# **Data Visualization**

You will spend a considerable amount of time during your project with generating data. However producing the most interesting and well researched data is meaningless if you cannot communicate your findings with clear and well structured visualizations.

Before your start your quest for the perfect plot, you should ask yourself:

- What data type do you want to show and what is the right plot for your data? (Figure 1)
- What is the message of your plot?
- Who is your audience?

#### Chart Suggestions—A Thought-Starter Variable Width Column Chart Circular Area Chart Column Chart Line Chart Table or Table with Bar Chart **Embedded Charts** ш Many Items Few Items Cyclical Data Non-Cyclical Data Single or Few Categories Many Categories per Item Few Categories Many Periods One Variable per Item Column Histogram – Data Points Single Comparison Scatter Chart Two Variables ...... What would you Line Histogram Relationship Distribution like to show? - Data Points **Bubble Chart** Composition Scatter Chart Three Variables .... Changing Over Time 3D Area Chart Few Periods Many Periods Simple Share Only Relative Relative and Absolute Only Relative Relative and Absolute Accumulation or Components Stacked 100% Stacked Stacked 100% Stacked Area Chart Pie Chart Waterfall Chart itacked 100% Column Char Column Chart Area Chart آئی © 2006 A. Abela — a.v.abela@gmail.com

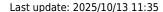
Figure 1: Choosing the right plot for your data.

If you want to get a short primer on data visualization, check out these slides:

- Data visualization slides by R. Burke Squires (NIH)
- EU DataViz Conference Effective, non-standard data visualisation

# **Programming free Data Visualization**







Raw Graphs

Simple web-interface for data exploration and the creation of various graph types directly from a spreadsheet.

## Data visualization with python

There are many different libraries with powerful functions for data visualization. All packages have their own strength and weaknesses and you will find a short description of some of them below. If you would like to pick your package depending on the kind of graph you need right now, check out the Python Graph Gallery by Yan Holtz for some inspiration and more information.

#### **Matplotlib**

One of the most popular choices when it comes to creating plots with python, Matplotlib is an extensive library full of different tools for data visualization.

#### Seaborn

Seaborn is a powerful extension of Matplotlib with which you can create publication-ready figures in as little as one line of code. Structure your data with Pandas dataframes to get the most out of Seaborn.

### **Plotly**

Best known for creating interactive web-appliations, you can also use plotly to create offline figures.

## Creating custom color palettes

Packages like seaborn come with a variety of color palettes for all kinds of data (continues, categorical, divergent etc.). Sometimes you might want to create your own color scheme. In this case you can use the webtool Colors to quickly generate your own set of colorations.

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