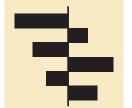
## Deviation

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

#### Diverging bar



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

# Diverging stacked bar









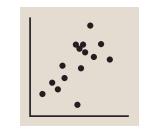
The shaded area of these charts allows a balance to be shown either against a baseline or between two series.

## 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

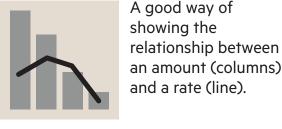
Example FT uses Inflation and unemployment, income and life expectancy

#### Scatterplot



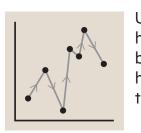
The standard way to show the relationship between two continuous variables, each of which

#### Column + line timeline

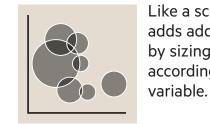


an amount (columns) and a rate (line).

#### **Connected scatterplot**

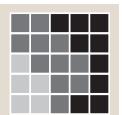


Usually used to show how the relationship between 2 variables has changed over time.



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

#### XY heatmap



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

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

Ranking

#### Ordered bar



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

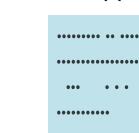
## **Ordered column**

See above.

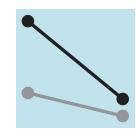
# Ordered proportional symbol

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

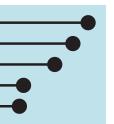
#### Dot strip plot



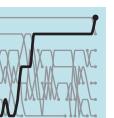
Dots placed in order on a strip are a space-efficient method of laying out ranks across multiple categories.



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



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



Effective for showing changing rankings across multiple dates. For large datasets, consider grouping lines using colour.

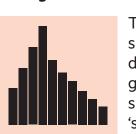
# Distribution

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, revealing

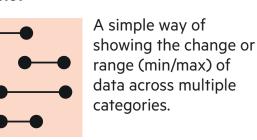
#### Histogram

inequality

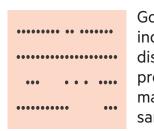


The standard way to show a statistical distribution - keep the gaps between columns small to highlight the shape' of the data.

## Dot plot



#### Dot strip plot



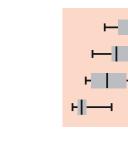
Good for showing individual values in a distribution, can be a problem when too many dots have the same value.

## Barcode plot



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

## **Boxplot**



Summarise multiple distributions by showing the median (centre) and range of the data



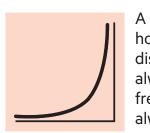
Similar to a box plot but more effective with complex distributions (data that cannot be summarised with simple average).

## Population pyramid



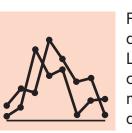
A standard way for showing the age and sex breakdown of a population distribution; effectively, back to back

## **Cumulative curve**



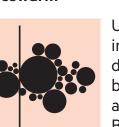
A good way of showing how unequal a distribution is: y axis is always cumulative frequency, x axis is always a measure.

## Frequency polygons



For displaying multiple distributions of data. Like a regular mile chart, best limited to a maximum of 3 or 4 datasets.

## Beeswarm



Use to emphasise individual points in a distribution. Points can be sized to an additional variable. Best with mediumsized datasets

# 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

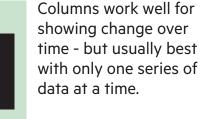
# series, sectoral changes in a market

for the reader.



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

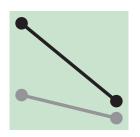
# Column



#### Column + line timeline



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



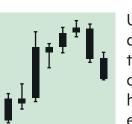
Good for showing changing data as long as the data can be simplified into 2 or 3 points without missing a key part of story.

## Area chart



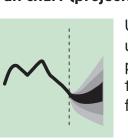
Use with care – these are good at showing changes to total, but seeing change in components can be very difficult.

## Candlestick



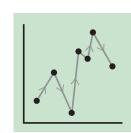
Usually focused on day-to-day activity, these charts show opening/closing and high/low points of each day.

## Fan chart (projections)



Use to show the uncertainty in future projections - usually 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

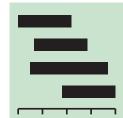
Great when date and

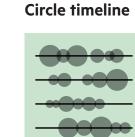
elements of the story

duration are key

in the data.

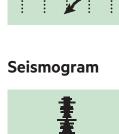
## Priestley timeline





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

## Vertical timeline



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

axis. Good for

Presents time on the Y

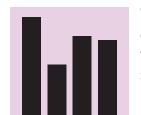
## Streamgraph



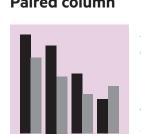
A type of area chart; over time is more important than individual values

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

**Example FT uses** Commodity production, market capitalisation, volumes in general



start at 0 on the axis.



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

#### Paired bar



## Marimekko

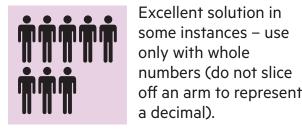


showing the size and proportion of data at the same time – as long as the data are not too complicated

## Proportional symbol



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



numbers (do not slice off an arm to represent a decimal).



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

arrangement of the variables is important.

Usually benefits from

highlighting values.

# Parallel coordinates



Good for showing a measurement against the context of a targe

or performance range

An alternative to

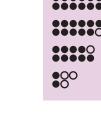
being able to count

data or highlight individual elements is

useful.

bar/column charts when

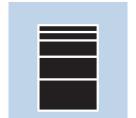
## **Grouped symbol**



## Part-to-whole

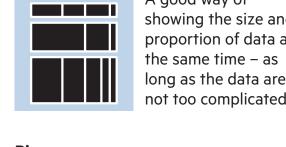
magnitude-type chart instead.

# national election results



A simple way of showing part-to-whole relationships but can be difficult to read with more than a few components.

## Marimekko



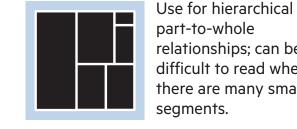
A common way of showing part-to-whole data – but be aware that it's difficult to accurately compare the size of the

#### **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).

## Treemap



relationships; can be difficult to read when there are many small



A hemicycle, often

used for visualising

parliamentary

composition by

number of seats.





Waterfall

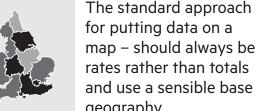
Can be useful for showing part-to-whole relationships where some of the components are negative.

## Spatial

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

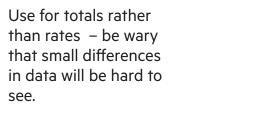
#### Example FT uses Population density, natural resource locations, natural disaster risk/impact, catchment areas, variation in election

## Basic choropleth (rate/ratio)

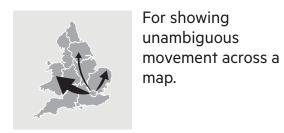


for putting data on a map – should always be rates rather than totals and use a sensible base geography.

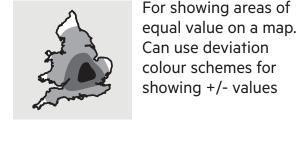
## Proportional symbol (count/magnitude)



#### Flow map



#### Contour map



Equalised cartogram Converting each unit on a map to a regular and equally-sized shape –

good for representing

voting regions with

equal value.

#### Scaled cartogram (value)



Used to show the location of individual events/locations make sure to annotate

any patterns the

reader should see.

Grid-based data values

# Heat map

**Dot density** 



graphs.



tracing the eventual

Flow

Show the reader volumes or intensity of

movement between two or more states

or conditions. These might be logical

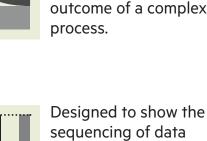
sequences or geographical locations.

Movement of funds, trade, migrants,

lawsuits, information; relationship

Waterfall

**Example FT uses** 



through a flow

process, typically

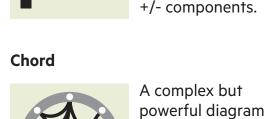
budgets. Can include

which can illustrate

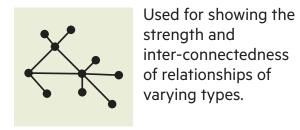
2-way flows (and net

winner) in a matrix.





## Network





# 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.

Inspired by the Graphic Continuum by Jon Schwabish and Severino Ribecca

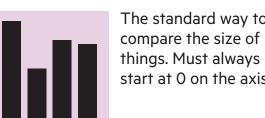
FT graphic: Alan Smith; Chris Campbell; Ian Bott; Liz Faunce; Graham Parrish; Billy Ehrenberg-Shannon; Paul McCallum; Martin Stabe



# Magnitude

calculated rate or per cent.

## Column

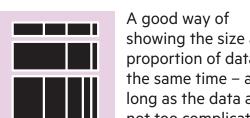


See above. Good when the data are not time series and labels have

long category names.

## Paired column



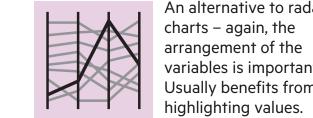


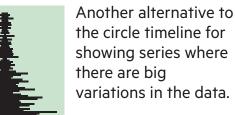
## important. Isotype (pictogram)



Lollipop charts draw more attention to the data value than standard bar/column does not have to start a

zero (but preferable).





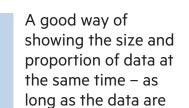
changes in proportions

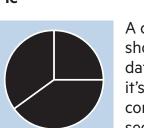
Show how a single entity can be broken down into its component elements. If the reader's interest is solely in the size of the components, consider a

**Example FT uses** Fiscal budgets, company structures,

#### Stacked column/bar









point within each area is closer to the central point than any other



Generally only used

