

$$a : A = \{FSS, SFS, SSF\}$$

$$b : B = \{FSS, SFS, SSF, SSS\}$$

$$c : C = \{SSS, SFS, SSF\}$$

$$d : C' = \{FFF, SFF, FSF, FFS, FSS\}$$

$$A \cup C = \{SSS, SFS, SSF, FSS\}$$

$$A \cap C = \{SFS, SSF\}$$

$$B \cup C = \{FSS, SFS, SSF, SSS\}$$

$$B \cap C = \{SSS, SFS, SSF\}$$

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$$a : P(A_M \cap H_H) = 0.10$$

$$b : P(A_L) = 0.04 + 0.05 + 0.06 + 0.03 = 0.18$$

$$P(H_L) = 0.06 + 0.10 + 0.03 = 0.19$$

$$\begin{aligned} c : P(A = H) &= (A_L \cap H_L) + P(A_M \cap H_M) + P(A_H \cap H_H) \\ &= 0.06 + 0.20 + 0.15 \\ &= 0.41 \end{aligned}$$

$$d : P(A \neq H) = 1 - P(A = H) = 1 - 0.41 = 0.59$$

$$\begin{aligned} e : P(L) &= P(A_L \cup H_L) = P(A_L) + P(H_L) - P(A_L \cap H_L) \\ &= 0.18 + 0.19 - 0.06 = 0.31 \end{aligned}$$

$$f : P(\neg L) = 1 - P(L) = 1 - 0.31 = 0.69$$

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$$a : P(L \cap Pr \cap M) = 0.05$$

$$b : P(M \cap Pr) = P(L \cap Pr \cap M) + P(S \cap Pr \cap M) = 0.05 + 0.07 = 0.12$$

$$c : P(S) = 0.04 + 0.02 + 0.05 + 0.08 + 0.07 + 0.12 + 0.03 + 0.07 + 0.08 = 0.56$$

$$P(L) = 1 - P(S) = 1 - 0.56 = 0.44$$

$$d : P(M) = 0.08 + 0.07 + 0.12 + 0.10 + 0.05 + 0.07 = 0.49$$

$$P(Pr) = 0.02 + 0.07 + 0.07 + 0.02 + 0.05 + 0.02 = 0.25$$

$$e : P(M|S \cap Pl) = \frac{P(M \cap S \cap Pl)}{P(S \cap Pl)} = \frac{0.08}{0.04 + 0.08 + 0.03} = \frac{8}{15}$$

$$f : P(S|M \cap Pl) = \frac{P(S \cap M \cap Pl)}{P(M \cap Pl)} = \frac{0.08}{0.08 + 0.10} = \frac{4}{9}$$

$$P(L|M \cap Pl) = 1 - P(S|M \cap Pl) = 1 - \frac{4}{9} = \frac{5}{9}$$

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$$\begin{aligned}P(L_1 \cap \#1) &= P(L_1|\#1)P(\#1) \\&= (0.3 \times (1 - 0.1) + (1 - 0.3) \times 0.1)(0.5) = 0.17 \\P(L_1 \cap \#2) &= P(L_1|\#2)P(\#2) \\&= (0.25 \times (1 - 0.2) + (1 - 0.25) \times 0.2)(0.3) = 0.105 \\P(L_1 \cap \#3) &= P(L_1|\#3)P(\#3) \\&= (0.40 \times (1 - 0.25) + (1 - 0.40) \times 0.25)(0.2) = 0.09 \\P(L_1) &= P(L_1 \cap \#1) + P(L_1 \cap \#2) + P(L_1 \cap \#3) \\&= 0.17 + 0.105 + 0.09 = 0.365 \\P(\#1|L_1) &= \frac{P(L_1 \cap \#1)}{P(L_1)} = \frac{0.17}{0.365} \approx 0.4658 \\P(\#2|L_1) &= \frac{P(L_1 \cap \#2)}{P(L_1)} = \frac{0.105}{0.365} \approx 0.2878 \\P(\#3|L_1) &= \frac{P(L_1 \cap \#3)}{P(L_1)} = \frac{0.09}{0.365} \approx 0.2466\end{aligned}$$

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$$P(0_{0.1}) = (1 - 0.1)^{10} = 0.348678$$

$$P(1_{0.1}) = 1 - (1 - 0.1)^{10} = 0.651322$$

$$P(0_p) = (1 - p)^n$$

$$P(1_p) = 1 - (1 - p)^N$$

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$$\begin{aligned}a : P(L_1) &= \frac{500}{500 + 400 + 600} = \frac{1}{3} \\P(C) &= \frac{0.5 \times 500 + 0.44 \times 400 + 0.40 \times 600}{1500} = \frac{666}{1500} = 0.444 \\b : P(B|L_1) &= \frac{P(B \cap L_1)}{P(L_1)} = 0.15 \\c : P(L_1|S) &= \frac{P(L_1 \cap S)}{P(S)} = \frac{0.1 \times \frac{1}{3}}{\frac{0.1 \times 500 + 0.08 \times 400 + 0.15 \times 600}{1500}} \approx 0.2907\end{aligned}$$

## Collaborators

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