1. **Bar Chart**

Mark: line

Channel: vertical length

Bar charts compares categorical data. One axis may show the numerical comparisons while the other axis shows the categories being compared. The bars can be presented vertically or horizontally on the graph. A weakness, of bar charts, is labeling when there are an enormous number of bars to display.

Pages Used: https://datavizcatalogue.com/methods/bar\_chart.html

1. **Stacked Bar Graph**

Mark: line

Channel: vertical length

Stack Bar charts show multiple datasets on top of each other. In this way, the graph shows how the larger category gets segmented into smaller categorical pieces. The graph, also, shows the relationship of each segment on the total amount. Too many segments may make it harder for the viewer to compare each segment and the graph becomes harder to read.

There are two types of stacked bar charts:

Simple Stacked Bar Chart: the total value is the sum of its smaller segments.

100% Stack Bar Chart: segments are plotted by a percentage of the total amount.

Pages Used: https://datavizcatalogue.com/methods/stacked\_bar\_graph.html

1. **Scatterplot**

Mark: point

Channels: position

Scatterplots uses Cartesian coordinates to plot a set of points. Points are positioned on the graph based on two of its variables. One of the variables determine the point’s position on the x-axis while the other variable determines the point’s y-axis position. Through pattern interpretation, there are many types of correlations that develop through the scatterplot. Some examples of correlation types are positive, negative, exponential, and null. The strength of these correlations is determined by how close the points are together on the graph. Points not close to these general cluster of points are called outliers. One thing to note about scatterplots is that correlation is not always causation.

Pages Used: https://datavizcatalogue.com/methods/scatterplot.html

1. **Donut Chart**

Mark: line

Channels: angle

Donuts are essentially pie charts with its center missing. What’s left is the edge which in turn helps the viewer see the length of each slice. The length of each slice, also, makes it easier for the viewer to compare the slices from one to another. Donuts charts are space efficient and allows the creator to use the center as additional space for information to display.

Pages Used: https://datavizcatalogue.com/methods/donut\_chart.html

1. **Pie Chart**

Mark: area

Channels: angle

Pie charts makes it easy for viewers to give a quick glance and get the gist of how the data is distributed as a portion of the pie. Pie charts are segmented into slices. Each arc slice represents a percentage of the total sum of the data. Each arc slice, also, represents a category. A downside of pie charts is that they take up more space than their alternatives; for example, stacked bar charts and donut chart. Another downside is that the more categories there are to display the smaller each pie slice becomes. With several of pie charts next to each other, it makes it hard for the viewer to make accurate comparisons between each group.

Pages Used: https://datavizcatalogue.com/methods/pie\_chart.html

1. **Choropleth Map**

Mark: area

Channels: color

Choropleth maps display geographical areas or regions colored based on a data variable. Usually, the darker the color is the higher that variable is in value for that region. However, the color can be a blending of one color to another to represent the value of the variable. The use of different colors helps the viewer visualize the data for each area and to show variation across several locations. A downside of choropleth maps is that it makes it hard for the viewer to see the actual value of the data. Another downside is that bigger areas on the map seem to have more emphasis than smaller ones to the viewer. When using data for choropleth maps, instead of using raw data values, use normalized values.

Pages Used: https://datavizcatalogue.com/methods/choropleth.html

1. **Point Map**

Mark: point

Channels: position

Point maps display geospatial data on a map. Each point on the map is positioned by its longitude and latitude. Each point, also, is given a description or label thus becoming a ‘point of interest’. Point maps are not great for showing exact values. However, they can reveal spatial patterns on the map.

There are two types of Point Maps:

One-to-one: 1 point = a single count/object in the area.

One-to-many: 1 point = several counts/objects in the area.

Pages Used: https://datavizcatalogue.com/methods/dot\_map.html

1. **Line Graph**

Mark: point, connections

Channels: positions

Line graphs display how a particular data changes over time. The graph plots data points in order on a Cartesian coordinate grid. Then a line is drawn between these points, connecting them and creating one single line on the graph. Usually the y-axis represents qualitative values while the x-axis represents the change over time. An upwards slope of the line shows an increase of the value and a downwards slope shows a decrease if the value. The journey of the line has the potential to show the trends of where the values are going.

Pages Used: https://datavizcatalogue.com/methods/line\_graph.html

1. **Area Graph**

Mark: area

Channels: area

Area Graph is essentially a Line graph with the area below the line filled in with a color or texture. Similar to the Line graph, the Area graph displays how quantitative values change over time. Area graphs are used to show trends rather than showing specific values.

Pages Used: https://datavizproject.com/data-type/area-chart/

1. **Stacked Area Graph**

Mark: area

Channels: area, color

Stacked Area are useful for viewers to compare multiple variables that are changing over time. Similar to Area graphs except that Stacked area graphs show multiple data series starting from each point of the previous series. This creates multiple layers or stacks of data. The entire graph represents the total data plotted. Stacked Area graphs do not work for negative values as they convey whole numbers.

Pages Used: https://datavizcatalogue.com/methods/stacked\_area\_graph.html

1. **Candlestick Chart**

Mark: line

Channels: position, vertical length

Candlestick charts are a way to visualize price movements in stocks, commodities or currencies. Each ‘candle’ represents the open, high, low, and closing prices at a particular time period. The main body of the candle stick is called the real body, while the lines extending from the real body are called the lower or upper shadows. Long bodies show the large range of price movement while short bodies show little price movement in that time period.

There are two types candlesticks:

Bullish: when the closing price is higher than it opened and is typically colored white or green.

Bearish: when the closing prices is lower than it opened and is typically colored black or red.

Pages Used: https://datavizproject.com/data-type/candlestick-chart/

https://datavizcatalogue.com/methods/candlestick\_chart.html

1. **Chord Diagram**

Mark: line, connections

Channels: arc length, curvature

Chord displays the inter-relationships between entities. The inter-relationship between these entities are represented by data in a matrix. The data is arranged in a circle with the connections drawn as arcs between points. Values are assigned to each connection and is represented by the size of each arc. Color helps in distinguishing each entity in the chart and helps show where the values are being transferred to. An issue with Chord charts is that it can become overcluttered if there are too many connections to display.

Pages Used: https://datavizcatalogue.com/methods/chord\_diagram.html

1. **Force Directed Layout**

Mark: connections, points

Channels: lines, color

Are usually used with Network diagrams. Network diagrams are represented by nodes and edges which show how entities are interconnected. A node is usually represented as a circle and edges as lines. The position of these nodes that are connected by edges are determined by the different forces applied.

List of forces: https://github.com/d3/d3-force

Pages used: https://datavizcatalogue.com/methods/network\_diagram.html

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1. **Tree Diagram**

Mark: points, connections

Channels: lines

Tree diagrams are usually used to depict relationships of objects in a tree-like structure. They are generally used to show relations or descent in family, scientific classification, evolution and other business purposes. The structure of a tree diagram usually is made up of a root node, branches and nodes. The root node has no superior or parent. Then there are nodes are connected by branches or by a line that shows a connection between another node. Lastly leaf nodes are nodes who have no children nodes.

1. **Cluster Layout**

Mark: points, connections

Channels: lines

Very similar to Tree diagrams except that all leaf nodes of the tree are placed at the same depth. Like Tree diagrams, Cluster Layout has nodes that are connected by branches and shows relations between these nodes. The Cluster layout also has a root node, branches, child and leaf nodes.

Pages Used: https://github.com/d3/d3-hierarchy/blob/master/README.md#cluster

1. **Partition Layout**

Mark: area

Channels: area, spatial position

The Partition Layout uses areas (arcs or rectangles) and placement rather than drawing links to each node to represent hierarchy. In a Partition Layout, nodes are dawn as solid areas and their placement relative to other nodes determines their position in the hierarchy. The size of each node represents a quantitative value that would be much hard to show in a tree diagram.

Pages Used: https://github.com/d3/d3-3.x-api-reference/blob/master/Partition-Layout.md

1. **Packed Circle Layout**

Mark: containment, point

Channels: area

Packed Circle layout is similar to Treemap layout, but rather than drawing links to each node, Packed Circle layout uses circles instead to represent nodes in a hierarchal structure. Each circle contained in another circle represents a level in the hierarchy. The area and color of each circle can add more quantitative information about the node. The downside of the Packed Circle Layout is that it creates a lot of wasted space within the circles.

Pages used: https://datavizcatalogue.com/methods/circle\_packing.html

1. **Treemap Layout**

Mark: containment, area

Channels: area

Treemap layout is another way to visualize a Tree diagram through the use of containment and area. Each category is represented by a rectangular area. Each area may contain another rectangular area or category. The size of each sub area represents a portion of the qualitative value of its parent area. The way the rectangles are divided and ordered depends on the tilt algorithm. Treemap layout is great for quick overview of structure and is efficient with using space. Comparing the proportions between categories is also relatively easy in a Treemap layout.

Tilt Algorithms: https://d3indepth.com/layouts/

Pages Used: https://datavizcatalogue.com/methods/treemap.html

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