CHAPTER 3:   TRAFFIC SURVEY AND ANALYSIS

3.1   Introduction

(1)   Survey Background and Objectives

The study area including Dhaka city and its environs called Dhaka Metropolitan Area has been rapidly urbanized with both planned and unplanned developments. Under the rapid urbanization and population growth, urban environment and traffic congestion in the city has become worse in recent years. DHUTS conducted Household Interview Survey (hereafter HIS) and Cordon and Screen Line Survey to collect data of travel behavior patterns and characteristics throughout Dhaka Metropolitan Area. The main objectives of these traffic surveys are:

a)   To grasp trip characteristics of residents in the study area, which enables to provide various sources for setting up the integrated transport plan

b)   To offer the necessary data for transport modeling

Regarding to existing traffic congestion situation, it is described in Chapter 12.5.

(2)   Outline of Traffic Surveys

Table 3.1-1 summarizes the main traffic surveys conducted in the study.

Table 3.1-1   Outline of Traffic Surveys

Survey	Objectives	Coverage	Method
Household Interview Survey (HIS)	- To obtain trip characteristics of residents in the study area - To collect necessary data for transport modeling	- Target Sampling Rate: 1% of all household in DMA	- Home visit interview survey
Cordon Line Survey	- To obtain current traffic volume entering and exit from/to DMA - To understand travel characteristics of passengers	- 13 on-road stations in the surrounding area of DMA	- day vehicle traffic count - day OD interview at roadside - 16 hours & 24 hours
Screen Line Survey	- To obtain current traffic volume within DMA - To understand travel characteristics of passengers	- 51 on-road stations within DMA	- day vehicle traffic count - 16 hours & 24 hours

Regarding to existing travel speed information of bus, it is presented in Chapter 4.3.

(3)   Vehicle Classification

There are two ways to define a trip: in terms of linked trip and unlinked trip. The former is an entire trip of a person to terminate a single purpose, while the latter is a part of the former segregated by transport mode. In other words, a linked trip is a chain of unlinked trips by different individual transport modes. Hence, in order to define representative transport mode, there is a need to determine the priority among various transport modes.

In the Study, the priority was defined based on the following considerations:

a)   Public mode has a higher priority than private mode.
b)   Line-haul mode has a higher priority than feeder mode.

Considering the above, the priority was determined as shown in Table 3.1-2.

Table 3.1-2   Vehicle Types

Code	Category A	Category B	Mode Priority
1	Walking	Bi-Cycle	9
2	Passenger Car	Pickup /Small Van	4
		Car/Station Wagon	
		Taxi	
		Jeep	
3	Private Bus	Large Staff Bus	5
		Large School Bus	
		Minibus Staff Bus	
		Minibus School Bus	
		Micro Staff Bus	
		Micro School Bus	
4	Auto Rickshaw	Motor-cycle	6
		Auto-rickshaw/ CNG	
5	Rickshaw	Rickshaw/ Rickshaw Van	7
6	Truck	Truck 3-Axle /Truck Trailer	8
		Tanker/ Tank Lorry	
		Medium Truck/ Truck 2-Axle	
7	Railway	Railway	1
8	Bus	Large Bus	2
		Minibus	
		Micro Bus	
		Auto-tempo	
		Laguna/Maxi	
9	Waterway	Waterway	3

Note: In 'Mode Priority' column, smaller number indicates higher priority.
Category A is used for analyzing characteristics; while, Category B for survey implementation.
Rickshaw; A mode of human-powered cycle transport with two wheeled cart
Rickshaw van; Same as Rickshaw with van, School children are usually used
CNG; Same as Auto-Rickshaw, due to using CNG fuel, Dhaka people are as CNG
Auto-tempo& Laguna/Maxi; A mode of motorized transport with maximum 10 passengers in cart

Source: JICA Study Team

(4)   Zoning System

The Study area is subdivided into analysis zones, the use of which implies that all movement to and from a zone can be adequately represented as starting or ending at a single point in the zone - the centroid. This point represents the zonal centre of transport activity.

The form of the traffic zone system adopted for this Study was constrained by the availability of socio-economic data currently available, and which could be reliably predicted for future years, for traffic demand model calibration and application. The zonal structure has been created in order that areas sharing homogeneous characteristics are represented. Where possible zones have been defined to represent areas that may be defined as broadly uniform, for factors such as their population, land use, income, employment, or accessibility.

By taking into account recent changes in the administration boundaries like Ward, Thana and Upazila, the Study area is, to achieve degrees of accuracy, subdivided into 108 zones, which is mainly based on the smallest administration zone. In the Study, it is called "*C Zone*" (108 zones) or "*Traffic Analysis Zone (TAZ)*".
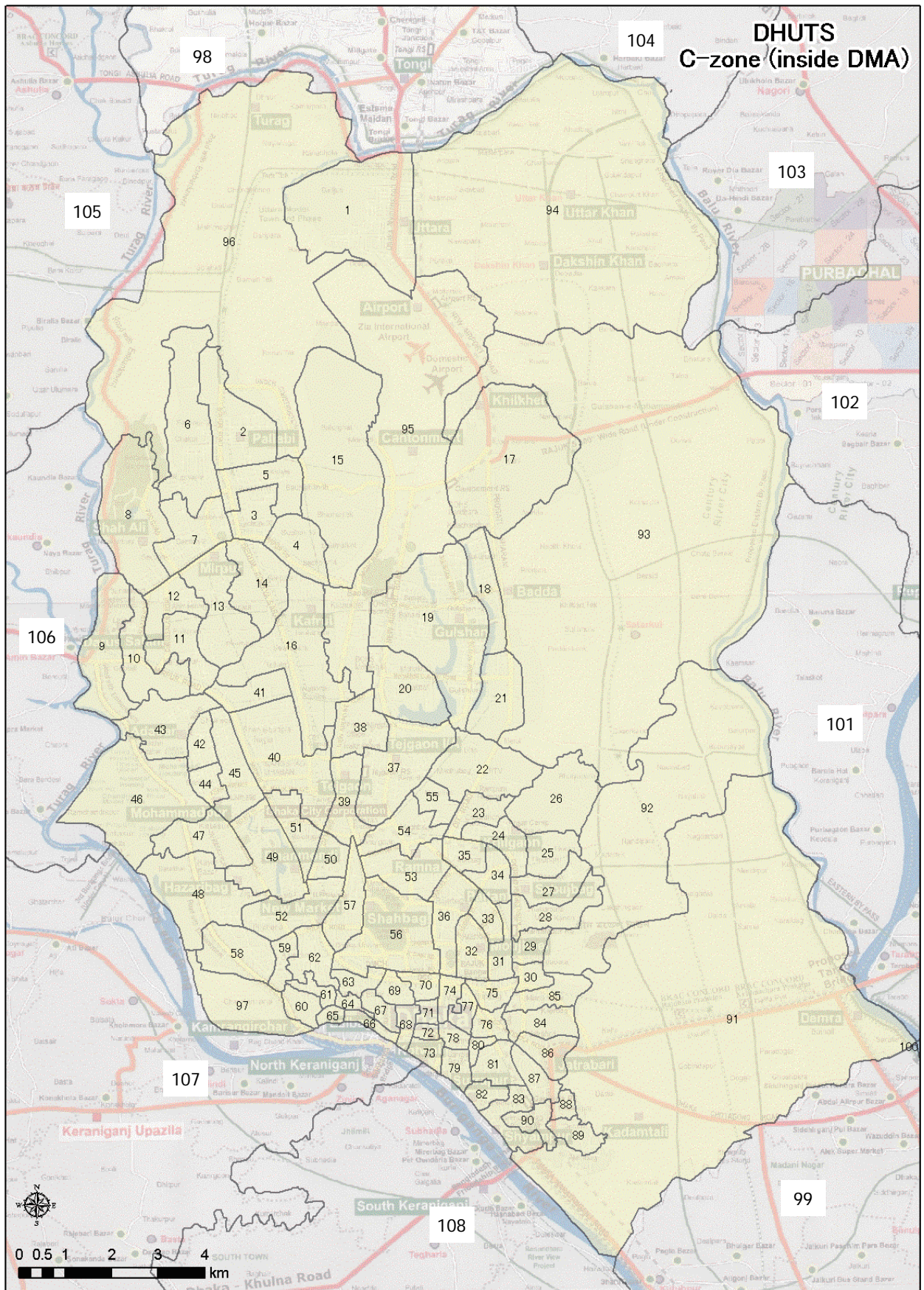
Figure 3.1-1   Zoning of Coverage Area

Source: JICA Study Team

In the central business districts (CBD) area, however, a more detailed zoning system smaller than Thana, that is a Ward, is employed, while outside Dhaka City Corporation (DCC) the zone sizes are generally larger as a result of absence of administration system smaller than Thana. Included in the zone system are external zones for explicit modeling of external trips to/from Dhaka Metropolitan Area. Trips between all combinations of zones are therefore contained in a matrix of 108 x 108 elements, which interact with the transportation network at 108 centroid locations.

In order to analyze the characteristics of study area, other 2 zoning systems are established: "B Zone" and "A Zone". Since the zones in DCC are subdivided into 90 zones (90 Wards), a larger zoning system has been set at B Zone with 56 zones including 38 zones in DCC. As the largest system, A Zone is also developed with 19 zones in RAJUK area. Table 3.1-3 summarizes the study's zoning system and converted numbers among three zoning systems.

Table 3.1-3   Zoning System for Traffic Analysis

Zoning Classification	No. of Zones	Purpose
A Zone	19	To analyze both urban analysis and traffic characteristics at macro level
B Zone	56	To analyze traffic characteristics at macro level
C Zone	108	To do traffic assignment, especially aiming at analyzing transit corridor

Source: JICA Study Team

3.2   Household Interview Survey (HIS)

3.2.1   Detail Survey Method

(1)   Objectives

The primary objective of the HIS was to acquire information on daily travel characteristics of the residents in 90 Wards of DCC and adjacent populous areas. More specifically, the HIS aimed to understand travel behaviors of individuals, and their activities, depending on age and socio-economic characteristics.

The HIS has two main objectives:

a)   <u>To understand current person's movement</u>

The last large-scale person trip survey was conducted by Strategic Transport Plan (STP) in 2004. At least 5 years have passed since STP; therefore, traffic situation might have changed. To formulate the urban transport network development plan, it is necessary to conduct the HIS and analyze the traffic situation with up-to-date information.

b) To support development of travel demand forecast

The content of the data was primarily determined by identifying the data needed to develop the JICA-STRADA Model. The principal application of the HIS data was for the estimation 'disaggregate' or individual-based estimation of travel behavior choice models that comprise the JICA-STRADA Model travel forecasting system.

(2) Survey Area

For this survey we set principally the survey area as Dhaka Metropolitan Area (DMA), and supplementary the adjacent areas of DMA such as Savar, Tongi, Narayanganj was included, where economic activities are growing.

(3) Survey Method

Since interviewing all citizens in Dhaka is not realistic way of method, the study adopted the sampling method which it collects representative samples from each zone and extends collected samples with actual population. The HIS used the following methodology:

a) Zoning Systems

The study area is divided into 108 small units called 'C Zone' or 'Traffic Analysis Zones' (TAZ) as explained in Section 3.1

b) Sampling Method

We used systematic sampling technique for selecting the targeted households in the voter list in the survey areas. In the adjacent areas, for instant, remaining populated areas of DMA, sample households were randomly. This type of random sampling method was also used in the adjacent area: Narayanganj, Savar and Tongi Municipalities. The sampling rate was set at 1.0% of total population in a Ward.

c) Survey Forms

The surveys forms comprise of five sections include dwelling unit, household members, household vehicles, trip report, and attitudinal questions. The survey forms cover all the aspects of household and personal information, and trip data.

The basic information of each section is described as follows:

1) Section 1: Dwelling Unit – basic data of each household, i.e., address, household zone, surveyed date, and housing type.

2) Section 2: Household Members – relationship with household members, age, sex and education level, licensed driver, employment status and occupation, address of work place, income, expenses for transport uses and location of educational institution.

3) Section 3: Household Vehicles – owned or available vehicle type including vehicle model

to households.

4) <u>Section 4</u>: Trip Report – trip purpose, origin and destination zones, and mode of transport used.

5) <u>Section 5</u>: Attitudinal Questions – trip frequency and distance, travel time and the purpose, usual mode of transport and transport expenses, problem faces by existing public transport including traffic situation, suggestions for improvement of the current traffic situation and future transport systems.

(4) Work Items

a) Preparatory Work

Preparatory works comprised of preparation of survey forms, recruitment of surveyors and supervisors, and training to them. A-three day training program was organized to teach the surveyors about details of the survey and how to conduct the survey.

b) Field Survey

The supervisors guided the surveyors and gave random household addresses and the questionnaire set. The surveyor visits the selected households, interviews household members and fills in the questionnaires by face-to-face interview. The supervisor checked the surveyed questionnaires to ensure quality of data before submitting it.

3.2.2 Results and Analysis

Basic survey data, such as population, number of household, number of targeted and collected sample and rate of collection etc. in each area are presented in Table 2.1-1 of Appendix 2. Total of those data is as follows.

|	
Population within DCC:	7,776,574 no
Household within DCC:	1,629,600 no
Targeted samples within DCC:	16,297 no (1 % of household number)
Collected samples within DCC:	16,394 no (1 % of household number)
Targeted samples outside of DCC:	1,704 no
Collected samples outside of DCC:	1,716 no

In this section, the survey results are analyzed from seven standpoints: (1) Socio-economic Profile, (2) Trip Production, (3) Trip Purpose, (4) Transport Mode, (5) Trip Generation and Attraction, (6) Origin and Destination Matters and 7) Trip Length.

(1) Socio-economic Profile

a) Demographic Features

Population as of the year 2009 was estimated based on population census which was

conducted in the year 2001. The population over 5 years old accounts 7.58 million. From out of the population of 7.58 million aging 5 years old and above, male and female account for 57% and 43% respectively. Looking at population distribution according to age group, the highest portion is found in a range aging 25-29 years old.
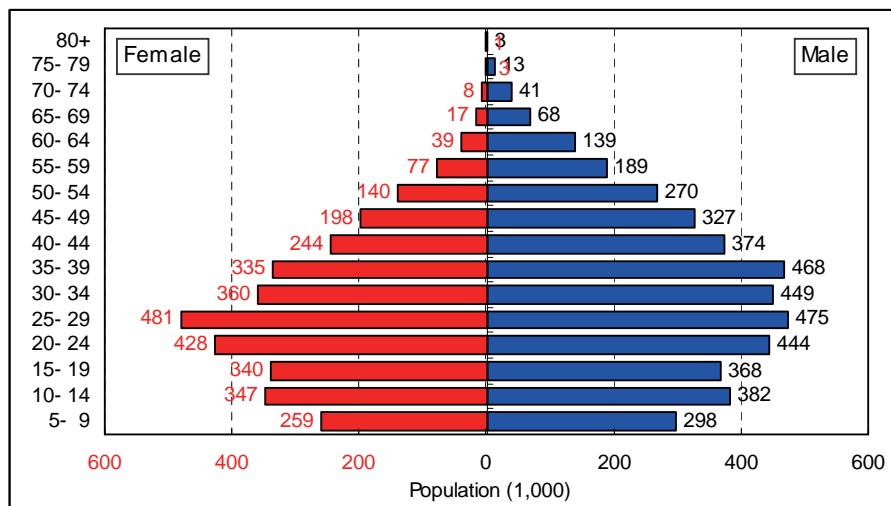
Figure 3.2-1   Population by Gender and by Age Group
*Source: Population Census 2001 Analytical Report, 2007 & Statistical Pocket
        Book Bangladesh 2008, BBS*

The population with a status of student is estimated to be 2.3 million in the DMA,: 1.5 million in primary education, 0.4 million in high education and 0.5 million in higher education (see Table 3.2-1). For a worker, tertiary sector is the dominant industry in DMA, which accounts for 85% followed by secondary sector (14%) and primary sector (1%).

Table 3.2-1   Number of Students and Workers in DMA

	Primary Education	High Education	Higher Education	Total
Student	1,476,806	352,934	494,684	2,324,424
	64%	15%	21%	100%
	Primary Sector	Secondary Sector	Tertiary Sector	Total
Worker	35,225	467,701	2,926,213	3,429,139
	1%	14%	85%	100%

*Source: Population Census 2001 Analytical Report, 2007 &
        Statistical Pocket Book Bangladesh 2008, BBS*

The study designates three levels of household income group as follow:

Group 1: Monthly household income with more than BDT 50,000

Group 2: Monthly household income between BDT 20,000 and BDT 49,999

Group 3: Monthly household income with less than BDT 19,999

This is based on the following two (2) factors:

a) Tendency of modal choice structure by income level

b) Comparison with STP study result

The modal choise structure is shown in Figure 3.2-2.

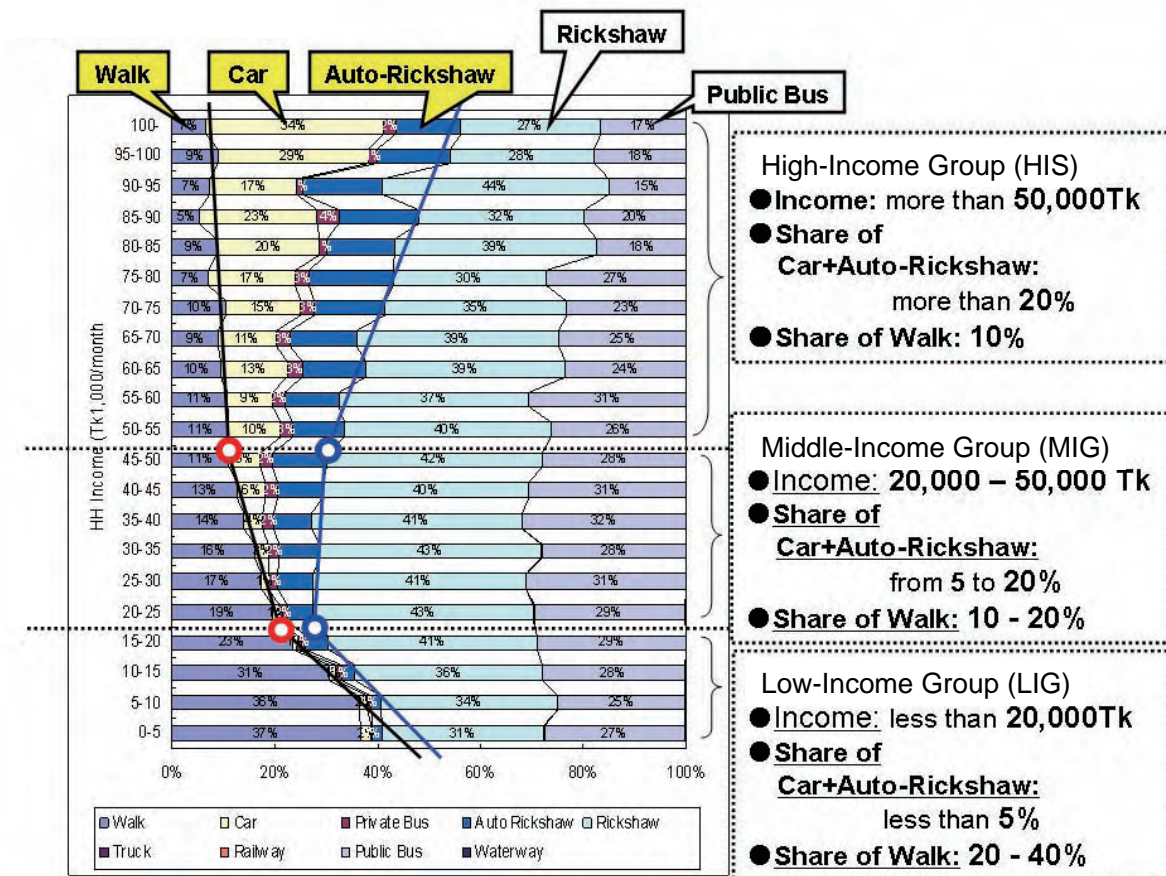It is clearly classified into 3 groups mentioned above.

Figure 3.2-2   Modal Choice Structure by Income Level

Source: JICA Study Team

According to the above criteria, population in Group 2 and Group 3 are almost same amount with about 3 million (see Table 3.2-2).

Table 3.2-2   Population by Household Income Group

	Population (1,000)	% Share
Group 1	1,548	20.4%
Group 2	3,014	39.7%
Group 3	3,022	39.8%

Source: JICA Study Team

b)   Household Income

Low-income households group are earning less than BDT. 20,000 per month is substantially high (Approx. 40%)   Average household income is BDT 34,322. The number of households with the income of more than BDT 100,000 is quite significant.
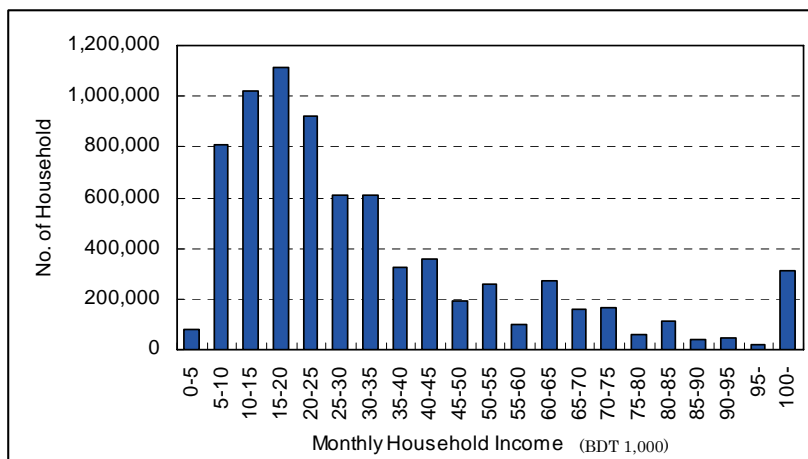
Figure 3.2-3   Distribution of Monthly Household Income

Source: JICA Study Team
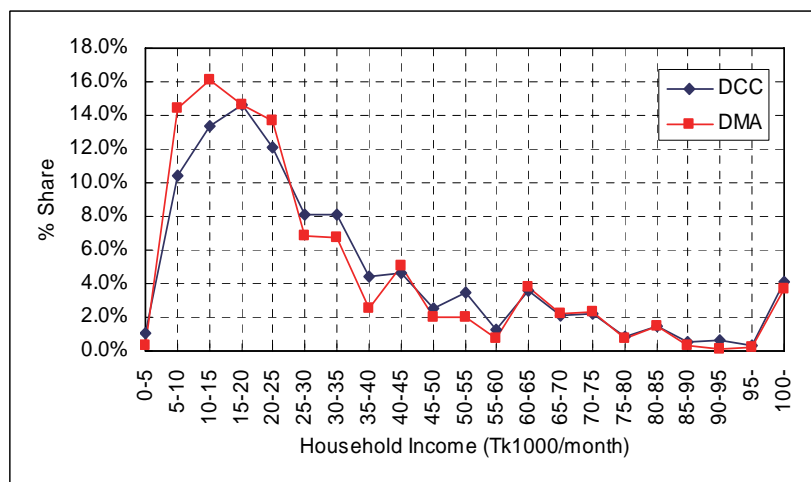
Figure 3.2-4   Household Income Distribution in the Study Area

Source: JICA Study Team

Figure 3.2-4 shows the difference of household income between DCC and outside DCC with in DMA. The percentage share of household income distribution is almost same in DCC and its environs. It can be found, however, that the percentage share of household income with less than BDT 20,000 per month in DCC is a little lower than outskirt of DCC. The average household income is BDT 33,691/month in DCC and BDT 31,549/month outside DCC. It is largely because most of economic activities are concentrated on the area within DCC. The households who have high income (Group 1) tend to live in the areas of Uttara, Baridhara, and Dhanmondi.

Table 3.2-3   Average Household Income by Income Group

Area	Group	Average HH Income
DCC	Group 1	BDT 83,715
	Group 2	BDT 29,340
	Group 3	BDT 12,006
	Total	BDT 33,691
Outside DCC	Group 1	BDT 87,907
	Group 2	BDT 28,834
	Group 3	BDT 11,868
	Total	BDT 31,549
Grand Total		BDT 33,563

Note: 'Outside DCC' means DMA area excluding DCC.

Source: JICA Study Team

(2)   Trip Production

a)   Number of Trips Produced

A total of 20.8 million trips per day are made by the residents in the study area, of which 19.6 million trips are produced with an origin in DCC. About 60% of the study area residents' trips are composed of NMT such as walking, riding bicycle and using rickshaw.

Table 3.2-4   Number of Trips Made

		NMT	Other Modes	Total
DCC	No. of Trips	11,236,049	8,298,804	19,534,853
	% Share	57.5%	42.5%	100.0%
Outside DCC	No. of Trips	684,481	549,260	1,233,740
	% Share	55.5%	44.5%	100.0%
Total	No. of Trips	11,920,530	8,848,063	20,768,593
	% Share	57.4%	42.6%	100.0%

Note: 'Outside DCC' means DMA area excluding DCC.

Source: JICA Study Team

Figure 3.2-5 shows that intra-zone trips of DCC are very high and amount to 19.0 million trips. On the other hand, the number of trips moving between DCC and outside DCC is about 0.8 million or 4% of total trips.
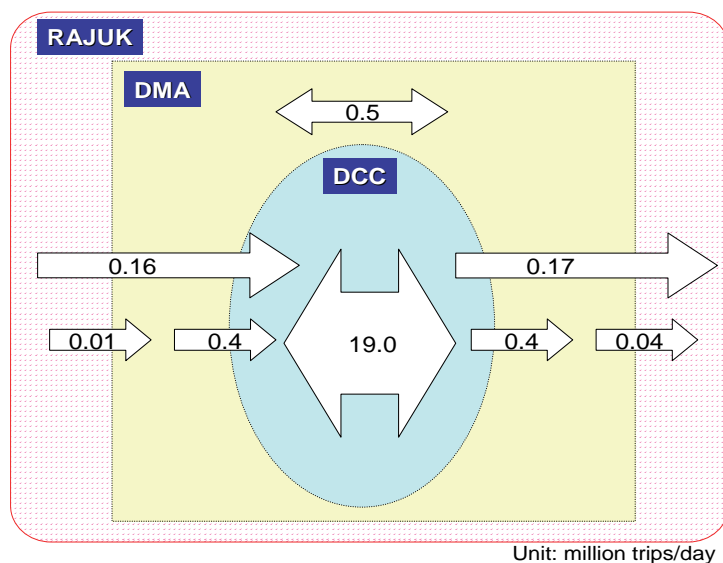
Figure 3.2-5   Residents' Movement in the Study Area

Source: JICA Study Team

b)   Trip Production Rate

Trip production rate is one of important indicators to understand travel behavior and it is used for estimating trip production in future. Trip production rate of the study area is 2.74. Judging from the trip rate by region, DCC and outskirt of DCC has produced almost same trip.
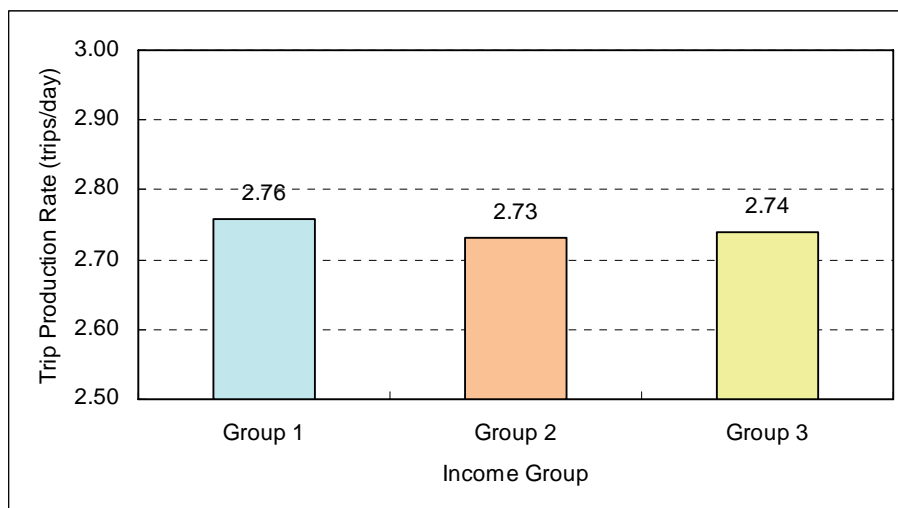
Table 3.2-5   Trip Production Rate

Region	Trip Production Rate
DCC	2.74
DMA (excl. DCC)	2.73
Total	2.74

Unit: trips/person/day

Source: JICA Study Team

c)   Trip Production Rate by Monthly Household Income

As household income increases, trip production rate increase although it does not have a pronounced tendency among groups.

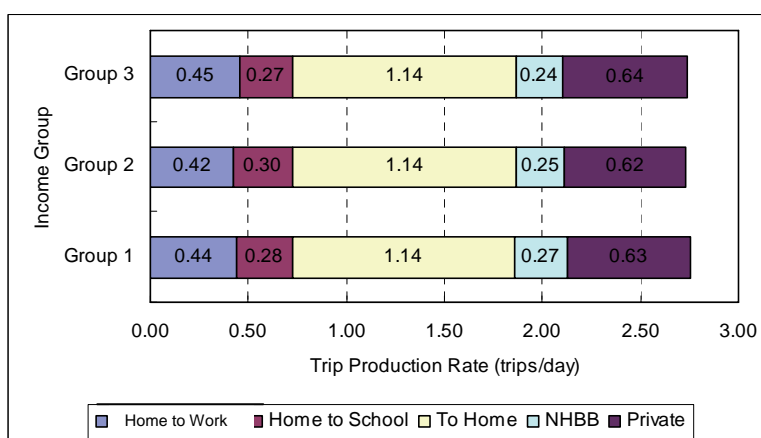**Figure 3.2-6   Trip Production Rate by Monthly Household Income**

Source: JICA Study Team

d)   Trip Production Rate by Trip Purpose and by Household Income

Table 3.2-6 and Figure 3.2-7 show trip production rate by monthly household income and trip purpose. Trip rate of 'NHBB' purpose increases as household income level increases.

Table 3.2-6   Trip Production Rate by Household Income Level and by Trip Purpose

Income Group	Home to Work	Home to School	To Home	NHBB	Private	Total
Group 1	0.44	0.28	1.14	0.27	0.63	2.76
Group 2	0.42	0.30	1.14	0.25	0.62	2.73
Group 3	0.45	0.27	1.14	0.24	0.64	2.74
Total	0.44	0.29	1.14	0.25	0.63	2.74

Figure 3.2-7   Trip Production Rate by Household Income Level
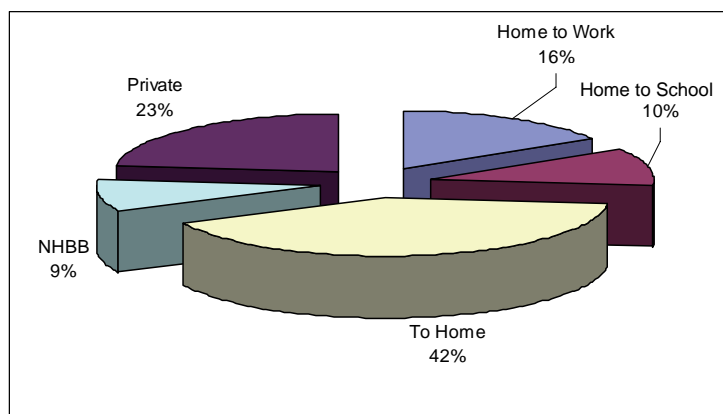
And by Trip Purpose

Source: JICA Study Team

(3) Trip Purpose

Table 3.2-7 shows the total trips and shares by purpose. Excluding 'To Home' trip, most of trips are dominated by 'Private' and 'Home to Work' purposes, accounting for 22.9% and 16.1%, respectively, followed by 'Home to School' and 'NHBB' purposes. 'To Home' trips, most of which can be explained by return trips, account for 41.5%.

Table 3.2-7   Trip Purpose in the Study Area

Purpose	No. of Trips	% Share
Home to Work	3,337,671	16.1%
Home to School	2,162,360	10.4%
To Home	8,631,771	41.5%
NHBB	1,877,409	9.0%
Private	4,766,069	22.9%
Total	20,775,280	100.0%

Figure 3.2-8   Trip Purpose Composition in the Study Area

Source: JICA Study Team

a) Trip Purpose by Household Income Group

The large difference among three groups could not be identified in Figure 3.2-9. The share of 'NHBB' trips increases with increasing household income. No significant difference in the "Home to School" among the groups may be attributed to the NGO's activities in the slams constructing the school, providing the education opportunity.
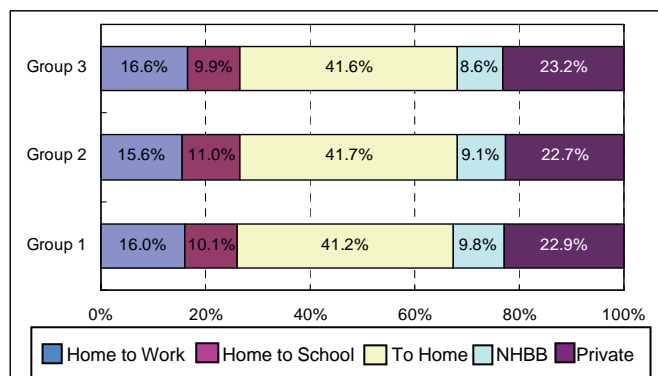
**Figure 3.2-9   Trip Purpose Composition by Household Income Group**

(4)   Transport Mode

a)   Modal Share in the Study Area

NMT apparently plays an important role in DMA, which accounts for 58.1% (walking 19.8% and rickshaw 38.3%). Next is bus transport, including Large Bus, Mini Bus, and Micro Bus. The number of trips by bus accounts for 28.3%. The share of private car, including jeep and taxi, accounts for 5.1%. The usage of railway and waterway is quite small (0.0% and 0.1% respectively) (Table 3.2-8 and Figure 3.2-10).

Table 3.2-8   Modal Share in the Study Area

| Transport Mode	No. of Trip			% Share		
	DCC	DMA (excl. DCC)	Total	DCC	DMA (excl. DCC)	Total
Walk	3,712,754	348,378	4,061,132	19.0%	37.2%	19.8%
Car	1,013,989	36,069	1,050,058	5.2%	3.8%	5.1%
Private Bus	350,630	8,999	359,629	1.8%	1.0%	1.8%
Auto Rickshaw	138,577	38,570	1,357,147	6.7%	4.1%	6.6%
Rickshaw	7,586,520	266,832	7,853,352	38.7%	28.5%	38.3%
Truck	6,974	111	7,085	0.0%	0.0%	0.0%
Railway	10,092	0	10,092	0.1%	0.0%	0.0%
Public Bus	5,573,126	228,503	5,801,629	28.5%	24.4%	28.3%
Waterway	15,362	9,825	25,188	0.1%	1.0%	0.1%
Total	19,588,024	937,287	20,525,311	100.0%	100.0%	100.0%
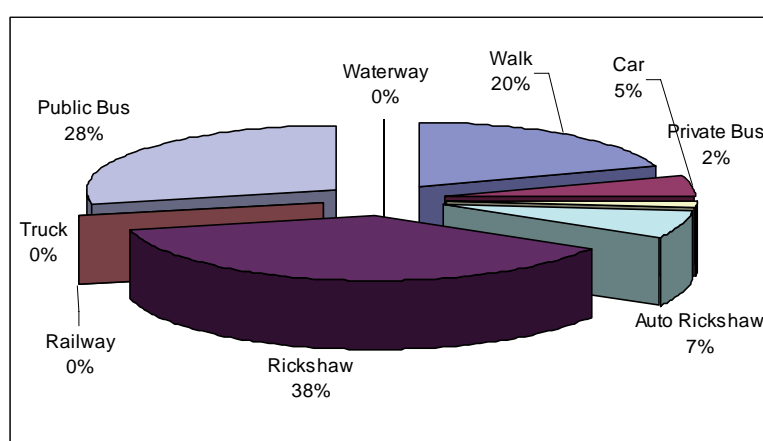
Figure 3.2-10   Modal Share in the Study Area

Source: JICA Study Team

b)   Modal Share by Household Income Group

Modal share varies strongly depending on monthly household income level. The residents

who belonging to Group 1 earns more than BDT 50,000 per month use private cars and its modal share accounts for 17.5%. Meanwhile, the person who belongs to Group 3 and the monthly household income is less than BDT 20,000 heavily relied on three transport modes such as walking, auto rickshaw and public bus. The middle income group with a monthly household income of BDT 20,000-49,999, the modal share of Group 2 is dominated by auto rickshaw and public bus.
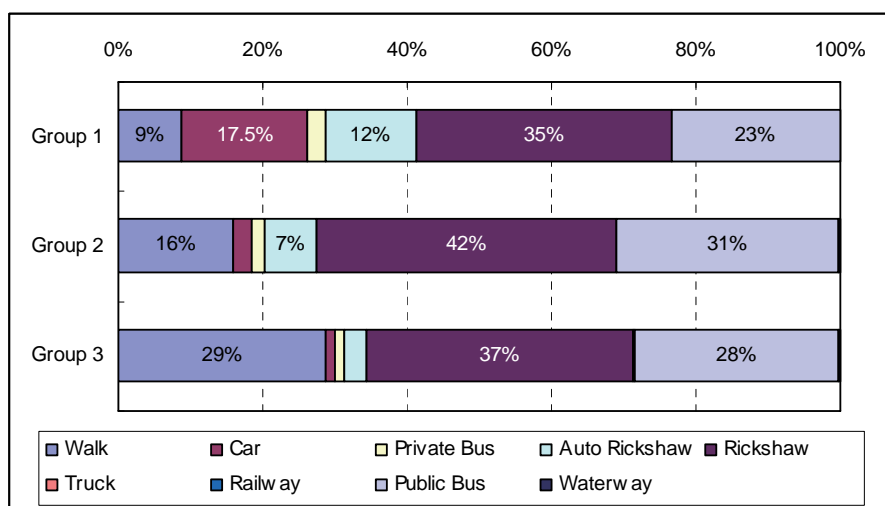
Figure 3.2-11   Modal Share by Household Income Group

Source: JICA Study Team

(5)   Trip Generated and Attracted

a)   Trips Generated and Attracted by Trip Purpose

Trips generated and attracted by trip purpose are presented in Figure 3.2-12 and Figure 3.2-13. The following features can be pointed out.

A large number of generated and attracted trips is concentrated in the area where is surrounded by New Circular Road, Kazi Nazrul Islam Avenue and Zahir Raihan Sharani Road, namely Shahabag, Ramna, Paltan and Motijheel Areas.

Private trips such as shopping are highly depended on New Market and Dhanmondi Areas, where the well-urbanized areas existed.
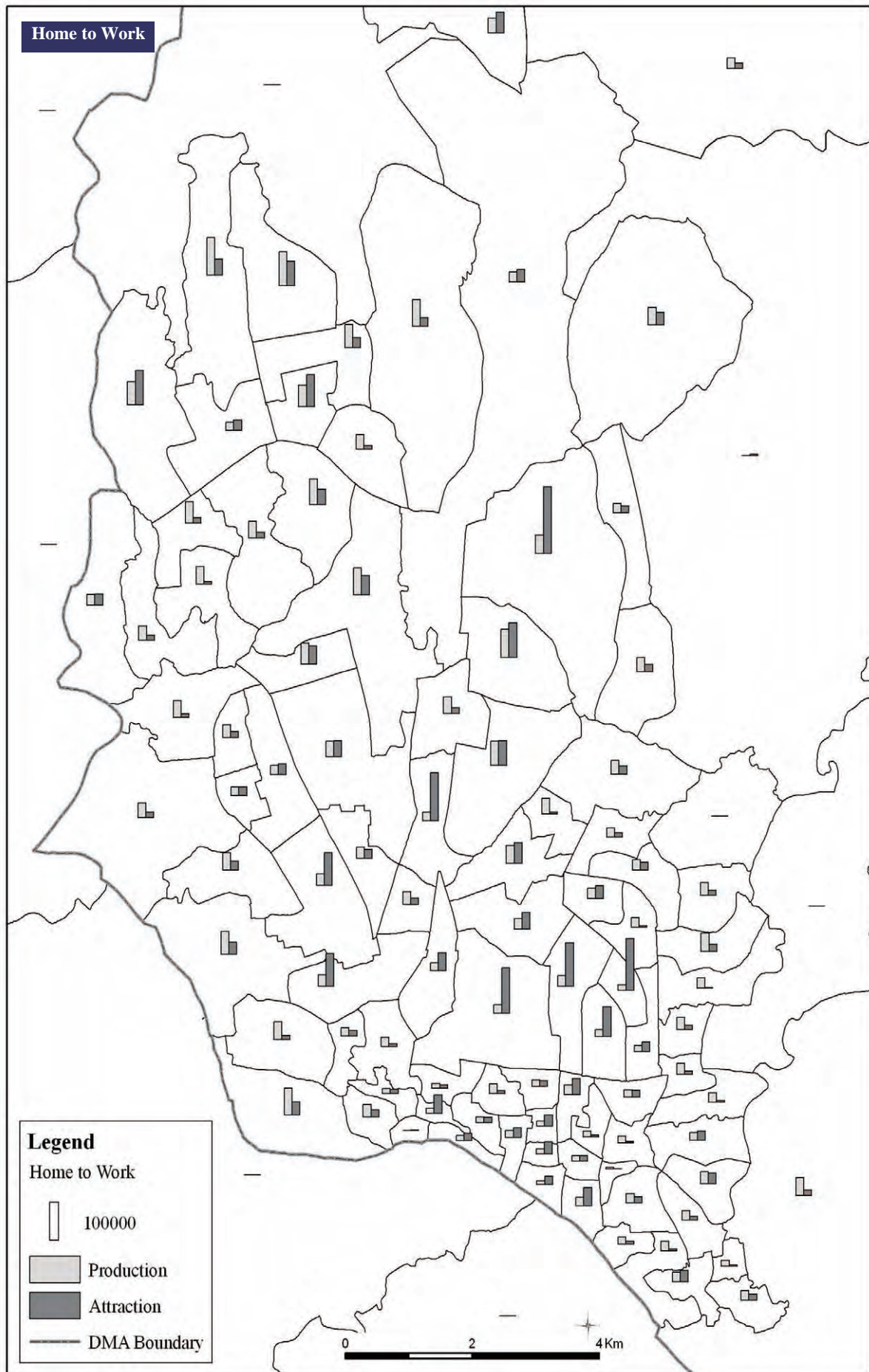
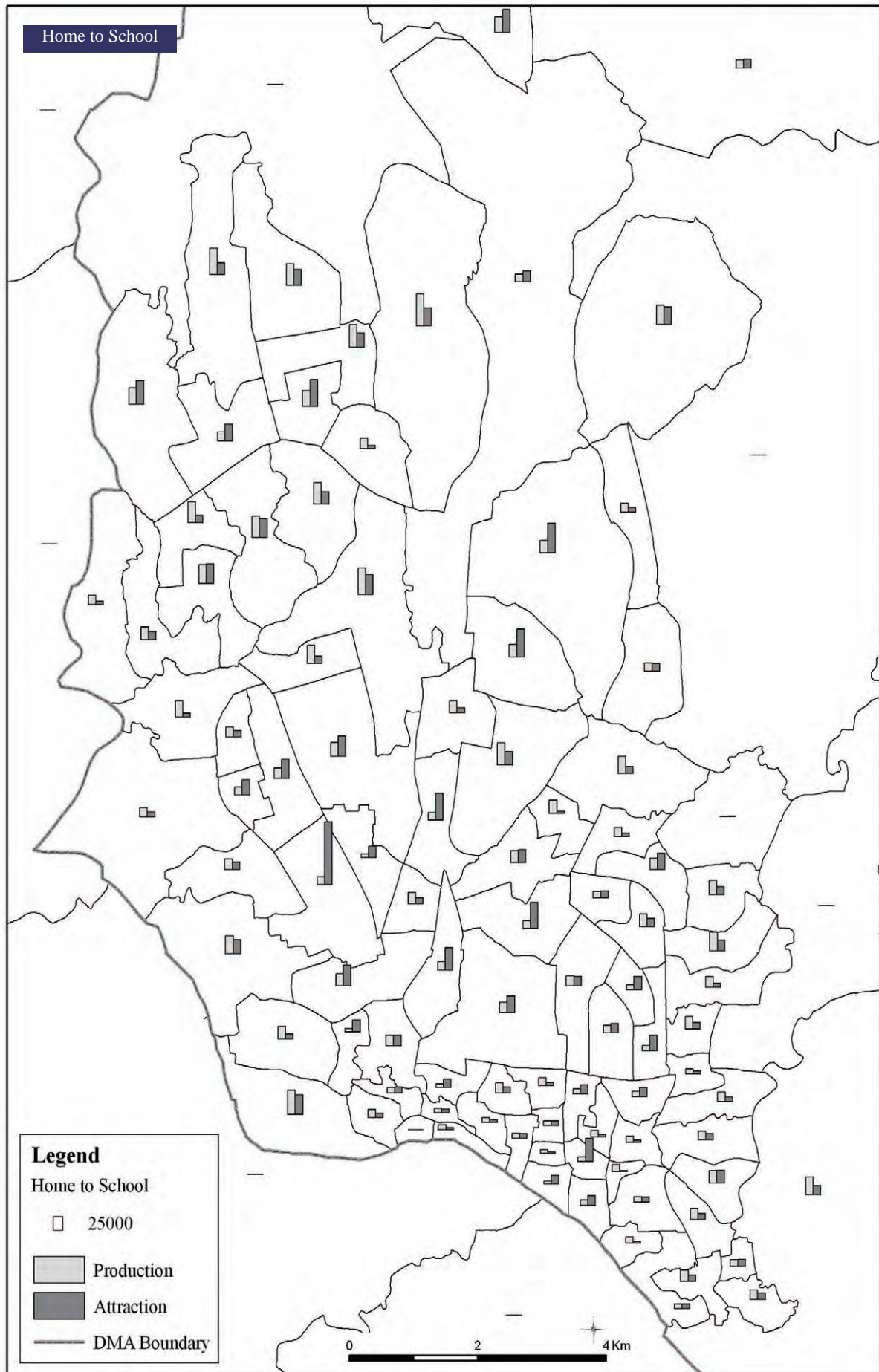**Figure 3.2-12 (1)   Trip Production and Attraction by Trip Purpose**

Home to School

Legend

Home to School

☐   25000

▨   Production

▦   Attraction

─── DMA Boundary

0   2   4 Km

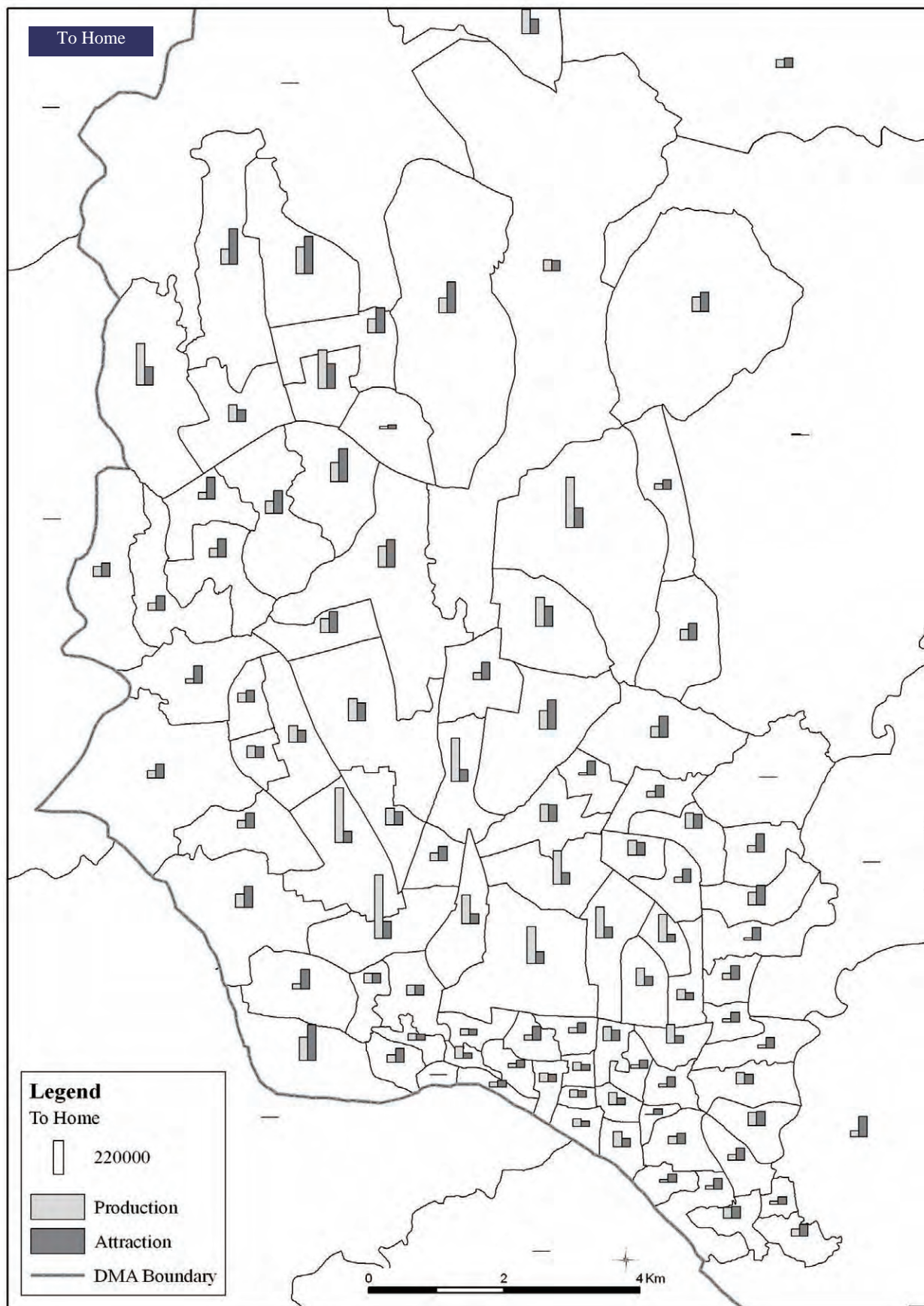**Figure 3.2-12 (2)   Trip Production and Attraction by Trip Purpose**

Figure 3.2-12 (3)   Trip Production and Attraction by Trip Purpose

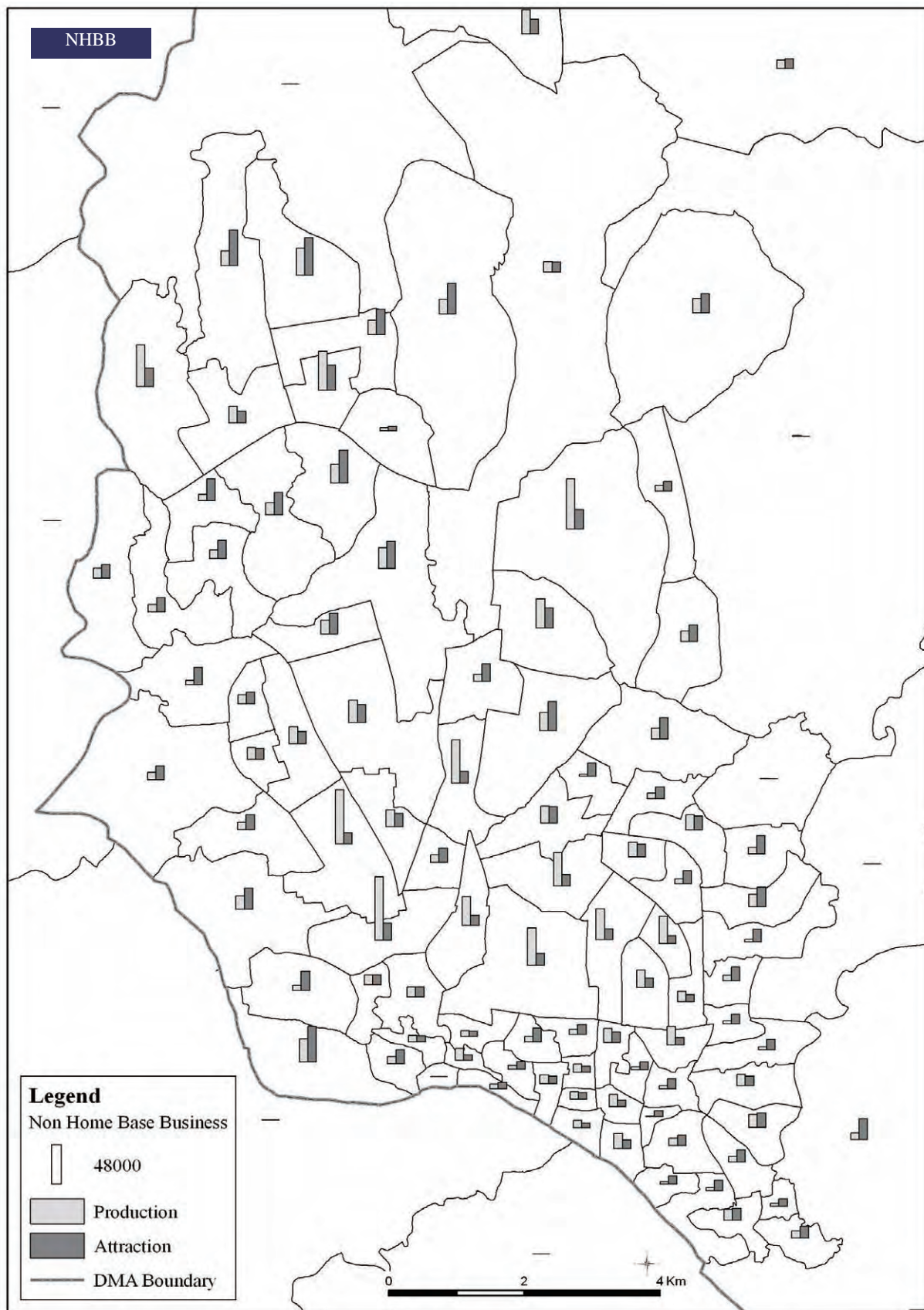**Figure 3.2-12 (4)   Trip Production and Attraction by Trip Purpose**

Figure 3.2-13   Trip Production and Attraction by Trip Purpose

(6)   Origin and Destination

a)   OD Flow by Transport Mode

OD flow by transport mode is illustrated in Figure 3.2-14. Trips by passenger car concentrate mostly in Uttara, Gulshan, Paltan and Dhanmondi Areas. On the other hand, trips by public bus excluding private bus were seen everywhere in DCC, but quite less in the outskirt of DCC. In addition, trips made by public bus have strong relation between Mirpur and Saidabad Areas where one of the largest bus terminals in Dhaka exists. Trips by rickshaw are specifically concentrated in the central area of DCC, whereas trips by auto-rickshaw were seen everywhere in DCC.
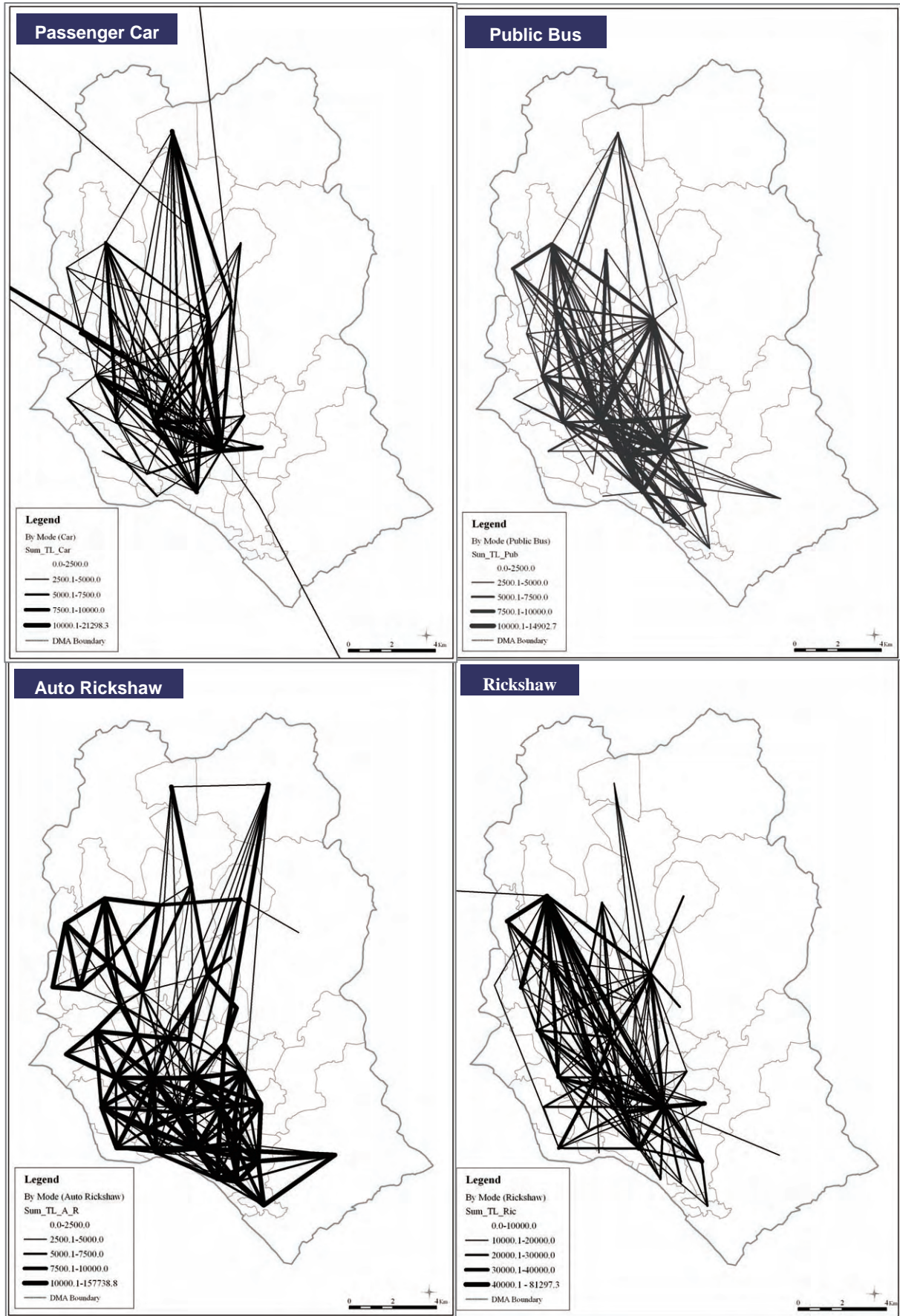
Figure 3.2-14   Desire Line by Mode (Car, Public Bus, Auto Rickshaw, Rickshaw)

(7)   Trip Length

Trip length was surveyed as actual trip length (within RAJUK) by such segmentations as income levels shown in the following figure. The figure shows trip length forecast in 2025 as well.
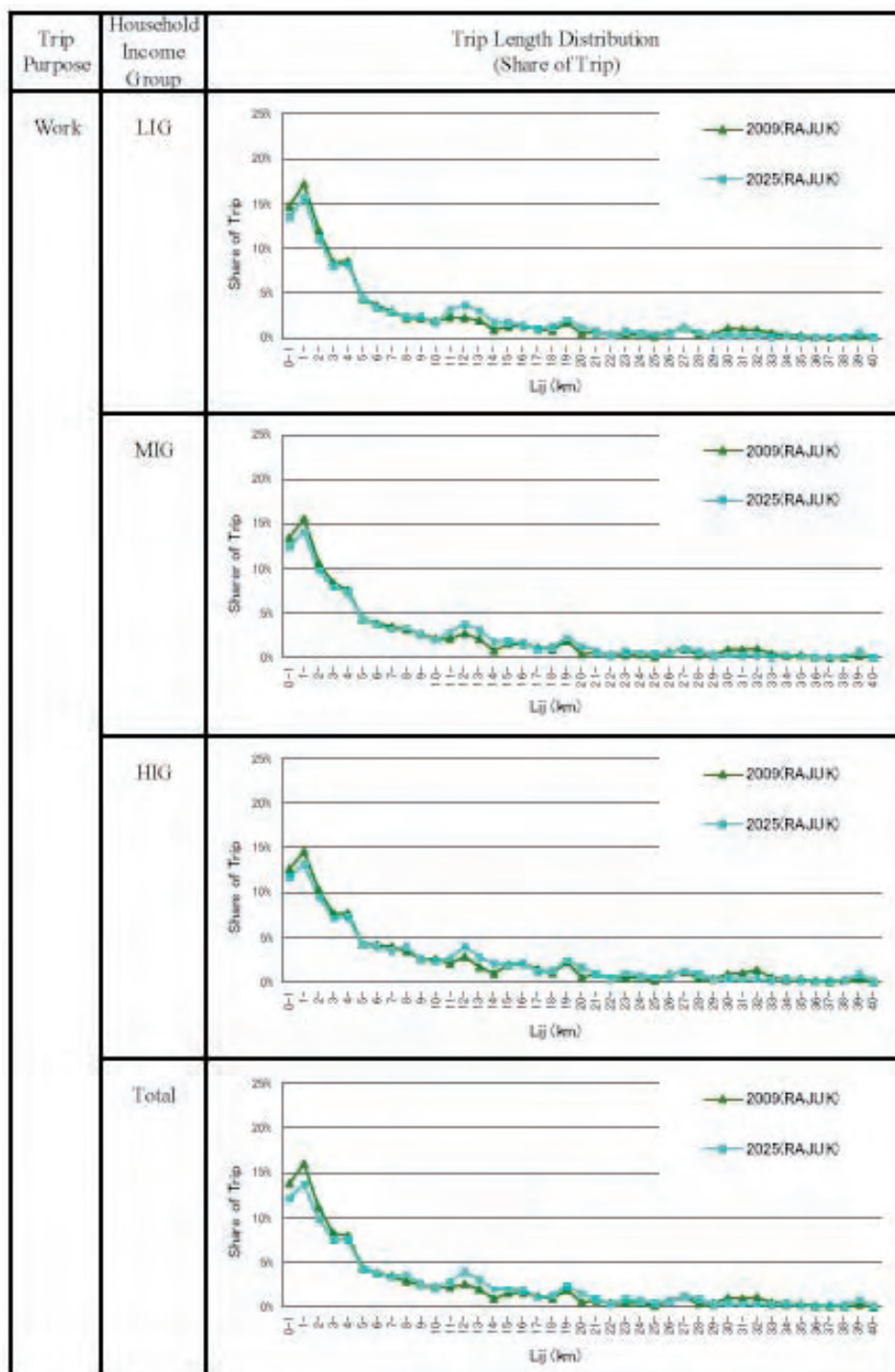

Figure 3.2-15   Trip Length Distribution by Each Income Group in 2009 and 2025 in RAJUK Area (Work Trip)

Source; JICA Study Team

3.3   Cordon and Screen Line Survey

3.3.1   Detail Survey Method

(1)   Objectives

The HIS will establish information on trips made by residents of the Study Area. However, on any given day, non-residents of Dhaka that is living outside of the DMA will enter the Study Area. They are not interviewed by the HIS. A cordon line survey has therefore been designed to collect trip information of such non-residents as they enter or leave Dhaka, as well as traffic volume information by traffic count program.

The screen line survey obtains traffic volume by counting the number of vehicles at several locations along imaginary lines (screen lines) which divide the study area into parts. The traffic volume counted by the screen line survey are used not only for evaluating traffic congestion at each location but also for calibrating the current trip origin and destination information surveyed by the household interview survey in terms of vehicular and passenger travel. Accordingly, in order to obtain the data, the following three surveys were conducted: namely (a) traffic count survey, (b) vehicle occupancy count survey, and, in two cases (c) passenger count survey.
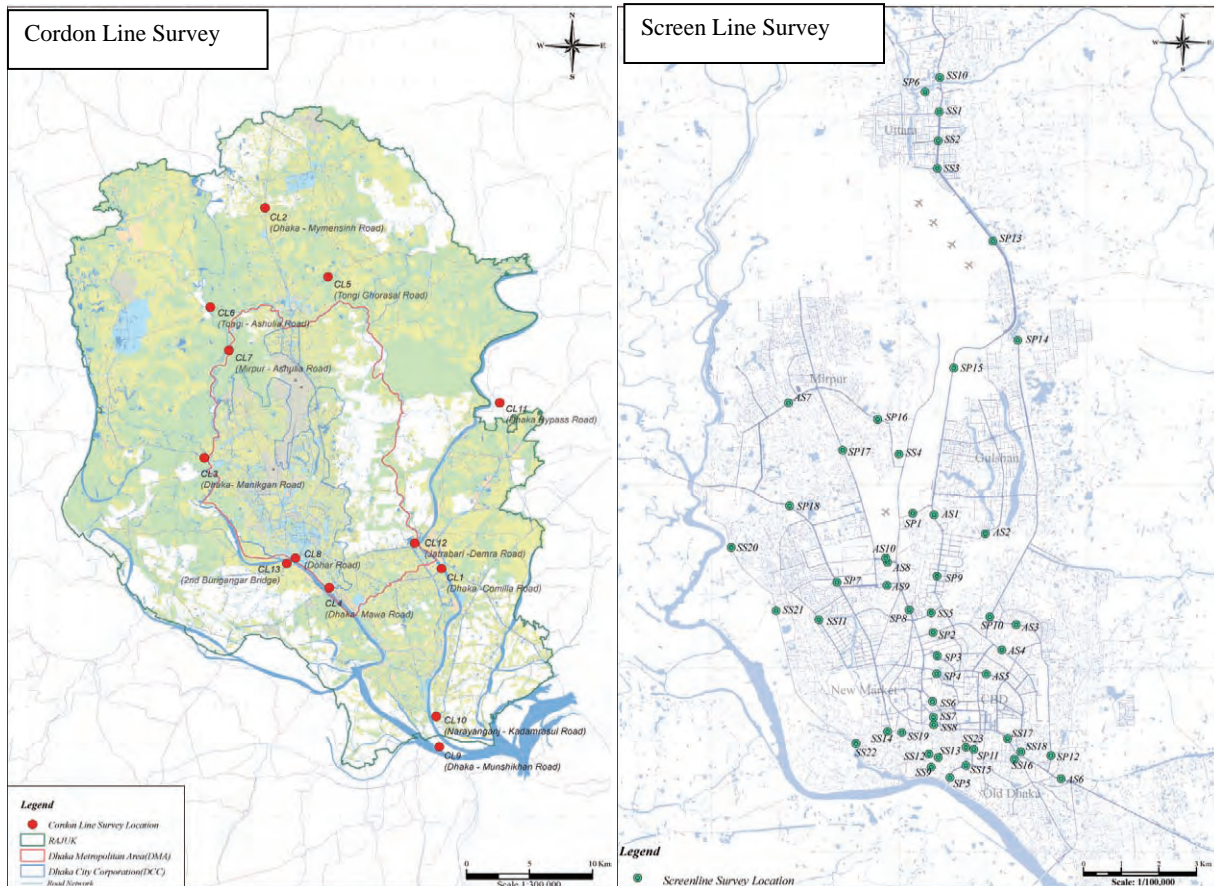
(2)   Survey Locations

     a)   Cordon Line Survey

         The locations of the surveys are set on all arterial roads crossing the study area boundary. This is referred to as the external cordon. The traffic count, interview and occupancy counting surveys were carried out at the same locations and at the same time for each single.

     b)   Screen Line Survey

         The screen line survey includes 51 locations on the arterial, primary and secondary roads.

Figure 3.3-1   Survey Locations of Cordon and Screen Line Survey

c)   Survey Hours

At the stations with 24-hour survey, the survey was conducted for continuous 24 hours starting from 6:00 am until 6:00 am in the next morning. While, at the remaining stations (16-hour survey), it was conducted from 6:00 a.m to 10:00 p.m.

d)   Survey Method

Counting of traffic flows across the cordon lines around the city are the most effective method for obtaining necessary data. The survey sites of the study were from all the main roads. In this way all vehicles entering and exit were recorded for cordon line survey. For screen line survey, all vehicles passing through survey locations were counted by direction. The surveyors recorded vehicles manually and filled in a survey form.

The study has been considered the same survey locations for cordon line and screen line as surveyed under Strategic Transport Plan (STP) in 2004 for comparison and to get inter annual changes of traffic characters and traffic demand in five years. However, survey locations were reviewed for optimal placement of surveyors. The primary concern was for traffic volume, i.e. workload of surveyors, therefore, the survey members were engaged as per traffic volume. The safety was one of the concerns in selecting the survey locations. Prior to survey, the team supervisor visited each location, sidewalks and straight visibility

to provide safe place for surveyors. Another factor is selection of locations which was operated under police control signals, toll plaza and bus stops that would allow surveyors to approach vehicles for roadside interviews with the drivers and passengers.

e)   Sampling

The roadside interview was conducted for 24 hours for National Roads and 16 hours for Regional Road/Secondary Road using the structured survey form. Data were collected from 5 to 10 % of all vehicles by mode.

3.3.2   Results and Analysis

(1)   Traffic Volume crossing Screen Line

The road network in DCC is characterized as a strong north-south corridor which consists of Mirpur Road, Begum Rokeya Sharani Road, New Airport Road and DIT Road. These roads eventually concentrate in southern part of DCC, downtown area. Figure 3.2-3 describes the main screen line crossing above-mentioned corridor. The traffic was counted at 481 thousand vehicles in a day.

Figure 3.3-2   Main Screen line Survey Location

(2)   Total Vehicles counted at the Locations

The total number of vehicle trips counted by the Cordon & Screen Line surveys can be summarized in Figure 3.3-3 and Figure 3.3-4.
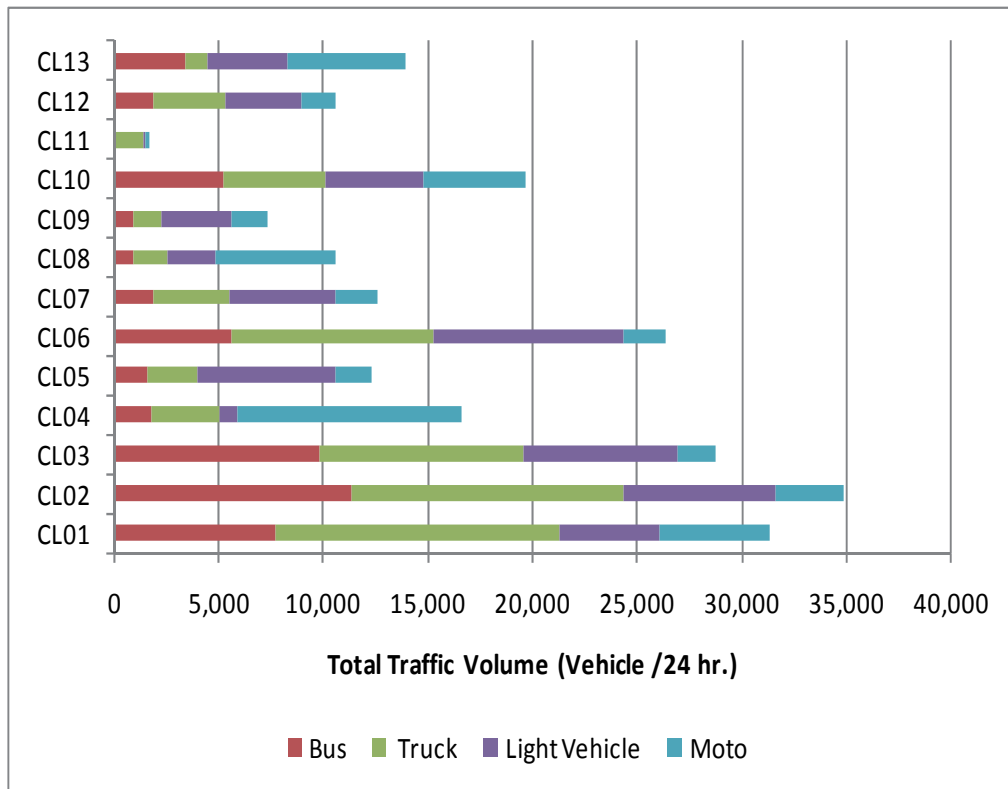
Figure 3.3-3   24 Hour Traffic Volume by Vehicle Types (Cordon Line Survey)

Source: JICA Study Team

Note: 16 hr. traffic volume at cordon line stations is converted to 24 hr. traffic volume for
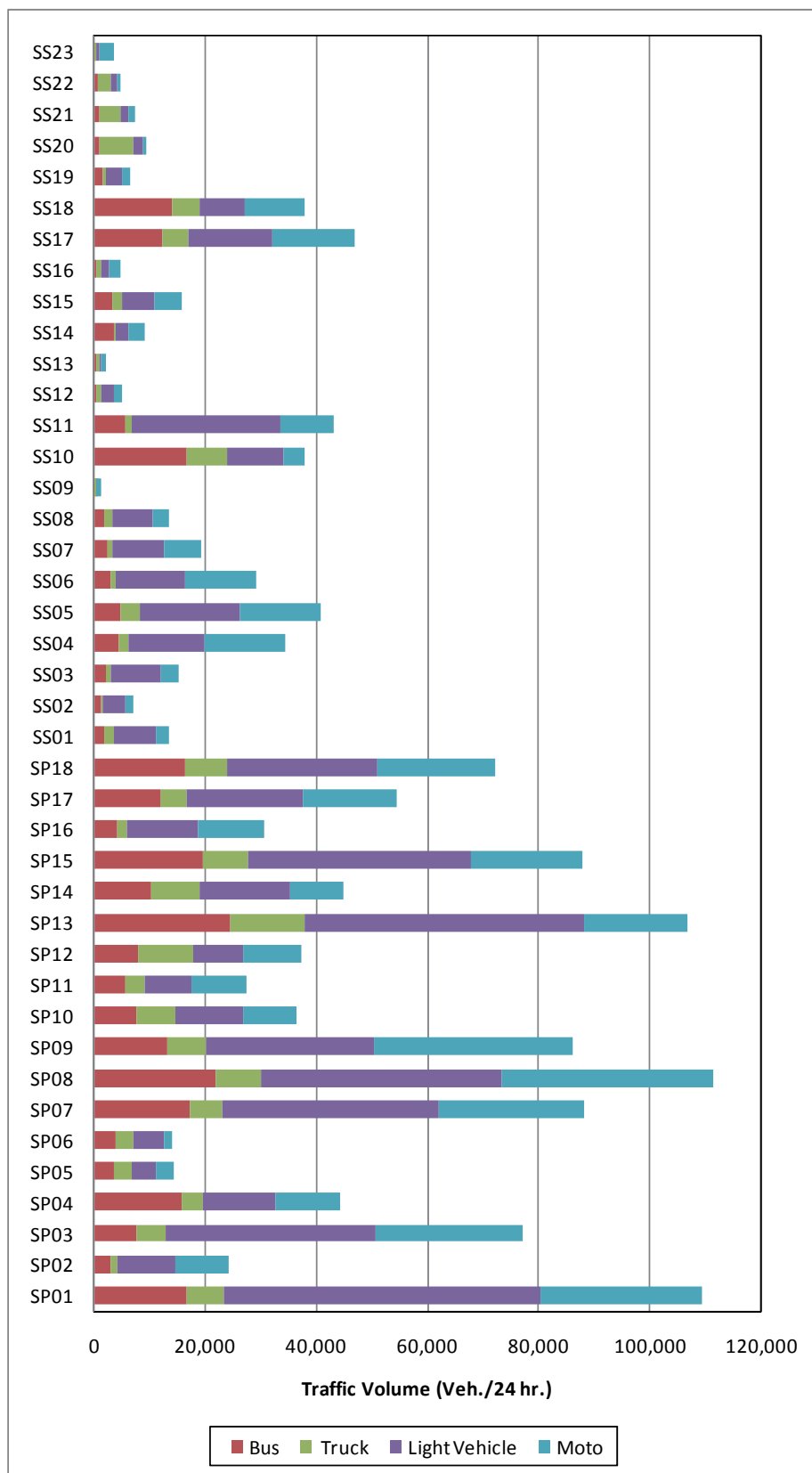
comparison purpose

Figure 3.3-4   24 Hour Traffic Volume by Vehicle Type (Screen Line Survey)
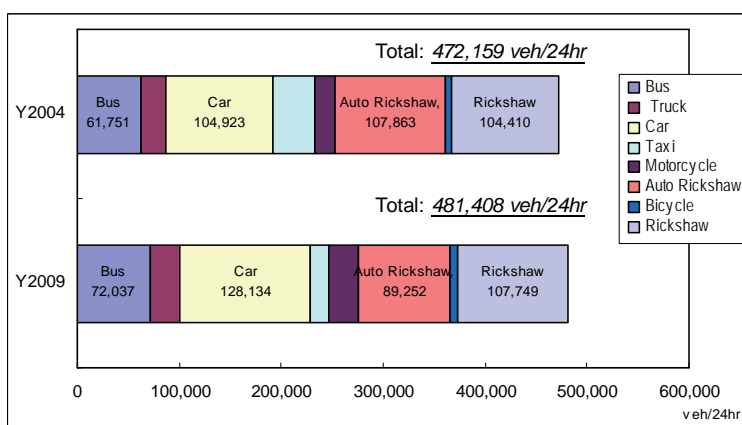
Source: JICA Study Team

Note: Same note in Figure 3.3-3

(3)   Comparison with the Results of STP in 2004

The last large-scale traffic surveys, cordon line and screen line surveys, were conducted by the STP study in 2004. As mentioned in the detail survey method, this study basically followed the basic survey components of STP's: survey locations, survey method etc.

Figure 3.3-5 describes the comparison of traffic volume on the main east-west screen line (see Figure 3.3-6) between 2004 and 2009. Total number of vehicles in north-south direction in 2009 increased 10,000 numbers (2% increases) from 2004. Average annual increase is approx. 2,000 vehicles (annual rate: 1.1%).
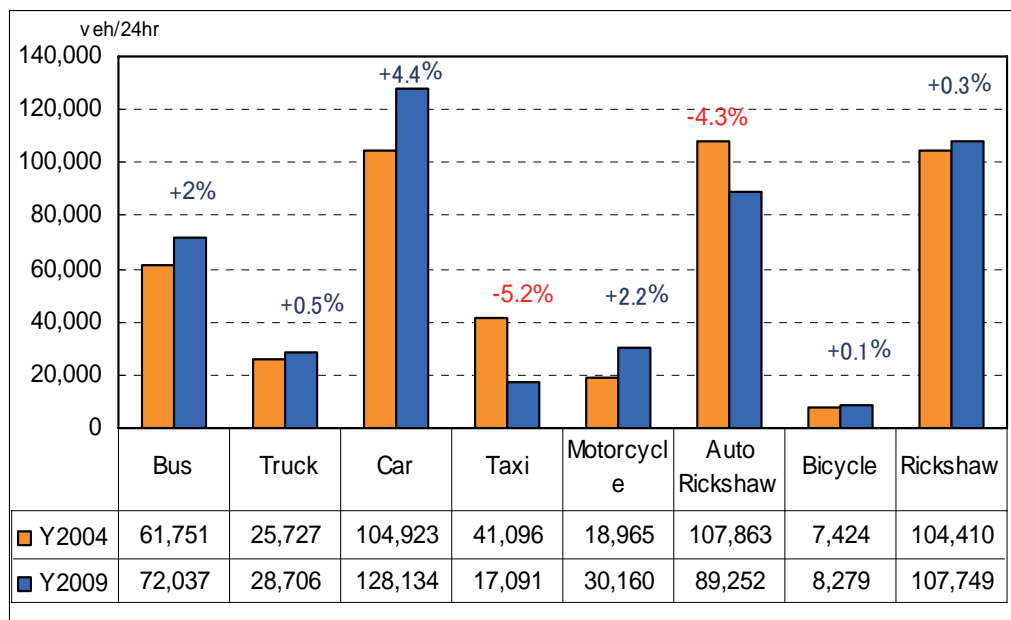

Figure 3.3-5   Comparison the Result of DHUTS with STP
Source: JICA Study Team
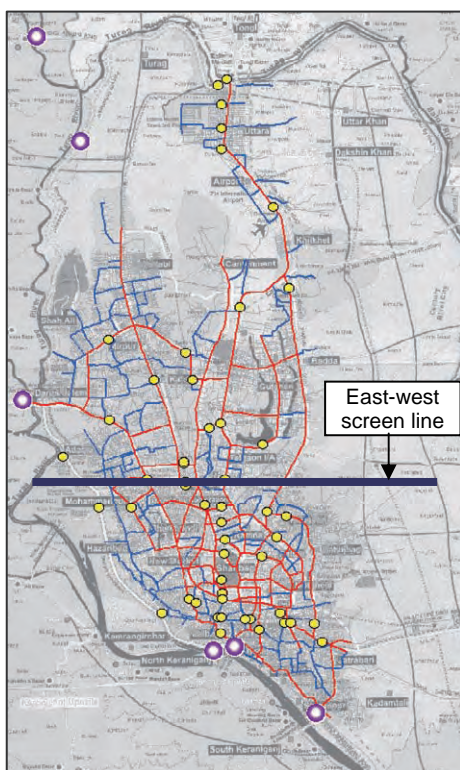
Figure 3.3-6   Location of Main East West Screen Line
Source: JICA Study Team

Figure 3.3-7 shows comparison of result between 2 traffic surveys by transport mode. Increase rate from 2004 to 2009 is relatively high for Car (+4.4%), Motorcycle (+2.2%) and Bus (+2.0%). Rickshaw is slightly increasing in 5 years, while Auto-Rickshaw and Taxi are decreasing.

	Bus	Truck	Car	Taxi	Motorcycle	Auto Rickshaw	Bicycle	Rickshaw
Y2004	61,751	25,727	104,923	41,096	18,965	107,863	7,424	104,410
Y2009	72,037	28,706	128,134	17,091	30,160	89,252	8,279	107,749

Figure 3.3-7   Fluctuation of Traffic Volume by Mode
Source: JICA Study Team

3.4   Major Findings

In this chapter, the Study Team overviewed current person's movement and traffic conditions in Dhaka. The following are major findings through its analysis:

(1)   Characteristics of Person's Movement

a)   Average household income in DCC (BDT 33,691) is higher than that in other parts of the study area (BDT 31,549). The high income group is distributed in residential area in Dhanmondi, Uttara.

b)   By the residents in DMA, approximately 20.8 million trips have been produced in daily basis. Of total trips of 20.8 million, non-motorized transport (Walking and Rickshaw) accounts for 58%. Non-motorized transport has still played an important role in Dhaka.

c)   Trips produced by female fall below male, and female's trip has a tendency to concentrate on private and return home purpose. It shows that female is acting in or around their house.

d)   As a major transport mode, Rickshaw has a dominant share of 38%, followed by Public Bus (28%) and Walking (20%). Without non-motorized transport, public bus accounts for 71%. It is clearly proven that the residents are highly depended on non-motorized transport.

e)   The corridor between Mirpur and Saidabad shows strong demand line by public bus, whereas auto rickshaw users is likely to move from one zone to next zone (middle trip).

f)   Business related trips such as 'Home to Work' and 'Non-Home Based Business' purposes indicates the business centre in Dhaka as Paltan Area.

(2)   Characteristics of Road Traffic

a)   Traffic volume in the central part of Dhaka has increased by 2% since the last large-scale survey by Strategic Transport Plan in 2004. Traffic volume of Car, Bus and Motorcycle is increasing; while, a number of Auto Rickshaw and Taxi observed goes down in 5 years. Thus, private vehicle may continue to increase and result in more serious traffic situation, if no action is taken.

b)   Due to the regulation for truck usage in DCC, it keeps traffic volume of truck lower level in the daytime. However, the goods transport by rickshaw and rickshaw van can be seen in the city, and it often results in traffic congestion.