Ans to the Q: No: ⑤

Lets use the following notation

M = male   M̄ = female

C = cigar   C̄ = not a cigar smoker

ⓐ Before using the information, we know that 51% of the adult in orange country are male, so the Probability of random selecting and adult and getting a male is given $P(M) = 0.51$

ⓑ given information, we have following

$P(M) = 0.51$ because 51% are males

$P(\bar{M}) = 0.49$ because 49% are females

$P(C/M) = 0.095$ becuse 9.5% males smok cigar

$P(C/\bar{M}) = 0.017$ because 1.7% Females smoke cigar

Lets now apply Baye's theorem by using the preceeding formula with M in place of A, and C in place of B, we get the following result.

$$P(M/C) = \frac{P(M) \cdot P(C/M)}{\left[P(M) \cdot P(C/M)\right] + \left[P(\bar{M}) \cdot P(C/\bar{M})\right]}$$

$$= \frac{0.51 \times 0.095}{\left[0.51 \times 0.095\right] + \left[0.49 \times 0.017\right]}$$

$$= \frac{0.04845}{0.04845 + 0.00833}$$

$$= \frac{0.04845}{0.05678}$$

$$= 0.853 \text{ (rounded)}$$

There is a 0.853 Probability that the cigar-smoking respondent is a male.