

**A STUDY OF NON-MOTORIZED PUBLIC TRANSPORTATION IN URBAN AND
URBANIZING AREAS: THE CASE OF PEDICAB OPERATIONS IN THE CITY OF
MANILA AND IN THE MUNICIPALITY OF LOS BANOS, LAGUNA**

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Abstract : Recognition of proper policies and planning the role of non-motorized transport (NMT) system is needed given the current emphasis on environmentally conscious planning and the needs of the urban poor. The use of non-motorized vehicles (NMV) is threatened by growing motorization, loss of street space for NMV use and changes in the urban form.

The study characterized and defined the role of *pedicabs*, bicycles with sidecar in both urbanized and urbanizing areas by understanding the supply and regulatory components of this transport mode. The rationale is that pedicab drivers are the ones directly affected with any or lack of NMT policies. Such is a significant input in the transportation planning process if the existence of mixed traffic in urban areas is to be considered.

Key words : Non-motorized vehicles, pedicabs, urbanized, urbanizing

1. INTRODUCTION

Mobility and accessibility in a safe and environmentally friendly mode of transportation is what sustainable transport system, at the very least is aiming. It seems to be a difficult task since the needs and demands of people belonging to different income group level varies.

Public non-motorized transportation (NMT) system in the form of pedicab operations commonly found in the city and regional areas of the Philippines is one type of non-motorized vehicles (NMV). It is gaining acceptability in European cities, however, in many cities in Asia, notably in Southeast Asia, as a result of rapid urbanization and development, the future of NMT is threatened by growing motorization, loss of street space for NMV use and changes in the urban form.

Given the concerns on environment and with the developing trends towards sustainable transportation, a number of studies have been done to characterize pedicabs operation in many developing countries where it is widely observe. Most of these studies describe the commercial use of pedicabs and defined trips characteristics from results of passengers' survey. While their role is recognized in these studies, there were no attempts comparing the operation with focus on the supply and regulation (particularly in reviewing policies) aspect

between urbanized and urbanizing areas, which can be considered in the urban transport planning process.

1.2 OBJECTIVES

The study is brought about by the observed proliferation of pedicabs, as a public transport mode in many urban areas. In particular the study aimed to define the role of pedicab operations in both urban and urbanizing areas. It sought to identify the role of public NMT, specifically that of pedicab operations, in the transportation system. It also hoped to explore the possibility of recommending further framework for sustainable transportation based on empirical evidence.

Specifically, the study hoped to:

- Provide an inventory and determine the operating characteristics of pedicabs in urban and urbanizing areas
- Study and review cases of how informal transport sector is organized and formalized
- Review the existing (if any) non-motorized transport policy at national and local level
- Study behavior of drivers, operators and regulators towards pedicabs
- Determine role of pedicab operation vis-à-vis chosen locality/study areas.

1.3. SIGNIFICANCE OF THE STUDY

Pedicab operation is a unique form of non-motorized vehicles (NMV) in the Philippine transportation system. Its popularity has been steadily increasing in the past few years that it can be observed competing with jeepneys, one of the country's public mode of transportation. The study can be one of the means to fill the existing research gap on NMVs in the Philippines. Factors identified in the study can be used as baseline in reviewing local NMT policies or assessing the need for providing one at national level. In addition, including this transportation mode to the general planning framework (i.e. Physical planning esp. in land use plans and infrastructure plans, sectoral development plans specifically in transportation and in economic and development plans) can be a significant input in using the sustainable development approach, particularly with regards to responding to policy issues at national and local level.

1.4. SCOPE AND LIMITATIONS

The study was limited to defining the role that pedicab operations play in the public transport sector by understanding the supply (as perceived by pedicab operators/drivers who were respondents of the study) and the regulatory (assessing policies and interviews with concerned government units) components of this transport mode. Therefore, any non-motorized transport policy recommendations will be based on the results of the survey in the study areas and the available data.

2. CONCEPTUAL FRAMEWORK AND METHODOLOGY

The framework of the study is designed to meet the objectives. In particular, this research explored on understanding the basis of how transport issues interrelate with urban poverty. It

tried looking at the role of transport in attaining sustainable human settlements especially those living in poverty.

Several issues, which confront the use of NMT (specifically as a public mode), can be attributed to three (3) major factors: environment, social and economic. These factors give rise to urban transport policies - specifically that of the informal transport services. Implementation of policies or lack of it is needed to better understand such existence. Defining NMT role as well as understanding a "pro-poor" policy, focusing on poverty issues that will reduce barriers to the informal supply of both passengers and goods transport is needed. Such policy can fall under the broad framework of sustainable transport. That is, a strategy integrated in the transport sector that is compatible with economic efficiency and with emphasis on ecological sustainability, which in turn creates highly livable and attractive cities. (Figure 1)

The conceptual framework used in relating the existence and proliferation of informal transport sector as in the case of pedicab operations can best be analyzed through understanding its role and characteristics. Defining and characterizing its role in an urban and urbanizing area will provide basis in looking at its growth as an informal transport sector as well provide inputs on how to integrate NMT in the planning process using the sustainable transportation framework.

With the aim of establishing the basis for integrating NMT system at the national planning level, a comparison of the operating characteristic was done using the analytical framework in Figure 2.

The study focused on comparing NMT operations of the two study areas by gathering primary and secondary data and conducting ocular inspection in the study areas. Interview with key local officials as well as association head was done in an effort to validate information gathered and to get the regulator's perspective with regards to this mode of transportation.

2.1. Survey Design

Most of the related NMT studies done focus on the demand side or the needs of the commuters. Bell and Kuranami (1991) study used the "measured capacity" approach, which estimates the number of people requiring service. In order to comparatively characterize pedicab operations, a survey was conducted using drivers and operators as the respondent. The objective of which is to have another approach to use in defining the role of NMT in the urban transportation system. Previous studies such as those of Hoda (1987), Kuranami, Winston and Guitink (1991) and Michael Repogle (1996) have characterized the operations by describing the commercial use of NMT in urbanized areas. In particular, Bell and Kuranami in their 1991 study in the Philippines showed through the survey made to its passenger its travel characteristics and reason why it is the preferred mode. Also, Danang Parikesit (1999) investigated travel characteristics and the difference in the use of NMV among stakeholders in Yogyakarta transport system in Indonesia. These related studies were taken into consideration in the design of the survey methodology used in the research.

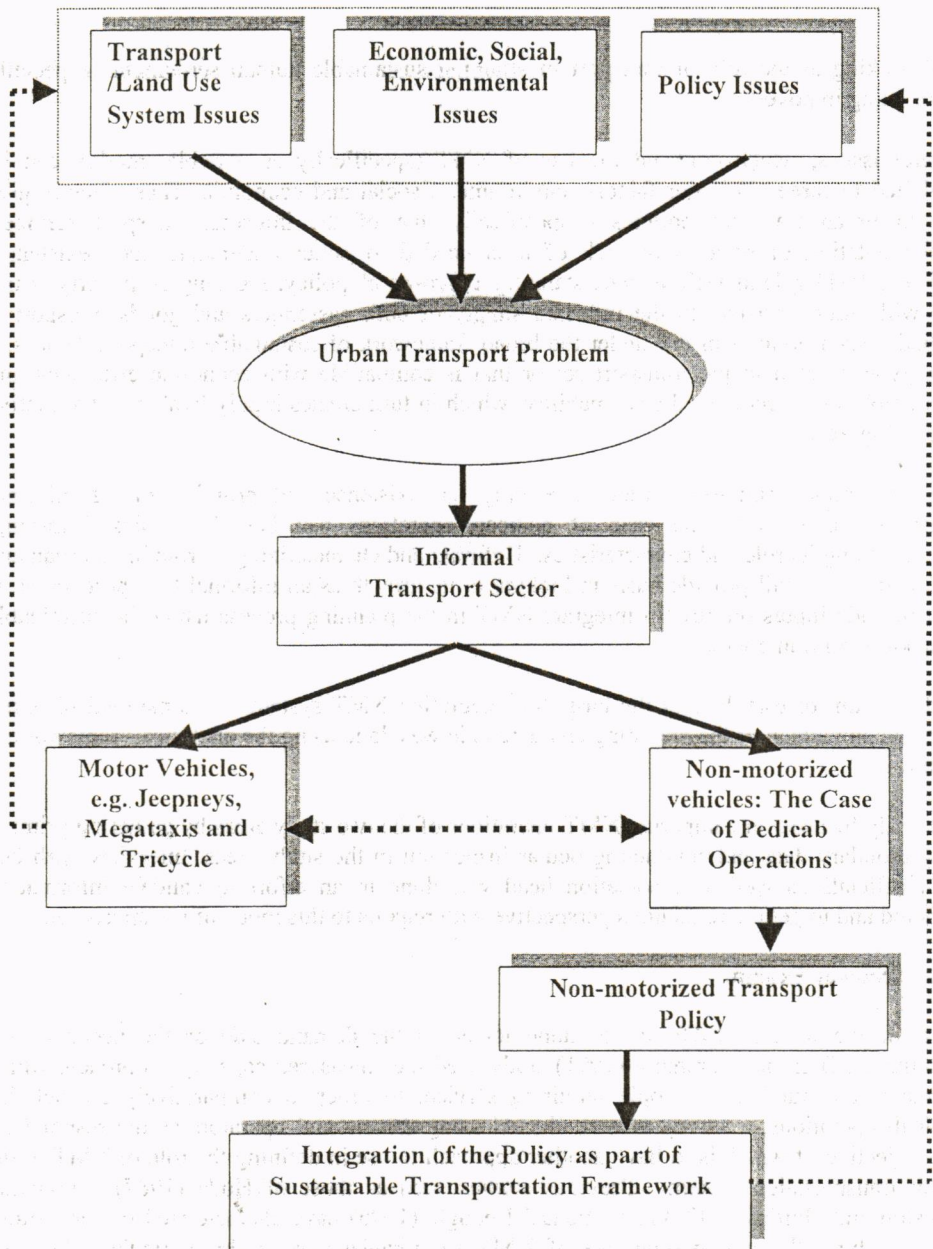


Figure 1. Conceptual Framework of the Study

A descriptive and explanatory nature of study was done to understand the role of NMT in the public transportation system through presenting variables in the study using primary and secondary data gathered in the study areas. Reviewing previous studies were done first on NMVs either abroad or locally where in concepts and policies, to a limited extent, seems to be patterned. This is where existing research gaps and relevant findings were analyzed in relation

to this research study. Second, a reconnaissance survey in the study areas was made. An inventory of existing pedicab operations was likewise done in the chosen study areas. Surveys were done on weekends and on weekdays. As a *sampling frame* for this research, samples were primarily taken from where there is the most number of pedicab drivers and operators.

According to the Manila City Hall officials, there are an estimated number of at least ten thousand pedicab drivers plying in the city of Manila. However, only around a thousand is said to be registered. Based from this survey, which was initially done in the study areas, the most number of pedicab units can be found in Divisoria, Malate, Intramuros. And based from the ocular inventory done in the town of Los Baños, Laguna, the most number of pedicab units can be found in Umali Subdivision, Crossing-Junction and Bambang-Palengke.

Probability sampling was the survey method used. Simple random stratified proportional sampling was employed. Stratified random sampling, in a way that two kinds of survey questionnaires were filled-up. One set for the pedicab drivers and another for pedicab operators were prepared. These aimed to gather relevant information with regards to comparing the operations in the City of Manila (urbanized area) and the town of Los Baños, Laguna (urbanizing area). In getting the relevant data, the original target of 10% of the study area chosen was increased to 38% in order to be more valid and reliable.

2.2 Pre-Testing

The final survey instrument was developed on October 1999. However, before the final questionnaire was done, a pre-testing was held in early November 1999. Pre-testing of the close-ended questionnaire was held to five (5) respondents in each study area in order to test the appropriateness of the questionnaire as well as validate the choice of responses to the questions asked.

2.3. Survey Instrument

The final survey instrument for pedicab drivers include the following categories (1) Socio-economic characteristics of respondents; (2) Operating Characteristics that include (a) Pedicab Driving as an occupation; (b) Characterizing pedicab trips; (c) Problems and suggestions for trip/operation improvements; (3) Health, safety and accident profiles and (4) Over-all perceptions.

The four major categories were designed to obtain the following information:

- (1) Pedicab Driver's/Operators Profile: Household and personal questions like address, province of origin (to check whether respondents are migrant or not), household members, working adults, combined monthly income and expenditures, age, gender, marital status, education level and the main source of income and former occupation (before becoming pedicab driver) were asked in order to understand the viability of pedicab driving as means of livelihood to support a family in an urban and urbanizing areas.
- (2) Pedicab Operating Characteristics: In order to find the similarities and differences of the operating characteristics in an urban and urbanizing areas, questions with regards (a) to pedicab driving as an occupation (this includes number days a respondent drives the pedicab, earnings, cost if owned or rented, system of operations, permits, and association memberships, carrying load, fare rates (b) trip characteristics (including distance traveled,

routes, peak hours, queuing time, other transportation modes plying in the same routes, and trip purposes) and (c) improvement of operation through asking ways to better design and system of operations.

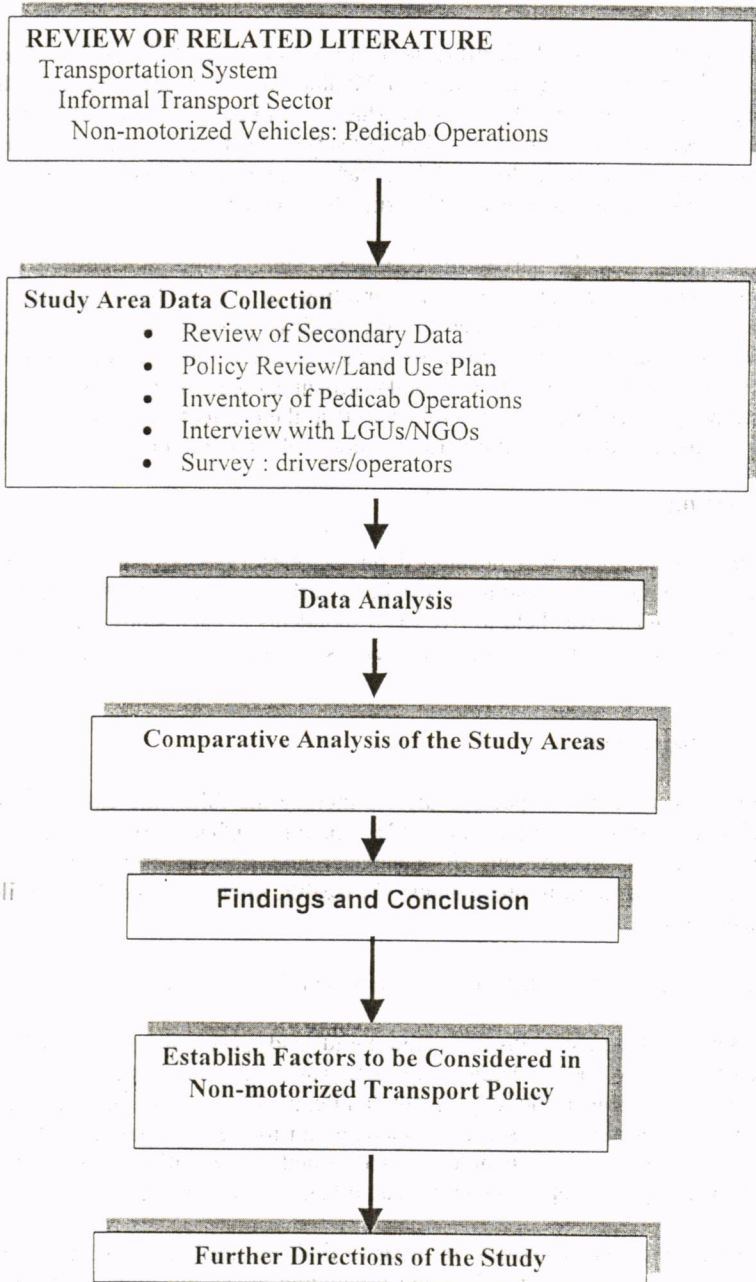


Figure 2. Analytical Framework of the Study

- (3) Health, Safety and Accident Profile: Respondents' perception on how pedicab driving might be contributing to their health condition as well as the number of accidents and estimated total property and damage cost were queried in order to assess the good and bad points of pedicab driving.
- (4) Overall Perception: The last portion asked the respondents perception on whether the driving of pedicabs per se is the cause on the worsening traffic conditions and whether they believe that NMT can actually alleviate the existing traffic condition.

Interview with local government unit's as well secondary data revealed that operators own most of the pedicab units in Manila. A separate close-ended questionnaire was prepared which include that following categories; (1) Socio-economic characteristics; (2) Pedicab System of Operations as (a) Means of Livelihood and (b) Operating System.

Face to face interviews were done to ensure reliable and high response rate. The questionnaires were filled-up by trained surveyors. Questionnaires were also designed in such a way that the surveyors asked question in Filipino vernacular and that ready answers were to be checked by the surveyors. An interview guide for one-on-one interviews with relevant sectors (local government units, operators, pedicab driver's association, police and NGOs) was also prepared to have their perspective regarding the issues faced by pedicab operations.

Finally, comparative, descriptive and assessment of the operating characteristics, as well as policy analysis were done using the sustainable transportation framework.

3. STUDY AREAS

In determining the areas for this study, NSO's regional survey of both areas on the growth rate, economic activities, annual average income and expenditure level as well as the annual per capita poverty threshold and incidence of poor families were taken into consideration. In particular, Manila was chosen as the study site for an urbanized area since it is considered as the oldest and the capital city of the Philippines. It has long been the center of many economic activities. Increasing birth rate and influx of migrants from the provinces bring about the rapid population growth. On the other hand, the university town of Los Baños was chosen as another study area (representing an urbanizing area) since it is one the region's growth pole (as part of the Cavite Laguna Batangas and Rizal or CALABARZON Growth Areas). It is considered an urbanizing area given the increasing presence of several commercial and service facilities. Its proximity to Manila (63 km) where the researcher is based was likewise considered.

4. RESULTS AND DISCUSSION

4.1. Presentation of Data

4.1.1. Inventory of Pedicab Units in the Study Areas

From the reconnaissance survey and the inventory done on pedicab operations in the City of Manila and the Town of Los Baños, Laguna, the following information were obtained:

Table 4.1. Comparative Inventory of Pedicab Units

	City of Manila (6 districts)	Municipality of Los Baños (5 baranggays)
Estimated Nos. of Registered Units ¹	1,000 units	400 units
Estimated Count ²	10,000 units	500 units
Total nos. of Operators/Drivers Registered ³	563 units	None
Actual Count (per survey and where the most number of pedicabs were known)	Malate: 165 (6 terminals) Intramuros: 130 (4 terminals) Divisoria : 220 (4 terminals) Total : 515	Bambang-Palengke: 70 (1 terminal) Crossing-Junction : 80 (1 terminal) Umali Subdivision :100 (2 terminals) Total :250

There is a major difference in the number of estimated count of pedicab units in the City of Manila and the Municipality of Los Baños. Manila has about 10,000 units while Los Baños has around 500 units. However, it is interesting to note that aside from the major difference of Manila having a relatively high population density compared to Los Baños, the former has a registration system while the latter does not have. There are also differences with regards to the routes where they are in operation and where their terminals are located. The former has it mostly in secondary roads leading to commercial and business districts while the latter is confined to secondary roads leading to residential areas.

Areas with the most number of pedicab units (based on the estimate given by officials of the Manila City Hall and its records on the number of operators in the study areas) are:

1. *Divisoria* (District 2 and 3) a retail commercial area with four pedicab terminals around its major malls namely: Tutuban Mall and Divisoria Mall. Roads are relatively narrow and in a part leading to Tutuban mall, a train track is located. Many street hawkers can also be observed occupying pedestrian lanes as well as part of the one-way streets. Nearest residential areas are those leading to the Tondo residential area.
2. *Malate* (District 5 and 6) a commercial and old residential area where Robinsons Mall and most hotels and food establishments as well as schools can be found. There are six terminals identified mostly at the intersections of one-way paved streets.
3. *Intramuros* (District 5) a commercial and business district where most offices and schools in Manila are located. Four terminals were identified at intersections of one-way paved streets.

In Los Baños, Laguna, the areas with the most number of pedicab units (based on ocular inspection of the area since there are no available records from the municipal hall) are:

¹ Estimates according to the Manila City Hall records but inaccessible, December 1999.

² Estimates according to the Manila City Hall officials in 1999 while in Los Baños, it was the estimated count in 1992.

³ Manila City Hall records, December 1999

1. *Umali Subdivision* a predominantly residential area with some business establishments and schools and have three pedicab terminals.
2. *Crossing-Bambang* both a residential and commercial area with two terminals located at crossing and market areas.
3. *Bambang-Palengke* also both a residential and commercial area with one terminal located near the municipal hall.

4.1.2. Source and Manufacturers and Cost of Pedicabs

The size and quality of pedicab sidecars depend on the type of bicycle used. The most common design found in the Philippines is that passengers sit side by side. Most of these units have only one gear and with single often poor quality of brake on the front wheel of the vehicle. Pedicabs are basically bicycles (similar to mountain bikes) with a sidecar (sometimes covered, with or without seats). Initially, most of the bicycles used for pedicabs came from Taiwan. According to interview with operators in Manila, there is a considerably number of local manufacturers of pedicabs, with some making it as a backyard industry. Most of them are found in Tondo area.

The following table shows the prices of different vehicles in Metro Manila. This is based from the data, which Kuranami and Bell got from estimates of DOTC officials but adjusted to the present dollar exchange rates.

Table 4.2 : Prices of Different Vehicles in Metro Manila, 1999 (Pesos)*

Vehicle Type	New Vehicles		Second-hand Vehicles	
	Price Range	Average Range	Price Range	Ave.Range
Pedicab**	7200	12800	4480-3200	2080
Tricycle	48000	88000	No data	No data
Jeepney	700000	3200000	No data	No data

*Estimated by DOTC officials: US\$1=40 pesos

**Estimated by operators and Manila LGU

This table showed that the cost of pedicab is significantly lowered than other MV.

4.1.3. ORGANIZATION AND FORMALIZATION OF PEDICAB INDUSTRY

Latest International Labor Organization (ILO) news noted that most informal sector activity is concentrated in urban areas. They are said to be part of a vast range of small-scale income generating activities which takes place outside the official regulatory framework and typically utilize low level of capital, technology and skills, offering low level of pay and little job security. It also noted that the "informal sector does not exist in isolation from the formal sector".

The popularity of pedicab use, according to the 1991 study of Bell and Kuranami started in 1991, with the sudden increase in gasoline prices after the Gulf war. Government officials have indicated that the increase in gasoline prices was followed by an increase in the number of pedicabs operating in Metro Manila. Those who previously operate tricycles switch back to pedicabs.

Interview with the pedicab driver/operators association members and head indicated that they initially grouped themselves in order to establish their routes and boundary of operation. In Manila, being a member is also a prerequisite for registration. The group also regulates the service, allotting riders to drivers on a first in, first out route basis and acting as an intermediary in disputes. Specifically, in Manila, the association is also the one that regulates the minimum fare per ride.

4.1.4. Local Policies/Ordinances Governing Pedicab Operation and Organizational and Implementing Structures⁹

Only at the local level can one find ordinances governing pedicab operations in the study areas chosen.

In Manila, there are six (6) ordinances enacted since 1991 covering the regulating and revenue earning mechanisms while in Los Baños, there is only one (1) comprehensive ordinance covering the same which was enacted in 1993. However, the major difference in the ordinances of both areas is that in Manila, fare is based on LTFRB rates on tricycle (MV) but in Los Baños, the fare is based on per km traveled and there are no provisions for fare adjustments. Another comment is that in Manila only the passengers and not drivers have the insurance coverage. In Los Baños, the comments were that there are many fees imposed to a pedicab driver/owner and there is a relatively young (15 years old) age requirement in order to driver a pedicab unit. For both areas, the general comment for its ordinances is that it did not consider provisions for NMT facilities like terminals. Likewise, pedicab operation is not governed by any national policy.

4.1.5. Drivers/Operators Socio Economic Profile and Perceptions

A typical pedicab driver's household is small with 3 to 5 members. Pedicab driving is mostly a major source of income that ranges from P1000-P3000 per month. However, in Manila, there are more drivers borrowing pedicab units from operators. This is because the cost of living is high in Manila and for operators this is also an additional source of income. However, the income derived from pedicab operations is lower compare to other public transportation.

Figure 3 shows pedicab drivers/operators descriptive and comparative responses on their system of operations. In summary, this figure showed that drivers in Manila are more familiar with ordinances and that most of them would follow regulations, become members of the association and get permits even if they are not owners of the pedicab units. It is also important to note that most of the drivers do not drive motorized vehicle. As such, they may not really be familiar with policies governing the motorized mode (for example traffic regulations, etc.)

The survey showed that there are more *pedicabs* in Manila than in Los Baños and both are limited to plying in secondary roads. The operating characteristics are different in terms of distance traveled, trip purposes, routes, peak hours as well as organizational system like membership level in associations and fare-decision makers.

⁹ Based from the secondary data and interview with local government officials of the study areas, December 1999 to January 2000

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Table 4.3. Respondents' Personal Profile

PROFILE	CITY OF MANILA				TOWN OF LOS BANOS	
	Drivers		Operators		Drivers cum Operators	
	Count	%	Count	%	Count	%
<i>Gender</i>						
Male	197	100	51	61.45	95	100
Female	0	0	32	38.55	0	0
<i>Status</i>						
Single	67	34	20	24.09	58	61.05
Married	124	62.94	62	74.7	34	35.79
<i>Age</i>						
15 -19	23	11.67	1	1.2	25	26.31
20 - 24	47	23.85	9	10.84	21	22.1
38 - 41	12	6.09	10	12.05	7	7.36
51 - 53	2	1.01	10	12.05	4	4.2
<i>Education</i>						
High School	62	31.47	50	60.24	73	76.84
College	72	36.54	9	10.84	3	3.16
<i>Daily Income</i>						
P101-P200	67	34	0	0	62	65.26
P201-P300	104	52.79	28	33.73	5	5.26
> P300	21	10.65	31	37.35	7	7.37
<i>As a Source of Income</i>						
Yes	178	90.35	10	12.05	83	87.37
No	19	9.64	71	85.54	12	12.63

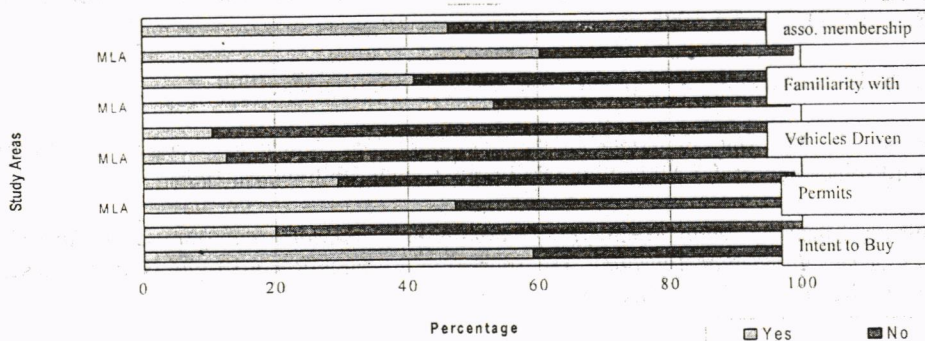


Figure 3. Descriptive and Comparative Responses of Drivers/Operators on the System of Pedicab Operations

The study found that *pedicab* driving continues to provide a source of employment and livelihood particularly for the urban poor families. They serve as paratransit for short-distance travel. In Manila, they serve as gap-fillers and are usually found in areas where there are more economic activities. In Los Baños, pedicabs serve as feeder mode from/to residential areas.

The overall-results suggest that there is a need to understand the importance of non-motorized movement, achieving strategies on self-sustaining economic growth and the integration of sustainable transportation towards urban developmental efforts.

5. CONCLUSION AND RECOMMENDATIONS

Mobility and accessibility in a safe and environmentally friendly mode of transportation are what sustainable transport system, at the very least is aiming. It seems to be a difficult task since the needs and demands of people belonging to different income group level varies. While local policies have been enacted (specifically in the areas studies), the process in drafting the policies lacked the involvement of the community in bringing about consensus on contentious issues. To operate in sub-optimal conditions, infrastructure and policy requirements of all modes of transportation should be given importance. Based from this study, it is recommended that government officials should consider a plan that would improve the overall transport service through integrating all the modes of transportation. Their inclusion at the national policy-planning framework, would enable better and simultaneous planning of both NMV and MV (motor vehicles) modes.

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