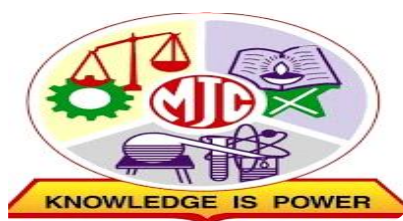


“Survey On Street Food”

*A project report submitted to KCES's
Moolji Jaitha College, Jalgaon
(A College Affiliated to KBCNMU Jalgaon)*



*For the compliance of work performed under
In the faculty of Science*

By

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Under the guidance of

Prof. S. L. Kulkarni

Submitted to

DEPARTMENT OF STATISTICS

MOOLJI JAITHA COLLEGE , JALGAON

(2019-2020)

KCES's Moolji Jaitha College , Jalgaon
(An Autonomous College Affiliated to KBCNMU Jalgaon)
M. J. College Sponsered
Research Promotion Scheme for Budding Researchers
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CERTIFICATE

This is to certify that Ms. Pardeshi Pranali Shailendra, Ms. Chhabdiya Durga Dilipkumar , Ms. Pathak Mayuri Arun , Ms. Bhavsar Shweta Vijay , Mr. Mahajan Manoj Suresh are the students of (T. Y. B.Sc.) Statistics have successfully completed their project entitled “***Survey On Street Food***” for the Research Promotion Scheme for Budding Researchers in Department of Statistics at Moolji Jaitha College , Jalgaon under my guidance and supervision during the academic year 2019-2020.

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INTRODUCTION

Food is one of the three essentials for maintenance of life. The first and foremost goal of any country is to increase the food supply in sufficient amounts of the right nutrient content to meet the needs of an ever increasing population. Such food has to be safe, which implies that its consumption should not give rise to any Food Borne Disease whether from infection, intoxication, contamination, adulteration or other sources.

Food is the most complex part of the environment through which human population is exposed to a variety of contaminants. Further, the WHO conference on nutrition has declared that - Access to safe and nutritionally adequate food is the right of every individual. But it seems that the right of an individual is misused due to improper safety of foods. This can be said so because millions of people worldwide suffer from diseases of food borne origin.

STREET FOOD : The Food and Agriculture Organization defines street food as ready-to-eat food and beverages prepared or sold by vendors and hawkers especially in streets and similar public places. Significant part of urban food consumption for millions of low and middle-income consumers, in urban areas on a daily basis. There are a plenty of types of food sold on the street and different places bring different flavours of street foods. With the changes in life style though people are aware of the impacts after consuming street food still they are preferring because of the convenience and price.

OBJECTIVES :

- To understand consumer perception on street food and safety.
- To study the reason behind buying of street food.
- To analyze the safety of street food.
- To understand the growth of street food industry.

NEED OF THE STUDY :

Study will make you understand how far the street food is safe, and the consumer's perception on street food and what the reason behind buying street food.

SCOPE OF THE STUDY :

The present study was confined to students of M. J. college in Jalgaon city.

REVIEW OF LITERATURE

A review of previous studies on street food vending is necessary to enable us to have a view of different scholars and reporters. The knowledge so obtained will be useful to go in depth and find out the unknown and unexplored areas. The earlier studies made on street food vending and related areas are briefly reviewed here. Many authors have dealt extensively on the subject of safe food.

According to Food and Agriculture Organization of the United Nations (FAO) "In many countries street foods make an important contribution to employment, household revenue and food security and help to meet the challenge of feeding urban populations, particularly in developing countries.

According to Sylvia Angubua Baluka in his study 'Hygiene practices and food contamination in managed food service facilities in Uganda'. This study has found that there is a critical need for improving food safety at restaurants and dining halls at Makerere University. The finding that the majority of respondents did not follow good hygiene practices, indicates laxity or lack of supervision, and a need to overcome the problems of the 'intention-behavior gap' in hygienic food handling. They further suggest that, there is a need for governmental support to improve food safety management system, and education and awareness programs.

Tambekar D H, Kulkarni R.V, S.D. Shirsat, D.G. Bhadange in their research paper opined that, for the contamination of street food, personal hygiene of vendor is also responsible. Vendors touch the floor, wash the utensils most of the time without using soap, handling of dish cloths and after all they touch food without gloves for preparing and serving water without washing the hands, this may lead to cross contamination of bacterial pathogens. They further insist that the local government and the ministry should consider establishment of adequate facilities and utility services as well as provision of necessary information, education and training programmes for vendors and consumers.

Margaret Githiri, Judith Kimiywe and Paul Okemo in their research paper opined that, there is really need for educational programmes to enhance the knowledge of food handlers regarding food borne diseases. Further they concluded that food safety inspection guidelines should be developed.

RRESEARCH METHODOLOGY

MODE OF DATA COLLECTION :

The type of research used in this research project is qualitative in nature. In this research the researcher has collected primary data using structured questionnaire and through observation method. A survey was done in Moolji Jaitha College, in Jalgaon city, especially students who are pursuing education in third year bachelorette degree of science faculty. The sampling units in this research were food items such as Pani puri, Bhel, Samosa, Kachori, Paneer chilli, Ragada and Chinese food. The respondents' i.e the students were asked questions regarding food safety and hygienic practices known to them. The questionnaire was also organized into distinctive sections to obtain information pertaining to respondents "socio-demographic characteristics; level of knowledge on food hygiene; status of medical screening and an observation checklist to determine personal hygiene and food handling practices". The data obtained from 184 respondents are logically screened, analyzed with the help of pie and bar chart. The questionnaire is mentioned in the last.

STATISTICAL TECHNIQUES

ONE SAMPLE PROPORTION TEST

SUMMARY :

In statistics, a single proportion (or one-sample) normal test is used to compare a proportion of response or values in a sample of data to a proportion in the population from which our sample is drawn .

A **proportion** is mathematically defined as being the ratio of the values in a subset **S** to the values in a set **R**.

As such, the population proportion can be defined as follows:

$$P = \frac{X}{N}$$

where X is the count of successes in the population and N is the size of the population.

This mathematical definition can be generalized to provide the definition for the sample proportion:

$$\hat{p} = \frac{x}{n}$$

Where x is the number in the sample who have the trait or outcome of interest, and n is the size of the sample obtained from the population.

Hypothesis Tests

- Null hypothesis $H_0: p = p_0$
- Alternative Hypothesis $H_1: p \neq p_0$

This hypothesis considers whether the population proportion is equivalent to some pre-specified value, p_0 . This value might be of historical interest or a result obtained in another study that we are trying to corroborate with our study data. A rule of thumb used to perform this test is that both np_0 and $n(1-p_0)$ are greater than five.

To perform this test, we:

1. Estimate the population proportion by the sample proportion, \hat{p} .
2. Calculate the following test statistic, which under the null hypothesis, follows approximately (dependent on the rule of thumb stated above) a Standard Normal Distribution:

$$z = \frac{\hat{p} - p_0}{\sqrt{p_0(1 - p_0)/n}}$$

where n is the sample size.

Decision Rule:

Reject if $Z > Z_{\alpha/2}$, where $Z_{\alpha/2}$ is the $1-\alpha/2$ percentile of the standard normal distribution.

ASSUMPTIONS :

1. The data's individual observation have to be obtained from a simple random sample of the population of interest.
2. The data's individual observations have to display normality. This can be verified mathematically with the following definition:
 - Let n be the sample size of a given random sample and let \hat{p} be its sample proportion. If $n\hat{p} \geq 10$, then the data's individual observations display normality.
3. The data's individual observations have to be independent of each other. This can be verified mathematically with the following definition:
 - Let N be the size of the population of interest and let n be the sample size of a simple random sample of the population. If $N \geq 10n$ then the data's individual observations are independent of each other.
4. Each sample point can result in just two possible outcomes. We call one of these outcomes a success and the other, a failure.

TWO SAMPLE PROPORTION TEST

SUMMARY :

In statistical hypothesis testing, a **two-sample test** is a test performed on the data of two random samples, each independently obtained from a different given population. The purpose of the test is to determine whether the difference between these two populations is statistically significant.

Formula is given as follows :

$$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\hat{p}_0(1 - \hat{p}_0)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where, \hat{p}_1 = Proportion of success in 1st population.

\hat{p}_2 = Proportion of success in 2nd population.

$$\hat{p}_0 = \frac{x_1 + x_2}{n_1 + n_2}$$

$$\hat{q}_0 = (1 - \hat{p}_0)$$

n_1 = 1st sample size.

n_2 = 2nd sample size.

Hypothesis Tests :

- Null hypothesis $H_0: \hat{p}_1 = \hat{p}_2$
- Alternative Hypothesis $H_1: \hat{p}_1 \neq \hat{p}_2$

ASSUMPTIONS :

Following are the assumptions of two sample proportion test :

- The data should follow the normal distribution.
- Variables should be independent of each other.

CHI SQUARE TEST

SUMMARY :

Chi-Square goodness of fit test is a non-parametric test that is used to find out how the observed value of a given phenomena is significantly different from the expected value. In Chi-Square goodness of fit test, the term goodness of fit is used to compare the observed sample distribution with the expected probability distribution. Chi-Square goodness of fit test determines how well theoretical distribution (such as normal, binomial, or Poisson) fits the empirical distribution. In Chi-Square goodness of fit test, sample data is divided into intervals. Then the numbers of points that fall into the interval are compared, with the expected numbers of points in each interval.

Procedure for Chi-Square Goodness of Fit Test:

✚ Set up the hypothesis for Chi-Square goodness of fit test:

A. **Null hypothesis:** In Chi-Square goodness of fit test, the null hypothesis assumes that there is no significant difference between the observed and the expected value.

B. **Alternative hypothesis:** In Chi-Square goodness of fit test, the alternative hypothesis assumes that there is a significant difference between the observed and the expected value.

✚ Compute the value of Chi-Square goodness of fit test using the following formula:

$$\chi^2 = \left[\frac{(O - E)^2}{E} \right]$$

Where, χ^2 = Chi-Square goodness of fit test

O= observed value

E= expected value

CHARACTERISTICS:

- * The test is used for testing the hypothesis and it is not useful for estimation.
- * This test can also be applied to a complex contingency table with several classes and as such is a very useful test in research work.

- * This test is an important non parametric test as no rigid assumptions are necessary in regard to the type of population, no need of parameter values and relatively less mathematical details are involved.

DATA ANALYSIS

 H0 : 50% Students spent 10-20 Rs. on street food.

H1 : 50% Students did not spent 10-20 Rs. on street food.

$$Cal\ Z1 = 0.09225 \quad \alpha = 0.025$$

H0 is accepted at $\alpha=0.025$, 50% Students spent 10-20Rs. on street food.

📌 H0 : 50% of students are ready to wait upto 10 minutes.

H1 : 50% of students are not ready to wait upto 10 minutes.

$$Cal\ Z2 = 0.55586 \qquad \alpha = 0.025$$


H0 is accepted at $\alpha=0.025$, 50% Students are ready to wait upto 10-20 minutes.

🚩 H0 : 50% of students think that street food is healthy.

H1 : 50% of students did not think that street food is healthy.

$$Cal\ Z3=0.384041 \quad \alpha = 0.025$$

H0 is accepted, 50% students think that street food is neither healthy nor unhealthy.

 H0 : Both street food and hotel food are equally preferred by college students.

H1 : Street food is not preferred as equal as hotel food.

$$Cal\ Z4 = 0.930158 \quad \alpha = 0.025$$

H0 is accepted at $\alpha=0.025$, That is both street food and hotel food are equally popular in college students.

🚩 H0 : Both Indian food and Chinese food are equally preferred by college students.

H1 : Indian food is not preferred as equal as Chinese food.

$$Cal\ Z5 = 9.04523 \quad \alpha = 0.025$$

H0 is accepted at $\alpha=0.025$, That is both Indian food and chinese food are equally popular in college students.

 H0 : Both online and cash mode of payment are equally preferred by college students.

H1 : Online mode of payment is preferred than cash mode payment.

$$Cal\ Z6 = 5.5774 \quad \alpha = 0.025$$

H0 is accepted at $\alpha=0.025$,That is both online payment and by cash payment are equally preferred by college students.

✚ H0 : Attributes are independent .

H1 : Attributes are not independent .

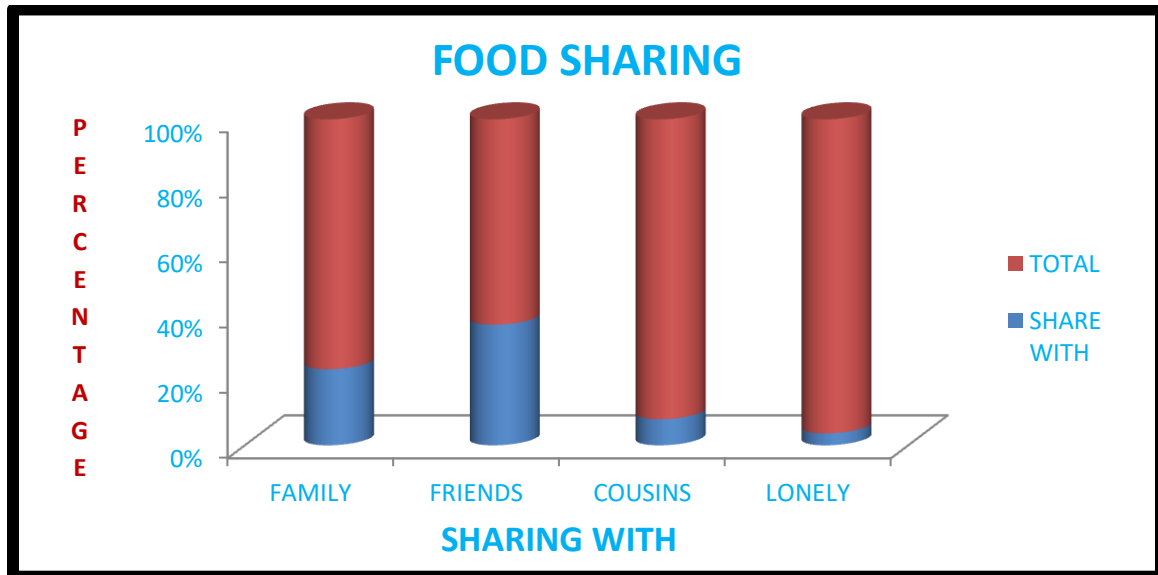
$$\text{Cal } \chi^2 = 3.6679$$

$$\text{Tab } \chi^2 = 1.96$$

H0 is rejected . Hence the attributes are dependent .

GRAPHICAL REPRESENTATION

1. Do You Like To Share Street Food With ?



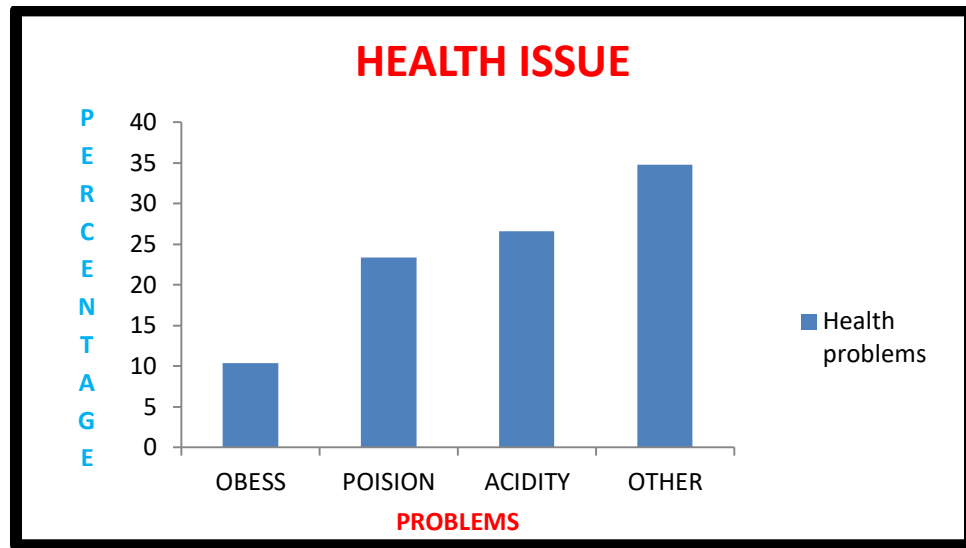
MOST OF THE T. Y. Bsc STUDENTS LIKE TO SHARE THEIR STREET FOOD WITH FRIENDS.

2. From Where Do You Order Food ?



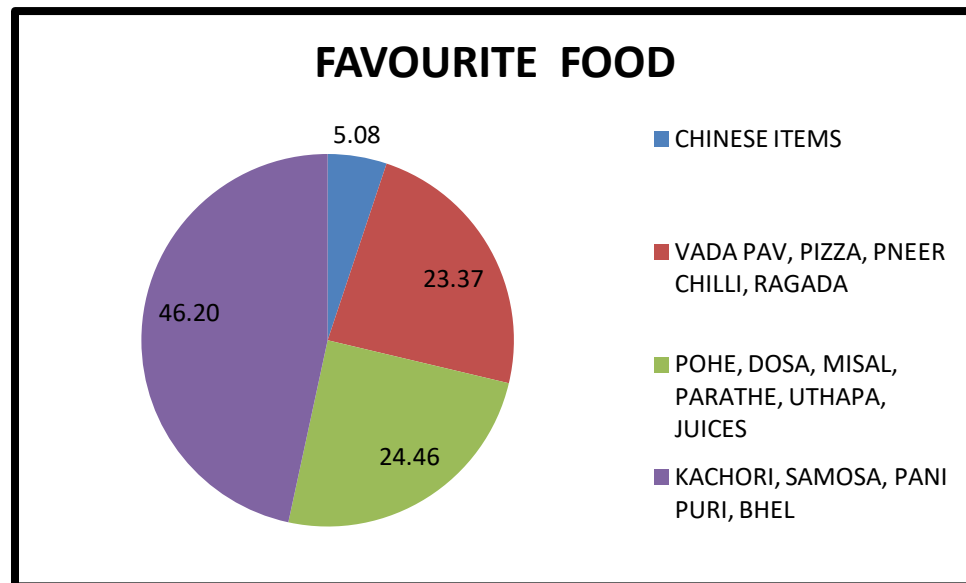
MOST OF THE T. Y. Bsc STUDENTS PREFER TO ORDER FOOD FROM ZOMATO.

3. Do You Have Any Health Issue ?



MOST OF THE T. Y. Bsc STUDENTS SUFFER FROM OTHER HELTH ISSUE SUCH AS PAIN OF TONSELS.

4. Which Is Your Favourite Street Food ?



MOST OF THE T. Y. Bsc STUDENTS FAVOURS KACHORI, SAMOSA, PANI PURI AND BHEL AS THE BEST STREET FOOD .

CONCLUSION

75% college students like homemade food whereas; only 14.14% college students like street food. This may vary in rural areas. 40% of students eat street food once a week whereas 22.22% of students eat street food twice a week whereas; only 10.86% students eat street food daily.

Most popular street food is Indian(66.84%). Chinese food come second (25.54%) whereas Italian food is not so popular (4.89%). Generally 46.99% students prefer street food at evening and they share street food with their friends. Generally students prefer to visit near by shops for eating street food. Taste, price, location, hygiene and health concerns are equally seen by students.

SUGGESTIONS

- To bring the safety awareness among the street food vendors .
- Inspection should be done weekly .
- Each and every street vendor should wear gloves and aprons while serving the food .
- Every consumer should know the impacts of street food after consuming .
- Development of infrastructure and personal hygiene should be maintained

RESULT

- ✓ To save time especially the working people and students majorly are depending on street food which is convenient and affordable and affordable.
- ✓ The other reason is Taste.
- ✓ Street food is the most convenient option for students .

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SOFTWARE

- *MINITAB*
- *MICROSOFT EXCEL*

WEBSITE

- ❖ www.statisticssolutions.com/manova-analysis...
- ❖ byjus.com/maths/paired-t-test
- ❖ www.statstutor.ac.uk/resources/uploaded/paired-t-test.pdf

Date: 14/03/2020

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