

1. Toward the end of 2003, there were many warnings that the flu season would be especially severe, and many more people chose to obtain a flu vaccine than in recent years. In January 2004 the Centers for Disease Control and Prevention published the results of a study that looked at workers at Children's Hospital in Denver, Colorado. Of the 1000 people who had chosen to receive the flu vaccine (before Nov. 1, 2003), 149 still developed flu-like symptoms. Of the 402 people who did not get the vaccine, 68 developed flu-like symptoms.
  - (a) Create a two-way table to summarize the results of this study, then make a segmented bar graph to graphically display the results.
  - (b) What are the individuals and variables in this study? Which variable is explanatory and which is response?
  - (c) What is the relative risk of getting flu-like symptoms for people with the vaccine versus for people who did not get the vaccine? Explain in words what the relative risk tells us.
  - (d) Can we conclude that there is a cause-and-effect relationship between the flu vaccine and lower risk of flu-like symptoms? Why or why not?

2. The University of Chicago's General Social Survey (GSS) is the nation's most important social science sample survey. The GSS asked a random sample of adults their opinion about whether astrology is very scientific, sort of scientific, or not at all scientific. Here is a two-way table of counts for people in the sample who had three levels of higher education degrees:

	Highest Degree Held		
	Junior college	Bachelor	Graduate
Not at all scientific	87	198	111
Very or sort of scientific	43	57	28

- (a) What percent of people with graduate degrees believe that astrology is scientific?
- (b) What percent of people who believe that astrology is scientific have graduate degrees?
- (c) Find the row proportions for this two way table, and then make a segmented bar graph showing the two row distributions.
- (d) Is there an association between education level and beliefs about astrology? If so, explain clearly how education level appears to effect astrology beliefs.