

Statistics

Lecture 25

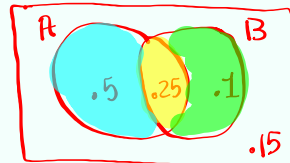


Feb 19-8:47 AM

Class Quiz 7

Given $P(A) = .75$, $P(B) = .35$, $P(A \text{ and } B) = .25$

1) Construct Venn Diagram.

2) $P(A \text{ or } B) = .75 + .35 - .25 = .85$

$$P(B|A) = \frac{P(A \text{ and } B)}{P(A)} = \frac{.25}{.75} = \frac{1}{3} \approx .333$$

$$P(A|B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{.25}{.35} = \frac{5}{7} \approx .714$$

Oct 9-9:46 AM

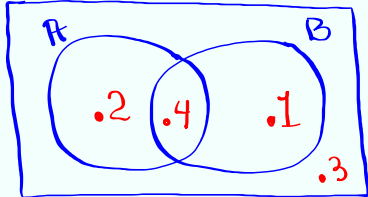
$P(A) = .6$
 $P(B) = .5$
 $P(A|B) = .8$

1) Find $P(A \text{ and } B)$

$P(A \text{ and } B) = ?$
 $P(A|B) = \frac{P(A \text{ and } B)}{P(B)}$

$.8 = \frac{P(A \text{ and } B)}{.5}$

Cross-Multiply
 $P(A \text{ and } B) = (.8)(.5) = .4$



$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$
 $= .6 + .5 - .4 = .7$

$P(B|A) = \frac{P(A \text{ and } B)}{P(A)} = \frac{.4}{.6} = \frac{2}{3} \approx .667$

Oct 10-8:54 AM

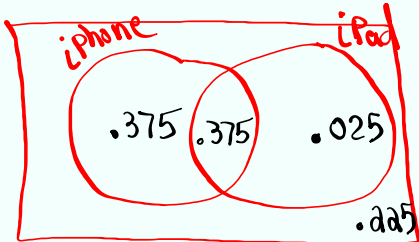
$P(\text{iPhone}) = .75$
 $P(\text{iPad}) = .4$
 $P(\text{iPad} | \text{iPhone}) = .5$

$P(\text{iPhone and iPad})$

$P(\text{iPad} | \text{iPhone}) = \frac{P(\text{iPhone and iPad})}{P(\text{iPhone})}$

$.5 = \frac{P(\text{iPhone and iPad})}{.75}$

Cross-Multiply
 $P(\text{iPhone and iPad}) = .375$



$P(\text{iPhone} | \text{iPad}) = \frac{.375}{.4} = .9375 \approx .938$

Oct 10-9:02 AM

$P(\text{shirt}) = .6$ $P(\text{Shirt and Pants})$
 $P(\text{Pants}) = .4$ $P(\text{shirt} | \text{Pants}) = \frac{P(\text{Shirt and Pants})}{P(\text{Pants})}$
 $P(\text{shirt} | \text{Pants}) = .8$ $.8 = \frac{P(\text{shirt and Pants})}{.4}$

Cross-Multiply

$P(\text{Shirt and Pants}) = .32$

Makes the total Prob. 1

$P(\text{Pants} | \text{shirt}) = \frac{P(\text{Shirt and Pants})}{P(\text{shirt})} = \frac{.32}{.6}$
 $\approx \boxed{.533}$

Oct 10-9:10 AM

7 Females, 13 Males
 Select 5 people, order does not matter

$P(5 \text{ Females}) = \frac{7^C_5 \cdot 13^C_0}{20^C_5} = \frac{21}{15504}$
 $= \boxed{\frac{7}{5168}}$

$P(5 \text{ Males}) = \frac{7^C_0 \cdot 13^C_5}{20^C_5} = \frac{1287}{15504} = \boxed{\frac{429}{5168}}$

$P(\text{at least 1 female}) = 1 - P(\text{No Females})$
 $= 1 - P(\text{All males})$
 $= 1 - \frac{429}{5168} = \boxed{\frac{4739}{5168}}$

FFFFF
 some F
 some M
 MMMMM

Oct 10-9:18 AM

$$P(\text{at least 1 Male}) = 1 - P(\text{All Females})$$



$$= 1 - \frac{7}{5168} = \frac{5161}{5168}$$

$$P(2F \text{ \& } 3M) = \frac{7^C_2 \cdot 13^C_3}{20^C_5} = \frac{6006}{15504} = \frac{1001}{2584}$$

$$P(3F \text{ \& } 2M) = \frac{7^C_3 \cdot 13^C_2}{20^C_5} = \frac{2730}{15504} = \frac{455}{2584}$$

Oct 10-9:26 AM

Class Quiz 8

$$P(A) = .8 \quad P(B) = .6 \quad P(A \text{ and } B) = .5$$

$$1) P(A|B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{.5}{.6} = \frac{5}{6} \approx .833$$

$$2) P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) \\ = .8 + .6 - .5 = .9$$

Oct 10-9:34 AM