

STAT 200 Exercise 3

1. The following is some data on 1000 adult Americans by Angus Reid EXPRESS (A market research company). The survey was collected via a phone interview on April 29-30, 2000. The respondents were asked about whether they had downloaded music off of the Internet in the past two months. The respondents were also asked if they thought downloading copyrighted material was the same as stealing. The data are given below and the cells contain frequencies.

	<i>Downloading copyrighted music without paying for it is the same as stealing</i>		
	Agree	Disagree	Row Total
Downloader	27	71	98
Non-Downloader	568	334	902
Column Total	595	405	1000

- a. Let Event A = Downloader and Event B = Disagree

Calculate and describe (in words) the following:

$$P(A) =$$

$$P(B^c) =$$

$$P(A \cap B) =$$

$$P(B|A) =$$

$$P(B|A^c) =$$

Odds that Downloaders Disagree

Odds that Non-Downloaders Disagree

Odds Ratio of Downloaders to Non-Downloaders for disagreeing versus agreeing

2. Answer Exercise 3.18 on page 111 in Chapter 3 (Marilyn vos Savant question). Hint: draw it out using a tree diagram and work through the probabilities for picking each pair, then sum the probabilities of being right and being wrong.

Consider the following question posed to Marilyn vos Savant:

I have two pairs of socks, and they look nearly identical - one navy blue and the other black. My wife matches the socks incorrectly much more than she does correctly. If all four socks are in front of her, it seems to me that her chances are 50% for a wrong match and 50% for a correct match. What do you think?

- 3. A fast food restaurant has determined that the chance a customer will order a soft drink is .90. The chance that a customer will order a hamburger is .6, and the chance for ordering french fries is .5.**
- If a customer places an order, what is the probability that the order will include a soft drink and no fries *if these two events are independent?*
 - The restaurant has also determined that if a customer orders a hamburger the chance the customer will also order fries is .8. Determine the probability that the order will include a hamburger and fries.

4. Consider another problem posed by Marilyn vos Savant in her weekly column, "Ask Marilyn." A woman and a man (unrelated) each have two children. At least one of the woman's children is a boy, and the man's older child is a boy. Do the chances that the woman has two boys equal the chances that the man has two boys?

a. Answer first based on your intuition

b. Use a tree diagram or the rules of probability to solve the problem.