



**ONE-FACTOR ANOVA MODEL THROUGH TRAPEZOIDAL
FUZZY NUMBERS USING ALPHA CUT
INTERVAL METHOD**

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Abstract

Most of our traditional tools in descriptive and inferential statistics is based on crispness (preciseness) of data, measurements, random variable, hypotheses, and so on. By crisp we mean dichotomous that is, yes-or-no type rather than more-or-less type. But there are many situations in which the above assumptions are rather non-realistic such that we need some new tools to characterize and analyze the problem. By introducing fuzzy set theory, different branches of mathematics are recently studied. But probability and statistics attracted more attention in this regard because of their random nature. Mathematical statistics does not have methods to analyze the problems in which random variables are vague (fuzzy). In this regard, a simple and new technique for testing the hypotheses under the fuzzy environments is proposed. Here, the employed data are in terms of trapezoidal fuzzy numbers (TFN) which have been transformed into interval data using α -cut interval method and on the grounds of the transformed fuzzy data, the one-factor ANOVA test is executed and decisions are concluded. This concept has been illustrated by giving two numerical examples.

Keywords and phrases: fuzzy set, α -cut, Trapezoidal fuzzy number (TFN), test of hypotheses, one-factor ANOVA model, upper level data, lower level data.

