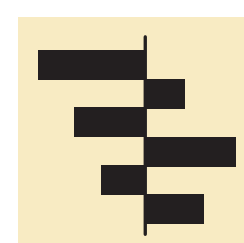
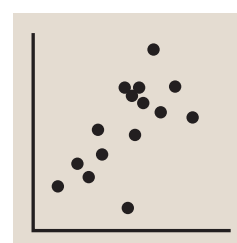

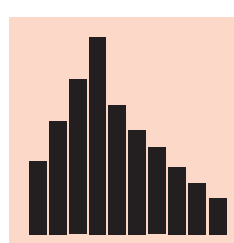
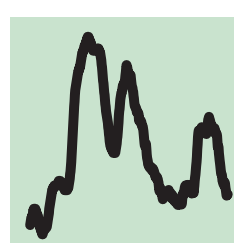



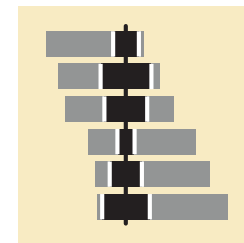
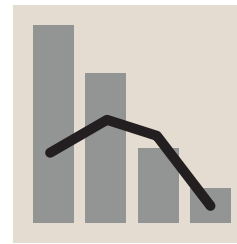
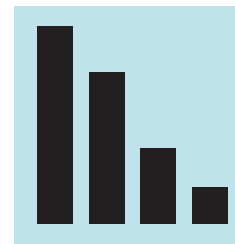
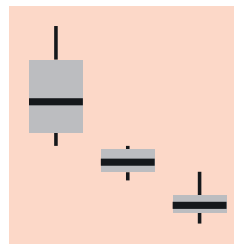
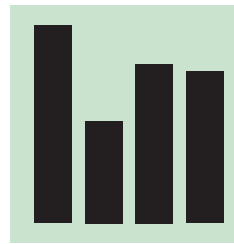

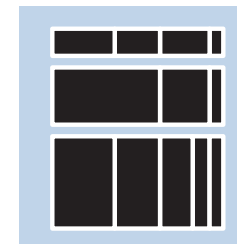
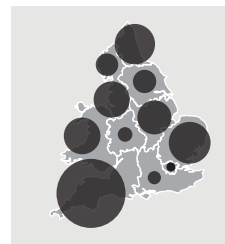
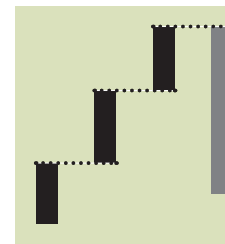

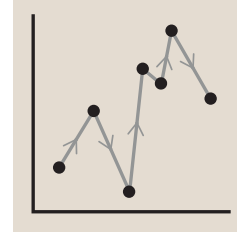
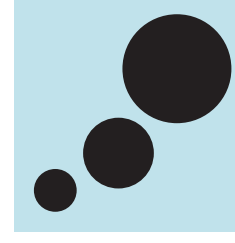
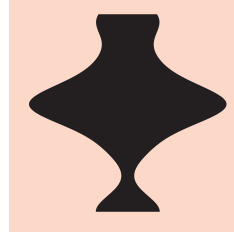
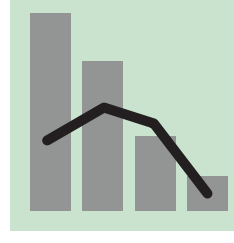
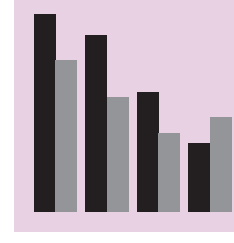
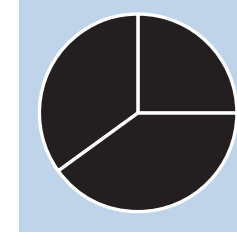

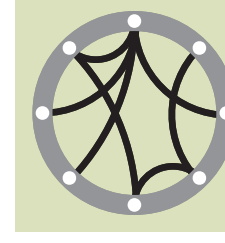
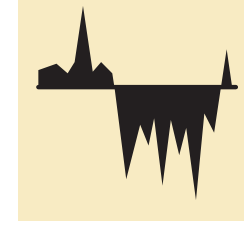
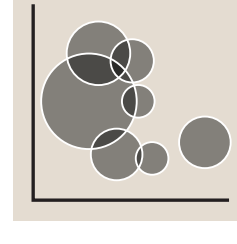



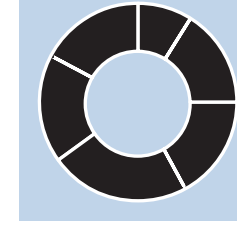
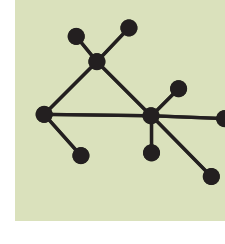
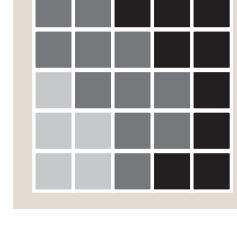
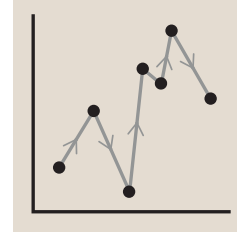
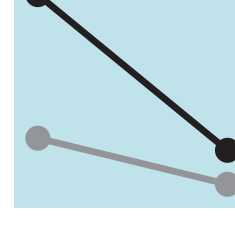
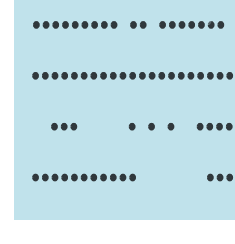
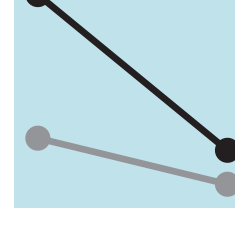
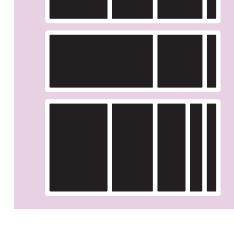
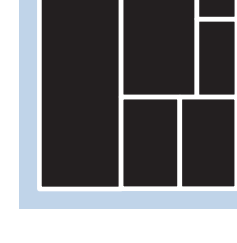

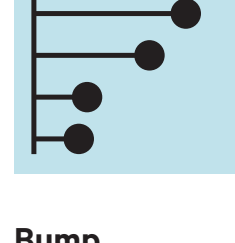
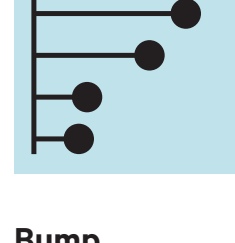
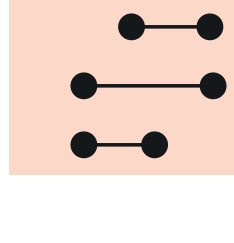

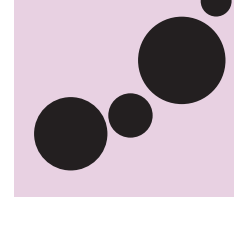


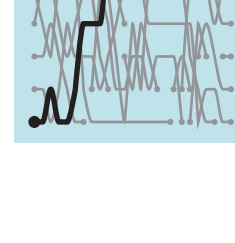
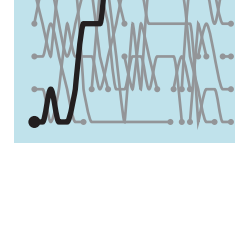
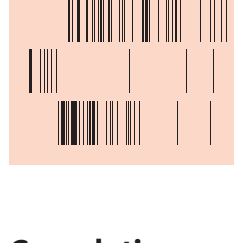
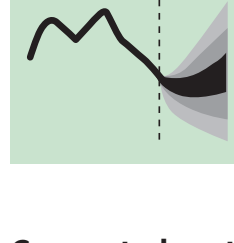


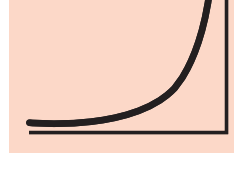


Deviation	Correlation	Ranking	Distribution	Change over Time	Magnitude	Part-to-whole	Spatial	Flow
Emphasise variations (+/-) from a fixed reference point. Typically the reference point is zero but it can also be a target or a long-term average. Can also be used to show sentiment (positive/neutral/negative).	Show the relationship between two or more variables. Be mindful that, unless you tell them otherwise, many readers will assume the relationships you show them to be causal (i.e. one causes the other).	Use where an item's position in an ordered list is more important than its absolute or relative value. Don't be afraid to highlight the points of interest.	Show values in a dataset and how often they occur. The shape (or 'skew') of a distribution can be a memorable way of highlighting the lack of uniformity or equality in the data.	Give emphasis to changing trends. These can be short (intra-day) movements or extended series traversing decades or centuries. Choosing the correct time period is important to provide suitable context for the reader.	Show size comparisons. These can be relative (just being able to see larger/bigger) or absolute (need to see fine differences). Usually these show a 'counted' number (for example, barrels, dollars or people) rather than a calculated rate or per cent.	Show how a single entity can be broken down into its component elements. If the reader's interest is solely in the size of the components, consider a magnitude-type chart instead.	Aside from locator maps only used when precise locations or geographical patterns in data are more important to the reader than anything else.	Show the reader volumes or intensity of movement between two or more states or conditions. These might be logical sequences or geographical locations.
Example FT uses Trade surplus/deficit, climate change	Example FT uses Inflation & unemployment, income & life expectancy	Example FT uses Wealth, deprivation, league tables, constituency election results	Example FT uses Income distribution, population (age/sex) distribution	Example FT uses Share price movements, economic time series	Example FT uses Commodity production, market capitalisation	Example FT uses Fiscal budgets, company structures, national election results	Example FT uses Population density, natural resource locations, natural disaster risk/impact, catchment areas, variation in election results	Example FT uses Movement of funds, trade, migrants, lawsuits, information; relationship graphs.
Diverging bar  A simple standard bar chart that can handle both negative and positive magnitude values.	Scatterplot  The standard way to show the relationship between two continuous variables, each of which has its own axis.	Ordered bar  Standard bar charts display the ranks of values much more easily when sorted into order.	Histogram  The standard way to show a statistical distribution - keep the gaps between columns small to highlight the 'shape' of the data.	Line  The standard way to show a changing time series. If data are irregular, consider markers to represent data points.	Column  The standard way to compare the size of things. Must always start at 0 on the axis.	Stacked column  A simple way of showing part-to-whole relationships but can be difficult to read with more than a few components.	Basic choropleth (rate/ratio)  The standard approach for putting data on a map - should always be rates rather than totals and use a sensible base geography.	Sankey  Shows changes in flows from one condition to at least one other; good for tracing the eventual outcome of a complex process.
Diverging stacked bar  Perfect for presenting survey results which involve sentiment (eg disagree/neutral/agree).	Line + Column  A good way of showing the relationship between an amount (columns) and a rate (line).	Ordered column  See above.	Boxplot  Summarise multiple distributions by showing the median (centre) and range of the data	Column  Columns work well for showing change over time - but usually best with only one series of data at a time.	Bar  See above. Good when the data are not time series and labels have long category names.	Marimekko  A good way of showing the size and proportion of data at the same time - as long as the data are not too complicated.	Proportional symbol (count/magnitude)  Use for totals rather than rates - be wary that small differences in data will be hard to see.	Waterfall  Designed to show the sequencing of data through a flow process, typically budgets. Can include +/- components.
Spine  Splits a single value into two contrasting components (eg male/female).	Connected scatterplot  Usually used to show how the relationship between 2 variables has changed over time.	Ordered proportional symbol  Use when there are big variations between values and/or seeing fine differences between data is not so important.	Violin plot  Similar to a box plot but more effective with complex distributions (data that cannot be summarised with simple average).	Line + column  A good way of showing the relationship over time between an amount (columns) and a rate (line).	Paired column  As per standard column but allows for multiple series. Can become tricky to read with more than 2 series.	Pie  A common way of showing part-to-whole data - but be aware that it's difficult to accurately compare the size of the segments.	Flow map  For showing unambiguous movement across a map.	Chord  A complex but powerful diagram which can illustrate 2-way flows (and net winner) in a matrix.
Surplus/deficit filled line  The shaded area of these charts allows a balance to be shown - either against a baseline or between two series.	Bubble  Like a scatterplot, but adds additional detail by sizing the circles according to a third variable.	Dot strip plot  Dots placed in order on a strip are a space-efficient method of laying out ranks across multiple categories.	Population pyramid  A standard way for showing the age and sex breakdown of a population distribution; effectively, back to back histograms.	Stock price  Usually focused on day-to-day activity, these charts show opening/closing and high/low points of each day.	Paired bar  See above.	Donut  Similar to a pie chart - but the centre can be a good way of making space to include more information about the data (eg total).	Contour map  For showing areas of equal value on a map. Can use deviation colour schemes for showing +/- values	Network  Used for showing the strength and inter-connectedness of relationships of varying types.
XY heatmap  A good way of showing the patterns between 2 categories of data, less good at showing fine differences in amounts.	Connected scatterplot  Usually used to show how the relationship between 2 variables has changed over time.	Slope  Perfect for showing how ranks have changed over time or vary between categories.	Dot strip plot  Dots placed in order on a strip are a space-efficient method of laying out ranks across multiple categories.	Slope  Perfect for showing how ranks have changed over time or vary between categories.	Marimekko  A good way of showing the size and proportion of data at the same time - as long as the data are not too complicated.	Treemap  Use for hierarchical part-to-whole relationships; can be difficult to read when there are many small segments.	Equalised cartogram  Converting each unit on a map to a regular and equally-sized shape - good for representing voting regions with equal value.	
	Lollipop  Lollipops draw more attention to the data value than standard bar/column and can also show rank and value effectively.	Lollipop  Lollipops draw more attention to the data value than standard bar/column and can also show rank and value effectively.	Dot plot  A simple way of showing the change or range (min/max) of data across multiple categories.	Area chart  Use with care - these are good at showing changes to total, but seeing change in components can be very difficult.	Proportional symbol  Use when there are big variations between values and/or seeing fine differences between data is not so important.	Voronoi  A way of turning points into areas - any point within each area is closer to the central point than any other centroid.	Scaled cartogram (value)  Stretching and shrinking a map so that each area is sized according to a particular value.	
	Bump  Effective for showing changing rankings across multiple dates. For large datasets, consider grouping lines using colour.	Bump  Effective for showing changing rankings across multiple dates. For large datasets, consider grouping lines using colour.	Barcode plot  Like dot strip plots, good for displaying all the data in a table, they work best when highlighting individual values.	Fan chart (projections)  Use to show the uncertainty in future projections - usually this grows the further forward to projection.	Isotype (pictogram)  Excellent solution in some instances - use only with whole numbers (do not slice off an arm to represent a decimal).	Arc  A hemicycle, often used for visualising political results in parliaments.	Dot density  Used to show the location of individual events/locations - make sure to annotate any patterns the reader should see.	
			Cumulative curve  A good way of showing how unequal a distribution is: y axis is always cumulative frequency, x axis is always a measure.	Frequency polygons For displaying multiple distributions of data. Like a regular line chart, best limited to a maximum of 3 or 4 datasets.	Calendar heatmap A great way of showing temporal patterns (daily, weekly, monthly) - at the expense of showing precision in quantity.	Radar A space-efficient way of showing value of multiple variables - but make sure they are organised in a way that makes sense to reader.	Gridplot Good for showing % information, they work best when used on whole numbers and work well in multiple layout form.	Heat map Grid-based data values mapped with an intensity colour scale. As choropleth map - but not snapped to an admin/political unit.

Visual vocabulary

Designing with data

There are so many ways to visualise data - how do we know which one to pick? Use the categories across the top to decide which data relationship is most important in your story, then look at the different types of chart within the category to form some initial ideas about what might work best. This list is not meant to be exhaustive, nor a wizard, but is a useful starting point for making informative and meaningful data visualisations.

FT graphic: Alan Smith; Chris Campbell; Ian Bott; Liz Faunce; Graham Parrish; Billy Ehrenberg; Paul McCallum; Martin Stabe
Inspired by the Graphic Continuum by Jon Schwabish and Severino Ribeca

ft.com/vocabulary

