

[Success Fractions]

A success fraction tells you the fraction of times an event occurred. This is expressed as a fraction of the number of times it had the opportunity to occur – so for example, if you tossed a coin 100 times and were interested in the probability of tossing a head, each coin flip is the opportunity for either a head (success) or tail (failure). These opportunities are usually referred to as trials, but a trial can be more elaborate. For instance, suppose we wanted to know the probability of tossing exactly 2 heads when three coins are flipped. In this case, one 'trial' would be the flipping of 3 coins at once, while a success would be when there are 2 heads and 1 tail flipped (failure otherwise). If we are able to repeat a number of experimental trials then this success fraction becomes our experimental probability, however we also may use success fractions when looking at historical data as we would with comparative statistics and make probabilistic statements concerning these. For example, with the relationship between smoking and cancer, we often talk about smokers having a higher risk, or higher probability of developing lung cancer. This is because from historical data, if we look at the number of the proportion of 'smokers' and 'non-smokers' whose deaths are attributed to lung cancer, we may find a greater proportion of smokers. In this way, we are attributing the many unknown factors and random variables to an overall degree of likelihood.