Chart Types and Their Uses

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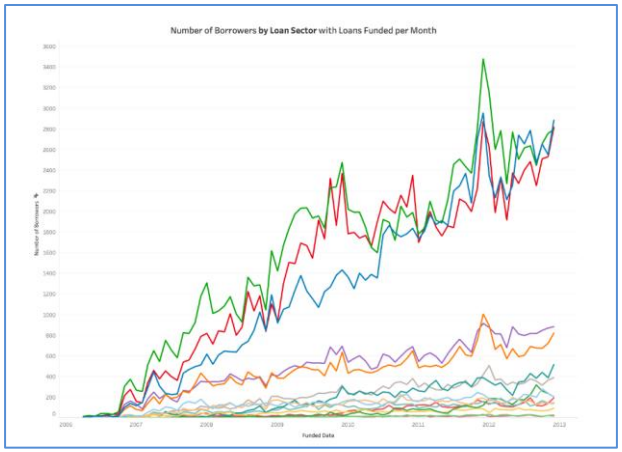
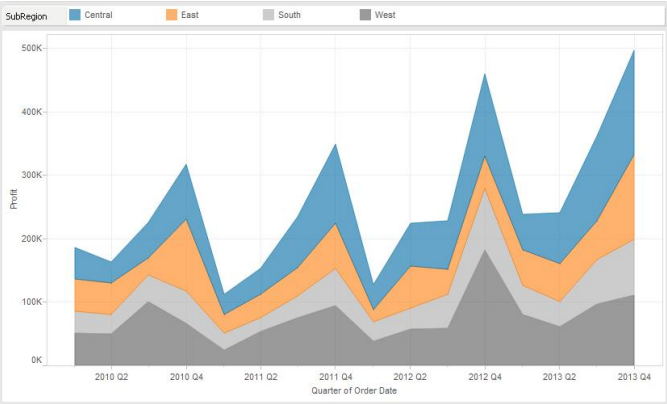
Line Chart



A line chart is a graphical representation where individual data points are connected by straight lines. It effectively visualizes trends over a continuous interval or time span, making it easier to understand long-term patterns.

- - Ideal for showing trends over time, such as temperature changes, stock prices, or student performance.
- - Can compare multiple datasets by using multiple lines.
- - Clearly highlight fluctuations, peaks, and drops.
- - Useful in financial, educational, and scientific analysis.
- - Good for visualizing changes over equally spaced intervals.
- - Helps to forecast future values based on past trends.

Area Chart



An area chart is an extension of the line chart where the area between the line and the axis is filled with colour or patterns. It provides a sense of magnitude as well as trend.

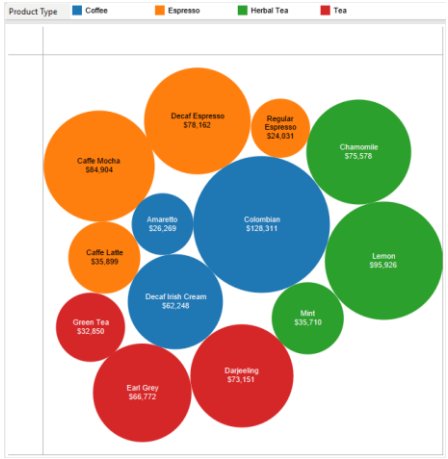
- - Displays quantitative data visually emphasizing the volume.
- - Great for showing cumulated totals over time.
- - Useful when you want to show part-to-whole relationships.
- - Can be stacked to show multiple datasets together.
- - Ideal for tracking the rise and fall of assets or metrics.
- - Helps in emphasizing the magnitude of change over time.

Scatter Plot

A scatter plot uses dots to represent values for two different numeric variables. For each position of the dot on the X and Y axis shows values for an individual data point.

- - Perfect for identifying relationships or correlations between variables.
- - Useful in identifying trends, clusters, and outliers.
- - Common in scientific and statistical research.
- - Helps in hypothesis testing.
- - Can detect positive, negative, or no correlation visually.

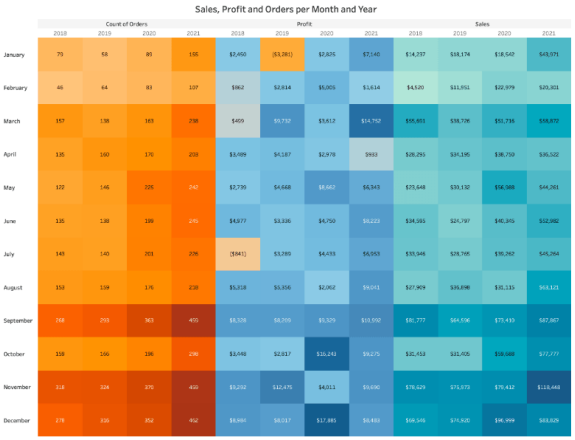
Bubble Chart



A bubble chart is a variation of a scatter plot where each dot is replaced with a bubble, and the size of the bubble represents a third data dimension.

- - Best suited for displaying three dimensions of data.
- - Helps to show concentration or importance with bubble size.
- - Useful in business and economic reports.
- - Must be carefully designed to avoid visual clutter.
- - Helps compare and highlight key insights effectively.
- - Ideal for survey data, financial analysis, and market research.

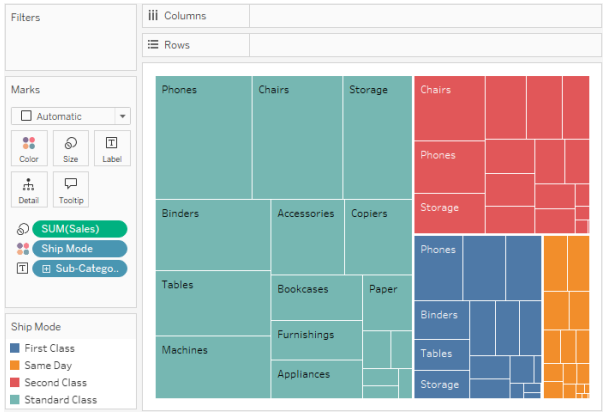
Heat Map



A heat map uses colour to communicate relationships between data values that would be much harder to understand in a spreadsheet.

- - Effective in visualizing the density or intensity of data.
- - Useful in website analytics to show where users click most.
- - Helps identify patterns, peaks, and trends quickly.
- - Darker shades often represent higher values or activity.
- - Common in bioinformatics, weather forecasting, and marketing.
- - Allows analysis of large datasets without crowding.

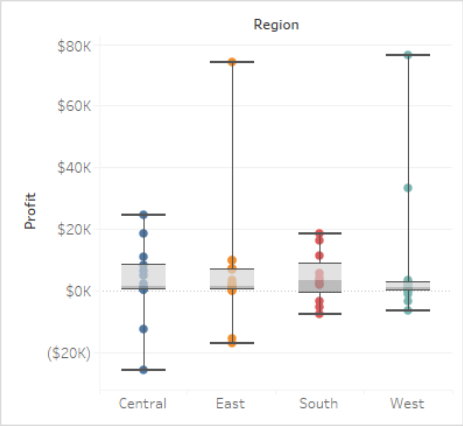
Tree Map



A tree map displays hierarchical data as a set of nested rectangles. Each branch of the hierarchy is given a coloured rectangle, containing smaller rectangles representing sub-branches.

- - Helps in visualizing proportions within a hierarchy.
- - Useful in financial analysis, like portfolio breakdown.
- - Makes it easy to compare different parts of the whole.
- - Can quickly spot patterns or anomalies.
- - Great for data like sales distribution or resource usage.
- - Offers a compact, space-efficient view of complex data.

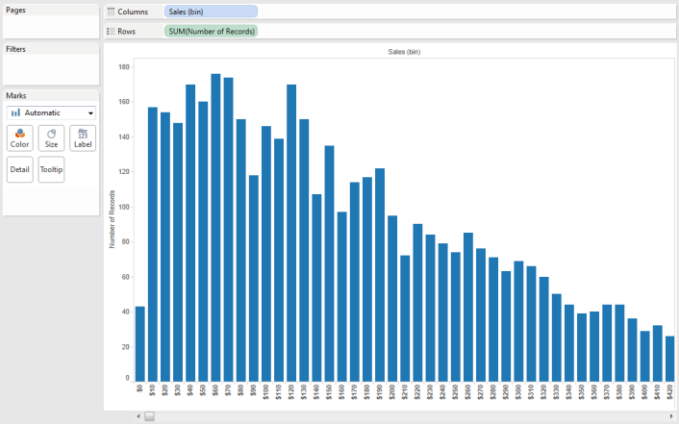
Box Plot



A box plot summarizes data using a box and whiskers, highlighting the median, quartiles, and outliers in a dataset.

- - Excellent for understanding distribution and spread.
- - Highlights central tendency and variability.
- - Identifies outliers clearly with dots or stars.
- - Used in quality control, academic performance, and finance.
- - Helps compare distributions across multiple groups.
- - Best suited for statistical analysis and comparison.

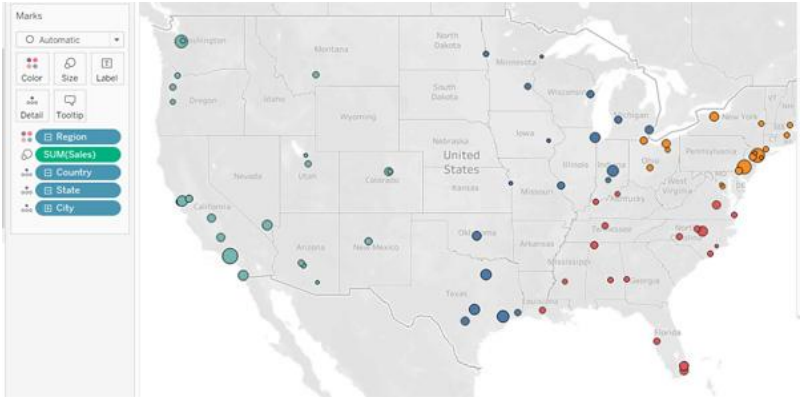
Histogram



A histogram groups numeric data into bins, displaying the frequency of data points in each bin as bars.

- - Shows the distribution of a dataset effectively.
- - Useful for identifying skewness, kurtosis, and modality.
- - Common in quality control, weather forecasting, and research.
- - Helps identify patterns like normal distribution.
- - Provides a visual summary of large datasets.
- - Good for spotting trends such as clusters or gaps.

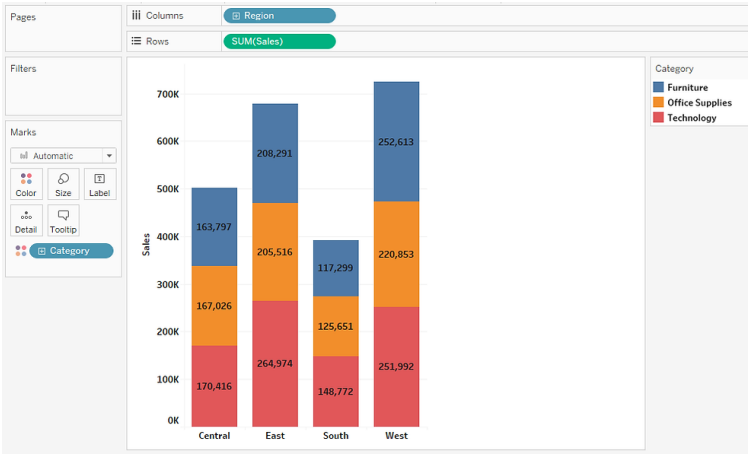
Dot Map



A dot map uses dots to represent a quantity or presence of a feature in a geographic area.

- - Excellent for visualizing spatial distributions.
- - Useful for demographic studies and population density maps.
- - Each dot can represent one or multiple occurrences.
- - Helps in tracking phenomena like disease outbreaks.
- - Useful in agricultural and environmental studies.
- - Highlights geographic patterns and clusters.

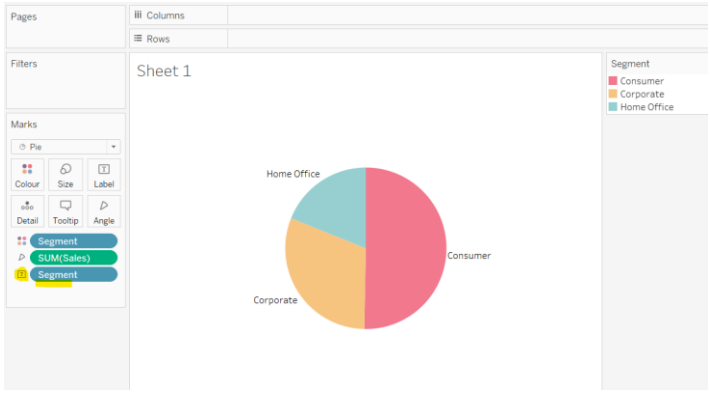
Stacked Chart



A stacked chart layers different datasets one on top of another in the form of bars, making it easy to see part-to-whole relationships.

- - Shows how individual parts contribute to a total.
- - Useful for visualizing cumulative values over time.
- - Can compare multiple groups easily.
- - Good for project management, budgeting, and sales analysis.
- - Helps detect patterns and fluctuations among components.
- - Useful in monitoring components' relative size changes.

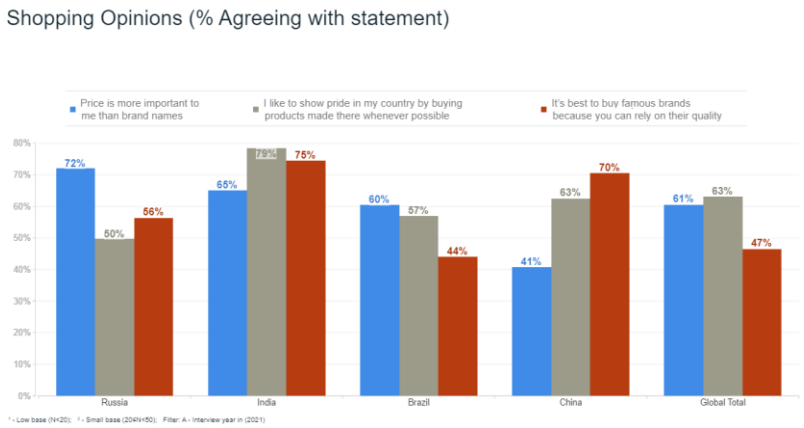
Pie Chart



A pie chart divides a circle into slices to illustrate numerical proportions.

- - Best for showing parts of a whole.
- - Good for simple datasets with a few categories.
- - Useful in business for market share analysis.
- - Can easily highlight dominant segments.
- - Easy to understand at a glance.
- - Should be used cautiously to avoid misinterpretation.

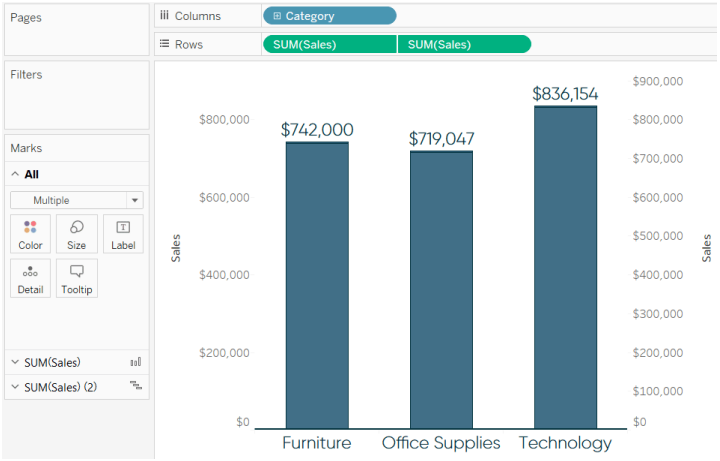
Column Chart



A column chart represents data as vertical bars, where the height of each bar correlates to the value it represents.

- - Excellent for comparing discrete categories.
- - Useful for tracking changes over time.
- - Helpful in marketing, finance, and education sectors.
- - Provides a clear visual impact for comparisons.
- - Can be grouped or stacked for deeper insights.
- - Good for showing rankings, such as top-performing branches.

Bar Chart



A bar chart is similar to a column chart but with horizontal bars. It is effective for comparing quantities among different groups.

- - Ideal for comparing many items or long labels.
- - Easier to read for categorical data.
- - Useful in survey results, marketing analysis, and public health data.
- - Facilitates direct side-by-side comparisons.
- - Highlights differences between groups clearly.
- - Effective even with large datasets.