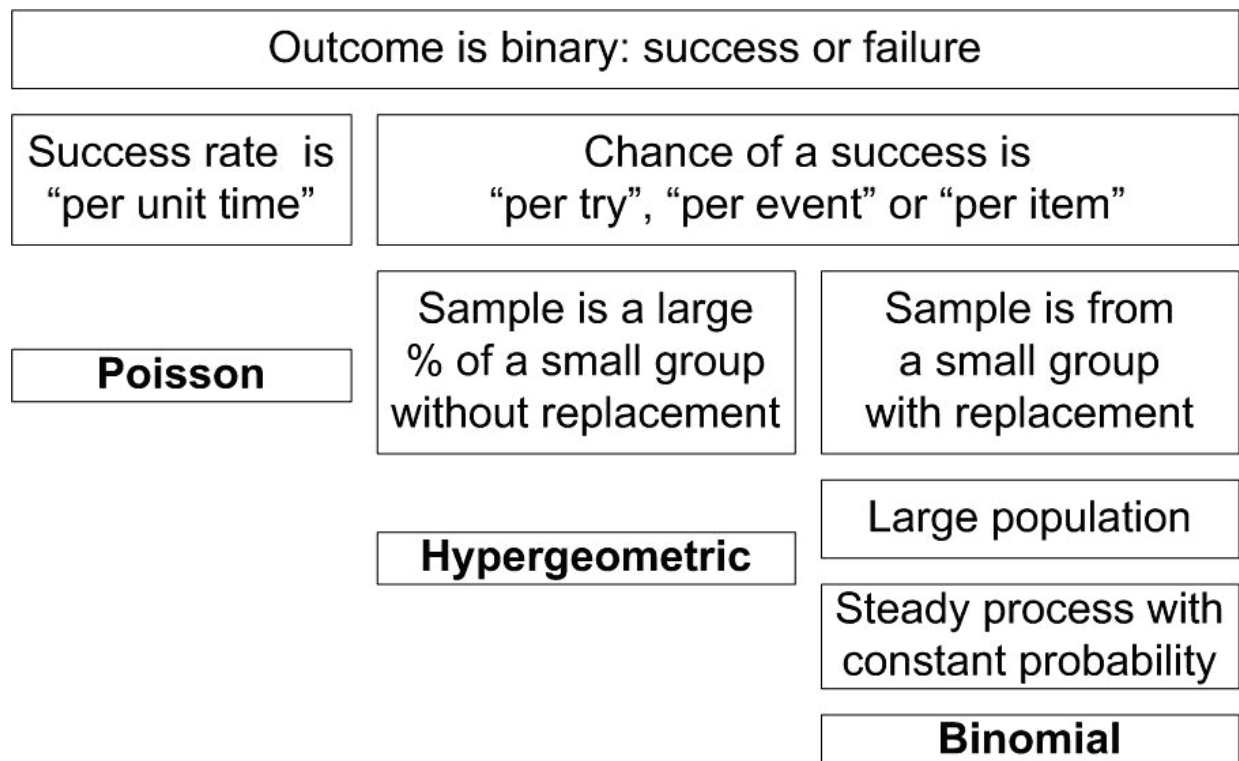


# Probability of Discrete Outcomes

Consider a process where the outcomes are discrete – they are represented by separate names or numbers. In each case the many discrete outcomes can be mapped into just two: "success" or "failure". "Success" may be good (face cards); it may be bad (defects).

These "successes" can be totaled. The probabilities for the various number of "successes" are known as "discrete probabilities."

These probabilities are classified into two main groups: "per unit time" and "per try". The "per try" group is subdivided depending on whether the chance of success changes or not.



You can identify which method applies by answering these three questions:

1. If the success rate involve an interval such as an interval of time or distance, then **use the Poisson** distribution. If not, go to #2.
2. If the sample is obtained without replacement and it is more than 1% of the population, then **use the hypergeometric** distribution. If not, go to #3.
3. If the sample is taken with replacement, or the sample is small (less than 1% of the population), or the sample is taken from a process with a constant chance of success, then **use the Binomial**. If not, then you may have to simulate the process.