

IMPACT SUMMER INSTITUTE

Evaluating Together: Expanding Thinking and Strengthening Practice



EXCELLING WITH ANALYSIS AND VISUALIZATION

A PRACTICAL GUIDE FOR DEALING WITH
DATA

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Welcome

Hello there!

In July 2016, I led two workshops—*Excel Basics for Monitoring and Evaluation* and *Illustrating Data*—at the Ontario Council for International Cooperation’s IMPACT Summer Institute in Toronto. Each workshop lasted three hours. We covered everything from pivot tables to chart-choosing to data storytelling.

This document is a self-paced learning guide. I’ll walk you through the major topics we covered during the in-person workshops in Toronto. You’ll be encouraged to explore additional resources, like video tutorials and blog posts, that elaborate in these skills. You’ll also be encouraged to practice the skills in the accompanying Excel files. The more you participate, the more you’ll learn.

Happy spreadsheeting!
Ann K. Emery

The Data Analysis Process

Data analysis is a multi-step process, from pulling your spreadsheets together into a master spreadsheet, to calculating key numbers like averages and sums, to designing graphs that showcase your key findings for stakeholders.

This guide walks you through key stages of the data analysis process, which include:

1. Importing and merging datasets together
2. Organizing your spreadsheet
3. Cleaning data and recoding variables
4. Exploring preliminary patterns
5. Calculating descriptive statistics
6. Calculating inferential statistics
7. Building data tables
8. Visualizing key findings

Are you an absolute beginner? Start here! <http://annkemery.com/beginners-guide-to-spreadsheets/>.

Then, watch

https://www.youtube.com/watch?v=JcUms1AJ0oA&list=PLZzQj_sVf3smXR_mhmopAzC9WHfA4dkbj&index=6 to get a sense for the variety of formulas that are available in Excel.

1 Import and Merge Datasets

Datasets come in a variety of formats – from MS Access, from SPSS, or from CSV files. The first step in the data analysis process is to import, export, and merge multiple datasets together into a master dataset that you can use for further analyses.

Combine Two or More Spreadsheets into a Single Spreadsheet (Many to One)

Lookup functions are for merging and combining datasets, like when you've got program participants' demographic data in one place and their scores or outcomes in another place. I can't tell you how many times I've watched researchers and evaluators *waste hours of their time* by trying to merge these spreadsheets manually (e.g., by copying and pasting back and forth). You've got better things to do with your time, don't you? Lookup functions to the rescue!

There are two primary versions: vertical lookup and horizontal lookup. Most of the time, you'll be using a vertical lookup. Use vertical lookup or `vlookup` when unique ID numbers are listed vertically down the first column of your spreadsheet—when each entry in your spreadsheet is located in its own row. Use horizontal lookup or `hlookup` when unique ID numbers are listed horizontally across the first row of your spreadsheet—when each entry in your spreadsheet is located in its own column.

A disclaimer: `vlookup` has a learning curve. I first learned this function from a teammate back in 2008. Bless her heart, she explained and re-explained the function to me a million times. I practiced on my own, and finally—probably a full month later—I got it. So don't worry if this function seems tricky at first. Eventually everything will click in your brain, and you'll be on your way to saving hours and hours of your time.

The function contains four pieces of information. It looks like this:
`=vlookup(lookup_value,table_array,col_index_num,range_lookup)`.

And here's what each piece of the function really means:

- `lookup_value`: The cell that contains the person's ID number. The ID numbers are the link or key that connect all the spreadsheets together. The ID numbers must be located in the first column of each table – in the first column of your new combined dataset and in the first column of every single table from which you're pulling data.
- `table_array`: This is the table from some other spreadsheet or other file from which you're pulling data.
- `col_index_num`: This is the column in that table where you're pulling the data from. Just type in the number of the column. For example, if you want to pull in data from Column C of another table, you'd type "3."
- `range_lookup`: Always type "false" and you'll be in good shape.

Read *vlookup: One Excel Function to Rule Them All* at <http://annkemery.com/vlookup/> and watch a tutorial about hlookup at https://www.youtube.com/watch?v=68uxRHcfMdY&index=7&list=PLZzQj_sVf3skzJvklgHr4qguKRGr2lbFb.

Combine Content from Several Cells into a Single Cell

There are two primary strategies for combining numbers, letters, and other content from several different cells into one single cell.

In this video, I show you how to use the & operator:

https://www.youtube.com/watch?v=PbZLJsV1560&list=PLZzQj_sVf3smXR_mhmopAzC9WHfA4dkbj&index=1

Parse Data from a Single Cell into Multiple Cells (One to Many)

Sometimes we receive evaluation data in CSV format. CSV files contain comma separated values, which means your numbers and text are stored in one big text file with a comma between each value. However, in Excel, we need each value in its own column.

In this video, I show you how to transform your CSV data into a tabular format for Excel within a minute using the *Text to Columns* icon: <http://annkemery.com/portfolio/text-to-columns/>

Transpose (Flip) Rows and Columns in a Table

Have you ever wished that the contents listed left-right across the top of your columns was actually listed top-bottom down your rows? Transpose (flip) your rows and columns with a technique called *Paste Special*:

https://www.youtube.com/watch?v=RwM69543qt0&list=PLZzQj_sVf3smXR_mhmopAzC9WHfA4dkbj&index=8

2 Organize Your Spreadsheet

When you're staring at a spreadsheet for hours on end, a little organization can go a long way. To stay organized, I create new sheets, freeze panes, insert filters, and set up Excel Tables.

Sheets

Keep raw data and clean data in separate sheets, create new sheets, color-code your sheets, protect your sheets, and hide/unhide your sheets.

Watch

https://www.youtube.com/watch?v=lisTyXATu0M&index=1&list=PLZzQj_sVf3sI5zTBpadKjIICiw5yHUGwN to learn more.

Freeze Panes

Freeze your top row and/or your first column so that your headers stay in view as you scroll through the data.

Watch

https://www.youtube.com/watch?v=PsyOPR3Lb2o&index=2&list=PLZzQj_sVf3sI5zTBpadKjIICiw5yHUGwN to learn more.

Sort and Filter Your Spreadsheet

Have a list of words that need some alphabetizing? Have a list of numbers that you want to arrange from least to greatest or greatest to least? Rather than painstakingly rearranging your rows by hand, let Excel's *Sorting* and *Filtering* features do the heavy lifting for you.

Sorting Data

Most folks are familiar with Excel's Sorting feature. (And if not, you're going to love it!) The *Sort* button is located within your *Data* tab.

Instructions:

- Highlight or select the data that you want to re-order.
- Go to the *Data* tab.
- Select the *Sort* icon.
- In the pop-up window, choose how you want to organize your data, e.g., alphabetically or from greatest to least.

Bonus! You can also create multiple layers of sorting by clicking the Add Level button within that same pop-up window. For example, you might first sort by gender and then by age.



[Click here to access the rest of the toolkit](#)

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