Dos sucesos son independientes cuando:

$P(A/B) = P(A)$ $\quad P(A \cap B) = P(A) \cdot P(B) \iff$ son independientes

$P(A \cap B) = P(A/B) \cdot P(B)$ siempre

$P(A \cap B) = P(A) \cdot P(B)$ solo para sucesos ind.

A: "SALE UN Nº IMPAR" $\quad$ C: "SALE UN Nº PAR"

B: "SALE UN Nº MENOR A CUATRO" $\quad$ D: "SALE UN Nº MAYOR A 4"

A: $\{1, 3, 5\}$

B: $\{1, 2, 3\}$

$A \cap B$: $\{1, 3\}$

E: $\{1, 2, 3, 4, 5, 6\}$

C: $\{2, 4, 6\}$

D: $\{5, 6\}$

$A \cap D = \{5\}$

$P(A \cap B) = P(A) \cdot P(B)$

$\frac{2}{6} \cdot 1 \neq \frac{3}{6} \cdot \frac{2}{6} = \frac{1}{4}$ No son ind.

$P(A/B) = \frac{2}{3} \neq P(A) = \frac{1}{2}$

$P(B/A) = \frac{2}{3} \neq P(B) = \frac{1}{2}$

$P(A \cap D) = \frac{1}{6}$

$P(D) = \frac{2}{6} = \frac{1}{3}$

$P(A) \cdot P(D) = \frac{1}{2} \cdot \frac{1}{3} = \frac{1}{6}$

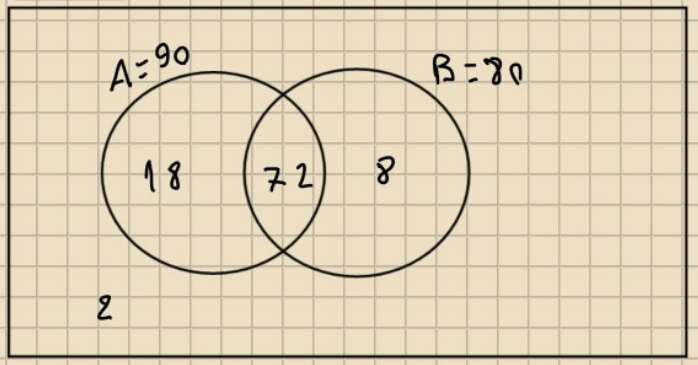
$P(A \cap D) = P(A) \cdot P(D)$ son ind

$P(A/D) = \frac{1}{2} = P(A)$

$P(D/A) = \frac{1}{3} = P(D)$

$18/100$ $\quad$ $8/100 = 0,08$

$E = 100$ $\quad$ $P(\text{solo 1}) = P(\text{solo A}) + P(\text{solo B})$



$P(A) = 0,9$ $\quad$ $P(B) = 0,8$

$P(A \cap B) = P(A) \cdot P(B)$

$0,72$

$P(A) = 0,3$

$P(B) = 0,5$ $\quad$ $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$P(A \cap B) = 0,15$

$P(A \cap B) = P(A) \cdot P(B)$

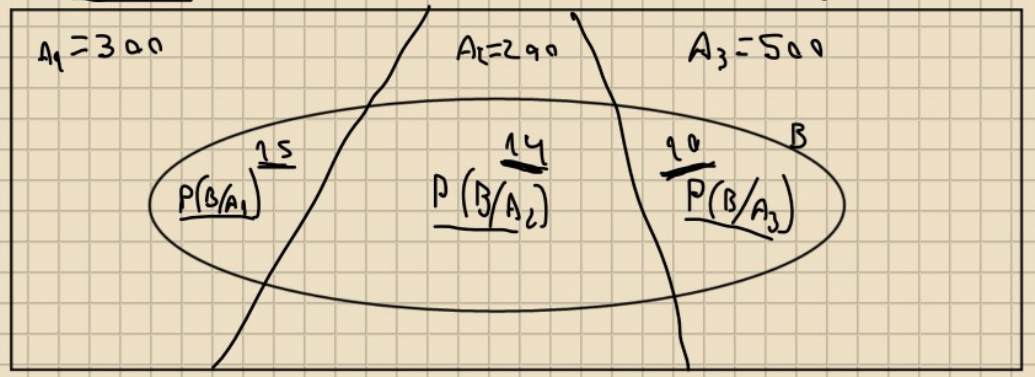
$0,15 = 0,3 \cdot 0,5 = 0,15$

$P(A) = 0,9 \quad P(B) = 0,8 \quad P(A \cap B) = 0,72$

$P(\text{Solo 1}) = P(A \cup B) - P(A \cap B) = P(A) + P(B) - P(A \cap B) - P(A \cap B) = 0,9 + 0,8 - 2 \cdot 0,72 = 1,7 - 1,44 = 0,26$

$P(\text{Solo 1}) = 1 - \left(P(\text{AMBOS}) + P(\text{NINGUNO})\right) = 1 - (0,72 + 0,02) = 1 - 0,74 = 0,26$

Teorema de la probabilidad total



A1 FALLAN 5%.
A2 FALLAN 7%.
A3 FALLAN 2%.

$P(B) = \frac{39}{1000} = 0,039$

$P(B/A_1) = 5 \ldots = 0,05$

$P(A_1/B) = \frac{P(B/A_1) \cdot P(A_1)}{P(B)}$

$P(A_1 \cap B) = P(B/A_1) \cdot P(A_1)$

$P(B) = P(B \cap A_1) + P(B \cap A_2) + P(B \cap A_3) = P(B/A_1) \cdot P(A_1) + P(B/A_2) \cdot P(A_2) + P(B/A_3) \cdot P(A_3)$

$0,05 \cdot 0,3 + 0,07 \cdot 0,2 + 0,02 \cdot 0,5 =$

$0,015 + 0,014 + 0,01 = 0,039$

$\frac{15}{1000} + \frac{14}{1000} + \frac{10}{1000}$

Teorema de Bayes

$P(A/B) = \frac{P(A \cap B)}{P(B)} = \frac{P(B/A) \cdot P(A)}{P(B)}$

$P(A_1/B) = \frac{15}{39} =$

$P(A_1/B) = \frac{P(B/A_1) \cdot P(A_1)}{P(B)} = \frac{0,05 \cdot 0,3}{0,039} = \frac{0,015}{0,039} = \frac{15}{39}$