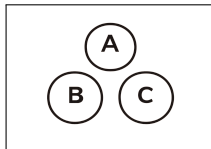


10 Discrete Distribution Posterior Probabilities

P

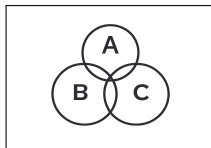


$$P(H) = 0.30$$

$$P(L) = 0.70$$

$$P(A|H) = 0.40$$

$$P(A|L) = 0.20$$



$$P(A) = P(A|H)P(H) + P(A|L)P(L)$$

$$P(A) = (0.4)(0.3) + (0.2)(0.7) = 0.12 + 0.14 = 0.26$$

$$P(H|A) = \frac{P(A|H)P(H)}{P(A)} = \frac{(0.4)(0.3)}{0.26} = \frac{0.12}{0.26} = \frac{6}{13} \approx 0.4615$$



$$P(N) = 0.40$$

$$P(M) = 0.50$$

$$P(H) = 0.10$$

$$P(C|N) = 0.05$$

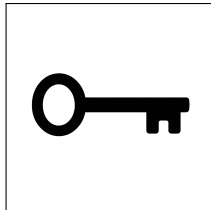
$$P(C|M) = 0.08$$

$$P(C|H) = 0.20$$

$$P(N|C) = ?$$

10 Discrete Distribution Posterior Probabilities

P



$$\begin{aligned}P(N) &= 0.40 \\P(M) &= 0.50 \\P(H) &= 0.10 \\P(C|N) &= 0.05 \\P(C|M) &= 0.08 \\P(C|H) &= 0.20 \\P(N|C) &= ?\end{aligned}$$

$$\begin{aligned}P(C) &= P(C|N)P(N) + P(C|M)P(M) + P(C|H)P(H) \\&= (0.05)(0.40) + (0.08)(0.50) + (0.20)(0.10) \\&= 0.08\end{aligned}$$

$$P(N|C) = \frac{P(C|N)P(N)}{P(C)} = \frac{(0.05)(0.40)}{0.08} = 0.25$$