

HPOG RoundTable: How to Manipulate PAGES Data with Excel

This document describes how to create a basic table shell, populate it, and generate a chart in Excel 2016. Other versions of Excel will have corresponding steps, but the appearance and location of some buttons or options may be different from what is shown in this guide.

MAKING A TABLE

Think about the question you want to answer. What are the “metrics” that you will need? These will be conditions that you want to count in the data. First, make an empty table with the metrics that you want to count as the rows. Do this by typing out the name of the metrics in Excel rows. For example:

	Number	Percent
Participants who Gained Healthcare Employment after Intake		
No Healthcare Training Began		
Healthcare Training Completed		

The top row of this example will be the “total” for the chart. It is often useful to have a row that everything else in your chart will add up to. The next two rows are metrics that will be counted in the next steps. **Once you have put your table together, EDIT it. Think about whether it includes the information you want to present, and think about whether the metrics you are including are related and fit together.** You can also make more complex tables, where both the rows and columns are metrics. For example:

	TANF at Intake	Not TANF at Intake
Participants who Gained Healthcare Employment after Intake		
No Healthcare Training Completed		
Healthcare Training Completed		

COUNTING DATA METRICS

Next, you need to fill your table shell with numbers that correspond to the metrics you created. **There are two ways you can do this.** The best way to do this is by inserting a formula that will count for you. For this example, we recommend using the common and versatile “COUNTIF” formula, but there are many Excel formulas that you can learn more about on the internet. To you use ”COUNTIF,” first look at where the data you want to count is located:

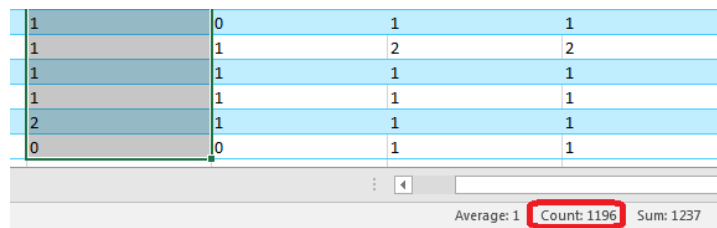
H	I
Healthcare Trainings Enrolled	Healthcare Trainings Completed
1	1
1	1
1	1
1	1
1	1

Our “enrolled in training” column is H and our “completed training” column is I. We need to use the function with the following format: =COUNTIF([CELL RANGE], “LOGIC”). We will replace CELL RANGE with the cells we want to check and LOGIC with the condition we want to count. The condition should be simple, using the following symbols: = (equals), < (less than), <= (less than or equal to), > (greater than), or >= (greater than or equal to). For example, if we want to restrict to any number greater than 0, we would enter “>0” and if we wanted only numbers 2 or larger we would enter “>=2.” We will enter the formula into our empty table shell, like so:

	Number	Percent
Participants who Gained Healthcare Employment after Intake		
No Healthcare Training Completed	=COUNTIF(I2:I100, “=0”)	
Healthcare Training Completed	=COUNTIF(I2:I100, “>0”)	

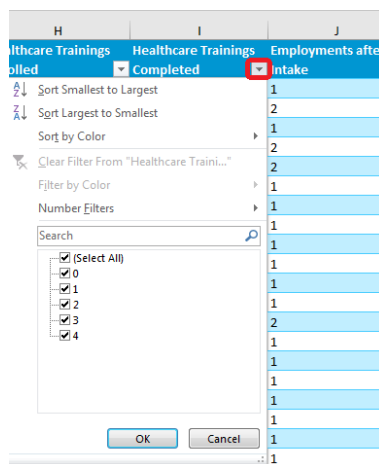
NOTE: in the above examples, “I2” and “I100” are the letter “I” followed by the numbers 2 or 100.

These functions count cells I2 to I100 – your numbers will be a different range, depending on how much data you have and what column you are counting. To fill the total/top row, you can enter the total number of records you have in your data extract. You can find this by counting the number of rows of data that you have, or you can select the rows with your mouse and look at the count at the bottom right corner of the screen:

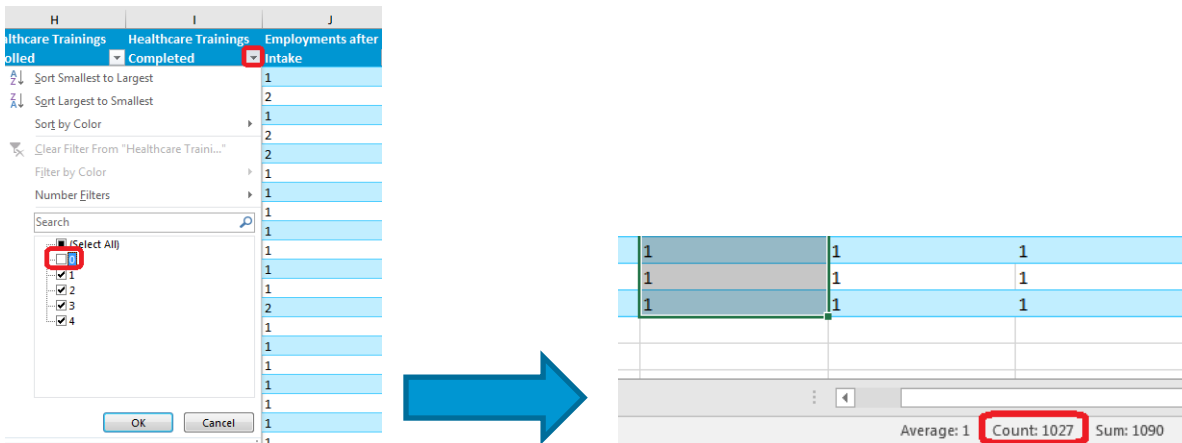


Carefully copy this number (1,196 in the above screenshot) into your table. This is your total for the table, and other numbers will be divided by it in order to calculate percentages.

As an alternative to COUNTIF, you can use the filter arrows at the top of the Excel columns, which automatically appear in your PAGES extracts. Please be aware, this method is more prone to human error, because it requires you to look at and manually copy various numbers into your table. To do this, click on the “down arrows” found at the top of each column in the extract:



Upon clicking on the arrow, a dropdown menu will appear with all values found in that column. The values by default are all checked. To filter the data, you can check and uncheck values to show only what you want. When doing so, rows of data will be temporarily hidden, as long as a value is left unchecked. For example, in the above screenshot you can obtain the list of participants with 1 or more healthcare trainings completed by unchecking the box next to “0.” After doing that, use the method described above of highlighting the column in question and looking at the Excel count on the bottom right of the screen (be sure to pick the Count, not the Sum):



After you have gotten the number you need, enter it into your table. In this instance, we would be entering the number 1,027 into the row for Healthcare Training Completed. When finished, be sure to reverse the above steps – click on the down arrow and re-check the box that you have hidden (in this example it would “0”). Unchecking the boxes restores your view of all the data in your extract.

CALCULATE PERCENTAGES

To calculate percentages, fill in the percent column with the formula =NUMERATOR/\$DENOMINATOR\$. The denominator cell is normally your total in the top row, and the \$ symbols ensure the formula refers to the same cell if you were to copy the formula. This is done because you always want to be dividing out of the **total** value for your table (cell B2 in this case). We can see that in our sample shell our metric numbers are in Column B and rows 2 through 4:

	A	B	C
1		Number	Percent
2	Participants who Gained Healthcare Employment after Intake	1196	
3	No Healthcare Training Completed	169	
4	Healthcare Training Completed	1027	

We will enter the following to calculate the percent (you can enter the formula into the top row and drag down to copy the formula into the lower cells – the \$ symbols now have the effect of keeping the formula referring to cell B2):

	Number	Percent
Participants who Gained Healthcare Employment after Intake	1196	=B2/\$B\$2
No Healthcare Training Completed	169	=B3/\$B\$2
Healthcare Training Completed	1027	=B4/\$B\$2

To drag the formula down, hover over the bottom right corner of the cell with the formula where there is a square dot – the cursor will turn into a small black cross. Click there and drag down to the cells below to replicate the function:

	A	B	C
1		Number	Percent
2	Participants who Gained Healthcare Employment after Intake	1196	=B2/\$B\$2
3	No Healthcare Training Completed	169	
4	Healthcare Training Completed	1027	
5			



	B	C
	Number	Percent
Participants who Gained Healthcare Employment after Intake	1196	1.00
No Healthcare Training Completed	169	
Healthcare Training Completed	1027	

	B	C
	Number	Percent
Participants who Gained Healthcare Employment after Intake	1196	1.00
No Healthcare Training Completed	169	
Healthcare Training Completed	1027	

	B	C
	Number	Percent
Participants who Gained Healthcare Employment after Intake	1196	1.00
No Healthcare Training Completed	169	0.14
Healthcare Training Completed	1027	0.86

Next, format the numbers into percentages by highlighting the cells and clicking the format window above and selecting percentage:

B	C	D
Number	Percent	
1196	1.00	
169	0.14	
1027	0.86	

You can also reduce the number of decimals in your percentage by clicking the reduce decimal icon above. Click on it multiple times to get to the desired result:

B	C	D
Number	Percent	
1196	100.00%	
169	14.13%	
1027	85.87%	

B	C	D
Number	Percent	
1196	100%	
169	14%	
1027	86%	

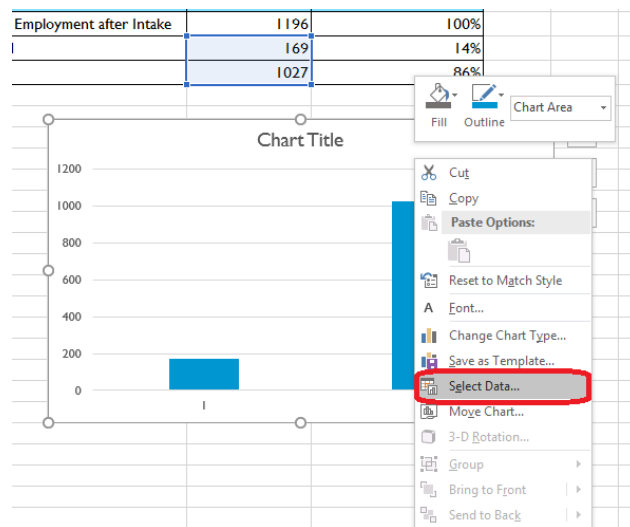
INSERT CHARTS

Now that your table is populated, it's time to insert a chart. **What type of chart should you use?** Often, when we are trying to show differences in total amount (i.e. your number column) you would use a **bar/column chart**. For differences in percentage by category (when all categories add up to 100 percent) you can use a **pie chart**. If you need a chart with time-period metrics (day, week, month, quarter, year) you can represent that with a **line chart**.

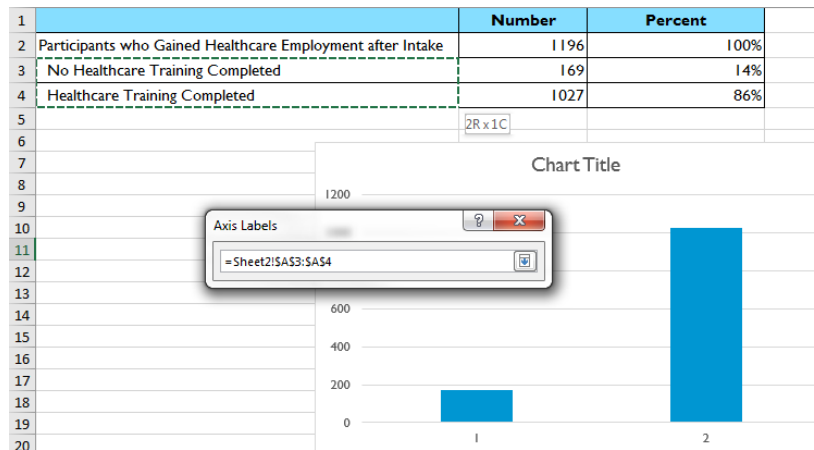
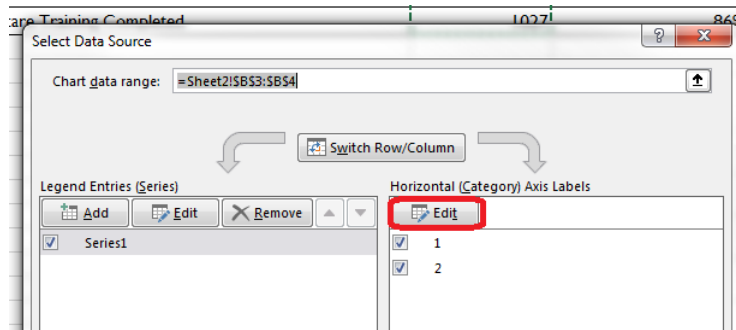
To create a chart, first click on “Insert” at the top of the Excel toolbar. You will see several charts as options. Next, select the data you would like to display. In this case, **we are not going to display the total**. Select both metric rows – “number” if you are going to make a column/bar chart or “percent” if you are going to create a pie chart.

	A	B	C
1		Number	Percent
2	Participants who Gained Healthcare Employment after Intake	1196	100%
3	No Healthcare Training Completed	169	14%
4	Healthcare Training Completed	1027	86%
5			

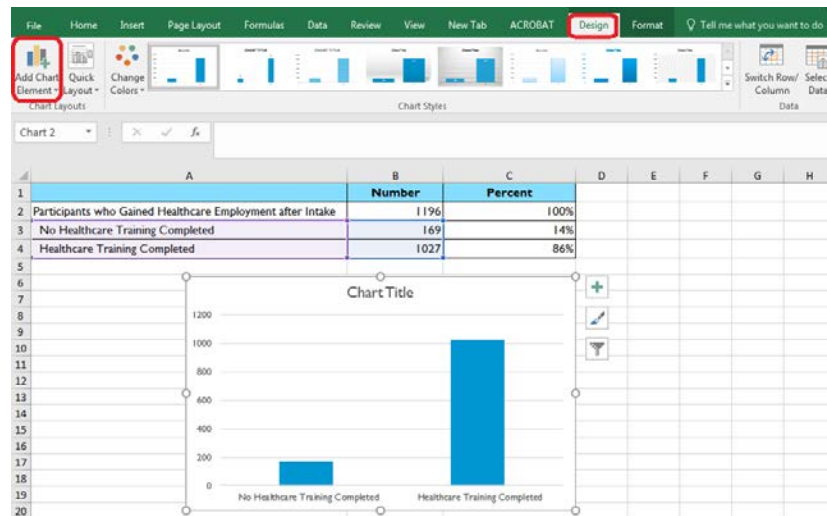
The chart will appear on your sheet. Right click on it and choose “select data” to bring up chart options. The options will be used for selecting data labels or changing the range of data included in the chart, for example.



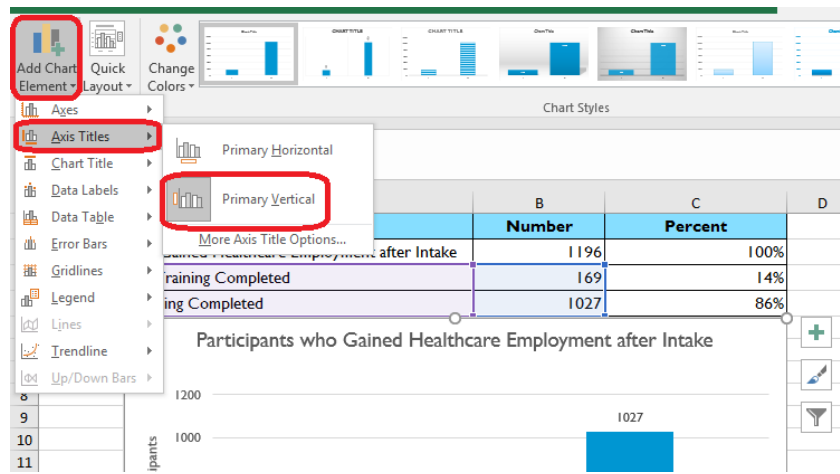
A pop-up window will appear with several options. You have already defined your data source (you did so by selecting the data you wanted to display when you created the chart), but you will want to change the Horizontal Axis labels to correspond to the rows of your table. Click on “Edit” below the Horizontal (Category) Axis Labels, and next highlight the cells where you want to draw your chat labels from:



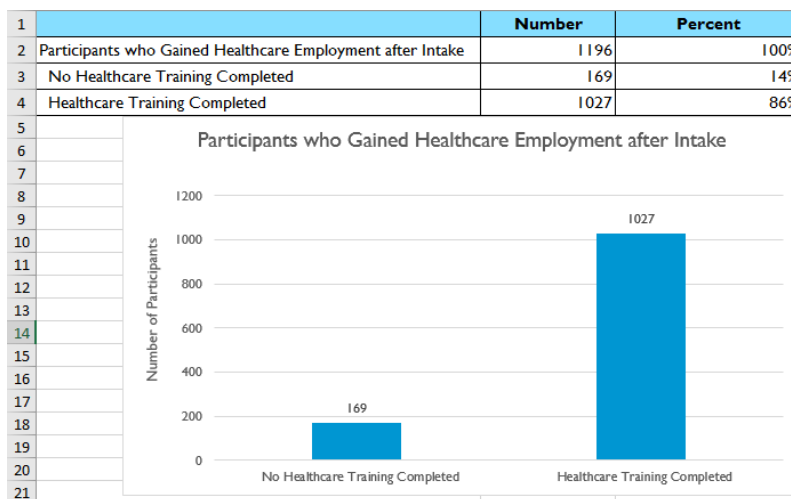
Click Ok after selecting the cells. Now the chart will have the labels that match each category, and if you edit the name of a category in your table it will automatically change on the chart. At this point, you may want to edit the design of your chart. Click on the chart and go to the “design” tab at the top of the screen.



This gives you options such as adding axis labels or changing the chart colors or style:



It's best to ensure that your chart can stand alone – edit the title (by clicking on the “Chart Title” text and typing in a new name) and add data and axis labels so that your audience will understand what they are looking at. Here is what a finished chart might look like:



This chart was edited to have the same name as the “Total” row of the table, and “Add Chart Element” was used to add data labels and a Primary Vertical Axis Label (which was edited to read “Number of Participants”).