Bayes' Theorem (version 2)
Sometimes in Bayes' Theorem, we do not know $P(B)$.

$$\begin{aligned} P(A \mid B) &= \frac{P(A \cap B)}{P(B)} \\ &= \frac{P(A \cap B)}{P(A \cap B) + P(A^c \cap B)} \\ &= \frac{P(A)P(B \mid A)}{P(A)P(B \mid A) + P(A^c)P(B \mid A^c)} \end{aligned}$$

So if we know $P(A)$, and $P(B \mid A)$, and $P(B \mid A^c)$, we are able to calculate $P(A \mid B)$. Notice that we don't need $P(B)$ anymore.