## vi. Explain in detail the heat maps and scatter plot and how to create them with example

Heat map-

A heat map is a two-dimensional representation of data in which values are represented by colours. A simple heat map provides an immediate visual summary of information. More elaborate heat maps allow the viewer to understand complex data sets.

There can be many ways to display heat maps, but they all share one thing in common -- they use colour to communicate relationships between data values that would be would be much harder to understand if presented numerically in a spreadsheet.

Heat maps are very useful in describing correlation among several numerical variables, visualizing patterns and anomalies. Below fig is an example of a heat map.
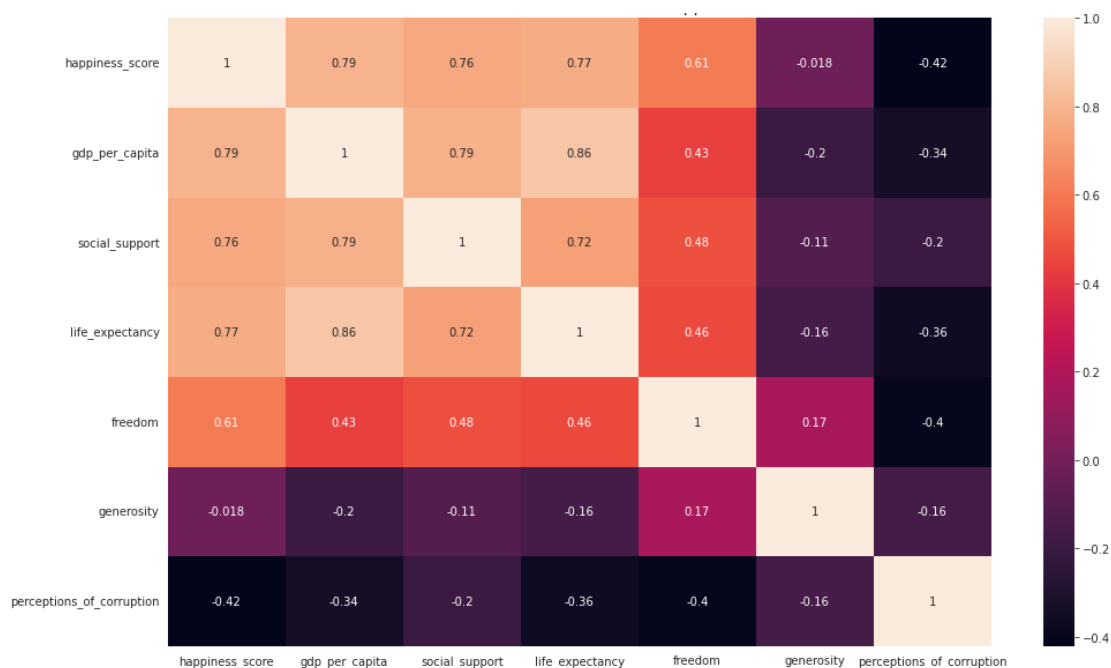

In Tableau, you create a highlight table by placing one or more dimensions on the Columns shelf and one or more dimensions on the Rows shelf. You then select Square as the mark type and place a measure of interest on the Colour shelf.
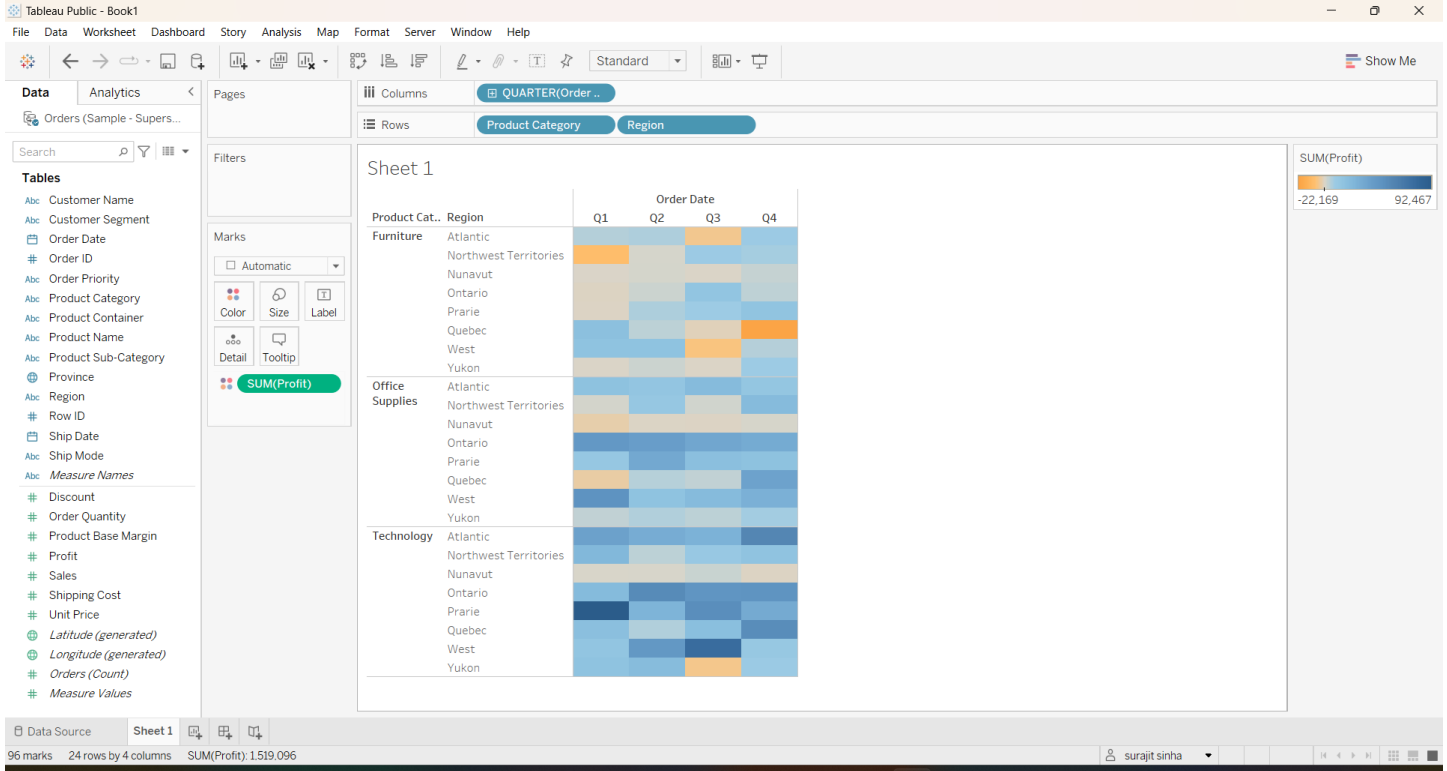
Step 1- Connect to a data source.

Step 2- Dragging the Order date dimension to Columns and set it to quarterly.
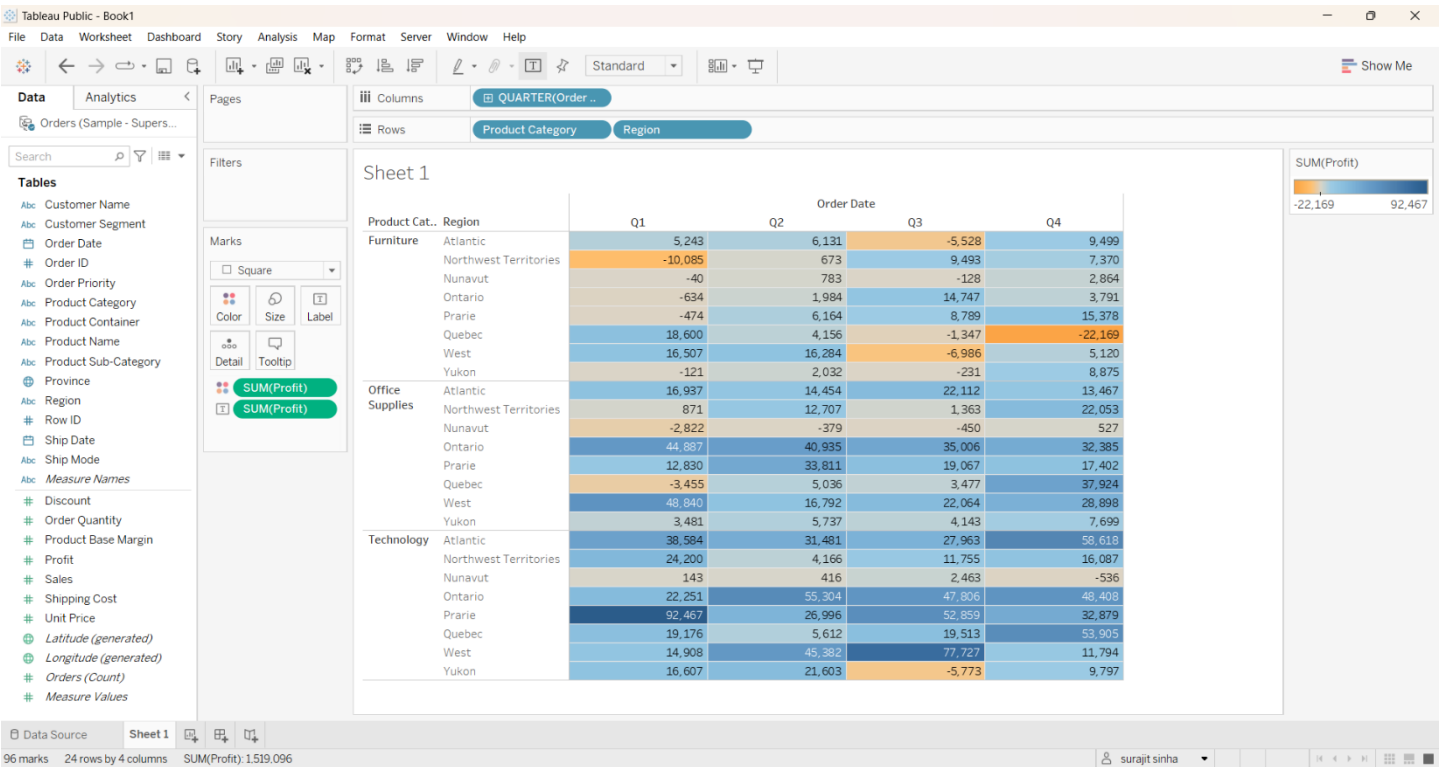
Step 3- Dragging the product category and region dimension to the rows.
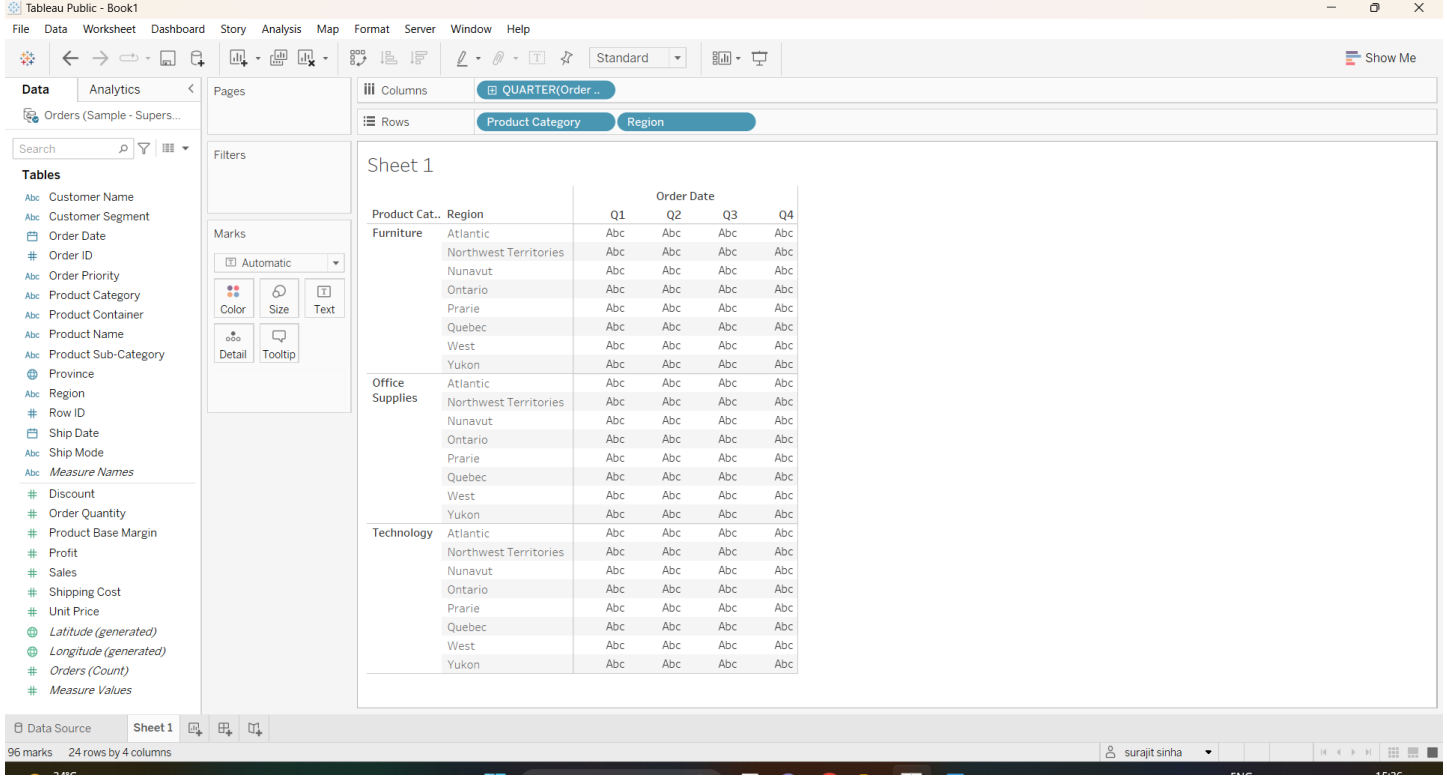
Step 4- Drag the Profit measure to Colour on the Marks card.

At last for better view adding a border and dragging the profit to the label box in mark cart.
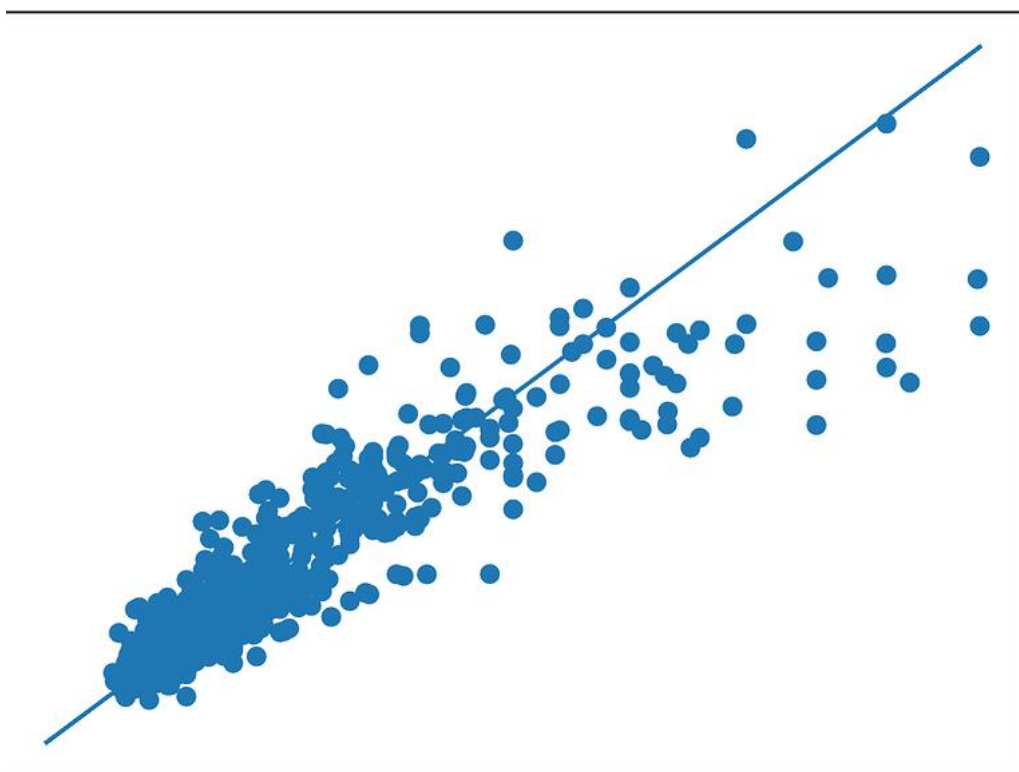
Scatter Plot-

Scatter plots are the graphs that present the relationship between two variables in a data-set. It represents data points on a two-dimensional plane or on a Cartesian system. The independent variable or attribute is plotted on the X-axis, while the dependent variable is plotted on the Y-axis. These plots are often called scatter graphs or scatter diagrams.

A scatter plot is also called a scatter chart, scattergram, or scatter plot, XY graph. The scatter diagram graphs numerical data pairs, with one variable on each axis, show their relationship. Now the question comes for everyone: when to use a scatter plot?

Scatter plots are used in either of the following situations.

1) When we have paired numerical data

2) When there are multiple values of the dependent variable for a unique value of an independent variable

3) In determining the relationship between variables in some scenarios, such as identifying potential root causes of problems, checking whether two products that appear to be related both occur with the exact cause and so on.

Below fig is a representation of the scatter plot.

A scatter plot can use several mark types. By default, Tableau uses the shape mark type. Depending on your data, you might want to use another mark type, such as a circle or a square.

In Tableau, you create a scatter plot by placing at least one measure on the Columns shelf and at least one measure on the Rows shelf.

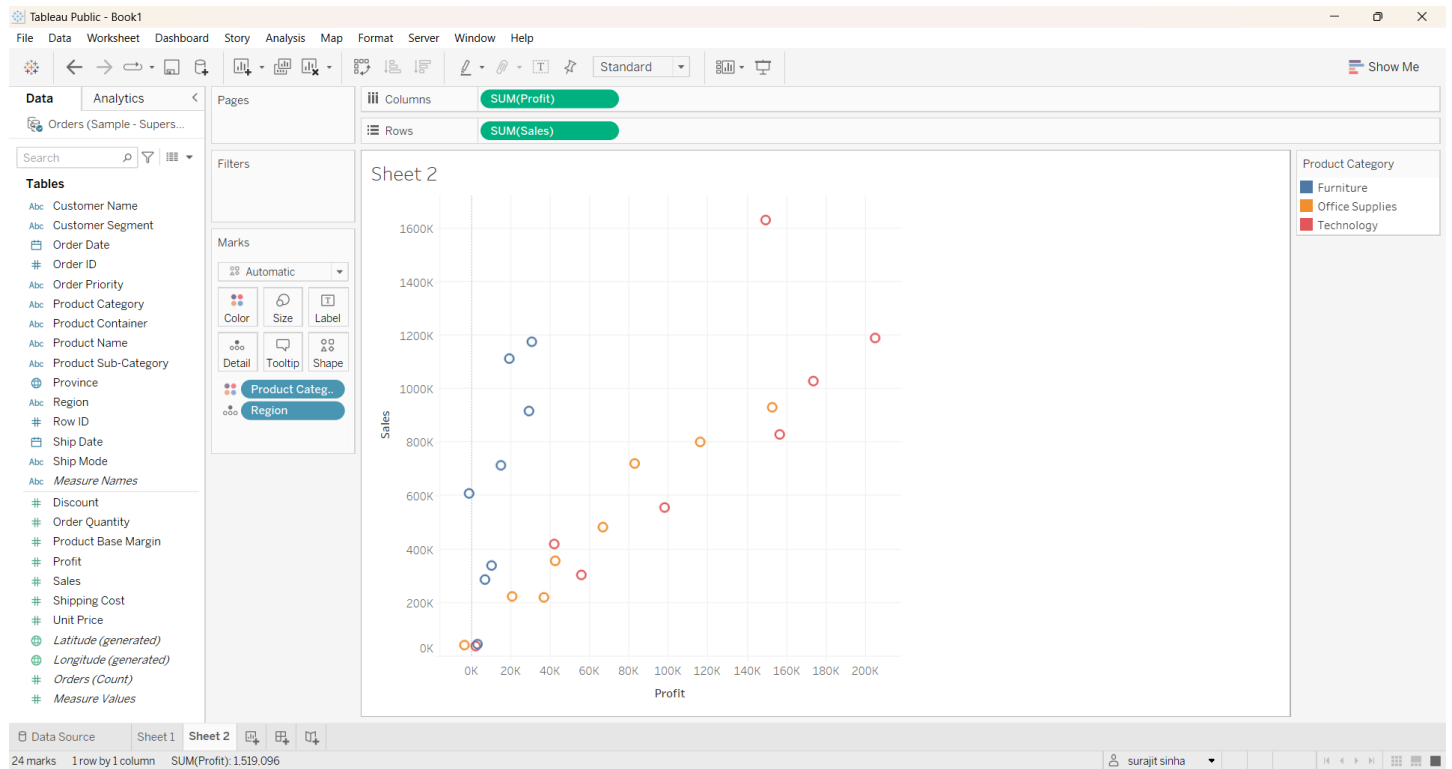Step 1- Connect to a data source.

Step 2- Dragging the Profit measure to Columns.

Step 3- Dragging the Sales measure to Rows.
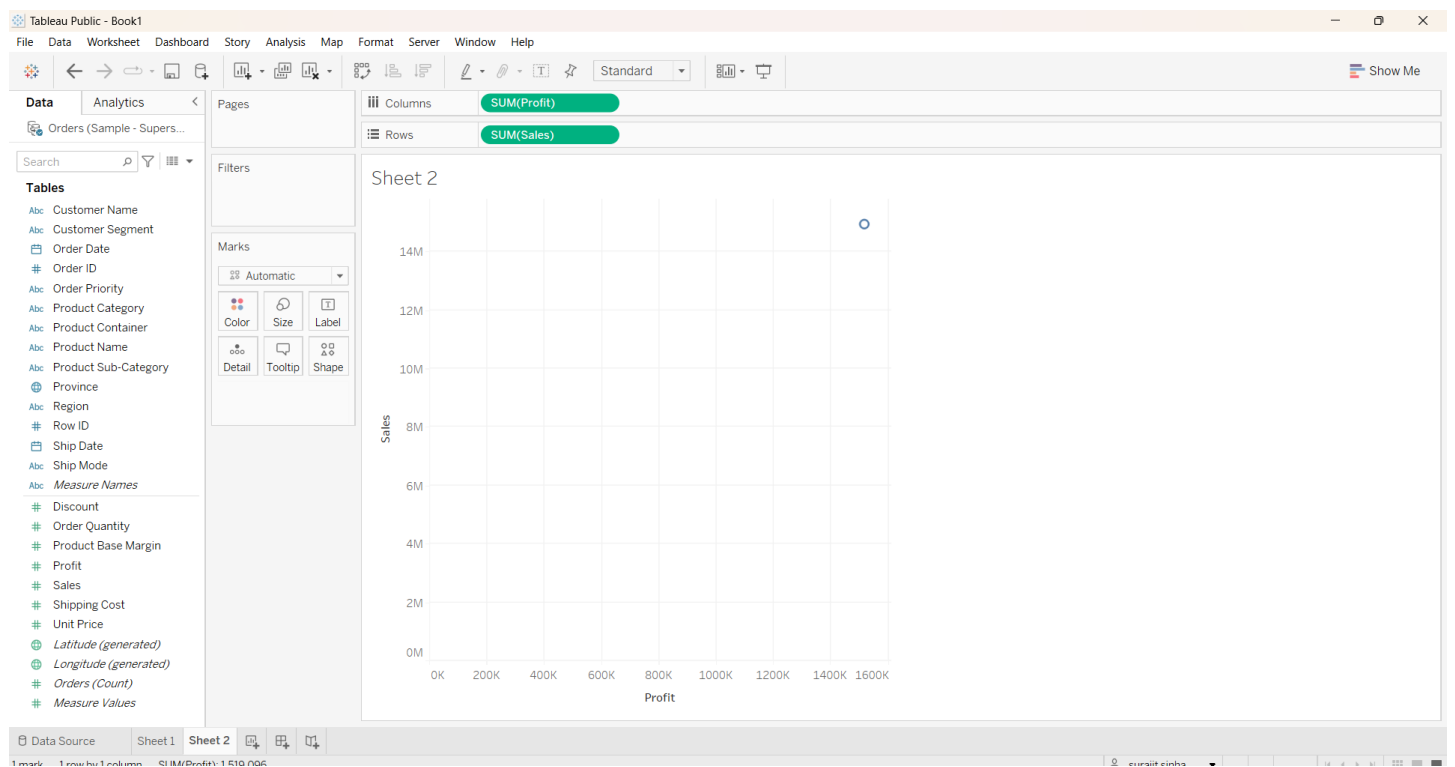
Step 4- Dragging the Category dimension to Colour on the Marks cart.

Step 5 - Dragging the Region dimension to details on the Marks cart.

At last for adding a regression line or trend line from the Analytics pane, drag the Trend Line model to the view, and then drop it on the model type.

And dragging region to the label in the mark cart.