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Study of Urban Travel Demand Characteristics of Twin City

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Abstract: ***BRT applications are designed to be appropriate to the market they serve and their physical surroundings and can be incrementally implemented in a variety of environments. In brief, BRT is a permanently integrated system of facilities, services, and amenities that collectively improve the speed, reliability and identity of bus transit. In many respects, BRT is rubber-tired light rail transit (LRT), but with greater operating flexibility and potentially lower capital and operating costs.***
Keywords: BRT, Population, Traffic analysis.

I. INTRODUCTION

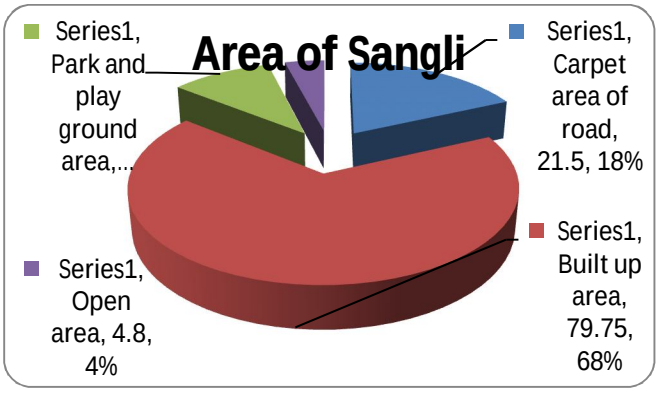
A traffic situation and requirement of transport planning and development of infrastructure, economic growth and spatial developments are quite often governed by the quality and quantity of transport infrastructure provided. Before undertaking such projects, it will be necessary to carry out a detailed analysis of the traffic and transportation situation and prepare long term strategies and plans to establish the requirement and viability of such projects. It will be appropriate to prepare a comprehensive mobility plan that reflects the land use changes as well as the changes in the economy and industrialization. This project is to suggest a suitable Bus rapid system for a twin city by the analysis of travel demand and its travelling pattern.

II. MATERIALS AND METHODS

A. Secondary Data Collection

This includes
The total land use survey an population survey
Present an overview of socio- economic and physical conditions of the city
Present and assessment of the existing transport system in city.
Analysis of corridor as potential BRTS corridors
Implementation of identification of corridors in phase one

1) Area Survey: Total area -118.18 sq. km. Carpet area of road - 21.50 sq. km.
Built up area -79.75 sq. km.
Park andplay ground area -12.13 sq. km
Open area - 4.80sq.km.



B. Population Growth Survey

1. 1876 - 4,500 souls

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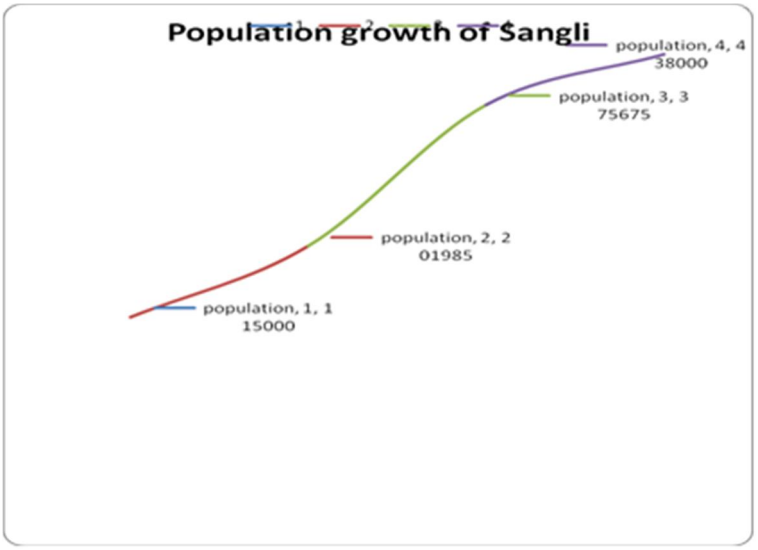
2. 1971 - 1,15,000 souls
3. 1981 - 2,01,985 souls
4. 1991 - 3,75,675 souls
5. 2001 - 4,38,000 souls
6. 2011 - 5,56,743 souls



Population growth of S-M-K

C. Overview of Population

TRU	No.of household	Total Population	Total Male	Total female
Sangli-Miraj-Kupwad(M.Cop)	110562	656743	359153	297590

Overview of population

D. Primary Data Collection

Household interview survey was carried out with an objective to study the socioeconomic and household characteristics of the people (workers and students) being interviewed and the travel behavior in commuting their trips(work and education).The choice set experiments helps to analyze the willingness to shift towards BRTS for their current mode for same trip.

E. Sample Selection

The targeted individuals for the information collection where the workers or students aged over 14. In 800 household surveys there were 2400 respondents final 100 samples where specifically allocated for students which were collected from different colleges and university. This was done to collect more samples from students from data collection. From data collection earlier was considered too little. The additional 823 observations were conducted for those persons who were travelled daily basis.

F. Zone Distribution

Zoning is defined as the creation by law of the sections or zones such as residential, commercial, industrial, civic, institutional & recreational in which the regulation prevents misuse of land and buildings and limit their height and densities of populations differing in different zones.

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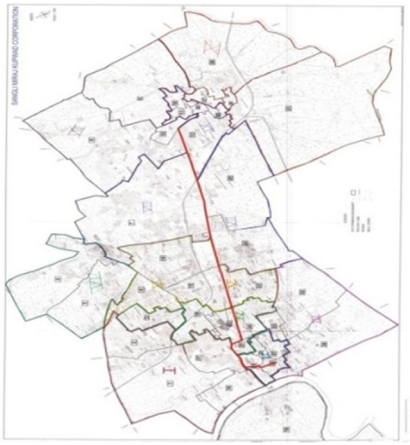
Zone No	Wards	Population	Type of zone
I	1,18,17,2	48105	Residential+Commercial
II	20,35,36,37	46509	Recreational
III	32,33,38	51781	Residential
IV	21,22,16,34	46440	Silent+Residential
V	4,14,15,23	50477	Institutional
VI	3,5,6	46932	Residential
VII	7,24,25	55706	Residential
VIII	8,9,12	47205	Industrial
IX	10,11,13,26,30	50022	Commercial
X	27,28,29,31	46000	Residential
XI	19	16953	Residential

G. Selection of Study Area

The survey area where selected with an objective to collect samples from different socioeconomic background and the areas which are specially distributed evenly across BRTS route. The area located for the data collection fall within half km from the route.



Selection of Study Area

III. RESULT ANALYSIS

A. Analysis of Zones

For better understanding of the travel pattern a total of 11 zones called traffic analysis zones have been identified. In general the zoning has been done based on connectivity and importance of town/region with respect to Sangli city.

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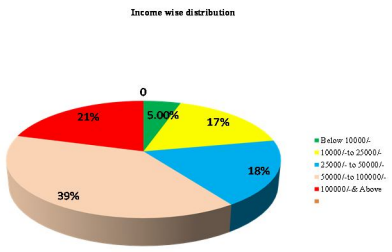
Zone No	Wards	Population	Assumption 1% Population
I	1,18,17,2	48105	76
II	20,35,36,37	46509	73
III	32,33,38	51781	84
IV	21,22,16,34	46440	73
V	4,14,15,23	50477	80
VI	3,5,6	46932	74
VII	7,24,25	55706	92
VIII	8,9,12	47205	75
IX	10,11,13,26 ,30	50022	80
X	27,28,29,31	46000	72
XI	19	16953	30

Analysis of zones

B. Income Wise Distribution of Population

Sr no.	Income	Total	Out off	%
1	Below 10,000	800	40	5%
2	10-25000	800	136	17%
3	25-50000	800	144	18%
4	50-100000	800	312	39%
5	Above 1 Lakh	800	168	21%

Incomewise distribution of population



Incomewise distribution of population

C. Purpose Wise Distribution of Population

Sr.no.	Purpose	Total	Out off	%
1	Education	4000	1960	49%
2	Work	4000	720	20%
3	Business	4000	740	17%
4	Market	4000	640	14%

Purpose wise distribution of population

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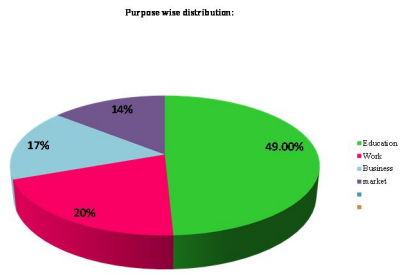
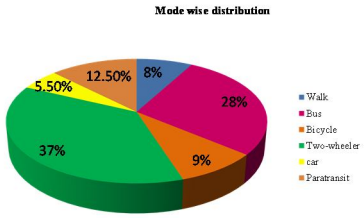


Purpose wise distribution of population

D. Mode Wise Distribution of People

Sr. no	Mode	Total	Out off	%
1	Car	4000	220	5.5%
2	Two-wheeler	4000	1480	37%
3	Bicycle	4000	360	9%
4	Bus	4000	1120	28%
5	Paratransit	4000	500	12.5%
6	Walk	4000	320	8%

modewise distribution of people



Mode Wise Distribution

E. Traffic Analysis

Travel demand analysis by Origin-Destination (O-D) s urvey conducted at existing locations in entire city.Origin-Destination (O-D) survey

Sr. No.	Station	Total	Out of	Percentage
1.	Ram mandir	823	90	10.93%
2.	Market yard	823	47	5.71%
3.	Vishrambag	823	277	33.65%
4.	Vijaynagar	823	120	14.58%
5.	Mission hospital	823	183	22.23%
6.	Other(G.H,WC,BH)	823	106	12.9%

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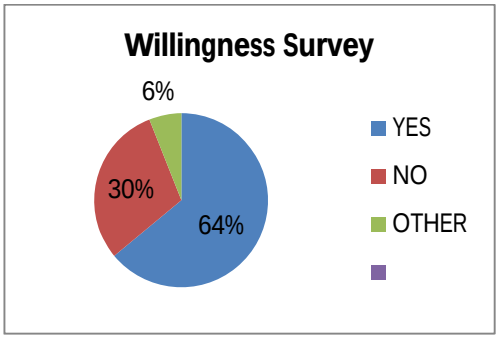
F. Analysis of Willingness Survey

Willingness survey analysis

Sr. No.	Response	Total	Out of	Percentage
1.	Yes	823	526	64%
2.	No	823	247	30%
3.	Other	823	50	6%

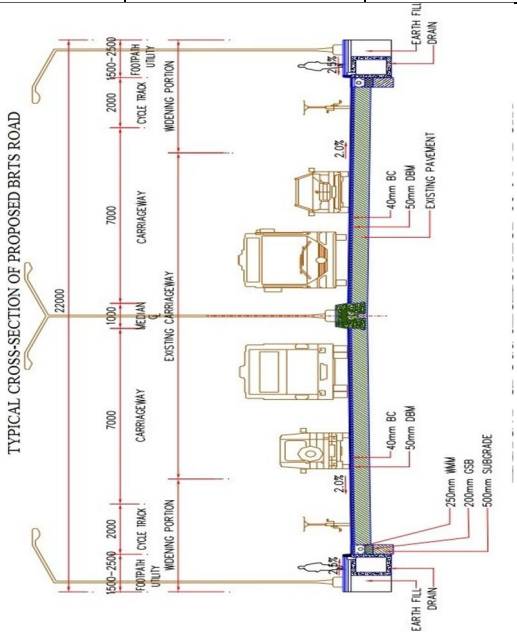


Willingness Survey

G. Proposed BRTS Network

Following table summarizes the BRT System for Sangli –Miraj city in various phases. Here, in this project the feasibility is considered for a phase- I for proposed BRTS lane.

PHASE	FROM	TO	ROUTE LENGTH	NAME OF STATIONS
I	Ram Mandir	Mission Hospital	8 Km	Ram Mandir, Market Yard,Vishrambag,Vijaynagar,Mission Hospital.
II	Sangli Stand	Ram Mandir	3 Km	Sangli Stand, Shivaji Mandai ,City Post ,Congress Bhavan
III	Mission Hospital	Miraj Stand	1.5 Km	Mission, Darga, Stand



Typical C/S Of Proposed BRTS

H. Location of BRTS Stations

Several stops identified for provision of BRTS for Sangli-Miraj depend upon the various above mentioned surveys as O-D survey, willingness survey etc.

Ram Mandir
Market yard
Visharambag
Vijaynagar
Mission Hospital

I. Feasibility for Provision of BRT System for Sangli-Miraj City

Reduction in no.of Bus stations
No need of construction of new lane
Higher travel demand
Reduction in no. of vehicles
Safety

J. Modifications Required According to Proposed BRT System

Land acquisition if required
Widening of road
Provision of separate lane for proposed BRTS
Provisions for parking at high congestion traffic.
Provision of sky walk, rovision for BRT station
Up gradation of existing station

IV. CONCLUSION

The income wise distribution is comprises more percentage of middle income group which agreed to pay for BRT system considering comfort, convenience and safety.

The mode wise distribution by survey analysis which comprises of 37% people use two wheeler as a mode of transportation and 28% people travel by bus and 12.5% people use paratransit as a mode of transit. These all can be change BRTS as their mode of transport from current mode because of followings:

People using bus as well as paratransit mode have advantage over their current transport that safety and time reduction.

People using two wheelers have advantage that safety ,traffic congestion as well as air pollution. Because it is better to provide one bus instead of providing no. of vehicles at same time.

The purpose wise distribution according to survey which comprises of For Education- 50.50% and for work 20% . They can easily From the Willingness survey, it is clear that population of 60% among total population is willing to pay for a Bus Rapid Transit System which is suggested in this project.

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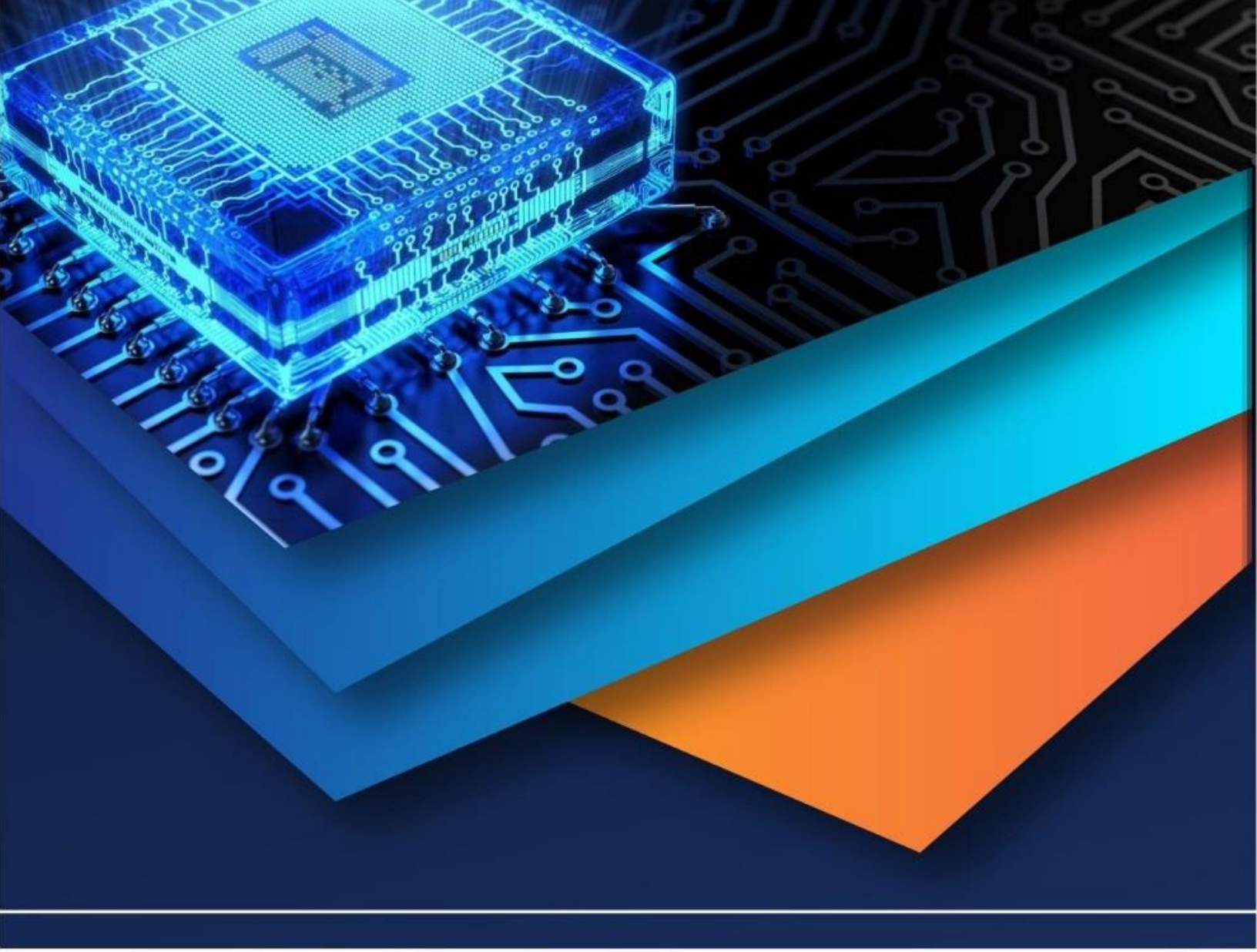

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