**Key points**

* When interpreting values of X¯, it is important to remember that X¯ is a random variable with an expected value and standard error that represents the sample proportion of positive events.
* The expected value of X¯ is the parameter of interest p. This follows from the fact that X¯ is the sum of independent draws of a random variable times a constant 1/N.

E(X¯)=p

* As the number of draws N increases, the standard error of our estimate X¯ decreases. The standard error of the average of X¯ over N draws is:

SE(X¯)= √p(1−p)/N

* + In theory, we can get more accurate estimates of p by increasing N. In practice, there are limits on the size of N due to costs, as well as other factors we discuss later.
  + We can also use other random variable equations to determine the expected value of the sum of draws E(S) and standard error of the sum of draws SE(S).

E(S)=Np

SE(S)= √Np(1−p)