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IMPLEMENTATION OF STATISTICS: A STEPPING STONE OF DATA ANALYSIS AND INTERPRETATION IN MULTIDISCIPLINARY PURPOSE

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Introduction: -

- Statistics plays a vital role in every field of human activity. It is the study of the collection, organization, analysis, interpretation and presentation of data. Application of statistical methods are allowing to make progress (stepping stone) in every research field. It holds a central position in almost every field, including industry, commerce, social science, trade, physics, chemistry, economics, mathematics, biology, botany, psychology, astronomy, etc.
- It Emphasis the logical and critical analysis of every field related to education, economic, health, social and nutritional status of an individual which are the key elements of quality of life of every individual.
- Different problems are structured in different way related to multidisciplinary field which helps the learner to use the given information and solve in a critical way of thinking.
- All the objectives and question has been discussing by using different statistical method with the help of an appropriate example from the reflection question area of introduction to statistical analysis. (Module-1, module-2, module-3 &module-4)
- Therefore, it is essential to assess the educational status, economic status, health status and nutritional status to enhancing the quality of research in different field which enhance the quality of life of every individual in every field.
- Result has been discussed from the different point of view according to the different statistical method which are used for this report.
- Application of statistics will help to Assess the various issues related to different field give an idea to understand the different subject in a holistic way.

The following objectives are set for the present report

Objectives: -

1. To study the aptitude skill test of college students with their scores.
2. To study the economic status of unorganised sector of workers.
3. To study the health status of a patient in a covid hospital.
4. To study the mid-day meal scheme on nutritional status of tribalschool and rural school going children.

Analysis and interpretation:

Data analysis and interpretation is the process of assessing meaning to collected information and determining and the conclusion, significance and implication of the findings. For thispresent report irrelevant and redundant data has been collected where the researcher tries to give a meaningful and useful information regarding the data

In the present report the following section has been consider to analysis and interpretation of data.

i. Section-1 Assessment of aptitude test of college students.
ii. Section-2 Assessment of economic status of unorganised sector of workers.
iii. Section-3 Assessment of Health status of patient in a Covid hospital.
iv. Section-4 Assessment of Mid-day-meal scheme on nutritional status of tribal and rural school going children.

The present study has been conducted by using the descriptive survey where to gather data about varying subjects' area. Report has been standardized with different discipline such as educational sector, economic sector, health sector and Govt. intervention programme (MDM) which were executed on the selected sample.

Section-1 To study the aptitude skill test of college students with their score.

Data: -The data comprised of scores 500 students. Average score was 74.8 and standard deviation was 7.8. We have to find out how many candidates have marked 60-80 and how many candidates secured above 80.

Result and interpretation: -

Standard score of 60= (60-74.8)/7.8=-1.89σ. i.e. -1.89σ distance from the mean (1.89 below the mean). Standard score of 80= (80-74.8)/7.8=0.66σ. i.e., 0.66σ distance from the mean (0.66 above the mean). Between mean and -1.89$\boldsymbol{\sigma}$ there are 47.06% of scores and between mean and 0.66$\boldsymbol{\sigma}$ distance, there are 25.54% of cases lie. So, between -1.89$\boldsymbol{\sigma}$ and 0.66$\boldsymbol{\sigma}$ (47.06%+25.54%) =72.6% of score lies. Therefore 72.6% of 500=72.6* 100/500=363 candidates Hence, we will say that 363 candidates have marked between 60-80. In this question it has been given that score above 80 means it's not equal to 80 hence we will take 80.5 score for calculation. Standard score of 80.5= (80.5-74.8)/7.8=0. 73$\boldsymbol{\sigma}$.Between mean and 0.73$\boldsymbol{\sigma}$. There are 26.73% of score lie. Hence percentages case above 0.73$\boldsymbol{\sigma}$ is =50-26.73=23.27%. So,23.27% of 500=23.27×100/500=116.35. Therefore, we can conclude that 116 candidates secured score above 80.

Section-2 Assessment of economic status of unorganised sector of workers

Data: -The data comprised of economicstatus of350(M) unorganised workers with mean wage 10(n) and standard deviation 12.8(sd). We have to find out the economic status of limit of .95 confidence level and .99 confidence level.

Result and interpretation: -

SEM= σ / $\sqrt{n}$=4.05, Degree of freedom(df)=n-1=10-1=9.From the t -distribution table at -05 level of significance is 2.26(critical value).M$\pm$2.26SEM=350$\pm$2.26 × 4.05 = 350 $\pm$ 9.15.The range between 350-9.15 to 350+9.15. Hence the limit or range is between 340.85 to 359.15 at the .05 confident level. Also, we can conclude that p=.05 and the population mean is lie in the interval 340.85 to 359.15.

From the t-distribution table with the df=9 the t-value at the .01 level of significance is 3.25. So, 99% confidence interval includes the range M$\pm$3.25 SEM. Hence the limit range is between 336.84 to 363.16. hence, we can interpret that the limit of 99% confidence interval include 336.84 to 363.16. p=.99 that the population mean lie in the interval 336.84 to 363.16 and we are 99% confidence with this limit and 1% risk will take.

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Section-3 Assessment of Health status of patient in a Covid hospital

Data: -The data comprised of heart beat of patients in a covid hospital of 72(Mpop), standard deviation 12(sd), group of patients 50(n) and sample mean is 75(Ms)We have to f test, whether the difference is significant at 0.01 level of significance?

Result and interpretation: -

SEM= σ / $\sqrt{n}$=1.69. Z-value=Mpop-Ms(D)/SEM=1.77(Calculated value). Z (.01) = 2.58 is the critical value.Calculated value (1.77) <2.58. Hence, we can interpret that the difference between the sample mean and population mean is not significant. So, we are 99% confidence or the probability in saying that the difference between the sample mean and population mean is not significant. It means we are taking only 1% risk in this given statements. Also, in testing hypothesis we accept the null hypothesis and reject the alternative hypothesis.

Section-4 Assessment of Mid-day-meal scheme on nutritional status (weight)of tribal and rural school going children.

Data: -The data comprised of investigation of Mid-day meal on nutritional status (weight) of two school children. Following information are collected where 40 sample collected from tribal school and 50 sample collected from urban school. Mean weight of tribal schoolchildren are 36kg, standard deviation is 3.4 kg. mean weight of rural school children is 38kg & standard deviation is 4. 6kg.We need to test the whether the mean difference in weight is significant at .01 and .05 level.

Result and interpretation: -

Tribal children school-1		**Rural children school-2**	
n1	**40**	**n2**	**50**
M1	**36 kg**	**M2**	**38kg**
SD	**3.4kg**	**SD**	**4.6kg**

Standard error ($\boldsymbol{\sigma}$E) == σ / $\sqrt{n}$= 0.84

After use this formula the value of Z=m1-m2/ $\boldsymbol{\sigma}$E =2/0.84=2.38

Critical value (0.05) of Z =1.96, Hence (2.38>1.96)

So, the null hypothesis is rejected, and we can interpret that there is a significant difference between the mean weight tribal children of school 1 and rural children of school -2 in mid-day meal investigation. we are 95% confident in saying that the two groups of children are at par with each other in terms of mean weight. The small different is due to sampling error or fluctuation in sampling.

Critical value (0.01) of Z= 2.58, Hence (2.38<2.58)

So, the null hypothesis is accepted, and we can interpret that there is no significant difference between the mean weight of tribal children school-1 and rural children school -2 in mid-day meal investigation. we are 99% confident in saying that the two groups of children are at par with each other in terms of mean weight. The small different is due to sampling error or fluctuation in sampling. That means the accuracy is more at the 0.1 level of significant in comparison to 0.5.

It is one-tail test and right-tail test and need to test one direction. In one tail test, critical value of Z=2.33, Hence (2.38> 2.33). Null hypothesis(H0) is rejected;Therefore, the mean weight is significant at .01 level .so, wecan say that rural children of School 2 are provided with additional portion in mid-day meal leads to increase weight.

Discussion and conclusion: -

Educational field: -On the basis of findings, it was revealed from of the study that out of 300 students of aptitude skilltest, 363 students have mark between 60-80 and 116 candidates have secured above 80 marks. The performances of the students among 60-80 score were more than the 80 score. But the aptitude skill among the students can be developed by providing different source of study material, good quality of teachers. Further It helps the students to prepare for the future competitive examination.

Economic field: -On the basis of findings, it was revealed from the study that out of 350 workers the range of economic limit lie from 340.85 to 359.15 at 95% confident level and 336.84 to 363.16 lie at 99% confident level which are contain the true mean value. This range of values about the population mean reflect the range of economic status of unorganised worker. Hence it is very important for the private company, policy makers and government to provide skill-based training programme to the unorganised worker to enhance their economic status as well as improve their standard of living.

Medical field: -On the basis of analysis of 72 patient in a covid hospital, it was found that Calculated value (1.77) <2.58. Hence it is clear that there is a no significant difference between sample mean and population mean at 99% confident. Because there is no difference therefore the health status of a patient may be improving by morewell-informed diagnoses, take good care of the clinicians and make the patient feel comfortable.

Health &Nutrition field: -In this analysis conducted a study of implication of mid- day meal programme between the tribal school going children and rural school going children. It was revealed from the study that2.38(Z) >1.96(critical value) at (.05) significance which interpret that there is a significant difference between the mean weight of tribal school children and rural school children. Also found that 2.38(Z)> 2.33(critical value) at (.01) level of significant which

also interpret that there is a significant difference between these two schools. Thus, it can be concluded that mid-day meal scheme is a school meal programme in India designed for improve the betternutritional status of school children in worldwide specially for rural and tribal areas. There need to be awareness, proper implementation, and evaluation of this programme by the stakeholder in community level.\

Conclusion: -

Thepresent report is based on four multidisciplinary studies related to different field such as education, economic, medical and health & nutritional status. These are the four major indicators of human development index (HDI).HDI is a statistic composite index of life expectancy, education, per capita income indicators which are used to rank the countries into four tires of human development. In this report all the analysis and interpretation has been done in critical way of thinking. These four studies are the pillar of quality of life. It could help to all the researcher and stakeholders (teachers, parents, health workers, doctors, policy makers) for taking initiative for overall improvement of individuals in the society, improve standard of living and enhance the quality of life. A good education, good economic status, healthy life and optimum nutritional status enhances the Human development index (HDI) of every country.

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