8.2 Relative Frequency

Relative frequency is the number of times an even occurred divided by the number of times the experiment was conducted. For example, if I toss a coin 50 times and get heads 37 times, then the relative frequency of heads is 37/50. This can also be known as an experimental (or empirical) probability.

Properties of Estimated Probability Distributions – Let $S = \{s_1, s_2, ..., s_n\}$ be a sample space and let $P(s_i)$ be the estimated probability of the event $\{s_i\}$. Then

1. $0 \le P(s_i) \le 1$

→The relative frequency of each outcome is a number between 0 and 1 (inclusive).

2. $P(s_1) + P(s_2) + ... + P(s_n) = 1$

→The relative frequencies of all the outcomes add up to 1.

3. If $E = \{e_1, e_2, ...e_r\}$, then $P(E) = P(e_1) + P(e_2) + ... + P(e_r)$

→The relative frequency of an event *E* is the sum of the relative frequencies of the individual outcomes in *E*.