

a) $P(S_1) = \frac{13}{52} = \frac{1}{4}$

$$P(S_2|S_1) = \frac{12}{51} = \frac{4}{17}$$

$$P(S_2|S_1^c) = \frac{13}{51}$$

b)

$$P(S_2) = P(S_2|S_1)P(S_1) + P(S_2|S_1^c)P(S_1^c)$$

$$\frac{4}{17} \cdot \frac{1}{4} + \frac{13}{51} \cdot \frac{3}{4} \quad \boxed{M}$$

P5

~~CCC~~
 CC3
~~CS3~~
 SSS
~~SSC~~
~~SCC~~
 CSC

Inf: 2 primeras iguales

$$1 - P(\text{iguales 3} | \text{iguales 2})$$

$$P(\text{dis} | 3 | \text{iguales 2})$$

$$P(A|B) = 1 - P(A^c|B)$$

P2) $E_i^j = \text{extracción } j \text{ es color } i \text{ (} i \in \{R, B\} \text{)}$

Evento: $E_R^1 \cap E_R^2$

$$P(E_R^1 \cap E_R^2) = \underbrace{P(E_R^1)}_{1/2} \underbrace{P(E_R^2 | E_R^1)}_{3/4} = 3/8$$



100 personas

↳ 5 de ellas dan positivo

↳ 95 negativo

$$\Rightarrow P(A) = 5/100 \Rightarrow P(A^c) = 95/100$$

$P(A|B^c)$ ← falso positivo

util dif

Probabilidad de no estar ebrio dado que el alcohótest marcó positivo.

$$\bullet \ P(B^c | A) = \frac{P(A \cap B^c)}{P(A)} = \frac{P(B^c)P(A|B^c)}{P(A)} = 1 - p$$

$$\bullet \ P(A) = P(A|B^c)P(B^c) + P(A|B)P(B) \Rightarrow P(B^c) = \frac{P(A) - p}{1 - 2p}$$

$$\Rightarrow P(B^c | A) = \frac{\left(\frac{P(A) - p}{1 - 2p} \right) (1 - p)}{P(A)} \quad \text{QED}$$