3) Current Practices in Traffic Control

One-way Traffic

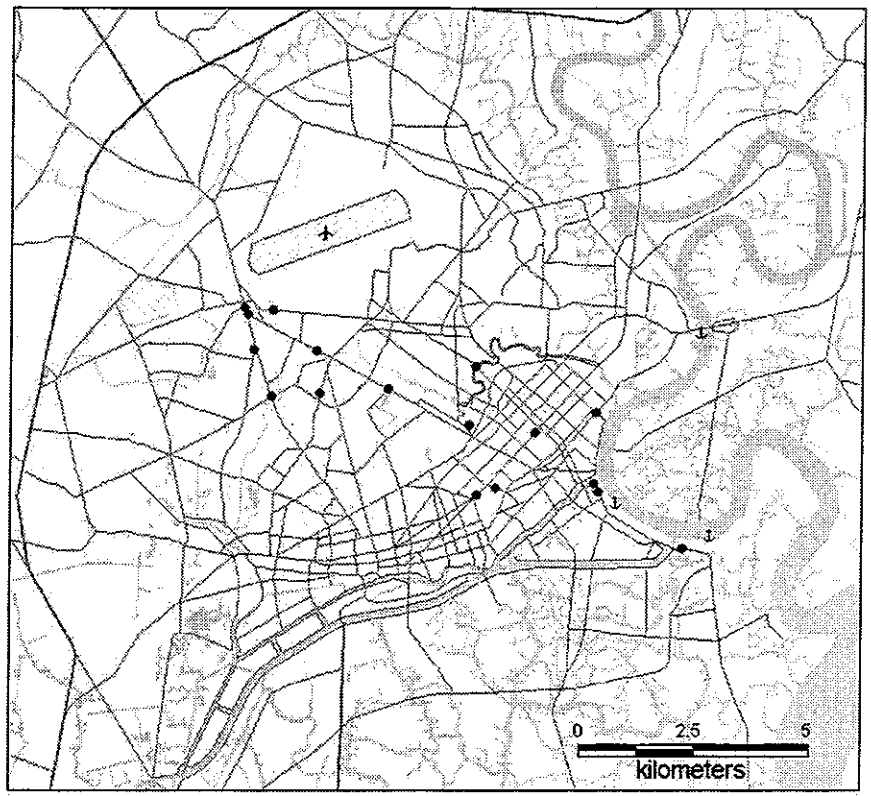
In the CBD area of districts 1 and 3, where road network has a grid pattern, the one-way system is extensively adopted. Another one-way pair along the arterial street is Nguyen Trai and Tran Hung Dao in District 5. In addition, the one-way system was introduced or is being considered in the outer areas:

- Co Viet Nge Tinh / Dinh Bo Linh in Binh Thanh District (introduced in November 2002)
- Cach Mang THang Tam / Hoang Van Thu in Tan Binh District (planned)
- Hoang Van Thu / Nguyen Kiem in Phu Nhuan District (planned)

Turning Restrictions

As mentioned earlier, left turning is allowed at intersections in HCMC except at 19 intersections shown in Figure 2.2.17. Likewise, priority rule (priority for through traffic over left turning traffic stipulated in Road Traffic Law) is, however, not observed and dangerous conflicting situations often happen between through-prohibition and left-turning traffic.

Figure 2.2.17 Intersections with Left Turn Prohibition



Source: TUPWS

Truck Ban

According to "Decision of Ho Chi Minh People's Committee on adjustments to peak hours and prohibited trucks together with their coverage areas in HCMC" No. 5736/QN-UB-NCVX dated 9 December 1996, trucks are prohibited to travel inside the ring road of the city during peak hours, which are defined as follows:

- Morning: 06:00 – 08:00
- Noontime: 11:00 – 13:00
- Afternoon: 16:00 – 19:00

Prohibited truck types are:

- Trucks being allowed to transport commodities over 2,000kg.
- Construction trucks and specialized trucks such as cranes, tractors, bulldozers, forklifts, and road iron-rollers.

On the other hand, the following vehicles are allowed to travel during peak hours:

- Fire engines
- Police vehicles (except economic related ones)
- Hearses
- Ambulances
- Trucks for repairing the urban technical works of the electric power company, communication and urban public works department, post office, and banks. But they must be registered with the HCM Police to obtain permission.

The ban is applied to the following streets:

- Along NH 1 (from the 3-way intersection on Dai Han to the 3-way intersection on An Lac)
- Tan Thuan Bridge of Interprovincial Road No. 15
- Nhi Thien Duong Bridge on Interprovincial Road No. 50

Recently, the truck ban was expanded by "Decision of Ho Chi Minh People's Committee on control of trucks on some routes in HCMC" No. 4554/QD-UB dated 11 November 2002. The ban now includes:

- All kinds of cars on Le Minh Xuan Street from Tan Tien Street to Lac Long Quan Street (Tan Binh District)
- Trucks of 2.5 tons or over from 06:00 to 21:00 on the following streets:
  - Hoa Binh-Ong Ich Khiem-Lanh Binh Thang route (District 11)
  - Au Co Street (Tan Binh District)
  - Luy Ban Bich Street (Go Vap District)
  - Le Van Tho Street (Go Vap District)
  - Le Quang Dinh Street (Binh Thanh District)
  - Nguyen Van Dau Street (Binhg Thanh District)
- Trucks of less than 2.5 tons during morning peak hours (06:00-08:00) and afternoon

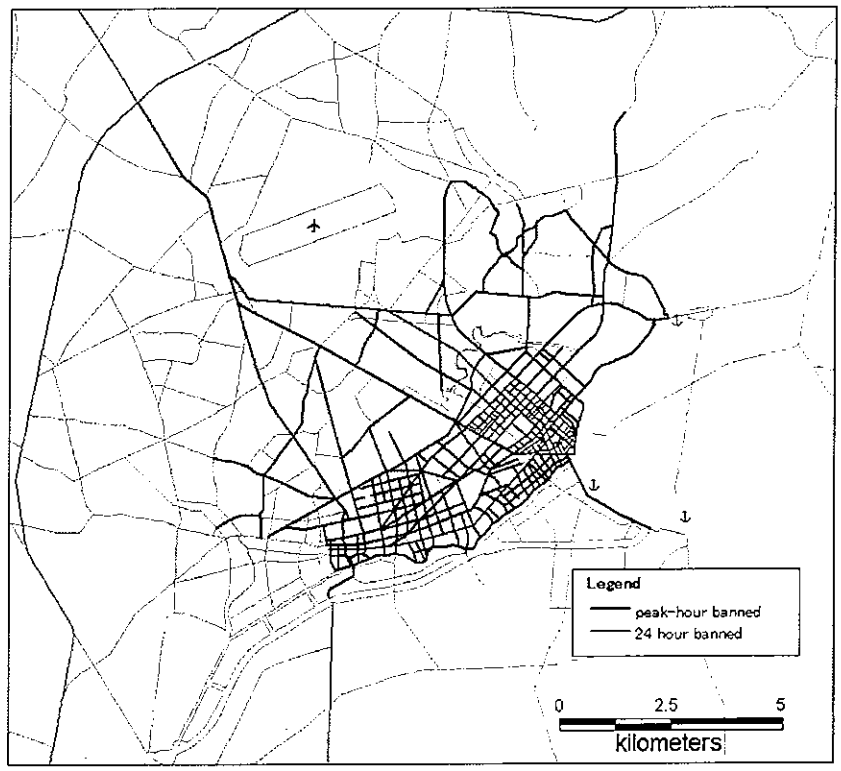
peak hours (16:00-19:00) on the following eight routes:

- Hoa Binh-Ong Ich Khiem-Lanh Binh Thang route (District 11)
- Au Co Street (Tan Binh District)
- Lac Long Quan Street (Tan Binh District)
- Binh Long Street (Tan Binh District)
- Le Van Tho Street (Go Vap District)
- Le Quang Dinh Street (Binh Thanh District)
- Nguyen Van Dau Street (Binhg Thanh District)
- Phan Van Tri Street (Binh Thanh District)

According to a news report, which appeared on Thanh Nien on 24 January 2003 and on Tuoi Tre on 13 February 2003, a new truck ban prohibiting trucks of 2.5 tons or less from the city's roads during 06:00 – 09:00 and 16:00 – 21:00 starting 1 March 2003, and trucks of 2.5 tons or more from all city streets except roads connecting NH 1 and Saigon Port during 06:00 – 21:00 starting 1 July 2003, was submitted to People's Committee for approval.

In addition to the truck ban, three-wheeled vehicles are also banned in the CBD which is surrounded by the streets of Dien Bien Phu, Hai Ba Trung, Ton Duc Thang, Ham Nghi, and Cach Mang Thang Tam, and along Nam Ky Khoi Nghia in Districts 1 and 3, and along Tran Hung Dao as shown in Figure 2.2.18.

Figure 2.2.18 Streets Banning Three-wheeled Vehicles



Source: TUPWS

4) Traffic Management Projects

Two foreign-assisted traffic management projects are being implemented in HCMC. The outline of these projects is given below.

French ATC System

Background: An ATC system was introduced to a part of HCMC under financial assistance from the French Government. The project covered the installation of traffic signals and an ATC system at 48 intersections in Districts 5, 6, and 11, plus a CCTV camera system covering eight intersections. The assistance was a tied project so that French-made products were installed. The project commenced in 2000 and was already completed. It was expected to be handed over to the Police at the end of December 2003.

Scope and Coverage: Inductive loop vehicle detectors are installed at all junction approaches to detect vehicles. The vehicle count data is sent to a central computer to select the signal timing pattern most suitable to the prevailing traffic condition. The detection signal is also used to adjust signal timing on a real-time basis. However, according to the hearing with the Public Lighting Company, a signal maintenance company, the vehicle detectors are no longer operational due to lack of maintenance so that no traffic responsive control is used in the system.

The system employs wireless communication system using UHF band frequency (440-470 MHz) to link the control center with 48 signal controllers at the intersections. Two base stations with antenna were set up at Tran Hung Dao Street in District 1 and Chau Van Liem Street in District 5.

CCTV system uses optical fiber cable to connect cameras with the monitor at the control center. Remote control of pan, tile, zoom, and wiper is possible at the control center. The same number of video monitors is provided to make one-to-one connections between camera and monitor. In addition, a large monitor and a video recorder are also provided.

The maintenance of the system is undertaken by the Public Lighting Company.

VUTIP

(1) Background: The Vietnam Urban Transportation Improvement Project (VUTIP) was a WB sponsored project. The whole project covered both Hanoi and HCMC with a value of approx US$ 47M. The PMU/IUT was only responsible for the HCMC works which were valued at approx US$ 23M of which 90% will be funded by the WB and 10% by local (HCMC) funding.

(2) Objective: The objective of the VUTIP was to improve traffic conditions and safety in HCMC. The main components of the work were junction improvements along four major road corridors and the central area of HCMC. The concepts were outlined in the VUTIP Study conducted in 1995 and further developed in the subsequent feasibility study. The measures were intended as short-term improvements pending construction of other new infrastructure projects to be completed in the medium to long term and focused on improvements at junctions rather than upgrading and widening of the links between junctions. Other aspects of the project included strengthening of institutional arrangements for the Police and for traffic management.

(3) Project Scope: Measures principally consisted of:

- Widening within the existing highway boundary without land take.
- Channelization to regulate traffic flow and restrict unauthorized movements.
- Change traffic circulation to minimize conflicts.
- Installation of traffic signal control and application of road markings to define priority and separate conflicts.
- Implementation of ATC system (see Figure 4.3.2 in section 4.1 signal systems for location of signals).

In addition, pedestrian areas were to be created in three areas (outside the People's Committee headquarters, theater, and cathedral).

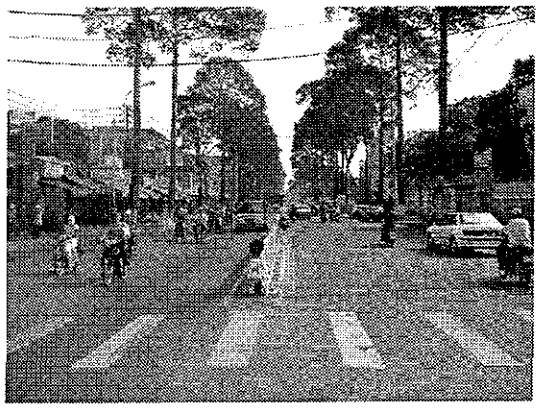
The project also included institutional support for the Police Department and the establishment of a Traffic Management Unit – advising on structure and tendering of equipment, i.e. vehicles, and equipment for operation, maintenance, enforcement, etc.

(4) Specific Work for Project Area: The main aspects of improvements to the road network are as follows:

Corridor 1: Corridor 1 covers the main east-west route along 3 Thang 2, Dien Bien Phu, and Vo Thi Sau forming the northern boundary of the central area. Improvements designed by local consultant and construction works were completed and traffic signals are to be installed. Designs for some complex junctions were cancelled or reduced in scale by the TUPWS (refer to Photo 4.3.12).

Corridor 2: Route along Ton Duc Than and Nguyen Tat Thanh which provides access to ports from Corridor 1 with a high proportion of truck traffic. Works are under construction. A requirement of the TUPWS is that all works must be defined with temporary barriers to test the changes before final implementation. A major change is the new gyratory on the approach to Khanh Hoi bridge.

Photo 2.2.8 Temporary Barrier



Source: Taken by the Study Team

Corridor 3: Main route along Nguyen Van Thoi and Nam Ky Khoi Nghia linking the central area to the airport. Works are being suspended pending the implementation of the monorail.

Corridor 4: Main route for traffic entering HMCH from NH22 through Cach Mang Thang Tam forming the western boundary of the central area. A new gyratory was created north of Corridor 1 and Ben Thanh triangle. Objections were received regarding the use of heavy

vehicles at Ben Thanh roundabout. Also the new Ong Lang bridge (currently under construction) will redistribute traffic when completed. The East-West Highway has an intersection at Calmette which will also affect future traffic conditions. Designs were already approved and tendering of construction works expected by end of December 2002. Completion was expected August 2003 with ATC operation completed by December 2003.

Central Area: Several two-way roads are to be converted to one-way. Pedestrianization scheme will also affect traffic flow due to closure of roads and rearrangement of flow direction to prevent through traffic. In addition to improvements to junctions and installation of traffic signals, road markings will be installed to define priority for many of the crossing which do not currently have a defined right of way. Designs have been recently approved and tendering of construction works is expected by end of December 2002. Completion was expected in August 2003 with ATC operation completed by December 2003.

Isolated Junctions: Junction improvements at identified locations outside the central area are mainly signalized junctions but not under the ATC control. Designs have been recently completed and will be tendered in one of the central area packages. Tendering of construction works is expected by the end of December 2002. Completion was expected August 2003 with ATC operation completed by December 2003.

5) Traffic Management Organizations

There are four organizations that are actively involved in traffic management in HCMC. Two of them are government agencies, while the other two are government-owned companies. These are:

- Urban Traffic Management Unit in the TUPWS
- Traffic Police
- Voluntary Youth Public Benefit Service Company
- Public Lighting Company

In addition, there are PMUs which manage traffic or transport projects.

Urban Traffic Management Unit in TUPWS

(1) Functions of TMU: The Urban TMU is a section of the TUPWS and was newly established in July/August 2002. Currently, it has only nine persons, of which six are engineers, although it has the designated number of 42 persons.

Its main functions are:

- Planning and design of traffic management schemes.
- Management of other urban infrastructure such as drainage system and parking.

(2) Traffic Management Activities in the Past: The TMU has identified 20 traffic problem spots. It planned and managed the introduction of a one-way traffic system on two roads (Xo Viet Nghe Tinh and Dinh Bo Linh near Mien Dong Bus Terminal in Binh Thanh District). These roads were changed from two-way to one-way starting November 2002. Average speed along these roads increased from 10 km/h to 20km/h after the introduction of the one-way traffic scheme. An interview survey with residents also showed favorable responses.

Traffic count survey was conducted by the ARUP before planning these projects. No traffic

engineering computer software was used for the design and evaluation of improvement schemes, as there was no suitable program that could handle motorcycle traffic properly. The basic concept was to segregate vehicle flow and motorcycle flow as much as possible. Implementation of the scheme was carried out by the Public Lighting Company.

(3) Current and Future Project: Introduction of a one-way traffic system is being planned around two intersections (Cach Mang Thang Tam / Hoang Van Thu in Tan Binh District and Hoang Van Thu / Nguyen Kiem in Phu Nhuan District). The design was already approved. The improvement at the former intersection is separate from the World Bank project.

A survey of small roads was conducted in November 2002. It was found that large vehicles enter these small roads causing traffic problems. New restrictive measures of trucks are being studied.

One of the traffic management problems identified by the TMU is the left turn at intersections. The banning of left turns at some intersections is being considered. The TMU acknowledges the necessity of public campaign using radio, TV, etc. to introduce such measures. In this connection, the introduction of a left turn arrow signal, which is not used at the moment, is also being studied.

In 2003, the TMU started a traffic management project using geographic information system (GIS), in which a digitized map of HCMC would be developed.

(4) Role Sharing with Other Agencies: Currently, the Public Lighting Company engages in the design of traffic signal while the Saigon Traffic Management Company designs pavement markings. These two companies are also responsible for the implementation of these components. On the other hand, the TMU is also responsible for the design of signals, pavement markings, and traffic signs. It is planned that design work will be consolidated with the TMU, while the former two companies will implement it.

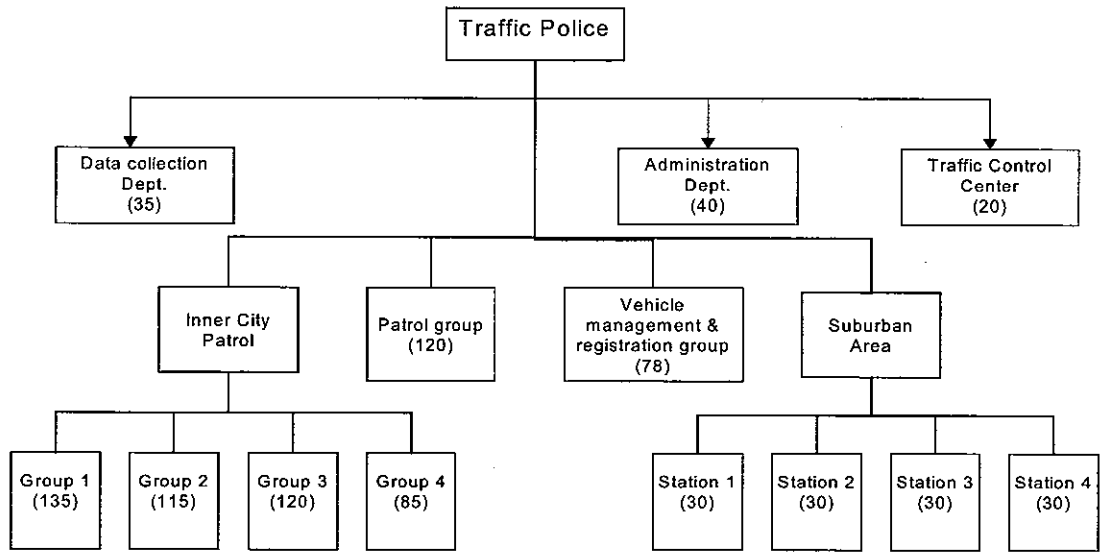
(5) Design Standards: Design standards of traffic signs and pavement markings are specified by 22TCN-237-01 issued by the MOT. With regard to signal design standards, the Public Lighting Company would be able to provide the information.

Traffic Police

(1) Organization: The organization of a Traffic Police with the corresponding number of personnel is presented in Figure 2.2.19. Functions and duties of each group are summarized below.

- Patrol Group
  - Traffic management along streets and at intersections
  - Traffic management for VIPs
- Gateway Group
  - Traffic management at the gateways of HCMC
- Vehicle and Motorcycle Registration Group
  - Management of vehicle registration
  - Two sections, one for motorcycles and another for four-wheeled vehicles
- Accident Inspection Group
  - Investigation and accident data collection
- District-level Traffic Police
  - Traffic management in districts

Figure 2.2.19 Organizational Chart of Traffic Police



Source: Traffic Police, HCMC
Note: (*) indicates the number of officers in each division.

(2) Training: There are two schools in HCMC for police personnel: one, is university level and the other is high school level. Various courses are taught at these schools including a course for traffic policemen. The study period is five years for university level and three years for high school level.

There is no regular training for the traffic police. A training center was proposed in 1998 by the MVA study but this never materialized. Under the same study, two members of the police were trained in using a computerized traffic accident database. Computerization, however, was discontinued.

Training in motorcycle driving was carried out by Honda. A few years back, some policemen underwent a similar training in Taiwan.

(3) Enforcement: The number of violators, number of vehicles seized and total fine are summarized in Table 2.2.17 for years 2001 and 2002. The number of violators in 2002 increased almost 60% compared with the previous year. The reason for such increase is not clear. The total amount of fine accordingly increased and the average amount of fine per violation increased slightly by 10.8%.

When a traffic policeman apprehends a violator, a 'decision', called citation ticket in other countries, is issued. The violator is requested to go to the treasurer of one of the police stations to pay the fine. Depending on the seriousness of the violation, the driver's license may be confiscated.

All the fines become part of the national revenue. There is no separate account established for fines to be used for traffic management purposes. There is also no monetary incentive for the traffic policemen to apprehend violators.

There are many kinds of violations including speeding, which is determined by using speed guns which are used only on highways outside the city, as the speed in the urban area is perceived to be low. The enforcement of the ban on drunk driving was carried out before but it was discontinued because of lack of apparatus.

Table 2.2.17 Number of Violators and Vehicles Seized

	Unit	2001	2002
Violators	Person	272,981	431,476
Vehicles seized by Police	Vehicle	13,411	16,479
Total Fine	million VND	30,256	53,000

Source: Traffic Police, HCMC

(4) Traffic Signal Design and Installation: The Traffic Police used to design and install traffic signals. At present, however, these are done by the TUPWS. After installation, the operation of traffic signals is transferred to the Traffic Police. The Public Lighting Company maintains the signals and the budget for maintenance work comes from the HCMC PC.

Old signals that include vehicle signals made by Eagle Signal Company of the USA and Japanese-type pedestrian signals were installed before 1975. The Traffic Police are not familiar with the details of these signals.

Voluntary Youth Public Benefit Service Company

(1) Company Profile: The Voluntary Youth Public Benefit Service Company is a government-owned company under the control of the People's Committee. It was established in 1997. Its business ranges from construction, business development consultancy, and investment in international travel business. It also engages in water supply service. The Public Benefit Service Department is one of its departments in which a group of youth volunteers belongs. The annual revenue of the company is about 200 billion VND.

(2) *Public Benefit Service Department:* *In addition to traffic management, the* department manages public toilets, parking lots, and parks. There are 19 management staff and 131 rank and file personnel for these activities.

(3) Traffic Management Unit: The TMU was established on 26 April 2001 under the Public Benefit Service Department in collaboration with a traffic safety campaign by the People's Committee. Its main task is to assist the Traffic Police in carrying out traffic management and control. The operation of the Unit is limited to five (5) years from 2001 to 2005.

The TMU has a total of 576 employees including its administrative staff. There are two (2) teams of Youth volunteers (or traffic aides), who are dispatched to intersections and assist Traffic Police. The first team has a manpower of 200 persons. They are dispatched to congested intersections when requested by the Traffic Police. When there is no request the personnel stand by at one of the police stations. Their duty time is from 6:00 to 21:00.

The second team has 350 persons. They are dispatched to designated intersections on a regular basis from 6:00 – 800 and 16:00 – 18:00. They stay at one of the four police stations between morning and evening duty times. There are 101 such intersections and two to 14 volunteers are assigned to an intersection depending on the size and complexity of the traffic at these intersections (refer to Photo 4.3.9).

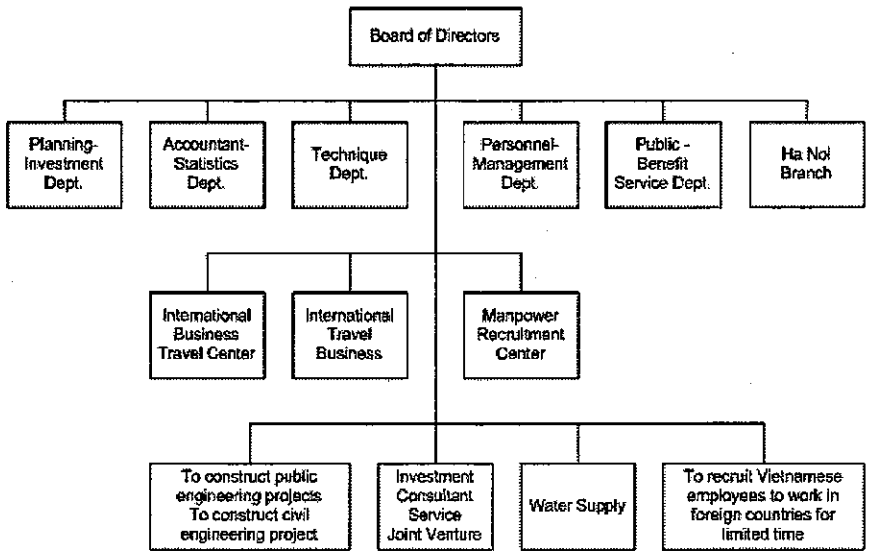
(4) Cost and Budget: The operation of the TMU costs about 6 billion VND a year. HCMC provides a subsidy of 4 billion VND, while the company shoulders the remaining VND 2 billion.

The salary of youth volunteers is VND 850,000 a month for the first team and VND 750,000 a month for the second team. In addition, they receive three sets of uniforms per year.

(5) Recruitment: The company recruits youth volunteers when necessary through interviews of applicants. The selection criteria are the experience of volunteer activity, experience of military service and unemployment status in this order. In the interview, conditions of employment are explained and health conditions are checked. Once applicants pass the interview, they are given a 6-day probation period, during which they go through a training course. Use of the equipment (flags and walkie-talkies) provided by the company is taught during training. After the probation period, a youth volunteer is employed with a 6-month contract. There are always sufficient applicants for the position so that the company faces no difficulty in recruitment.

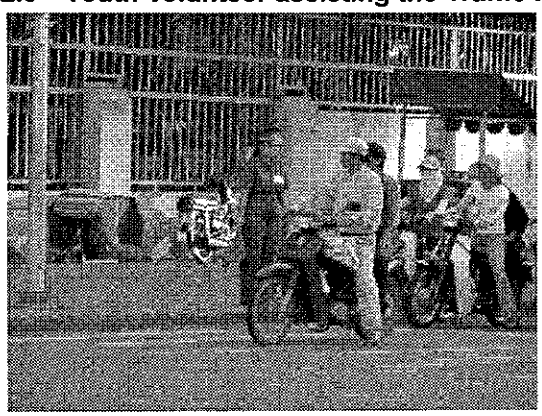
(6) Training of Youth Volunteers: The police carry out a 6-day training program for the youth volunteers. The youth volunteers assist the police and they are responsible for guiding road users to observe the laws; they work with the Traffic Police in settling violations and are posted at heavily congested intersections.

Figure 2.2.20 Organizational Chart of Voluntary Youth Public Benefit Service Company



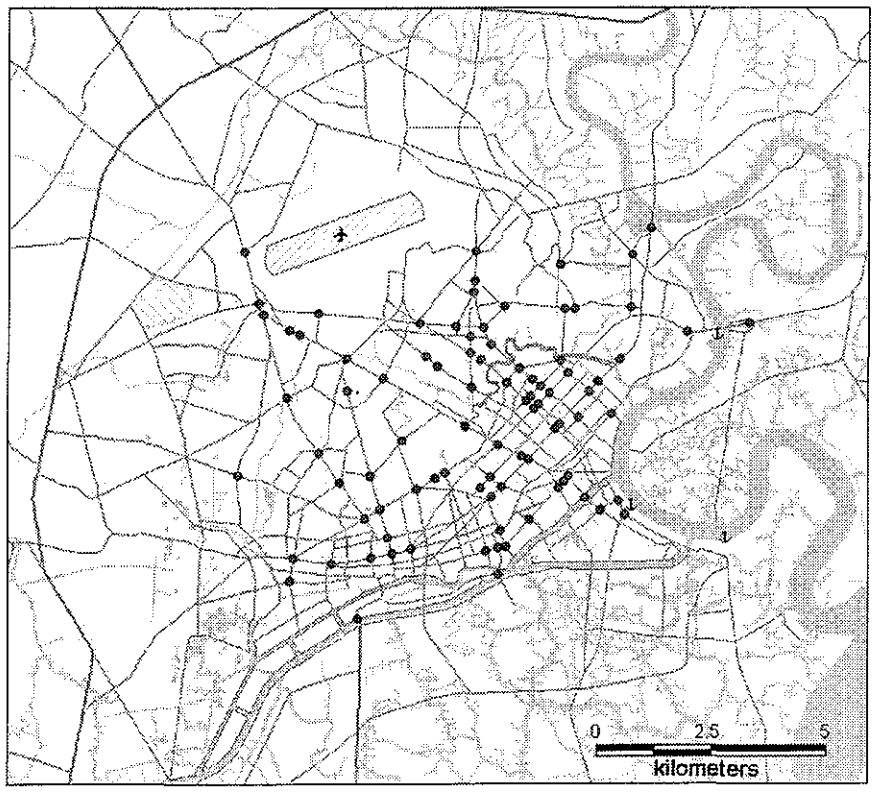
Source: Voluntary Youth Public Benefit Service Company

Photo 2.2.9 Youth Volunteer assisting the Traffic Police



Source: Taken by the Study Team

Figure 2.2.21 Intersections Where Youth Volunteers Are Dispatched



Source: Youth Voluntary Public Benefit Service Company

Public Lighting Company

(1) Company Profile: The Public Lighting Company (PLC) is one of the companies under the HCMC People's Committee. Its main task is the management of public light, traffic signals, traffic monitoring CCTV systems, and variable message signboards (VMSs). A VMS is being installed, one near the intersection of NH1 and NH22. Another one, which was already installed but not yet operational, is located at the intersection of Tran Hung Dao and Nguyen Cu Trinh.

(2) PLC's Mission: The PLC is responsible for the technical management of traffic signals including ATC signals, while the Traffic Police is responsible for managing traffic congestion. PLC's task is to design, install and maintain the signals and CCTV system. There are two companies under the PLC that undertake these tasks. One company, which is located at the same offices as the PLC, provides consulting services and designs traffic signals, while another company takes charge of installation, operation and maintenance. These two companies also do similar business in other Mekong Delta provinces.

The PLC has a total of 35 engineers, of which 12 work for both the consulting and design companies mentioned above. The rest work for the PLC or other companies.

(3) Traffic Signal Design: There are about 1,300 intersections in HCMC, of which 341 have traffic signals. Of the total, 48 signals are ATC signals installed under a French-assisted project. Others are isolated signals operating independently. A new set of 121 ATC signals was expected to be installed under a World Bank-assisted project starting in 2003.

The Urban Traffic Management Unit of the TUPWS is responsible for studying signal

demand and decides the location of new signals. The PLC designs signals but there are no written standards of signal design. Depending on road width, a straight pole, which is 3.8 meters above the ground, or a mast-arm pole, which has a straight section of 5.2 meters high and a clearance of 5.8 meters above the carriageway, is used. Only nearside primary signals are installed and no secondary signals on the far side of intersections are used. For vehicles stopping near the stop line, a '+'-shaped red signal indicator, which lights up when the red light for the opposing traffic is on, is mounted on the back side of the pole for the opposite direction. The practice is peculiar to HCMC.

Gantry-type signals have been designed and will be installed on NH1 and NH22 near the intersection of these two roads. The signal with a left-turn arrow will also be introduced.

(4) Maintenance Work: The PLC carries out maintenance of traffic signal equipment as per established maintenance procedures and schedule. The budget for maintenance is part of the company's budget, which comes from the People's Committee.

Periodic review of signal timing is not undertaken. Signal timing is reviewed and re-adjusted only when inadequate timing is reported either by the TMU of the TUPWS, the Traffic Police, or the PLC itself.

French signals use loop detectors, which are about 0.7 meters wide in longitudinal direction and placed diagonally from the curb to the center line near the stop line for signal control at all approaches. But loop detectors are currently no longer used for signal control thus they are not maintained.

Project Management Units

The Project Management Unit of the Investment in Urban Transport (PMU-IUT) is responsible for the HCMC portion of the WB-funded VUTIP.

PMU1 is a Hanoi-based PMU under the MOT that primarily manages projects located south of HCMC.

PMU1 (South) is responsible for the management of improvements on NH1 from the south of Ho Chi Minh City (An Lac) to Tien Zanh in Mekong Delta. Original works were funded by the World Bank. The office has been retained to manage further widening (due to larger-than-anticipated traffic growth) with local funding from the MOT. It also looks after other local projects including:

- Flood protection in Mekong Delta (ADB funding)
- Ferry construction in Mekong Delta (Danish funds).
- A 42-km bypass is proposed at Thixa Tab An as a BOT project which is currently at the bidding stage. The project includes a new alignment due to costs and difficulties of land acquisition and new river crossing.

PMU 18 manages NH1 project around HCMC and other provincial projects funded by the MOT. PMU My-Thuan undertakes works for NH22 and NH1.

6) Traffic-related Laws and Regulations

General Background

Laws, decrees, and regulations related to traffic management are as follows:

- Road Traffic Law (Law No. 26/2001/QH10)[11]
- Decree No. 36/2001/ND-CP of July 10, 2001 on Ensuring Land-Road Traffic Order and Safety and Urban Traffic Order and Safety
- Regulation on Land-Road Traffic Order and Safety and Urban Traffic Order and Safety (Promulgated together with Government's Decree No. 36/2001/ND-CP, 10 July 2001)
- Decree No. 39/2001/ND-CP of 13 July 2001 on Administrative Sanctions against Acts of Violating Land-Road Traffic Order and Safety and Urban Traffic Order and Safety

This review of traffic-related laws and regulations was made based on these laws and regulations of which English versions were published in the Official Gazette No. 31 (22-8-2001).

Outline of Road Traffic Law

The Road Traffic Law is a principal law that contains provisions covering almost all aspects of road traffic. Subjects covered by the law are:

- Road traffic regulation (Articles 9-36): Stipulates the manner in which drivers must observe when operating their vehicles;
- Road transport infrastructure (Articles 37-47): Planning, design, construction, management, and maintenance of road and related facilities;
- Road vehicle (Articles 48-52): roadworthiness and registration of motor vehicles;
- Road traffic vehicle driver (Articles 53-58): driving license;
- Road transport (Articles 59-67): Passenger and freight transport; and,
- State management of road traffic (Articles 68-73): Roles of government, road traffic inspector, and Traffic Police.

Decree No.36/2001 mainly stipulates the tasks, responsibilities, and powers of state agencies, economic organizations, social organizations, armed forces units, and individuals such as the Ministry of Communications and Transport, Ministry of Public Security, Ministry of Defense, Ministry of Finance, Ministry of Trade, People's Committee, etc.

It is noted that the Regulation on Land-road Traffic Order and Safety and Urban Traffic Order and Safety has many clauses similar to those in the Road Traffic Law. Their relationship needs to be clarified.

Decree No. 39/2001/ND-CP of 13 July 2001 on Administrative Sanctions against Acts of Violating Land-Road Traffic Order and Safety and Urban Traffic Order and Safety sets forth the types of violations and fines imposed on violators.

Features of Traffic Laws and Regulations

Distinctive features of related laws and regulations are summarized below.

(1) High Priority of Public Transport: The Road Traffic Law recognizes the priority of public transport and expresses an intention to restrict personal transport modes (Article 5).

(2) Contradictory Clauses on Priority of Pedestrians: There are conflicting clauses regarding the priority of pedestrians. Article 15 item 2 of the Road Traffic Law stipulates "In the course of turning, a driver must give priority to pedestrians, bicyclists on their lanes...," while Article 52, Chapter VI of the Regulation on Land-Road Traffic Order and Safety and Urban Traffic Order and Safety says that "Pedestrians must give way to all vehicles."

(3) Seat Belt and Helmet Requirements: Wearing seatbelt is not mandatory for all types of vehicles. The use of seat belts is required only for drivers and front seat passengers who are riding vehicles that are equipped with seat belts (Article 9 of Road Traffic Law). Helmet wearing obligation for drivers and other riders on motorcycle is applied only on roads stipulated by the government (Article 28 of Road Traffic Law).

(4) Maximum Load on Motorcycles: The Road Traffic Law allows a motorcycle to carry, in addition to the driver, one adult and one child as maximum load regardless of engine displacement (Article 28 of Road Traffic Law). Under the Regulation on Land-Road Traffic Order and Safety and Urban Traffic Order and Safety, however, the child must be under 7 years old (Item 8, Article 24).

(5) Parking Requirement in Public Places: Provision of parking lots is required for institutions, offices, schools, hospitals, trading centers, cultural centers, and residential areas (Article 46 of Road Traffic Law). But specific figures or sizes of parking facilities are not mentioned.

(6) Types of Driving Licenses: Article 54 of the Road Traffic Law requires the possession of a driving license. There are 13 types of driving licenses (Type A1, A2, A3, A4, B1, B2, C, D, E, FB, FC, FD, and FE). Types A1, A2, and A3 are permanent driving licenses for motorcycles and others are temporary driving licenses for other types of vehicles including automobiles, tractors, and tow trailers. The meaning of "permanent" and "temporary" is not mentioned in the law.

(7) Age Limits for Driving License: There are minimum and maximum age limits. The minimum age limit of 16, 18, 21, and 25 years old are stipulated for different types of motorcycles and vehicles, and the maximum age limit of 50 for female drivers and 55 for male drivers is set for drivers of buses with more than 30 seats (Article 55 of Road Traffic Law).

(8) Complex Sanction System: The sanction system stipulated by Decree No. 39/2001/ND-CP of 13 July 2001 on Administrative Sanctions against Acts of Violating Land-Road Traffic Order and Safety and Urban Traffic Order and Safety is too complex. Violations are very specific and separate clauses are prepared for the same violation but by different types of vehicle. Thus, there are 211 kinds of violation for not driving on prescribed road lanes by cyclists to doing business in passenger transportation. Accordingly, the amount of fine varies greatly from VND 10,000 to VND 100,000,000 in 25 different amounts of fine. The sanction system seems to be too difficult to understand even for the Traffic Police not to mention the drivers and road users.

(9) Practice Different from Regulation: Observation of road traffic indicates that some regulations are not observed. For example, vehicles turning at an intersection must give way to vehicles running in the opposite direction (Article 15 of Road Traffic Law). In practice, interaction between conflicting movements is made on a first-in-first-served basis. Likewise, the prohibition of holding markets on roads (Article 33 of Road Traffic Law) is simply ignored at many locations.

7) Current Issues on Traffic Management

Traffic management is one of the important measures to improve existing transport conditions, especially public transport, without need for huge investments in new infrastructure. This section identifies current problems and issues in terms of infrastructure, facilities, traffic flow management, traffic regulation, institutions, and safety.

Infrastructure

(1) Inadequate Intersection Geometry: Many intersections are constructed just as an intersecting point of two or more roads without considering adequate traffic engineering and design. Corner radii are too large or too small, causing irregular turning movements. Corner islands or separators are not placed where needed, resulting in unregulated flow. Entries and exits have different widths. These are some examples of inadequate design.

The area of conflict at intersections and roundabouts is very large. A common roundabout feature is to have the median too far from the center island thus creating a very large convergence area.

(2) Traffic Signal: Traffic signals are installed at many intersections in HCMC. However, most of them are outdated -- with small faces and low mounting height. Different types of signals (made in Vietnam, France, Spain, Japan, USA, etc.) coexist in the study area and two ATC systems, which are neither compatible nor interconnectable, are being introduced.

No technical standards seem to exist, or at least applied, for signal design, signal phase design, and signal timing calculation. Phase and timing are not reviewed periodically, resulting in inadequate signal operation. The Traffic Police operates signals manually during peak hours to handle increased traffic, which is not necessarily efficient.

Moreover, these signals operate in two phases even when the number of left-turning vehicles requires an exclusive phase. The use of this phase pattern causes a lot of risk taking among the motorists as they weave through each other's path. There is no distinct clearance interval or inter-green period (yellow/amber) between these two phases. All-red period is very short. Motorists are caught in the middle of the intersection during phase changes. Green times are often very short without consideration of the required time for pedestrians to cross safely.

(3) Traffic Control Devices: Traffic regulatory signs are relatively well installed and maintained. Pavement markings, however, require improvements. Layout must follow the uniform design standards, which are yet to be established. Quality of materials must be upgraded. Markings must be re-applied before they are worn out.

Traffic Management Schemes

(1) Lack of Traffic Engineering Approach: Due probably to the lack of resources and experience, traffic management measures are designed and implemented without traffic engineering analysis. No scientific approach, like computer simulation based on the data, is adopted to plan and design traffic engineering measures. Measures are rather developed intuitively or by trial and error.

(2) Inadequate Rule on Lane Assignment by Vehicle Type: Decree 36/2001/ND-CP of 10 July 2001, Chapter V Art 32 states that if a road is divided into different motor lanes, all types of vehicles must strictly keep to the lanes prescribed for them.

The existing practice of assigning lanes based on vehicle class originates from the old practice when two-wheeled nonmotorized vehicles (bicycles) were the predominant mode of transport, i.e. before the proliferation of motorcycles due to the entry of Chinese motorcycle manufacturers.

With rapid motorization, bicycles and other nonmotorized vehicles have been replaced by motorized ones. The process seems to be irreversible for Ho Chi Minh City due to rapid urbanization. However, there has been no change in regulation -- for 2-lane roads (in one direction), for example, the outer lane is assigned to two-wheeled vehicles (now predominantly motorcycles with very few bicycles), while inner lanes are assigned to four-wheeled vehicles. The rule of assigning lanes by vehicle type is applied all throughout the whole stretch of the road, even at intersection approaches. This rule creates a major problem on turning vehicles – cars turning right conflict with motorcycles going straight or turning left; motorcycles turning left conflict with cars going straight or turning right. The problem is compounded when the number of turning cars or motorcycles becomes large.

(3) Traffic Information: At the moment there is no system that collects, processes and disseminates traffic information. HCMC is installing VMSs. But they are of little use unless there is traffic information to provide. A systematic approach with long-term planning is required.

(4) Traffic Regulation: While there are some traffic regulation schemes in HCMC, such as the ban on trucks and on three-wheeled vehicles, there are few regulation schemes on motorcycle usage, which is the predominant mode in HCMC. Some regulation schemes are reported in newspaper or other media but are never realized. These are:

- Motorcycle use control in specific areas.
- Restriction in total number of motorcycle registration[10].
- Regulation of left-turning.

In order to improve traffic conditions with limited infrastructure, traffic regulation schemes on motorcycles must be enforced, in economical terms or physical terms, which can be introduced on specific areas during specific periods, or to specific targets at the beginning.

[10] A regulation limiting one motorcycle registration per person has been applied.

Institutions

(1) Overlapping Roles of Organizations: Several organizations like sections of the TUPWS, Traffic Police, government-owned companies, etc. are involved in traffic management, and their roles are not clearly delineated except for the Traffic Police, whose role is enforcement of laws and regulations. Different design standards are applied and a consolidated approach is not taken to solve traffic management problems. The situation has been improved to some extent with the creation of the Urban Traffic Management Unit in the TUPWS, which is solely responsible for planning and designing traffic management measures.

(2) Complicated Sanction System: The existing sanction system for traffic violators is too complex and difficult to understand. Enforcement could become lax or arbitrary depending on the traffic enforcer.

2.2.3 Public Transport Services

1) Overview

The existing public transport system in the study area consists of road-based transport modes, such as bus, taxi, *xe om*, and *cyclo*, and rail-based transport of the Vietnam Railway (VR). The study focused mainly on existing road-based public transport modes since the railway service plays a very minor role, mostly serving interprovincial transport.

Bus: As described earlier, current bus usage is very low, accounting for only 2% of total trips in the study area. One major factor is the high ownership and usage of two-wheeled vehicles, i.e. motorcycles and bicycles. Bus operations and services are explained in detail in the next page.

Taxi: Taxi services not only have increased demands but also an even larger increase in supply. There are now 23 taxi operators and 3,579 taxis plying HCMC. Private companies as well as SOEs and joint ventures (JVs) control 40% each of the taxis. In general, taxis are readily available and have reasonable standards. The taxi meter is the basis for fare setting which varies by company. Average flagdown rate is about VND 12,000 for the first 1.8km.

Cyclo: The cyclo, or traditional "taxi" in Vietnam, is mainly used for short distances. Cyclo use has decreased due to the rise of xe om and due to a city government's ban in some central areas of HCMC. About 30,000 cyclos are registered in HCMC, although not all of them are in service.

Xe Om: Although actually an illegal transport business, the increase in the number of xe om has been remarkable. They provide fast and cheap services. The number of xe om drivers is not available but it is estimated to be in the tens of thousands.

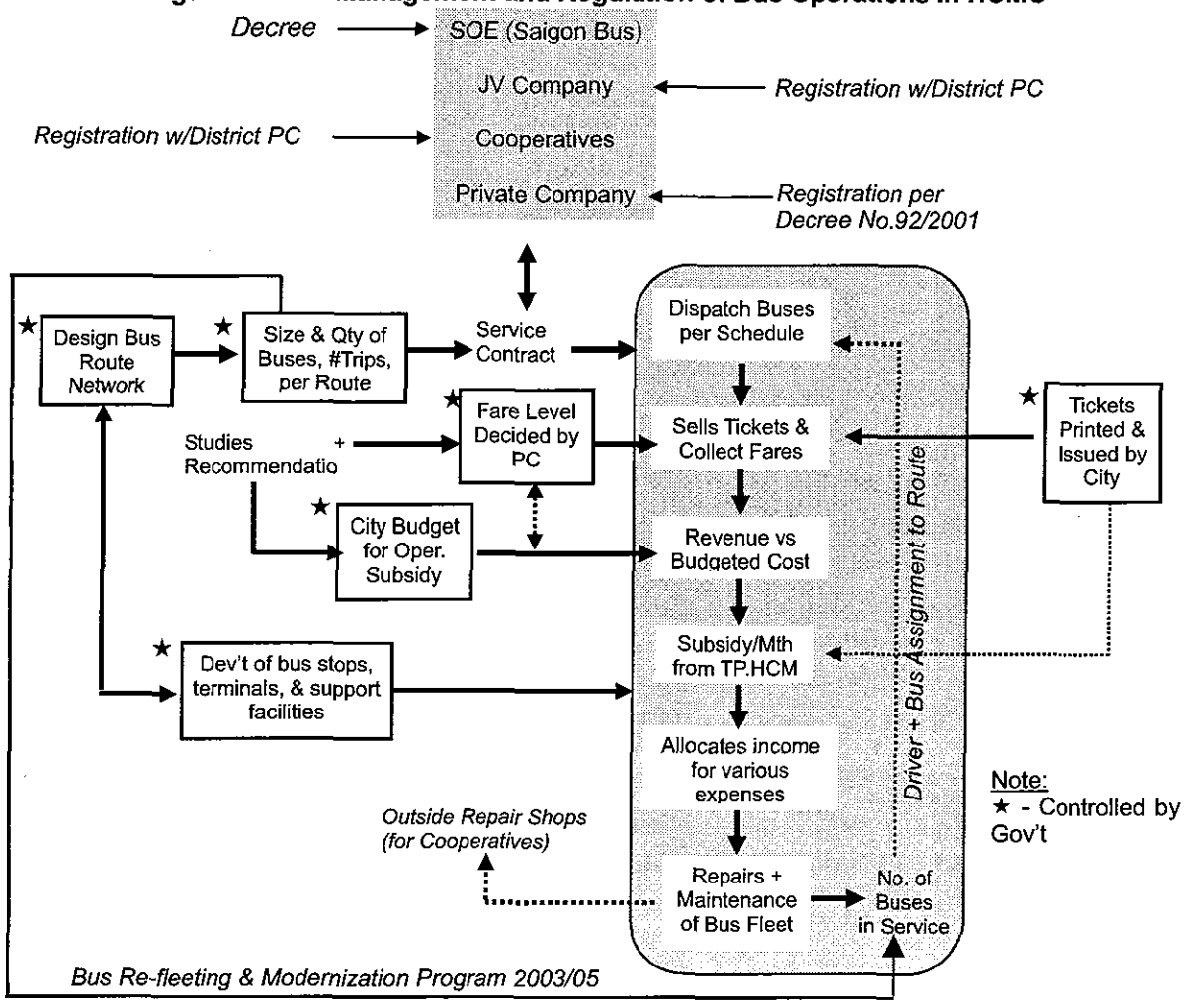
The flawed model for bus transport provision can be seen in Table 2.2.18, where most of the decision variables to achieve efficiency in operations were beyond the control of the operators themselves. The corollary decision processes are illustrated in Figure 2.2.22.

Table 2.2.18 Range of Functions Associated with Bus Transport Services

Function/Scope	Situation in HCMC	Remarks
Route Network Configuration	▪ Handled directly by MOCPT. A major review of the network was initiated in 2002.	▪ Design of the network can not be left to private entities.
Transport Infrastructure	▪ Responsibility is fragmented among different units. Lately, HCMC has taken an aggressive role in rehabilitating and improving these facilities.	▪ Roads, terminals, bus stops, waiting sheds, and the like are typically a city government responsibility.
Fleet or Rolling Stock	▪ The government policy on bus importation and manufacturing has virtually limited the options of operators on fleet procurement. Under the Model Bus Scheme, government has selected the vehicles that operators will use.	▪ Choice of rolling stock is a strategic decision that is best left to operators. Government intervention on fleet choice can not be avoided, due to existing subsidy.
Operation	▪ Largely left as a prerogative of transport service providers, subject to specific conditions on time of service, number of trips, and schedules.	▪ This is an area where HCMC bus operators have utmost freedom, but still not as flexible as in other cities in the Asian region.
Fleet Maintenance	▪ Saigon Bus and Saigon Star have depot facilities to repair and maintain their vehicles. Cooperatives rely on small outside shops and mechanics, and do not pool such activities as spare parts supply, tools and fixtures, and accounting.	▪ Without an organized setup, the new buses may end up with shorter economic lives and poor reliability.
Finance	▪ Turnover is too low to warrant re-investment in new vehicles. ▪ Non-state entities have poor access to capital finance. ▪ Under the new subsidy policy, operating cost is established by government for every route and every operator.	▪ Prior to the Model Bus Scheme, only Saigon Bus gets subsidy. Others have to live on their own income. With weak demand, only with government support can new buses be acquired. Financial dependence on State is likely to continue for years to come.
Regulation	▪ A new player must register first with PC, then secure a service contract from MOCPT. Award of contract requires vehicles, which in turn, can not be funded without prior contract. Terms of Contract are very specific as to schedule, frequency/day, and type of vehicle to use on a route. ▪ Fare level is decided by PC on social basis, rather than commercial.	▪ Market entry is difficult and requires prior investment in vehicles. No one, however, will take risk in investing unless there is a long-term contract. Routes are pre-assigned to existing operators; thus a new entrant would first become a sub-operator. ▪ Operator has restricted freedom to increase revenues.

Source: Study Team

Figure 2.2.22 Management and Regulation of Bus Operations in HCMC



Source: Study Team

2) Bus Transport Operation and Management

(1) Management: Prior to 1992, bus transport services in HCMC were a city government obligation carried out through HCMC Bus Company. With the onset of privatization, the bus company was dissolved in 1992 and its assets distributed among five cooperatives. To retain government presence, the city retained the ownership of Saigon Traveling Bus Company, later renaming it Saigon Passenger Transport Company (sometimes referred to as Saigon Bus).

Growth of the bus transport industry in HCMC remained stagnant for nearly a decade, except for the entry of Saigon Star (a JV enterprise) in 1993. This state is reflected in the age profiles of the buses with 59% of 1975 and 1978 models. Post 2000 models only account for less than 4%. The lack of investments can be ascribed to the combined effects of the following:

- Weak demand despite an expanding trip market, as commuters shifted to motorcycles and other private modes of transport;
- Fares were set to a level insufficient to generate surplus for capital re-investment;
- Short time span of the franchise, or service contract (1 year or less), which prevented operators from taking long-term market views;

- Limited access to credit for cooperatives and other private enterprises; and,
- Preferential treatment for Saigon Bus, which has access to government financing, as well as price subsidy.

Bus Operators: Thirty-two (32) operators run the bus services in HCMC; 10 use buses (603 buses) and 22 deploy lambros (1,704 lambros including 1,063 microbuses). The operators are: one city-owned enterprise (Saigon Bus), one JV (Saigon Star), two private enterprises, and 28 cooperatives. Saigon Bus and Saigon Star account for 5% of the total bus fleet if the lambros/micro buses are included, 19% if these are excluded.

Table 2.2.19 lists the different transport operators with their respective scale of operations and bus fleets. More than two thirds of the operators are small – "Mom and Pop" type of operation owning no more than two vehicles that were built around or converted from the old Lambretta scooter (or the new Suzuki mini pickup). These small vehicles were originally made to carry 1-4 passengers only; but in their transformation in HCMC, they are packed up to 11-12 passengers.

Table 2.2.19 Profile of Bus/Lambro Operators in HCMC

No.	Bus/Lambro Operator	Management Type	No. of Routes				No. of Vehicle				
			Total	By type of Routes			Total	By Capacity (No. of seats)			
				Ordinary Routes	Model Bus Routes			*11-12*	*14-24*	*25-49*	*50-60*
					Main	Sub					
	Bus Operators		**32**	**10**	**22**	**5**	**603**	**0**	**167**	**163**	**273**
1	Saigon Bus Company	SOE	8	1	7	1	71	0	39	32	0
2	Saigon Star Transport JV	Joint Venture	4	0	4	0	49	0	3	46	0
3	Cooperative 19/5	Cooperative	4	3	1	3	137	0	56	65	16
4	Binh Minh Cooperative	Cooperative	1	0	1	1	42	0	0	0	42
5	Quyet Tam Cooperative	Cooperative	3	1	2	0	30	0	0	0	30
6	Quyet Thang Cooperative	Cooperative	3	1	2	0	81	0	0	0	81
7	Quyet Tien Cooperative	Cooperative	2	1	1	0	62	0	0	0	62
8	Rang Dong Cooperative	Cooperative	3	1	2	0	42	0	0	0	42
9	Cooperative No. 26	Cooperative	2	2	0	0	76	0	56	20	0
10	Phuong Trinh Co. Ltd.	Private	2	0	2	0	13	0	13	0	0
	Lambro Operators		**42**	**35**	**7**	**9**	**1,733**	**1,704**	**21**	**8**	**0**
11	Cooperative No. 2	Cooperative	2	2	0	2	60	60	0	0	0
12	Cooperative No. 5	Cooperative	2	1	1	0	91	91	0	0	0
13	Cooperative No. 7	Cooperative	1	1	0	0	43	43	0	0	0
14	Cooperative No. 10	Cooperative	2	2	0	0	33	33	0	0	0
15	Cooperative No. 11	Cooperative	2	2	0	0	15	15	0	0	0
16	Cooperative No. 14	Cooperative	1	1	0	2	78	78	0	0	0
17	Cooperative No. 15	Cooperative	1	1	0	0	79	79	0	0	0
18	Cooperative No. 16	Cooperative	3	2	1	1	133	133	0	0	0
19	Cooperative No. 17	Cooperative	1	1	0	0	102	102	0	0	0
20	Cooperative No. 19	Cooperative	1	1	0	1	67	67	0	0	0
21	Cooperative No. 22	Cooperative	2	2	0	1	69	69	0	0	0
22	Cooperative No. 25	Cooperative	4	1	3	0	118	118	0	0	0
23	Cooperative No. 28	Cooperative	2	2	0	0	192	192	0	0	0
24	Cooperative No. 30	Cooperative	1	0	1	1	160	152	8	0	0
25	Ba Chieu-Cho Lon Cooperative	Cooperative	1	0	1	1	101	101	0	0	0
26	Hung Dao Cooperative	Cooperative	1	1	0	0	92	92	0	0	0
27	Hiep Luc Cooperative	Cooperative	4	4	0	0	88	88	0	0	0
28	District 8 PPT Cooperative	Cooperative	5	5	0	0	102	102	0	0	0
29	Cu Chi Cooperative	Cooperative	4	4	0	0	67	46	13	8	0
30	Phuong Nam Cooperative	Cooperative	1	1	0	0	26	26	0	0	0
31	Binh Chanh Cooperative	Cooperative	1	1	0	0	17	17	0	0	0
32	B.S.Co.	Private	1	1	0	0	n.a.	n.a.	n.a.	n.a.	n.a.
	Total		**74**	**45**	**29**	**14**	**2,336**	**1,704**	**188**	**171**	**273**

Source: MOCPT (as of November 2002)

(3) Bus Fleets: In 2002, there were 1,704 lambros (three-wheeled, 11 seats) including 1,063 micro buses (four-wheeled, 12 seats) and 603 buses with more than 14 seating capacity. The supply of bus fleets was comparatively stagnant from 1997 to 2002. This anemic growth was symptomatic of the weakness of the city's public transport sector. In relation to its 2002 population, the ratio was about 0.45 bus/lambro per 1,000 people, which was too low compared to the 1995 data for Bangkok (1.14), Manila (3.65) and Kuala Lumpur (0.86).

Table 2.2.20 Number of Bus Fleets

Mode	1997	1998	1999	2000	2001	2002
Bus (>14 seats)	572	599	540	540	532	603
Lambro/Micro Bus	2,250	2,194	1,755	1,830	1,789	1,704
Total	2,822	2,793	2,295	2,370	2,321	2,336

Source: MOCPT (as of November 2002)

The size of the vehicles varies – from a lambro that can be packed with 11 passengers, to large buses that can accommodate 50-60 passengers. The dominant class is the micro bus, mini vans modified to accommodate 12 seated passengers.

Table 2.2.21 Number of Bus Fleets by Capacity

Type	Seating Capacity	Vehicles		Aggregate Seats	
		Number	%	Number	%
Lambro	11	641	27.4	7,051	15.8
Micro Bus	12	1,063	45.5	12,756	28.5
Mini Bus	14 - 24	188	8.0	3,572	8.0
Medium Bus	25 - 49	171	7.3	6,327	14.1
Large Bus	50 - 60	273	11.7	15,015	33.6
Total		2,336	100.0	44,721	100.0

Source: MOCPT (as of November 2002)

The age profile of the vehicles mirrors the lack of investments over the years. About 59% of the fleet are 24 years and older. Only about 3.5% were acquired after 2000. Significantly, under a government decree issued in December 2001, all lambros, 21% of micro buses and 80% of other larger size buses were classified as obsolete and non-complying with vehicle standards, and therefore, have to be replaced.

Table 2.2.22 Age Profile of Bus Fleets

Production year	Age	Lambro (11-12 seats)	Bus (>14 seats)	Total
1975	27	864	467	1,340
1978	24	0	32	32
1990-1999	3-13	775	108	883
2000	2	65	0	65
2002	0	0	16	16
Total		1,704	632	2,336

Source: MOCPT (as of November 2002)

Bus Operations: Up to the beginning of January 2002, the bus transport network in HCMC had 76 routes with a total length of 1,409.2km. Of these routes, 28 were served by mini buses, medium buses and large buses with a combined route length of 539.4km (average 19.3km/route). A larger number of the routes, 48 of the 76, were served by lambros (small three- and four-wheeled vehicles) with a combined route length of 896.8km (average 18.7km/route).

Operating hours generally start at 5:00 and last up to 19:00. The earliest trip departs at 2:50 in some routes (e.g. Hoc Mon-Mien Dong Terminal), while the latest trip ends at 20:00 (e.g. Saigon-Mien Tay Terminal-An Lac). It is unclear why some routes have to start (2:50) or end (15:00) early.

Although frequency varies by route, average interval time of departures is 5 -15 minutes in peak hours and 15 -30 minutes in off-peak hours. Fare is set by route and charged to the passenger in proportion to the distance, VND 1,000-3,000 up to half of the route length and VND 3,000-6,000 for more than half.

Since January 2002, the city government implemented a Model Bus Scheme to encourage more commuters to switch to public transport.

The old bus route network was re-examined and revised. New orbital routes were introduced to complement the largely radial configuration of the network. As of November 2002, a total of 74 city bus routes emerged, of which 29 were designated as Model Bus Routes. In addition to these routes, 20 others were converted or opened as Model Bus Routes in December 2002.

Model bus routes cover most of the major corridors with a total route length of 517km (average of 17.8km/route). They are serviced by 331 buses, most of which are of medium size with seating capacities of 12-45. These routes are operated 14 hours a day from 4:50-5:00 to 19:00 with 5-15 minute frequencies in peak hours and between 10 to 30 minutes in off-peak hours. Bus operators in these routes charge an introductory flat fare of VND 1,000 and are entitled to a monthly subsidy from the government.

Table 2.2.23 shows the summary of bus operations and services by model bus and ordinary bus routes. Figure 2.2.23 shows the coverage of model bus routes. Table 2.2.24 and Table 2.2.25 present the profile and operational details of the model bus routes, respectively. Table 2.2.26 shows the detailed operating indicators of normal bus routes.

Table 2.2.23 Bus Operation and Service in HCMC

Item		Model Bus Route	Normal Route
Routes	Number	29	45
	Route length	8-43km (Total 516.9km) Average: 17.8km	4.3-57km (Total 827.2km) Average: 18.4km
	Coverage	Most of major roads and destinations	Relatively minor narrow roads
Operator	Type	Mostly by bus operators	Mostly by lambro operators
	Co-operation	Mostly co-operated	No sub-operator
Buses Assigned	Type	Relatively new and large capacity (more than half are served by buses with 30-40 seating capacity)	Mostly old and small capacity (11-12 seats)
	Number	4-26 buses per route depending upon route length, frequency and travel speed (Total 331)	N.A.
Operation	Frequency	50-274 trips/day (Average 150 trips)	N.A.
	Headway	Peak hour: 5-15 min. Off-peak hour 10-30 min.	Peak hour: 10-20 min. Off-peak hour 20-30 min.
	Operating Hours	From 4-5 am to 6-7 pm; average 14 hours	From 3-5 am to 5-7 pm; average 14 hours
Fare	Single Ticket	VND 1,000/trip (flat fare)	VND 1,000-12,000 (VND 200/passenger/km)
	Monthly Pass	VND 50,000 (multiple use for Model Bus Route)	No monthly pass

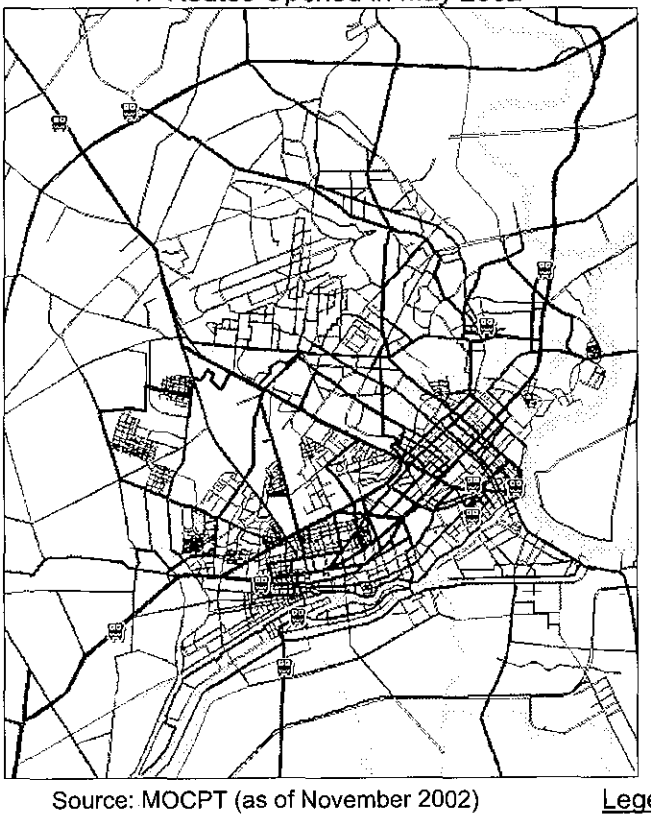
Source: Study Team (as of November 2002)

Figure 2.2.23 Model Bus Route Network

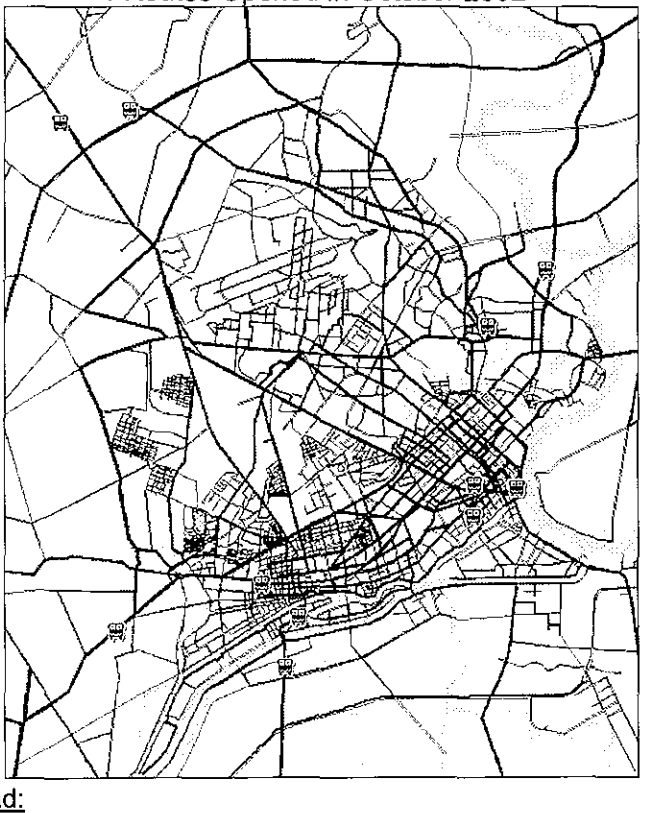
29 Model Bus Routes

8 Routes Opened in January 2002

17 Routes Opened in May 2002



4 Routes Opened in October 2002



Source: MOCPT (as of November 2002)

Legend:
Road covered by bus routes:
Road covered by model bus routes:

Table 2.2.24 Profile of Model Bus Routes

Sq. No.	Route No.	Terminal A - Terminal B	Main Operator	Sub Operators	Length (km)	Bus		
						Brand	No. of Seats	Age
Routes Opened in January 2002								
1	1	Sai Gon (Me Linh) - Cho Lon (Binh Tay)	Saigon Star	Sai Gon Bus	9.0	Iveco	30	7
2	4	Ben Thanh - An Suong	Saigon Star	Coop 30, 19/5	14.0	Iveco	30	7
3	8	Distruct 8 - Thu Duc	Q.Thang Coop.	-	34.0	890	45	27
4	11	Ben Thanh - Dam Sen	Sai Gon Bus	-	9.4	Daihatsu	14	8
5	18	Ben Thanh - Q.Trung SP	R.Dong Coop.	Coop 16	14.5	890	45	27
6	26	Ben Thanh - Mien Dong	Sai Gon Bus	Coop 19	12.8	Daf	45	24
7	27	Ben Thanh - An Suong	Sai Gon Bus	Coop 19/5	16.8	Daf	45	24
8	28	Ben Thanh - Tan Son Nhat	Sai Gon Bus	-	8.0	Daihatsu	14	8
Routes Opened in May 2002								
9	2	Sai Gon (Me Linh) - Mien Tay	Saigon Star	(R. 57)	12.0	Iveco	30	7
10	57	Ben Thanh - Mien Tay	Coop 5	(R. 2)	15.0	Suzuki	12	2
11	3	Ben Thanh - Thanh Loc	Saigon Star	Coop 22	12.0	Iveco	30	7
12	6	Le Hong Phong - Thu Duc	Q.Thang Coop.	-	21.5	890	45	27
13	7	Cho Lon - Go Vap	Sai Gon Bus	-	13.5	Daihatsu	14	8
14	9	Cho Lon - Hung Long	Q.Tam Coop.	(R. 25)	25.0	890	45	27
15	25	Cho Lon - Long Thuong	Q.Tam Coop.	(R. 9)	30.0	890	45	27
16	13	Ben Thanh - Cu Chi (Phuoc Thanh)	Q.Tien Coop.	Coop 14	42.7	890	45	27
17	14	Mien Dong - Mien Tay	B.Minh Coop.	(R. 88)	17.5	890	45	27
18	88	Mien Dong - Mien Tay	Coop 25	(R. 14)	15.0	Daewoo	12	10
19	19	Ben Thanh - Linh Trung IP	R.Dong Coop.	-	15.5	890	45	27
20	24	Mien Dong - Hoc Mon	Coop 19/5	Coop 2	22.0	890	45	27
21	38	Le Thi Rieng Park - Le Thi Rieng Park	P.Trinh Co. Ltd.	-	12.0	Iveco	21	1
22	41	Dam Sen - Dam Sen	Sai Gon Bus	-	14.5	Daihatsu	14	8
23	54	Cho Lon - Mien Dong	BC-CL Coop	B. Minh (R.87)	19.0	Suzuki	12	2
24	87	Cho Lon - Mien Dong	Coop 25	B. Minh (R.54)	16.0	Daewoo	12	10
25	94	Cho Lon - Cu Chi	Coop 30	Coop 19/5	35.0	Daihatsu	12	27
Routes Opened in October 2002								
26	36	Ben Thanh - Thoi An	Coop 16	-	16.5	Daewoo	12	10
27	39	Van Thanh - Cho Lon	Sai Gon Bus	BC-CL Coop	16.0	Daihatsu	14	8
28	40	Mien Dong - Mien Tay	Coop 25	Coop 2, 14	17.5	Suzuki	12	2
29	139	Mien Tay - Le Hong Phong	P.Trinh Co. Ltd.	-	10.2	Asia	25	7

Source: MOCPT (as of November 2002)

Table 2.2.25 Operating Indicators of Model Bus Routes

Sq. No.	Route No.	Terminal A	-	Terminal B	No. of Trips/ day	Headway (min.)		Operating Hours			No. of Buses
						Peak- hr	Off peak-hr	Start	End	Hours	
Routes Opened in January 2002				**Subtotal / Average**	**1,262**	-	-	-	-	**14:00**	**106**
1	1	Sai Gon (Me Linh)	-	Cho Lon (Binh Tay)	250	6	8	5:00	18:50	13:50	14
2	4	Ben Thanh	-	An Suong	184	8	10	5:00	19:16	14:16	14
3	8	DIstruct 8	-	Thu Duc	144	5	13	4:50	19:00	14:10	26
4	11	Ben Thanh	-	Dam Sen	130	10	15	4:55	18:55	14:00	9
5	18	Ben Thanh	-	Q.Trung Software Park	120	10	15	5:00	19:00	14:00	12
6	26	Ben Thanh	-	Mien Dong	148	10	15	5:00	18:50	13:50	10
7	27	Ben Thanh	-	An Suong	134	10	15	4:50	18:50	14:00	13
8	28	Ben Thanh	-	Tan Son Nhat	152	10	15	5:10	19:00	13:50	8
Routes Opened in May 2002				**Subtotal / Average**	**2,023**	-	-	-	-	**14:10**	**199**
9	2	Sai Gon (Me Linh)	-	Mien Tay	200	8	10	4:30	19:40	15:10	13
10	57	Ben Thanh	-	Mien Tay		8	10	4:30	19:40	15:10	
11	3	Ben Thanh	-	Thanh Loc	274	6	10	4:30	19:55	15:25	24
12	6	Le Hong Phong	-	Thu Duc	130	5	15	5:00	19:00	14:00	17
13	7	Cho Lon	-	Go Vap	168	10	10	5:00	18:50	13:50	14
14	9	Cho Lon	-	Hung Long	120	10	15	4:00	18:00	14:00	14
15	25	Cho Lon	-	Long Thuong		60	60	5:00	19:00	14:00	
16	13	Ben Thanh	-	Cu Chi (Phuoc Thanh)	156	8	14	4:40	18:30	13:50	22
17	14	Mien Dong	-	Mien Tay	264	6	10	4:00	19:00	15:00	20
18	88	Mien Dong	-	Mien Tay		6	10	4:00	19:00	15:00	
19	19	Ben Thanh	-	Linh Trung IP	97	15	20	4:30	19:00	14:30	10
20	24	Mien Dong	-	Hoc Mon	128	10	15	4:00	19:00	15:00	13
21	38	Le Thi Rieng Park	-	Le Thi Rieng Park	100	15	15	6:00	18:15	12:15	10
22	41	Dam Sen	-	Dam Sen	50	15	15	5:00	18:30	13:30	4
23	54	Cho Lon	-	Mien Dong	172	8	12	5:00	19:00	14:00	14
24	87	Cho Lon	-	Mien Dong		8	12	5:00	19:00	14:00	
25	94	Cho Lon	-	Cu Chi	164	8	10	5:00	18:10	13:10	24
Routes Opened in October 2002				**Subtotal / Average**	**240**	-	-	-	-	**14:20**	**26**
26	36	Ben Thanh	-	Thoi An	80	15	15	5:20	17:20	12:00	10
27	39	Van Thanh	-	Cho Lon	80	24	24	5:00	18:20	13:20	6
28	40	Mien Dong	-	Mien Tay	80	20	20	5:00	18:00	13:00	10
29	139	Mien Tay	-	Le Hong Phong	n.a.	15	30	4:00	22:55	18:55	n.a.
TOTAL					**3,525**	-	-	-	-	**14:10**	**331**

Source: MOCPT (as of November 2002)

Table 2.2.26 Profile of Normal Bus Routes

Sq. No.	Route No.	Terminal A	-	Terminal B	Main Operator	Length (km)	Fare (VND)		Interval (min.)		Operating Hours			Brand	Seat	Year
							On/off	>1/2	Peak Hour	Off-peak Hour	Start	End	Hours			
1	5	Le Hong Phong	-	Bien Hoa	Q. Thang	36.0	2000	5000	20	28	5:00	17:15	12:15	890	45	1975
2	10	Cho Lon	-	Cau Ong Thin	Q. Tam	15.0	1500	2500	25	25	3:00	16:00	13:00	890	45	1975
3	12	Ben Thanh	-	Tam Hiep	Q. Tien	30.0	1000	6000	25	25	5:50	17:30	11:40	890	45	1975
4	17	Sai Gon (Me Linh)	-	Cho Lon	Sai Gon Bus	9.5	2000	2000	10	15	6:00	18:00	12:00	Daihatsu	14	1994
5	20	Ben Thanh	-	Nha Be	R. Dong	16.5	1000	3000	15	15	3:45	18:20	14:35	890	45	1975
6	21	Cho Lon	-	Hoc Mon	Coop 19/5	27.5	1000	5000	10	10	2:40	17:00	14:20	890	45	1975
7	22	Ben Thanh	-	Hoc Mon	Coop 19/5	26.0	1000	5000	10	10	3:00	15:00	12:00	890	45	1975
8	23	Cho Lon	-	Xuan Thoi Thuong	Coop 19/5	28.5	1000	5000	10	10	2:50	15:30	12:40	890	45	1975
9	33	An Suong	-	Tan Van	Coop 22	29.0	2000	6000	10	10	5:40	18:00	12:20	Daewoo	12	1992
10	35	Mien Dong	-	Ho Nai	Coop 25	35.0	3000	6000	20	30	5:00	17:30	12:30	Daewoo	12	1992
11	53	Ben Thanh	-	Cho Lon	H. Dao	7.0	1000	1500	-	-	-	-	-	Lambro	11	1975
12	55	Bay Hien	-	Mien Dong	Coop 2	12.0	1000	3000	15	20	4:00	18:00	14:00	Lambro	11	1975
13	56	Mien Dong	-	An Suong	Coop 2	17.0	1000	4000	15	20	4:00	18:00	14:00	Lambro	11	1975
14	58	Cho Lon (Kim Bien)	-	An Suong	Coop 7	14.8	1000	3000	10	15	5:00	19:00	14:00	Lambro	11	1975
15	61	Sai Gon (N.Thai Hoc)	-	Le Minh Xuan IP	Coop 5	19.0	-	-	-	-	-	-	-	Suzuki	12	2000
16	63	Cho Lon	-	Mien Tay	Coop 10	5.0	1000	1000	-	-	-	-	-	Lambro	11	1975
17	65	Cho Lon	-	Tan Quy Tay	Coop 10	18.0	-	-	-	-	-	-	-	Lambro	11	1975
18	67	Ba Chieu	-	Lai Thieu	Coop 11	18.0	1500	3500	15	30	6:30	17:40	11:10	Daewoo	12	1992
19	71	Cho Lon (Kim Bien)	-	District 8	Dist. 8	4.3	-	-	-	-	-	-	-	Lambro	11	1975
20	73	Cho Lon (Kim Bien)	-	Binh Dong	Dist. 8	7.5	-	-	-	-	-	-	-	Lambro	11	1975
21	74	Cau Muoi	-	An Suong	Coop 14	16.0	1000	3000	5	5	3:30	19:00	15:30	Suzuki	12	2000
22	77	Ben Thanh	-	Suoi Tien	Coop 15	22.0	2000	5000	20	30	5:10	18:00	12:50	Daewoo	12	1992
23	79	Cau Muoi	-	Go Vap	Coop 16	9.2	1000	3000	15	15	5:00	18:00	13:00	Daewoo	12	1992
24	80	Cho Lon (Kim Bien)	-	Nga 5	Coop 16	14.5	1000	3000	15	15	5:00	16:00	11:00	Daewoo	12	1992
25	81	Cho Lon	-	Le Minh Xuan	Coop 17	17.6	1000	3500	5	10	3:00	19:00	16:00	Suzuki	12	2000
26	82	Cau Muoi	-	Binh Loi	Coop 19	11.0	1000	2000	5	10	5:00	19:45	14:45	Suzuki	12	2000
27	86	Cau Muoi	-	Lai Thieu	Coop 22	20.0	2000	4000	12	20	4:35	18:40	14:05	Daewoo	12	1992
28	89	Sai Gon (Duc Chinh)	-	Nha Be	Coop 26	15.0	1000	2500	4	7	5:45	17:15	11:30	Peugout	16	1975
29	90	Sai Gon (Duc Chinh)	-	Can Gio	Coop 26	57.0	2000	16000	30	30	5:05	16:00	10:55	Asia	25	1993
30	92	Cho Lon	-	Binh Chanh	Coop 28	16.0	1000	3000	10	15	4:00	19:00	15:00	Suzuki	12	2000
31	93	Cho Lon	-	Cho Dem	Coop 28	14.0	1000	2500	30	40	4:00	18:00	14:00	Suzuki	12	2000
32	99	Xom Cui	-	Phu Lac	Dist. 8	7.5	-	-	-	-	-	-	-	Lambro	11	1975
33	100	Ben Da	-	Xom Cui	Dist. 8	7.0	-	-	-	-	-	-	-	Lambro	11	1975
34	101	Nguyen Bieu	-	District 8	Dist. 8	5.6	-	-	-	-	-	-	-	Lambro	11	1975
35	108	Cho Lon	-	Hung Long	B. Chanh	18.0	1000	3000	30	60	5:00	16:30	11:30	Daewoo	12	1992
36	109	Kho 11	-	Nha Be	H. Luc	12.0	1000	2500	-	-	-	-	-	Lambro	11	1975
37	110	Nha Be	-	Hiep Phuoc	H. Luc	14.0	1000	3000	15	20	5:00	17:00	12:00	Suzuki	12	2000
38	112	Cau Chu Y	-	Phu Xuan	H. Luc	14.0	1000	2500	-	-	-	-	-	Lambro	11	1975
39	125	Cu Chi	-	Hau Nghia	Cu Chi	16.0	1000	3000	-	-	-	-	-	Lambro	11	1975
40	126	Cu Chi	-	Binh My	Cu Chi	20.0	1000	3500	-	-	-	-	-	Lambro	11	1975
41	130	Cu Chi	-	Ben Suc	Cu Chi	32.0	2000	5000	-	-	-	-	-	Lambro	11	1975
42	131	Cu Chi	-	An Nhon Tay	Cu Chi	23.0	2000	4000	-	-	-	-	-	Lambro	11	1975
43	135	Cat Lai	-	Ba Chieu	C 11/P.Nam	13.5	1000	2500	-	-	-	-	-	Lambro	11	1975
44	136	Phu Xuan	-	Nhon Duc	H. Luc	10.0	1000	2000	-	-	-	-	-	Lambro	11	1975
45	137	Mien Tay	-	Thu Dau mot	B.S. Co.	46.7	6000	12000	30	30	5:30	21:00	15:30	Mercedes	16	2000

Source: MOCPT (as of November 2002)

3) Other Public Transport Services

(1) Taxi: The number of taxis increased from 2,541 in 1997 to 3,579 in 2002. These are operated by 23 taxi operators. About 40% of taxi vehicles are operated by private companies and 40% by SOEs and JVs. Almost all have meter and most have radio contact and reservation services. Fares vary by company but on average the scale is about VND 12,000 flagdown rate for the first 1.8km.

Table 2.2.27 Profile of Taxi Operators in HCMC

Category	No. of Operators	Taxi Vehicle	
		No.	%
1.State-owned Enterprises	4	1,015	28.3
2. Joint Ventures	2	417	11.7
3. Private Companies	5	1,439	40.2
4. Cooperatives	12	708	19.8
Total	23	3,579	100.0

Source: MOCPT (as of November 2002)

(2) Cyclo: Cyclos operate based on demand and are available throughout the study area, particularly in the urbanized areas. Cyclos are sometimes used for goods transport. Recent regulation on cyclos bans them from certain streets and areas in the CBD. The MOCPT estimated that there are about 30,000 cyclos in HCMC and this number is decreasing. Fare is determined through negotiations between driver and passenger depending upon the distance. For short-distance trips, fare is generally much cheaper than taxi but almost the same or slightly higher than xe om.

(3) Xe Om: Xe om, or motorcycle taxi, also operates on demand. Xe om drivers wait for passengers on sidewalks in the urbanized area. Although there is no legal license to operate this type of service, its number and passengers are increasing because of its convenience, speed and relative cheapness. Fare is negotiated.

(4) Comparison of Operation of Taxi, Cyclo and Xe Om: Based on the results of the public transport driver interview survey conducted in the HOUTRANS, the characteristics of operation, drivers' profile, and financial aspects of taxi xe om and cyclo are summarized in Table 2.2.28. Major findings are as follows:

- Taxis make 10.2 paid trips per day for 18 working hours on average. Average fare income and net income on a weekday are VND 265,200 and VND 78,000, respectively. Most drivers are young and high school graduates or higher.
- Xe oms and cyclos make about six paid trips per day for 10 working hours on average. Their average fare income and net income on a weekday are VND 30-43 thousand and VND 12-17 thousand, respectively. Operation of xe oms and cyclos can start with a low initial investment but it is not a good business venture.

Table 2.2.28 Characteristics of Taxi, Xe Om and Cyclo Operation

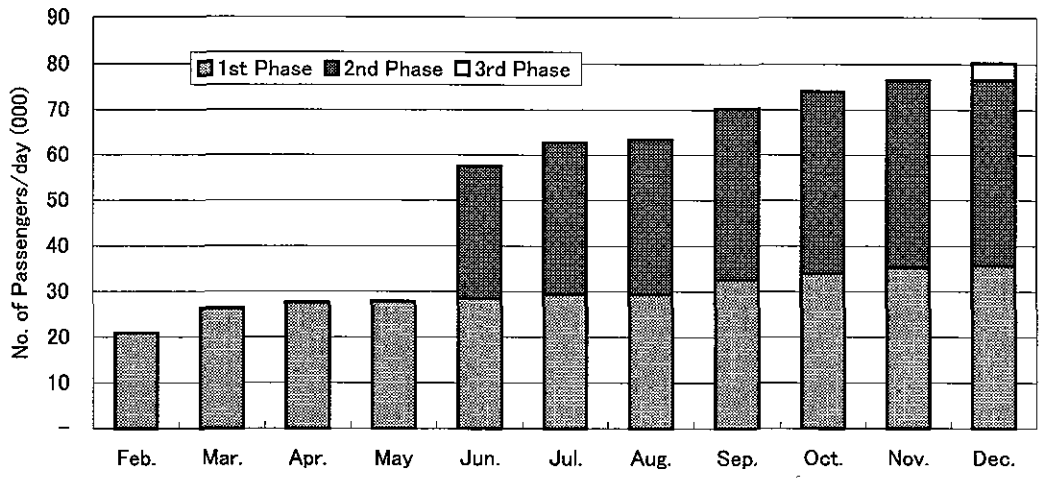
	Unit	Taxi	Xe Om	Cyclo
Operational Aspects				
1) No. of paid trips per day	trips/day	10.2	6.0	6.3
2) Average running km per day	km/day	133.0	74.7	39.7
3) Working hours	hours/day	17.8	10.0	10.5
4) No. of working days per week	days/week	5.8	6.8	6.9
5) No. of drivers per vehicle	persons/vehicle	1.5	1.7	1.1
6) No. of operating days per vehicle	days/vehicle	6.0	6.6	6.8
7) Years using current vehicle	years	4.0	5.5	10.5
Financial Aspect				
1) Fare income: - weekday	VND/day	265,200	42,900	30,600
- weekend	VND/day	352,800	48,300	37,300
2) Expenses: - fuel cost	VND/day	63,000	10,700	0
- Mgt, parking	VND/day	93,700	1,000	2,800
- Other costs	VND/day	16,200	3,000	2,900
3) Net Income: - weekday	VND/day	78,000	17,400	12,600
- weekend	VND/day	121,500	19,700	17,500
Profile of Drivers				
1) Drivers' age	years	33.9	41.8	44.0
2) Education: - Primary school	%	10	68	83
- High school	%	59	25	16
- Above high school	%	31	7	1
3) No. of family members	Person/HH	4.0	4.2	4.2
4) Family income: VND 0-0.8 M	%	0	29	40
VND 0.8-4 M	%	91	72	56
VND 4 M-	%	8	0	4
Organization				
1) Company style: - State-owned	%	9	6	0
- JV	%	16	4	0
- Cooperative	%	52	1	0
- Private	%	23	89	100
2) Employment Style: - Permanent	%	74	21	45
- Temporary	%	8	8	0
- Rental	%	9	2	4
- Others	%	8	69	51

Source: Study Team - Public Transport Operator Survey

4) Assessment of Model Bus Scheme

Ridership: Since the Model Bus Scheme's implementation in January 2002, the number of passengers using Model Bus Routes has gradually increased. But ridership is still low. As of December 2002, 2.5 million passengers a month, or 80,000 passengers a day for 4,100 trips/day used the 29 Model Bus Routes (first and second phases). The average number of passengers per trip was 28 for first phase routes and 20 for second phase routes.

Figure 2.2.24 Ridership of Model Bus Routes, 2002



Source: MOCPT

Financial Aspect: Model bus operations are heavily subsidized under the current flat fare of VND 1,000 per trip. Total subsidy per month increased from VND 1.3 billion (US$ 87,000) in February 2002 to VND 5.3 billion (US$ 353,000) in December 2002, or VND 2,150 for every passenger trip.

As of December 2002, approximately 53% of the operating cost of the eight first phase routes was subsidized, although the percentage of subsidy in operating cost gradually decreased. Total subsidy in 2002 reached VND 37 billion (US$ 2.5 million). According to the MOCPT, the HCMC-PC prepared a budget of VND 45 billion for 2002 and planned to disburse VND 145 billion in 2003.

The problem with the current subsidy system is that it does not encourage bus operators to be efficient. The State, in effect, guarantees profit and the operating losses are almost always covered with subsidy. The likelihood of subsidy levels escalating into unmanageable (and unsustainable) proportion in the future is realistically high.

Table 2.2.29 Ridership of Model Bus Routes, 2002

		Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Growth Rate
Operating days		28	31	30	31	30	31	31	30	31	30	31	-
1st Phase (8 Routes)	Bus trips (000)	32	37	36	35	36	38	39	38	39	38	40	1.23
	Passengers (000)	586	817	828	865	854	914	912	978	1,055	1,056	1,108	1.89
	Passengers/trip	18	22	23	24	24	24	24	26	27	28	28	1.54
	Passenger/day (000)	21	26	28	28	28	29	29	33	34	35	36	1.71
2nd Phase (17 Routes)	Bus trips (000)	-	-	-	-	59	59	59	60	62	61	63	1.08
	Passengers (000)	-	-	-	-	870	1,028	1,051	1,129	1,238	1,233	1,264	1.45
	Passengers/trip	-	-	-	-	15	17	18	19	20	20	20	1.35
	Passenger/day (000)	-	-	-	-	29	33	34	38	40	41	41	1.41
3rd Phase (4 Routes)	Bus trips (000)	-	-	-	-	-	-	-	-	-	-	19	-
	Passengers (000)	-	-	-	-	-	-	-	-	-	-	114	-
	Passengers/trip	-	-	-	-	-	-	-	-	-	-	6	-
	Passenger/day (000)	-	-	-	-	-	-	-	-	-	-	4	-
Total	Bus trips (000)	32	37	36	35	95	97	98	98	101	99	123	-
	Passengers (000)	586	817	828	865	1,724	1,942	1,962	2,107	2,293	2,290	2,485	-
	Passengers/trip	18	22	23	24	18	20	20	22	23	23	20	-
	Passenger/day (000)	21	26	28	28	57	63	63	70	74	76	80	-

Source: MOCPT

Table 2.2.30 Financial Indicators of Model Bus Routes, 2002

		Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Growth Rate
1st Phase (8 Routes)	Fare Revenue (VND Mil.)	586	817	828	865	854	914	912	978	1,055	1,056	1,108	1.89
	Operating Cost (VND Mil.)	1,915	2,202	2,163	2,251	2,176	2,296	2,323	2,272	2,343	2,267	2,376	1.24
	Subsidy (VND Mil.)	1,329	1,386	1,335	1,386	1,322	1,382	1,412	1,293	1,287	1,211	1,269	0.95
	% of Subsidy	69.4	62.9	61.7	61.6	60.7	60.2	60.8	56.9	55.0	53.4	53.4	-
2nd Phase (17 Routes)	Fare Revenue (VND Mil.)	-	-	-	-	870	1,028	1,051	1,129	1,238	1,233	1,264	1.45
	Operating Cost (VND Mil.)	-	-	-	-	3,986	3,999	3,997	4,031	4,179	4,149	4,283	1.07
	Subsidy (VND Mil.)	-	-	-	-	3,116	2,971	2,947	2,902	2,941	2,915	3,019	0.97
	% of Subsidy	-	-	-	-	78.2	74.3	73.7	72.0	70.4	70.3	70.5	-
3rd Phase (4 Routes)	Fare Revenue (VND Mil.)	-	-	-	-	-	-	-	-	-	-	1	-
	Operating Cost (VND Mil.)	-	-	-	-	-	-	-	-	-	-	1,162	-
	Subsidy (VND Mil.)	-	-	-	-	-	-	-	-	-	-	1,048	-
	% of Subsidy	-	-	-	-	-	-	-	-	-	-	90.2	-
Total	Fare Revenue (VND Mil.)	586	817	828	865	1,724	1,942	1,962	2,107	2,293	2,290	2,485	-
	Operating Cost (VND Mil.)	1,915	2,202	2,163	2,251	6,162	6,294	6,321	6,302	6,521	6,416	7,821	-
	Subsidy (VND Mil.)	1,329	1,386	1,335	1,386	4,438	4,352	4,358	4,195	4,228	4,126	5,335	-
	% of Subsidy	69.4	62.9	61.7	61.6	72.0	69.1	69.0	66.6	64.8	64.3	68.2	-

Source: MOCPT

(3) Popularity of Model Bus Scheme: There is widespread public awareness about the Model Bus Scheme in HCMC. According to the results of the HIS, 75% of the people knew the "model bus" system and more than half replied that they have tried the service. The same respondents also considered the fare level as rather low to moderate; none answered the fare to be high. This implies that fare was not the main factor in deciding to take a bus.

Table 2.2.31 Opinion of Residents on Model Bus Scheme

Question	Answer
1. Do you know Model Bus?	74.6% answer "Yes"
2. Have you tried bus?	64.1% answer "Yes"
3. How do you assess Model Bus?	47.6% answer "Like"
4. How do you find fare level?	51.2% answer "Cheap"

Source: HOUTRANS HIS

(4) Bus Fare: Although the people were concerned with fare, it was not a single factor for them to use buses. Balance between fare levels and quality of services was the point of discussion. As compared with the case of Hanoi, the impact of a low fare of VND 1,000 was limited. Providing better services with reasonably higher fares is a policy for the next step in bus service improvement in HCMC. Affordability for HCMC's residents is obviously high considering their income level. In comparison with other cities in Southeast Asia, bus fares in HCMC are extremely low.

Table 2.2.32 Comparison of Bus Fares in Southeast Asian Cities

City	Service Type	Fare System	Fare (US$)	
			5km-ride	10km-ride
HCMC	Model Bus	Flat: VND 1,000	0.07	0.07
	Ordinary Bus	Distance-related	0.07	0.14
Hanoi	Model Bus	Flat: VND 2,500	0.17	0.17
Manila	A/C Bus	Distance-related: P8 + P1/km	0.25	0.35
	Non-A/C Bus	Distance-related: P3 + P1/km	0.15	0.25
	Jeepney	Distance-related: P4(<4km) + P0.5/km	0.09	0.17
Bangkok	A/C Bus	Flat by route: TB 8-16	0.19-0.37	0.19-0.37
	Non-A/C Bus	Flat by route TB 3.5-5.5	0.08-0.13	0.08-0.13
Singapore	A/C Bus	Distance-related: min. S$0.6 (<3.2km)	0.44	0.61
	Non-A/C Bus	Distance-related: min. S$0.5 (<3.2km)	0.33	0.44

Source: Culled from various information sources.

Model Bus Scheme in Hanoi

(1) Operating Characteristics: Model buses have also been in operation in Hanoi with 34 routes and a total route length of 606km. Four operators field 408 buses which are relatively new (about half of buses is less than five years old and 50% are 5-10 years old). Bus capacity is also large (mostly with 60-80 passengers). The characteristics of the model bus scheme in Hanoi as compared to that of HCMC are briefly identified as follows:

- Fare adopted in the Model Bus Routes in Hanoi is VND 2,500 flat as compared to VND 1,000 in HCMC.
- Although fare level is relatively high, ridership on Model Bus Routes is significant, 177,000 passengers a day as compared with 80,000 a day in HCMC.
- Model bus operation in Hanoi is considered more efficient compared to that in HCMC, in spite of its higher fare level.

Table 2.2.33 Operating Characteristics of Model Buses in Hanoi

Item	Description
1. No. of Routes	34 with 606km route length
2. No. of Operators and Buses	4 operators with 408 buses
3. Fare Structure - Single ticket - Monthly for one route - Monthly for multiple routes	 VND2500 VND 30,000 (normal) & 15,000 (for students) VND 60,000 (normal) & 30,000 (for students)
4. Ridership (average/day) - 2001 - September 2002	 About 50,000 177,000
5. Bus Trips (average/day) - 2001 - September 2002	 About 2,000 3,870
6. Average passengers/bus trip	46 (as of September 2002)

Source: Hanoi Model Bus Survey-HOUTRANS

(2) Assessment of Bus Service in Hanoi: According to the interview survey conducted for bus passengers in Hanoi, most of the aspects concerning the Model Bus services were evaluated positively. Those evaluated as very good to good were "punctuality", "fare level", "ticketing system", "transfer facilities", "safety" and "bus quality". Those evaluated as fair included "waiting time", "travel speed", "number of bus stops" and "noise level". It is to be noted that passengers were concerned more with quality of services than fare.

Table 2.2.34 Assessment of Model Bus Services by Passengers in Hanoi

(%)

Item		Very good/good	Fair	Bad/Very bad
Service Level	Punctuality	67.8	26.8	5.4
	Waiting time	34.7	52.5	16.3
	Travel Speed	17.5	77.5	5.0
	Fare Level	71.6	25.6	2.8
	Ticketing System	76.4	23.0	0.6
	No. of Bus Stops	38.5	50.3	11.2
	Transfer Facilities	69.6	28.6	1.8
Safety	Security	95.3	4.0	0.7
	Boarding/Alighting	87.3	11.8	0.9
	Driver's Skill	89.9	9.4	0.7
Bus Quality	Body Cleanness	91.7	8.2	0.1
	Air Quality	73.8	24.3	1.9
	Noise Level	42.9	51.8	5.3
	Staff Behavior	75.4	22.5	2.1

Source: Hanoi Model Bus Survey-HOUTRANS

(3) Opinion for Future Improvement: Slow travel speed due to traffic congestion on some road sections was one of the most serious concerns of bus passengers in Hanoi. On a question on the willingness to pay for travel time reduction, most users replied positively. The introduction of air-conditioned buses was also supported by a majority of the passengers.

Table 2.2.35 Opinion of Bus Passengers on Further Improvement

Item	Description		
1. Willingness to Pay for Travel Time Reduction	Less than VND 1,000	VND 1,000-2,000	More than VND 2,000
- by 5 minutes	85%	15%	
- by 10 minutes	55%	40%	5%
- by 15 minutes	34%	55%	11%
2. Opinion on Air-con Buses	84% said Necessary		

Source: Hanoi Model Bus Survey-HOUTRANS

5) Current Issues on Public Transport

The current low level of public transport usage, especially bus transport, was clearly identified in the HIS and other transport surveys, as having decreased from its 1996 level shown in the DFID survey. Such a situation was due to many factors, e.g. rapid increase in motorcycles diverted people away from public transport. In terms of bus operation services, supply side, there are many issues that need to be tackled in the near future, which are described in this section.

Bus Fleet

Most buses operated in HCMC are very old, about 70% are more than 20 years old. These degraded vehicles have deteriorated the air quality and caused many traffic accidents due to mechanical failures. Since these problems have been addressed as serious social issues these days, the MOT issued a decree to prohibit the operation starting January 2003 of vehicles that are more than 20 years old. Under this decree, more than 1,300 buses need to be replaced.

In this regard, HCMC has formulated a plan to acquire 1,318 buses by the end of 2005, of which 50 buses have been already delivered and are in operation. However, there are some concerns that should be carefully reviewed, as follows:

(1) It is uncertain as to how many of the trips currently using private modes will divert to buses after putting many bus fleets in operation. Before new bus fleets should be introduced, travel demand should be reviewed.

(2) Large buses with 80 or more capacity appear to be favored over smaller buses with 40 to 60 capacity. Diverting commuters away from private modes and into buses would require major improvements in travel and waiting time. In contrast, large buses would mean longer headways and less agility in traffic movement.

(3) Transport operators are not yet capable of handling such large additional fleet in terms of operations, maintenance and parking facilities. Five big transport cooperatives (with a combined size of 403 vehicles) are forming a union, and it is likely to take at least a year to get it working as a unit. Formation of a similar union among the remaining 25 operators is yet to be initiated.

(4) In distributing the new buses, the following matters should be carefully specified; (i) number of buses and bus routes to be allocated, (ii) transfer of legal ownership of bus fleets, (iii) responsibility of leasing functions, and (iv) repair and maintenance system.

- **Subsidy System**

The current Model Bus Scheme has approved the procedure for allocating subsidies to bus operators, as follows: (a) a standard or budgeted cost is established (by MOCPT) for every operator on a specific route per trip (Cij); (b) actual revenues is calculated based on tickets sold per trip and validated through periodic inspections at the terminals (Rij); (c) the difference between revenues and standard cost accumulated on a monthly basis, is the amount of subsidy (Sij = Cij – Rij).T

The fundamental problem about this 'deficit method' is that it does not encourage bus operators to become efficient. The State, in effect, guarantees profit and that any operating loss would be covered (almost always) by subsidy. The likelihood of the subsidy level escalating into unmanageable (and unsustainable) proportion in the future is very high. The following abnormalities should be considered;

(1) If the standard costs (Cij) are smaller than historical operating expenses, the operator would seek to reduce turnover or ridership in order to recoup his profit margin. The lower the revenues, the higher the subsidy. There would also be incentive to under-declare revenues, i.e., collect fares without issuing the 'official tickets.'

(2) If the standard costs (Cij) are larger than historical operating expenses, the operator would again seek to reduce turnover or ridership in order to widen his profit margin.

Another obvious weakness of the current method is the imposition of profit margins. The standard or budgeted cost includes some amount of profit for the operator. The stipulated rates by route, and in some instances also by operator, are highly uneven. Profit margins ranged from a low of 5.2% to a high of 9.2% relative to operating costs, with an average of 6.9%. Neutrality and fairness among operators would have dictated a uniform profit margin, as the amount of investments and degrees of difficulties are already reflected in the respective operating expenses. Unintentionally or otherwise, the imposed profit margins decrease with bus productivity. In other words, the more a bus is used in service (measured in kilometers run per day), the lower the profit. Usually, it should be the reverse; that is, better bus utilization should be rewarded with higher profit margins instead of being penalized. The long-term impact, therefore, of the current method is to encourage inefficient use of fleet assets.

2.2.4 Water Transport

1) Inland Waterway and HCMC

HCMC's waterways serve a multitude of functions, some of which conflict with each other. Aside from traditional passenger and goods transport, they are a natural system of drainage, agricultural irrigation, intrinsic ecosystem of the Mekong Delta, source of municipal water, fishing grounds, park areas, and huge receptacle for wastes.

While advantageous in many ways, they likewise pose barriers to large-scale land development and inhibit a more efficient formation of road hierarchies.

Albeit natural, they are meandering formations with an intrinsic hierarchy -- smaller tributaries merging into bigger rivers. Bigger vessels are, therefore, limited to main segments of the river, while navigation is impossible in many smaller branches.

2) Waterway Operation

Passenger Transport Routes: Waterway transport is more significant in interprovincial services than in the study area. These generally are in the south to southwest areas of the city, namely in the direction of Vung Tau, Tien Giang-Can Tho, Tra Vinh Town, Thanh Phu, and Bang Tra.

The first two routes are served by high-speed hydrofoils with a 116 passenger capacity and cruising speed of 65-70 kph. Passengers using these high-speed crafts increased to 1,300 per day in 2000, compared to less than 200 in 1996. Although considered a tourist route, the proportion of foreigners using the service averaged less than 10%. This means that domestic demand, despite the high fare (VND 65,000 to Vung Tau), drove traffic growth.

One intracity route, from Ton That Thuyet Port to Can Gio, had passenger traffic estimated at 160 thousand in 2000, or about 500 a day. The watercrafts operating on this route are generally wooden-hulled vessels capable of carrying 40 to 80 passengers, and from seven to 30 tons of cargo.

Goods Traffic on Waterways: While data on waterway routes plied by cargo vessels are not available, visual surveys indicated that goods movement within HCMC, and between HCMC and nearby provinces, are far more extensive than passenger traffic, since Saigon Port serves international trade and is the primary Vietnamese port-of-call for ocean-going containerized vessels. Traffic counts conducted at several stations clearly showed that barges and oil carriers outnumber passenger boats by 18 to 1.

Shipside loading, from ocean-going vessels to river barges, is a common sight in HCMC. Tug-and-barge fleet is a favored means of cargo transport because of its inherent low cost, aside from its versatility in carrying bulk commodities (like sand, earthwork, gravel, and timber), manufactured goods, and container vans.

River Ports: Saigon Port actually encompasses a number of ports in several strips of land on the western banks of the Saigon River, which feeds into the larger Nha Be River. The more important ones are the Ton That Thuyet Port, Hiep An Port, Tan Binh Dong Port, and Bach Dang Port, which are located in HCMC.

2.2.5 Goods Transport

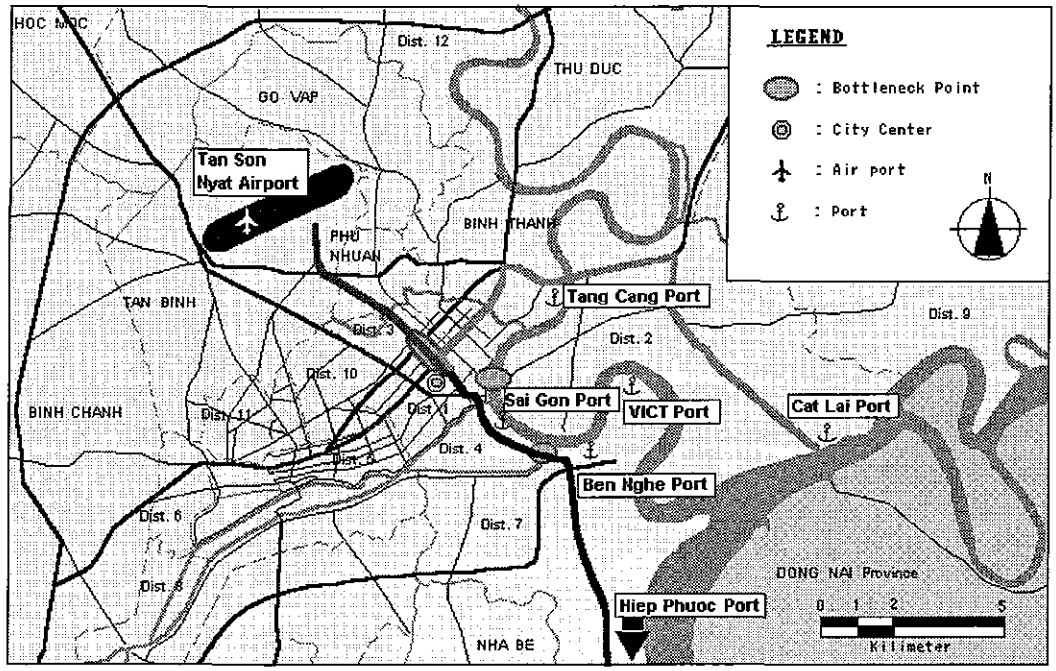
General Description: There are several major ports in the study area. These major goods transport terminals serving as international gateways are very important not only for the economic development of the study area but for southern Vietnam as a whole. They generate and attract large amounts of cargo.

Most of the major ports are located in the inner-city area, making expansion to meet future demands difficult and adversely impacting on urban transport. A plan to relocate these ports outside of HCMC has been proposed.

Access to and from Port: There are six river ports in the study area (refer to Figure 2.2.25) and two main access routes that connect each port to the central area. One is via Duong Huynh Tan Phat and Nguyen Tat Thanh streets from Saigon Port, Ben Nghe Port, VICT Port, and Hiep Phuoc Port, and another one is via the provincial road (PR25), national road (NH52), and Xo Viet Nghe Tinh Street from Tan Cang Port and Cat Lai Port.

The distribution of trucks from major ports and inland container depots (ICDs) shows that there are many trucks going into and outside of HCMC and its adjoining areas. Although this implies that HCMC plays a vital role in southern Vietnam, its ports need not be located in the central areas because it has a strong impact on local traffic.

Figure 2.2.25 Main Access to Ports and Airport



Source: Study Team

Freight Traffic to and from Major Ports: Although the number of trucks plying the routes to and from major ports per day is only about 14,700, the impact of the ports' location on urban traffic is much larger along the truck routes (refer to Table 2.2.36).

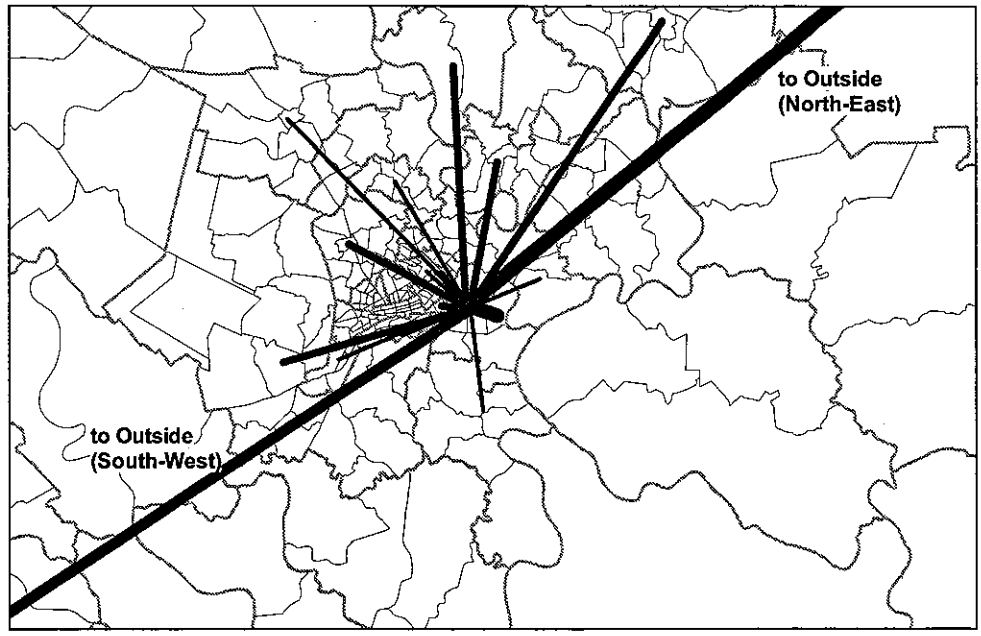
Increase in port traffic is expectedly significant. The negative impact of port traffic on urban areas is becoming increasingly serious because of port location and growing containerization. The survey conducted in the study showed a clear pattern of port traffic distribution (refer to Figure 2.2.26).

Table 2.2.36 Truck Traffic Volume to/from Major Ports

	Port and Location	No. of Vehicles/day				PCU
		Small Trucks (3.5t<)	Big Trucks (3.5t>=)	Container Trucks	Others	
1	Saigon Port (Nha Rong)	27	563	0	0	1,743
2	Saigon Port (Khanh Hoi)	122	234	327	0	2,091
3	Saigon Port (Tan Thuan 1)	129	841	768	29	5,498
4	Saigon Port (Tan Thuan 2)	41	33	1	2	187
5	Saigon Port (Ben Suc)	155	502	111	45	2,250
6	Tan Cang Port	321	528	2,351	55	10,510
7	Ben Nghe Port	4	198	202	0	1,309
8	VICT	373	771	1,290	38	7,612
9	Lotus	71	118	107	0	871
10	Phuoc Long ICD 1	101	325	740	2	3,769
11	Phuoc Long ICD 2	249	625	714	6	4,878
Total		1,593	6,331	6,611	177	40,718

Source: HOUTRANS Transport Survey
[1] in and out of the ports

Figure 2.2.26 Distribution of Trucks inside Study Area from/to Major Ports



Source: HOUTRANS Transport Survey

2.2.6 National Transport

1) Air Transport

In the study area, there is only the Tan Son Nhat International Airport, the main gateway from and to southern Vietnam. Tan Son Nhat Airport handled a total of 5.5 million passengers in 2002, 60% of which were international passengers.

The airport is located in Tan Binh District. The main access from the central area is approximately 6km via Truong Son, Phu Dinh Giot and Nguyen Van Troi streets.

Since air transport demand is increasing year after year, a plan to develop a new international airport in Long Thanh District in Dong Nai province has been proposed.

2) Vietnam Railway

The VR has about 2,660 route-kilometers of railway nationwide. The railway network is composed of seven main lines and several branch lines. In the study area, Vietnam Railway (VR) has six stations, namely Saigon, Go Vap, Binh Trieu, Song Than, Di An and Bien Hoa. The railway traverses Saigon Station to Bien Hoa Station (29.1km) as part of the Hanoi-Saigon Line (1,727km) operated by the VR with single and un-electrified tracks. This section has 19 manually operated level crossings, one bridge across Saigon River and two bridges across Dong Nai River. Between Saigon and Go Vap, it passes through congested built-up areas with a 12m ROW width.

Saigon Station, the end terminal of VR, is located in the middle of the urban center and close to Tan Son Nhat International Airport. Although the station is close to the two major roads of Cach Mang Thang Tam and Vo Thi Sau, access to Saigon Station is not well provided.

In general, more than 11m of land are generally reserved for side roads. Along the railway

track between Saigon and Go Vap stations, two-story houses are constructed along the road. In other sections, roads run on both sides of the railway track.

Although six long-distance trains depart and arrive at Saigon Station, they do not stop at any station. No commuter service operates between the Saigon and Bien Hoa sections.

Operating Status

VR operates six round-trip passenger trains a day taking 30-41 hours from Hanoi to Saigon. After leaving Saigon Station, trains stop only at Muong Man Station, 169 km from HCMC and skip all other stations in the study area. Commuter trains are, therefore, non-existent. Freight trains are operated from Song Than freight terminal to Hanoi with two round trips per day but none between Saigon and Song Than stations.

Operating hours at Saigon Station are from 3:00 to 5:00, 9:00 to 15:00, and 18:00 to 23:00. No trains are operated during the rush hours between 5:00 and 9:00 as well as between 15:00 and 18:00 to avoid traffic congestion at level crossings, which are currently operated in favor of road traffic. Level crossings are closed for five minutes when railway crosses the street. During the daytime from 9:00 to 20:00, six trains with three round trips are operated, blocking road traffic for 30 minutes in total.

3) Inter-city Bus Transport

There are eight bus terminals in HCMC. Three of them are terminals for HCMC intracity buses, while the other five terminals are for buses connecting HCMC and other provinces and/or cities. Almost all terminals were constructed before 1975.

Except for Ben Thanh Terminal (intracity, District 1) and Cho Lon Terminal (intracity and interprovincial /inter-city, District 5), the other six terminals are located relatively far from the city center. A new terminal building and bus bays are now being constructed in the area of Mien Dong Bus Terminal. Both Ben Than Terminal and Cu Chi Terminal will be relocated and will have new buildings and facilities. Preliminarily identified problems and issues are as follows:

(1) Each terminal has limited area and capacity, considering the number of buses operated, and almost all terminals have no bus bay.

(2) Roads surrounding the existing bus terminals are always crowded and form bottlenecks. Improvement of the road network and traffic control surrounding the terminals is needed.

(3) Considering the current urban growth in the surrounding areas, existing bus terminals in HCMC will become obstacles to urban development in the near future. Relocation of existing bus terminals needs to be studied.

(4) In existing bus terminals, size, design and layout of facilities are insufficient and inadequate. In order to secure a smooth flow and security of vehicles and users, improvement of the existing bus terminals, including facilities, is needed.

(5) The TUPWS is in charge of the study, design and construction of bus terminals in HCMC, while MOCPT under the TUPWS manages and operates bus terminals, buses, bus stops, and waiting sheds. They are also responsible for attending to the above issues.

2.3 Performance of Urban Transport Systems

2.3.1 Mobility and Accessibility

1) Analytical Framework

This section further analyzes the quality of urban transport services from the view of transport's role and ability to provide access to needed urban services. The people's and commuters' concerns are primarily on "mobility" and "accessibility" which are defined as follows:

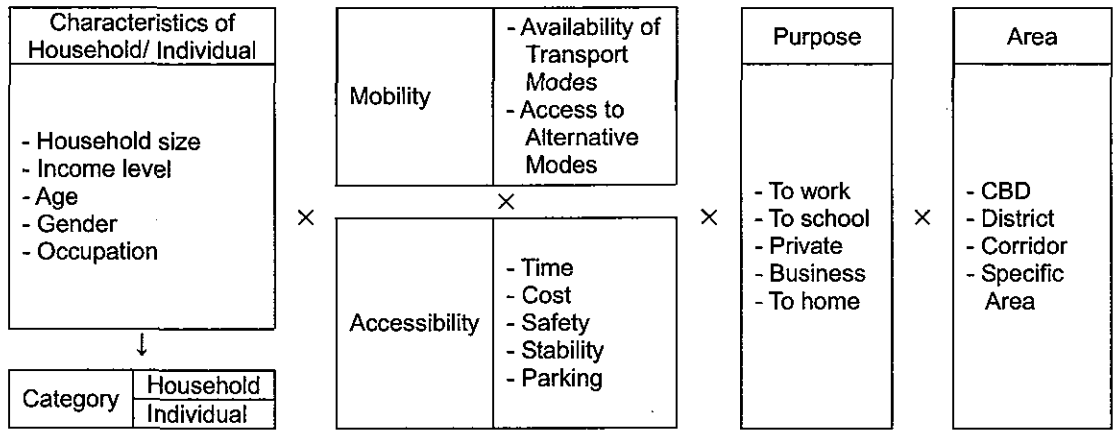
Mobility: The availability of transportation, either through ownership of a vehicle or access to one, such as vehicles for hire or public transport modes, which can be used to access needed services.

Accessibility: An indicator which defines conditions (i.e. time, cost, safety, comfort, stability, etc.) to reach specific destinations, services or places like hospitals, markets, schools, business centers, offices, etc.

These two factors were evaluated during the Study on groups of people with different socio-economic backgrounds in relation to their travel purposes and the areas they traveled to.

The following section explains the results of the analysis of urban transport services.

Figure 2.3.1 Framework to Analyze Urban Transport Services



Source: Study Team

2) Mobility

High Level of Vehicle Ownership and Access to Vehicles

(1) Vehicle Ownership by Households: Despite its relatively low level of income, mobility in the study area was high, which was due to the high level of motorcycle ownership and opportunities for mobility even for others who did not own motorcycles.

The trend in HCMC from 1996 to 2002 was to shift from bicycles to motorcycles. By 2002, more than 90% of households owned one or more motorcycles and only 7% did not possess them. Ownership rates for motorcycles and cars in HCMC also grew higher, while that for bicycles decreased compared with adjoining areas (refer to Table 2.3.1).

Household characteristics by vehicle ownership were further analyzed (refer to Table 2.3.2). The most common type of households (53.4% of the total) in the study area had

more than two motorcycles, 2.8 income earners (out of 4.3 household members) who earned VND 3.1 million monthly. This was followed by households (37.8% of the total) with one motorcycle and 2.5 income earners (out of 3.6 household members) who earned VND 2.0 million monthly. Of the total households in the study area, only 5.9% owned bicycles, 1.2% did not have any form of vehicle.

Table 2.3.1 Vehicle Ownership of Households, 1996 and 2002

Vehicle Type		% of Owning households			
		1996	2002		
		HCMC	HCMC	Adjoining Area	Study Area
Bicycle	Total	78.5	48.7	63.7	53.3
	- One	*37.8*	*33.6*	*40.0*	*35.6*
	- 2 or More	*40.7*	*15.1*	*23.7*	*17.7*
Motorcycle	Total	85.9	94.2	89.7	92.8
	- One	*38.7*	*34.2*	*46.7*	*38.0*
	- 2 or more	*47.2*	*60.0*	*43.0*	*54.8*
Car	Total	1.7	1.7	1.5	1.7

Source: HOUTRANS HIS, HCMC Transport Study (DfID)

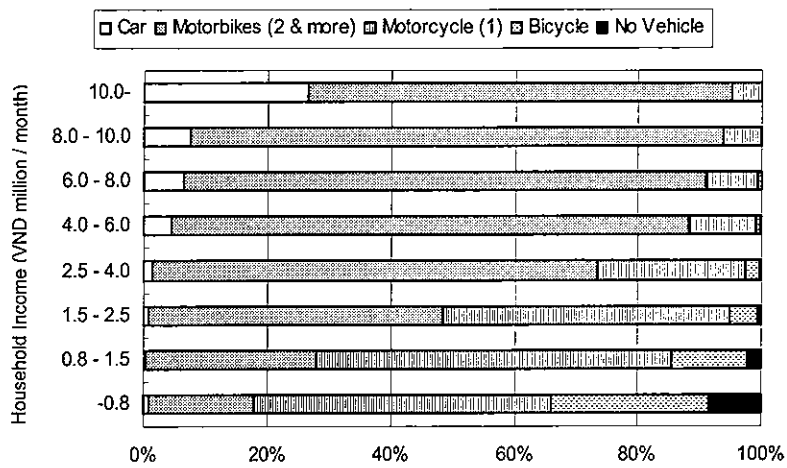
Table 2.3.2 Profile of Households by Vehicle Ownership

		Type of Household by Vehicle Ownership					
		Car owning	M/C Owning		Bicycle only	None	Total
			Multiple	Single			
No. of Households	(000)	32	1,037	723	112	26	1,929
	%	1.7	53.7	37.5	5.8	1.3	100.0
HH Profile	Ave. Income (000 VND/month)	4,415	3,118	1,985	1,472	1,284	2,596
	Ave. HH member	4.4	4.3	3.6	3.6	2.7	3.9
	No. of Income Earner	2.3	2.4	1.8	1.8	1.5	2.1

Source: HOUTRANS HIS

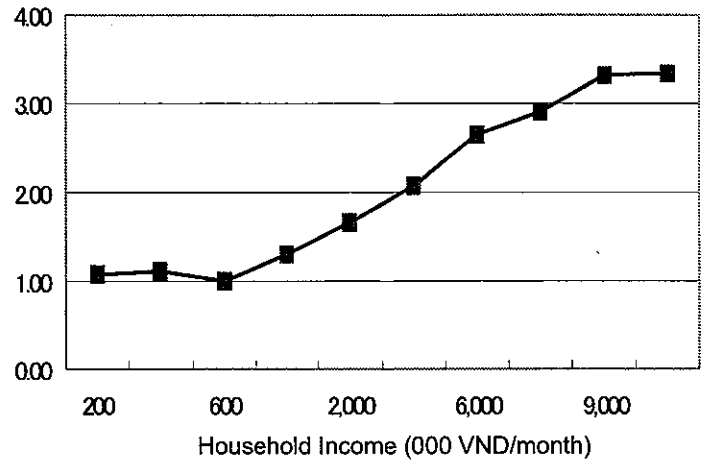
As is usually the case, increase in household income leads to higher level of ownership of motorcycles and cars. Multiple ownership of motorcycles has been increasing rapidly as income increases (refer to Figure 2.3.2 and Figure2.3.3).

Figure 2.3.2 Vehicle Ownership by Household Income



Source: HOUTRANS HIS

Figure 2.3.3 Average Number of Motorcycles/Household by Income Level



Source: HOUTRANS HIS

The vehicle ownership by household per area also showed a high rate of vehicle ownership in the central urban areas. In the inner city and its fringes as well as the urban areas in nearby provinces, about 60% of households owned more than two motorcycles. On the other hand, in the rural areas, motorcycle ownership was still low: less than half of the households owned more than two motorcycles; more than 10% had bicycles.

Table 2.3.3 Vehicle Ownership by Household Type (%)

Area by Type	Type of Household by Vehicle Ownership				
	Car	MC: multi	MC: single	Bicycle	None
Study Area Total	1.6	53.4	37.8	5.9	1.2
HCMC Total	1.7	58.9	33.8	4.4	1.3
• Inner Core	1.6	64.4	28.9	3.5	1.6
• Inner Fringe	1.8	62.9	31.4	2.9	1
• Emerging Peripheral	1.6	53.6	38.9	5	0.8
• Suburban	1.9	43.3	43.4	9	2.4
• Rural	2.3	39.4	45.9	10.9	1.5
Provincial Area	1.4	41.2	46.7	9.5	1.2
• Satellite Urban	2.4	56.7	36.5	3.9	0.5
• Suburban	2.8	57.4	33.6	5.1	1
• Rural	0.6	29.5	54.9	13.5	1.6

Source: HOUTRANS HIS

(2) Vehicle Ownership by Individual: Forty-five percent (45%) of the people owned motorcycles. In other words, one of two persons in the study area owned a motorcycle. Ownership of bicycle was about 17%, while that of car was still very low (0.7%).

Table 2.3.4 Vehicle Ownership of Individuals, 2002

Vehicle Type	% of Owning Individuals		
	HCMC	Adjoining Area	Study Area
Bicycle	17.5	25.2	19.7
Motorcycle	45.9	36.3	43.1
Car	0.7	0.6	0.6

Source: HOUTRANS HIS

(3) Motorcycle Ownership by Gender and Age Group: The gap in the availability of private transport meant a difference in ownership between gender as well as age groups in the study area. While 56% of males owned motorcycles, only about 30% of females were owners. Considering the difference in age groups, about 85% of males in the 30-49 year old bracket were owners, while the females had less than 50% ownership.

Table 2.3.5 Motorcycle Ownership of Individuals by Gender and Age Group

Age	% of Owning Individuals					
	HCMC		Adjoining Area		Study Area	
	Male	Female	Male	Female	Male	Female
6-17	4.5	3.9	3.4	2.7	4.2	3.5
18-29	67.5	50.2	59.2	33.4	65.1	45.4
30-39	85.7	50.0	83.0	37.6	84.9	46.6
40-49	86.6	43.9	85.4	32.0	86.3	40.7
50-59	73.7	24.2	61.8	16.0	70.2	21.8
60-69	45.3	8.3	30.2	3.9	40.5	6.9
70-	16.6	2.5	7.3	1.3	13.5	2.1
Total	58.7	34.2	50.6	22.9	56.3	30.9

Source: HOUTRANS HIS

Usage of Transport

(1) Overall Modal Share: Transport demand in the study area and in HCMC in 2002 was estimated at about 19.3 and 13.5 million trips/day (excluding walking), respectively (refer to Table 2.3.6). About 75% of all trips were made by motorcycles, of which about a fifth was as motorcycle passengers. Within HCMC, about 79% of all trips were made by motorcycles, an increase from 64% in 1996. The share of bicycles decreased to 13% from 32% in 1996. Only about 2.1% were served by public transport.

Table 2.3.6 Modal Share of Person Trips, 1996 and 2002

Mode	1996	2002		
	HCMC	HCMC	Adjoining Area	Study Area
Bicycle	32	13.6	26.4	17.4
Motorcycle	64	79.0	67.0	75.4
- driver		*65.6*	*55.1*	*62.5*
- passenger		*12.3*	*11.5*	*12.1*
- Xeom		*1.0*	*0.4*	*0.8*
Car	1	1.6	1.2	1.5
Bus	2	2.1	0.8	1.7
Others	1	3.8	4.7	4.0
Total	100	100.0	100.0	100.0

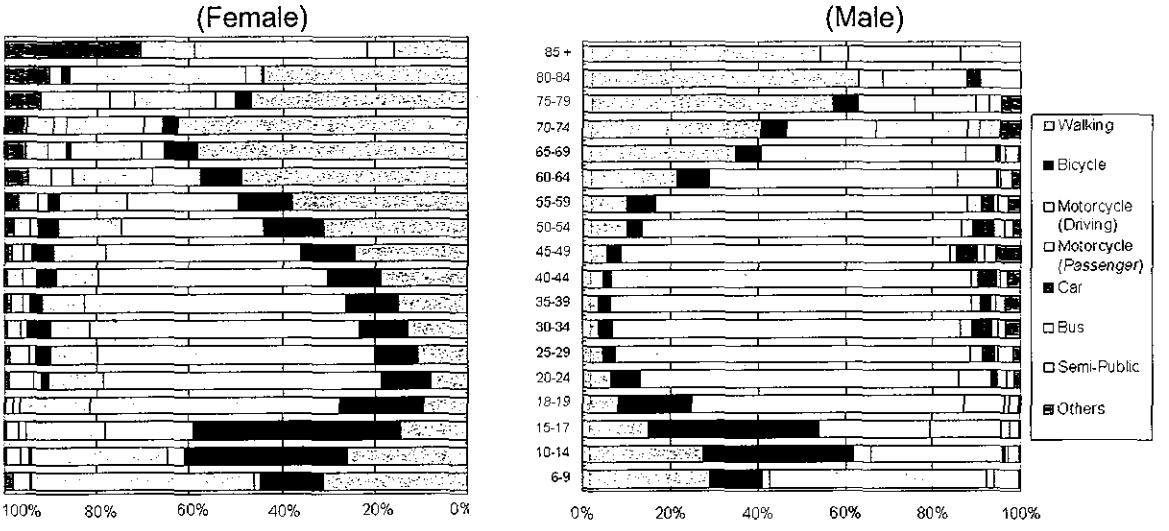
Source: HOUTRANS HIS, HCMC Transport Study (DFID)

(2) Modal Share by Social Segment: Characteristics of modal shares including walking were analyzed in relation to social status. The results showed big gaps in transport use between males and females, and between people of working age and others. In general, modal share was strongly affected by vehicle ownership and whether or not they have access to available transport means.

More than 80% of males between 30-49 years of age drove motorcycles. Of this, 80% owned the motorcycles they drove. On the other hand, the rate of pillion passengers was

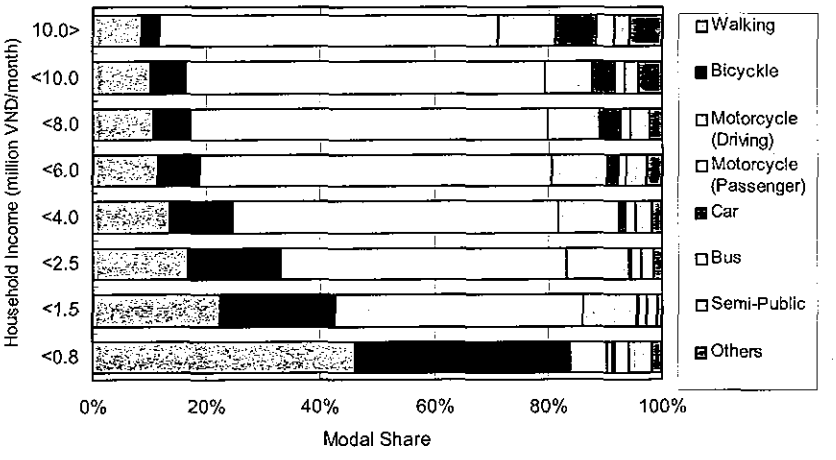
higher among females, showing that females had lower mobility than males. The rate of pillion passengers was also higher among the younger generation.

Figure 2.3.4 Modal Share by Gender and Age Group



Source: HOUTRANS HIS

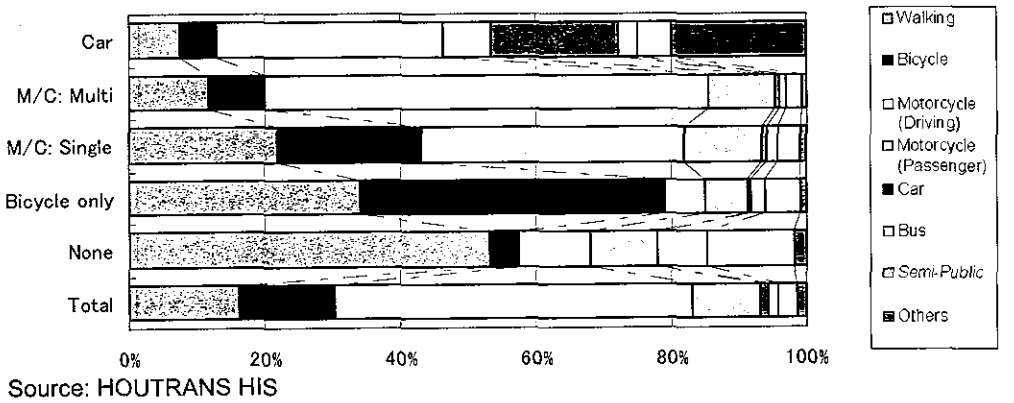
Figure 2.3.5 Modal Share by Household Income



Source: HOUTRANS HIS

Modal share also differed by household vehicle ownership. The share of walk trips by household members who did not own motorized vehicles was extremely high (more than 50%), while that of motorcycle trips by household members with more than two motorcycles was above 70%.

Figure 2.3.6 Modal Share by Household Type



Source: HOUTRANS HIS

Availability of Modes: The results of the HIS further showed that 38% of HCMC's residents did not own any private vehicle. Of this, 22% rode with family members, while 42% were sent off or picked up by others. The use of public transport, including bus, motorcycle taxi (or xe om) and cyclo, was limited (refer to Table 2.3.7).

Table 2.3.7 Access to Alternative Transport Modes, 2002

Category		HCMC (%)	Adjoining Areas (%)	Study Area (%)
1. Persons owning vehicles		62.5	61.0	62.1
2. Persons not owning vehicles		37.5	39.0	37.9
Alternative Modes	Family vehicle	(22.3)	(22.9)	(22.5)
	Sent off/Picked up by others	(41.9)	(33.7)	(39.5)
	Public transport	(3.9)	(1.7)	(3.2)
	Others	(31.9)	(41.7)	(34.7)

Source: HOUTRANS HIS

Assessment on Mobility

(1) Assessment of Trips: In general, people in the study area considered that the current travel conditions are not so bad. However, trips made by bus or car were relatively rated lower than other purposes and modes (refer to Table 2.3.8).

There is a clear negative relationship between travel time and trip evaluation (refer to Figure 2.3.7) In general, a trip requiring more than 30 minutes got a bad evaluation. A range of 20-30 minutes seemed to be a critical point between "bad" and "not bad" trip for motorcycle users, while 30 minutes seemed to be still a tolerable level for cars, buses, and other transport modes.

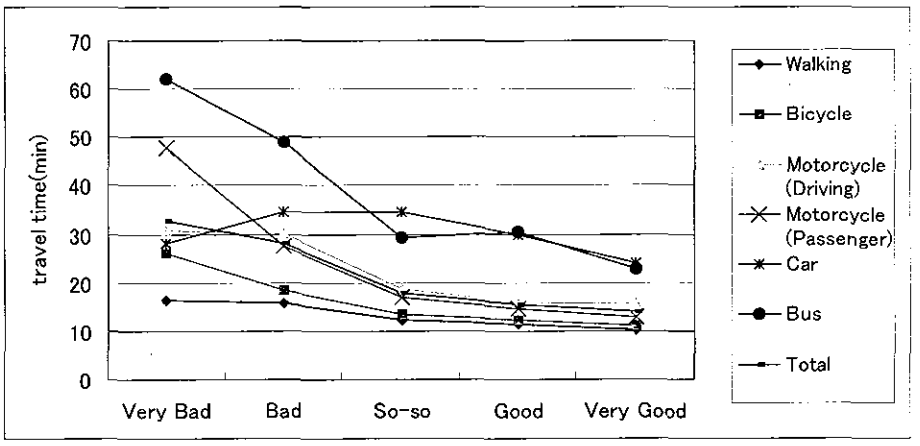
Table 2.3.8 Average Travel Time and Evaluation by Mode

	Modal Share (%)	Ave. Travel Time (min)	Evaluation Score [1)]
Walking	17.1	10.0	3.43
Bicycle	15.7	13.8	3.25
Motorcycle (Driving)	51.4	18.2	3.27
Motorcycle (Passenger)	9.9	16.3	3.33
Xeom	0.7	19.2	3.17
Car	0.9	39.2	3.31
Bus	1.4	34.3	3.25
Others[2)]	2.9	34.3	3.29
TOTAL	100.0	16.8	3.30

Source: HOUTRANS HIS
[1)] The scores are calculated by averaging the points as following; 1-Very Bad; 2-Bad, 3-So-so; 4-Good; and 5-Very Good
[2)] Others include semi-public modes except xe om.[11]

[11] In some analysis in this chapter, Trip Xeom is specifically extracted in order to describe motorcycle trips in detail.

Figure 2.3.7 Average Travel Time by Evaluation on Trip and Transport Mode

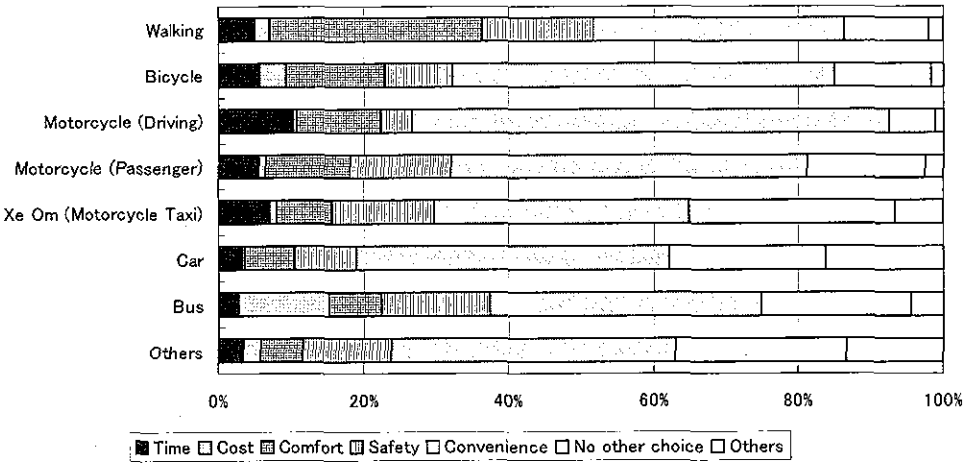


Source: HOUTRANS HIS

Average evaluation score of the trips made by HIS respondents was about 3.3 on a scale of 5 and more than 9 % trips were evaluated "so-so" or "good". This implies that people in the study area were generally satisfied with current traveling conditions.

(2) Assessment by Transport Mode: With regard to reasons for modal choice, in general, "convenience" was the most popular reason, which was more prominent for motorcycle and bicycle. Bus users chose bus for its cheapness, while "cost" was not a major reason for other modes. Moreover, when sent off or picked up, many shared rides by motorcycle, including xe om users, since they had no other choice (refer to Figure 2.3.8).

Figure 2.3.8 Reasons for Modal Choice by Transport Mode



Source: HOUTRANS HIS
Note: Others included semi-public modes except xe om.

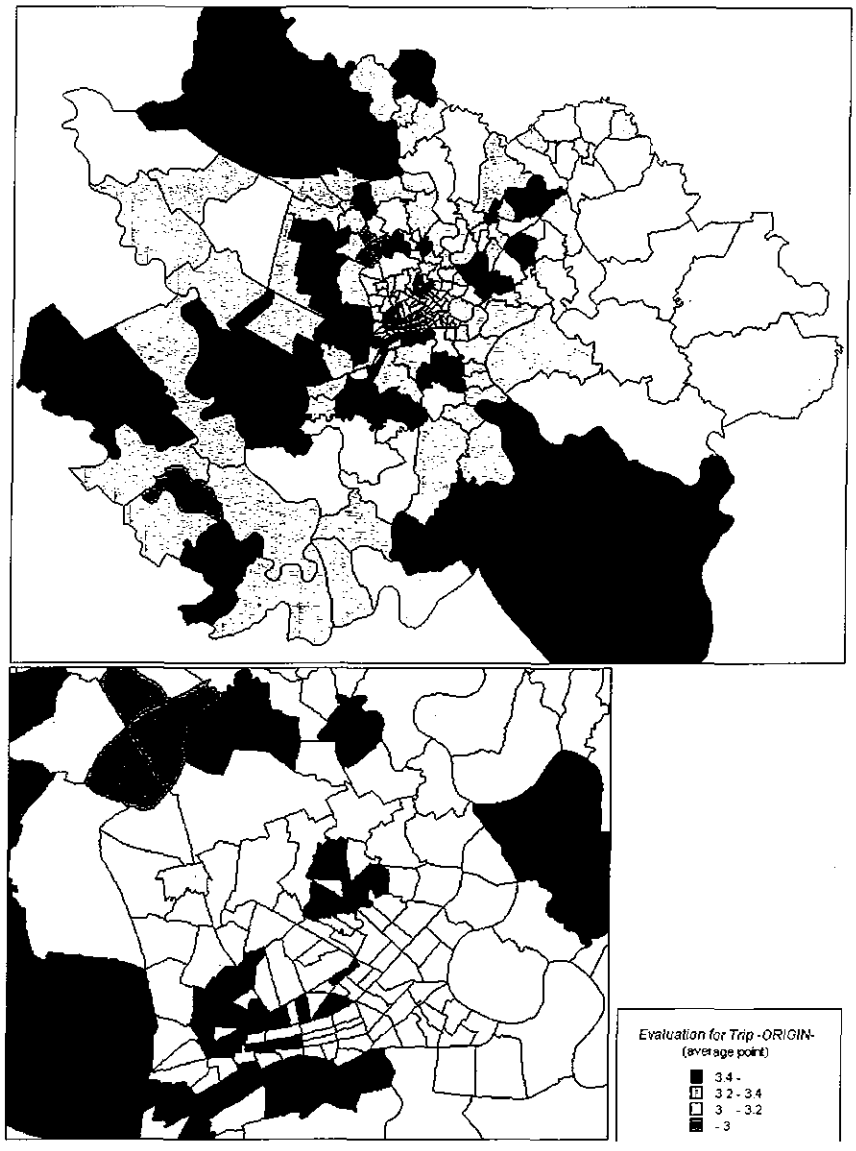
(3) Assessment by Area: Trips made in the areas were rated above 3.0 (level of so-so) (refer to Figure 2.3.9). Western part (Dong Nai province) was evaluated comparatively low and some areas in Ho Chi Minh City including the districts of Go Vap 12, and 3 showed a low rated value. In general, the disparity between areas seemed very small in the study area.

(4) Assessment of Motorcycle Mobility: As was described in the previous section, the ownership of motorcycle has increased rapidly and motorcycle has been the predominant

mode in the HCM metropolitan area. People use motorcycle for its convenience. Likewise, the HIS results showed that commuters considered motorcycles as highly convenient (refer to Figure 2.3.10).

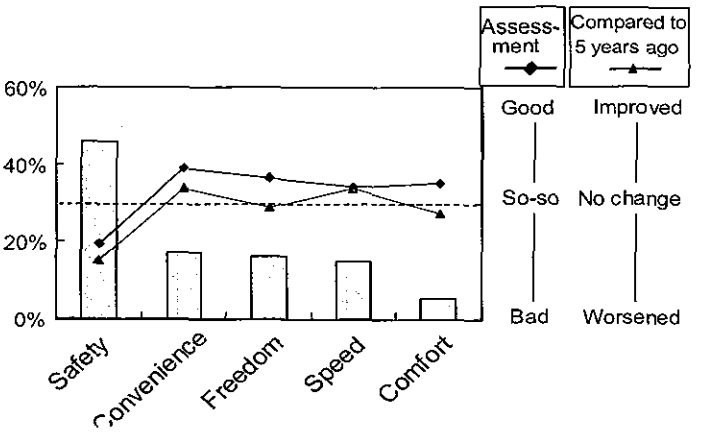
However, the safety of motorcycles is a serious concern. Out of five important aspects, more than 45% of respondents chose "safety" as the most important aspect in motorcycle mobility. The five aspects are: convenience, speed, freedom, safety, and comfort (refer to Figure 2.3.10). In addition, "safety" was also assessed the lowest as having significantly worsened compared with five years ago. The other four aspects were assessed as having remained the same. Respondents seemed to realize that the convenience of motorcycle driving comes with great risk to their lives.

Figure 2.3.9 Evaluation of Trip by Zone (Origin-based)



Source: HOUTRANS HIS
Note: Average points were calculated by assigning points, as follows: 1-Very Bad; 2-Bad, 3-So-so; 4-Good; and 5-Very Good

Figure 2.3.10 People's Concerns on and Assessment of Motorcycle Use

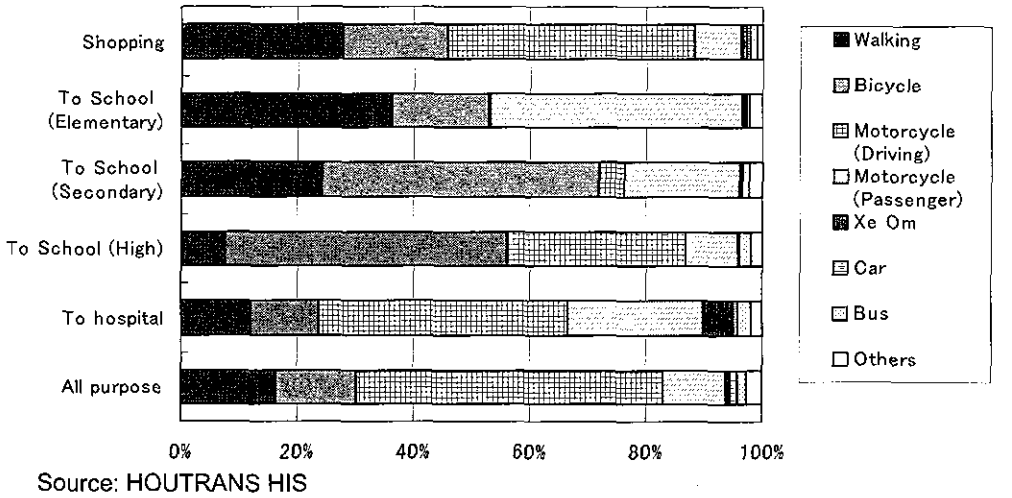


Source: HOUTRANS HIS

3) Accessibility

Accessibility to Basic Urban Services: To focus on daily trips in urban areas, "shopping", "to school" (elementary, secondary, high school)[12], and "to hospital"[13] trips were delineated in the HIS survey results. Modal share was quite different by purpose. Walking and the use of bicycles were frequently used for "shopping" and "to school" trips, while motorized vehicles were used for "to hospital" trips (refer to Figure 2.3.11). The modal share of pillion passengers was higher among elementary school students than high school students. Using the bus was not a popular mode for any purpose.

Figure 2.3.11 Modal Share by Trip Purpose in the Study Area



Source: HOUTRANS HIS

Average travel time of these trips was also shorter than that of "all purpose" trips. People perceived the travel time was quite satisfactory (refer to Table 2.3.9).

Reasons for modal choice for these trips were different from each other by purpose and mode. Main characteristics are as follows (refer to Figure 2.3.12):

- In general, convenience was the most popular reason for modal choice.

[12] Trips to elementary schools were assumed as school trips of children 6-10 years of age, while trips to secondary schools and high schools were done by children 11-15 and 16-18 years of age, respectively.

[13] Trips to medical facilities were assumed as trips going to hospitals.

- Walking was considered as comfortable and safe in most of the purposes.
- Convenience was the dominant reason in the choice of bicycles and motorcycles.
- Xe om was chosen as a convenient mode for shopping and for "to school" (elementary) trips, because of the "no other choice" factor. Safety was also a reason for choosing xe om.
- *Cars were used for convenience, comfort and safety.*
- The bus was used for convenience, the "no other choice" factor, and safety.

Table 2.3.9 Average Travel Time and Evaluation per Trip by Purpose

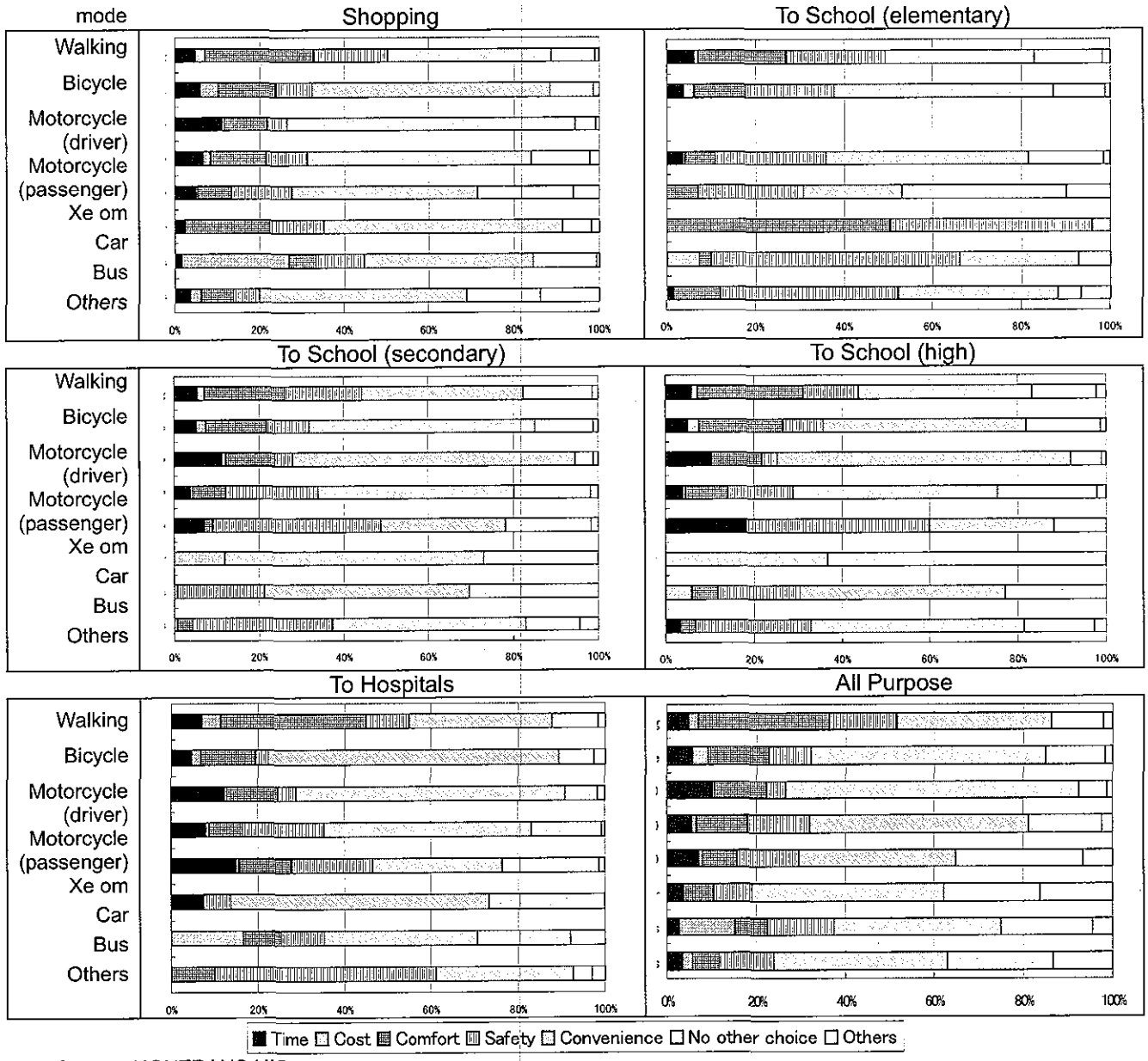
Mode	Shopping		To School (elementary)		To School (secondary)		To School (high school)		To Hospitals		All Purpose	
	Time (min)	Evaluation[1)]	Time (min)	Evaluation	Time (min)	Evaluation	Time (min)	Evaluation	Time (min)	Evaluation	Time (min)	Evaluation
Walking	9.5	3.43	9.6	3.38	10.0	3.35	11.2	3.34	10.8	3.36	10.0	3.43
Bicycle	11.7	3.28	11.0	3.36	12.7	3.28	15.1	3.25	12.4	3.05	13.6	3.26
Motorcycle (Driving)	14.8	3.30	11.5	3.52	13.2	3.41	16.1	3.24	20.4	3.22	18.1	3.26
Motorcycle (Passenger)	15.9	3.32	10.7	3.47	12.5	3.37	15.6	3.34	18.4	3.19	16.5	3.32
Xeom	15.6	3.36	11.3	3.00	11.0	3.36	16.0	3.00	21.8	3.00	19.2	3.17
Car	26.1	3.17	13.8	3.96	20.0	3.75	17.8	3.82	22.6	3.37	36.9	3.30
Bus	25.5	3.33	12.0	3.39	18.0	3.24	19.1	3.12	28.8	3.00	32.8	3.24
Others[2)]	25.2	3.30	13.9	3.29	17.5	3.36	23.6	3.37	17.0	3.04	33.1	3.24
TOTAL	13.2	3.34	10.4	3.42	12.1	3.32	15.2	3.27	18.1	3.18	16.9	3.30

Source: HOUTRANS HIS

[1)] Average evaluation points were calculated by assigning points, as follows: 1-Very Bad; 2-Bad, 3-So-so; 4-Good; and 5-Very Good

[2)] Others include semi-public modes except xe om.

Figure 2.3.12 Reasons for Modal Choice by Trip Purpose



Source: HOUTRANS HIS

Accessibility of To-school Trips: The modal share of motorcycle passengers was higher for elementary school students than for high school students, which may show that elementary students depend more on send-off/pick-up by others.

(1) *When send-off/pick-up was not available, elementary students used the xe om while* high school students drove bicycle themselves. Very few students used public transport as an alternative mode (refer to Table 2.3.10).

(2) Students did not use public transport because of unavailability of routes, or because it was time-consuming. High school students were concerned more with comfort in choosing transport (refer to Table 2.3.11).

(3) Students could have used public transport more often had bus stops been located closer to homes or exclusive school buses been available for them (refer to Table 2.3.12).

Table 2.3.10 Alternative To-school Travel Modes

Mode	-10[1]		11-15[2]		16-		Total	
	No.	%	No.	%	No.	%	No.	%
Walking	4	21.1	31	17.0	5	7.5	40	14.9
Bicycle	1	5.3	62	34.1	31	46.3	94	34.9
Xeom	9	47.4	55	30.2	13	19.4	77	28.6
Car	0	0.0	1	0.5	0	0.0	1	0.4
PT	0	0.0	13	7.1	3	4.5	17	6.3
Others	5	26.3	20	11.0	15	22.4	40	14.9
Total	19	100	182	100	67	100	269	100

Source: HOUTRANS Student Interview Survey

[1] Students' ages are: from 6 to 10 years for elementary, from 11 to 14 for secondary and from 15 years for high school.

[2] In Vietnam, driving a motorcycle is allowed only to youths 16 years and above.

Table 2.3.11 Reasons for not Using Public Transport

	-10		11-15		16-		Total	
	No.	%	No.	%	No.	%	No.	%
No Available Route or Time Consuming	5	38.5	105	60.7	37	46.8	147	55.5
Dangerous	2	15.4	12	6.9	1	1.3	15	5.7
Not Comfortable	0	0.0	30	17.3	37	46.8	67	25.3
Expensive	0	0.0	2	1.2	0	0.0	2	0.8
Others	6	46.2	24	13.9	4	5.1	34	12.8
Total	13	100	173	100	79	100	265	100

Source: HOUTRANS Student Interview Survey

Table 2.3.12 Conditions for *Transferring* to Bus

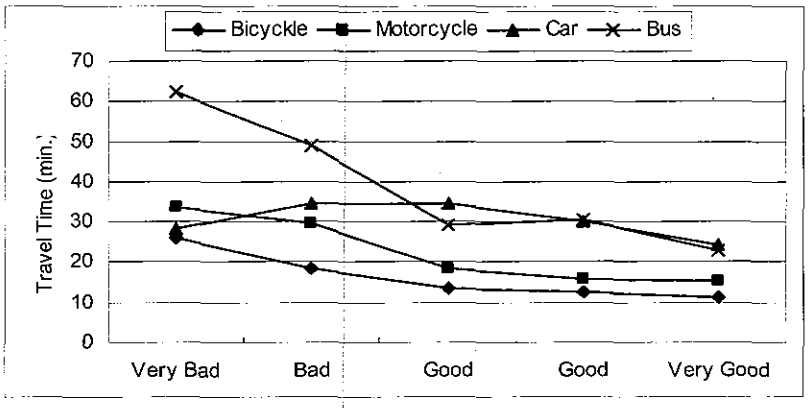
	-10		11-15		16-		Total	
	No.	%	No.	%	No.	%	No.	%
Bus Stop close to House	5	45.5	63	35.6	25	31.6	93	34.8
Bus Stop close to School	0	0.0	12	6.8	5	6.3	17	6.4
School Bus with lower price	1	9.1	16	9.0	14	17.7	31	11.6
School Bus only for Students	3	27.3	73	41.2	32	40.5	108	40.4
Others	2	18.2	13	7.3	3	3.8	18	6.7
Total	11	100	177	100	79	100	267	100

Source: HOUTRANS Student Interview Survey

Accessibility of Commuting Trips: Commuting trips were specifically focused in the HIS, in terms of average commuting time, assessment, and tolerable commuting time. The average travel time for commuting was 15 minutes by bicycle, 20 minutes by motorcycle and 30 minutes by bus. These were perceived to be within tolerable levels. In general, the average commuting time was getting longer as the assessment of trip worsened except for trips by car (refer to Figure 2.3.13 and Table 2.3.13). The evaluation point showed that commuters considered the travel condition of commuting as acceptable except for trips by bus.

With regard to commuting conditions by area, commuters in the districts located along the east-west corridor enjoyed shorter commuting times except for District 2 compared with those in districts located along the north-south corridor, such as Go Vap, Nha Be, and Hoc Mon (refer to Figure 2.3.14).

Figure 2.3.13 Commuting Time by Mode and Assessment



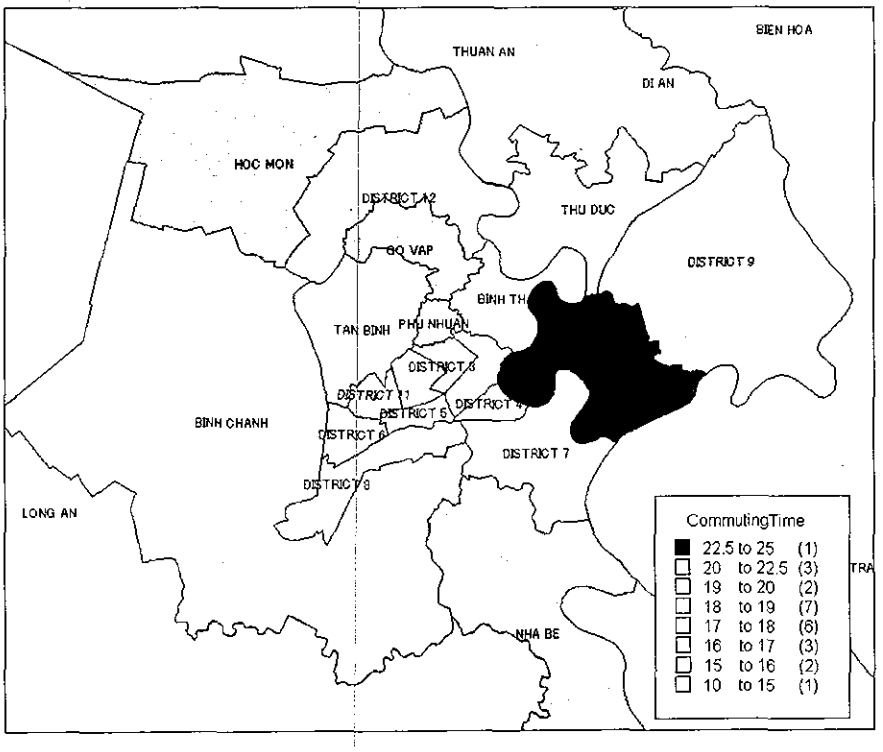
Source: HOUTRANS HIS

Table 2.3.13 Assessment of Commuting Condition by Mode

Mode	Assessment (%)			Travel Time (min.)		
	Bad	So-so	Good	Present	Tolerable	Bad
Walking	1.4	76.3	22.3	9.5	10.7	15.0
Bicycle	5.2	79.6	15.2	15.6	16.1	24.2
Motorcycle	6.7	79.0	14.3	20.0	20.7	32.9
Car	6.8	77.5	15.8	28.6	30.5	65.8
Bus	8.6	77.5	13.8	28.7	28.3	50.8

Source: HOUTRANS HIS

Figure 2.3.14 Commuting Conditions by Area



Source: HOUTRANS HIS