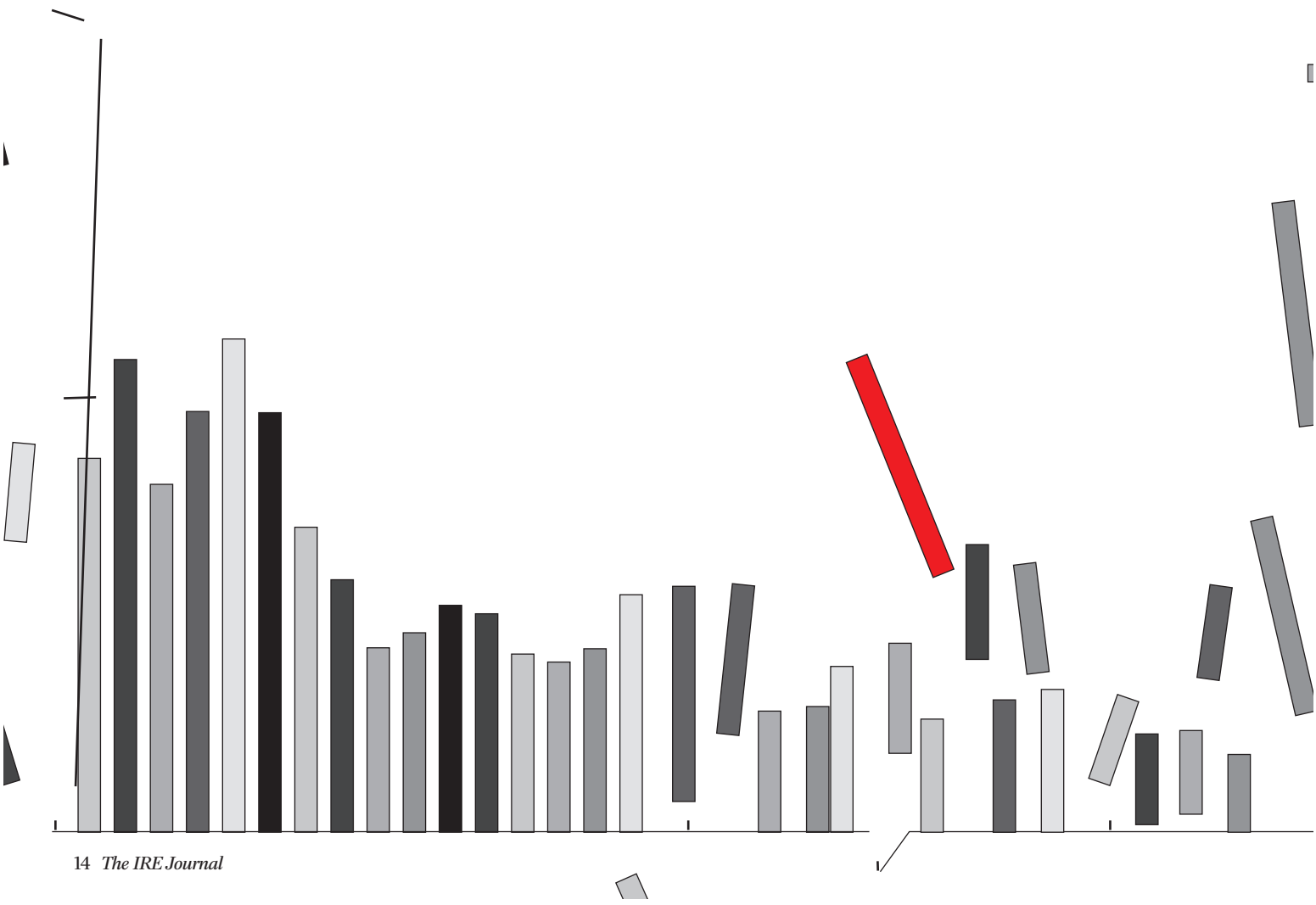
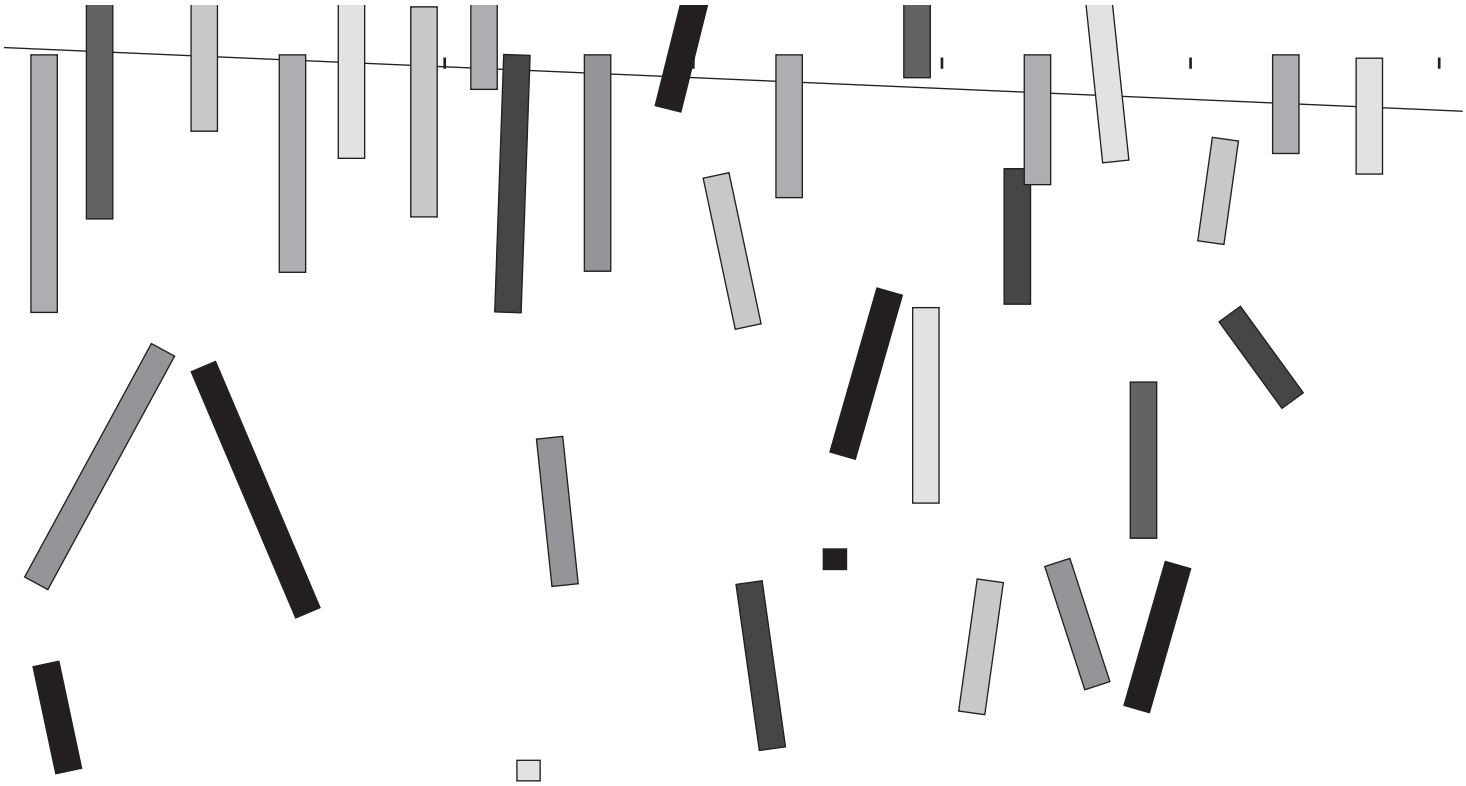
A beginner's guide to building effective maps, plots and charts

DECONSTRUCTING DATA VIZ

By **Simon Scarr**, Thomson Reuters



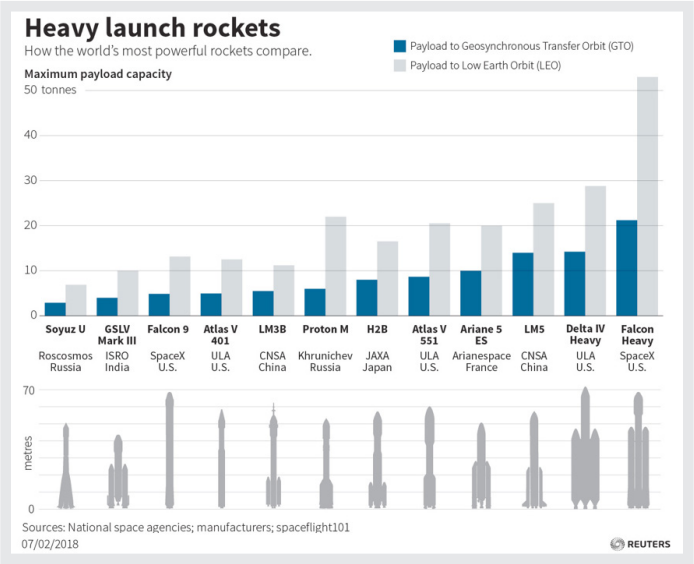


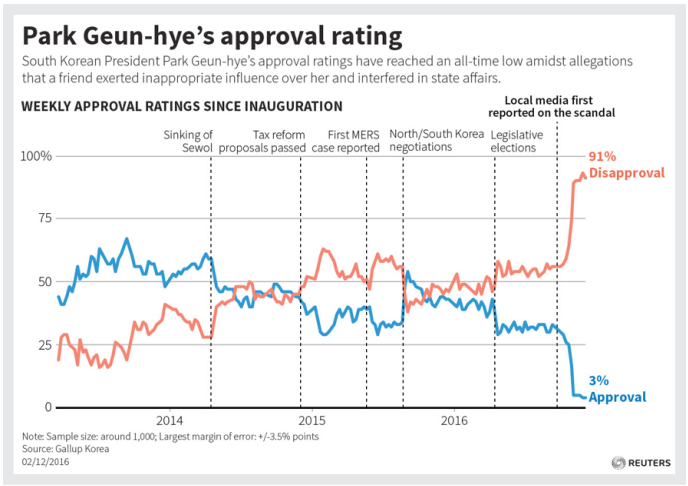
Whenever I teach a workshop, I ask participants to note three things about themselves using only visuals. After 10 minutes, some are still busy drawing elaborate scenes or perfecting complicated illustrations. But the truth is, it's a job that could be done clearly and concisely using simple icons.

Clarity and readability are always key. We are conveying information, after all. If the reader doesn't immediately understand your graphic, you've fallen at the first hurdle.

Before diving in, think about your message. I always start by making a few notes to myself that address the information and message I want to convey. With a simple blueprint in hand, I won't stray from my original goal.

Here's some basic advice to help you combine data, design and narrative to add an invaluable dimension to your storytelling.





THE DATA

Good charts need good data; it's non-negotiable. No amount of fancy interaction or cutting-edge design can make a sub-standard data set compelling. The data must be clean, complete and, above all, well-sourced. Apply the same reporting and quality standards to your data as you would a written piece.

CHART TYPES

Now, it's time to chart. There are dozens, if not hundreds, of charting types, but I'll focus on some basic categories that most charts fall into.

Comparisons

Comparing values is one of the most common reasons to chart. Maybe you want to look at gross domestic product across countries or compare the year's top grossing movies.

Typically, you'll use a **bar chart** with each category represented by a bar, the length denoting value. This allows the reader to glance across bars and gather meaning from the contrast.

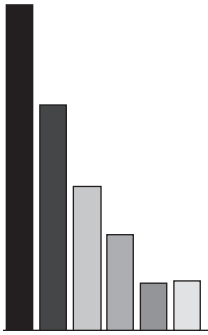
Bar charts must start at zero. Readers look at the length of bars to compare. If some of that bar is missing because of its starting point, it can skew your data and mislead the reader.

Another important and often overlooked aspect of bar charts is how they're sorted. If you want to emphasize value, sort them from lowest to highest. If they naturally fall into groups (like European and Asian countries), group bars together. Choose the sort that best conveys your point.

Time series

Sometimes we want to show change over time. Time series charts are most effective when there's an obvious change to observe. While bar charts are perfectly acceptable, as the number of categories being compared increases, it can be hard to derive meaning. This is where the **line chart** comes in.

Line charts are perfect for any continuing series, like time. Connecting the points together gives the reader a sense of continuity and allows them to better see how one group fares over time and compares to others.



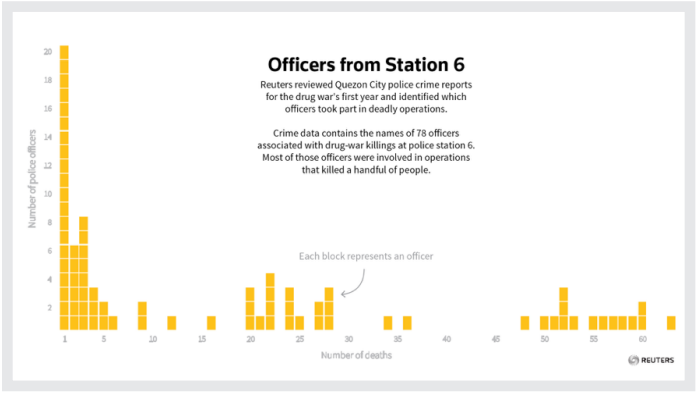
Composition

But what if our data isn't strictly showing disparate things? What if each category is a subset of a whole and our aim is to show the composition?

You clever readers out there have one delicious word in mind: Pie.

Pie charts show the whole as a circle divided into slices for each individual part. This can be useful, but it also has limitations. Single-slice pies are easy to understand, but with each additional slice it gets harder to gauge how much each wedge represents. When you have lots of wedges, a **stacked bar chart** can be a more legible option.

Stacked bars have another advantage over pies. Suppose you are looking at multiple categories. It's easier to see the difference between bars — which are right next to each other — rather than multiple pie charts that force the reader to look back and forth for meaning.



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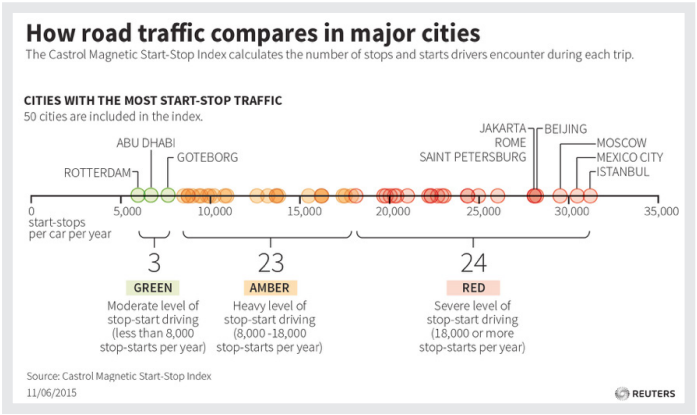
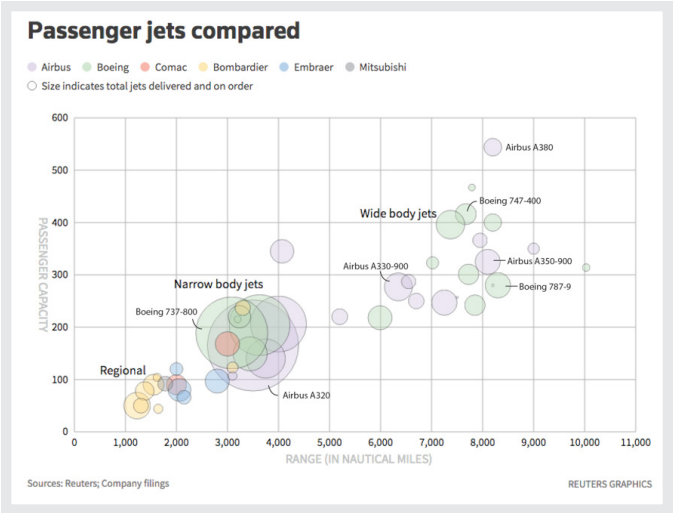
Distribution

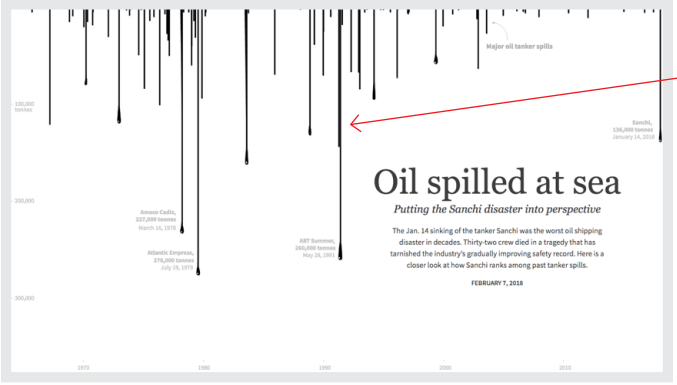
Sometimes the most interesting aspect of a data set is its spread, how points cluster, their ranges and obvious outliers. This is where the **dot plot** comes in. This chart type places a dot at each data point along a single axis. If your dots overlap, try adding transparency to the circles so you can see the density.

If you have a large data set, you can also arrange these points into stacked groups, called a **histogram**.

Dot plots are great for visualizing a single variable, but what if you want to look at multiple aspects of the data? You might want the dot plot's big brother: **the scatter plot**. These charts allow us to see a relationship between two variables. They can show trends and clusters in our data, and can highlight outliers. Incorporate a third or fourth variable by changing the size or color of the dots.







Geographical

Sometimes geographic distribution is important, and a map can help us interpret this information. To make a reliable map we need to use geographic information system (GIS) mapping software to ensure our data is displayed accurately. Don't attempt to hand-plot your points.

We can also show the geographical boundaries of our data using shapes and polygons.

But remember: Just because something happens in a place doesn't mean the location is important. For example, take a **choropleth map** of the world, which uses differences in color or shading of countries to visualize information. Because countries are different sizes, Russia often looks way more important than smaller countries. If you're visualizing or counting countries that fall into certain categories, a chart may be more effective.

Static or interactive?

Interactivity can be a powerful feature, but if used incorrectly, it can make your visualization harder to read. Interactivity should only be used when absolutely necessary to convey important information to the reader. A good rule of thumb is to assume a reader won't interact with the piece at all. Therefore, any information gained by hovering over an item or clicking on something is bonus material and not vital to your main goal. Remember, our aim is to make information easy to digest. Don't make the reader work for it.

However, there are compelling cases for interactivity. One recent trend I've noticed involves personal interaction with the reader. Ask them to answer questions or guess an outcome. You can collect this data and visualize the results.

Simon Scarr is Deputy Head of Graphics at Thomson Reuters, the world's largest multimedia news provider. Simon is responsible for directing information graphics and data visualization products, managing teams in Singapore and London, and working on a range of graphics from breaking news to investigative reports.

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DESIGN

Now that you've picked a chart type, it's time to consider design. We must give readers all the help we can to guide them through a piece. Layout and color can go a long way here. Ensure your piece has an obvious beginning and natural flow. You can use element size and font weight to create a logical hierarchy.

Color should form a harmonious palette — elements shouldn't fight for a reader's attention. Contrast color or increase saturation to highlight certain parts of the graphic if necessary. Color can also be used to visually connect data. Add a key if you need to explain to readers what colors represent.

Avoid over-embellishment and unnecessary artwork. Keep additional design touches to a minimum so you don't distract the reader or make the chart harder to understand. You can still achieve a strong visual effect with simple, clean and smart touches.

Remember, the overall goal is to communicate a message. There's no harm in being direct. Guide the reader with annotations directly on the visualization or in an adjacent narrative. Don't forget to state sources and any caveats with the data, and make sure you give the chart a clear and interesting title and an introduction for context.

Before publishing, make sure your graphic has gone through a thorough fact check, preferably by someone else. And don't forget to gather feedback. Discuss your visualization with editors or other reporters. I also like to test a graphic on people who have no knowledge of the story or subject. If your visualization isn't working, don't be afraid to abandon it and start again. ◆