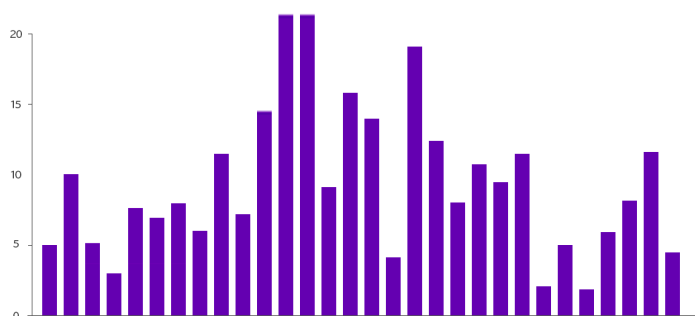


App Development 2

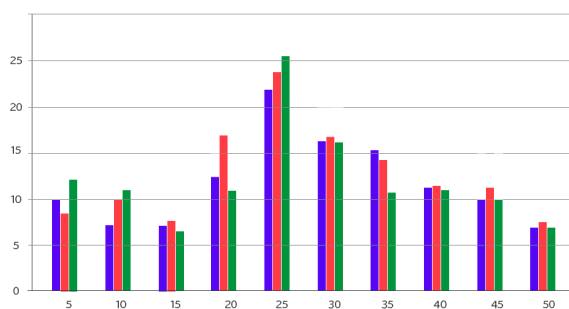
Approaches to Data Visualization

Bar Chart



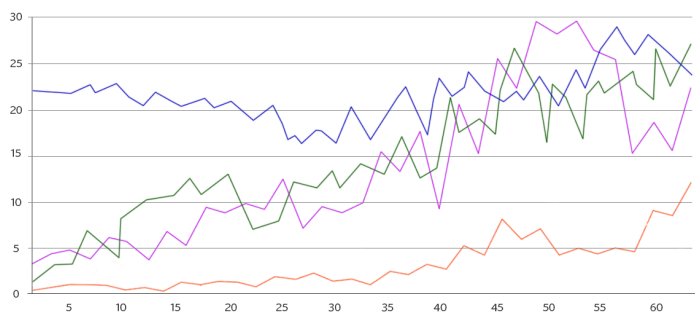
The **Bar Chart** is also known as a *Bar Graph* or *Column Graph*. It uses either horizontal or vertical bars to show a comparison of numbers across categories. For example, you could compare the number of women elected across a number of years.

Multi-Set Bar Chart



The **Multi-Set Bar Chart** is also known as a *Grouped Bar Chart* or *Clustered Bar Chart*. This variation of a Bar Chart is used when two or more data series are plotted side-by-side. For example, you could plot the total number women elected, the number of Democrats and the number of Republicans for each congressional session.

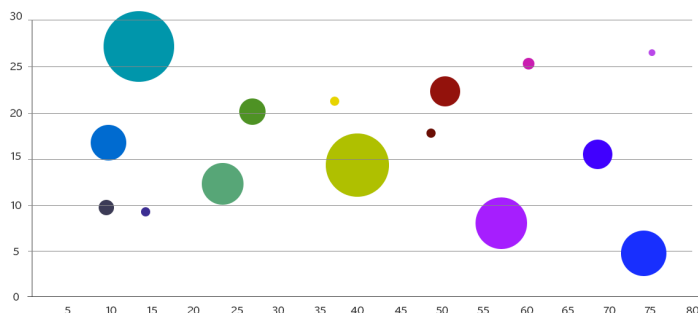
Line Graph



The **Line Graph** is most frequently used to show trends and analyse how the data has changed over time. Each number is plotted on the graph with a dot. The dots are then connected to form a line, which clearly shows where numbers have increased and decreased.

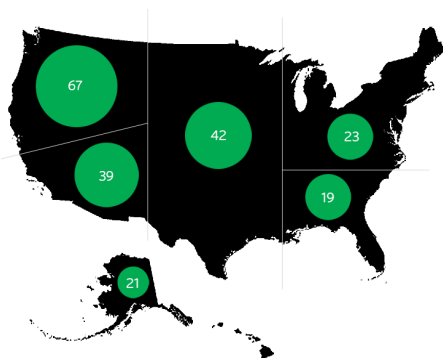
You can also plot other lines in different colors to add more information to the graph. For example, you could have a black line for the number of women elected to Congress, a blue line for the number of Democrats elected, and a red line for the number of Republicans.

Bubble Chart



Bubble Charts can show three different kinds of information by using the x axis, the y axis, and the size of the bubble to indicate an amount. They're typically used to compare and show the relationships between color categorised circles, by positioning and proportions. This makes bubble charts useful to look for patterns and correlations.

Bubble Map



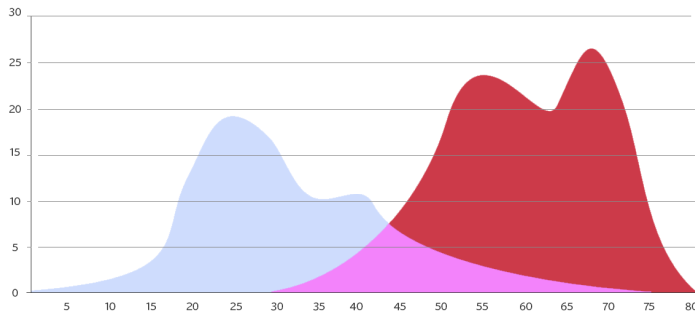
On a **Bubble Map**, circles are displayed over a geographical region with the size of the circle proportional to its area (or value) in the dataset. They're good for comparing proportions across locations and geographic regions. However, if a bubble gets too big, it can overlap other bubbles and regions on the map, making it hard to understand.

Connection Map



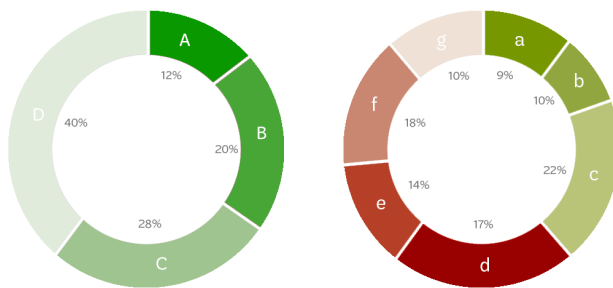
Connection Maps are drawn by connecting points placed on a map by straight or curved lines. They're great for showing connections and relationships geographically, and they can also be used to display map routes through a single chain of links. Connection maps can easily show patterns and relationships between locations, movement, the distribution of connections, and how concentrated connections are on a map.

Density Plot



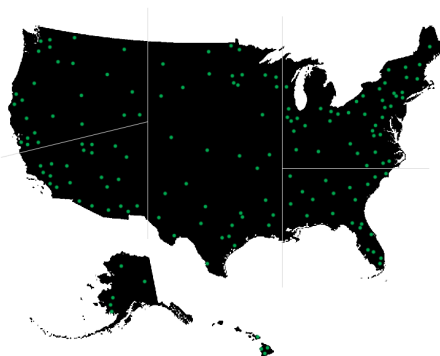
A **Density Plot** visualises data over an interval or time period. The peaks of a Density Plot help display where values are concentrated over the interval. In a density plot, the x-axis is the interval/time period and the y-axis measures the density.

Donut Chart



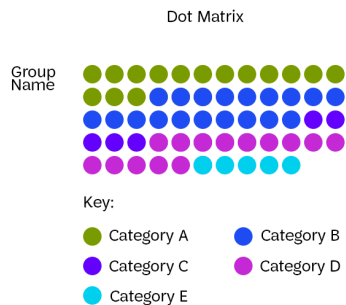
A **Donut Chart** is a Pie Chart with the center cut out. In a pie chart, readers compare the proportions between slices and to the chart as a whole. This can make it tricky to see the differences between slices, especially when you try to compare multiple Pie Charts. But, when you read a donut chart, you can look at the length of the arcs, and include other information inside the center. They're good for showing comparisons, data about part-to-a-whole, and proportions.

Dot Map



Dot Maps can show patterns or the distribution of data over a geographical area, by placing equally sized points over a geographical region. You can have a **one-to-one** dot map, where one point represents a single object or a **one-to-many** dot map where one point represents a unit, such as 1 point = 10 people). Dot Maps are ideal for seeing how things are distributed over a geographical region and can reveal patterns when the points cluster on the map. They're easy to grasp and are good at giving an overview of the data.

Dot Matrix



Dot Matrix Charts display data in units of dots, each colored to represent a particular category, that's then grouped together in a matrix. They're used to give a quick overview of the distribution and proportions of each category in a data set. You can create multiple dot matrix to compare distribution and proportion across datasets and discover patterns. Dot Matrix Charts are good for showing patterns, comparisons, distribution, and proportions.

Other Examples of Data Visualizations Commonly Used in Apps:

- **Calendars** organize events, tasks, etc. over periods of time. In an app, you might be able to see your events by different periods of time such as days, weeks, months and years.
- **Histograms** are a graphical way to display data using bars of different heights. In a histogram, each bar groups numbers into ranges. Taller bars show that more data falls in that range. Histograms are used in app to track data over time, like sleep patterns, time spent on social media, etc.
- **Timetables** are used as a referencing and management tool for events, tasks, etc. The data is organized into a table by chronological and/or alphabetical order which helps users with quick referencing. Timetables are used in apps to display information like the arrival and departure time of trains, class schedules, etc.
- **Gantt Charts** are a great organisational tool for project management. They display a list of activities (or tasks) with their duration over time, showing when each activity starts and ends. This makes Gantt Charts useful for planning and estimating how long an entire project might take. You can also see what activities are running in parallel to each other. In a project management app, you might see some version of a Gantt Chart that can help a leader manage projects, staff, goals, etc.