M 362K Pre-Class Work for 2/3

Xiaohui Chen
EID: xc2388

January 31, 2015

2-56

(a)

$Pr(1st - ace) = \frac{4}{52} = \frac{1}{13}$

(b)

$Pr(2nd - ace|1st - ace) = \frac{3}{51} = \frac{1}{17}$

(c)

Using Bayes' Theorem, we get:

$Pr(1st{-}ace|not\ 2nd{-}ace) = \frac{Pr(not\ \ 2nd{-}ace|1st{-}ace) * Pr(1st{-}ace)}{Pr(not\ \ 2nd{-}ace|1st{-}ace) * Pr(1st{-}ace) + Pr(not\ \ 2nd{-}ace|not\ \ 1st{-}ace) * Pr(not\ \ 1st{-}ace)} =$

$\frac{(1-\frac{1}{17}) * \frac{1}{13}}{(1-\frac{1}{17}) * \frac{1}{13} + \frac{47}{51} * \frac{12}{13}} = \frac{4}{51}$

2-59

$Pr(1997|accident) =$

$$\frac{Pr(accident|1997)*Pr(1997)}{Pr(accident|1997)*Pr(1997)+Pr(accident|1998)*Pr(1998)+Pr(accident|1999)*Pr(1999)+Pr(accident|other)*Pr(other)} =$$

$$\frac{0.05*0.16}{0.05*0.16+0.02*0.18+0.03*0.20+0.04*0.46} \approx 0.22$$

Therefore the answer is (A)