Statistics

Lecture 24

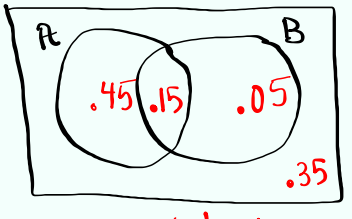
Feb 19-8:47 AM

Suppose $P(A)=.6$, $P(B)=.2$, $P(A \text{ and } B)=.15$

1) $P(\bar{A}) = 1 - P(A) = \boxed{.4}$

2) $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) = \boxed{.65}$

3) Construct Venn Diagram



Total = 1

4) $P(B \mid A) = \frac{P(A \text{ and } B)}{P(A)} = \frac{.15}{.6} = \boxed{.25}$ (AND; $P(A)$)

Conditional Prob

5) $P(A \mid B) = \frac{P(A \text{ and } B)}{P(B)} = \frac{.15}{.2} = \boxed{.75}$ (And; $P(B)$)

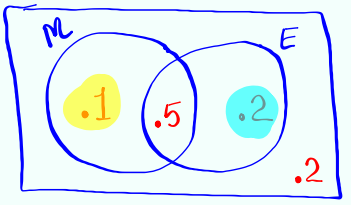
Oct 9-8:48 AM

P(Math) = .6

P(English) = .7

P(Math and English) = .5

1) Construct Venn Diagram



2) P(Math or English)

= .6 + .7 − .5 = .8

3) P(English | Math) = P(M and E) / P(Math) = .5/.6 = 5/6 ≈ .833

4) P(Math | English) = P(M and E) / P(E) = .5/.7 = 5/7 ≈ .714

5) P(Math only OR English only, not both) = .1 + .2 = .3

Oct 9-8:58 AM

Find

1) $_6C_0 = 1$

2) $_6C_6 = 1$

3) $_{10}C_4 = 210$

4) $_{10}C_6 = 210$

There are 10 coins, 2 quarters, 8 dimes. Select 2 coins, No replacement, order does not matter,

Sample Space

DD → 20¢ $P(20¢) = \frac{{}_2C_0 \cdot {}_8C_2}{{}_{10}C_2} = \frac{28}{45}$

DQ, QD → 35¢ $P(35¢) = \frac{{}_2C_1 \cdot {}_8C_1}{{}_{10}C_2} = \frac{16}{45}$

QQ → 50¢ $P(50¢) = \frac{{}_2C_2 \cdot {}_8C_0}{{}_{10}C_2} = \frac{1}{45}$

Total ¢	P(Total ¢)
20¢	28/45
35¢	16/45
50¢	1/45

Total ¢ → L1

P(Total ¢) → L2

Use 1-Var Stats with L1 & L2

$\bar{x} = 26$

S_x = Blank

$n = 1$

Oct 9-9:08 AM

5 Females & 10 Males

Select 4 people

Sample Spare

$P(\text{All Females}) = \frac{{}_5C_4 \cdot {}_{10}C_0}{{}_{15}C_4} = \frac{5}{1365} = \boxed{\frac{1}{273}}$

$P(\text{All Males}) = \frac{{}_5C_0 \cdot {}_{10}C_4}{{}_{15}C_4} = \frac{210}{1365} = \boxed{\frac{2}{13}}$

$P(\text{at least 1 Female}) = 1 - P(\text{No Females})$

$= 1 - P(\text{All Males}) = 1 - \frac{2}{13} = \boxed{\frac{11}{13}}$

$P(\text{at least 1 Male}) = 1 - P(\text{No males})$

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

$= 1 - \frac{1}{273} = \boxed{\frac{272}{273}}$

Oct 9-9:24 AM

$P(\text{3 Females \& 1 Male}) = \frac{{}_5C_3 \cdot {}_{10}C_1}{{}_{15}C_4} = \frac{100}{1365} = \boxed{\frac{20}{273}}$

$P(\text{2 Females \& 2 Males}) = \frac{{}_5C_2 \cdot {}_{10}C_2}{{}_{15}C_4} = \frac{450}{1365} = \boxed{\frac{30}{91}}$

$P(\text{1 Female \& 3 Males}) = \frac{{}_5C_1 \cdot {}_{10}C_3}{{}_{15}C_4} = \frac{600}{1365} = \boxed{\frac{40}{91}}$

# F	P(# F)
4	1/273
3	20/273
2	30/91
1	40/91
0	2/13

F → L1

P(# F) → L2

Use 1-Var Stats with

L1 & L2

$\bar{x} = 1.\overline{3}$

S_x = Blank

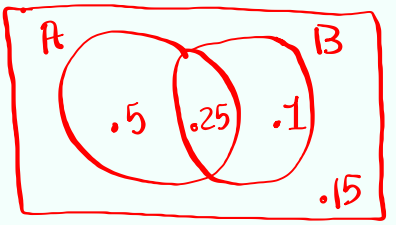
$n = 1$

Oct 9-9:36 AM

Class Quiz 7

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

1) Construct Venn Diagram.



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

Oct 9-9:46 AM