



# Step 1: Visualise

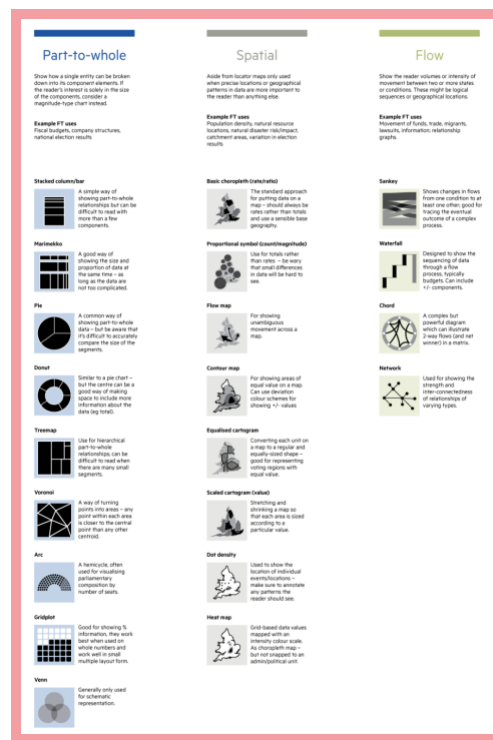
- ☑ [Step 2: Package](#)
- ☑ [Step 3: Communicate: Present and follow-up](#)

## TOOL: **Chart chooser resources**

Different types of information are conveyed by different chart types and hence selecting a chart type highly depends on the data type to be visualised. For example, you need to know if you are dealing with data that shows change over time, distribution, magnitude, evolution or general knowledge and for each of these, different sets of charts apply.

The websites below provide different chart types to choose from and also offer some advice about the best uses of each chart.

1. Interactive Charts Chooser | [Depict Data Studio](#)
2. Including infographic visual choices → [Data Viz Project](#)
3. Data type categorized visual choices → [Visual vocabulary](#) and [Python Graph Gallery](#)
4. Searchable [Data visualisation Catalogue](#): search by data visualisation functions or by what you want a chart to communicate


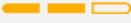






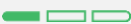





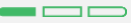






**TIP:** Tryout different charts before deciding on one.









The choice of visualising and communicating data depends on these characteristics of the data; volume, velocity and variety. For example, with a large volume of data: consider data binning or aggregation (part of a whole visual), for high velocity: Animations/video or Dashboard and for a large variety: Interactive interface

## TOOL: 10 tools for DV creation

Here are 10 tools/platforms to consider for creating your charts/visuals:

Tool	Short description	Knowledge level	Example resources	Cost & usage
 <a href="#">Excel</a>	Used to make visualisations with minimal interactivity (small datasets)	 <i>Intermediate</i> Medium to advanced excel knowledge. Need to install Microsoft excel	<a href="#">Step by step DV in excel</a> , <a href="#">Best DVs in excel</a> , courses on <a href="#">Tutorial point</a> , <a href="#">Coursera</a> , <a href="#">Udemy</a>	
 <a href="#">Plotly-chart studio</a>	Python graphing library that makes interactive, publication-quality graphs online	 <i>Easy</i> Chart studio is suitable for users without python coding knowledge	<a href="#">Chart studio tutorials</a>	 for public data  At a cost to keep data private
 <a href="#">Tableau public</a>	A visual analytics platform with capabilities to create interactive data visualisations and design information dashboards	 <i>Easy</i> No coding knowledge needed. Need to install tableau app	Getting started guide ( <a href="#">tutorials</a> ) Other resources: <a href="#">#projecthealthviz</a> , <a href="#">4 tips for mastering tableau</a>	 data is made public Web page embedding; PNG, PDF and PPT download
 <a href="#">Flourish</a>	An online interactive toolkit for creating data visualisations with storytelling capabilities including quizzes, grid, sliders, and more that make the output engaging	 <i>Easy</i> No need for coding skills or to install software	<a href="#">Help articles</a> , <a href="#">youtube channel</a> with template tutorials, and <a href="#">training site</a> (for business users only). <a href="#">Five ways to display survey responses</a>	 data is made public Web page embedding; PNG, PDF and PPT download
 <a href="#">Datawrapper</a>	An online platform to create charts, maps and tables	 <i>Easy</i> No coding knowledge needed	<a href="#">Datawrapper academy</a>	 Datawrapper attribution Web page embedding; PNG, PDF, or SVG download
 <a href="#">Stata</a>	Stata is a multi-purpose statistical package to explore, summarize and analyse datasets. It is widely used in social science research.	 <i>Intermediate</i> Can be used without programming but learning Stata commands makes one more efficient in	<a href="#">Getting started</a> in data analytics with stats tutorial, <a href="#">statalist</a> forums and <a href="#">Stata's learn page</a> with net courses, video tutorials and more	

data analytics

 <a href="#">D3.js</a>	<p>D3.js is a JavaScript library for visualising data using HTML, SVG, and CSS. it has a rich <a href="#">library of example visualisations</a> to reuse</p>	<p>Advanced</p> <p>Requires coding knowledge in Javascript, HTML &amp; CSS</p> <p>Embedded visuals do not rely on an external server</p>	<p><a href="#">Quick Guide</a></p> <p><a href="#">D3 medium articles</a> (step by step guidelines on various visuals)</p> <p>Book: D3.js in Action by Elijah Meeks</p>	
 Python	<p>Visualise data with libraries like <a href="#">Matplotlib</a>, <a href="#">Plotly</a> and <a href="#">seaborn</a></p>	<p>Advanced</p> <p>Python programming knowledge needed</p>	<p><a href="#">Matplotlib tutorials</a>, <a href="#">Plotly fundamentals</a> and <a href="#">Seaborn user guide and tutorial page</a>. Several Python for data science courses on edX, Coursera and more</p>	
 R	<p>Visualising data with libraries like <a href="#">ggplot</a>, <a href="#">ggviz</a> and <a href="#">plotly</a></p>	<p>Advanced</p> <p>R programming knowledge needed</p>	<p><a href="#">RStudio Education</a></p> <p>Plotly <a href="#">fundamentals</a>,</p>	
 <a href="#">Higcharts</a>	<p>An SVG-based, multi-platform, JavaScript charting library that creates interactive charts to web and mobile projects.</p>	<p>Advanced</p> <p>Requires some technical skills to use effectively, but the tradeoff is that it's relatively inexpensive and works with any database or stack.</p>	<p><a href="#">Higchart demos</a></p>	

Ref: [O'Donoghue et al, Best Data Visualisation Tools You Should Consider Using, Best data visualisation tools for smarter decisions in 2019](#)

There are a million and more tools for visualising and communicating data but I considered the following factors to select these:

- i. Visualisation capabilities
- ii. Skills requirements-easy to learn
- iii. Inexpensive compared to other options-free or affordable
- iv. Community of people using the tools and developer support and
- v. Potential to handle big data

## TOOL: Map visualisation resources

Map charts can be intimidating for various reasons including the fact that you have to find base map layers before mapping your data. Most online data visualisations platforms come with already inbuilt map layers but some do not. Here are some resources to get one quickly moving by creating maps that you could bookmark.

- [Shapefile sources](#)
- [OSM tiles](#)
- Editable SVG maps: [simple maps](#) or [AM CHARTS](#) (SVGs are great as they can be edited in basic visual tools like Inkscape and graphical software like Adobe Illustrator)

And here are tool examples strictly for maps:





Free tools → [QGIS](#), [StatPlanet](#)

Commercial tools → MapInfo, ArcGIS

Finally, did you know you can create a map chart in Excel? Check out this [post](#).

## TOOL: Chart post-processing

There will be cases when you need to adjust things like legends in a specific way, overlay several charts, or edit some part of the chart, in a way that is not possible with data visualization tools. In such cases make use of post-processing tools to help you accomplish what you have imagined. Examples of post-processing tools include:

 Adobe <a href="#">Illustrator</a>	 Open-source alternative: <a href="#">Inkscape</a>
 <a href="#">Photoshop</a>	 Open-source alternative: <a href="#">Gimp</a>

*To do this, ensure you have exported/saved or downloaded visuals in good print quality and then proceed to process them further to achieve the desired look. More examples [here](#).*

## **TOOL: Vital elements of data visualisations and information graphics**

Several elements are crucial to effective data/information visualisation.

**Colour** → is a huge element in creating data visualisations. Here is some example uses of colour borrowed from [Peer Recognized](#) article "[Research data visualisation tools](#)"

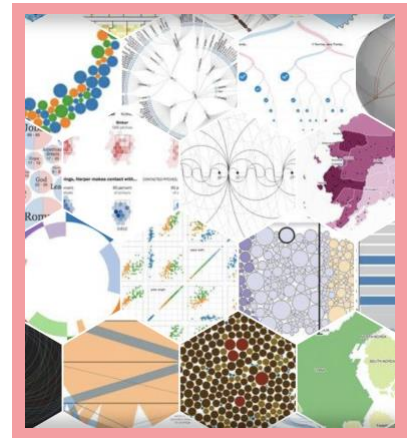
- Differentiating between categories of results
- Highlighting important elements in the chart
- Assigning a particular colour to certain result series and keeping it consistent throughout all the charts in a paper or a presentation.

These resources provide guides in colour combinations, colour mixing and more. They include [HTML color picker](#), [Color Brewer](#), [Adobe color](#), [Paletton](#), [Color Map Advice for Scientific Visualisation](#), and [Choosing Colormaps in Matplotlib](#)

## TOOL: Software for dynamic visuals

### D3js

D3.js is a JavaScript library for manipulating documents based on data. It helps one bring data to life using HTML, SVG, and CSS. It gives the ability to customize visualisations from the ground up and gives the flexibility for more advanced interactive visualisations. D3.js - [Quick Guide](#). Whereas D3 allows for advanced interactivity, it requires coding knowledge in Javascript, HTML and CSS. The visuals produced with D3 can be embedded in websites and downloaded in image formats. D3 supports popular interaction methods including dragging, brushing, and zooming.



The D3 gallery consists of various visualisations grouped by type which helps in the user select visuals to reuse. D3 supports basic charts as well as complex ones including tools for quantitative analysis, supports hierarchical data, networked data (graphs) and a range of geographical projection visuals capabilities.

Other tools in this category include; Python and R using the libraries suggested in the table above.



**TIP:** Most effective data visualisations are clear, focused and compelling. While these characteristics can be subjective, and audience dependent, they provide a strong starting point for assessing data visualisations that are intended to communicate research. The following questions can be used to assess data visualisations:

- **Clarity:** Is the charting form appropriate? Are titles appropriate? Are the units of the data familiar to the intended audience? Does the visualisation anticipate the questions it raises?
- **Focus:** Does the language used in the visualisation support at least one specific idea? Do design choices such as colours, typography or highlighted areas support at least one specific idea? In more complicated visualisations, is it clear that some parts of the information are more important than other parts?
- **Compelling:** Will your audience want to talk about or act upon this data? Does the richness of the data justify a visualisation? Would incorporating photography or annotations make the data more relatable?