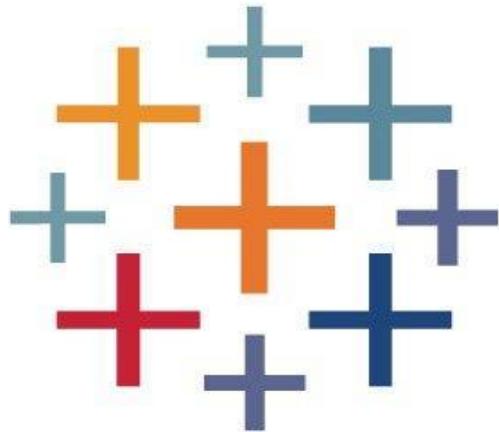




Tableau



Introduction

Why Tableau?

Ultimate skill for Data Science

Apply to any Business

You don't need to do any Coding

It makes it easier to understand and explain
the Data Reports

Community is Huge

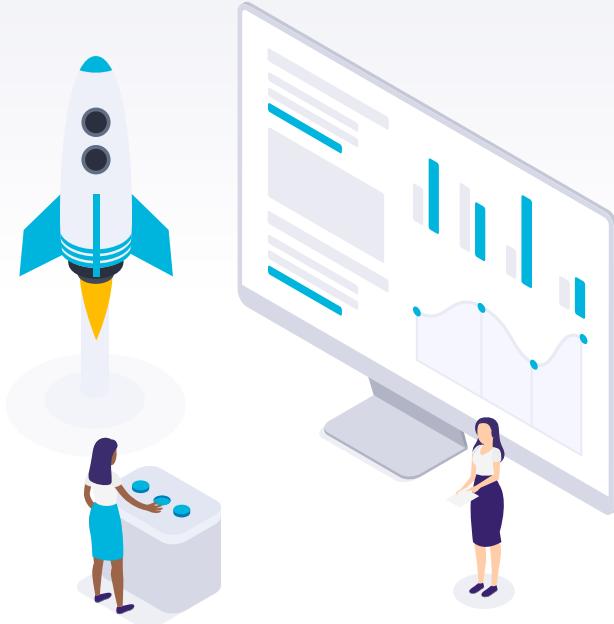
Fast and Easy

Why Visualization

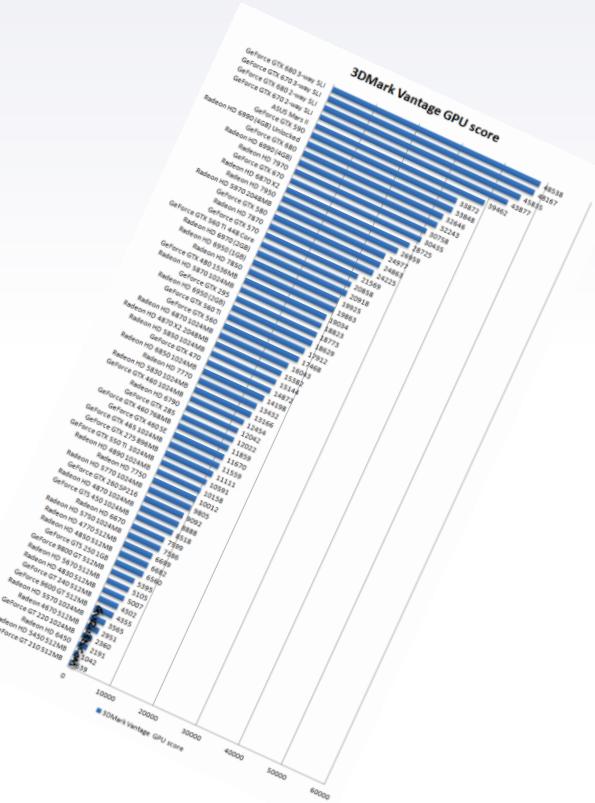
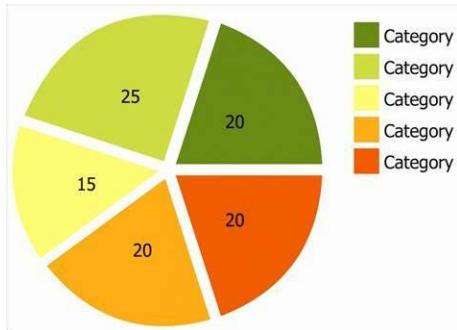
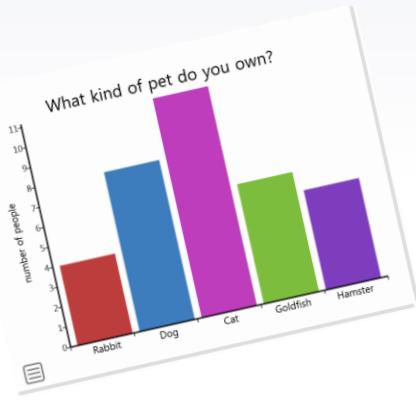
One of the most important benefits of visualization is that it allows us visual access to huge amounts of data in easily digestible visuals.

Well designed data graphics are usually the simplest and at the same time, the most powerful.

Data Visualization



Data Visualization



What is Data Visualization

Data Visualisation is representing your data in a pictorial form, it may be in form of a graph, bar diagram or different kind of charts.

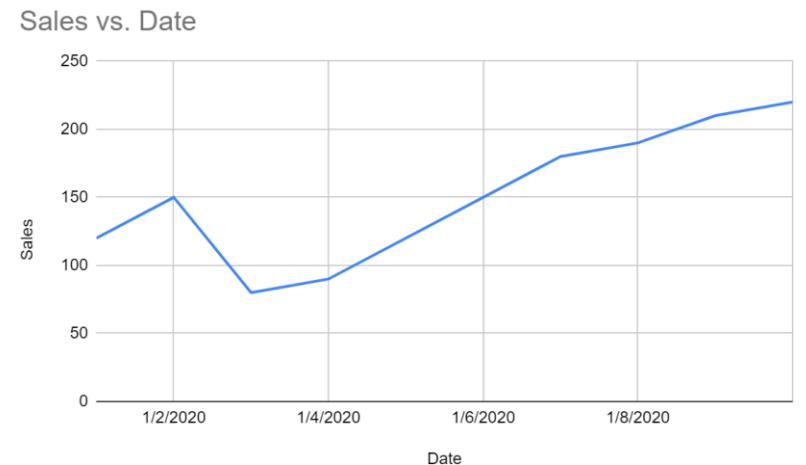
Visualisation allows us visual access to huge amounts of data in easily digestible ways.

Well designed data graphics are usually the simplest and at the same time, the most powerful.



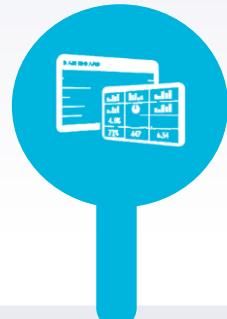
Power of Data Visualization

Date	Sales
1/1/2020	120
1/2/2020	150
1/3/2020	80
1/4/2020	90
1/5/2020	120
1/6/2020	150
1/7/2020	180
1/8/2020	190
1/9/2020	210
1/10/2020	220



Visual Analysis

Analyze



After integrating data the next step is analyzing the data which is collected to visualize it.

Integrate



Before visualizing data it is necessary to integrate, identify and prepare the data.

Visualize



After analyzing the data next step is to create visuals to interpret data.

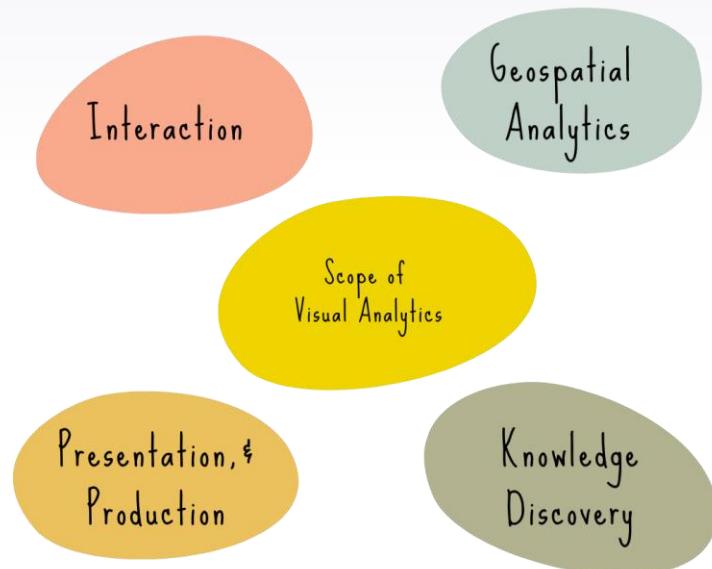
Visual Analysis

Visual analytics is essentially the marriage of data analytics and visualizations. This approach to solving problems is concerned with integrating interactive visual representations with underlying analytical processes to effectively facilitate high-level, complex activities, such as reasoning and data-driven decision making. Visual analytics falls under the category of visual [business intelligence](#) and visual [business analytics](#), employing practices such as data mining and statistical work to visualize information in a format that is easy for humans to understand.



Scope of Visual Analysis

Visual analytics is used widely. It can be used for informational analytics, geospatial analytics, scientific analytics, knowledge discovery, data management and knowledge representation, and there are many more usage of it.



Scope of Visual Analysis

Decision Making &
Sense of Risk



Key Strategic
Initiative



Customer
Relationship

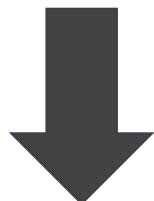
Financial
Performance

How does Data Viz works?

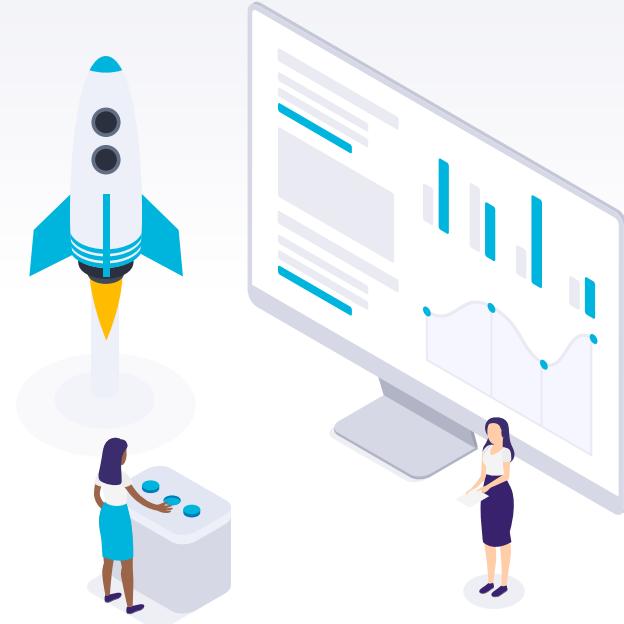
Import Dataset



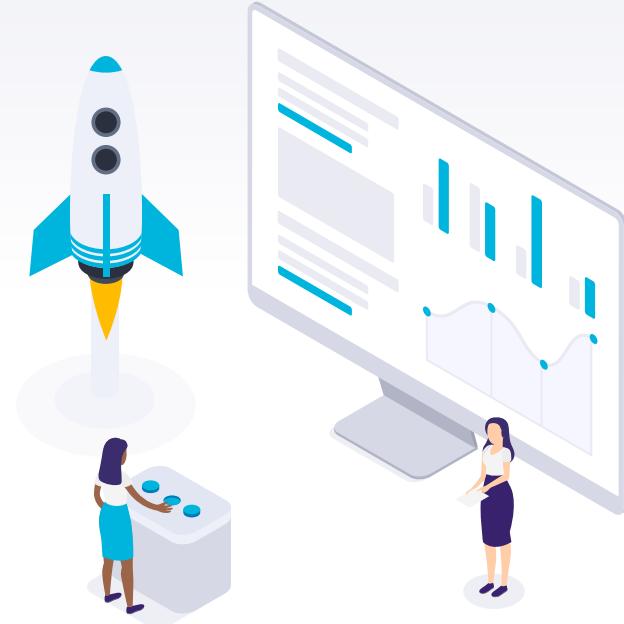
Analyze the Data



Represent what you Analyzed



BI Process



BI Process



Get Data

Easily connect, clean, and mashup data



Analyze

Build powerful models and flexible measures



Visualize

Create stunning interactive reports



Publish

Share insights with others



Collaborate

Empower your organization with self-service analytics

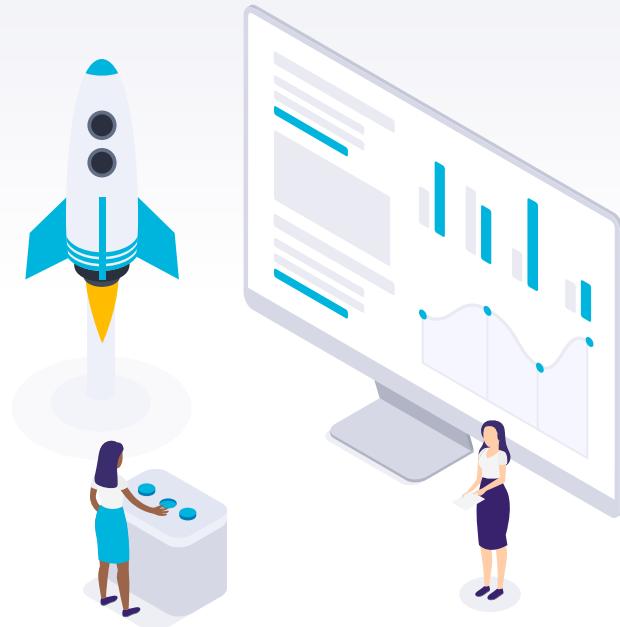
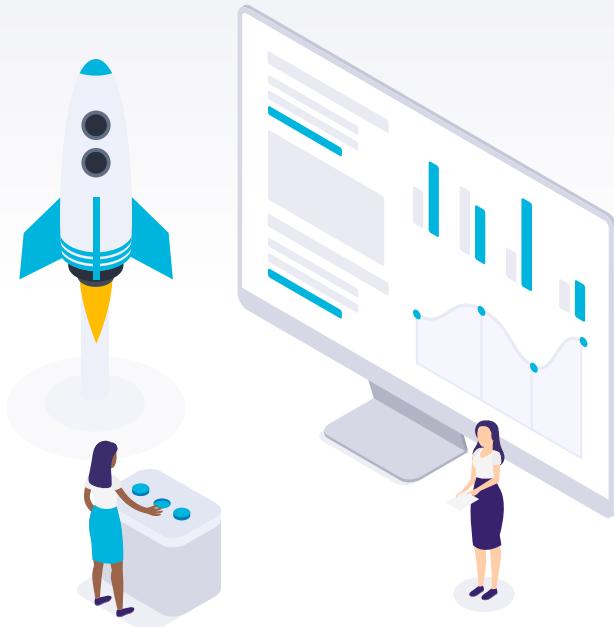


Tableau & its Architecture



Tableau

Tableau is a powerful and fastest growing data visualization tool used in BI (business intelligence) industry.

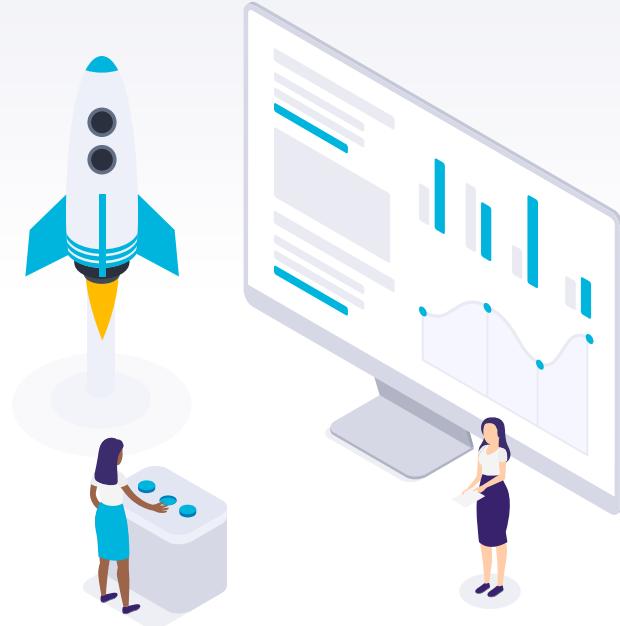
Tableau helps the world's largest organizations unleash the power of their most valuable assets: their data and their people.

Allows the customers to spend more time on Data Analysis and less on Data Wrangling.

It helps in simplifying raw data in a very easily understandable format.

Tableau helps create the data that can be understood by the professionals at any level in an organization.

It also allows non-technical users to create dashboard.



Features of Tableau

The most significant features are as follows

Easy implementation

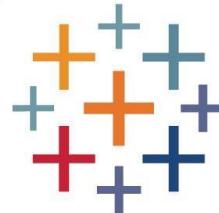
Quality Customer support

**Amazing Data
Visualization**

**Data source
integration**

**Mobile
support**

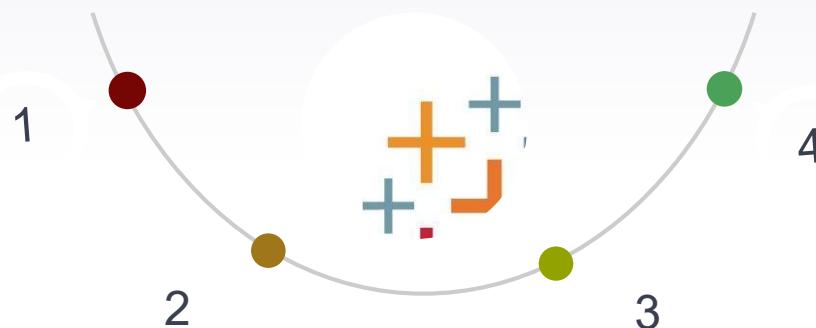
**Rich online
community**



Why Tableau

Flexibility

It is highly flexible you can connect to any kind of data using tableau. Also it has optimized data connectors for databases.



Intuitive Platform

It is highly used industrial tool and has vast uses. You can play and tweak with visuals you have created.

Interactive visuals

Tableau is a top class visualization tool and hence it has many visuals for your data. You can use variety of visualizations to interpret your data easily.

Quick Prediction time

Tableau is in Gartner's magic quadrant from many years. Tool is very quick in predicting insights.

Tableau vs Power BI

Power BI vs. Tableau

Criteria	Power BI	Tableau
Cost	Starts at \$9.99/ user/month	Starts at \$500/ user/year
Ease of Use (10%)	5	4
Implementation (20%)	4	5
Customization (20%)	3	2
Integrations (20%)	3	5
Customer Support (15%)	4	5
Features & Add-ons (15%)	3	2
Total Rating 1-5	3.55	3.85

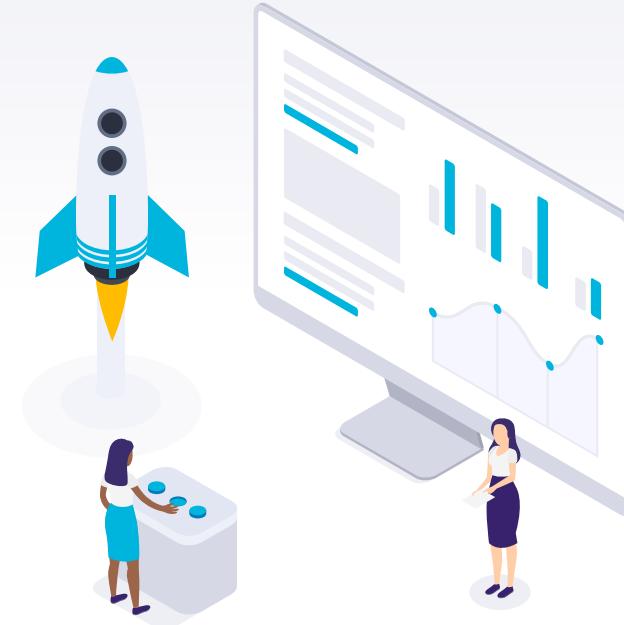


Tableau Architecture

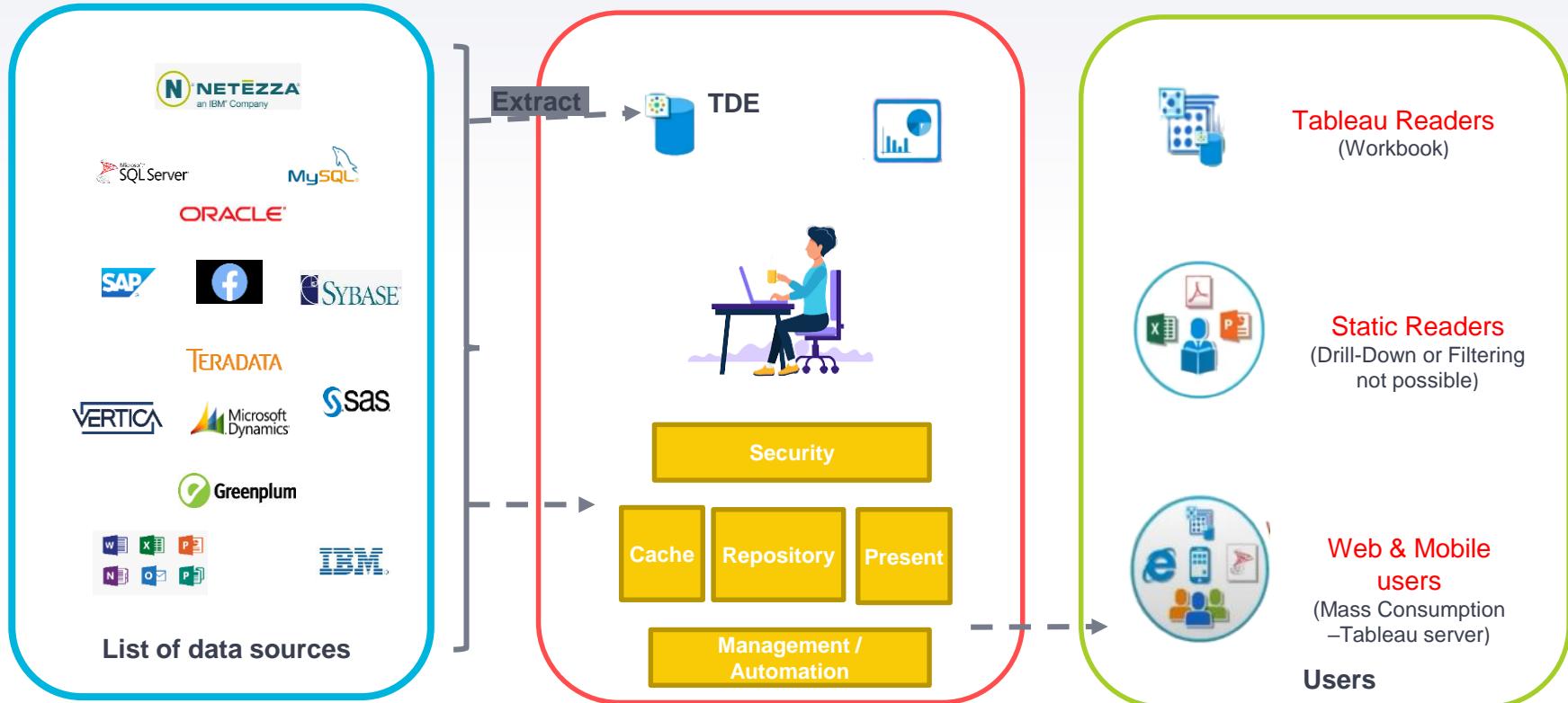


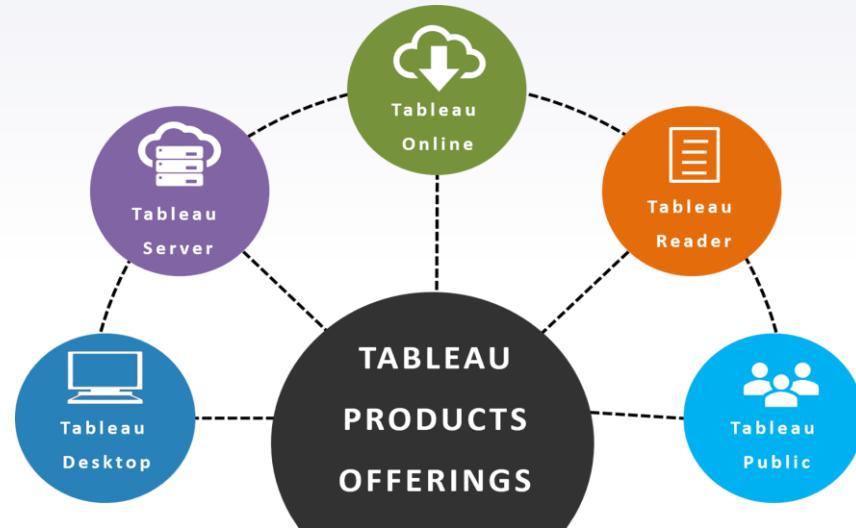
Tableau Installation

https://help.tableau.com/current/desktopdeploy/en-us/desktop_deploy_download_and_install.htm



Tableau Product Line

- Tableau Server
- Tableau Online
- Tableau Public server
- Tableau Desktop
- Tableau Public Desktop
- Tableau Reader
- Tableau Mobile
- Tableau Prep Builder



Advantages of Tableau



High Performance



Mobile Friendly



Extensive Customer Resources



Easy to Upgrade



Low Cost

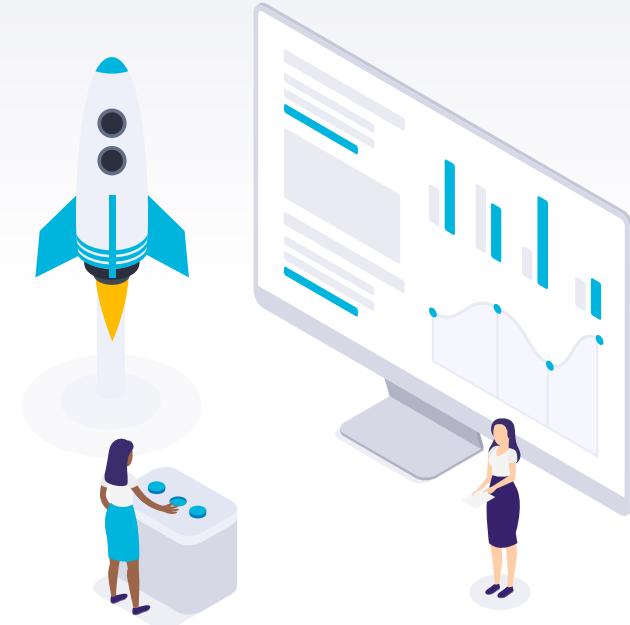


Quality Customer Service



Ease of use

How To use Tableau



Connecting To Data

- 1 Start Tableau Desktop and on the **Connect** pane, under **Search for Data**, select **Tableau Server**.
- 2 To connect to Tableau Server, enter the name of the server and then select **Connect**.

To connect to Tableau Online, select **Tableau Online** under **Quick Connect**.

To sign in:

For Tableau Server, enter your user name and password.

For Tableau Online, enter your email address and password.

Select a data source from the list of published data sources. (Data that you don't have Connect permissions for is grayed out.)

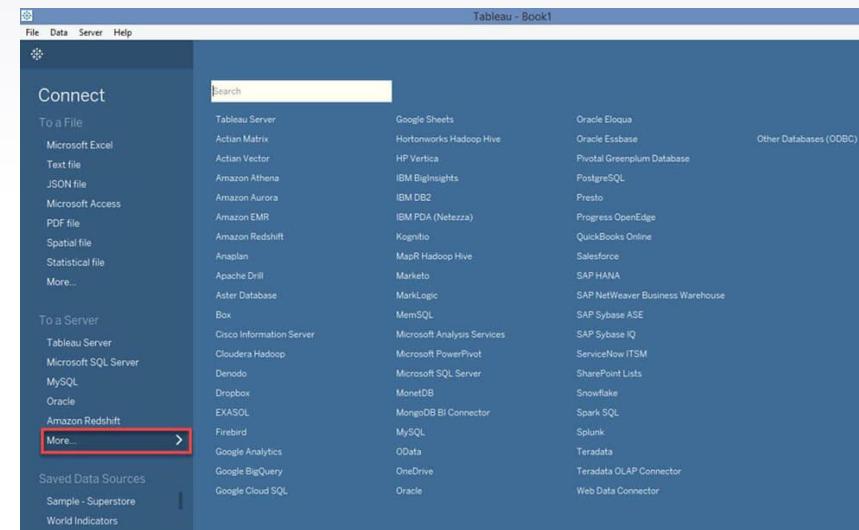


Tableau Datatypes

Sl. No.	Type	Size	Description
	Integers		
1	Byte	8 bits	Byte length integer
2	Short	16 bits	Short Integer
3	Int	32 bits	Integer
4	Long	64 bits	Long Integer
	Real Numbers		
5	Float	32 bits	Single Precision floating point
6	Double	64 bits	Double Precision floating point
	Other Types		
7	char	16 bit Unicode character	A single character
8	Boolean	True or false	A Boolean value

Tableau Desktop

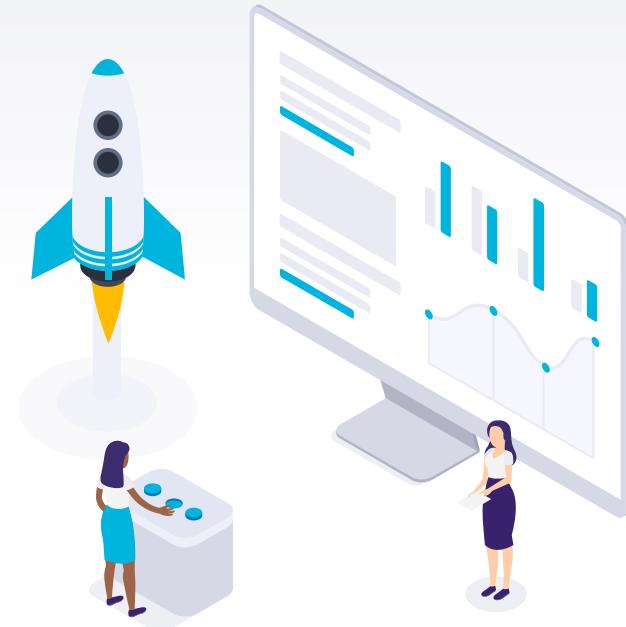


Tableau Desktop UI

The screenshot displays the Tableau Desktop user interface with various components labeled:

- Data Window**: Shows the data source "Orders (Superstore Sales Train...)" and its dimensions (Department, Item, Order Date, Order Priority, Postal Code, Region, Ship Date, Ship Mode, State, SubRegion, Measure Names) and measures (Order Quantity, Product Base Margin, Profit, Row, Sales, Shipping Cost, Unit Price, Latitude, Longitude, Number of Records, Measure Values). It also shows the current view: "SUM(Sales)" in Columns, "YEAR(Order Date)" in Rows, and "Customer Segment" in the Marks shelf.
- Workbook Name**: Shows the current workbook name "Tableau - My Workbook".
- View Cards**: Shows the current view configuration.
- Toolbars**: Shows the standard Windows-style toolbar with icons for file operations, zoom, and orientation.
- View**: Shows the current view mode as "Normal".
- Workspace Controls**: Shows the workspace controls for saving, sharing, and publishing.
- Figure Area**: Displays a horizontal bar chart showing Sales (in thousands) for each year from 2010 to 2013 across different customer segments. The chart uses green bars to represent sales volume.
- Status Bar**: Shows "16 marks" and "16 rows by 1 column" at the bottom left, and "SUM(Sales): \$30,070K" at the bottom center.
- Sheet Tabs**: Shows tabs for "My Worksheet 1" and "My Worksheet 2".

Tableau UI – Dimensions and Measures

Dimensions typically contain qualitative values (such as names, dates, or geographical data). And measures typically contain things you can measure, like numeric and quantitative values.

Dimension is a field that is an independent variable

Measure is a field that is a dependent variable
But there is a more important conceptual difference.
Dimensions split up the data set into different categories and reveal different levels of detail in the data.

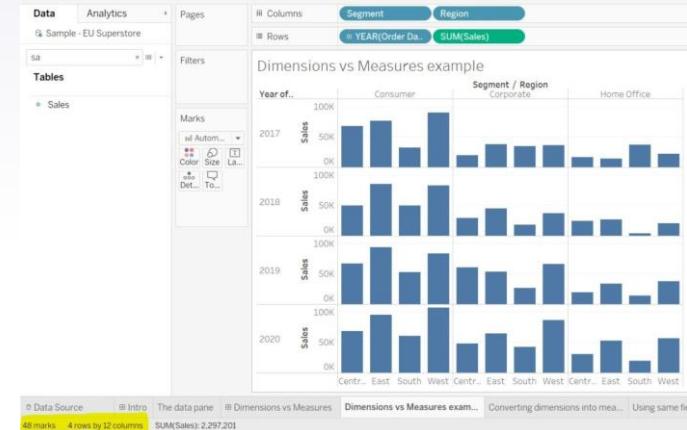
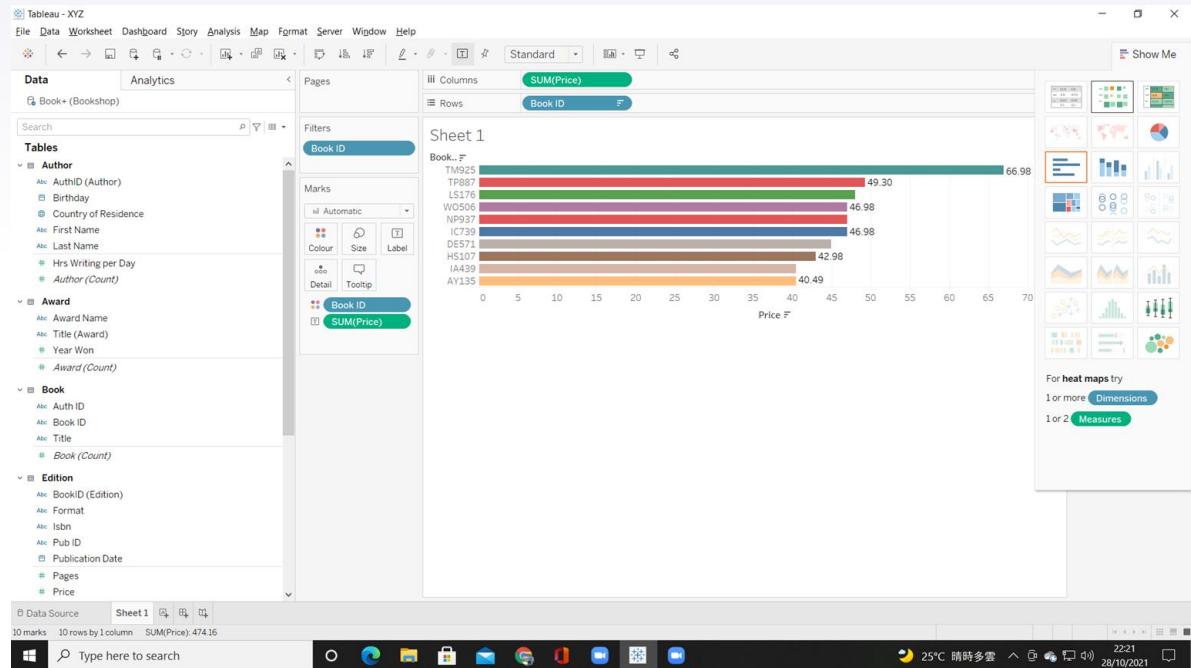
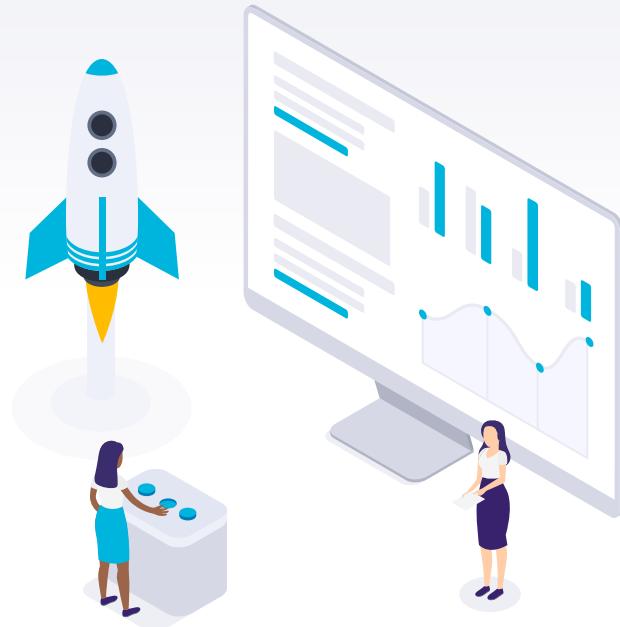


Tableau UI – Show me

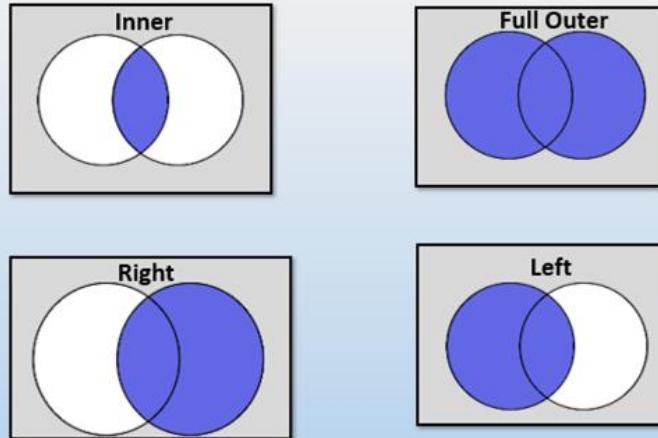
Show Me window holds the most commonly used charts in Tableau. You can use any of these charts to view the data. Click Show Me on the toolbar to open this window, as we have shown below.



Functions in Tableau



Relationship, Join and Union



A screenshot of the Tableau interface. On the left, a sidebar titled "Sheets" lists "August2016", "July2016", "June2016", "May2016", and "New Union". A callout points from the "New Union" item to a dialog box titled "Purchases (All)". The dialog box contains the text "Connection: Purchases" and a list of tables: "July2016", "June2016", "May2016", and "August2016". The "August2016" table is highlighted with an orange border. A cursor is clicking the "Remove" button next to it. At the bottom of the dialog, there are buttons for "Apply" and "OK". A status message at the bottom left says "Tables in union: 3".

SET

Tableau Sets are custom fields used to hold the subset of data based on a given condition. In real-time, you can create a set by selecting members from the list or a visualisation. You can also do the same by writing custom Conditions or Selecting Top/Bottom few records in a Measure.

The screenshot shows the Tableau Dimensions shelf. A context menu is open over the 'Customer Name' field, which is highlighted with a blue selection bar. The menu is titled 'Add to Sheet' and includes options: Duplicate, Rename, Hide, Aliases..., Create, Transform, Convert to Measure, Change Data Type, Geographic Role, Default Properties, Group by, and Folders. The 'Create' option has a submenu with 'Calculated Field...', 'Group...', 'Set...' (which is selected and highlighted in blue), and 'Parameter...'.

Dimensions

- Customer
 - Customer Name
 - Segment
- Order
 - Order Date
 - Order ID
 - Ship Date
 - Ship Mode
- Location
 - Country
 - State

Measures

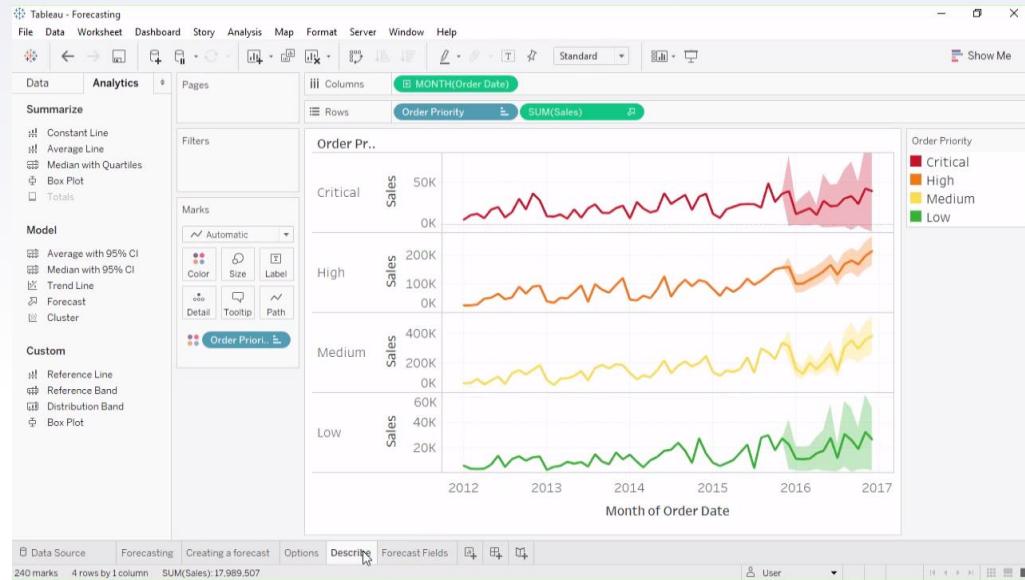
- # Discount
- # Profit
- =# Profit Ratio

Add to Sheet

- Duplicate
- Rename
- Hide
- Aliases...
- Create
 - Calculated Field...
 - Group...
 - Set...**
 - Parameter...
- Transform
- Convert to Measure
- Change Data Type
- Geographic Role
- Default Properties
- Group by
- Folders

Forecasting

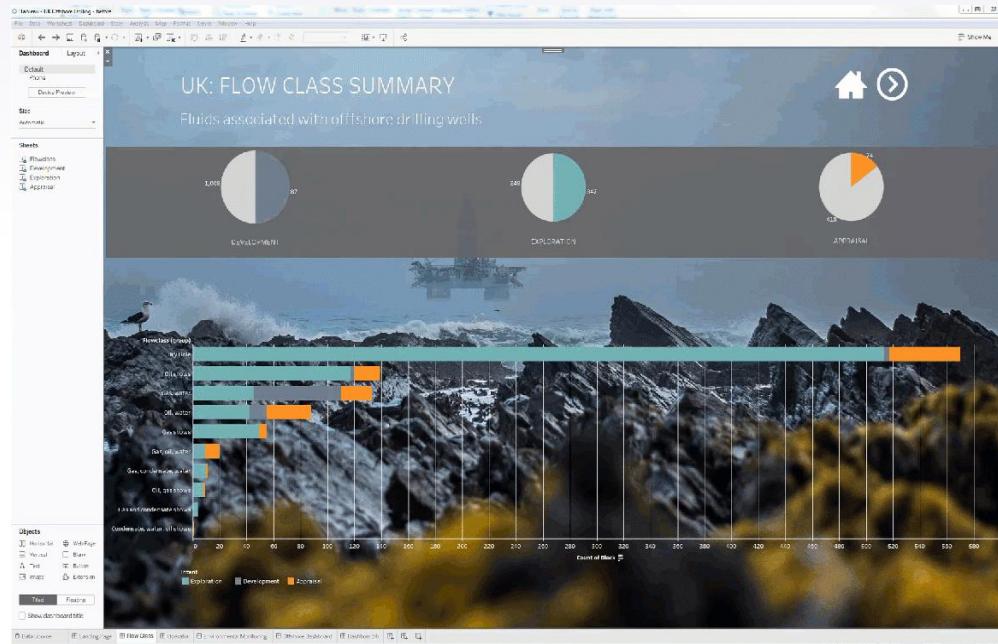
Forecasting is a process of depicting future trends by identifying regular patterns in measure values. This technique of identifying regular patterns from existing data values and giving a forecast is known as **exponential smoothing**.



Highlighting

Highlight actions allow you to call attention to marks of interest by coloring specific marks and dimming all others. You can highlight marks in the view using a variety of tools. For example, you can manually select the marks you want to highlight, use the legend to select related marks, use the highlighter to search for marks in context or create an advanced highlight action.

Methods: Select Marks, Legends, Highlighter, Actions

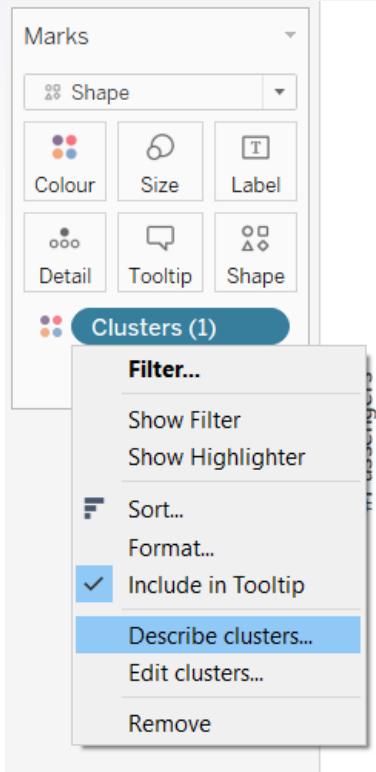


Device Designer

With this feature, you can create specific, curated experiences for each device. Here's how to use device designer to make your viz shine on any device. Device Designer: letting you build different views for different devices.



Analytics Pane - Clustering



Describe Clusters

Summary Models

Inputs for Clustering

Variables: Sum of #Passengers

Level of Detail: Year of Month

Scaling: Normalised

Summary Diagnostics

Number of Clusters: 3

Number of Points: 12

Between-group Sum of Squares: 1.0587

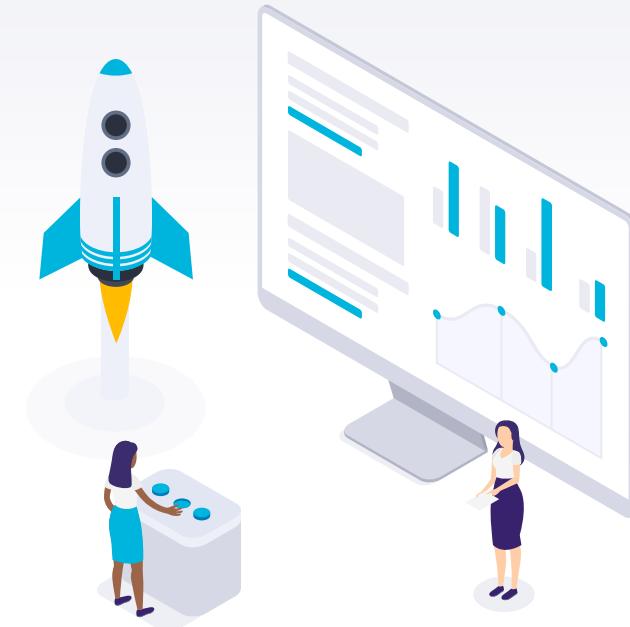
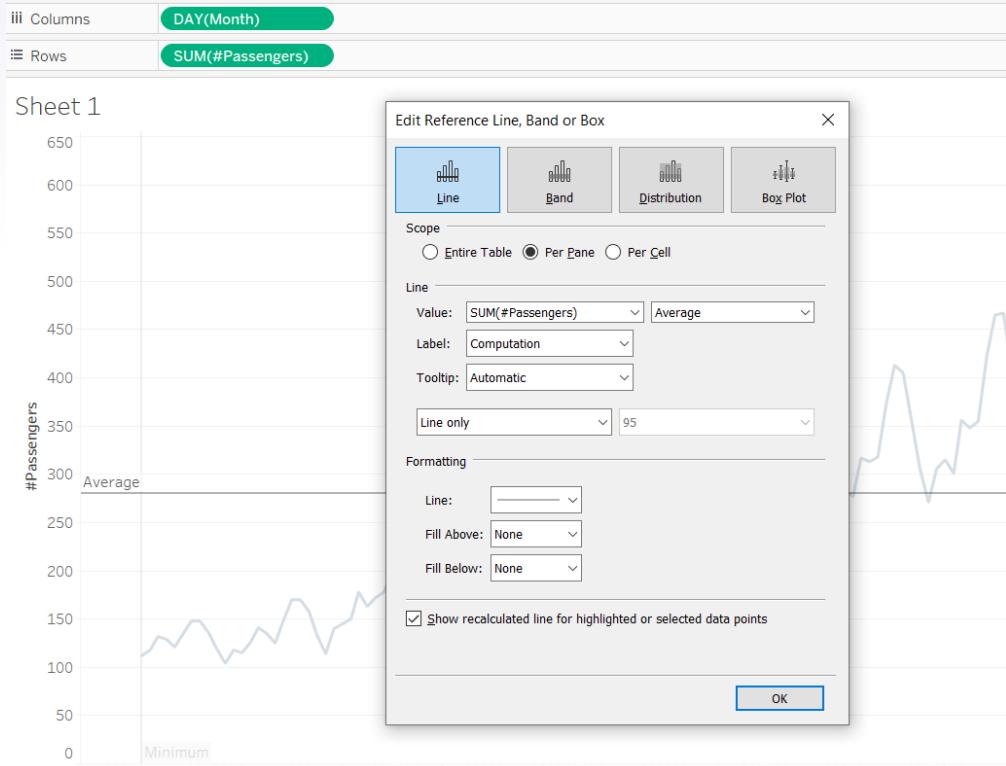
Within-group Sum of Squares: 0.15061

Total Sum of Squares: 1.2093

Show scaled centres

[Copy to Clipboard](#) [Learn more about the cluster summary statistics](#) [Close](#)

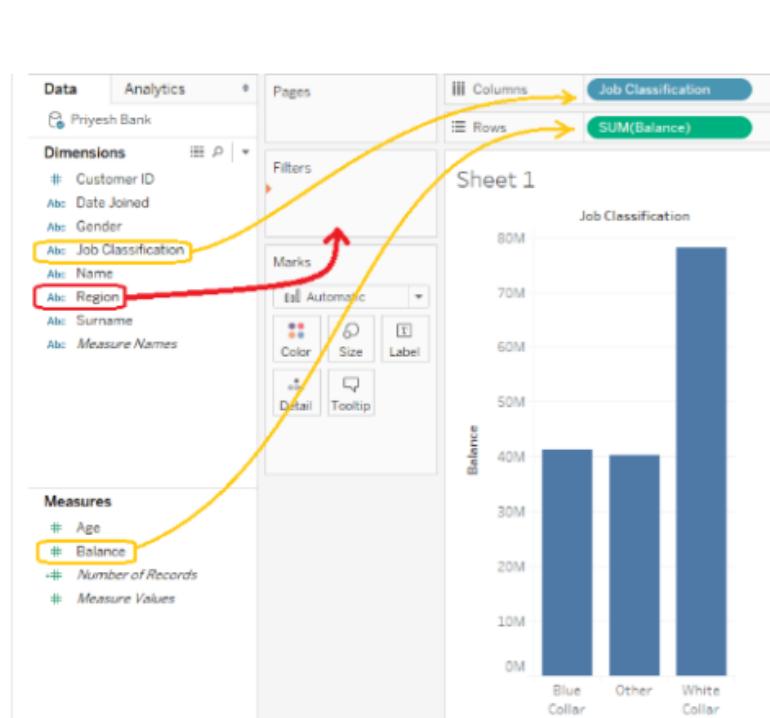
Analytics Pane – Reference Line



Filters

Filters in Tableau

- Quick Filter
- Context Filter
- Data Source Filters
- Measure Filter (Filter Shelf)
- Extract Filter (Data Source)
- Dimension Filter (Filter Shelf)



Drill Down and UP

To drill down and drill up for individual dimension members in a hierarchy: Right-click a table header and select Drill Down or Drill Up . This is often referred to as non-uniform drill down because you expose only the members of interest instead of exposing all the members of a given level.



The screenshot shows a Tableau dashboard with a data view and a sidebar. The data view displays a table with columns for Category, Subcategory, and Product Name, along with their corresponding sales amounts. The sidebar on the left contains sections for Pages, Filters, and Marks, with specific filters applied to "Product Categories" and "Sales Amount".

Category	Subcategory	Product Name	
Accessories	Bike Racks	Hitch Rack - 4-Bike	\$135,667.84
	Bike Stands	All-Purpose Bike Stand	\$20,829.00
	Bottles and Cages	Water Bottle - 30 oz.	\$16,427.35
		Mountain Bottle Cage	\$12,137.85
		Road Bottle Cage	\$7,749.38
Cleaners		Bike Wash - Dissolver	\$10,353.42
Fenders		Fender Set - Mountain	\$28,617.96
Helmets	Sport-100 Helmet, Red	\$8,599.45	
	Sport-100 Helmet, Red	\$20,840.96	
	Sport-100 Helmet, Red	\$65,227.02	
	Sport-100 Helmet, Black	\$8,942.62	
	Sport-100 Helmet, Black	\$21,749.05	
	Sport-100 Helmet, Black	\$64,991.55	
	Sport-100 Helmet, Blue	\$10,384.35	
	Sport-100 Holmot, Blue	\$22,770.10	
	Sport-100 Helmet, Blue	\$67,598.23	
Hydration Packs	Hydration Pack - 70 oz.	\$55,923.42	
Locks	Cable Lock	\$11,024.98	
Pumps	Minipump	\$9,307.96	
Tires and Tubes	Patch Kit/B Patches	\$4,603.82	
	Mountain Tire Tube	\$8,892.18	
	Demand Tires	\$5,322.04	

Hierarchies

The hierarchy in Tableau is an arrangement where entities are presented at various levels. So, there's an entity or dimension under which there are further entities present as levels. In Tableau, we can create hierarchies by bringing one dimension as a level under the principle dimension.

The screenshot shows the Tableau interface with a bar chart titled "Sheet 1". The chart displays sales data by category, with "Furniture & Office S..." having the highest sales. The data source is "Sample - Superstore".

The "Dimensions" shelf on the left contains:

- Order ID
- Ship Date
- Ship Mode
- Category (group)** (highlighted with a red box and circled with a red number 1)
- Location
 - State
 - City
 - Postal Code
- Product

The "Measures" shelf contains:

- Profit Ratio
- Quantity
- Sales

The "Parameters" shelf contains:

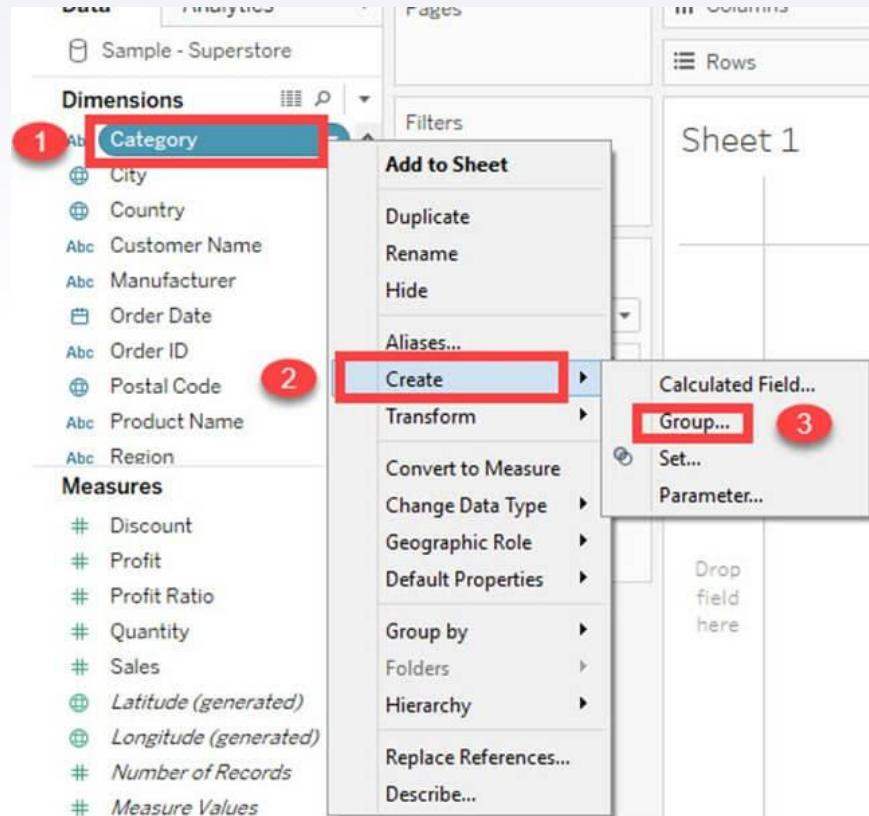
- Profit Bin Size
- Top Customer

A context menu is open over the "Country" dimension entry. The menu items are:

- Add to Sheet
- Show Filter
- Duplicate
- Rename
- Hide
- Aliases...
- Create
- Transform
- Convert to Measure
- Change Data Type
- Geographic Role
- Default Properties
- Group by
- Folders
- Hierarchy** (highlighted with a red box and circled with a red number 2)
- Replace Reference...
- Describe...
- Create Hierarchy...** (highlighted with a red box and circled with a red number 3)

Groups

A Tableau Group is a set of multiple members combined in a single dimension to create a higher category of the dimension. Tableau allows the grouping of single-dimensional members and automatically creates a new dimension adding the group at the end of the name.

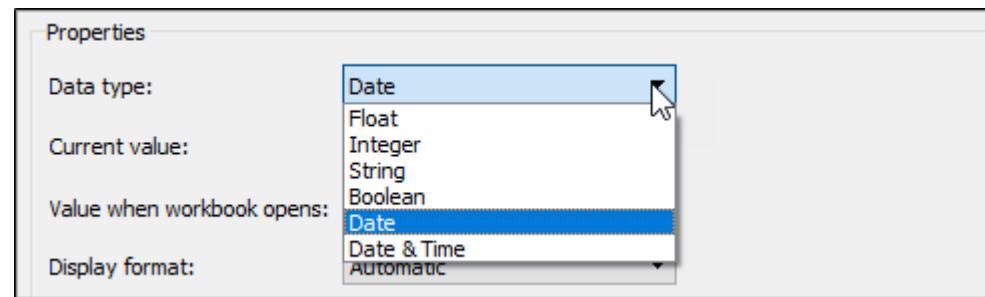


Creating a parameter in Tableau

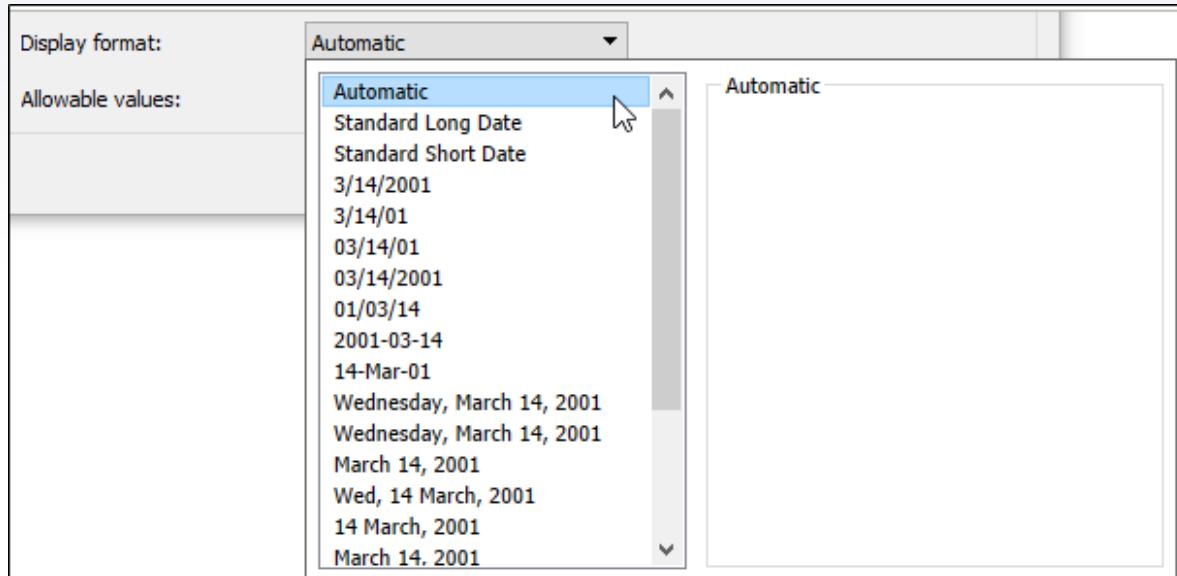
-Specify a current value. This is the default value for the parameter. In this case, let's leave the field as is because we'll be using the latest data, which we'll configure in the next step.

Current value:	9/1/2019
----------------	----------

-Specify the data type for the values it will accept:



Creating a parameter in Tableau



-Specify the display format to use in the parameter control

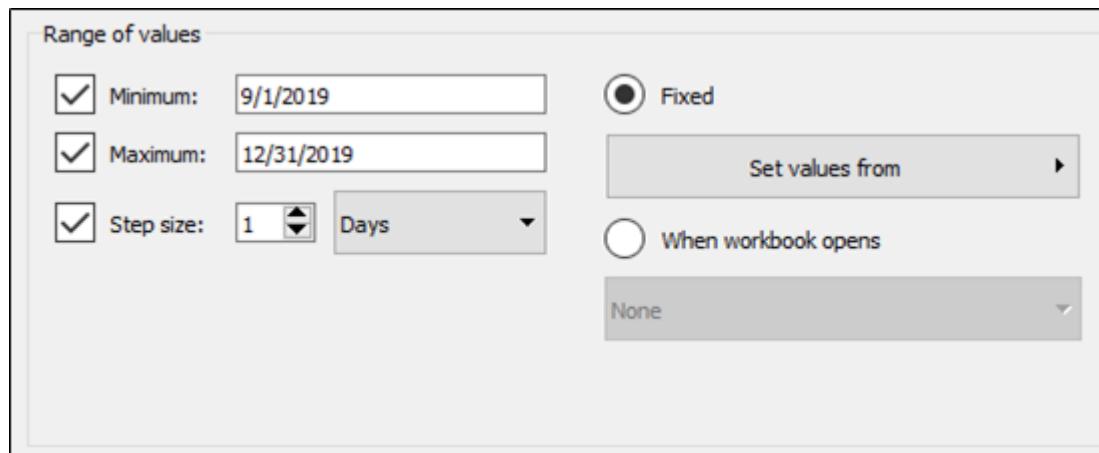
Creating a parameter in Tableau

- Specify how the parameter will accept values. You can select from the following options:
 - All - The parameter control is a simple text field.
 - List - The parameter control provides a list of possible values for you to select from.
 - Range - The parameter control lets you select values within a specified range.
- The availability of these options is determined by the data type. For example, a string parameter can only accept all values or a list. It does not support a range.
- If you select List, you must specify the list of values. Click in the left column to type your list of values, or you can add members of a field by selecting Add values from.



Creating a parameter in Tableau

-If you select Range, you must specify a minimum, maximum, and step size. For example, you can define a date range between January 1, 2019 and December 31, 2019, with the step size set to 1 month to create a parameter control that lets you select each month in 2019.



Creating a parameter in Tableau

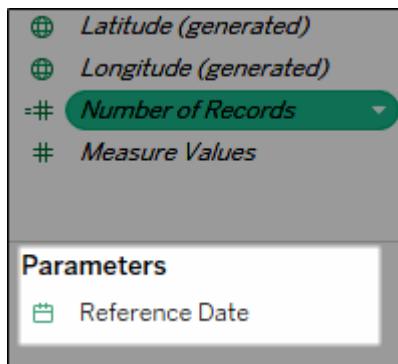
-In this case, to refresh the parameter's list of values (or domain) whenever the workbook opens, select List, and then select When workbook opens. Notice that the list of values on the left is grayed out because the workbook is dynamically pulling values from the data source.

The screenshot shows the 'List of values' dialog box in Tableau. On the left, there is a table with two columns: 'Value' and 'Display As'. The 'Value' column is currently empty and grayed out. On the right, there are two radio button options: 'Fixed' (unchecked) and 'When workbook opens' (checked). Below these options is a dropdown menu set to 'None'. A dropdown arrow is open, revealing four items: 'None' (selected), 'Date', 'Latest Month', 'Month with highest YoY growth', and 'Today's Month'. The 'Date' item is highlighted with a blue selection bar and has a cursor pointing at it.

Creating a parameter in Tableau

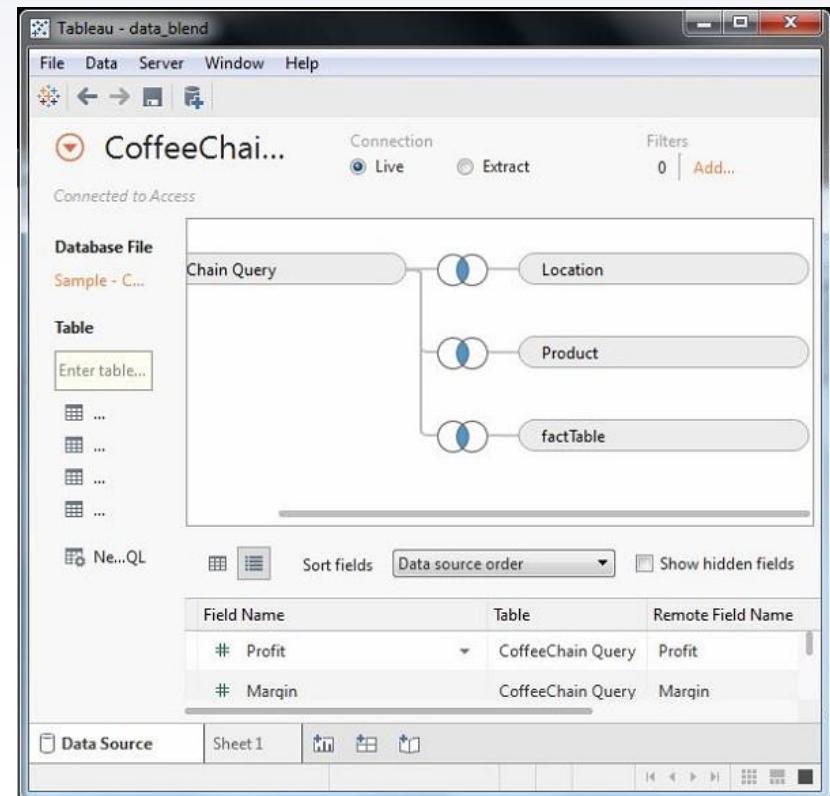
-When finished, click OK.

The parameter is now listed in the Parameters section at the bottom of the Data pane



Data Blending

Data Blending is a very powerful feature in Tableau. It is used when there is related data in multiple data sources, which you want to analyze together in a single view. As an example, consider the Sales data is present in a relational database and Sales Target data in an Excel spreadsheet.

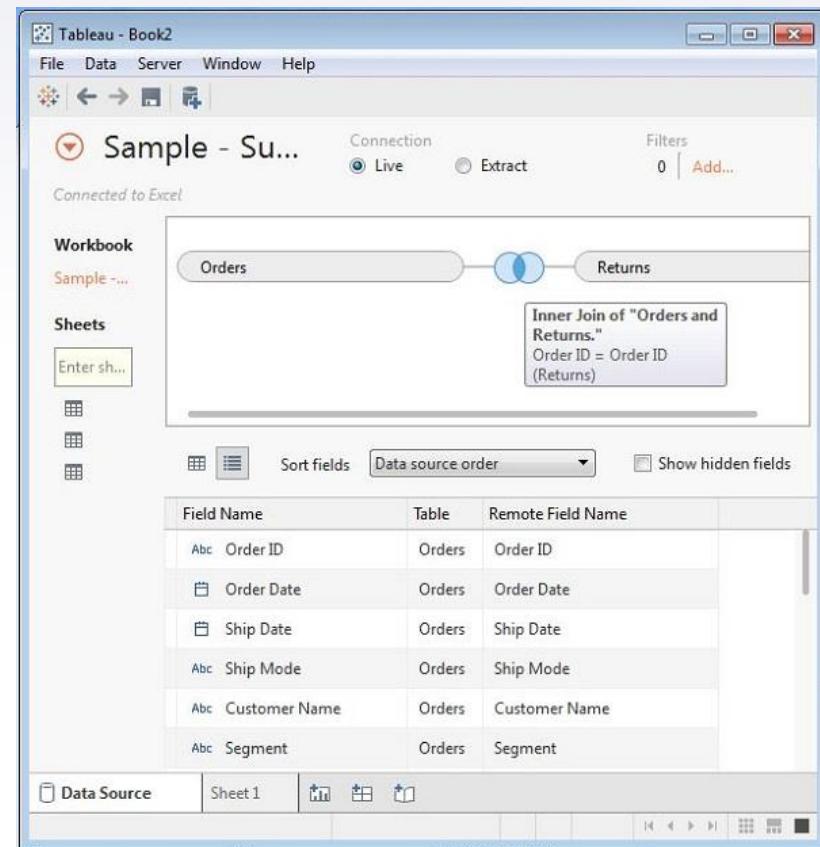


Blend vs Join vs Relationship

	Blend	Join	Relationships
Visual Cue			
# Data Sources	At least 2	1	1
# Connections	At least 1 per data source	Can be multiple	Can be multiple
Structure	Retain original table	New combined form	Retain original table
How tables are combined	Separate queries; linking field	Physical join	Logical; context specific
How numbers are aggregated	Based on primary	Based on join level granularity	Smart; context specific

Data Joining

Data joining is a very common requirement in any data analysis. You may need to join data from multiple sources or join data from different tables in a single source. Tableau provides the feature to join the table by using the data pane available under Edit Data Source in the Data menu.



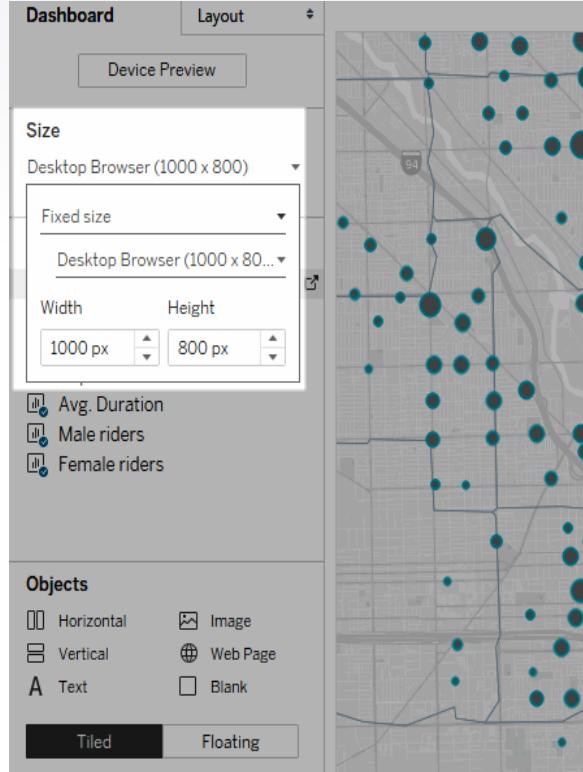
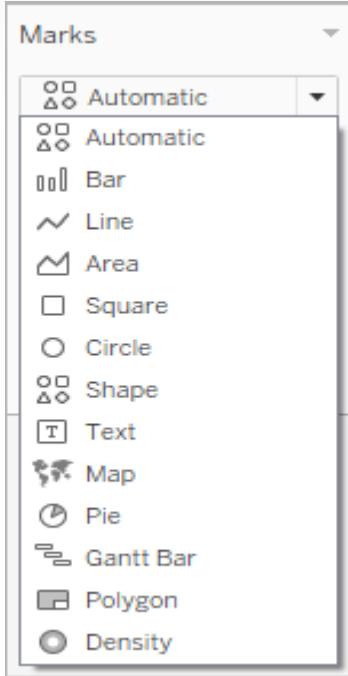
Analysis

Tableau is an end-to-end data analytics platform that allows you to prep, analyze, collaborate, and share your big data insights. Tableau excels in self-service visual analysis, allowing people to ask new questions of governed big data and easily share those insights across the organization.



Mark and Size

Type drop-down and select an option from the list.



Under Size on the Dashboard pane, select the dashboard's dimensions (such as Desktop Browser) or sizing behavior(for example, Automatic)

Transparency

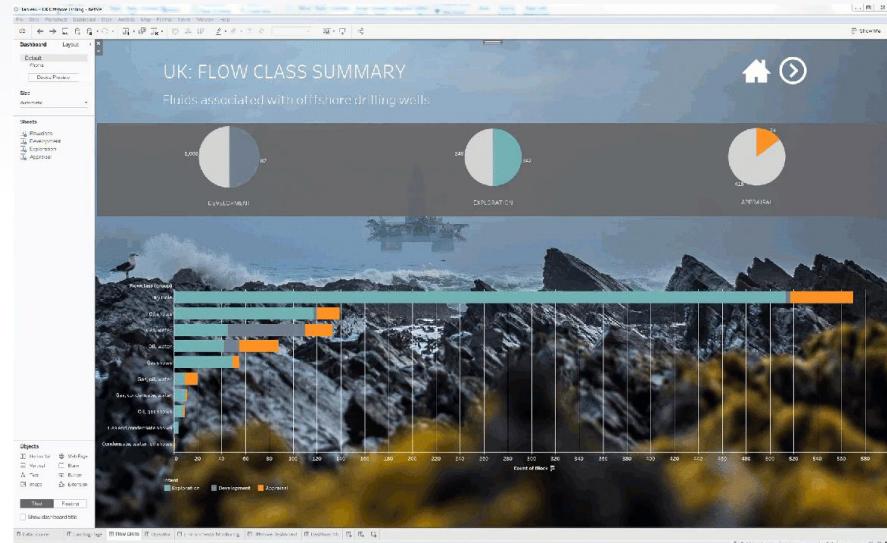
The ability to set fully transparent backgrounds to worksheets in dashboards!

Step 1. right click and select format

Step 2. Select Shading

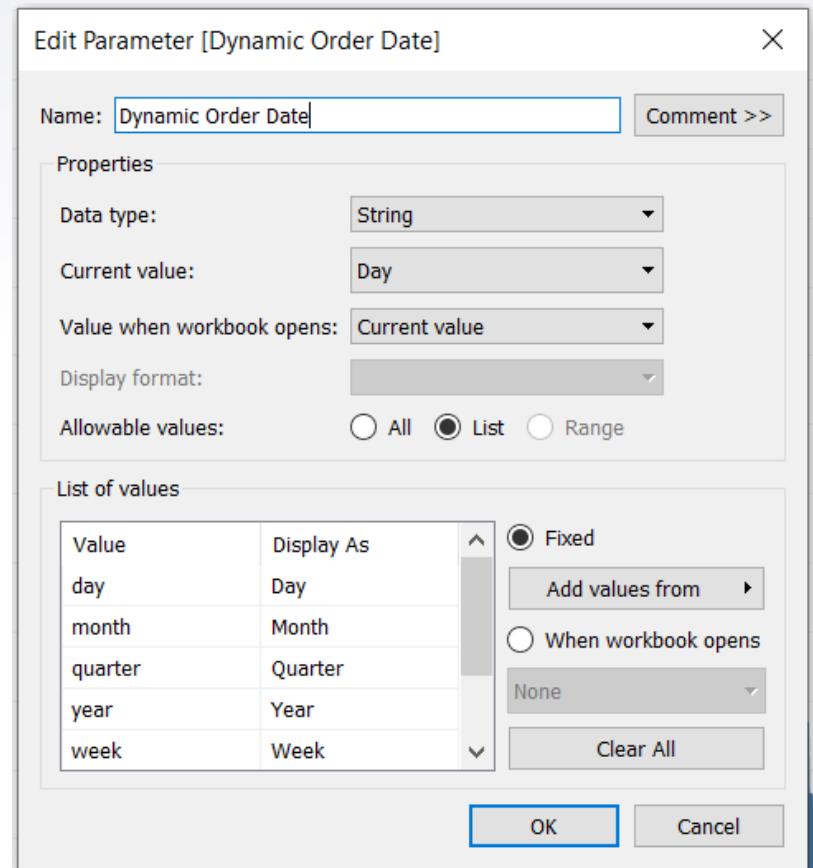
Step 3. Select none

Step 4. Some just for fun, add a semi-transparent box behind the graphs to help set them apart from the background.



Data Aggregation

Step1: Create a Parameter with All Date Aggregations



Data Aggregation

Step 2: Create a Calculated Field to Change Date Aggregations

flexi order date

DATETRUNC([Dynamic Order Date], [Order Date])

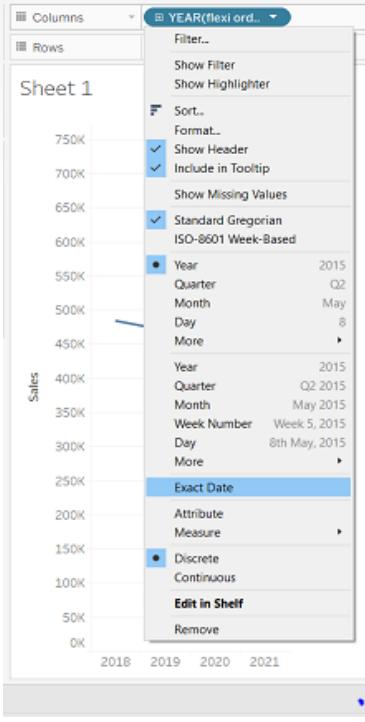
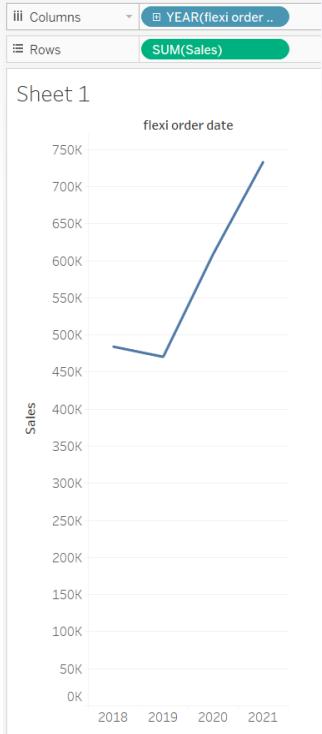
The calculation is valid.

1 Dependency ▾

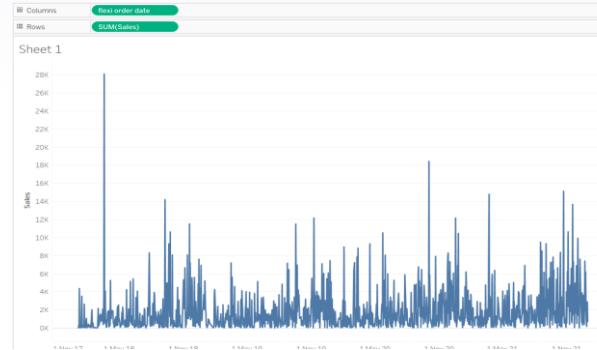
Apply

OK

Data Aggregation

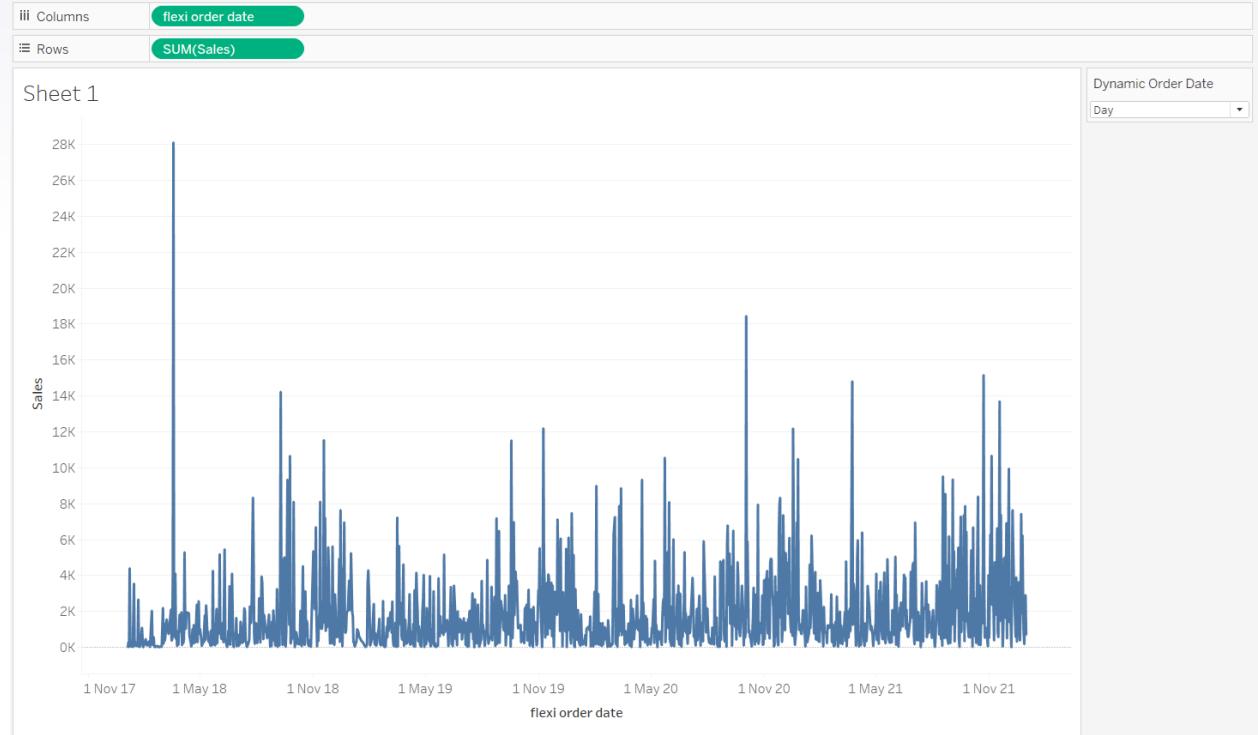


Step 3: Use the New Date Aggregation Calculation in the View



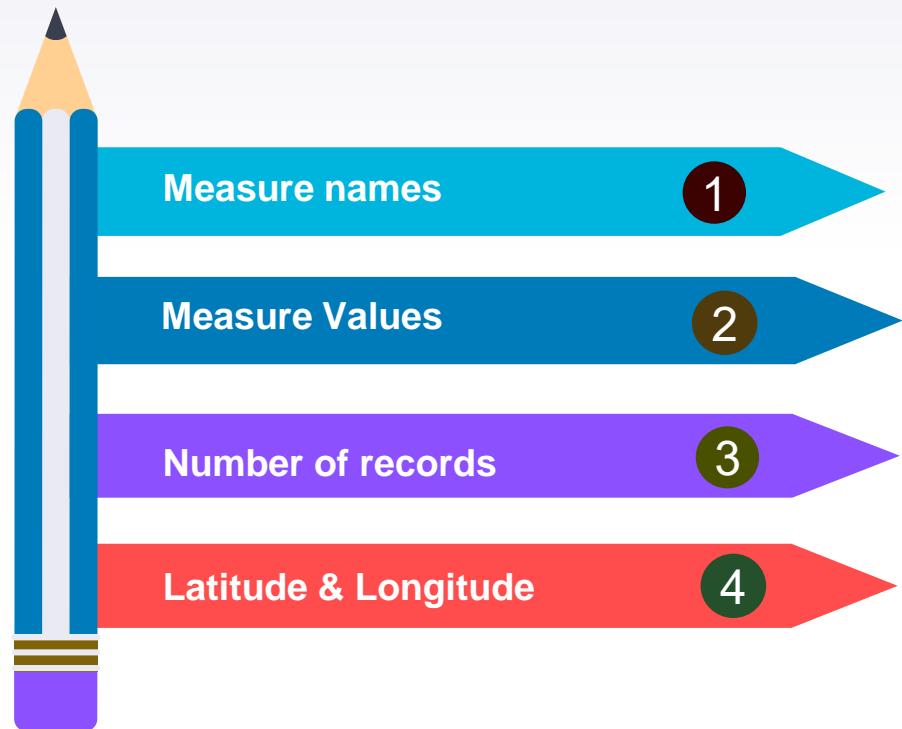
Data Aggregation

Step 4: Make the Date Aggregation Parameter Available to Users



Generated Fields

Generated fields are created and can be visible in the data pane in addition to the fields present in the data set.



Discrete versus Continuous

Dimensions contain qualitative values (such as names, dates, or geographical data). You can use dimensions to categorize, segment, and reveal the details in your data. Dimensions affect the level of detail in the view.

Measures contain numeric, quantitative values that you can measure. Measures can be aggregated. When you drag a measure into the view, Tableau applies an aggregation to that measure (by default).

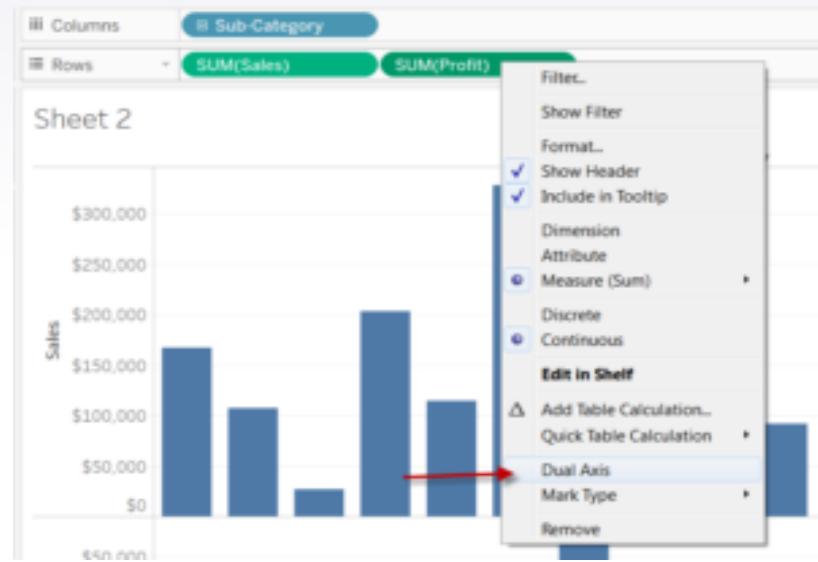
Tableau represents data differently in the view depending on whether the field is discrete (blue), or continuous (green). Continuous and discrete are mathematical terms. Continuous means "forming an unbroken whole, without interruption"; discrete means "individually separate and distinct."

- Green measures `SUM(Promotion)` and dimensions `YEAR(Order Date)` are continuous. Continuous field values are treated as an infinite range. Generally, continuous fields add axes to the view.
- Blue measures `SUM(Promotion)` and dimensions `Product Name` are discrete. Discrete values are treated as finite. Generally, discrete fields add headers to the view.

Dual Axis/ Multiple Measures

There are several different ways to compare multiple measures in a single view. You can:

- Create individual axes for each measure.
- Blend two measures to share an axis.
- Add dual axes where there are two independent axes layered in the same pane.

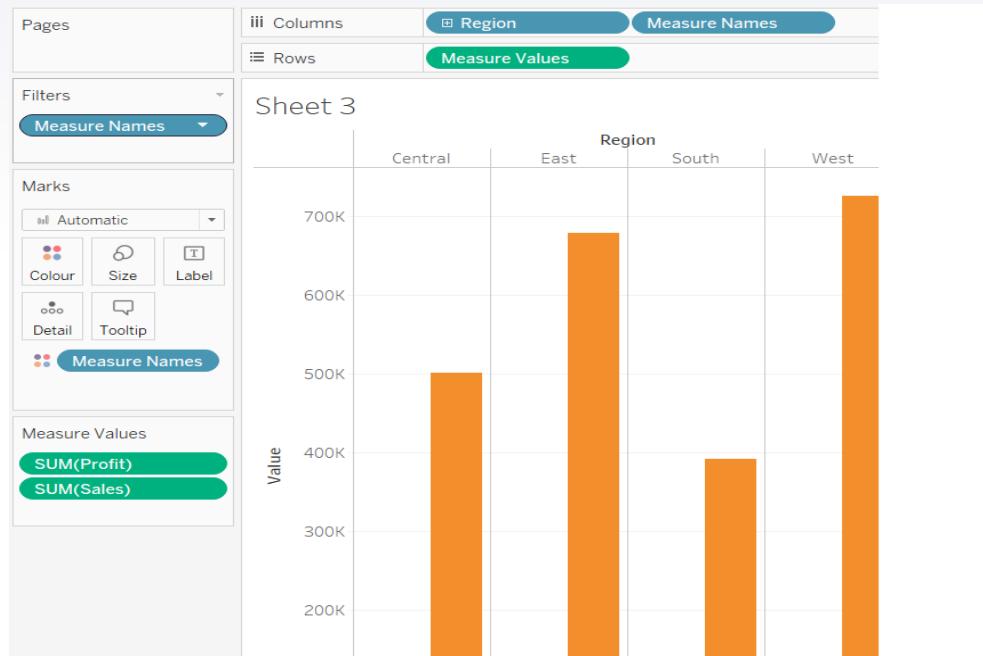


Combo Chart

Step 1 – Make a graph for one of the measures

Step 2 – Drag the second measure onto the opposite axis

Step 3 – Create a dual-axis combination chart by changing one of the mark types

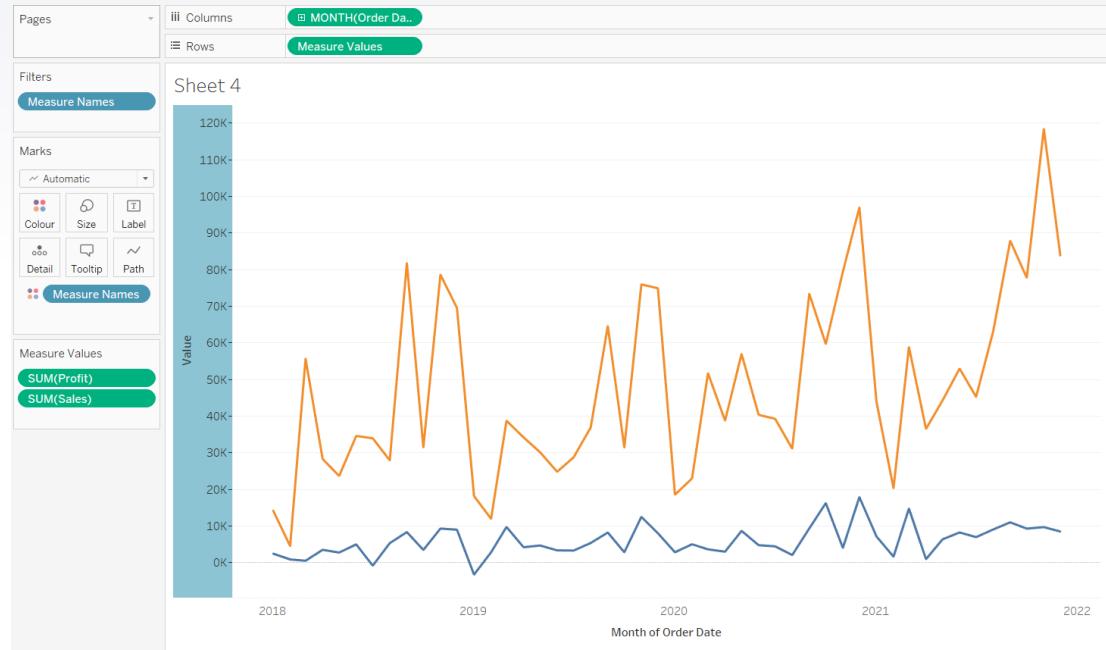


Combo Charts

Step 1 – Date vs Sales

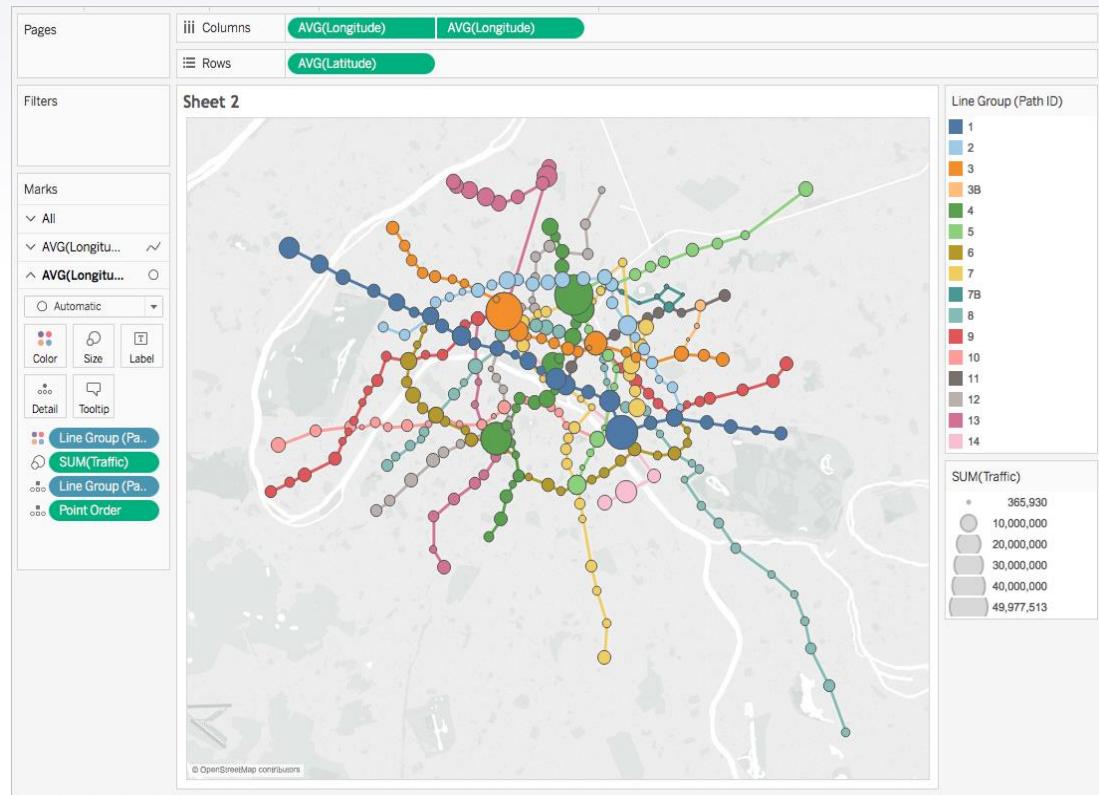
Step 2 – Drag the second measure onto the opposite axis

Step 3 – Create a dual-axis combination chart by changing one of the mark types



Geographic Map

Metro station traffic in
Paris, France



Heat Map

Tableau heatmap is a visualization where marks on the view are represented using color. And as the density of records increases per mark, a more intense color is displayed (heating up).

Drag Order Date to the columns shelf.

Drag product Sub-Category to the rows shelf.

Drag Sales to the text shelf.

Under Show Me Tab, select 'Heat Maps'

Changing marks to circles

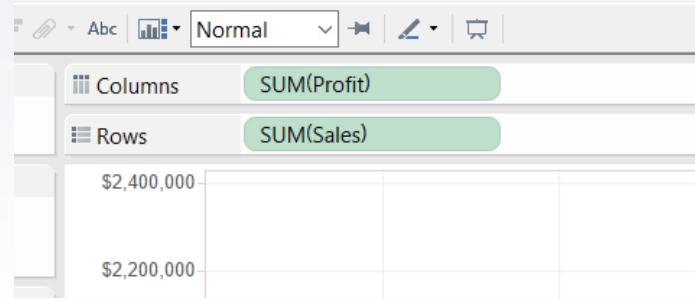
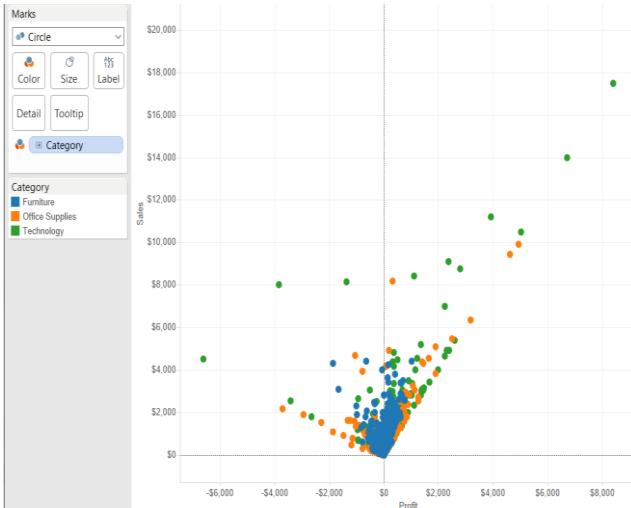
And adding Profit to color shelf



Scatter Plot

The scatter plot is a visualization used to compare two measures

Adding the Category dimension to the Color mark card



Adding Category to the Shape mark card.



Pie Chart

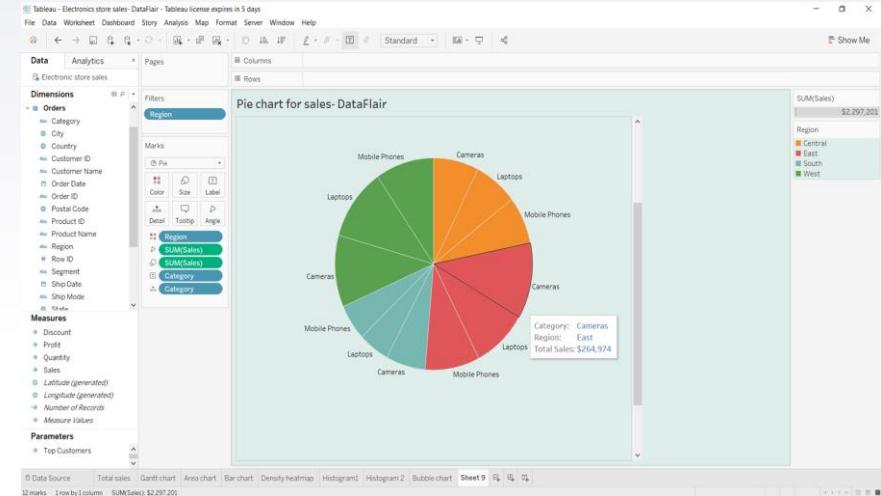
Connect to the Sample - Superstore data source

Drag the Sales measure to Columns and drag the Sub-Category dimension to Rows.

Tableau aggregates the Sales measure as a sum
Click Show Me on the toolbar, then select the pie chart type

Resize it as per your convenience

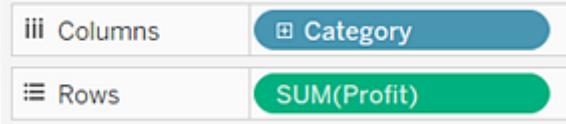
To add labels, drag the Category dimension from the Data pane to Label on the Marks card.



Mark type:	Pie
Color:	Dimension
Angle:	Measure

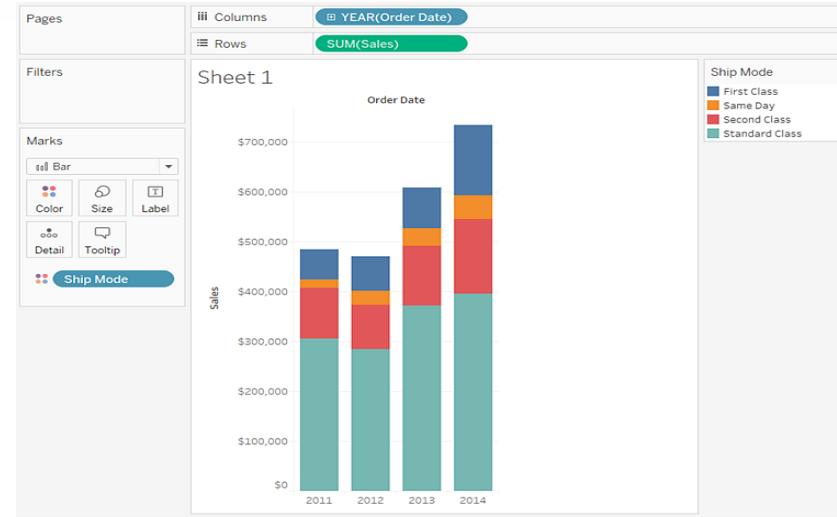
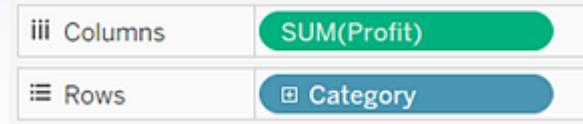
Bar Chart

Creates Vertical Bars



Connect to the dataset
Drag the Order Date dimension to Columns and drag the Sales measure to Rows.
On the Marks card, select Bar from the drop-down list.
Drag the Ship Mode dimension to Color on the Marks card.

Creates Horizontal Bars

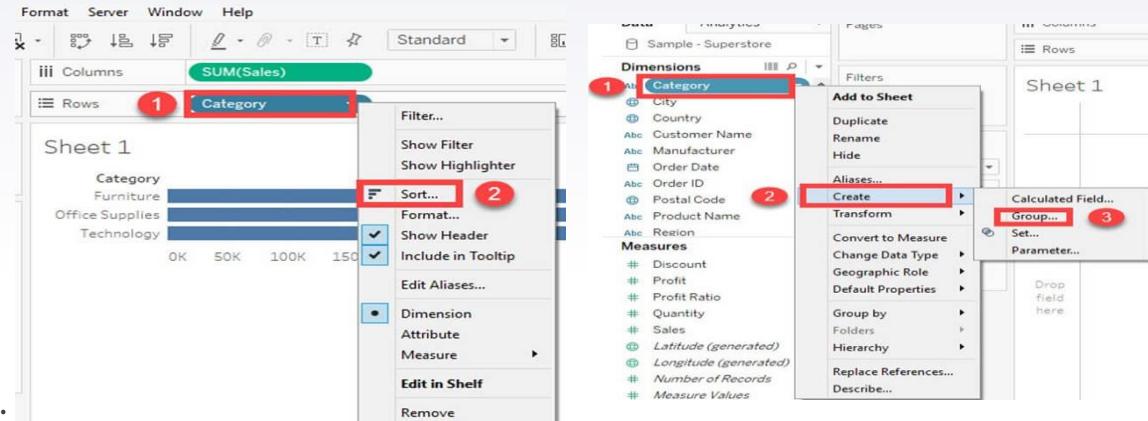


Sorting, Grouping & Sets

Sorting - Display your data in ascending or descending order based on other fields or custom formulas using computed sorts. Or you can manually sort your data to display in whatever order you choose.

Groups - Combine dimension members into higher level categories.

Sets - Create a custom field based on existing dimensions that can be used to encode the view with multiple dimension members across varying dimension levels.



Cross-tabs(Pivot Tables)

CrossTab in Tableau is a type of chart that is also known as the text table or pivot table. Cross tab includes one or more measures along with the dimensions for the visualization. It also supports calculated fields for dynamic value representation.

The diagram illustrates the transformation of a Cross-tab (Pivot Table) from a wide format to a long format. On the left, a wide-format Cross-tab is shown with columns for Quarter, Samsung, Nokia, and Apple. An orange box highlights the data for the Apple column across all quarters. An arrow points from this table to a long-format Pivot Table on the right, which lists each quarter and its corresponding Apple value in a single column.

Quarter	Samsung	Nokia	Apple
Q1 '12	89.2800	83.1600	33.1200
Q2 '12	90.4300	83.4200	28.9400
Q3 '12	97.9600	82.3000	24.6200
Q4 '12	106.9600	85.0500	43.4600
Q1 '13	100.6600	63.2200	38.3300
Q2 '13	107.5300	60.9500	31.9000
Q3 '13	117.0500	63.0500	30.3300
Q4 '13	119.2100	63.5800	50.2200

Quarter	Pivot Field Names	Pivot Field Values
Q4 '12	Apple	43.460
Q1 '13	Apple	38.330
Q2 '13	Apple	31.900
Q3 '13	Apple	30.330
Q4 '13	Apple	50.220
Q1 '10	Nokia	110.110
Q2 '10	Nokia	111.470
Q3 '10	Nokia	117.460
Q4 '10	Nokia	122.280

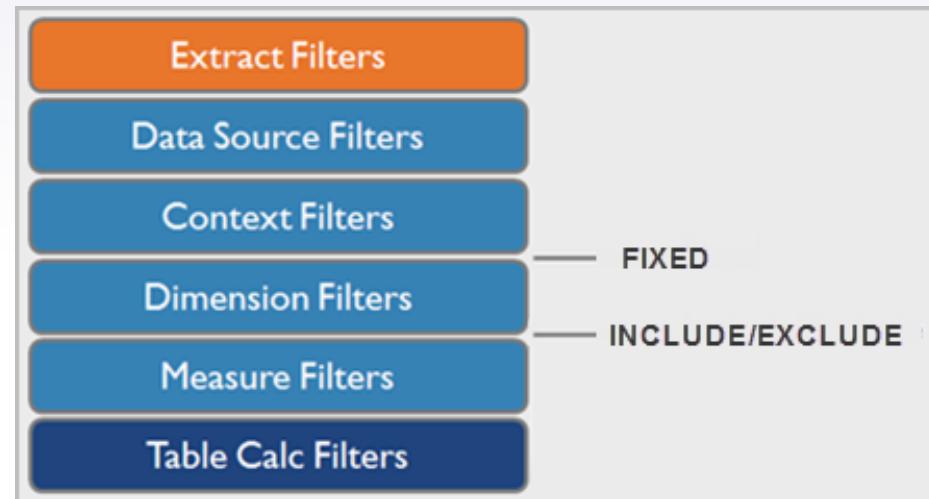
Cross-tabs(Pivot Tables)

Abc Data Quarter	# Data Samsung	# Data Nokia	# Data Apple	
Q4 '11	99.8300	111.7000	35.46	
Q1 '12	89.2800	83.1600	33.12	
Q2 '12	90.4300	83.4200	28.94	
Q3 '12	97.9600	82.3000	24.62	
Q4 '12	106.9600	85.0500	43.46	
Q1 '13	100.6600	63.2200	38.3300	
Q2 '13	107.5300	60.9500	31.9000	
Q3 '13	117.0500	63.0500	30.3300	
Q4 '13	119.2100	63.5800	50.2200	

Abc Data Quarter	# Data LG	Abc Data Pivot Field Values
Q1 '10	27.19	8.270
Q2 '10	29.37	8.740
Q3 '10	27.48	13.480
Q4 '10	30.12	16.010
Q1 '11	24.00	16.880
Q2 '11	24.42	19.630
Q3 '11	21.0100	Apple
Q4 '11	16.9400	Apple

Level of Detail(LOD) Expression

Level of Detail expressions (also known as LOD expressions) allow you to compute values at the data source level and the visualization level. They can be performed at a more granular level (INCLUDE), a less granular level (EXCLUDE), or an entirely independent level (FIXED).



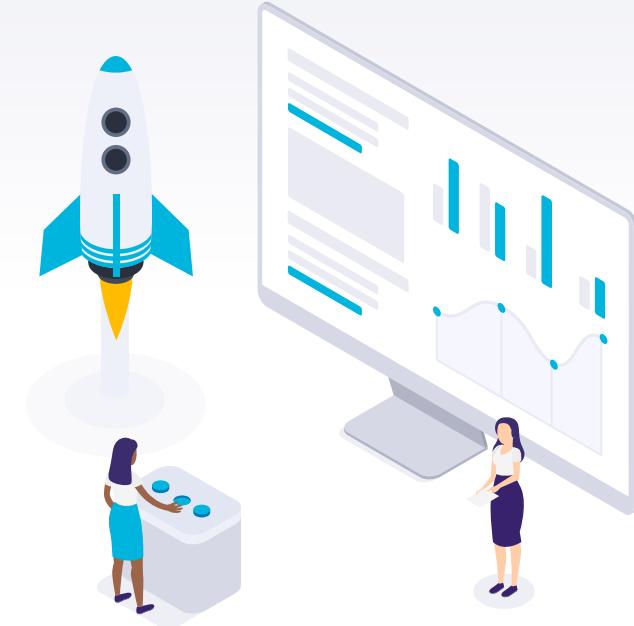
Level of Detail(LOD) Expression

- High Level

- Leave out the details
 - Summary
 - Less granular
 - More aggregated

- Low Level

- Include the details
 - More details
 - More granular
 - Less aggregated



Level of Detail(LOD) Expression

Types of LOD Expressions:

FIXED → Independent of view

INCLUDE → minus from the view

EXCLUDE → add to the view

Syntax: {TYPE [Dimension List]: AGGREGATE}



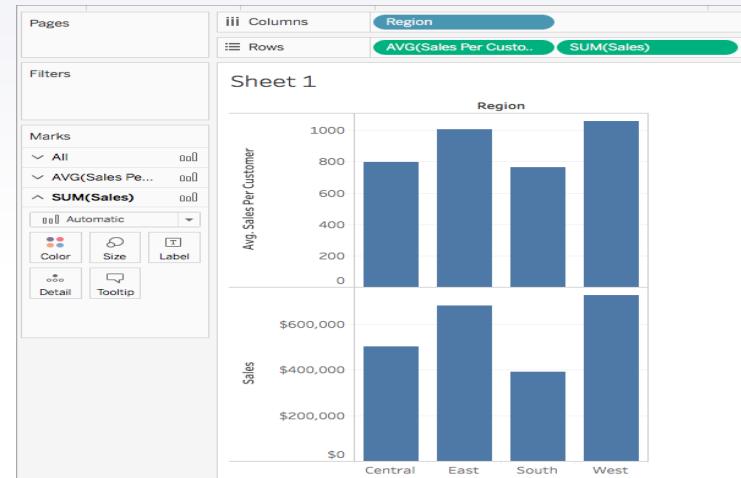
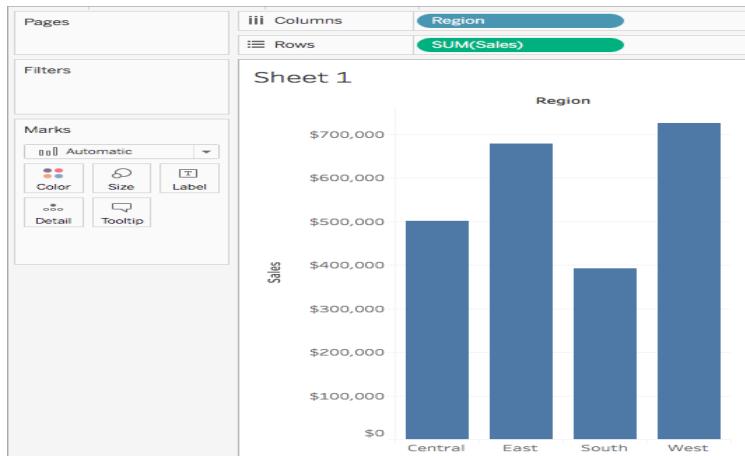
Level of Detail(LOD) Expression

Step 1: Set up the Visualization

Step 2: Create the LOD expression(using calculated field)

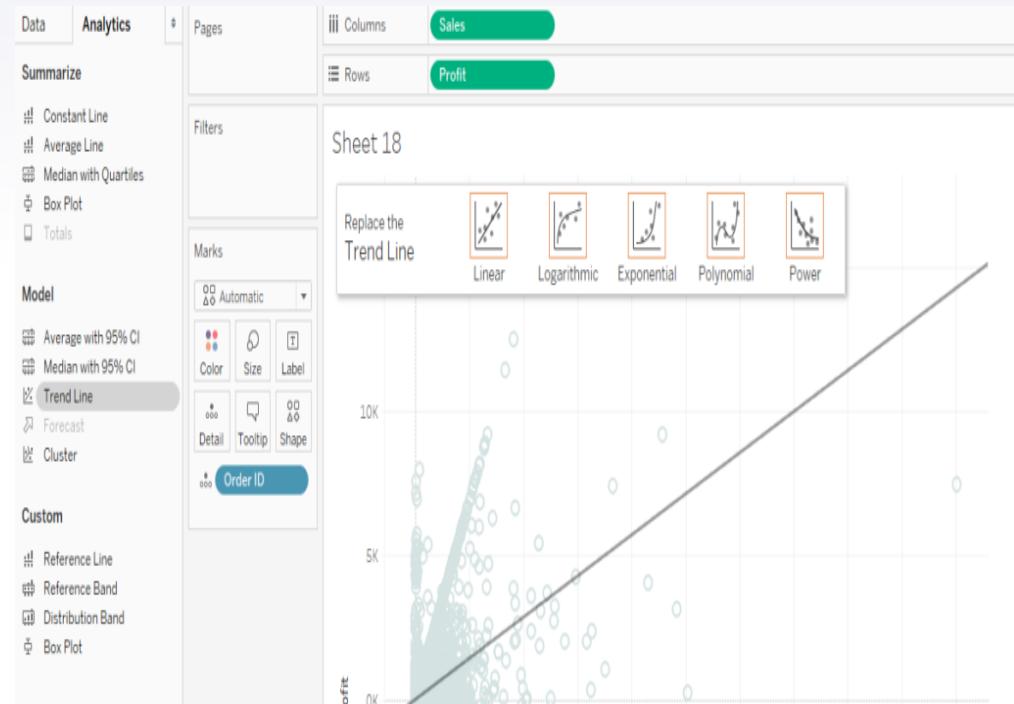
Ex: { INCLUDE [Customer Name] : SUM([Sales]) }

Step 3: Use the LOD expression in the visualization



Statistics and Trend Line

Trend lines or lines of best fit can be used to predict the continuation of a trend and help to identify the correlation between two variables by mapping the trend of both at the same time.



Calculated Fields

CONTAINS:

```
IF CONTAINS([First Name], 'jit') THEN 'Contains Characters'  
ELSE 'Doesnt contain characters'  
END
```

SPLIT:

```
TRIM( SPLIT( [Email], "@" , 1 ) )
```

ENDSWITH/STARTSWITH

CONCAT: str1 + str2

LOWER/UPPER

MAKEDATE

DATEDIFF

Calculated Fields

Use Cases:

- To segment data
- To convert the data type of a field, such as converting a string to a date.
- To aggregate data
- To filter results
- To calculate ratios

CONTAINS(string, substring)

`CONTAINS("InterWorks", "Works") = TRUE`

REPLACE(string, substring, replacement)

`REPLACE("calculation", "ion", "ed") = "calculated"`

FIND(string, substring, [start])

`FIND("Oklahoma", "la") = 3`

Logical Statements

Calculated Field [IIF Certificate Formula]

Name: IIF Certificate Formula

Formula:

```
IIF([Letter Grade (Nulls)]="A","Create Certificate","Do Nothing")
```

The calculation is valid.

Fields: All

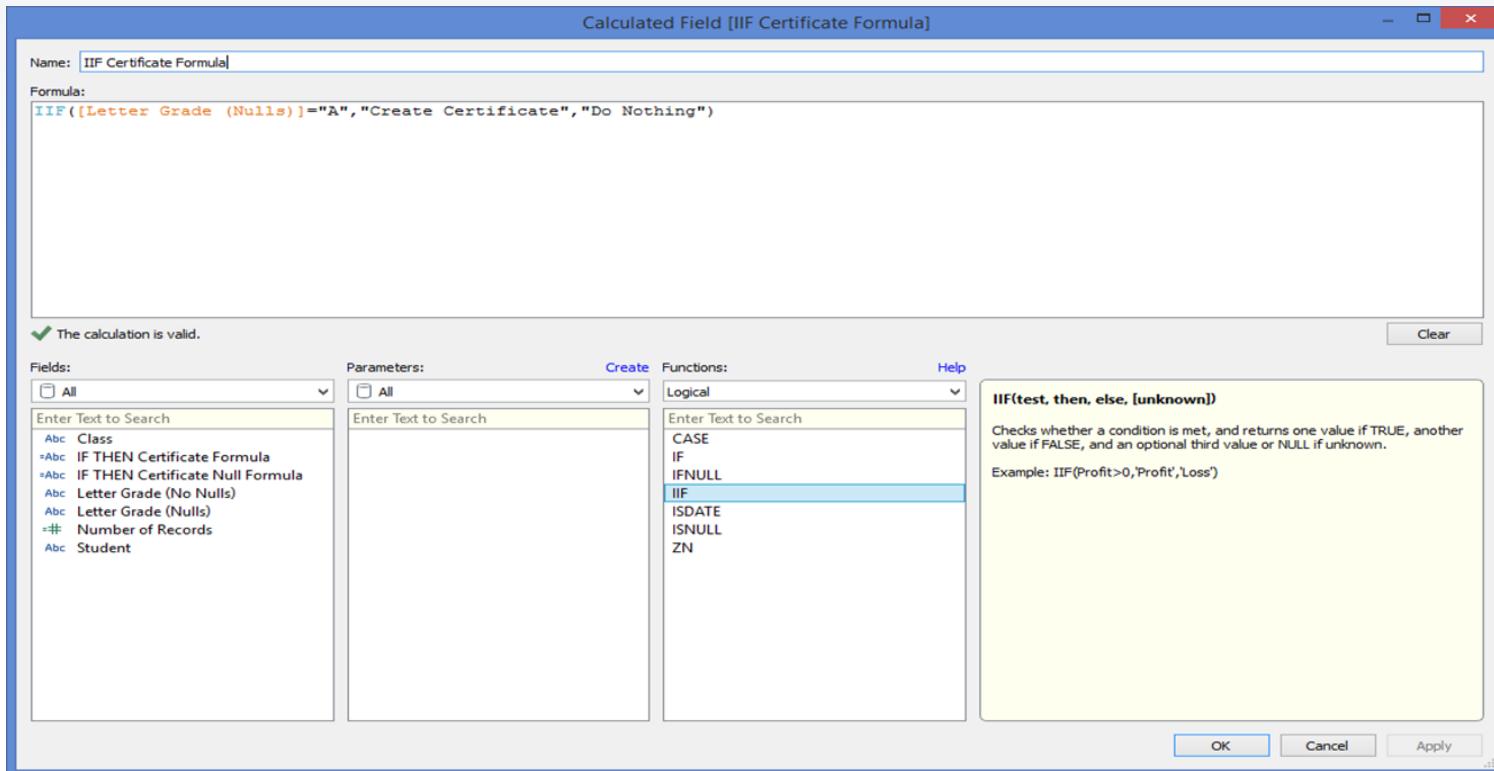
Parameters: All

Functions: Logical

IIF

IIF(test, then, else, [unknown])
Checks whether a condition is met, and returns one value if TRUE, another value if FALSE, and an optional third value or NULL if unknown.
Example: IIF(Profit>0,'Profit','Loss')

OK Cancel Apply



Formatting

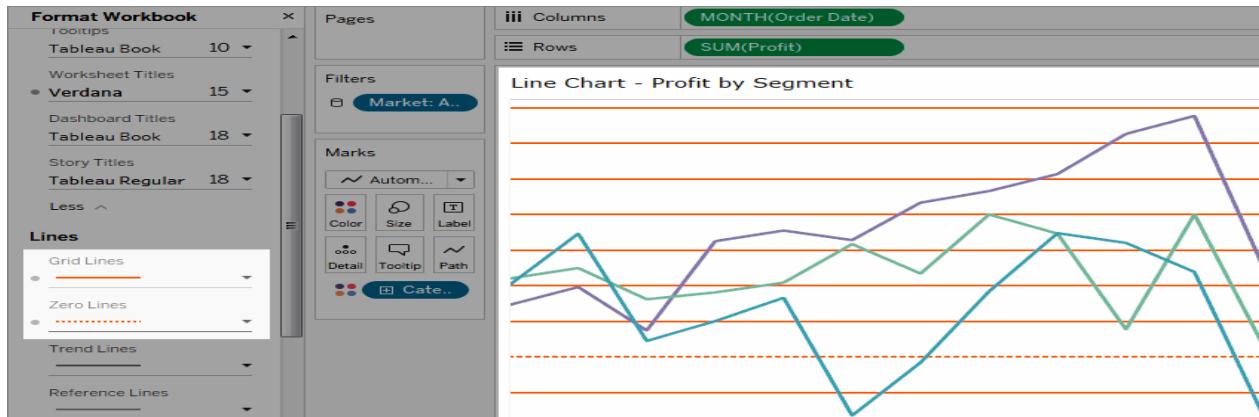
Formatting is an important part of both your analysis and presentation. You can format almost everything you see on a worksheet including the fonts, shading, alignment, borders, and graph lines.

Tableau also allows you to format individual parts of the view as well. For example, you can format specific fields, resize the cells and the table, and edit individual axes.

Format at the Workbook Level

On the Format menu, select Workbook.

The Format Workbook pane replaces the Data pane on the left and provides a series of drop-down lists where you can change all line settings in a workbook



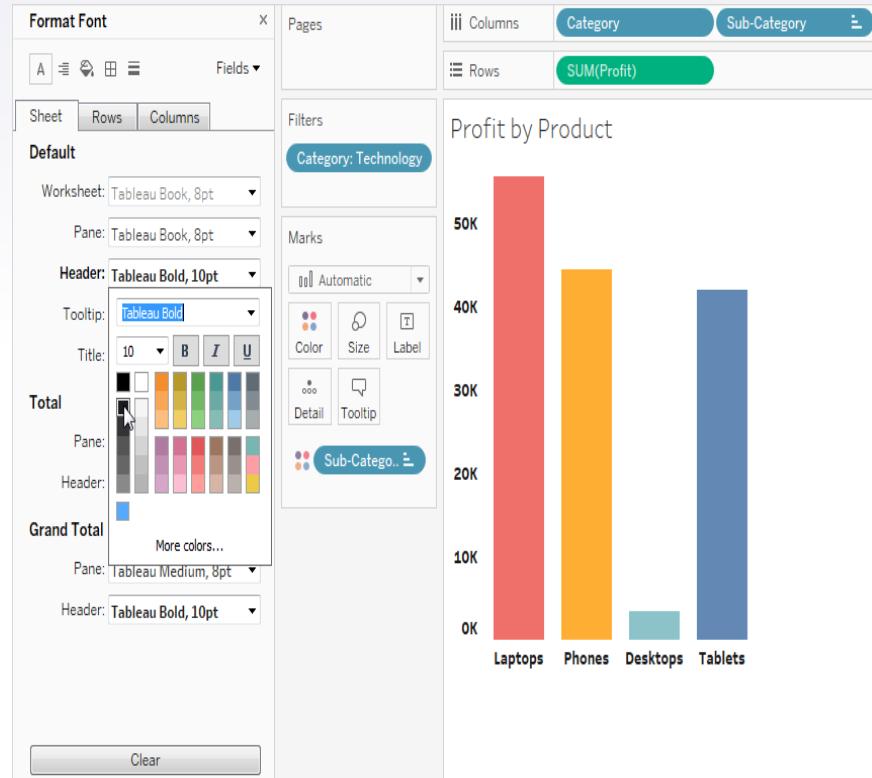
Formatting

Format at the Worksheet Level

Display a worksheet or dashboard.

From the Format menu, choose the part of the view that you want to format, such as Font, Borders, or Filters

- Format Font
- Format Text Alignment
- Format Shading
- Format Borders
- Format Lines
- Format Highlighters
- Format a Filter Card
- Format a Parameter Control Card



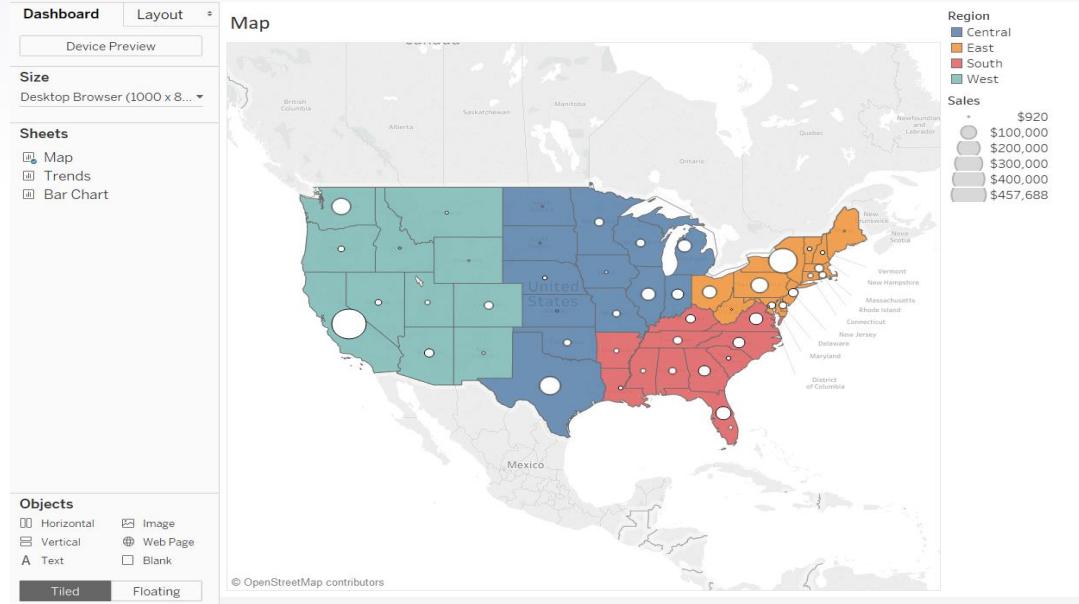
Dashboarding

The screenshot shows a dashboard editor interface with the following components:

- Top Bar:** Contains "Dashboard" and "Layout" tabs.
- Device Preview:** A small preview window.
- Size:** Set to "min 420x560 - max 650x860".
- Sheets:** A list of available visualizations:
 - Map
 - Trends
 - Bar Chart
- Canvas:** A large white area with the placeholder text "Drop sheets here".
- Bottom Bar:** Contains "Objects" and "Tiled" (selected) and "Floating" buttons.
- Checkboxes:** Options for "Image", "Web Page", and "Blank".
- Text Input:** "Horizontal", "Vertical", "Text", and "Blank".
- Show dashboard title:** A checkbox.

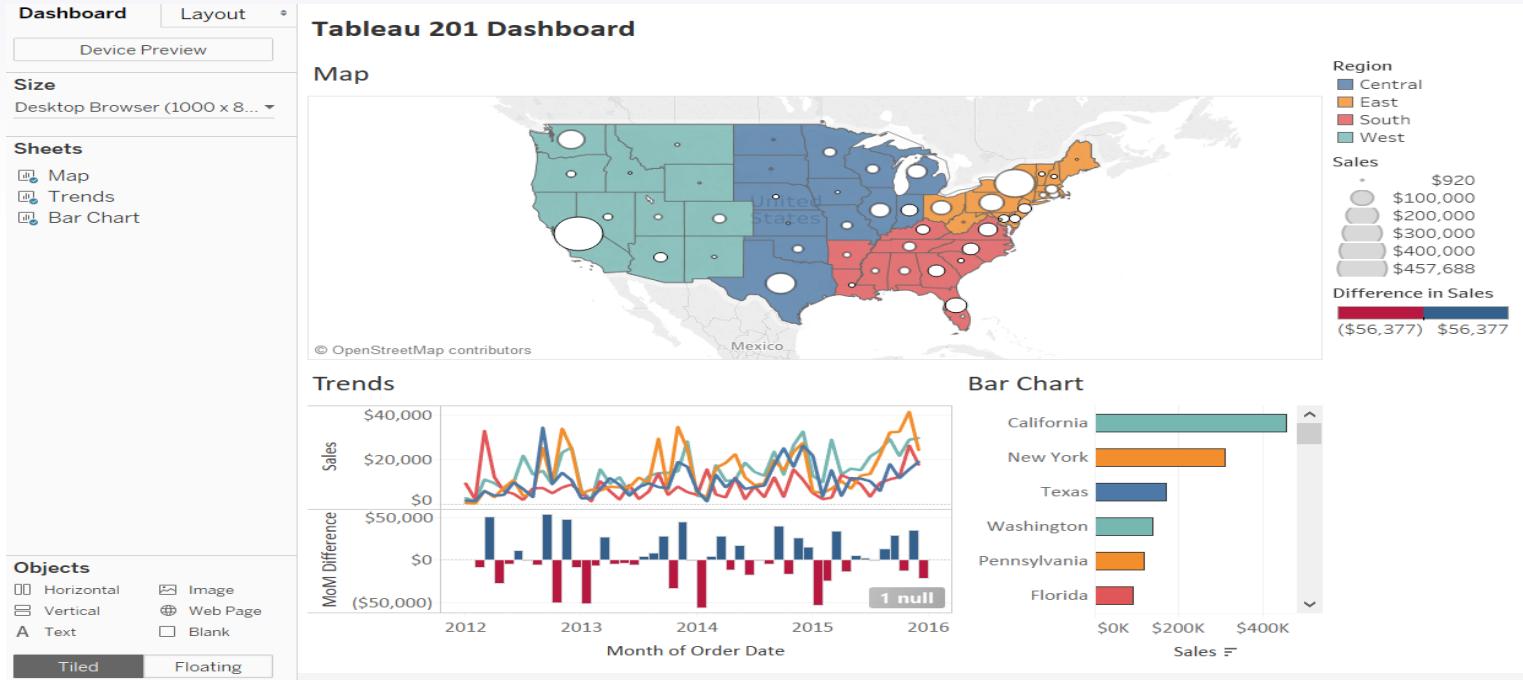
Combining multiple visualizations into a dashboard

Elements and Options



- Dashboard and Layout tabs
- Device Preview Button
- Size
- Sheets
- Objects
- Tiled or Floating

Complete Dashboard



Sharing Tableau Dashboard

Sharing Tableau Dashboards

After you've created a dashboard in Tableau, there are several ways the dashboard can be shared for consumption.

Packaged Workbooks

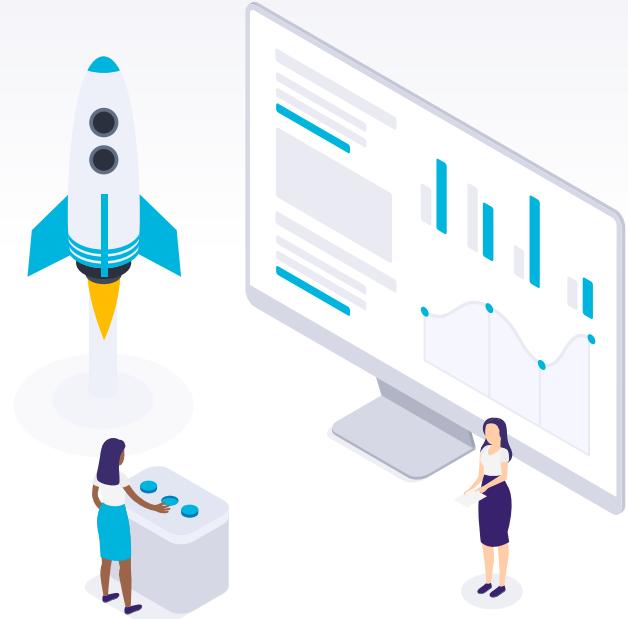
To package a workbook, navigate to File in the top navigation and click "Export Packaged Workbook...".

Tableau Public

To publish a dashboard from Tableau Desktop to Tableau Public, navigate to "Server", hover over "Tableau Public", and choose "Save to Tableau Public As...".

Tableau Server

To publish a workbook to Tableau Server, navigate to "Server" in the top navigation, and choose "Publish Workbook".





Technical Details

