

Creating Figures in Excel

Making a Basic Graph with Multiple Lines

1. Create a spreadsheet of your data with the variable names in the first row.
2. Highlight the cells you wish to be included in your line graph.
3. Click on the "Insert" Tab.
4. Click on the "X Y Scatter" button.
5. Click the "Scatter with Smooth Lines and Markers" option.
6. Excel will generate a graph, but you may want to adjust the axes, insert a title, and include other information to make your graph more professional. Make sure the x-axis (on the bottom) has dates or years, and the y-axis (on the left) indicates "number of stories" or whatever you are graphing.
7. Right click the graph, and choose the "Select Data Source" option.
8. Adjust the variables that you want to be on the x and y axes.
9. Create a title for your graph by finding the Chart Layout table located on the top right of Excel under the Design tab. Choose the first option that creates a title and legend.
10. You also may want to format your axes. Right click on an axis and click the "Format Axis" option.

Making a Graph that Stacks Your Data:

1. Follow the steps in the previous option, and instead of selecting the "X Y Scatter button," select the "Area" option.
2. Next select the "100% Stacked Area" option.
3. Excel will generate a graph with the stacked areas of your different variables.

Making a Moving Average Column:

1. You may want to graph a line that measures a moving average of the frequency of your frames over time.
2. First decide of which column you want to calculate a moving average.
3. Next, create a new column and label it "Moving Average" or something of the like.
4. The first row under the new column will be the same value as the first row of your variable of interest because you are not averaging multiple values yet.
5. The second row under the new column will be the average of the first two values of your variable.
6. The third row will be the average of the first three values of your variable, so you can enter the formula =AVERAGE(B1:B3) (or whatever column you are interested in. It may be C, D, E, etc.) (you can calculate a 5 year average, or whatever, in the same manner)
7. Next, copy this formula until you reach the last row of your column.

8. Include this line in your graphs to show a smoothed value, avoiding the annual fluctuations, if those are misleading.
9. Note that steps 4 and 5 are simply there to adjust for the fact that a 3-year average can't be computed for years 1 and 2 of your series, so you do the best you can!

Adding a Second Y Axis:

1. You may have a variable that takes on much smaller/larger values than the other variables in your graph, so Excel may not convey enough variation when you are only using one Y axis. For example, if one item ranges from 0 to 2,000, but another is a percentage that only varies from 0 to 100, then the one with the more restricted variation might appear to be a straight line at the bottom. Or, more dramatically, imagine you have one series measured in millions, and another series that is a decimal, always between 0 and 1. Obviously you can't see any variation in the second series on the same scale as the first. So...
2. First select the line that does may appear flat or extreme compared to the others.
3. Right click on the line and select the "Format Data Series" option.
4. Section the "Series Options."
5. You now will see a page titled "Series Options." Choose the "Secondary Axis" option.
6. You will now see a second Y axis.
7. Right click on the axis and select the "Format Axis" option.
8. Adjust the values if they do not correspond with your data.
9. You can title each axis by selecting the "Layout" tab.
10. Then select the "Axis Titles" button.
11. Label your axes accordingly.
12. If you have more than 2 variables that require different axes, you can't do that since the graph can only have 2 axis. In such a case, you might need to divide a variable by 10, multiply it by 100, or transform it in some manner so that it has a similar scale to the other variables. Do this in Excel by creating a new column. If your data are in col C, then just insert a column D that contains: `"=(c2)*100"` in cell D2 and then copy that down. Label it something like "VariableName (x 100)"

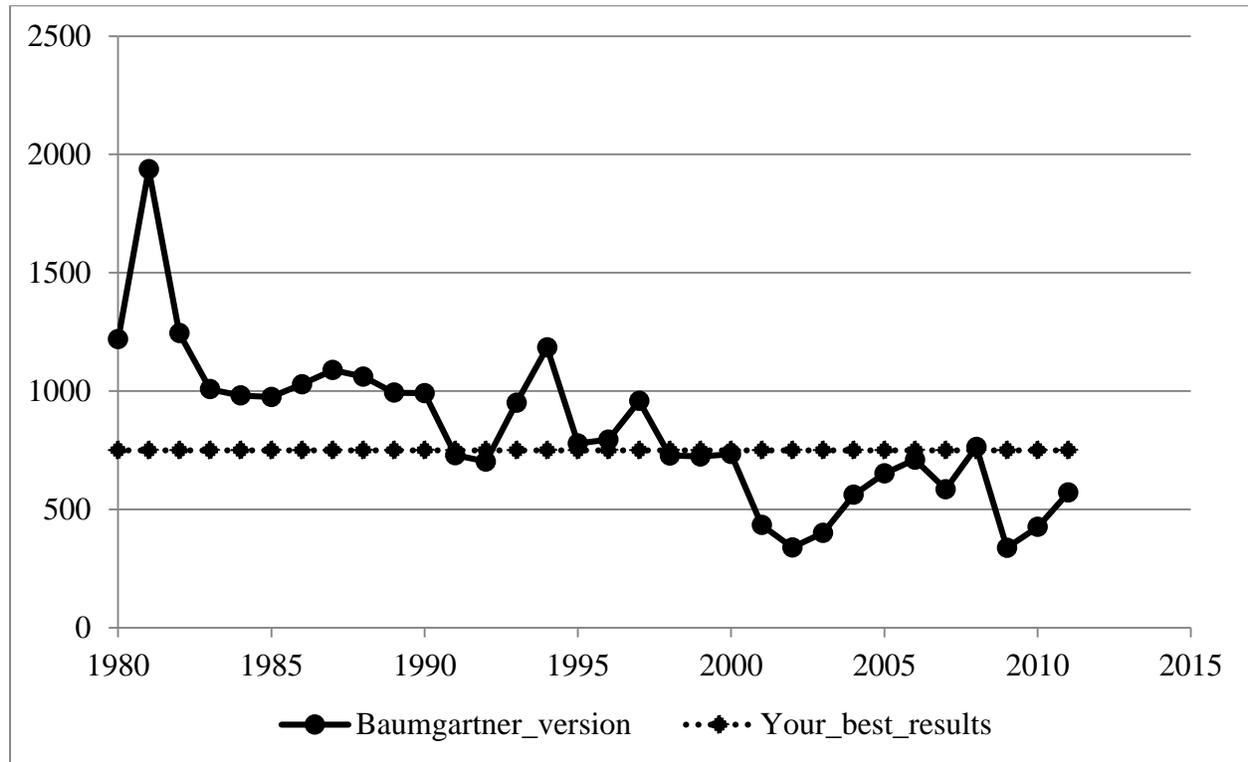
Helpful Hints:

1. Use appropriate colors and fonts, specifically ones that look professional.
2. Always make sure to label—give titles, label axes, etc.
3. If you are not able to separate the frequencies of the different frames with color, consider using different types of lines to distinguish each frame.

- When you drop the figures into a Word document, don't hesitate to give a complete title at the top that explains the figure's importance, and also a NOTE at the bottom that gives more detail.

Below is a graph that looks reasonable:

Figure x. Baumgartner's class is probably the best one I ever took.



Note: This figure is 6.5 inches wide and contains data from the first assignment. This note is the area where I can explain anything I need to say about the graph. It's single-spaced even though the text around it will be double-spaced.

Text starts up again here, indented, double-spaced. If I decide to have jillions of figures, and they aren't fitting in the text well, I can say:

(Insert Figure 1 about here)

in the text and continue with that. Then, after the references, at the end of the document, you can add all your figures one after the other. Black and white is a great way to do your graphs, especially if you print them in b&w...