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Study of Inferential Statistics and Parametric Test

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Abstract: ***In analytical work, the most important common operation is the comparison of data, or sets of data, to quantify accuracy (bias) and precision. The value of statistics lies with organizing and simplifying data, to permit some objective estimate showing that an analysis is under control or that a change has occurred. Statistical techniques can be used to describe data, compare two or more data sets, determine if a relationship exists between variables, test hypotheses and make estimates.***

Keywords: Hypothesis, Parametric tests, non Parametric test

1.Introduction

The study of data in a more refined way, it deals with scientific and analytical methods of collecting, organizing, analyzing and presenting data in such a way that some meanings and conclusions could be made out of something that appears to be jungle of data. Statistics can be very broadly classified into two categories, viz, descriptive and inferential statistics.

Descriptive statistics refers to the type of statistics, which deal with collection, organizing, summarizing and describing quantitative data. For example, the average score describe the performance of the class but does not make any generalization about other classes. Examples of descriptive statistics are graphs, charts etc…

An area of inferential statistics called hypothesis testing is a decision making process for evaluating claims about a population based on information obtained from samples. Relationship among variables can also be determined. Also, by studying past and present, data and conditions; it is also possible to make predictions based on this information. It would be observed that descriptive statistics consists of the collection, organization, summarization, and presentation of data while inferential statistics on the otherhand, consists of generalizing from samples to populations, performing estimation and hypothesis testing, determining relationships among variables, and making predictions.

Parametric and Non-Parametric Tests

The distribution of many test statistics can be said to be normal or follows some form that can be derived from the normal distribution. A characteristic property of the normal distribution is that 68% of all of its observations fall within a range of ±1 standard deviation from the mean, and a range of ±2 standard deviations includes 95% of the scores. In other words, in a normal distribution, observations that have a standardized value of less than-2 or more than +2 have a relative frequency of 5% or less than 1.

The exact shape of the normal distribution (the characteristic "bell curve") is defined by a function which has only two parameters: mean and standard deviation

Basic Statistical Techniques

A multitude of different statistical tools is available, some of them simple, some complicated, and often very specific for certain purposes. In analytical work, the most important common operation is the comparison of data, or sets of data, to quantify accuracy (bias) and precision. The value of statistics lies with organizing and simplifying data, to permit some objective estimate showing that an analysis is under control or that a change has occurred. Statistical techniques can be used to describe data, compare two or more data sets, determine if a relationship exists between variables, test hypotheses and make estimates about population measures.

There are however specific assumptions underlying the use of the t-test:

1. The sample data should be normally distributed.
2. The sample must be representative of the population so that we can made generalizations at the end of the analysis.
3. Equality of variances. Equal variances are assumed when two independent samples are used to test a hypothesis.
4. The dependent measurements involved in the calculation of the means must come from either interval or ratio scales.

Since all calculations are carried out subject to the null hypothesis, it may be very difficult to come up with a reasonable null hypothesis that accounts for equal means in the presence of unequal variances. Consequently, the null hypothesis is that the test may or may not read more. An example of a repeated measures t-test would be if one group were pre-and post-tested. For example, if a teacher wanted to examine the effect of a new set of textbooks on student achievement, he/she could test the class at the beginning of the year (pre-test) and at the end of the year (post-test). A dependent t-test would be used, treating the pre-test and post-test as matched variables (matched by student).

2.Data Analysis and Interpretation

Unprocessed data are called raw data. Data have to be processed by making use of computers to for analysis. This is because manual procedures for estimating and

computing relevant statistics have become increasingly tedious or entirely impossible.

Computers are now applied in all aspects of statistical analyses, from the calculation of simple sums to the estimation of large scale stochastic models. There are numerous statistical programs for analyzing data which can be implemented for future use.

References

[1] Bluman, A. G. (1990) Elementary Statistics. McGraw Hill, Higher Education, New York.
[2] Gujarati, D. N (1995) Basic Econometrics.3rd Edition. McGraw Hill, Ne