

Data Analysis: Fun with Numbers

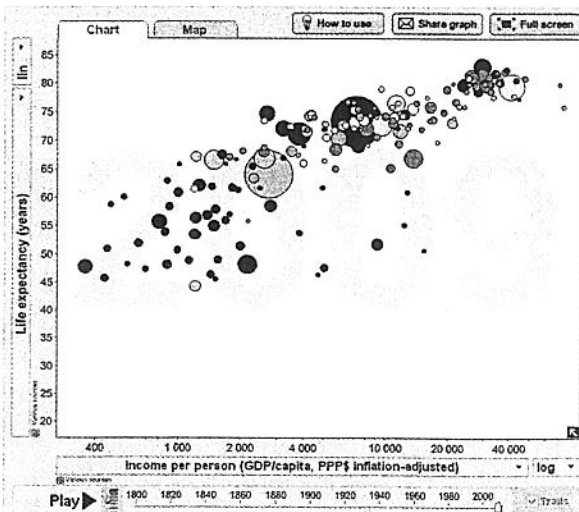
Graphs offer us an easy, intuitive way to understand data. In a glance we can see relationships, connections, and trends in a graph that most of us can't discern in a table of numbers. Among the many sources of data on human populations, one of the most entertaining is the Gapminder Foundation. Founded in Stockholm, Sweden, by Ola Rosling, Anna Rosling Ronnlund, and Hans Rosling, Gapminder has created a wonderful interactive graphing program to explore international statistics on health, economics, and other social indicators. To learn about their work, go to www.gapminder.org.

Try exploring the data yourself: Go to www.gapminder.org/world, which provides a graph like the one below.

Click on "Play" in the lower left corner to watch how the global life expectancy and income have changed over the past 200 years. Professor Rosling describes it as a race toward higher incomes and longer lives. Notice that it isn't a simple uniform process. Individual nations shoot ahead and then fall back. You can identify the nations by moving your cursor over the bubbles, or show names using the blue check boxes to the right of the graph. You can even turn on "trails" (lower right corner) to watch progress for selected countries. Notice when you roll over the bubbles, the life expectancy and income values show for that country and year. You can also jump to particular years using the slider bar.

While you're exploring this chart, answer the following questions:

1. In 2009, which country had the highest per capita GNP?
2. What was the highest life expectancy in 2009?



Source: www.gapminder.org/world

3. What's the overall relationship between these two factors?
4. How many countries have a lower per capita income than the United States but a higher life expectancy? Note that the downward-point arrow in the lower left corner of the chart allows you to enlarge a specific area. 21(?)
5. How does sub-Saharan Africa rank in these indicators? Note the map in the upper right corner that color-codes geographical regions. Switching to the map view also helps you identify locations.
6. What's the lowest life expectancy for any nation in this 200-year span? (*Hint*: scroll slowly through the years and watch individual countries bounce up and down.)
7. What was happening in Russia in 1933? (*Hint*: try Googling "Russia 1933.")
8. What happened to life expectancy and income in China between 1850 and 1870?
9. What explains these Chinese data?
10. What was life expectancy in the United States in 1812? How does that compare to the situation in other nations in 2009?

Now that you're becoming familiar with the graph, click on the bottom axis and change it to "Children per woman (total fertility)." Click "Play." What trends do you see? Are there particular dates of sudden change? Try a comparison between child mortality versus women's education, or child mortality versus total fertility, for example.

To see several remarkable events in the data, click on the "Open graph menu" button at the top left (outside the chart area). Try the "Bangladesh Miracle," for example. Set the bottom axis to GDP/capita. You'll see with stunning clarity how total fertility has fallen by two-thirds, even though per capita income has barely budged over the past 40 years.

While you have the Gapminder World open, look at some of the excellent videos Hans Rosling has made. "200 Countries, 200 Years, 4 Minutes" is wonderfully entertaining. "Asia's Rise, How and When" is also enlightening. Most of all, watch "Population Growth Explained with IKEA Boxes." It's an excellent summary of everything in this chapter.

For Additional Help in Studying This Chapter, please visit our website at www.mhhe.com/cunningham12e. You will find additional practice quizzes and case studies, flashcards, regional examples, placemarkers for Google Earth™ mapping, and an extensive reading list, all of which will help you learn environmental science.