Section 6.3: cont'd

Monday, December 01, 2014
8:39 AM

note: signup sheet for Makeup Test Day is available
- deadline for X01 8:30 section is Wednesday at noon

we will not cover section 6.5

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recall:

$$P(A \mid B) = \frac{P(AB)}{P(B)} = \frac{n(AB)}{n(B)}$$

($P(AB)$: probability of both)

$P(A \mid B)$: probability of A if B

4) $$P(T \mid F) = \frac{P(TF)}{P(F)} = \frac{n(TF)}{n(F)}$$

$$= \frac{5}{30} = \frac{1}{6}$$

5) $$P(F \mid T) = \frac{n(FT)}{n(T)} = \frac{5}{50} = \frac{1}{10} \text{ or } 10\%$$

independent variables vs. dependent variables:

Consider two events A & B:

if A is just as likely when you look at the entire population as when you look at only subpopulation B, then we say that the events are independent

"A does not depend on B"

examples: A = getting cavities
B = brushing teeth regularly

Do you think that A depends on B?

The probability of A (getting cavities) decreases when B (brush teeth regularly)

so A does depend on B

"A and B are dependent"

what probabilities do you compare to determine independence?

C = getting cavities
B = brushing regularly

then compare

$$P(C) \stackrel{?}{=} P(C \mid B)$$

or $P(B) \stackrel{?}{=} P(B \mid C)$

if they are equal, C & B are independent

Are T and F independent?

Compare $P(F)$ with $P(F \mid T)$

or $P(T)$ with $P(T \mid F)$

if equal, then independent

$P(F) = \frac{n(F)}{n} = \frac{30}{100} = 30\%$

$P(F \mid T) = 10\%$

} different

$\therefore$ events are dependent