International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 09 Issue: 11 | Nov 2022 www.irjet.net p-ISSN: 2395-0072

DESIGN OF PUBLIC TRANSPORTATION IN BARAMULLA CITY OF JAMMU AND KASHMIR".

MIR SOZAN ASHRAF[1], ER.MANISH GEOL[2]

[1]M.Tech Civil Engineering, (Specialization In Transportation Engineering), Desh Bhagat university
[2]Assistant Professor, Desh Bhagat university

ABSTRACT

The study deals with the analysing of existing public transportation system in district Baramulla of J & K. The study is fully based on the results of studying the public transport network, its emerging requirements to make it as cost effective and useful in other means also for the public and make the whole public transportation system as friendly with the environment. In this study the various transportation surveys were done and the possible outcomes for the maximum use of public transportation were procured. The various issues faced by the use of public transporters were being studied and the suggestive measures for minimizing the same had been given. The study focused on the Bus rapid transit system to be introduced as a well stabilized and long term solution to the traffic congestion. The role of public transportation was to provide people with mobility and simultaneously boosts the accessibility of basic services. In this examine, the numerous surveys on the site of district Baramulla were conducted and the viable effects for the most use of publication transportation had been procured. So, in order to promote economic benefits to the inhabitants of Baramulla reduce traffic congestion and keeping the conducted surveys into consideration. Time table was designed for public transportation in Baramulla to bring more public transportation in use than the private ones.

Keywords: Public Transportation, Private Transport, Cars, Time Table.

INTRODUCTION

Sustainability and sustainable development balances a fine line between meeting our requirements – our need to move forward technologically and economically, and the need to cover the terrain in which we and others live. In the environment of transportation, sustainable transportation, also known as green transportation, refers to the system of transportation that's sustainable in the Senses of social, environmental and climate impacts. The developments are veritably rapid-fire in moment's world but care must be taken that they shouldn't take place at the stake of our future. Sustainable transportation can be achieved pertaining to transportation system operation, energy operation, capacity operation, and environmental operation.

Transportation systems enable metropolises to flourish and grow – enabling day to day conditioning, profitable relations, and quality of life. Vibrant and habitable metropolises are supported by effective transportation systems. This is honoured in academic exploration, the field of practice, and in public converse. It's common for transportation issues to be top of mind during election cycles and in liability and ranking scales, similar as the Mercer quality of living check and the Economist Intelligence Unit's global liability report, include a variety of transportation issues when ranking metropolises or liability. Transportation is a common element of day to day life and is honoured as essential for liveability and progress. Still, defining and applying delineations of sustainable transport can produce a degree of confusion due to the inherit complexity of both motifs. The analysis of transportation systems is an in depth content with numerous rudiments including mortal gets , network configuration, terrain of the system, prevailing influences on the system(politics and economics, for illustration), and the types of mode of trip that are available.

BACK GROUND OF THE STUDY

"The income-poor make less trips and more of their trips are undertaken on foot. For most purposes they are restricted to whatever services can be accessed within walking distances, making them accessibility-poor. The journey to work may be relatively long. Even if it is not, they will use slow modes and it may be very time consuming, so they are also time-poor. For poor people, and particularly women, children and the elderly, trip making is often discouraged by their vulnerability as pedestrians both to traffic accidents and to personal violence, making them safety-poor. Finally there is evidence that

long walking distances and times also create a tiredness and boredom adding an energy-poverty dimension to their deprivation." (The World Bank, 2002).

Therefore, public transport is veritably important to offer an affordable and dependable volition to people who cannot go private transport. From the below statement it can be derived that the four criteria of a good public transport system are availability, trust ability, affordability and effectiveness. Public Transport systems that meet these four criteria will help to improve the social and profitable development of a megacity and offer a way out of profitable, social and physical insulation for the poor. The problem with public transport planning in utmost Indian metropolises is that public transport is either inadequately planned or not planned at all. There's a lack of acceptable information and planning frame to guide decision makers, performing in numerous metropolises either opting unhappy systems grounded on those used in developed countries or letting private drivers decide. Developing countries have different profitable and social conditions from those in advanced countries and results, specific to their own requirements as opposed to simply copying approaches used by developed countries, should be developed and applied in each country. It's the responsibility of government to insure that public transport systems meet the requirements of the communities they serve. There's thus a need to develop a methodology to assess public transport systems in India particularly Jammu & Kashmir. J & k is one of the prominent places of tourism in India. This emotional destination attracts tourists from across the globe. Its tranquil beauty, mesmerizing spots, literal monuments, pleasing life, godly meadows, and Jeremiah air appeals a lot to every sightseer.

To overcome the need of connectivity to other corridor of country, transport structure is acceptable and development is still on in the vale. Road transport provides stylish connectivity to the major and minor metropolises of state. Indeed since major times, this region is known for its excellent road connectivity. Formerly, it used to fallen route the Silk route connecting corridor of central Asia with Indian sub-continent. Indeed pre-independence period was marked by the Jammu Kashmir has varied regions that offer different structure to arrive through road in this region.

Introduction of public transport in Baramulla city

Baramulla is nearly 54 Km far from Srinagar megacity. It's the 4th largest megacity in Jammu and Kashmir with an civic population of,500 and pastoral population of,539. Due to the large population of the megacity and roads leading towards sightseer destinations like Gulmarg Gondola, Apharwat Peak, Alpather Lake external Circle Walk Ningle Nallah Baba Reshi Shrine through the centre of the megacity, enterprises like range of the road and need of adding the public transportation needs to be answered. Still, utmost public transport passages include other modes of trip, similar as passengers walking or catching machine services to pierce train stations. Share hacks offer on- demand services in numerous corridor of the world, which may contend with fixed public transport lines, or round them, by bringing passengers to underpasses.

STATEMENT OF PROBLEM

With the trends of rapid urbanization in developing countries and automobile dominance in many developed nations there is a need to explore policies and plans that will allow transportation to enable quality of life for urban citizens in a sustainable manner. Despite awareness of the value of sustainable transportation and the technical operation of transit systems, few studies exist that compare and contrast the sustainable transportation

Benefactions of major mass conveyance systems. Typical studies concentrate on one or two pointers, similar as energy consumed or capacity, but don't look at the sustainability of a system in a holistic manner. An assessment of literature on the content of sustainable transportation shows several robust theoretical fabrics for the analysis of transportation which are applicable for comparing different modes, but many executions of these fabrics. This study will concentrate on the Bus rapid-fire conveyance system to be introduced as a well stabilized and long term result to the business traffic. The part of public transportation will be handed to people with mobility and will contemporaneously boost the availability of introductory services. In this examine, the multitudinous checks on the point of quarter Baramulla will be conducted and the feasible goods for the most use of publication transportation and time table will be formulated for the same

OBJECTIVE OF STUDY

1.To frame the time tables of public transportation(buses and cabs)

2. To boost safety for all public transportation operators and to propose references for the improvement in the system.

INTRODUCTION ABOUT STUDY AREA

As per 2001 tale, Baramulla quarter had a population of. Males constituted 51 of the population and ladies 49. It had a knowledge rate of 44, lower than the public normal of64.84; with 63 of the males and 37 of ladies. knowledgeable 11 of the population was under 6 times of age.

POPULATION OF THE STUDY AREA

District	Area $(Km)^2$	Population according to 2001 census	Population according to 2011 census
Baramulla	4243	8,53,344	1,008,039

METHODOLOGY

The option of mode of the transport is most likely an important and dynamic classic models in planning of transportation system, and that is why the key role adopted by the public transport in the making of plans. The different modes of the public transport expresses the road break usage efficiently than the private transport and have more social advantages like when the more people begin to use the public transport the less overcrowding will be there on roads and hence the less miss happenings and more economic benefits. This can assist an aim of creating public transport greater efficient and decisive within the development of new infrastructure, In order to increase usage amongst each existing customers and present day non-users in their public delivery structures, the city needs to:

1. Speed up the core services, perfectly by means of the practice of converting them to a little shape of segregate rail-based absolutely and bringing in the bus precedence.

2. Streamline routes more commonly and thus recognition on great regularity on centre corridors.

3. Cut fares via the condition of included term tickets.

4. Put together offerings at some period in modes.

5. Give immoderate high excellence contemporary day, clean, safe motors, and stations and stops.

6. Reduced parking availability/multiplied parking charges, that works to help public transport will all cause more patronage will increase and modal shift, even though they may no longer always be described as what the citizen might need from their public transport system.

Existing public transportation conditions

The public transportation currently running in the city of Baramulla mainly includes, sheared taxi, four wheelers ,trains and the busses which are playing with extremely limited availability on the Baramulla to Srinagar route. The major outer city connecting roads from Baramulla to sopore, Baramulla to Uri, Baramulla to Srinagar. As most of the trips to reach these cities are via different roads other than highways which requires special vehicles if necessary, as the availability of public transport is limited.

Modal share figures for passengers

The modal share data given here are showing the higher dependency on the road transport and on the other side the public transportation modes among which busses and other passenger cars like tata sumos ,innovas and taveras were seen less that own vehicles which were the main modes that contribute to the road transport . Hence from the modal share data full passenger dependency on the road transportation can be seen.

Table -2 Model shares for passengers

Mode	Road transport	Rail transport	Sea transport	Air transport
Passengers	74.66%	21.22%	0.2%	3.92%

Method (video and manual)

Traffic flow on an hourly basis was quantified during the day by recording video on different roads heading towards Baramulla. Manually counting traffic under subcategories such as (public and private transport) two-wheelers, four-wheelers, taxis, mini-buses, cabs, and so on, and it was revealed that public transportation was less available, as people choose to drive their own cars instead of using public transportation.

Questioning

To find out why people don't use public transportation, survey was conducted in which series of common questions were asked to people. The most common responses were recorded and documented. The most common responses were, less availability of public transportation, which was limited to particular routes with specific scheduling and often took too long to complete due to multiple stops.

Questionnaire

1. Is there availability of public transport in your area?

A. Yes
B. No

2. **Do you use public transportation**

A. Yes
B. No

3. If yes what form of transportation do you use ?

A. Bus
B. Cab
C. Train
D. Other

4. If not, why you are not using public transport?

A. Not available
B. Time consuming
C. Costly
D. Multiple stops
E. Own vehicle

5. How often do you use public transportation

A. Daily
B. Weekly
C. Monthly
D. Bi-monthly
E. Quarterly
F. Never

6.At the bus stop or stations do you find there are timetables available and readable should you need them?

A. Strongly agree
B. Disagree
C. Neither agree nor disagree
D. Agree
E. Strongly agree

7.How would you rate personal safety when travelling by public transport?

Least

1	2	3	4	5

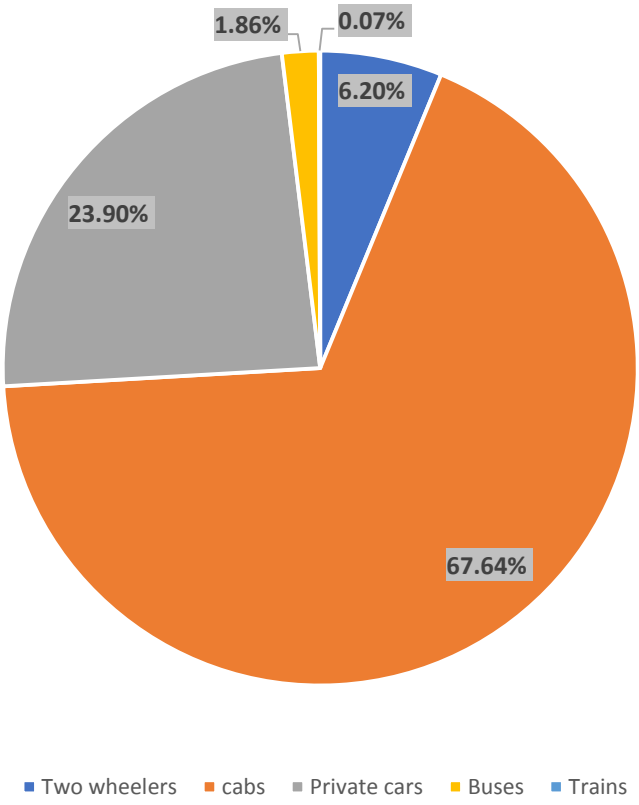
Most

3.5 Timetable formulation: Timetables from reputable bus and taxi stands were handled to know their running times for a certain route, and recommendations were made based on surveys so that people can use public transportation on a large scale.

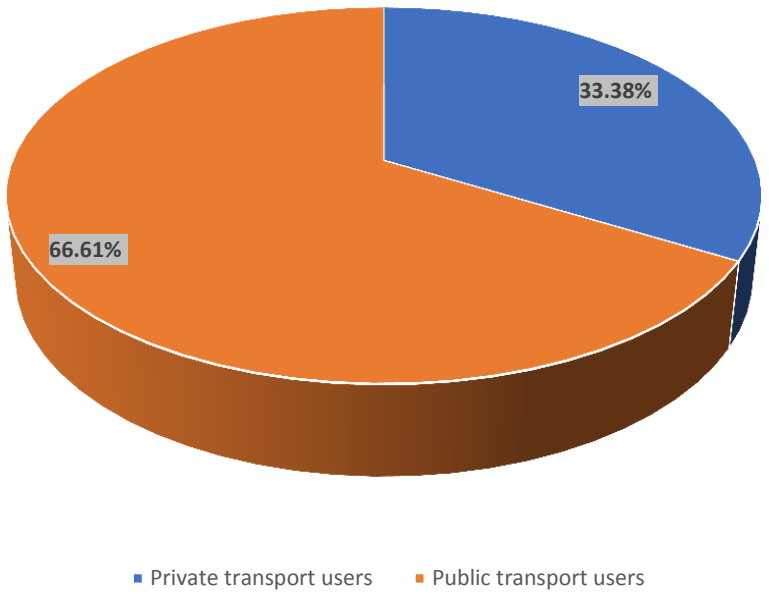
RESULTS AND DISCUSSION

One of the three routes generating from Baramulla, the traffic data will be collected and the analysis will be done for the same, for the introduction of the public transportation on all the four routes as below.

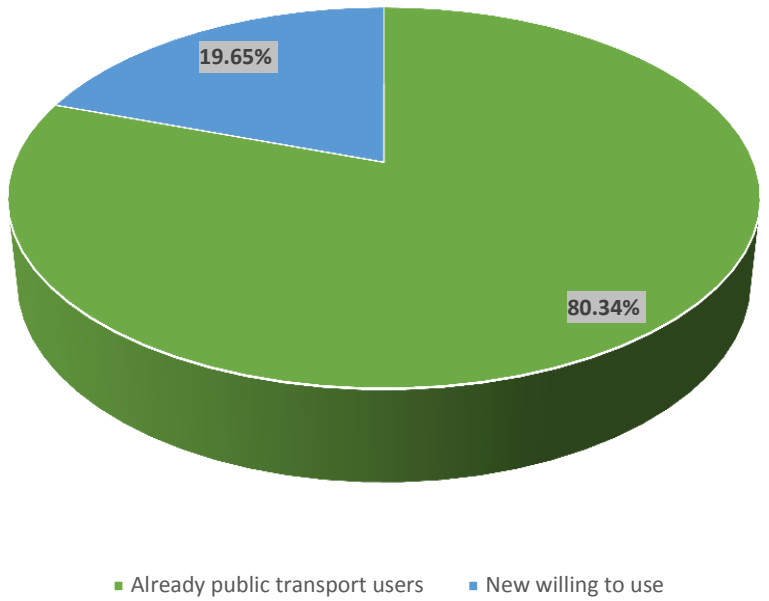
GRAPH 2 :FLOW OF TRAFFIC FROM BARAMULLA TO SRINAGAR



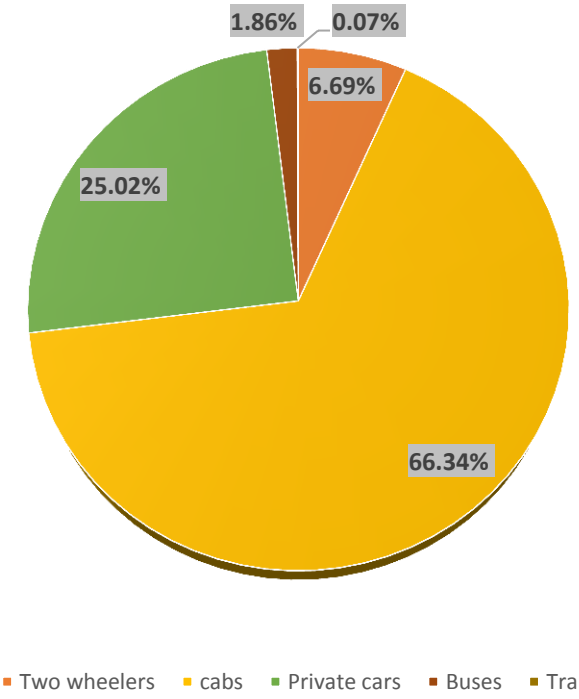
GRAPH 3 : PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



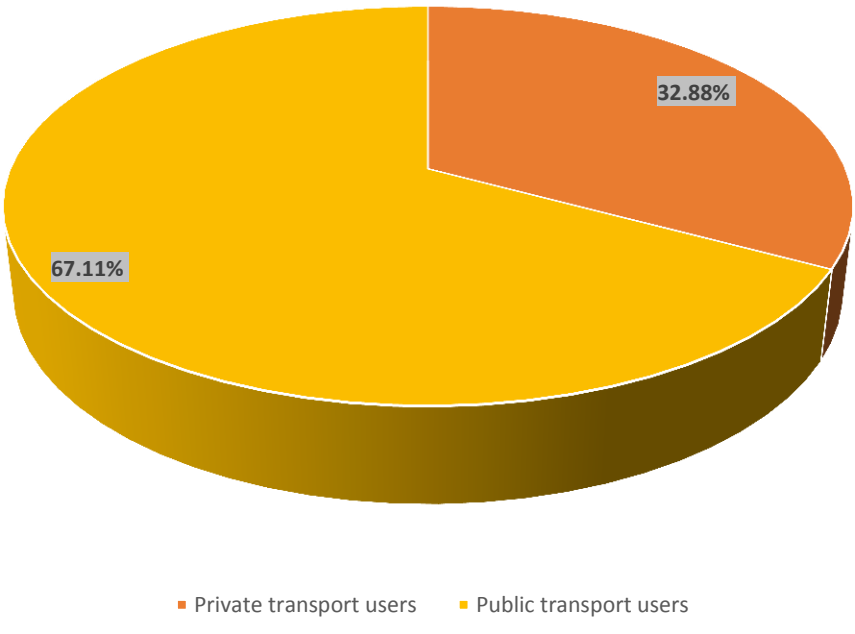
GRAPH 4 : AlLREADY PUBLIC TRANSPORT USERS AND NEW WILLING TO USE IN PERCENTAGE



GRAPH 5 : FLOW OF TRAFFIC FROM SRINAGAR TO BARAMULLA



GRAPH 6 :PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



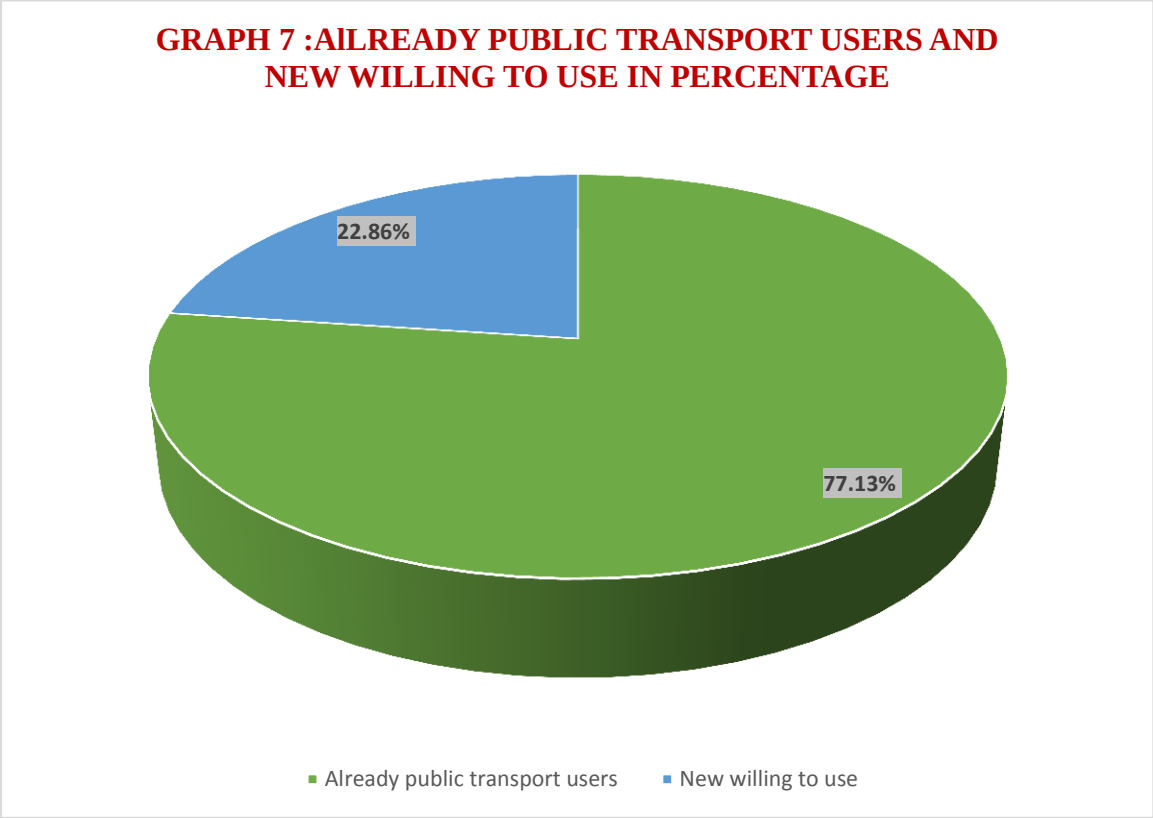
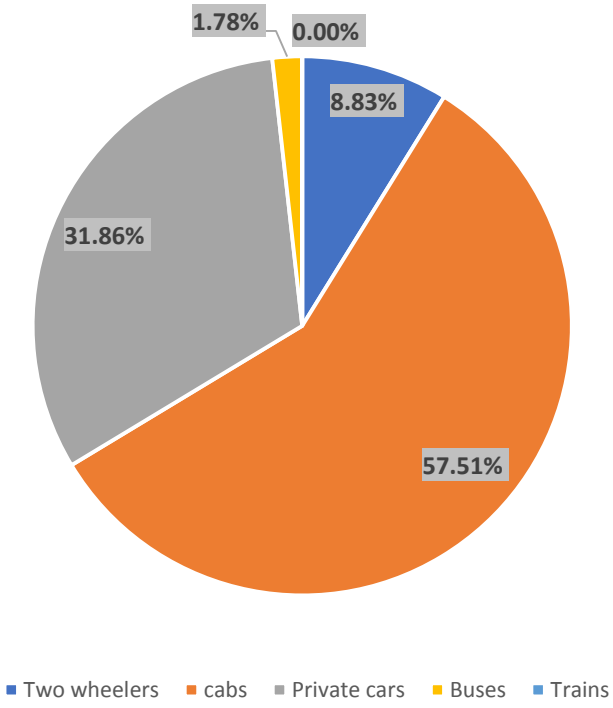


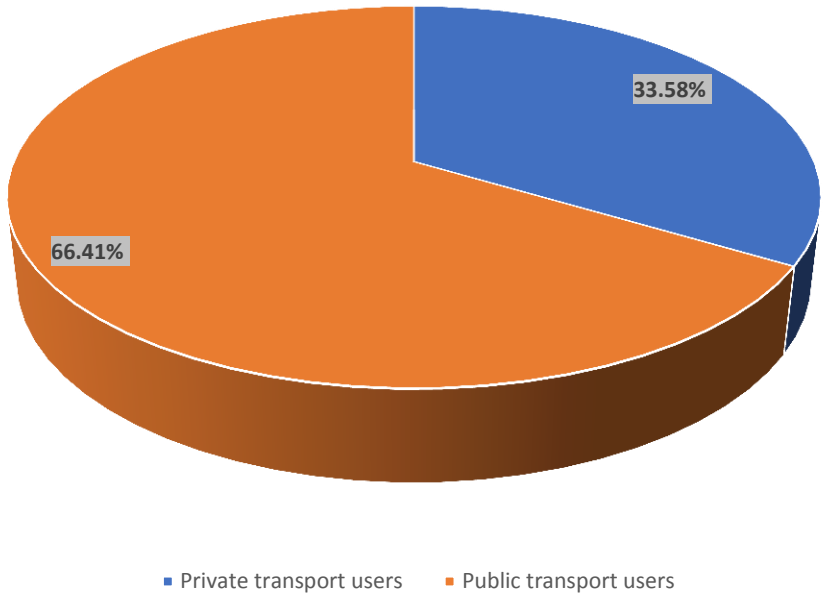
Table 5: Flow of traffic from Baramulla to Uri

From Baramulla to Uri Time 7.00AM to 7.00PM					
Two wheelers	Cabs	Private cars	Buses	Trains	Total
268	1744	966	54	0	3032
Percentage of total flow of traffic					
Two wheelers	Cabs	Private cars	Buses	Trains	Total
8.83%	57.51%	31.86%	1.78%	0%	100%
Number of passengers travelling every day					
Private		**Public**		**Total**	
4874		9640		14514	
Percentage of private and public transport users					
Private		Public		Total	
33.58%		66.41%		100%	
New willing to use public transport					
Already public transport users		New willing to use		Total	
9640		1800		11440	
Already public transport users and new willing to use in percent					
Already public transport users		New willing to use			
84.26%		15.73%			

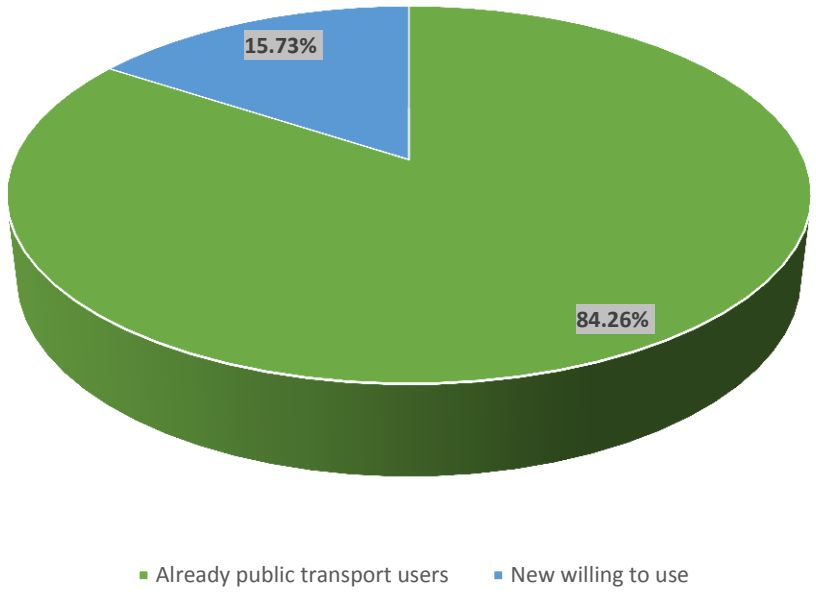
GRAPH 8 : FLOW OF TRAFFIC FROM BARAMULLA TO URI



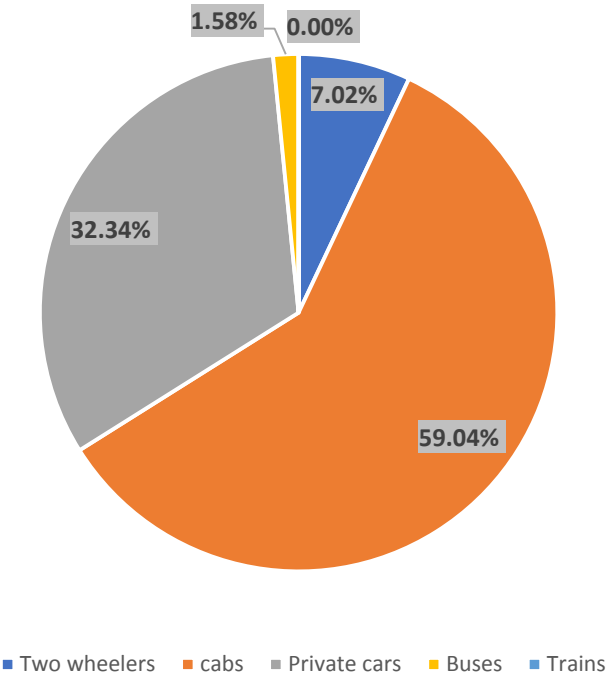
GRAPH 9 :PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



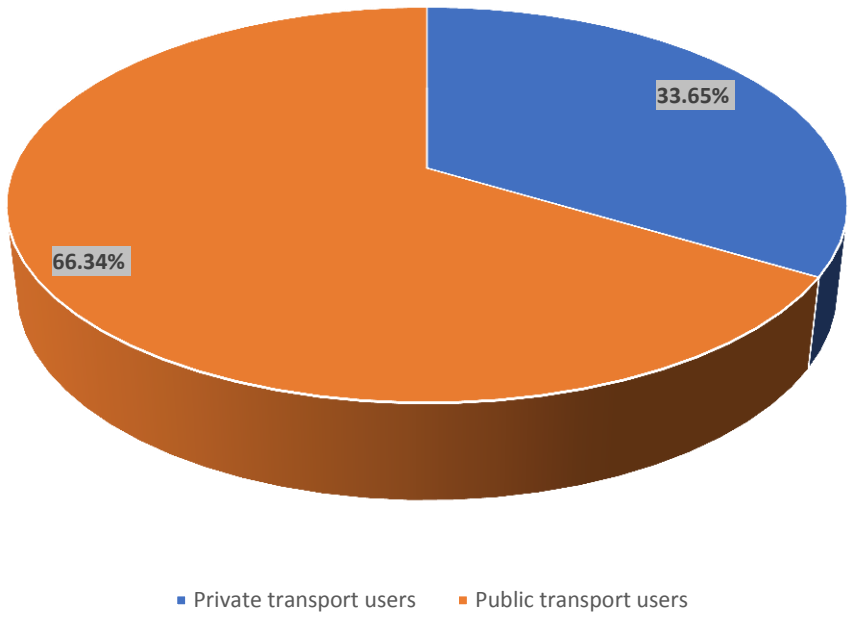
GRAPH 10 :AlLREADY PUBLIC TRANSPORT USERS AND NEW WILLING TO USE IN PERCENTAGE



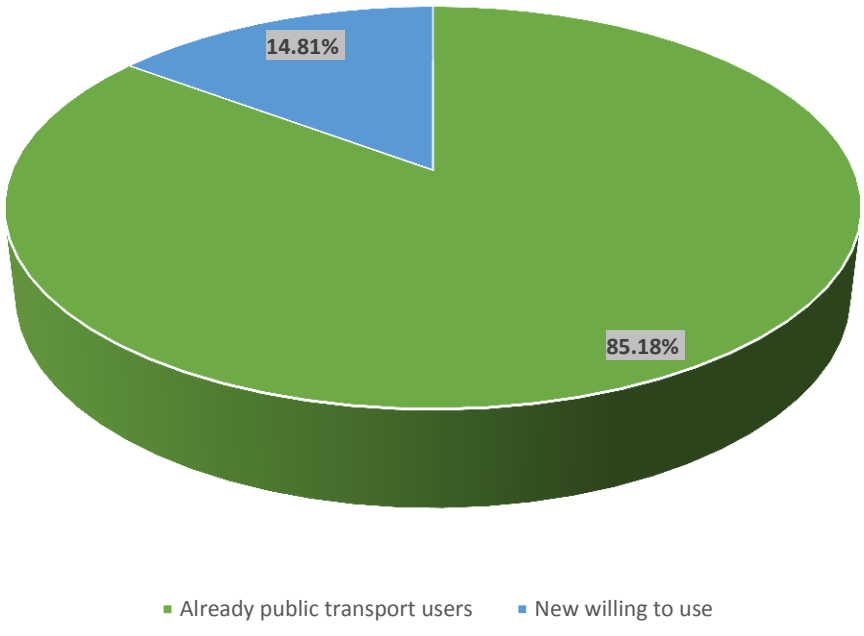
GRAPH 11 : FLOW OF TRAFFIC FROM URI TO BARAMULLA



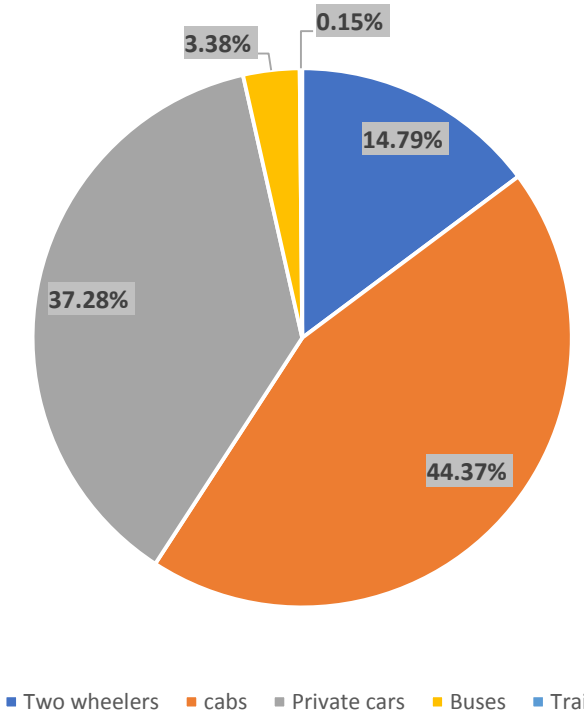
GRAPH 12 :PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



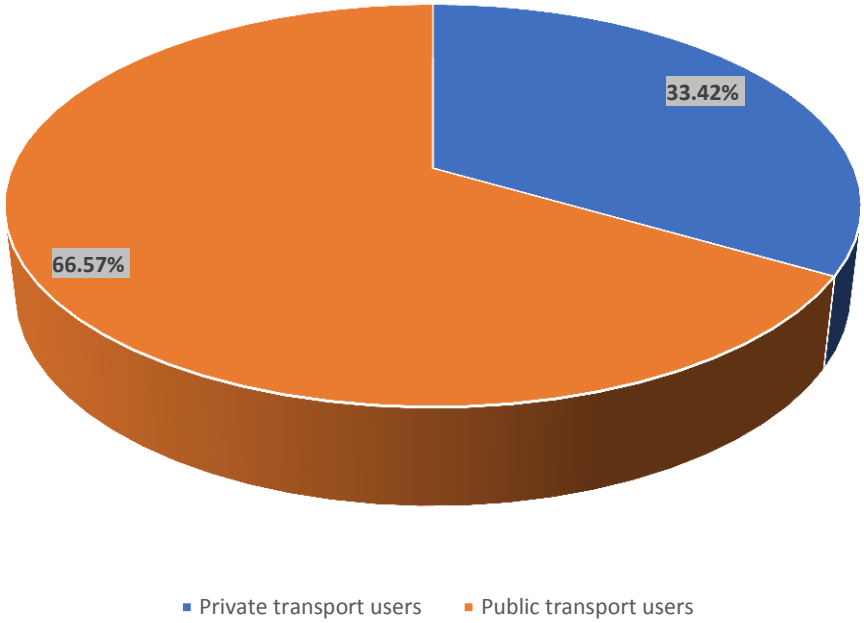
GRAPH 13 :AlLREADY PUBLIC TRANSPORT USERS AND NEW WILLING TO USE IN PERCENTAGE



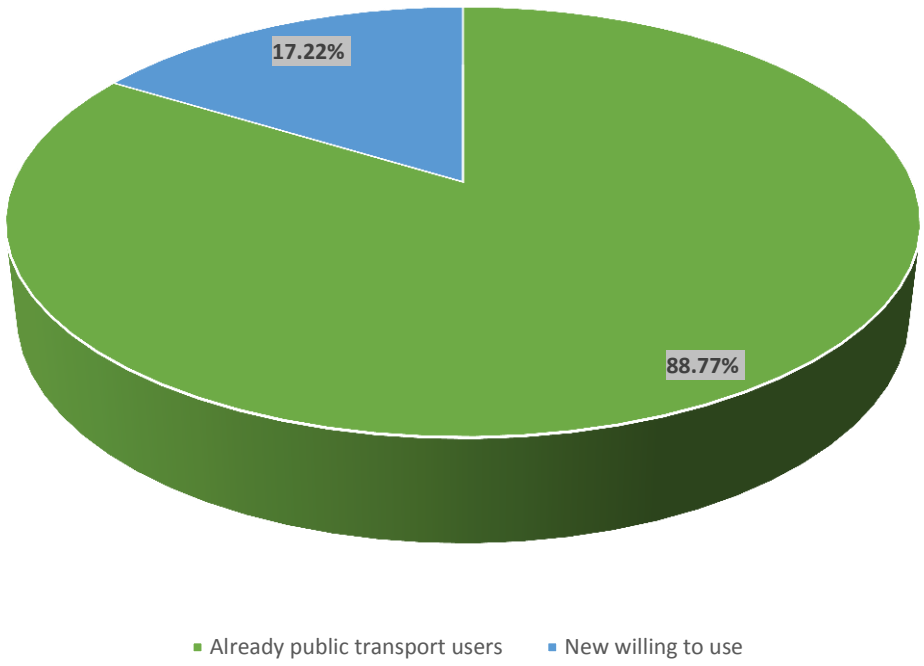
GRAPH 14 :FLOW OF TRAFFIC FROM BARAMULLA TO SOPORE



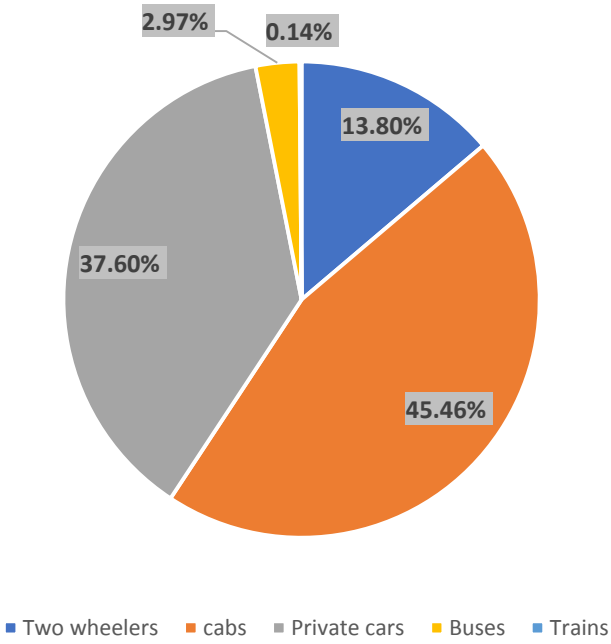
GRAPH 15 : PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



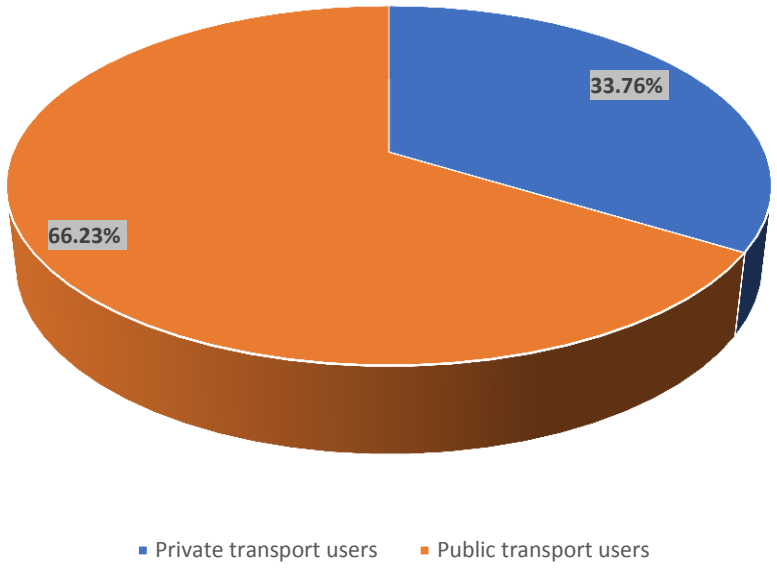
GRAPH 16 : AlLREADY PUBLIC TRANSPORT USERS AND NEW WILLING TO USE IN PERCENTAGE



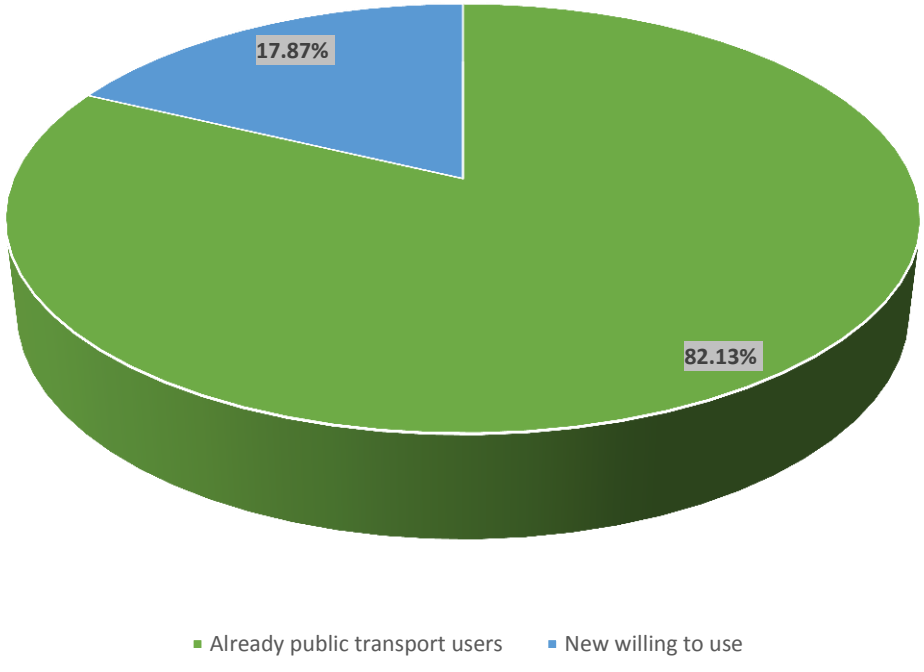
GRAPH 17 : FLOW OF TRAFFIC FROM SOPORE TO BARAMULLA



GRAPH 18 : PERCENTAGE OF PRIVATE AND PUBLIC TRANSPORT USERS



GRAPH 19: AlLREADY PUBLIC TRANSPORT USERS AND NEW WILLING TO USE IN PERCENTAGE



By taking 1 to 2 passenger travelling by each two-wheeler, 2 to 3 passengers are travelling by one car, 7 to 9 passengers travelling by one cab and 35 to 40 passengers travelling by one bus. the total number of travellers travelling by different private and public transportation, while indicating two wheelers and private cabs as the private mode of transportation and cabs and busses as the public mode of transportation were calculated . Passengers using private vehicle throughout the day were interviewed in the short survey. On Baramulla to Srinagar route 17664 (66.61%) passengers were using public mode of transportation and 4322 (19.65%) were willing to use public mode of transportation . On Srinagar to Baramulla route 17647 (67.11%) passengers were using public mode of transportation and 5232 (22.86 %) were willing to use public mode of transportation.

On Baramulla to Uri route 9640 (66.41%) passengers were using public mode of transportation and 1800 (15.73%) were willing to use public mode of transportation . On Uri to Baramulla route 9544 (66.34%) passengers were using public mode of transportation and 1660 (14.81 %) were willing to use public mode of transportation.

On Baramulla to Sopore route 10200 (66.57%) passengers were using public mode of transportation and 2123 (17.22%) were willing to use public mode of transportation . On Sopore to Baramulla route 10266 (66.23%) passengers were using public mode of transportation and 2234 (17.87 %) were willing to use public mode of transportation. It was observed that the maximum number of public transport users were on Srinagar to Baramulla route route and maximum number of new willing public transport users were also on the same route (Srinagar to Baramulla)

Table 9 : Number of required cabs , buses and trains from Baramulla to different routes

Time Table of public transport on different routes of Baramulla

Cabs ,buses and trains required from Baramulla to Srinagar from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
1600 (93.56%)	100 (5.84%)	10 (0.58%)	1710
Cabs ,buses and trains required from Srinagar to Baramulla from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
1720 (92.97%)	120 (6.48%)	10 (0.54%)	1850
Cabs ,buses and trains required from Baramulla to Uri from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
990(94.73%)	55 (5.26%)	Not available	1045
Cabs ,buses and trains required from Uri to Baramulla from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
960 (95.04%)	50 (4.95%)	Not available	1010
Cabs ,buses and trains required from Baramulla to Sopore from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
1100 (93.61%)	70 (5.95%)	5 (0.42%)	1175
Cabs ,buses and trains required from Sopore to Baramulla from 7:00 am to 7:00 pm			
Cabs	Buses	Trains	Total
1150 (93.49%)	75 (6.09%)	5 (0.40%)	1230

CONCLUSION

The analysis of the surveyed data showed that the passenger trips are troubled due non availability of the efficient public transport in the city. The inadequacy of public transport facilities has left the population immensely simulated. The facilities provided by the existing transportation system is ineffective to the required level as seen by the surveyor of the inspected area. The population in the periphery would get the additional benefits if associated by the public transit system.

Surveys on the site of district Baramulla were conducted and the viable effects for the most use of publication transportation had been procured. So, in order to promote economic benefits to the inhabitants of Baramulla reduce traffic congestion and keeping the conducted surveys into consideration. Time table was designed for public transportation in Baramulla to bring more public transportation in use than the private ones. According to the researcher of the study area the facilities provided by the existing transportation system were not up to the required level. The population residing in the outskirts of the city would get more benefit if connected via public transportation system

REFERENCES

1.Report of the World Commission on Environment and Development "Our Common Future". G.H. Brundtland, (Ed.) Oxford University Press, 1987 .

2. Christy Mihyeon Jeon, S.M.ASCE, and AdjoAmekudzi, M.ASCE, "Addressing Sustainability in Transportation Systems: Definitions, Indicators, and Metrics",Journal of Infrastructure Systems, ASCE / March 2005 / 11(1): 31-50.

3.https://www.conserve-energy-future.com/benefits_of_public_transportation.php

4.https://baramulla.nic.in

5.https://www.indiagrowing.com

6.Naveen BR, Gurtoo A. Public transport strategy and epidemic prevention framework in the Context of Covid-19. Transp Policy (Oxf). 2022 Feb;116:165-174. doi: 10.1016/j.tranpol.2021.12.005. Epub 2021 Dec 6. PMID: 34898864; PMCID: PMC8646084.

7.R. Kanthavel, S.K.B. Sangeetha, K.P. Keerthana,Design of smart public transport assist system for metropolitan city Chennai,International Journal of Intelligent Networks,Volume 2,2021,Pages 57-63,ISSN 2666-6030,https://doi.org/10.1016/j.ijin.2021.06.004.

8.JETIR2104351 Journal of Emerging Technologies and Innovative Research (JETIR) www.jetir.org

9. Xueqin Wang et al [2020]" Environmental governance of transportation infrastructure under Belt and Road Initiative: A unified framework." Civil and Environmental Engineering, Nanyang Technological University, Singapore. 20 July 2020.

10. Dimitra Tarassi [2020] ''Transportation in the Mediterranean during the COVID-19 pandemic era.'' DOI:10.1016/j.glt.2020.12.003

11. John Preston [2020] Accessibility, mobility and transport-related social exclusion.Journal of transport geography

12.Venter, C.J. [2020] Measuring the quality of the first/last mile connection to public transport. Research in Transportation Economics, Vol. 83, 100949.

13. Yash, Ankit Kumar [2020] ''Review Paper on Video Traffic Flow Analysis in Distributed System.'' International Journal of Emerging Technology and Innovative Engineering

14.Fonseca, J. F. P. (2020). Timetable integration in public transport planning

15. Kucuk, Enis & Aldemir, Gokhan. (2019). A literature review on urban public transportation.

16. Fielbaum, Andres. (2019). Correction to: Strategic Public Transport Design Using Autonomous Vehicles and Other New Technologies. International Journal of Intelligent Transportation Systems Research. 18. 10.1007/s13177-019-00201-5.

17. Abrar Ul Haq Bhat, Dr. Rakesh Gupta."Traffic Volume and Safety Measures Study on National Highways", Volume 6, Issue VII, International Journal for Research in Applied Science and Engineering Technology (IJRASET) Page No: 616-619, ISSN : 2321-9653,

18. Public Transport Accessibility: A Literature Review - Scientific Figure on ResearchGate. Available from: https://www.researchgate.net/figure/Summary-of-previous-studies-on-public-transport-accessibility_tbl1_323835064 [accessed 20 Oct, 2022]

19. 19.https://doi.org/10.3929/ethz-b-000298628

20. Illahi, Ubaid. (2018). Transport planning and traffic safety: making cities, roads, and vehicles safer. Transport Reviews. 39. 1-2. 10.1080/01441647.2018.1552632.

21.International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 04 Issue: 11 | Nov -2017 www.irjet.net p-ISSN: 2395-0072

22.Mazloumi Shomali, Ehsan (2017): Public transport travel time and its variability. Monash University. Thesis. https://doi.org/10.4225/03/58d1d2d9b5a27

23. Nuannan Leng, Ulrich weridmann 2016 "Design of passenger oriented time table rescheduling in railway disruptions".

24.Saad Yousif, Purnawan [2016] a study into on-street parking: effects on traffic congestion

25. Sutanto Soehodho May 2016 "Public transportation development and traffic accident prevention in Indonesia".

26.Saif, Muhammad Atiullah. (2016). Individual Differences and Public Transport Performance Indicators- B.Sc Transportation Engineering Thesis.

27. Francesco Ciaffi, Ernesto Cipriani, Marco Petrelli, Rasa Uspalyte Vitkuniene 2014 "A new methodology for the public transport network design".

28.Runhua, Qian & Hua, Cong & Ruiling, Zhao & Yuanxing, Li. (2013). Design Scheme of Public Transport Comprehensive Dispatching MIS based on MAS. Procedia - Social and Behavioral Sciences. 96. 1063-1068. 10.1016/j.sbspro.2013.08.122.

29. Dean Papajohn, Quing cui, Mehmet emre bayraktar 2011 "Public Private Partnership in U.S transportation: Research overview and a path forward".

30.Yang Qin, Shi Jia-lian 2011 "Research and Design of Public Transportation System Based on the Classification Theory on Road Traffic".

31. Chhavi Dhingra 2011 "Measuring Public Transport Performance".

32.Tiwari, Geetam. (2009). Public Transport Research Challenges in India

33. Caulfield, Brian & O'Mahony, Margaret. (2007). An Examination of the Public Transport Information Requirements of Users. Intelligent Transportation Systems, IEEE Transactions on. 8. 21 - 30. 10.1109/TITS.2006.888620.

34. Avishai Ceder 2004 "New Urban Public Transportation Systems: Initiatives, Effectiveness, and Challenges".

35. Kwang Sik Kim, Lucien Benguigui, Maria Marinov,The fractal structure of Seoul's public transportation system,Cities,Volume 20, Issue 1,2003,Pages 31-39,ISSN 0264-2751,

https://doi.org/10.1016/S0264-2751(02)00094-X.