How to Create Population Pyramids using Microsoft Excel

(These instructions are easy to follow, but long; you may want to print them out.)

Background: Population pyramids are an effective way to compare male and female populations over a range of ages. This special type of graph will tell you a great deal about the health of a city, state or nation. A pyramid that is very wide near the top indicates a large population of older people and may suggest a high infant mortality rate. A pyramid that is wide at the bottom might indicate a high birth rate and the potential for explosive population growth. Have a look at the example below.



There are four types of growth trends to consider;

Expansive — a broad base, indicating a high proportion of children, a rapid rate of population growth, and a low proportion of older people.

Stable growth — a structure with indentations that even out and reflect slow growth over a period.

Stationary — a narrow base and roughly equal numbers in each age group, tapering off at the older ages.

Declining — a high proportion of aged persons and declining numbers.

Which of these trends does the population pyramid for the United States (year 2000) seem to show?

If you said "stable growth" you were correct.

What You Will Do: Using the data for the state of Connecticut (year 2000) and the instructions I will provide, you will create a population pyramid for the state of Connecticut using Microsoft Excel. When you are done, you will answer some questions based on your graph.

The following is your set of data for the state of Connecticut.

Connecticut				
Age Distribution by Sex, 2000				
	Male	Female		
	Number	Number		
0-4	114,129	109,215		
5-9	125,003	119,141		
10-14	123,706	117,881		
15-19	111,291	105,336		
20-24	95,103	92,468		
25-29	99,980	101,487		
30-34	122,733	127,440		
35-39	142,480	148,386		
40-44	142,749	147,434		
45-49	123,872	128,882		
50-54	110,241	117,812		
55-59	85,621	91,340		
60-64	62,409	69,243		
65-69	54,050	63,506		
70-74	49,952	64,057		
75-79	41,214	59,882		
80-84	26,854	46,395		
85	17,932	46,341		
Total Population	1,649,319	1,756,246		

How You Will Do It: First, you must open Microsoft Excel and create a worksheet that looks similar to this. Follow these instructions exactly.

- 1. Click on cell A1 and type the word Connecticut
- 2. Click on cell A2 and type the words Age Distribution by Sex, 2000
- 3. Click on cell B3 and type the word Male; click on cell C3 and type the word Female.
- 4. Click on column A (at the top, so that the whole column is highlighted); rightclick and choose **Format cells**. On the **Number** tab, find the word **Text** and choose it. Click **OK**.

- 5. Now begin to enter the **age range** exactly as you see it on the sample. You do not have to add the line that says **Total Population**.
- 6. Click on cell B4 and type the word number. Click on C4 and type the word number.
- 7. Now begin to enter the population figures for **each sex** exactly as you see it on the sample. Do not add the data for the line that says **Total Population**.
- 8. When you are done with that, you are almost ready to begin, but first you must go back and put a **negative (-) sign** in front of each population figure in the **Male** column only! (It is not shown this way on the sample.)
- 9. Move the mouse to cell A3, hold the left mouse button and drag it to cell C23 to highlight all of the data. (Don't forget to let go when you are done.)
- 10. Click on the **Chart Wizard** on the toolbar. When it opens, choose **Bar Chart** and **cluster** from the choices.



11. Follow the prompt buttons to get through steps 2 to 4. When you reach the end, click **Finish**.

12. At this point, your graph should look like this:



- 13. Now double click on the **vertical axis** near the very top, see the black arrow for "pointers".
- 14. The **Format Axis** dialog box will pop up, make sure the **Pattern** tab is selected. Set *Major* and *Minor tick mark types* to "none". Set the *Tick mark labels* to "low". Then click **OK**.

Format Axis	? ×
Patterns Scale Font N	umber Alignment
Lines Automatic None Custom Style: Color: Automatic Weight: Sample	Major tick mark type None Outside Inside OCross Minor_tick mark type None Outside Inside OCross <u>Tick mark labels</u> None High Low Next to axis
	OK Cancel

15. Now double click on either (side) data series of the graph. The Format Data Series dialog box will pop up. Choose the Options tab. Set Overlap to 100 and set Gap Width to 0. Click OK when you are done.



16. Now double click on the horizontal axis near the right end. See the black arrow for "pointers".



17. The Format Data Series dialog box will pop up. Select the Number tab. In the Category pull down list, choose Custom, then click on 0 in the pull down list on the right side. Then add ;0 after it so that it reads 0;0.

ormat Axis		? ×
Patterns Scale	Font Number Alignment	
Category: General Number Currency Accounting Date Time Percentage Fraction Scientific Text Special Custom	Sample 200000 Type: 0;0 General 0 0.00 #,##0 #,##0 #,##0_);(#,##0) #,##0_);[Red](#,##0) Linked to source code, using one of the existing codes as a starting	1
	OK Can	cel

18. Now you will have to modify the chart so that the appropriate labels are shown, the title needs to be added and the axes need to be labeled correctly.

How You Will Be Graded: You must save your Microsoft Excel spreadsheet on your diskette using the filename **popstat**. That way I will be able to find it. Since your graph will be contained within the spreadsheet, I will find both.

- \checkmark The X and Y-axes should be labeled appropriately.
- \checkmark Your graph should have an appropriate title.
- \checkmark Your legend should be easy to understand.
- \checkmark The numbers (values) should be easy to read.
- \checkmark You can add or take off the grid lines.

✓ You must also answer the 10 questions in complete sentences.

Good luck,

Mr. Masters

Questions About the Population Pyramid

- 1. Which age grouping do you fall in to? Which sex grouping are you in?
- 2. Which age and sex group represents the largest portion of Connecticut's population?
- 3. Which sex group is the largest? Why do you think this is so?
- 4. What is the total number of citizens in Connecticut under the age of 18? What might this suggest?
- 5. What is the total number of citizens in Connecticut over the age of 65? What might this suggest?
- 6. Which age grouping represents the largest portion of the population in Connecticut?

0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90

- 7. How would you explain this finding?
- Based on this graph, how would you categorize the population of Connecticut? (Look back to the beginning of the instruction set to find the four categories.)
- 9. What would you predict the population pyramid of Connecticut would have looked like 100 years ago? Why do you think so?
- 10. What do you predict the population pyramid of Connecticut will look like 100 years from now? Why do you think so?