

116. Solution: D

Denote the number of tornadoes in counties P and Q by N_P and N_Q , respectively. Then

$$E[N_Q | N_P = 0]$$

$$= [(0)(0.12) + (1)(0.06) + (2)(0.05) + 3(0.02)] / [0.12 + 0.06 + 0.05 + 0.02] = 0.88$$

$$E[N_Q^2 | N_P = 0]$$

$$= [(0)^2(0.12) + (1)^2(0.06) + (2)^2(0.05) + (3)^2(0.02)] / [0.12 + 0.06 + 0.05 + 0.02]$$

$$= 1.76 \text{ and } \text{Var}[N_Q | N_P = 0] = E[N_Q^2 | N_P = 0] - \{E[N_Q | N_P = 0]\}^2 = 1.76 - (0.88)^2$$

$$= 0.9856 .$$