

Project B.Sc. III In Year 2023-24

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A

Project Report

On

“STATISTICAL ANALYSIS ON CUSTOMER PREFERENCE
TOWARDS OTT PLATFORM”

Submitted To

(Department Of Statistics)

Shikshan Prasarak Sanstha's

PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA,
KAVATHE MAHANKAL

By

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For the academic year 2023-24

ShikshanPrasarakSanstha's

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CERTIFICATE

This is to certify that the following students are working under my Guidance.They have satisfactorily carried out and completed the project Work for the B.Sc Part III. They are presently submitted their project entitled.

This work is genuine, and the project or the part of it has not has submitted for the award of any other degree.

“Statistical Analysis on Customer Preference Towards OTT Platform”

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ACKNOWLEDGEMENT

We have great pleasure while submitting this project report on “Statistical Analysis on Customer Preference Towards OTT Platform” in practical fulfilment of B.Sc III. We thank Prof. Dr. M.K. Patil. for doing this project.

This report has been prepared under the guidance of Prof. Koshti V.V. (Head of department). We would like to express our profound gratitude towards him for his guidance and timely support throughout the completion of this project .

We would like to express our higher regards to our department of statistics, and also appreciate our respected teacher Asso. G.D. Satpute, Mrs. Patil S.S., Miss. Zarekar S.S. Also, we would like to thank all non-teaching staff for their help and co-operation. In the end, we express our respect to our friends who inspire and support us in this work.

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INTRODUCTION



Over-the-top (OTT) in 2008 Reliance entertainment started the first dependent Indian OTT platform. OTT platform are where people can have access over the content via internet. OTT platform eliminate the factor of visiting theatres as everything is available at our comfort zone. There is a common talk that, because of OTT there is a smaller number of people have cable access. OTT platforms have influenced a lot of viewers because of easy accessibility through internet in our comfort zone.

In this paper a study on customer preference towards OTT. Analysis of the consumption includes determination of the OTT platforms used. Time spent on them and their experience. Consumers can watch OTT content on phones, smart TVs, set-top boxes, tablets, desktop and laptop computers.

We study how many respondents are using OTT platforms also we determine factor influencing; we check which app is more used by respondents. OTT platform is neither inherently bad nor good it all depends on how it is being used.

OBJECTIVES

1. To recognize popular OTT platforms and contents preference of viewers in OTT platform.
2. To study the comparison between cinemahall and OTT platform.
3. To make a study on the the impact of COVID-19 pandemic on the OTT platform.
4. To analyse age Group Wise classification of respondents to OTT platform.
5. To measure the pattern of use of OTT platform among customers.
6. To find the major OTT platform subscribed by the customers.
7. To check dependency between profession and times pendon OTT platform.
8. To analyselanguage preference of respondents to OTT platform.
9. To find the ratings of the OTT platform be ston experience.
10. To check dependency between gender and opinion about the OTT platform.

SAMPLESIZEDETERMINATION

The population size of Kavathe-Mahankal Tehsil is 152327 according to census of 2011. We used Yamane's formula to determine the sample size at approximately 6% margin of error and we got the sample size approximately 298. The Yamane's formula for the sample size determination is given by,

$$n = \frac{N}{Ne^2 + 1}$$

Where, n is sample size

N is the population size

E is the margin of error.

DATA COLLECTION

The main objective of the project is "To analysis customer preference towards OTT platforms." We have collected sample of various age group of people from different areas of Kavathe Mahankal tehsil. We prepare a questionnaire to fulfill the objectives behind the project accurately. The data collection procedure was done using google forms and direct interviewing with people.

STATISTICAL TOOLS

1) Graphical representation:

❖ Piechart

A pie chart is a type of graph that represents the data in the circular graph. The slices of pie show the relative size the data, and it is type of pictorial representation of data. A pie chart requires list of categorical variables and numerical variable. Here the term pie represents the whole. All the slices of the pie chart add up to make whole equalling 100% and 360 degree.

❖ Bar chart

A bar chart is a graphical representation used to display and compare discrete categories of data through rectangular bars, where the length or height of each bar is proportional to the frequency or value of the corresponding category or strips. It can be either horizontal or vertical.

❖ Donut chart

A donut chart is a graphical representation used to show proportions of categories that make up the whole, but the center can also be used to display data.

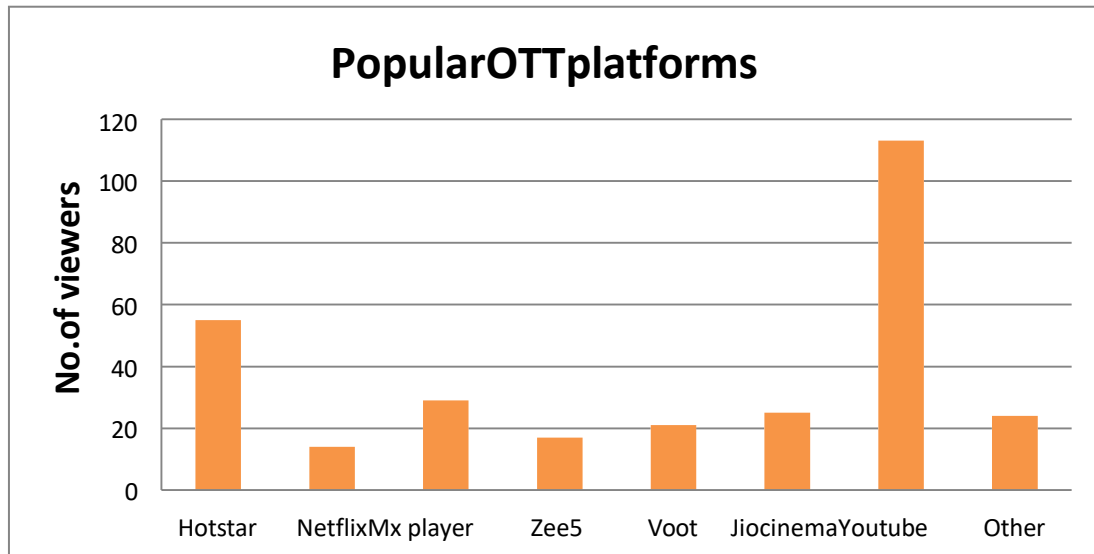
2) Hypothesis testing:

❖ Chi-square test for independence of attributes:

The null hypothesis of this test is that the attributes are independent on each other. The test is used to check the independency of the attributes. Observed frequencies are tabulated in the contingency table and the expected frequencies are calculated. The test checks whether the observed frequencies and expected frequencies are significantly different or not.

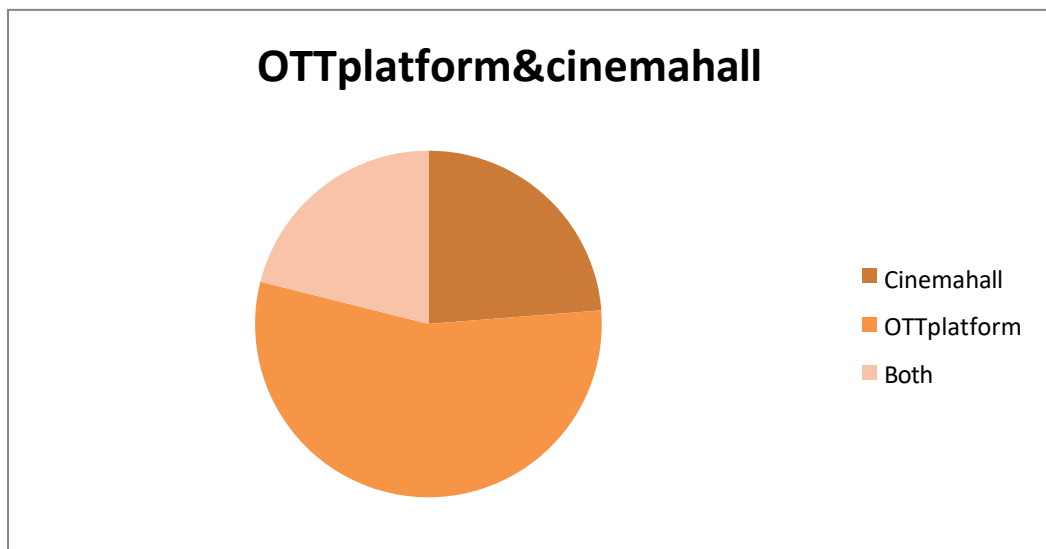
STATISTICAL ANALYSIS

1) To recognize popular OTT platforms and contents preference of viewers in OTT platform.



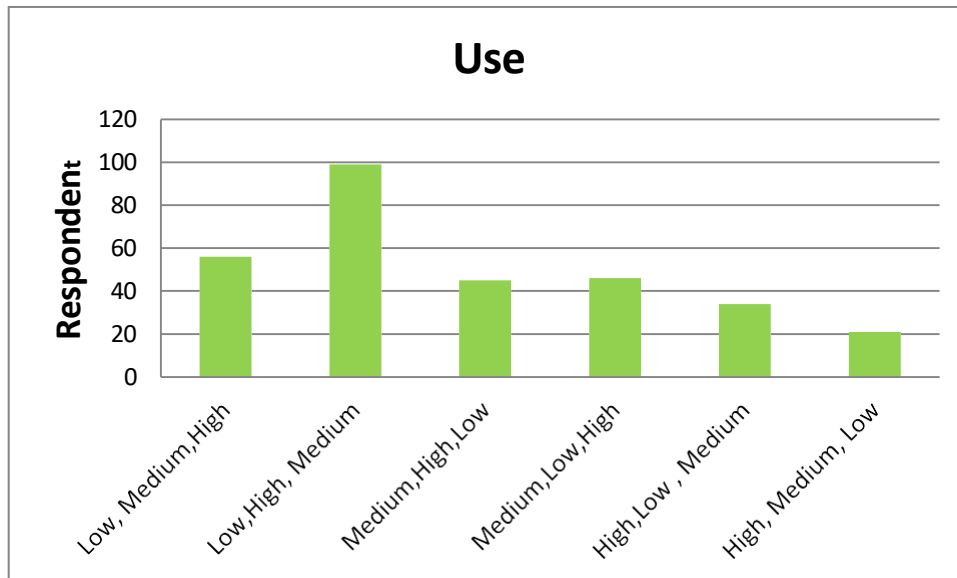
Interpretation: Most popular OTT platform is Youtube and people give less preference to Netflix.

2) To study the comparison between cinemahall and OTT platform.



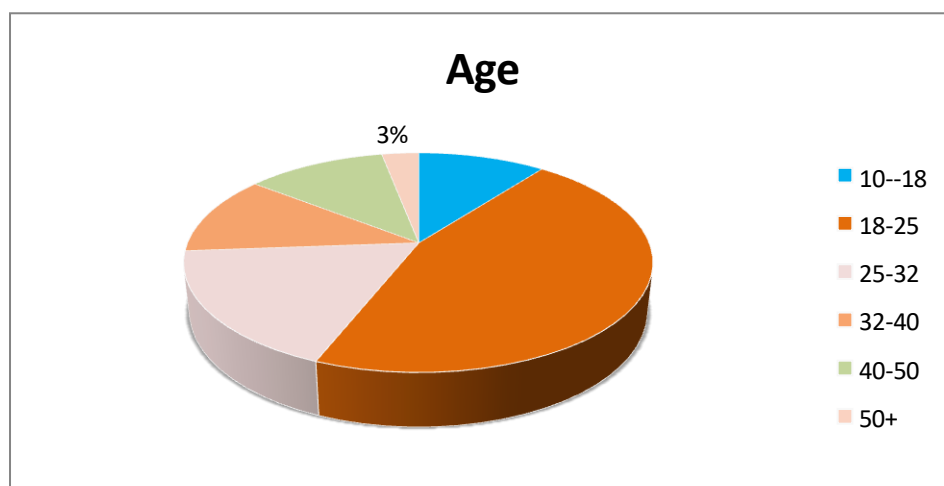
Interpretation: People prefer OTT platforms than cinemahall.

3) To make a study on the impact of COVID-19 pandemic on the OTT platform.



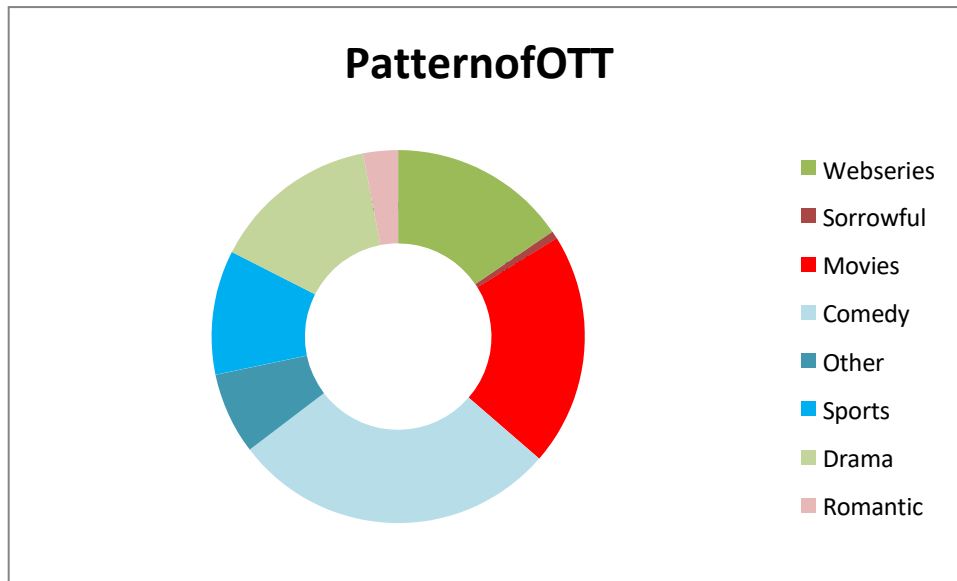
Interpretation: From graph we can observe that people uses low OTT platforms before COVID-19, high in COVID-19 and medium after COVID-19.

4) To analyse age Group Wise classification of respondents to OTT platform.



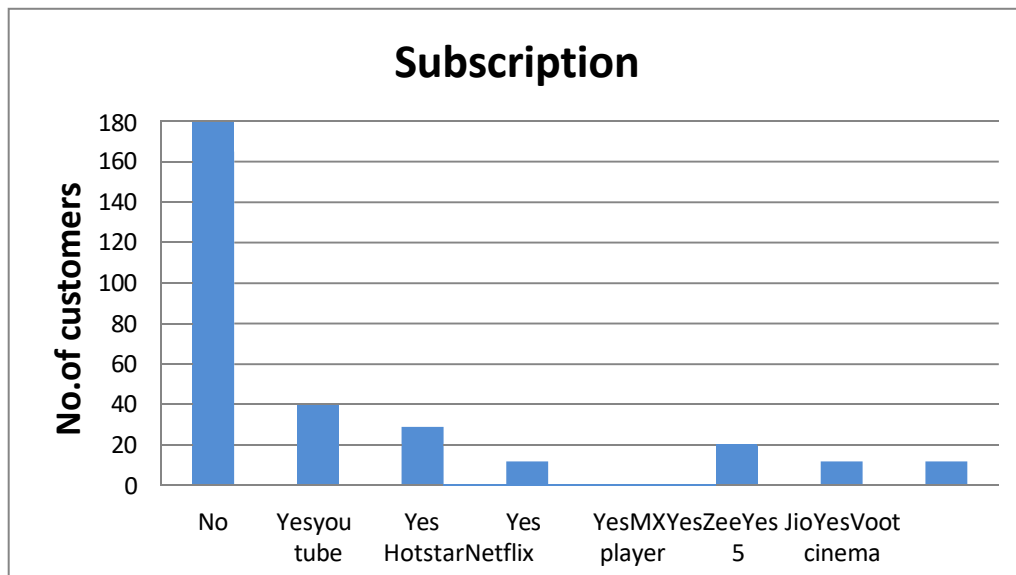
Interpretation: In 18-25 age group people more uses OTT platforms and 50+ age group less uses OTT platform.

5) To measure the pattern of use of OTT platform among customers.



Interpretation: From the given data, people use OTT platform to watch for comedy and then for movies.

6) To find the measures OTT platform subscribed by the customers.



Interpretation: Most of the people don't want to give any subscription.

7) To check dependency between profession and time spend on OTT platform.

H_0 : The relationship between profession and time spend on OTT platform is independent.

H_1 : The relationship between profession and time spend on OTT platform is dependent.

The contingency table is,

	Student	Employee	Homeworker	Others	Total
30min	49	16	10	5	80
1hr	47	26	15	7	95
2hr	26	29	9	11	75
More than 2	29	7	4	8	48
Total	151	78	38	31	298

The tabulated value is,

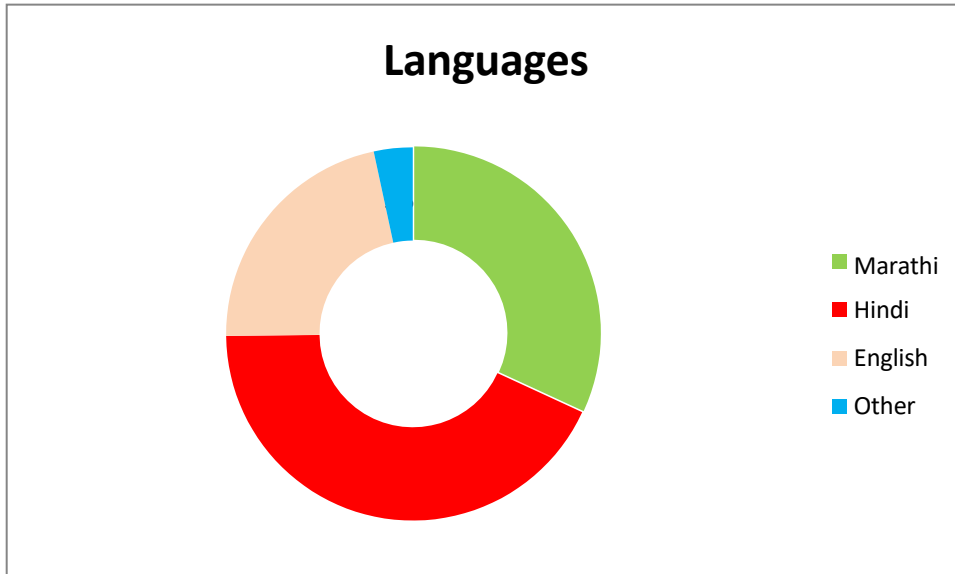
$$\chi^2 = 16.92$$

$$\begin{aligned} \text{Calculated } \chi^2 &= \sum \frac{(O_i - E_i)^2}{E_i} \\ &= 18.1307 \end{aligned}$$

Therefore we reject the Null hypothesis at 5% level of significance.

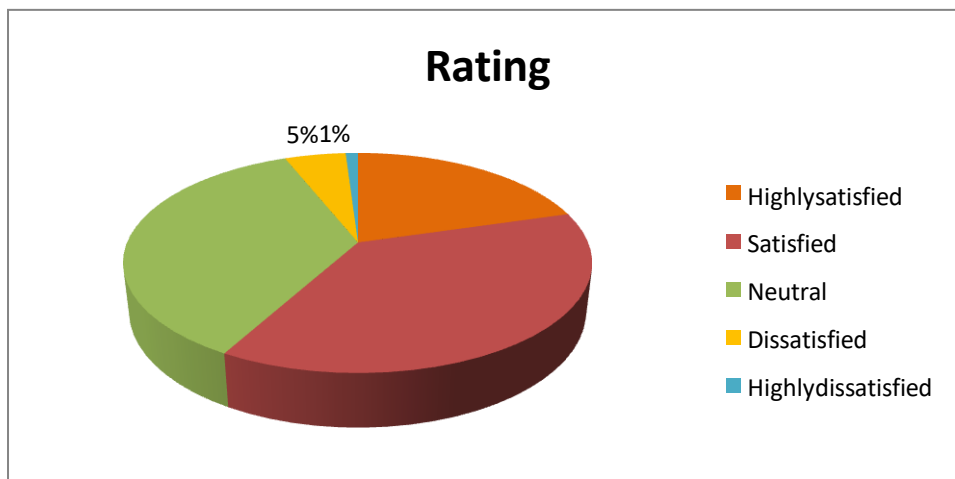
We conclude that, the data provides that time spend is dependent on profession.

8) To analyse language preference of respondentst ott platform.



Interpretation:Out of 298 peoples,128 people choose Hindi language. And also Marathi language are preferable among them.

9) To find theratings of the OTT platform beston experience.



Interpretation:There are 38% people are satisfied by using OTT platform.

10) To check dependency between gender and opinion about the OTT platform.

H_0 : The relationship between gender and opinion about OTT platform is independent.

H_1 : The relationship between gender and opinion about OTT platform is dependent.

The contingency table is,

	Yes	No	Total
Male	132	15	147
Female	140	11	151
Total	272	26	298

The tabulated value is,

$$\chi^2 = 3.841$$

$$\begin{aligned} \text{Calculated } \chi^2 &= \frac{N(ad-bc)^2}{(a+b)(c+d)(b+d)(a+c)} \\ &= \frac{298(1452-2100)^2}{147 \times 151 \times 26 \times 272} \\ &= 0.7971 \end{aligned}$$

Therefore we accept the Null hypothesis at 5% level of significance.

We conclude that, the data provides no evidence to claim that opinion is independent on the gender.

CONCLUSION

- The most popular OTT platform among people is YouTube.
- The most of the people still prefer to OTT platform than cinema hall.
- People use low OTT platforms before COVID-19, high in COVID-19 and medium after COVID-19.
- In 18-25 age group people more use OTT platforms.
- Mostly people use OTT platform to watch for comedy.
- Most of the people don't want to give any subscription.
- People's time spend is dependent on their profession.
- Out of 298 people, 128 people choose Hindi language. And also Marathi language is preferable among them.
- There are 38% people are satisfied by using OTT platform.
- People's opinion about OTT platform is independent on gender.

LIMITATIONS

- This study is limited to 298 respondents. So finding and suggestions given on the basis of the study cannot be assumed to the entire population.
- The study also restricts itself to the geographical area of the Kavathe Mahankal tehsil

SCOPE

- OTT Media Research and data on OTT players Regularly build on data with regards to the performance and reach of OTT players in India.
- Constantly review newly launched shows, movies,news channels interms of view, reachandaudiences engagement parameters.

REFERENCES

- Fundamentals of mathematical statistics by Gupta and Kapoor.
- 100 Statistical Tests by Gopalk. kanji.
- Study on customer preference towards OTT platform during a pandemic by PAVITHRA.D (April 2022)

QUESTIONNAIRE

- Age
 - A) 10-18 B)18-25 C)25-32
 - D) 32-40 E)40-50 F)Morethan 50
- Gender
 - A) Male B)Female
- WhichOTTplatform doyouprefer themost ?
 - A) Hotstar B)Netflix C) Mxplayer D)Zee5
 - E) Voot F)Jio cinemaG)Youtube H)Other
- WhichlanguagedoyouprefertowatchinOTT?
 - A) Marathi B) Hindi
 - C) English D)Other
- Do youthinkwatchinmoviesinOTTischeaperandconvenientthanothertraditional medium ?
 - A) Yes B)No
- Ina future,ifa moviereleasedincinema hallor onOTT together, whatwouldyou prefer mostly ?
 - A) Cinemahall B) OTT platform C) Both
- Do youatisfyonOTTplatform ?
 - A) Highllysatisfied B)Satisfied C) Neutral
 - D) Dissatisfied E)Highlydissatisfied
- Howmuchtimedoyou spendonOTTplatform ?
 - A) 30 minute B)1hour C)2 hour D)Morethan 2hour
- WhatdoyouwanttowatchonOTTplatform?
 - A) Drama B) Romantic C) Sorrowful D)Movies
 - E) Web series F) Sports G)Other
- Howwas theusageon OTTplatformbeforeCovid-19, in Covid-19 and howis it after Covid-19 ?
 - A) Low,Medium,High B)Low,High, Medium
 - C)Medium,High,Low D)Medium,Low,High
 - E)High,Low,Medium F)High,Medium, Low
- Didyoubuythesubscription?Ifyes,thenforwhichOTTplatform

A project report on,
**“A Study of Socio Economic Condition and
Health Hazard among
Road Side Workers in Jath City”**

Submitted to,
COLLEGE PROJECT

Organised by,
DEPARTMENT OF STATISTICS

By
**Miss. Dhanashri Dattatray Kodag.
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Miss. Swapnali Suryakant Sawant.
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Under the Guidance of,
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Mrs. S. S. Patil
Miss. S. M. Zarekar**

Through
**Prof. Dr. M. K. Patil
The principal,
Padmabhushan Vasanttraodada Patil Mahavidyalaya, KavatheMahankal.**

ACKNOWLEDGEMENT

We have great pleasure while submitting this project report on “A Study of Socio Economic Condition and Health Hazard among Road Side Workers in Jath City” in practical fulfilment of B.Sc. III. We thank Prof.Mr.V.V. Koshti (HOD, Statistics Department) for giving permission for doing this project.This report has been prepared under the guidance of Mrs. S.S. Patil . We would like to express our profound gratitude towards him for his guidance and timely support throughout the completion of this project.We would like to express our higher regards to our department of statistics, and also appreciate our respected teachers Mr. G. D. Satpute , Mrs. S. M. Zarekar . Also, we would like to thank all non-teaching staff for their help and co-operation. In the end, we express our respect to our friends who inspire and support us in this work.

ABSTRACT

Construction works on high speed roads in mountainous landscape can be considered as exceptionally dangerous. During construction period, sometimes people have to work in the middle of the lanes with heavy and harmful equipment and materials so that workers should have to be very cautious while working in these areas. Since construction plays a vital role to the development of the nation, the rate of accident can be reduced if sufficient attention for the safety is provided at the construction site. This research was carried out to analyze the health and safety of casual workers and to verify whether the clauses mentioned in the contract regarding workplace health and safety has been followed by the contractors at project location in construction projects in Road Improvement Project (Phase-II). Safe drinking water, first-aid equipment, sanitary facilities, provision of personal protection equipment (PPE) and training of casual workers on safety procedures, were the measures needed for addressing the health and safety facilities confronting casual workers on construction sites. Inadequate instructions concerning work are ranked as the main cause of the accident on a construction site. Safe drinking water and safety signs are ranked as the most important health and safety facility that need to be provided on site to the casual workers.

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INTRODUCTION

Jath is a town and taluka headquarters in Miraj subdivisions of Sangli district in southern Maharashtra. Total area is 2258.28 km² (871.93 sq mi). The total population is 3,27,747 as per 2011 census. The population density is 150/km² (380/sq mi). According to the 2011 census, Jath taluka has a the male population is 1,68,493 and the female population is 1,59,254. The sex ratio of Jath taluka is 945 females per 1000 males. The Jath taluka has an average literacy rate of 71.63%. Road site are the most visible section of the informal economy. Large-scale spatial planning and urban development initiatives like road infrastructure have become increasingly popular in cities worldwide. These projects improve connectivity, increase cities competitiveness, and attract investment, When inhaled into the human body, silica can lead to lung cancer and other respiratory tract infections such as silicosis, cough, cold, etc. These diseases impact human health greatly and can have even worsening effects on people with underlying health conditions such as asthma, which may lead to the loss of life. On the other hand, road construction is linked to environmental pollution and risks, which impact people's health and well-being in urban and rural areas. Also, the varying implications of road construction activity on residents, commuters, traders, hawkers, and on-site workers on the road strongly correlate with the place's socioeconomic activity. Traders along the stretch of road construction activity are displaced to make way for the construction to go on as when the road is completed, it will improve living conditions and trading conditions; but the displacement of traders and hawkers during road construction greatly impacts their socio-economic lives. According to a recent report by the World Resources Institute (a Maharashtra government knowledge partner), building dust is responsible for 71% of Mumbai's air pollution. Air, water, and noise pollution result from these pollutants, causing irreversible damage to human health, with a concerning link between pollutants and cancer. The study aim is to explore the level of socio economic condition and health hazards experienced by the road site workers in the Jath Taluka. Total population of Road site workers in Sangli is 65000 and Total population of Road site Workers in Jath is 1358 we take response of 309 women and men Road site workers in Jath.

OBJECTIVES

- To study the working condition of Road site workers in Jath.
- To study Socio Economic condition among road site workers in Jath.
- To study health hazard of Road site workers in Jath.

SAMPLE SIZE DETERMINATION :-

The population size of Road site workers in Sangli is 65000 according to the given survey. According to this survey population size of Road site workers in Jath 1358. We used Yamane's formula to determine the sample size at approximately 5% margin of error and we got the sample size approximately 309. The Yamane's formula for the sample size determination is given by,

$$n = \frac{N}{1 + Ne^2}$$

Where, n is sample size

N is the population size

E is the margin of error.

DATA COLLECTION

The design adapted for this study is exploratory type. The population of Road site workers in Sangli city is 65000 and The population of Road site workers in Jath is 1358 . To study the working condition a Study of Socio EconomicCondition and Health Hazard among Road Side Workers in Jath City.

We collect the data of Road site Works by cluster sampling method to visiting the house of Road site Workers . The present study is based on primary data. The primary data is collected through field work. The interview of 309 Workers conducted and data is collected from Jath. The observations, discussion, interview and questionnaire technique is applied.

STATISTICAL TOOLS

- **Exploratory Data Analysis:**

Exploratory data analysis is an analysis approach that identifies general patterns in the data. These patterns include outlier and features of the data that might be unexpected. EDA is an important first step in any data analysis.

- **Graphical representation:**

- **Pie chart**

A pie chart is a type of graph that represents the data in the circular graph. The slices of pie show the relative size the data, and it is type of pictorial representation of data .A pie chart requires list of categorical variables and numerical variables. Here the term pie represents the whole. All the slices of the pie chart add up to make whole equaling 100% and 360 degrees.

- **Bar chart**

A bar chart is a graphical representation used to display and compare discrete categories of data through rectangular bars, where the length or height of each bar is proportional to the frequency or value of the corresponding category or strips. It can be either horizontal or vertical.

- **Line Chart**

Line chart is the graphical tool that is used to represent the trend in the data over the time. Line chart consists of the series of the data points connected by the line segments.

- **Hypothesis testing:**

- **Chi-square test for independence of attributes:**

The null hypothesis of this test is that the attributes are independent on each other. The test is used to check the independency of the attributes. Observed frequencies are tabulated in the contingency table and the

expected frequencies are calculated. The test checks whether the observed frequencies and expected frequencies are significantly different or not.

- **Fisher's Exact test for independence**

Fisher's exact test is a statistical significance test used in the analysis of contingency tables. The null hypothesis is that the relative proportions of one variable are independent of the second variable; in other words, the proportions at one variable are the same for different values of the second variable. The alternative the relative proportions of one variable are not independent of the second variable.

- **Proportion test:**

Let us consider the parameter p of the population proportion. For instance, we might want to know the proportion of males within a total population of adults when we conduct a survey. A test of proportion will assess whether or not a sample from a population represents the true proportion of the entire population.

$$H_0: P=P_0$$

$$H_1: P \neq P_0$$

- MS-Excel
- R- Software

STATISTICAL ANALYSIS:

❖ Exploratory Data Analysis:

Variables	Mean	SD	Median	Minimum	Maximum
Age	39.307	11.5427	38	17	71
Work start	20.6537	3.0937	20	14	32
Hrs. per day	6.3527	1.1685	6	4	9
Workers	2	0.8710	2	1	4
Income	5737.86	1334.783	5700	500	9500
Savings	1707.3	856.1	1610	100	6000

From the survey of road site workers, we have observed that, age of road site workers in between 17 to 71 years and average age is 39.307 years. Age of most of the road site workers is 38 years.

They start work from minimum 6 years and maximum 32 years and average of work starts of road site workers is 20.6537 years and most of road site workers work start from 20 years.

The hours per day working of road site workers are in between 4 hrs to 9 hrs and average working hours per day is 8.362 hrs and most of road site workers work 6 hrs per day.

In the family of road site workers there are minimum 1 and maximum 7 workers are worked in this same occupation. Average number of workers is $1.7799 \approx 2$ per family. Most of families there is single worker working in this occupation.

The income of road site workers is in between 500 Rs to 9500 Rs and average income of road site workers is 5737.86 Rs. Most of road site workers earn 5700 Rs per month.

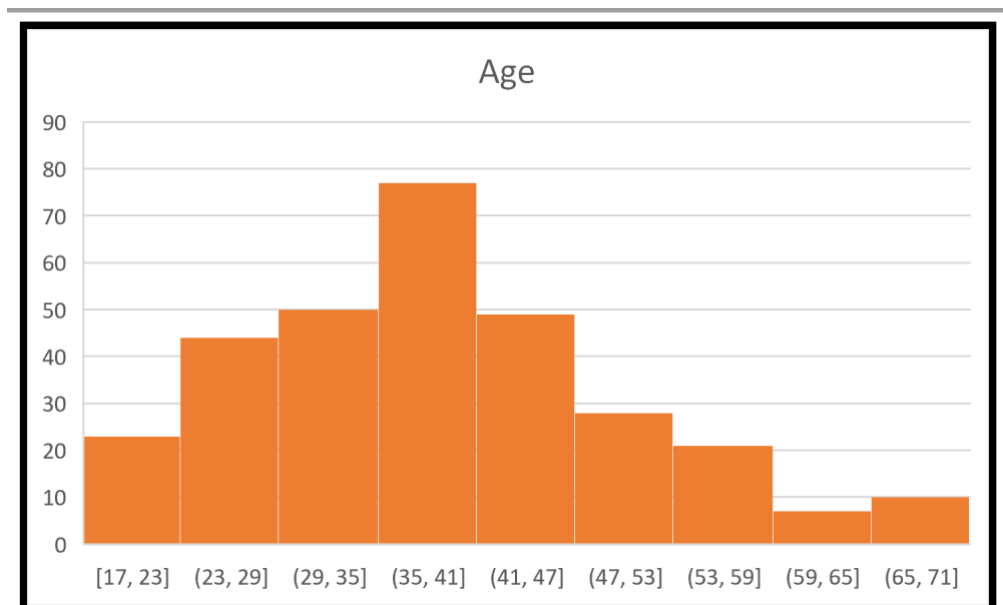
The 50% Road site workers save money for future and save 100 Rs to 6000 Rs per month and average saving of bidi rollers is 1707.3 Rs. The most of bidi rollers save 1610 Rs per month.

Opinion to timely payment	Frequency	Percentage
Yes	247	79.93528
No	62	20.06472
Total	309	1

Around 79.93528 % of workers said that they get timely payment to their wages. While as 20.06472 % said that they don't get it on time but gets delayed by 2 to 3 days.

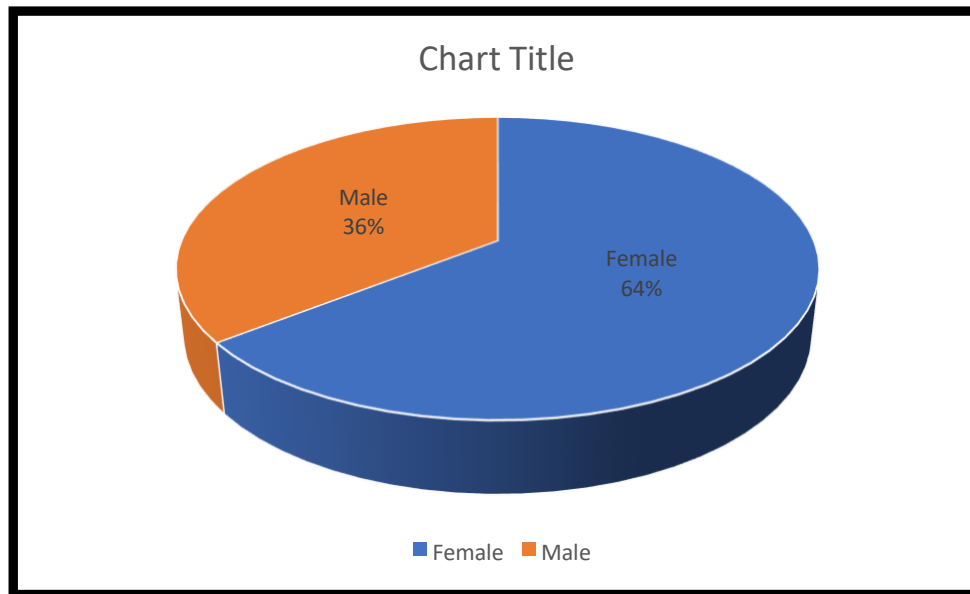
❖ Graphical Representation

1. Bar chart for age of Road site workers



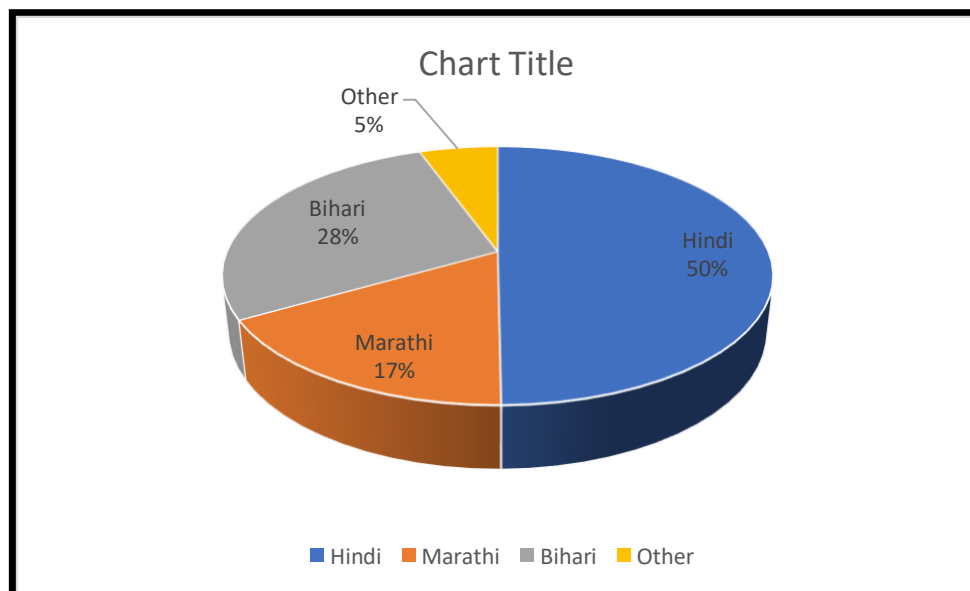
Interpretation: From above bar chart, we interpret that, Age of most of the Road site workers are in between 35 to 41 years.

2. Pie chart for Gender of road site workers



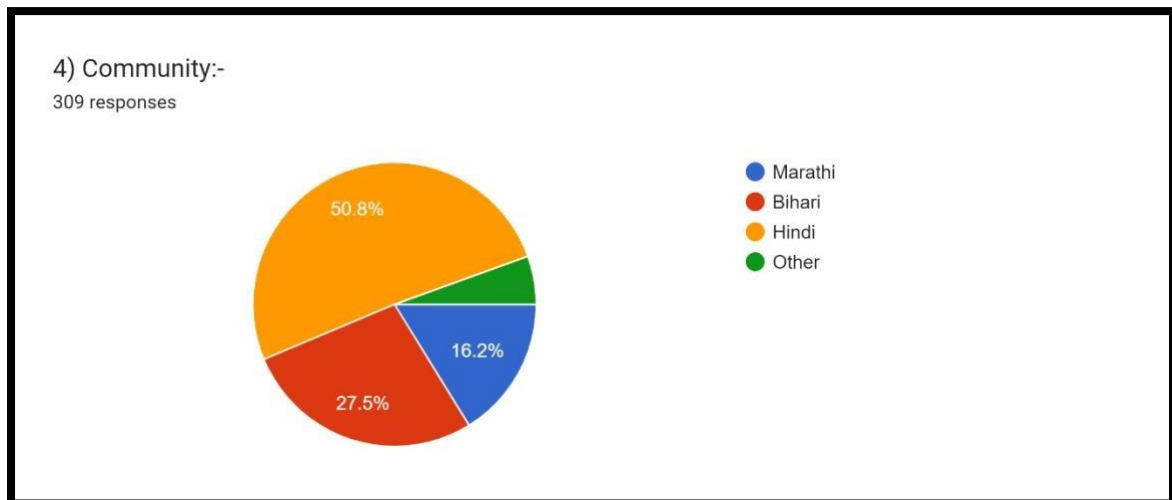
Interpretation: From above pie chart, we interpret that, number of female workers are greater than male workers. The 35.6% male workers and 64.4% female.

3. Pie chart for Language of road site workers



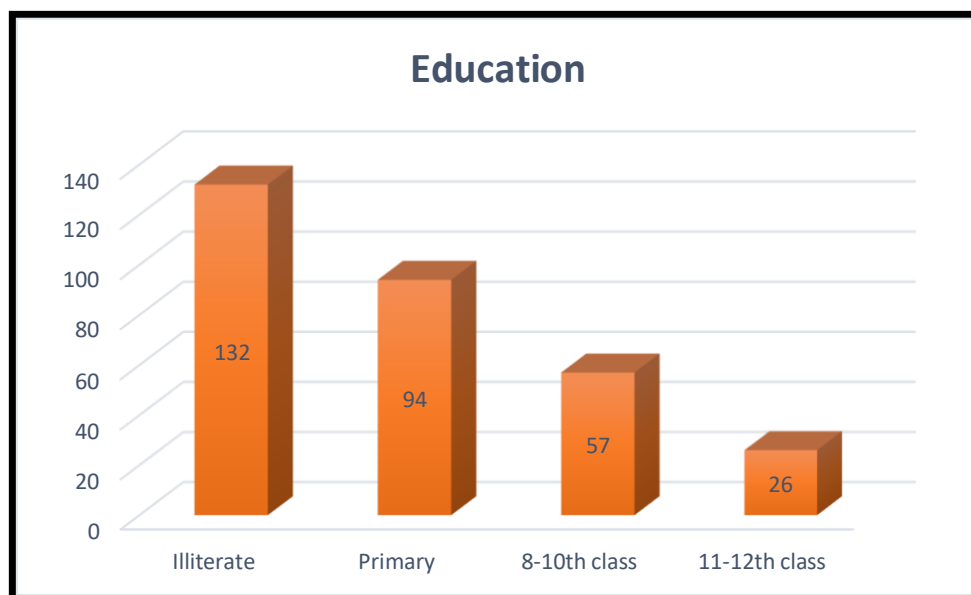
Interpretation: From above pie chart , we interpret that, most of road site workers speak Hindi language.

4. Pie chart for Community of Road site workers



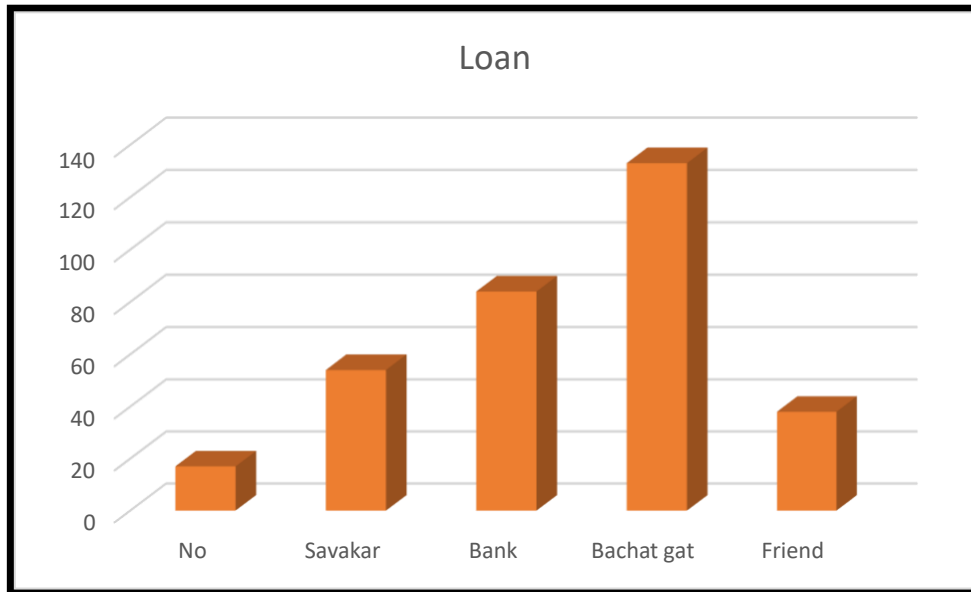
Interpretation: From above pie chart, we interpret that, 50.8% road site workers are of Hindi community.

5. Bar chart for Education of road site workers



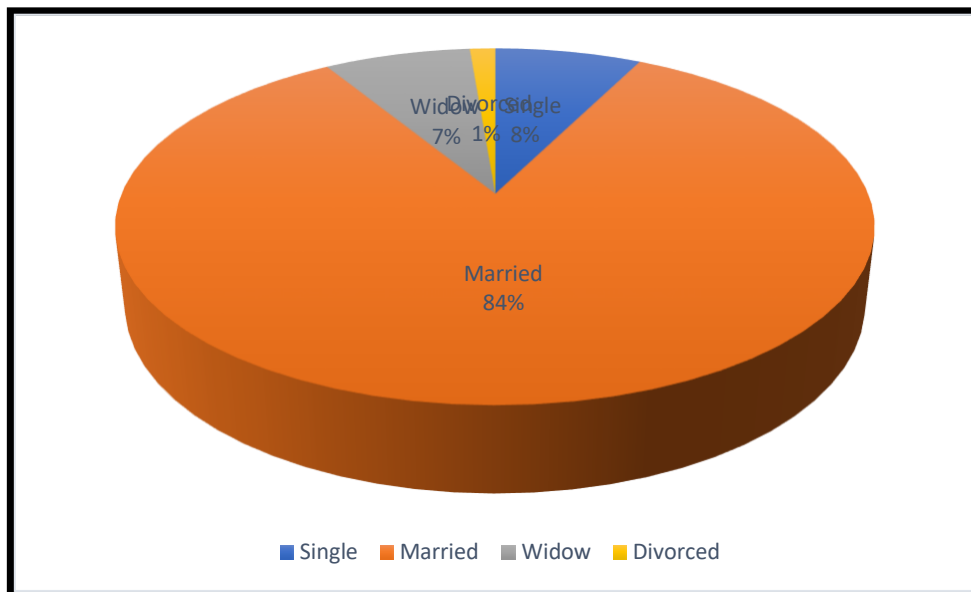
Interpretation: From above for pie chart, we interpret that, illiterate workers are more than the educational workers.

6. Bar chart for loan:



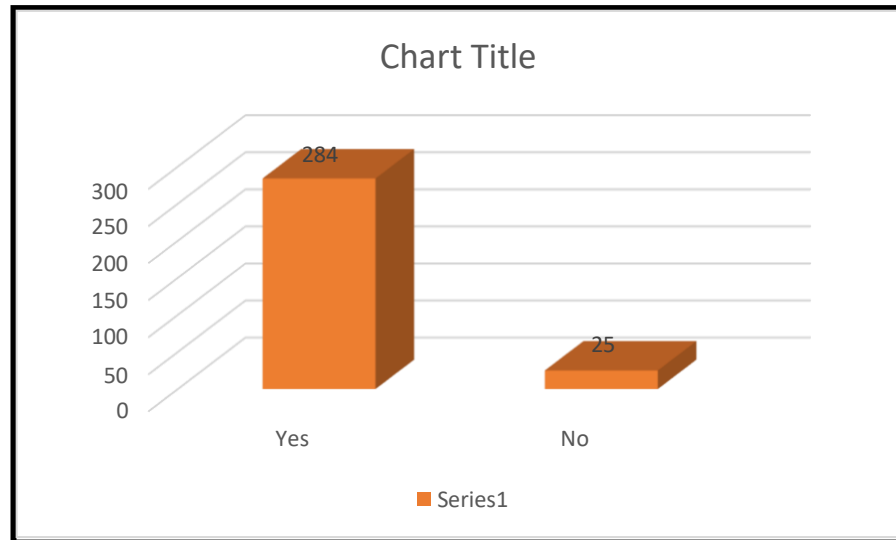
Interpretation: From above chart, we interpret that, greater 50% workers are takes loan and most of worker takes loan from bachat gat.

7. Pie chart for Marital status for road site workers:



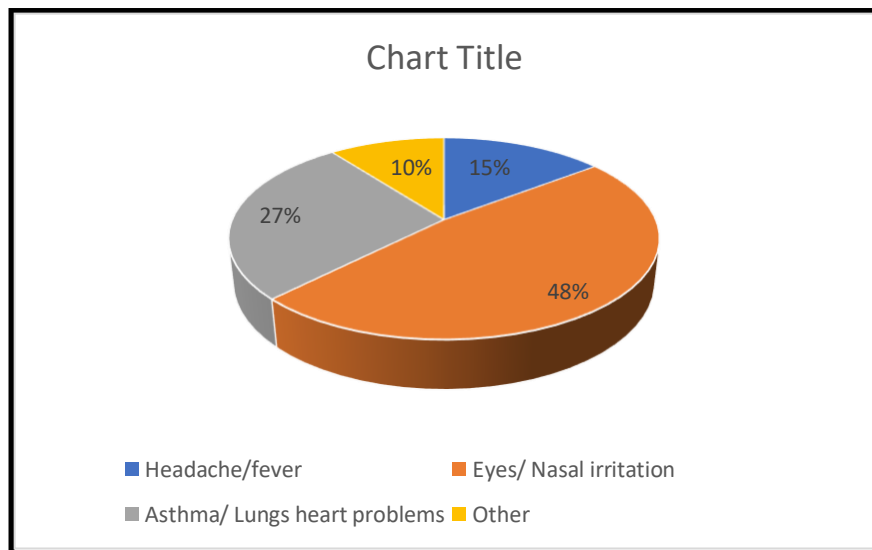
Interpretation: From above pie chart, we interpret that, 84% married, 8% Single, 7% widow, 1% divorced workers .

8. Bar-chart for health problem:



Interpretation: From above chart, we interpret that, the most of the road site workers are suffered from the health problem.

9. Pie-chart for type of different diseases:



Interpretation: From above chart, we interpret that, the most of the road site workers are suffered from disease like Eyes/ nasal irritation.

❖ Fishers's exact test for independence:

Here we want to test,

H_0 : House and type of house of road site workers are independent.

H_1 : House and type of house of road site workers are dependent.

Observation table:

		Type of House		
		Tin/mud/glass	Slab/tile	Total
House	Owned	17	15	32
	Rented	243	4	247
	Total	260	19	279

Procedure:

We apply fisher's exact test using R software we get,

Fisher's Exact Test for Count Data

p-value= 6.777e-13

Alternative hypothesis: true odds ratio is not equal to 1

Sample estimates:

Odds ratio :0.01939014

Here P value 6.777e-13 < 0.05,

Hence we reject H_0

Conclusion :

We conclude that, House and type of house of road site workers are dependent.

❖ **Pearson's Chi-square test for independence:**

Here, we want to test,

H_0 : Loan is independent on marital status of road site workers.

H_1 : Loan is dependent on marital status of road site workers.

Observation table:

		Marital Status		
		Married	Unmarried	Total
Loan	Yes	237	19	256
	No	17	6	23
	Total	254	25	279

Procedure:

By using R software we get,

Pearson's Chi-squared test with Yate's continuity correction

X-squared = 6.8699, df = 1, p-value = 0.008766

Here, p-value is $0.008766 < 0.05$

Hence we reject H_0 .

Conclusion:

We conclude that, Loan is independent on marital status of road site workers.

❖ Proportion Test:

Here we claim that, 85% Road Site Workers are save money for future.

We have to test,

$H_0: P=0.85$ (i.e.85% road site workers are save money for future)

$H_1: P \neq 0.85$

Saving money for future	Save	264
	Do not save	45
	Total	309

Procedure:

By using R software we get,

1-sample proportions test with continuity correction

data: 264 out of 309, null probability 0.85

X-squared = 0.018339, df = 1, p-value = 0.8923

alternative hypothesis: true p is not equal to 0.85

95 percent confidence interval:

0.8089145 0.8907669

sample estimates: p = 0.8543689

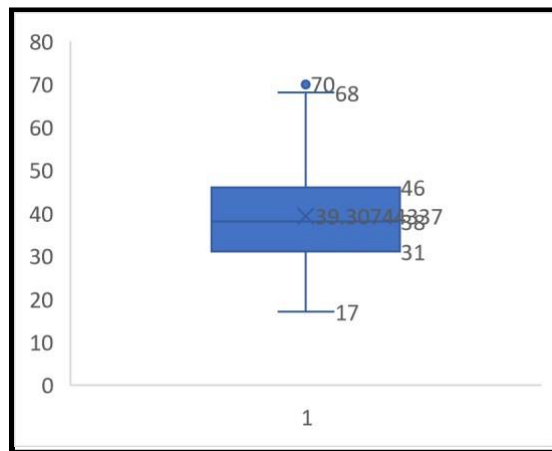
Here, p value is $0.8923 > 0.85$, hence it fails to reject H_0

Conclusion:

85% road site workers are save money for future.

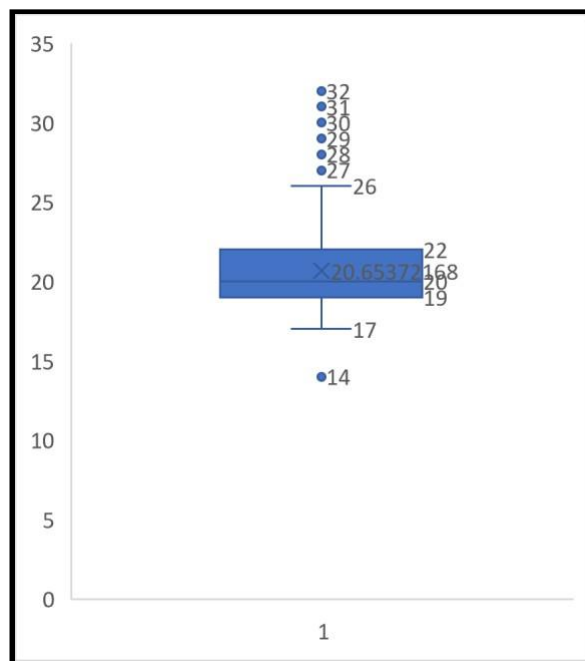
❖ Age and income

Age



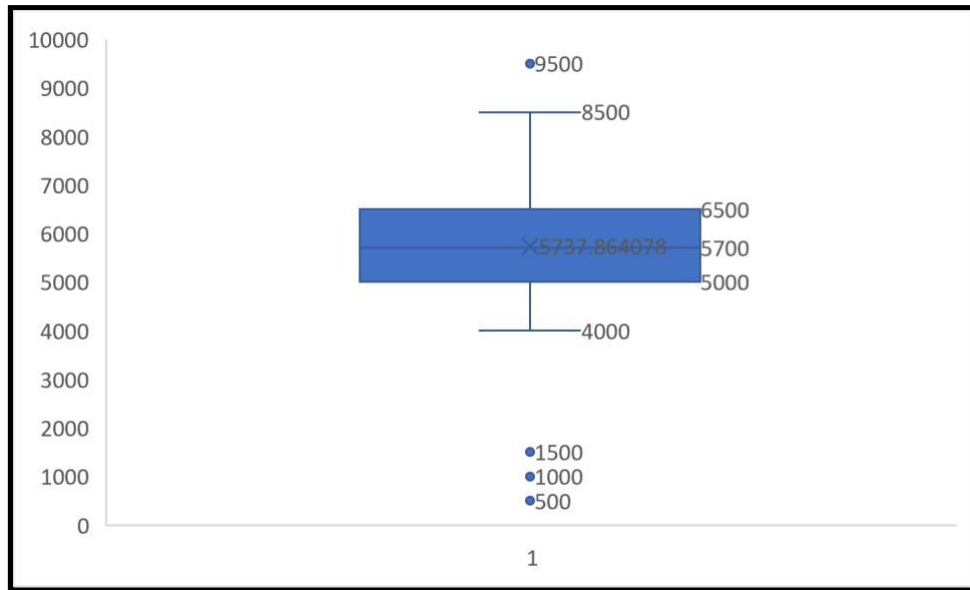
On an average, the age of Road site workers is 39 year old

Work start from age



On an average the road site workers start this work from year 20.

Income status



On an average, the income of the road site workers is 5737.

CONCLUSION

- Age of most of the Road site workers are in between 35 to 41 years.
- Around 79.93528 % of workers said that they get timely payment to their wages. While as 20.06472 % said that they don't get it on time but gets delayed by 2 to 3 days.
- The number of female workers are greater than male workers.
- The most of road site workers speak Hindi language.
- The 50.8% road site workers are of Hindi community.
- The illiterate workers are more than the educational workers.
- The greater than 50% workers are takes loan and most of worker takes loan from bachat gat.
- The 84% workers are married.
- We conclude that, House and type of house of road site workers are dependent.
- The most of the road site workers are suffered from the health problem.
- We conclude that, Loan is independent on marital status of road site workers.
- 85% road site workers are save money for future.

LIMITATIONS

- Sample size is limited.
- Income and Working hours take as rounded figure.
- Thus survey is limited to Jath city.

SCOPE

1. Study can be used to improve the life style of Road site workers.
2. The study can be used to improve the awareness about education.
3. The study can be used to provide the hospital facilities for road site workers.
4. The study can be used to improve the some important facilities related to the health, education, economical, etc.

REFERENCES

1. Fundamentals of Mathematical Statistics by S.G. Gupta & V.K. Kapoor.
2. Internet .
3. Research papers.
4. Categorical data analysis (second edition) by Alan Agresti.
5. Some report on Road site workers.

QUESTIONNAIRE

1. Age:
2. Gender: 1) Male 2) Female
3. Language: 1) Hindi 2) Marathi 3) Bihari 4) Other
4. Community: 1) Hindi 2) Marathi 3) Bihari 4) Other
5. Marital Status: 1) Married 2) Single 3) Widow 4) Divorced
6. No. of Childrens:
7. No. of persons in family: 1) Single 2) 2-5 3) 6-10 4) > 10
8. Educational Qualification: 1) Illiterate 2) Primary 3) 8th-10th 4) 11-12th
9. House: 1) Owned 2) Rented
10. Type of house: 1) Tin 2) Mud/glass 3) Slab 4) Tile 5) Other
11. From what age you have started this work?
12. How many hours do you work per day ?
13. No. of family members working in this occupation ?
1) 1 2) 2 3) 3 4) 4
14. Do you get payment on time? 1) Yes 2) No
15. Do you save money for future? 1) Yes 2) No
16. Monthly income of individual?
17. Do you face a health Problem? 1) Yes 2) No
18. Type of health problem: 1) Headache/fever 2) Eyes/ Nasal irritation
3) Asthma/ Lungs heart problems 4) Other

19. Did you get a loan?

1)Yes

2)No

20. Did you get loan from?

1)Bank

2)Savakar

3) Friend

4) Bachat gat

A
Project Report
On
**“STATISTICAL ANALYSIS EFFECT OF USE
OF
MOBILE AND INTERNET ON CHILDREN’S HEALTH”**
Submitted to

(Department Of Statistics)
Shikshan Prasark Sanstha’s
**PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA
KAVATHE MAHANKAL**

BY
Miss. Shinde Shailaja Dilip.
Miss. Jadhav Aarti Tanaji.
Miss. Mali Priyanaka Balu.
Miss. Patil Akshata Balaso.
Miss. Shinde Ashwini Pandurang.

Under the guidance of
Prof. Koshti V.V (Head of Department)
Miss. Patil S. S.
Miss. Zarekar S. M.
Mr. Satpute G. D.

Through
The Principal

Dr. Patil M. K.

Padmabhushan Vasantryadada Patil Mahavidyalaya, Kavathe Mahankal.

FOR THE ACADEMIC YEAR,

2023-2024

Shikshan prasarak sanstha's
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA
KAVATHE MAHANKAL.
(Department of Statistics)

CERTIFICATE

This is to certify that the following students are working under my guidance. They have satisfactorily carried out and complete the project work for the B. Sc. Part III. They are presently submitted their entitled .

This work is genuine, original, and the project or the part of it has not has Submitted for the award of any other degree .

“Statistical analysis effect of use of mobile and internet on children's health”

Miss. Shinde Shailaja Dilip.
Miss. Jadhav Aarti Tanaji.
Miss. Mali Priyanaka Balu.
Miss. Patil Akshata Balaso.
Miss. Shinde Ashwini Pandurang .



Teacher in Charge



Examiner



Head Department

DECLARATION

We hereby declare that the project entitled “**Statistical analysis effect of use of mobile and internet on children’s health**”.

It is the original work carried out by us at the department of statistics. This project or part of it has not been submitted previously for any other degree or any other purpose.

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Place: Kavathe Mahankal

Date:

ACKNOWLEDGEMENT

We express our hearty thanks and deepest gratitude to Prof. Dr. Patil M. K. who gave backing and his valuable guidance for this project work. We further thank to Asso. Prof. V.V. Koshti, Asst. Prof. S. S. Patil, Asst. Prof. S. M. Zarekar and Asst. Prof. G. D. Satapute. Who gave us their encouragement, kind support and constant inspiration during our project, work further we are thankful to all of us who gave us necessary information to carry out this project.

Finally we give sincerest thanks to all our family members for keeping our sprit up and their immerse support during every stage of project work.

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INTRODUCTION

The integration of mobile technology into children's daily lives has become increasingly prevalent in recent years, raising questions about its impact on various aspects of their development. In this statistics project, we aim to investigate the effects of mobile technology on children's behaviour, academic performance and overall well-being.

By analysing data on the usage patterns of mobile devices among children of different age groups, we seek to understand how screen time correlates with factors such as social interactions, cognitive abilities and emotional health.

The pervasive use of mobile devices among children has sparked debates about the long-term consequences of excessive screen time and digital media exposure. According to recent studies, the average child spends a significant amount of time engaged with screen ranging from watching videos and playing games to browsing social media and texting friends. This trend has raised questions about how prolonged screen time may influence various aspects of children's lives.

Through statistical analysis, we hope to uncover valuable insights that can inform parents, educators and policymakers about the potential benefits and risks associated with children's exposure to mobile technology.

OBJECTIVES

- To find the amount of screen time by children.
- To study which social media platform more used by children.
- To study how much time parents use mobile or laptop.
- To analyze the different diseases due to mobile.
- To check why children use mobile phones.
- To check whether social networking sites are popular in the girls and boys.
- To analyze use of mobile affects children's language.
- To check whether the children's screen time and parents spend time with children's are independence or not.

METHOD OF DATA COLLECTION

We surveyed Kavathe Mahankal area and collect the data. We select the Convenient sample by the random sampling method. We collect the data through the online questionnaire. 250 samples are the optimum sample size. We collect data from the online method. The data of our project is primary because we collect the data by taking online methods from each Parents .

SAMPLE SIZE DETERMINATION

The population size of Kavathe Mahankal Tehsil is 152327 according to census of 2011. We used Yamane's formula to determine the sample size at approximately 5% margin of error and we got the sample size approximately 250. The Yamane's formula for the sample size determination is given by,

$$n = \frac{N}{1+Ne^2}$$

Where,

n is the sample size

N is population size

E is the margin of error

STATISTICAL TOOLS

The following are some statistical tools leads us towards the appropriate results and finding.

A) GRAPHICAL REPRESENTATION :

To represent our data graphically, we use the multiple bar diagram, pie chart method, etc. To construct the appropriable divided bar diagram of given data we used Microsoft Excel.

1.Bar Chart: A bar chart or bar graph is a chart that presents grouped data with rectangular bars with a lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally. A vertical bar is sometimes called a column bar chart.

A bar graph is a chart that uses either horizontal or vertical bars to show comparisons among categories being compared, and the other axis represents a discrete value.

2.Pie Chart: A pie chart displays data, information, and statistics in an easy-to-read pie-slice format with varying slice sizes telling you how much of one data element exists. The bigger the slice the more of that particular data was gathered.

3.Line Chart: A line chart or line plot or line graph or curve chart is a type of chart that displays information as a series of data points called 'markers' connected by straight line segments. It is a basic type of chart common in many fields. It is similar to a scatter plot except that the measurement points are ordered typically by their x-axis value) and joined with straight line segments. A line chart is often used to visualize a trend in data over intervals of time a time series thus the line is often drawn chronologically. In these cases, they are known as run charts.

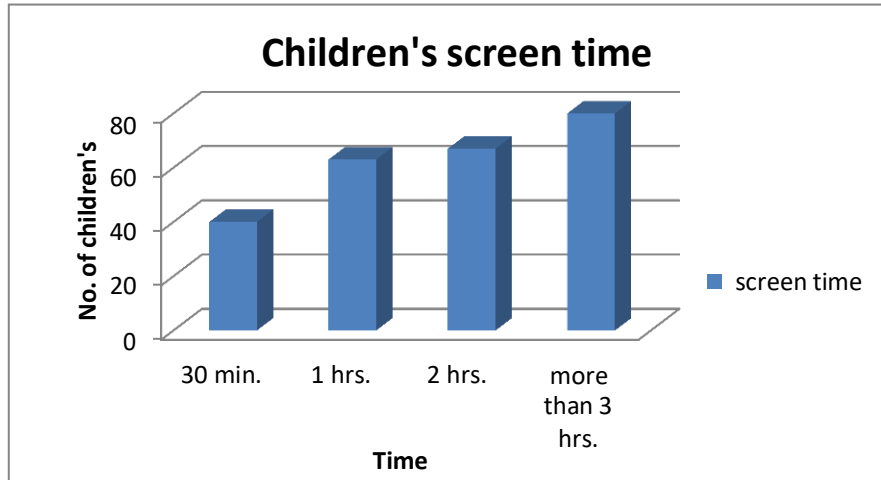
4. Pareto chart : A Pareto chart is a graph that indicates the frequency of defects, as well as their cumulative impact. Pareto charts are useful to find the defects to prioritize on order to observe the greatest overall improvement.

B) CHI-SQUARE TEST FOR INDEPENDENCE OF ATTRIBUTES:

The null hypothesis of this test is that the attributes are independent on each other. The test is used to check the independency of the attributes. Observed frequencies are tabulated in the contingency table and the expected frequencies are calculated. The test checks whether the observed frequencies and expected frequencies are significantly different or not.

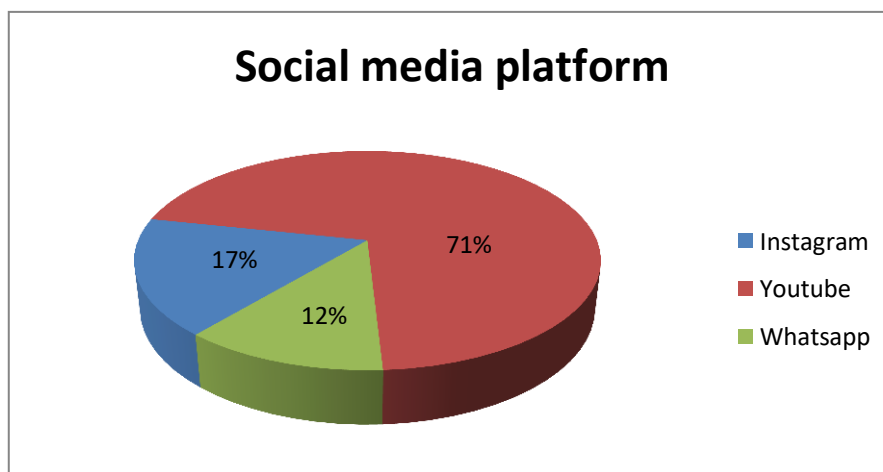
STATISTICAL ANALYSIS

1. To find the amount of time spend by children's on screen.



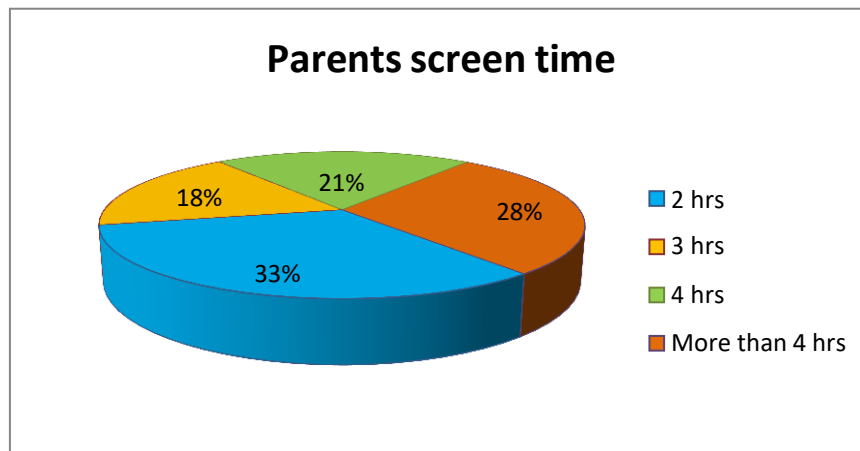
Interpretation: From the figure most of the children's use mobile more than 3 hours.

2. To study which social media platform more used by children's .



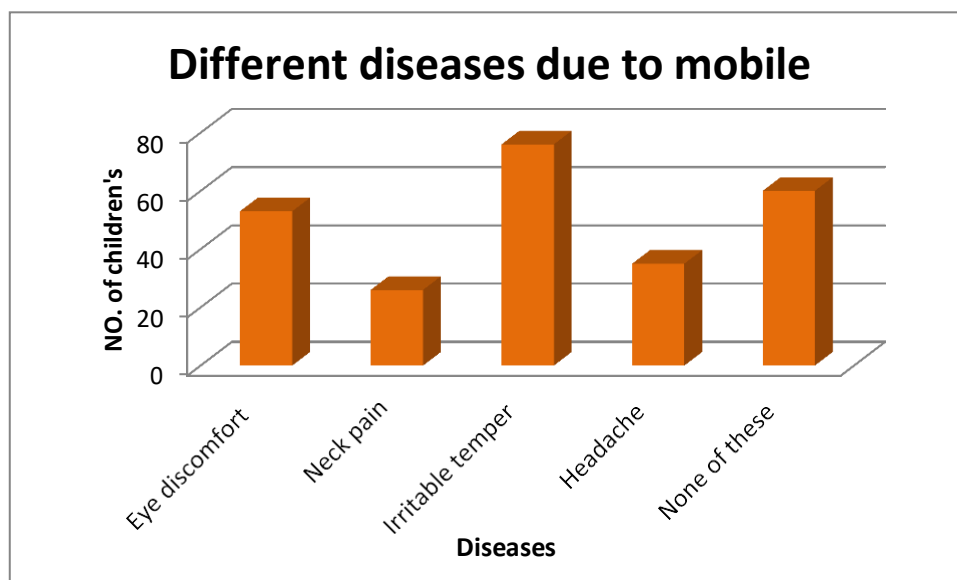
Interpretation: Most of the children's use YouTube .

3. To study how much time parents use mobile or laptop.



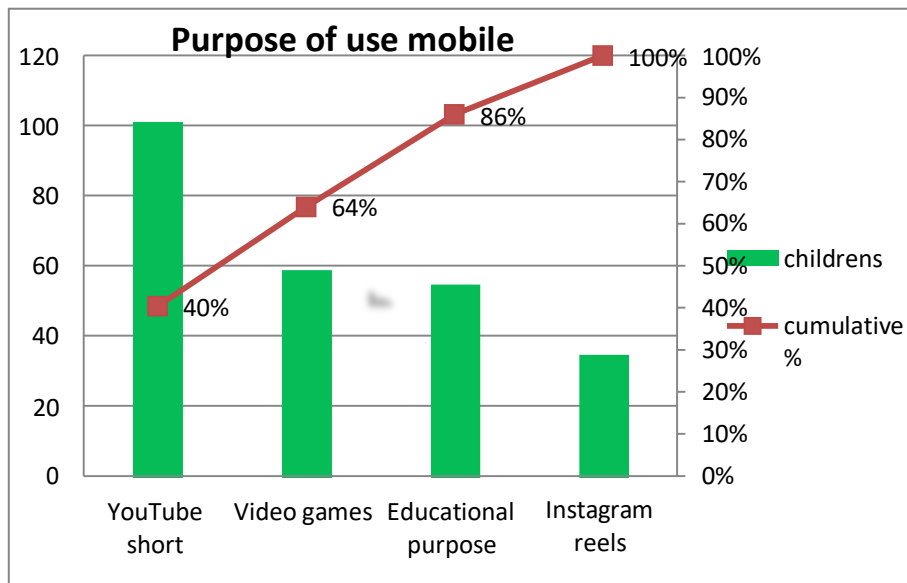
Interpretation: Most of the parents use mobile or laptop for 2 hours.

4. To check the different diseases due to mobile.



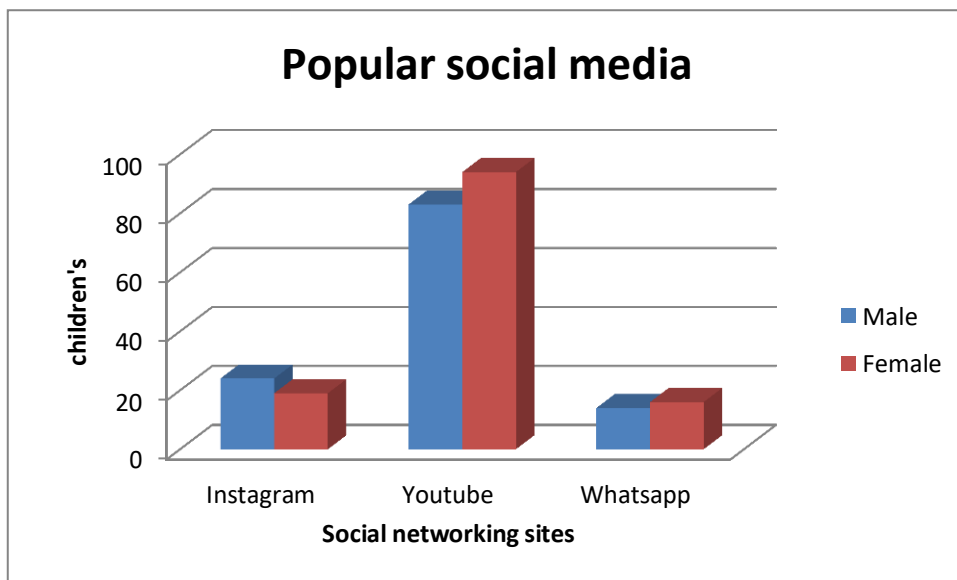
Interpretation: Out of 250 childrens 76 childrens affected by irritable temper issues.

5. To check why children's use mobile phones.



Interpretation: From the above graph we conclude that the 64% childrens use mobile for you tube shorts and video games.

6. To check whether social networking sites are popular in the male and female.



Interpretation: From the above graph, we observed that the most popular social networking site in male and female is you tube.

7. To analyse mobile improve children's language.

Test of independent of attributes:

H₀: The use of mobile and improvement of language are independent.

H₁: The use of mobile and improvement of language are dependent.

The contingency table is,

	Half hrs	1 hrs	2 hrs	More than 3 hrs	Total
Yes	16	36	38	53	143
No	24	27	29	27	107
Total	40	63	67	80	250

The test statistics is,

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

$$\chi^2_{(cal)} = 7.5165 \quad \chi^2_{(tab)} = 7.8147279$$

$$\chi^2_{(cal)} = 7.5165 < \chi^2_{(tab)} = 7.8147279$$

Interpretation: We conclude that, the data provides enough evidence to claim that improvement of language is independent upon the use of mobile.

8. To find out the relation between time spend by children's on screen and parents time spend with children's.

Test of independent of attributes:

H₀: The children screen time and parents time spend with children are independent.

H₁: The children screen time and parents time spend with children are dependent.

The contingency table is,

	Half hrs	1 hrs	2 hrs	More than 3 hrs	Total
2 hrs	20	16	12	34	82
3 hrs	3	16	14	16	49
4 hrs	2	7	16	14	39
More than 4 hrs	15	24	25	16	80
Total	40	63	67	80	250

The test statistics is,

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

$$\chi^2_{(cal)} = 27.74145 \quad \chi^2_{(tab)} = 16.91898$$

$$\chi^2_{(cal)} = 27.74145 > \chi^2_{(tab)} = 16.91898$$

Interpretation: We conclude that, the data provides enough evidence to claim that children's screen time is depend on parents time spend with children.

OVERALL CONCLUSIONS

2. Most of the children's use mobile more than 3 hours.
3. Most of the children's use you tube.
4. Most of the parents use mobile or laptop 2 hours.
5. Out of 250 children's 76 children's affected by irritable temper issues.
6. Most preferred purpose use of mobile is, you tube shorts.
7. Most popular social networking site in male and female is you tube.
8. Improvement of language is independent upon the use of mobile.
9. Children's screen time is depend on parents time spend with children.

LIMITATIONS

- 1) Sample size (250) is very small to represent the whole area.
- 2) The analysis and finding can be made more accurate if the data on large scale is available.

SCOPE

- 1) This project can be extended to the state and national level.

REFERENCE

- fundamental of mathematical statistics by Gupta and Kapoor.
- <https://innohealthmagazine.com/2019/well-being/effects-mobile-phones/>
- https://www.researchgate.net/publication/316974592_Effects_of_Mobile_Phones_on_Children's_and_Adolescents'_Health_A_Commentary



QUESTIONNAIRE

1) Children's age?

- 0-2
- 2-5
- 5-7
- 7-15

2) Gender?

- Male
- Female

3) What is the education of parents?

- Primary
- Secondary
- Graduation
- Post-Graduation

4) How much time parents use mobile/laptop?

- 2 hours
- 3 hours
- 4 hours
- More than 4hours

5) How much time are you out of the house?

- 2 hours
- 3 hour
- 4 hours
- More than 4 hours

6) How much time parents spend with children's?

- 2 hours
- 3 hours
- 4 hours
- More than 4 hours

7) Children's daily screen time?

- 2 hours
- 3hours
- 4 hours
- More than 4 hours

8) Most used social media platform by children's?

- You Tube
- Instagram
- What's App

9) Reason for mobile used?

- Video games
- You Tube short
- Educational purposes
- Instagram reels

10) Do they have their own mobile?

- Yes
- No

11) Do they have their own account own social media ?

- Yes
- No

12) Does mobile make a difference in their language?

- Yes
- No

13) Different diseases due to mobile?

- Eye discomfort
- Neck pain
- Headache
- Irritable temper
- None of these

14) Do children's remember mobile phone while sleeping at night?

- Yes
- No

15) What parents can do to reduce children's screen time?

- Free response

A

Project Report

On

“STATISTICAL ANALYSIS ON ACADEMIC
PERFORMANCE OF THE UNDERGRADUATE STUDENTS”

Submitted To

ShikshanPrasarakSanstha’s

**PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA,
KAVATHE MAHANKAL**

(Department Of Statistics)

By

Mr. Kute Pranav Kundlik

Mr. Kore Pratik Jayant

Mr. Kadam Aniket Mahadev

Mr. Bandgar Vishal Annaso

Under the Guidance of

Mr. Koshti V.V.(Head of dept.)

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Miss. Patil S.S.

Miss. Zarekar S.M.

Through

Hon. Prin. Prof (Dr) M.K. Patil

**PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA,
KAVATHE MAHANKAL.**

For the academic year 2023-2024

ShikshanPrasarakSanstha's

**PADMABHUSHAN VASANTRAODADA PATIL
MAHAVIDYALAYA, KAVATHE MAHANKAL**

(Department Of Statistics)

CERTIFICATE

This is to certify that the following students are working under my Guidance. They have satisfactorily carried out and completed the project Work for the B.Sc Part III. They are presently submitted their project entitled.

This work is genuine, and the project or the part of it has not has submitted for the award of any other degree.

“Statistical Analysis on Academic Performance Of The Undergraduate Student”

Mr. Kute Pranav Kundlik

Mr. Kore Pratik Jayant

Mr. Kadam Aniket Mahadev

Mr. Bandgar Vishal Annaso



Teacher in Charge



Examiner



Head Department of statistic

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INTRODUCTION

The final year of college is a pivotal juncture, where students solidify academic foundations and prepare for their future endeavors. This study explores various aspects of undergraduate education, focusing on B.A, B.Com, and B.Sc streams. Our objectives include determining the most preferred subject in the final year (TY) across these streams, examining the dependency between gender and pursuing higher studies, comparing attendance percentages, identifying reasons for irregular attendance, and exploring competitive exam preparation methods.

We aim to understand students' academic preferences, gender-based differences in educational pursuits, and attendance patterns. By addressing these objectives, we seek to provide insights that can enhance educational policies and practices, ultimately improving the academic experience and outcomes of undergraduate students.

SAMPLE SIZE DETERMINATION

The population size of PVP college is almost 350. We use Yamane's formula to determine the sample size at approximately 6% margin of error. The Yamane's formula for the sample size determination is given by,

$$n = \frac{N}{1+Ne^2}$$

Where, n is sample size
N is the population size
E is the margin of error.

DATA COLLECTION

The main objective of the project is "To analysis academic performance of the undergraduate students." We have collected sample of TY students of BA, BCom, BSc stream from PVP college. We prepare a questionnaire to fulfill the objectives behind the project accurately. The data collection procedure was done using google forms and direct interviewing with students.

OBJECTIVE

1. To determine the most preferred subject in TY across B.A, B.Com and B.Sc streams.
2. To check dependency between the gender and pursuing higher study across different streams.
3. To compare the attendance percentage across different streams.
4. To identify the reasons why students are irregular.
5. To identify which competitive exam are most of the student preparing across different streams and also to compare the approaches to competitive exam preparation employed by male and female students
6. To check dependency between the gender and attendance percentage across different streams.
7. To identify the preparation method to prepare for competitive exams

STATISTICAL TOOLS

1) Graphical representation:

❖ Pie chart

A pie chart is a type of graph that represents the data in the circular graph. The slices of pie show the relative size the data, and it is type of pictorial representation of data. A pie chart requires list of categorical variables and numerical variable. Here the term pie represents the whole. All the slices of the pie chart add up to make whole equalling 100% and 360 degree.

❖ Bar chart

A bar chart is a graphical representation used to display and compare discrete categories of data through rectangular bars, where the length or height of each bar is proportional to the frequency or value of the corresponding category or strips. It can be either horizontal or vertical.

❖ Donut chart

A donut chart is a graphical representation used to show proportions of categories that make up the whole, but the center can also be used to display data.

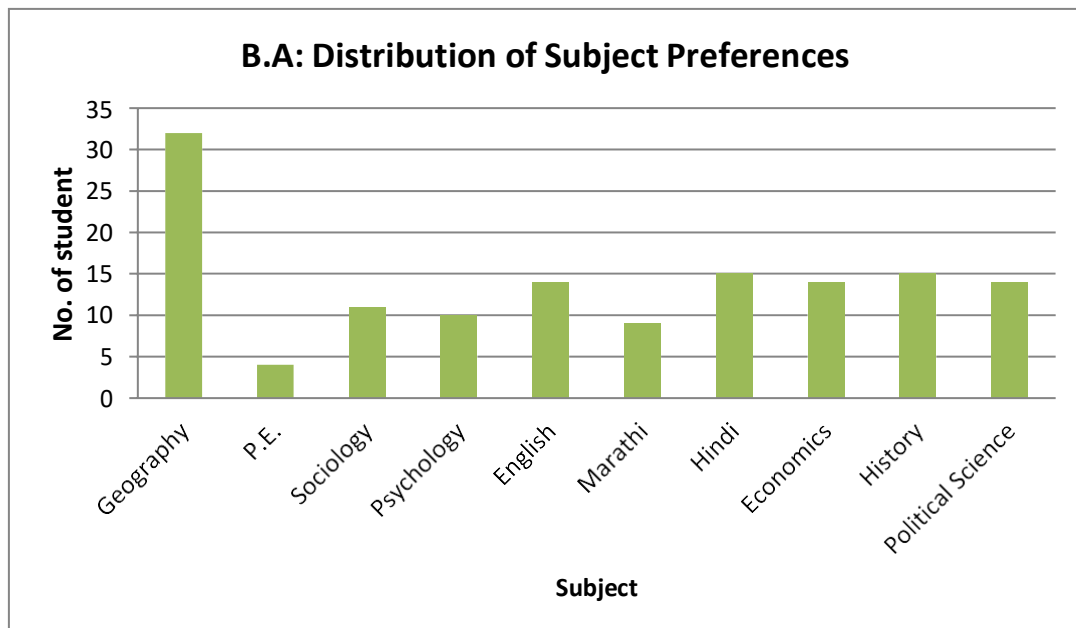
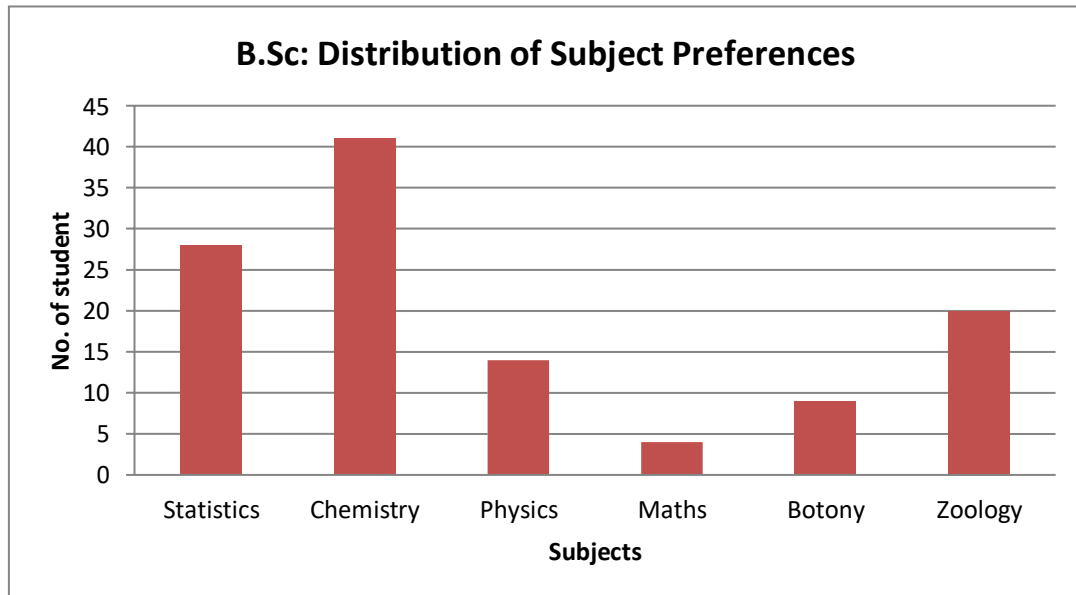
2) Hypothesis testing:

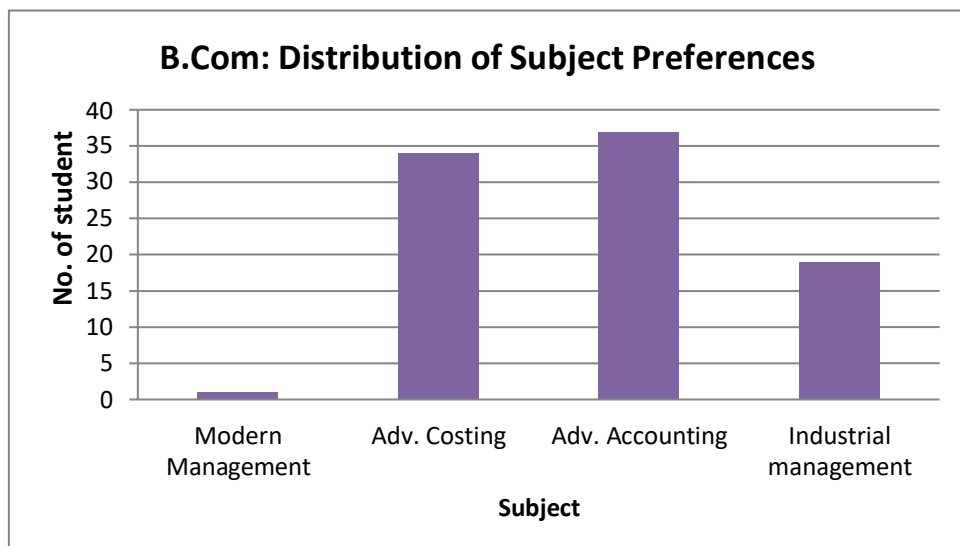
❖ Chi-square test for independence of attributes:

The null hypothesis of this test is that the attributes are independent on each other. The test is used to check the independency of the attributes. Observed frequencies are tabulated in the contingency table and the expected frequencies are calculated. The test checks whether the observed frequencies and expected frequencies are significantly different or not.

STATISTICAL ANALYSIS

1) To determine the most preferred subject in TY across B.A, B.Com and B.Sc streams.





Interpretation : Most preferred stream in TY across B.A, B.Com and B.Sc streams are ‘Geography’, ‘Advanced Accounting’ and ‘Chemistry’ respectively.

2) To check dependency between the gender and pursuing higher study across different streams

H_0 : Pursuing higher study is independent on gender

H_1 : Pursuing higher study is dependent on gender

B.Sc:

	Yes	No	Total
Male	23	24	47
Female	20	46	66
Total	43	70	113

Tabulated χ^2 is,

$$\chi^2 = 3.8414$$

$$\begin{aligned}\text{Calculated } \chi^2 &= \frac{N(ad-bc)^2}{(a+b)(c+d)(b+d)(a+c)} \\ &= \frac{113(23*46-24*20)^2}{(23+24)*(20+46)*(24+46)*(23+20)} \\ &= \mathbf{4.0432}\end{aligned}$$

Therefore we reject the Null hypothesis at 5% level of significance. We conclude that, the data provides enough evidence to claim that Pursuing higher study is dependent on gender.

B.Com:

	Yes	No	Total
Male	30	25	55
Female	10	27	37
Total	40	52	92

Tabulated χ^2 is,

$$\chi^2 = 3.8414$$

$$\begin{aligned}\text{Calculated } \chi^2 &= \frac{N(ad-bc)^2}{(a+b)(c+d)(b+d)(a+c)} \\ &= \frac{92(30*27-25*10)^2}{(30+25)*(10+27)*(25+27)*(30+10)} \\ &= \mathbf{6.8161}\end{aligned}$$

Therefore we reject the Null hypothesis at 5% level of significance.

We conclude that, the data provides enough evidence to claim that pursuing higher study is dependent on the gender.

B.A:

	Yes	No	Total
Male	16	57	73
Female	9	54	63
Total	25	111	136

Tabulated χ^2 is,

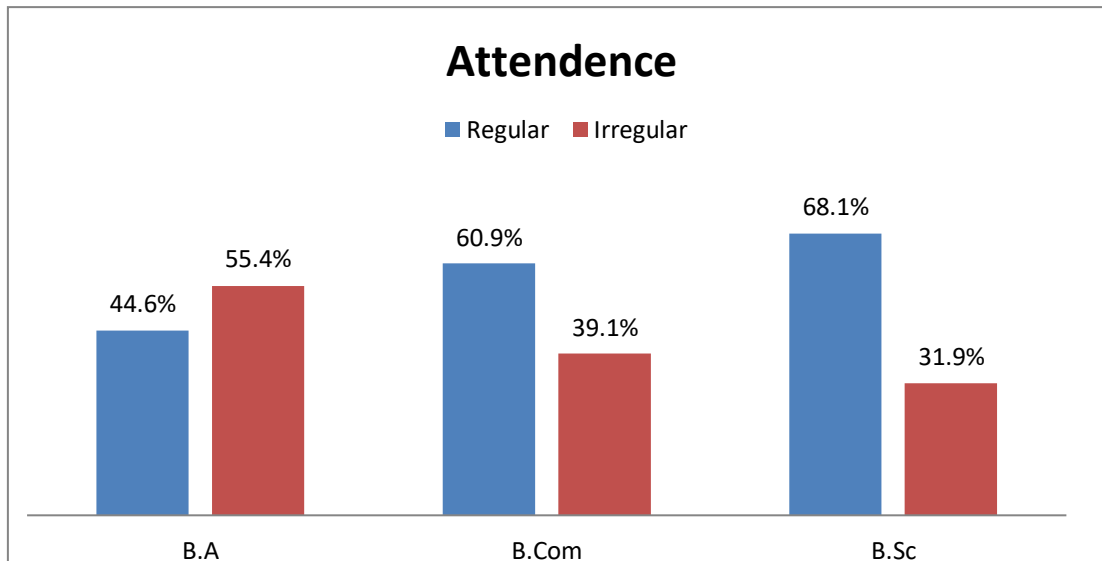
$$\chi^2 = 3.8414$$

$$\begin{aligned}\text{Calculated } \chi^2 &= \frac{N(ad-bc)^2}{(a+b)(c+d)(b+d)(a+c)} \\ &= \frac{136(16*54-57*9)^2}{(16+57)*(9+54)*(54+57)*(16+9)} \\ &= \mathbf{1.3128}\end{aligned}$$

Therefore we accept the Null hypothesis at 5% level of significance.

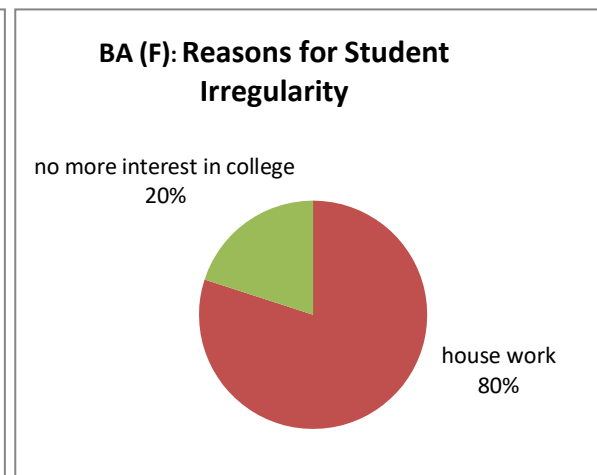
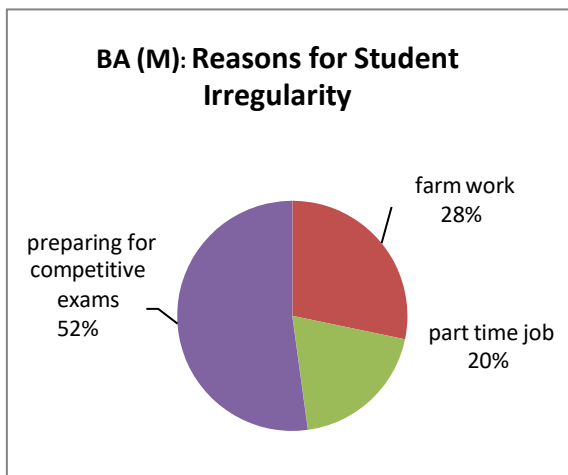
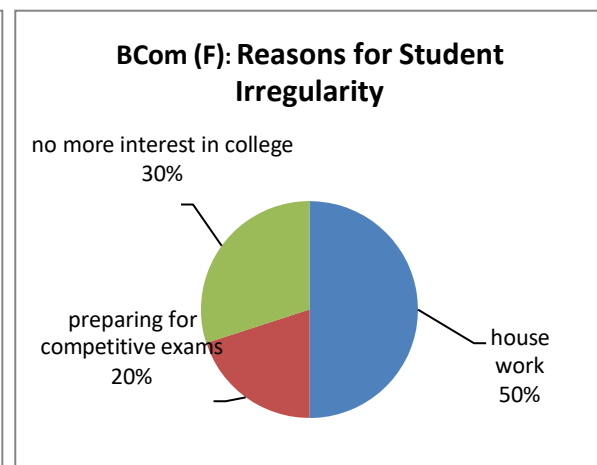
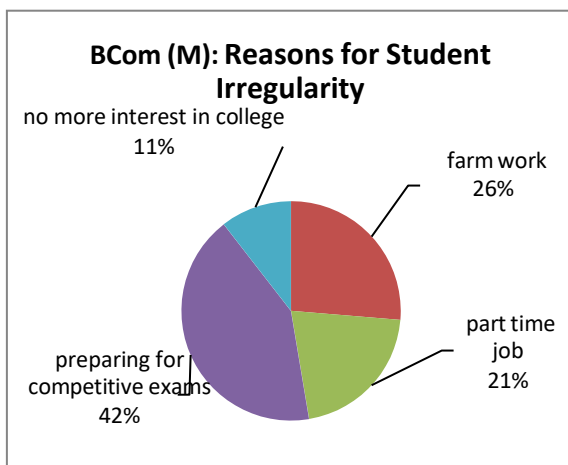
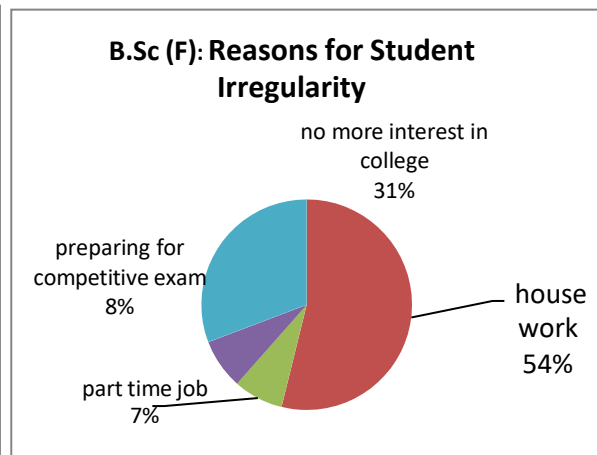
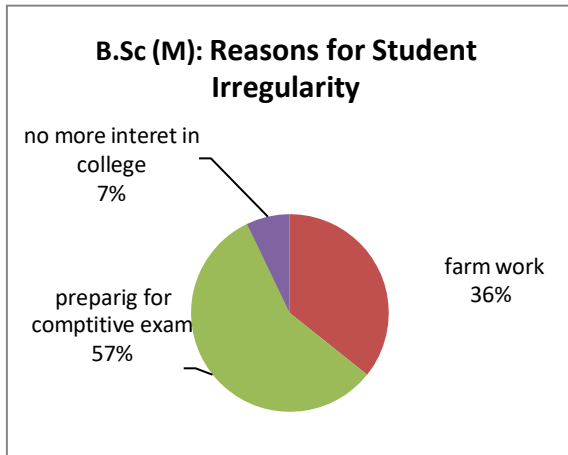
We conclude that, the data provides enough evidence to claim that opinion is independent on the gender.

3) To compare the attendance percentage across different streams.



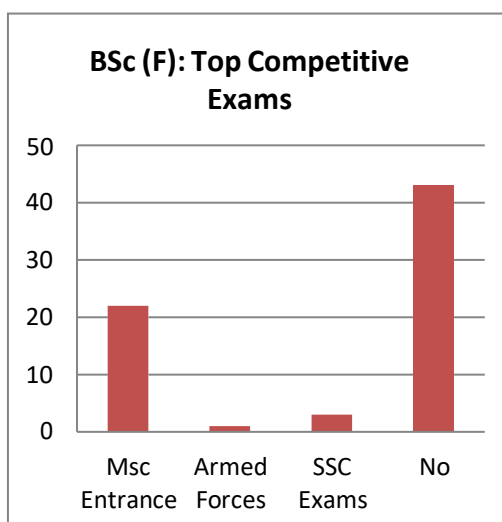
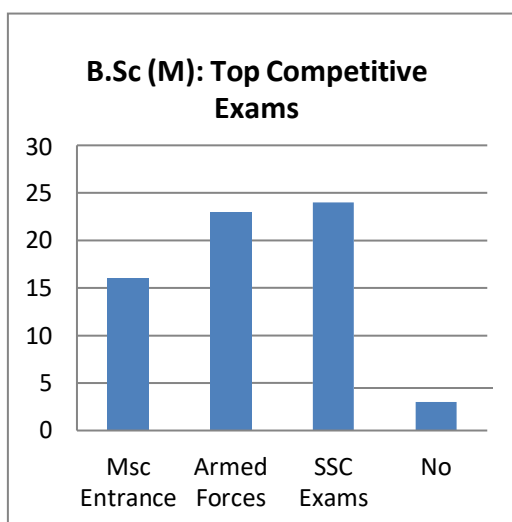
Interpretation : From graph we can observe that B.Sc students are more regular than B.A and B.Com students and B.A students are more irregular than B.Com and B.SC students

4) To identify the reasons why students are irregular.

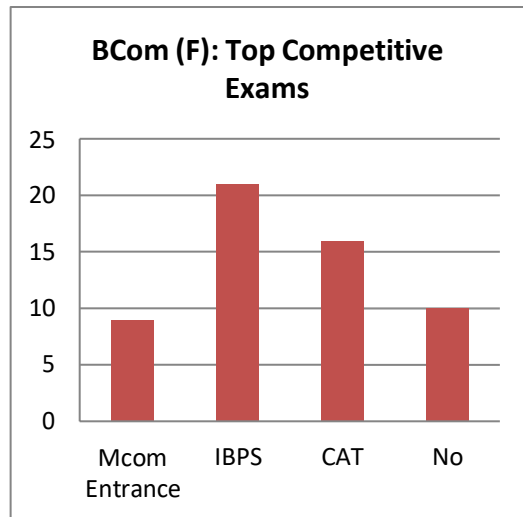
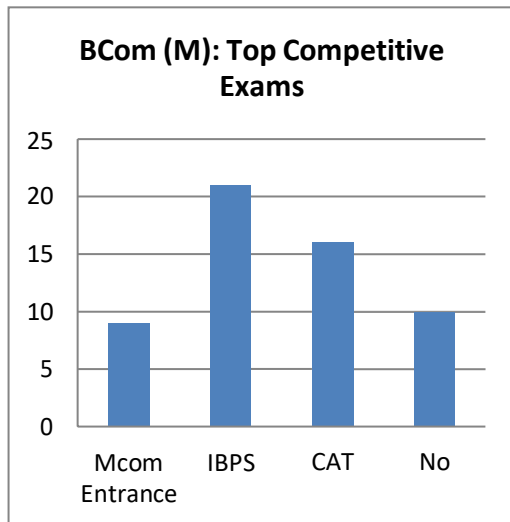


Interpretation : From the graph we can see that most of the male students are irregular because of doing preparation of competitive exam & farm work responsibility and most of the female students are irregular due to house work and no more interested in college.

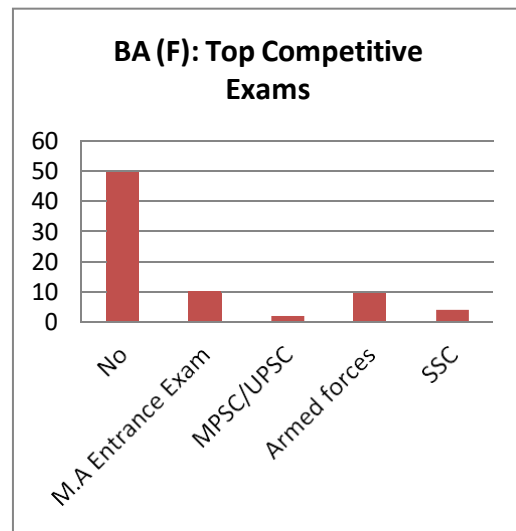
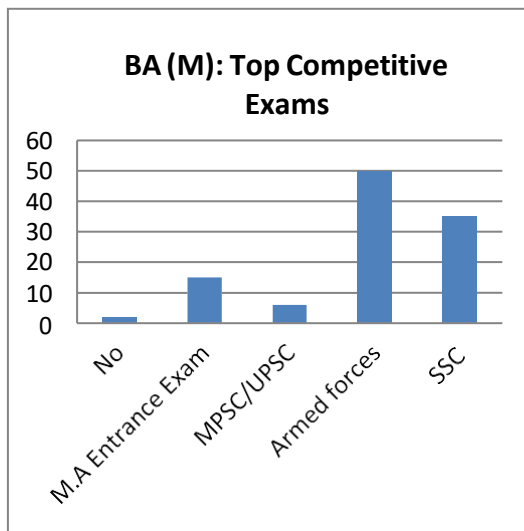
5) To identify which competitive exam are most of the student preparing across different streams and also to compare the approaches to competitive exam preparation employed by male and female students.



1) From the graph we can conclude that most of the male B.Sc students are preparing for Armed forces and M.Sc entrance and SSC exams



2) From the graph we can conclude that most of the male B.Com students are preparing IBPS and CAT exams.



3) From the graph we can conclude that most of the male B.A students are preparing Armed Forces and SSC exams and female students are not interested in competitive exams.

4) Also we can see that across all streams female students are less interested than male students in competitive exams.

6) To check dependency between the gender and attendance percentage across different streams.

H_0 : The relationship between gender and attendance percentage is independent

H_1 : The relationship between gender and attendance percentage is dependent

B.Sc :

Sr. No.	(O_i)	(E_i)	$\frac{(O_i - E_i)^2}{E_i}$
1	25	31.38318	1.29830562
2	21	14.61682	2.78753854
3	48	41.61682	0.97905014
4	13	19.38318	2.10207825
Total			7.16697255

The test statistic is,

$$\chi^2 = 3.8414$$

$$\begin{aligned} \text{Calculated } \chi^2 &= \sum \frac{(O_i - E_i)^2}{E_i} \\ &= \mathbf{7.1669} \end{aligned}$$

$$\text{Cal } \chi^2 > \text{Tab } \chi^2$$

Therefore we reject the Null hypothesis at 5% level of significance. We conclude that, the data provides that for B.Sc streams gender is dependent on the attendance percentage.

B.Com :

Sr. No.	(<i>O_i</i>)	(<i>E_i</i>)	$\frac{(O_i - E_i)^2}{E_i}$
1	37	38.34783	0.04737257
2	19	17.65217	0.10291283
3	26	24.65217	0.07369067
4	10	11.34783	0.16008662
Total			0.38406269

The test statistic is,

$$\chi^2 = 3.8414$$

$$\text{Calculated } \chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$
$$= \mathbf{0.3840}$$

$$\text{Cal } \chi^2 < \text{Tab } \chi^2$$

Therefore we accept the Null hypothesis at 5% level of significance.

We conclude that, the data provides that for B.Com stream gender is independent on the attendance percentage.

B.A :

Sr. No.	(<i>O_i</i>)	(<i>E_i</i>)	$\frac{(O_i - E_i)^2}{E_i}$
1	27	32.7971	1.02467547
2	46	40.2029	0.83591946
3	35	29.2029	1.15078937
4	30	35.7971	0.93880185
Total			3.95018615

The test statistic is,

$$\chi^2 = 3.8414$$

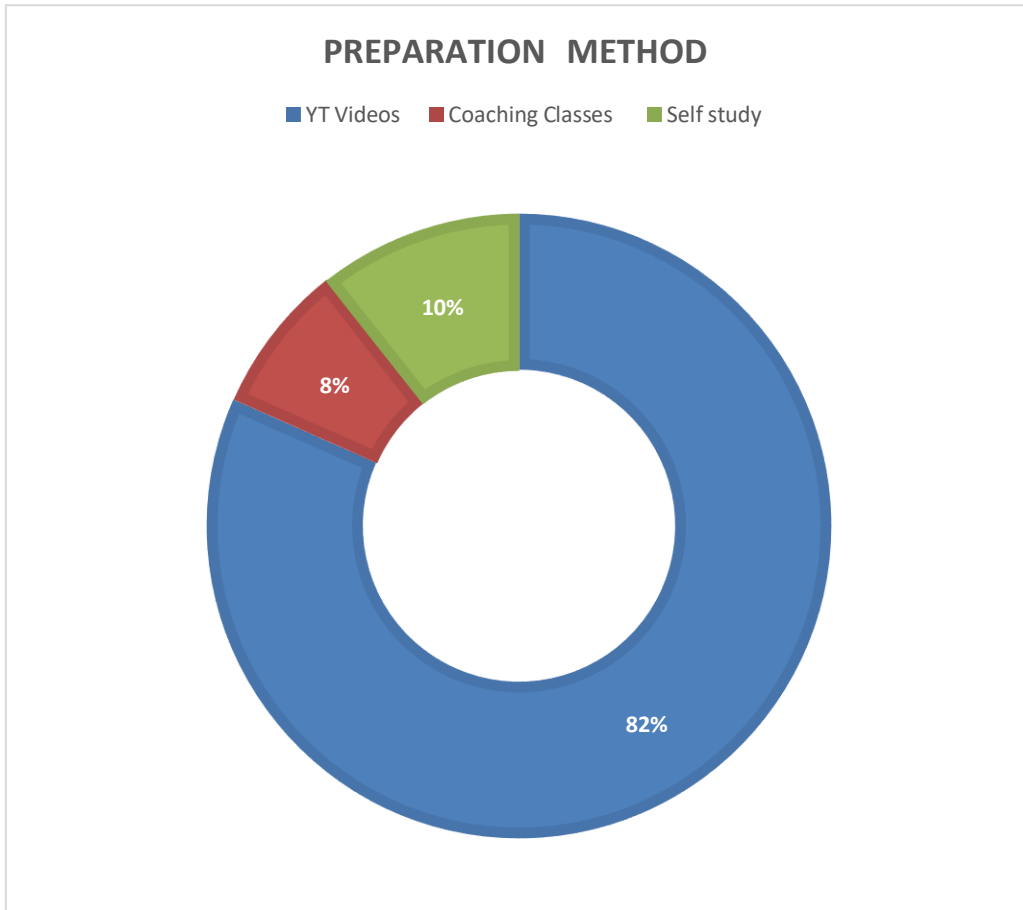
$$\text{Calculated } \chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

$$= 3.9501$$

$$\text{Cal } \chi^2 > \text{Tab } \chi^2$$

Therefore we reject the Null hypothesis at 5% level of significance. We conclude that, the data provides that for B.A stream gender is dependent on the attendance percentage.

7) To identify the preparation method to prepare for competitive exams



Interpretation : From graph we can observe that most of the students prefers Youtube videos to prepare for competitive exams

OVERALL CONCLUSION

- Most preferred stream in TY across B.A, B.Com and B.Sc streams are ‘Geography’, ‘Advanced Accounting’ and ‘Chemistry’ respectively.
- For BSc and B.Com student pursuing higher study is dependent on gender and for B.A student it is independent on gender.
- BSc students are more regular to college and B.A students are more irregular to college.
- Most of the male students are irregular because of doing preparation of competitive exam & farm work responsibility and most of the female students are irregular due to house work and no more interested in college.
- Most of the students are preparing for
 - I) BSc: Armed forces and MSc entrance and SSC exams
 - II) B.Com: IBPS and CAT exams
 - III) B.A: Armed Forces and SSC exams
- Female students are less interested than male students in competitive exams.
- For BSc and B.A streams gender is dependent on the attendance percentage and for B.A stream gender is dependent on the attendance percentage.
- Students prefers ‘Youtube videos’ to prepare for competitive exams

LIMITATION

- This study is limited to 347 respondent. So finding and suggestion given on the basis of the study cannot be assumed to entire population.
- This study also restricts itself to the geographical area of the Kavathe Mahankal tehsil.

SCOPE

- The study can provide insights and information to make informed decisions about their academic journey.
- The study can raise the awareness of potential biases and advocating for equitable educational experiences.
- The study highlight the need for motivating female students to participate in competitive exams.

BIBLIOGRAPHY

- Fundamental of statistics by Gupta and Kapoor.
- 100 statistical test by Gopal K. Kanji

QUETIONARRIE

<https://docs.google.com/forms/d/e/1FAIpQLSdxR6R7M2O357cUKkVF4v2oGrgXmpA6OYZdY7OISlflj1CxQ/formResponse?pli=1>

THANK

YOU...