Frequency Distributions and Histograms in Excel 2016

These instructions will explain how to generate a frequency distribution and histogram using the Data Analysis toolpak, so if you have not installed the Toolpak, you should go back and reference the "Installing the Analysis Toolpak" tutorial.

1. You should already have the Excel tutorial file open. Open a new sheet and copy the "Height" from the original data into this sheet.
2. Determine the number of bins and the bin size. Look at the min and max of the data using the formulas min(data) and =max(data) to determine the appropriate bin size to give between 5 and 15 bins. For this example we will use a bin size of 2 which results in 9 bins.
3. Create a column with the upper values of the bin ranges as the Analysis Toolpak only needs the upper bound for the bins as input.
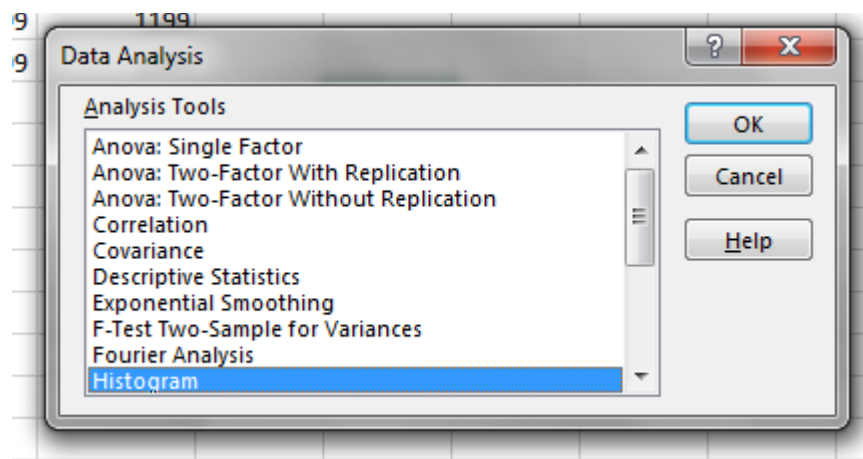
Min and Max

Data column

Step 3. Bin upper bounds

	A	B	C	D
1	Height			Bin Ranges
2	67.75	59		60
3	71	76		62
4	64			64
5	63			66
6	69			68
7	64			70
8	62			72
9	64			74
10	66			76
11	68			
12	64			
13	67			

4. Click the Data tab
5. Select the Data Analysis button (located in the top right-hand corner)
6. Select Histogram in the Data Analysis Menu and click OK

7. In the 'input range' box, enter the cell range of the Height column (i.e. a2:a77)
8. In the 'bin range' box, enter the cell range of the upper bin limits from Step 3 beginning with cell d2.

Note: Leave the labels box unchecked. If you had also selected the column titles for Height and upper limits, then you would need to check the labels box.

9. To generate the output on the same sheet as the data, select the 'Output Range' option and then enter in a range of empty cells where the output will be placed(for example, try using the range F4:L15).
10. Select the 'Chart Output' box. This tells Excel to generate a histogram. Click OK.

This is what the histogram interface should look like once you have completed steps 7-10:
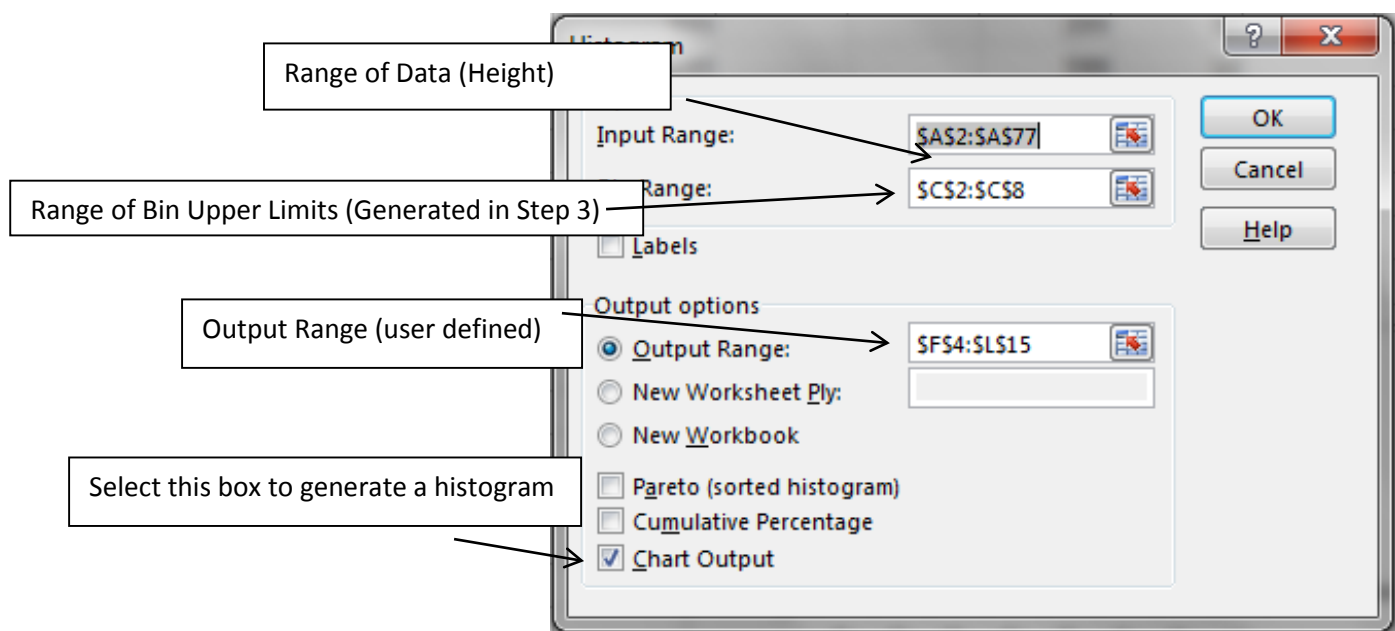
Excel generates a frequency distribution and a histogram. You still need to do some formatting for the histogram.

Graph Formatting Instructions

11. To remove the extra category of "More" click on the chart. This highlights the columns which the data was drawn from. Hover over the bottom right edge of this column and drag up one cell to remove "More" from the histogram.
12. Delete the series label 'Series1' by right clicking on the label and selecting 'Delete.'
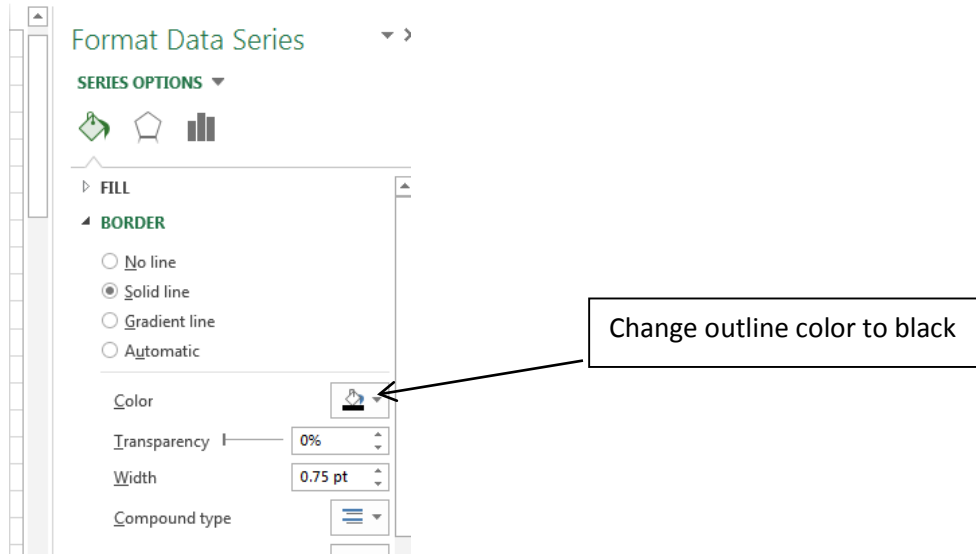
Bin	Frequency
60	2
62	16
64	15
66	18
68	11
70	7
72	4
74	1
76	2
More	0

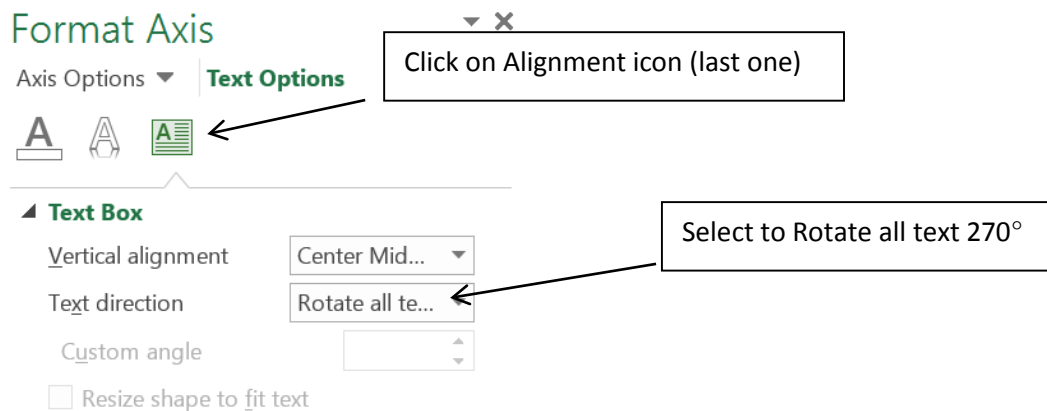Hovering over the corner will give the option to shrink the highlighted area

13. Double click on the bars of the histogram to bring up the 'Format Data Series' menu.
14. Under the dropdown menu select 'Series Options' and change the gap width to '0%.' Then click the 'X' to exit the menu.

Format Data Point

SERIES OPTIONS ▼

◢ SERIES OPTIONS

Plot Series On

⦿ Primary Axis
◯ Secondary Axis

Series Overlap   0%

Gap Width   0%

Drag Gap Width to 0%

15. Now, click on the paint bucket to bring up another options menu. You will see an option for 'Border.' Click on 'Border,' then 'Solid line,' and change the color to black.

Format Data Series
SERIES OPTIONS ▼

▷ FILL
◢ BORDER
  ○ No line
  ● Solid line
  ○ Gradient line
  ○ Automatic

  Color
  Transparency |———— 0%
  Width   0.75 pt
  Compound type

Change outline color to black

16. Right click on the label 'Bin' (beneath the x-axis) and choose edit text or just double click on the text. Rename the label Height.
17. Click the x-axis labels to bring up the axis formatting menu. Under "Axis Options," click on the Alignment icon.
18. Change the text direction box to the 'Rotate all text 270°', then close the formatting menu.

Format Axis
Axis Options ▼   Text Options

A   A   A≡

Click on Alignment icon (last one)

◢ Text Box
  Vertical alignment   Center Mid... ▼
  Text direction   Rotate all te...
  Custom angle
  ☐ Resize shape to fit text

Select to Rotate all text 270°

19. Right click on the chart title and select Edit Text
20. Rename the chart title Distribution of Heights

This is what your final output should look like after you have completed formatting steps 11-20:

Bin	Frequency
60	2
62	16
64	15
66	18
68	11
70	7
72	4
74	1
76	2
More	0

Frequency Distribution

Distribution of Heights

Formatted Histogram (follow steps 11-20 to obtain this format)