A STUDY OF PROBLEMS OF S.T. DRIVERS IN KOLHAPUR DIVISION USING STATISTICAL METHODS.

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ABSTRACT:

In an urban area, driving a bus is extremely stressful. This involves the risk of physical and mental ill-health at work, leading to absenteeism and decreased employee productivity. Bus drivers are currently faced with different stresses in the form of work pressure, time pressure, social pressure, noise pollution, changes in tempe rature, etc. There have been numerous studies on the nature of work and health status of bus drivers in India and also in other countries. The research shows that being a bus driver requires a high-risk occupation.In the The present study we collect the information through questionnaires containing several attributes related the problem faced by drivers in two S.T.depot and the collected data are analyzed using various statistical measures .our study shows most of the S.T.Drivers education is below 10^{th} standard also they are not satisfied with their salary as well as the S.T. canteen facility provide by S.T,.Depot maximum S.T. driver agreed with the cause road accident Break failure of bus, use mobile while driving as well as drive with drinking.

Key words: Graphical Representation, Small Test, Regression analysis , Level of significance.P-Value.

INTRODUCTION:

The transport company and the public expect the driver to maintain a good customer relationship and also be service-oriented, such as supplying passengers with information on timetables, directions, exits, fares, etc. The most significant factor in drivers' job satisfaction is the preservation of a cordial relationship with passengers. In the everyday life of drivers, the individual passenger's demand for service frequently clashes with the need to preserve the scheduled time in dense traffic on a tight schedule. The driver's task is not only physical but also mental and physiological to cope up with passengers' needs.India's passenger transport is bus-oriented for short and medium distances. By providing night services, buses also compete with railways on some long distance routes. The protection of travelers and other road users is of prime importance, like many other transportation industries. The conflicting criteria of safety, customer-focused service and company operating regulations are effectively balanced by bus drivers Sundar.k (2009). A vital element in driving success is the physical and psychological safety of the bus driver. Any disability could have negative effects for the passengers. This may

be due to the absence of the Decision making authority of drivers,exhaustion, fear of attack,social isolation, tight running schedule , mechanical faults of vehicles, decreased rest breaks, poor cabin comfort, constant rotating shift patterns, adverse weather conditions,traffic congestion, sedentary work, hazardous emissions from other vehicles, pressure to ensure passenger safety and safety see in detailed Morris, J. N et.al.(1953), Tse, J. L. et.al.(2006), Michiel A.J. et.al.(1995),Machin, M. A et.al.(2008), Bus drivers also experience anxiety, mental overload, fatigue and issues with sleeping. Bus drivers often have more regular and longer-lasting absences from work than jobs in other professions(3). It is also an important view, as they think, that any driver has a risk of causing accidents due to unhealthy mental conditions, like mood or emotions that arise in a particular situation. Therefore, accident prevention strategies should be addressed afterlooking for psychological instability causes that are closely linked to bus accidents and then checking the component factors involved. Kompier M. A (1965) Recognizing that buses are one of the world's most common forms of public transport and that the high probability of such transport is sustainable for the near future.

The psychosocial climate of bus drivers must clearly be consciously discussed. Rajib Lochan Dhar (2008)S.T Drivers in Kolhapur city have different problems. Now a day, S.T. Drivers faced several partly external but largely due to declining financial support from both central and state governments.One major reason why bus Drivers face health problem is that, to be a bus Drivers deal with several competing and conflicting demand. S.T Drivers are not happy with their work.In this study, we observed that there are many problems faced by the S.T. Drivers such as poor government policies, poor management social conflicts, lack of co-operation with depot management, high traffic, bad conditions of road, competition to private vehicles etc. The purpose of study is to,direct relation between divers facing stresses and the effect of stress on their duty.andt o evaluate influence of stress on bus Driver drain.Kolhapur division is established in 1950 it is jurisdiction is limited to physical Boundaries of Kolhapur district. It is divided into 12 depots. It this study we select their S. T. depots namely C. B. S. Kolhapur and Sambhajinagar bus stand, Kolhapur .The Kolhapur division is working with a feet of 853 buses fly over 1019 routes and coverts entire district per day. The total lengths of these routes is 65,628 km. Total 4,67,000 passengers travels with S.T. within day with the of 4869 employees.

OBJECTIVES:

- To study the rising problems of S. T. Driver's concentration by use of mobile during driving.
- To study the conditions of facilities provided by the management.
- To study the reasons responsible for road accidents.
- To study the financial and health problems facing by the S. T. Drivers and so that arising adverse effects on the S. T. Driver.

METHODOLOGY:

To study we have selected S. T. Drivers we have C. B. S. and Sambhajinagar from this study There are total 150 Drivers in C.B.S. stand and 100 Drivers in Sambhajinagar stand. We have selected 130 Drivers from C.B.S. stand and 60 Drivers from Sambhajinagar stand. Therefore the total sample size is 190 Drivers.

Sr. No.	**Name of S. T. Stand**	**Sample Size**
1.	C. B. S.	130
2.	Sambhajinagar	60
Total	2	190

In this study, we have observed that there many problem faced by S. T. Driver such as government policies, poor management, social conflicts lack of co-operation depot management, high traffic, bad condition of road competition private vehicle etc.

Method of data collection:

We have collected data from CBS stand and Sambhajinagar stand of size 130 and 60 respectively. This study was conducted with a "interview" method. While information collecting from the bus stand is useful for making correct decision about the problems of bus Drivers.





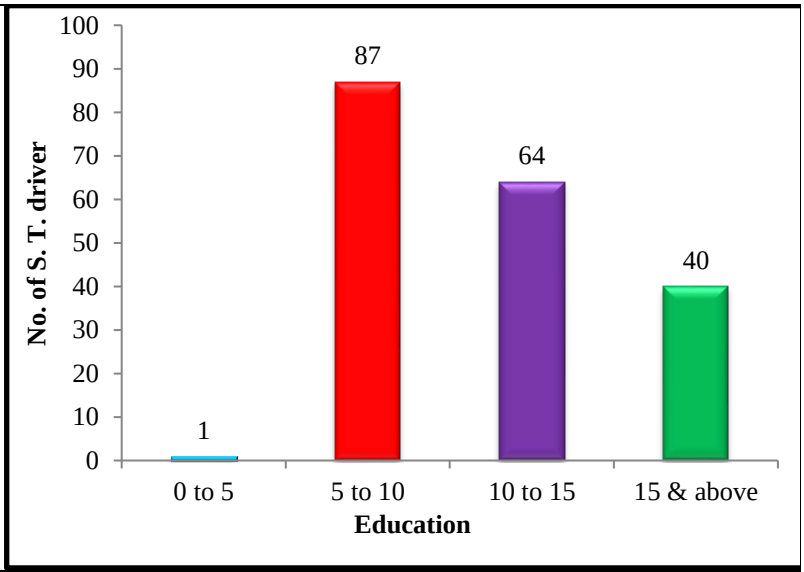
Statistical tools used:

1. Graphical representation
2. Testing of hypothesis

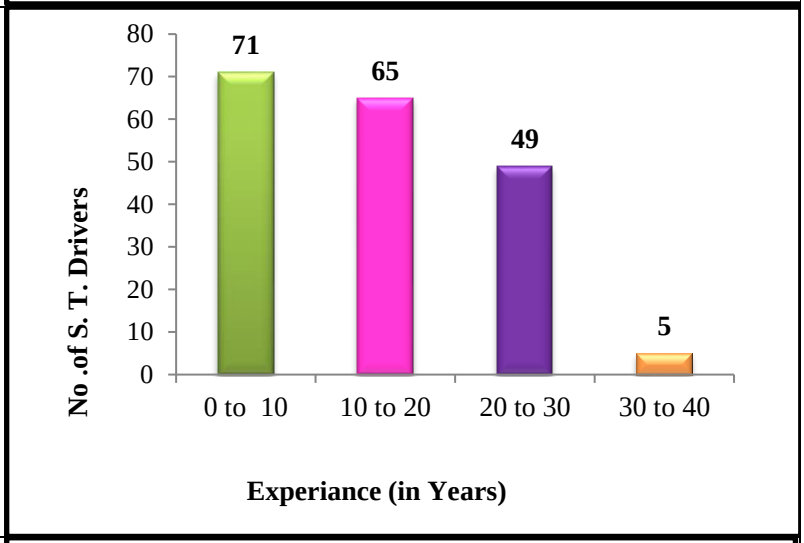
Software used: 1. MS-Excel

Graphical Representation:

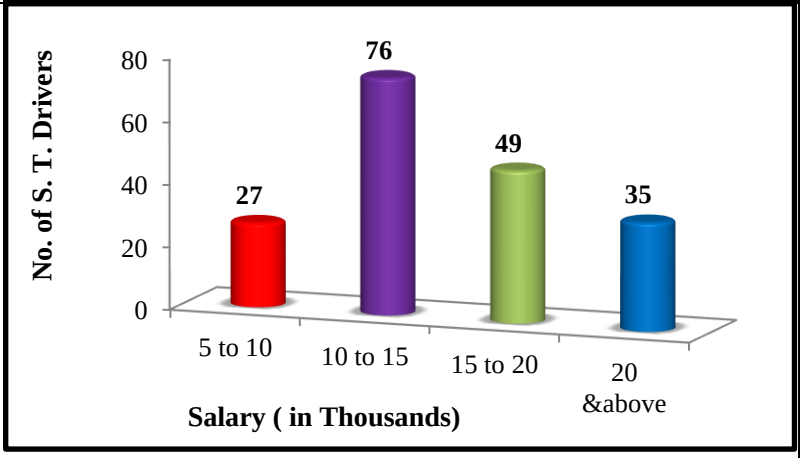
Education	No. of S.T.Driver
0 to 5	1
5 to 10	87
10 t0 15	64
15 & above	40



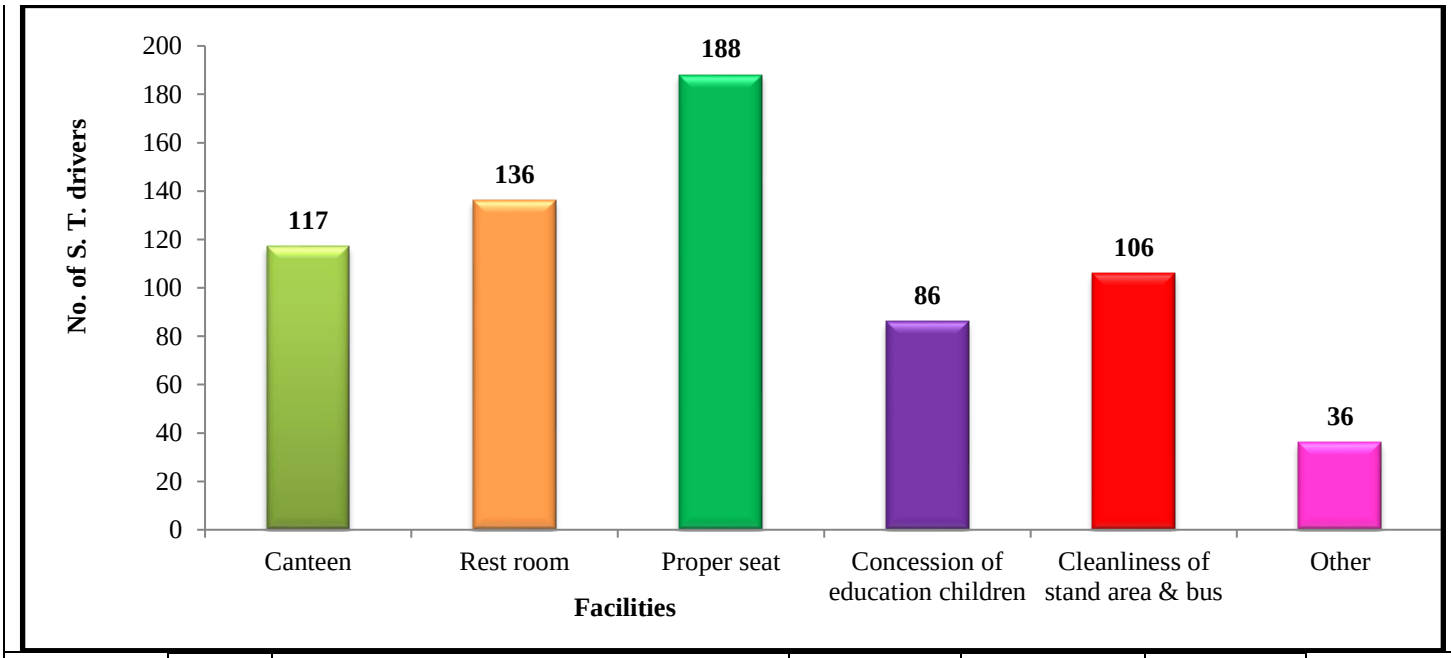
Experience (in Years)	No. of S.T. Drivers
0 to 10	71
10 to 20	65
20 to 30	49
30 to 40	5



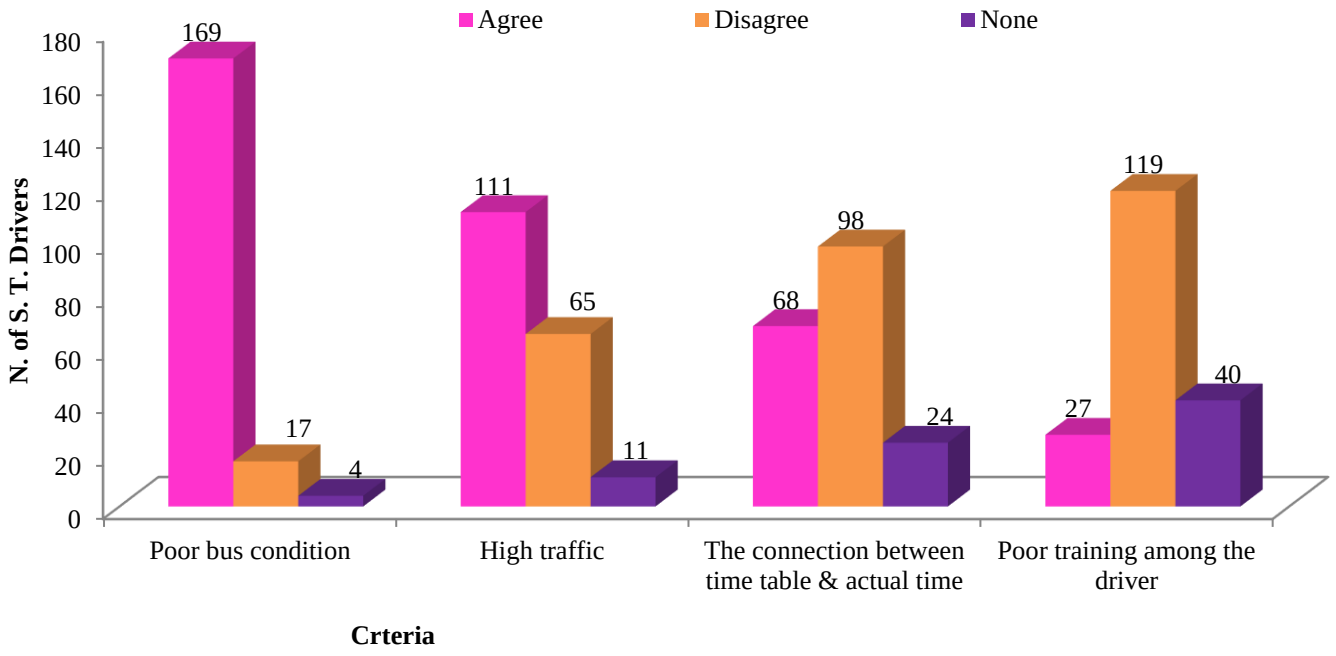
Salary of S.T Drivers (in Thousands)	No. of S.T Drivers
5 to 10	27
10 to 15	76
15 to 20	49
20 &above	35



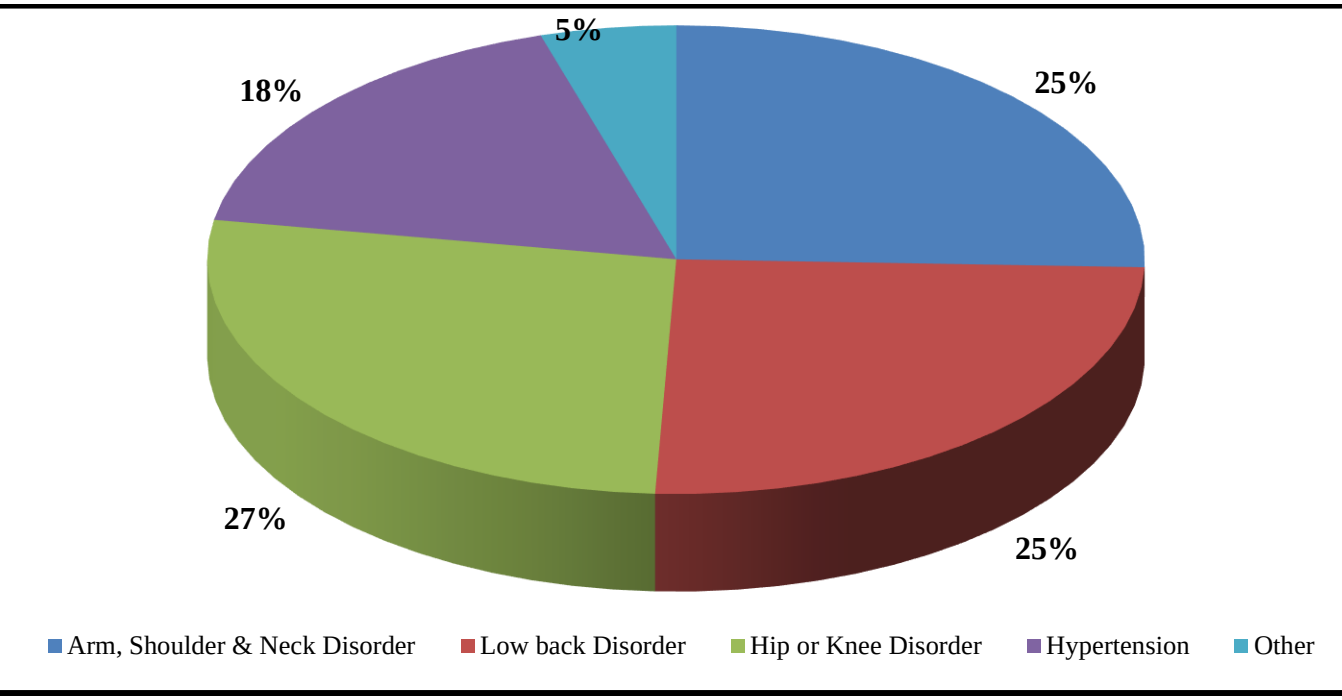
Sr. No.	Facility expecting from employer	No. of S.T. Driver
1	Canteen	117
2	Rest room	136
3	Proper seat	188
4	Concession of education children	86
5	Cleanliness of stand area & bus	106
6	Other	36



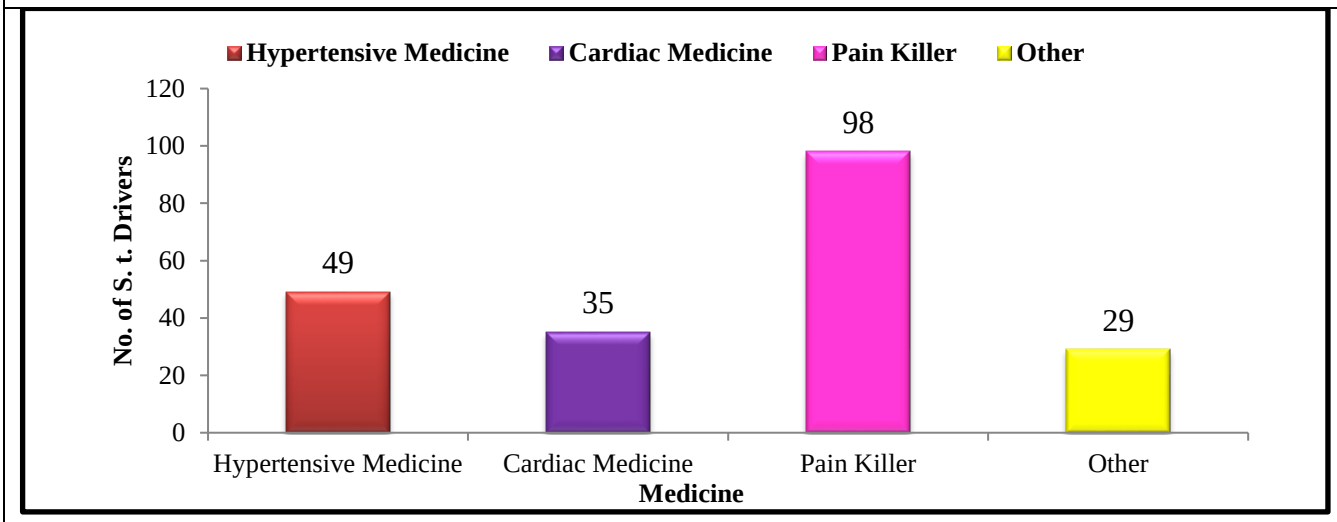
Sr. No.	Thing become responsible to make unable	Agree	Disagree	None
1	Poor bus condition	169	17	4
2	High traffic	111	65	11
3	The connection between time table & actual time	68	98	24
4	Poor training among the Driver	27	119	40



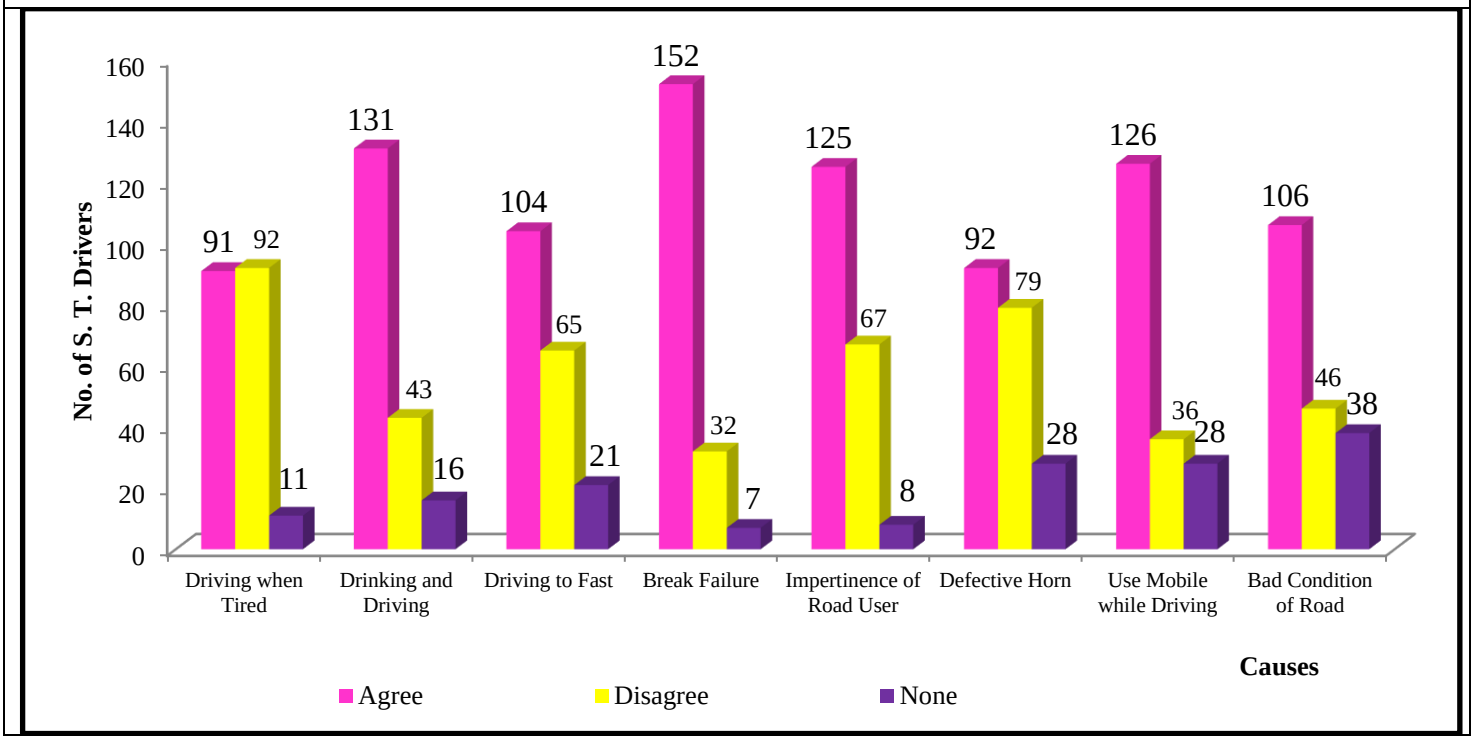
Sr. No.	Symptoms &Diseases	No. of S.T.Drivers
1	Arm, Shoulder &Neck Disorder	71
2	Low back Disorder	70
3	Hip or Knee Disorder	75
4	Hypertension	49
5	Other	13



Sr. No	Medicine take by S.T Driver	No. of S.T. Driver
1	Hypertensive Medicine	49
2	Cardiac Medicine	35
3	Pain Killer	98
4	Other	29



Sr. No.	Causes of Road Accident	Agree	Disagree	None
1	Driving when Tired	91	92	11
2	Drinking and Driving	131	43	16
3	Driving toFast	104	65	21
4	Break Failure	152	32	7
5	Impertinence of Road User	125	67	8
6	Defective Horn	92	79	28
7	Use Mobile while Driving	126	36	28
8	Bad Condition of Road	106	46	38



Testing of Hypothesis:

a) Test for testing equality of two population proportion

To test the hypothesis is,

H_0: There is no significant difference between area and health of S. T. Drivers
H_1: There is significant difference between area and health ofS. T. Drivers

i.e..H_0:$p_1=p_2$ V/S H_1: $p_1 \neq p_2$

Observation Table:

Disease / Region	Having Hypertension	No Hypertension
CBS Stand	49	81
Sambhajinagar	19	49

p_1= proportion of Drivers in CBS stand region $p_1=\frac{X_1}{n_1}=\frac{49}{130}=0.3769$

p_2= proportion of Drivers in Sambhajinagar stand $p_2=\frac{X_2}{n_2}=\frac{19}{60}=0.3166$

$n_1=130$ $n_2=60$

Test statistic is $|z| = \left|\frac{p_1-p_2}{\sqrt{PQ(\frac{1}{n_1}+\frac{1}{n_2})}}\right|$

$P=\frac{n_1p_1+n_2p_2}{n_1+n_2}=0.3578$ and $Q=1-P=0.6422$

$|z|_{cal}=0.1790$ and $z_{tab}=1.96$

$Zc_{al}<Z_{tab}$,

b) Test for testing based on F - Distribution

To test the hypothesis is,

H_0: The tendency of S.T. Drivers of taking casual leave from C.B.S, and Sambhajinagar stand are same.V/S

H_1: The tendency of S.T. Drivers of taking casual leave from C.B.S, and Sambhajinagar stand are not same.

Test statistic: $F = \frac{S_1^2/\sigma_1^2}{S_2^2/\sigma_2^2} \sim F(5, 5)$

ANOVA Table: F-Test Two-Sample for Variances

	Casual leave for C. B. S. Stand	Casual leave for Sambhajinagar Stand
Mean	10	21.66667
Variance	140.4	490.6667
Observations	6	6
df	5	5
F	0.286141	
P(F<=f) one-tail	0.097949	
F Critical one-tail	0.198007	

For alpha= $\alpha = 0.05$; F_{cal}=0.286141 and P-value=0.097949

alpha < P-value.

c) **Chi-Square Test for testing independence of attribute**

To test the hypothesis is,

H_0: Hypertension of Driver and the area is independent.V/S

H_1: Hypertension of Driver and the area is not independent.

Test statistic: Chi-square= $\frac{N[ad-bc]^2}{(a+b)(a+c)(c+d)(b+d)} \sim chi - square(1.df)$

Health / Exercise	**Good**	**Bad**	**Total**	O_i	E_i	$\frac{(O_i - E_i)^2}{E_i}$
Exercise	77	28	105	77	62.44737	3.391321
No Exercise	36	49	85	28	42.55263	4.976874
Total	113	77	N=190	36	50.55263	4.189279
				49	34.44737	6.147903

Calculated value of chi- square=18.70538

Table value of chi-square=3.841459

Since cal. Chi-Square > Tab. Chi-Square,

d) Analysis of Causes which responsible to make unable Drivers for their prompt service using CRD.

To test the hypothesis is,

H_0: The things become responsible to make unable Drivers for their prompt Serviceare not significant.V/S

H_1: The things become responsible to make unable Drivers for their prompt service are significant.

Observation Table:

Rate / Reason	Agree	Disagree	None
Bus condition	169	17	4
Traffic	111	65	14
Time table	68	98	24
Poor training	27	123	40

Summary:

Groups	Count	Sum	Average	Variance
Column 1	4	375	93.75	3692.917
Column 2	4	303	75.75	2098.25
Column 3	4	82	20.5	235.6667

ANOVA:

Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	11656.17	2	5828.083	2.901067	0.106569	4.256495
Within Groups	18080.5	9	2008.944			
Total	29736.67	11				

Since, P-value > alpha

e) **Analysis of Causes of road accident using CRD**

To test the hypothesis is,

H_0: Causes of Road Accidents are not significant.V/S

H_1: causes of Road Accidents are significant.

Observation Table:

Sr. No.	Causes of road accident	Agree	Disagree	None
1	Driving when tired	91	47	56
2	Drinking and Driving	131	43	16
3	Driving to fast	104	65	21
4	Break failure	152	32	7
5	Impertinence of road user	125	64	11
6	Defective horns	92	79	19
7	Use of mobile while driving	126	36	28
8	Bus condition of road	106	46	38

Summary:

Groups	Count	Sum	Average	Variance
Column 1	8	927	115.875	449.5536
Column 2	8	412	51.5	262.5714
Column 3	8	196	24.5	255.7143

ANOVA Table:

Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	35260.08	2	17630.04	54.64763	4.74845E-09	3.4668
Within Groups	6774.875	21	322.6131			
Total	42034.96	23				

Since P-value < alpha

f) Analysis of Facilities provided by S. T. Management Using C. R. D.

To test the hypothesis is,

H_0: Facilities provided by S.T. management are not significant.V/S

H_1: Facilities provided by S.T. management are significant.

Observation Table:

Rate / Facilities	Very Good	Good	Poor	Bad
Enquiry	72	72	31	15
Cleanliness	40	36	75	39
Bus Condition	7	24	82	77
Canteen	21	33	85	51

Summary:

Groups	Count	Sum	Average	Variance
Column 1	4	140	35	791.3333
Column 2	4	165	41.25	446.25
Column 3	4	273	68.25	634.25
Column 4	4	182	45.5	665

ANOVA Table:

Source of Variation	SS	df	MS	F	P-value	F critical
Between Groups	2519.5	3	839.8333	1.324223	0.312239	3.490295
Within Groups	7610.5	12	634.2083			
Total	10130	15				

Since P-value>alpha

Overall Conclusion:

- The economic and health condition of S. T. Drivers ofKolhapur division is not satisfactory.
- S.T. Drivers are not satisfied with their salary as well as the conditions ofS.T., canteen facility etc.
- S.T. Drivers have facing various problems like lack of salary, health problems etc.
- S. T. Drivers whose education completed up to 10^{th} standard they choose this field for government job.
- Most of the S.T. Driver agreed with Break failure of bus, drinking and Driverand use mobile while driving these things responsible for road accident.

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