

**Math 263, Section 5: Excel Assignment 1**  
**Histograms, averages, and weighted averages.**

1. One of the determinants of medical care is the number of doctors available. In this problem you will construct and analyze the distribution of doctors worldwide using data gathered by the United Nations (UN) to construct the Human Development Index (HDI). This index is used to compare countries and to decide which need aid money the most. The data from 2006 is in the file HDI06.xls
  - (a) Construct a histogram showing the distribution of the number of physicians per 100,000 people. Use bins of width 50. (Note: Hand in a copy of your histogram. Instructions on how to make a histogram are at the end of the assignment.) Based on the data given and histogram, are the following statements true or false? Give reasons for your answers.
    - i. The second column from the left represents the 100 countries that have 17 doctors per 100,000 people.
    - ii. More than half the countries represented have fewer than 50 doctors per 100,000 people.
    - iii. Cuba has the largest number of doctors per capita.
  - (b) Write a brief paragraph (a couple of sentences) describing what each bar in the histogram shows, and what the whole histogram tells us. Do not use the word distribution in your answer, as you are being asked to explain what this word means.
  - (c) Find the average of the numbers in column T, giving the average number of physicians per 100,000 across the countries.
  - (d) Make an additional column in your spreadsheet showing the number of physicians in each country.
  - (e) Find the total number of physicians in the world.
  - (f) Find the average number of physicians per 100,000 in the world.
  - (g) Explain why your answers to parts (d) and (g) are not the same.

## **How to Make a Histogram in Excel 2003**

1. Make sure Data Analysis shows up under Tools on the main menu. If it does not,

Select Add-Ins under Tools  
Check Analysis Tool Pak, Analysis Tool Pak-VBA  
Click OK

You will only need to do this once. Data Analysis should show up every time after this.

2. Type in the bin limits you would like to use in a vertical column. It is usual to have about ten bins, including most of the data, and with “nice” limits.
3. Go to Tools/Data Analysis. A dialog box will open; select Histogram. Another dialog box will open.
4. In the Histogram dialog box,
  - In first Range is the data you want to put into bins.
  - Bin Range is the bin limit you typed in.
  - Don't check Labels unless you selected the labels in the two ranges above.
  - Output range is the top left corner of where you would like the data put.
  - If you want a chart, check the box. (you can also make one later.)
  - Click OK.
5. Excel's Histogram program will only make a frequency histogram. If you want a relative frequency histogram, you have to calculate the relative frequencies first and then make a graph.

## How to Make a Histogram in Excel 2007

1. Make sure Data Analysis shows up on the Data ribbon. If it does not,

Click the office icon to the left of the home ribbon

At the bottom of the menu, click Excel option

From the left list, choose Add-Ins. You see a long list of active Add-Ins and inactive Add-Ins.

From the very bottom of the window, select the Manage Drop down box and then choose Excel Add-Ins, Click Go. You are taken back to Excel 2003 Add-Ins dialog.

In the Add-Ins dialog, choose the Analysis Toolpack check box. Click OK

You will only need to do this once. Data Analysis should show up on the Data ribbon which is on the main menu.

2. Type in the bin limits you would like to use in a vertical column. It is usual to have about ten bins, including most of the data, and with “nice” limits.
3. Go to Data Analysis. A dialog box will open; select Histogram. Another dialog box will open.
4. In the Histogram dialog box,
  - In first Range is the data you want to put into bins.
  - Bin Range is the bin limit you typed in.
  - Don’t check Labels unless you selected the labels in the two ranges above.
  - Output range is the top left corner of where you would like the data put.
  - If you want a chart, check the box. (you can also make one later.)
  - Click OK.
5. Excel’s Histogram program will only make a frequency histogram. If you want a relative frequency histogram, you have to calculate the relative frequencies first and then make a graph.

### **Histograms on the Mac in Excel 2008**

Unlike in Office 2004 on the Mac, the Data Analysis Toolpak is not included with Office 2008. However, histograms can be made using the attached file, *HistogramMaker.xls*. This can also be used on a PC, and makes the constructing the histogram much easier. However, the histogram still needs to be labeled clearly.