The Bayesian paradigm

Bayes theorem = Inversion of probabilities

If A and B are events such that $\mathbb{P}(B) \neq 0$,
$\mathbb{P}(A|B)$ and $\mathbb{P}(B|A)$ are related

$$\mathbb{P}(A|B) = \frac{\mathbb{P}(A \cap B)}{\mathbb{P}(B)} = \frac{\mathbb{P}(B|A)\mathbb{P}(A)}{\mathbb{P}(B)} = \frac{\mathbb{P}(B|A)\mathbb{P}(A)}{\mathbb{P}(B|A) + \mathbb{P}(B|A^c)}$$