Excel Intermediate with the Health Sciences Library

This handout is designed to reinforce some of the skills taught during the workshop. For further information, please refer to the Excel section of our Basic Computer Skills resource guide at http://bit.ly/hslbasicexcelskills

Terminology

Excel opens into a workbook. A workbook is a collection of worksheets that contain rows (labeled with numbers) and columns (labeled with letters). Cells are located at the intersection of every column and row, and each cell has its own distinct address defined by the column-row intersection, such as H6. Each cell holds a single value, label, or formula.

Looking at the Screen

The quick access toolbar at the top of the screen allows you to quickly save your workbook, as well as undo (eliminate the last change to the workbook) and redo (repeat the last change to the workbook). You can also customize the toolbar to contain the commands that you use regularly by pressing the dropdown next to the redo button. The ribbon organizes all of the features of Excel into tabs, including options for formatting, viewing, editing, and inserting data and objects into a worksheet. There are 2 scroll bars on the right and bottom of the screen that allow you to maneuver the worksheet to the left and right as well as up and down.

The page view options include normal view (seen left), page layout view (displays the workbook as it would appear when printed) and the page break preview option which allows you to set page parameters. The zoom tool allows you to zoom in on the cell section of the workbook only, effectively increasing the appearance of the cells without distorting the ribbon and other features of the workbook.
Excel is extremely useful for calculating and processing complex formulas. Below the ribbon menu is the **formula bar** on the right side which allows you to input equations or text into the selected cell. On the left side is the **name box**, which indicates the **selected cell** (“C5”). Equations (for example, =SUM(A5, A9)) will automatically be **hidden** and can only be viewed using the formula bar; the cell will display the result, not the equation.

Simple formulas can be typed directly into the formula bar with the **equals** sign ahead of an equation (ex. entering =A2 + B2 into cell C2 will calculate the value of cell A2 plus B2 and display the sum in cell C2). For more complex calculations, Excel offers a variety of functions (pre-established formulas) to choose from. There are a few different ways to enter functions into a cell. One way is by pressing the **insert function** key next to the formula bar. Another way is by clicking the **formulas** **tab** and selecting an option from the **function library**. The insert function pop-up window allows you to either **browse** from categories of functions or enter **search** terms to get suggestions for an appropriate function. Another way to insert a function is to select a cell and simply **type** the equals sign and first letter of a function (for example “=S”). Suggestions of functions with a brief description will appear for you to consider.
Useful Functions

**SUM:** This is the function to add the values of cells. If you want to add a range of cells use the colon to separate the first and last cell address in your range. For example =SUM(A1:A15) will add all of the cell values from A1 to A15. To add single cell values use the comma between the cell addresses. For example =SUM(A1,B1,C1) will add the cell values of A1 and B1 and C1. The sum function is versatile and multi-purpose. It can also be used for multiplication (use the * symbol), percentage, division (use the / symbol), etc. For example =SUM(B2*0.13) will provide the result of 13% of cell B2. Formula =SUM(C2/B2+A2) will provide the result for the value of C2 divided by the value of B2 plus A2.

**AUTOSUM:** This feature will automatically provide an addition calculation for the selected numbers. For example, highlighting the cells from A2 to A6 and then clicking the autosum selection from the editing section of the home tab will provide the sum of all of the cell values from A2 to A6 in the cell A7.

**SUMIF:** This function adds values within a cell range that meet a condition or criteria. For example =SUMIF(A1:A12,"Budget",B1:B12) will search the cells from A1 to A12 for the term Budget. If this term is found the adjacent values in the cell range from B1 to B12 will be added. Therefore, if cells A3 and A6 contain the text Budget, the provided result will be the value of B3 plus B6.

**COUNTIF:** This function counts the number of occurrences within a cell range when given a condition or criteria. For example =COUNTIF(A1:A12,"Include") will search the cells from A1 to A12 for the term Include. The number of times Include is found within the cell range will be displayed. Therefore, if cells A5 and A8 contain the text Include, the provided result will be 2.

**IMSUB:** This is the function to use to subtract cell values; it returns the difference between two complex numbers. For example =IMSUB(A2,B2) will provide the result of A2 minus B2. Other simple equations can also be added to this formula. For example =IMSUB(D2,B2+C2) will provide the result of D2 minus the total when B2 and C2 are added.

**CONCATENATE:** This is a text function that is used for creating strings of text; it combines the contents of cells. For example entering =CONCATENATE(A3,B3) into cell C3 will provide a string of text combining the terms found in A3 and B3. Therefore, if A3 contains the term J.H. and B3 contains the term Jones, the text J.H.Jones will be displayed in the cell.
Drop-down Lists

Creating drop-down lists in Excel makes data entry easier, more accurate and consistent by allowing the user to limit the valid entries that can be placed in a field. There are 2 main steps in the process: creating the list of valid terms, and using data validation to make the list accessible in the chosen range of cells.

To create a list of valid entries for the drop-down list, type the entries in a single column or row without blank cells (note: this can be done on a separate worksheet from the one where the drop-down list will be inserted, but it does have to be contained within the same workbook). Highlight the cells containing the terms for your list, and select the define name option from the defined names section of the formulas tab. A new name pop-up will appear where you will give the list a name (keep this name in mind for the next step). In the example on the right, cells A3:A9 were selected and given the name “Fruits”.

To insert the drop-down list, highlight the cell or range of cells where you want the drop-down list, and select the data validation option from the data tools section of the data tab. In the data validation pop-up, set the allow box to list and in the source box, enter the equals sign followed by your list name. Ensure that the ignore blank and in-cell dropdown boxes are checked. In the example on the left, cells B2:B7 were selected and the list “Fruits” was validated as a drop-

When you create a drop-down list for a cell, it displays an arrow in that cell. To enter information in that cell, click the arrow, and then select the entry from the list of terms that you want. The example on the right shows the selection options for this list: apple, grapefruit, orange, peach, pear, strawberry, and watermelon—all of the terms from the list “Fruits” that was created.
The formatting options that are most frequently used are located within the home tab. Holding the cursor over any of the icons on the tab will show a brief description of what formatting the option will do. Options to change the font face, size and colour, apply bolding, italicization, underlining, cell borders and background colour are found in the font section of this tab. To align, indent, orient, wrap text (adjust cell size so that all text is seen), or merge and centre (useful for headings) the alignment section is used. The number section gives you options to change from general cell content to formats such as currency, percentage, and date. Conditional formatting options are found in the style section of the home tab. The sort and filter function in the editing section will sort the cells that you select either alphabetically or by parameters that you outline by selecting custom sort from the drop-down menu.

Another formatting tool found within the view tab is the freeze panes selection, which keeps a portion of the worksheet visible while the rest scrolls. By clicking the drop down arrow next to freeze panes, options are given to freeze a selection, the top row, or first column.

Conditional formatting is a great tool to use to display data in cells one way for some values, but another way for others by setting rules. By selecting a section of your worksheet and choosing a highlight rule using the between option, you can set greater than and less than cell values and select a fill colour in order to differentiate the data between those values. For example, if the rule is set as greater than 1000 and less than 1500 with a light red fill, all of the cells with values between 1000 -1500 in your selection will be highlighted with a light red colour.
Charts and Tables

A variety of chart types can be found on the Charts section of the Insert tab of the ribbon. To create a basic chart, highlight data to be displayed (be sure to highlight headings as well) and select a chart type. For example, the chart on the right was created by highlighting cells A1-B4 and selecting the 2-D pie chart option.

For a chart with more depth and description, or to display more complicated data, Excel provides options for creating a completely customized chart. When a type of chart is selected from the Charts section of the Insert tab of the ribbon, the chart tools tabs are displayed. The design tab has a select data option to customize what data is displayed for each axis. The layout tab is where options for legends, data labels, chart titles, gridlines and axis titles are found. Using the format tab, border, background fill, and arrangement of the chart can be edited.

The example on the left is a completely customized chart, displaying data for 2 sets of information (number of employees as well as number of clients served) with both sets referencing back to department. Layout chart tools including chart title, axis titles and data labels were used to make the data understandable.

Also on the insert tab, in the tables section, is where picot tables can be created. Pivot tables and charts can be used to extract significance from a large, detailed data set, making it easy to summarize and arrange the data. Fields from the worksheet are used as rows or columns, values, and filters. The examples below show a Pivot table and a Pivot chart containing the same data. The unit field was selected as the row, the lit searches field was selected as the value, and the program field was selected as the filter. The number of lit searches per unit in the labs program are displayed.
Additional Resources

Keyboard Shortcuts

Shortcuts can be a convenient time-saver, especially when using Excel. Some of the most commonly used shortcuts are \texttt{ctrl+c} (copy), \texttt{ctrl+v} (paste), and \texttt{ctrl+a} (select all), but there are many more available. Please see the link below for a more comprehensive list.


Microsoft Office Support

List of Excel functions by category:

https://support.office.microsoft.com/en-US/article/Excel-functions-by-category-5f91f4e9-7b42-46d2-9bd1-63f26a86c0eb

This is an excellent resource from Microsoft that lists the names, formats, and capabilities of all functions within Excel. Use this page to discover new functions or to get help if a function is not working.

Microsoft Excel Help Guide

Access the Help Guide by pressing the F1 key on the keyboard or clicking the question mark button in the upper right corner of the ribbon. Then search for your topic.

Thank You!

For further help, please contact the Health Sciences Library at:

Website: www.librarysmh.ca

Phone: (416) 864-5059

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