| Batch:    C-2              Roll No.:  16010122267 |
|---|
| Experiment 04 |

**Title:** Introduction to various charts

**Objective:**

**1. To learn how to use various charts for visualizing preprocessed data**
- **Pie chart**
- **Donut chart**
- **Lollypop chart**
- **Boxplot**
- **Bubble chart**
- **Bump Chart**
- **Funnel chart**
- **Water Chart**
- **Bar chart /column chart / Stacked chart**
- **Area Chart**
- **Pareto chart**
- **Tree maps**
- **Scatter plot**
- **Gantt chart**
- **Word map**

**2. To learn following concepts**
- **Parameters**
- **Combine, Sets**
- **Label, Title and caption**
- **Working with metadata**
- **Working with filter**
- **Font, Size, colour, and Border,**
- **Calculated field, Number function, string function**
- **Conditional formatting, logical function**
- **Exporting the charts**

**3. To learn interpretation of each charts/plots**

**Course Outcome:**

**CO1: Learn how to locate and download datasets, extract insights from that data and present their findings in a variety of different formats.**

**CO3:  Apply data visualization best practices**

**Books/ Journals/ Websites referred:**

https://www.youtube.com/watch?v=oMTbUnZmaw8

**Resources used:**

https://help.tableau.com/current/pro/desktop/en-us/buildexamples_bar.htm
https://en.wikipedia.org/wiki/Bar_chart
https://datascience.foundation/discussion/visualisation/data-types-supported-in-tableau

**Theory (About various charts explored):**

1. **Bar chart:**

A bar chart is a way of summarizing a set of categorical data (continuous data can be made categorical by auto-binning). The bar chart displays data using several bars, each representing a particular category. The height of each bar is proportional to a specific aggregation (for example the sum of the values in the category it represents). It is also possible to colour or split each bar into another categorical column in the data, which enables you to see the contribution from different categories to each bar or group of bars in the bar chart.

2. **Line chart:**

A line chart is used to represent data over a continuous time span. It connects a series of data points with a continuous line.

It is generally used to show trend of a measure (or a variable) over time. Data values are plotted as points that are connected using line segments.

Using a line chart, one can see the pattern of any dependent variable over time like share price, EPS (Earnings Per Share) of a company, weather recordings (like temperature, precipitation or humidity), etc.

3. **Pie chart:**

A Pie Chart is a type of graph that displays data in a circular graph. The pieces of the graph are proportional to the fraction of the whole in each category. In other words, each slice of the pie is relative to the size of that category in the group. The entire "pie" represents 100 percent of a whole, while the pie "slices" represent portions of the whole.

A list of numerical variables along with categorical variables is needed to represent data in the form of a pie chart. The arc length of each slice and **consequently the**

area and central angle it forms in a pie chart is proportional to the quantity it represents.

## 4. Scatter plot:

Scatter plot is a type of plot or mathematical diagram using Cartesian coordinates to display values for typically two variables for a set of data. If the points are coded (color/shape/size), one additional variable can be displayed. The data are displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis.

The position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are used to observe relationships between variables.

## 5. Packed bubble chart:

Packed bubble charts are visualizations where the size and optionally the color of the bubbles are used to visualize the data. It is a means to show relational value without regards to axes. The bubbles are packed in as tightly as possible to make efficient use of space.

## 6. Donut chart:

A donut chart (also spelled doughnut) is functionally identical to a pie chart, except for a blank centre and the ability to support multiple statistics at once. Doughnut charts provide a better data intensity ratio to standard pie charts since the blank center can be used to display additional, related data.

Donut Charts are more space-efficient than Pie Charts because the blank space inside a Donut Chart can be used to display information inside it.

**Following points should be written by students**

- Different charts explored for data visualization:

Working: Using tableau software

1. Exported of each chart output with variations explored on your dataset
2. Interpretation (what each chart signifies)

1. **Bar Chart:** It represents categorical data with rectangular bars with heights or lengths proportional to the values that they represent.
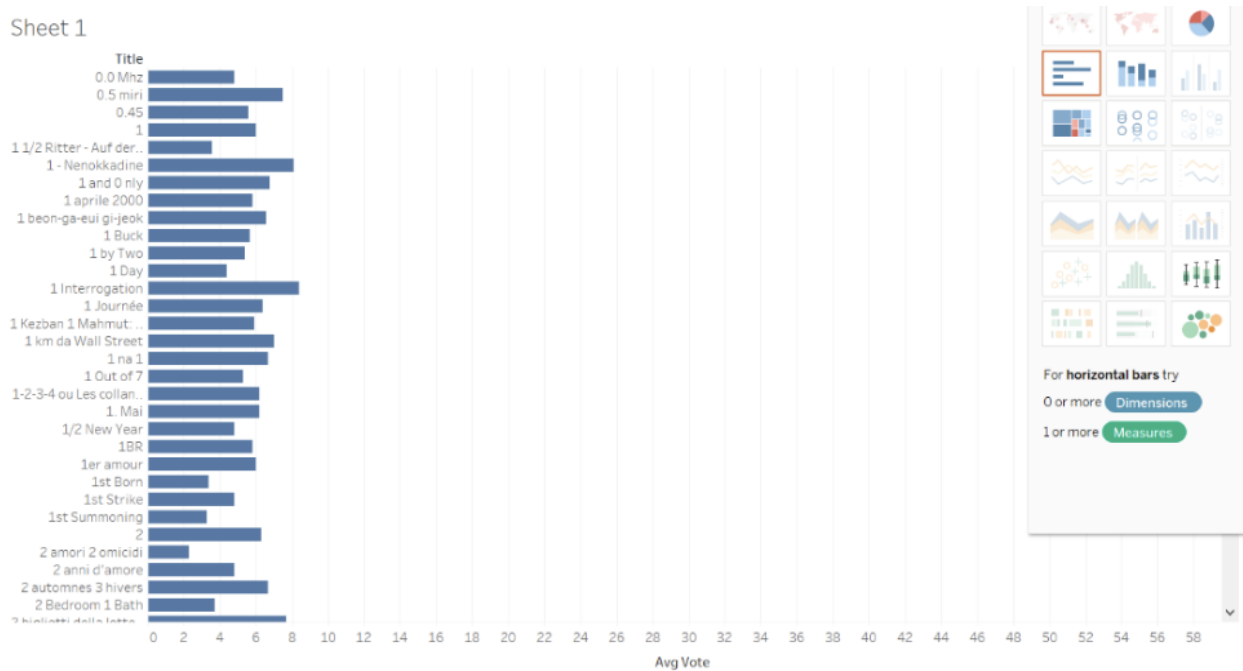


2. **Line Chart:** It displays information as a series of data points called 'markers' connected by straight line segments.
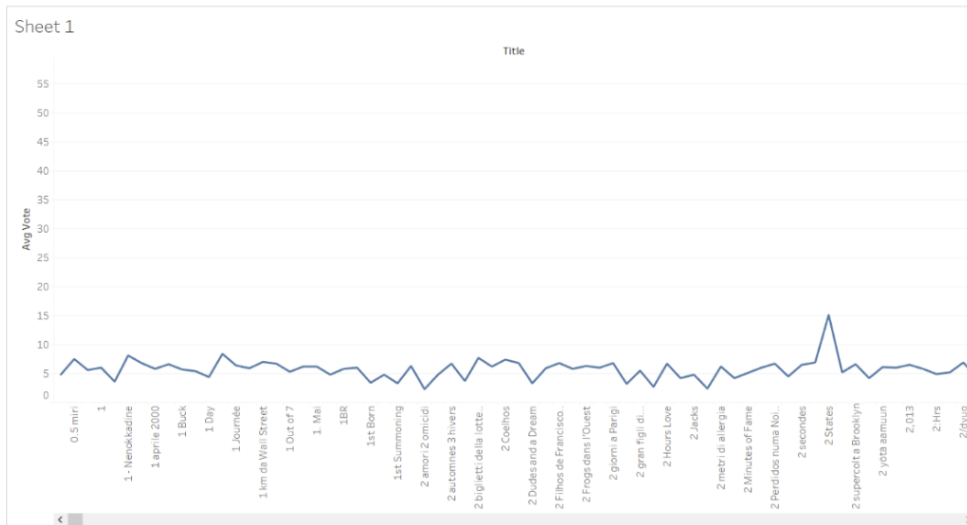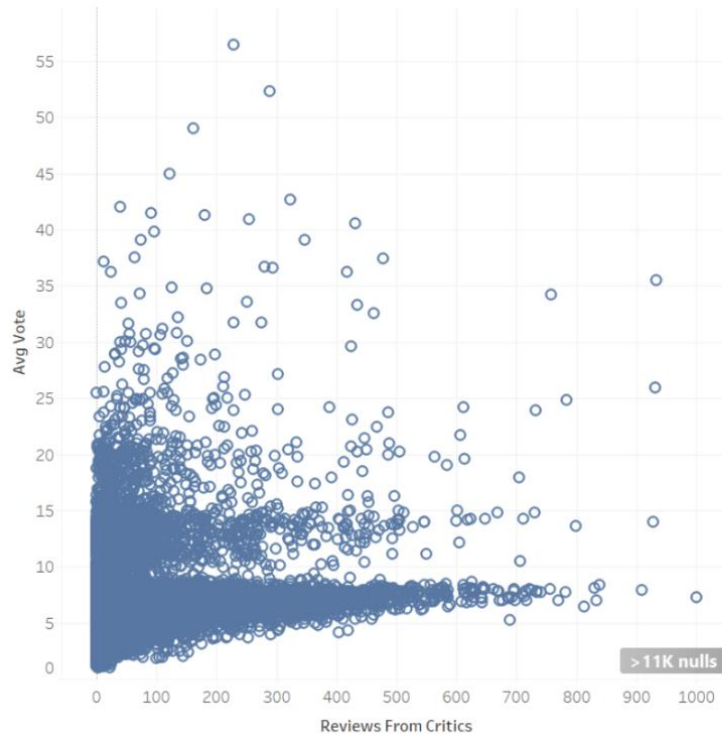
3. **Pie Chart:** It is a circular statistical graphic, which is divided into slices to illustrate numerical proportion.
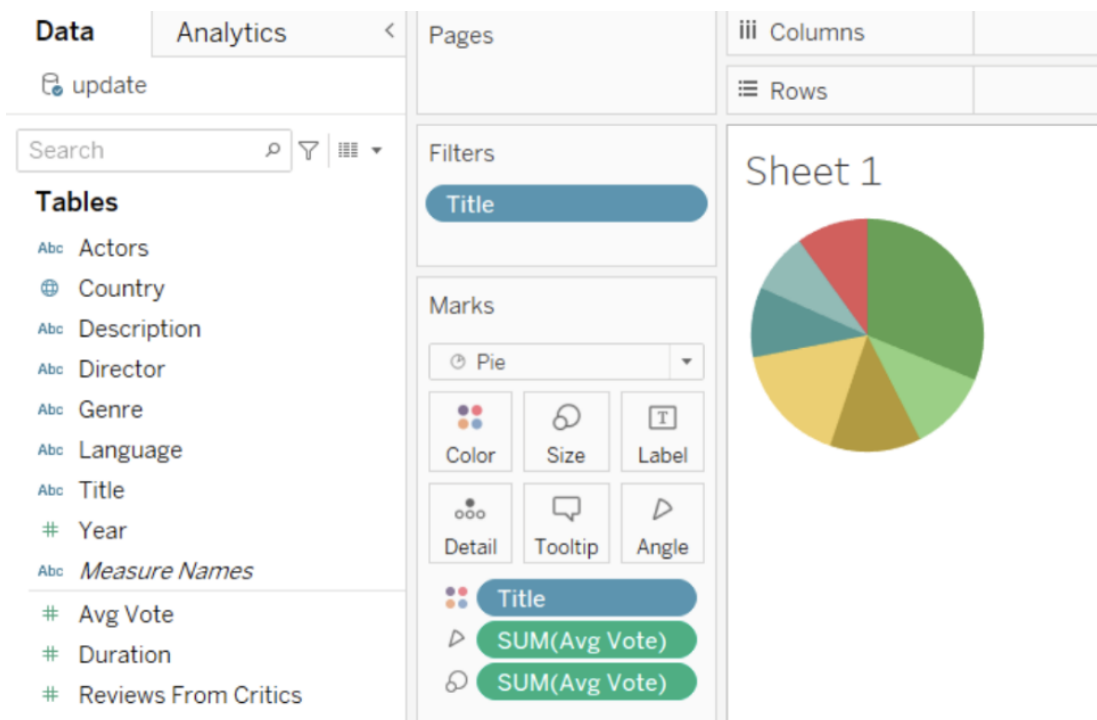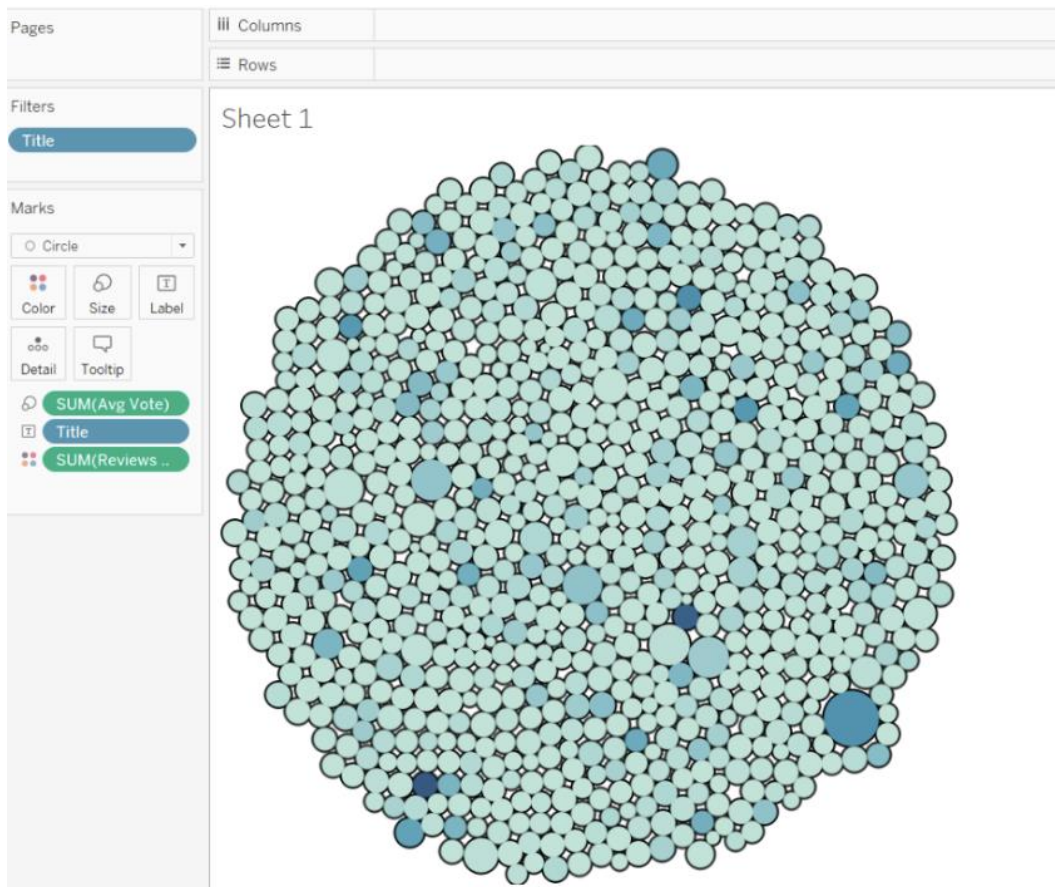


4. **Scatter Plot:** The position of each dot on the horizontal and vertical axis indicates values for an individual data point. Scatter plots are used to observe relationships between variables.
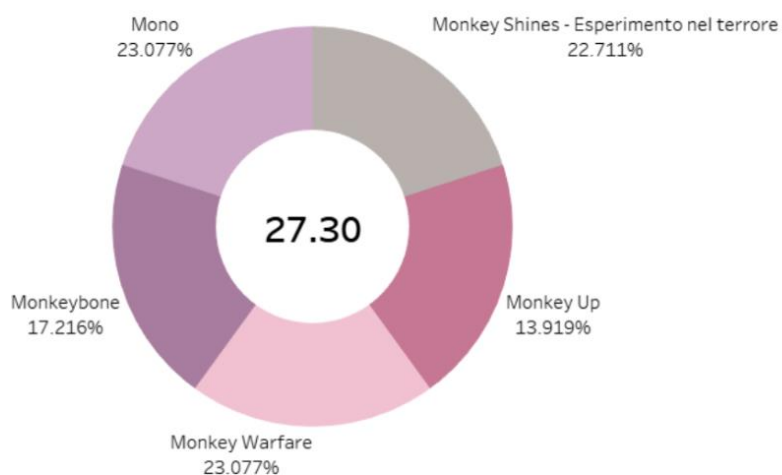
Sheet 1



5. **Packed Bubble Chart:** The size and colors of the bubbles signify the value of the variables that is, the number of average votes in this case.

6. **Donut Chart:** This graph signifies the average number of votes and the percentage of total average votes for each movie.



Mono
23.077%

Monkey Shines - Esperimento nel terrore
22.711%

27.30

Monkeybone
17.216%

Monkey Up
13.919%

Monkey Warfare
23.077%

**Conclusion (Students should write in their own words):**

Thus, we learnt how to locate and download datasets, extract insights from that data and present their findings in a variety of different formats.

**Date: _____**                                          **Signature of faculty in-charge**

**Post Lab Question:**

1. **What are different data types supported in Tableau software?**

**Ans:**

The following data types are supported in Tableau:

- Text (string) values
- Date values
- Date and time values
- Numerical values
- Boolean values (relational only)
- Geographical values (used with maps)

2. **Which chart is most appropriate for visualizing your preprocessed dataset? Justify**

**Ans:**

Bar chart is the most appropriate for visualizing this dataset. This is because the bar chart directly shows the highest number of average votes for each movie. That way we can easily compare the number of votes for each movie and find out which movie has a relatively greater or lesser number of votes.