In the world of data visualization, there are many different ways to present data. In fact, there are so many ways, or idioms, that it is impossible to comprehend the (dis)advantages of every single one. These idioms range from simple static ones, such as bar charts, scatter plots and line charts, to more complex ones, such as static idioms linked together by interaction and thus converted to dynamic idioms, such as the comparison of success rates, described later.

When selecting an idiom to represent a data set, it is important to know the strengths and weaknesses associated with that idiom. Different data sets require different idioms, and in order to choose the right one, it is paramount to know about marks and channels.

Marks and Channels

Marks are basic graphic elements in a picture, while *channels* control the appearance of the marks [**?**, Chapter 5, p. 95-96]. Marks can be anything from small points in a scatter plot, to lines in a line chart, or even areas. Channels can be the position of the mark, the shape, tilt, length or color of the mark, or anything else that alters the appearance of the mark. In a bar chart, the mark is typically a line with the channels being the length of that line, as well as horizontal categorical information. Color can also be used as a channel, making it possible to encode more information in a chart, for example by plotting different variables in a group, each variable having its own color.

Not all channels can be used with all marks. If a two-dimensional mark is used, it is not practical to use a shape-based visual channel, as it makes it harder to compare the different marks with one another. Therefore, if one runs out of channels to encode information with, it might be wise to contemplate using other kinds of marks, or even other visual channels, if the usage of one channel means that other channels can't be used. An example of this is trying to compare the area of triangles and rectangles.

The most effective channels should be matched with the most important attributes, in order to increase perception of the visualization, and therefore efficiency of the idiom. When the most important attributes are the easiest to compare, it strengthens the visualization as a whole. There a two main types of channels. *Magnitude channels* are channels that describe quantity, while *identity channels* describe categories. The most effective magnitude channel is aligned spatial position, with unaligned spatial position channels being second best. After these comes length, angle and area, length being more effective than area to convey quantitative data. The most effective identity channels are spatial regions, followed by color hue[**?**, Chapter 5, p. 101].

Graphs

- **Scatter Plots**
  Scatter plots are effective when visualizing few (typically two) variables of a large data set[**?**, Chapter 5, p. 54]. Visual channels typically used in scatter plots include horizontal and vertical spatial position, color hue, area, as well as shape. However, if area is used on the marks, one should not use shape as an identity channel, but instead color hue. Scatter plots can be used to quickly gain an overview of the data set, since it is possible to plot large quantities of observations.

- **Line charts**
  Line charts are good for displaying continuous data or trends, and they can be much cleaner to look at, than bar charts. They usually have independent data on the x-axis, such as time or matches played, and dependent data on the y-axis, such as points in the league.

- **Bar charts**
  Bar charts are widely used for comparing variables, either across, or within categories. Grouped or stacked bar charts are useful when comparing different variables between different categories. Groups are better than stacked bars, since stacked bars don't share the same baseline on the top bars.

- **Radar Chart**
  Radar charts are useful for comparing independent variables, such as the different success rates between teams. They can be used to show up to seven variables simultaneously and efficiently, thus quickly creating an overview of the differences in observations. For comparing dependent variables, such as a distribution, a histogram or a pie chart should be considered instead, as well as other idioms.