Conditional Event Probability

1 Why

2 Definition

Consider two events, the second of which has non-zero probability. The *conditional probability* of the first event *conditioned* on a second event is the result of dividing the probability of the second event into the probability of the intersection of the two events.

2.1 Notation

Let $\mathbf{P}$ be the event probability function. Let A and B be two events with $\mathbf{P}(B) \neq 0$. Then the conditional probability of A conditioned on B is

$$\frac{\mathbf{P}(A \cap B)}{\mathbf{P}(B)}.$$

We denote this by $\mathbf{P}(A \mid B)$.