STAT 270 - More Notes re Ch 2 Exercises

In class we discussed the direct extraction of conditional probabilities from the joint distribution table.

The instructor's manual presents the solution as follows. You should see that the methods are essentially the same.

45.

a. P(A) = .106 + .141 + .200 = .447, P(C) =.215 + .200 + .065 + .020 = .500 P(A ∩ C) = .200

b. $P(A|C) = \frac{P(A \cap C)}{P(C)} = \frac{.200}{.500} = .400$. If we know that the individual came from ethnic group 3, the probability that he has type A blood is .40. $P(C|A) = \frac{P(A \cap C)}{P(A)} = \frac{.200}{.447} = .447$. If a person has type A blood, the probability that he is from ethnic group 3 is .447

c. Define event D = {ethnic group 1 selected}. We are asked for $P(D|B') = \frac{P(D \cap B')}{P(B')} = \frac{.200}{.500} = .400$. P(D∩B′)=.082 + .106 + .004 = .192, P(B′) = 1 – P(B) = 1 – [.008 + .018 + .065] = .909