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∴ QUESTION: NO: 05:

Q: What is hypothesis? Also explain different steps in testing of hypothesis?

A. ∴ HYPOTHESIS ∴

According to the Kerlinger "A hypothesis is an conjectural statement of the relationship between two or more variable.

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Hypothesis is defined as a proposition, condition or principle which is assumed, perhaps without belief in order to draw out its logical consequences and by this method to test its accord with the fact, which are known or may be determined.

∴ e.g: Mean or population

Take an Example of Hypothesis:

Suppose you have a hunch that there are more smokers than non-smokers in your class. To test your hunch, you ask either all or just some of the class if they are smokers. You can conclude whether your hunch was right or wrong.

The importance of hypothesis is lies in their ability to bring direction, specificity

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and focus to the research study. They tell a researcher what specific information to collect and thereby provide greater focus.

STEPS IN TESTING OF HYPOTHESIS :-

Hypothesis testing is a formal procedure for investigating our ideas the using statistics. It is most often caused by scientists to test specific predictions, called Hypothesis.

Hypothesis testing involves conducting a test of statistical significance and quantifying the degree.

There are five ^{main} steps in hypothesis testing.

* STEP: 1 :- State your null and Alternative Hypothesis:

After developing your initial research hypothesis, it is important to restate it as a null (H_0) and alternative (H_a) hypothesis so that you can test it mathematically.

The alternative hypothesis is usually your initial hypothesis that predict a relationship b/w variables. The null hypothesis is a prediction of no relationship b/w variables you are interested in.

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STEP: 2 :-

COLLECT DATA :-

In Step 2 collect the data in a way of designed to test the hypothesis.

For a statistical test to be valid, it is important to perform sampling and collect data in a way that is designed to test your hypothesis.

If your data cannot be representative, then you cannot make statistical inferences about the population.

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STEP: 3 :-

PERFORM A STATISTICAL TEST :-

The variety of statistical tests available, but they are all based on the comparison of within-group variance (how spread out the data is within a category) b/w group variance.

If b/w group variance is large enough that there is little or no overlap between groups, then your statistical test will reflect that by showing a low p-value. This means it is unlikely that the differences between these groups came about by chance.

Your choice of statistical test will be based on the types of data you collected.

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* STEP: 4 ::

DECIDE WHETHER THE NULL HYPOTHESIS IS SUPPORTED OR REFUTED ::

In most cases you will use the p -value generated by your statistical test to guide your decision. And in most cases, your cut off for rejecting the null hypothesis will be 0.05 - that is when there is a less than 5% chance that you would see these results if the null hypothesis were true.

* STEP: 5 ::

PRESENT YOUR FINDINGS ::

The result of hypothesis testing will be presented in the result.

For example: The estimated differences b/w group means and associated p -value. In the discussion where there your initial hypothesis was supported or refuted.

In the formal language of hypothesis testing, we talk about refuting or accepting the null hypothesis. You will probably be asked to do in your statistics.

Drawing conclusions, rejected null hypothesis if the p -value is less than the set significance level.

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QUESTION: NO: 01:

Q1:- Nine student take a test. Their scores out of 100 are 50, 79, 70, 48, 90, 68, 89, 92, 77. Find their the Mean, median and mode of their scores?

A:- Nine student take a test. Mean is calculated by total of result of all observation & divided by total number of observation. So,
$$\text{Mean} = \frac{50 + 79 + 70 + 48 + 90 + 68 + 89 + 92 + 77}{9}$$

MEAN :- $\boxed{= 73.67}$

Ordering set of numbers, we get 48, 50, 68, 70, 77, 79, 89, 90, 92 and the middle number is median.

Median :- $\boxed{= 77}$

The mode is the common number but as there is no common number: So,

Mode :- is None.
Mode is the most frequently occurring value in a set of observation.

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QUESTION : NO : 02

Q:2:- Write a short note on presentation of research data?

A. PRESENTATION OF RESEARCH DATA :

The presentation of research data refers to the organization of data into tables, graphs or charts so that logical and statistical conclusions can be derived or from the collected measurement. Data can be presented into 3 methods.

- i) Textual.
- ii) Graphical.
- iii) Tabular.

The textual presentation of data gathered are presented in paragraph form. These data are also in form of written and read. It is the combination of texts and figures.

The graphical presentation are the kind of graphs or diagrams. Bar - graph is used to show relationship or comparison between groups.

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- * pie or circle graph show percentage effectively.
- * Line-graph are most useful in displaying data that changes continuously over time.
- * Pictograph or pictogram: It is used to small identical or figures of objects called isotopes in making comparison. Each picture represent a definite quantity.

When we use tables. Tables are more effective way of presenting the data.

General Rules:

- * This golden rule seems obvious but authors who have immersed in their data sometimes fail to realise that readers are lost in the mass of data they are little too keen to present.

- * Data should answer the research questions identified earlier.

- * Always ^{use} we^t past tense in describing results.

- * Text, tables or graphics?
These complement each other in providing clear reporting of research finding.

- * Donot Repeat the same information more than one format. Select the Best Method to convey the message.

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-: QUESTION: NO: 03 :-

Q3: Differentiate between Relative risk and odd ratio with Example?

A. :: DIFFERENTIATE B/W RELATIVE RISK AND ODD RATIO ::

The differentiate between relative risk and odd ratios are often confused despite, being unique concepts.

ODD RATIOS

* The basic difference is that the odd ratio is a ratio of two odds.

* The odd ratio is instead the number of positive occurrences in relation to the number of non-positive occurrences.

* For The Tiger has a one in four probability of being diseased, we say the odds are "3 to 1".
For every diseased Tiger, there are three non-diseased Tigers.

RELATIVE RISK

* Where as the Relative risk is a ratio of two probabilities.

* A Relative risk ratio is one probability divided by another.
For - Example :-
The probability of a Tiger being diseased, divided by the probability of a bear being diseased.

* A relative risk is much easier to interpret and makes much more than sense to layman.

E.g. The Relative Risk of

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Odd Ratio

Relative Risk

* Odd ratio is more complex conceptually but has some statistical advantages over the Relative Risk. essentially it is more versatile.

* E.g:- The Relative Risk of 7.0 means that affected group have 7 times the risk of a non-affected group. So, most people can grasp this concept easily.

* For- Example:-

In the treatment group the odds of an event is the number of tutored student who fail a class / the numbers of student in the tutored group who passed all their classes.

Relative Risk is the proportion of exposed people who develop the disease.

$$\text{Relative Risk} = \frac{\text{Incidence of Exposed}}{\text{Incidence of non-exposed}}$$

or

$$RR = \frac{a/a+b}{c/c+d}$$



QUESTION: NO: 04 ::

Q4: What is meant by prevalence in research?
Also explain point and period-prevalence?

A. :: PREVALENCE IN RESEARCH:

Prevalence is a statistical concept referring to the proportion of a population who have a specific characteristic in a given time period. and such as also referred to as point prevalence.

This point or / can refer to the specific point / fixed point in the course of events that varies in real time from person to person.

POINT PREVALENCE ::

The point prevalence is referred to the prevalence measured in a particular point in time. It is proportional to the person with a particular disease or attribute on a particular date.

$$\text{point prevalence} = \frac{\text{Number of current (new and pre-existing) at a specific point in time}}{\text{Population at the same specified point in time}}$$

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PERIOD PREVALENCE ::

The period prevalence refers to the prevalence measured over an interval of time. Point prevalence and period prevalence are given as:

Period prevalence = $\frac{\text{Number of current cases (new and preexisting) over a specified period of time.}}{\text{Average / mid-interval population.}}$

Average / mid-interval population.

E.g.: Frequency of patients receiving psychiatric Rx between May 31 - Dec 01 2008.

Period prevalence represent the proportion of the cases that exist within a population at any point during a specific period of time.