

Example: Dataset used: Tableau Joins File: Contains 3 sheets: Demographics, Salary, Job Title**1. Connecting to Excel Files in Tableau:**

- Open Tableau and click on **Connect** in the left pane.
- Under **To a File**, choose **Microsoft Excel**.
- Browse and select your Excel file (Tableau Joins File.xlsx).
- Tableau will display the sheets from the Excel file in the Data Source tab.
- Drag the relevant sheets to the workspace.

2. Tableau Joins File.xlsx Dataset: has three Excel sheets

- **Demographics:**
 - ✓ EmployeeID
 - ✓ NameofEmployee
 - ✓ EmployeeAge
 - ✓ EmployeeGender
- **Salary:**
 - ✓ EmployeeID
 - ✓ EmployeeSalary
- **Job Title:**
 - ✓ EmployeeID
 - ✓ EmployeeName
 - ✓ JobTitle

These sheets have a relationship based on the EmployeeID, and you can join them using this field.

Drag and drop Demographics table- Right click-select open- that allows you to do following types of joins.

Now Drag and drop Salary table - That allows you to do join of your choice.

3. Types of Joins in Tableau:

Once both tables are in the Data Source tab, Tableau automatically suggests an inner join, but you can modify the type of join depending on the scenario.

a. Inner Join:

- **Description:** Returns only records where there is a match in both tables.
 - ✓ **How to Create in Tableau:**
 - Drag Demographics and Salary sheets into the canvas.
 - Tableau automatically detects the common field (EmployeeID). If not, manually select it.
 - Choose **Inner Join** in the **Join Type** options.
 - Result: You will see only employees whose employee id matches in both Demographics and Salary table.

Demographics is made of 2 tables. @

Demographics Salary

Join

Inner Left Right Full Outer

Data Source Salary

Employee ID EmployeeID (Salary)

Add new join clause

Demographics 6 fields 7 rows

Name	Demographics	Salary
Employee ID	EmployeeID	EmployeeID (Salary)
Name of Employee	Name of Employee	
Employee Age	Employee Age	
Employee Gender	Employee Gender	
EmployeeID (Salary)		EmployeeID (Salary)
Employee Salary		Employee Salary

Employee ID	Name of Employee	Employee Age	Employee Gender	EmployeeID (Salary)	Employee Salary
1001	Jim Halpert	35	Male	1001	45,000
1002	Pam Beasley	35	Female	1002	35,000
1003	Dwight Schrute	37	Male	1003	65,000
1004	Toby Flenderson	38	Male	1004	38,500
1005	Angela Martin	34	Female	1005	45,000
1006	Michael Scott	40	Male	1006	70,000
1007	Meredith Palmer	43	Female	1007	40,000

b. Left Join:

- a. **Description:** Returns all records from the left table (Demographics), and matched records from the right table (salary). If there's no match, NULL values are returned for fields from the right table.

How to Create in Tableau:

- b. In the join settings, select **Left Join**.

Result: All employees will be returned, even if data missing in Salary. Salary

Demographics is made of 2 tables. @

Demographics Salary

Join

Inner Left Right Full Outer

Data Source Salary

Employee ID EmployeeID (Salary)

Add new join clause

Demographics 6 fields 10 rows

Name	Demographics	Salary
Employee ID	EmployeeID	EmployeeID (Salary)
Name of Employee	Name of Employee	
Employee Age	Employee Age	
Employee Gender	Employee Gender	
EmployeeID (Salary)		EmployeeID (Salary)
Employee Salary		Employee Salary

Employee ID	Name of Employee	Employee Age	Employee Gender	EmployeeID (Salary)	Employee Salary
1001	Jim Halpert	35	Male	1001	45,000
1002	Pam Beasley	35	Female	1002	35,000
1003	Dwight Schrute	37	Male	1003	65,000
1004	Toby Flenderson	38	Male	1004	38,500
1005	Angela Martin	34	Female	1005	45,000
1006	Michael Scott	40	Male	1006	70,000
1007	Meredith Palmer	43	Female	1007	40,000
1008	Stanley Hudson	49	Male	null	null
1009	Kevin Malone	37	Male	null	null
null	Ryan Howard	31	Male	null	null

c. Right Join:

- **Description:** Returns all records from the right table (Salary), and matched records from the left table (Demographics). If there's no match, NULL values are returned for fields from the left table.

How to Create in Tableau:

- Select **Right Join**.

Result: You will see all salary, even if they don't

Demographics+ (Tableau Joins File)

Demographics is made of 2 tables. ☒ Demographics ☐ Salary

Join: Inner, Left, **Right**, Full Outer

Data Source: Employee ID = EmployeeID (Salary)

Fields:

Type	Field Name	Physical Table	Remote FI...
Employee ID	Employee ID	Demographics	EmployeeID
Name of Employee	Name of Employee	Demographics	Name of Em...
Employee Age	Employee Age	Demographics	EmployeeAge
Employee Gender	Employee Gender	Demographics	EmployeeG...
EmployeeID (Salary)	EmployeeID (Salary)	Salary	EmployeeID...
Employee Salary	Employee Salary	Salary	EmployeeS...

Demographics Employee ID	Demographics Name of Employee	Demographics Employee Age	Demographics Employee Gender	Salary EmployeeID (Salary)	Salary Employee Salary
1001	Jim Halpert	35	Male	1001	45,000
1002	Pam Beasley	35	Female	1002	35,000
1003	Dwight Schrute	37	Male	1003	65,000
1004	Toby Flenderson	38	Male	1004	38,500
1005	Angela Martin	34	Female	1005	45,000
1006	Michael Scott	40	Male	1006	70,000
1007	Meredith Palmer	43	Female	1007	40,000
null	null	null	null	1010	25,000

d. Full Outer Join:

- **Description:** Returns all records when there is a match in either the left (Demographics) or right (JobTitle) table. If there's no match, NULL values are returned for the missing side.

✓How to Create in Tableau:

- Select **Full Outer Join**.

Result: You will see all employees and all salary, even if they don't have a match in the other table. NULL values will appear where there's no corresponding

Demographics+ (Tableau Joins File)

Demographics is made of 2 tables. ☐ Demographics ☒ Salary

Join: Inner, Left, Right, **Full Outer**

Data Source: Employee ID = EmployeeID (Salary)

Fields:

Type	Field Name	Physical Table	Remote FI...
Employee ID	Employee ID	Demographics	EmployeeID
Name of Employee	Name of Employee	Demographics	Name of Em...
Employee Age	Employee Age	Demographics	EmployeeAge
Employee Gender	Employee Gender	Demographics	EmployeeG...
EmployeeID (Salary)	EmployeeID (Salary)	Salary	EmployeeID...
Employee Salary	Employee Salary	Salary	EmployeeS...

Demographics Employee ID	Demographics Name of Employee	Demographics Employee Age	Demographics Employee Gender	Salary EmployeeID (Salary)	Salary Employee Salary
1001	Jim Halpert	35	Male	1001	45,000
1002	Pam Beasley	35	Female	1002	35,000
1003	Dwight Schrute	37	Male	1003	65,000
1004	Toby Flenderson	38	Male	1004	38,500
1005	Angela Martin	34	Female	1005	45,000
1006	Michael Scott	40	Male	1006	70,000
1007	Meredith Palmer	43	Female	1007	40,000
1008	Stanley Hudson	49	Male	null	null
1009	Kevin Malone	37	Male	null	null
null	Ryan Howard	31	Male	null	null
null	null	null	null	1010	25,000

4. Creating a Visualization Based on Joins:

After performing the joins, you can build different visualizations. Press on Sheet 1:
For example:

Bar Chart: Number of employees and their salary

- Drag NameofEmployee to **Columns**.
- Drag EmployeeSalary to **Rows**.
- This chart will display the number of employees and their salary based on the type of join.
- Sort it in decending
- Drag EmployeeSalary to Marks - Select color Color, Label.

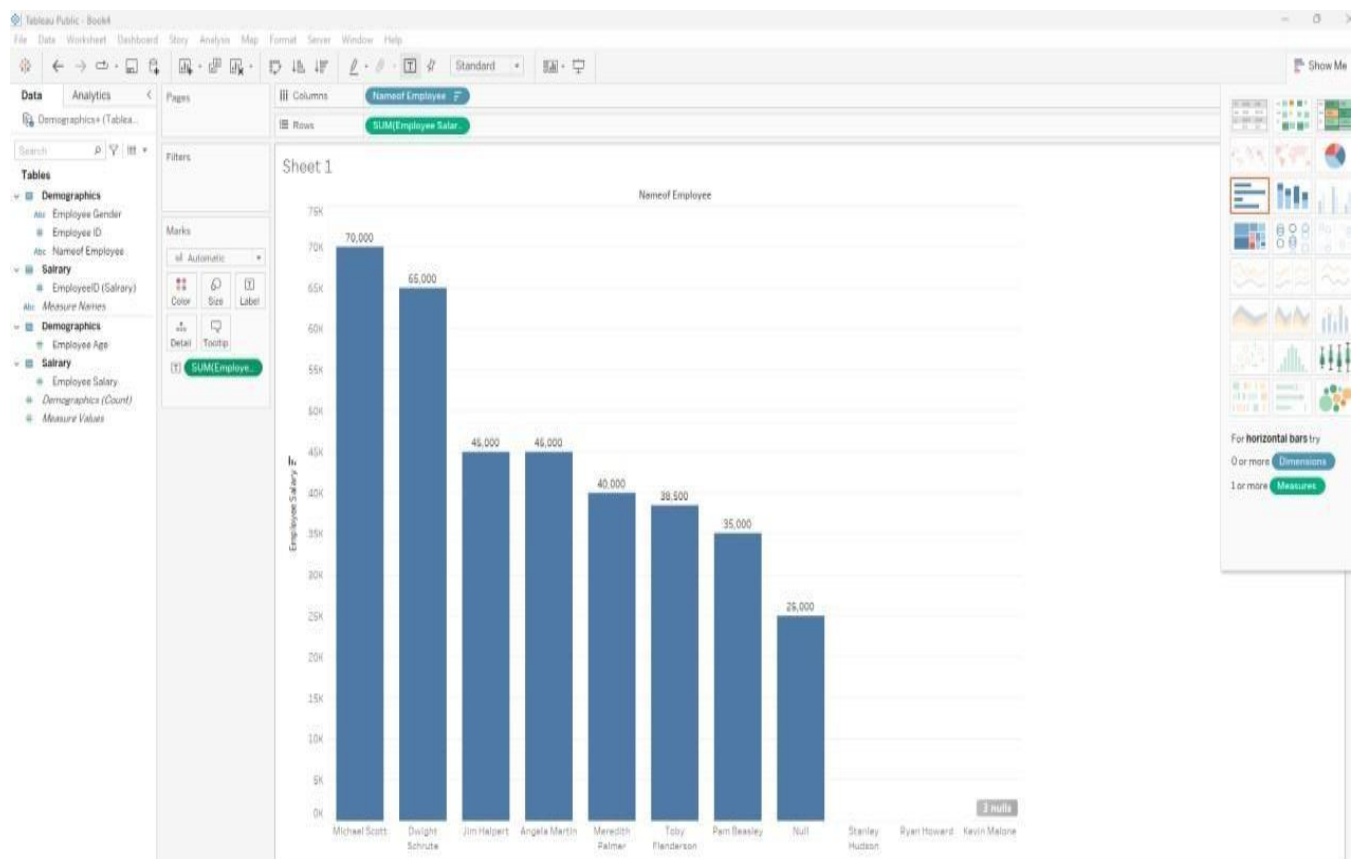
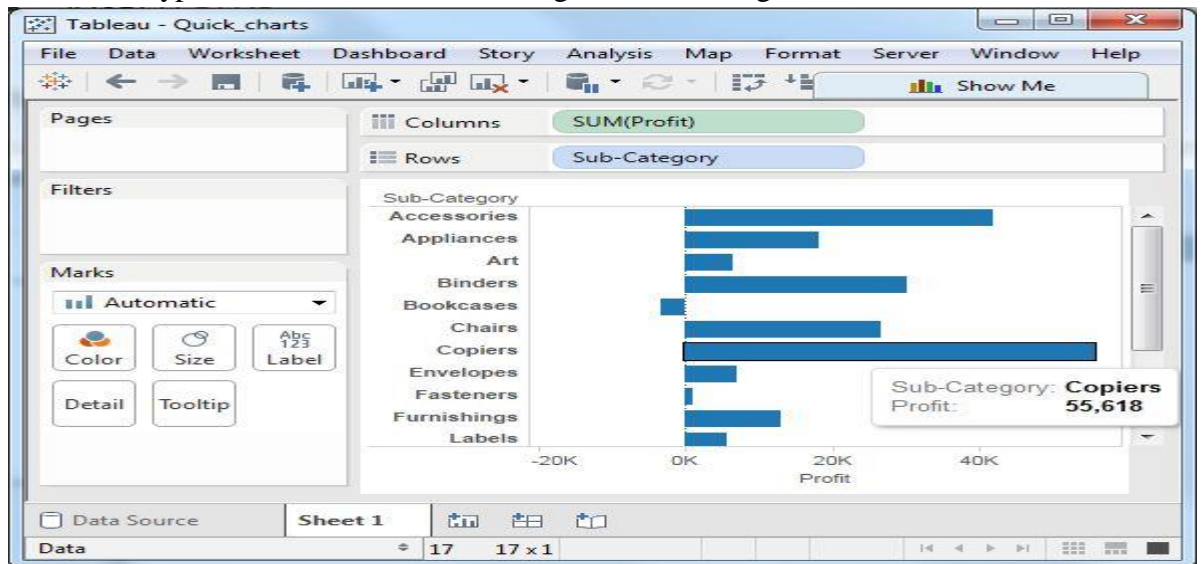


Tableau - Bar Chart

In Tableau, various types of bar charts can be created by using a dimension and a measure.

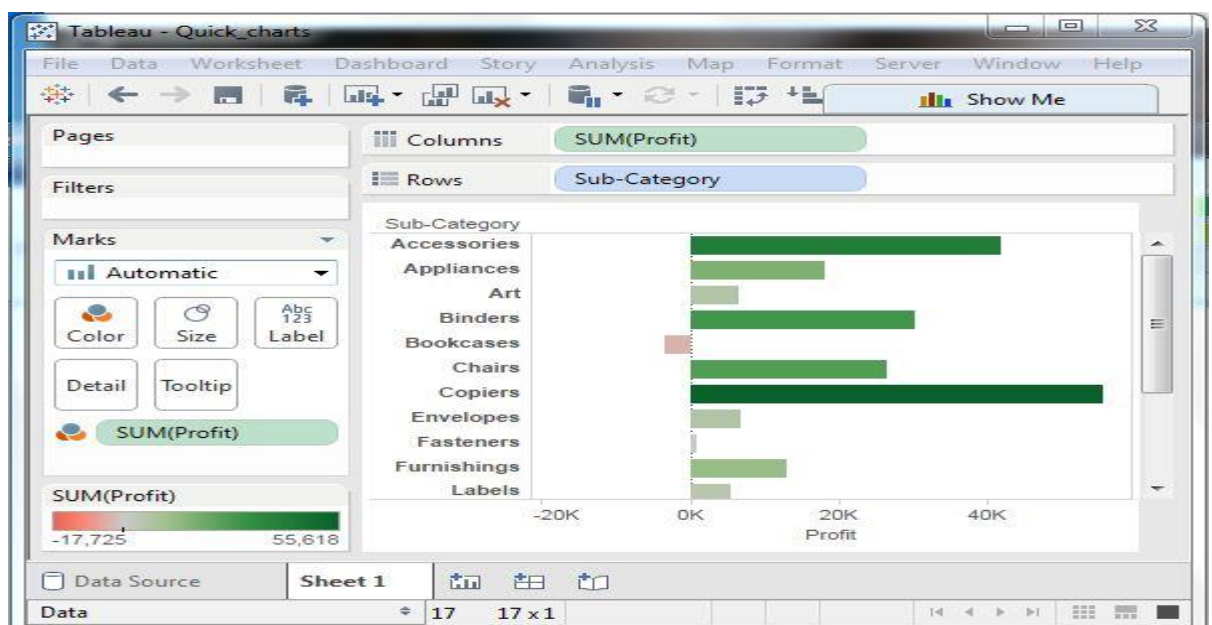
Simple Bar Chart

From the Sample-Superstore, choose the dimension, take profit to the columns shelf and Sub-Category to the rows shelf. It automatically produces a horizontal bar chart as shown in the following screenshot. In case, it does not, you can choose the chart type from the Show Me tool to get the following result.



Bar Chart with Color Range

You can apply colors to the bars based on their ranges. The longer bars get darker shades and the smaller bars get the lighter shades. To do this, drag the profit field to the color palette under the Marks Pane. Also note that, it produces a different color for negative bars.



Stacked Bar Chart

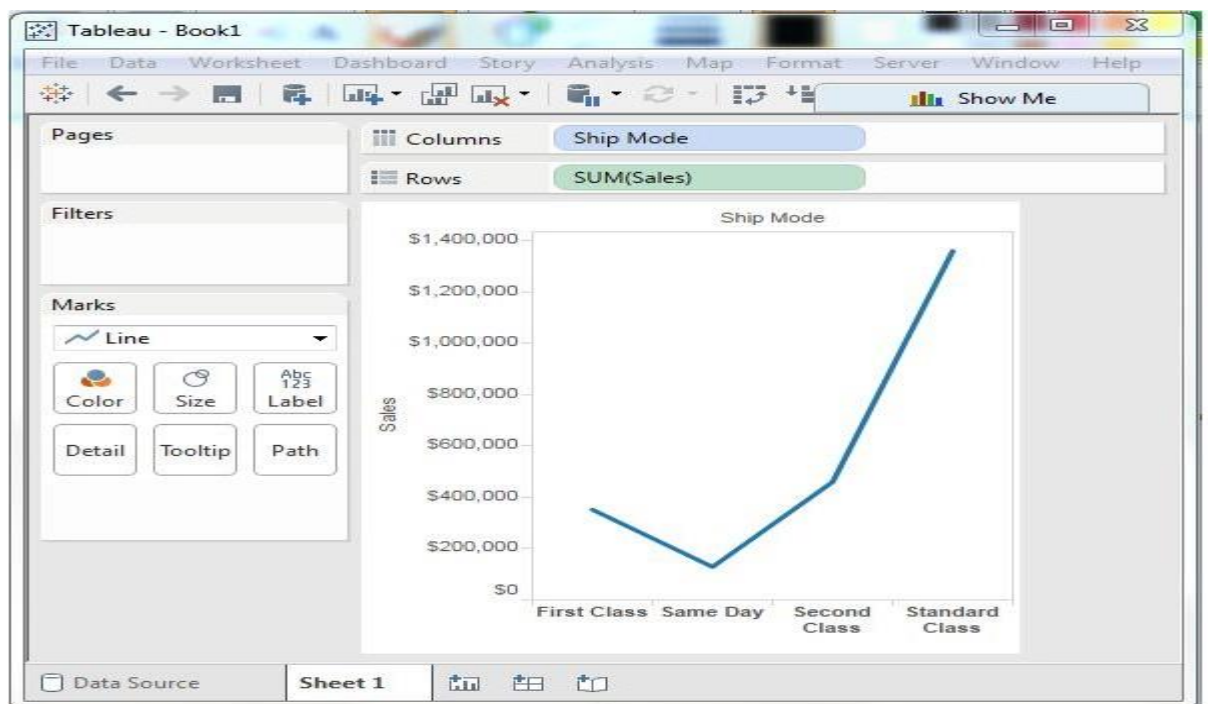
You can add another dimension to the above bar chart to produce a stacked bar chart, which shows different colors in each bar. Drag the dimension field named segment to the Marks pane and drop it in colors. The following chart appears which shows the distribution of each segment in each bar.



Tableau - Line Chart

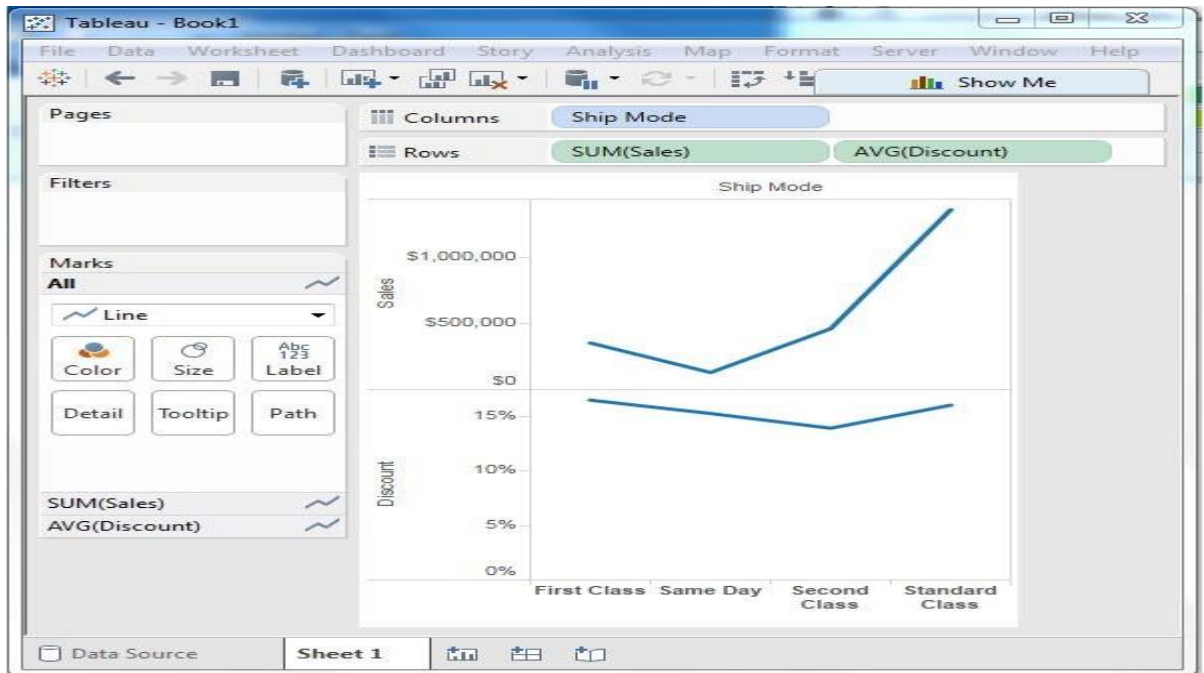
Simple Line Chart

Choose one dimension and one measure to create a simple line chart. Drag the dimension Ship Mode to Columns Shelf and Sales to the Rows shelf. Choose the Line chart from the Marks card. You will get the following line chart, which shows the variation of Sales for different Ship modes.



Multiple Measure Line Chart

You can use one dimension with two or more measures in a line chart. This will produce multiple line charts, each in one pane. Each pane represents the variation of the dimension with one of the measures.



Line Chart with Label

Each of the points making the line chart can be labeled to make the values of the measure visible. In this case, drop another measure Profit Ratio into the labels pane in the Marks card. Choose average as the aggregation and you will get the following chart showing the labels.

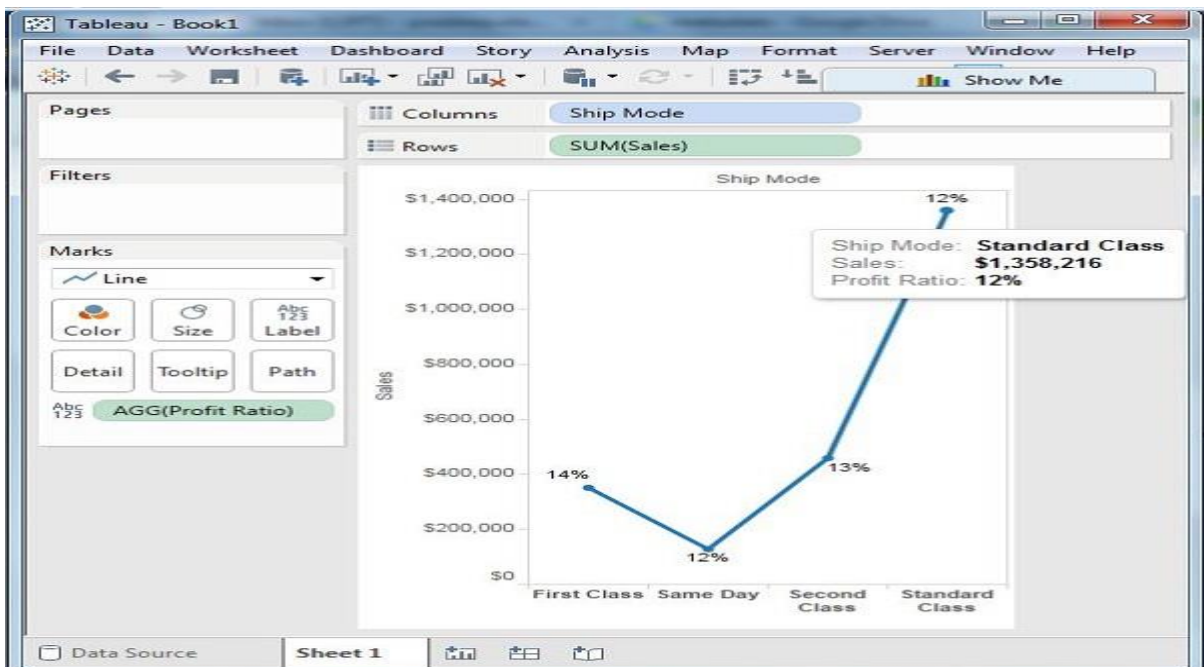


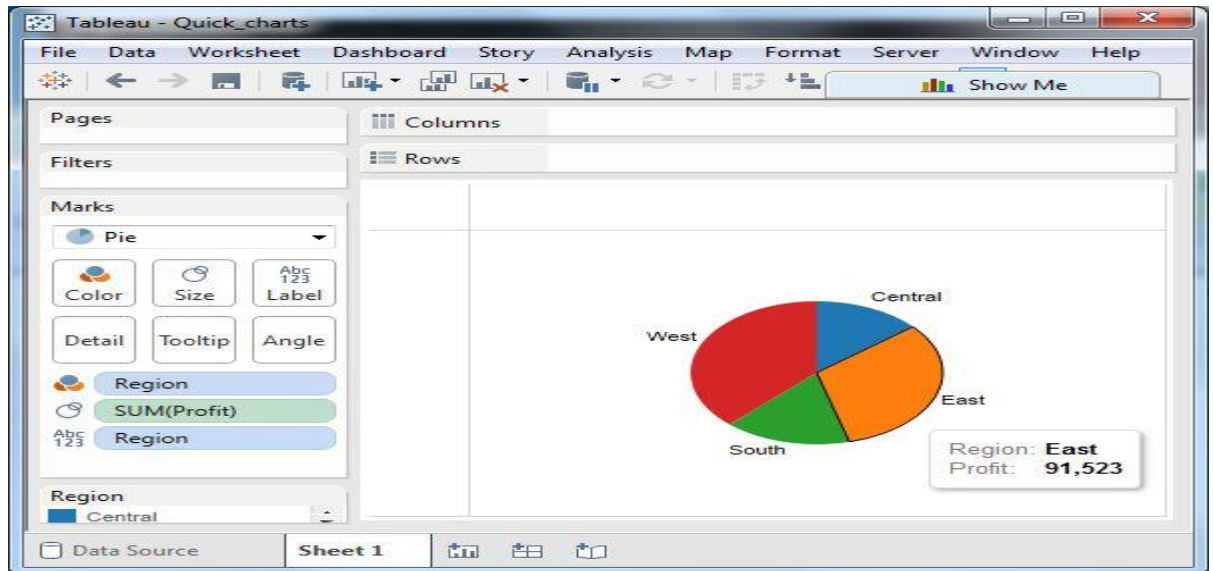
Tableau - Pie Chart

A pie chart represents data as slices of a circle with different sizes and colors. The slices are labeled and

the numbers corresponding to each slice is also represented in the chart.

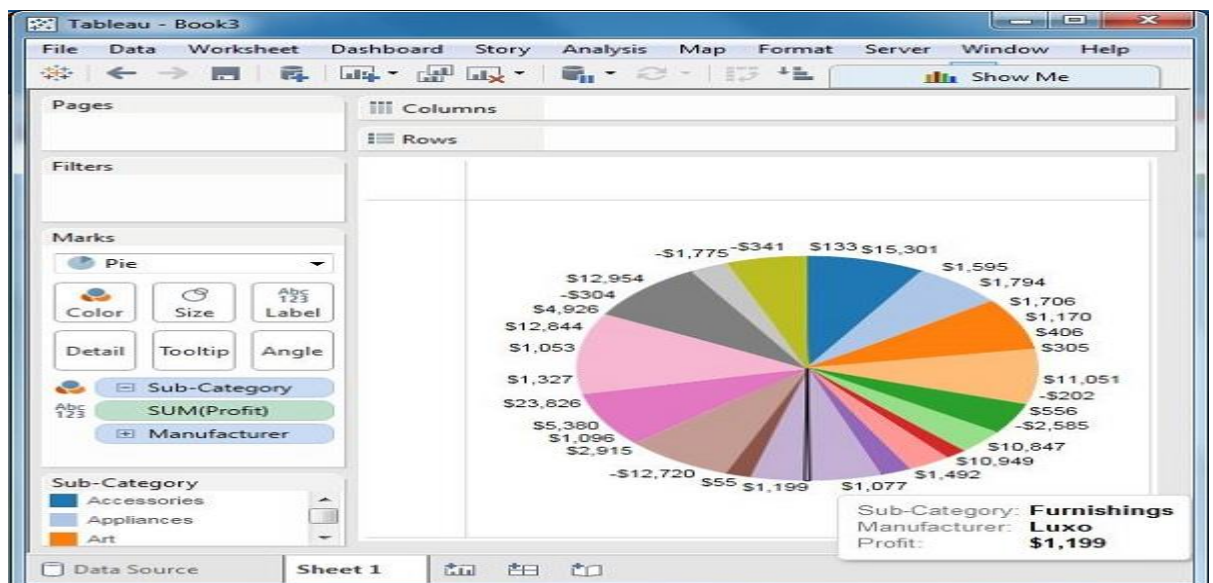
Simple Pie Chart

Choose one dimension and one measure to create a simple pie chart. For example, take the dimension named region with the measure named profit. Drop the Region dimension in the colors and label marks. Drop the Profit measure into the size mark. Choose the chart type as Pie. The following chart appears which shows the 4 regions in different colors.



Drill-Down Pie Chart

You can choose a dimension with hierarchy and as you go deeper into the hierarchy, the chart changes reflect the level of the dimension chosen. In the following example, we take the dimension Sub-Category which has two more levels - Manufacturer and Product Name. Take the measure profit and drop it to the Labels mark. The following pie chart appears which shows the values for each slice.



We get the manufacturer as the label and the above pie chart changes to the following one.

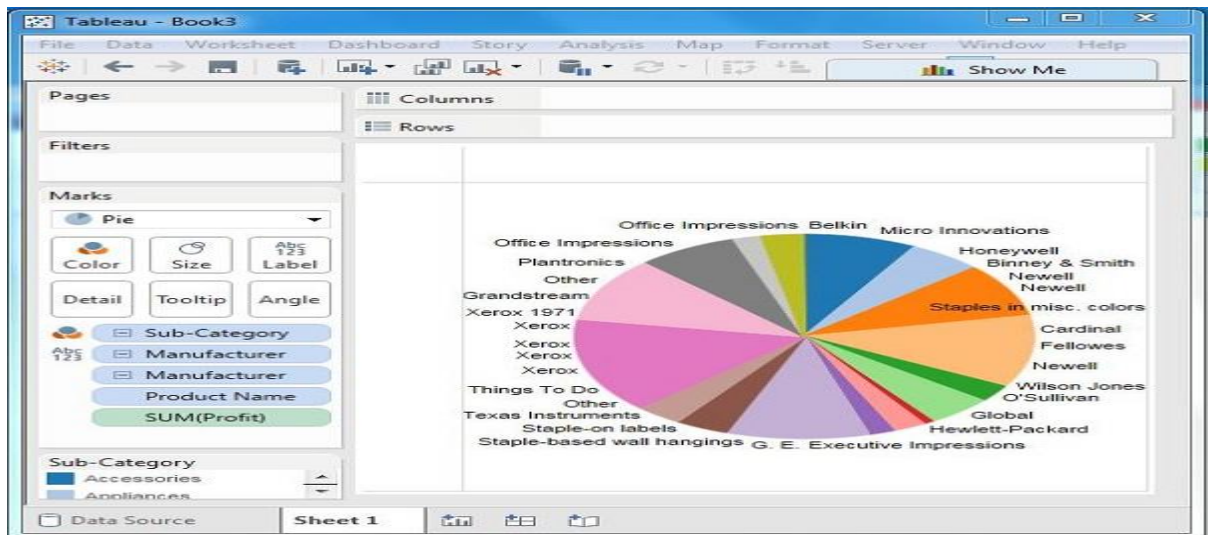


Tableau - Crosstab

A crosstab chart in Tableau is also called a Text table, which shows the data in textual form. The chart is made up of one or more dimensions and one or more measures. This chart can also show various calculations on the values of the measure field such as running total, percentage total, etc.

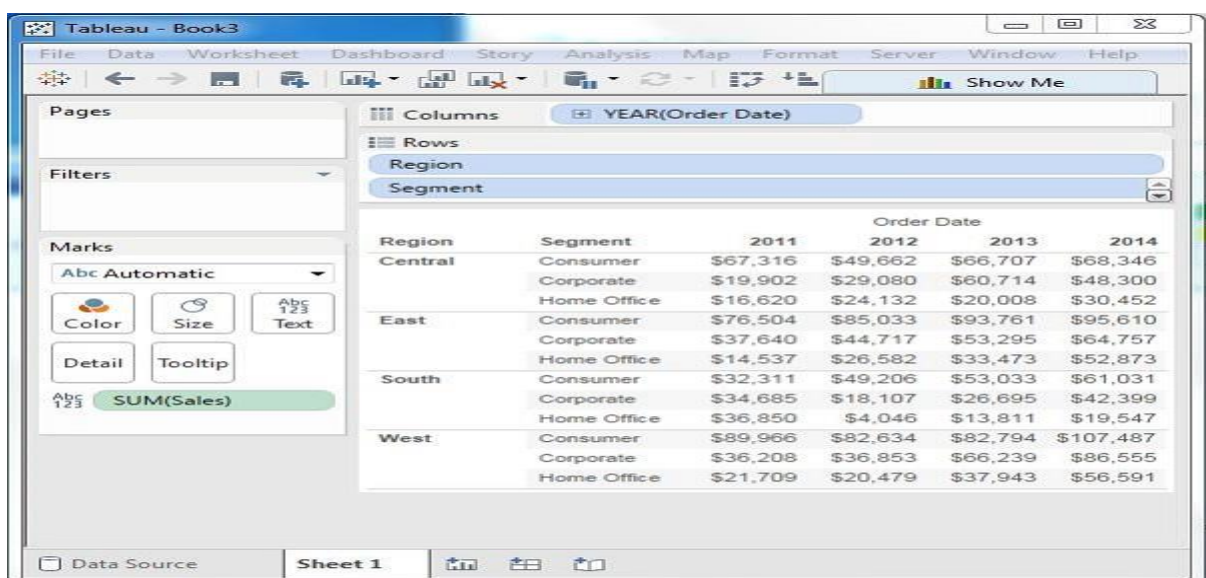
Simple Crosstab

Using the Sample-superstore, let's plan to get the amount of sales for each segment in each region. You need to display this data for each year using the order dates available. To achieve this objective, following are the steps.

Step 1 – Drag and drop the dimension order date to the columns shelf.

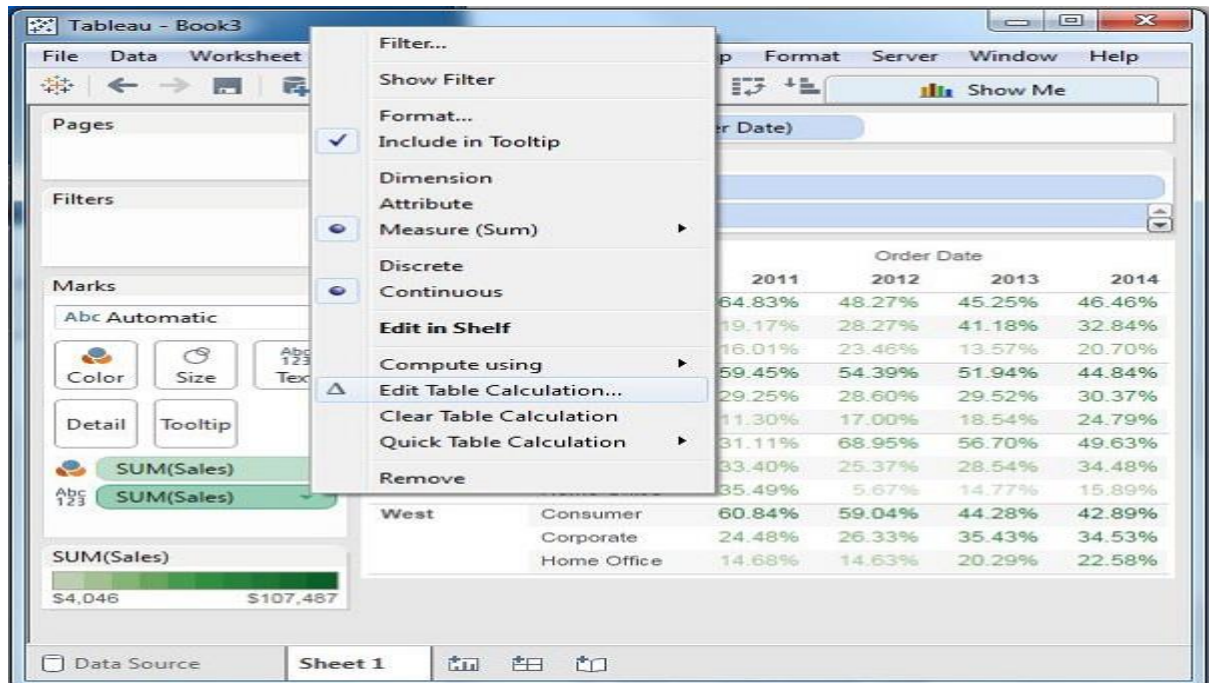
Step 2 – Drag and drop the dimensions region and segment to the rows shelf.

Step 3 – Pull the measure Sales to the labels Shelf under Marks.



Crosstab with Row Percentage

In addition to the color encoding, you can also get calculations applied to the values from the measure. In the following example, we apply the calculation for finding the percentage total of sales in each row instead of only the sales figures. For this, right-click on SUM (Sales) present in the marks card and choose the option Add Table Calculation. Then, choose the percent of total and summarize it as Table (Across).



On clicking OK in the screen above, you will find the crosstab chart created with percentage values.

Tableau - Scatter Plot

Simple Scatter Plot

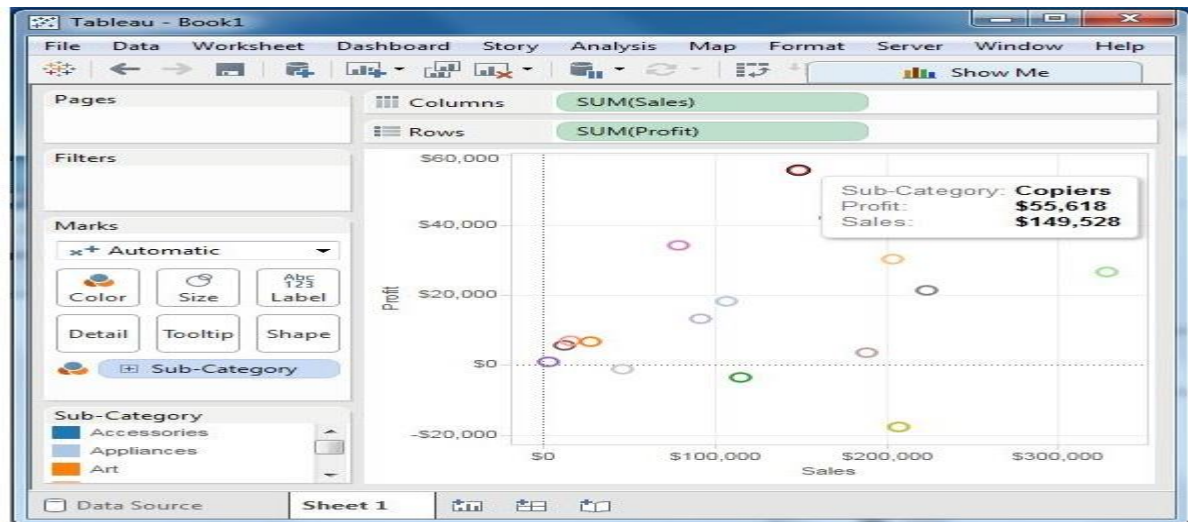
Using the Sample-superstore, let's aim to find the variation of sales and profit figures as the two axes of the Cartesian plane is distributed according to their Sub-Category. To achieve this objective, following are the steps.

Step 1 – Drag and drop the measure Sales to the Columns shelf.

Step 2 – Drag and drop the measure Profit to the Rows shelf.

Step 3 – Pull the dimension Sub-Category to the labels Shelf under Marks.

The following chart appears which shows how profit and sales is distributed across the Sub-Category of products.



You can get the values color encoded by dragging the dimension Sub-Category to the color Shelf under the Marks card.

Tableau - Bubble Chart

Bubble charts display data as a cluster of circles.

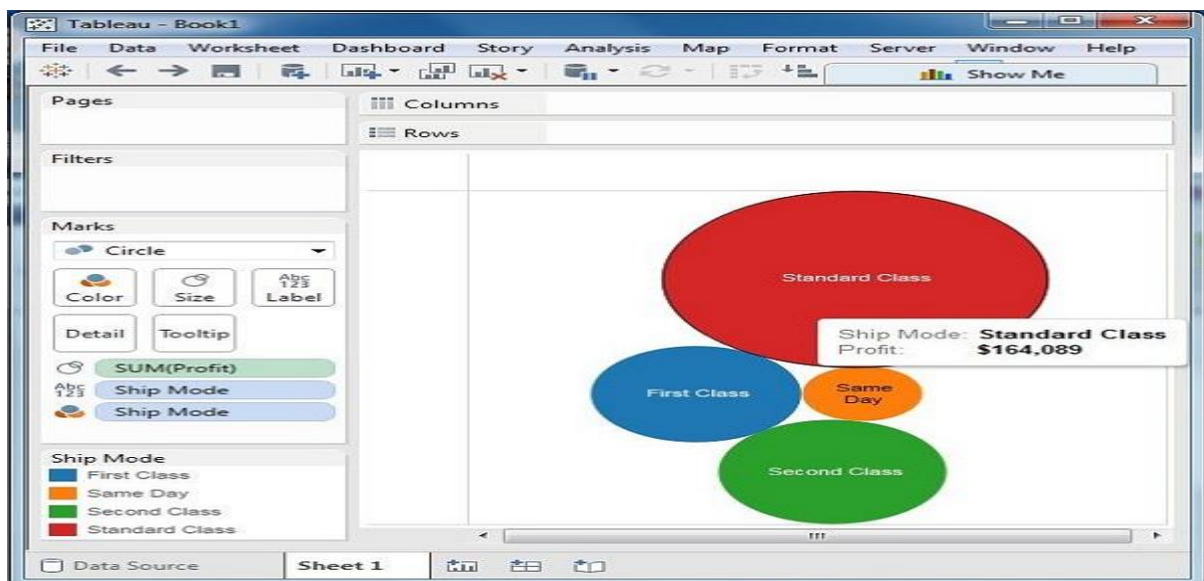
Simple Bubble Chart

Using the Sample-superstore, let's plan to find the size of profits for different ship mode.

Step 1 – Drag and drop the measure profit into the Size shelf under Marks card.

Step 2 – Drag and drop the dimension ship mode into the Labels shelf under Marks card.

Step 3 – Pull the dimension ship mode to the Colors shelf under Marks card.



Note: 1. You can also show the values of the measure field which decides the size of the circles. To do this, drag the sales measure into the Labels shelf. The following chart appears.

2. Instead of coloring each circle with a different color, you can use a single color with different shades.

For this, drag the measure sales into the color shelf. The higher values represent darker shades while the smaller values represent lighter shades.

Tableau - Bullet Graph

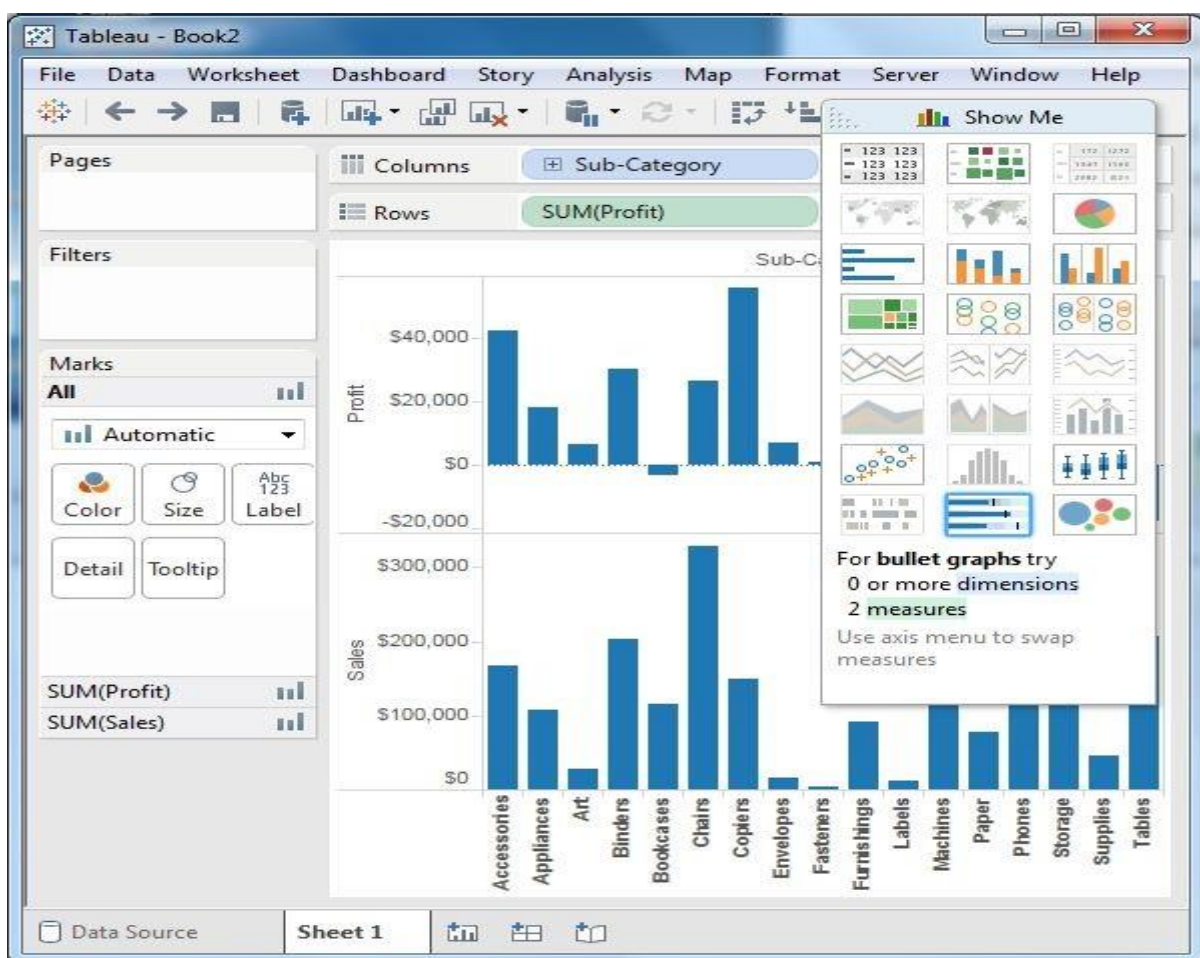
A bullet chart is a variation of Bar chart. In this chart, we compare the value of one measure with another measure in the context of finding the variation in the first measure within a range of variations in the second measure. It is like two bars drawn upon one another to indicate their individual values at the same position in the graph. It can be thought of as combining two graphs as one to view a comparative result easily.

Creating Bullet Graph

Using the Sample-superstore, plan to find the size of profits for the respective sales figures in each Sub-Category.

Step 1 – Drag and drop the dimension Sub-Category from the data pane into the column shelf.

Step 2 – Drag and drop the measures Profit and Sales to the Rows shelf.



Drag the sales measure to the Marks card. Using Show Me, choose the bullet graph option. The following chart shows the bullet graph.

Tableau - Box Plot

The box plots are also known as a box-and-whisker plots. They show the distribution of values along an axis. Boxes indicate the middle 50 percent of the data which is, the middle two quartiles of the data's distribution. The Dept. of AD, CIT, Gubbi

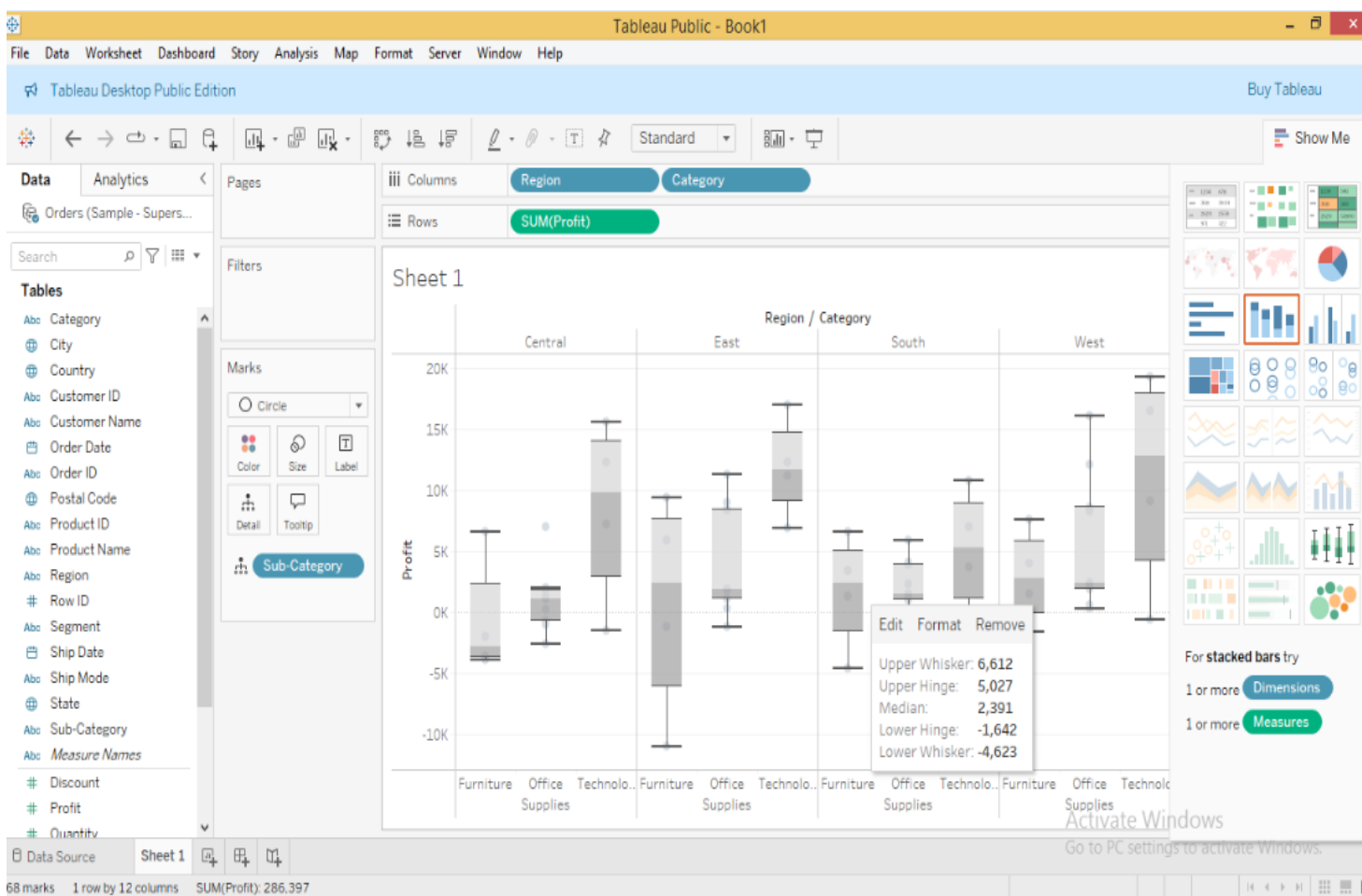
remaining 50 percent of data on both sides is represented by lines also called whiskers, to display all points within 1.5 times the interquartile range, which is all points within 1.5 times the width of the adjoining box, or all points at the maximum extent of the data.

Creating a Box Plot

Using the Sample-superstore, plan to find the size of profits for the respective category for each Ship mode values. To achieve this objective, following are the steps.

Step 1 – Drag and drop the dimension category to the Columns shelf and profit to the Rows shelf. Also drag the dimension Ship mode to the right of Category in Columns shelf.

Step 2 – Choose Box-and-Whisker plot from Show Me. The following chart appears which shows the box plots. Here, Tableau automatically reassigns the ship mode to the Marks card.



You can create box plots with two dimensions by adding another dimension to the Column shelf. In the above chart, add the region dimension to the Column shelf. This produces a chart which shows the box plots for each region.

Tableau - Tree Map

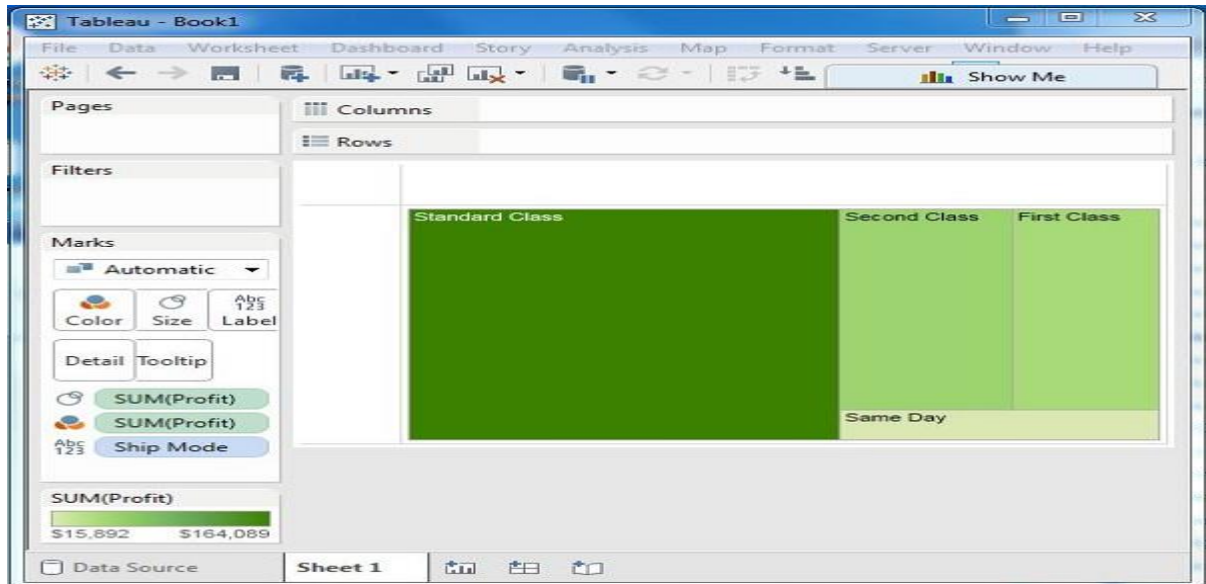
The tree map displays data in nested rectangles.

Creating a Tree Map

Using the Sample-superstore, plan to find the size of profits for each Ship mode values. To achieve this objective, following are the steps.

Step 1 – Drag and drop the measure profit two times to the Marks Card. Once to the Size shelf and again to the Color shelf.

Step 2 – Drag and drop the dimension ship mode to the Label shelf. Choose the chart type Tree Map from Show Me. The following chart appears.



Note: Tree Map with Two Dimensions

You can add the dimension Region to the above Tree map chart. Drag and drop it twice. Once to the Color shelf and again to the Label shelf. The chart that appears will show four outer boxes for four regions and then the boxes for ship modes nested inside them. All the different regions will now have different colors.

Tableau - Bump Chart

A Bump Chart is used to compare two dimensions against each other using one of the Measure value. They are very useful for exploring the changes in Rank of a value over a time dimension or place dimension or some other dimension relevant to the analysis.

Creating a Bump Chart

Using the Sample-superstore, plan to find the variation of ship mode of products with the variation of the Sub-Category. To achieve this objective, following are the steps.

Step 1 – Drag and drop the dimension Sub-Category to the Columns shelf. Also drag the dimension Ship mode to the Color shelf under Marks card. Leave the chart type to Automatic. The following chart appears.

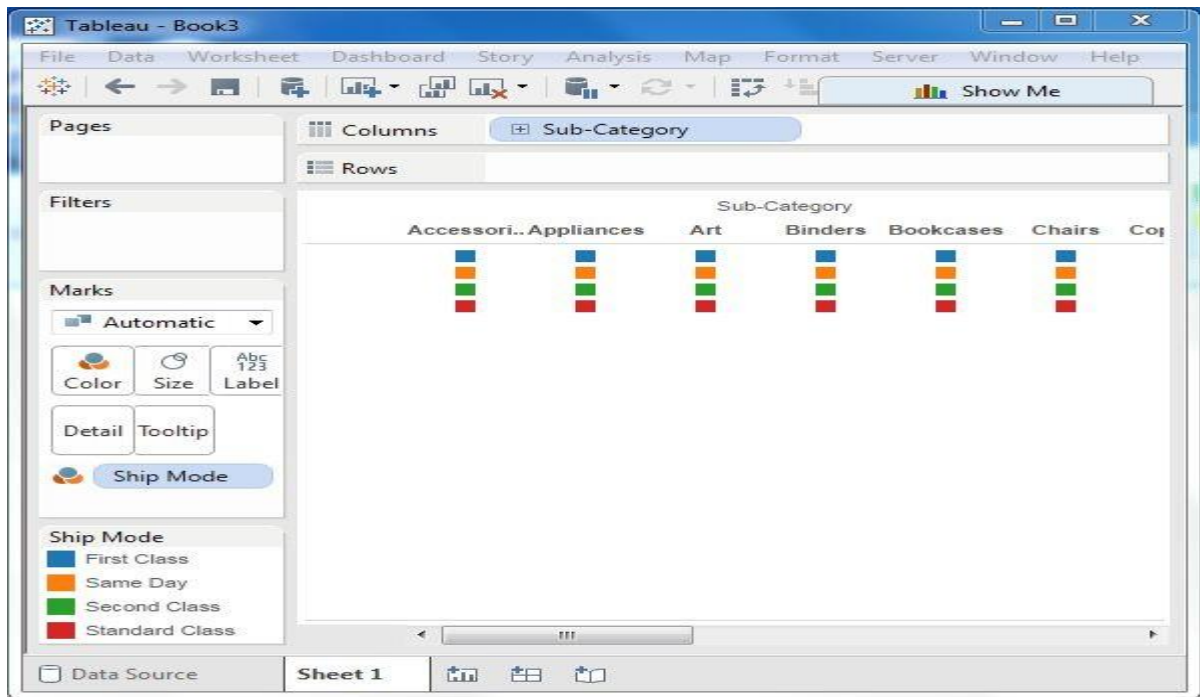
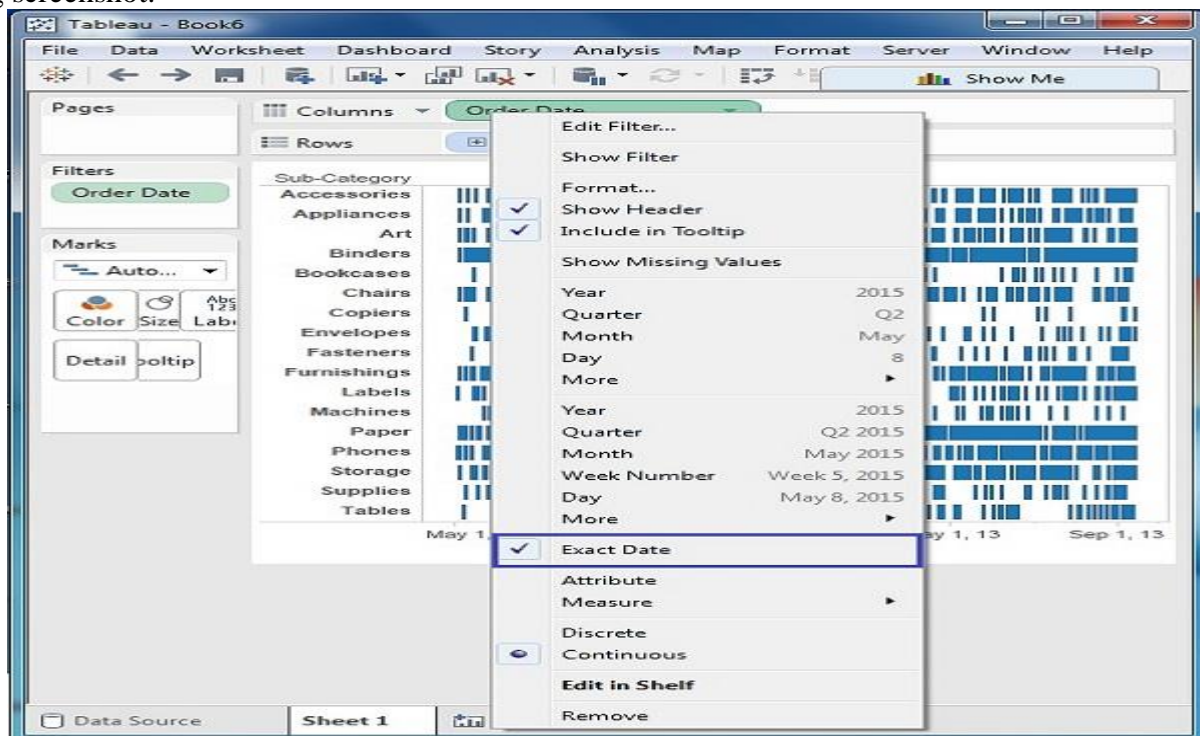


Tableau - Gantt Chart

A Gantt chart shows the progress of the value of a task or resource over a period of time. It is extensively used in project management and other types of variation study over a period of time. Thus, in Gantt chart, time dimension is an essential field.

Creating a Gantt Chart

Step 1 – Drag the dimension order date to the Columns shelf and Sub-Category to the Rows shelf. Next, add the order date to the Filters shelf. Right-click on order date to convert it to the exact date values as shown in the following screenshot.



Step 2 – Edit the filter condition to select a range of dates. It is because you want individual date values and there is a very large number of dates in the data.

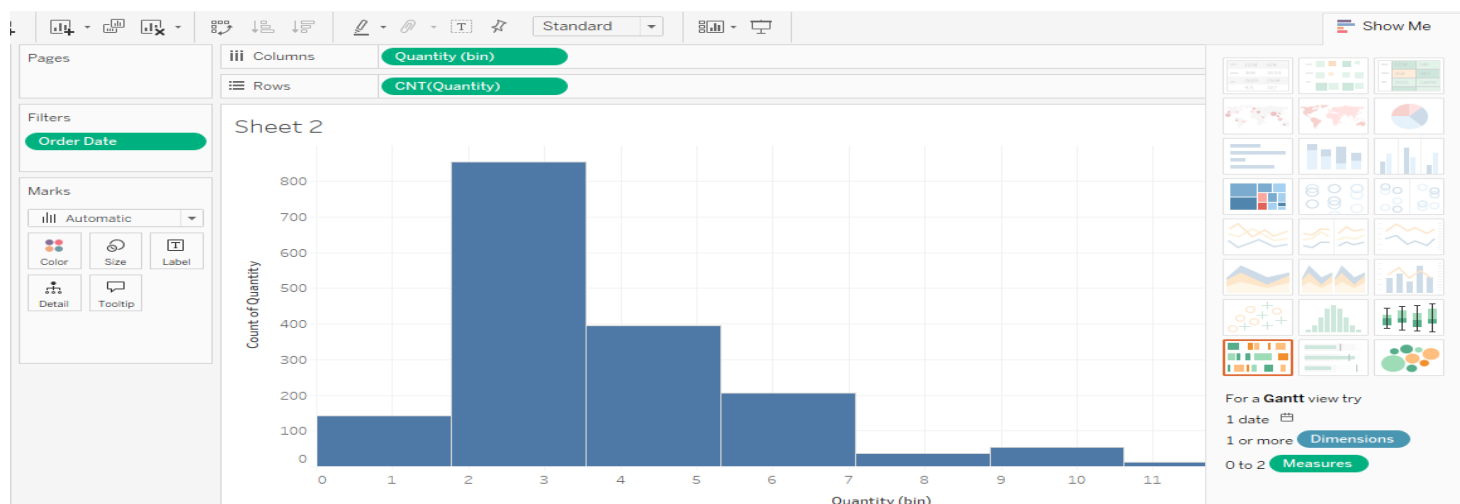
Step 3 – Drag the dimension ship mode to the Color shelf and the measure quantity to the Size shelf under the Marks card.

Tableau - Histogram

A histogram represents the frequencies of values of a variable bucketed into ranges. Histogram is similar to bar chart but it groups the values into continuous ranges. Each bar in histogram represents the height of the number of values present in that range.

Creating a Histogram

Using the Sample-superstore, plan to find the quantities of sales for different regions. To achieve this, drag the Measure named Quantity to the Rows shelf. Then open Show Me and select the Histogram chart. The following diagram shows the chart created. It shows the quantities automatically bucketed into values ranging from 0 to 856 and divided into 11 bins.



Note:

You can also add Dimensions to Measures to create histograms. This will create a stacked histogram. Each bar will have stacks representing the values of the dimension. Following the steps of the above example, add the Region Dimension to the color Shelf under Marks Card. This creates the following histogram where each bar also includes the visualization for different regions.

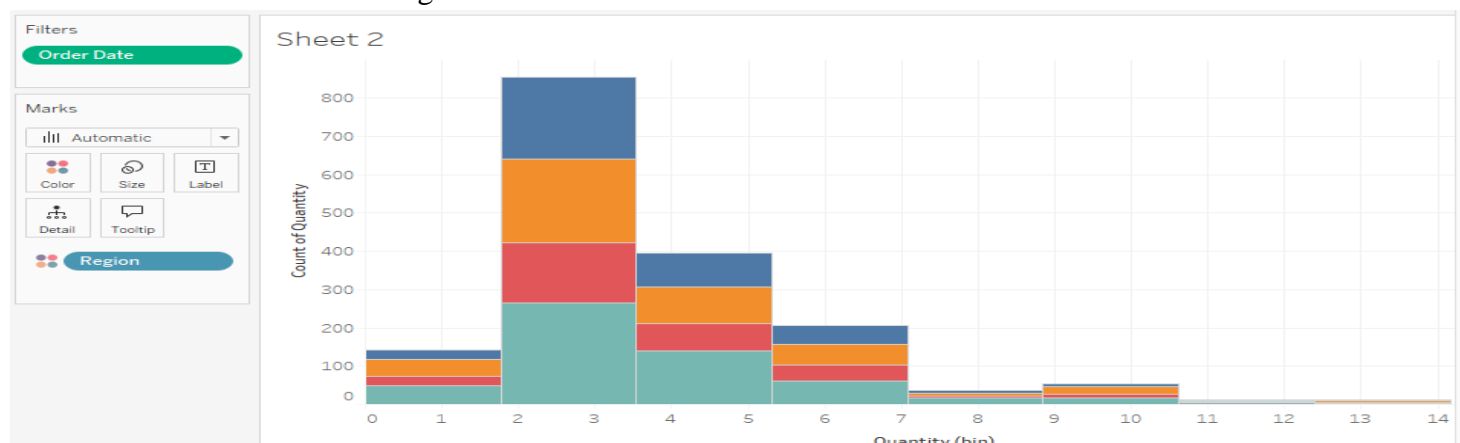


Tableau - Motion Charts

Motion charts show data using the X and Y-axes, displaying changes over time by showing the movement of data points within the defined space as well as changes in the color of the lines. The main advantage of motion chart is to view the entire trail of how the data has changed over time and not just a snapshot of the data.

Using the Sample-superstore, plan to find the variation of Profits over the months.

Step 1 – Drag the Dimension Order Date to the Columns Shelf. Drag it again to the Pages Shelf. In the Pages shelf, right-click on the Order Date and choose Month. Then drag the measure Profit to the Rows Shelf.

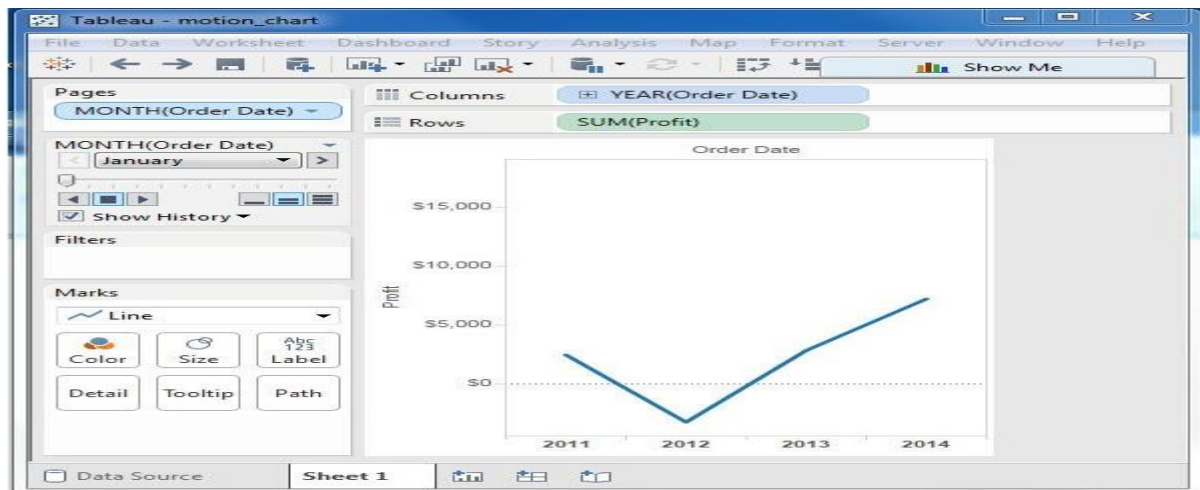


Tableau - Waterfall Charts

Waterfall charts effectively display the cumulative effect of sequential positive and negative values. It shows where a value starts, ends and how it gets there incrementally. So, we are able to see both the size of changes and difference in values between consecutive data points.

Step 1 – Drag the Dimension Sub-Category to the Columns shelf and the Measure Sales to the Rows shelf. Sort the data in an ascending order of sales value. For this, use the sort option appearing in the middle of the vertical axis when you hover the mouse over it.

