

Thesis Title      A Comparison of Methods for Testing the Difference  
Among Population Means by Parametric and Some  
Nonparametric Tests to Rank Transformation.

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#### ABSTRACT

The objective of this thesis is to compare the methods for testing the difference among population means by parametric and some nonparametric tests to rank transformation. Under normal distribution of population, t-test and F-test were compared with rank transformation. For other distributions, namely logistic and double exponential distributions, the test results were compared among Mann-Whitney and Kruskal-Wallis tests to rank transformation, with the condition that, the coefficient of variation of population are 5, 10, 20 and 30 percent and the sample size are 4, 6, 8, 10, 20 and 40.

The result of this research indicates that, for the case of of two normal distribution of population, the proportion of the aligned results between t-test and rank transformation were tested with expected percentage. The expected percentage shown was over 75. However, in the even that the sample size was larger than 10, it was over 90. For logistic and double exponential distribution, the proportion of the aligned results between Mann-Whitney and rank transformation were test

with expected percentage. The expected percentage shown was over 90 when the sample size was larger than 6.

For the case of three normal distribution of population, the proportion of the aligned results between F test and rank transformation were tested. The expected percentage shown was over 75. In the even that the sample size was larger than 8, it was over 90. Under the logistic and double exponential distributions, the proportion of the aligned results between Kruskal-Wallis and rank transformation were tested with expected percentage. For the logistic distribution it was over 75 and when the sample size was larger than 10 it was over 85. For the double exponential distribution, the proportion is vary as the coefficient of variation and the sample size but never more than 75.

For the case of four normal distribution of population, the proportion of the aligned results between F-test and rank transformation were tested. The expected percentage shown was over 75. However in the even that the sample size was larger than 10 it was over 85. Under the logistic and double exponential distributions, the proportion of the aligned between Kruskal-Wallis test and rank transformation were tested with expected percentage. For logistic distribution, it was over 75 expected percentage. In the even that the sample size was larger than 8, it was over 85. For double exponential distribution, it was over 75 for the coefficient of variation was 30 percent.