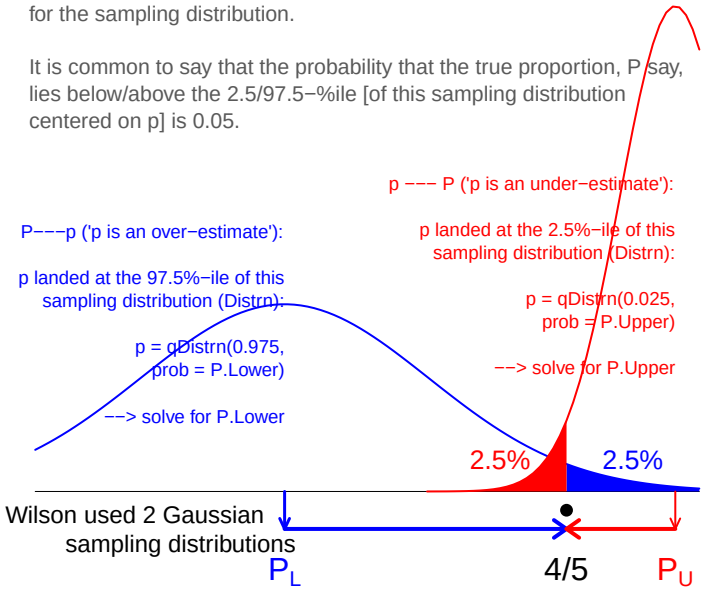
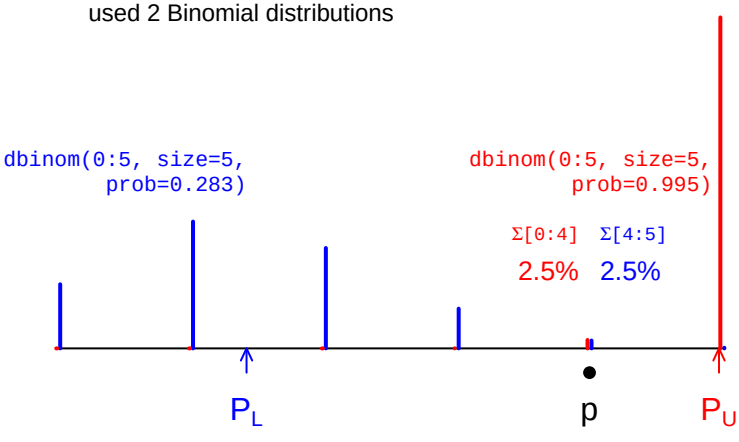
WILSON 1927. CI for proportion P, based on observed sample proportion p.

Probable Inference (USUAL). Say we observe a certain proportion, p, in a sample of n. We compute an interval using a statistical model (binomial or Gaussian) that uses (the statistic) p as the parameter for the sampling distribution.

It is common to say that the probability that the true proportion, P say, lies below/above the 2.5/97.5−%ile [of this sampling distribution centered on p] is 0.05.



Clopper−Pearson (1934) used 2 Binomial distributions

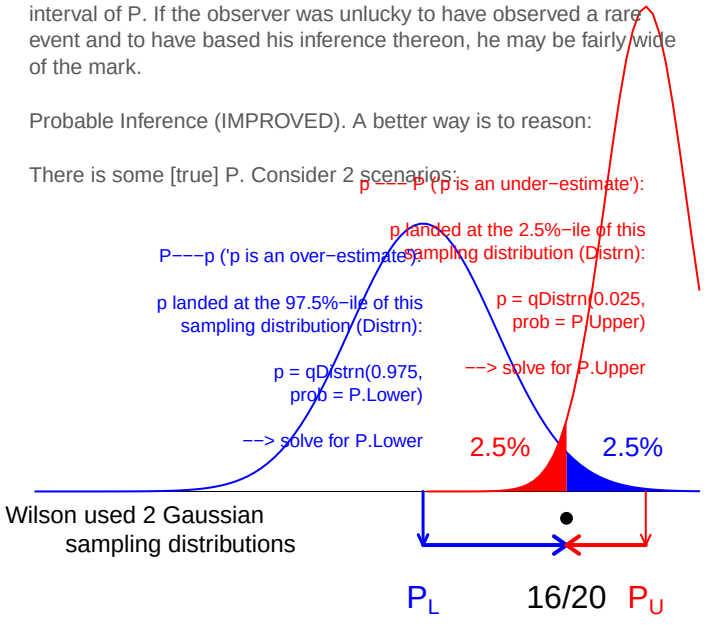


WILSON 1927 (continued...)

Strictly speaking, this statement is elliptical. Really the chance that P lies outside a specified range is either 0 or 1. It is the observed proportion p which has a greater or less chance of lying within a certain interval of P. If the observer was unlucky to have observed a rare event and to have based his inference thereon, he may be fairly wide of the mark.

Probable Inference (IMPROVED). A better way is to reason:

There is some [true] P. Consider 2 scenarios:



Clopper−Pearson (1934) used 2 Binomial distributions