

Intro to Statistics — Excel Worksheet

Warning: We have chosen to use Excel because it is easily available on campus and because the data is easily visible on the screen as you use it. But it has errors (different versions have different errors) in its statistical functions. So for any serious purpose we urge you to learn and use a real statistical package such as SPSS, SAS, Minitab, etc.

1. Spreadsheet **cells** (those little rectangles) can hold numbers, words, or formulas (which then produce numbers). Try filling in some cells with numbers and others with words (click on it to highlight it and start typing your entry).
 - Use “Enter” or “Return” to finish an entry and move down. “Tab” moves you to the right. “Shift-Enter” or “Shift-Return” moves you up, and “Shift-Tab” moves you left. You can also use the mouse to click on a cell that you wish to change, or you can use the arrow keys to move around in the spreadsheet.
 - What happens if your words are longer than a cell? Try this with the cell to the right being empty and again with it having some entry.
 - Select a cell and change its format with the “Format” menu.
2. Scrolling works as you might expect. Enter the value 23 into cell D104 (use the column and row headings to find cell D104). Then come back to the top of the spreadsheet.
3. **OK... Now we’re ready to try entering formulas.**

All formulas start with an equals sign “=”. Select cell D4 and enter the formula “=3+2*D104” (without the quotes). The value 49 (which is $3 + 2(23)$) should appear. When you select a cell, the formula that is actually in the cell appears in the line at the top of the screen. (What appears in the cell is the present value of that formula.) Select cell D4 again and click in the line at the top to edit it to be “=5+2*D104”. The value should change to 51.
4. **Copying/Cutting and Pasting:**
 - Clear out column A. (Select and “Edit→Clear→All” or “Edit→Delete” the cells you don’t need). Enter the number “1” in cell A1 and the formula “=A1+1” in cell A2.
 - Select cell A2 and move the cursor to the lower right corner of that cell. The cursor (which is usually a white plus sign) should change to either a “black plus sign” or a “box with arrows” depending on your version of Excel. Using that special cursor, drag the cell down to A10 so that the numbers “1” through “10” appear. This dragging “copies” the formula to the cells below. Check the formulas in this column and figure out how Excel changed the formula during the copying.
 - Now select the entire column of ten numbers and, using the special cursor from the lower right hand corner, copy them to the two columns to the right of the first. What happened to the formulas this time?
 - To move a column, you should “cut” and “paste”. Select all three columns. Select the “Edit→Cut” menu. The border of the cells starts to shimmer. Select cell A12 and choose the “Edit→Paste” menu. What happened to the formulas?
5. **What if you don’t want the formulas to change?**
 - You can protect a cell name in a formula from being changed when the formula is moved or copied by using a dollar sign in front of the column letter or row number or both. For example, select cell C13. Change the formula to “= \$C\$12+1”, and then copy it down the column. All the numbers in the column after C12 should now be the same; the formula doesn’t change when you copy.

- Enter the value 2 into cell C10. Change the formula of C13 to “=C12+C\$10” and copy it down the column. Now the column counts by twos. Changing cell C10 automatically changes all the other cells to count by whatever value you want. Try counting by threes.

6. Formulas on Ranges:

Some functions use a range of values. For example, if we want to sum the ten values in the first column. Enter the formula “=sum(A12:A21)” into cell A10. It should show their sum.

- You can also use the “Function Wizard” button at the top of the screen. It looks like f_x in fancy letters. Select cell B10. Push the “Paste Function” button. A list of functions should appear. Choose the function you want (sum). Excel will then prompt you to enter the range of cells you wish to use. You can enter them by hand, **OR** click on the arrow to the right of the blank. This allows you to use the mouse to select the cells. Highlight the cells B12 through B21 and then find the arrow again to get out of selection mode. Click OK and the function is pasted in.
- In a new column, enter five arbitrary numbers. Find the average, median, max, min, stdev and stdevp(=SD) of those numbers. (The stdev is what our text calls the SD^+ — it will appear late in the course — and other texts call the sample standard deviation. It is a little larger than the SD, which other texts call the population standard deviation; hence the “p” in stdevp.) It is a good idea to label the functions you use, so type the labels “average”, etc. next to the values you just computed.
- Go back and change a value in the original column and the average and SD update.

7. Using Web Data:

Go to the website <http://math.colgate.edu/math102/examples/econlie.html> Copy the data (and labels) and then go to Excel and Paste it into a column (say, column A) of your worksheet. (Use the Edit menu.)

- In Excel, move the Unemployment data next to the Inflation data (say, in column B).
- Create a third column labelled Misery Index (say, in column C) which is the sum of the other two. (If the inflation data began in cell A3 and unemployment in B3, then you might put “=A3+B3” into cell C3 and copy down.)

8. Print Only What You Want:

When you want to print out your results on paper, for example to hand them in, you rarely want to print all the data; rather, you just want the results. To print part of the spreadsheet, highlight a rectangle of cells that contains what you want, and use “File→Print Area→Set Print Area”. To see what will print before actually printing it, use “File→Print Preview”. If your data is wide but not tall, it may be helpful to use “File→Page Setup” and change the layout from Portrait to Landscape to get it onto fewer pages.

9. Next Steps

It will probably be useful to play around with the chart wizard some. See what type of plots you can make, how to enter titles, how to change where the axis markings(ticks) appear. This kind of “playing” is almost certainly going to be useful at some point in your professional life. It isn’t a major part of this class, but its useful to know about.

You should continue to the next excel worksheet which talks about creating histograms, doing regression analysis, and using “Macros” to type the equations for you. That worksheet is: <http://math.colgate.edu/math102/Common/excel/toolpak.html>