

# International Multidisciplinary Research Journal

# *Golden Research Thoughts*

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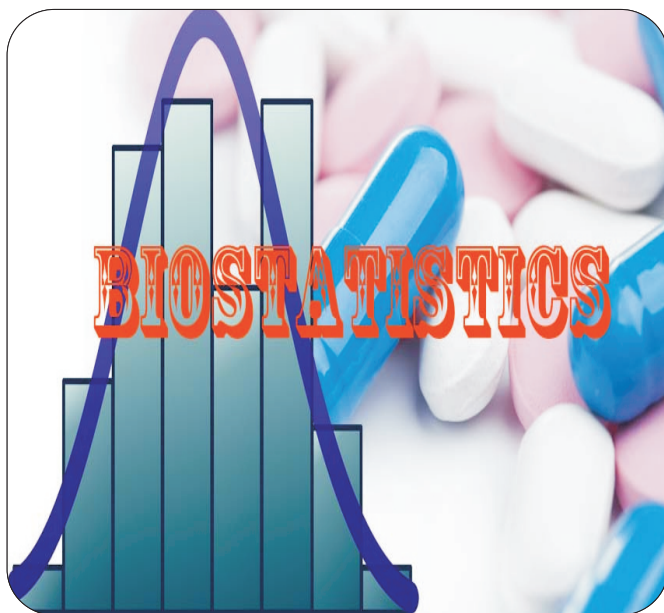
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# Golden Research Thoughts

**GRT****INTRODUCTION TO BIOMETRY AND BIOSTATISTICS****Dr. Sakdeo Babita Marutirao****Associate Professor in Agricultural Development Trust's, Shardabai Pawar Mahila Mahavidyalaya, Shardanagar, Malegaon Bk., Baramati, Pune.****ABSTRACT**

**S**tatistics is the science of figures which deals with collection, analysis and interpretation, of data. Data is obtained by conducting a survey or an experimental study.

The use of Statistics in biology is known as Biostatistics or Biometry.

Biological research in every field must plan carefully to ensure that the quantity and quality of data may obtain are adequate to meet their requirements. They find the techniques and concepts of a management information system appropriate for this purpose. Researchers use the scientific method.

**KEYWORDS** :Biometry, Descriptive biostatistics, Inferential biostatistics, Pharmacology.

**INTRODUCTION:**

Well planned Statistical information system enables a biological researcher to determine and examine its informational needs in respective. That is he can evaluate the importance of each need relative and the overall operation of research.

The scientific method is characterized by objectivity inductive reasoning and a systematic explanation and measurement of facts. Her accumulation of facts is followed by the formulation of concepts hypothesis and theory all of which may be modified later as additional facts are collected.

The ultimate objective of researchers is to assemble information of sufficient quantity and quality to provide a basis for making sound decisions. In the use of both a management information system and the scientific method, the person trained in statistics can make an important contribution.

**BIOMETRY –**

The word biometry has Greek origin the word bios means life & metran means measurement. It

is the branch a statistics which deals with the study of biological problems or the application on of mathematical methods to the study. Living things and organism. The science of biometry was founded by Francis Galton and Later on developed by Karl Pearson, R.A. fisher and others. Now a day biometry is an indispensable tool in all the branch of science maths commerce economics etc and specially in agricultural research. In short the science of application of statistical method biological facts and observation is called biometry it is and imp tool in biological research wherein the facts can be expressed with more confident in biology we deal with living things and no two individuals whether plants or animals are exactly similar for example if we record the colour of Gerbera flower growing in a plot of land, we would find difference variation in colour among individual flowers though they were grown from the seed of the same variety and received the same cultural practices. These differences or variation may be large or small. Seed variations carnol be wholly due to experimental error or error recording the observations or data. Experimental error is a part of biological variation but it is not shingly responsible for it. The occurrence of variation makes the application of statically methods if biological sciences i.e. biometry, all the more important than in the physical sciences. Experimental error is common to both but in biology the workers has to deal with other sources of variation that are quite distict. The purpose of biometry is to make worthwhile conclusions in the presence of variations and to provide a measure for the probable truth of statement which is being applied to the whole group of individuals plant kingdom and animal kingdom.

While conducting an experiment the data obtained may be either qualitative or quantitative in nature. In the qualitative or enumeration data the individual under consideration are indicated by some quality of attribute for example colour of flower nature of seed. Coat, colour of eye in animals etc. Enumeration or qualitative data always involves the number of individuals. Conforming to a given set a descriptions. Sometimes it may be based on only one criteria for example colour of flower with several categories e.g. green red, white, yellow, etc. or these may be two or more criteria each with two or more categories. The quantitative or measurement data on the other hand are based on a measurement or count of the individuals. viz. height, weight number of petals in a flower etc.

Biometry being a branch of applied mathematic, use of mathematical formulae and algebraic notations cannot be avoided in our study.

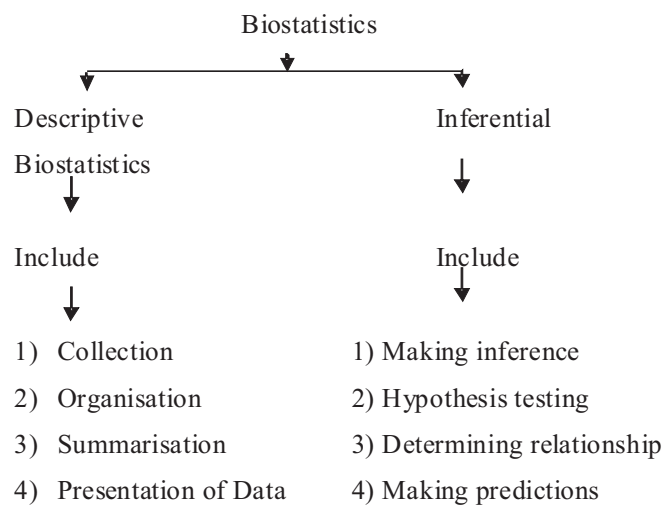
### **1) Definition – Horace secrist –**

By statistics we mean aggritates of facts affected to a marked extent by multiplicity of causes numerically expressed enumerated or estimated according to reasonable standards of accuracy collected in a systematic manner for a pre determined purpose and placed in relation to each other.

**2) Definition –** The statistical methods applied to biological problems in called as Biostatistics.

**3) Definition -** is the application of statistical methods to the problems of biology including human biology, medicine public health, agriculture, veterinary and genetics.

**Diagrammatic presentation of branches of biostatistics and their fields.**



Biostatistics can be divided into 2 subcategories descriptive biostatistics and inferential biostatistics.

**1) Descriptive biostatistics –**

It is study of biostatistical procedures which deal with the collection, representation calculation and processing i.e. the summarization of data to make it more informative and comprehensible. It involves graphical and tabular approaches to describe summarise and analyse the data. The primary function of descriptive statistics is to provide meaning ful and convenient techniques for describing features of data that are of interest.

The failure of choose appropriate descriptive statistics often leads to faulty scientific inferences the field of descriptive statistics is not concerned with implications or conclusions that can be drawn from the sets a data. It is basically a device for organizing data and bringing into focus their essential characteristics for the purpose of conclusion.

**2) Inferential biostatistics –**

It constitutes the procedures which serve to make generalizations or drawing conclusions on the basis of the studies of a sample. This is also known as sampling biostatistics. Statistical inference is most often limited to the quantitative aspects of the gernatlization but more often a biostatistician is asked to contribute to the process or reaching substantive conclusions as well.

The study of the quantative aspects of the inferential process provides foar solid basis on which the more general substantive process of inference can be founded.

Modern biostatistics are not the more devices for collecting numerical data but a means of

- 1)developing sound techniques for handling and analyzing the data.
- 2)Drawing inference from the collected data. using various techniques and formulations.

**Importance of Biostatistics –**

Statistical plays a major role in bioscience because data of bioscience are of a variable mature. It is difficult to draw conclusion from biological experiments because of inherent differences between two individuals homozygous twins are even not exactly same in physiology and behavior

### **Aim of Biostatistics –**

Biostatistics is basically concerned with following purpose.

- 1) To generate the statistical data through experimental investigation and sample surveys.
- 2) To organize and represent the data in suitable tables diagrams charts or graphs etc.
- 3) To draw valid inferences from the data collected, put forth definite interpretations or predict the future outcomes from the data.

### **Application of Biostatistics –**

Biostatistics is applied and used in difference branches of bioscience.

#### **1) In physiology and Anatomy**

- a) To define what is normal or healthy in a population and to find limits of normality in variables.
- b) To find the difference between the mean and proportion of normal at two place or in different periods.
- c) To find out correlation between two variables X and Y such as height and weight.

**2) In Genetics –** Mendelian genetics is centered on the inheritance of such as vital statistics life table techniques etc. Study of vital statistics enables the government to assess the impact of family planning on population growth.

**3) Numerical Taxonomy –** Numerical taxonomy deals with grouping of taxonomic units into taxa by numerical methods. On the basis of their characteristics the term includes the drawing on phylogenetic inferences from the data by statistical methods.

Apart from classification the problems of identification are important facets of taxonomic studies. The problems of identification is that of placing an unknown operational taxonomic unit (OTU) into one pre-established taxon based on the character set observed in the specimen at hand on as independent variable is in practice the best suited function of a set of polynomial or experimental.

**4) In Ecology –** Most of the statistical applications in ecology deals with the study of temporal and spatial patterns of populations of organisms the former is described as population dynamics and the latter as statistical ecology.

**5) In Ethnology –** Behavioral studies in the usual cases yield time series data. Data is either collected from complete record of the events or from observation at fixed intervals of time or on the sequence of activities on local animals or their groups without a time base. Duration interval and latency of behavioral acts are a interest to ethologists. If the events in a time series are independent of one another there will be no significant correlation among the time of their occurrences. Auto correlation coefficient may be used to determine the existence of such correlations.

**6) Forest Mensuration –** In forestry measurement of tree length area or volume and weight are measured in some cases but it is difficult to measure these attributes in many others cases. The prediction of those attributes which are difficult to be measured directly in terms of easily measurable characteristics is the crux of mensuration problem. Since prediction is probabilistic in nature, the science of statistics play a major role in this field.

**7) Forest and Agricultural Yield Table -** Tabular statement which gives an idea of the developing crop forest product or animal production yield tables multiple use in the management of crop, forest production animals husbandry. Fish production etc. The standard regression techniques have gained wide acceptance for the construction of yield equations. Volume yield of a tree is the output of a regression function with tree volume as the dependent variable and diameters and / or height.

**8) Biomass Estimation –** Total mass of living material in a given locality or a given area called Biomass. The estimation of biomass has assumed considerable importance in recent years. The common



procedure of estimation is through the use of regression equations and standard tables. In biomass estimation many theoretical refinements like generalized test square, stepwise regression, non-linear regression etc. are used extensively.

**9) Cell function physiology and Biochemistry** – Statistical techniques have made enough contribution to these fields of biology. Many workers have used correlation and regression analysis system as basic determinates of cell physiology. Chi-square test has much been used in cell population studies in the physiological experiments.

**10) Demography** – The study of measurement of human population is called as Demography. It is the quantitative study of human population with respect to events such as birth, death, marriage, morbidity, migration etc. various statistical methods are used for these studies qualitative characters. The statistical methods generally applied are binomial or chi-square tests. Testing the agreement of observed frequency data with these expected or derived by hypothesis of Mendelian segregation was the major task and this included problems such as detection and estimation of linkage. This fall in the preview of genetically statistics.

**11) Population genetics** – To study the behaviour of genes in a population which is concerned with changes in the frequency of genes in the population statistical methods are applied for example the relationship between allelic and genotypic frequencies is justified by applying binomial equation

**12) Statistical Environmental Management** – The use of statistical methods is a powerful tool is understand the complex relationship and process in the environmental biology and its managements. Now a days no field of environmental biology is left untouched by statistical technique.

### **13) In Medicine –**

- 1) To compare the efficacy of a particular drug for this, the percentage of cured and died in the experiment and control groups is done.
- 2) To find out an association between two attributes such as cancer and smoking.
- 3) To identify signs and symptoms of a disease or syndrome. Cough and typhoid is found by chance and fevers is found in almost every case.

### **14) Pharmacology –**

- 1) To know the action of drug a drug given to animals and humans to observe the changes produced are due to the drug or by chance.
- 2) To compare the action of two different drugs or two successive dosages of drugs.
- 3) The efficiency of a newly manufactured

### **15) Statistical Ecology**

Most of the statistical applications in ecology deal with the study of temporal and spatial patterns of populations of organisms. The former is described as population dynamics and the latter as statistical ecology.

Ecologists frequently measure the environmental variables along with the observations on the organisms in their habitats. Studies on vegetation/animal versus environment are amenable to such analysis. An extension of canonical correlation analysis is called multiple discriminate analysis. It operates on several sets of qualitatively similar variates.

When the units for observations are discrete a simple test for association of two species or groups within the sample is provided by chi-square value computed out of the contingency table. When more than two species are studied together, the results are not straight forward and need appropriate grouping of the frequency classes.

Two major aspects of interest with many species populations are species abundance relations and measurement of directivity. The species abundance relations are studied through distributions like

log-normal, negative binomial and geometric distribution. These functions determine approximations to relationship between a number of species and a number of individuals and make it possible to predict the total number of species in the whole population from the observed number of species in the sample.

### CONCLUSION:

The advances in accuracy and usability and decreasing cost have made the biometric technology a secure, affordable and cost effective way of identifying individuals. Biometric parameters such as fingerprint scanning, iris scanning, retinal scanning, hand geometry, signature verification, voice verification and others are all well established with their own particular characteristics. The limiting factors of speed and band width are now a thing of the past and their practical performance might in many instances be better than expected. Today, it is an efficient and effective method of replacing passwords, tokens and smart cards.

It is important to recognize that although biometric authentication has served extensively in high security applications in defense industry, it is still fledgling technology in commercial world, both in terms of its technical sophistication and current extent of deployment. There are no established standards for biometric system architecture, for template formation, or even for biometric reader testing. It is also not clear as which technology or technologies will dominate the customer market. In the absence of standards and direction, the rapid and wide spread deployment of biometric authentication system could easily facilitate the problematic proliferation of authentication and tracking of the people.

### REFERENCE=

- 1.S. Prabhakar, S. Pankanti, and A. K. Jain, "Biometric Recognition: Security and Privacy Concerns", IEEE Security and Privacy Magazine, Vol. 1, No. 2, pp. 33-42, 2003.
- 2.D. Maltoni, D. Maio, A. K. Jain, and S. Prabhakar, Handbook of Fingerprint Recognition, Springer, NY, 2003.
- 3.A. K. Jain, R. Bolle, and S. Pankanti (editors), Biometrics: Personal Identification in Networked Society, Kluwer Academic Publishers, 1999.
- 4.CNN World News, "Schiphol Backs Eye Scan Security", March 27 2002. Available at <http://www.cnn.com/2002/WORLD/europe/03/27/schiphol.security/>.
- 5.J. Daugman, "Recognizing Persons by Their Iris Patterns", In A. K. Jain, R. Bolle, and S. Pankanti, editors, Biometrics: Personal Identification in a Networked Society, pp. 103-121, Kluwer Academic Publishers, 1999.
- 6.L. O'Gorman, "Seven Issues With Human Authentication Technologies", Proc. of Workshop on Automatic Identification Advanced Technologies (AutoID), pp. 185-186, Tarrytown, New York, March 2002.



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