



Postgraduate Program and Research

Department of Health Management

Methods for Normality Testing in Application with Empirical and Simulated Data

This thesis is submitted in Partial Fulfillment of the Requirements for the Master Degree in in Applied Statistics

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Aug 2023

ABSTRACT

The purpose of this study was to evaluate and compare the performance of the various methods commonly used to test for normality of the data. The methods that were examined in this study included graphical methods, such as the normal Q-Q plot and histogram, as well as statistical tests like the Kolmogorov-Smirnov test, Shapiro-Wilk test, Jarqua-Bera test, and D'Agostino test.

The study found that the normal Q-Q plot is a superior method for determining normality, especially when working with small sample sizes. This is because the Q-Q plot is not limited by sample size and can accurately reflect both normal and non-normal distributions. In contrast, a histogram should be used with caution, as it may not detect deviations from normality with small sample sizes.

Among the statistical tests examined, the Kolmogorov-Smirnov test was found to be the most effective method for testing normality compared to the other three tests, particularly for small sample sizes. While the other tests performed well in detecting deviations from normality, the Kolmogorov-Smirnov test was found to be the most powerful in identifying both normal and non-normal distributions.

The normal Q-Q plot and Kolmogorov-Smirnov test are recommended as the most effective methods for testing normality, especially with small sample sizes. Researchers should exercise caution when using other methods, such as histograms or other statistical tests, and carefully consider the appropriateness of the method for their specific data and research questions. Overall, this study underscores the importance of careful evaluation and selection of appropriate methods for assessing normality in data analysis.