

## EVALUATION MONTE CARLO OF THE TEST OF CHI-SQUARE NORMALITY UNDER DIFFERENT CRITERIA OF THE NUMBER OF CLASSES

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- **ABSTRACT:** *It is known that the probability density function can be approximated by the sample histograms. The normal density is the most used due to such assumption in most statistical tests. One way to verify the normality of the data is through the adherence chi-square test. However, authors usually do not explain what was the rule used to determine the number of classes of the histogram (which is the first step in implementing this test). Thus, a possible poor performance is attributed to the chi-square test, but one suspects that it may be increased by choosing a non optimal criterion for determining the number of classes (k). The objectives of this study were: 1. Verify the validity of this hypothesis and; 2. point out what is the better criterion. We compared the performance (type I error rate and power) of five criteria for the determination of k (empirical criteria, Sturges, Scott, Doane and Freedman and Diaconis) for the normality chi-square test, via Monte Carlo simulation. It was concluded that the results of the chi-square test are affected by the criterion for k and that the Sturges criterion best controlled the type I error rate. The criterion of Freedman and Diaconis presented the highest values of power.*
- **KEYWORDS:** *Adherence test; type I error rate; power; histogram.*

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