How to create a histogram chart in Excel 2016, 2013 and 2010

ablebits.com/office-addins-blog/2016/05/11/make-histogram-excel

The tutorial shows 3 different techniques to plot a histogram in Excel - using the special Histogram tool of Analysis ToolPak, FREQUENCY or COUNTIFS function, and PivotChart.

While everyone knows how easy it is to <u>create a chart in Excel</u>, making a histogram usually raises a bunch of questions. In fact, in the recent versions of Excel 2016, Excel 2013, and Excel 2010, creating a histogram is a matter of minutes and can be done in a variety of ways - by using the special Histogram tool of the Analysis ToolPak, formulas or the old good PivotTable. Further on in this tutorial, you will find the detailed explanation of each method.

What is a histogram in Excel?

<u>Wikipedia</u> defines a histogram in the following way: "*Histogram is a graphical representation of the distribution of numerical data*." Absolutely true, and... totally unclear :) Well, let's think about histograms in another way.

Have you ever made a bar or column chart to represent some numerical data? I bet everyone has. A histogram is a specific use of a column chart where each column represents the frequency of elements in a certain range. In other words, a histogram graphically displays the number of elements within the consecutive non-overlapping intervals, or *bins*.

For example, you can make a histogram to display the number of days with a temperature between 61-65, 66-70, 71-75, etc. degrees, the number of sales with amounts between \$100-\$199, \$200-\$299, \$300-\$399, the number of students with test scores between 41-60, 61-80, 81-100, and so on.



The following screenshot gives an idea of how an Excel histogram can look like:

How to create a histogram in Excel using Analysis ToolPak

The Analysis ToolPak is a Microsoft Excel data analysis add-in, available in all modern versions of Excel beginning with Excel 2007. However, this add-in is not loaded automatically on Excel start, so you would need to load it first.

To add the Data Analysis add-in to your Excel, perform the following steps:

- 1. In Excel 2010, Excel 2013, and Excel 2016, click *File* > *Options*. In Excel 2007, click the Microsoft Office button, and then click *Excel Options*.
- 2. In the *Excel Options* dialog, click *Add-Ins* on the left sidebar, select **Excel Add-ins** in the *Manage box*, and click the *Go* button.

| Excel Options | | | ? × |
|-------------------------|--|---|--------------------------|
| General Formulas | View and manage Microsoft Office Ad | d-ins. | |
| Proofing | Add-ins | Location | Type 🔺 |
| Language | Active Application Add-ins Ablebits.com Ultimate Suite for Microsoft Excel | C:\er64.dll | COM Ac |
| Customize Ribbon | Inactive Application Add-ins Analysis ToolPak | C:\32.XLL | Excel Ad |
| Quick Access Toolbar | Analysis ToolPak - VBA | C:\XLAM | Excel Ad 👻 |
| Add-Ins Trust Center | Add-in: Ablebits.com Ultimate Suite for Publisher: Add-in Express Compatibility: No compatibility information Location: C:\Users\sveta\AppData\Roar Ultimate Suite for Microsoft E: Description: Collection of tools to automate Manage: Excel Add-ins | or Microsoft Ex available ning\Add-in Ex xcel\adxloader6 te Excel tasks | cel ‹press\ 54.dll |
| | | ОК | Cancel |

In the Add-Ins dialog box, check the Analysis ToolPak box, and click OK to close the dialog.
 If Excel shows a message that the Analysis ToolPak is not currently installed on your computer, click Yes to install it.

Now, the Analysis ToolPak is loaded in your Excel, and its command is available in the *Analysis* group on the *Data* tab.



Specify the Excel histogram bin range

Before creating a histogram chart, there is one more preparation to make - add the bins in a separate column.

Bins are numbers that represent the intervals into which you want to group the source data (input data). The intervals must be consecutive, non-overlapping and usually equal size.

Excel's Histogram tool includes the input data values in bins based on the following logic:

- A value is included in a certain bin if it is greater than the lowest bound and equal to or less than the greatest bound for that bin.
- If your input data contain any values greater than the highest bin, all such numbers will be included in the *More* category.
- If you do not specify the bin range, Excel will create a set of evenly distributed bins between the minimum and maximum values of your input data range.

Considering the above, type the bin numbers that you want to use in a separate column. The bins must be entered in **ascending order**, and your Excel histogram bin range should be limited to the input data range.

In this example, we have order numbers in column A and estimated delivery in column B. In our Excel histogram, we want to display the number of items delivered in 1-5 days, 6-10 days, 11-15 days, 16-20 days and over 20 days. So, in column D, we enter the bin range from 5 to 20 with an increment of 5 as shown in the below screenshot:

| | А | В | С | D |
|----|-----------|-----------------|---|------|
| 1 | Order no. | Delivery (days) | | Bins |
| 2 | 1002369 | 4 | | 5 |
| 3 | 1002382 | 24 | | 10 |
| 4 | 1002378 | 13 | | 15 |
| 5 | 1002372 | 6 | | 20 |
| 6 | 1002346 | 19 | | |
| 7 | 1002345 | 5 | | |
| 8 | 1002347 | 14 | | |
| 9 | 1002362 | 9 | | |
| 10 | 1002358 | 5 | | |
| 11 | 1002360 | 17 | | |
| 12 | 1002376 | 14 | | |
| 13 | 1002371 | 2 | | |
| 14 | 1002380 | 13 | | |
| 15 | 1002354 | 5 | | |

Make a histogram using Excel's Analysis ToolPak

With the Analysis ToolPak enabled and bins specified, perform the following steps to create a histogram in your Excel sheet:

1. On the Data tab, in the Analysis group, click the Data Analysis button.



2. In the Data Analysis dialog, select Histogram and click OK.

| Data Analysis | 8 | X |
|--|---|-------|
| Analysis Tools | | OK |
| Covariance Descriptive Statistics Exponential Smoothing F-Test Two-Sample for Variances Fourier Analysis | | ancel |
| Histogram Moving Average Random Number Generation Rank and Percentile Regression | | |

- 3. In the Histogram dialog window, do the following:
 - Specify the Input range and the Bin range.

To do this, you can place the cursor in the box, and then simply select the corresponding range on your worksheet using the mouse. Alternatively, you can click the *Collapse Dialog* button **iso**, select the range on the sheet, and then click the *Collapse Dialog* button again to return to the *Histogram* dialog box.

Tip. If you included column headers when selecting the input data and bin range, select the **Labels** check box.

• Select the Output options.

To place the histogram on the same sheet, click *Output Range*, and then enter the upper-left cell of the output table.

To paste the output table and histogram in a new sheet or a new workbook, select *New Worksheet Ply* or *New Workbook*, respectively.

Finally, choose any of the additional options:

- To present data in the output table in descending order of frequency, select the Pareto (sorted histogram) box.
- To include a cumulative percentage line in your Excel histogram chart, select the Cumulative Percentage box.
- To create an embedded histogram chart, select the **Chart Output** box.

For this example, I've configured the following options:

| Histogram | | ? <mark>x</mark> |
|--|---------------------------------|------------------------------|
| Input Input Range: <u>B</u> in Range: <u>I</u> abels | \$B\$1:\$B\$15 \$D\$1:\$D\$5 | OK Cancel <u>H</u> elp |
| Output options <u>O</u>utput Range: New Worksheet <u>Ply:</u> New <u>W</u>orkbook P<u>a</u>reto (sorted histogram Cu<u>m</u>ulative Percentage <u>C</u>hart Output | SAS19 m) | |

4. And now, click *OK*, and review the output table and histogram graph:

| Bins | Frequency | Cumulative % | Histogram |
|------|-----------|--------------|--------------------------|
| 5 | 5 | 35.71% | Histogram |
| 10 | 2 | 50.00% | ک ¹⁰ 200.00% |
| 15 | 4 | 78.57% | § 5 - 100.00% |
| 20 | 2 | 92.86% | <u> </u> |
| More | 1 | 100.00% | 5 10 15 20 More |
| | | | Bins |
| | | | |
| | | | Frequency — Cumulative % |

Tip. To improve the histogram, you can replace the default *Bins* and *Frequency* with more meaningful axis titles, customize the chart legend, etc. Also, you can use the design, layout, and format options of the *Chart Tools* to change the display of the histogram, for example <u>remove gaps between columns</u>. For more details, please see <u>How to customize and improve Excel histogram</u>.

As you've just seen, it's very easy to make a histogram in Excel using the Analysis ToolPak. However, this method has a significant limitation - the embedded histogram chart is **static**, meaning that you will need to create a new histogram every time the input data is changed.

To make an **automatically updatable histogram**, you can either use Excel functions or build a PivotTable as demonstrated below.

How to make a histogram in Excel using formulas

Another way to create a histogram in Excel is using the FREQUENCY or COUNTIFS function. The biggest advantage of this approach is that you won't have to re-do your histogram with each change in the input data. Like a normal Excel chart, your histogram will **update automatically** as soon as you edit, add new or delete existing input values.

To begin with, arrange your source data in one column (column B in this example), and enter the bin numbers in another column (column D), like in the screenshot below:

Now, we will use a Frequency or Countifs formula to calculate how many values fall into the specified ranges (bins), and then, we will draw a histogram based on that summary data.

| | А | В | С | D |
|----|-----------------------|-----------------|-----|------|
| 1 | Order no. | Delivery (days) | | Bins |
| 2 | 1002369 | 4 | | 5 |
| 3 | 1002382 | 20 | | 10 |
| 4 | 1002378 | 13 | | 15 |
| 5 | 1002372 | 6 | | 20 |
| 6 | 1002346 | 25 | | 25 |
| 7 | 1002345 | 5 | | 30 |
| 8 | 1002347 | 27 | | 35 |
| 9 | 1002362 | 9 | | |
| AR | ~~100735 ^e | mm | NNN | mon |

Creating a histogram using Excel's FREQUENCY function

The most obvious function to create a histogram in Excel is the FREQUENCY function that returns the number of values that fall within specific ranges, ignoring text values and blank cells.

The FREQUENCY function has the following syntax:

FREQUENCY(data_array, bins_array)

- Data_array a set of values for which you want to count frequencies.
- Bins_array an array of bins for grouping the values.

In this example, the data_array is B2:B40, bin array is D2:D8, so we get the following formula:

=FREQUENCY(B2:B40,D2:D8)

Please keep in mind that FREQUENCY is a very specific function, so follow these rules to make it work right:

- An Excel Frequency formula should be entered as a multi-cell array formula. First, select a range of adjacent cells where you want to output the frequencies, then type the formula in the formula bar, and press Ctrl + Shift + Enter to complete it.
- It's recommended to enter one more Frequency formula than the number of bins. The extra cell is required to display the count of values above the highest bin. For the sake of clarity, you can label it "*More*" like in the following screenshot (but don't include that "*More*" cell in your bins_array!):

| VI | LOOKUP 🔻 | | | =FREQU | ENCY(B2 | :B40,D2:D8) |
|----|-----------|-----------------|--------|--------|---------|-------------|
| | А | В | | С | D | E |
| 1 | Order no. | Delivery (days) | | | Bins | FREQUENCY |
| 2 | 1002369 | 4 | | | 5 | =FREQUENCY |
| 3 | 1002382 | 20 | | | 10 | 8 |
| 4 | 1002378 | 13 | | | 15 | 6 |
| 5 | 1002372 | 6 | | | 20 | 5 |
| 6 | 1002346 | 25 | | | 25 | 2 |
| 7 | 1002345 | 5 | | | 30 | 4 |
| 8 | 1002347 | 27 | | | 35 | 2 |
| 9 | 1002362 | 9 | | | More | 1 |
| 10 | 1002358 | 5 | | | | |
| A1 | 10023/50 | Amaran | \sim | ~~~ | nnn | man |

Like the *Histogram* option of the <u>Analysis ToolPak</u>, the Excel FREQUENCY function returns values that are greater than a previous bin and less than or equal to a given bin. The last Frequency formula (in cell E9) returns the number of values greater than the highest bin (i.e. the number of delivery days over 35).

To make things easier to understand, the following screenshot shows the bins (column D), corresponding intervals (column C), and computed frequencies (column E):

Note. Because Excel FREQUENCY is an array function, you cannot edit, move, add or delete the individual cells containing the formula. If you decide to change the number of bins, you will have to delete the existing formula first, then add or delete the bins, select a new range of cells, and re-enter the formula.

| | С | D | E |
|---|----------|------|-----------|
| | Interval | Bins | FREQUENCY |
| 1 | 1-5 | 5 | 11 |
| 2 | 6-10 | 10 | 8 |
| 3 | 11-15 | 15 | 6 |
| 4 | 16-20 | 20 | 5 |
| 5 | 21-25 | 25 | 2 |
| 6 | 26-30 | 30 | 4 |
| 7 | 31-35 | 35 | 2 |
| 8 | Over 35 | | 1 |

Making a histogram using COUNTIFS function

Another function that can help you calculate frequency distributions to plot histogram in Excel is <u>COUNTIFS</u>. And in this case, you will need to use 3 different formulas:

- The formula for the first cell top bin (F2 in the screenshot below):
 =COUNTIFS(\$B\$2:\$B\$40, "<="&\$D2)
 The formula counts how many values in column B are less than the smallest bin in cell D2, i.e. returns the number of items delivered within 1-5 days.
- The formula for the last cell over the highest bin (F9 in the screenshot below):
 =COUNTIFS(\$B\$2:\$B\$100, ">"&\$D8)
 The formula counts how many values in column B are greater than the highest bin in D8.
- The formula for remaining bins (cells F3:F8 in the screenshot below):
 =COUNTIFS(\$B\$2:\$B\$40, ">"&\$D2, \$B\$2:\$B\$40, "<="&\$D3)

The formula counts the number of values in column B that are greater than the bin in the above row and less than or equal to the bin in the same row.

As you see, the FREQUENCY and COUNTIFS functions return identical results:

| F3 | ~ | : =COUNTI | FS(\$B\$2:\$B\$ | 40,">"&\$[| D2,\$B\$2:\$B\$40 |),"<="&\$D3) |
|-----|--|-----------------|-----------------|------------|-------------------|--------------|
| | А | В | С | D | E | F |
| 1 | Order no. | Delivery (days) | Interval | Bins | FREQUENCY | COUNTIFS |
| 2 | 1002369 | 4 | 1-5 | 5 | 11 | 11 |
| 3 | 1002382 | 20 | 6-10 | 10 | 8 | 8 |
| 4 | 1002378 | 13 | 11-15 | 15 | 6 | 6 |
| 5 | 1002372 | 6 | 16-20 | 22 | 5 | 5 |
| 6 | 1002346 | 25 | 21-25 | 25 | 2 | 2 |
| 7 | 1002345 | 5 | 26-30 | 30 | 4 | 4 |
| 8 | 1002347 | 27 | 31-35 | 35 | 2 | 2 |
| 9 | 1002362 | 9 | Over 35 | | 1 | 1 |
| 10 | 1002358 | 5 | | | | |
| 121 | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | nnna | mm. | And | white | mound |

"What is the reason of using three different formulas instead of one?" you may ask me. Basically, you get rid of the multi-cell array formula and can add and delete bins easily.

Tip. If you plan to add more input data rows in the future, you can supply a bigger range in your FREQUENCY or COUNTIFS formulas, and you won't have to change your formulas as you add more rows. In this example, the source data are in cells B2:B40. But you can supply the range B2:B100 or even B2:B1000, just in case :) For example: =FREQUENCY(B2:B1000, D2:D8)

Make a histogram based on the summary data

Now that you have a list of frequency distributions computed with either FREQUENCY or COUNTIFS function, create a usual bar chart - select the frequencies, switch to the *Insert* tab and click the 2-D Column chart in the *Charts* group:

| 崔 Store | > | - | | ? | 2- | Colu | - 🖄 - | | | |
|-----------|---------------------------|-----------------|-------------|-------|------|--------|---------|------|--------|---|
| Dy Apps 🕥 | , Bing I Maps d-ins | People Graph | Recom Cł | narts | Ы | | | | | |
| | | | | | 3-0 |) Colu | mn | | | |
| D | Е | F | : / | G | a | lħ | laí | 1 | | 1 |
| Interval | Bins | FREQU | JENCY | | 41 | | 씨 | ŀ | Æ | ŀ |
| 1-5 | 5 | | 11 | | | | | | | |
| 6-10 | 10 | | 8 | | H | h | | | | |
| 11-15 | 15 | | 6 | | | 'Uur | | | | |
| 16-20 | 22 | | 5 | | հո | More | e Colun | nn (| Charts | |
| 21-25 | 25 | | 2 | | Lunu | _ | | | | |
| 26-30 | 30 | | 4 | | | | | | | |
| 31-35 | 35 | | 2 | | | | | | | |
| Over 35 | | | 1 | | | | | | | |

The bar graph will be immediately inserted in your sheet:

| 1 Order no. Delivery (days) Interval Bins 2 1002369 4 1-5 5 3 1002382 20 6-10 10 4 1002378 13 11-15 15 5 1002372 6 16-20 22 6 1002346 25 21-25 25 | FREQUENCY 11 8 6 5 2 4 | |
|---|--|-----|
| 2 1002369 4 1-5 5 3 1002382 20 6-10 10 4 1002378 13 11-15 15 5 1002372 6 16-20 22 6 1002346 25 21-25 25 | 11 8 6 5 2 | |
| 3 1002382 20 6-10 10 4 1002378 13 11-15 15 5 1002372 6 16-20 22 6 1002346 25 21-25 25 | 8 6 5 2 | |
| 4 1002378 13 11-15 15 5 1002372 6 16-20 22 6 1002346 25 21-25 25 | 6 5 2 | |
| 5 1002372 6 16-20 22 6 1002346 25 21-25 25 | 5 2 4 | |
| 6 1002346 25 21-25 25 | 2 | |
| | 4 | |
| 7 1002345 5 26-30 30 | | |
| 8 1002347 27 31-35 35 | 2 | |
| 9 1002362 9 Over 35 | 1 | |
| 10 1002358 5 | | |
| 11 1002360 17 ERECUEN | ICV | |
| 12 1002376 14 | ICT. | |
| 13 1002371 2 12 | | |
| 14 1002380 13 10 | | |
| 15 1002354 5 | | |
| 16 1002375 7 8 | | |
| 17 1002368 17 | | Į |
| 18 1002373 28 6 | | |
| 19 1002381 23 4 | | |
| 20 1002370 7 | | |
| 21 1002366 26 2 | | |
| 22 1002361 40 | | |
| 23 1002352 3 0 1 2 3 4 | 5 6 | 7 8 |
| 24 1002355 12 | | , , |
| 25 1002356 7 | | |

Generally speaking, you already have a histogram for your input data, though it definitely requires a few improvements. Most importantly, to make your Excel histogram easy to understand, you need to replace the default labels of the horizontal axis represented by serial numbers with your bin numbers or ranges.

The easiest way is to type the **ranges** in a column left to the column with the Frequency formula, select both columns - *Ranges* and *Frequencies* - and then create a bar chart. The ranges will be automatically used for the X axis labels, as shown in the below screenshot:



Tip. If Excel converts your intervals to dates (e.g. *1-5* can be automatically converted to *05-Jan*), then type the intervals with a preceding apostrophe (') like '1-5. If you want the labels of your Excel histogram to display **bin numbers**, type them with preceding apostrophes too, e.g. '5, '10, etc. The apostrophe just converts numbers to text and is invisible in cells and on the histogram chart.

If there is no way you can type the desired histogram labels on your sheet, then you can enter them directly on the chart, independently of the worksheet data. The <u>final part</u> of this tutorial explains how to do this, and shows a couple of other improvements that can be made to your Excel histogram.

How to make a histogram with a PivotChart

As you may have noticed in the two previous examples, the most time-consuming part of creating a histogram in Excel is calculating the number of items within each bin. Once the source data has been grouped, an Excel histogram chart is fairly easy to draw.

As you probably know, one of the fastest ways to automatically summarize data in Excel is a PivotTable. So, let's get to it and plot a histogram for the *Delivery* data (column B):

| | А | В |
|---|--|-----------------|
| 1 | Order no. | Delivery (days) |
| 2 | 1002369 | 4 |
| 3 | 1002382 | 20 |
| 4 | 1002378 | 13 |
| 5 | 1002372 | 6 |
| 6 | 1002346 | 25 |
| 7 | 1002345 | 5 |
| 8 | 1002347 | 27 |
| ~ | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | www |

1. Create a pivot table

To create a pivot table, go to the *Insert* tab > *Tables* group, and click **PivotTable**. And then, move the *Delivery* field to the ROWS area, and the other field (*Order no.* in this example) to the VALUES area, as shown in the below screenshot.

If you have not dealt with Excel pivot tables yet, you may find this tutorial helpful: <u>Excel PivotTable tutorial for</u> <u>beginners</u>.

| Row Labels 💌 Sum of Order no | A | DivetTelele Cielele 🗸 🗙 |
|------------------------------|----------|----------------------------------|
| 1 100236 | 5 | Pivot l'able Fields |
| 2 200473 | 3 | Choose fields to add to report: |
| 3 100235 | 2 | |
| 4 300710 | 3 | ✓ Order no. |
| 5 400942 | וו | ✓ Delivery (days) |
| 6 200472 | 2 | MORE TABLES |
| 7 300710 | L | |
| 8 100237 | 7 | |
| 9 200471 | 5 | Drag fields between areas below: |
| 12 100235 | 5 | |
| 13 200475 | 3 | |
| 14 200474 | וו | |
| 15 100237 | 1 | |
| 17 200472 | 3 | ■ ROWS ≥ VALUES |
| 18 100234 | 3 | Delivery (days) 🔻 Sum of Amou 🔻 |
| 19 100235 | 7 | |
| 20 | 2() | mound |

2. Summarize values by Count

By default, numeric fields in a PivotTable are summed, and so is our *Order numbers* column, which makes absolutely no sense :) Anyway, because for a histogram we need a count rather than sum, right-click any order number cell, and select *Summarize Values By* > **Count**.

| Row Labels 💌 | Sum of Order no. | | | | |
|--------------|------------------|-------------------------------|----------|---|-----------------|
| 1 | 1002365 | | | | |
| 2 | 200 200 | - | | | |
| 3 | 100 🗎 | Copy | | | |
| 4 | 300 📰 | Format Cells | | | |
| 5 | 400 | Number Forma <u>t</u> | | | |
| 6 | 200 🕞 | Refresh | | | |
| 7 | 300 | | | | |
| 8 | 100 | Sort | <u> </u> | | |
| 9 | 200 🗙 | Remove "Sum of Order no." | | | |
| 12 | 100 | Su <u>m</u> marize Values By | N | ~ | Sum |
| 13 | 200 | Show Values As | 7 | | Count |
| 14 | 200 | | - | | <u>c</u> ount |
| 15 | 100 🗂 | Show D <u>e</u> tails | | | <u>A</u> verage |
| 17 | 200 🛅 | Value Field Setti <u>n</u> gs | | | Max |
| 18 | 100 | PivotTable <u>O</u> ptions | | | Min |
| 19 | 100 | Show Fiel <u>d</u> List | | | Product |

Now, your updated PivotTable should look like this:

| Row Labels 💌 Count of Order no. |
|---------------------------------|
| 1 1 |
| 2 2 |
| 3 1 |
| 4 3 |
| 5 4 |
| 6 2 |
| 7 3 |
| 8 1 |
| 9 2 |
| annon an marine |

3. Create the intervals (bins)

The next step is to create the intervals, or bins. For this, we will be using the *Grouping* option. Right-click any cell under *Row Labels* in your pivot table, and select **Group**...

In the *Grouping* dialog box, specify the starting and ending values (usually Excel enters the minimum and maximum value automatically based on your data), and type the desired increment (interval length) in the *By* box.

In this example, the minimum delivery time is 1 day, maximum - 40 days, and the increment is set to 5 days:

| Row La | bels | Count of Order no. | |
|---------|----------|--|---|
| 1 | | 1 | |
| | Ē | <u>С</u> ору | |
| | e- 0- | <u>F</u> ormat Cells | |
| 1 | B | <u>R</u> efresh | |
| | | Sort | ⊧ |
| 5 | | – Filter | ► |
| | | Subtotal "Delivery (days)" | |
| 5 1 | ľ. | Su <u>b</u> total Delivery (days) | |
| , 12 | | Expand/Collapse | • |
| 13 | ē= | <u>G</u> roup | |
| 14 | 28 | <u>U</u> ngroup | |

Click OK, and your pivot table will display the intervals as specified:

| Row Labels | Count of Order no. |
|-------------|--|
| 1-5 | 11 |
| 6-10 | 8 |
| 11-15 | 6 |
| 16-20 | 5 |
| 21-25 | 2 |
| 26-30 | 4 |
| 31-35 | 2 |
| 36-40 | 1 |
| Grand Total | 39 |

4. Plot a histogram

One final step is left - draw a histogram. To do this, simply create a column pivot chart by clicking the **PivotChart** on the *Analyze* tab in *PivotTable Tools* group:



And the default column PivotChart will appear in your sheet straight away:



And now, polish up your histogram with a couple of finishing touches:

• Delete the legend by clicking the Chart Elements button 4 and removing the tick from the Legend Or,

select the legend on the histogram and press the Delete key on your keyboard.

- Replace the default *Total* title with something more meaningful.
- Optionally, choose another chart style in the Chart Styles group on the PivotChart Tools > Design tab.
- Remove the chart buttons by clicking Field Buttons on the PivotChart Tools > Analyze tab, in the Show/Hide group:



Additionally, you may want to achieve a conventional histogram look where **bars touch each other**. And you will find the detailed guidance on how to do this in the next and final part of this tutorial.

Customize and improve your Excel histogram

Whether you create a histogram using the Analysis ToolPak, Excel functions or a PivotChart, you might often want to customize the default chart to your liking. We have a special <u>tutorial about Excel charts</u> that explains how to modify the chart title, legend, axes titles, change the chart colors, layout and style. And here, we will discuss a couple of major customizations specific to an Excel histogram.

Change the axis labels on an Excel histogram chart

When creating a histogram in Excel with the Analysis ToolPak, Excel adds the horizontal axis labels based on the bin numbers that you specify. But what if, on your Excel histogram graph, you want to display ranges instead of bin numbers? For this, you'd need to change the horizontal axis labels by performing these steps:

1. Right-click the category labels in the X axis, and click Select Data...



2. On the right-hand side pane, under *Horizontal (Category) Axis Labels*, click the **Edit** button.

| Select Data Source | 8 × |
|---|-----------------------------------|
| Chart <u>d</u> ata range: = 'Functions (3)'!SDS34:SFS41 | |
| S <u>w</u> itch F | Row/Column |
| Legend Entries (Series) | Horizontal (Category) Axis Labels |
| Add <u>Edit</u> <u>Remove</u> | Edit |
| Frequency | 5 |
| Cumulative % | ☑ 10 |
| | ☑ 15 |
| | 22 |
| | ✓ 25 |
| Hidden and Empty Cells | OK Cancel |

- 3. In the *Axis label range* box, enter the labels you want to display, separated by commas. If you are entering the **intervals**, enclose them in double quotes like in the following screenshot:
- 4. Click OK. Done!

| Axis Labels | ? X |
|-------------------|-----------------|
| Axis label range: | = 1-5, 6-10, 11 |
| ОК | Cancel |



Remove spacing between bars

When making a histogram in Excel, people often expect adjacent columns to touch each other, without any gaps. This is an easy thing to fix. To eliminate empty space between the bars, just follow these steps:

1. Select the bars, right-click, and choose Format Data Series...



2. On the Format Data Series pane, set the Gap Width to zero:





And then, you can embellish your Excel histogram further by modifying the <u>chart title</u>, <u>axes titles</u>, and changing the <u>chart style</u> or <u>colors</u>. For example, your final histogram may look something like this:



This is how you draw a histogram in Excel. For better understanding of the examples discussed in this tutorial, you can download the sample <u>Excel Histogram sheet</u> with source data and histogram charts. I thank you for reading and hope to see you on our blog next week.