

$W \in \{0,1\}$ weather balloon $P(W=1) = 0.47$

$S \in \{0,1\}$ surveillance balloon $P(S=1) = 0.19$

$B \in \{0,1\}$ any balloon present

$$P(W=1|S=1) = 0$$

$$P(S=1|W=1) = 0$$

$$P(D=1|B=1) = 0.63$$

$$P(D=1|B=0) = 0.07$$

$$P(D=1|S=1) = 0.63$$

$$P(B=1) = P(W=1) + P(S=1) = 0.66$$

$$\begin{aligned} \text{Want } P(S=1|D=1) &= \frac{P(D=1|S=1)P(S=1)}{P(D=1)} = \frac{0.63 \cdot 0.19}{0.63 \cdot 0.66 + 0.07 \cdot 0.34} \\ &= 0.272 \end{aligned}$$