3E. Simpson's Paradox.

page 183. Discuss which of the acne treatments is better. Does it depend on the type of acne you have?

What is the "paradox" here? (Paradox means something that is true, but it seems that it couldn't be true.)

What is the "imbalance" that is causing this paradox?

Section 3D. Index Numbers

In the spreadsheet workbook for this section (Detailed Course Calendar), find two sheets with numbers.

Gasoline: For each decade the price of a gallon of gasoline in the US.

CPI: For each year between 1975 and 2011, the Consumer Price Index.

Activity 1. Talk in a group about how to do these. Each of you should do them in a spreadsheet. For the **gasoline prices**, in the spreadsheet, do the following:

1. Find what percent the 1955 price is of the 1975 price. (Use the spreadsheet to compute this.)
2. For each of the years, find what percent that year's price is of the 1975 price. (Definitely use the spreadsheet!)
3. These percent can be thought of as the price index for gasoline, with 1975 as the reference year. Read page 172, Table 3.2 and add a column for Price index to your table and fill it in.
4. Copy the sheet to another sheet and redo this with 1985 as the reference year. Compare this to page 175, Table 3.4.
5. Consider that the 2012 gasoline price was $3.53. Explain how to find the gasoline price index for 2012 with 1975 as the reference year. Then find it.

Activity 2. Talk in a group about how to do these. The CPI is an official US measure from the Bureau of Labor Statistics. It is used to measure inflation. (We studied the gasoline price index first because it is somewhat easier to understand because there is only one product and a specific year as the reference year. The CPI is computed in the same way, but from an assortment of products and a longer reference frame than just one year.) Use the CPI spreadsheet to answer these questions:

6. The CPI for 1975 was 53.9. By approximately when (what year) did prices double? By when did they triple?
7. By what factor did the prices increase from 2000 to 2008?
8. After reading about how to compute the rate of inflation on page 176, find the rate of inflation from 1975 to 1976. Put that in the spreadsheet in the 1976 row and label that column "inflation rate."
9. Then find the rate of inflation for each year in the table. (Quickly – use a formula and copy it down as we learned to do.)
10. When was the rate of inflation the highest? The lowest?
11. By what factor did the prices increase from 1975 to 1976?
12. Suppose a family had a $10,000 income in 1975. Find the equivalent income in 1976. Put that in the 1976 row and label that column "income adjusted."
13. Find the equivalent income in 1977 to a $10,000 income in 1975. Put that in the 1977 row.
14. Find the equivalent income in 1978 to a $10,000 income in 1978. Put that in the 1978 row.
15. Suppose a family had a $10,000 income in 1975. Find the equivalent income for each of the years in the table.

Activity 3: Talk with your group about this. When you take Test 2, you will have to do individual calculations like this with only a calculator, not a spreadsheet. Do you understand clearly how to do these calculations with a calculator as well as on a spreadsheet?

Homework and Quiz 8: Due Wednesday, March 20 at the beginning of class.

3D: 1-4, 5, 7, 9, 11, 13, 17, 19, 23, 27, 31, 35, 39, 41, 43

3E: 1-3, 5, 7, 9, 17, 19, 23

Quiz 8: 3D: 6, 8, 10, 34, 44. 3E: 15, 22