

~~HOMEWORK~~ - HOMEWORK - Conditional Probability

Homebuyers Profile

	2001	2003	2004	2005	2006	2007	2008	2009	2010
MC	68	59	62	61	61	62	61	60	58
SF	15	21	18	21	22	20	20	21	20
SM	7	11	8	9	9	9	10	10	12
UC	7	8	9	7	7	7	7	8	8
Other	3	1	2	2	1	2	2	1	1

National Association of Realtors | Profile of Home Buyers and Sellers 2010

552 MC - married couple  
 178 SF - single female  
 85 SM - single male  
 68 UC - unmarried couple

$89/449 = 89/898$

15 = 15

1. What was the probability that a homebuyer from the given data was a single female?  
 $178/898 = 89/449$  or  $19\%$

2. What was the probability that a homebuyer was an unmarried couple during 2005?  
 $7/898$

3. What was the probability that a buyer purchased their home in 2007, given that the buyer was a single male?  
 $9/85$

4. What was the probability that a homebuyer fall into the other category, given that the home purchase occurred in 2008?  
 $2/160 = 1/56$

$$\frac{P(A \cap B)}{P(A)}$$

Example 1: A jar contains black and white marbles. Two marbles are chosen without replacement. The probability of selecting a black marble and then a white marble is 0.34, and the probability of selecting a black marble on the first draw is 0.47. What is the probability of selecting a white marble on the second draw, given that the first marble drawn was black?

$$\frac{.34}{.47} = 72\%$$

Example 2: The probability that it is Friday and that a student is absent is 0.03. Since there are 5 school days in a week, the probability that it is Friday is 0.2. What is the probability that a student is absent given that today is Friday?

$$\frac{.03}{.2} = 15\%$$

Example 3: In New York State, 48% of all teenagers own a skateboard and 39% of all teenagers own a skateboard and roller blades. What is the probability that a teenager owns roller blades given that the teenager owns a skateboard?

$$\frac{.39}{.48} = 81\%$$

Example 4: At a middle school, 18% of all students play football and basketball and 32% of all students play football. What is the probability that a student plays basketball given that the student plays football?

$$\frac{.18}{.32} = 56\%$$

Example 5: In New England, 84% of the houses have a garage and 65% of the houses have a garage and a back yard. What is the probability that a house has a backyard given that it has a garage?

$$\frac{.65}{.84} = 77\%$$