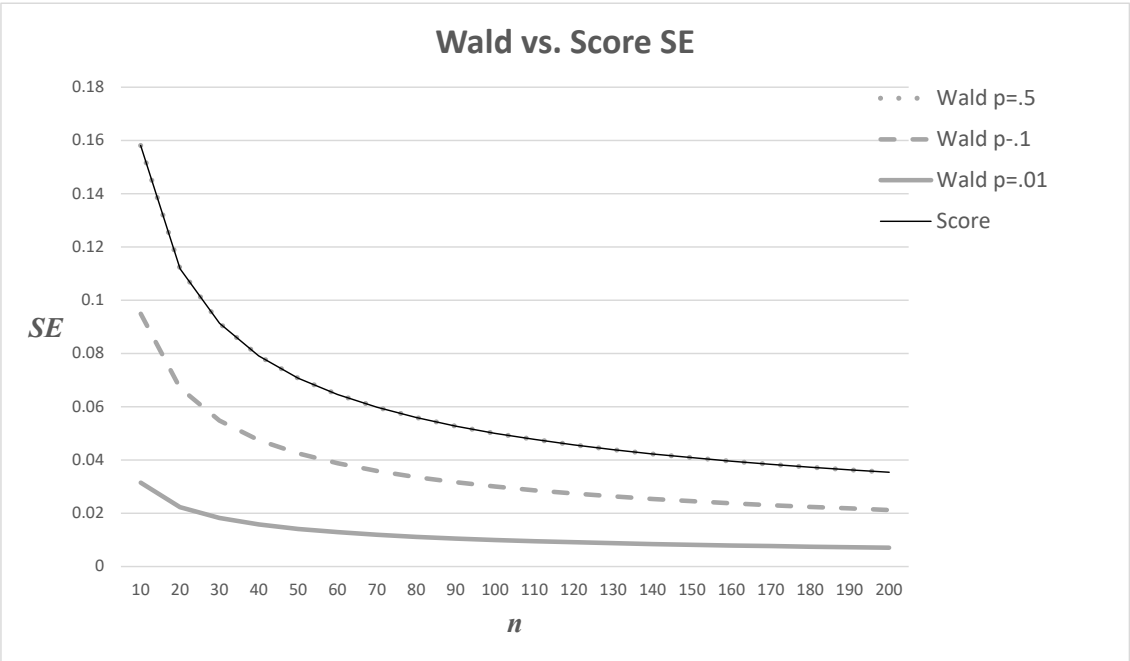
Performance of the Wald Ratio for z-Proportion Tests

Illustration of the relationship between sample size and standard error for the proportion test for three proportions. Wald uses the obtained sample proportion, p, for calculating the standard error, $SE_{Wald} = \sqrt{p(1-p)/n}$, whereas the score test uses the population null proportion, π (assumed .5 here), for computation of the standard error, $SE_{score} = \sqrt{\pi(1-\pi)/n}$. Note that the Wald and the score are the same thing when the obtained sample proportion is .5.



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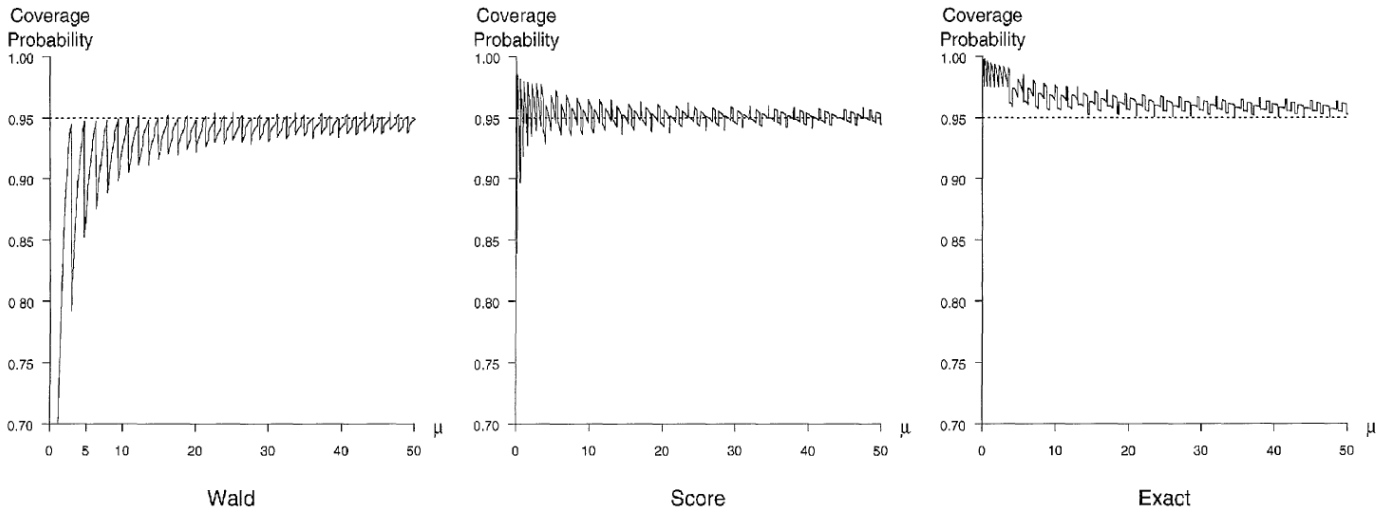

Figure 5. A Comparison of Coverage Probabilities for the Nominal 95% Wald, Score, and Exact Intervals for a Poisson Mean.

From Agresti, A., & Coull, B. A. (1998). Approximate is better than "exact" for interval estimation of binomial proportions. *The American Statistician*, *52*(2), 119-126.