COMMON CHART TYPES

AGENDA.

- Common Chart Types
- Bar Chart
- Time Series Line Chart
- Scatter Plot
- Dot Plot
- Choropleth Map
- Symbol Map
- Table / Highlight Table
- Bullet Graph

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- Counter Example – Sales And Profit By Category And Segment
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- Further Charts

COMMON CHART TYPES.

- In this section, we briefly outline the most **common chart types**.

- This list is **intentionally short**.

- Even if you use only the charts listed here, you would be able to **cover the majority** of needs when **visualising** your data.

BAR CHART.

- A **bar chart** uses length to **represent a measure**.

- Human beings are **extremely good** at seeing even **small differences** in length from a common baseline.

- **Bars** are widely used in **data visualisation** because they are often the **most effective** way to **compare categories**.

- **Bars** can be oriented **horizontally** or **vertically**.

- **Sorting** them can be very helpful because the most **common task** when bar charts are used is to **spot the biggest / smallest items**.
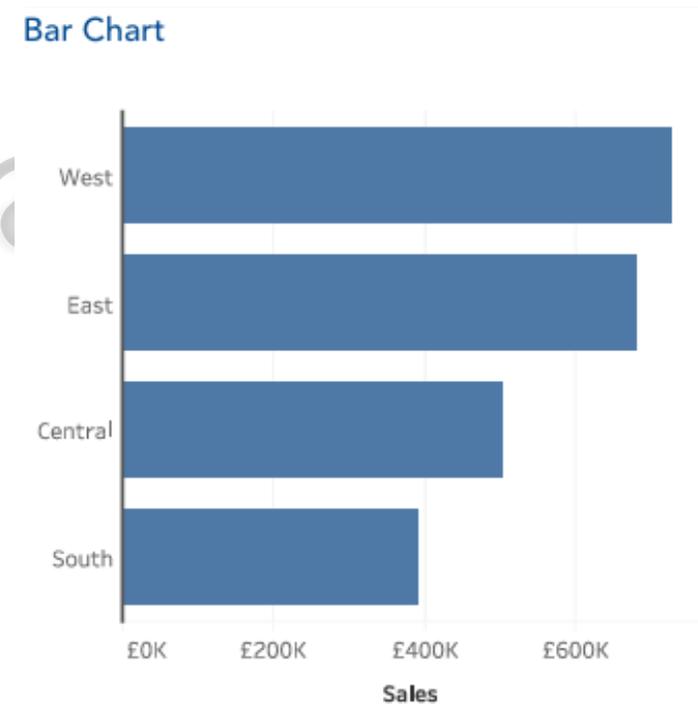
TIME SERIES LINE CHART.

- **Line charts** usually show **change over time**.

- **Time** is represented by position on the horizontal x-axis.

- The measures are shown on the vertical y-axis.
  - The height and slopes of the line **let us see trends**.


Time-Series Line Chart
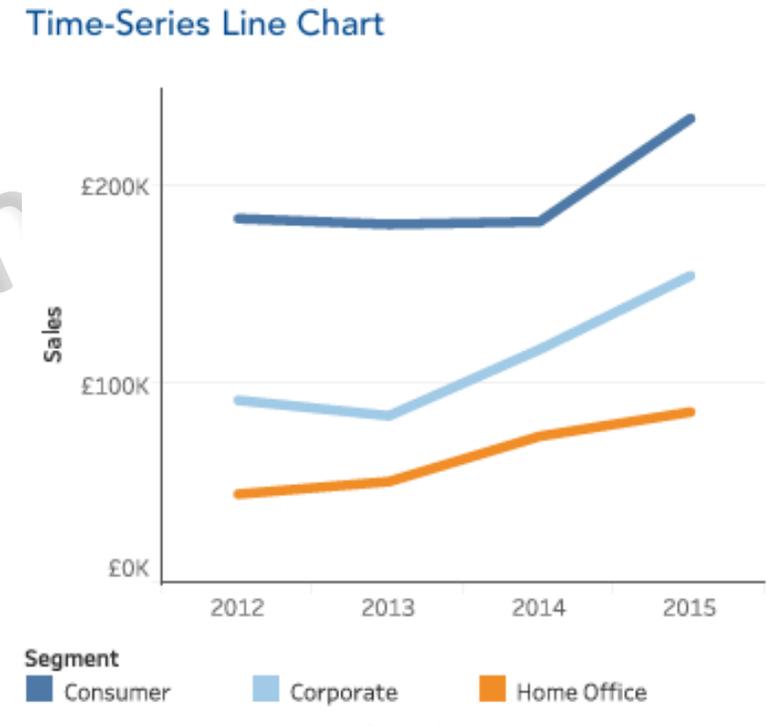
SCATTER PLOT.

- A **scatterplot** lets you **compare two different measures**.

  - Each **measure** is **encoded** using position on the horizontal and vertical axes.

  - **Scatterplots** are useful when looking for **relationships between two variables**.


Scatterplot
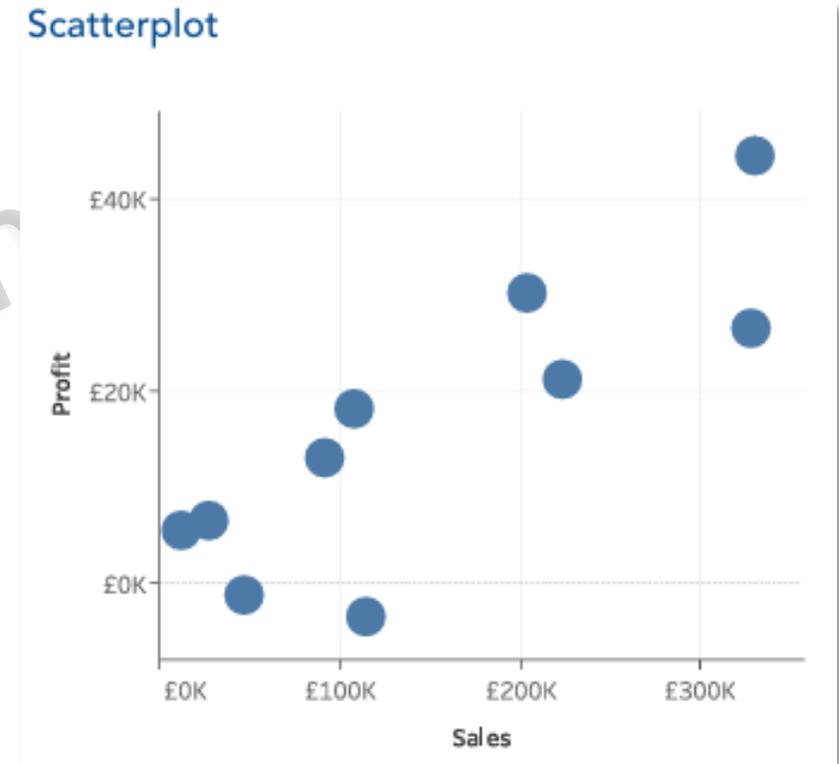
DOT PLOT.

- A **dot plot** allows you to **compare values across two dimensions**.

  - In our example, each row shows sales by ship mode.

  - The dots show **sales for each ship** mode, broken down by **each segment**.

  - In the example, you can see that corporate sales are highest with standard class ship mode.

Dot Plot
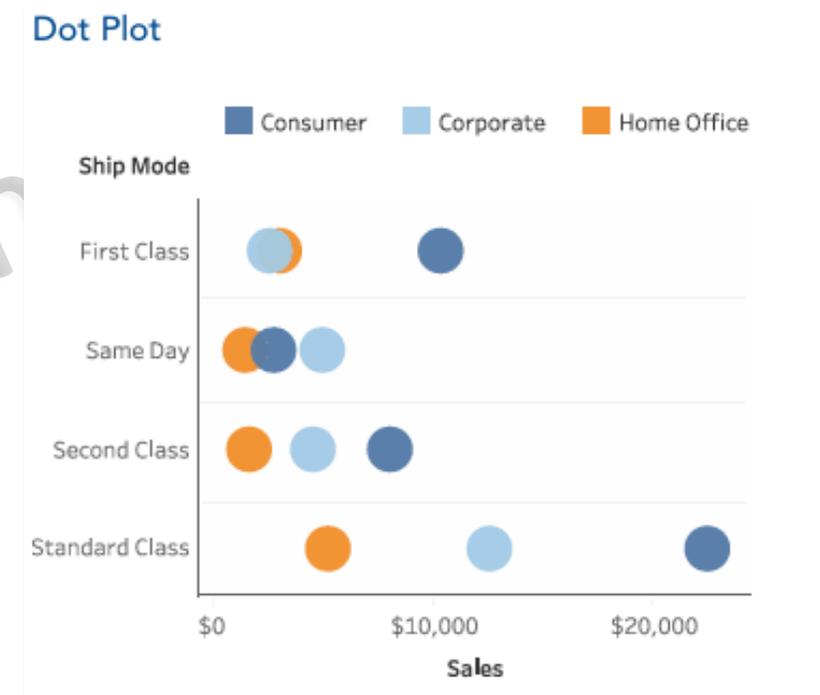
CHOROPLETH MAP.

- A **choropleth** (also known as a filled) map uses **differences in shading** or **colouring** within predefined areas to **indicate the values or categories** in those areas.
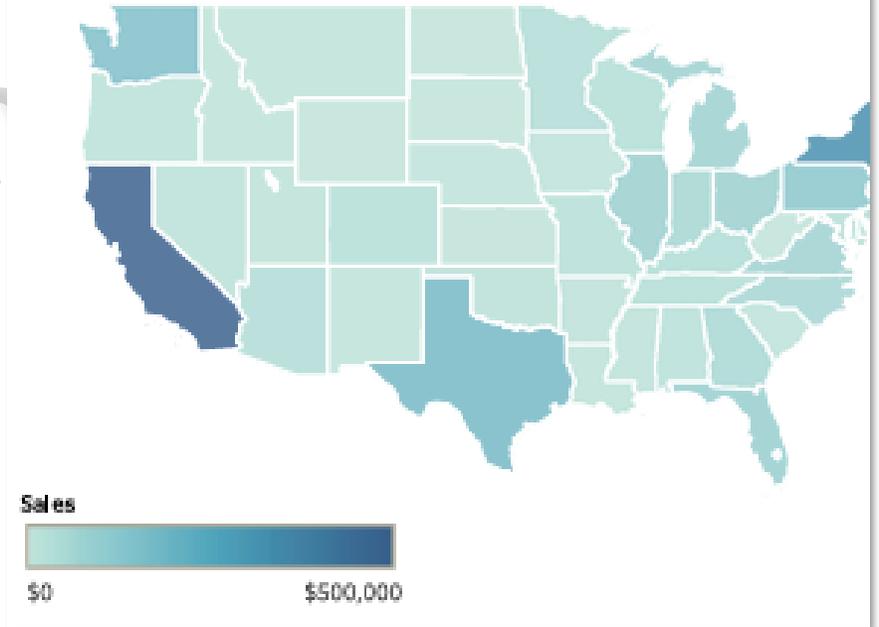
SYMBOL MAP.

- A **symbol map** shows **values in specific places**.

- These could be the **center points** of large regions.

  - E.g., the center of each U.S. state or specific locations determined by an exact latitude / longitude measurement.

TABLE / HIGHLIGHT TABLE.

- A **Table**.

  - Sometimes you do need to be able to look up **exact values**.

  - A table is an **acceptable way** to show data in that situation.

  - On most dashboards, a table shows **details alongside summary charts**.

$111K	$131K	$138K	$154K
$132K	$117K	$157K	$215K
$77K	$68K	$79K	$106K

- A **Highlight Table**.
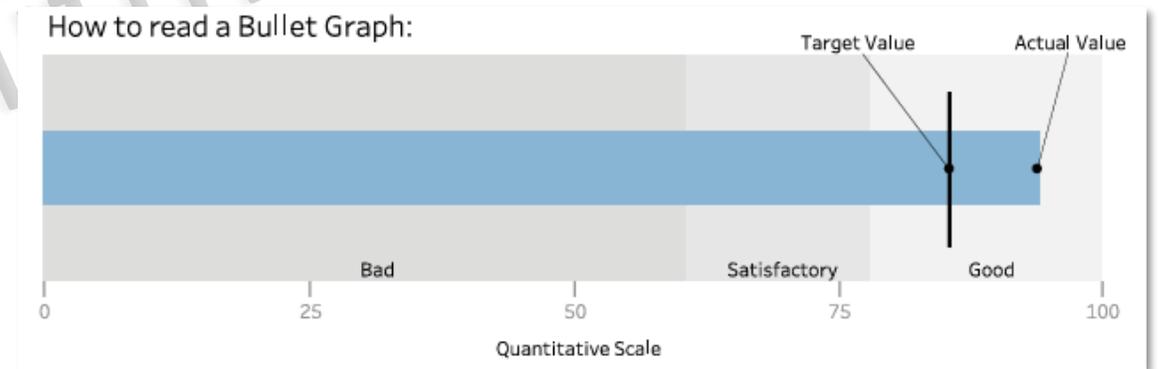
- **Adding colour** to your tables can transform them in to highly visual views that also enable the **lookup of any value**.

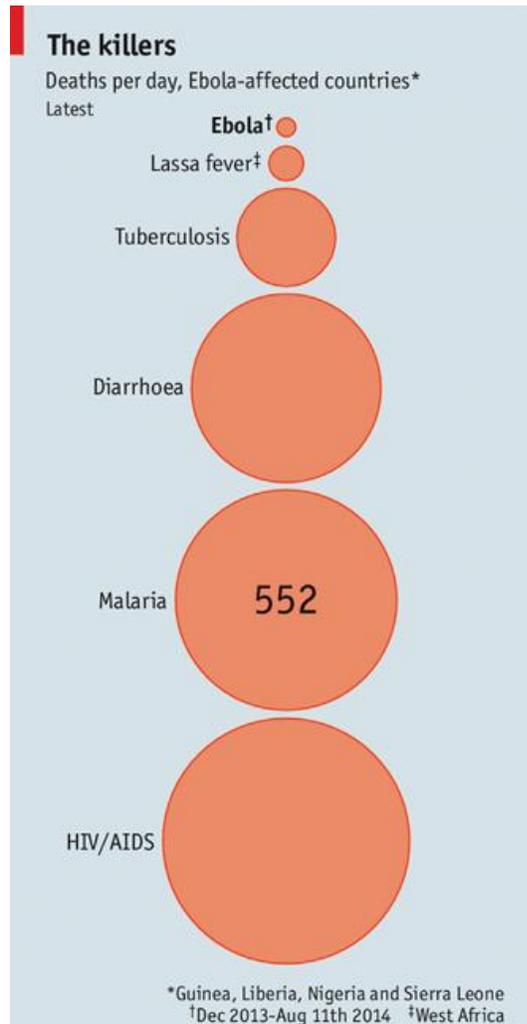|			
$111K	$131K	$138K	$154K
$132K	$117K	$157K	$215K
$77K	$68K	$79K	$106K

BULLET GRAPH.

- A **Bullet Graph**.

  - A **bullet graph** is one of the best ways to show **actual versus target comparisons**.

  - The **blue bar** represents the **actual value**, the **black line** shows the **target value**, and the areas of **gray shading** are **performance bands**.

How to read a Bullet Graph:

Target Value   Actual Value

Bad   Satisfactory   Good

0   25   50   75   100

Quantitative Scale
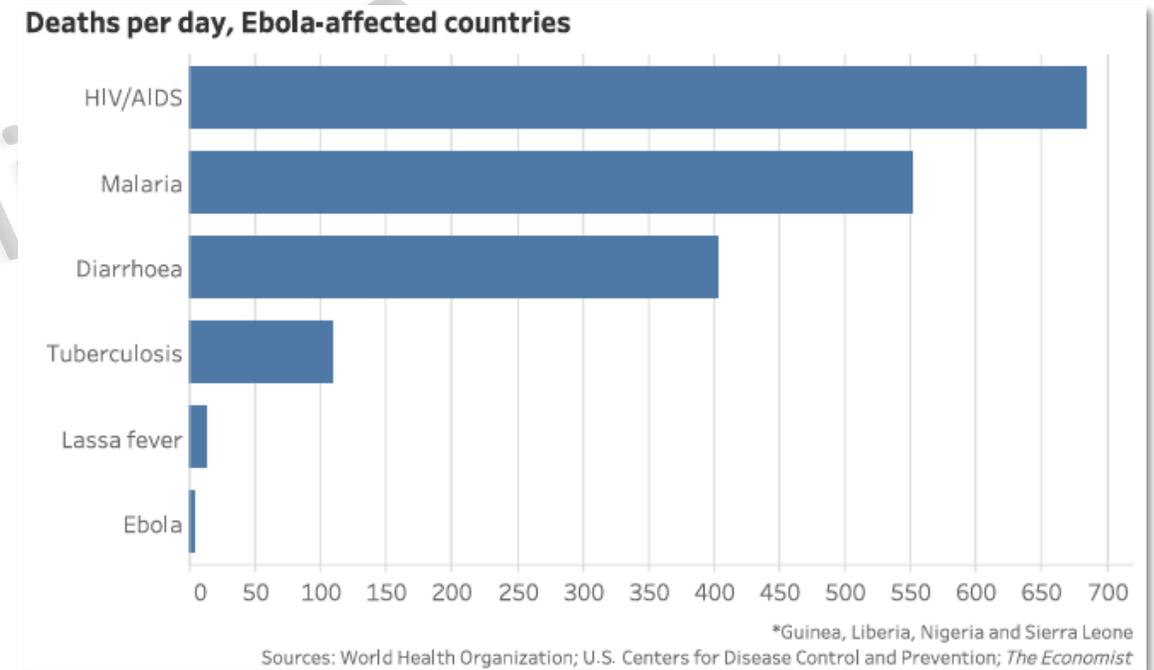
COUNTER EXAMPLES – THE KILLERS.

- The image shows the **number of deaths** each day from **various diseases** in Africa.

- Each **circle** is **sized** according to the number of deaths.

- We have removed all the labels **except** the one for malaria (552 deaths per day).

- **How many** deaths per day are there from diarrhea ?

- **How much bigger** is the HIV/AIDS circle than the diarrhea circle ?

- Most people **underestimate** the size of the bigger circles.

- The point is that while **size is preattentive**, we're **not able to tell the differences** with any **accuracy**.
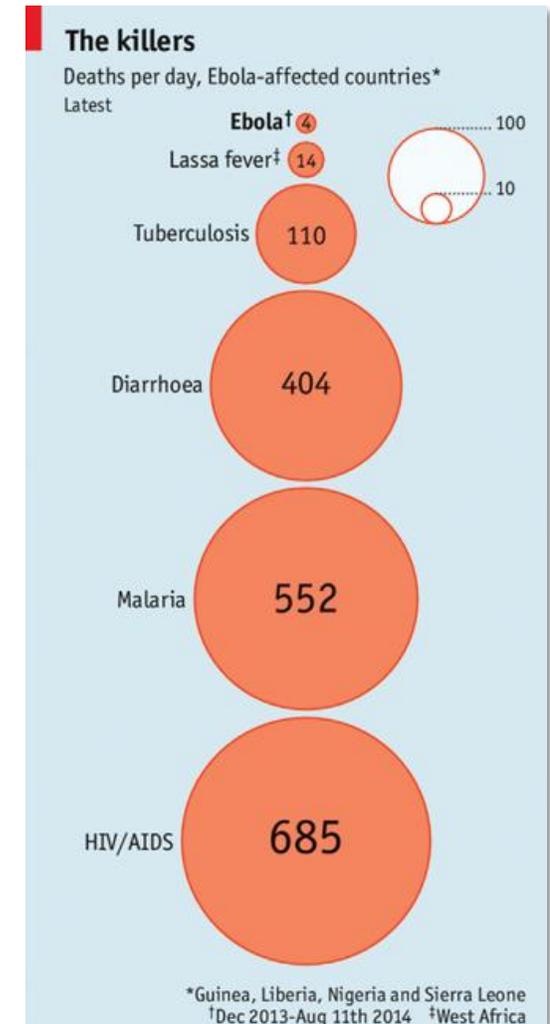
COUNTER EXAMPLES – THE KILLERS.

- In the **bar chart**, we are **encoding** the **quantitative variable**, deaths per day, using length.

  - Notice how **accurately** you can see the **differences**.

  - This is why the **bar chart** is such a **reliable chart** to use:

    - **Length** is one of the most **efficient preattentive** attributes for us to process.

Deaths per day, Ebola-affected countries

*Guinea, Liberia, Nigeria and Sierra Leone
Sources: World Health Organization; U.S. Centers for Disease Control and Prevention; *The Economist*

COUNTER EXAMPLE – SALES AND PROFIT BY CATEGORY AND SEGMENT.

- Yet using **multiple preattentive attributes** in one chart can lead to problems.

- The image shows a **scatterplot** of sales and profit for a fictional sales company.

- Position is used for sales (x-axis) and profit (y-axis).

- **Colour** shows different segments, and **shape** shows the categories of products.

- **Which category has, on average, the highest profits** ?

- It's **almost impossible** to see anything, isn't it ?

  - **Mixing position, colour, and shape does not make for easy reading**.
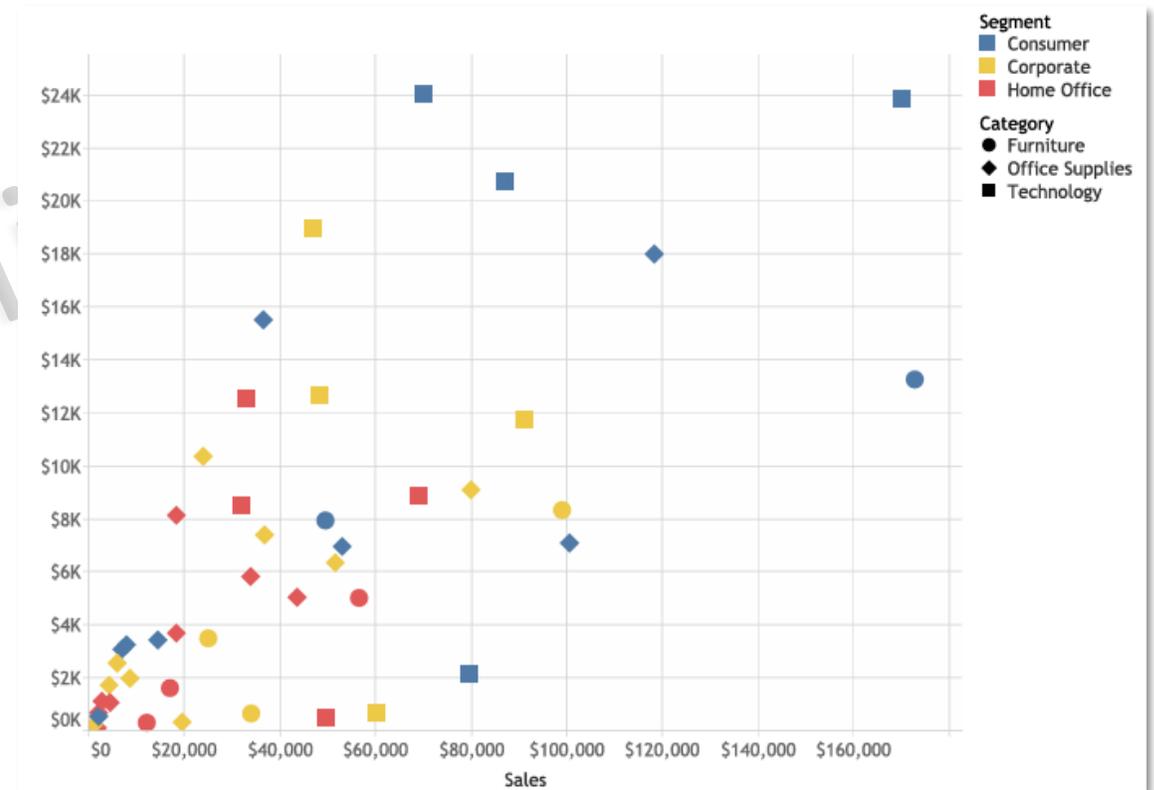
COUNTER EXAMPLE – SALES AND PROFIT BY CATEGORY AND SEGMENT.

- How about using **position** to represent category, breaking the **single scatterplot into three panels** ?

  - The result is much **clearer**.

  - Now you can even see that technology sales, on average, have a higher range of profits than furniture and office supplies.

 - That insight was certainly **not apparent** in the first scatterplot.
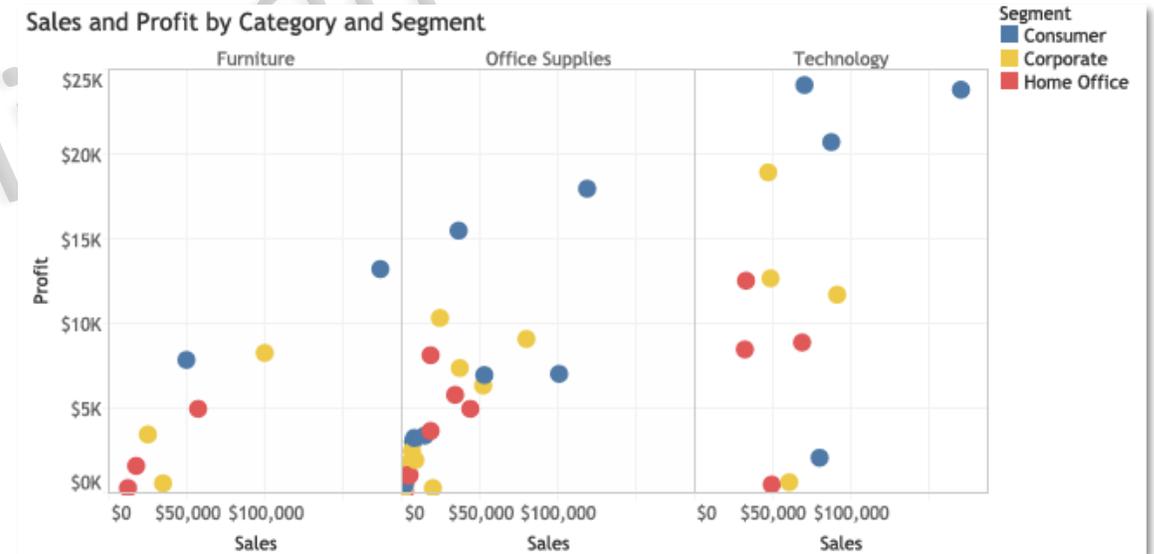
PIE CHART.

- **What percentage of each circle is covered by the blue segment** ?

- The one on the left is pretty easy:

  - **25 percent**.

- The middle ?

  - It's a little harder.

  - It's also **25 percent**, but because it's not aligned to a horizontal or vertical axis, it's harder to determine.

- And on the right ?

  - It's **13 percent**.

- We are simply **not able to make accurate estimates** of angle sizes, and if accurate estimates are the goal, it's a problem.

PIE CHART.

- The **biggest slice** is easy to spot.

- But what about the second, third, and fourth biggest slices ?

- The **sorted bar** chart makes it very easy to distinguish size differences:

  - Length is such an **effective visual attribute**; we can see very **small differences** with ease.

  - To make **effective** dashboards, you must **resist** the temptation to use **purely decorative** chart types.
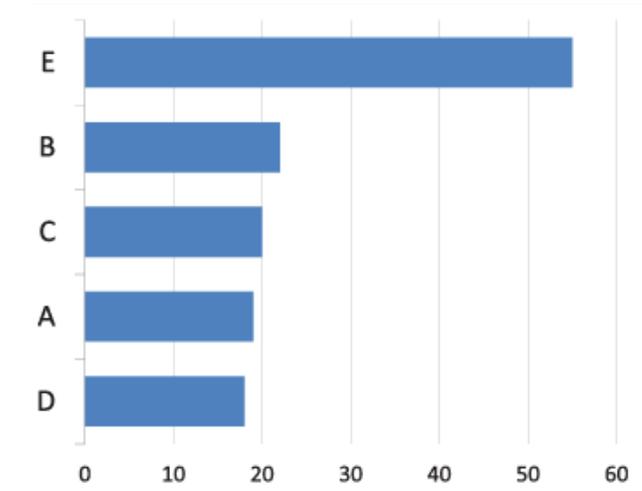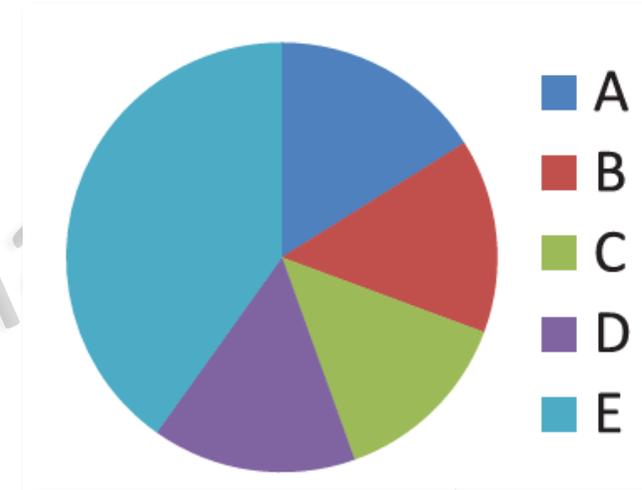
EVERY DECISION IS A COMPROMISE.

- However you choose to show your data, you will **emphasize one feature over another**. Let's have a look at an example.

- Let's imagine they are sales for two products, A and B, over 10 years.

- Each chart uses a **different mix** of **preattentive attributes**.

- Notice the compromises in the charts labeled 1 and 2.

- **A standard line chart (1)** showing each product lets us compare each product's sales very accurately.

- **The area chart (2)** lets us see total sales over time with ease, but now it is harder to compare the two products.

- You **can't**, in a single chart, **answer every possible question** or comparison.

- What you do need to do is **assess whether** the chart you do choose **answers the question being asked**.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
A	100	110	140	170	120	190	220	250	240	300	1840
B	80	70	50	100	130	180	220	160	260	370	1620

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
A	100	110	140	170	120	190	220	250	240	300	1,840
B	80	70	50	100	130	180	220	160	260	370	1,620
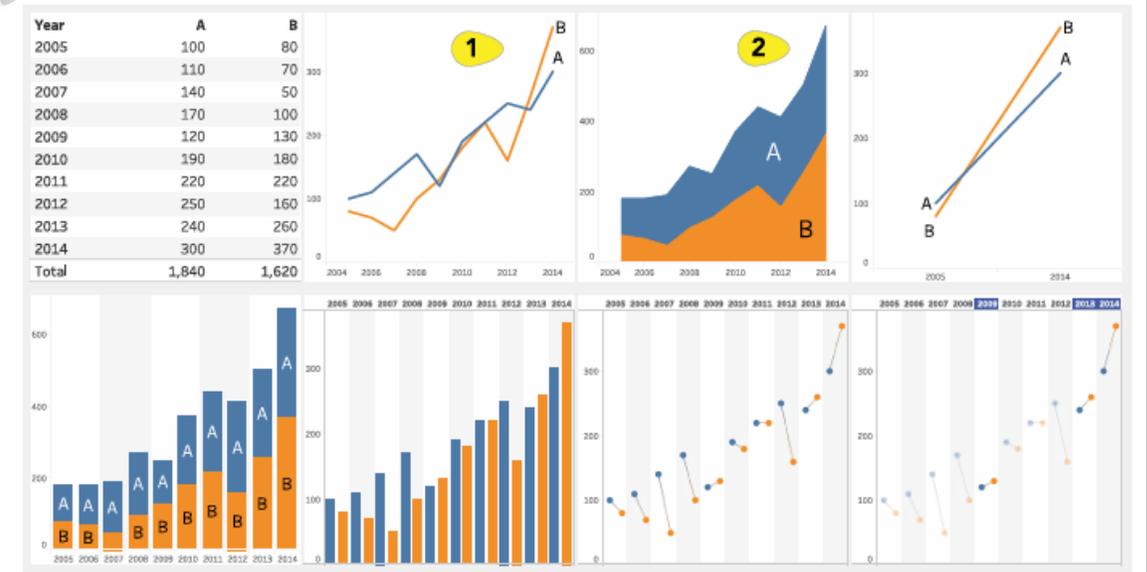
FURTHER CHARTS.

Chart and Graphs