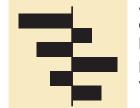
### Deviation

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).

**Example FT uses** Trade surplus/deficit, climate change

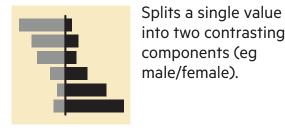


A simple standard bar chart that can handle both negative and positive magnitude

### Diverging stacked bar



Spine chart



components (eg male/female).

### Surplus/deficit filled line



The shaded area of these charts allows a balance to be shown baseline or between

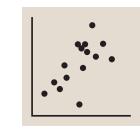
into two contrasting

# Correlation

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

**Example FT uses** Inflation & unemployment, income & life expectancy

### Scatterplot

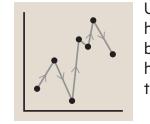


The standard way to show the relationship between two continuous variables, each of which has its own axis.

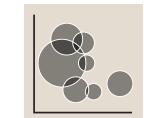
### Line + Column



### **Connected scatterplot**

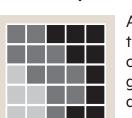


Usually used to show how the relationship between 2 variables has changed over time.



Like a scatterplot, but adds additional detail by sizing the circles according to a third

### XY heatmap



A good way of showing A good way of snowing the patterns between 2 categories of data, less categories of data, less good at showing fine differences in amounts.

## Ranking

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.

Example FT uses Wealth, deprivation, league tables, constituency election results

### Ordered bar



Standard bar charts display the ranks of values much more easily when sorted into order.

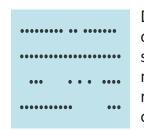
### **Ordered column**

See above.

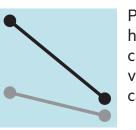
# Ordered proportional symbol

Use when there are big values and/or seeing fine differences between data is not so

### Dot strip plot

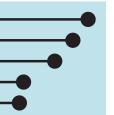


Dots placed in order on a strip are a method of laying out ranks across multiple categories.



Perfect for showing how ranks have changed over time or vary between **a** categories.

### Lollipop chart

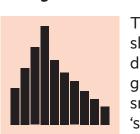


attention to the data value than standard bar/column and can also show rank and value effectively.

# Distribution

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.

Example FT uses Income distribution, population (age/sex) distribution

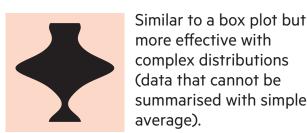


The standard way to show a statistical distribution - keep the gaps between columns small to highlight the shape' of the data.

### **Boxplot**

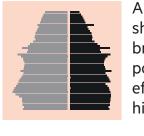


### Violin plot



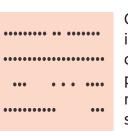
more effective with complex distributions (data that cannot be summarised with simple

### Population pyramid



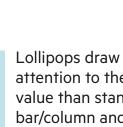
A standard way for showing the age and sex effectively, back to back

### Dot strip plot



Good for showing individual values in a distribution, can be a problem when too many dots have the same value.

### Dot plot



A simple way of showing the change or range (min/max) of data across multiple

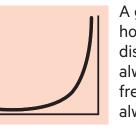
# Barcode plot

•



Like dot strip plots, good for displaying all the data in a table, they work best when highlighting individual

### **Cumulative curve**

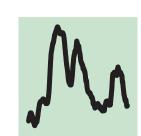


A good way of showing how unequal a distribution is: y axis is always cumulative frequency, x axis is always a measure.

# Change over Time

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

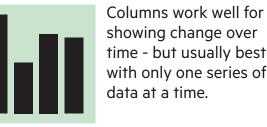
**Example FT uses** Share price movements, economic time



for the reader.

The standard way to show a changing time series. If data are irregular, consider markers to represent

### Column

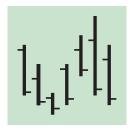


### Line + column

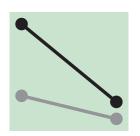


A good way of showing the relationship over time between an amount (columns) and a rate

### Stock price



Usually focused on day-to-day activity, these charts show opening/closing and high/low points of each day.



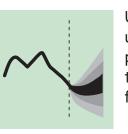
Good for showing changing data as long as the data can be simplified into 2 or 3 points without missing a key part of story.

### Area chart



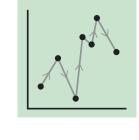
Use with care – these are good at showing changes to total, but seeing change in components can be very difficult.

# Fan chart (projections)



Use to show the uncertainty in future this grows the further forward to projection.

### **Connected scatterplot**



A good way of showing changing data for two variables whenever there is a relatively clear pattern of progression.

### Calendar heatmap



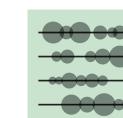
A great way of showing temporal patterns (daily, weekly, monthly) at the expense of showing precision in

### Priestley timeline



Great when date and duration are key elements of the story

### **Circle timeline**



Good for showing discrete values of varying size across multiple categories (eg earthquakes by

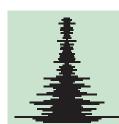
Presents time on the Y

## Vertical timeline



axis. Good for displaying detailed time series that work especially well when scrolling on mobile.

### Seismogram



Another alternative to the circle timeline for showing series where there are big variations in the data.

# Magnitude

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.

**Example FT uses** Commodity production, market capitalisation



things. Must always

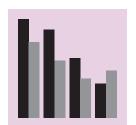
\_\_\_ See above. Good when

the data are not time

series and labels have

long category names.

Paired column

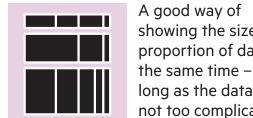


As per standard column but allows for multiple series. Can become tricky to read with more than 2

### Paired bar



### Proportional stacked bar



showing the size and proportion of data at the same time – as long as the data are not too complicated

### Proportional symbol



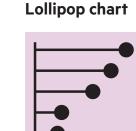
Use when there are big variations between values and/or seeing fine differences between data is not so

important.

a decimal).

# Isotype (pictogram)

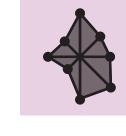




Lollipop charts draw more attention to the data value than standard bar/column does not have to start a zero (but preferable).

off an arm to represent

# Radar chart

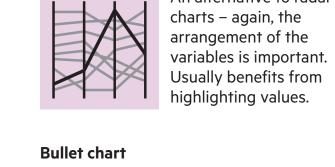


A space-efficient way of showing value of multiple variables- but make sure they are organised in a way that makes sense to reader.

An alternative to radar

variables is important.

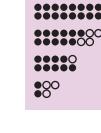
### Parallel coordinates



Good for showing a measurement against the context of a target

or performance range

### **Grouped symbol**



data or highlight individual elements is useful.

An alternative to

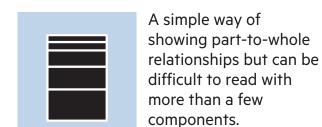
bar/column charts when being able to count

# Part-to-whole

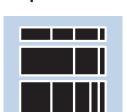
Show how a single entity can be broken down into its component elements. If the reader's interest is solely in the size of the components, consider a magnitude-type chart instead.

### **Example FT uses** Fiscal budgets, company structures, national election results

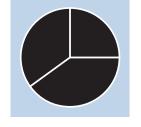
### Stacked column



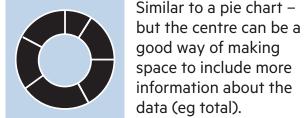
### Proportional stacked bar



A good way of showing the size and proportion of data at the same time – as long as the data are not too complicated



A common way of showing part-to-whole data – but be aware that it's difficult to accurately compare the size of the



information about the data (eg total).

Use for hierarchical

relationships; can be

there are many small

difficult to read when

part-to-whole

space to include more

Treemap



A way of turning points into areas – any point within each area is closer to the central is closer to the central point than any other



A hemicycle, often used for visualising political results in parliaments.

Good for showing %

Generally only used

for schematic

representation.

Can be useful for

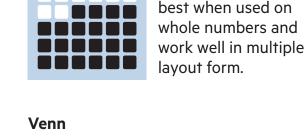
some of the

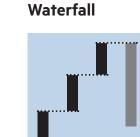
components are negative.

showing part-to-whole

relationships where

information, they work



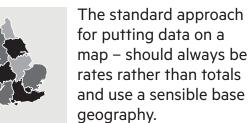


# Spatial

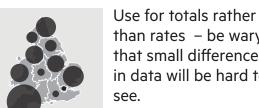
Aside from locator maps only used when precise locations or geographical patterns in data are more important to the reader than anything else.

### Example FT uses Population density, natural resource locations, natural disaster risk/impact, catchment areas, variation in election

### Basic choropleth (rate/ratio)



### Proportional symbol (count/magnitde)



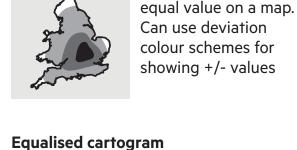
than rates – be wary that small differences in data will be hard to



For showing areas of

### Contour map

Flow map



Converting each unit on a map to a regular and equally-sized shape – good for representing voting regions with

shrinking a map so

that each area is sized

equal value.

### Scaled cartogram (value)



# events/locations -

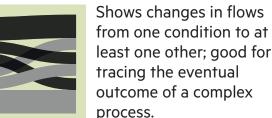


Show the reader volumes or intensity of movement between two or more states or conditions. These might be logical sequences or geographical locations.

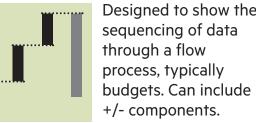
Flow

**Example FT uses** Movement of funds, trade, migrants, lawsuits, information; relationship

graphs.



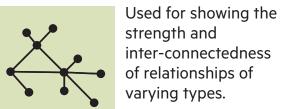
### Waterfall



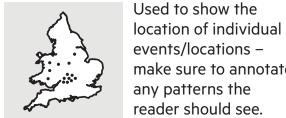
### Chord



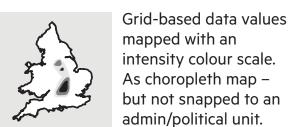
### Network



winner) in a matrix.



make sure to annotate any patterns the reader should see.





# 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.

Visual vocabulary

Inspired by the Graphic Continuum by Jon Schwabish and Severino Ribecca

FT graphic: Alan Smith; Chris Campbell; Ian Bott; Liz Faunce; Graham Parrish; Billy Ehrenberg; Paul McCallum; Martin Stabe

# ft.com/vocabulary