

READING MATERIAL: CHARTS VISUALISATION IN EXCEL

Note: The below-mentioned charts are just for reference purposes and the student must not go in depth of the data points mentioned in the chart. Additionally, most of the charts mentioned here have been described in the class, but the purpose of this sheet is to provide the details of all the charts in a single place.

1. Bar Charts:

Bar charts in Excel are one of the most common and easy-to-understand types of visualization tools. They are particularly effective for comparing data across different categories.

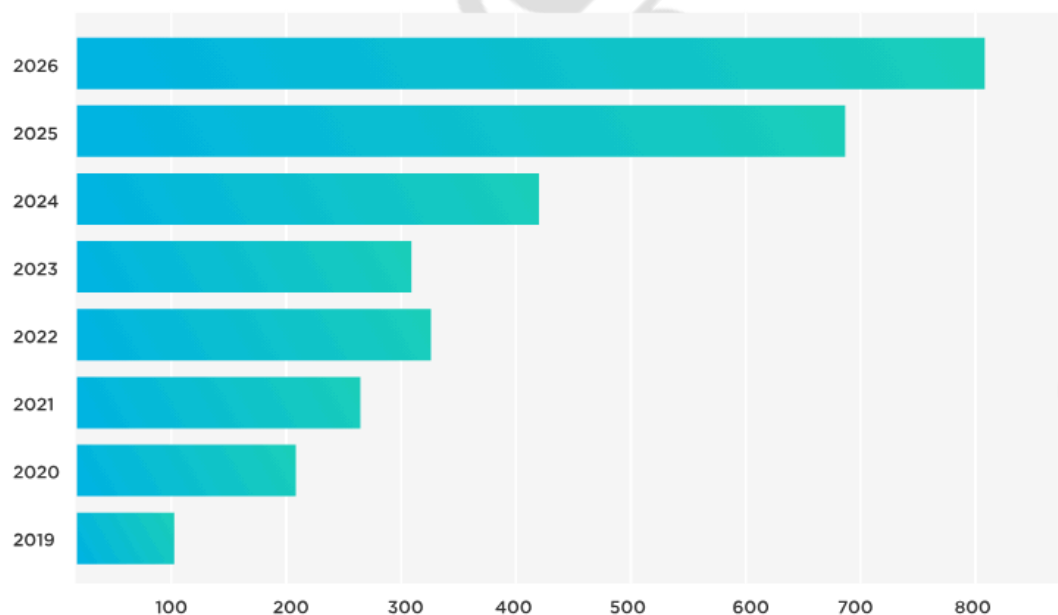
Example 1: Comparing Quantities Across Different Categories

Displaying the sales figures of different products across a company's product line. Bar charts can help visualize which products are selling the best and which are underperforming.

Example 2: Showing Changes Over Time (When Data Points Are Few)

Visualizing the revenue growth of a startup over its first few years. If the number of time points (years) is relatively small, a bar chart can effectively show the growth trend.

Reference Chart:



Other use cases:

Other use cases for bar graphs include:

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

2. Line charts:

Line charts are one of the most effective ways to display data trends and changes over time using Excel. They are particularly useful when you need to illustrate the continuity of data points and are widely used in both business and scientific environments.

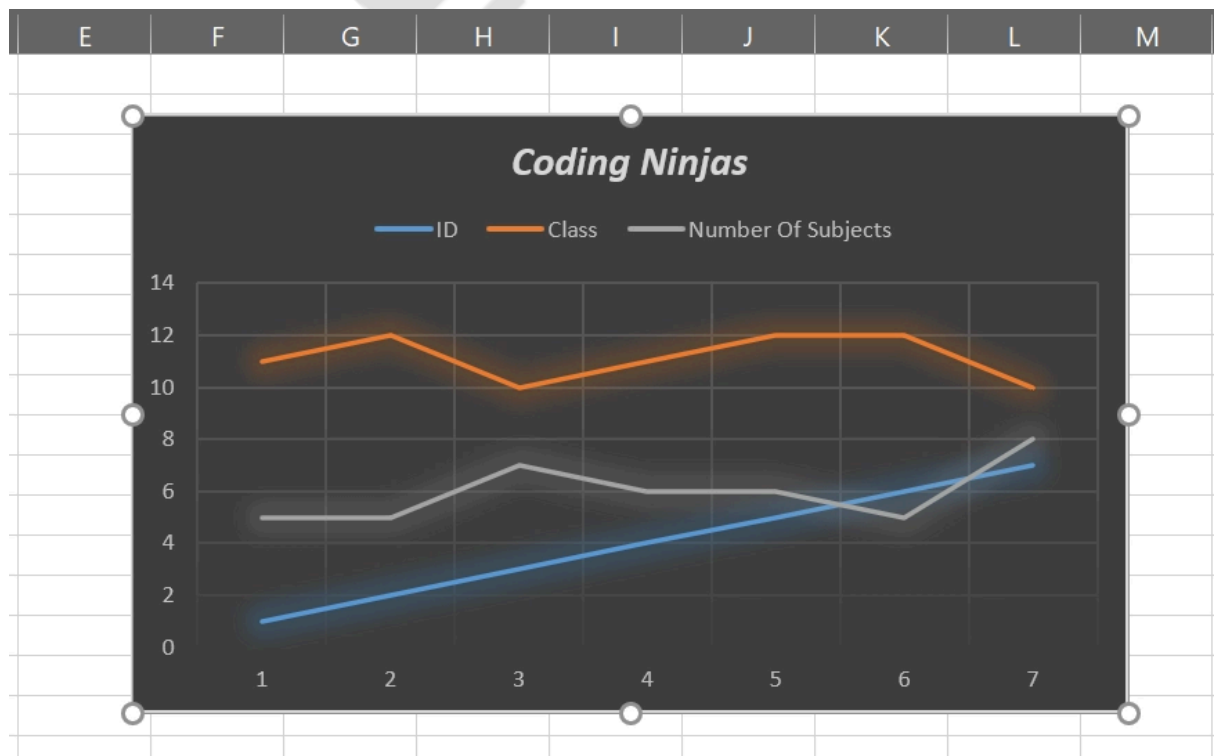
Examples 1: Tracking Changes Over Time

Showing the growth in monthly revenue of a company over several years. A line chart can effectively display the upward or downward trend of revenue, helping stakeholders quickly grasp business performance over time.

Example 2: Comparing Trends Between Different Groups

Comparing the sales performance of multiple products across the same time periods. Using different lines for each product, a line chart can help identify which products are performing well and how sales trends are evolving.

Chart Reference:



3. Pie chart:

Pie charts are a visually intuitive way to represent data in Excel, particularly when you want to show how parts of a whole are divided. However, they are best used when the categories are limited in number, typically no more than five to seven.

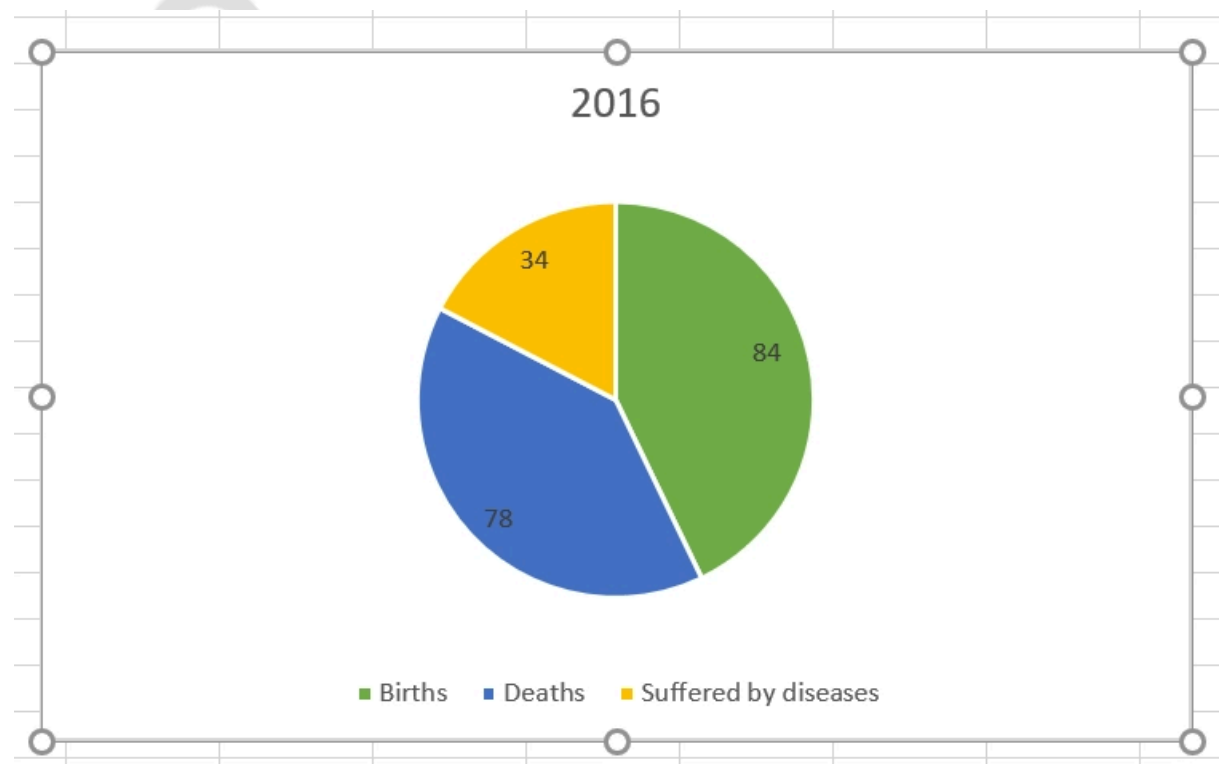
Example 1: Comparing Relative Sizes

Showing the distribution of spending in a household budget. Different slices can represent categories like housing, food, transportation, and entertainment, illustrating what proportion of the total budget each category consumes.

Example 2: Highlighting a Segment

Emphasizing the percentage of renewable energy sources in a country's total energy production. A slice representing renewables in a pie chart can be highlighted to draw attention to this environmentally friendly energy source.

Reference Chart:



Other use cases:

Pie charts are good for representing the following data:

- Customer personas in relation to all customers.
- Revenue from your most popular products or product types in relation to all product sales.
- Percent of total profit from different store locations.

4. Column Chart:

Column charts in Excel are a staple for data visualization, especially useful for comparing data across different categories.

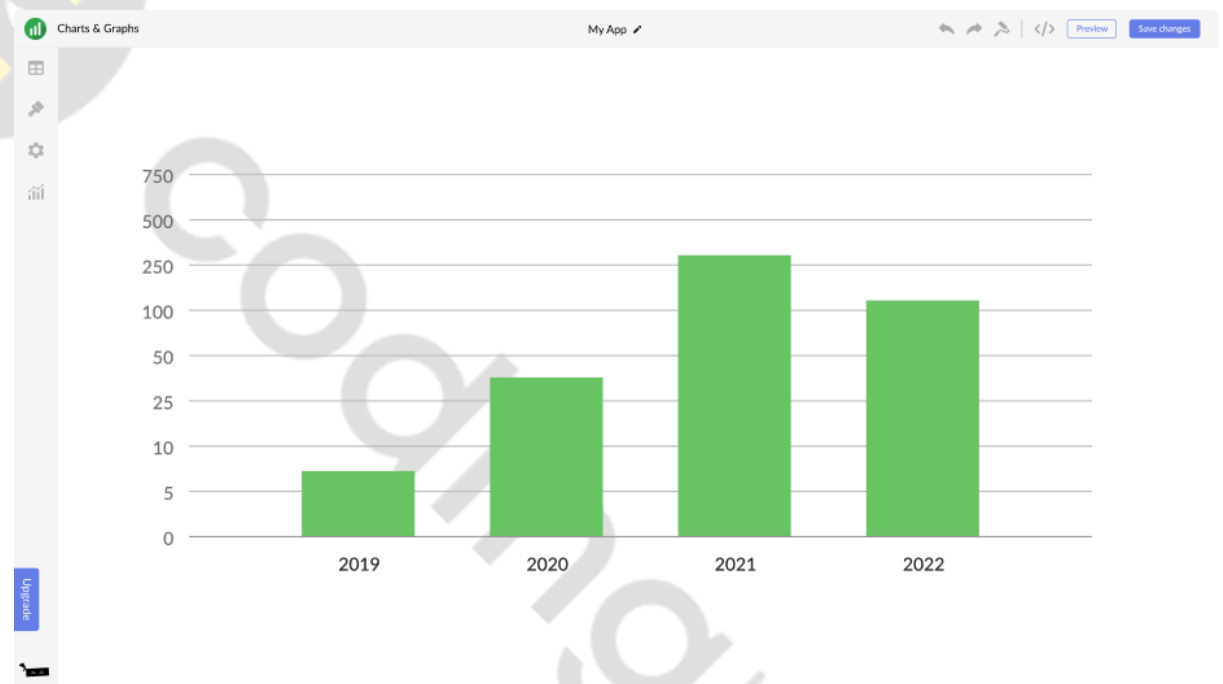
Example 1: Comparing Categories

Showing sales data across different store locations. A column chart can visually compare the sales performance of each store, highlighting which locations are performing better or worse.

Example 2: Showing Changes Over Time

Displaying monthly revenue for a company within a single fiscal year. Column charts are great for illustrating how revenue fluctuates from month to month, providing a clear visual of peaks and troughs throughout the year.

Reference chart:



Other use cases:

- Customer survey data, like showing how many customers prefer a specific product or how much a customer uses a product each day.
- Sales volume, like showing which services are the top sellers each month or the number of sales per week.
- Profit and loss, showing where business investments are growing or falling.

5. Stacked Bar Chart:

Stacked bar charts in Excel are particularly effective when you need to show how different segments contribute to the whole across various categories. They can provide deeper insights into the composition of the data, which is not possible with standard bar or column charts.

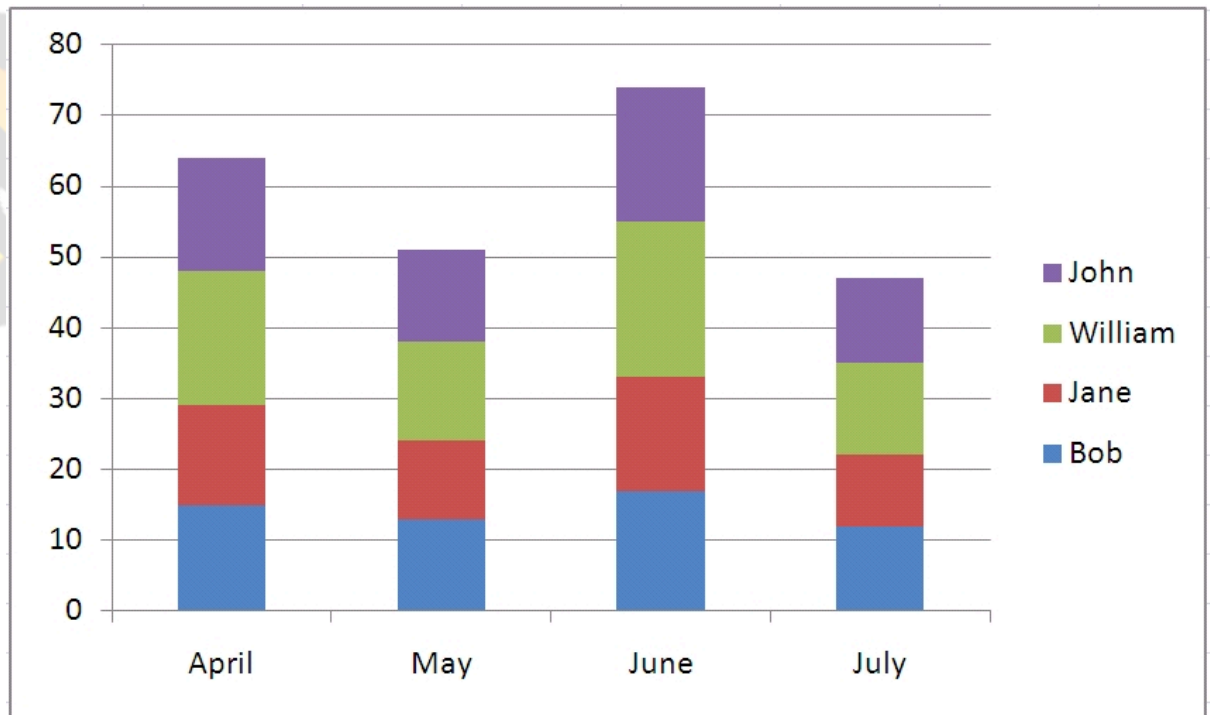
Example 1: Visualizing Part-to-Whole Relationships

Demonstrating the total sales of a company, broken down by product category. A stacked bar chart can display the total sales as the length of the bar, with different colors representing different product categories, showing what portion of the total each category represents.

Example 2: Resource Allocation

Displaying the amount of time spent on various project activities by different team members. A stacked bar chart can illustrate how each team member's time is allocated across tasks, helping in assessing workload and productivity.

Reference chart:



Other use cases:

You can also use these charts to:

- Show the frequency of survey responses.
- Identify outliers in historical data.
- Compare a part of a strategy to its performance as a whole.

6. Area chart:

Area charts in Excel are excellent for visualizing data that demonstrates cumulative relationships between quantities over a given time period. They help show the magnitude of trends rather than just the sequential pattern of data points, which can be particularly useful in certain analysis scenarios.

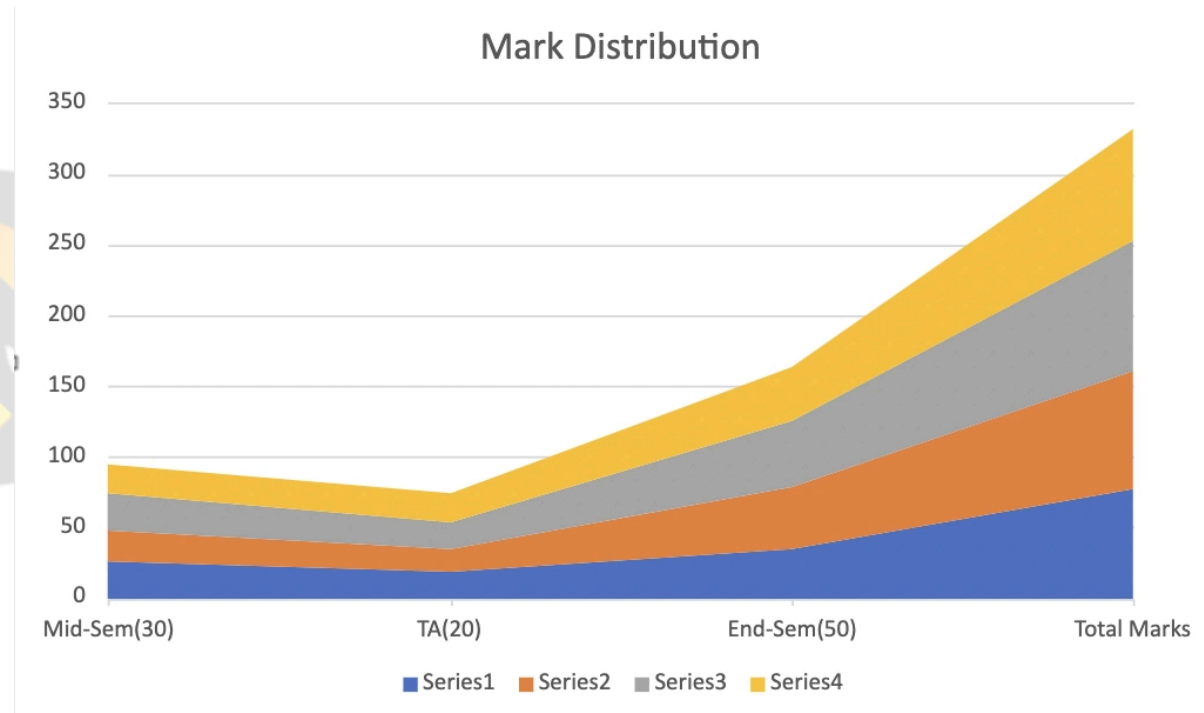
Example 1: Tracking Cumulative Values Over Time

Displaying the total revenue accumulated by a company over several years. An area chart can show not only the periodic revenues but also the growing total over time, which helps to visualize the overall growth trajectory.

Example 2: Market Share Over Time

Example: Showing the market share held by different companies within an industry over several years. An area chart can illustrate how each company's share contributes to the total industry market over time, indicating shifts in competitive dynamics.

Reference chart:



Other use cases:

Area graphs can help to:

- Visualize which product categories or products within a category are most popular.
- Show key performance indicator (KPI) goals vs. outcomes.
- Spot and analyze industry trends.

7. Combo chart:

Combo charts in Excel are versatile and powerful tools for data visualization, especially when you need to display different types of data on the same chart. They combine two or more chart types (like column and line charts) to provide a clearer understanding of complex datasets.

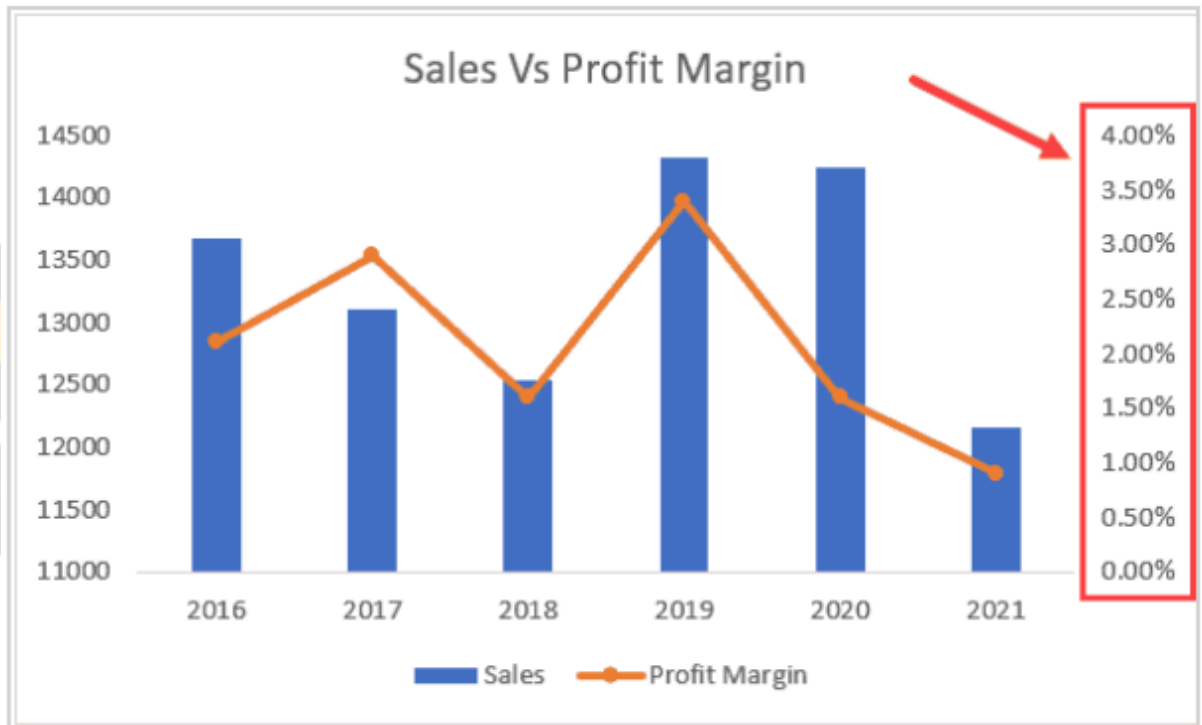
Example 1: Displaying Different Units of Measurement

Visualizing revenue (in dollars) and percentage profit margin on the same graph. A combo chart can use a column chart for revenue and a line chart for profit margin, allowing for comparison of two different units of measurement on a single chart.

Example 2: Analyzing Trends Alongside Actual Values

Tracking actual sales against sales targets for a series of products. A combo chart can use columns to show actual sales and a line to show the sales targets, providing a direct visual comparison of performance versus objectives.

Reference chart:



Other use cases:

You can use dual-axis charts to compare:

- Price and volume of your products.
- Revenue and units sold.
- Sales and profit margin.
- Individual sales performance.

8. Scatter plot chart:

Scatter plot charts in Excel are extremely useful for displaying and analyzing relationships between two numerical variables. These charts plot points on a horizontal and vertical axis, showing how much one variable is affected by another. The visual representation of data points in scatter plots can help identify correlations, trends, and potential outliers.

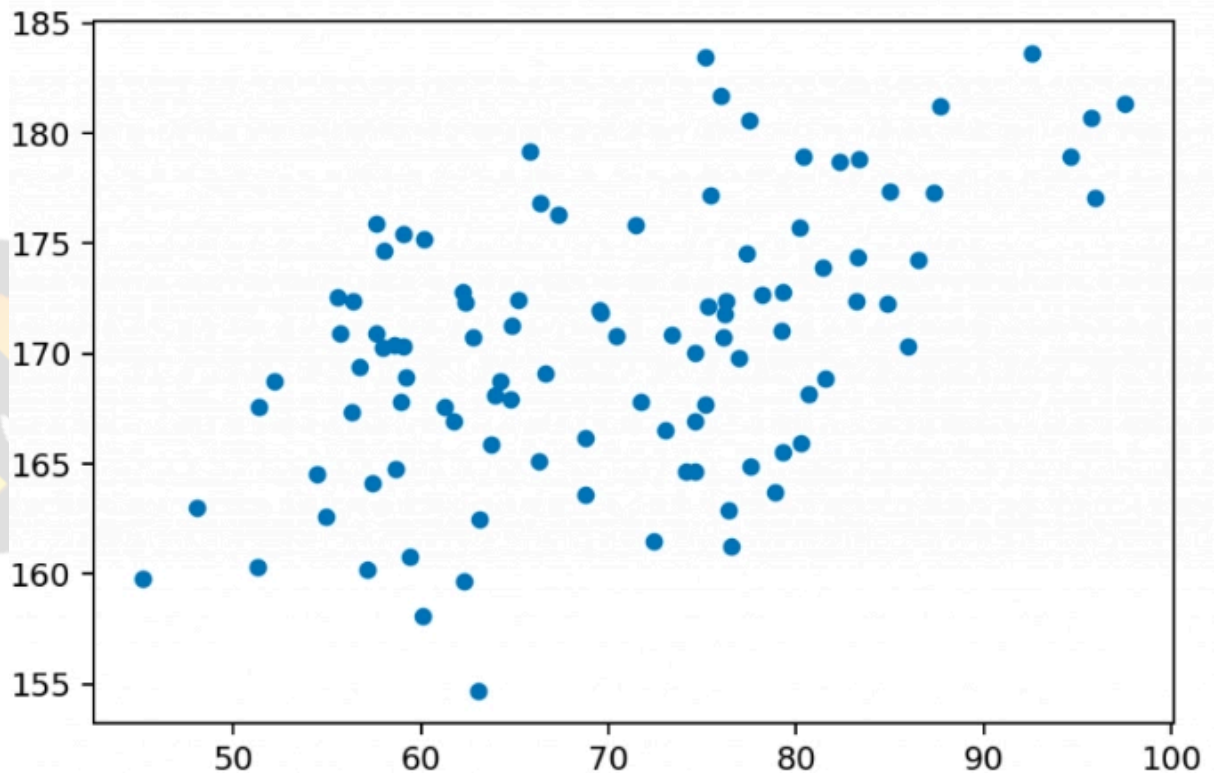
Example 1: Examining Correlation Between Variables

Analyzing the relationship between advertising spend and sales revenue. A scatter plot can help determine if there is a correlation between the amount spent on advertising and the corresponding sales figures, helping businesses assess the effectiveness of their marketing expenditures.

Example 2: Trend Analysis

Studying time efficiency in project delivery. Scatter plots can be used to visualize project duration against the number of project team members to see if more team members contribute to faster project completion.

Reference chart:



Other use cases:

Use cases might include:

- Employment and manufacturing output.
- Retail sales and inflation.
- Visitor numbers and outdoor temperature.
- Sales growth and tax laws.

9. Bubble chart:

Bubble charts in Excel are an extension of scatter plots, allowing you to represent three dimensions of data: the values of two numeric variables determine the position of the bubble (just like in scatter plots), and the size of the bubble represents the third variable, typically a quantitative value. Bubble charts are particularly effective when you want to add another dimension to the data visualized in a scatter plot.

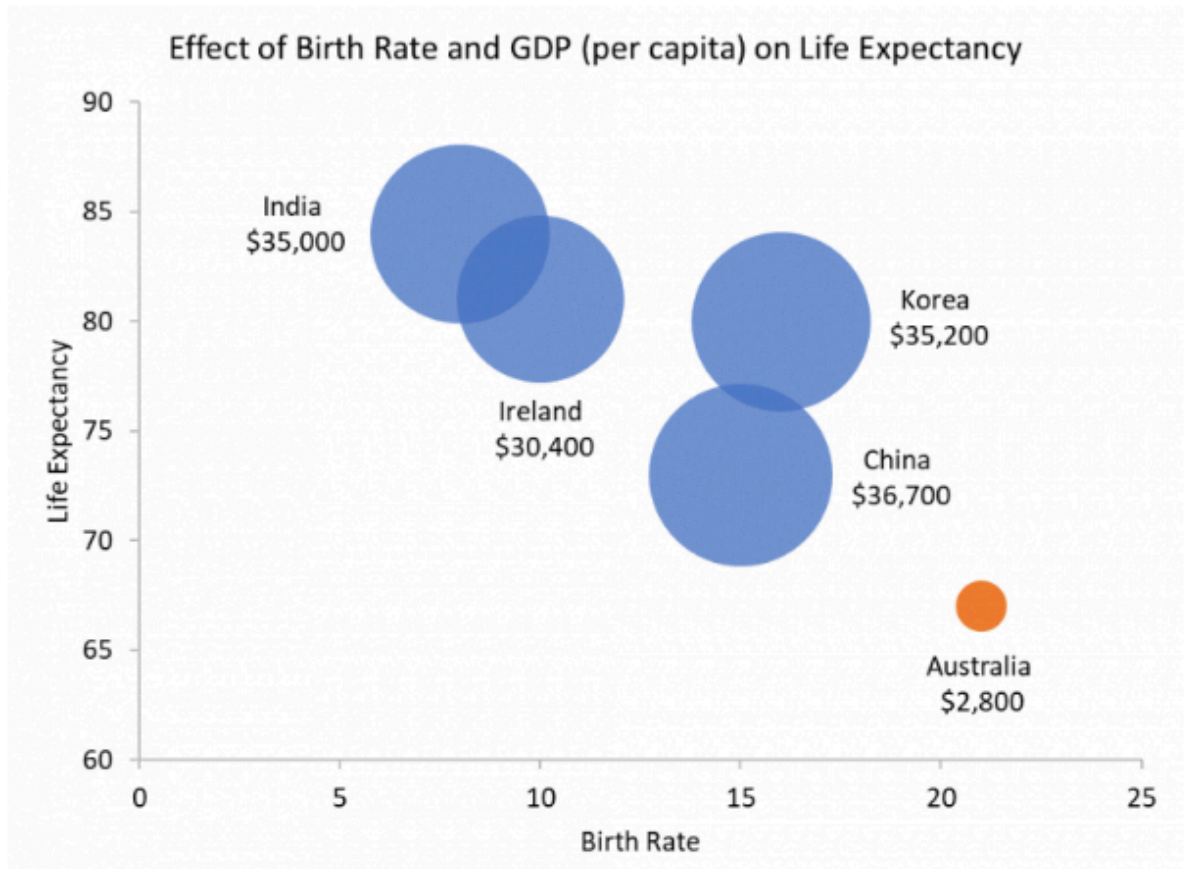
Example 1: Visualizing Three Variables Simultaneously

Analyzing the relationship between a country's population, GDP per capita, and total GDP. The X-axis could represent GDP per capita, the Y-axis the population, and the bubble size could represent the total GDP, providing a comprehensive snapshot of economic data.

Example 2: Showing Regional Data

Displaying healthcare data such as the number of hospitals, average healthcare spending, and population size in different regions. The number of hospitals can be plotted on the X-axis, average spending on the Y-axis, and the bubble size can illustrate the population size, highlighting how these factors correlate regionally.

Reference chart:



Other use cases:

You can also use bubble charts for:

- Top sales by month and location.
- Customer satisfaction surveys.
- Store performance tracking.
- Marketing campaign reviews.

10. Funnel chart:

Funnel charts in Excel are particularly useful for visualizing the stages in a process, especially processes characterized by sequential reduction or attrition. They are often used to represent data where the amount decreases progressively at each stage.

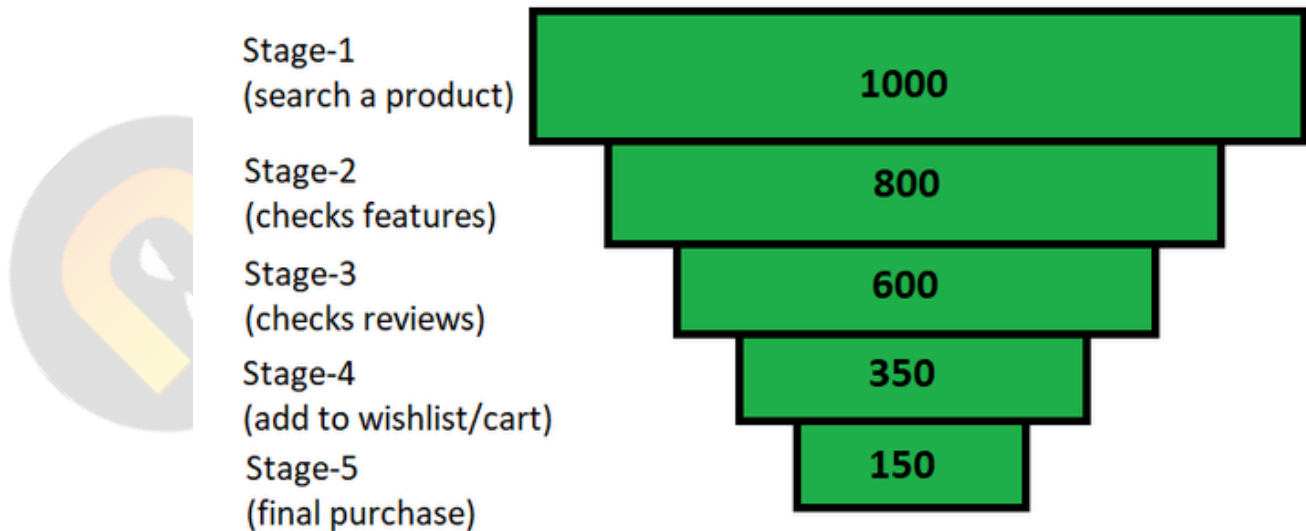
Example 1: Conversion Analysis

Analyzing website visitor conversion through different steps of a checkout process. Starting with the total number of visitors to a landing page, progressing through various actions like product selection, cart addition, and finally to purchase completion. A funnel chart shows where the largest losses occur, guiding optimizations to web pages or processes to increase retention.

Example 2: Marketing Funnel Analysis

Understanding the effectiveness of a marketing campaign from initial awareness through interest, desire, and action. A funnel chart can depict the number of potential customers at each stage, helping marketers analyze the performance of their campaign tactics at each step.

Reference chart:



Other use cases:

You can also use bubble charts for:

- Deal pipelines.
- Conversion and retention analysis.
- Bottlenecks in manufacturing and other multi-step processes.
- Marketing campaign performance.
- Website conversion tracking.

11. Histogram chart:

Histograms in Excel are ideal for analyzing the distribution of numerical data, helping to visualize the frequency of data points within certain ranges, or bins. This can be extremely useful in various statistical analyses, from quality control to performance analysis.

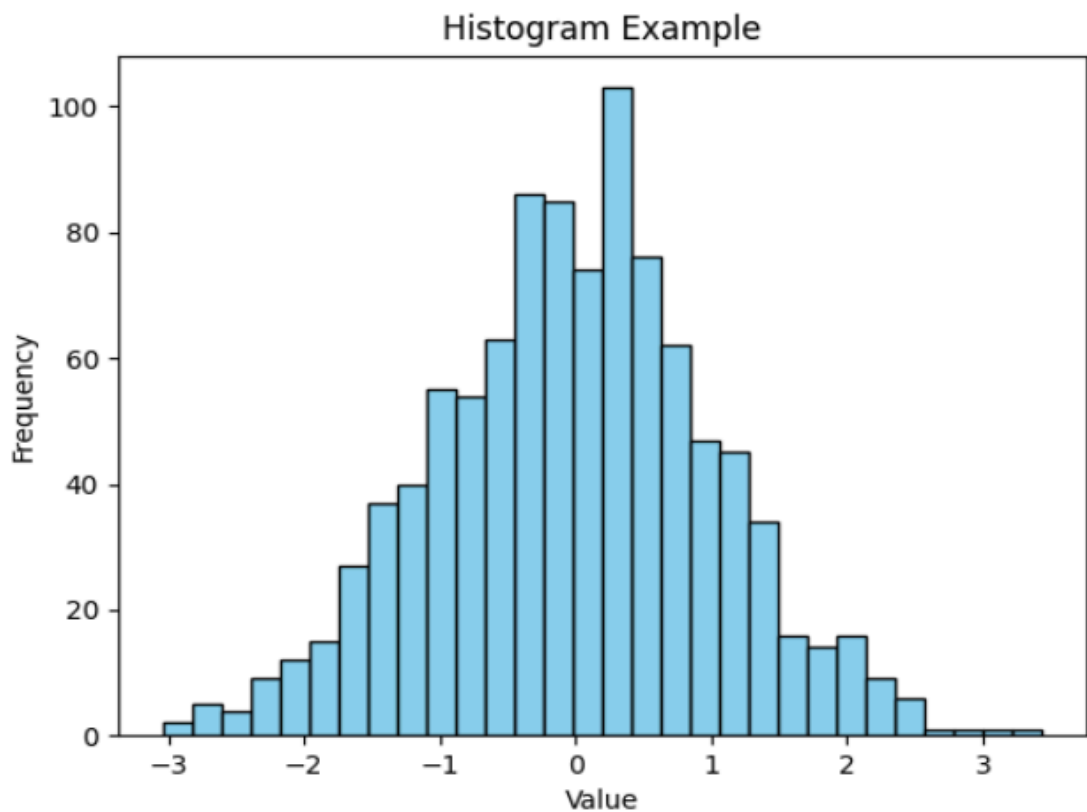
Example 1: Understanding Data Distribution

Analyzing the distribution of exam scores in a classroom. A histogram can show how many students scored within specific score ranges (e.g., 60-70, 71-80, etc.), helping educators identify the most common score ranges and the overall performance spread.

Example 2: Identifying Skewness in Data

Reviewing salary distributions within a company. A histogram can help HR to see if the salaries are skewed towards the higher end or lower end, or if they're normally distributed, which is useful for assessing wage equity and competitive positioning.

Reference Chart:



Other use cases:

- Analyzing Operational Efficiency
- Studying Environmental Data
- Financial Market Analysis
- Demographic Studies

12.Box and whisker chart:

Box and whisker charts, also known as box plots, are excellent for statistically summarizing data distributions through their quartiles, and they are particularly effective in highlighting outliers, medians, and the spread of a dataset.

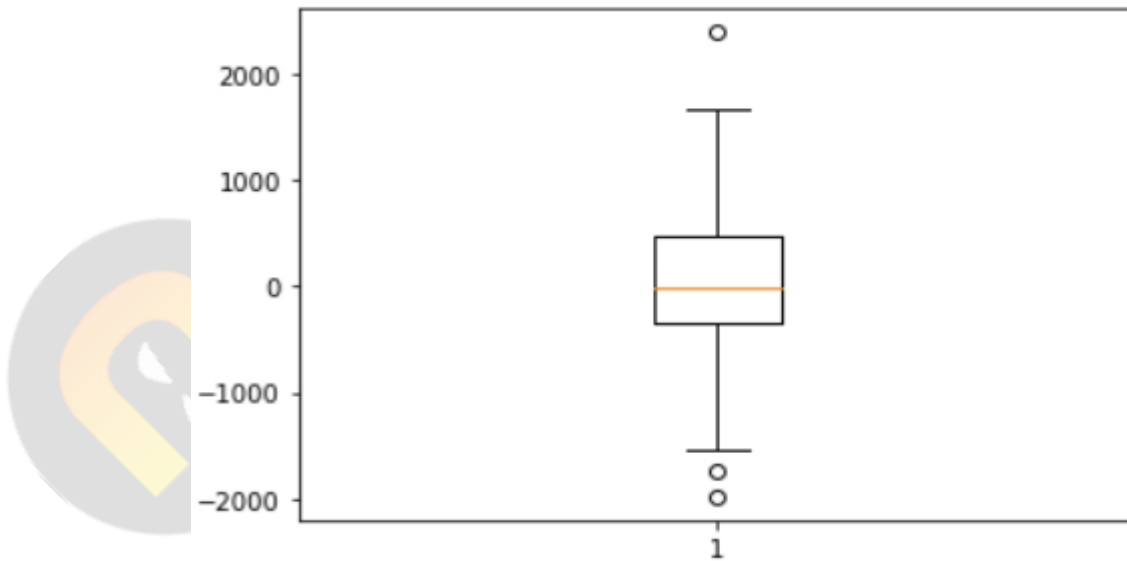
Example 1: Comparing Distributions Across Groups

Comparing the test scores of students across different classrooms. A box plot for each classroom can show the median, quartiles, and outliers, helping to identify which classrooms might be outperforming or underperforming.

Example 2: Identifying Variability in Data

Analyzing the consistency of manufacturing output from different machines. Box plots can display the range of outputs and any deviations, which are crucial for quality control.

Reference Chart:



Other use cases:

- Agricultural Research
- Engineering and Product Testing
- Real Estate Analysis
- Supply Chain Management

13. Tree map:

Tree map charts in Excel are effective for visualizing hierarchical data and for showing how individual parts fit into a whole. They represent data with rectangles, where each segment is sized proportionally to its value. Tree maps are particularly useful when you need to display a large amount of data in a compact visual format.

Example 1: Visualizing Part-to-Whole Relationships

Showing the market share of different companies within an industry. Each company is represented by a rectangle in the tree map, where the size of each rectangle is proportional to the company's share of the market.

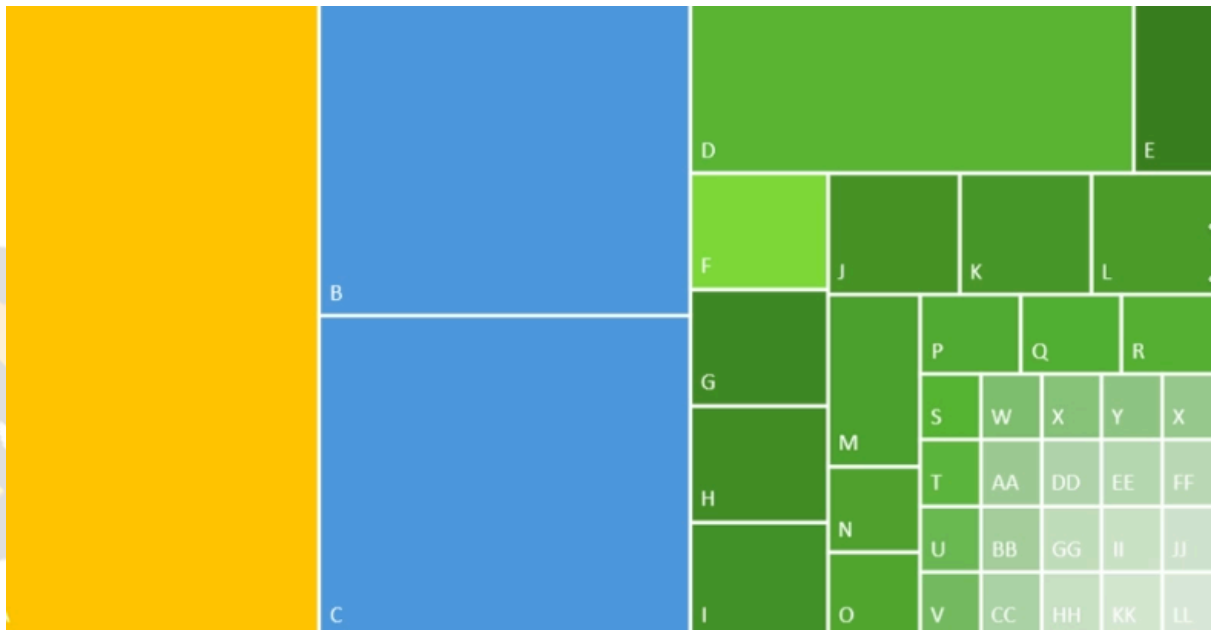
Example 2: Budget Allocation

Illustrating how a budget is allocated across different departments within an organization. A tree map can help stakeholders quickly see which departments are receiving the most funding and how the total budget is distributed.

Example 3: Inventory or Sales Analysis

Example: Analyzing product sales across various categories. A tree map can display each product category as a rectangle, with sizes based on sales volume, helping to identify which categories are the highest performers.

Reference chart:



Other use cases:

You can use these charts in:

- Competitor research.
- Customer sentiment.
- Sales outreach.
- Campaign impact. Customer demographics.

14. Waterfall charts:

Waterfall charts in Excel are particularly effective for visualizing sequential changes in quantitative data, often related to financial statements. These charts are useful for breaking down the cumulative effect of sequentially introduced positive or negative values.

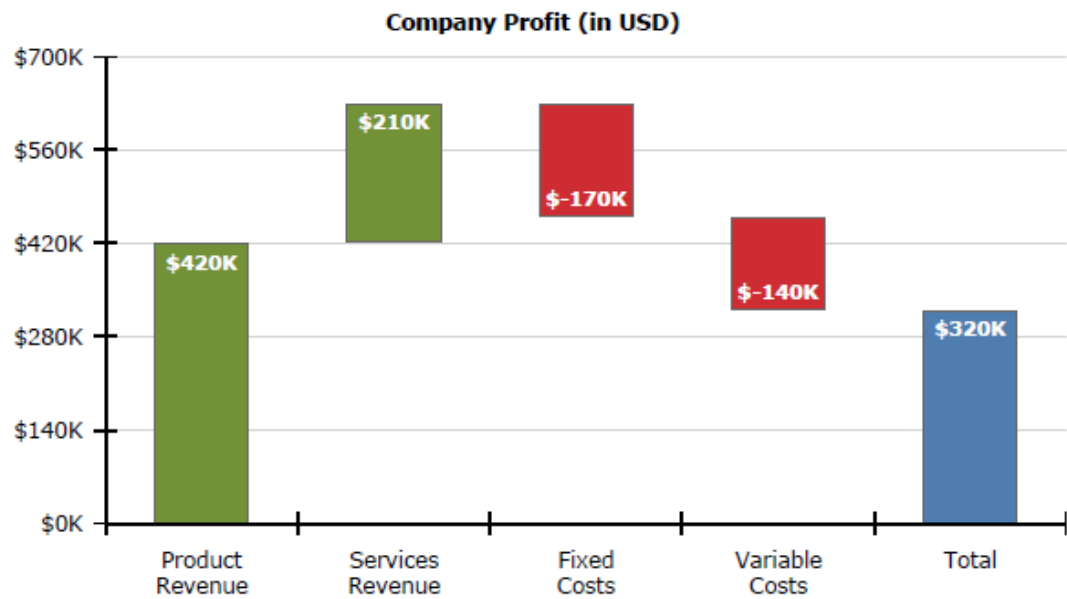
Example 1: Financial Results Analysis

Demonstrating how initial revenue, various costs, taxes, and other factors lead to a net profit. A waterfall chart can start with the total revenue, subtract costs, taxes, and add any other income to arrive at the final net profit, showing how each component contributes to the end value.

Example 2: Inventory Analysis

Tracking inventory levels over time. Start with the initial inventory, increase for new stock received, decrease for stock sold, and adjust for stock damaged or expired to show the final inventory level.

Reference chart:



Other use cases:

You can also use bubble charts for:

- Changes in revenue or profit over time.
- Inventory audits.
- Employee staffing reviews.

NOTE: The student can go through these links to understand other types or details related to the charts which will help the students better understand the topics of charts.

1. 16 best types of charts and graphs for data visualization- [Link](#)
2. Types of charts in Excel- [Link](#)