

# **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 BAÑOS, LAGUNA**

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**Abstract** : Recognition 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 side car 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.

## **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) 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). However, the future of NMT is threatened by growing motorization, loss of street space for NMV use and changes in the urban form.

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 observed. 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 was no attempt in comparing the operation with focus on the supply and regulation 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 as well as 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 operations 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. Related literature noted that the substitution of motorized transport for non-motorized transport for short trips will tend to increase capital shortages and the surplus of labor especially in the case of developing nations with high population. Bicycle, rickshaw, pedicab or becak is an economical vehicle and fills a valuable role in the non-motorized hierarchy because of the following characteristics: (1) its low capital cost and easy licensing arrangement (if it is not banned) are sources of employment for the poor; (2) its size allows this three-wheeler to negotiate narrow streets and alleys and other areas of the city where few vehicles would be able to go; and (3) its versatility allows to carry produce to market, children to school and commuters. 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 (ie. Physical planning esp. in land use plans and infrastructure plans, sectoral development plans specifically in transportation and in economic and development plans) can be an input in using the sustainable development approach.

### **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**

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 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 2)

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 and validate the need for NMT policy using the sustainable transport framework.

With the aim of establishing the basis for creating NMT policy at national level, a comparison of the operating characteristic was done using the analytical framework in Figure 3.

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 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.

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. (Figure 3)

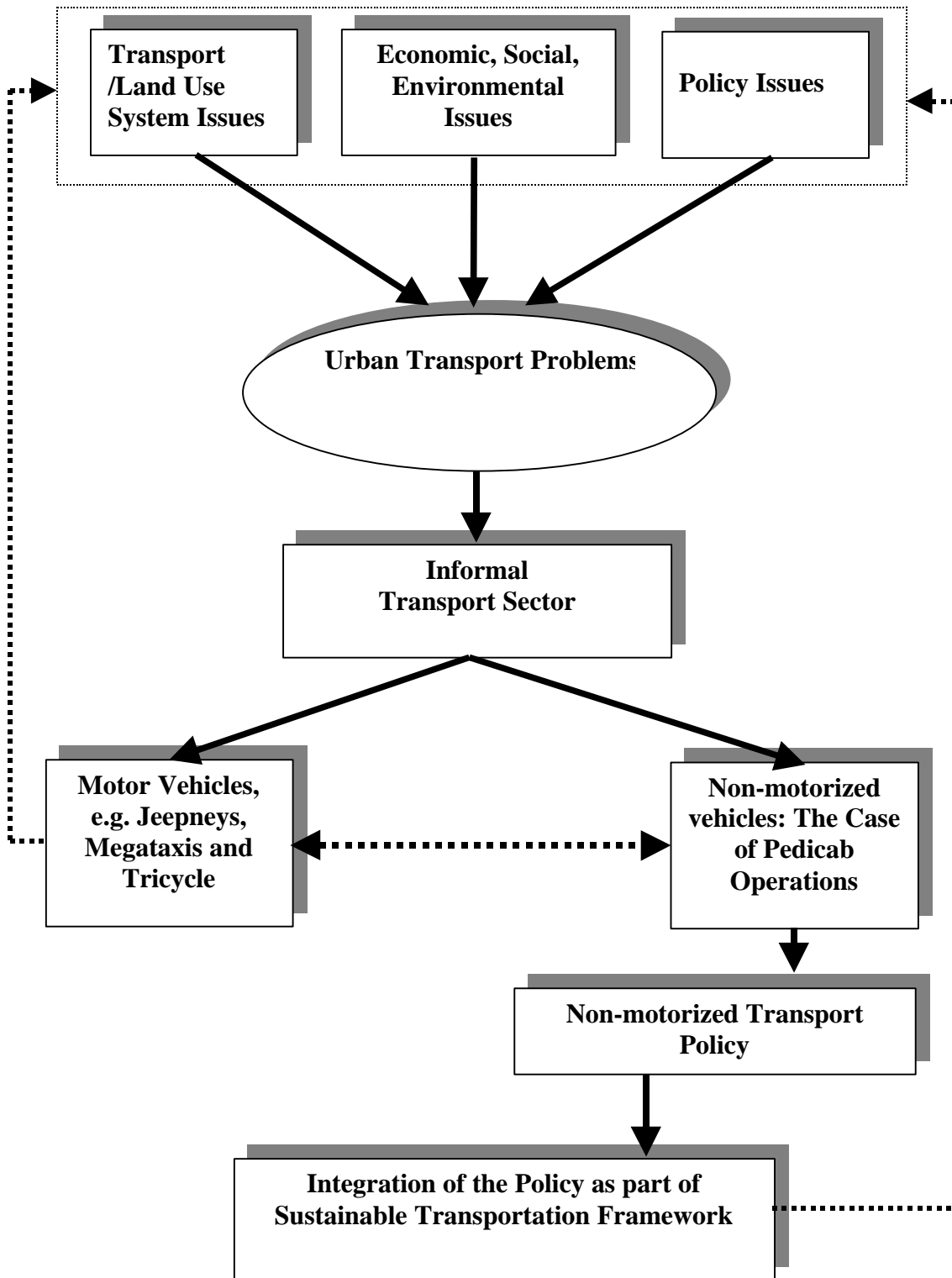


Fig.2

Reviewing previous studies were done first on NMVs either abroad or locally where in concepts and policies, to a limited extent, seem to be patterned. This is where existing research gaps and relevant findings was 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 is 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 areas chosen was increased to 38% in order to be more valid and reliable.

## **2.2 Pre-Testing**

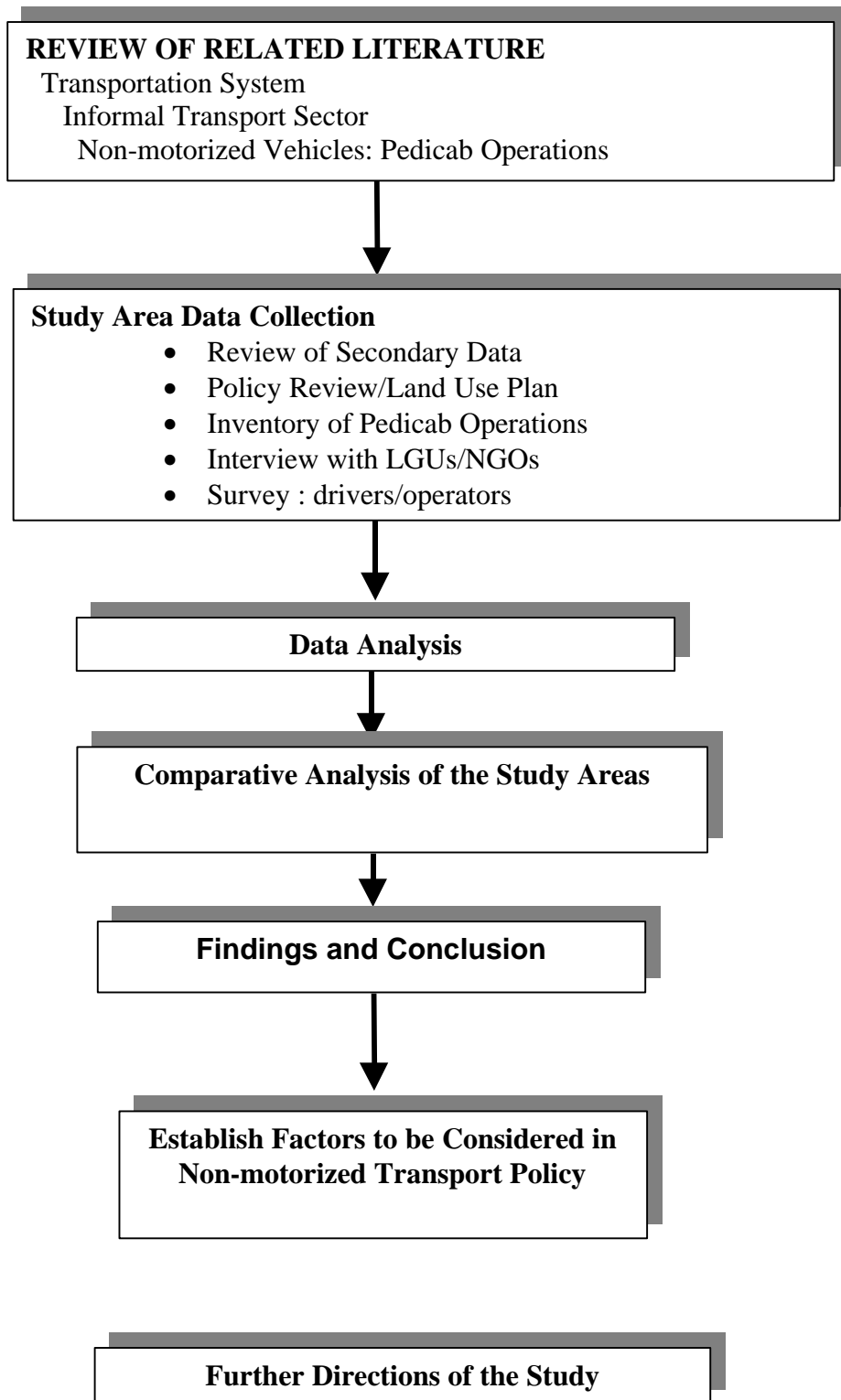
The final survey instrument was developed on October 1999. However, before the final questionnaire was done, a pre-testing was held in early November 1999. Pre-testing of the close-ended questionnaire was held to five (5) respondents in each study area in order to test the appropriateness of the questionnaire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

## **2.3. Survey Instrument**

The final survey instrument for pedicab drivers (as shown in Appendix 1 ) 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



**Fig.3 ANALYTICAL FRAMEWORK**

(before turning to 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.
- (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 units as well secondary data revealed that most of the pedicab units in Manila are owned by operators. A separate close-ended questionnaire was prepared which include the 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 questions 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) were 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 urbanizing areas) since it is one the region's growth pole ( as part of the Cavite Laguna Batangas and Rixal 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**

	<b>City of Manila (6 districts)</b>	<b>Municipality of Los Baños (5 baranggays)</b>
Estimated Nos. of Registered Units <sup>1</sup>	1, 000 units	400units
Estimated Count <sup>2</sup>	10,000 units	500 units
Total nos. of Operators/Drivers Registered <sup>3</sup>	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.

<sup>1</sup> Estimates according to the Manila City Hall records but inaccessible, December 1999

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

<sup>3</sup> Manila City Hall records, December 1999



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. *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.

### 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.

#### **4.1.2 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 acting as an intermediary in disputes. Specifically, in Manila, the association is also the one that regulates the minimum fare per ride.

#### **4.1.3. Local Policies/Ordinances Governing Pedicab Operation and Organizational and Implementing Structures<sup>9</sup>**

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.

#### **4.1.4 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 range 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.

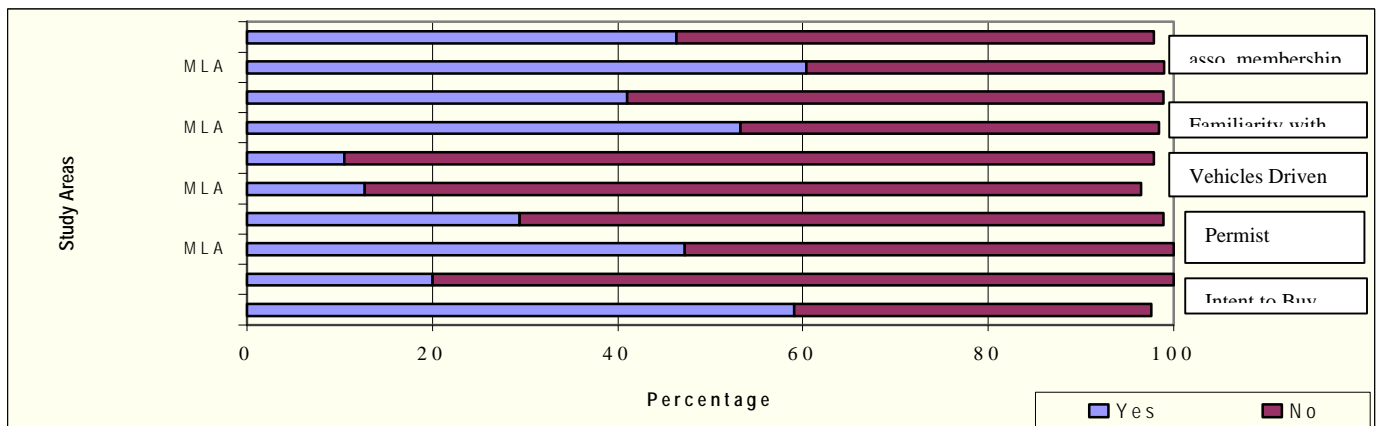
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<sup>9</sup> Based from the secondary data and interview with local government officials of the study areas, December 1999 to January 2000

**TABLE 4.3. Respondent's 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>						
HighSchool	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

The following figure shows pedicab drivers/operators descriptive and comparative responses on their system of operations:



As shown in **Figure 3** most of the drivers in Manila have intention to buy their own pedicab units while in Los Baños, most of them (80%) responded negative intention of buying another unit.

The above figure also showed that most of the drivers in both areas have no permits and have an average of at least 1 to 5 years experience in driving pedicabs. Most of the drivers do not know how to drive other vehicles.

However, for the minority of drivers in Manila, who owned pedicab units, some of them borrowed money of about ₱2,000 to ₱4000 from local cooperatives/banks or from individuals who lend money with "five-six"<sup>12</sup> interests.

Most of the drivers in Manila were also familiar with ordinances/policies, unlike in Los Baños, Laguna where most of the drivers are not familiar with ordinances and are not even members of pedicab associations. This can be attributed to the fact, that the city government of Manila implements the policies enacted and conducts monthly seminar-workshops in the City Hall for drivers/operators.

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 following summarized the major similarities and differences of the operating characteristics of this mode of transportation between urban (Manila) and urbanizing (Los Baños) areas based from the survey conducted on pedicab drivers/operators:

**Table 5.4. Comparison of the Survey**

<b>SIMILARITIES</b>	<b>DIFFERENCES</b>
<i>On the pedicab drivers/Respondents' Socio-economic Profile</i>	
They have similar 3 to 5 household members, with at least one working adult and have a monthly family income and expenditure cost of P1000.-P3000.	Most of respondents in Manila are migrants from the province, married and supporting a family with age ranging from 20 to 24. Most of them reached college level of education and listed pedicab driving as their major source of income.  On the other hand, most of the respondents from Los Baños are native of the place, single, with age ranging from 15 to 19 and reached high school level with some even listing pedicab driving as a means to support their schooling.
<i>On Pedicab Driving as An Occupation</i>	
The survey showed that most of the drivers worked 5 to 7 days a week with more earnings during the rainy season.	Since most of the drivers in Los Baños are also the owners of their pedicab units, they can both work during the day

<p>This can be attributed to the fact that during rainy season, commuters will most likely ride to avoid getting wet.</p> <p>Most drivers worked without permit and have not yet driven other kind of vehicles. Most of them have been driving for the past 5 years.</p> <p><b>SIMILARITIES</b></p>	<p>and at night. Most of them also have no intention of buying another unit. The income is slightly lower at P101-176 per day. They are not familiar with the local ordinances and most are not even members of the association.</p> <p><b>DIFFERENCES</b></p> <p>The same is not true for pedicab drivers in Manila. Most of them pay boundary fee to operators and only work during daytime. They are usually members of associations in order to get protection and they are familiar with local policies.</p> <p>They have intention to buy their own units and have average income of P176 to P200 per day.</p>
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<p><i>Characterizing Pedicab Trips</i></p>	
<p>Most respondents on both areas showed that they average 9 to 10 trips per day on a weekday and they both do not change their usual routes even on a peak hour.</p> <p>They contract fare on a per passenger basis and they both have low repair and maintenance cost of around P100 per month.</p> <p>Traffic is the mostly encountered problem but they do not perceived themselves as the cause of it.</p>	<p>The distance traveled by drivers in Manila is relatively farther (1km-2km) than in Los Baños (less than 1km).</p> <p>Drivers in Manila charge higher passenger fee at mostly P5 -P10 and this is as approved by the pedicab association. They usually carry 3 to 4 passengers. Other routes that ply in the area are jeepneys although it can not assure that it can bring the passenger at the door-step of its destination. They average more than 30 minutes for waiting time.</p> <p>Drivers in Los Baños charge less than P5.00 and this is decided upon through negotiations with the driver and passengers or subdivision association.</p> <p>Tricycle is the other mode that can mostly be seen in areas where pedicabs ply. They average less than 15 minutes for waiting time.</p> <p>The most number of respondents in Manila chose 4pm to 7pm as their peak hours. It can be related to the trip purpose in these areas, which is mostly</p>

<p><b>SIMILARITIES</b></p>	<p>for work. On the other hand drivers in Los Baños, chose 7 am to 8am as their peak hours.</p> <p><b>DIFFERENCES</b> This can be related to trip purpose where in a mixture of shopping, work, home and school is when most of these travels are done. Such activities are usually done in the mornings.</p>
<p><i>Improvements in Pedicab Operation</i></p>	
<p>Addition of gears is what most drivers would in the design of their units and that the estimated cost is less than a Thousand.</p> <p>Most respondents agreed that there is a need for government assistance for this mode of transportation.</p>	<p>In Manila, the bearers for the cost of repair and maintenance are the operators. In Los Baños, otherwise holds true.</p> <p>The most number of respondents in Manila believed that creating terminals and separate lanes are what the government can do to improve operations. On the other hand most respondents from Los Baños believed that what they need is information and education. This can be attributed to the fact the local government seems to be not so particular in the implementation of the ordinance passed in 1993.</p>
<p><i>On Health, Safety and Accident</i></p>	
<p>Fever and Flu are the most common reported kind of sicknesses and that both respondents of survey areas have no regular medical check-up.</p> <p>There is very little involvement (as shown in the frequency table: 11.61 and 6.31%) in accident reported and if there were any, they also involved another pedicab units with very low cost of damage to property. This can be attributed to the fact that there is more flexibility in the maneuvering of the unit.</p>	<p>Most of the drivers in Manila reported that they are sicklier after they started driving. On the other hand, most drivers in Los Baños reported no change at all.</p> <p>Interestingly, most drivers in Manila have vices especially smoking while the otherwise is reported for drivers in Los Baños.</p>
<p><i>Over-all Pedicab Drivers' Perception</i></p>	
<p>Most of the respondents perceived that NMT can help alleviate traffic.</p>	<p>55% of drivers in Manila perceived that they contribute to the worsening of traffic condition while 97% of drivers in Los Baños do not think that they contribute to the worsening of traffic. This can be attributed to the fact that most pedicab drivers in Los Baños are relegated in residential areas.</p>

## 5. Conclusion and Recommendations

The study characterized and defined the role played by public NMV in both urban and urbanizing areas by understanding the supply and regulation components of this transport mode specifically pedicab operations.

Significantly, the following can be concluded from the findings of the study:

- There are more pedicabs in highly urbanized areas such as Manila than in an urbanizing localities like Los Baños, Laguna. Interestingly, in both study sites, pedicab operations are not allowed on national roads. In Los Baños, they are limited to roads leading to residential areas (eg. Umali Subdivision). On the other hand, in Manila, they can be found in city roads which lead to commercial or business districts (eg. Tutuban Mall, Robinson's Mall). Consequently, the operating characteristics are different in terms of distance traveled, trip purposes, location of zonal routes, peak hours as well as organizational system like membership level in associations and fare decision-makers.
- Proliferation of pedicab operations, especially in Manila, started in 1991, in the height of increasing oil prices. Issues on where to have terminals, queuing systems, fare rates as well as the operating routes prompted drivers/operators to form associations. In a way, they became a lobbying voice for certain policies to be enacted. With LGU recognition, the entry of pedicab as NMT public transportation sector was formalized.
- In response to the growing number of pedicabs in operation, the study showed that both areas have local ordinances enacted to systematize and to limit their zone operations. However, there were no clear provisions on infrastructure developments for this mode of transportation. There were also some differences on provisions of certain ordinances. An example is the allowable age to drive the pedicab unit. There were no national policies governing NMT operations specifically, that of pedicab as a public transportation. Nor were they included in national transportation policies. With organizational and political issues to address, there seemed to be a gap even at the local level between the approved policy and its implementing mechanisms.
- With the difference in the ownership level of drivers between the two study areas, the behavior towards associations, organizational policies and/or membership as well as in some provision of policies enacted (eg. registration system) tend to be different. However, it should be noted that the survey showed that drivers/operators follow local government policy specifically, zones where they were allowed to operate. They also varied on how they perceived their effect to traffic conditions. Interestingly, survey showed that in Manila, most of the drivers think that they are partly to blame for the existing traffic in the area surveyed and that they have suggestions on how to improve the existing situation.
- The study showed 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 an urbanized area like Manila, they serve as gap-fillers and are usually found in areas where there are more economic activities. On the other hand, for urbanizing areas like Los Baños, pedicabs serve as feeder mode to residential areas. Their route of operation is limited to city/barangay roads.

Based from this conclusion of this study, the following is thus recommended:

- ◆ Improvement is the registration system for pedicab operation and in the enforcement of ordinances vs "colorum" operation are suggested.
- ◆ There is a need for further study to identify reasonable fare rates given the location, distance where they are in operation and the registration fees as well as unit design.
- ◆ Pedicab associations should have membership requirements that each member should be first registered to the LGU before being accepted. Associations should also work with LGUs in the drive against colorum.
- ◆ Inclusion of pedican in the national transport policy to provide guidelines for local government unit in drafting and implementing local policies concerning the said transport mode.
- ◆ Determining the reasonable passenger rate is also suggested. The ordinance should have provisions given the annual inflation rates. Drivers, passengers and LGU officials should be consulted in fare-setting decisions.
- ◆ There is a need to amend ordinance to incorporate NMT facilities like terminals and traffic rules and regulations like keep right driving rules.
- ◆ Pedicab driving can be promoted as a source of livelihood for urban poor.
- ◆ Information and education campaign regarding policies on pedicab operations and organized system of operation should be launched.

In essence, results indicates that there is a need for inclusion of pedicabs in the transport hierarchy as well as in the land transportation framework of the Philippines.

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