

ASSESSMENT OF NON-MOTORIZED TRANSPORTATION ON EDUCATION ZONE IN RAJAPALAYAM TOWN

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Abstract—Today, transportation systems in most cities are no longer sustainable due to carbon emissions into the atmosphere contribute to environmental pollution in terms of quality deficiencies that affects mobility of life in general. The characteristics of sustainable transport are safe, comfortable and efficient in terms of economic and energy consumption and minimize environmental pollution. Non-motorized is vital for sustainable living since it is a green transport of zero emission concept that prioritizes planning, operations and maintenance for walking and cycling over automobiles. This study aims to assess the sustainable transport in terms of non-motor vehicles as per non-motorized transport Guidance document published by Ministry Urban Development Government of India in one of the educational zones falls along PAC Ramasamy Raja Salai in Rajapalayam town. We have categorized mode share using midblock traffic volume count and derived longitudinal section of that feeder road using road inventory investigation. The characteristics non-motorized transport falls in our study area has gained through questionnaire from user's feedback. Cyclist along around 900pcu have been moving in our study area during week days. Our sample survey reflects around 50 percentage of our users had exposed accidents. Based on our preliminary step of assessment in non-motorized transport planning, subsequent process like plan, design and implementation will carry out to attain desired non-motorized goals.

Keywords—non-motorized transport (NMT), sustainable transport, mode share, passenger car unit and questionnaire

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I. INTRODUCTION

The concept of sustainable transportation is vital to ensure environment clean, healthy and high quality. The concept also emphasis on the human life and the environment, to meet current and future needs. Today, the transportation systems in major cities have shown a bad image because of have traffic congestion, accidents, lack of access to public transport and carbon emissions to the atmosphere of space contributes to environmental pollution and imbalance in terms of quality of life in general mobility. Along with the promising concept of sustainable transport services to consumers and at the same time ensure the safety of road users and also help towards the welfare and the environment.

Non-motorized is vital for sustainable living. The characteristics of sustainable transport are safe, comfortable and efficient in terms of economic and energy consumption and minimize environmental pollution.

This study is aimed to assess the sustainable transport in terms of non-motor vehicle for Rajapalayam city that promises a better world for future generations. It provides both physical and social characteristics of roads and its users of our study area through investigation as per traffic and transportation planning principles .

II. CASE STUDIES

A. Scope of our study

Name of the institute	Number of staffs	Number of students	Number of cycles	Number of two wheelers	Number of 3 axels	Number of 4 axels
P.A.C.R Poly	150	1350	249	91	NIL	5
P.A.C.M School	95	2344	1050	90	10	3
P.A.C.A.A School	4	400	200	35	NIL	NIL
RAMCO ITI	58	1726	300	30	NIL	NIL

Table.1 Traffic attraction in our education zone



Fig.1.Study area

As per non-motorized transport guidance document published by Ministry Urban Development Government of India says that process from feasibility assessment to completion, the step-by-step guide is organized into five key steps are

1. Assess
2. Enable
3. Plan + Design
4. Invest
5. Implement

Our scope of work on this work is limited to the assess step to understanding the current NMT status in our study area after completing a set of tasks and sub-tasks for establishing baseline needs. This includes a review of existing physical road infrastructure, student's needs, and stakeholders' interests.

B. Study area by Area consideration

We have chosen area consideration for the scale of non-motorized transport for this study. PACR Educational charity trust area in Rajapalayam town has taken as our study area which comprises of institutions such as P.A.C.R Polytechnic, P.A.C.M School, P.A.C.A.A School and RAMCO ITI. It has been spread over around 29 hectare and P.A.C.R Salai of state highway functioning as collector which runs adjacent to study area in east – west direction. The frequents existing users of our study area under institution wise is given in table.1.

III. NMT USER SURVEY

A. Survey Questioner

A Taylor made questioner prepared in local language Tamil has been utilized to explore existing situation prevailing as part of non-motorized transport in our study area shown in figure 2. The Questions broadly covers Socio-demographic characteristics, travel patterns and travel behavior categories . The sample size should be at least 1 % of the population (universe of users) is taken to consideration. Figure 3 exhibits Institution wise total population against number of cycle user. It is evident an average 30% of total population in each institution have been using non mortised vehicle.

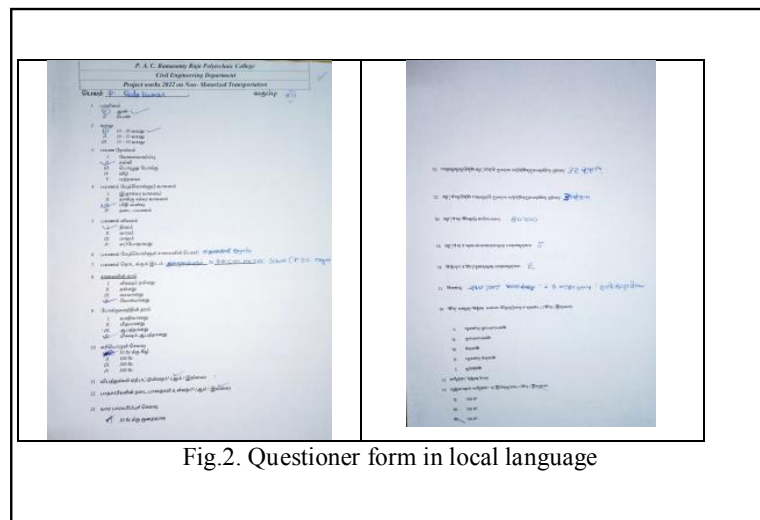


Fig.2. Questioner form in local language

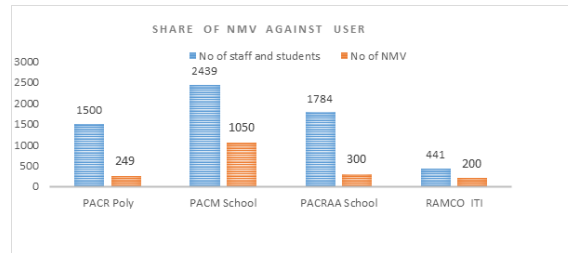


Fig.3. Population vs NMV users

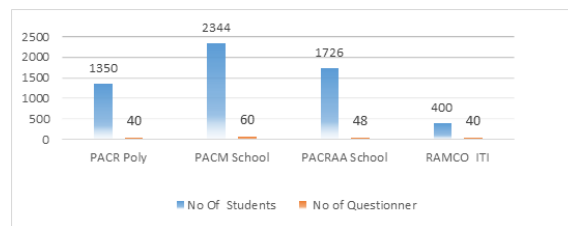


Fig.4. Sample breakup

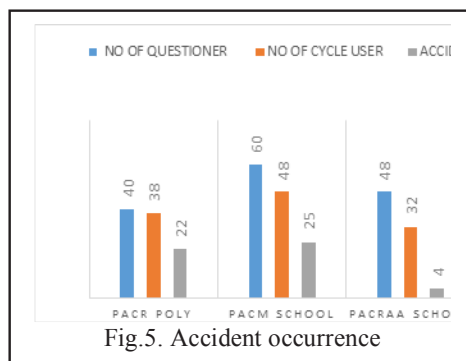
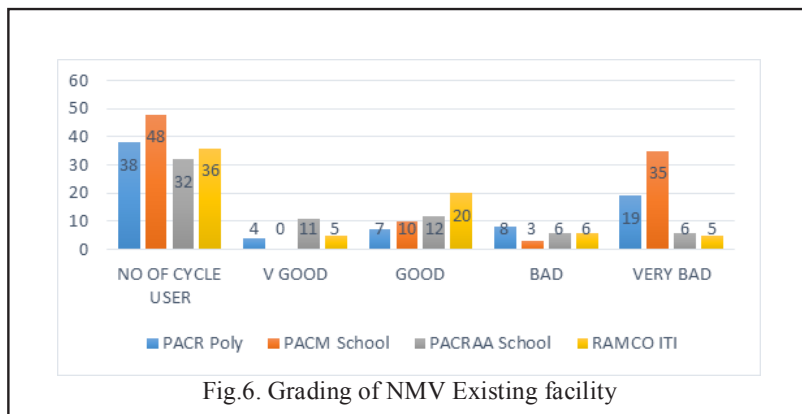


Fig.5. Accident occurrence

B. Features of our survey

- Our sample size is around 3.23% of the population in our study as shown in figure 4
- Out of the four institution, non-motorized transport user of two school has been involved the road accidents. 50% is represents in figure 5.
- More than 50% of the non-motorized transport user in all our institution had stress the condition for riding cycles on the existing road is very bad which is highlighting in figure.6



IV. ROAD INVENTORY SURVEY

Physical aspects of Rajapalayam - Vembakottai Road state highway 186 which acts as collector for our study area is studied by conducting road inventory survey. This comprehensive survey is enhanced using Electronic Distance measuring instrument with conventional format to get the more accurate profile of the roads in the area of study features like road/Pavement widths, road pavement types, drain types, encroachments, presence of vendors/street, furniture, bus stop etc. Both table 2 and figure 7 shows the physical environment prevailing along the roads.

Table. 2 Road inventory out come

Chainage in meter	Width Carriage way(m)	Width of shoulder(m)	Right of way(m)	Major road elements fall	School /college entry
0-200	22.25	4.34	26.56		
200-400	9.88	5.13	15.01	2 Arms	P.A.C. Ramasamy raja polytechnic college
400-600	9.53	2.32	11.85	-	
600-800	10.27	2.62	12.89	4 Arms, bus stop, inter section	P.A.C.R Ammani ammal school
800-1000	11.58	2.02	13.60	-	
1000-1200	7.69	-	11.66	-	
1200-1400	6.74	-	11.73	2 Arms, bus shelter, inter section	
1400-1600	7.54	-	17.56	-	
1600-1800	7.51	-	13.08	3 Arms	
1800-2000	7.46	-	18.84	-	
2000-2200	7.42	-	15.54	3 Arms	

V. TRAFFIC STUDY

Traffic Volume by manual Count is counting of number of vehicles passing through a road over a period of time . We have collected one way traffic count from Highway department. It is further deduced in terms of passenger Car Unit (PCU) and shown in figure 8.

A. Objective

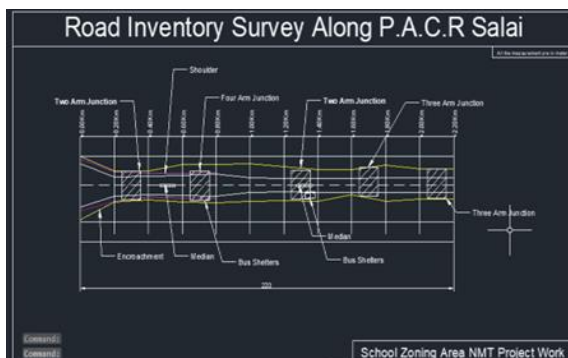


Fig.7. Longitudinal plan of collector

1. To Identify the usage of non-motorized transport mode share against all other modes
2. To identifying the hourly distribution of vehicles and peak hour
3. To provide possible solutions and improvement suggestion for the problem identified at bottleneck to improve mobility of non-motorized transport

B. Traffic volume count findings

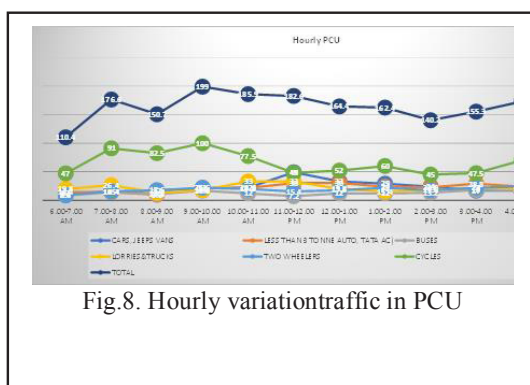
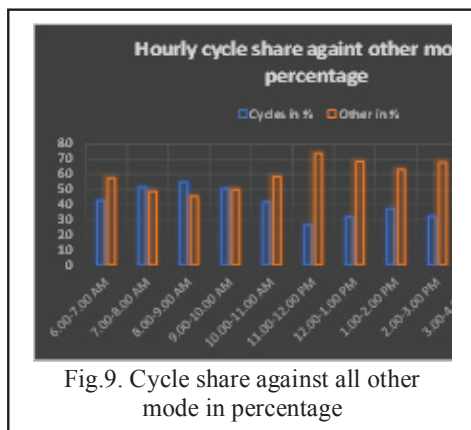


Fig.8. Hourly variation traffic in PCU

1. It is clearly evident that morning and evening peak hours are fall prior to school start and close time.
2. As per their study we have received maximum 200 PCU in morning peak hour.
3. Cycles alone passing near about 50 percentage than other modes of represents in figure 9.

VI. EXISTING SCENARIO CORRIDOR ON NMT

Proper bus stops facilities is not provided for the school students near to school gate so that they are standing in edge of the road which might be cause accident to the student.



There is no proper cycle track provided hence it may be cause accident to the student or people who travel in the roadside. In the road edge the shops are occupying the pavement width so the people walk along the road it might be causes accident to those people.

There is no lane discipline to move the people this traffic takes much more time to clear.

An uncontrolled street crossing in inter section leads traffic accidents.

There are no proper line marks in the road due to accumulation of sand on the road.

Cluster formation during cycling due to lack of education on road safety.

Pothole on the road surface leads to vehicle damage.

VII. RECOMMANDATIONS

- Cycle lane should be providing for students and others.
- The authority should set up bus stops at suitable places for students, thus avoiding accidents.



The shops should move away from the walkway.

- Traffic congestion during peak hour can be avoided by employing traffic police and traffic signals at intersection.

- Zebra crossing should be marked on the road for crossing road users.
- Necessary type of road marking and signs should be laid.
- Installation of street light post without abstracting the traffic.
- Pothole on the road should be repaired immediately.
- The Speed breakers are provided near road crossing.
- Students should be educated the traffic rules to behave properly on the road.

VIII. CONCLUSION

Based our Assessment outcomes further steps involved in the non-motorized transport process such as enable, plan, design, invest and implement will be carried out to attain goal of non-motorized transport planning, since 50% of non-motorized transport user of our study area has been involving accidents.

Around 900 Passenger car unit of cyclist alone has been using P.A.C.R salai in our study area both morning and evening peak hours hence separate cycle lane is recommended as per IRC code provision to overcome all traffic problem associated with non-motorised vehicles.

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