Yellowfin

Data Visualization Best Practices Guide

Data Visualization Best Practices

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Data Visualization Best Practices

Everybody expects their Business Intelligence (BI) and analytics solution to turn data into insights. But your data is only as good as your ability to understand and share it.

This guide to best practice data visualization will walk you through how to:

1. **Choose the right chart type:** Communicate the significance of your data in the most efficient way possible
2. **Optimize your charts:** Improve information absorption
3. **Share your insights:** Turn information into action

Effectively transform your organizational data into easily digestible and actionable business communications.

Why Visualize Data?

PROCESS INFORMATION

Make your data sets coherent and easy to absorb.

BETTER DECISIONS

Understand your business and make better informed decisions.

TELL A STORY

Present a convincing fact-based story.

MAXIMIZE VALUE

Get the most out of your BI investment.

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Choose the right chart type

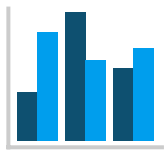
BEST PRACTICE #1

Choosing the right chart type will help you find and tell the story in your data. The appropriate chart will reveal patterns and trends, so you instantly understand the significance of the data set that you're visualizing.

In this section, we'll cover when to use the most common chart types.

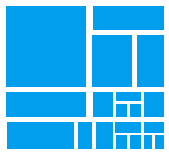
What would you like to show?

If you know your question, and have the right data available, there is a perfect chart for you.



COMPARE ITEMS

Compare values across different categories.



STATIC COMPOSITION

Part-to-whole relationship.

CORRELATION

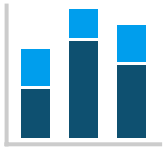
Relationship between two or more variables.

LOCATION

Show where things happen.

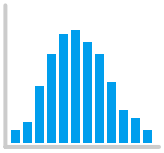
TIME COMPARISON

Compare changes over a period of time.



NON-STATIC COMPOSITION

Part-to-whole relationship over time.



DISTRIBUTION

Frequency of values in a data set.

KPIs

Key Performance Indicators.

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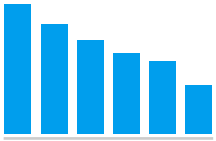
Comparisons among items

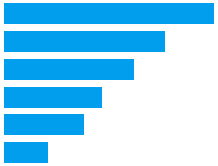
How to compare values across different categories.



COLUMN CHART

Compare the values of different categories.

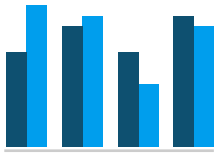
Compare sales by products



BAR CHART

Compare values that have more than 12 categories or very long category labels.

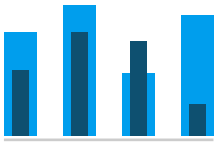
Compare sales by salesperson



CLUSTERED COLUMN / BAR

Shows values of multiple category groups.

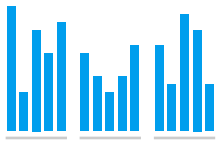
Compare sales by products by gender



BULLET / LAYERED CHART

Highlight when one metric overtakes another (such as a KPI).

Compare departmental spend vs budget



TRELLIS CHART

Compare values of multiple categories across multiple dimensions.

Compare sales by products by region

RADAR / SPIDER CHART

Highlight strengths and weaknesses by comparing multivariate data with three or more quantitative variables.

Compare products by features

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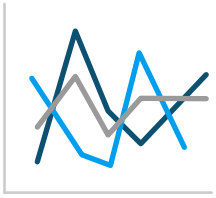
Comparisons over time

How to compare changes over a period of time.

LINE CHART

Displays a metric over a period of time. Line charts help you understand trends such as acceleration, deceleration and volatility.

Compare sales by month



MULTI-LINE CHART

Compare multiple categories or multiple metrics over time.

Compare sales by product by month

TRELLIS LINE CHARTS

Compare time across multiple categories.

Compare sales by product by month

STEP CHART

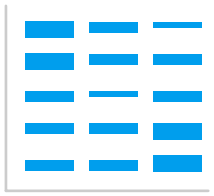
Highlight sudden changes in time-series data. Best used on granular timestamp data, or if data is missing some dates.

Compare balance by hour

AREA CHART

Similar to line charts, however the time-series relationship represents volume.

Compare sales volume by month



WEEK DENSITY

Displays when things are happening during the week. Can assist decision-making regarding, for example, resource planning.

Compare usage by day by hour

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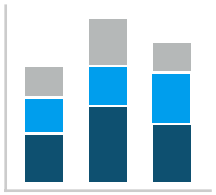
Composition

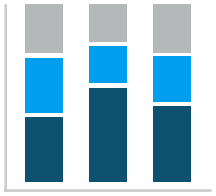
How to show part-to-whole relationship.



STACKED BAR

Show how a value of a category is comprised of another dimension.

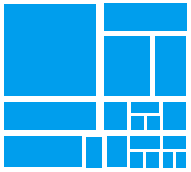
Sales by product broken down by region



PERCENTAGE BAR

Shows a total broken down by percentage of proportions.

Percentage of product sales by region



TREEMAP

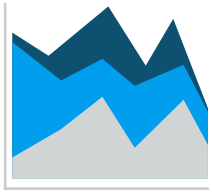
Display hierarchical data in a series of clustered rectangles, which together represent the whole.

Sales by product grouped by product category

PIE / RING CHART

Shows total divided into categories by percentage.

Revenue by gender



STACKED AREA

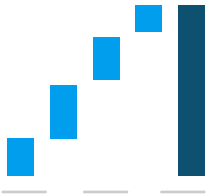
Show part-to-whole relationships over time.

Sales by month broken down by products

FUNNEL

Used to identify bottlenecks in a workflow by ordering categories by stage.

Sales by funnel stage



WATERFALL

Shows how initial value is increased or decreased by a series of intermediate values, leading to a total value.

Number of employees by team over time

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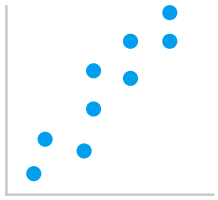
Correlation

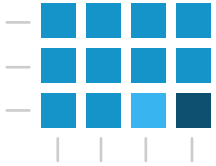
How to understand the relationship between two or more variables.



SCATTER PLOT

Show how two different variables correlate.

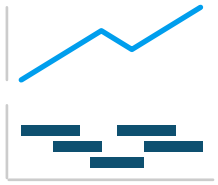
Correlate number of customers by age



HEAT GRID

Highlight relationships across two dimensions and a metric with color.

Correlate region and product by sales



EVENT CHART

Aligns the occurrence of events against the values of a numeric data set over time.

Show how events correlate with sales over time

BUBBLE CHART

Shows how three different variables correlate.

Correlate number of customers by age and revenue

CIRCLE GRID

Highlight relationships across two dimensions and two metrics with color and size.

Correlate region and product by sales and profit

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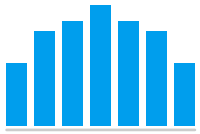
Distribution

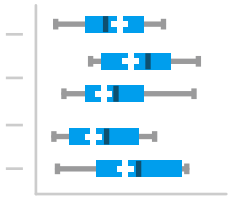
How to understand the frequency of values in a data set.



HISTOGRAM

Shows the number of times a value occurs in the dataset by a specific bin class (e.g. age bracket, grades, scores).

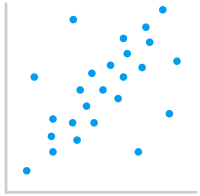
Number of customers by age group



BOX AND WHISKER

Shows distribution in data sets by category. Box contains median and first and third quartiles (e.g. 25% greater and less than the median). Whisker typically represents minimum and maximum points in the data.

Revenue distribution by region



SCATTER PLOT

Plot how your data is distributed by value across two metrics to identify clusters and outliers.

Individuals by height and weight

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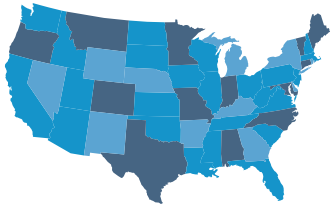
Location

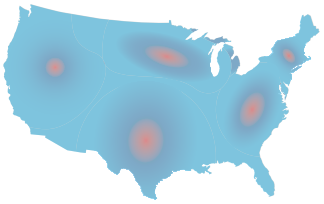
How to see *where* things happen.
(Or where things aren't happening in order to uncover your next opportunity)



THEMATIC / GIS MAP

Show location areas or boundaries using color in order to compare values.

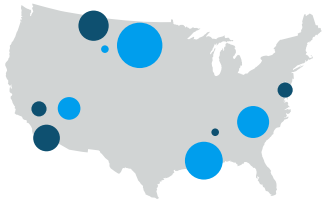
Population by state



HEAT MAP

Shows concentration of occurrences of interest in the same location.

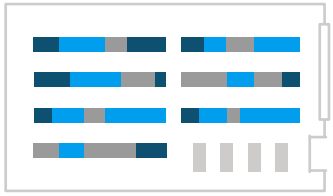
Usage by location



BUBBLE MAP

Show location of data points using bubble size to compare values.

Sales by store



RASTER MAP

Show where data is on a custom map.

Sales by sections of a shop floor

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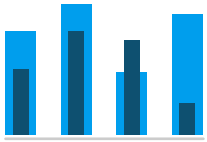
Key Performance Indicators (KPIs)

How to show if you are on target.

BIG NUMBER CHART

Show the value of a metric as a number.

How many online users in total?



BULLET / LAYERED CHART

Highlights when one metric overtakes another.

Compare departmental spend vs budget

DIAL

Measure performance or rate of change against predefined targets using the metaphor of a dial.

Revenue vs target

METER

Measure performance, or rate of change, against predefined targets using the metaphor of a meter.

Growth vs target

THERMOMETER

Vertical representation of a dial chart.

Revenue vs target

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Format style

BEST PRACTICE #2

Format your charts to make them easier to understand and more aesthetically pleasing.

Colors

Data can be represented by color. You can use colors to highlight different categories or to represent a secondary metric on your chart.

Be careful: Color used poorly can obscure insights and confuse people.

Did you know?

One in 12 men (8%) have some sort of color blindness. To make your charts as accessible as possible, think about choosing a color scheme that will work for colorblind people too.

Colors can give your charts more meaning

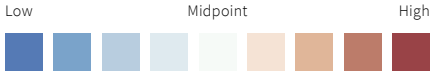
Use colors to highlight different categories or metrics.

CATEGORICAL

Every category is labeled with a different color.

SEQUENTIAL

Single color represents a metric ordered low to high.

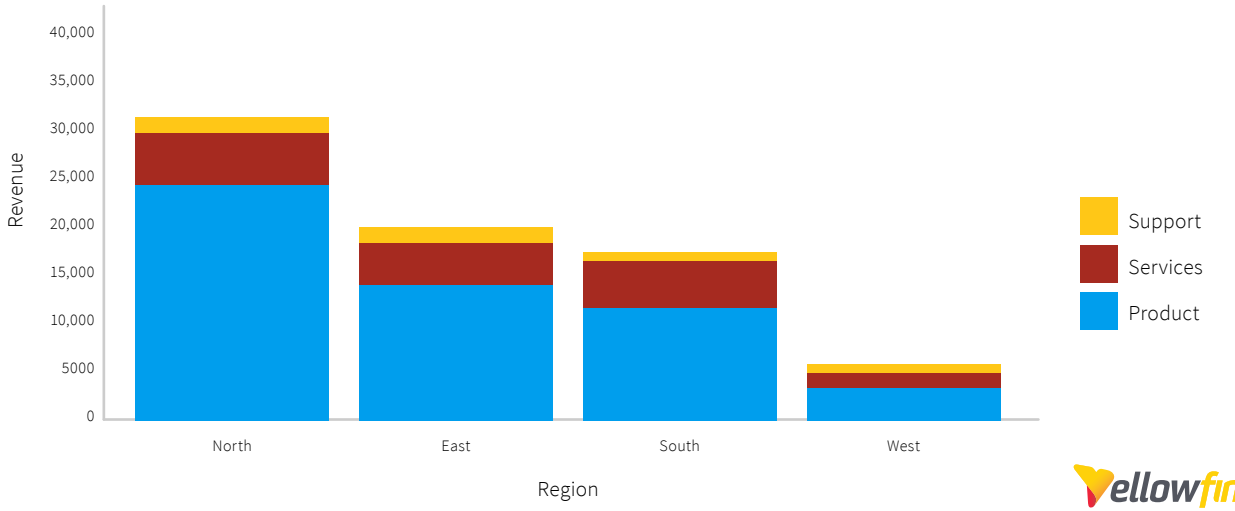


DIVERGING

Two color schemes with critical midpoint value.

Use legends as your key

Include a legend to define what your color scheme means.
You do not need a legend when you only have one data category.



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Format style

BEST PRACTICE #2 *(continued)*

Grid lines

Grid lines help you compare key thresholds. Without them, your mind has to draw an imaginary line to make comparisons.

Labels

While charts reveal patterns in your data, labels enhance visual representation by displaying exact values. Labels are especially useful for paper-based or static charts that don't have hover tooltips enabled.

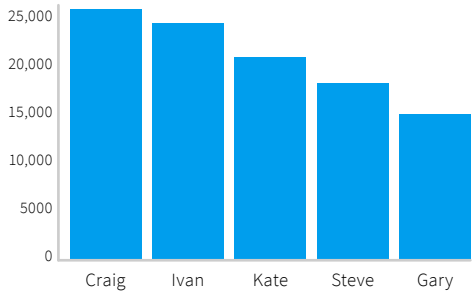
Axis

Format your axis to control the scale and intervals of your charts. Make sure your axis labels and spacing are easy to read.

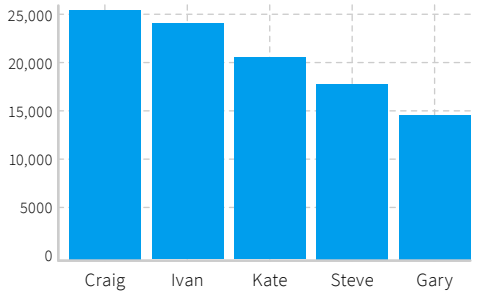
Grid lines communicate key thresholds

Be careful not to overuse grid lines; too many can make your chart harder to read.

NO GRID LINES



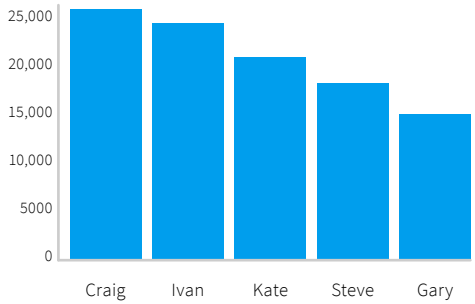
GRID LINES



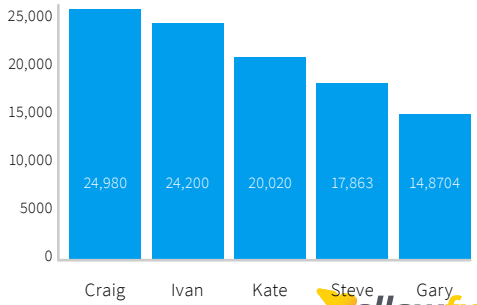
Labels reveal exact values

Support visual representation with precise figures.

NO LABELS



LABELS



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Add clarity

BEST PRACTICE #3

Make your charts easy to understand by telling people exactly what they represent.

Chart titles & descriptions

Use chart titles to frame the story, purpose and meaning of your charts. Use chart descriptions to add additional context to your chart, such as from where the data comes.

Sorting

Sorting can help people make sense of what your charts mean, by telling the story in the right order.

Annotations & comments

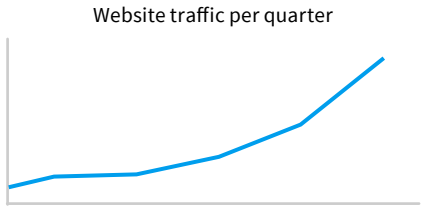
Add context and perspective by annotating data in charts or adding comments.

Chart titles frame the story in your data

There are two ways to tell people what they are looking at.

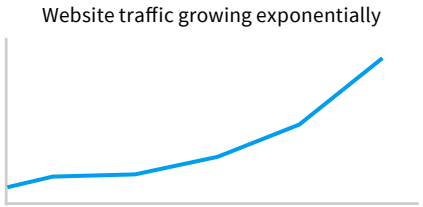
DESCRIBE THE QUERY

For monitoring data without bias.



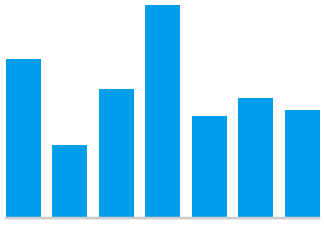
EXPLAIN THE INSIGHT

Use data to tell a story.



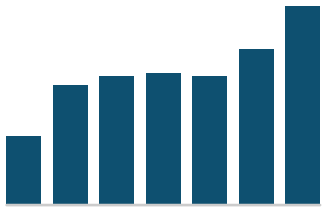
Sorting tells your story in the right order

Sort your data to make finding insights easier.



ALPHABETICAL

Quickly find a category.



ASCENDING

Tell a story in order.

DESCENDING

Compare categories.

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Highlight what's important

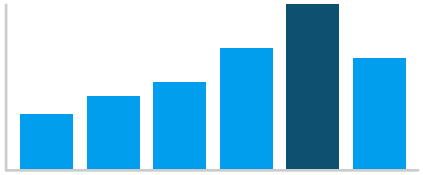
BEST PRACTICE #4

Data visualizations can contain, display and communicate lots of information. But, you can make critical insights and data points stand out by directing your audience's attention to what's important.

Directing attention with conditional formatting, reference lines or trends and forecasts increases the 'dwell time' of your reports, leading to a better understanding of the significance of your data.

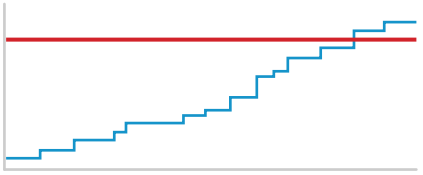
Direct attention

Draw people's eye to what's important.



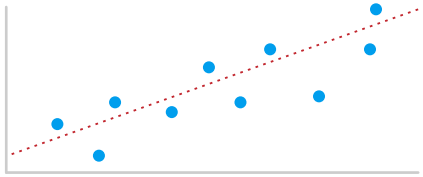
CONDITIONAL FORMATTING

Colors data that is above or below defined thresholds.



REFERENCE LINES

See if you are on target to reach a goal.



HIGHLIGHT TRENDS

Uncover patterns in your data.

PROJECT FORECASTS

Predict what will happen next.

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Share

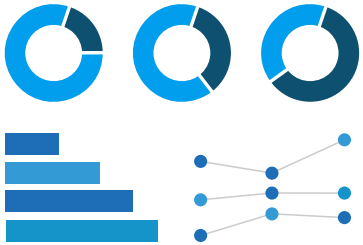
BEST PRACTICE #5

Data visualizations reveal insights, but that's only half the challenge. The *real* value is created when insights are shared and acted upon.

The best data visualizations turn insights into action. So don't let your stunning data visualizations go to waste. Deliver insights to decision-makers wherever they make decisions.

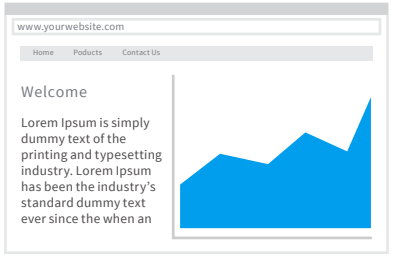
Data is more valuable when shared

Deliver insights to people where they make decisions.



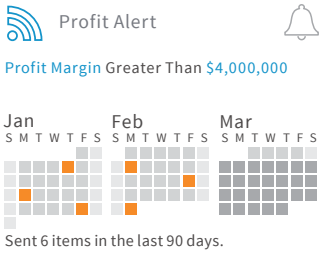
DASHBOARDS

Set-up personalized dashboards to help people monitor what matters to the them.



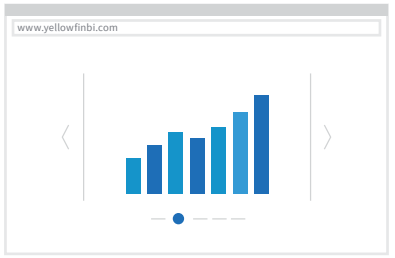
EMBED

Embed insights into the platforms and applications people use every day.



BROADCAST

Tell people when to take action with periodic reports and data-driven alerts.



LIVE PRESENTATIONS

Include real-time interactive charts to tell compelling stories to live audiences.

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About Yellowfin

Yellowfin is a Business Intelligence platform that makes finding and sharing insights easy. Transform your data into rich visualizations and interactive dashboards. Answer your organization's most important questions. Then share, collaborate and make data-driven decisions.

For more information, visit www.yellowfinbi.com

Additional resources

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