Data Science 6th Module End Exam- Tableau

1) **Explain in detail the area graphs and line graphs in tableau and how to create them with examples. (With the help of an example create one in tableau)**

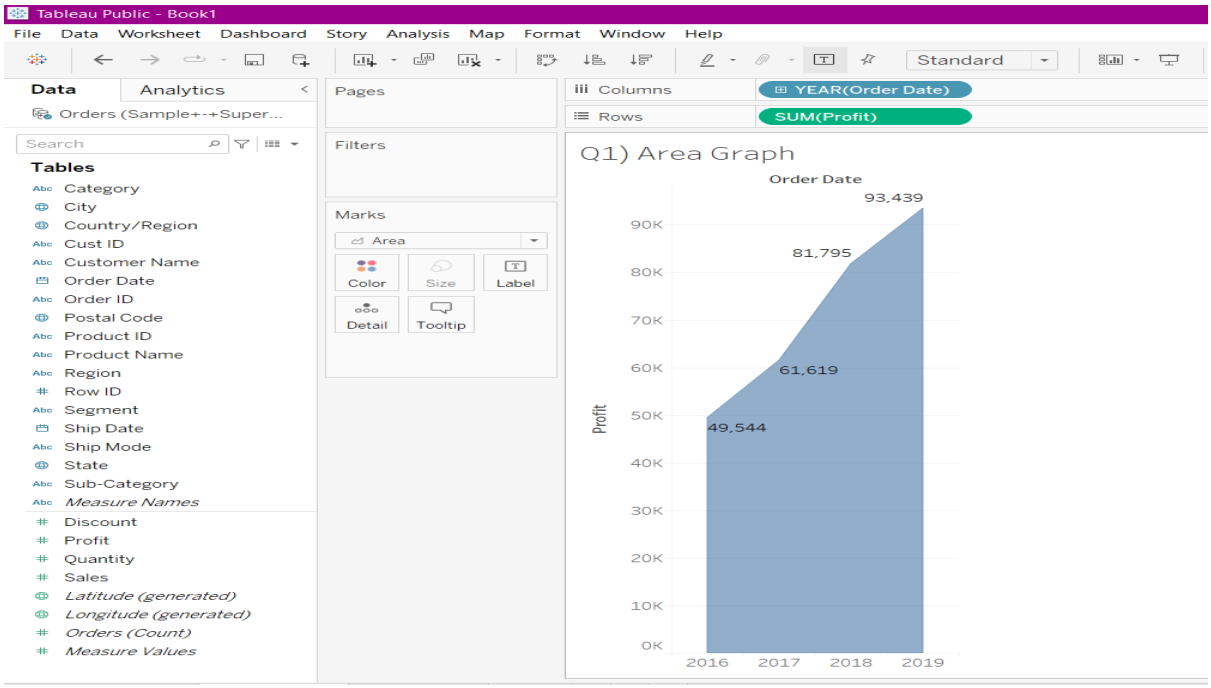
In Tableau, area graphs and line graphs are two popular visualization types used to represent trends or changes in data over time. An area graph is a type of chart that represents data as a series of points connected by a filled-in area, while a line graph represents data as a series of points connected by a line.

To create an area or line graph in Tableau, follow these steps:

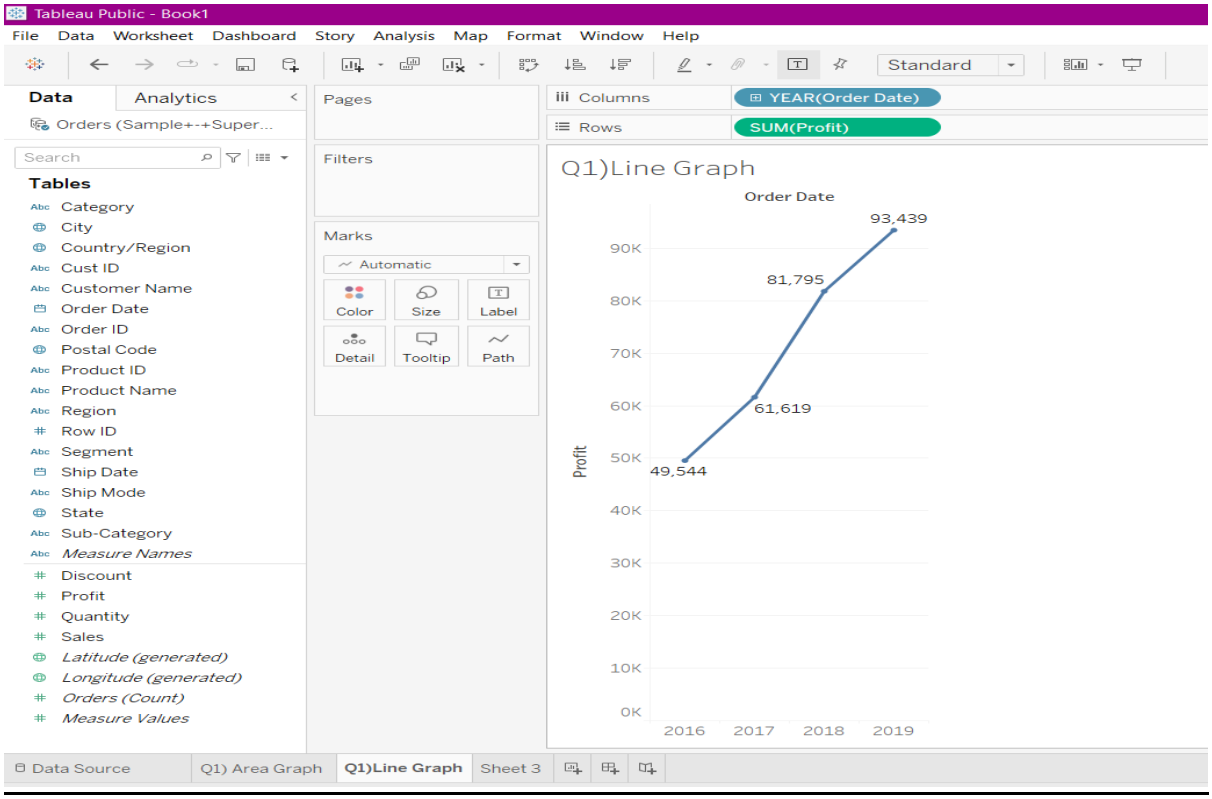
- Connect to your data source and select the fields you want to use in your graph.
- Drag the dimension you want to use for the x-axis to the Columns shelf, and the measure you want to use for the y-axis to the Rows shelf.
- To create an area graph, right-click on the y-axis and select "Add Table Calculation." Choose "Percent of Total" as the calculation type, and select "Table (Across)" as the addressing option. This will convert your graph to a stacked area chart. To create a line graph, simply click on the "Line" mark type in the Marks card.
- To add additional measures to your graph, drag them to the Rows shelf and Tableau will automatically create new lines or areas for each measure.
- To customize your graph, use the Marks card to adjust the color, size, and other properties of your lines or areas. You can also use the formatting options in the toolbar to adjust the axis labels, title, and other aspects of your graph.

Example of Area Graph and Line Graph.

- **Area graph**



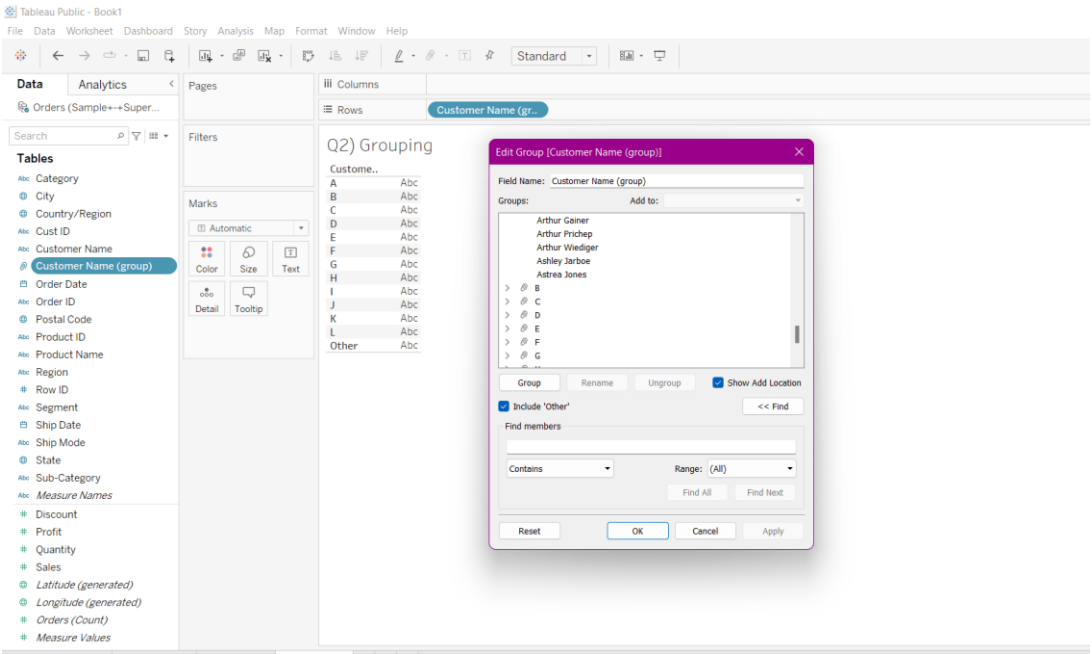
- **Line Graph**



2) **What are the different steps in grouping fields and combining tables in tableau? Explain with examples. (With the help of an example create one in tableau)**

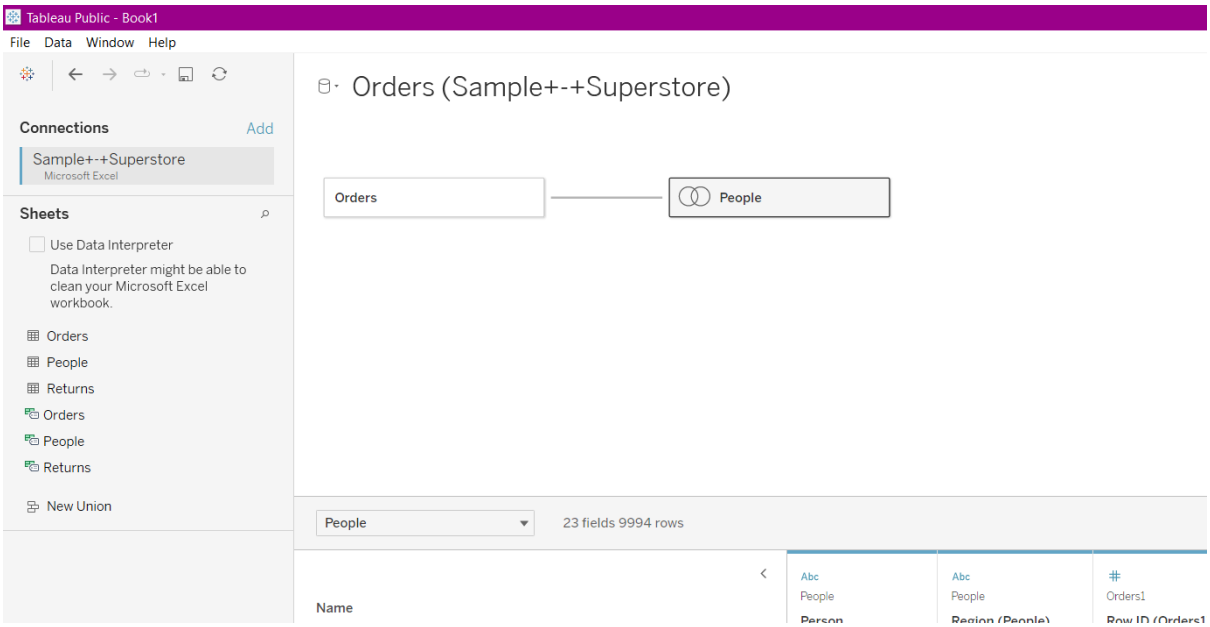
Grouping fields in Tableau allows you to combine values from multiple fields into a single category or group. This can be helpful for simplifying your visualization and making it easier to analyze. The following are the different steps involved in grouping fields in Tableau:

- Select the Fields to Group: First, select the fields you want to group in the "Data" pane by holding down the "Ctrl" key and clicking on each field.
- Right-Click to Group: Once you have selected the fields to group, right-click on one of the fields and select "Group" from the drop-down menu.
- Name the Group: In the "Create Group" dialog box, you can give your group a name and adjust the group's members by checking or unchecking the boxes next to each value. You can also use the "Add" and "Remove" buttons to add or remove values from the group.
- Click OK to Create the Group: After you have named your group and adjusted its members, click the "OK" button to create the group. The new group will appear in the "Data" pane as a single field.
- Use the Group in Your Visualization: You can now use the group in your visualization by dragging it onto the "Rows" or "Columns" shelves. The group will appear as a single category or column in your visualization.



The following are the different steps involved in combining tables in Tableau:

- Identify Common Field(s): The first step in combining tables is to identify the common field(s) that exist in both tables. This is usually done by looking at the columns of the two tables and identifying which columns have the same data.
- Open the Data Source Tab: In Tableau, go to the "Data" menu and select the "New Data Source" option. This will open the "Data Source" tab.
- Add Tables to the Data Source: In the "Data Source" tab, click on the "Add" button to add the tables that you want to combine. Select the data source that contains the tables you want to add, and then select the tables themselves.
- Drag and Drop Tables: Once the tables have been added to the data source, drag and drop the tables onto the "Join Area" in the "Data Source" tab. The "Join Area" is located at the bottom of the screen and is where you can combine the tables.
- Select Join Type: Select the type of join you want to use. Tableau supports four types of joins: inner join, left join, right join, and full outer join. Select the appropriate join type based on how you want to combine the tables.
- Specify Join Conditions: Once you have selected the join type, specify the join conditions. Join conditions specify which fields in the two tables should be used to combine the data. To specify the join conditions, drag the fields from one table to the other.
- Preview and Modify Data: Once you have specified the join conditions, you can preview the combined data by clicking on the "Sheet" tab. From here, you can modify the data by adding or removing fields, creating calculations, and applying filters.
- Save and Use the Data: Once you are satisfied with the combined data, save the data source and use it to create visualizations and dashboards in Tableau.

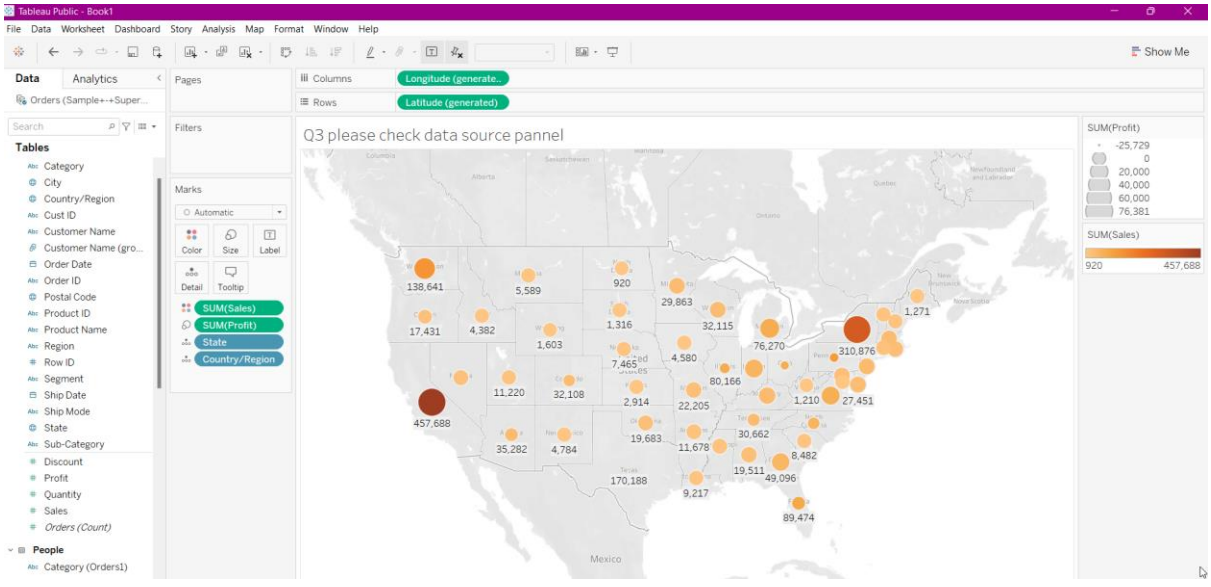


3) **<u>What is the use of color and size options in the marks cart of tableau? (With the help of an example create one in tableau)</u>**

The color and size options in the marks card of Tableau are used to add visual encoding to a visualization.

- The color option allows you to assign different colors to data points based on the values of a particular dimension. For example, you can use color to distinguish between different product categories or to show the performance of different regions. Color can also be used to highlight important data points or to create a color gradient that represents the intensity of a particular measure.
- The size option allows you to change the size of data points based on the values of a particular measure. For example, you can use size to show the sales volume of different products or the population of different cities. Size can also be used to emphasize important data points or to show the relative importance of different data points within a visualization.

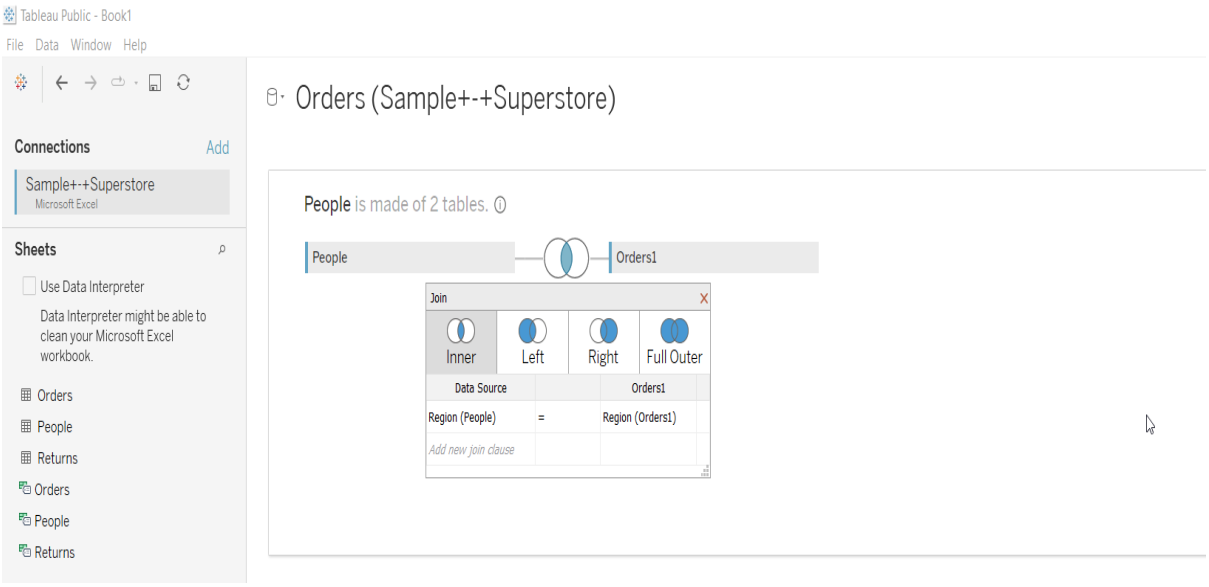
In general, color and size are powerful tools that can be used to add meaning and context to a visualization. By using color and size effectively, you can make your visualizations more engaging, informative, and easier to understand.



4) **What are the different joins supported by tableau? (With the help of an example create one in tableau)**

Tableau supports four types of joins:

- Inner Join: An inner join returns only the rows that have matching values in both tables. This is the most common type of join and is used when you want to combine data from two tables that have matching values in a particular field.
- Left Join: A left join returns all the rows from the left table and the matching rows from the right table. If there is no match in the right table, the result will contain null values. This is used when you want to include all the rows from one table, even if there are no matching rows in the other table.
- Right Join: A right join returns all the rows from the right table and the matching rows from the left table. If there is no match in the left table, the result will contain null values. This is used when you want to include all the rows from one table, even if there are no matching rows in the other table.
- Full Outer Join: A full outer join returns all the rows from both tables, regardless of whether there is a match in the other table. If there is no match, the result will contain null values. This is used when you want to include all the rows from both tables, even if there are no matching rows in the other table.

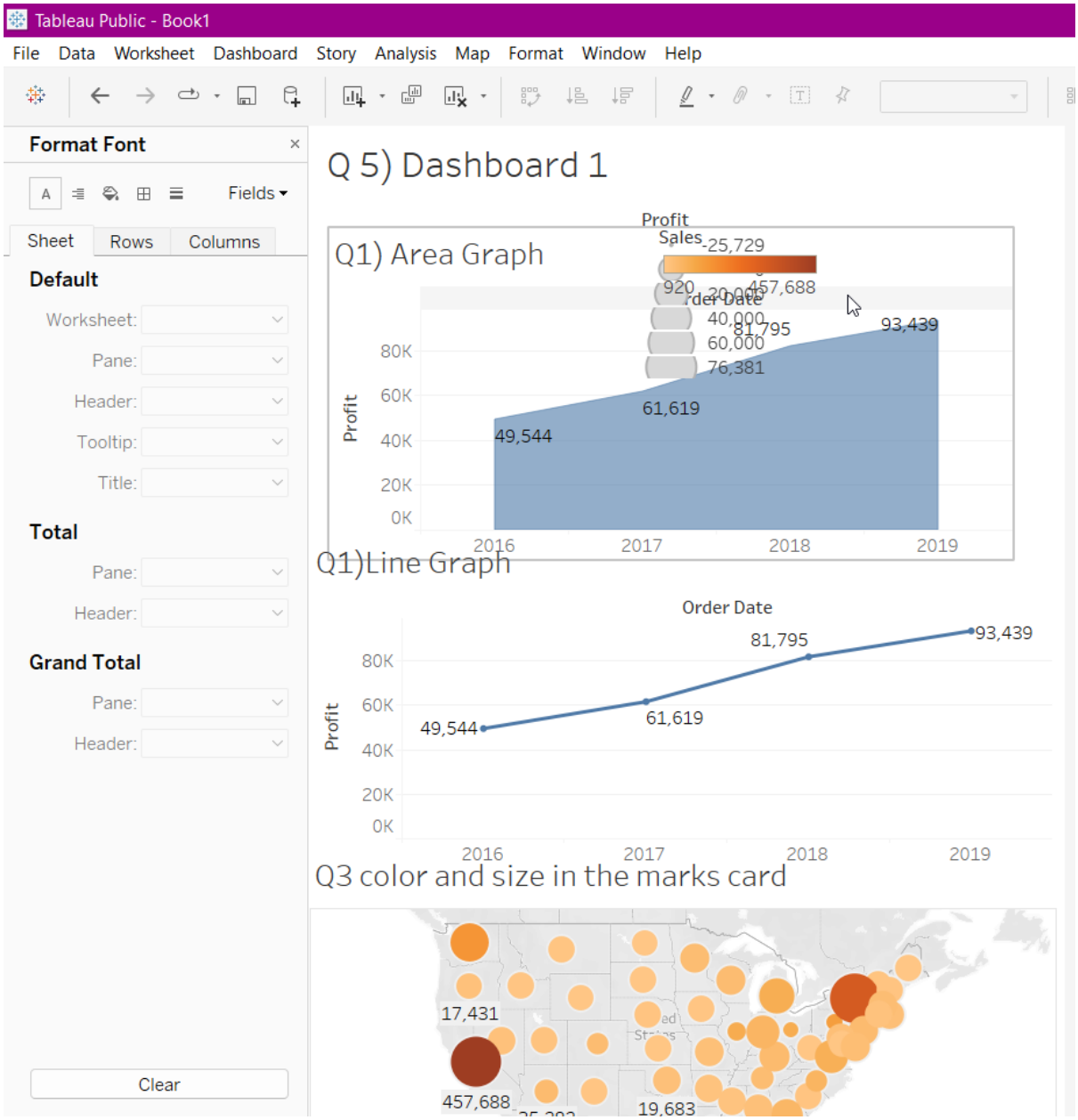


5) **Explain the steps to create dashboard in tableau with example (With the help of an example create one in tableau)**

Creating a Dashboard in Tableau:

A dashboard is a collection of several visualizations and objects on a single page. It is used to present a summary view of multiple data sources and to provide insights into key performance indicators. The following steps can be followed to create a dashboard in Tableau:

- Connect to Data: Connect to the data sources that you want to use in your dashboard.
- Create Worksheets: Create the worksheets that you want to include in your dashboard. You can create different types of worksheets such as charts, maps, tables, etc. that provide insights into your data.
- Add Worksheets to the Dashboard: Once you have created the worksheets, add them to the dashboard. You can add them by clicking on the "New Dashboard" button in the toolbar, and then dragging and dropping the worksheets onto the dashboard canvas.
- Arrange Worksheets on the Dashboard: Arrange the worksheets on the dashboard by dragging and dropping them to the desired location. You can resize them, move them, or layer them to create a visually appealing layout.
- Add Filters and Interactivity: Add filters and interactivity to the dashboard to enable users to explore the data further. You can add filters to the worksheets, add actions that change the view when users click on a data point, or add buttons that navigate to other dashboards.
- Format and Style the Dashboard: Format and style the dashboard to make it more visually appealing and informative. You can add text boxes, images, or shapes to provide additional information, or modify the colors, fonts, and layout to match your organization's branding.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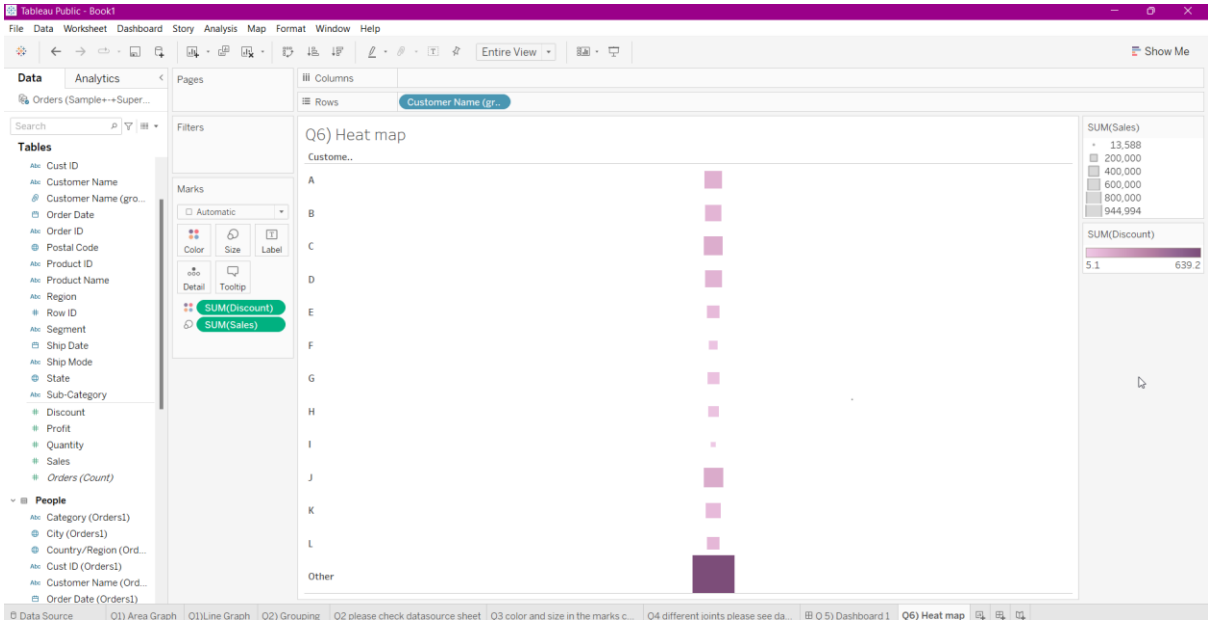
6) **Explain in detail the heat maps and scatter plot and how to create them with example (With the help of an example create one in tableau)**

Heat Maps:

A heat map is a type of visualization that uses color to represent the intensity of data values. It is used to show the density of data points in a two-dimensional space. The color of each data point represents the value of a third variable, typically a measure. The heat map is created by using a color scale that maps the values of the measure to different colors.

To create a heat map in Tableau, follow these steps:

- Connect to Data: Connect to the data source and drag the dimensions and measures to the view.
- Change the Mark Type: Change the mark type to "Square" or "Rectangle".
- Assign a Measure to Color: Assign a measure to the color shelf. Tableau will automatically use a gradient color scale to represent the values of the measure.
- Adjust the Color Scale: Adjust the color scale to make it more meaningful and visually appealing. You can modify the color palette, change the range of values displayed, or adjust the midpoint.
- Add Labels: Add labels to the data points to provide more context and information. You can add labels to the individual data points or to the overall view.

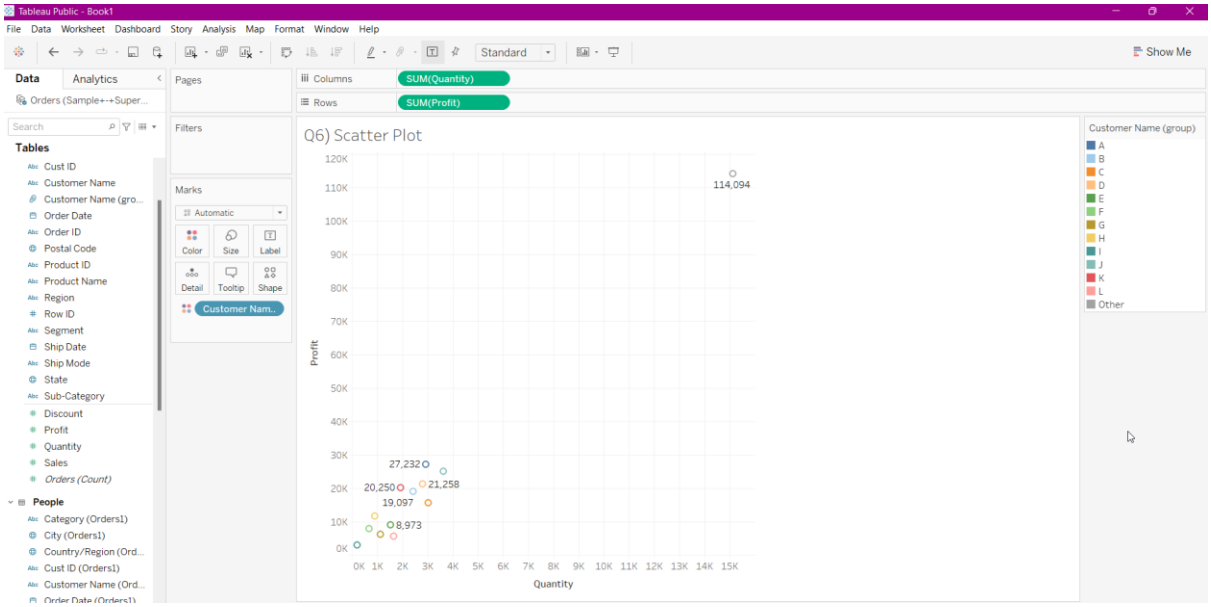


Scatter Plot:

A scatter plot is a type of visualization that displays the relationship between two variables. It is used to identify patterns and trends in data and to show the strength of the relationship between the two variables. The scatter plot is created by plotting one variable on the x-axis and the other variable on the y-axis. Each data point is represented by a dot, and the position of the dot represents the values of the two variables.

To create a scatter plot in Tableau, follow these steps:

- Connect to Data: Connect to the data source and drag the dimensions and measures to the view.
- Change the Mark Type: Change the mark type to “Circle” or “Shape”.
- Assign a Dimension to Columns and a Measure to Rows: Assign a dimension to the Columns shelf and a measure to the Rows shelf. Tableau will automatically create a scatter plot that shows the relationship between the two variables.
- Assign a Second Measure to Size or Color: Assign a second measure to the Size or Color shelf. This will add a third dimension to the scatter plot and make it more informative.
- Add Labels: Add labels to the data points to provide more context and information. You can add labels to the individual data points or to the overall view.

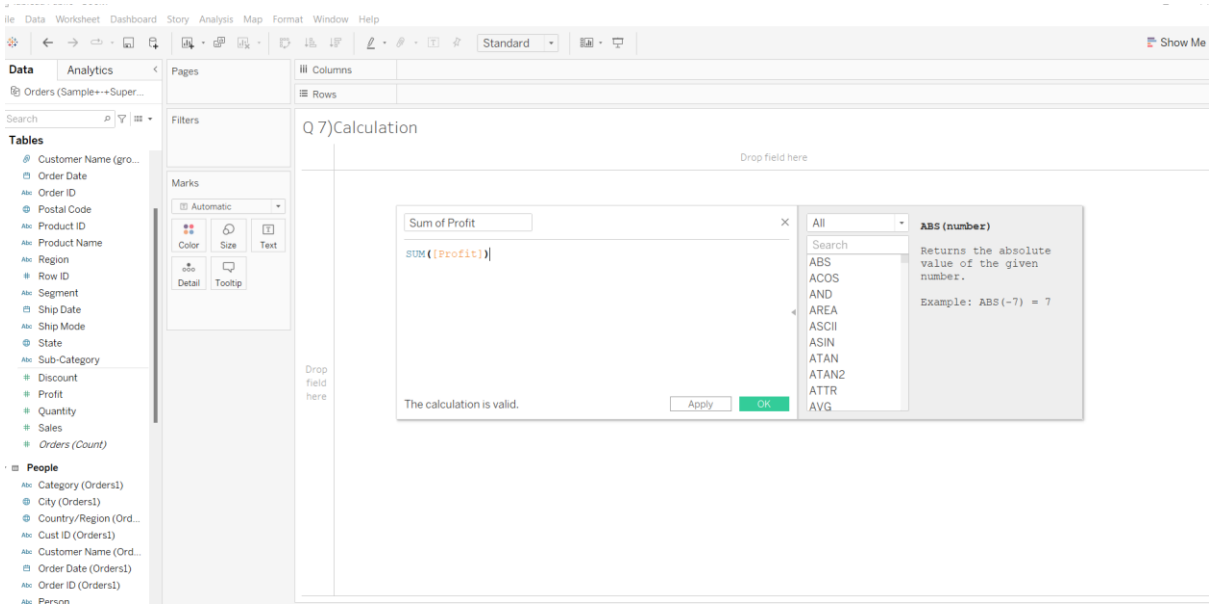


7) How to create table calculations in tableau with examples. (With the help of an example create one in tableau)

Table calculations in Tableau are used to perform calculations on a set of data based on the values in each row or column. Table calculations can be used to perform running totals, percentages, and other types of calculations.

Here are the steps to create table calculations in Tableau:

- Select the worksheet where you want to create the table calculation.
- Select the measure that you want to perform the calculation on.
- Right-click on the measure and select "Add Table Calculation".
- In the Table Calculation dialog box, select the type of calculation that you want to perform, such as Running Total or Percent of Total.
- Choose the fields that you want to use in the calculation. You can choose to use all fields in the view or limit the calculation to specific dimensions.
- Set the computation options. These options allow you to specify how the calculation should be computed, such as across the entire table, by pane or by cell
- Define the scope of the calculation. This determines which rows or columns the calculation should be applied to.
- Choose the format for the calculation, such as currency or percentage.
- Click "OK" to create the table calculation.



8) **Explain in detail the distribution bands in tableau and how to create them with example (With the help of an example create one in tableau)**

In Tableau, distribution bands are used to show the distribution of data in a visualization. Distribution bands are essentially a type of error bar that is used to show the range of data values around a central point, such as a mean or median.

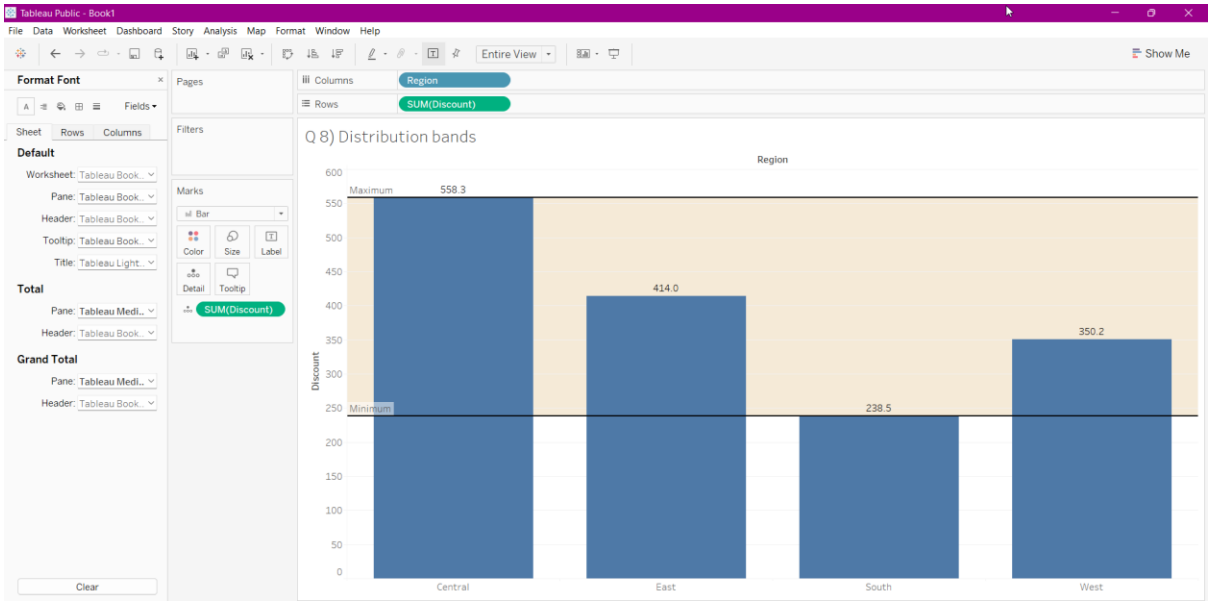
To create distribution bands in Tableau, you can follow these steps:

- Connect to your data source and create a new worksheet.
- Drag the measure that you want to visualize onto the Rows or Columns shelf.
- Drag the same measure onto the view again, and drop it onto the Marks card.
- Change the mark type to "Bar" or "Circle".
- Right-click on the second instance of the measure on the Marks card, and select "Add Reference Line".
- In the Reference Line dialog box, select "Band" as the Line type.
- Choose the aggregation method for the band, such as Median, Mean, or Standard Deviation.
- Choose the confidence interval for the band, such as 95% or 99%.
- Choose the color and width for the band.
- Click "OK" to create the distribution bands.

The distribution bands will now appear on your visualization as a shaded area around the central point.

For example, let's say you have a dataset that includes the sales data for a retail store. To create a visualization that shows the distribution of sales by product category, you can follow these steps:

- Connect to your sales data source and create a new worksheet.
- Drag the "Product Category" dimension onto the Rows shelf.
- Drag the "Sales" measure onto the Columns shelf.
- Drag the "Sales" measure onto the Marks card, and change the mark type to "Bar".
- Right-click on the "Sales" measure on the Marks card, and select "Add Reference Line".
- In the Reference Line dialog box, select "Band" as the Line type.
- Choose "Median" as the aggregation method for the band.
- Choose "95%" as the confidence interval for the band.
- Choose a color and width for the band.
- Click "OK" to create the distribution bands.

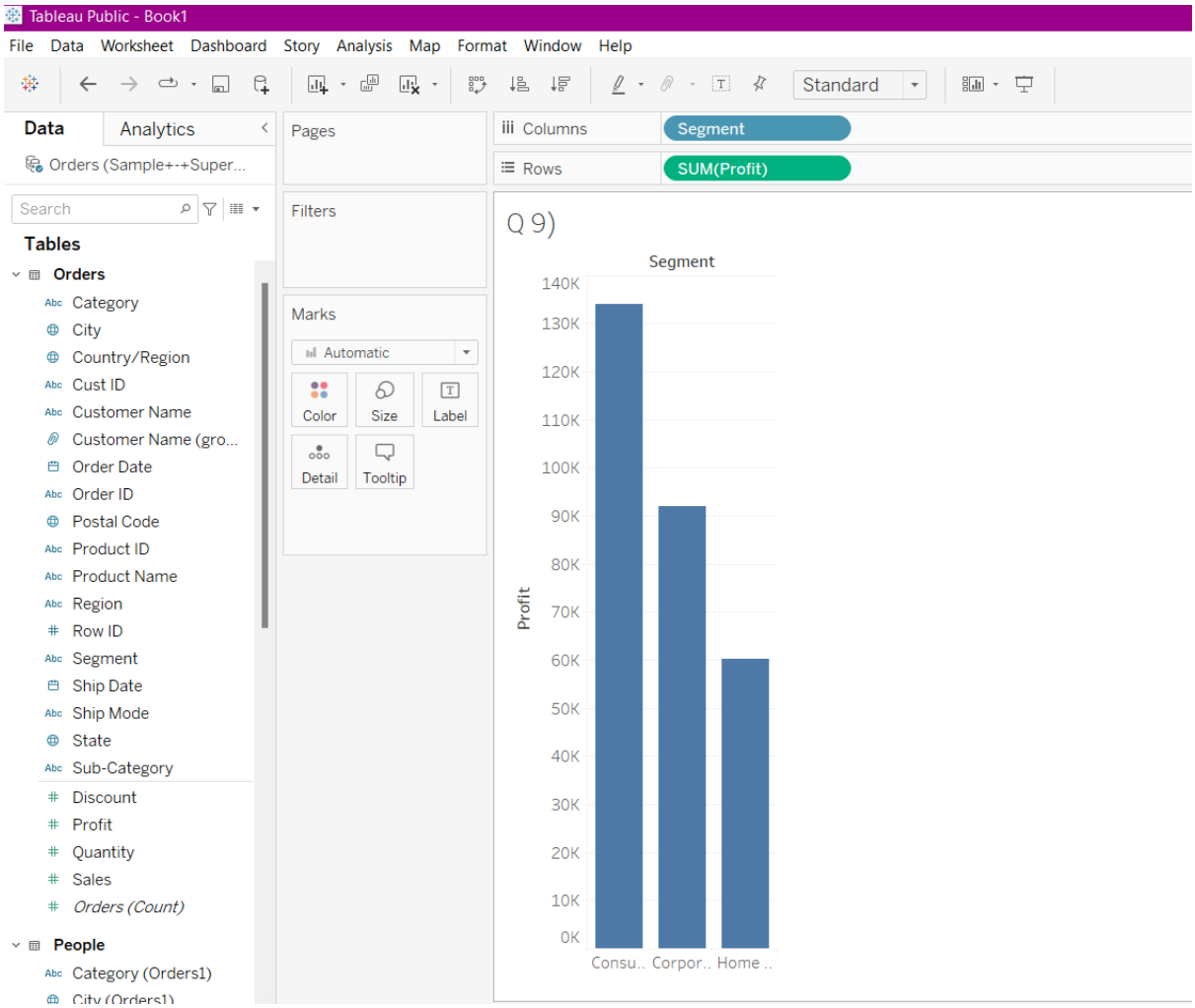


9) <u>Explain the steps to create bar chart and pie diagram in tableau with example (With the help of an example create one in tableau)</u>

Creating a bar chart or pie chart in Tableau is a straightforward process. Here are the steps for creating both types of charts:

Creating a Bar Chart in Tableau:

- Connect to your data source and create a new worksheet.
- Drag the dimension you want to analyze onto the Columns shelf.
- Drag the measure you want to analyze onto the Rows shelf.
- Tableau will automatically create a bar chart using the default aggregation of the measure. You can customize the chart by adjusting the color, size, and other options.
- To add additional dimensions or measures to the chart, drag them onto the Columns or Rows shelf.
- Creating a Pie Chart in Tableau:
- Connect to your data source and create a new worksheet.
- Drag the dimension you want to analyze onto the view.
- Drag the measure you want to analyze onto the view.
- Right-click on the measure and select "Add to Label" or "Add to Angle".
- Tableau will automatically create a pie chart using the default aggregation of the measure. You can customize the chart by adjusting the color, size, and other options.
- To add additional dimensions or measures to the chart, drag them onto the view.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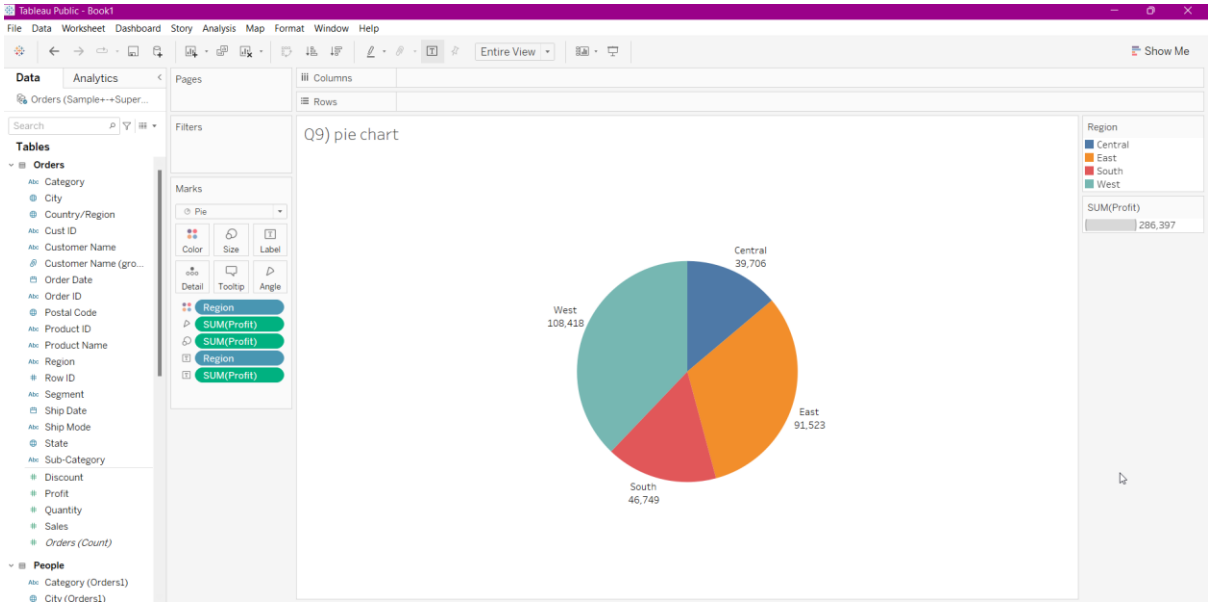
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91,523
South
46,749
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108,418

10) How to add story points on the dashboard (With the help of an example create one in tableau)

To add story points to a dashboard in Tableau, follow these steps:

- Create a story by clicking on the "New Story" button in the toolbar.
- Add a title and description to your story, and then click "Create Story."
- Add the visualizations that you want to include in your story. You can add sheets, dashboards, or web pages.
- Arrange the visualizations in the order you want them to appear by dragging and dropping them within the story.
- Add text, images, or shapes to your story by clicking on the "Add Text," "Add Image," or "Add Shape" buttons in the toolbar.
- Customize the appearance of your story by selecting a theme, changing the font, or adjusting the colors.
- When you're done creating your story, click on the "Share" button in the toolbar and select "Embed" to get the embed code.
- Copy the embed code and paste it into your dashboard by adding a "Web Page" object and pasting the code into the URL field.
- Resize the web page object to fit the size of your story.
- Save your dashboard and view it in the "Dashboard" view to see the story points.

Your story will now be embedded in your dashboard and users can navigate through the story points by clicking on the arrows in the bottom right corner of the web page object.