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BANARAS HINDU UNIVERSITY

ACADEMIC PERFORMANCE OF NEW COMERS IN BHU

A STUDY ON BHU STUDENTS

DEPARTMENT OF STATISTICS

ACADEMIC YEAR 2023-24

SEMESTER:- 6th

UNDER THE SUPERVSION OF:-

DR.RAJESH KUMAR SINGH
DEPARTMENT OF STATISTICS
INSTITUTE OF SCIENCE
BANARAS HINDU UNIVERSITY

SUBMITTED BY:-
ASHWANI KUMAR
B.Sc.(Hons) STATISTICS
Exam Roll No
21220STA021

CERTIFICATE

This is certified that the project report entitle as "ACADEMIC PERFORMANCE OF THE NEW COMERS IN BHU" has been successfully conducted and completed under supervision and guideline. The data used in this project was collected, analysed, and submitted by ASHWANI KUMAR, B.Sc.(Hons) statistics semester 6 (BHU).

Dr. Rajesh Singh
Department of statistics
Banaras Hindu University

ACKNOWLEDGEMENT

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I'm also grateful to other respected faculty members of the department for their invaluable suggestion. Last but not the least, I express my heartiest thanks to my parents, friends and respondent as well for their support.

ASHWANI KUMAR
B.Sc. (Hons)
Department of Statistics
Banaras Hindu University

CONTENTS

ABSTRACT-

The transition to university life poses a significant challenge for newcomers, impacting their academic performance. This project aim to analyze the factor influencing the academic success of first year university student. Through a mixed-method approach be surveyed 80 students to explore various aspects such as study habit social interaction and support system. Preliminary findings suggest that the time management skill engagement and faculty and peer support play crucial role in shaping newcomers academic outcome the project also explain the correlation between students background and their adaptation to the university environment by identifying key predictor of academic performance this study provides valuable insights for developing targeted interventions to assist newcomers in their academic journey.

Introduction-

The transition to university life is a pivotal moment that can shape a student's academic trajectory. At **Banaras Hindu University** a prestigious institute some diverse students body, understanding the academic performance of newcomers is crucial for forecasting an environment conducive to learning and growth. This project delves into the multifaceted aspects influencing the academic outcome of the freshman at **BHU**.

The academic performance of students is not merely a reflection of the their intellectual capabilities but also a complex interplay of socioeconomic background, psychological well-being, and the support system available to them. As **BHU** welcomes a new cohort of students each year it becomes imperative to analyze how these factor converge to impact their academic success. This study aims to provide a comprehensive analysis of the academic performance of newcomers at BHU by examining various determinants such as study habits access to resources and adaptation to the university culture.

Through quantitative and qualitative research methods including surveys and interviews we seek to uncover pattern and insights that can inform strategies to enhance the academic experience of incoming student by focusing on the first year student's performance, this project not only contribute to the academic literature but also serves as a valuable resource for university administrators educators and policymakers committed to provide student outcomes the finding of this research will pave the way for targeted intervention and support program that can assist newcomers in navigating the challenges of university academics and ultimately thriving at BHU.

STATEMENT OF THE PROBLEM

The transition to university life represents a significant milestone in the educational journey of students. At Banaras Hindu University (BHU), the academic performance of newcomers has emerged as a focal point of educational research due to its potential implications on long-term academic success and student well-being. This study aims to investigate the multifaceted challenges faced by freshmen at BHU, which may include adapting to a new academic environment, coping with the increased rigor of university coursework, and managing the social and emotional aspects of integrating into a new community. The research will explore how these factors correlate with the academic outcomes of first-year students. By identifying the key determinants of academic performance among newcomers, the study seeks to inform the development of targeted interventions and support systems that can facilitate a smoother transition and promote academic excellence at BHU.

SCOPE OF STUDY

The scope of study is restricted to Banaras Hindu University only. In this study I have evaluated the academic performance of newly admitted student at BHU and factor associated with it the finding of the study and the conclusion drawn are based on the analysis of the information collected through the questionnaire

OBJECTIVES

1-To find that in which subjects students are facing more challenges to clear in PMS and SMK Group.

2- To examine how the various factor such as family backgrounds, current place of resident, sleeping time affect their study.

3-To study the relationship between the study hours and CGPA.

METHODOLOGY

The overall design or strategy that helps in obtaining the desired goal and objectives of the research is referred to as research methodology it is basically a confirmation that the problem under study has been analyzed and addressed thoroughly this give effectiveness and completion to the research.

This study is both descriptive and analytic in nature the data has been collected through primary sources. The primary data has been collected through a well structured question are you using it stratified random sampling technique the research methodology include research design data collection reliability and validity analysis of data and ethical issues involved in the research process.

DATA TYPE

The project contain primary data collected through a questionnaire the primary data for this research study will be collected using a distributed questionnaire. The data of the questionnaire was collected from 100 participants which will be used as primary source of the data analysis.

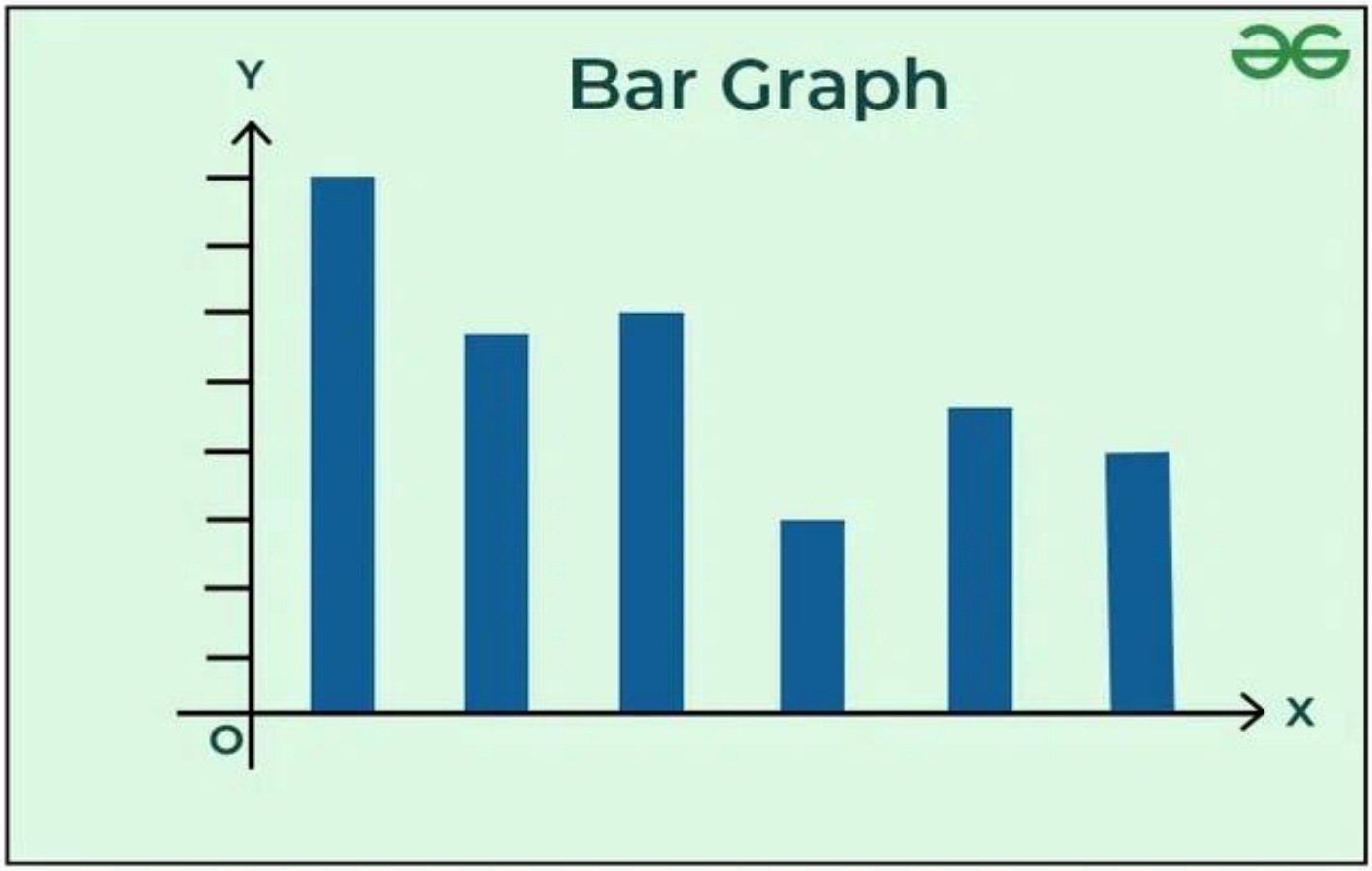
Data Representation

After the analysis of the data associated with the objective get completed. Next steps is representation of it in terms of graphs and tables there are various ways to fulfill this aim. I have chosen the following methods

Bar Diagram or Bar chart-

A bar diagram or bar chart is a chart with rectangular bars with the length of bars proportional to the values of the category they represent the bars can be plotted vertically or horizontally.

A vertical bar chart is sometimes called a column bar chart bar the graph is a chart that uses either horizontal or vertical bar to show comparisons among categories. Some bar graphs represent bars clustered groups of more than one (grouped bar chart) and others show the bar divided into sub part to show the cumulative effect (stacked bar graph).



Pie Chart-

A pie chart is a circular statistical graphic that is divided into slices to illustrate numerical proportion in a pie chart with the arc length of each slice and consequently its central angle and area is proportional to the quantity it represents while it is named for its resemblance to a pie that has been sliced pear or variations in the way it can be presented.

Frequency Distribution Table-

A frequency distribution table is a list or table, displaying the number of times a variable has attained all its possible values if the frequency are distributed over different classes then the table formed is called frequency table.

Class Interval	Frequency
0-10	3
10-20	2
20-30	3
30-40	4
40-50	3
50-60	2
60-70	3
Total	20

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Descriptive Analysis and Interpretation

For obtaining a useful results, reaching a strong conclusion and decision making it is important to analyze the obtained data. The process of analysis is transforming all the obtained data into useful data and then obtaining a clear conclusion about the data.
The analysis process also includes examining the data building relation of different data type with each other and trends of different factor.

For measuring data that means answer obtained from the questionnaire has been analyzed in a way to build pattern of user behaviors and find out what are the most commonly occurring behavior or impacts this has helping concluding and determining the future directions of research.

I have used Microsoft Excel for the analysis of data and one test had also been employed to check the validity of the statement via chi square for the independence of attribute.

Descriptive Analysis of the Results

Now we present a characterization of the interviews included in the sample description of their academic performance of who or what has a strong influence on their academic performance and the results obtained in each component.

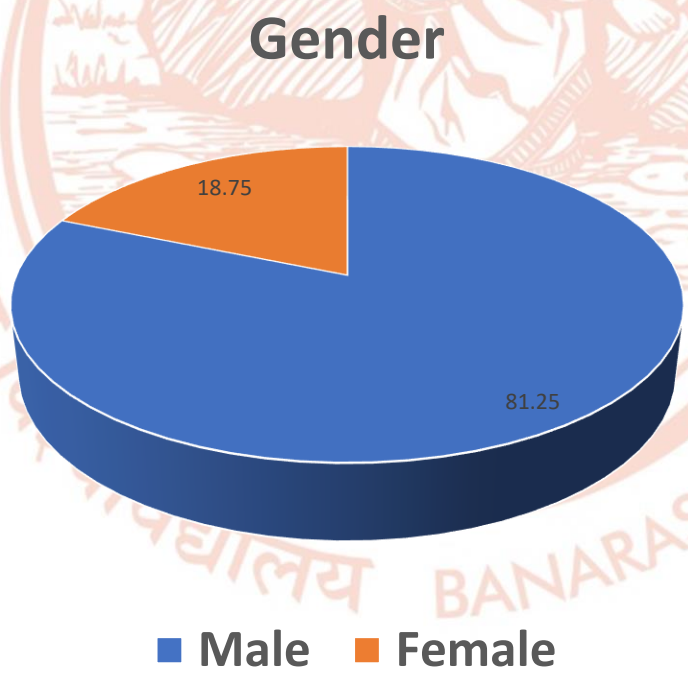
1 Representation of Gender-

The data was collected from PMS,EMS and SMK groups in **BHU**.

TABLE 1

Gender	No of students	Percentage
Male	65	81.25
Female	15	18.75
Total	80	100

Graphical representation-



Interpretation-

- **From the sample of 80 students, 65 were male i.e. about 81.75% were male.**
- **15 out of 80 were female i.e. about 18.25% were female.**

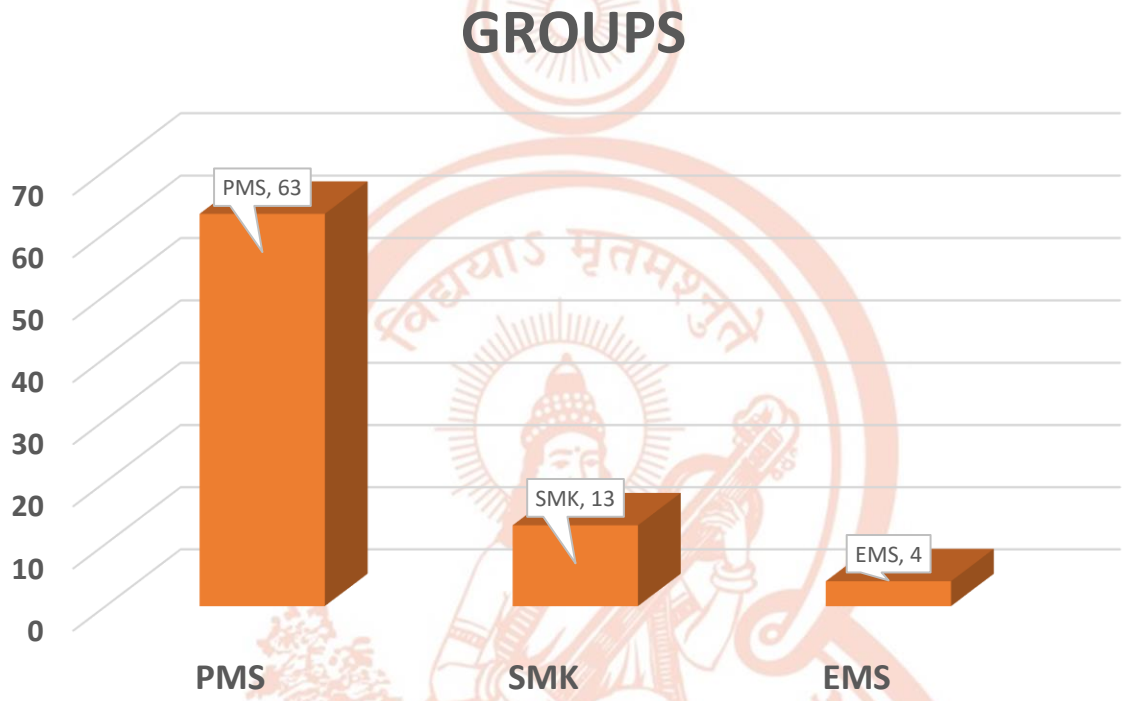
Subject Combination-

Data is collected from PMS,EMS and SMK groups.

TABLE 2

Groups	No of students	Percentage
PMS	63	78.75
SMK	13	16.25
EMS	4	5

Graphical representation-



Interpretation-

- From the sample of 80 students 63 are from PMS 13 from SMK group and 4 from EMS group.
- The maximum number of respondent are from PMS group. 63 out of 80 i.e. 78.75% out of total population.
- The minimum number of respondent are from EMS group. 4 out of 80 i.e. about 5% of total population.

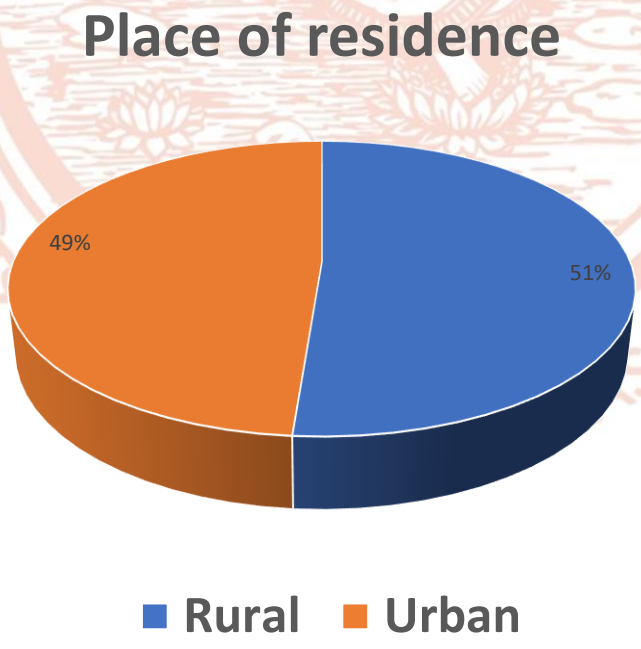
Family Residence-

Collect data on family residence to know that how it affect students performance.

TABLE 3

Family Residence	No of students	Percentage
Rural	41	51.25
Urban	39	48.75
Total	80	100

Graphical representation-



Interpretation-

- **Out of 80 samples 41 students are from rural area i.e. 51.25% of the total population were from rural residence.**

- **39 students are from urban area i,.e. 48.75% were from urban residence.**

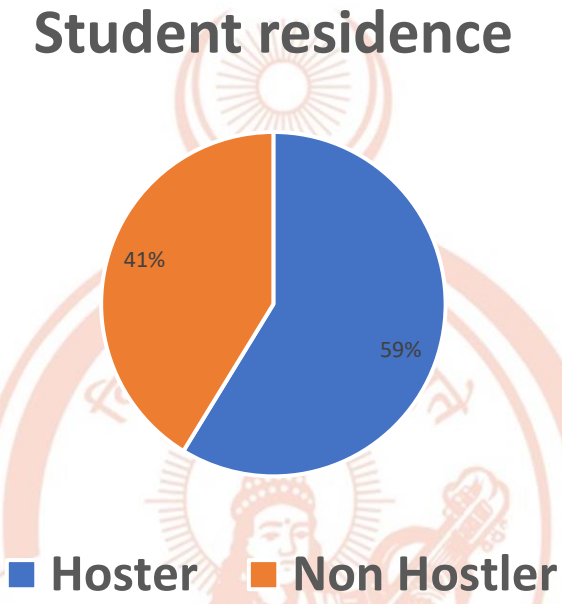
Student's residence-

Student from different resident i.e. hostelers and non-hosteler have different place to study and it effect their academic performance.

TABLE 4

Students Residence	No of students	Percentage
Hosteler	47	58.75
Non-Hosteler	33	41.25
Total	80	100

Graphical representation-



Interpretation-

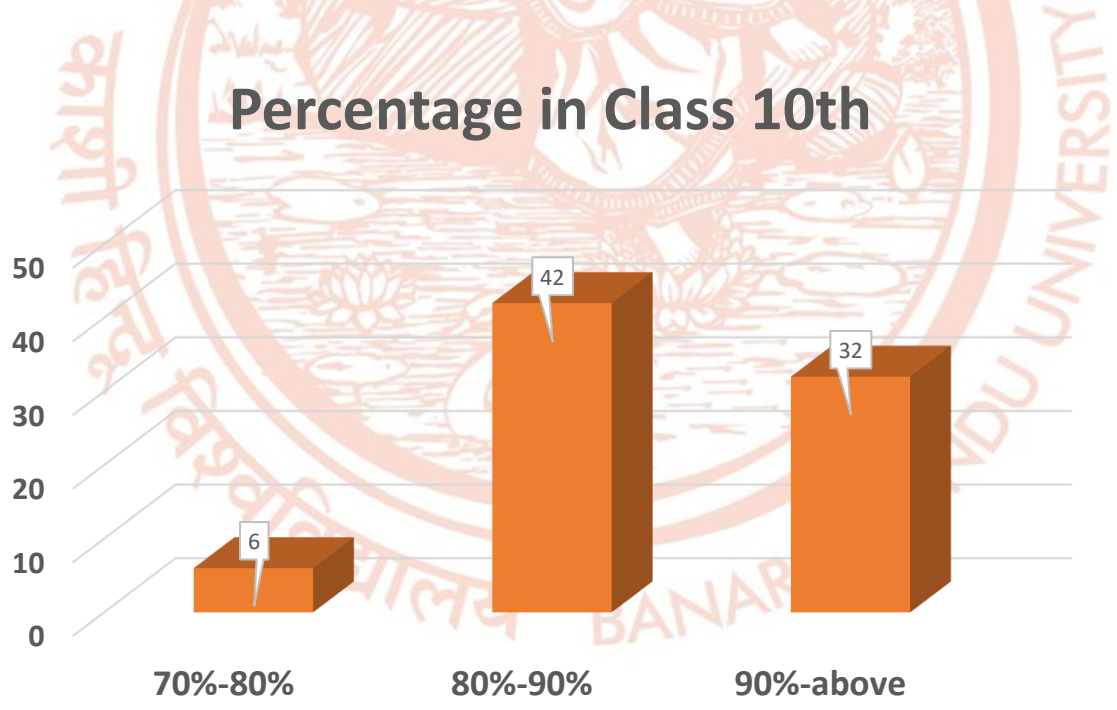
- About 47 student out of 80 were from the hostels of BHU.
- 33 students were non hosteler that is they were living in private PG.

Percentage in class 10th

TABLE 5

10th Percentage	No of students	Percentage
70-80	6	7.5
80-90	42	52.5
90-above	32	40

Graphical representation-



Interpretation-

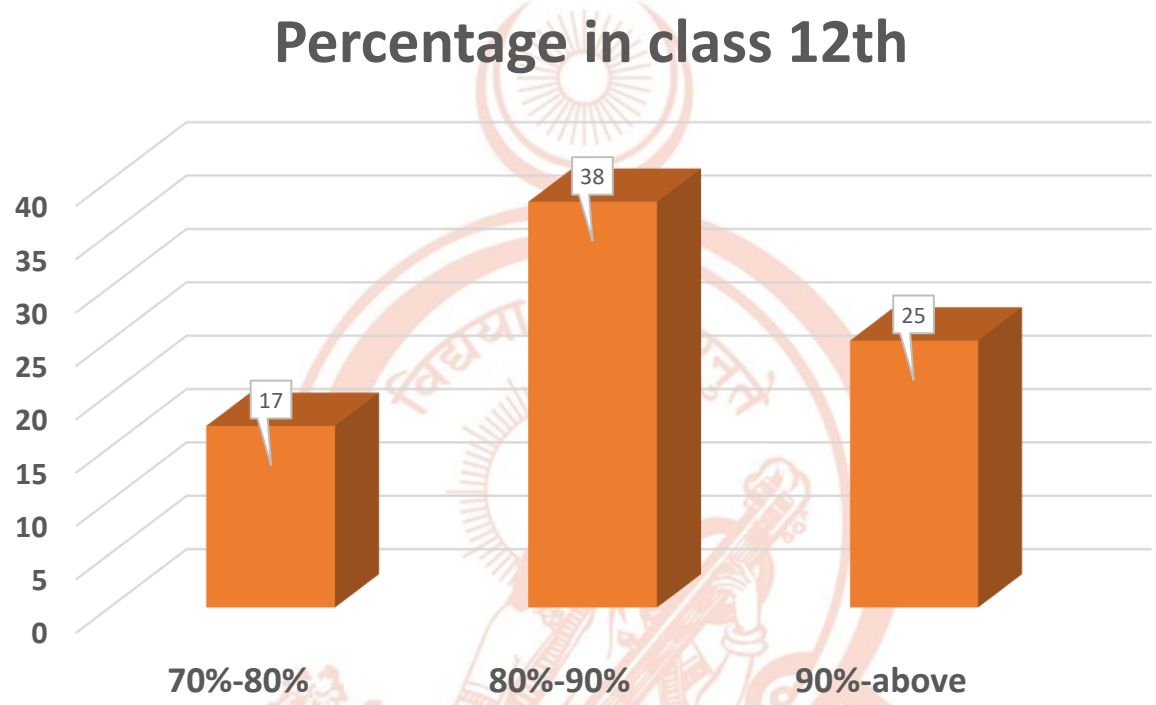
- Out of 80 students 6 students obtained 72%-80% in class 10th
- 42 students obtained 80%-90%
- 32 student obtained 90 and above

Percentage in class 12th

TABLE 5

12TH Percentage	No of students	Percentage
70-80	17	21.25
80-90	38	47.5
90-above	25	31.25
Total	100	100

Graphical representation-



Interpretation-

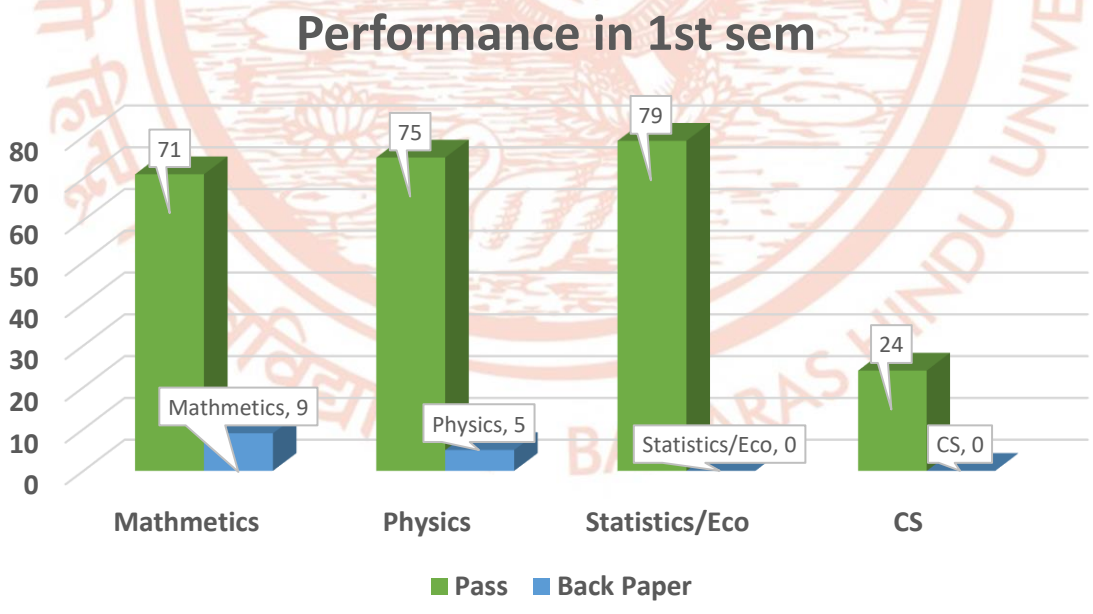
- Out of 80 students 17 students obtained 72%-80% in class 10th
- 38 students obtained 80%-90%
- 25 student obtained 90 and above

Performance in 1st Semester-

TABLE 6

Subjects	Pass Students	Back Paper
Mathematics	71	9
Physics	75	5
Statistics/Eco	79	0
Computer science	24	0

Graphical Representation



Interpretation-

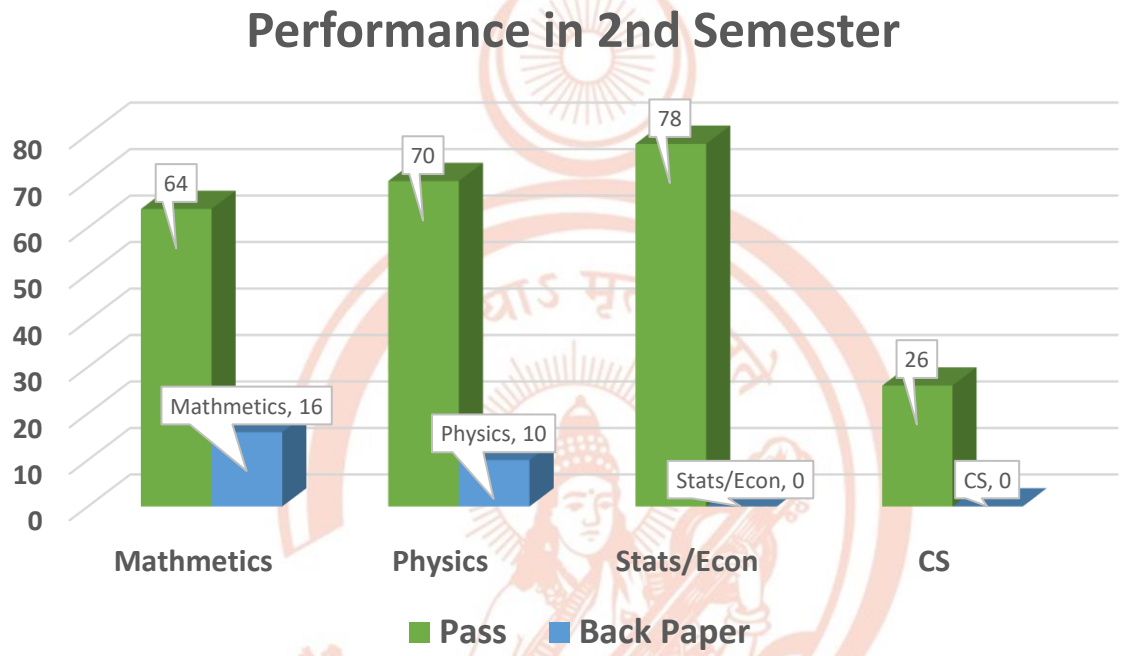
- Out of 80 students 74 students were pass in mathematics and 5 students face Back paper i.e. approximately 6.25% out of total population face back in mathematics.
- 62 Students pass in Physics and 6 students face back i.e. approximately 7.25% out of total population face back in Physics
- Out of 80 students approximately all students pass the statistics, economics and computer science paper.

Performance in 2nd Semester

TABLE 7

Subjects	Pass Students	Back Paper
Mathematics	64	16
Physics	70	10
Statistics/Eco	78	0
Computer Science	26	0

Graphical Representation



Interpretation-

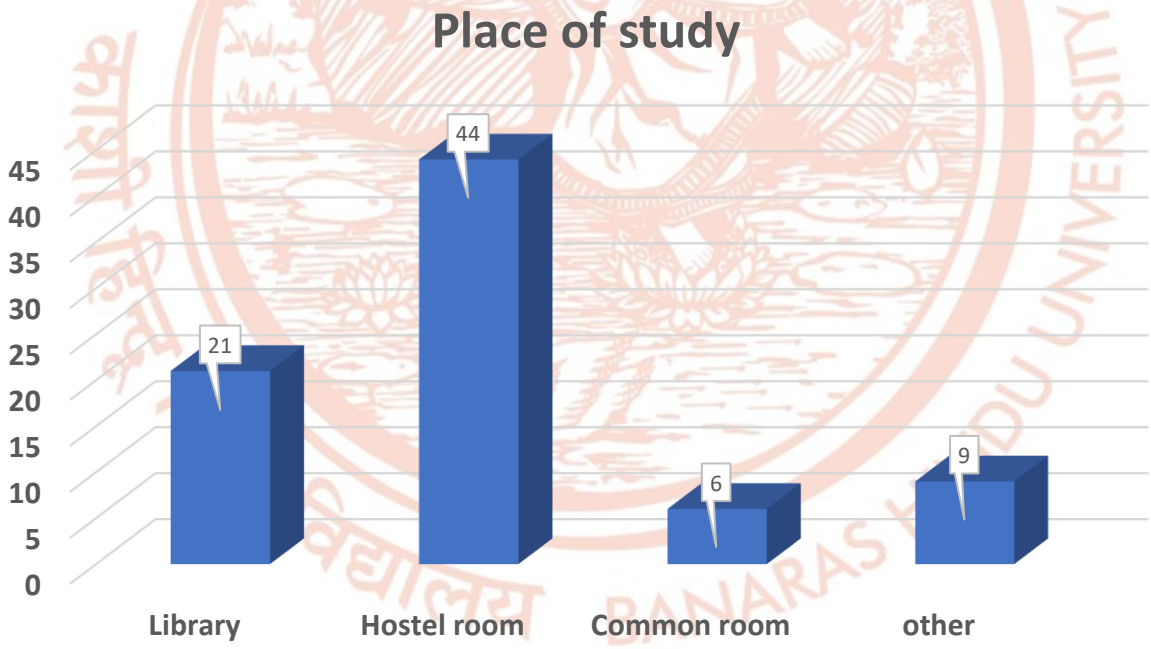
- **Out of 80 students 65 students were pass in mathematics and 14 students face Back paper i.e. approximately 17.5% out of total population face back in mathematics.**
- **61 Students pass in Physics and 7 students face back i.e. approximately 8.75% out of total population face back in Physics**
- **Out of 80 students approximately all students pass the statistics, economics and computer science paper.**

Preferred Time for study-

TABLE 8

TIME	No of students	Percentage
Morning	6	7.5
Evening	24	30
Night	50	62.5

Graphical Representation-



Interpretation-

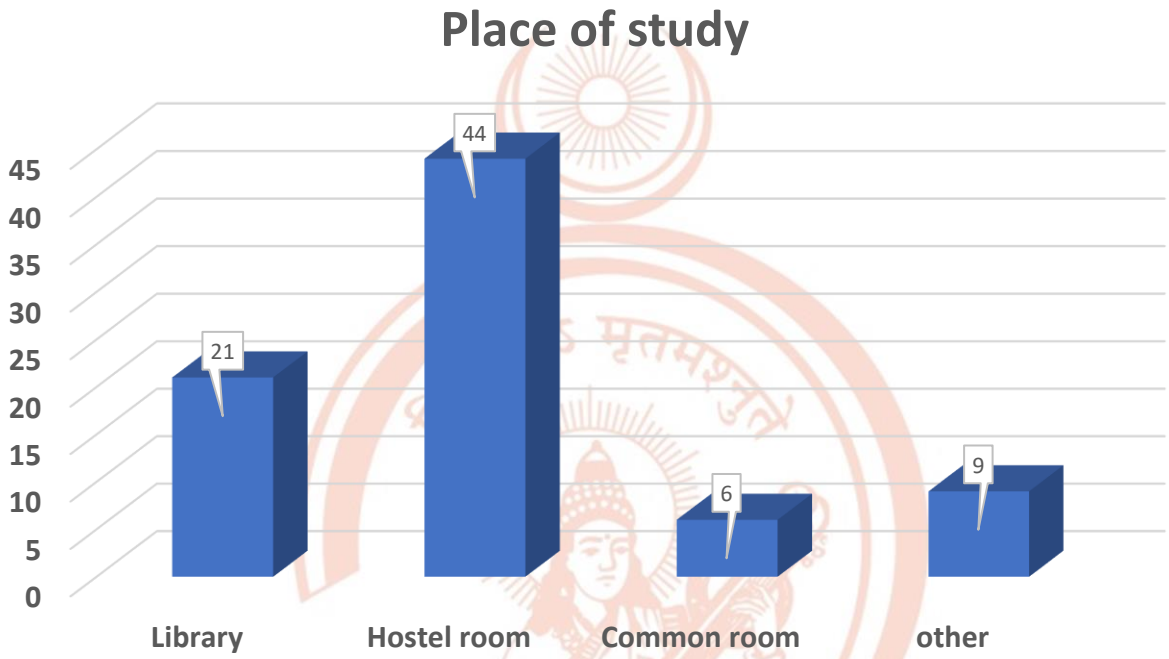
- About six student out of 80 sample study in morning that is 7.5% student study in morning.
- 24 student study in evening that is 30% to student of the population we study in the evening
- 50 out of 80 students study in night that is 62.5% student study in night.

Place of study

TABLE 8

Place	No of students	Percentage
Library	21	26.25
Hostel Rooms	44	55
Common Room	6	7.5
Other	9	11.25
Total	80	100

Graphical Representation-



Interpretation-

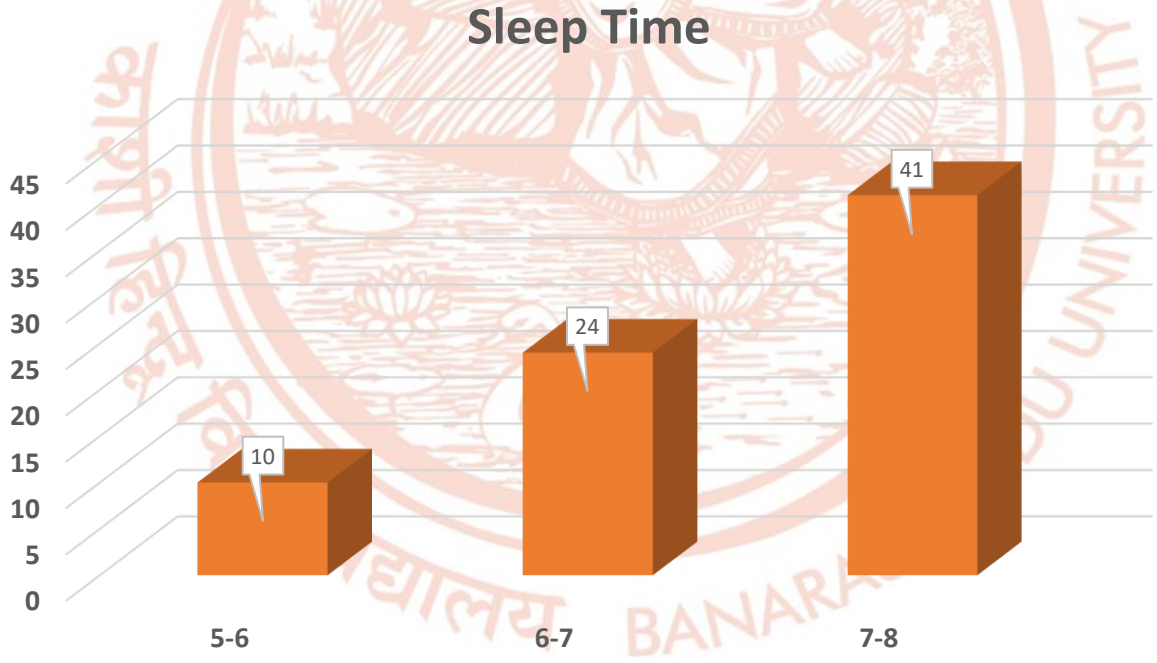
- **Out of 80 samples 21 students study in library that is 26.25% is students study in library.**
- **44 is students study in hostel rooms that is 55% the student study in hostel room.**
- **15 students study in common room and other places that is 18.75 students study at other places.**

Sleeping Time-

TABLE 9

Sleep Time	No of Students	Percentage
5-6	10	12.5
6-7	24	30
7-8	41	51.25
others	5	6.25

Graphical Representation-



Interpretation-

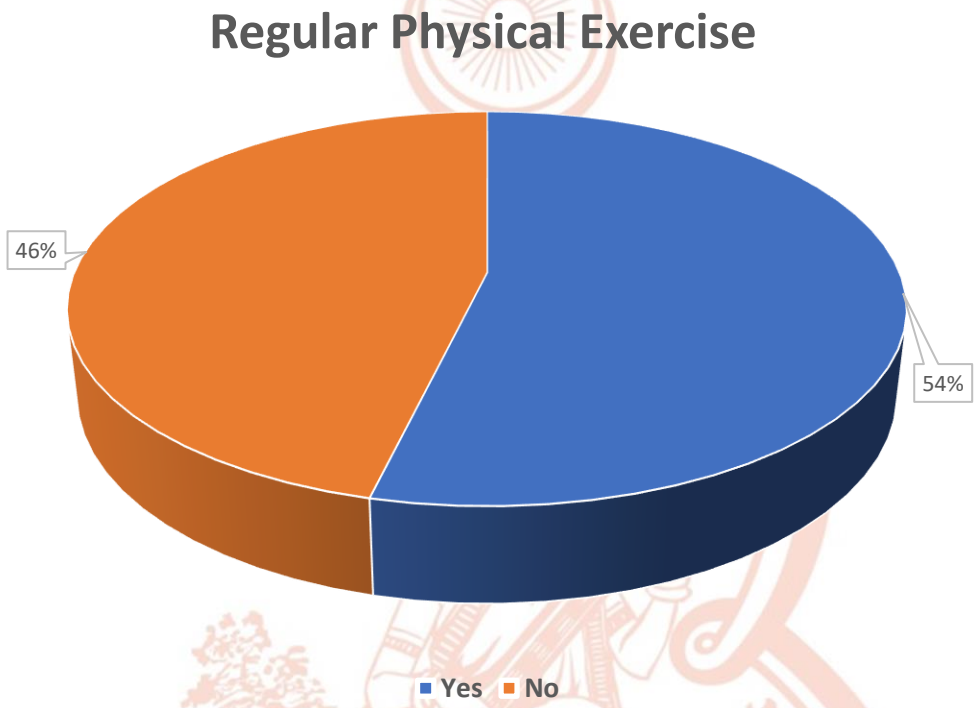
- Out of 80 students 10 students take sleep of 5-6 hours i.e. 12.5% students sleep 5-6 hours.
- 24 students sleep 6-7 hours i.e. 30% students sleep 6-7 hours
- 41% students sleep 7-8 hours i.e 51.75% students sleep 7-8 hours.

Physical Exercise

TABLE 10

Exercise	No of students	Percentage
Yes	43	53.75
No	37	46.25
Total	80	100

Graphical Representation-



Interpretation-

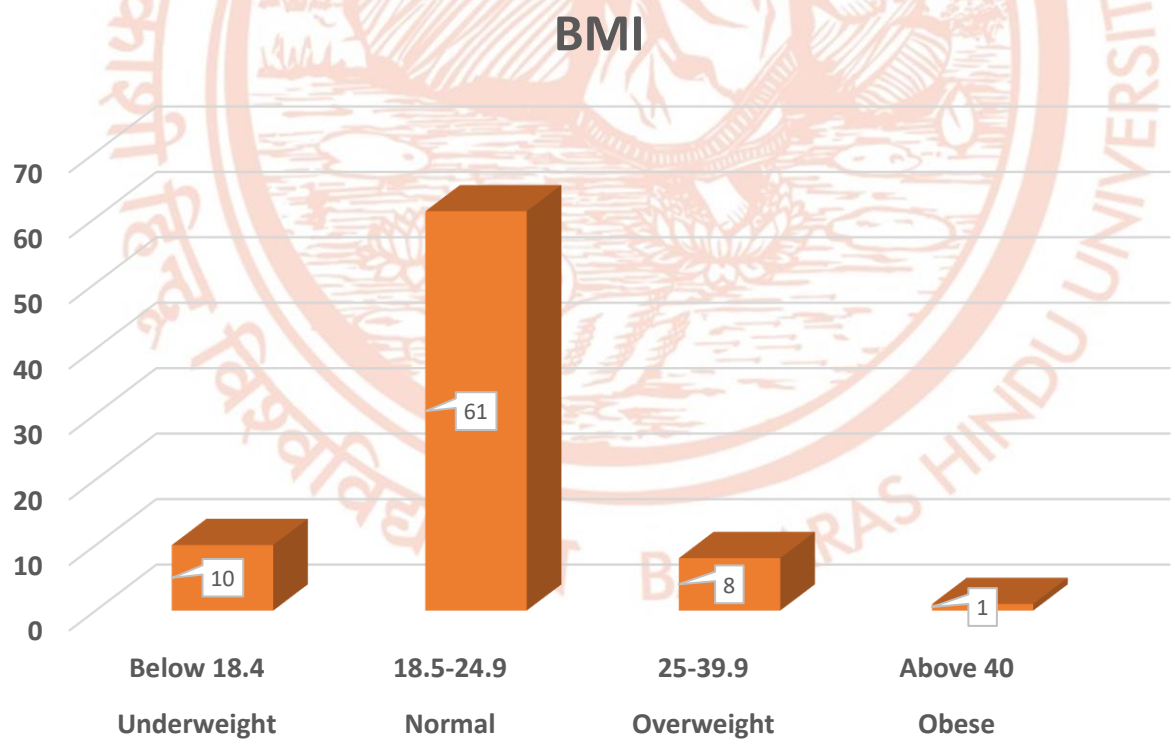
- From the sample it is apparent that out of 80 students 43 student involved in regular physical exercise i.e. 53.75% students engage in physical exercise.
- 37 out of 80 student do not engage in physical exercise i.e. 46.2% is student not engage in physical exercise.

BMI-

TABLE 11

BMI	No of Students	Percentage
Below 18.4	10	12.5
18.5-24.9	61	76.25
25-39.9	8	10
Above 40	1	1.25
Total	80	100

Graphical Representation-



Interpretation-

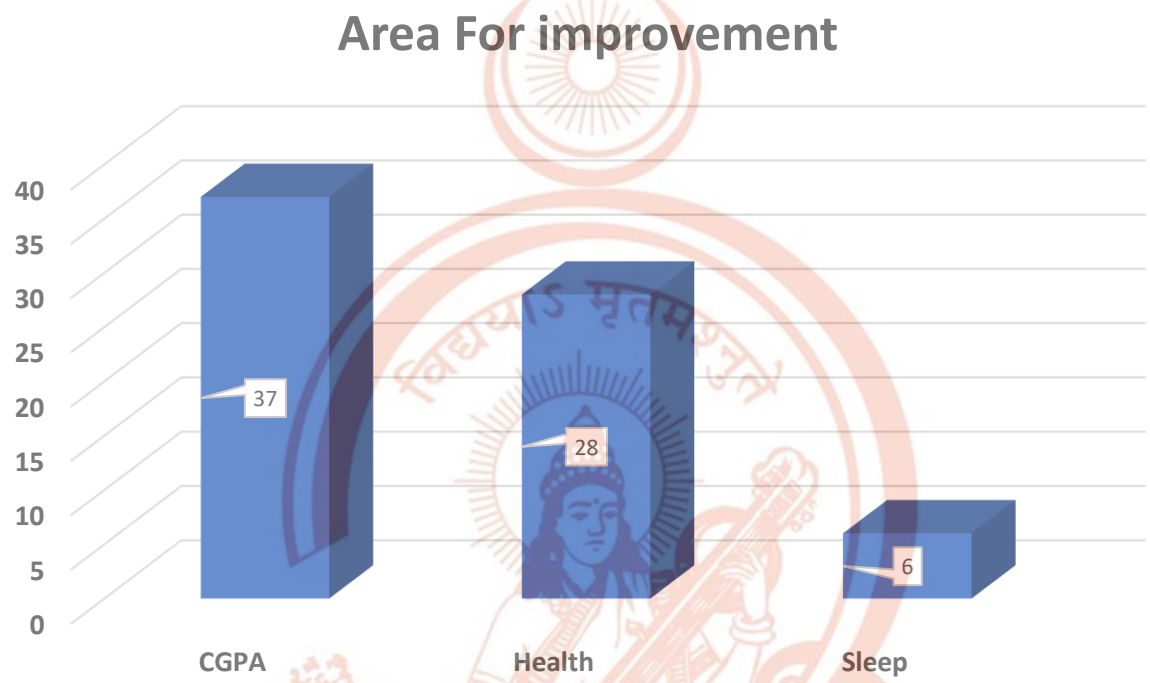
- Out of 80 sample it is obtained that 12.5% students are underweight
- 76.25 students are normal.
- Approximately 10% of students are overweight and 1.25% students have obesity.

Specific Area for improvement-

TABLE 12

Area for improvement	No of Students	Percentage
CGPA	37	46.25
Health	28	35
Sleep	6	7.5
Other	9	11.25
Total	80	100

Graphical Representation-



Interpretation-

- **About 37 students out of 80 samples want to improve their CGPA.**
- **28 students wants to improve their health**
- **15 is students wants to improve in their sleeping pattern and other activity.**

Data Analysis and Interpretation-

In order to extract useful results for searching a strong conclusion and decision making it is important to analyse the data. The process of analysing is transforming all the obtained data into useful data and then opinion a clear conclusion about the data. The analysis process also including examining the data building relation of different data types and each other and trend to different factor.

Concept of Z test-

The **two- sample Z-test** is a statistical method used to determine if there is a significant difference between two population proportions based on sample data. Here's a concise overview:

•**Purpose**: It tests the hypothesis that two proportions are equal, often used in A/B testing or comparing success rates.

•**Hypotheses**:

- **Null Hypothesis (H_0)**: The two population proportions are equal i.e. $p1 = p2$.
- **Alternative Hypothesis (H_1)**: The two population proportions are not equal i.e. $p1 \neq p2$ or one is greater than the other depending on the test direction.

•Formula:

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{p(1-p)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where p1 and p2 are sample proportion
n1 and n2 are sample size and

$$p = \frac{x_1 + x_2}{n_1 + n_2}$$

The null hypothesis is tested either on 5% or 10% level of significance.

Decision-

If the P value of the test is less than the alpha level of significance then we reject the null hypothesis otherwise we may accept the null hypothesis.

OR

If the test statistics is greater than critical value then we reject the null hypothesis otherwise we may accept the analysis

TEST 1

In our survey let us assume that student facing more problem to clear mathematics paper than physics

From the data it is obtained that out of 160 student 25 students have back paper in mathematics and 15 students have back paper in physics in semester 1st and 2nd

The null and alternate hypothesis are

$$H_0: p_1 = p_2$$

$$H_1: p_1 > p_2$$

Where p1 and p2 are the sample proportion of mathematics and physics back paper respectively.

Given that

$$x_1 = 25, x_2 = 15$$

$$n_1 = 160, n_2 = 160$$

$$\alpha = 5\% = 0.05$$

Calculation-

$$p_1 = \frac{25}{160} = 0.15625$$

$$p_2 = \frac{15}{160} = 0.09375$$

$$p = \frac{25+15}{160+160} = 0.125$$

$$Z = \frac{0.15625 - 0.09375}{0.0369755}$$

$$= 1.69$$

Critical Value-

The critical value at alpha is equal to 0.05 is 1.64 from the normal distribution table.

P-Value-

In excel use the function = **1-NORMSDIST(1.69)** we calculate the p-value

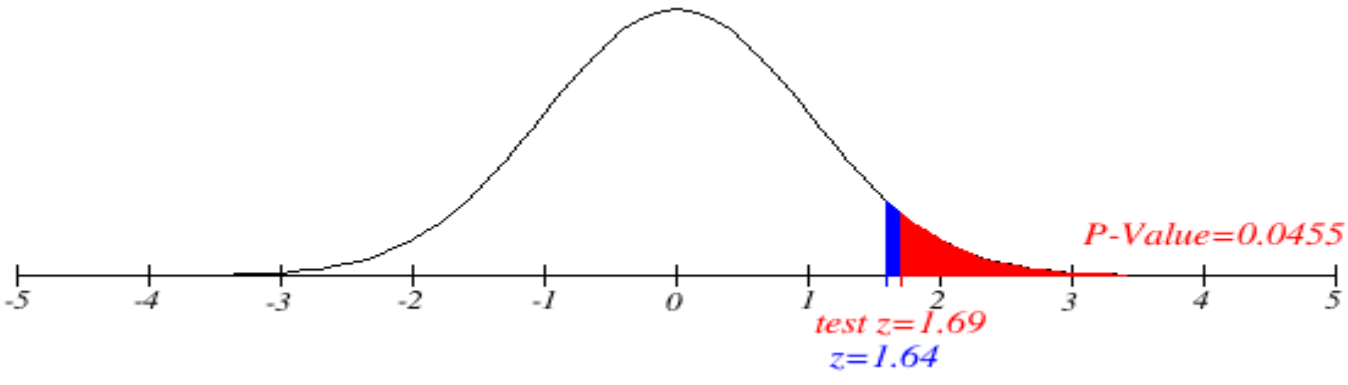
P-value = 0.0455

Decision-

The P value is 0.0455 which is less than the alpha 0.05 level of significance. So we **can reject the null hypothesis** and conclude that student faces more challenges to pass the mathematics paper than physics.

OR

Data 6 statistics 1.69 age **greater** than the critical value so we can reject the null hypothesis and conclude that student faces more challenges to pass the mathematics paper than physics



TEST 2

Concept of chi-square

Chi-square test is applied to find out whether the two variable is a bivariate contingency table under the study are dependent or independent our two hypothesis null hypothesis and alternate hypothesis are.

H0: the two attributes are independent

H1: the two attributes are dependent.

Computation is done using the formula

$$\chi^2 = \Sigma_i \Sigma_j \frac{(O_{ij} - E_{ij})^2}{E}$$

Where r and s are the number of rows and number of columns of the contingency table and I = 1,2,……,r and j = 1,2,…..,s
O is the observed frequency.
E is the expected frequency.

The test statistics follows under the null hypothesis H0 is a chi- square distribution with are (r-1)(s-1) degree of freedom the null hypothesis can be tested either at 5% or 10% level of significance

Decision-

If Chi-square calculated is less than chi square tabulated then null hypothesis may be accepted which shows that the two variables are independent of each other otherwise we may be rejected the null hypothesis which shows the two variables are not independent also when the observed frequency is less than five polling is done to apply the test.

H_0: *There is no significant relation between students current residence and their CGPA.*

H_1: *There is significance relation between students current residence and their CGPA.*

Observed frequency

TABLE 13

			CGPA		
	6-7	7-8	8-9	9-10	Total
Hosteler	8	17	19	3	47
Non Hosteler	12	17	4	0	33
Total	20	34	23	3	80

Expected Frequency

		CGPA			
	6-7	7-8	8-9	9-10	Total
Hosteler	11.75	19.97	13.51	1.76	47
Non-Hosteler	8.25	14.03	9.49	1.24	33
Total	20	34	23	3	80

Calculation-

$$\chi^2 = 11.4843$$

Degree of freedom = (r-1)(s-1) = (2-1)(4-1) = 3

$$\alpha = 0.05$$

Critical Value-

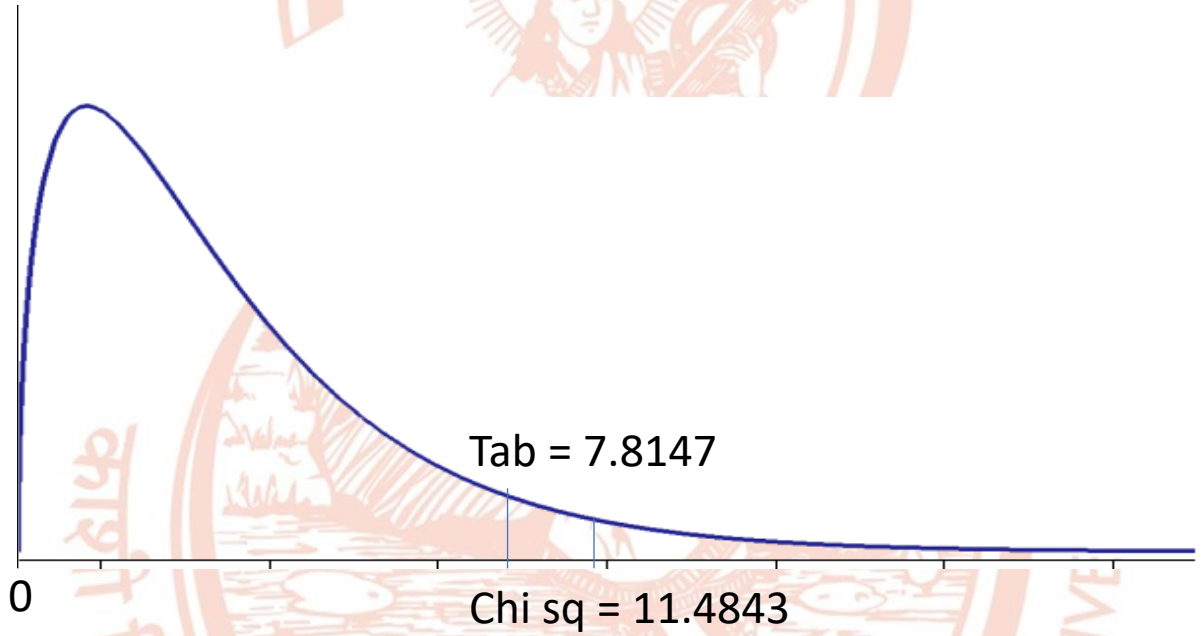
In Excel use the function =CHIINV(0.05,3) we calculate the critical value.

Critical value = 7.8147

Decision-

The test statistics is greater than the critical value so we can reject the null hypothesis.

Conclusion



We can conclude that there is a significance relation between students residence and their CGPA.

TEST 3

H_0: *There is no significance relation between the study hours and CGPA.*

H_1: *There is a significance relation between the study hours and CGPA.*

Observed Frequency

TABLE 14

			CGPA			
		6-7	7-8	8-9	9-10	Total
	4-5	13	21	11	3	48
Study Hours	5-6	2	8	5	0	15
	6-7	2	2	3	0	7
	7-above	3	3	4	0	10
	Total	20	34	23	3	80

Expected Frequency

			CGPA			
		6-7	7-8	8-9	9-10	Total
	4-5	12	20.4	13.8	1.8	48
Study	5-6	3.75	6.38	4.31	0.56	15
Hours	6-7	1.75	2.98	2.01	0.26	7
	7-above	2.5	4.25	2.88	0.38	10
	Total	20	34	23	3	80

Calculation-

$$\chi^2 = \Sigma_i \Sigma_j \frac{(O_{ij} - E_{ij})^2}{E}$$

$$\chi^2 = 5.7572$$

Degree of freedom = (r-1)(s-1) = (4-1)(4-1) = 9

$$\alpha = 0.05$$

Critical Value-

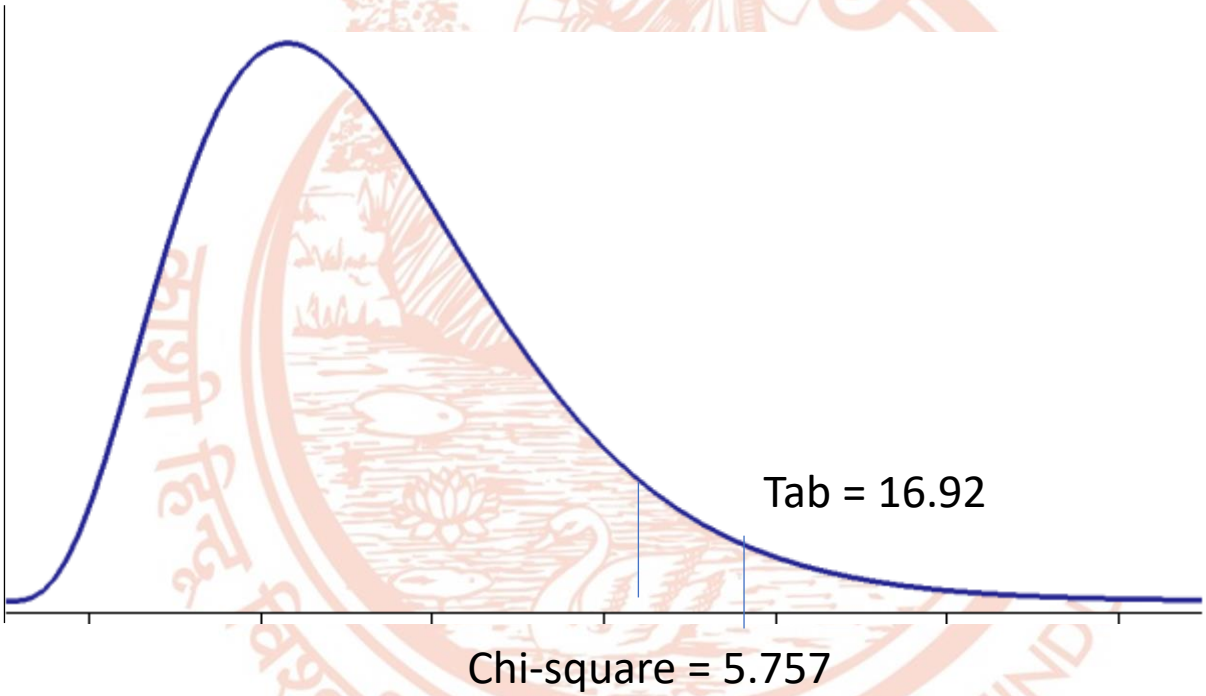
In Excel use the function =CHIINV(0.05,9) we calculate the critical value.

Critical value = 16.9189

Decision-

The test statistics is less than the critical value so we fail to reject the null hypothesis.

Conclusion



We can not conclude that there is a significance relation between students study hours and their CGPA.

Conclusion

The following key conclusion were drawn from the analysis of the entire data collected from the survey on "Academic Performance of Newcomers in BHU".

- Students are facing more challenge to clear the mathematics paper as compared to physics and approximately all student pass the statistics and CS paper.
- Studies show that there is a significant relation between the a student's current place of residence and their CGPA.
- On the basis of the survey we cannot conclude that this study our effect the CGPA of the students.
- Approximately 47% students want to improve their CGPA and 35% student want to improve their health.

The finding of this study here concluded that for students passing the mathematics course are more difficult then any other paper.

Limitation

- Only questionnaire method was used to measure the performance among the student.
- The study is limited to BHU students only hence the results cannot be generalized to greater extent in terms of their applicability.
- The sample is only 80 and opinion of the survey may not synchronize with the opinion of entire population.
- The opinion expressed by the respondent are purely personal hence and they are subjected to individual bias in their nature.

Questionnaire

SURVEY ON ACADEMIC PERFORMANCE OF NEW COMERS IN BHU

Hello everyone, I'm Ashwani Kumar third year undergraduate student of department of statistics Banaras Hindu University. I am conducting a survey on Academic performance of new comers in the University under Dr. Rajesh Singh sir
Please fill up this form
Thank you.

* Indicates required question

1. Name *

2. What gender do you identify as ? *

Mark only one oval.

- ◯ Male
- ◯ Female
- ◯ Prefer not to say

3. Course in which you are enrolled ? *

Mark only one oval.

- ◯ B.A
- ◯ B.Sc

4. What is your subject combination ? *

Mark only one oval.

- ◯ PMS
- ◯ SMK
- ◯ EMS

5. What was your percentage in class 10th ?

Mark only one oval.

- ◯ 60-70
- ◯ 70-80
- ◯ 80-90
- ◯ 90-above

6. What was your percentage in class 12th ? *

Mark only one oval.

- ◯ 60-70
- ◯ 70-80
- ◯ 80-90
- ◯ 90- above

7. Are you a Hostler ? *

Mark only one oval.

- ◯ Yes
- ◯ No

8. Place of residence *

Mark only one oval.

- ◯ Rural
- ◯ Urban
- ◯ Other: _____

9. What was your performance in 1st semester ?

Tick all that apply.

	Pass	Back paper
Math	☐	☐
Physics	☐	☐
Statistics	☐	☐
Computer Science	☐	☐

10. What was your performance in 2nd semester ?

Tick all that apply.

	Pass	Back Paper
Math	☐	☐
Physics	☐	☐
Statistics	☐	☐
Computer Science	☐	☐

11. What is your current CGPA ? *

Mark only one oval.

- ◯ 6-7
- ◯ 7-8
- ◯ 8-9
- ◯ 9-10

12. How many hours do you study in 24 hours ? *

Mark only one oval.

- ◯ 4-5
- ◯ 5-6
- ◯ 6-7
- ◯ 7-above
- ◯ Other: _____

13. What is your preferred time for studying ? *

Mark only one oval.

- ◯ Morning
- ◯ Evening
- ◯ Night

14. Where do you typically study ? *

Mark only one oval.

- ◯ Library
- ◯ Hostel room
- ◯ common room
- ◯ others

15. What study technique do you find most effective ? *

Mark only one oval.

- ◯ Professor's Lecture
- ◯ Online
- ◯ Books
- ◯ Other: _____

16. How many hours do you sleep in 24 hours ? *

Mark only one oval.

- ◯ 5-6
- ◯ 6-7
- ◯ 7-8
- ◯ Other: _____

17. Do you engage in regular physical exercise ? *

Mark only one oval.

- ◯ Yes
- ◯ No

18. Mode of exercise *

Mark only one oval.

- ◯ Gym
- ◯ Playground
- ◯ Open Gym
- ◯ Other: _____

19. What is your weight in Kg ? *

_____

20. What is your height in cm? *

_____

21. How are you satisfied with your academic performance? *

Mark only one oval.

- ◯ 1-2
- ◯ 2-3
- ◯ 3-4
- ◯ 4-5

22. Specific area in which you want to improvement ? *

Mark only one oval.

- ◯ CGPA
- ◯ Health
- ◯ Sleep
- ◯ Other: _____

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