

Computer Generated Images

Creating Graphs with Spreadsheets

One of the most common ways people use computers to “automatically” create images is making a **graph** for a set of numbers. The tool most often used is a spreadsheet where a graph is called a **chart**.

This brief overview will take you through the basics of creating graphs from data in a spreadsheet. LibreOffice was the software used. The live demo will include more details than are written here. Ask for more written details if you want them.

Entering Data

You can enter data into columns or rows of spreadsheet cells manually. That's the basic job of data entry clerks all over the world.

You may be able to get data that somebody else entered. Some tricky people even capture data to their computers right from nature.

For the purpose of making graphs, you should put a label into either the top cell of the column or the first cell of the row. The rest of the data fills out the column or row, depending on your spreadsheet design. While building the chart, you will add a title and axis scales as you see fit.

Inserting Chart

Once you have the data, select the column(s) or row(s) that have the data you want to visualize. Use the shift key while clicking to select a group of columns that are side-by-side. Use the control key when selecting columns that are not side by side. Select only those cells with data, except you will generally want to include the cell that serves as a label for the series of numbers.

Selecting Chart Style

While there are variations, there are three main types of graph: Pie, Bar and Line.

- Pie graphs compare components of a whole (water covers 70% of the Earth, land 30%)
- Bar graphs compare things (Joe is 50” tall, Sam is 58” tall and Sarah is 72” tall)
- Line graphs show a measurement that changes over time or in a cycle.

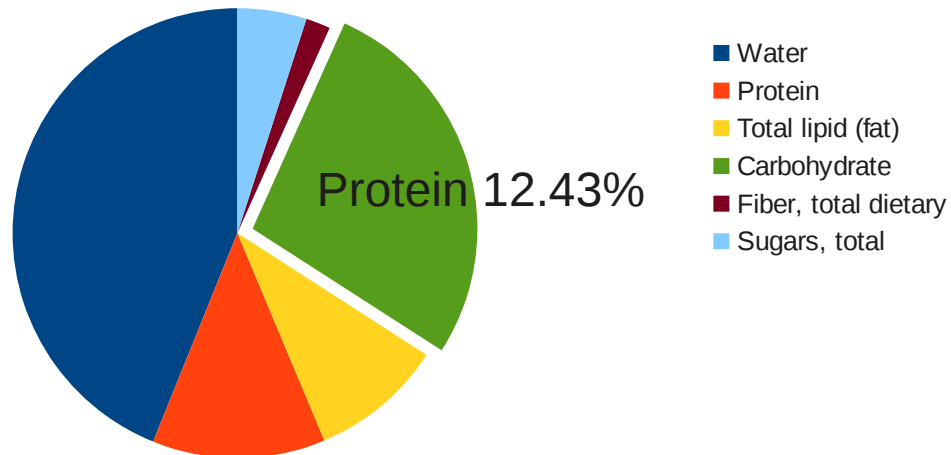
It is important to choose the right type of graph for your data. You want to get your point across.

Tweaking the Graph

There are more things one can do with the elements of a graph. In the pie chart of the hamburger's nutritional components (shown on the next page), for example, it is possible to highlight a segment and add a label. To highlight a segment, edit the chart (starting with a right click) and choose the element to which you want to draw attention. In the example here, the pie section for protein is drawn out of the circle. Adding the percent label is easy to do with the drawing components of LibreOffice.

Fast Food Hamburger

Percent of Dietary Components



Pie Chart/Graph (parts of a whole)

Putting chart into report

When the chart is ready for “publication”, copy it (select and right click – choose copy) from the spreadsheet or the tweaked version from the Draw page. Go to the document that needs a graph for illustration. Position the cursor below the text you want to go with the image. Paste the graphic.

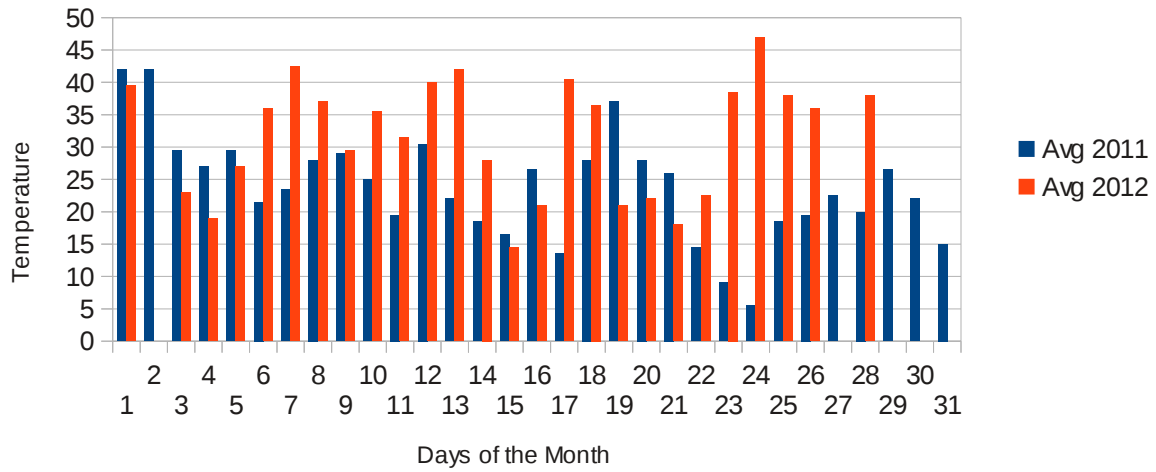
For the demo, the data is from these sources:

- The National Weather Service station at Taunton, MA
- The US Department of Agriculture
- National Weather Service – Average high temperatures
- A description of sine wave calculation

The links are listed on the final page.

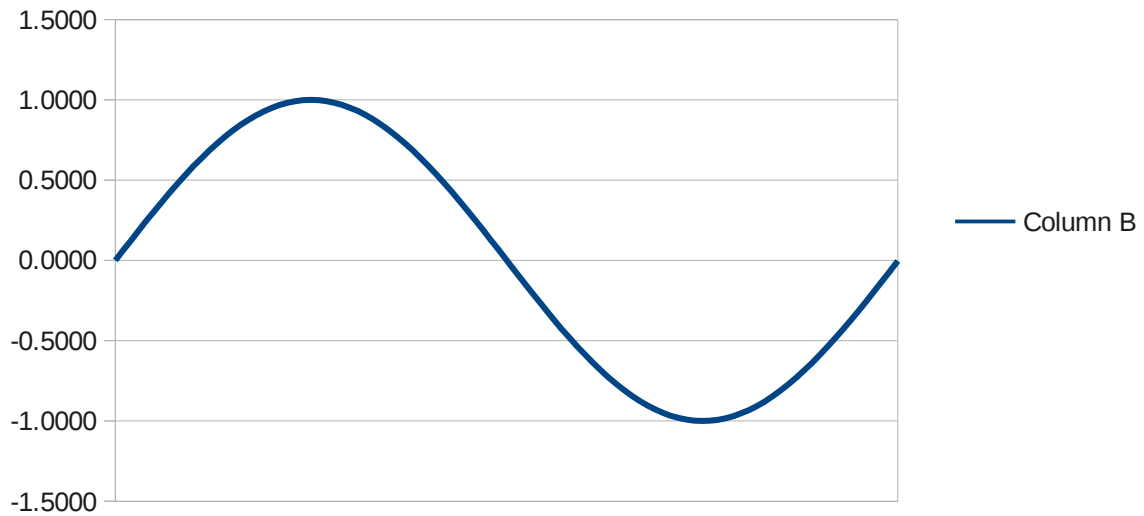
Average January Temperatures

2011 -2012 Taunton, MA



Bar Graph (Comparison)

Sine Wave



Line Graph (change over time)

Data Sets

If you decide you want to recreate these demos.

National Weather Service for Taunton, Massachusetts

<http://www.erh.noaa.gov/box/dailystns.shtml>

The US Department of Agriculture

Data for the nutrition components of a fast-food hamburger

<http://ndb.nal.usda.gov/ndb/foods/show/6586>

National Weather Service – Average High Temperatures for selected US cities.

<http://lwf.ncdc.noaa.gov/oa/climate/online/ccd/maxtemp.html>

Directions for calculating #3, the sine wave graphic:

<http://jwilson.coe.uga.edu/emt668/emat6680.2000/umberger/EMAT6690smu/Day1/Day1.html>

The spreadsheet files used during the demonstration and this document file are available.

Pie Chart – <http://runeman.org/articles/natick-foss/sschart/fastfood-hamburger.ods>

Bar Graph – <http://runeman.org/articles/natick-foss/sschart/temperature.ods>

Line Graph – <http://runeman.org/articles/natick-foss/sschart/sine.ods>

Tweak in Draw – <http://runeman.org/articles/natick-foss/sschart/piechart-protein.odg>

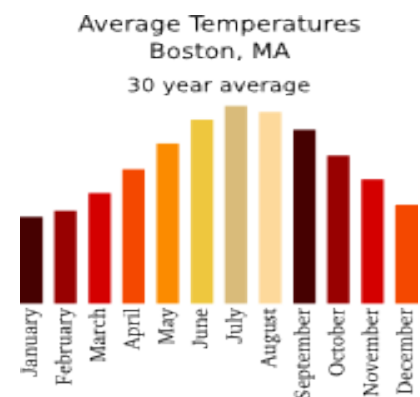
Average City Temps (group practice):

<http://runeman.org/articles/natick-foss/sschart/average-temps.ods>

This document:

<http://runeman.org/articles/natick-foss/sschart/spreadsheet-charting.odt>

The chart to the right was made with Inkscape using an extension called NiceCharts v0.4 which looks promising, too.



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