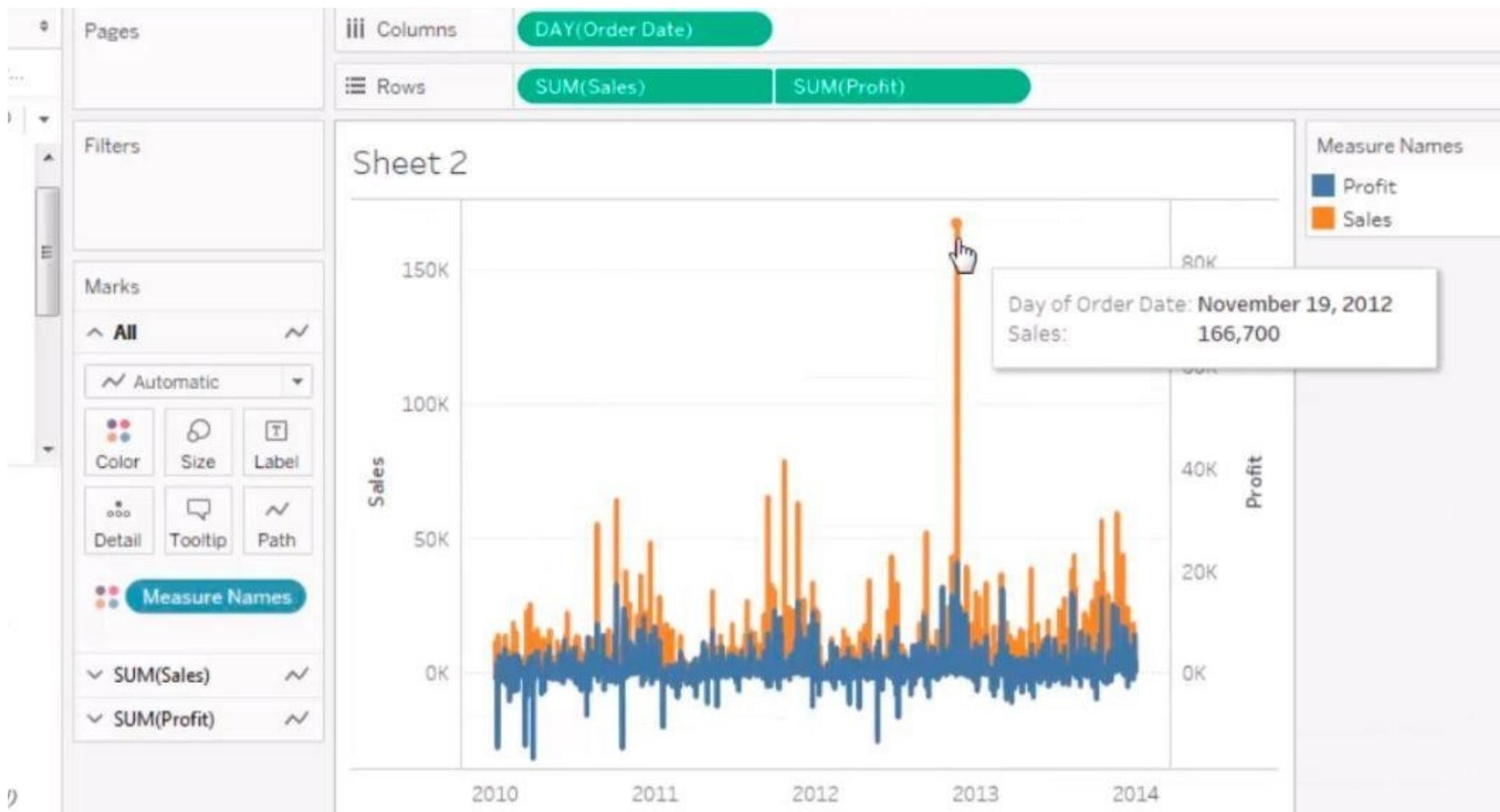
- Profit
- Sales











Recap

Bar charts –show how a measure varies one by or more dimensions
(example profit by region)

Line and Area Charts – Show how measure varies over time
(example profit by month)

Dual Axis chart – show two different measures on the same graph.
(example –profit and sales by month)