

Simulated Tests for Normality: A Comparative Study

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Abstract

The subject of assessing whether a data set is from a specific distribution has received a good deal of attention. This topic is critically important for the normal distribution. Often the distributions of the test statistics are intractable. Here we consider simulation based distributions for several commonly used normality test statistics, such as, Anderson-Darling A^2 test, Chi-square test, Shapiro-Wilk W test, Shapiro-Francia W' test, D'Agostino-Pearson test, and Jarque-Bera test. Practitioners are used to with the Chi-square test because all other tests are dependent on specialized tables and/or software. Here, we give algorithms, how those specialized tables can be generated and then the respective tests can be implemented without much difficulty. A power comparison is also performed using simulation.

Keywords and Phrases: Central moments; Kurtosis; Legendre polynomials; Monte-Carlo simulation; Normal score; Skewness.

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1 Introduction

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