Qlik

# 10 Ways to Take Your Data Visualizations to the Next Level

# Inspire action with your data.

The world of data visualization has exploded. From arc diagrams and bullet charts to violin plots and waterfalls, there are more techniques than ever before. That's great news – because given the breakneck pace of digital transformation, it has become crucial not only to analyze data but to act on it. And when you choose the right visualization – or accept a great recommendation from AI – to highlight the most important aspects of your data, you can illuminate new insights and communicate them more persuasively. That can result in smarter actions and bigger outcomes for your business.

In the following pages, you'll find a guide to understanding some of the newer visualizations – including where and when to use them for the biggest impact.

> **Data is increasingly important to all businesses…We're now seeing an acknowledgment that if you don't have good data visualization, then your insights are less apparent, resonate less with audiences, and are harder to communicate."**
>
> **Elijah Meeks,** Fast Company

# Form follows function.

When considering next-level visualizations for telling your data story, put function first. The Financial Times has developed a visual vocabulary – now used as a reference among people who work with data – that categorizes visualizations by the nine functions to the right.

Before you choose a visualization type, determine which relationships in your data you're trying to show. Once you settle on function, you can use the Financial Times vocabulary to select a visualization in that category.


## 9 FUNCTIONS OF VISUALIZATIONS

**Change Over Time**

**Distribution**

**Part-to-Whole**

**Correlation**

**Flow**

**Ranking**

**Deviation**

**Magnitude**

**Spatial**

Source: https://ft-interactive.github.io/visual-vocabulary/

# A visualization selection tool.

Another way to approach visualization selection is to evolve from classic options to more specialized ones by filtering them through the function categories. Start with the visualization you'd typically choose, use it as a cue to determine your function, and then make a different selection in the same function category.

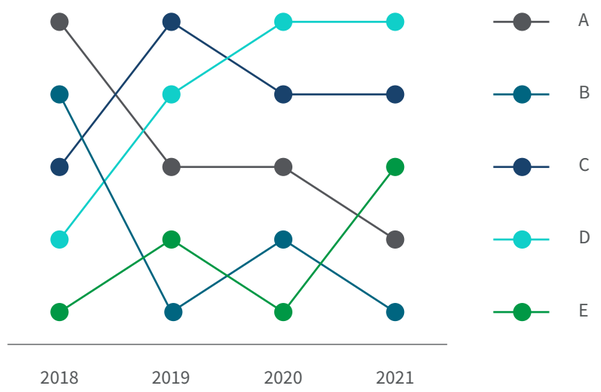
| IF YOU TYPICALLY USE | YOUR FUNCTION MAY BE | SO YOU MIGHT ALSO USE |
|---|---|---|
| Horizontal bar chart | Ranking | Bump chart or slope chart |
| Line graph | Change over time | Calendar heatmap or stacked area graph |
| Pie chart | Part-to-whole | Mekko chart or treemap |
| Histogram | Distribution | Box plot or distribution plot |
| Scatterplot | Correlation | Heatmap or grid chart |

Source: https://ft-interactive.github.io/visual-vocabulary/

# Beyond the bar.

If you're using a bar chart, you may be ranking items. Consider trying a slope chart or a bump chart instead.

## BUMP CHART



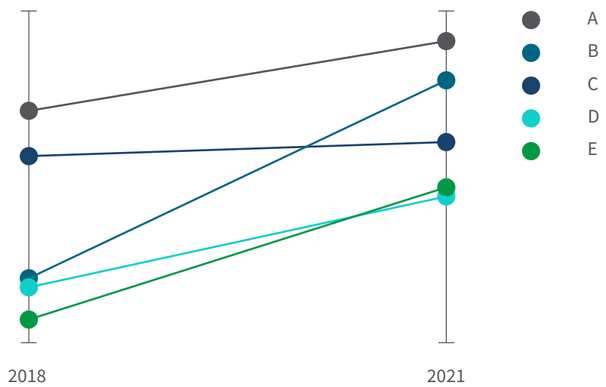

**GREAT FOR**

Showing changes in rank across multiple dates. The point is usually to compare the relative positions of categories against each other – and to show how those positions have changed over time – as opposed to focusing on the values themselves.

**PRO TIP**

For large data sets, consider grouping lines using color. Bump charts don't work as well for dimensions with a large number of values, so limit yourself to the top 10–12 categories. You may even want to highlight just the top five.

## SLOPE CHART




**GREAT FOR**

Showing how ranks have changed over time. Whereas a line or a bump chart shows three or more points in time, the slope chart shows only two. That makes it easy for the eye to compare the grades of the slopes – and see how the rates of change differ among categories.

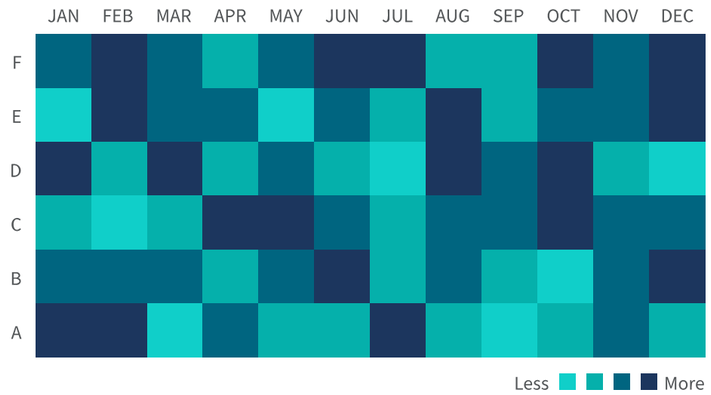
**PRO TIP**

Consider using a slope chart for visualizing the rates of change in prices, sales, costs, profits, and more. You can give your audience a simple view into what has gone up, what has gone down, and how quickly it happened.

# Beyond the line.

If you’re using a line chart, you may be tracking change over time. Two other ways to show that: a calendar heatmap and stacked area chart.

## CALENDAR HEATMAP



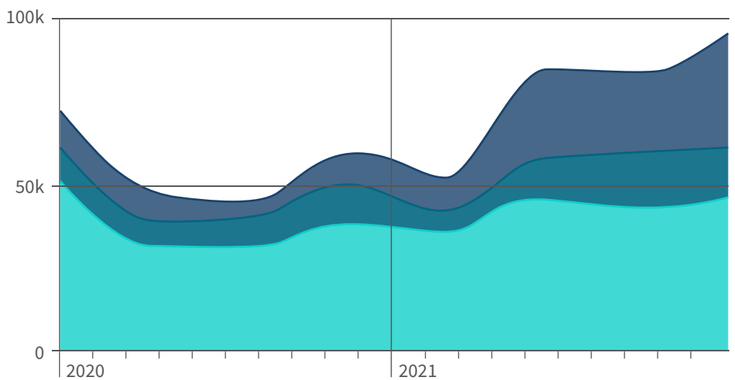

**GREAT FOR**

Showing variance across multiple variables, revealing patterns, displaying whether variables are similar to each other, and detecting correlations. In a calendar heatmap, one of the rows or columns is set to intervals of time – for example, the months of the year, as shown here – which enables you to show change over time.

**PRO TIP**

Calendar heatmaps require two dimensions, one of which is time, and one measure, with an optional second measure. The highest and lowest values appear in each dimension column. The values in between are shown in a color gradient, centered on the average.

## STACKED AREA CHART




**GREAT FOR**

Showing changes to the total and revealing trends over time. Stacked area charts are similar to simple area charts (a line graph with the area filled in), only with multiple data series. They start each data point from the point left by the previous data series.

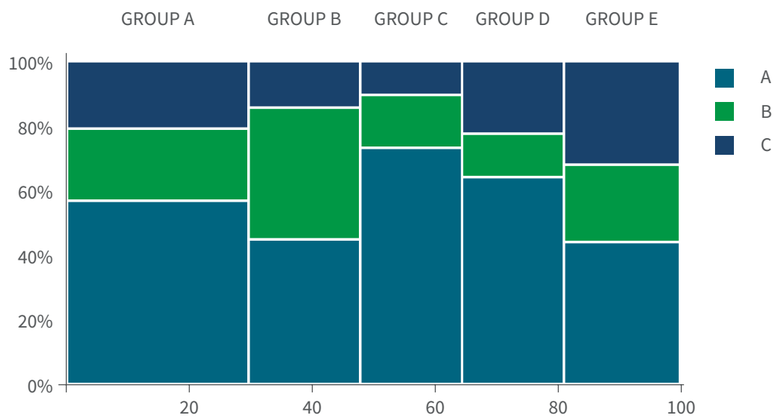
**PRO TIP**

The stacked area chart shows the total of all the data plotted. The areas convey whole numbers, so the chart won’t work for negative values. And while they’re good at showing changes to the total, stacked area charts can make it difficult to see changes in the components.

# Beyond the pie.

If you're using a pie graph, you're showing the relationships of parts to whole. You can also do that with a Marimekko chart or tree map.

## MARIMEKKO CHART



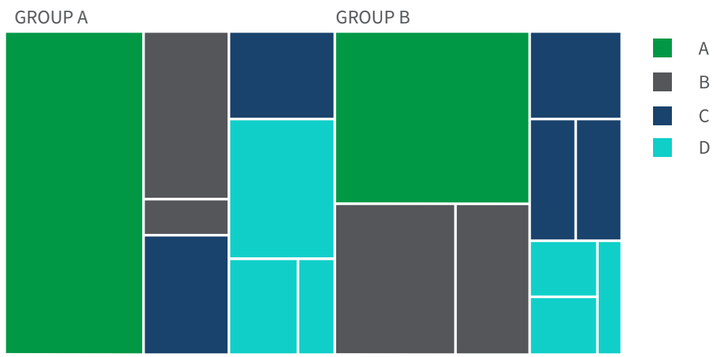

**GREAT FOR**

Comparing groups while being able to compare the impact of categories within each group. The dimension axis shows the groups, and the measure axis shows the normalized percentage value for each category item. The size of each group shows its value.

**PRO TIP**

The mekko chart is especially popular in finance, sales, and marketing – but it doesn't have to be restricted to those areas. Two cases where a mekko chart won't work: when there's a big difference in the magnitude of the measure values and when you're mixing absolute and relative values.

## TREEMAP




**GREAT FOR**

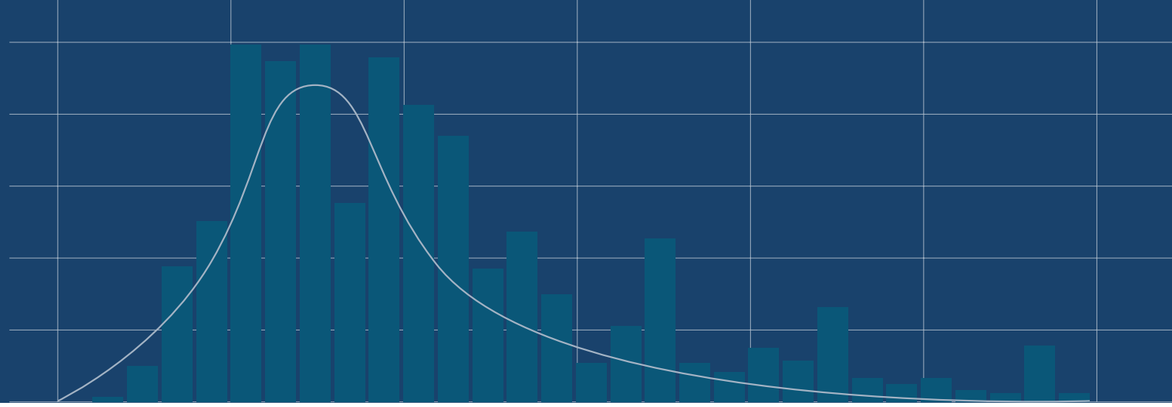
Visualizing hierarchical part-to-whole relationships. Treemaps display hierarchical data by using nested rectangles – that is, smaller rectangles within a larger rectangle. They're useful when space is constrained and you'd like to present an overview of a large amount of hierarchical data.

**PRO TIP**

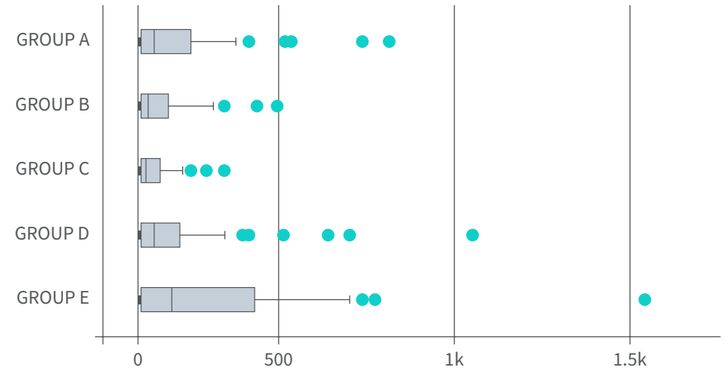
When there's a correlation between color and size in the tree structure, you can see patterns that would be hard to spot in other ways – for example, when a certain color is particularly relevant. But beware: Treemaps can be hard to read when there are many small segments.

# Beyond the histogram.

A histogram shows the distribution of a series. Both a box plot and a distribution plot will serve that purpose as well.



## BOXPLOT



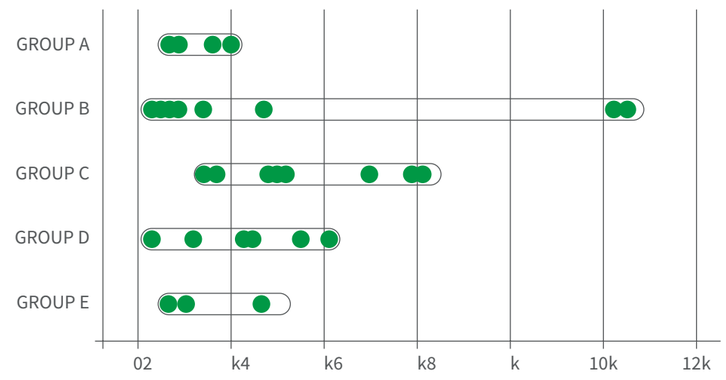

**GREAT FOR**

Comparing range and distribution for groups of numerical data. Box plots use boxes with whiskers and a center line in the middle to display higher-lower quartiles, median, and maximum/minimum. The whiskers represent high and low reference values for excluding outlier values, and outliers can be plotted as individual points.

**PRO TIP**

Box plots organize large amounts of data in less space than a histogram. They're not relevant for detailed analysis of the data; the point is to show a summary of the data distribution.

## DISTRIBUTION PLOT




**GREAT FOR**

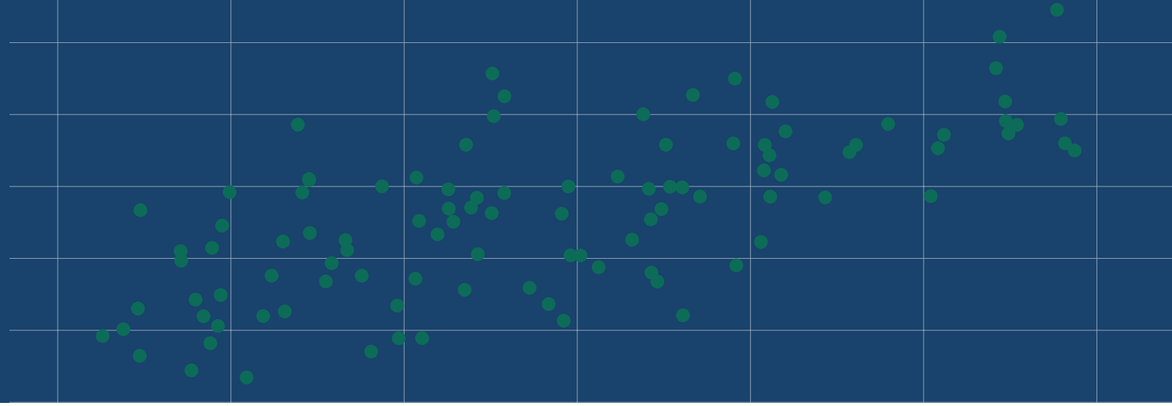
Comparing range and distribution for groups of numerical data. Data is plotted as value points along an axis. You can see which data points are the lowest and highest, and you can see if the points are evenly spread or whether there are clusters and gaps.

**PRO TIP**

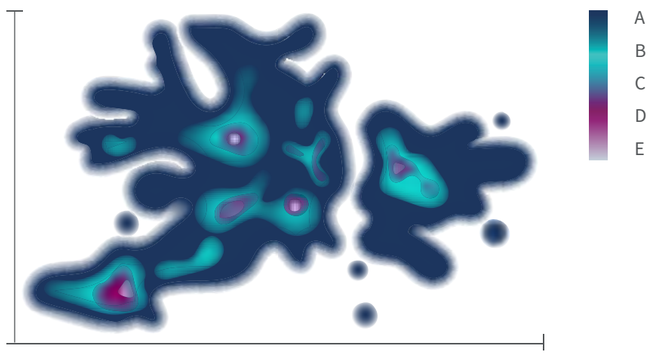
You can choose to display only the value points to see the distribution of values, a bounding box to see the range of values, or a combination of both (as shown here). Like the box plot, the distribution plot isn't relevant for a detailed analysis of the data; its point is to present a summary of the data distribution.

# Beyond the scatterplot.

If you're using a scatterplot, you're probably working with correlation. You might also try a heatmap or grid chart.



## HEATMAP



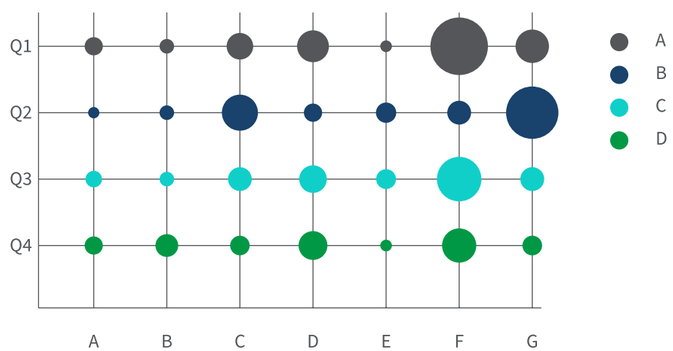

**GREAT FOR**

Showing variance and revealing patterns. A heatmap displays point data using a multicolor gradient image, effectively highlighting hot spots and cold spots. (Hence the name.) Points close to each other provide a higher color contribution than solitary points.

**PRO TIP**

Because they use color to communicate value, heatmaps are better at displaying a general view of numerical data and less effective at showing fine differences in amounts. Use a legend to make sure that values can be clearly understood – and try different color ramps to provide the best contrast for the data being displayed.

## GRID CHART




**GREAT FOR**

When you need to quickly find measure values that stand out from other values. (For example, when you want to see which products sell well in some months but poorly in others.) The grid chart uses symbols of varying size sorted in a grid.

PRO TIP

Grid charts must have two dimensions and one measure. The dimension values are the x and y axes; the measure determines the size of the symbol in each crossing. Grid charts don't work well when the measure has many duplicate values or values that are numerically close to each other.

# Beyond the pretty picture.

Beyond offering the full range of visualizations, Qlik Sense® delivers functionality that makes them uniquely powerful – including an enhanced ability to pinpoint outliers, compression of large data sets into heatmaps, intelligent labeling of data points, and summarization of the overall data set into mini-charts. And responsive design automatically adapts visual representations, data density, and functionality for different screen sizes and form factors.

Finally, no matter how striking your visuals are, if they're not truly interactive, you can't empower your users. In Qlik Sense, dashboards are not just static displays of content with limited filtering; they're rich analytics applications that provide unmatched exploratory power. Thanks to our one-of-a-kind Associative Engine, users can view the full record-level detail, make selections anywhere, and see all visualizations update together. They can understand all the relationships in their data, including what's related and unrelated to their selections. They can search across the entire data set. And all calculations update instantly – no matter what selections are made, how complex the data is, or how many users there are.

**Every visualization in this eBook is supported by Qlik Sense.**

In fact, over 100 visualization improvements have been added in the last few years alone. You can begin exploring the possibilities by clicking around in our Visualization Showcase.

# Why choose Qlik?

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- ☑ **Give everyone – at any skill level – the power to explore data with our unique Associative Engine**
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Qlik transforms complex data landscapes into actionable insights, driving strategic business outcomes. Serving over 40,000 global customers, our portfolio leverages advanced, enterprise-grade AI/ML and pervasive data quality. We excel in data integration and governance, offering comprehensive solutions that work with diverse data sources. Intuitive and real-time analytics from Qlik uncover hidden patterns, empowering teams to address complex challenges and seize new opportunities. Our AI/ML tools, both practical and scalable, lead to better decisions, faster. As strategic partners, our platform-agnostic technology and expertise make our customers more competitive.

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