

Tableau

Module 4

Charts & Graphs



+tableau®

Charts & Graphs

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Charts & Graphs

Dual-axis Graphs

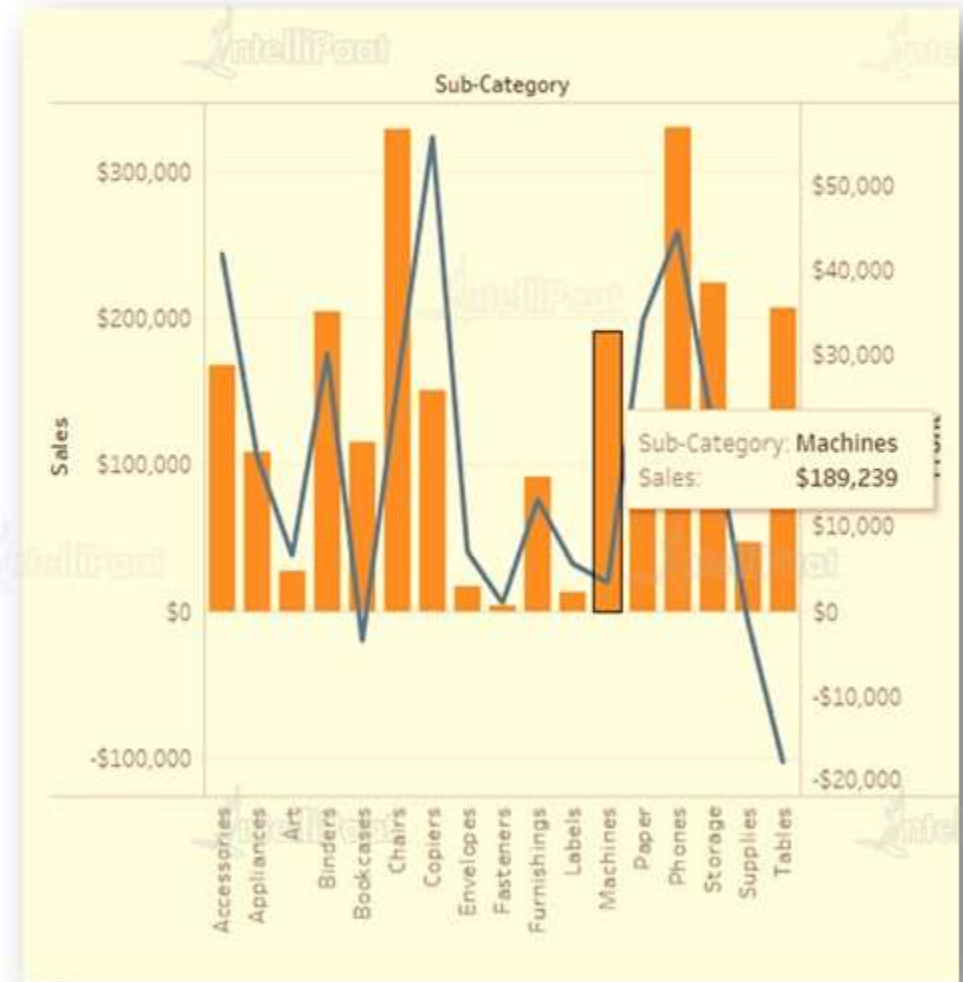


What are dual-axis graphs in Tableau?

- Dual-axis are two independent axes that are layered on top of each other. In Tableau, these are used to compare multiple measures. Dual-axis are useful when you have two measures that have different scales.
- To understand this, let us take an example chart of profit and sales and draw a dual-axis graph.

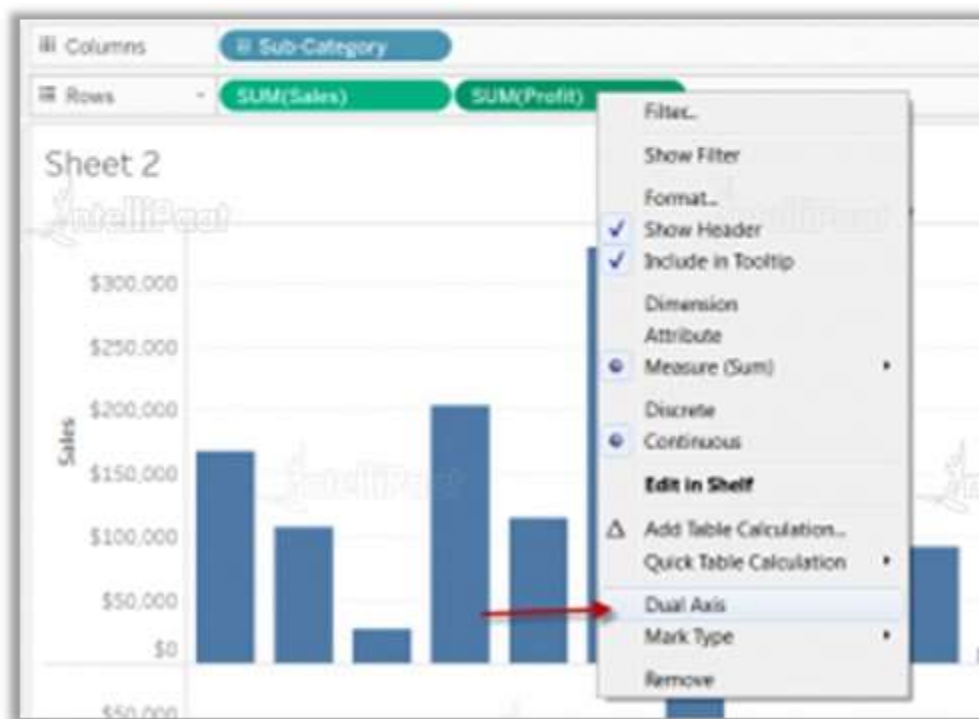
Dual-axis Graphs

- You can compare multiple measures using dual axes, which are two independent axes that are layered on top of each other.
- Dual-axis are useful when you have two measures that have different scales. To add a measure as dual axes, drag the field to the right side of the view and drop it when you see a black dashed line appear. You can also right-click (control-click on Mac) on the measure on the Columns or Rows shelf and select **Dual Axis**.



Dual-axis Graphs

- **Step 1:** Pull sub-category onto columns.
- **Step 2:** Drag Sales to rows and Profit to rows next to sales. You will get the SUM next to SUM.
- **Step 3:** Right click on SUM and choose **Dual Axis** as shown in the figure.



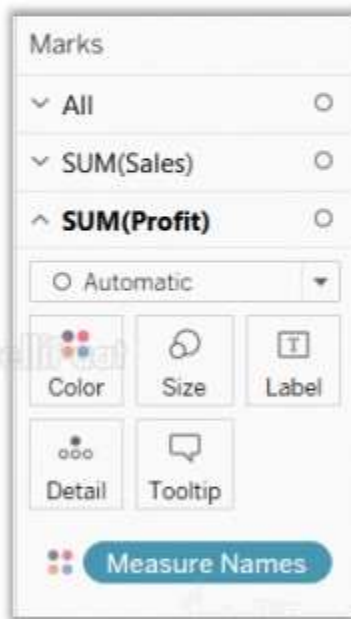
Dual-axis Graphs

- **Step 4:** Now, you can see that there are two axes with different scales. Now, you need to decide whether the two axes should be synchronized. You can do right-click on the Profit axis and select **Synchronize Axis** as shown in the figure.



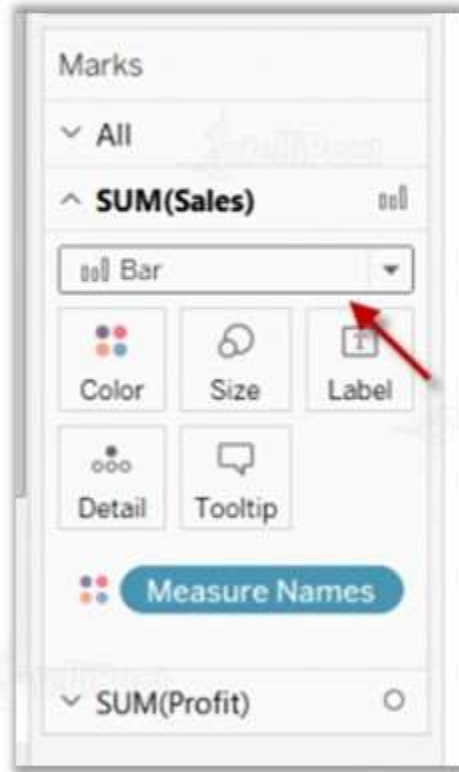
Dual-axis Graphs

- **Step 5:** Once you have a dual-axis chart, you will be able to use different marks for each measure. On the Marks card, you will now have the option to format the two measures differently.



Dual-axis Graphs

- **Step 6:** If we want to have a bar chart for Sales, click on the **SUM(Sales)** section on the **Marks** card and choose **Bar** from the drop-down menu.



Histograms



- A histogram is a chart that displays the shape of a distribution. A histogram looks like a bar chart but groups values for a continuous measure into ranges or bins.
- **Building blocks of histograms are:**

| | |
|----------------|--|
| Mark type: | Automatic |
| Rows shelf: | Continuous measure (aggregated by Count or Count Distinct) |
| Columns shelf: | Bin (continuous or discrete) |

In Tableau, histograms are created using Show Me. Let's see how this is done.

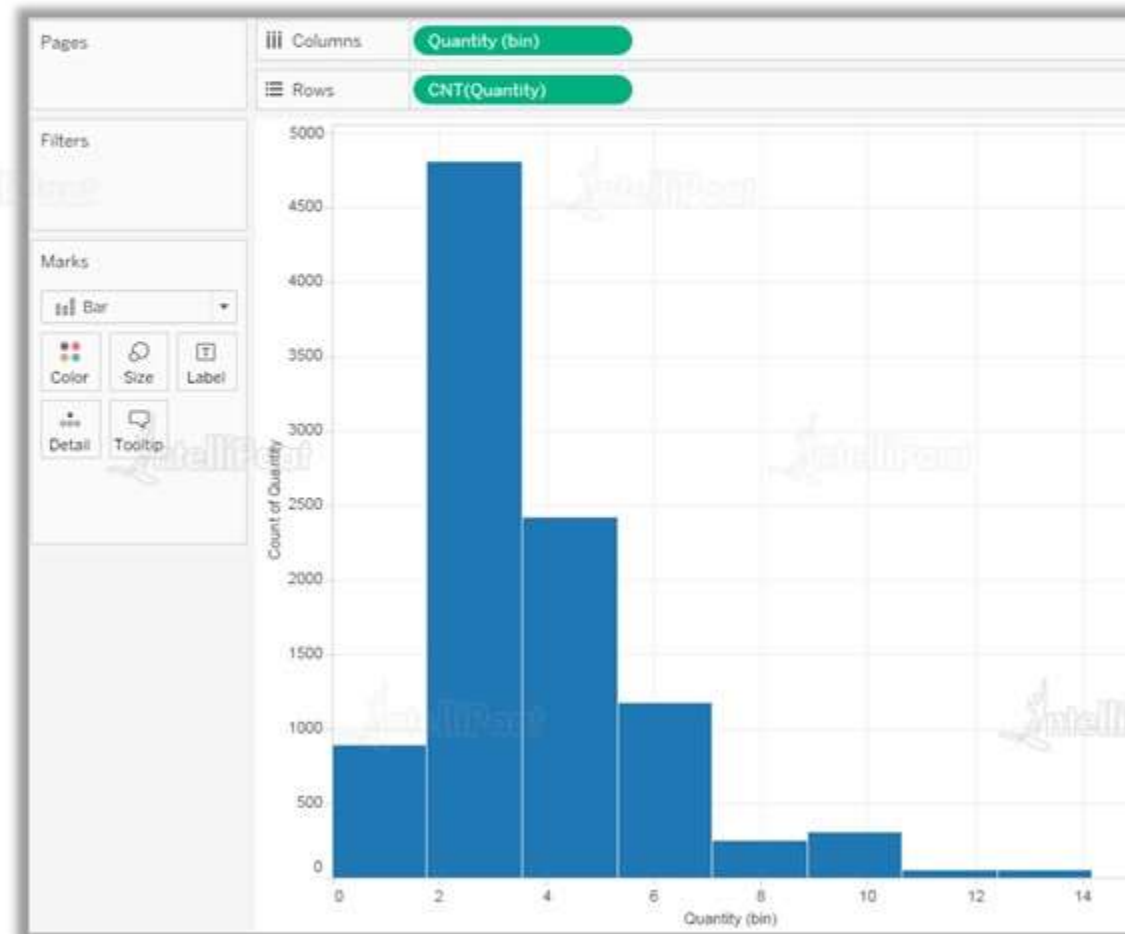
Histograms

- **Step 1:** Connect to the **Sample - Superstore** data source.
- **Step 2:** Drag **Quantity** to **Columns**.
- **Step 3:** Click on **Show Me** on the toolbar, then select the histogram chart type, as shown in the figure.



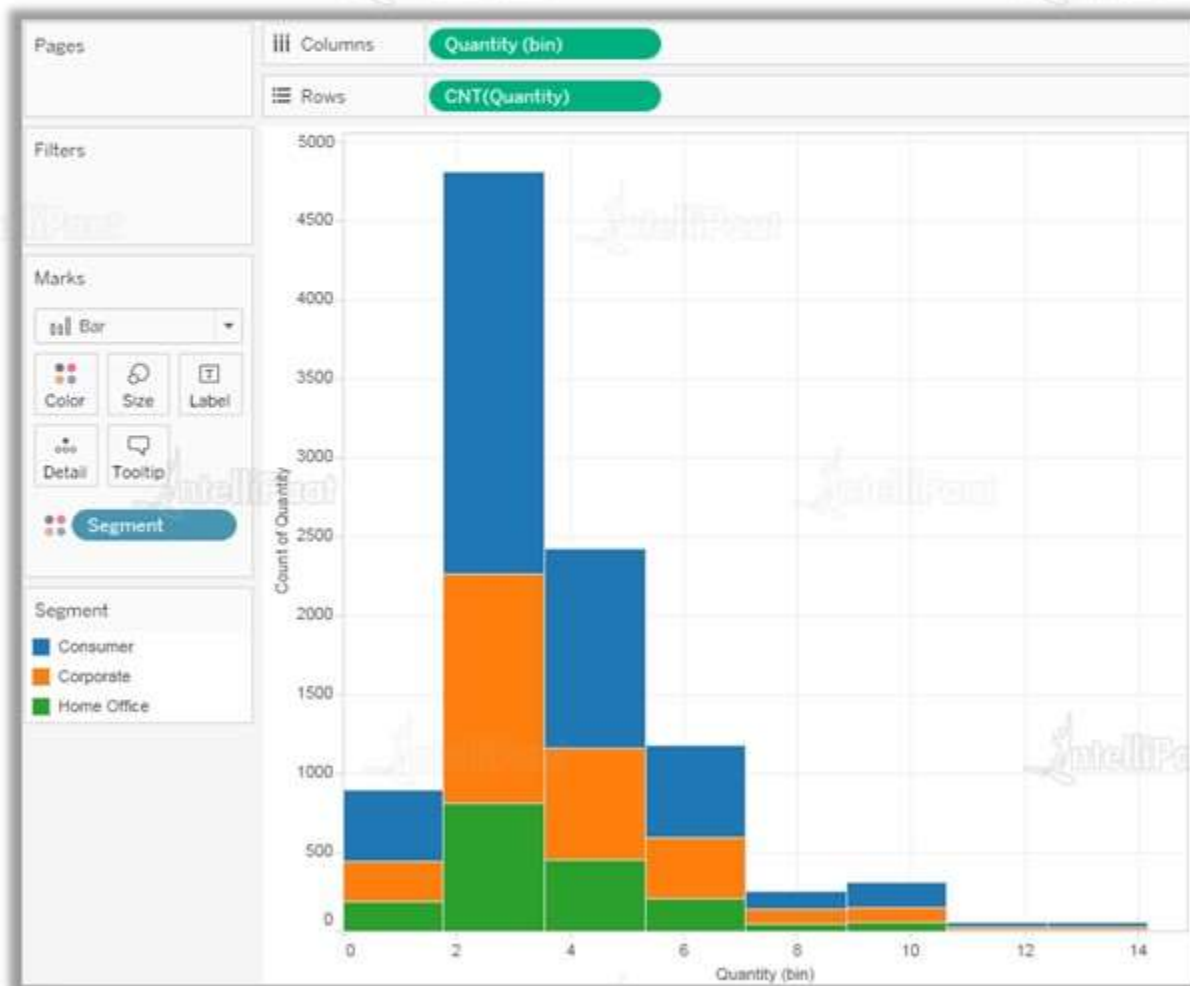
Histograms

- **Step 4:** The view changes to show vertical bars, as shown in the figure.



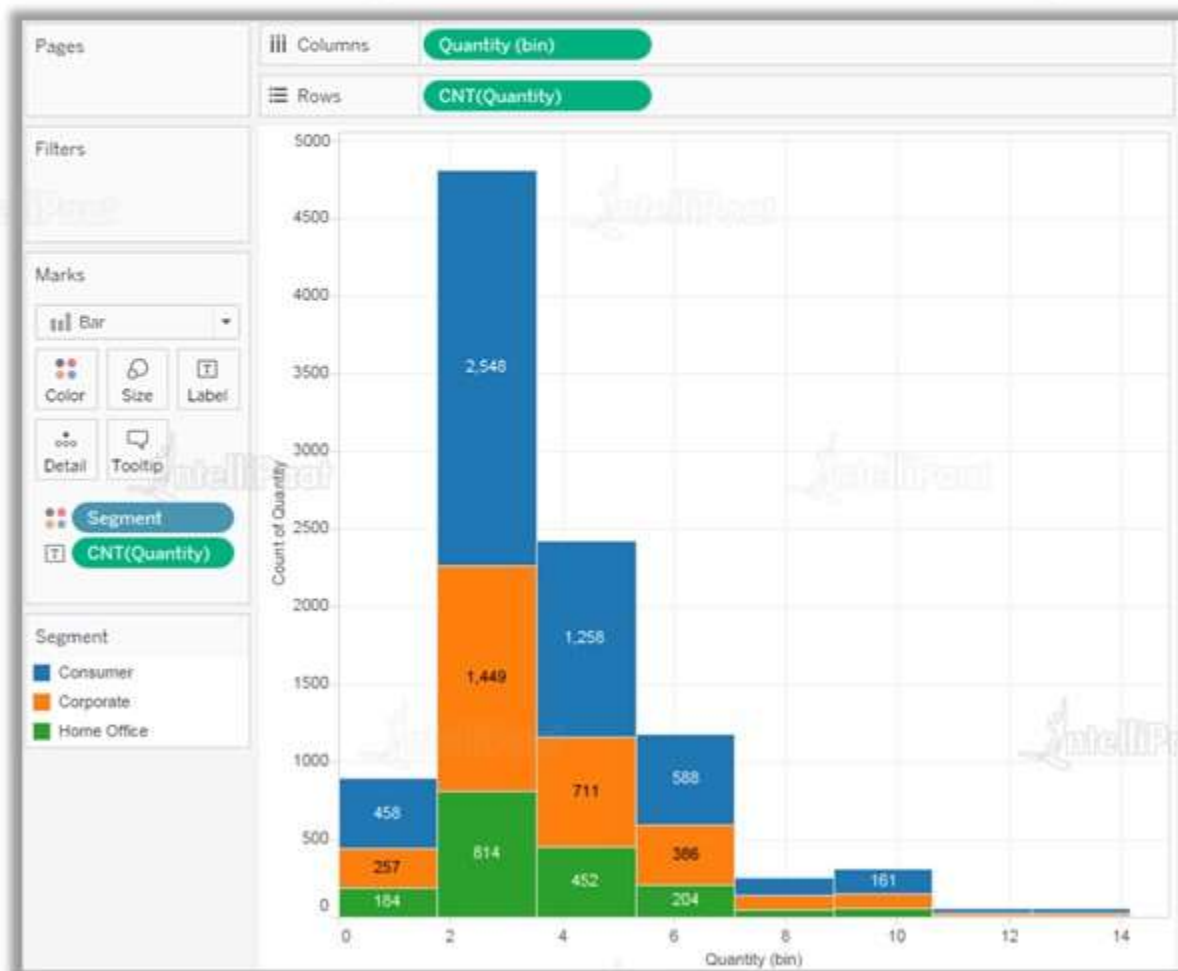
Histograms

- **Step 5:** Drag segments to color.



Histograms

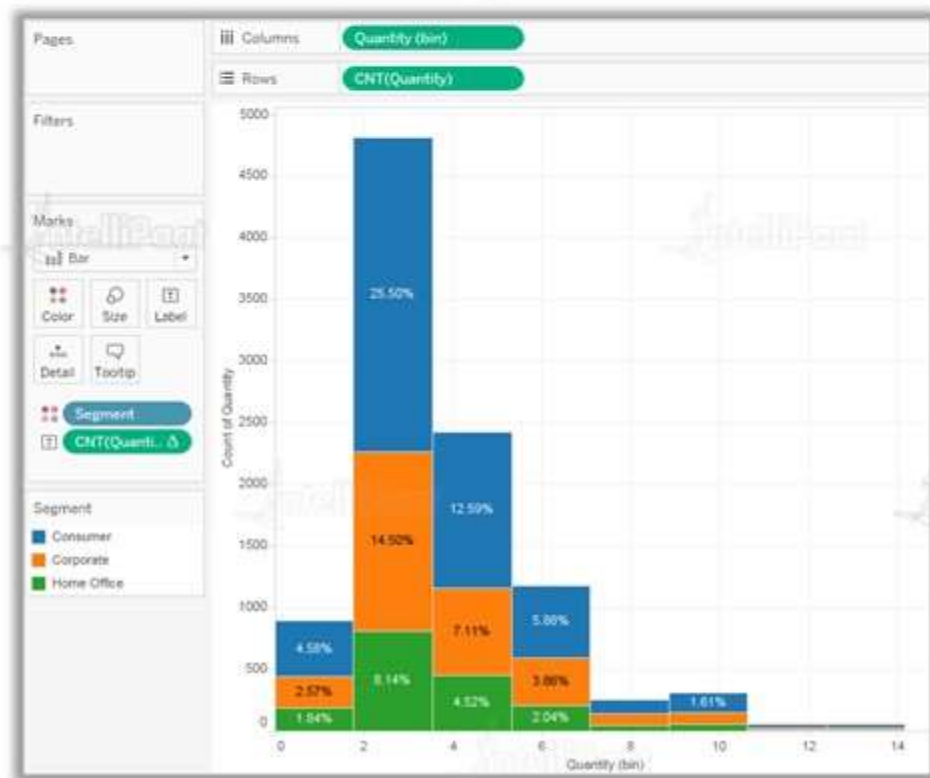
- **Step 6:** Hold down the **Ctrl** key and drag the **CNT(Quantity)** field from the Rows shelf to Label.



Histograms

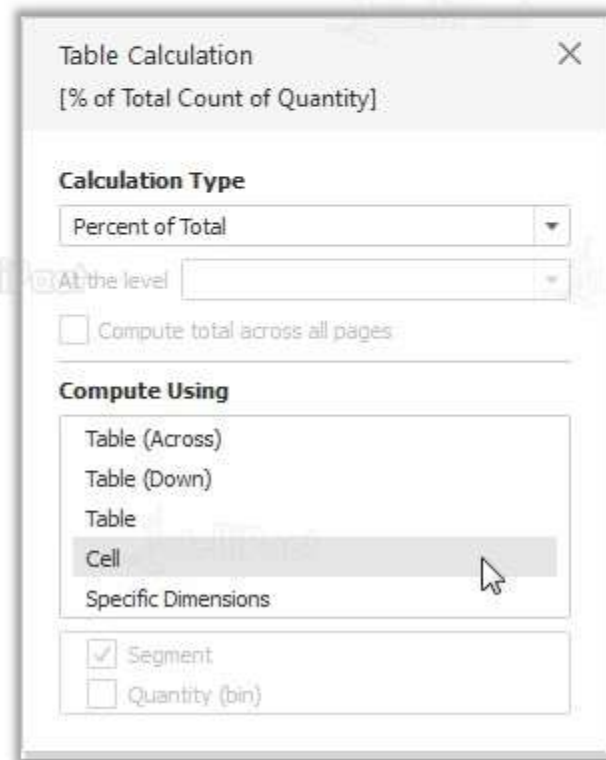
- **Step 7:** Right-click (Control-click on a Mac) on the **CNT(Quantity)** field on the **Marks** card and select **Quick Table Calculation > Percent of Total**.

Now, each colored section of each bar shows its respective percentage of the total quantity.



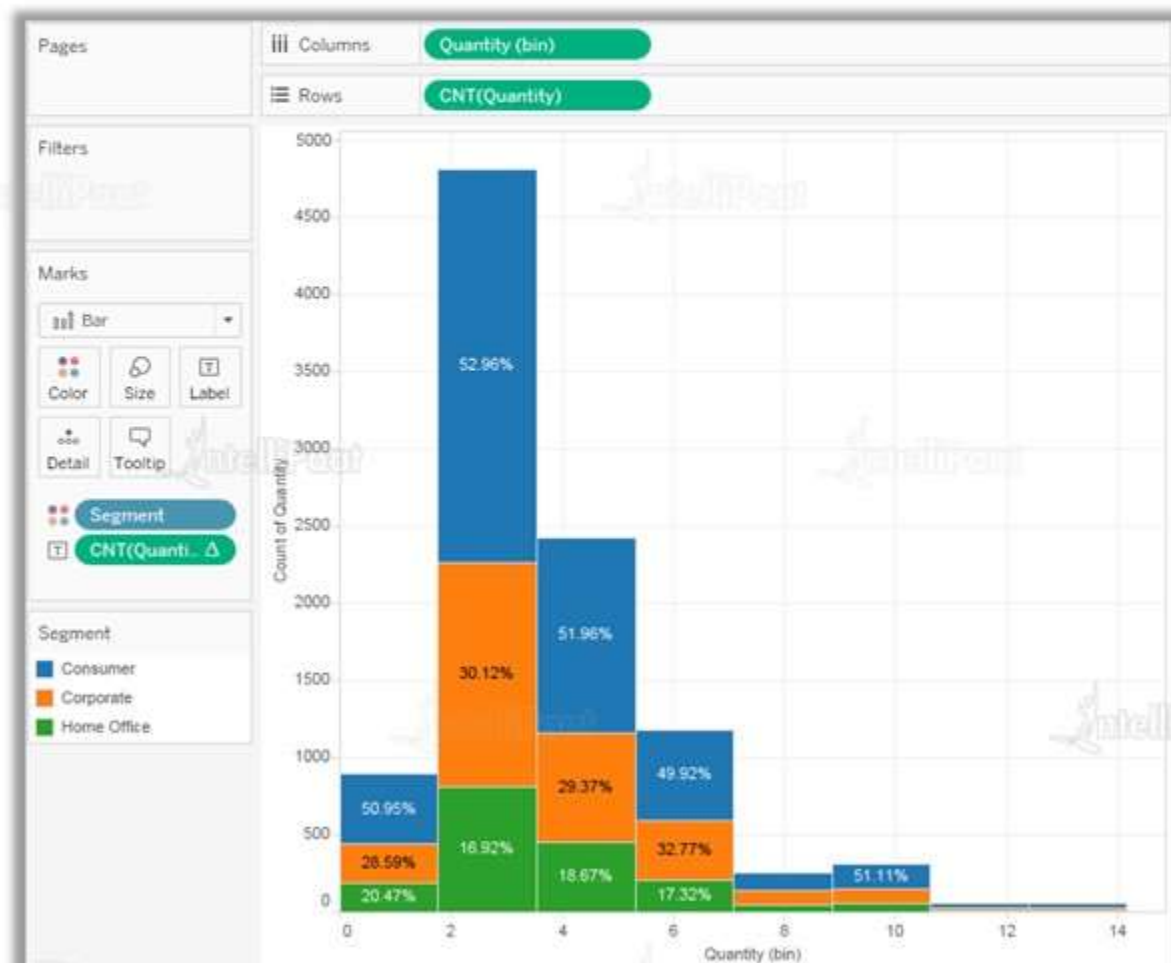
Histograms

- **Step 8:** Right-click on the **CNT(Quantity)** field on the **Marks** card again and select **Edit Table Calculation**.
- **Step 9:** In the **Table Calculation** dialog box, change the value of the **Compute Using** field to **Cell**.



Histograms

The result will be as shown in the figure.

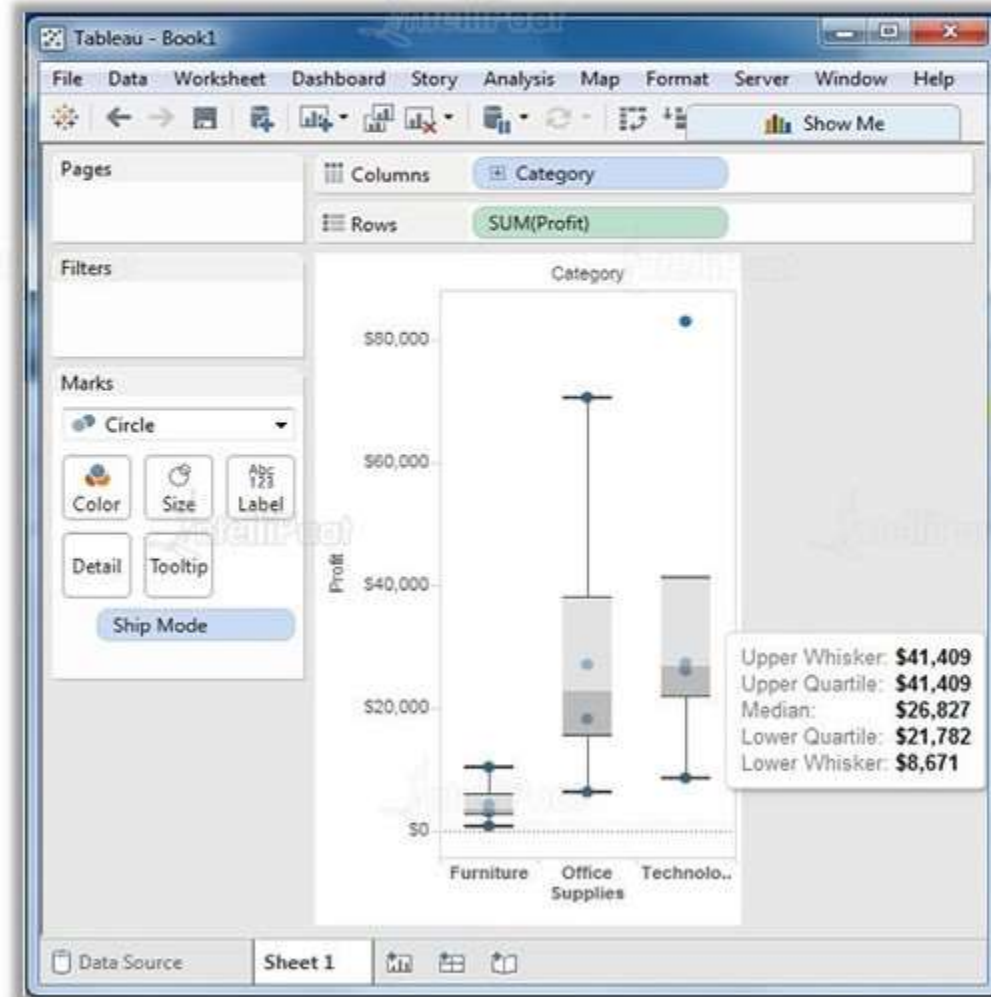


Box Plot



- Box plots or box-and-whisker plots are used to show the distribution of values along an axis.
- This is mainly used to indicate the middle 50 percent of the data, which is the middle two quartiles of the data's distribution.
- Here are the steps to create a box plot:
 - 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 the Category in Columns shelf.
 - Step 2:** Choose the Box-and-Whisker plot from Show Me.

Box Plot



Pareto Chart

A Pareto chart is a type of chart that contains both bars and a line graph, where individual values are represented in descending order by bars, and the ascending cumulative total is represented by the line.



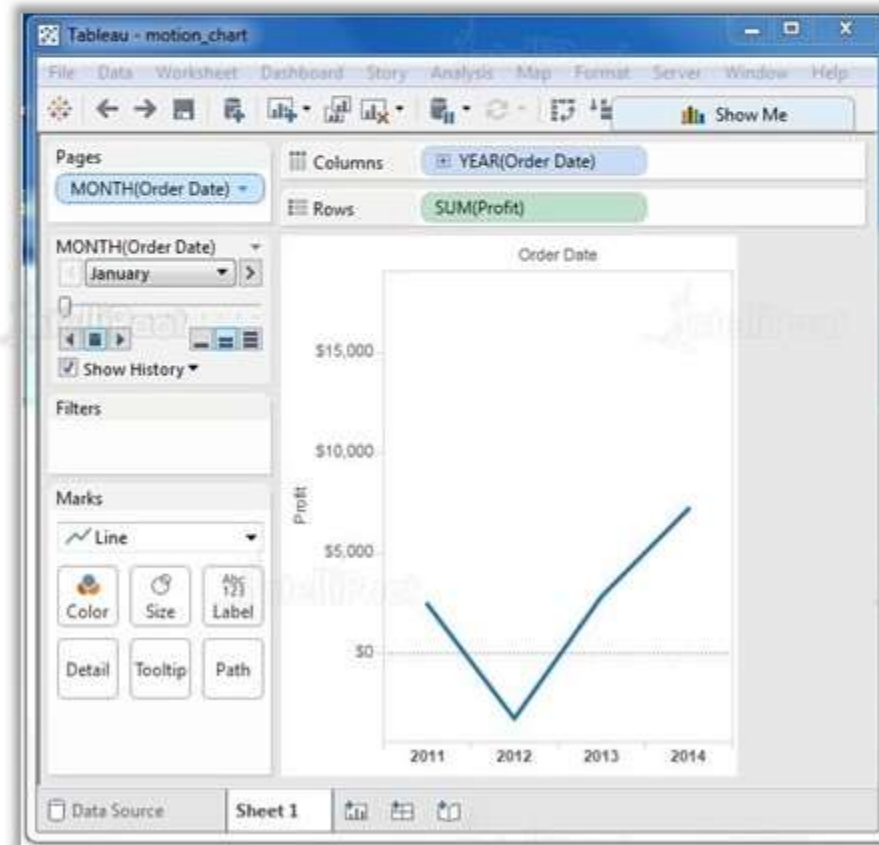
Motion Chart



- Motion charts show data using x and y axes, displaying changes over time.
- This is done by showing the movement of data points within the defined space as well as changes in the color of the lines.
- Motion charts are mainly used to view the entire trail of how the data has changed over a period of time.

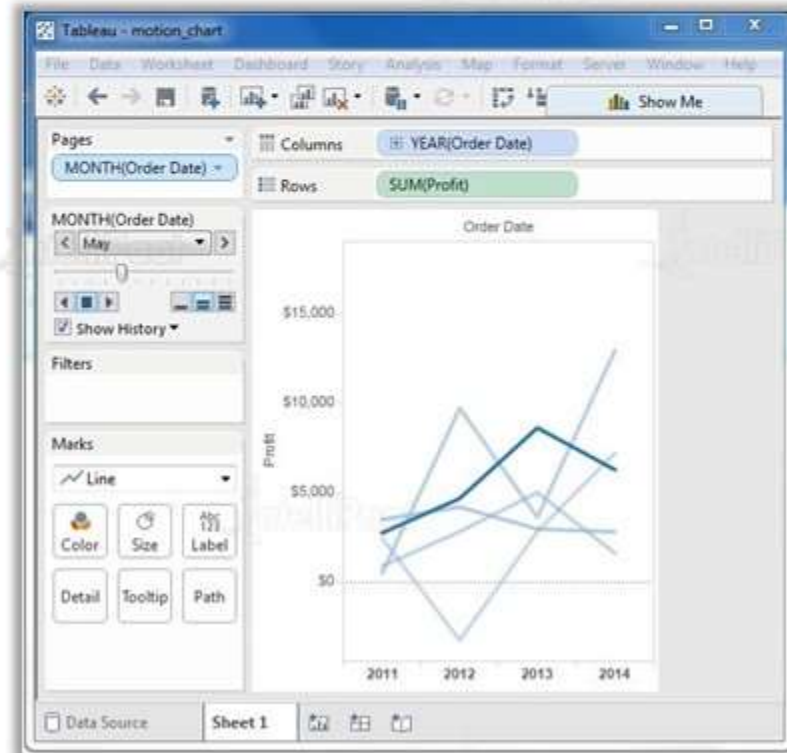
Motion Chart

- **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. The following chart appears.



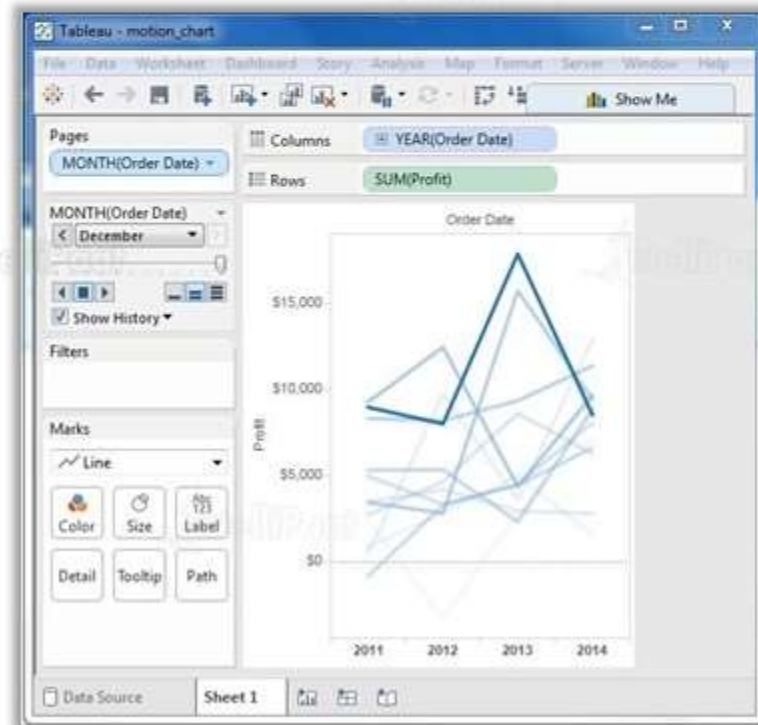
Motion Chart

- **Step 2:** Put a check mark on the box next to Show History and then click on the drop-down arrow next to it. For “Marks to Show History For” select “All”. Then under “Show”, select “Both”. Selecting “Marks” shows only the points and selecting “Trails” shows only the line. Click the “Play” button. The following chart appears.



Motion Chart

- **Step 3:** Allowing the chart to run from January to December will create a chart which shows how the profits have varied over each month for all the years. Note that as the data changes the recent months get a darker shade of color and the historical data gets a lighter shade of color. The result is as shown below:



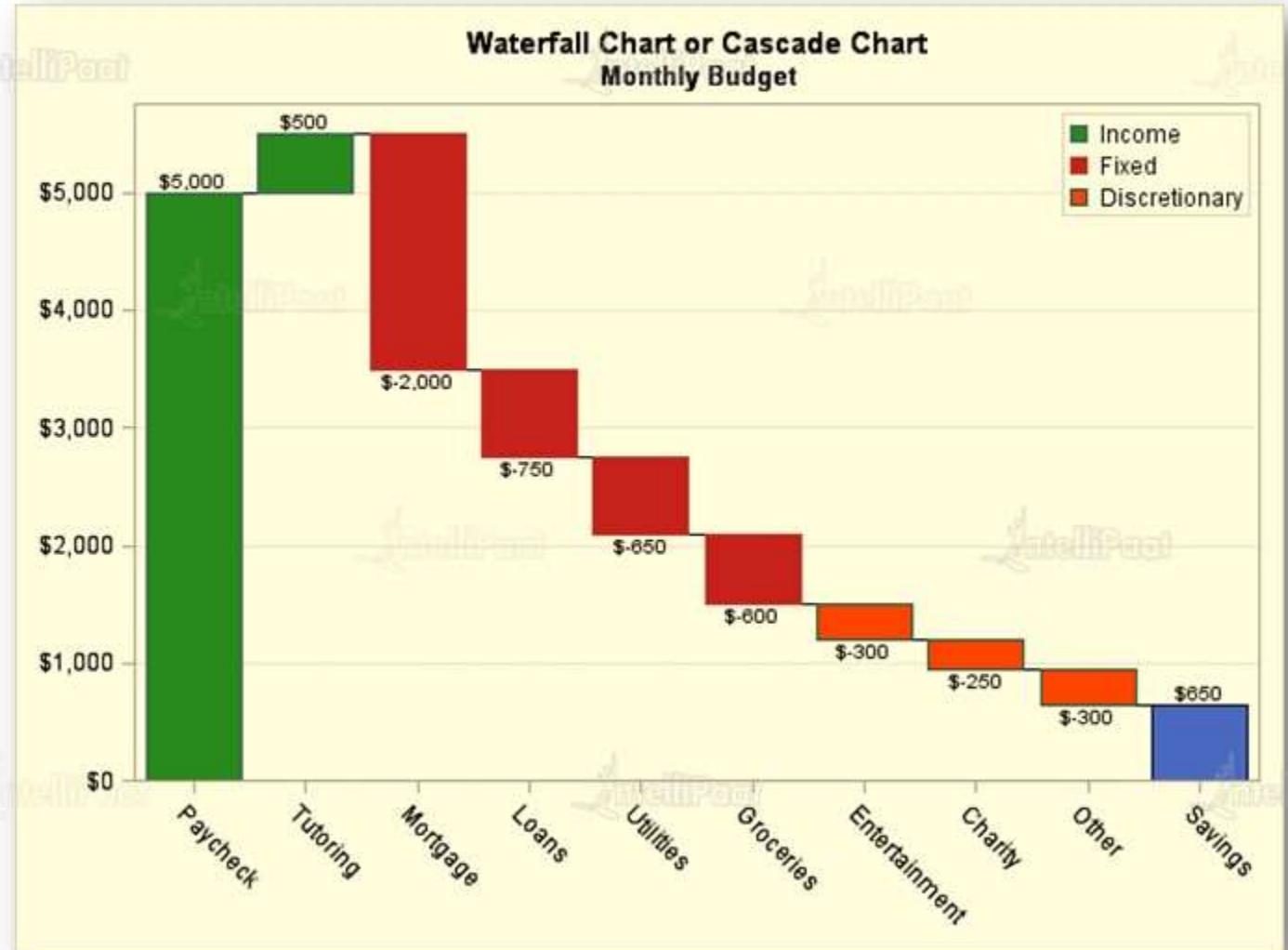
Funnel Chart

Funnel charts are a type of chart, often used to represent stages in a sales process and show the amount of potential revenue for each stage. This type of chart can also be used in identifying potential problem areas in an organization's sales processes.



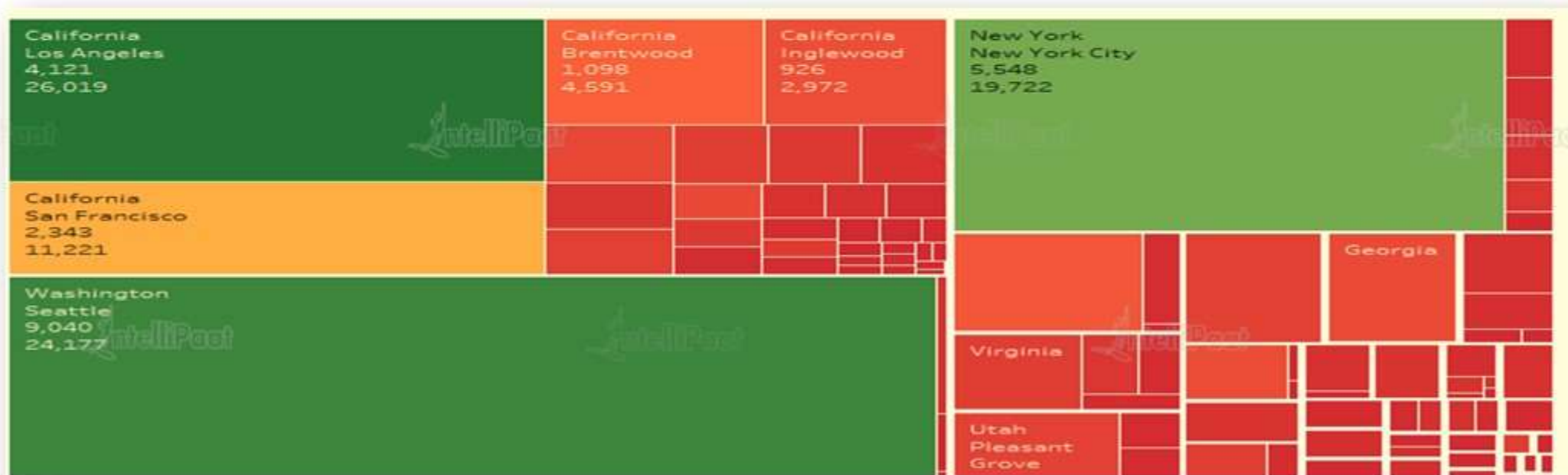
Waterfall Chart

Waterfall charts are powerful visuals for your data dashboard because they effectively display the cumulative effect of sequential positive and negative values.



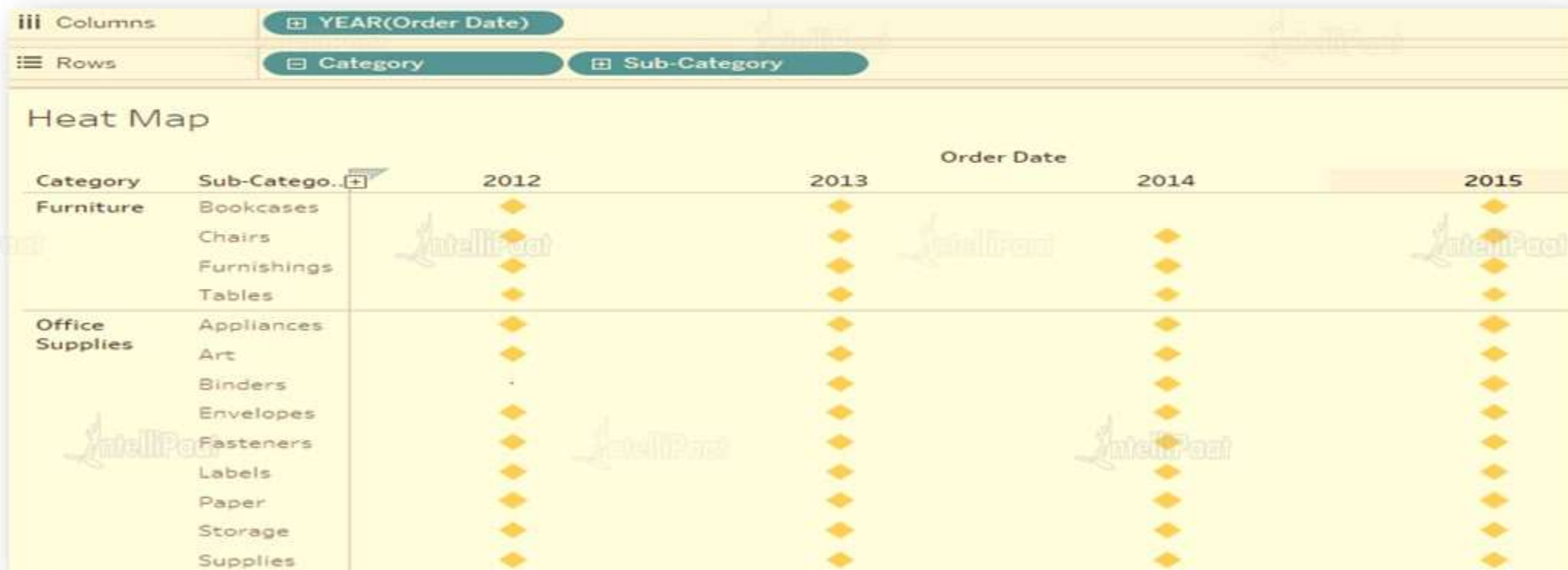
Tree Map

- To show a lot of information in a very small amount of area
- Useful when we have different measures and dimensions and we want to see the most important ones
- The given chart depicts how much of profit was contributed by different product categories across different regions. Left to right the profit percentage reduces, and regions are grouped by color.



Heat Map

- A heat map is a great way to compare categories using color and size. In this, you can compare two different measures.



Market Basket Analysis



- In the case of Tableau, a user can pick one field value and then see which other field values it co-occurs with and how often. One practical application of such analysis is the market basket analysis.
- This is used to discover and understand the customer purchasing behavior.
- **Market basket analysis answers the following questions:**

How many people bought both Product A and Product B?

What other products do people who purchased Product A generally buy?

Which other courses do students who enrolled in Course A frequently enroll in?

Market Basket Analysis

- Below are the steps:

Step 1:

Create a parameter that you will use to dynamically modify the view based on the item you select.

Step 2:

Create calculated fields that you will use to return which items are also ordered when a particular item is ordered.

Step 3:

Create a set to determine whether an order has the item that was selected in the parameter control.

Step 4:

Build a view to display which items are also contained in an order with the selected item.

Using Show Me



Show Me creates a view based on the fields already used in the view and any fields you've selected in the Data pane.

- Select fields in the Data pane that you want to analyze
- Click Show Me on the toolbar and then select the type of view you want to create
- View the result. Tableau automatically creates a view of the data



Creating charts, maps and tables using Tableau



Creating combination charts using Tableau:

Combination charts are great tools to use to compare any two variables that use the same value measure such as currency, quantity or time.

Chart Types

Chart Types

Map Chart
Tree Maps
Packed Bubbles
Bullet Chart
Heat Map
Scatter plot
Funnel Chart
Water Fall Chart
Pareto Chart
Highlight table
Bar Chart
Line Chart
Pie Chart
Gantt Chart
Bubble Chart



Text Table

- A text table (also known as a crosstab) is essentially the same view you would see from an Excel data source or by clicking the **View Data** button in the **Sidebar**. The mark type is text, and the data is organized simply into rows and columns.

| SubRegion | Customer S.. | 2010 | 2011 | 2012 | 2013 |
|-----------|----------------|-----------|-----------|-----------|-----------|
| Central | Consumer | \$55,643 | \$75,238 | \$133,829 | \$133,827 |
| | Corporate | \$158,462 | \$276,894 | \$216,395 | \$378,177 |
| | Home Office | \$140,370 | \$172,717 | \$149,380 | \$246,067 |
| | Small Business | \$85,409 | \$73,885 | \$108,769 | \$109,149 |
| East | Consumer | \$124,562 | \$122,039 | \$62,532 | \$102,421 |
| | Corporate | \$156,408 | \$148,043 | \$152,769 | \$282,413 |
| | Home Office | \$114,117 | \$96,031 | \$71,918 | \$124,814 |
| | Small Business | \$158,915 | \$57,694 | \$132,477 | \$220,256 |
| South | Consumer | \$92,159 | \$68,300 | \$80,710 | \$87,103 |
| | Corporate | \$122,765 | \$115,298 | \$145,148 | \$186,830 |
| | Home Office | \$66,991 | \$91,545 | \$147,754 | \$118,017 |
| | Small Business | \$74,697 | \$36,584 | \$56,214 | \$107,326 |
| West | Consumer | \$118,745 | \$127,283 | \$175,779 | \$197,925 |
| | Corporate | \$206,321 | \$148,921 | \$258,752 | \$220,807 |
| | Home Office | \$139,880 | \$172,305 | \$94,049 | \$124,219 |
| | Small Business | \$72,332 | \$73,560 | \$128,667 | \$128,368 |

Highlighted Table

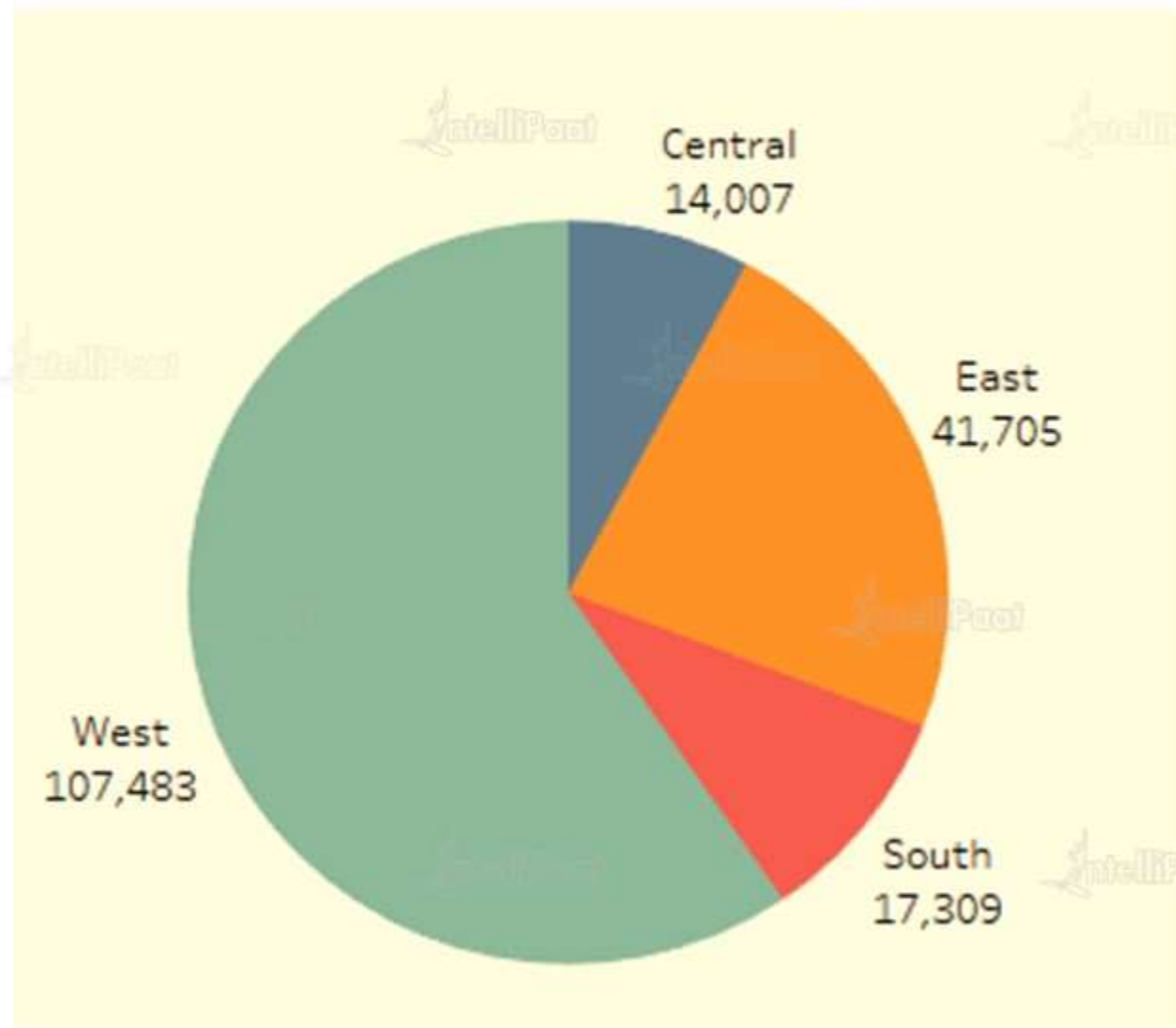
- A highlight table allows us to apply conditional formatting to a view. Tableau will automatically apply a color scheme in either continuous or stepped array of colors from the highest to the lowest. It is great for comparing a field's values within a row or a column.

Highlighted Table

| Category | Sub-Catego.. | Region | | | |
|-----------------|--------------|---------|-------|-------|--------|
| | | Central | East | South | West |
| Furniture | Bookcases | 493 | 999 | | 5,952 |
| | Chairs | 2,453 | 8,529 | 1,275 | 12,898 |
| | Furnishings | 725 | 894 | 2,513 | 5,446 |
| | Tables | 339 | 3,391 | 2,731 | 10,581 |
| Office Supplies | Appliances | 399 | 1,027 | 492 | 8,212 |
| | Art | 529 | 172 | 59 | 669 |
| | Binders | 2,587 | 1,109 | 292 | 5,994 |
| | Envelopes | 74 | 132 | 270 | 443 |
| | Fasteners | 3 | 22 | | 189 |
| | Labels | 291 | 24 | | 571 |
| | Paper | 711 | 1,769 | 278 | 4,382 |
| | Storage | 2,043 | 3,212 | 1,437 | 7,988 |
| | Supplies | 67 | 370 | 1,755 | 1,005 |
| Technology | Accessories | 1,537 | 2,723 | 1,397 | 7,059 |
| | Copiers | | 3,680 | | 15,520 |
| | Machines | 1,008 | 4,570 | | 7,580 |
| | Phones | 746 | 9,083 | 4,809 | 12,996 |

Pie Chart

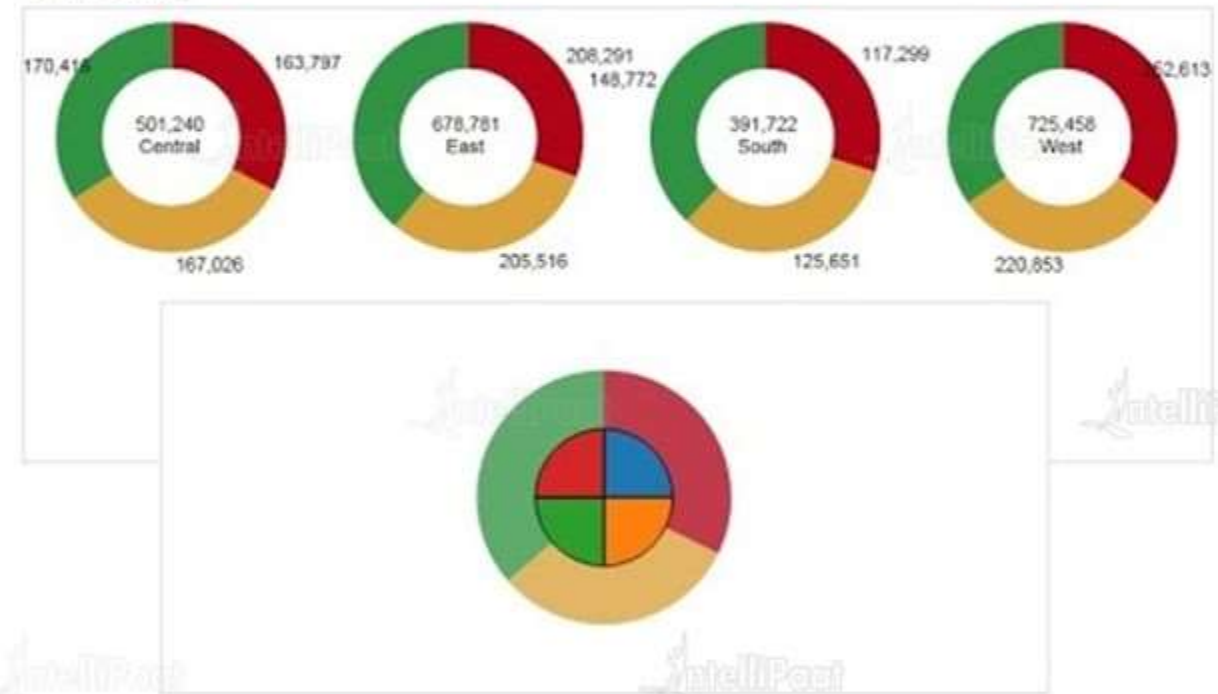
- Pie charts are among the most popular—sometimes terribly overused—charts in business presentations. They are best suited to show proportional or percentage relationships. When used in the right circumstance, pie charts can quickly show relative values to the other data points in the measure.



Donut Pie Chart

- Donut pie charts are created using the dual axis option between two pie charts.

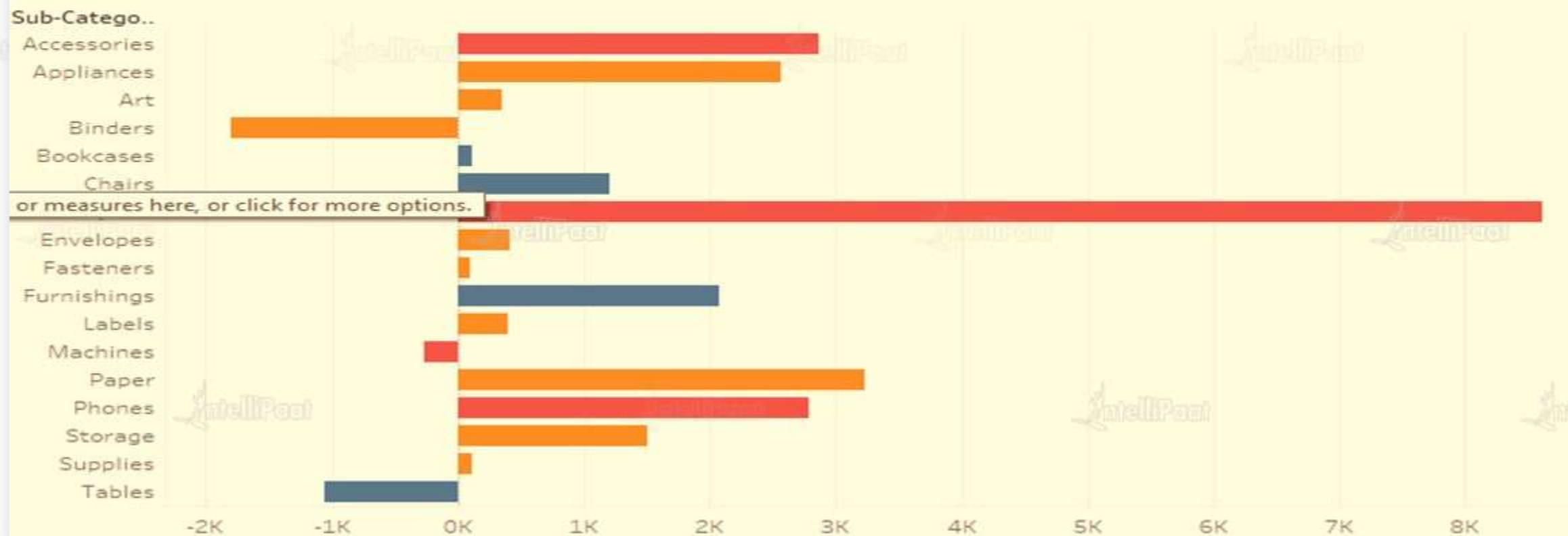
Donut Chart



Bar Chart

- In a bar chart, data is represented by horizontal or vertical bars.

Bar Chart1



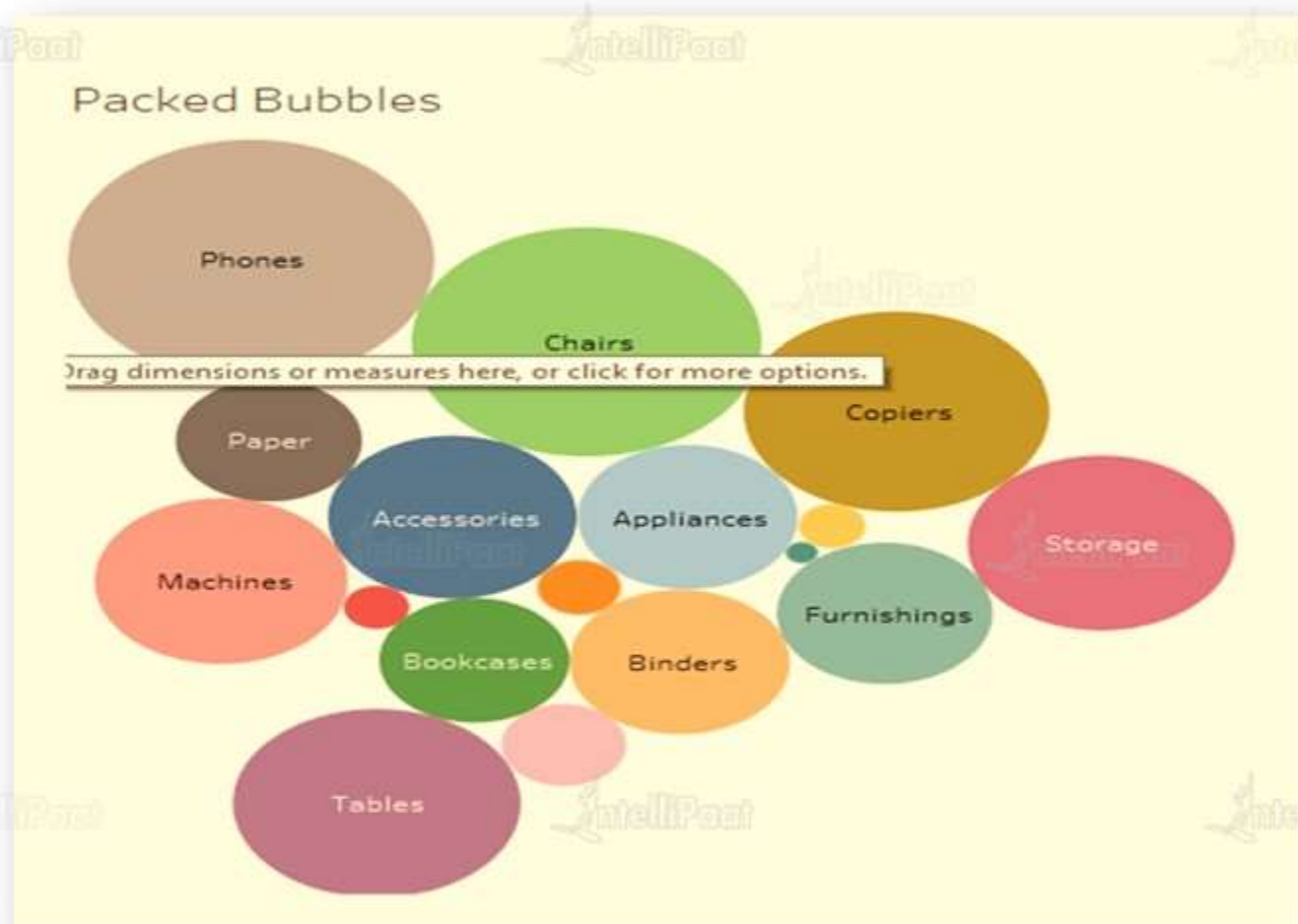
Line Chart

- A line chart is ideal when you want to illustrate trends over time. To use the line chart, you must have a date field.



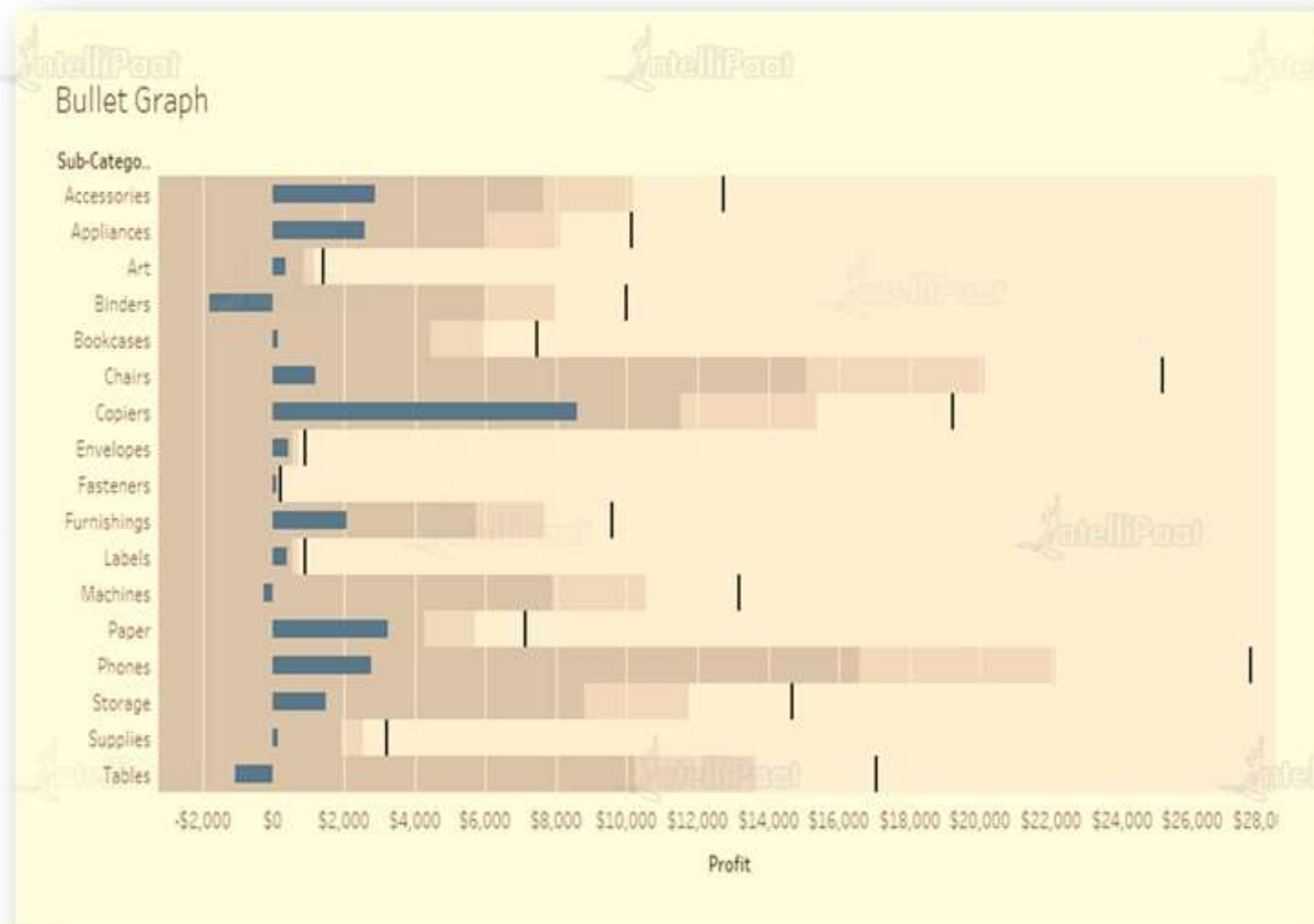
Bubble Chart

- A bubble chart is similar to tree maps which is useful in depicting lot of information in a very small amount of area.
- Size and Color of the bubbles highlight the top performing product categories.



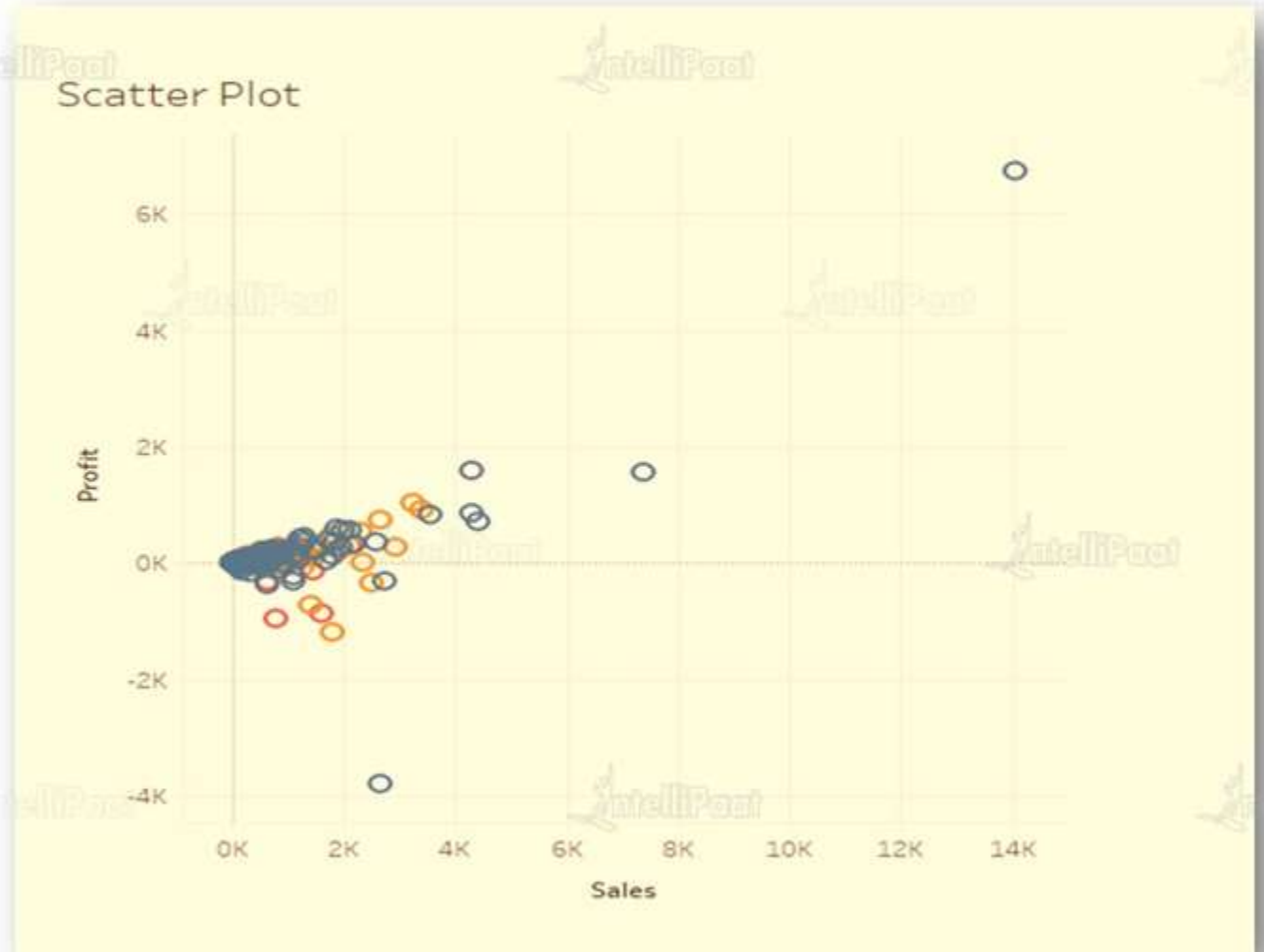
Bullet Charts

- Bullet charts or bullet graphs compare a primary measure to one or more other measures and presents this in the context of defined performance metrics. A bullet graph tells us instantly how the primary measure is performing against overall goals.



Scatter Plot

- Scatter plots are an effective way to give a sense of trends, concentrations and outliers that will direct us to where we need to focus our investigation efforts further.



Map

- One of the great features about the Tableau software is the ease in utilizing maps for your visualizations. There are two chart types to choose from when creating a view with geographic data: symbol maps and filled maps.



Quiz



Q 1. Which visualization identifies correlation between two data fields?

- a) Pie chart
- b) Cluster
- c) Trend line
- d) Stacked bars



Quiz



Q 2. A text table is also called a

_____.

- a) Crosstab
- b) Cross data
- c) Swap data
- d) All of the above



Q 3. What are the requirements for representing a bar chart?

- a) One dimension and two measures data field
- b) One dimension and one measure data field
- c) Two measure and two dimension data field
- d) All of the above



Q 4. What is the difference between copy data and copy crosstab?

- a) Copy data combines all additional data, and copy crosstab presents the visualization of data
- b) Copy data sums all additional data, but crosstab selects the remaining data
- c) All of the above



Assignment



1. Create a bar chart to compare two measures against a dimension.
2. Explains the conceptual difference between a line chart and an area chart.
3. Create a tree map to show the whole location hierarchy and also state the main visual element of a tree map.
4. Show category-wise sales on a State Map.
5. Create dual-axis maps to show state and city on the same map.



Thank You