

## **A Study of Preference for Public Transport Bus Service among Residents of Gandhinagar**

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### **Introduction**

Urban transportation is gradually becoming one of the most pressing problems in India. An efficient system of transport that could accommodate a continuously increasing need of movement for people as well as goods is the need of the hour. Transportation not only facilitates movement of goods and people but it also serves multiple other activities to sustain life ranging from economic, political to social. Economic reasons are what are given the most weightage some of them being expansion of markets and stabilization of prizes in different markets. But the more pertinent ones remain hidden as they are social in nature since opportunities to travel open a gamut of economic as well as social opportunities like meeting various people and exposure to various cultures and places that bring in a lot of awareness among travelers. The present paper tries to understand the preferences of residents of Gandhinagar city which is the capital of Gujarat state. This understanding leads to a summary of what people expect of today's state-run road public transport service and thereby providing policy implications for public transport.

Wang, Huapu, Peng (2008) suggests in his study that urban transportation system is a complex system with multiple variables and nonlinear feedback loops and influenced by transportation, social, economic, and environmental factors. Conventional transportation modeling approaches

are unsuitable to simulate and evaluate its performance. A system dynamics approach based on the cause-and-effect analysis and feedback loop structures. The model comprises 7 sub models: population, economic development, number of vehicles, environmental influence, travel demand, transport supply, and traffic congestion. The study has been conducted at Dalian, China. The coefficient of the intervention policy of vehicle ownership is chosen as the control variable for simulation and the impacts of different policy scenarios on urban development and transportation system are analyzed. It strongly recommends that Dalian should restrict the total number of vehicles to improve the sustainability of transportation system.

Few studies on urban transportation deliberate on what impact it carries on sustainable development and what should be policy priorities for government while planning transportation. Stjernborg V, Mattisson O (2016) The role of public transport in society, and to investigate how public transport is used in a strategic capacity. By studying general policy documents, the ambition is to gain a wider understanding of the role of public transport based on the societal context it is situated. Public transport is regarded as an important factor towards achieving other goals and other public values, particularly those related to economic and environmental issues and that the social dimension. Public transport, is increasingly important to deal with the challenges caused by denser areas and greater mobility volumes. Public transport is promoting beneficial condition and good for citizens. The ability to interact with different stakeholders and meet their different criteria for satisfaction. It is a challenge for local government organizations to balance different stakeholders' views, especially in times when both resources and peoples' trust are lacking people can share their idea during the transport. The ambition is to gain a deeper understanding of the role of public transport, based on societal context. Another study that discusses urban transportation planning in Bengaluru points out that there do exist elements of a polycentric governance system; however, there are institutional aspects which need to be strengthened for transport planning to be considered as an example of an effective polycentric governance system. Difference in public transportation systems. Researchers examine how difference is built into the system's fleets, planning, schedules, and stations and how this shapes unequal experiences for minorities and poor people. Researcher discussed how these disparities shape an unequal system that not only keeps people bound in economically and racially segregated spaces, but that it shapes incivility in many integrated spaces, including a virtual space dedicated to people sharing their experiences with public transportation he discusses the

social consequences of segregation and built-in transportation inequalities. Passengers transform public spaces into friendly mobile communities where passengers share stories, offer advice, openly discuss politics, race, and religion. In these communities, passengers also openly discussed fears for their safety and for the well-being of their family (Vaidyanathan V. R. S., 2018).

## **Methodology**

The present study is conducted in Gandhinagar, the capital city of Gujarat. The density of population and the geographical expanse of the city is not very vast as in many other metropolitan cities. But that is what draws our interest into the research as administrative authorities could take up right policy decisions well in time to cope up with the constantly rising vehicular congestion in smaller cities too. The data is collected from both primary and secondary data. First a pilot study was conducted informally from residents of selected areas. Primary survey was then done based on the inputs received from pilot study. Structured questionnaire is used to interview residents' views on buses from various sectors especially residential ones. Convenience sampling was done. Structured questionnaires were used to interview respondents either directly or via google forms. Secondary data is collected from research papers, books, GUDA, GMC, documents of Department of Town Planning etc.

## **Objectives**

- To identify the challenges of commuting students in urban public transportation in Gandhinagar creating social exclusion.
- To identify the challenges of Senior citizens in urban public transportation in Gandhinagar creating social exclusion.
- To recommend facilities that could improve access and usage of urban public transportation in Gandhinagar.

## **Limitations**

The size of sample may not be representative of the population due to paucity of time and heat wave. Respondents from few limited sectors have filled in forms only and therefore the responses could be a bit skewed.

### **Brief History of Gandhinagar**

Gandhinagar is planned to function mainly as administrative center for the State and as such, the principal employer of the town is the State Government. The town is planned on principle of sectors, each measuring about 1 km in length and 0.75 km in width. The sectors are numbered from one to thirty and they are formed by seven roads running in each direction and cutting each other perpendicularly. Out of 30 sectors, 27 sectors are residential and remaining 3 sectors are non-residential. They are planned on neighborhood concept. The government employees reside in these sectors in various categories of staff quarters along with other residents who have constructed their own houses. The day-to-day need of individuals are suitably catered in each sector. Almost every residential sector has a small shopping centre, a health care centre, primary government school (initially in all residential sectors, now closing down due to various reasons), a post office, an inquiry station to support residents for utility services, a small garden and lots of common spaces. However, a lot of this is gradually changing and now unavailable to common residents.

### **During the various phases of its development, the city passed through following four stages:**

Phase 1: Between 1970 to 1980, the infrastructure of city.

Phase 2: City was known as the most *unpolluted* city, during 1980 to 1990.

Phase 3: Many trees were planted after 1990 and the city was then called the *Green city*.

Phase 4: In 2002, Proposed a triple focus for the city

- I. It should be green;
- II. It should use solar energy;
- III. It should be cosmopolitan.

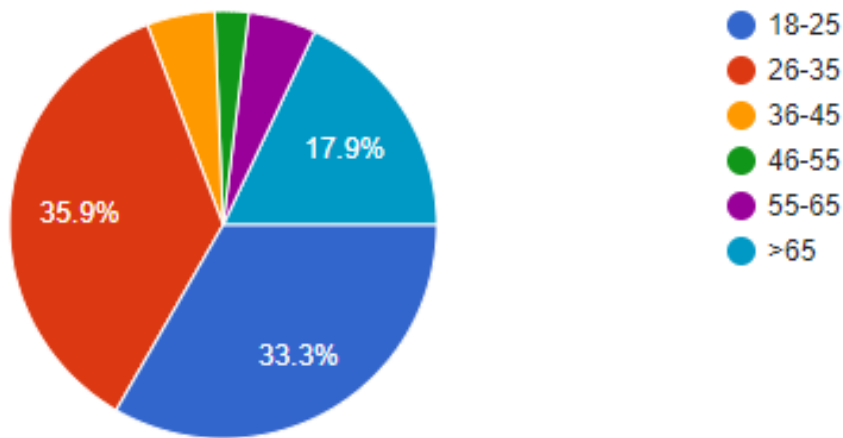
**Road system, Transportation Facilities and Traffic Control:**

Developing a free and rapid roadway was significant for a newly planned city like Gandhinagar as initially it had to be connected to the neighboring city of Ahmedabad for almost every small need and the fact that it was the state capital would have to be made on a futuristic note. To this extent Gandhinagar city has a very well planned and smooth roadway since its inception. Smooth traffic flow is not only essential for public but also for industrial transportation of goods to maintain market efficiency.

Rangwala, S.C. (2015) provides a very interesting understanding of the roadways of Gandhinagar, “preventing the rapid traffic flow from being in undue danger either to its own units or to the public at large. The town should be provided with suitable transport facilities so that there is minimum loss of the from place of work to the place of residence. The efficiency of any town is measured by the layout of its roads. A nicely designed road system puts a great impression in the minds of people, especially the visitors to the town. The provision of a faulty road system in the initial stage of town formation proves to be too difficult and costly to repair or to re-arrange in future. The roads are oriented to run 30° north of west and 60° north of east. Such an orientation helps in avoiding direct facing of morning and evening sun. thus, the driver of a fast-moving vehicle is not disturbed and the houses located on these roads, either parallel or perpendicular, get the benefit of south-west winds during hot summer. The roads leading to government offices and the approach roads are 100 m wide. The peripheral roads and roads giving access to the town center are 65 m wide. The rest of the town roads are 45 m in width. The important centers generating traffic are placed in the town in such a way that total volume of traffic is placed in the town plan in such a way that the total volume of traffic is well distributed within the town with a balanced pressure on traffic routes. The cycle-ways and motor roads are segregated with grade separations at their intersections. The pattern of the main roads of the town is usually rectangular and such a pattern divides the town into more or less rectangular sectors. All the main roads are provided with road side trees of different varieties, the total length being about 275 km.”

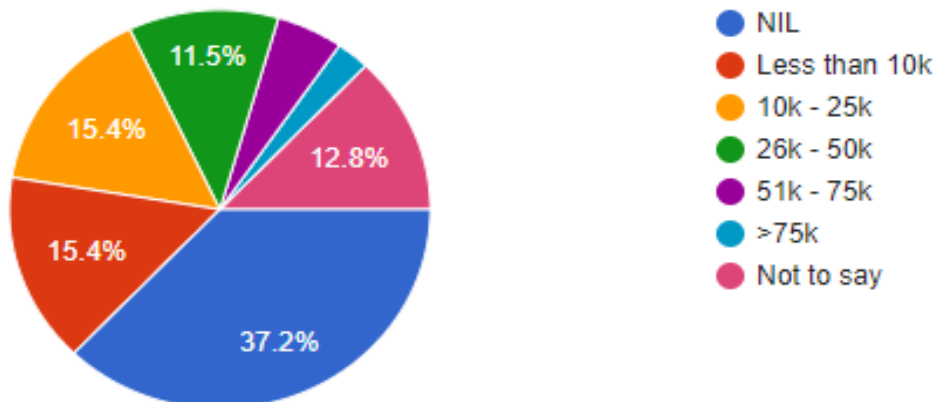
**Findings and Analysis**

This section discusses the findings and analysis of the study with respect to peoples’ preferences and problems with public transport in Gandhinagar city. 67 percent respondents were males and 33 percent were females. As shown in the pie chart 33.3% respondents are from the age group of 18-65 years while 35.9% are from that of 26-35 years age group. The least number of respondents are from age group between 46-55 years.



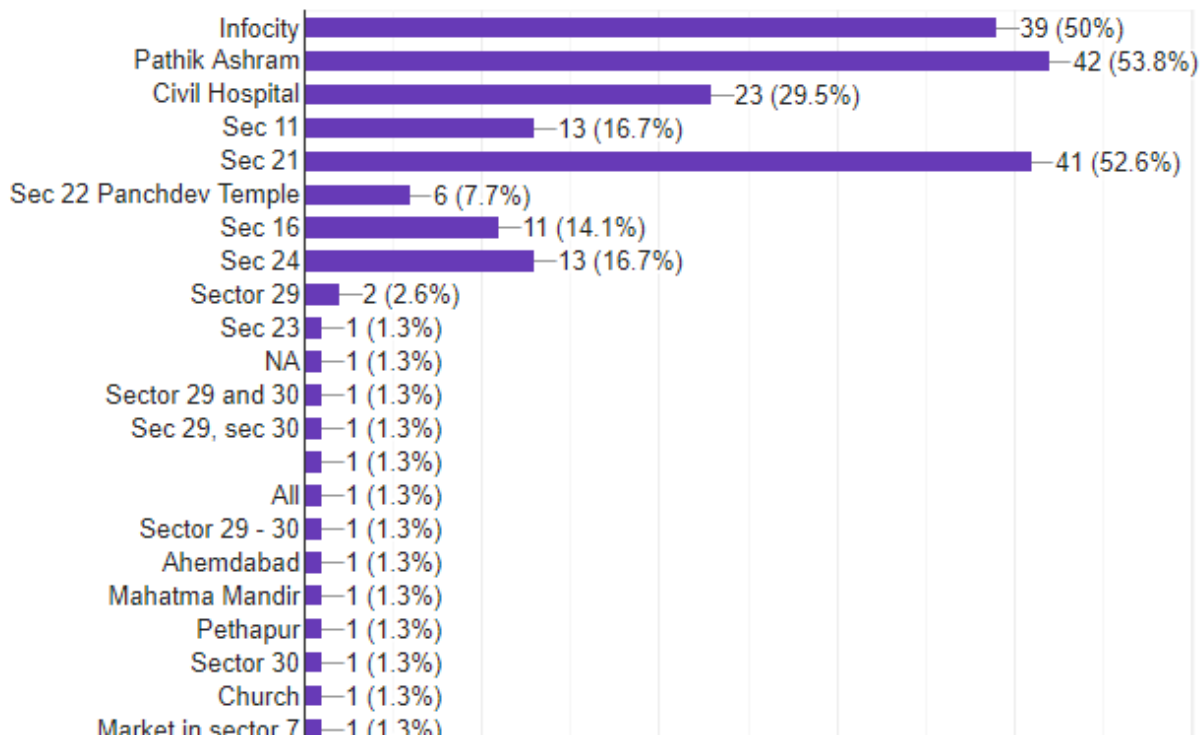
Among the respondents 53.8 % are students and 23.1 % from the service group. Maximum being students and others include retired, farmer, self-employed.

It is interesting to see the income flow for the respondents which has a major impact on their decision while choosing the type of transport. Almost 37.2% respondents have shown their income as nil as they may not be working as either most of them are students or senior citizens.



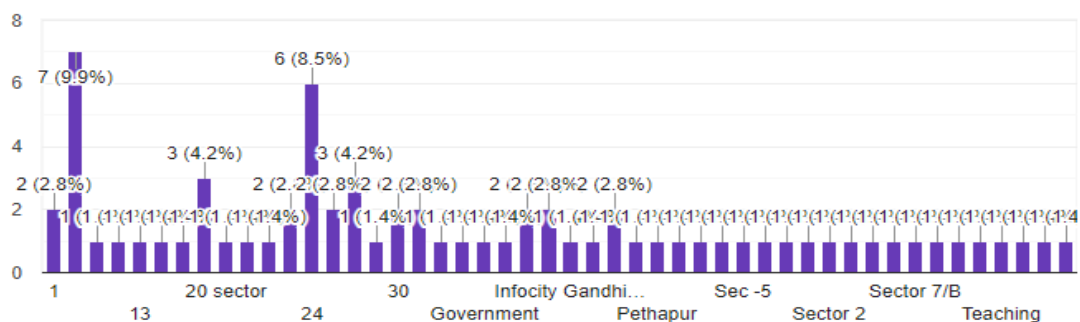
This pie chart shows the Male & Female respondents. Male respondents 66.7 % and Female 33.3 %.

**Most travelled places in Gandhinagar**



Every city has few destinations which are favorites and regularly frequented by people. Access to such places should be atleast easily available through public transport. Most people in Gandhinagar do visit the ST Bus Depo, Infocity Mall area, Civil hospital area, District Shopping Centre at sector 21, shopping area in sector 11 and some temples like the Panchdev Temple in sector 22.

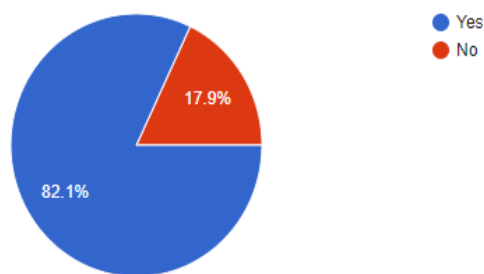
**Area of residence:**



The area of residence shows the sectors in which respondents are residing. Most respondents who participated in this survey stay in either sector 2 or sector 24. Out of them, the proportion of people who use their own means of transport at 55.1% while public transport is 44.9%. Since the city is not very big and access to public transport is still distant from the place of residence, many people prefer going in their own vehicles than public transport.

The above information is significant in the light that if there is little access to own vehicle for transportation then what would be the alternatives available and preferred by residents. Most people prefer Auto as the mode of transport if own means of transport is not available which is 60.3% while 41 % would tend to use the State Transport bus. Remaining people prefer either taxi or local mini-buses but that is very less in number compared to state transport or auto.

**Access to Gujarat State Transport**



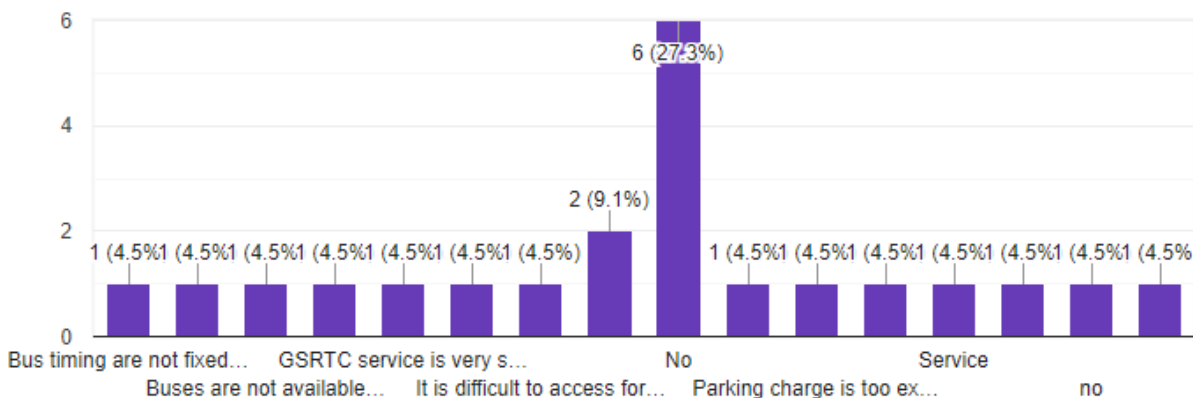
About 82.1% say they have a good access to GSRTC buses in Gandhinagar city while about 17.9% do not and therefore they depend on their own transportation.

**About GSRTC Bus Service (Source: primary survey):**

Sr. No	Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Fare is too expensive	3	8	25	23	19
2.	Inadequate bus service	10	22	25	17	4
3.	Lack of Safety	9	23	25	18	3
4.	Time consuming	15	40	16	6	1
5	Too many transfers (changing of buses)	12	28	23	14	1
6	Lack of parking for private vehicles at bus	15	28	18	10	7

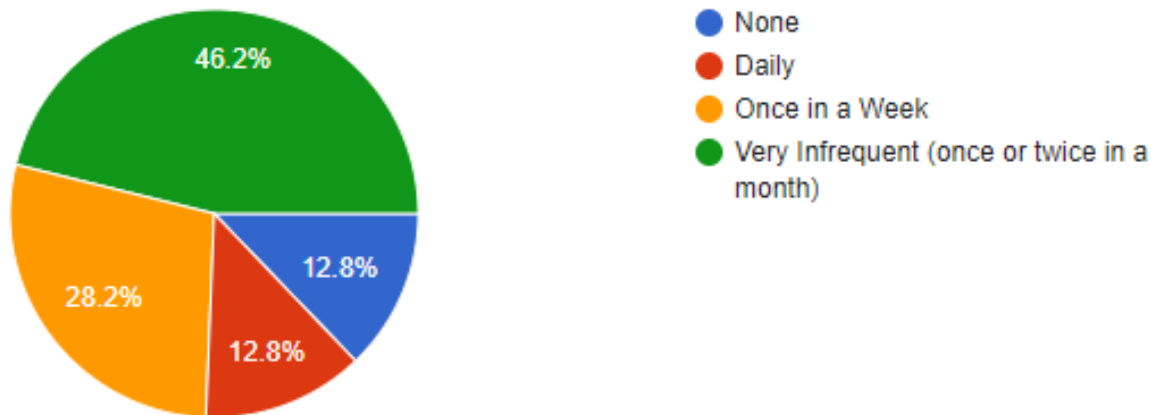
The above section indicates problems respondents have faced while traveling in State Transport buses. Most people, 67 of them believe fare is inexpensive though 11 of them differ and say that it is expensive for them. Largely one sees a consensus for lack of public transport bus service in the city. Around 31 of the respondents thought it was difficult to access public bus services. 21 of them see lack of safety in public transport these days. Almost 51 of the respondents agreed for that public transport buses are time consuming. Some 40 respondents think there are too many transfers or change of buses that they have to undertake in case they travel in public transport buses. 43 believe that there is no parking space for regular travelers at the bus station. A large consensus is also found in that the buses and bus stops are unclean. One of the most important parameters that was to be studied through this survey was about the care for disabled and senior people, 55 people believe that there is a strong lack on this.

If any other? Problems mentioned by respondents:



In an open-ended question about different problems with respect to Public Transport buses, respondents pointed out about tiny display board for destination/route, lack of services, irregular timing, access and availability, parking charges etc.

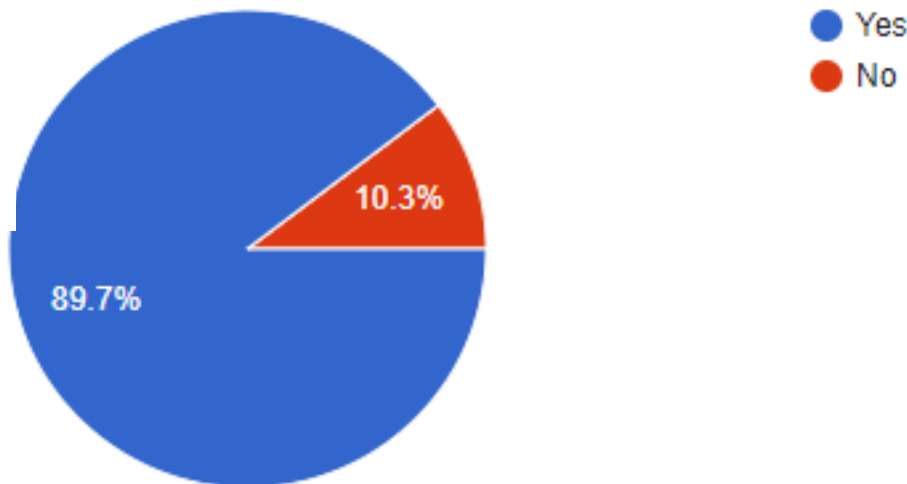
**Frequency of using GSRTC buses:**



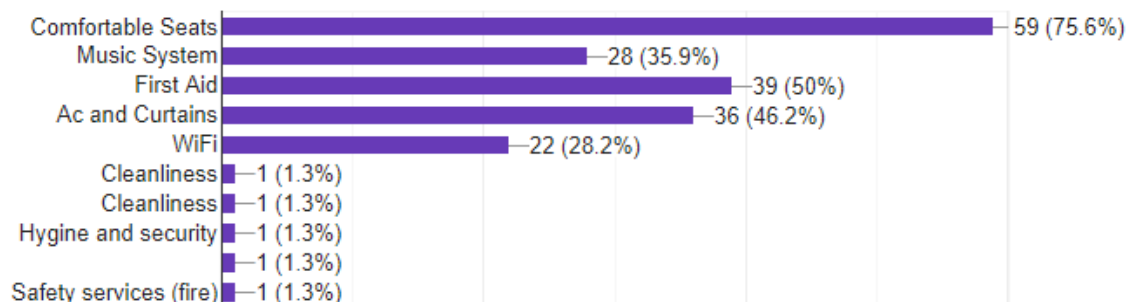
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the same is not so pressing. If there are a lot of people using the State Transport service then due to the sheer demand for better quality services the supply would have been taken care of.

**People would like to have Internal Bus Services**

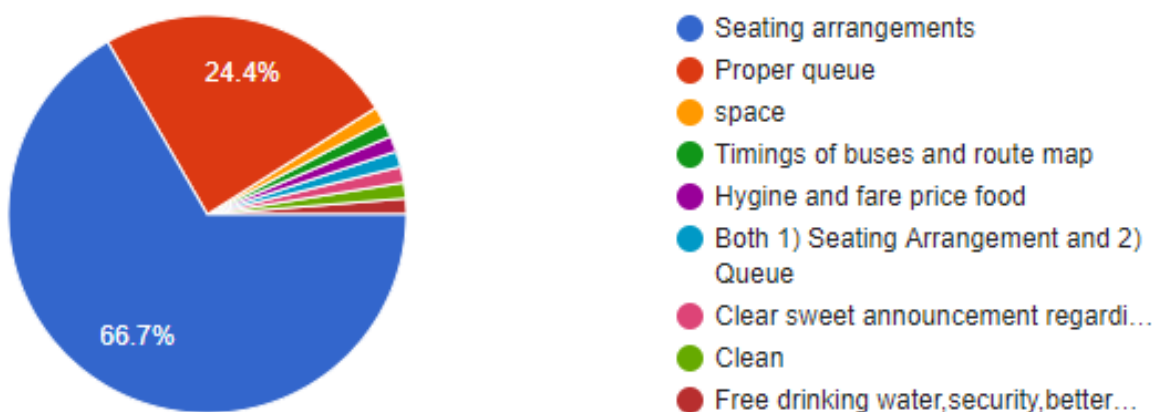


**Service will like to add in the bus**



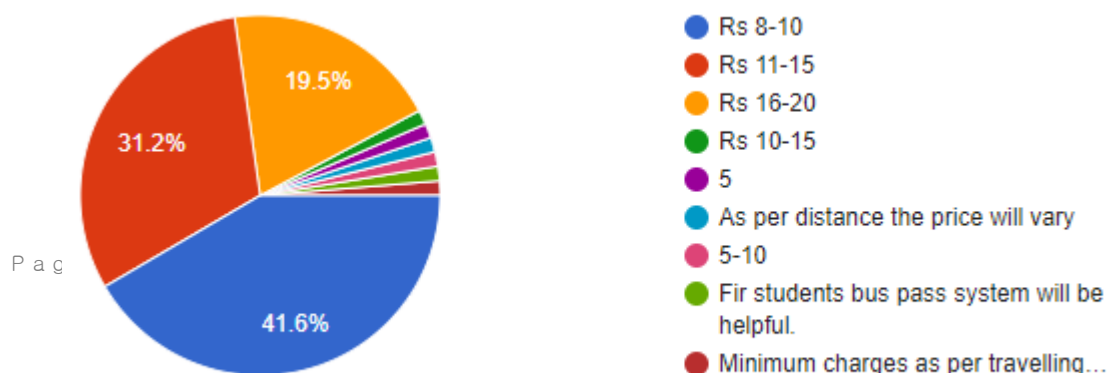
Respondents have indicated highest preference for comfortable seats, music system, first aid, air conditioners and wi-fi services in the buses as desirable in the buses that they travel. Even disable friendly buses have not found much attention in the survey nor has fire safety. It seems travelers still rate comfort more than empathy and safety in cities which is not getting as much attention.

**Infrastructures have to add in Bus Stands**



Bus stops/stands are an integral part of any bus transport service. But the single most important facility that respondents have asked for is seating arrangement followed by proper queuing at the bus stand. These are basic facilities and sometimes these are also lacking putting women, elderly and differently abled travelers into difficulty. Indian bus stands are typically sight of pushing and shoving for getting on to the buses faster. As per the survey, respondents have strongly recommended specially designed buses for the elderly and special queues for the differently abled and senior citizens.

Reasonable cost for traveling in GSRTC in Gandhinagar:



**Few incidents and suggestions highlighted by people who are frequent travelers:**

- If public transport is maintained well and available at all times people would choose to travel in public transport.
- Availability of frequent public transportation reduced the dependency on the friends and family.
- One such incident happened at my place where a 17 years old boy died due to road rage. Parents give their vehicles to the children quite young which has increased road accidents in the country.
- Most of the time seat availability is lacking.
- It will help in saving money, will cause less damage to environment and one will not have to depend on someone for traveling.
- Every citizen should take more advantage of government enterprise so that many interrelated problems can be taken care of.

**Suggestions received based on technology in public transport to make it safe and comfortable travel:**

- GPS, Good Quality bus, proper driving methods,
- Comfortable seats with belts & Ramps for climbing the bus
- Vehicle tracking system. - flying car
- Changes in bus on the route which has more crowd after quarterly assessments
- E-ticketing

- Time tables in Hindi and English, mobile app regarding services, fixed auto fares and meters, student conversations
- GPS in bus. There must be mobile application which shows where the bus is located. It saves time and rush in bus station.
- Fire safety, emergency exit, safety sensors and emergency alerts provide in it.
- Non-polluting vehicle
- Cameras in bus
- Provide number system for buses and display the numbers of buses passes by that route in the bus stops. Then people can easily identify the required bus.
- Alarming system with fine those who r not cooperating with situations.
- Walkie-talkie & e-alerts
- Bus should have standard security features; drivers should be more experience.
- As sometimes one runs out of cash, there should be a facility to pay bus fare online or use debit card and there should be a proper system for the advanced booking.
- Accelerator technology-based chair for sittings ---for safe traveling required ABS system in Vehicles
- Electric bus traveling is good

## **Conclusion and recommendations**

Respondents agree that if better access and facilities are provided, they would prefer using bus transport. Most of the people are recommending for comfortable bus services to be provided for both students and senior citizens. For people today, facilities like GPS, Bus tracking system, Wi-Fi, Seats should be provided unlike the traditional transport options available. Therefore, the public transport needs to improvise services so that more and more people tend to use it.

Transport is a very pertinent issue also addressed in the UN-Sustainable Development Goals since it has far reaching impact on climate change and lives of people. Suggestions in the paper are from a policy perspective and we majorly emphasize on creating infrastructure more citizen friendly.

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