



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Coimbatore – 641 035.

Academic Year 2023-2024 (EVEN)

Sixth Semester

Department of Computer Science and Engineering

19CSE311 – DATA VISUALIZATION

QUESTION BANK



PART A — (5 x 2 = 10 Marks)

1. What is data visualization? CO1 Ana
Data visualization is the graphical representation of information and data.
List the benefits of data visualization. CO1 Und
2.
 1. Visualize relationships and patterns in businesses.
 2. More collaboration and sharing of information.
 3. More self-service functions for the end usersHow do you make multiple plots to a single page layout in R? CO1 Und
3. # set the page structure with par()
 par(mfrow = c(2, 2))
 # create the plots.
What are the steps involved in a data analysis process? CO2 Ana
4. Data exploration, Data preparation , Data modeling , Validation CO2 Und
Define "Time Series" in terms of data analytics.
5. Time series is a data set that tracks a sample over time. In particular, a time series allows one to see what factors influence

PART B — (2 x 13 = 26 Marks and 1 x 14 = 14 Marks)

6. (a) (i) Formulate the Visualization function and Seven stages of Data visualization. CO1 Ana 13
 Step 1: Define a clear purpose.
 Step 2: Know your audience.
 Step 3: Keep visualizations simple.
 Step 4: Choose the right visual.
 Step 5: Make sure your visualizations are inclusive.
 Step 6: Provide context.
 Step 7: Make it actionable
- (OR)
- (b) Define :
 - i) Visualization design options CO1 Und 13Data visualization is the act of turning data and numbers into the

form of maps, charts, graphs or infographics. This is done because it's easier for the human brain to comprehend information in a visual representation rather than its raw form.

ii) Data representation

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

iii) Data Presentation.

Data visualization is the presentation of data in a graphical format to make it easier for decision makers to see and understand trends, outliers, and patterns in data.

7. (a) Analyze Graph visualization and explain about Matrix CO2 Ana 13 Representation for graphs.

For example, at the start of the pandemic, online businesses saw a big jump in traffic. So, if you want to look at monthly traffic for an online business, a bar graph would make it easy to see that jump.

Other use cases for bar graphs include:

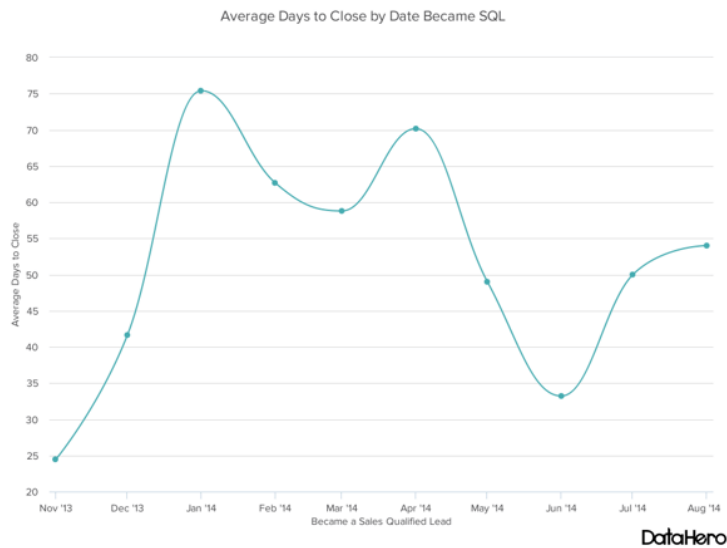
- Product comparisons.
- Product usage.
- Category comparisons.
- Marketing traffic by month or year.
- Marketing conversions.

Design Best Practices for Bar Graphs

- Use consistent colors throughout the chart, selecting accent colors to highlight meaningful data points or changes over time.
- Use horizontal labels to improve readability.
- Start the y-axis at 0 to appropriately reflect the values in your graph.

2. Line Graph

A line graph reveals trends or progress over time, and you can use it to show many different categories of data. You should use it when you chart a continuous data set.



Best Use Cases for These Types of Graphs

Line graphs help users track changes over short and long periods. Because of this, these types of graphs are good for seeing small changes.

Line graphs can help you compare changes for more than one group over the same period. They're also helpful for measuring how different groups relate to each other.

A business might use this graph to compare sales rates for different products or services over time.

These charts are also helpful for measuring service channel performance. For example, a line graph that tracks how many chats or emails your team responds to per month.

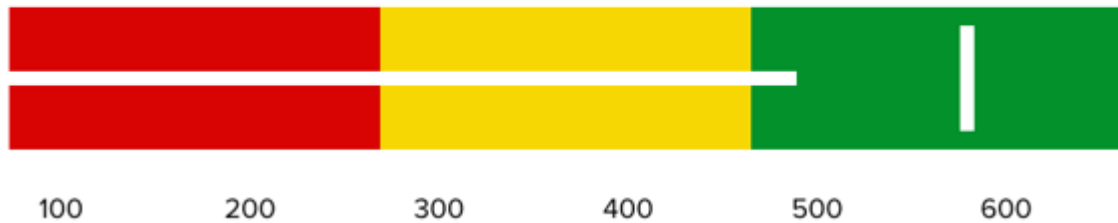
Design Best Practices for Line Graphs

- Use solid lines only.
- Don't plot more than four lines to avoid visual distractions.
- Use the right height so the lines take up roughly 2/3 of the y-axis' height.

3. Bullet Graph

A bullet graph reveals progress towards a goal, compares this to another measure, and provides context in the form of a rating or performance.

New Customers



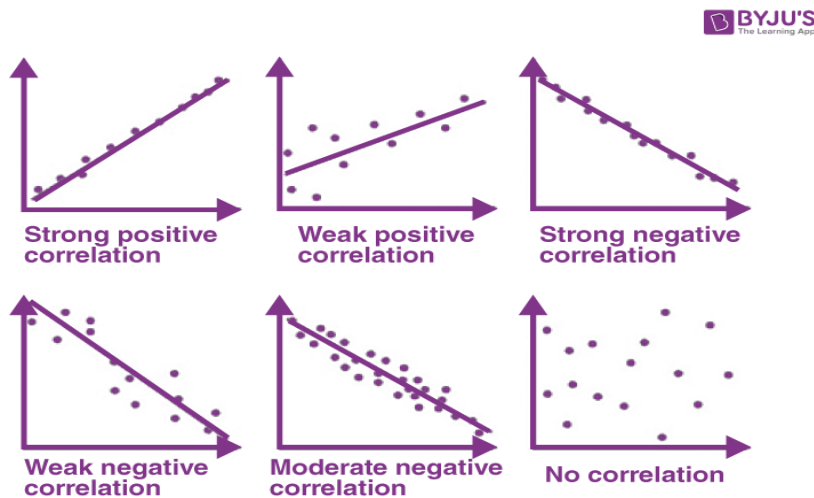
Best Use Cases for These Types of Graphs

In the example above, the bullet graph shows the number of new customers against a set customer goal. Bullet graphs are great for comparing performance against goals like this.

(OR)

- (b) Illustrate the concept of Connections and correlations with CO2 Und 13 diagram.

Correlation refers to a process for establishing the relationships between two variables. You learned a way to get a general idea about whether or not two variables are related, is to plot them on a “scatter plot”. While there are many measures of association for variables which are measured at the ordinal or higher level of measurement, correlation is the most commonly used approach.



8. (a) Assume that the Load the required packages and set the CO1 Ana 14 default theme to create a time series With any five time series data visualization techniques along with diagram. Then Create a basic line plots which create structure.

A line chart (aka line plot, line graph) uses points connected by line segments from left to right to demonstrate changes in value. The horizontal axis depicts a continuous progression, often that of time, while the vertical axis reports values for a metric of interest across that progression.

ZZD to QQY Exchange Rates



The line chart above shows the exchange rate between two fictional currencies over a six month period. As time progresses from left to right, points connect the daily exchange rates. We can read from the general slope of the line and its vertical positions that the rate improved from about 0.75 to 0.78 between March and early April, then fell gradually to about 0.765 in late May and June.

(OR)

8. (b) Develop Perfect Data Visualizations for geographic CO2 App 14
distribution (of Organization)this Year : By region or
Country

In this data visualization, the size of the squares indicates the population size. Additionally, the saturation of the square's color indicates how many organizations in that area are using GitHub.

- Composing text with desktop-friendly and mobile-friendly typefaces. This included choosing optimal font sizes, typefaces, and line length and height, and refining how the text looks at different breakpoints.
- Laying out the visual elements on each page to encourage scrolling.

- Designing a user-friendly top navigation bar that adapts its layout to the viewport size.

