

A NORMAL APPROXIMATION TO THE F DISTRIBUTION

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- **ABSTRACT:** A new normal approximation, $\Phi(z)$, for the cumulative distribution function (c.d.f.) of the F distribution, $F(x, v_1, v_2)$, with associated degrees of freedom, v_1 and v_2 , is proposed for large v_2 and fixed v_1 . The proposed approximation is compared to several others approximations such as a normal, ordinary chi-square, Scheffé-Tukey and Li and Martin approximations. The employed numerical analysis indicates that, for $v_2/v_1 \geq 3$, the accuracy of the proposed normal approximation is to at least the third decimal place for most small values of v_1 . This is a comparable accuracy that is achievable using Li and Martin (2002) approximation with shrinking factor approximation (SFA) using a chi-square c.d.f. with degrees of freedom v_1 . The advantage of the proposed normal approximation over SFA is that normal c.d.f. is easily obtained than that of chi-square.
- **KEYWORDS:** Approximation; F distribution; normal distribution.

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