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D II Hons/Zoology Paper IV

Group-B.

Lecture – 31

BIOMETRY

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Method of Sampling :-

In statical analysis a data is needed and that data originates from samples. And the methodology of collecting samples is known as sampling. The sampling method one select for his experimental work is based on ① Experimenter's research question & research objectives.

② Experimental design

③ A multitude of practical consideration.

Aim of Sampling :- ① To obtain the optimum result. i.e. the maximum information about the characteristics of the population with the available sources at our disposal in terms of time, money & manpower by studying the sample values only.

② To obtain best possible estimates of the population parameters.

Selection of Samples :- Sample may be of two types :-

① Qualitative Sample.

② Quantitative sample.

① Qualitative Sample :- When we express samples in quality such as colour of flowers, sex, disease etc. we call them qualitative samples. If we say, cells are developed after treating with particular chemicals, or size of fishes are bigger in one pond than that of other. These ~~not~~ represents qualitative samples.

② Quantitative Samples :- When the measurement of samples is done on a scale in some appropriate units, they are called quantitative samples.

Proper sampling can be done by following methods :-

① Random Sample :- It is obtained when the selection is made without deliberate discrimination. But in practice it is not possible but the workers must consciously attempt to randomnization through unbiased sampling efforts.

⑪ Non-random sample :- In contrast to randomness in biological problems non-randomness is of two types

ⓐ Contagious distribution :- where the individuals form an aggregation.

ⓑ Regular distribution :- where the individuals are evenly distributed.

Classification of data or Frequency distribution

A set of fact expressed in quantitative form obtained by experimental observations is known as collection of data. Collected data is displayed either in tabular form or through charts for analysis & to draw inferences. Display of data in tabular form is called classification of data and display through charts is called charting of data.

condensed from data to draw some inferences is known as frequency distribution. The number occuring in each class is termed as frequency.

Classification of data :- Data consisting of observations corresponding to each individual under study is said to be raw data. They are independent & are written separately.

In most cases it is difficult to conclude from raw data as it contains large number of observation values. Then the raw data is grouped or classified and presented in the form of frequency distribution table. Two types of frequency table may be prepared one is (i) Discrete frequency table & the other is (ii) Continuous frequency table. Discrete and continuous series are collectively known as grouped series. Discrete series is without class interval whereas continuous series is in class interval.

Discrete Frequency Table – 1.

variable x / Frequency y						
2	10	20	30	39	40	45
3	4	7	7	1	3	5
49	50	65	70	79	80	
1	9	2	5	1	2	

Preparation of discrete frequency table using Tally mark—

The above table may be prepared from raw data with confidence using tally mark. A table of 3 columns is prepared. First column is variables, Second ~~col~~ column repetition of variables is mentioned by tally mark. In Third column total number of repetition of each variable counted by tally mark is mentioned.

variables	Tally mark	Frequency
2	III	3
16	IIII	4
20	~~IIII~~ II	7
30	~~IIII~~ II	7
39	I	1
40	III	3
45	~~IIII~~	5
49	I	1
50	~~IIII~~ IIII	9
65	II	2
70	~~IIII~~	5
79	I	1
80	II	2

table – 2

Preparation of Continuous frequency distribution table

Variables grouped in classes & the No. of repetition of each class is counted & mentioned is known as continuous frequency distribution. In this form data is presented continuously and in condensed form.

Class :- Grouping of identical values of variables into order is known as class. No. of classes depends upon number of observations.

$$\text{No. of classes} = \frac{\text{Highest score} - \text{Lowest score}}{\text{Length of class interval.}} \text{ or } \frac{R}{h}$$

The width of class is known as class interval. It is denoted as h.

Mid Point of class interval = It is the sum of upper & lower limits of class intervals devided by 2.

$$\text{Mid Point of class interval} = \frac{\text{upper level of CI} + \text{Lower level of CI}}{2}$$

Cumulative Frequency :- obtained by adding the frequency of previous variable.

Relative frequency :- obtained by deviding the frequency of each class interval by the total No. of observations.

Percentage frequency :- Multiplication of relative frequency from 100 gives % frequency.

Some basic rules of making frequency table are as follows:-

(i) Size of C I should not be too broad or too small. width of C I between 3 & 10 is ideal.

(ii) The No. of C I should not be too many or too few. The No. of classes between 3 to 15 is ideal.

(iii) For biological purposes data should be kept in ascending order

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