Page 2777 - 2794 **DOI:** *https://doij.org/10.10000/IJLMH.115736*

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 6 | Issue 4

2023

Problems Associated with Overcrowding of Vehicles in Chennai

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ABSTRACT

Road transport is the most preferable means which connects the villages, towns, cities, metropolitan regions, states and the whole country into the system establishing an innovative community. It improves the entire nation's development, environment conditions and socio economic, culture developments. The road transport has been facing unusual troubles owing to the need of its suitable organization, refurbish & preservation. With the unusual predicament of road transport, traffic delay, fatal road accidents, environmental pollution are the rising troubles in the urban region. This paper focuses on studying the public opinion on the problems associated with overcrowding of vehicles in Chennai. The type of research method followed is empirical research. A total of 200 samples have been collected by a convenient sampling method. The independent variables taken for the survey are age, gender and educational qualification. The dependent variables are agreeability on overcrowding of vehicles in Chennai leads to unexpected delay for work, rating on the statement most fatal accidents in Chennai occur due to overcrowded vehicles, major reasons for overcrowding of vehicles in Chennai, Effects of overcrowding of vehicles in Chennai and the measures to control the overcrowding of vehicles in chennai. The statistical tool used in the study is graphical representation. It has been found from the analysis of the results that people have strongly agreed with the statement that overcrowding of vehicles in Chennai leads to unexpected delays for work, the major reason for overcrowding of vehicles in chennai is due to office or employment pressure, the major effect of overcrowding of vehicles is the over exploitation of petroleum products and the resources, the public are of the opinion that using public transport is the best remedial measure to prevent overcrowding of vehicles, people are strongly of the opinion that most of the fatal road accidents occur due to overcrowded vehicles.

Keywords: *Overcrowding, vehicles, metropolitan cities, traffic delay, fatal road accidents*

I. INTRODUCTION

The Road traffic and overcrowding have become intermittent problems worldwide. This is substantially since transportation growth is sluggish compared to the increase in volume of

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 [ISSN 2581-5369]

vehicles, owing to gap and expenditure restriction. Constructions being non-lane grounded and disordered, is substantially unusual with different types of vehicles. Metropolitan region roads are under mixed conditions. The road stoner physiological geste also causes detention and traffic.

According to the new policy launched by the government of Tamilnadu, all motorcars over a certain age-marketable vehicles over 15 times and particular vehicles over 20 times should be off the roads if they fail a fitness test. This supports the problems related to overcrowding of vehicles**.**

Vehicle population in the state has doubled in the past decade and lately, it crossed the 3- crore mark. Nearly one- fifth of this — 60 lakh — are on Chennai roads fighting for space, and the traffic is what's making your drive back home from work longer. The vehicle population increase has worsened road tailbacks, reducing the average vehicle speed from 33km/ hr to 20km/ hr on megacity roads.

In Telangana, an analysis of the data involving motorist's negligence shows that 34 of the mishaps were due to overcrowding or overloading and 40 due to over speed. Population viscosity in the central part of Delhi could be much advanced. This leads to remarkable pressure on infrastructural installations like casing, electricity, water, transport, employment, etc. sweats to decongest Delhi by developing ring municipalities haven't met with the necessary success.

Objectives:

- To study the problems associated with the overcrowding of vehicles in Chennai.
- To analyze the public opinion on the overcrowding of vehicles in Chennai.
- To find out the remedy to combat overcrowding of vehicles in Chennai

Review of Literature:

Combinido JSL, Lim MT (2012) have discussed the Crowding Effects in Vehicular Traffic. They have studied the effects of crowding due to car density and driving fluctuations on the transport of vehicles.They have used a microscopic model for traffic, and they found that crowding can push car movement from a super ballistic down to a subdiffusive state.

Feifei Qin (2014) has conducted an Investigation about the In-Vehicle Crowding Cost Functions for Public Transit Modes. This paper conducts both quantitative and qualitative studies, especially focusing on remodeling the in-vehicle crowding cost functions for different transit modes.

Soumela Peftitsi, Erik Jenelius & Oded Cats (2021) have evaluated crowding in individual

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train cars using a dynamic transit assignment model. This study aimed at capturing the effective capacity utilization of the train, by considering passengers' distribution among individual train cars into an agent-based simulation model.

Arkadiusz Drabicki, Rafał Kucharski, Oded Cats & Andrzej Szarata (2021) have studie the modelling of the effects of real-time crowding information in urban public transport systems. This study aimed to contribute by developing an extended dynamic PT simulation model that enables a thorough analysis of instantaneous RTCI consequences.

M. Shao, C. Xie, T. Li et al., (2021) have studied the Influence of in-vehicle crowding on passenger travel time value: Insights from bus transit in Shanghai, China. This study attempts to investigate the real perception of bus passengers on the degree of in-vehicle crowding and put forward a quantitative analysis method of in-vehicle crowding. In this study, a stated preference (SP) survey embedded with revealed preference (RP) was conducted on bus transit in Shanghai.

Awari, Mahesh babu & Babu, Mahesh. (2017) have conducted a Study of Urban Cities Traffic Problems Due to Delay and Overcrowding. In this paper, the most important problems in the metropolitan region caused by traffic due delay and overcrowding were discussed.

Tirachini, A., Hensher, D. A., Rose, J. M. (2013) have analysed the Crowding in public transport systems: effects on users, operation and implications for the estimation of demand. This paper examines the multiple dimensions of passenger crowding related to public transport demand, supply and operations, including effects on operating speed, waiting time, travel time reliability, passengers' wellbeing, valuation of waiting and in-vehicle time savings, route and bus choice, and optimal levels of frequency, vehicle size and fare.

Zheng Li and David A Hensher (2013) have reviewed Crowding in Public Transport: A Review of Objective and Subjective Measures. We illustrate the difference in a comparison of monitored crowding levels using crowding measures defined by the rail operator/authority in Sydney and Melbourne, Australia, and the level of crowding experienced by rail passengers from two recent surveys to reveal the significant gap between objective and subjective measures of crowding.

Chakrabartty, Aparajita & Gupta, Sudakshina. (2014) have analyzed the Traffic Congestion in the Metropolitan City of Kolkata. The author has opined that The road space in Kolkata is only 6 percent compared to Delhi and Mumbai, which have greater road space. High demand for mobility coupled with low road space leads to high congestion on the roads of Kolkata. The authors have tried to measure congestion on a few arterial roads of Kolkata

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through a congestion/mobility index.

Zhiran Huang & Becky P. Y. Loo (2022) have studied Urban traffic congestion in twelve large metropolitan cities: A thematic analysis of local news contents, 2009–2018. The results of the study show that traffic congestion is no longer perceived to be primarily an economic issue. Concerns over the environmental impacts of traffic congestion were increasingly discussed. Based on the content analysis, cities in Asia mentioned a lot about congestion-related PM pollution and climate change was a recurrent theme among non-Asian cities.

S R Samal *et al* 2020 have done an Analysis of Traffic Congestion Impacts of Urban Road Network under Indian Condition. In the present study congestion forecast is aimed under mixed traffic with no lane discipline towards identifying the inherent viability of the diversified traffic situation and presents better recommendations in controlling and evading these prolonged traffic jams.

Khalid Mohammed Almatar, 2022, had studied the Traffic congestion patterns in the urban road network: (Dammam metropolitan area). This study is conducted with the main aim to determine the most congested area of the road network and determine how they are related to the demand of the drivers.

Sun Ye 2012, had Researched on Urban Road Traffic Congestion Charging Based on Sustainable Development,. The paper first probes into several key issues such as the goal, the pricing, the scope, the method and the redistribution of congestion charging from a theoretical angle. Then it introduces congestion charging practices in Singapore and London and draws conclusion and suggests that traffic congestion charging should take scientific plan, support of public transportation development as the premise.

Manish Shirgaokar 2016, had studied on Expanding cities and vehicle use in India: He has found that there has been Differing impacts of built environment factors on scooter and car use in Mumbai Urban Studies.

P. K. Sarkar, Pratiti Tagore The author has suggested that The national or local levels would require various dimensional problems of the third world countries. In the context of the urban transport sector, car and lorries may be considered to be symbolic of the central problem of non-sustainability.

Ashish Verma, S. Sreenivasulu, N. Dash 2011 had studied on achieving sustainable transportation systems for Indian cities – problems and issues.

Siddhartha Mitra 2006 has studied the City Transport in India: Impending Disaster vehicles

used for transport. Clearly, it has been found from the study that public transport is the answer for such high density urban regions.

C.Ramachandraiah (2007) has analyzed Public Transport Options in Hyderabad three-wheeler autos and seven-seater taxis have emerged as com- petitors to the buses and the roads are getting increasingly occupied by cars with each passing day, with large cars replacing the smaller ones.

P S KHAROLA (2013) has analyzed the Urban Public Transport Policy Regime in India. He had found that the taxes and levies that are levied by the integrating Land Use and Transport Planning are by the union, state, and local governments.

Kenneth A. Small, Camilla Kazimi (1995) has studied On the Costs of Air Pollution from Motor Vehicles. They have found that air pollution is frequently the stated reason for special measures aimed at controlling motor vehicles .

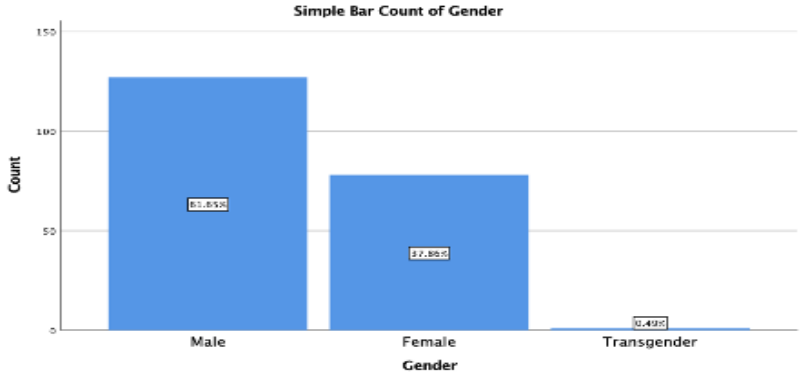
Research Methodology

The research method followed is empirical research. The questionnaire was prepared online and responses were collected by conducting a survey in a locality in Chennai. A total of 200 samples have been collected by a convenient sampling method. The independent variables taken for the survey are age, gender and educational qualification. The dependent variables are agreeability on overcrowding of vehicles in Chennai leads to unexpected delay for work, rating on the statement most fatal accidents in Chennai occur due to overcrowded vehicles, major reasons for overcrowding of vehicles in Chennai, Effects of overcrowding of vehicles in Chennai and the measures to control the overcrowding of vehicles in chennai. The statistical tool used in the study is graphical representation.

II. ANALYSIS:

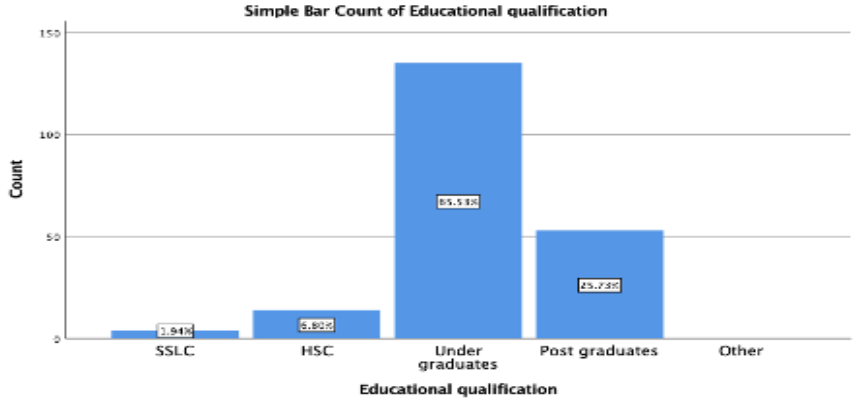
Frequency graphs:

Fig.1:



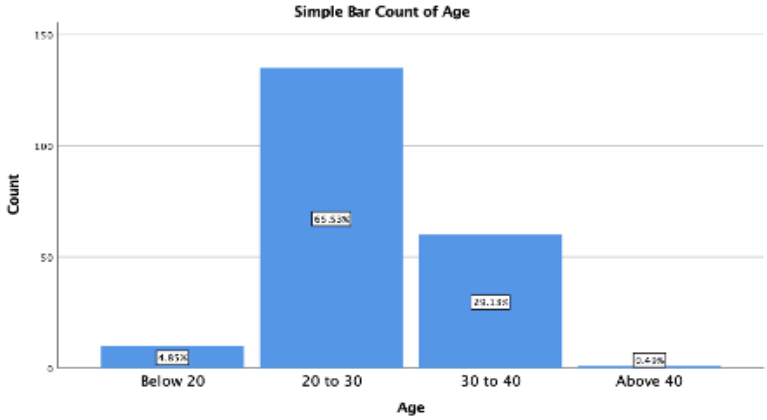
Legend: Fig.1 shows the distribution of male and female respondents.

Fig.2:



Legend: Fig.2 shows the distribution of respondents among various educational qualification groups.

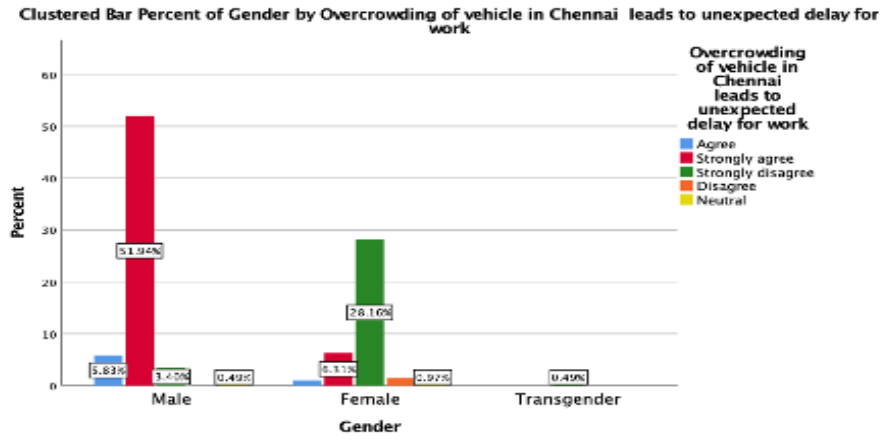
Fig.3:



Legend: Fig.3 shows the distribution of respondents in various age groups.

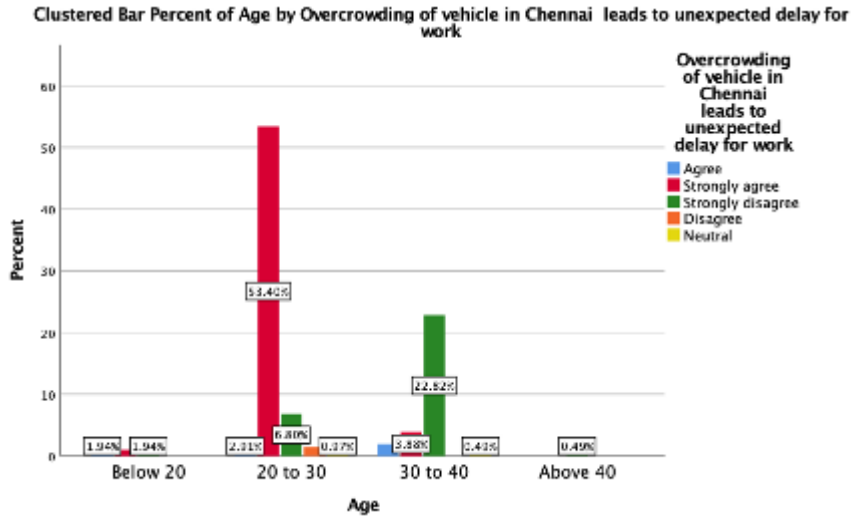
Analysis graphs:

Fig.4:



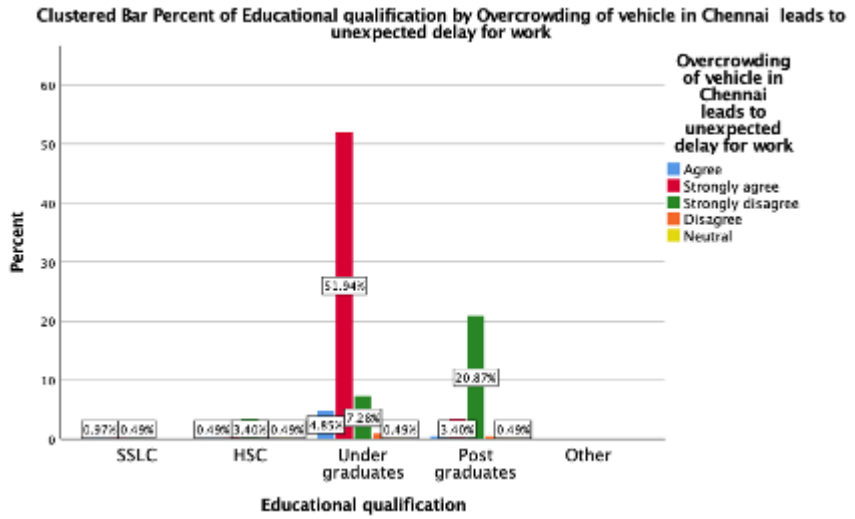
Legend: Fig.4 shows the distribution of male and female respondents and their agreeability on whether overcrowding of vehicles in Chennai leads to unexpected delay for work.

Fig.5:



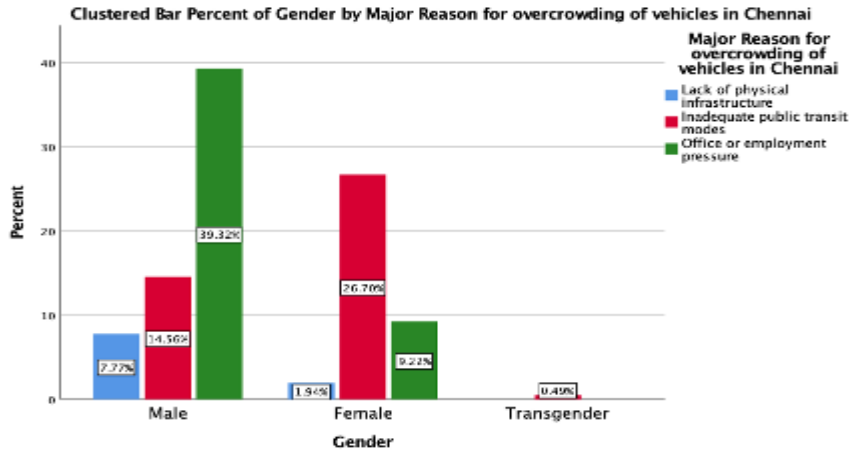
Legend: Fig.5 shows the distribution of respondents among various age groups and their agreeability on whether overcrowding of vehicles in Chennai leads to unexpected delay for work.

Fig.6:



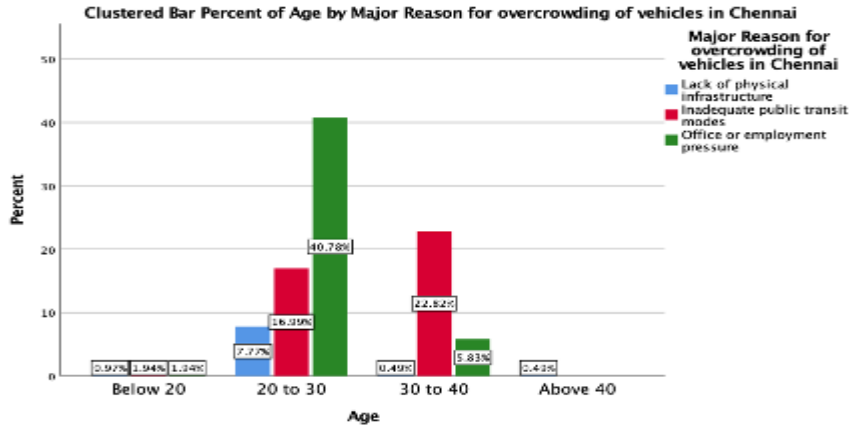
Legend: Fig.6 shows the distribution of respondents among various educational groups and their agreeability on whether overcrowding of vehicles in Chennai leads to unexpected delay for work.

Fig.7:



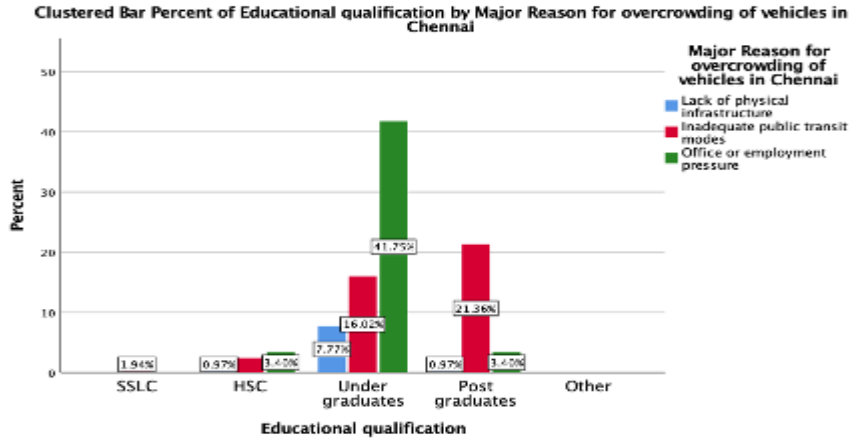
Legend: Fig.7 shows the distribution of male and female respondents and their opinion on major reasons for overcrowding of vehicles in Chennai.

Fig.8:



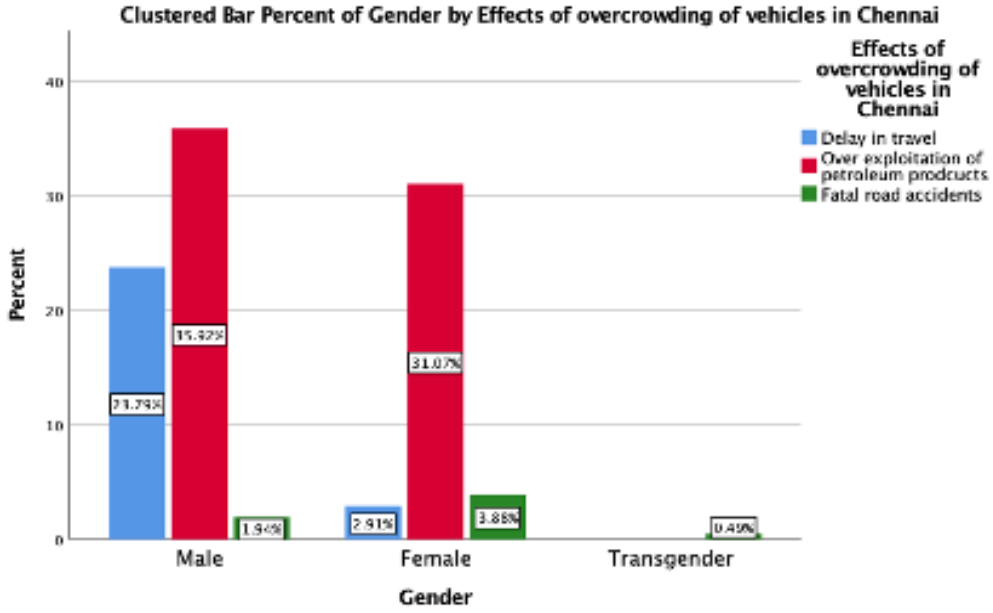
Legend: Fig.8 shows the distribution of respondents among various age groups and their opinion on the major reason for overcrowding of vehicles in Chennai.

Fig.9:



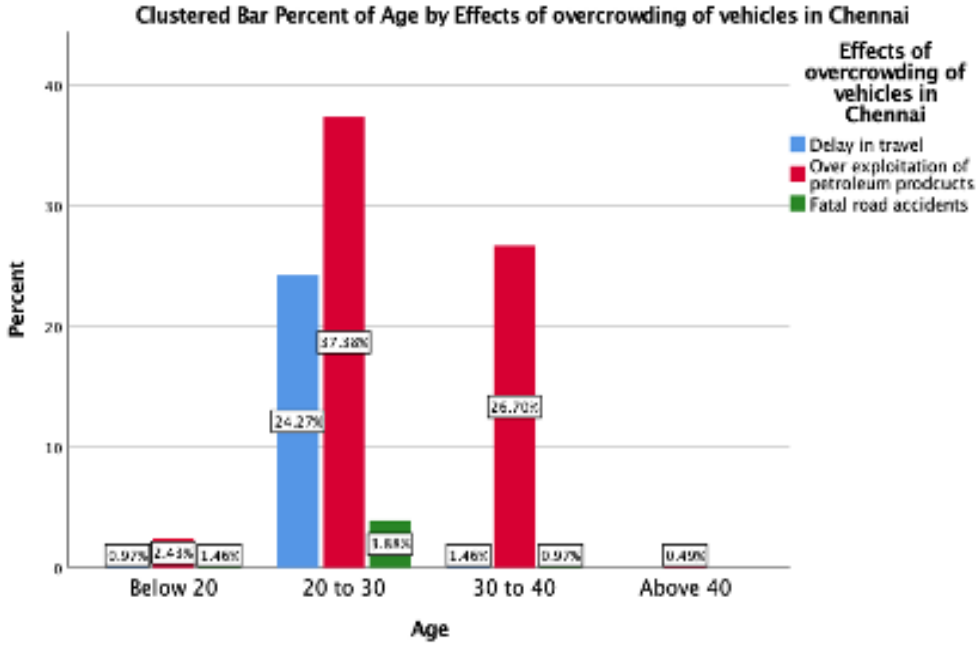
Legend: Fig.9 shows the distribution of respondents among various educational groups and their opinion on the major reason for overcrowding of vehicles in Chennai.

Fig.10:



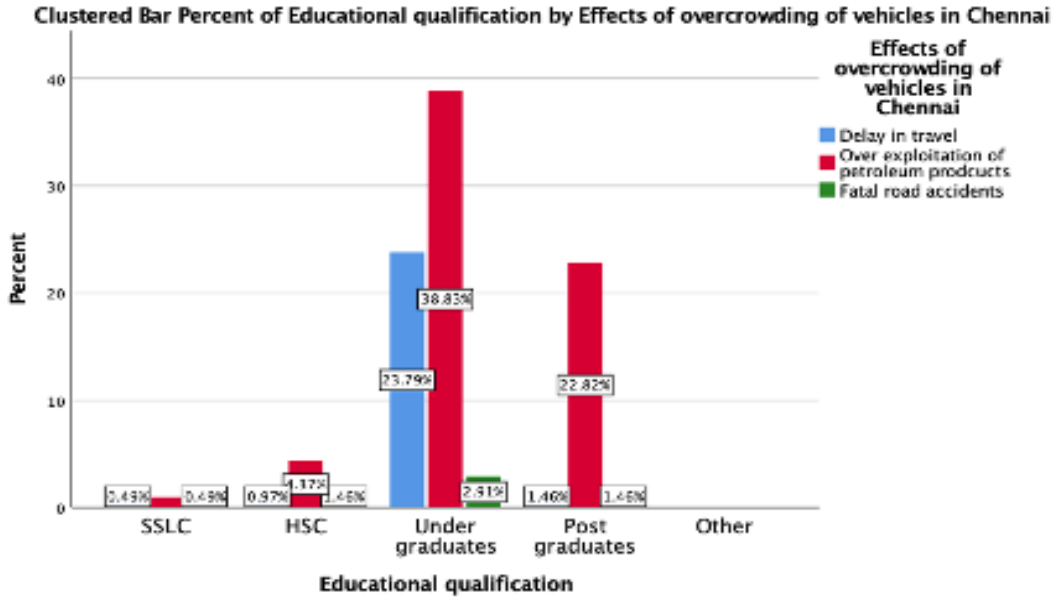
Legend: Fig.10 shows the distribution of male and female respondents and their opinion on the effects of overcrowding of vehicles in Chennai.

Fig.11:



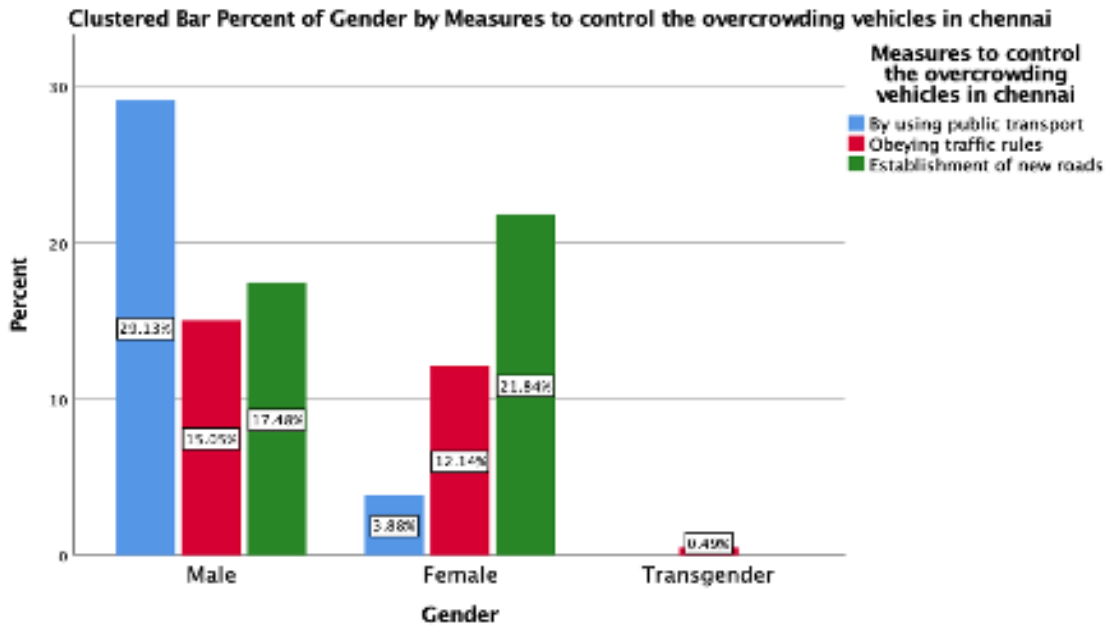
Legend: Fig.11 shows the distribution of respondents among various age groups and their opinion on the effects of overcrowding of vehicles in Chennai.

Fig.12:



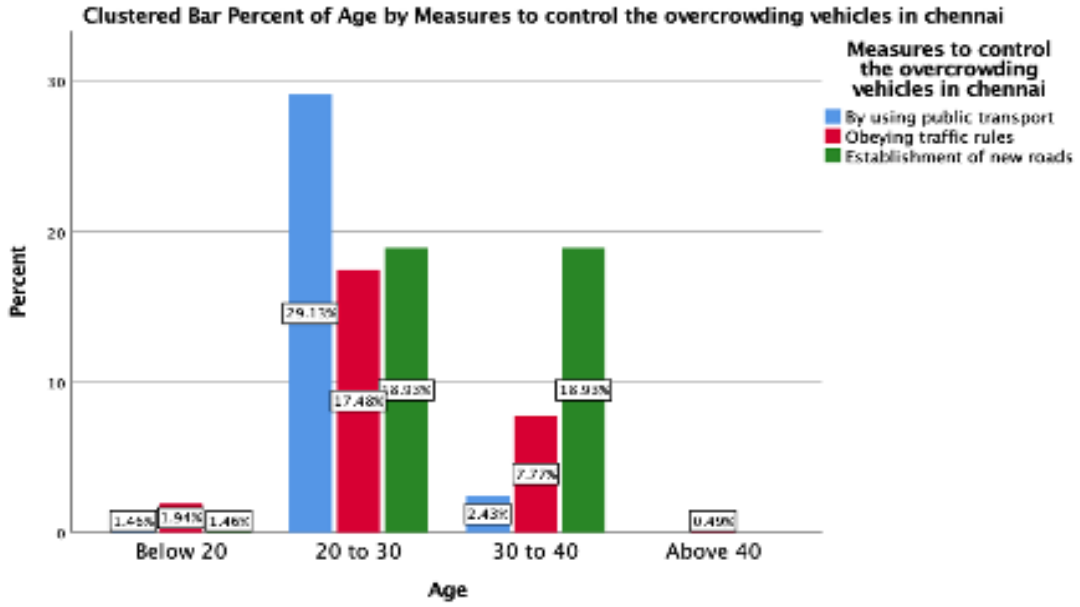
Legend: Fig.12 shows the distribution of respondents among various educational groups and their opinion on the effects of overcrowding of vehicles in Chennai.

Fig.13:



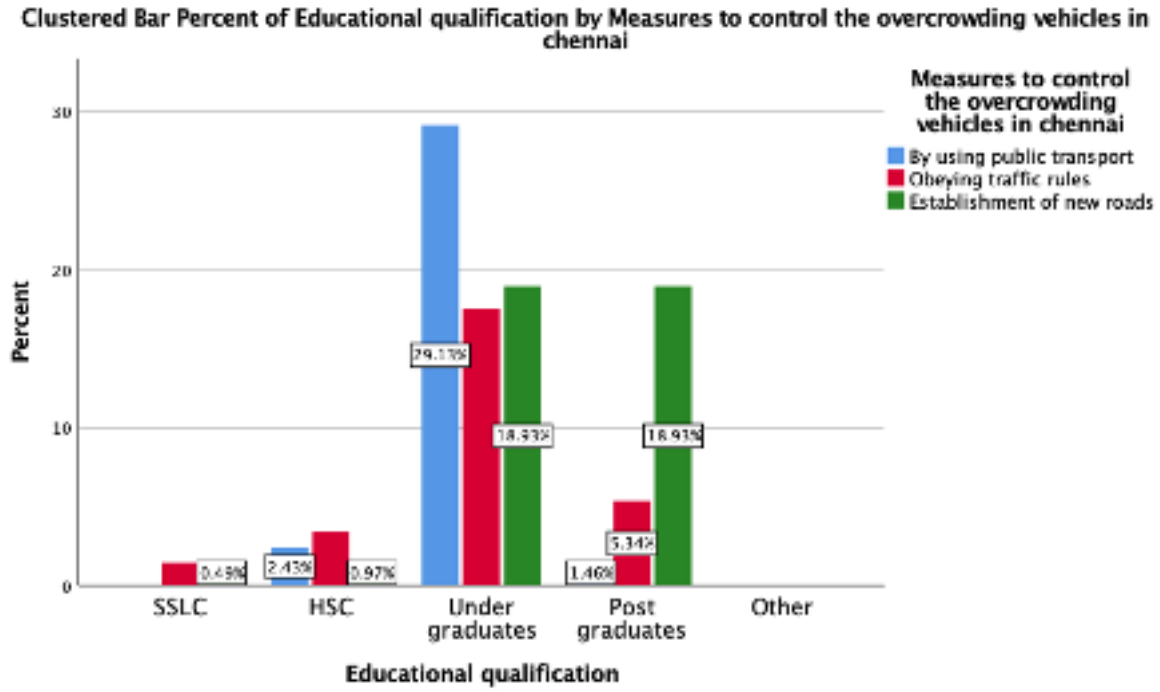
Legend: Fig.13 shows the distribution of male and female respondents and their opinion as to measures to control overcrowding of vehicles in Chennai.

Fig.14:



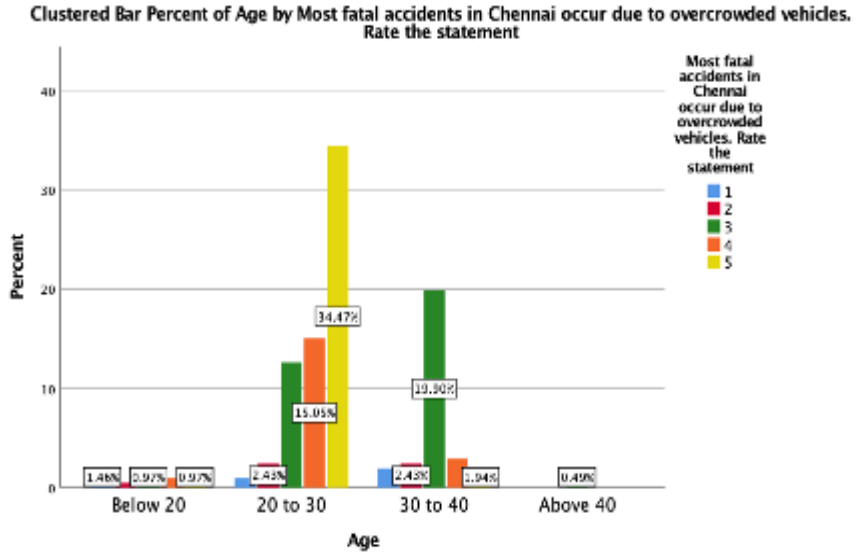
Legend: Fig.14 shows the distribution of respondents among various age groups and their opinion on measures to control overcrowding of vehicles in Chennai.

Fig.15:



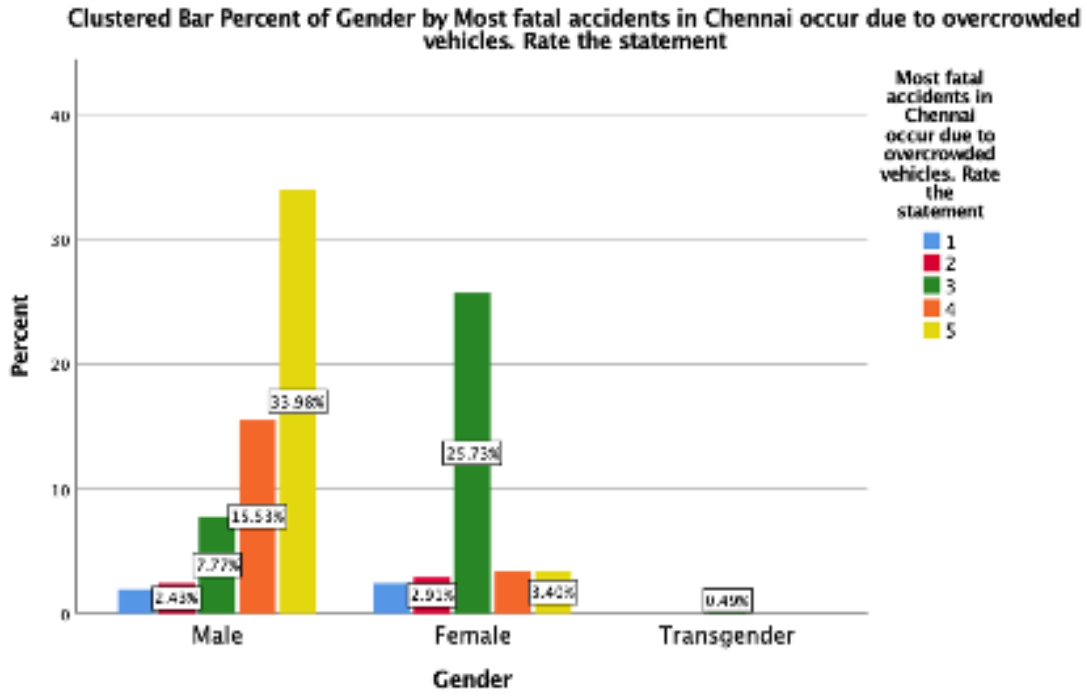
Legend: Fig.15 shows the distribution of respondents among various educational groups and their opinion on measures to control overcrowding of vehicles in Chennai.

Fig.16:



Legend: Fig.16 shows the distribution of respondents among various age groups and their rating on the statement - Most fatal accidents in Chennai occur due to overcrowded vehicles.

Fig.17:



Legend: Fig.17 shows the distribution of male and female respondents and their rating on the statement - Most fatal accidents in Chennai occur due to overcrowded vehicles.

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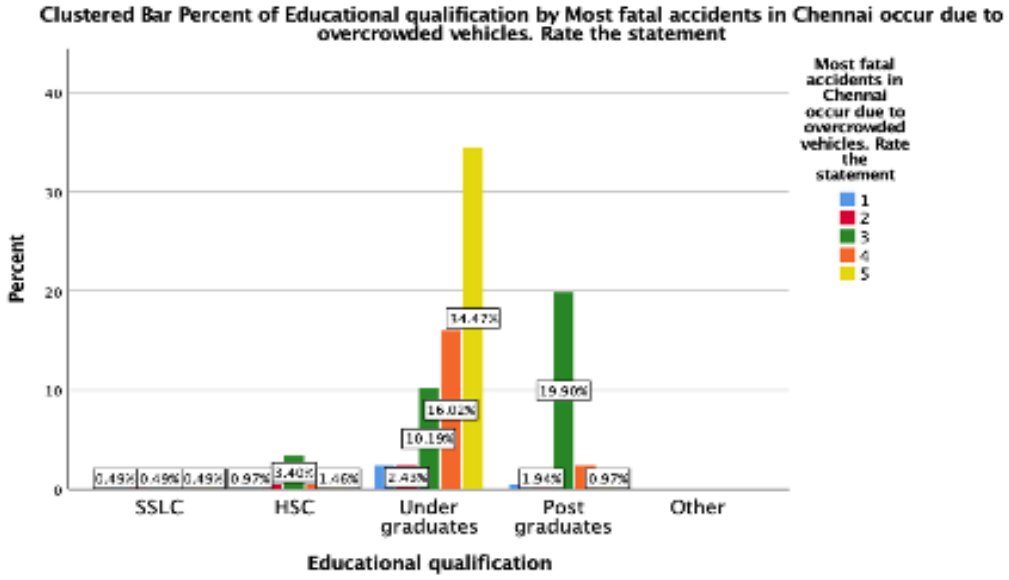
Fig. 18:



Legend: Fig.18 shows the distribution of respondents among various educational groups and their rating on the statement - Most fatal accidents in Chennai occur due to overcrowded vehicles.

III. Result

From fig.1, it is found that the respondents were mostly males (61.65%) and the least respondents were females (37.86%). From fig.2, it has been found that most of the respondents were undergraduates (65.53%) and the least of the respondents have completed SSLC (1.94%). From fig.3, it has been found that most of the respondents were in the 20 to 30 age group (65.53%) and the least of the respondents were in the age group of above 40 years (0.49%).

From fig.4, it is found that most of the male respondents (51.94%) have strongly agreed to the statement and the least of the respondents (0.49%) were transgenders who strongly disagreed with the statement. From fig.5, it is found that most of the respondents (53.40%) who were in the age group of 20 to 30 years have strongly agreed to the statement and the least of the respondents (0.49%) who were in the above 40 age group have strongly disagreed with the statement. From fig.6, it has been found that most of the respondents (52.94%) who were undergraduates have strongly disagreed to the statement and the least of the respondents (0.49%) who have completed SSLC and HSC have agreed to the statement.

From fig.7, it has been found that most of the respondents who were males (39.32%) have responded that office or employment pressure is the reason for overcrowding of vehicles in Chennai and the least of the respondents who were transgenders (0.49%) have responded inadequate public transit modes as the reason. From fig.8, it has been found that most of the

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respondents were in the age group of 20 to 30 years and they have responded that office or employment pressure leads to overcrowding of vehicles in Chennai and the least of the respondents who were in the above 40 age groups have responded that lack of physical infrastructure causes overcrowding of vehicles in Chennai. From fig.9 it has been found that most of the respondents were undergraduates (41.75%) who responded that office or employment pressure causes the overcrowding of vehicles in Chennai and the least respondents who were postgraduates (0.97%) have responded inadequate public transit modes as the reason for overcrowding of vehicles in Chennai.

From fig.10, it has been found that most of the male respondents (45.32%) have responded the effect of overcrowding of vehicles to be over exploitation of petroleum products and the least of the respondents who were transgender(0.49%) have responded that fatal road accidents is the effect of overcrowded vehicles.

From fig.11, it has been found that most of the respondents who were in the age group of 20 to 30 years (37.38%) have responded to over exploitation of petroleum products being the effect of overcrowding of vehicles in Chennai and the least respondents who were in the above 40 age group (0.49%) have also responded to the same. From fig.12, it has been found that most of the respondents who were undergraduates (38.83%) have responded overexploitation of petroleum products as the effect of overcrowding of vehicles in Chennai and the least respondents who have completed SSLC (0.49%) have responded to Fatal road accidents as the effect of overcrowding of vehicles in Chennai.

From fig.13, it has been found that most of the male respondents (29.13%) have insisted on using public transports whereas the least respondents who where transgenders(0.49%) have insisted on obeying traffic rules for controlling overcrowding of vehicles in Chennai. From fig.14, it has been found that the most respondents who were in th 20 to 30 years age group (29.13%) have insisted on using public transports and the least respondents who were in the above 40 age group (0.49%) have insisted on obeying traffic rules as the measures to combat overcrowding of vehicles in Chennai. From fig.15, it has been found that most of the respondents who were undergraduates (29.13%) have insisted on using public transports and the least respondents who have completed SSLC (0.49%) have relied on establishment of new roads would combat the overcrowding of vehicles in Chennai.

From fig.16, it has been found that most respondents who were in the 20 to 30 years age group (34.47%) have rated 5 to the statement while the least respondents who were in the above 40 age group (0.49%) have rated 3 to the statement. From fig.17, it has been found that most of the

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respondents were males (35.98%) who rated 5 to the statement and the least respondents were females who rated 3 to the statement. From fig.18, it has been found that the most respondents were undergraduates (34.42%) who have rated 5 to the statement and the least respondents who have completed SSLC (0.49%) have responded to 1, 2 and 3 equally.

IV. DISCUSSION

From the analysis of Figures 4, 5 and 6, it has been found that people have strongly agreed with the statement that overcrowding of vehicles in Chennai leads to unexpected delays for work. This result may be due to the fact that the respondents are mostly undergraduates and they experience the difficulty in going to work everyday due to overcrowding of vehicles in Chennai.

From the analysis of Figures 7, 8 and 9, it has been found that the major reason for overcrowding of vehicles in chennai is due to office or employment pressure. This might be because the respondents are mostly working in sectors wherein they have to go on time but the public transports are not enough to get them in time and hence they prefer to buy their own vehicle to go to their respective works.

From the analysis of Figures 10, 11 and 12, it has been found that the major effect of overcrowding of vehicles is the over exploitation of petroleum products and the resources. This might be because due to overcrowding of vehicles, people are forced to fill petroleum and its products in order to run the vehicles and this leads to overexploitation of the petroleum products and since we are not resourced in our country we are forced to buy it from other countries at an increased rate.

From the analysis of Figures 13, 14 and 15, it has been found that the public are of the opinion that using public transport is the best remedial measure to prevent overcrowding of vehicles. This might be because people are thinking that due to inefficiency of public transports, people prefer their own vehicles.

From the analysis of Figures 16, 17 and 18, it has been found that people are strongly of the opinion that most of the fatal road accidents occur due to overcrowded vehicles. This might be because the people themselves would have seen a lot of incidents on the roads which have affected them much

V. SUGGESTIONS

1. Strictly implement traffic laws & policy.
2. Encouraging sharing vehicles/minibusses/cars /passenger vans

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3. Separate traffic lanes should be identified for similar type of vehicles i.e, two wheels vehicles, and three wheels vehicles, Bus tracks etc.,
4. Proper parking places should be identified. Users must park their vehicles at provided regions/bays.
5. Well planning shopping malls / commercial buildings should be permitted in metropolitan regions with proper parking areas and other facilities.
6. Develop the road pavement and carriage way width to accommodate increased traffic vehicles.
7. Planning of the series signal system and signal timings should be allocated as the number of vehicles in queue on that lane.

VI. CONCLUSION

The population of Chennai in 1639 was 40,000 and today the city is estimated to have a population of 7.5 million, which gives a population density of about 6482 per sq.km. This rapid increase in population leads to traffic congestion and imbalanced supply and demand of transport facilities. This paper aimed at analyzing the problems associated with overcrowding of vehicles in Chennai.

From the analysis of Figures 4, 5 and 6, it has been found that people have strongly agreed with the statement that overcrowding of vehicles in Chennai leads to unexpected delays for work. From the analysis of Figures 7, 8 and 9, it has been found that the major reason for overcrowding of vehicles in chennai is due to office or employment pressure. From the analysis of Figures 10, 11 and 12, it has been found that the major effect of overcrowding of vehicles is the over exploitation of petroleum products and the resources. From the analysis of Figures 13, 14 and 15, it has been found that the public are of the opinion that using public transport is the best remedial measure to prevent overcrowding of vehicles. From the analysis of Figures 16, 17 and 18, it has been found that people are strongly of the opinion that most of the fatal road accidents occur due to overcrowded vehicles.

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 [ISSN 2581-5369]