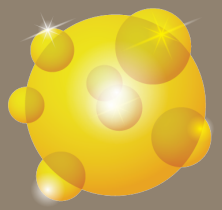
28 CHARTS EXPLAINED

TYPES AND USES OF CHARTS TO BEST SHOW OFF YOUR DATA.

With the growing amount and accessibility of data, data visualisation is becoming increasingly necessary. Find out how make use of a range of charts to effectively communicate your data whilst also effectively looking awesome.



Datalabs

WHY USE CHARTS TO PRESENT DATA?

GOOD QUESTION! VISUAL STORIES BRINGS CLARITY AND EFFICIENCY TO YOUR AUDIENCE.

Effective data visualization draws from human forms of perception and understanding. To take highly detailed, complex, and often disparate data and ensure the key messages and underlying trends can be displayed, absorbed and analysed faster than your typical csv file can.

A VISUAL STORY EXCITES AND INFLUENCES ITS AUDIENCE.

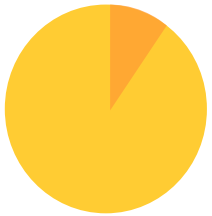
In today's age of big data, there are countless stories to tell. With all the data visualization techniques and displays out there, we have more power than ever to tell each story perfectly. With diverse interesting visuals, audiences can be captivated and inspired by data. Bye bye boring data!

DID YOU KNOW?

VISUALS are processed **60,000X FASTER** in the brain than text (3M Corporation, 2001)

VISUAL TEXTUAL

A plain figure with four straight, equal sides connecting at four right angles.

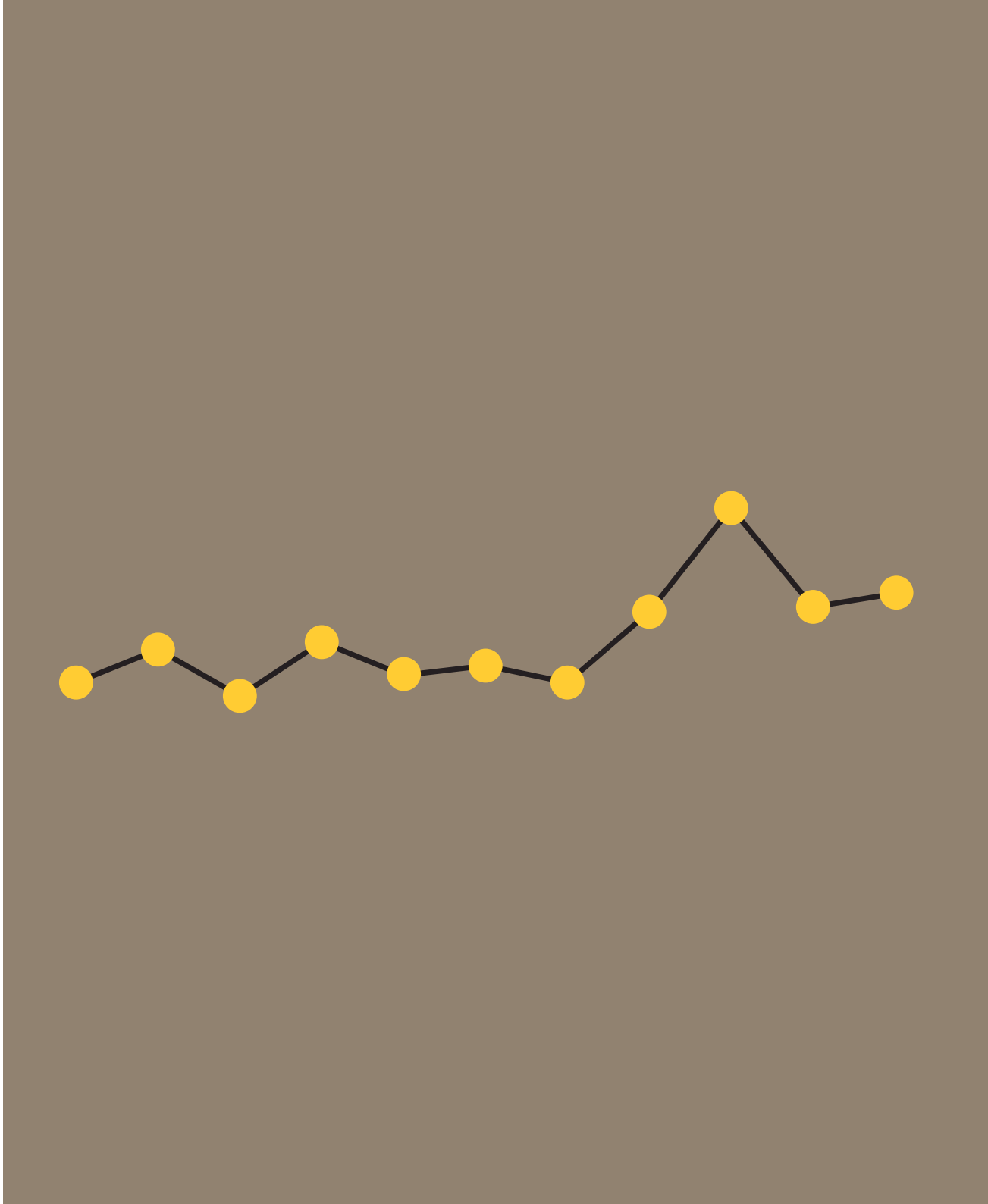


90% of information transmitted to the brain is **VISUAL** (Hyerle, 2000)

Approximately **65%** of the American population are **VISUAL LEARNERS** (Mind Tools, 1998)

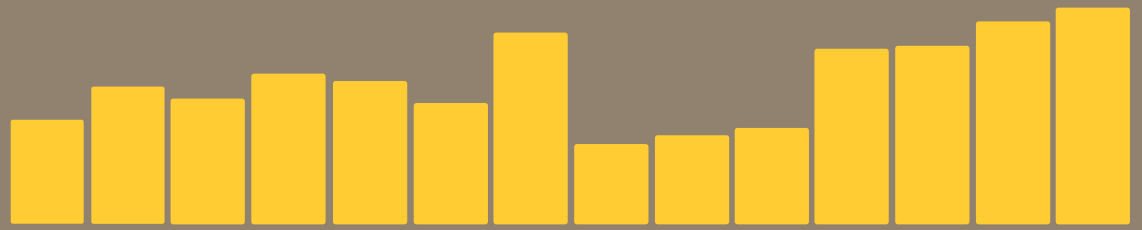
CONNECTED SCATTER PLOT

You've heard of a scatter plots, well now, brace yourself for connected scatter plots! Best used for visualizing data peaks and dips, or dates and monetary values. In the similar vain to a line graph, they often can literally show the story of your data.



COLUMN CHART

A column chart is fairly common chart type, and is best used to present and compare numeric values for categorised data sets (ex. Number of blog posts published by category: educational information, entertainment, thought leadership, etc).



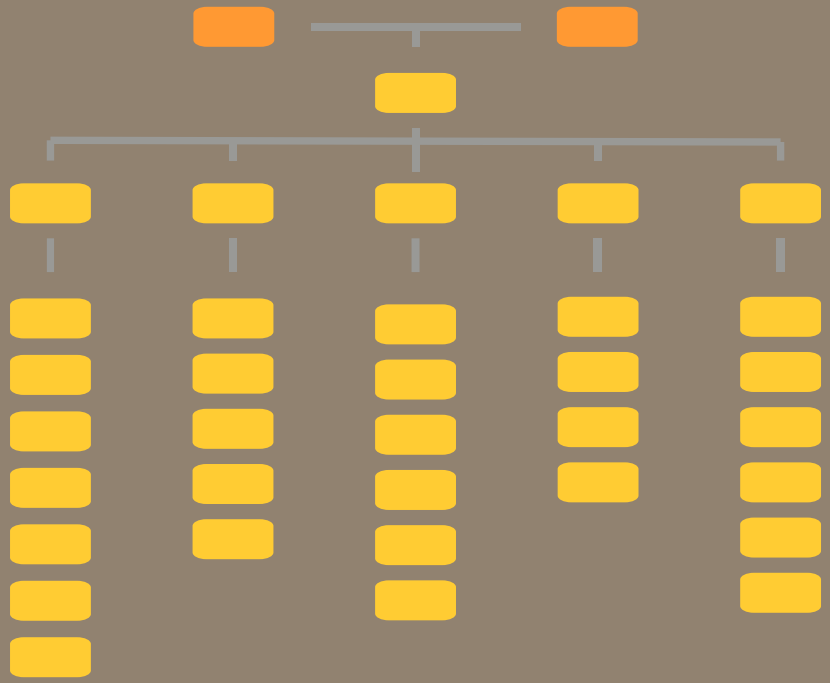
POLAR AREA DIAGRAM

A polar area diagram is similar to a traditional pie chart, but sectors differ in how far they extend from the center of the circle rather than by the size of their angles.

ORGANIZATIONAL CHARTS

You would be crazy not to organize your organization with organizational charts! These are diagrams outlining an overall structure within an organization, and depict four types of relationships:

1. Line relationships exist between superiors and subordinates.
2. Lateral relationships exist between different departments of similar rank.
3. Staff relationships exist between a managerial assistant and a line manager.
4. Functional relationships exist between a specialist and a line manager.

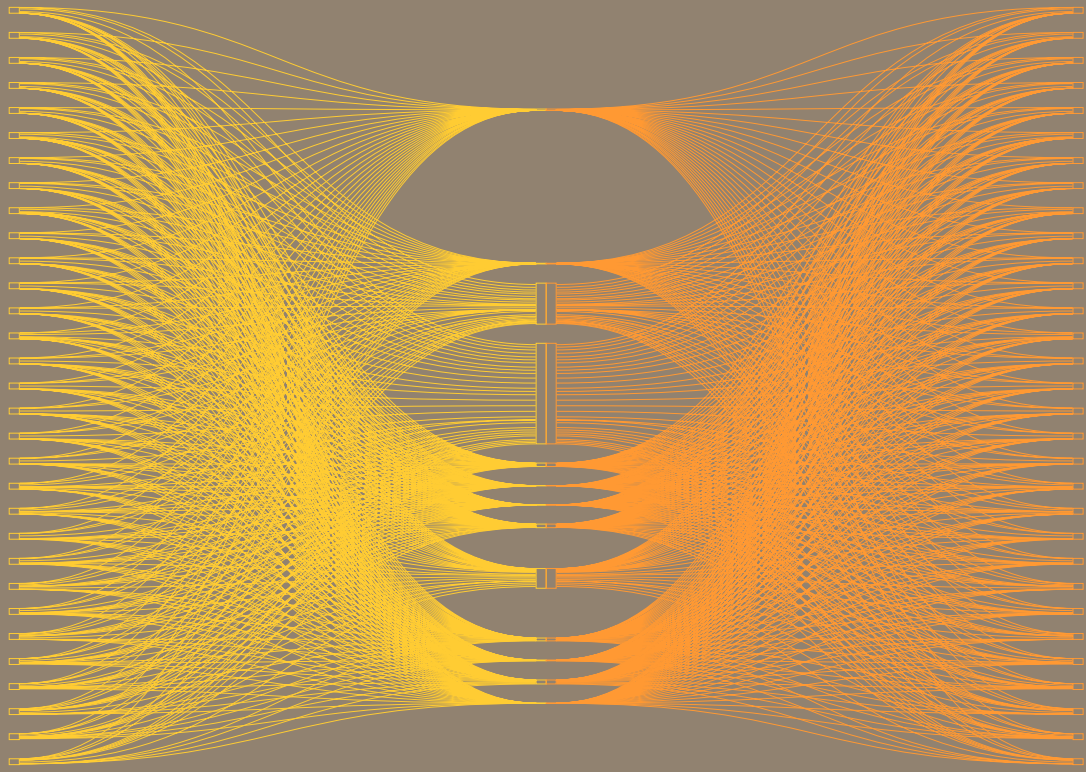


CALENDAR CHART

A calendar chart uses a typical calendar structure with colored or shaded areas to show activity over time - usually months or years. While our example includes just one solid differentiating color, others could display many more colors and/or different shading of the same color to depict additional metrics.

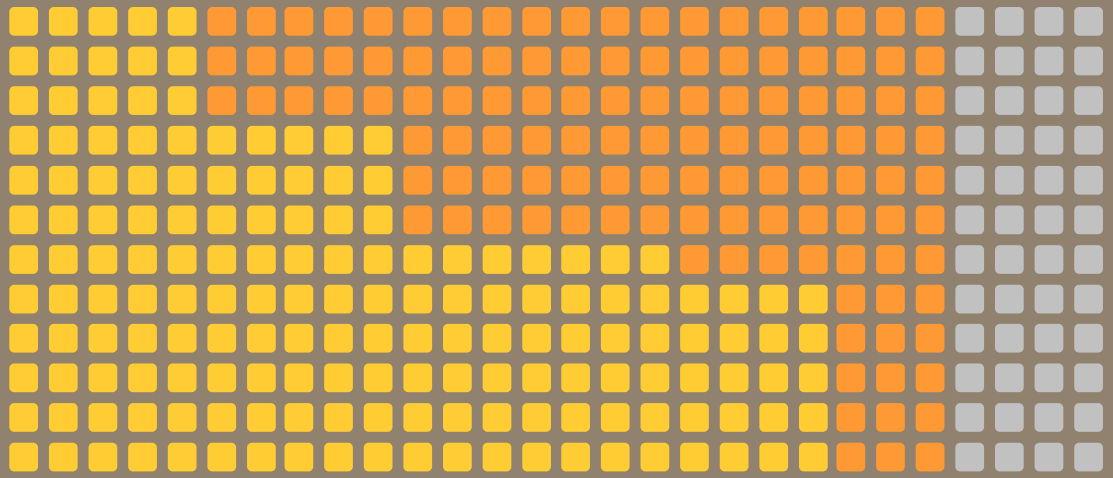
COSMOGRAPH

Holy guacamole, now that is a sexy chart! Cosmographs are particularly intriguing displays that relate two or more whole entities using branching lines that connect the the individual components of one entity to the components of another. Additional data can also be visualized through the weight or color of the connecting lines, allowing more complex data sets to come to life in a cosmograph.



DOT MATRIX CHARTS

Chillax Keanu; this is the sort of Matrix you are gonna want to be involved with!
A dot matrix chart displays a matrix of grouped dots, each representative of one defined unit and colored to identify itself as part of a particular category. They are used to provide a quick glimpse of the distribution and proportions of each category within a data set and can also be used to compare this across other datasets, in order to uncover trends.

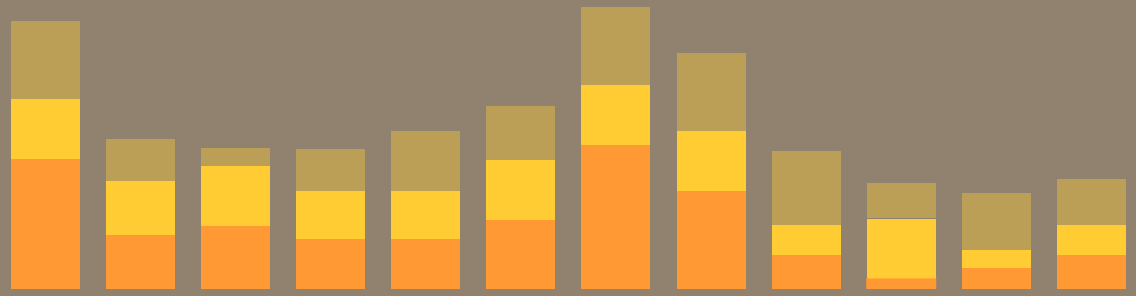


RADAR CHARTS

Radar. Fun fact; not just used in submarines. While radar charts have similarities with polar area diagrams, they also allow a comparison of two or more sets of data, making them useful for a quick analysis of variables that have similar values and identifying outliers in each variable between the data sets. A great use for radar charts is a comparison of performance metrics between businesses.

STACKED COLUMN BAR

A stacked column bar is best used when there is a need to compare multiple part-to-whole relationships. These can be used for discrete or continuous data (for example: monthly traffic by source-each month have different proportion of traffic generated from email, organic search, paid search, etc)

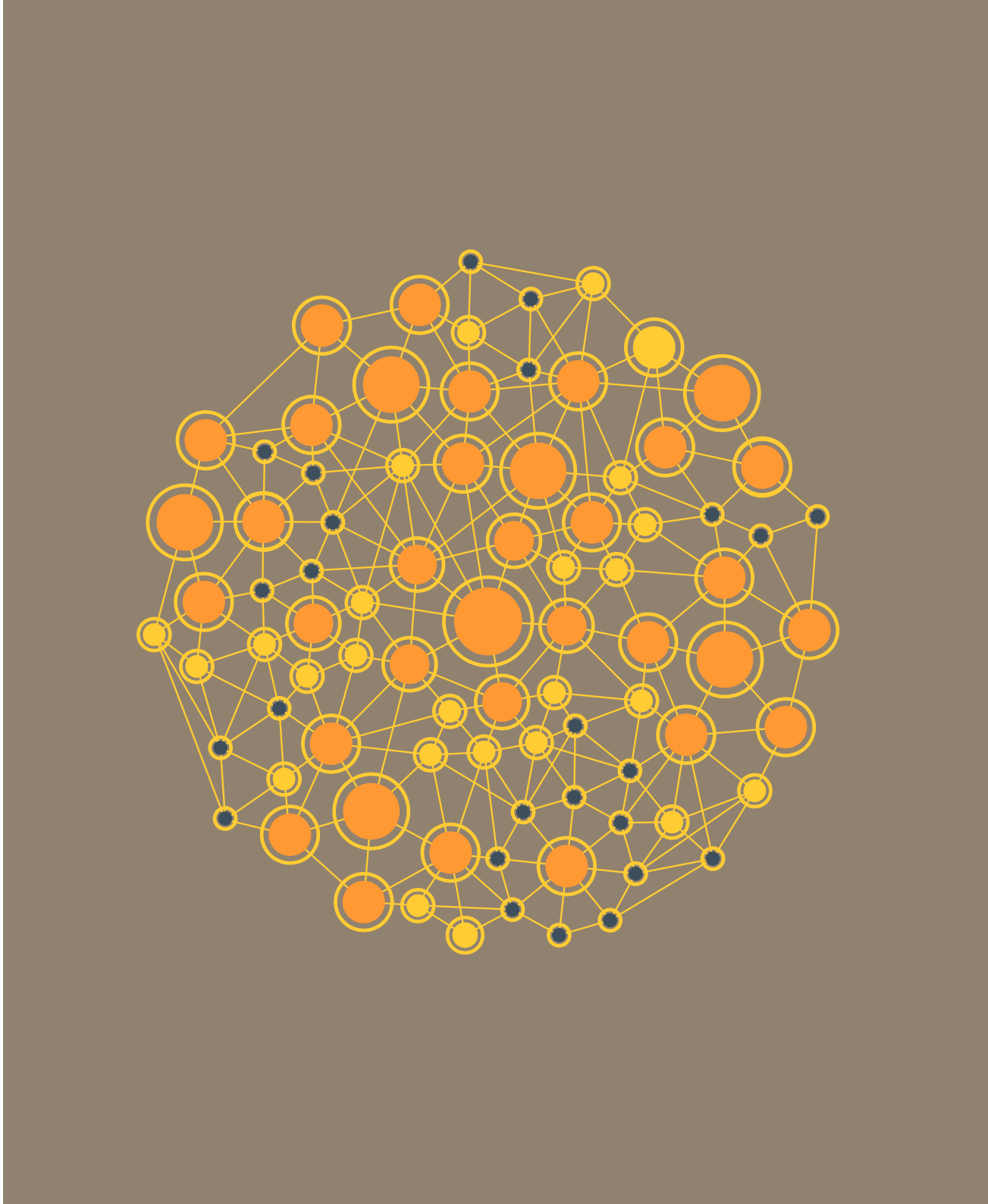


RADIAL/CIRCULAR BAR CHART

A radial/circular bar chart is essentially a curved bar chart - the only difference is that it's plotted on a polar coordinate system, whereas regular bar chart is plotted on a cartesian one. Radial or circular bar charts are great for visualizing comparisons and relationships between data values. However, a downfall is that the lengths of the bars can often be misinterpreted as each bar on the outside gets relatively longer to the last, even if they represent equal values. So it's important to remember that each bar is judged by its angle (usually put into perspective by the 'spoke' elements) rather than actual length. It's all totally radial, man! Too much?

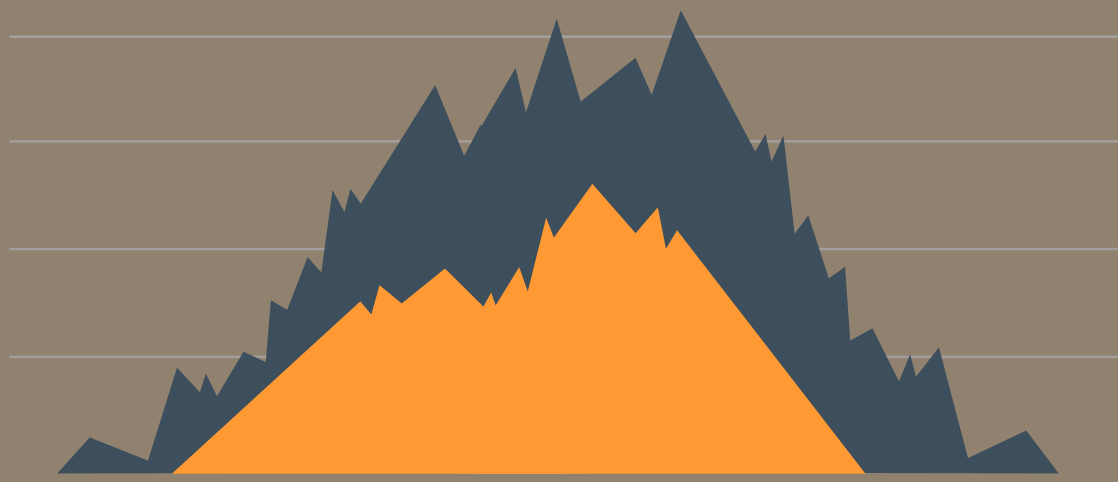
NODE-LINK DIAGRAM

A node-link diagram represents nodes as dots and links as line segments to show how a data set is connected. Each node can also include varying size, color and/or stroke attributes to further explain metrics such as hierarchy or volume.



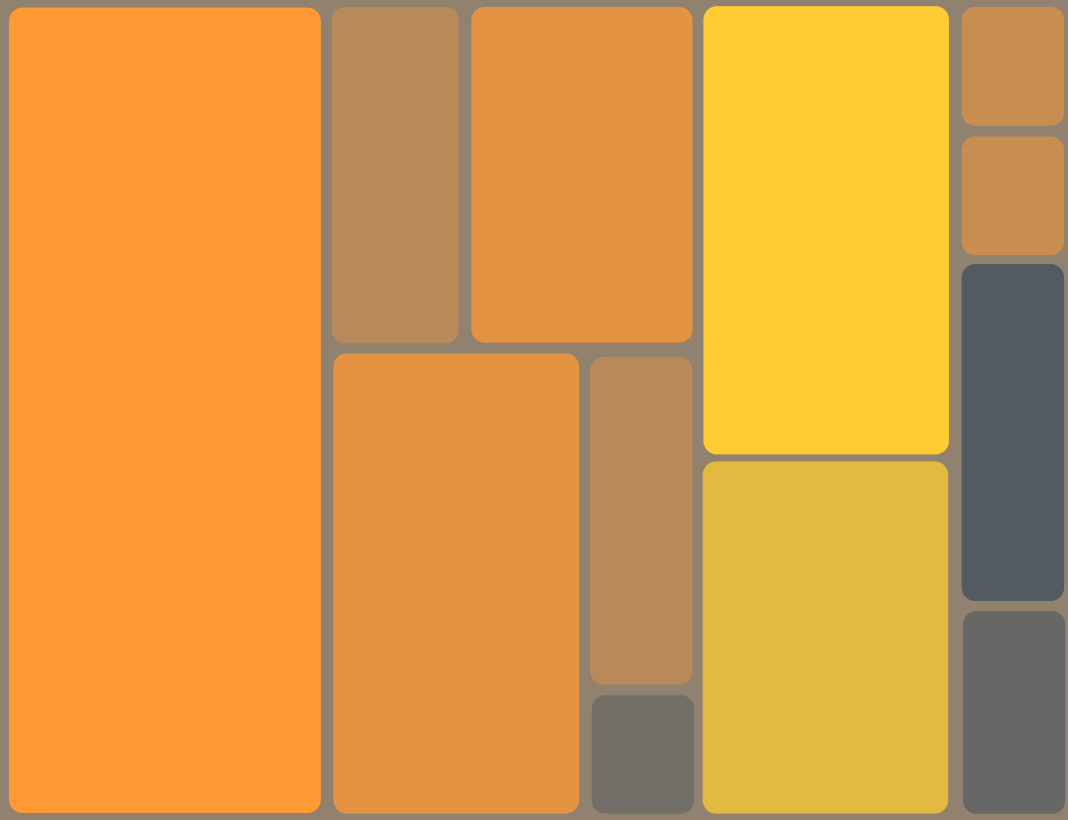
OVERLAPPING AREA CHARTS

An area chart can be displayed in two key ways: overlapping and stacked. Area charts depict one or more set of data, usually numeric over time. Overlapping area charts are best used to compare the individual performance of each category over time.



TREEMAPS

Similar to tree diagrams, treemaps visualize hierarchical structure, though they also display data via area sizes. Each category is assigned a rectangle area and may have zero or multiple subcategories nested inside it. The size of each category reflects its value and must be to proportionate of other categories in the display. The area size of a parent category is equal to the total of its nested subcategories (or if no value is specified for a subcategory, it's area is divided equally amongst the other subcategories within its parent category). Treemap displays allow for a part-to-whole relationship to be easily expressed and understood. And I'm sure treemaps are also really great for the environment too.

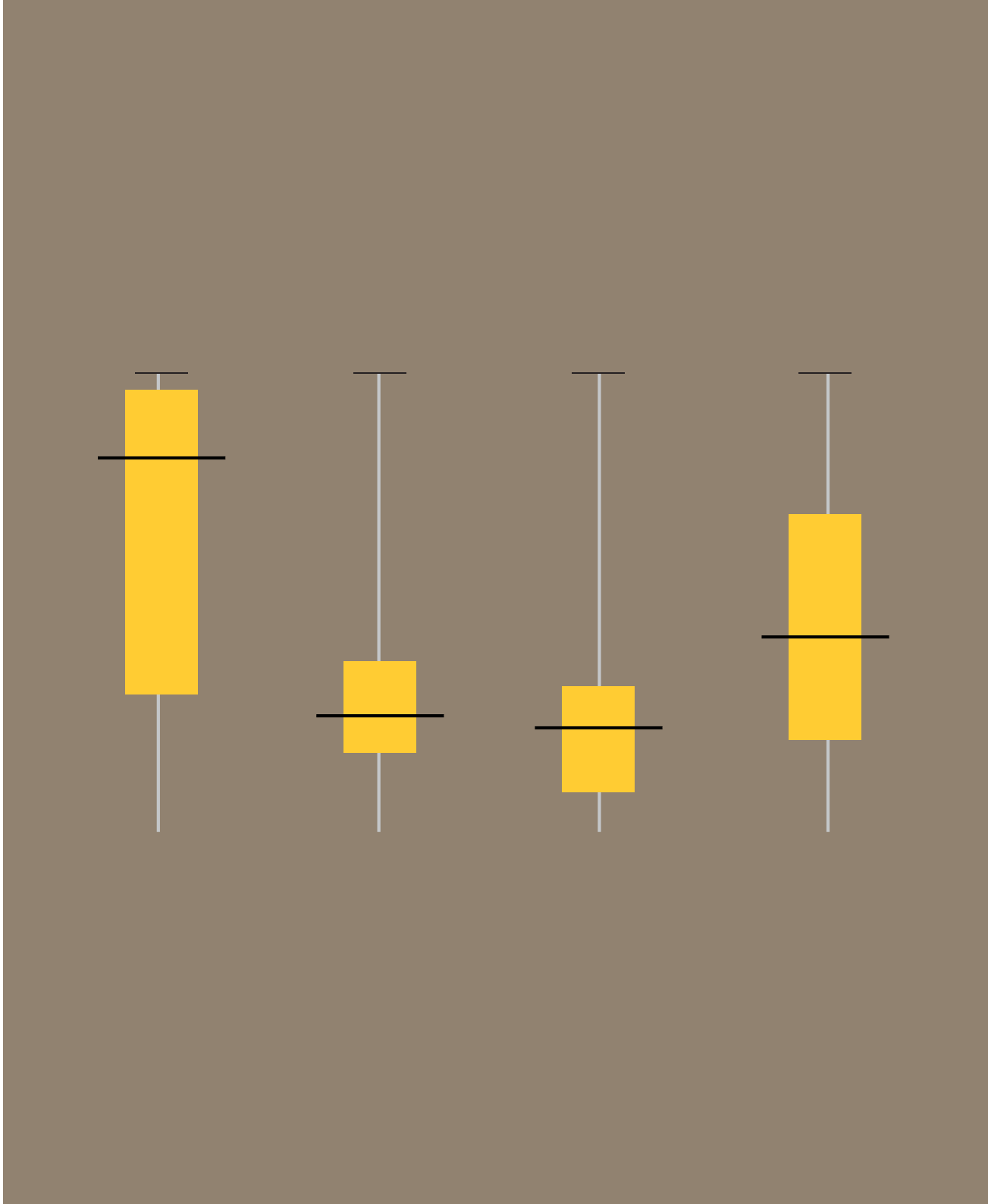


HISTOGRAM

A histogram is a data visualisation that uses rectangles with heights proportional to the value and widths equal to the “bin size” or range of small intervals. A histogram displays the distribution of values over continuous intervals or certain time periods. Histograms are great for showing estimates as to where or when values are concentrated, if there are repeating patterns or any outliers.

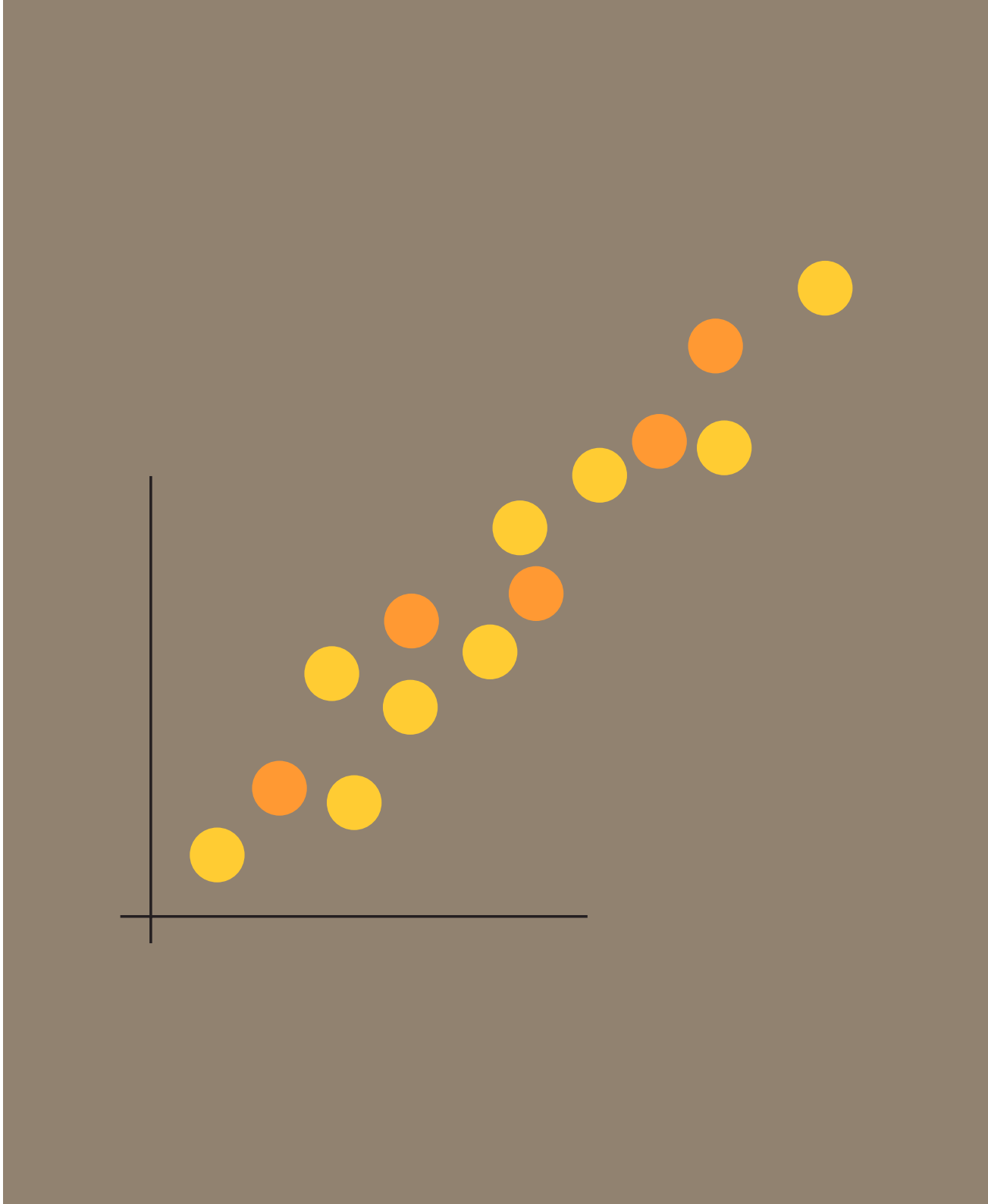
CANDLESTICK CHARTS

Shed some light on your data with a candlestick chart! Candlestick charts are used to visualize the distribution of grouped numeric data points. They're usually used to display stock data, where the endpoints of each vertical line express an opening and closing value. These charts illustrate the total range of distribution, along with the range within which most points fall, under each group - usually time.



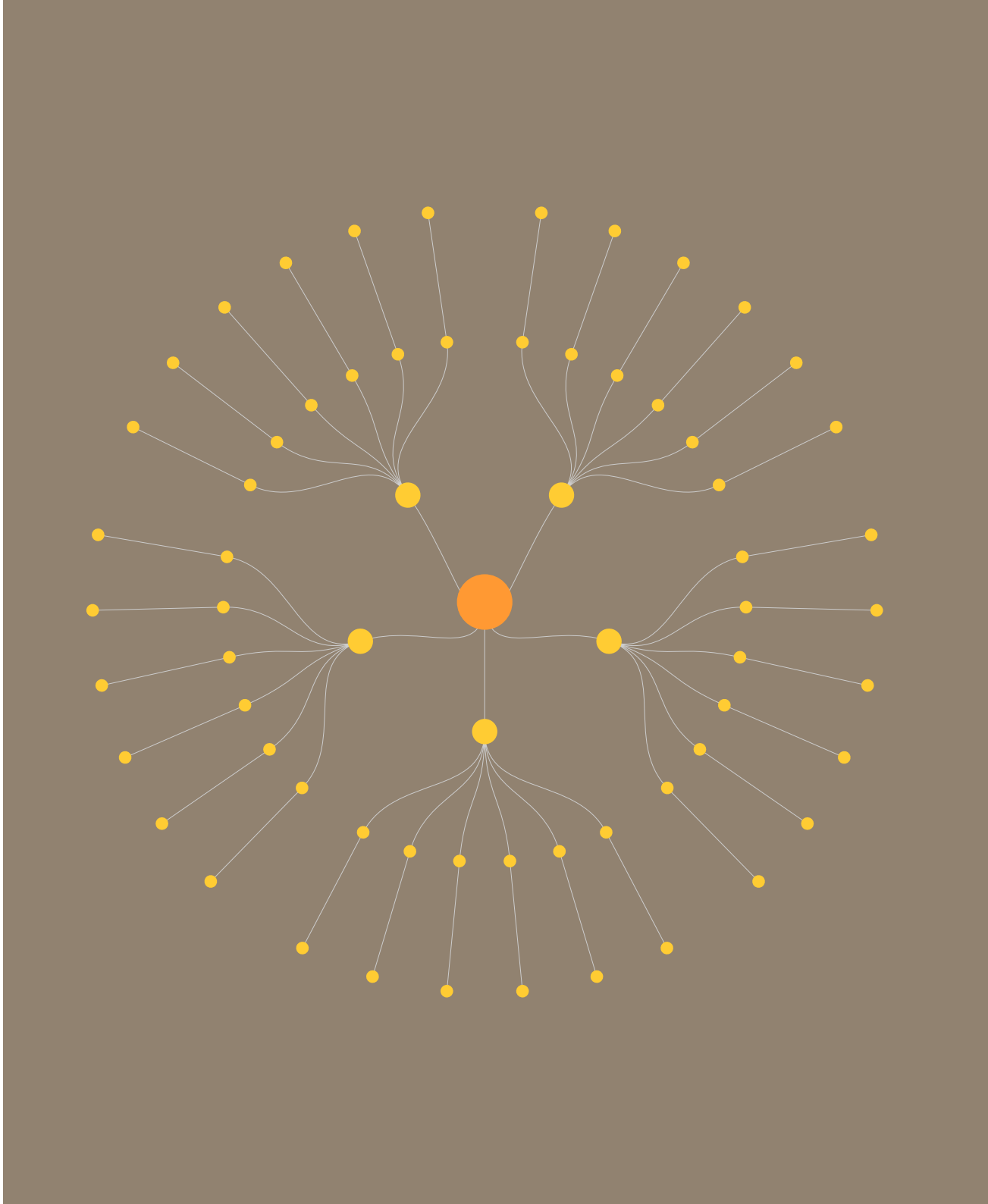
SCATTER PLOT

Visualizing data with a scatter plot is a fantastic way to quickly identify trends, relationships and outliers. Additional use of a color key can ensure other data elements such as category can be displayed.



RADIAL TREEMAP

A radial treemap, also known as a sunburst diagram or multi-level pie chart, is a great way to visually express both hierarchy and part-to-whole contributions and relationships in your data. The hierarchy starts at the center of the circle, allowing infinite sub-levels to be added on the outside. This means a more complex radial treemap can be easily simplified for different uses or audiences by simply removing the outer layers.



PICTOGRAPH

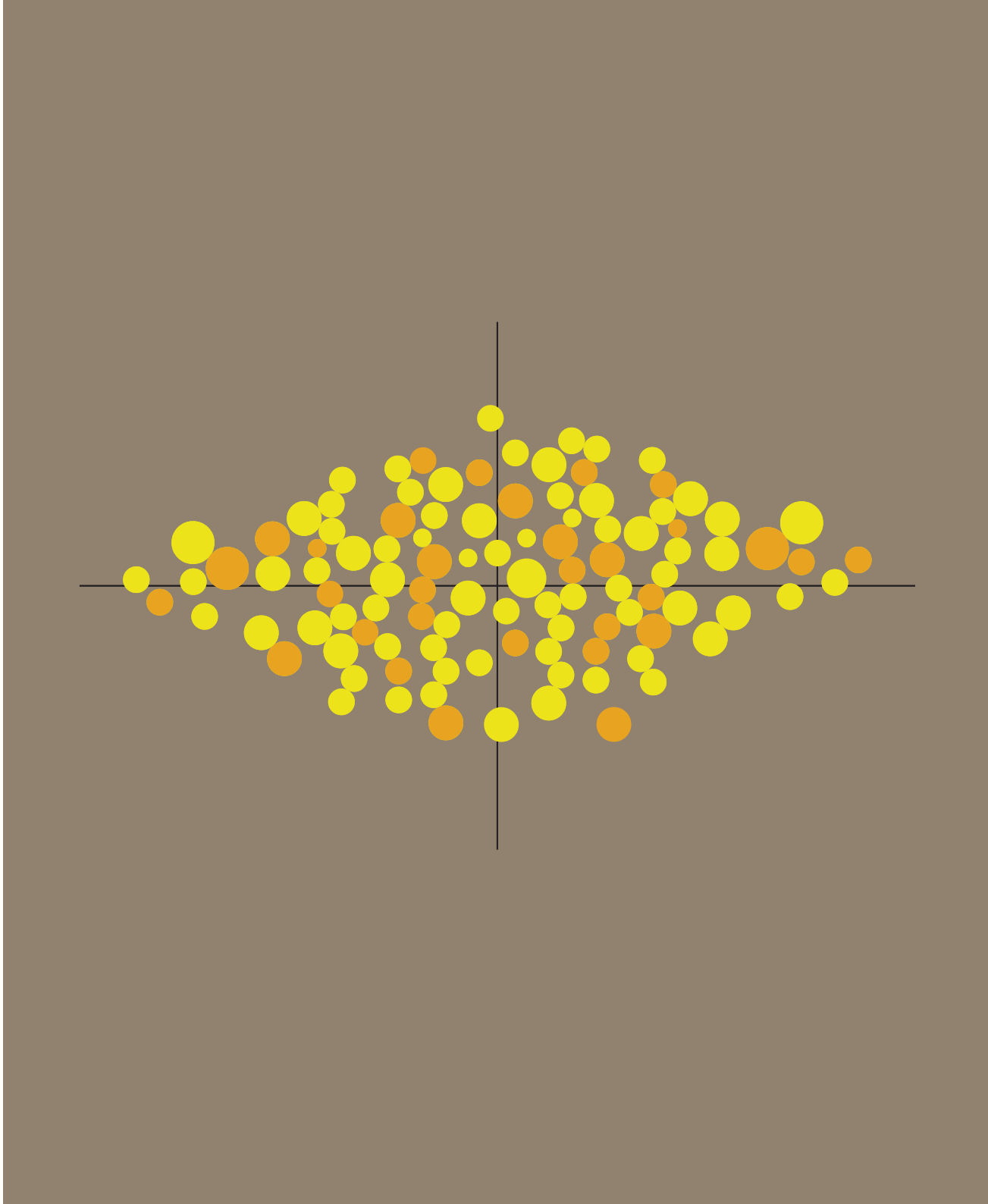
Perdy, pretty pictures! Pictographs, or pictograms, utilize icons to create a more engaging and visually appealing display of small sets of discrete data. Typically, the choice of icon relates to the data subject or category, for example, data on population would likely use icons of people. Each icon can represent a defined value (i.e. each icon is equal to 5). Multiple data sets can then be compared side-by-side in either columns or rows of icons.

VENN DIAGRAM

Venn diagrams show a logical relationship between different ideas or data sets. Each idea or data set is expressed by a circle and the convergence of the circles represent the crossover or similarities of the ideas - this overlap is known as the intersection. By its very nature, Venn diagrams are fantastic for comparing similarities and differences - and therefore finding relationships - between different categories. Venn vill data visualisation cease to amaze me?! The answer is never, obviously.

BUBBLE CHART

BUBBLES! Bubble charts are great for presenting ranking relationships or nominal comparisons. It's essentially a scatter plot with bubbles though a bubble chart visualizes data sets with two to four dimensions, where the first two dimensions are shown as x and y coordinates, the third as a color and the fourth as size.

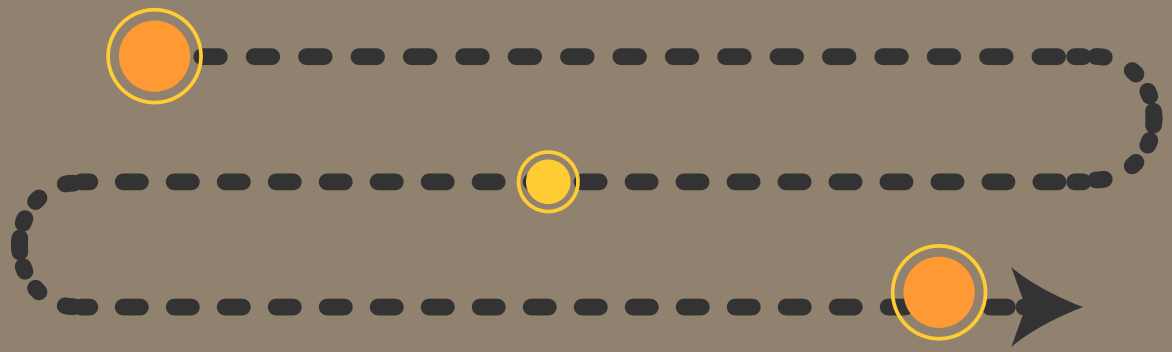


BULLET GRAPH

A bullet graph is a variation of a bar graph, developed to replace overused dashboard gauges and meters. The bullet graph works well to compare a primary measure to one or more other measures in the context of qualitative ranges of performance.

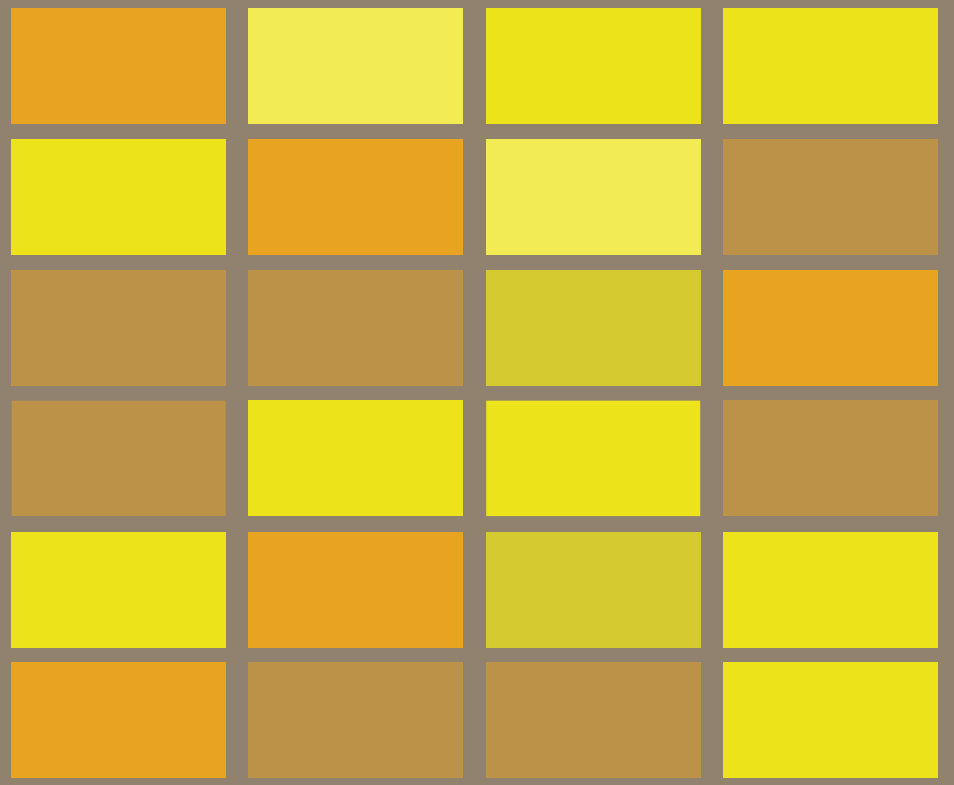
TIMELINE

An oldy, but a goodie! A timeline visualizes a list of events or milestones in chronological order. Some timelines work on a scale, while others simply display events in linear sequence. By nature, timelines work best to present history or a story and make for easy analysis of the relationship between events and time.



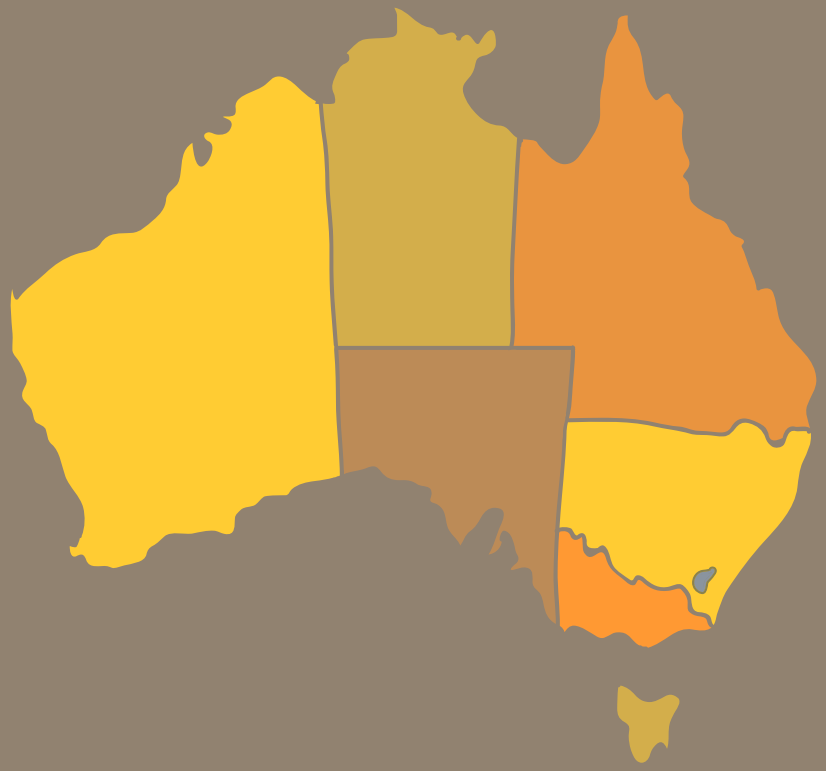
HEAT MAP

Hot damn, it's a heat map! Heat maps are a great way to visually compare data by representing each data category with a color. This allows a quick view of where the intersection of categories is strongest and weakest while showing the relationship between two or more factors.



CHOROPLETH MAP

A choropleth map utilizes a map layout with areas patterned or shaded to represent the measurement of a statistical variable, such as most visited website per country or population density by state.

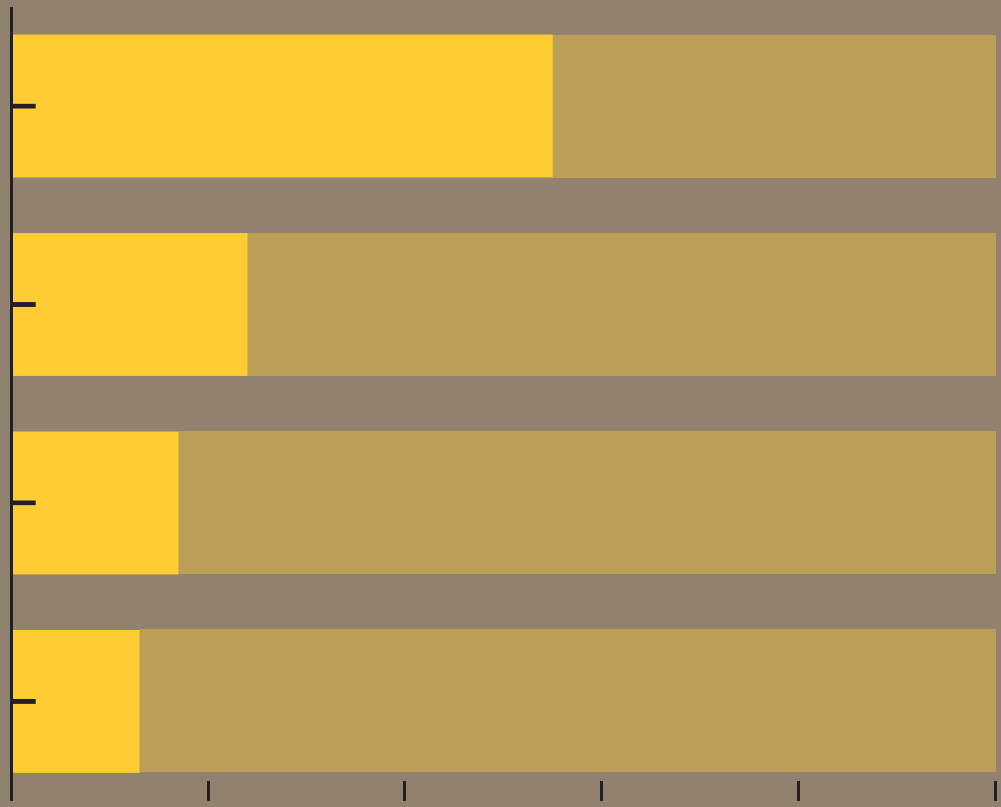


PIE/DONUT CHART

A pie/donut chart is usually “argued” as being an unuseful data visualisation as it is harder to compare “values” when the difference between each “pie” are not familiar (25%, 50%, 75%). However, the addition of text based values in the key or in separate (perhaps interactive) labels can easily resolve this. It also combines two of the greatest foods ever.

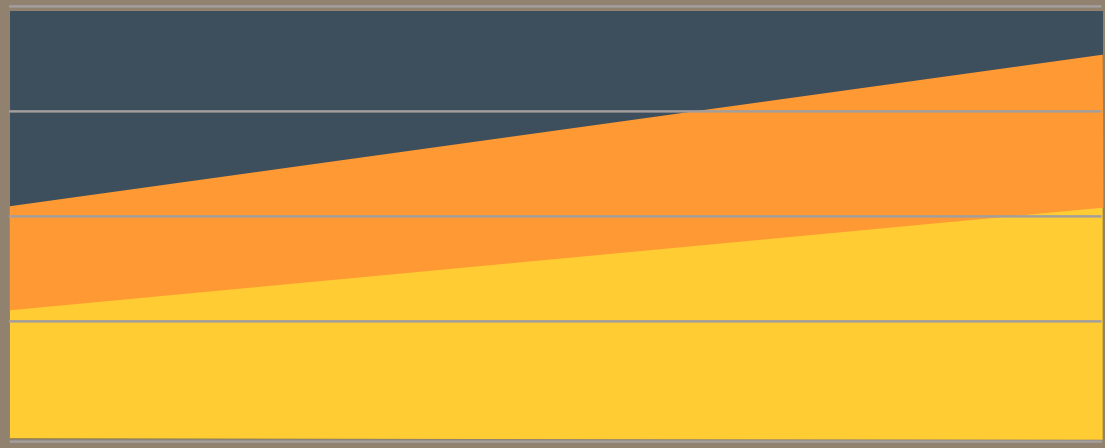
STACKED BAR GRAPH

100% Stack bar graphs visualize the percentage value represented by each category to make the whole. These are great for quickly identifying relative differences between quantities in each category.



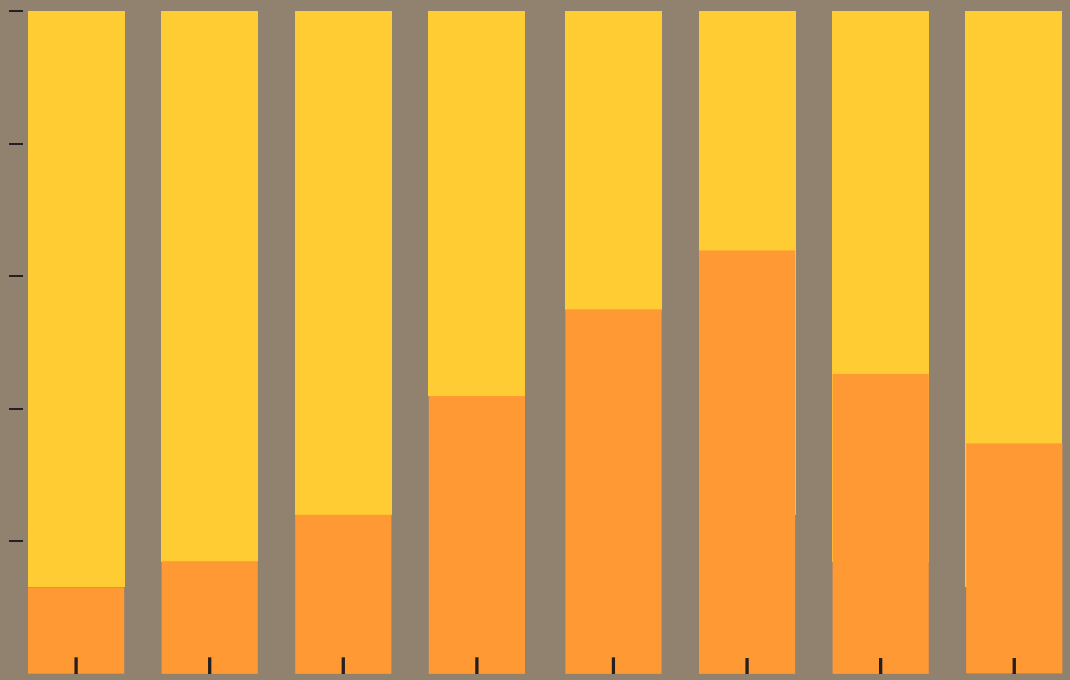
STACKED AREA CHART

So much stacked greatness! Area charts depict one or more set of data, usually numeric over time. A stacked area chart is where the described area of one category does not overlap the area of another, but rather gets ‘stacked’ on top of it, adding it’s value to the value/s of any categories already described below it. This is best used to visualise part-to-whole relationships, helping show how each category contributes to the cumulative total over time.



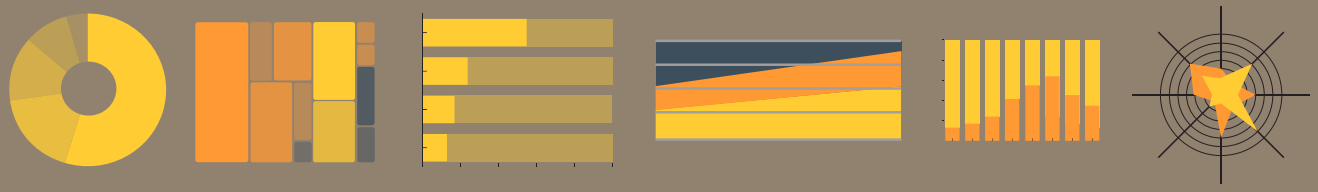
STACKED COLUMN GRAPH

Similar to 100% stacked bar chart, 100% stacked column charts/graphs compare the percentage that each category contributes to the total of the data set. The real difference between bar and column varieties is in the orientation of the bars/rectangles representing each category, with the most common decision-maker being how the category labels will fit in with layouts.

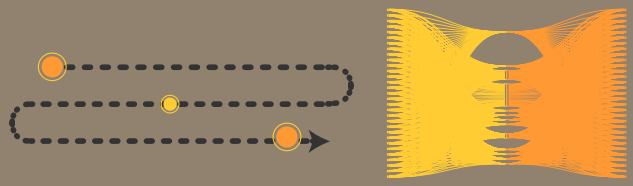


COMPARATIVE
WHAT?

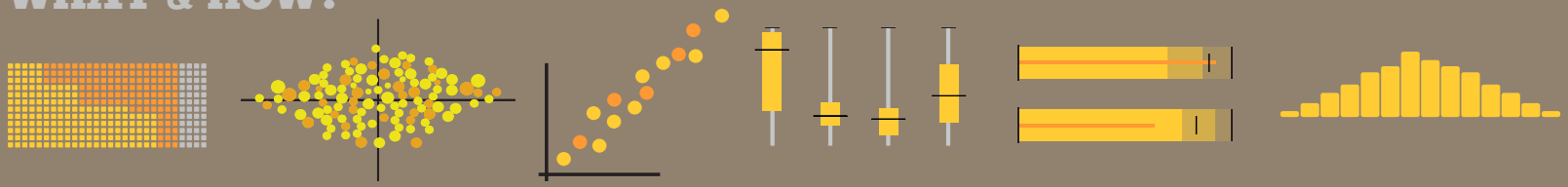
COMPOSITE
WHAT?



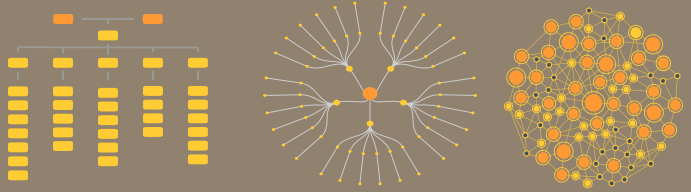
SEQUENTIAL
WHEN?



DISTRIBUTIVE
WHAT & HOW?



ORGANIZATIONAL
WHO & HOW?



TEMPORAL
WHEN?

RELATIONAL
HOW?

SPATIAL
WHERE?

WANT MORE?

TRAINING

The Datalabs Agency hosts a range of data visualization workshops, with both one-off, open-invite events and workshops tailored specifically for corporate and government groups.

Have a look at our current workshops or contact us to organise a group workshop or request an open-invite workshop in your city.

Data Visualization Workshops

Contact DataLabs

SERVICES

Need help? The DataLabs Agency offers extensive data visualistation services including:

- Dashboard development (for Education, Marketing, Business Intelligence and more)
- Interactive data visualizations
- Data analysis for businesses
- Interactive annual reports and microsites
- Data visualization style guides
- Content marketing analytics

Interactive Dashboards

Interactive Data Visualizations

Data Analysis

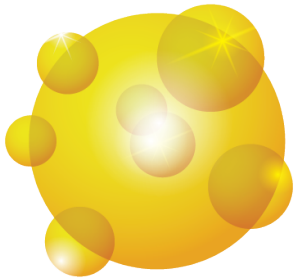
Annual Reports & Microsites

Style Guides

Content Marketing Analytics

...And this only scratches the surface. Find out more at **datalabsagency.com**

THANKS!



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