

$$P(D) = 10\%.$$

A test for a disease is positive 99% of the time if a person has the disease.

But if they don't have the disease, they test positive 2% of the time.

We want  $P(D|P)$ .

$$P(P|D) = .99 \tag{1}$$

$$P(P|D^c) = .02 \tag{2}$$

$$\begin{aligned} P(D|P) &= \frac{P(P|D) \cdot P(D)}{P(P|D) \cdot P(D) + P(P|D^c) \cdot P(D^c)} \\ &= \frac{.99 \cdot .10}{.99 \cdot .10 + .02 \cdot .90} \\ &= .846 \end{aligned}$$