# Choose Your Visualization Type Wisely
# Bars, Lines, Areas and Dots

*With so many different visualization types available, many people, especially those who are new to data visualization, find it challenging to decide which to use when. Some visualization forms are best suited to certain types of data. Some suit specific tasks or kinds of inquiry. Some imply different meaning from the same data.*

The figures below graphs one data set in four basic graph forms: bars, lines, area and dots. While each of the four is equally accurate, the forms are not equally appropriate or meaningful.

Each graph type suits a different type of data and suggests a different meaning. For example:

**Bars imply discrete categories with one dimension of data**. Eg. World regions (Western Europe, Middle East, South Asia) on the x-axis and population on the y-axis. As this happens to be the underlying data set, bars are really the only appropriate graph form for the data, out of the four.

**Lines imply trends or movement** of something along a continuous x-axis scale. They are typically used to map change over time. Eg. Stock market prices or temperature. A line would be meaningful here if we were graphing population change over time. But there is no trend in a graph of current population by region.

**Area graphs imply volume** and, sometimes, profile or personality (see the radial illustration below). An area graph would be suitable if we wanted to look at the changing population of one region over time, but is not very meaningful for population per region.



**Dots imply discrete occurrences** with two different quantitative variables, one mapped to the x-axis and another to the y-axis. Eg. Graphing each individual in a group by plotting their weight on the x-axis and height on the y-axis. In this case, dots would be appropriate if we were plotting, say, each country's land area on the x-axis and population on the y-axis but, since we are plotting one dimensional data, dots are not the best choice.

The principles above, also apply to other variations of the same basic forms. Consider the radial graphs below.
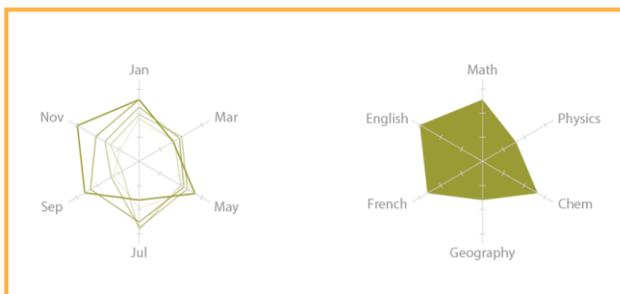


The diagram on the left could be used to graph cyclical data, such as climate data. Being a line graph, it would indicate climatic trends. By contrast, the one on the right could be used to plot a student's marks. Being an area graph, the shape implies the student's academic profile.

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