A STUDY THE PROBLEMS OF AUTO RICKSHAW DRIVERS IN KOLHAPUR CITY USING STATISTICAL TOOLS AND TECHNIQUES

Prakash S. Chougule[1]
[1]Associate Professor,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

Tejaswi S.Kurane[2]
[2]Assistant Professor,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

S. V.Patil[3]
[3]Associate Professor,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

Dhanaji M.Kamble[4]
[4]Research Student,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

Bhavana A.Kumbhare [5]
[5]Research Student,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

Sumit K. Waghamare[6]
[6]Research Student,
Rajarshi Chhatrapati Shahu College,
Kolhapur(MS),
India

ABSTRACT
 Health is a very significant matter in the daily life of a vehicle driver. The aim of this study is to identify the problems among the auto rickshaw service providers in relation to their standard of living and the number of hours put in driving the auto rickshaws, their life style, economic status, technology awareness, educational status, awareness about insurance. For this purpose, a well designed questionnaire prepared for collection of primary data containing various attributes and was circulated to 125 auto rickshaw drivers through convenient sampling technique and The data had been collected from different location in Kolhapur city . The collected data were then analysed with the help of various statistical tools and techniques to know the socio economic lifestyle of the autorickshaw drivers in kolhapur city .In our study the obtained results shows revealed major issues and backlogs in their socio economic lifestyle.
KEYWORDS: *Graphical Representation, Large Test , Small Test, Level of significance.*

INTRODUCTION

Auto rickshaw drivers in India have different life style. They work on daily basis and earn enough money to spend with their family. Rickshaw drivers with their humble behavior and hard work, earn money by taking the passengers to their destination. He is unable to buy his own rickshaw on his bases that's why, he takes loan from bank to buying rickshaw or he rent it for a rickshaw's owner. He works day in, day out. The hard work by rickshaw driver does not match the money for their fulfillment. Most of the times people try to pay him less. Rickshaw drivers want easy cash so he takes more passengers in a day and hard work. His life is simple life as he as to stand near road intersection and wait for passengers. He is one of the reasons for traffic.

An auto rickshaw provides door to door service and acts as a feeder mode to public trans, generally of train commuters using rickshaw to access the station. While auto rickshaw serves an integral transport role to resident of Kolhapur. We aim to answer some of the following questions; How many hours they drive? How much time to waiting for passengers? What is there education qualification?

They face many problems and had to go through several messy situations, but still people try to pay them less. A rickshaw driver have not sufficient income to there expenditure.

So in this study we try to analyze the life-style of auto rickshaw drivers in Kolhapur city.

OBJECTIVES
- To study the lifestyle of auto drivers in Kolhapur city
- To study economic status of auto drivers
- To study the technology awareness in auto drivers
- To study the educational status of auto drivers
- To study of family status of auto drivers
- To study of insurance of auto and his family
- To study the health problems of auto drivers
- To study of no. of E-meter's in Kolhapur city
- To study the company of auto rickshaws

METHODOLOGY
To study we have selected auto rickshaw driver we have C.B.S, Kadamwadi, shivajiputala, Sadarbajar, Nagala Park and Tarabai Park from this study.

There are total 100 Drivers in C.B.S. Stand, 30 Drivers in Kadamwadi, 50 Drivers in Shivajiputala, 40 Drivers in Sadarbajar, 30 Drivers in Nagala Park, and 25 Drivers in Tarabai Park. We have selected 32 Drivers from C.B.S. Stand, 10 Drivers from Kadamwadi, 31 Drivers from Shivajiputala, 29 Drivers from Sadarbajar, 13 Drivers from Nagala Park, 10 Drivers from Tarabai park Therefore the total sample size of 125 Drivers considered.

In this study, we have observed they face many problems and had to go through several messy situations, but still people try to pay them less, High traffic, Bad condition of road, competition of government vehicles.

Method of data collection
We have collected data from C.B.S. Stand , Kadamwadi , Shivajiputala, Sadarbajar, Nagala park, Tarabai park of size 32,10,31,29,13 and 10 respctively.This study was conducted with a "interview" method. While information collecting from the auto stop is useful for making correct decision about the problem of auto drivers.following are some photographs of data collection

Statistical tools used:
- Graphical representation
- Testing of hypothesis

Software used:
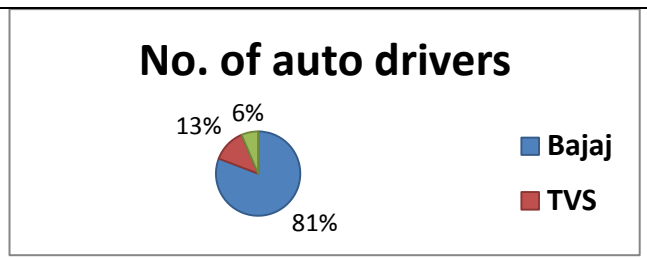- MS-Excel
- Microsoft Word
- R-software

GRAPHICAL REPRESENTATION

Rea	Rural	Urban
No. of auto drivers	33	92

Area of residental
Rural 26%, Urban 74%

Type of housing	Flat	Bungalows	Simple	On rent
No. of auto driver	6	28	75	16

Type of housing — Flat 6, Bunglows 28, Simple 75, On rent 16

Marital Status	Married	Unmarried
No. of auto drivers	113	12

Marital status — Married 90%, Unmarried 10%

Auto insurance (Yes/No)	Yes	No
No. of auto drivers	65	60

Loan — Yes 52%, No 48%

Type of bank for loan	Co-operative	Central bank	Private Bank	No Bank
No. of auto drivers	17	41	16	51

Type of Banks — Co.. 17, Ce.. 41, Pri.. 16, No.. 51

Auto insurance (Yes/No)	Yes	N0
No. of auto drivers	121	4

Auto insuarance — Yes 97%, N0 3%

Family insurance (Yes/No)	Yes	No
No. of auto drivers	65	60

Family insuarance — Yes 52%, N0 48%

Type of company	Bajaj	TVS	Ape
No. of auto drivers	101	16	8

No. of auto drivers

Monthly income	5000-7000	7000-10000	10000-15000	15000-20000
No. of auto drivers	36	63	24	2
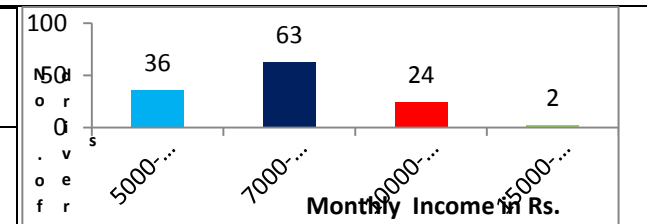
Working In hours	2.-4.	4-6.	6-8.	More than 8
No. of auto drivers	2	10	56	57
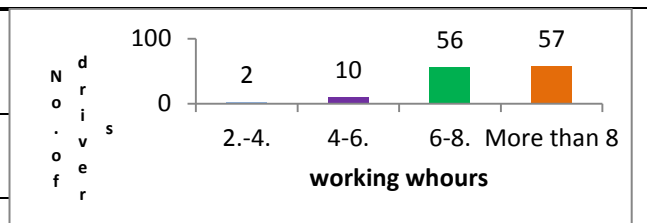
Fuels	Petrol	Gas	Both
No. of auto drivers	52	66	7

Fuel uses
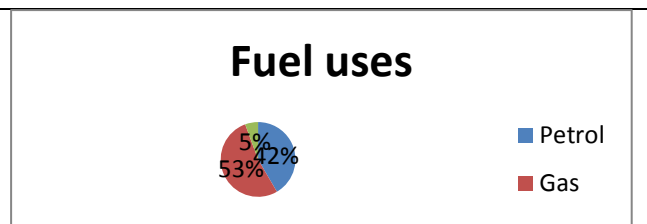
Yes/No	Google map	Online payment	Social media
No	104	104	104
Yes	21	21	21
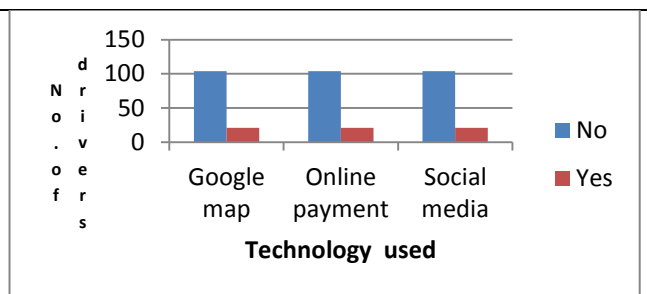
Yes/No	Union	Permit	E-meter
Yes	49	113	118
No	76	12	7
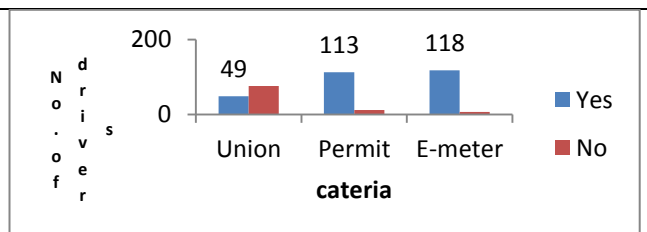
Yes/No	Other job	fast food	exercise
Yes	13	47	49
No	112	78	76

Yes/No	Aram	Eye problem	Low back	Hip Disorder	Hyper-tension
Yes	17	11	3	0	7
No	108	114	122	125	108

Medicines(Yes/No)		
	Yes	43
No. of auto drivers	No	65

Satisfy(Yes/No)	Yes	98
No. of auto drivers	No	27

TESTING OF HYPOTHESIS
a) Test for independence between drive hours and health problem:
Hypothesis:

H_0: Drive hour and health problem are independent.

H_1: Drive hour and health problem are not independent

Observation Table:

Hours/Health	No	Yes	Grand Total
2-4	1	1	2
4-6	5	5	10
6-8	41	15	56
More than 8	49	8	57
Grand Total	**96**	**29**	**125**

Chi-square calculated	7.92
Chi-square tabulated	7.81
DF	1
p-value	0.037
Alpha	0.05

b) Test for independence between the area and monthly income

H_0: area and monthly income are independent.

H_1: area and monthly income are not independent.

Observation Table:

Area/income	5000-7000	7000-10000	10000-15000	15000-20000
Rural	15	13	5	0
Urban	21	50	19	2

Chi-square calculated	6.496
Chi-square tabulated	7.815
DF	3
p-value	0.090
alpha	0.05

c) Test for independence between the education and monthly income

H_0: The Education and monthly income are independent.

H_1: The Education and monthly income are not independent.

Observation table

Education/Income	5000-7000	7000-10000	10000-15000	15000-20000
HSC	5	14	2	1
Illiterate	0	2	0	0
PG	0	0	1	0
SSC	10	27	10	1
UG	3	3	4	0
below 5th	3	2	2	0
below SSC	15	15	5	0

Chi-square calculated	19.723
Chi-square tabulated	28.869
DF	18
p-value	0.349
alpha	0.05

d) Test for independence between education and family insurance

H_0: Education and family insurance are independent.

H_1: Education and family insurance are not independent.

Observation table:

Education/insurance	Yes	No
HSC	12	10
Illiterate	2	0
PG	0	1
SSC	21	27
UG	4	6
below 5th	7	0
below SSC	14	21

Chi-square calculated	12.552
Chi-square tabulated	12.592
DF	6
p-value	0.051
alpha	0.05

e) Test for independence between education and loan:

H_0: Education and loan are independent.

H_1: Education and loan are not independent.

Observation Table

Education/loan	Yes	NO	Total
HSC	10	12	22
Illiterate	0	2	2
PG	0	1	1
SSC	22	26	48
UG	7	3	10
below 5th	3	4	7
below SSC	18	17	35

Chi-square calculated	5.095
Chi-square tabulated	12.592
DF	6
p-value	0.532
alpha	0.05

f) Z test of rural and urban auto drivers

Ho: $\mu1=\mu2$ and   H1: $\mu1\neq\mu2$

	Owner	Rental
Mean	419.7692	319.625
Known Variance	7347.391	2160.984
Observations	117	8
Hypothesized Mean Difference	0	
Z	5.488519	
z Critical one-tail	1.644854	
P(Z<=z) two-tail	4.05E-08	
z Critical two-tail	1.959964	

g) F-test for equality of two variance

H_0: $\sigma1=\sigma2$ and H_1:$\sigma1\neq\sigma2$

	Rural	**Urban**
Mean	379.9697	425.337
Variance	7935.03	7122.182
Observations	33	92
df	32	91
F	1.114129	
P(F<=f) one-tail	0.337287	
F Critical one-tail	1.570625	

h) Test for proportion of auto driver stay in simple house
Let,
n: Sample of auto driver
x: No. of auto driver has simple house
p: Sample proportion of auto driver has simple house

$$= \frac{x}{n} = 0.60$$
Level of significance, $\alpha = 5\%$

Hypothesis

H_0: P=0.65   V/s H_1: P$\neq$ 0.65

$|Z_0|$= 1.1702

Critical value = $Z_{\alpha/2}$ = 1.96

i)Test for proportion of auto drivers are taking loan in central bank
Let, n: Sample of auto Driver
x: No. of auto drivers have loan at central bank
p: sample proportion of taking loan in central bank
Level of Significance, α=5%

Hypothesis
H_0: P=0.4   V/s H_1: P$\neq$ 0.4

Calculation

$|Z_0|$= 1.6431

Critical value = $Z_{\alpha/2}$ = 1.96

j) Test for proportion of auto driver use bajaj auto company
Let,
n: Sample of auto driver
x: No. of auto drivers use bajaj auto company
p: Sample proportion of use bajaj auto company
Level of significance, $\alpha = 5\%$

Hypothesis

H_0: P=0.85   V/s H_1: P$\neq$ 0.85

Calculation: $|Z_0|$= 0.2236

Critical value = $Z_{\alpha/2}$ = 1.96

k) Test for proportion of auto driver use gas as fuel
Let,
n: Sample of auto driver
x: No. of auto drivers use gas as fuel
p: Sample proportion of use gas as fuel
Level of significance, $\alpha = 5\%$

Hypothesis
H_0: P=0.60   V/s H_1: P$\neq$ 0.60

$|Z_0|$= 1.6431

Critical value = $Z_{\alpha/2}$ = 1.96

ANOVA TEST (CRD)
The Testing of equality average of Different types of Companies of auto Drivers
Hypothesis:
$H_0: \mu 1 = \mu 2 = \mu 3 = \mu 4$ i.e. There is no significant difference between Companies of Auto Drivers
Where $\mu 1$: Bajaj, $\mu 2$: TVS, $\mu 3$: Ape, $\mu 4$: Other

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit.
Between Groups	3241.372	2	1620.686	0.208396	0.812174	3.070512
Within Groups	948787.4	122	7776.946			
Total	952028.8	124				

MAJOR FINDING

Our study shows that the maximum auto drivers are lives in urban area in simple house,most of auto drivers are married and maximum of are taking bank loan for buying auto rickshaw. They are prepared Central Bank for taking Bank loan.Number auto drivers are taking family insurance as well as insurance for auto rickshaw. Bajaj Auto companys rickshaw preferred by most of drivers .the montly income is Rs. 7000-10000.and auto drivers have minimum one vehicle.they driving in daily more than eight hours.and uses gas and petrol for fuel options.auto drivers are waiting for Passenger are nearly about one-two hours.most of the auto drivers are not use Smartphone and doesn't aware about the technology.The most of the auto drivers are does not include in Union, almost every auto has permit, and most of the auto drivers use e-meters and are do not work in others job. Almost auto-drivers though lot of people do not have any exercise regime they also do not any fast food.most of the auto drivers are faced aram and eye related issues, and none of the auto rickshaw drivers have problem related to hip disorder.They does not use in medicine.mostly auto drivers are satisfy in their work and income. Finally conclude that drive hours and health problem are not in dependent but area and monthly income are dependent. Auto drivers education and their monthly income are independent. And there is significant difference between education monthly incomes. education and family insurance are not independent There is no significance difference between education and loan.

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