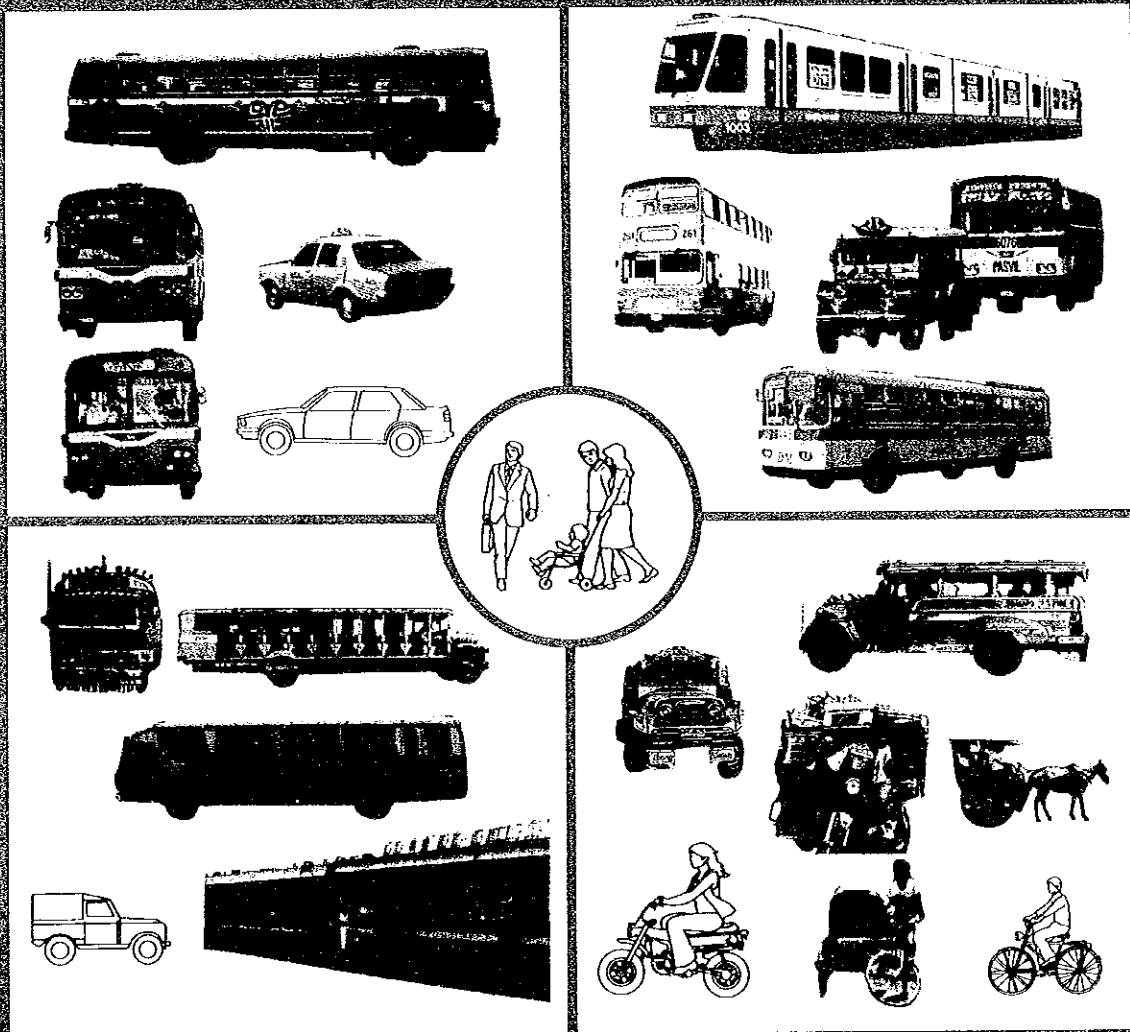


# THE METRO MANILA TRANSPORTATION PLANNING STUDY (JUMSUT)

FINAL REPORT

MAIN TEXT

PART II : Metro Manila Public Transportation



March 1984

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## MAIN TEXT PART II

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**Chapter 4.**  
**METRO MANILA SOCIO-ECONOMIC PROFILE**



## CHAPTER 4 METRO MANILA SOCIO-ECONOMIC PROFILE

### 4.1 LOCATION AND PHYSICAL STRUCTURE

#### 4.1.1 Metropolitan Area

- Metro Manila, also called the National Capital Region, is an area comprising of 4 cities and 13 municipalities. It extends 25 kilometers from north to south, 12 kilometers from east to west and covers 636 square kilometers. It has a population of about six million people which is expanding rapidly at a growth rate of 3.6 percent per annum.
- Constant pressure for development in Metro Manila has been expanding the actual geographical spread of the metropolitan area towards the adjoining areas in the north, east, and south, as shown in Figure 4.1. The approximate population in these areas is as follows:
  - The North: includes the municipalities of Obando (1980 population of 40 thousand), Meycauayan (84), Bulacan (35), Bocaue (50), Sta. Maria (58), San Jose del Monte (61), Balagtas (29), Malolos (96), and so on. Total population in these areas is approximately 453 thousand.
  - The East: includes San Mateo (52), Montalban (42), Taytay (75), Antipolo (69), Angono (27), Tanay (40), Morong (25), and Binangonan (81). Total population is approximately 411 thousand.
  - The South: includes Bacoor (90), Cavite City (88), Kawit (39), Imus (59), San Pedro (75), Carmona (65), Dasmariñas (52), and Noveleta (14). Total population of these areas is approximately 482 thousand.
- These outlying areas are well-linked with Metro Manila mainly by a road system and partly by a railway system (PNR). These areas have many bus and jeepney routes available from/to various growth centers and CBDs in Metro Manila.

#### 4.1.2 Metro Manila Jurisdiction

- In an effort to promote a simultaneous and unified development, to consolidate all public services rendered, and to administer these services more effectively and economically, PD No. 824 was issued on November 5, 1975. This provided for the creation of the Metropolitan Manila Area as an integrated area under the management of a commission. It is to be composed of four cities, namely; Manila, Quezon, Pasay, and Caloocan, and 13 municipalities, namely; Mandaluyong, Makati, San Juan, Las Piñas, Malabon, Navotas, Pasig, Pateros, Parañaque, Marikina, Muntinlupa, Taguig in the province of Rizal, and Valenzuela in the province of Bulacan. (See Figure 4.1.)
- The City of Manila further consists of four districts, namely; 1st, 2nd, 3rd, and 4th districts. Quezon City has four sub-areas: I, II, III, and IV. Caloocan City is divided into Caloocan North and Caloocan South, which are physically separated from each other.
- Each of these cities and municipalities is composed of a smaller administrative unit called "Barangay".

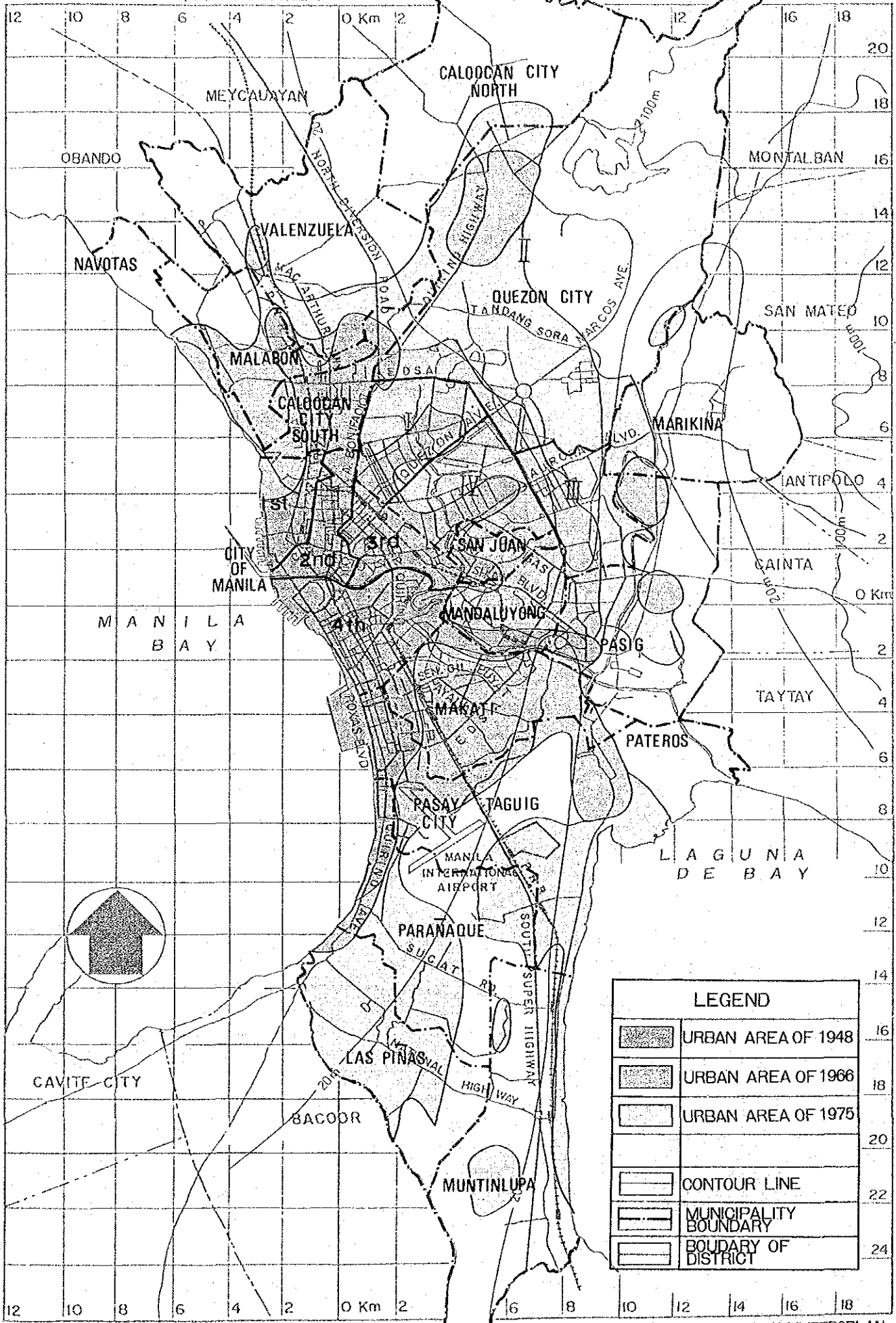
The word Barangay (branch) was first used by people who came on sailboats from Indonesia and Borneo to the Philippines. During the Spanish era, the Barangay referred to a small, meaningless rural community made up of one or more clusters of houses. Today, the term Barangay has been given an important meaning. President Marcos, issued PD No. 86 which called for the creation of a citizen's assembly later renamed Barangay by PD No. 86a. The Barangay is the basic unit of local government composed of not less than 100 families and not more than 500 families, closely and interpersonally relating with each other in the hope of drawing out more responsive opinions and ideas from its members. Through the Barangay, national unity and progress is hoped to be achieved through the people's active participation in governmental affairs.

Total number of barangays in Metro Manila is 1,694. The breakdown is as follows: City of Manila (910), Pasay City (200), Makati (32), Mandaluyong (27), San Juan (21), Quezon City (136), Caloocan City (188), Valenzuela (32), Malabon (21), Navotas (14), Marikina (13), Pasig (30), Pateros (10), Taguig (18), Parañaque (14), Muntinlupa (8), and Las Pinas (20).

#### 4.1.3 Physical Setting and Urban Development

- Geographically, Metro Manila is made up of flat lowlands along the coast, a valley (Marikina Valley) in the east, and relatively high grounds (the Guadalupe Plateau), which extend from north to south, between the lowlands and the valley.
- Historically, Manila has spread outwards from the mouth of the Pasig River, starting along the river banks and the flat coastal lands and then, much later, onto higher grounds. The growth of Manila since the middle of the 1940's is shown conceptually in Figure 4.1 and summarized as follows:
  - 1945-1960: The TRANVIA (streetcar) contributed to the development of urban areas through its role as a means of public transport. After the tranvia, radial roads with its structure being more or less the same as they are now, induced further the development of these areas (roughly the areas encircled by present EDSA). Population increased from 1.6 million in 1948 to 2.5 million by 1960.
  - 1960-1970: The present EDSA was constructed (1955-1965) in such a way that it surrounded the urban areas. This helped intensify the development of existing areas and, at the same time accelerate the new development along and outside EDSA, such as business and commercial centers in Makati and Cubao and subdivision developments in Las Piñas, Marikina Valley, etc.
  - 1970 – present: The urban areas are currently growing in all directions: government-led reclamation to the west, population-forced expansion to the northwest, and private sector-led expansion to the north, south and east. The areas with the fastest population growth in terms of percentage are the peripheral areas to the south and north. However, the highest annual increases are still to be found in the urban core. Population increased to approximately six million by 1980.
- The growth of Metro Manila has resulted in a complex pattern of continually changing relationships and movements. Middle and high income housing have tended to move to the periphery, while a sizeable number of urban poor penetrated into possible urban areas. Makati has developed as a major business center and Quezon City as a government center. Although the existing CBD has lost some of its functions to Makati, it is still a significant employment center.

FIGURE 4.1 METRO MANILA



LEGEND	
	URBAN AREA OF 1948
	URBAN AREA OF 1966
	URBAN AREA OF 1975
	CONTOUR LINE
	MUNICIPALITY BOUNDARY
	BOUNDARY OF DISTRICT

SOURCE: MMETROPLAN





## 4.2 SOCIO-ECONOMIC CHARACTERISTICS

### 4.2.1 Population

#### 1) Total Population and Household:

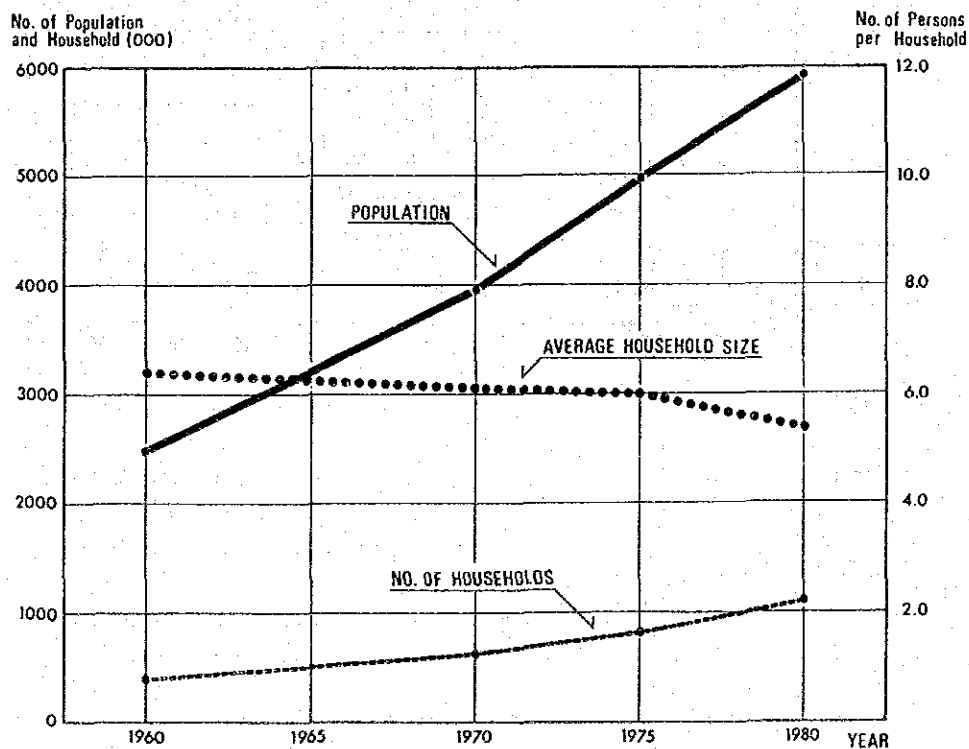
- In 1980, the population of Metro Manila was approximately six million as compared to only four million in 1970, as shown in Table 4.1. Although the population growth rate is slowing down, it is still 3.6 percent per year. Due to the decrease in the household size (from 6.2 members/household in 1970 to 5.4 in 1980), the number of households has been increasing at 5.0 percent per year.

Table 4.1  
Population and Household  
in Metro Manila

Year	Population (000)	Annual Growth Rate (%)	Number of House- holds (000)	Annual Growth Rate (%)	Ave. House- hold Size (persons/HH)
1960	2,463	—	385	—	6.4
1970	3,967	4.9	640	5.2	6.2
1975	4,970	4.6	826	5.3	6.0
1980	5,926	3.6	1,104	5.0	5.4

Source: Population and Household Census (NCSO)

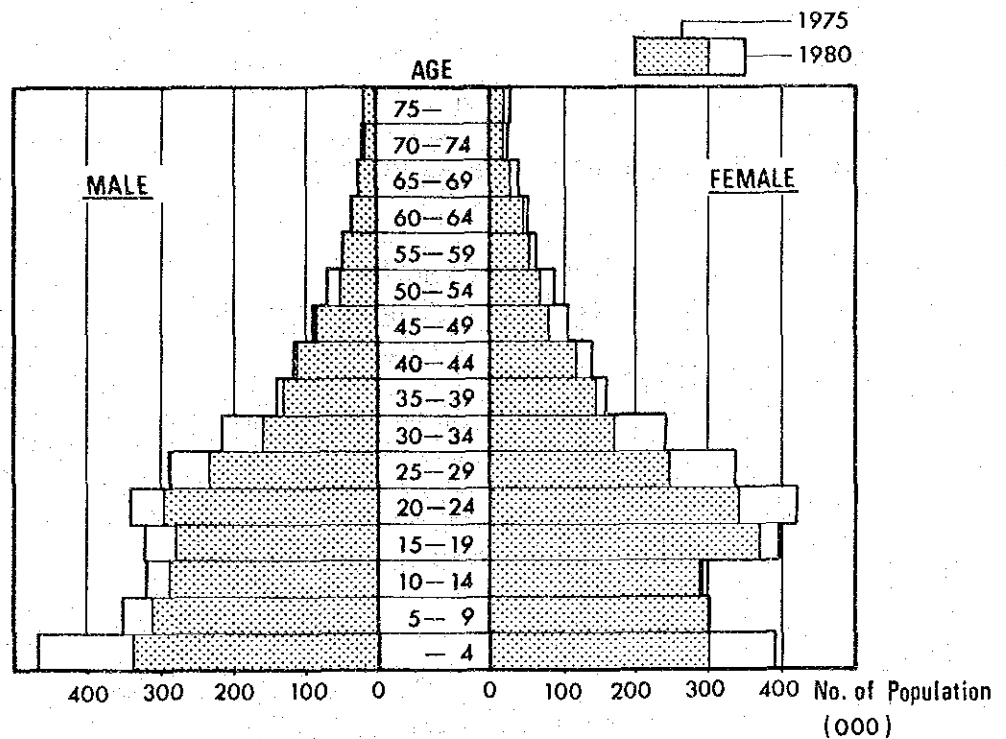
Figure 4.2  
Metro Manila Population Growth



## 2) Population by Sex and Age Group

- Population composition by age group and sex is shown in Figure 4.3. The working age group between 15 and 60 years old, is significantly high at 60.4 percent of the total population.
- Female population is larger than male population. Male to female population ratio of Metro Manila is 0.93 as compared to that of the whole country of 1.01. Particularly, the females share a considerably higher percentage (54.8%) of the total population in the 15 and 30 years age group.

Figure 4.3  
Metro Manila Population  
by Sex and Age Group



## 4.2.2 Employment and School Attendance

### 1) Population by Occupation

- Population by occupation in 1980 is shown in Table 4.2. Total school attendance is approximately 1.5 million or 26 percent of the total population, while the total number of gainful workers is 2.0 million or 34 percent of the total population. Jobless people share 9 percent of the total population or 26 percent of gainful workers.

Table 4.2  
Estimated Occupation Structure, 1980

Status	Population	
	000	%
Below 7 years old <sup>1/</sup>	1,117	18.8
Student:		
– Primary level <sup>2/</sup>	752	12.7
– Secondary level and above <sup>2/</sup>	795	13.4
Gainful worker <sup>1/</sup>	2,007	33.9
Housewife <sup>2/</sup>	730	12.3
Jobless and others	525	8.9
Total	5,926	100.0

<sup>1/</sup> 1980 Census, NCSO

<sup>2/</sup> based on the 1975 Integrated Population Census, NCSO

- Gainful workers by occupation is further shown in Table 4.3. Of the total 2.0 million gainful workers, production/manufacturing and related workers account for 34.4 percent, followed by service workers (19.7 percent), sales workers (12.6 percent), clerical and related workers (12.9 percent) and professional, technical and related workers (11.8 percent).

Table 4.3  
Occupation of Gainful Workers, 1980

Occupation Category	No. of Gainful Workers	
	000	%
1) Service Workers	395	19.7
2) Administrative, Executive and Managerial Workers	48	2.4
3) Sales Workers	252	12.6
4) Clerical and Related Workers	258	12.9
5) Production and Related Workers, Equipment Operators and Laborers	691	34.4
6) Professional, Technical and Related Workers	237	11.8
7) Others	126	6.2
Total	2,007	100.0

Source: 1980 NCSO Population Census

## 2) Employment

- Gainful workers in Metro Manila can be broken down by industry sector as shown in Table 4.4. Employment has increased from 1,606,000 in 1975 to 2,007,000 in 1980. In relation to this, the ratio of total employment to total population has slightly increased from 32.3 percent in 1975 to 33.9 percent in 1980.

Table 4.4  
Employment by Industry Sector, 1980

	Employment by Industry Sector, 1980			
	Primary	Secondary	Tertiary	Total
Number (000):	118	593	1,296	2,007
% to Total:	5.9	29.5	64.6	100.0

Source: NCSO Census

## 3) School Attendance

- As the national capital, Metro Manila not only plays the role of a political and economic activity center but also of an educational activity center. There are approximately 500 elementary schools and 600 upper level schools, i.e., secondary, college, university, and vocational schools in Metro Manila. By summarizing the school attendance lists of 1980/81, the number of school enrollees in Metro Manila reaches approximately 1,935,000. Since a number of working students belong to the category of "Gainful Workers" in the occupation structure, the student population of 1,935,000 is further broken down as shown in Table 4.5.

Table 4.5  
School Attendance by Type, 1980

Type	No. of Students	
	000	%
1) Student (primary level)	752	38.8
2) Student (secondary and above)	1,183	61.1
a) Metro Manila residents		
– full-time students	795	41.1
– working students	349	18.0
b) Residents outside Metro Manila	39	2.0
Total	1,935	100.0

Source: NCSO Census

### 4.2.3 Income Level and Distribution

- Table 4.6 and Figure 4.4 on the distribution of households in Metro Manila by income level (₱ per month) show the following:
  - a) In the 1980 HIS, 48 percent of total households in Metro Manila belong to the ₱500-₱1,000 per month income level. The average income of Metro Manila households is ₱1,152 per month.

- b) On the other hand, the NCSO reports that, based on a sample of 3,300 Metro Manila households, the average household income is P2,284 per month. Majority (or 23 percent of households) falls under the P500-P1,000 per month income level.

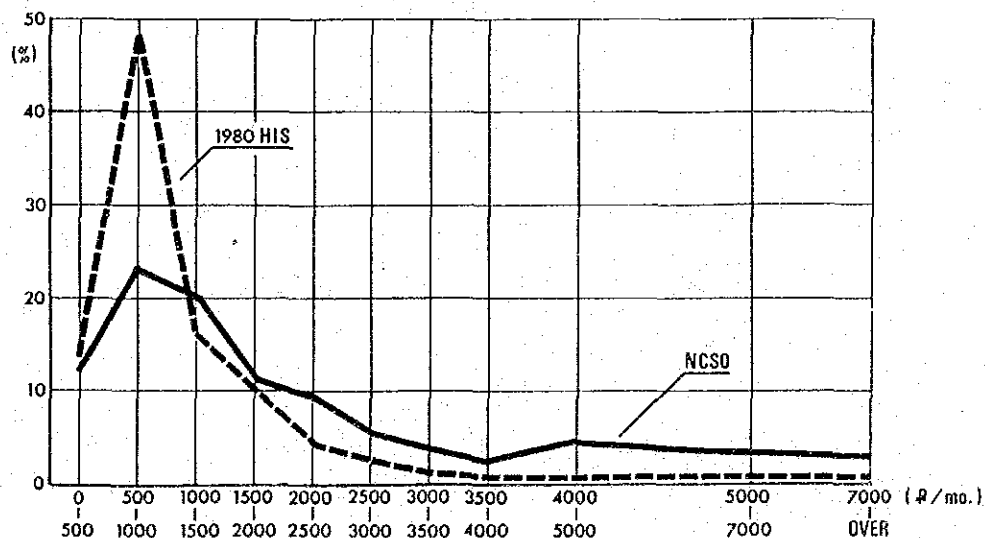
Table 4.6  
Distribution of Household by Income Level

Household Income Level (P/month)	1980 HIS		1980 NCSO Data % to Total
	No. of Households	% to Total <sup>1/</sup>	
0 - 500	138,306	13.4	12.6
501 - 1,000	499,187	48.4	23.2
1,001 - 1,500	170,331	16.5	20.0
1,501 - 2,000	108,301	10.5	11.6
2,001 - 2,500	44,218	4.3	9.5
2,501 - 3,000	27,718	2.7	5.6
3,001 - 3,500	14,745	1.4	3.8
3,501 - 4,000	9,574	0.9	2.1
4,001 - 5,000	7,989	0.8	4.9
5,001 - 7,000	5,759	0.6	3.5
7,001 & over	5,997	0.6	3.2
UNKNOWN	6,263	-	-
<b>Total</b>	<b>1,038,388</b>	<b>100.0</b>	<b>100.0</b>

Source: 1980 HIS and NCSO data.

<sup>1/</sup> % is calculated excluding unknown.

Figure 4.4  
Distribution of Household by Income Level



#### 4.2.4 Socio-Economic Profile by Municipality

- This section further presents some socio-economic profile of Metro Manila by municipality. Table 4.7 summarizes the information on population, population density, average household income, and comparison of day-time and night-time population. Their characteristics are as follows:

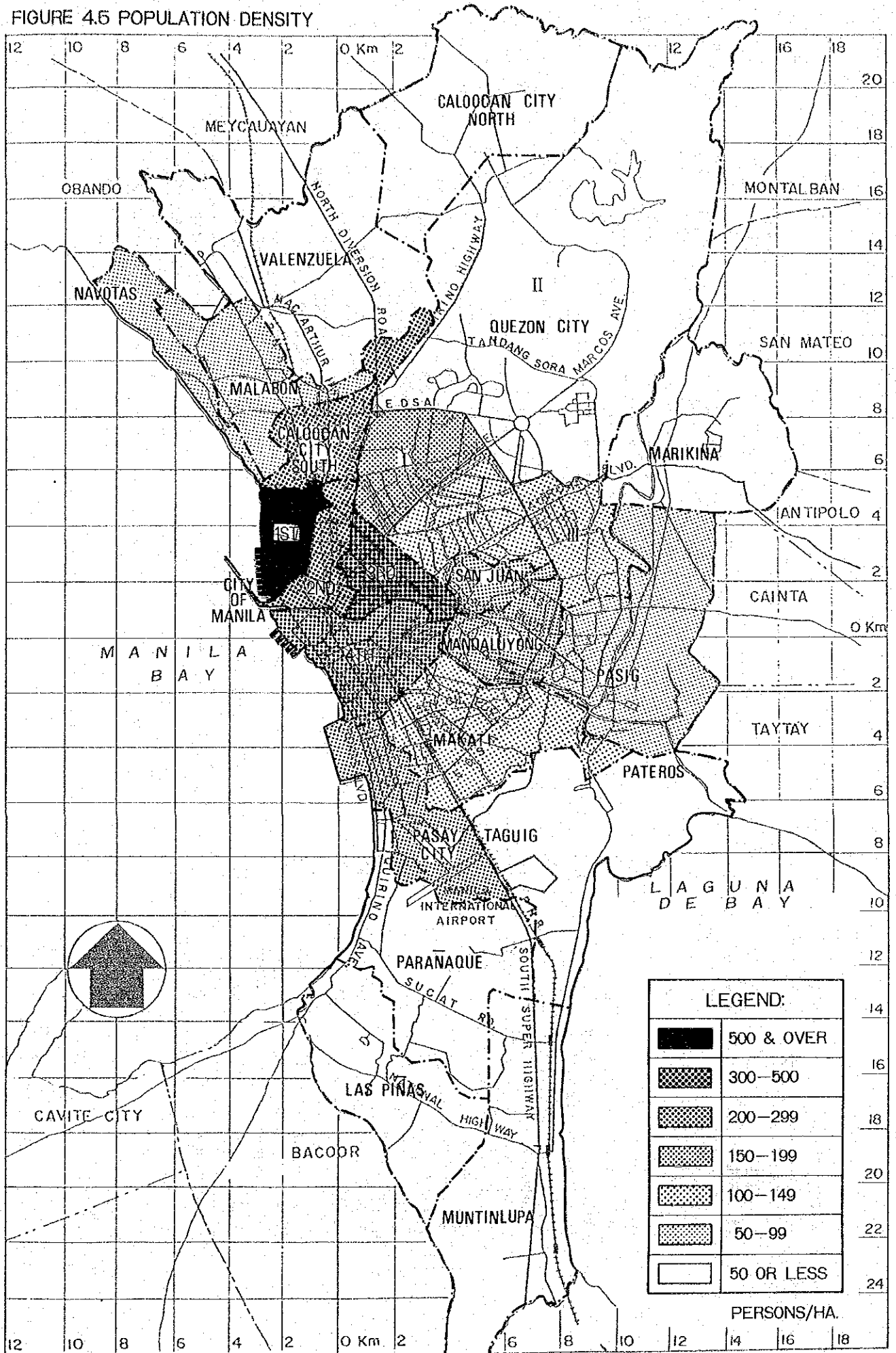
1) **Population Distribution and Growth:** The population in the City of Manila shares 1.6 million or 28 percent of the whole Metro Manila, while that of Quezon City is 1.2 million or 20 percent. Their average annual growth rates are 2.0 and 4.0 percent, respectively. Although the population increased in terms of growth rate, it is significantly high in Las Pinas (10.8 percent per year), Taguig (12.6 percent), Valenzuela (7.0 percent), and Muntinlupa (9.6 percent) and in some other municipalities. The increase in absolute amount is still large in the City of Manila (150,000 increase between 1975 and 1980) and Quezon City (222,000).

The population density by municipality ranges widely from 17 persons per hectare in Caloocan North to 710 persons per hectare in the City of Manila, first district. Figure 4.5 shows the distribution of the population density.

2) **Daytime versus Nighttime Population:** The municipalities where daytime population exceeds nighttime population is only for the City of Manila (second, third, and fourth districts), Makati, a part of Quezon City (III) and Muntinlupa. The City of Manila and Makati are the two most significant areas.

3) **Household Income:** Household income ranges from a low of ₱868 per month in Muntinlupa to a high of ₱1,739 per month in Parañaque by area. More than 70 percent of the households in the first district of Manila, Taguig, and Muntinlupa fall under the ₱1,000 a month income level. These areas have the lowest average income levels. On the other hand, areas with high average income levels, such as Parañaque, Las Piñas, the third district of Quezon City, have a relatively high number of households under the ₱2,501-₱4,000 income level. The income distribution of each municipality is shown in Table 4.8.

FIGURE 4.5 POPULATION DENSITY



SOURCE: 1980HIS





Table 4.7  
Selected Socio-Economic Data by Municipality, 1980

Municipality/District	Population (000)		Ave. Annual 1980 Population Growth Rate (%)	Population Density (Persons/ha.)	Average Household Income (₱/month)	Daytime Population		Ratio of Daytime Night-time Population
	1980	1975				Population	Night-time Population	
City of Manila	1,630	1,479	2.0	425	1,006	305,822	-124,037	1.23
1. City of Manila, 1st	565	—	—	710	881	—	—	0.73
2. City of Manila, 2nd	218	—	—	358	1,102	—	—	1.96
3. City of Manila, 3rd	428	—	—	470	1,109	—	—	1.34
4. City of Manila, 4th	419	—	—	276	1,025	—	—	1.40
5. Pasay City	288	255	2.5	206	1,090	-27,357	—	0.88
6. Makati	373	334	2.2	125	1,341	48,998	—	1.16
7. Mandaluyong	205	182	2.4	79	1,315	-3,797	—	0.98
8. San Juan del Monte	130	122	1.3	125	1,233	-24,857	—	0.76
Quezon City	1,165	957	4.0	70	1,195	-91,718	—	0.90
9. Quezon City, I	271	—	—	212	1,125	—	—	0.79
10. Quezon City, II	472	—	—	37	1,158	—	—	0.92
11. Quezon City, III	189	—	—	146	1,476	—	—	1.01
12. Quezon City, IV	233	—	—	166	1,128	—	—	0.92
Caloocan City	468	397	3.3	84	1,086	-73,977	—	0.80
13. Caloocan City, South	395	—	—	307	1,105	—	—	0.83
14. Caloocan City, North	73	—	—	17	976	—	—	0.67
15. Valenzuela	212	151	7.0	45	1,193	-12,979	—	0.92
16. Malabon	191	175	1.8	82	1,048	-19,293	—	0.87
17. Navotas	126	97	5.4	126	993	-22,567	—	0.77
18. Marikina	212	168	4.8	54	1,246	-25,568	—	0.85
19. Pasig	269	210	5.1	207	1,143	-3,972	—	0.98
20. Pateros	40	33	3.9	155	1,449	-4,045	—	0.87
21. Taguig	134	74	12.6	40	1,075	-8,345	—	0.92
22. Paranaque	209	159	5.6	54	1,739	-45,323	—	0.74
23. Muntinlupa	137	45	7.6	29	868	888	—	1.01
24. Las Pinas	137	82	10.8	33	1,471	-23,963	—	0.78
Metro Manila Total	5,926	4,920	3.6	93	1,152	0	—	1.00

Source: 1980 HIS and NCSO Statistics.

Table 4.8  
Household Income Distribution  
by Municipality, 1980

Municipality	Household Income Range (P/month)					Total (%)
	0 – 500	501-1,000	1,001-2,500	2,501-4,000	4,001 & Above	
City of Manila	21.1	46.9	27.1	3.8	1.1	100
1. City of Manila, 1st	29.2	46.0	21.0	2.7	1.1	100
2. City of Manila, 2nd	20.4	42.2	31.8	3.7	1.9	100
3. City of Manila, 3rd	16.6	44.7	32.1	5.6	1.1	100
4. City of Manila, 4th	15.2	52.5	28.0	3.4	0.9	100
5. Pasay City	11.4	51.9	31.5	3.9	1.3	100
6. Makati	9.7	48.7	33.6	4.5	4.6	100
7. Mandaluyong	12.6	40.4	37.5	6.4	3.0	100
8. San Juan del Monte	14.2	45.2	30.6	6.2	3.8	100
Quezon City	11.9	49.0	30.9	6.1	2.1	100
9. Quezon City, I	18.9	48.0	25.6	4.4	3.2	100
10. Quezon City, II	11.1	49.2	32.7	5.9	1.1	100
11. Quezon City, III	6.4	42.1	37.3	10.3	3.9	100
12. Quezon City, IV	9.9	55.0	28.6	5.1	1.4	100
Caloocan City	11.0	50.8	33.2	4.5	0.5	100
13. Caloocan City, South	11.0	49.5	34.0	5.0	0.6	100
14. Caloocan City, North	11.2	57.9	29.2	1.4	0.4	100
15. Valenzuela	6.9	44.7	42.5	5.1	0.8	100
16. Malabon	10.8	52.9	33.3	2.5	0.4	100
17. Navotas	16.9	50.6	20.2	4.3	0	100
18. Marikina	5.8	43.4	44.9	4.3	1.7	100
19. Pasig	10.0	52.0	31.6	5.7	0.9	100
20. Pateros	11.5	48.1	27.5	6.9	6.1	100
21. Taguig	12.6	56.9	24.8	3.7	2.1	100
22. Paranaque	7.1	41.8	30.2	12.3	8.6	100
23. Muntinlupa	11.9	63.2	24.5	0.4	0	100
24. Las Pinas	5.2	42.2	37.3	12.0	3.3	100
Metro Manila Total	13.4	48.4	31.3	5.0	1.9	100

Source: 1980 HIS

### 4.3 CAR OWNERSHIP

#### 4.3.1 Car Ownership Level

- As shown in Table 4.9 the number of motor vehicles (excluding motorcycles) registered in Metro Manila in 1982 was approximately 432,200. This accounts for an average of 70 motor vehicles per 1,000 persons – a very high density compared with the national average of 20 per 1,000 and with the average for all areas other than Metro Manila of 11 per 1,000. This high density is due to the fact that 46 percent of all motor vehicles in the nation or 61 percent of cars and taxicabs are found in Metro Manila.

- Of the Metro Manila motor vehicle fleet of 432,200, 63 percent consists of cars, taxicabs, and jeeps, about 6.5 percent PUJs, 30 percent trucks, and only 1 percent buses. The fleet grew substantially by 8 to 9 percent per year during 1975 to 1978. However, since the year 1979, its growth has slowed down. The Bureau of Land Transportation (BLT) records even show a considerable decrease between 1979 and 1980.

Table 4.9  
Number of Registered Vehicles

Vehicle Type	1975	1976	1977	1978	1979	1980	1982
1. Car	166,743	169,248	188,264	219,831	227,726	218,257	218,130
2. Jeep	41,280	41,861	39,495	44,636	50,073	36,770	46,892
3. Taxi	8,512	11,460	14,666	11,870	7,513	10,125	6,149
4. PUJ	13,359	14,640	23,763	27,752	19,067	28,174	27,886
5. Bus	5,725	6,205	4,640	4,703	2,437	3,578	4,381
a. PUB	4,940	5,030	4,136	3,839	1,811	2,890	3,591
b. Others	785	1,175	504	864	626	688	790
6. Truck/Trailer	76,364	81,393	93,715	113,035	128,267	100,966	128,761
7. Others	5,818	8,393	7,269	4,219	6,933	6,651	unknown
Sub-total (4-wheeled vehicles)	317,801	333,200	371,812	426,046	442,016	404,521	432,199
8. Motorcycle	14,701	41,438	42,987	50,607	47,883	41,621	38,609

Source: BLT

#### 4.3.2 Car Ownership by Income Level

- Table 4.10 gives a picture of the Metro Manila residents' car-ownership by income level as derived from the HIS analysis results. Average car-ownership ratio is approximately one for every ten households. Car-owning households have an average of 1.4 cars.
- Car-ownership varies significantly by income level. From the lowest income group (average household income of less than ₱1,000 per month), comprising almost 62 percent of the total households, only 3 percent owns an average of 1.1 cars. From the lower middle income group (₱1,000-₱2,500 per month per household), 15 percent owns 1.2 cars on the average, while 37 percent of the upper middle group (₱2,500-₱4,000 per month per household) owns 1.3 cars on the average. Almost 70 percent of the upper income group (₱4,000 per month per household and above) owns about 2 cars on the average.

Accordingly, it is estimated that almost 40 percent of the total number of cars in Metro Manila is owned by only 7 percent of the total households.

- The distribution of car ownership by municipality in Metro Manila ranges from a low 3.1 percent in Navotas to a high 24.0 percent in Parañaque as shown in Table 4.11. High ownership ratios are seen in Parañaque, Las Piñas (19.0 percent), Quezon City I (15.2 percent), III (19.2 percent), while low ratios are in the City of Manila (5.8 percent), Pasay City (6.9 percent), Navotas and some other municipalities in the north and east. Its distribution coincides fairly well to income level distribution.
- Figure 4.6 shows the correlation between household income level and car-ownership ratio.

Table 4.10  
Car-Ownership Level of Metro Manila  
Residents by Income Level, 1980

Household Income Level of (₱/month)	Households		Car-Owning Households			Estd. Total No. of Cars Owned
	Number	% to Total	Number	% to Total	Ave. No. of cars Owned	
500 & less	138,306	13.4	1,734	1.2	1.1	
501 - 1,000	499,187	48.3	17,809	3.5	1.1	
Subtotal	637,493	61.7	19,543	3.1	1.1	21,500 (16.4%)
1,000 - 1,500	170,331	16.5	17,709	10.5	1.1	
1,001 - 2,000	108,301	10.5	19,125	17.7	1.2	
2,001 - 2,500	44,278	4.3	12,256	27.7	1.2	
Subtotal	322,910	31.3	49,090	15.2	1.2	58,900 (45.0%)
2,501 - 2,000	27,718	2.7	9,286	33.6	1.3	
3,001 - 3,000	14,745	1.4	6,199	42.1	1.3	
3,001 - 4,000	9,574	0.9	3,880	40.5	1.5	
Subtotal	52,037	5.0	19,365	37.2	1.3	25,200 (19.3%)
4,001 - 5,000	7,989	0.8	4,781	59.9	1.7	
5,001 - 7,000	5,759	0.6	3,517	61.2	1.8	
7,000 & above	5,997	0.6	5,010	83.7	2.2	
Subtotal	19,745	2.0	13,308	67.4	1.9	25,300 (19.3%)
Unknown	62,646	-	3,173	5.1	1.7	
Total	1,094,831 <sup>1/</sup>	100.0	104,479	9.5	1.4	130,900

Source: 1980 HIS

<sup>1/</sup>Total includes "unknown"

Ratio of Car-Owning Households (%)

Figure 4.6  
Correlation between Household Income Level and Car-Owning Household Ratio by Area

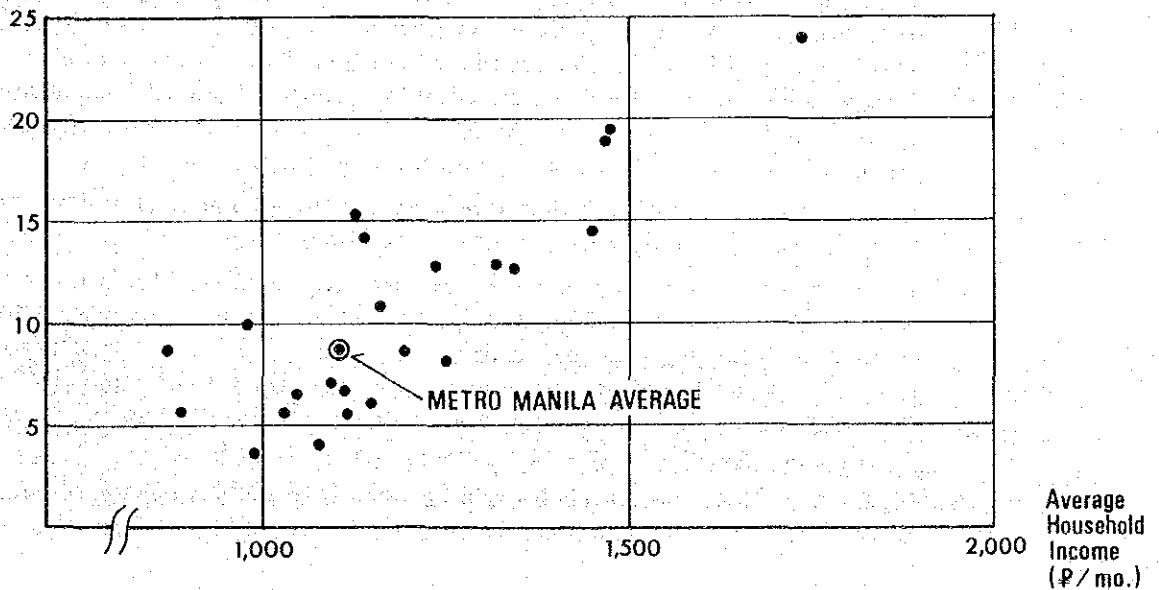


Table 4.11  
Car-Ownership by Municipality, 1980

Municipality/District	No. of Car-owning households	Car Ownership Ratio	Average No. of Cars/Car owning households
1. City of Manila, 1st	5,608	5.4	1.7
2. City of Manila, 2nd	2,924	8.2	1.3
3. City of Manila, 3rd	5,356	6.6	1.1
4. City of Manila, 4th	4,275	5.6	1.1
5. Pasay City	3,801	6.9	1.1
6. Makati	8,725	12.7	1.7
7. Mandaluyong	5,059	13.0	1.3
8. San Juan del Monte	3,006	13.1	1.6
9. Quezon City, I	7,723	15.2	1.8
10. Quezon City, II	9,710	11.1	1.3
11. Quezon City, III	6,556	19.2	1.6
12. Quezon City, IV	6,135	14.1	1.6
13. Caloocan City, South	3,907	5.2	2.6
14. Caloocan City, North	1,358	10.0	1.0
15. Valenzuela	3,217	8.1	1.1
16. Malabon	2,409	6.6	1.1
17. Navotas	715	3.1	1.0
18. Marikina	3,055	7.9	1.1
19. Pasig	3,120	6.2	1.1
20. Pateros	1,045	14.4	1.0
21. Taguig	905	3.5	1.1
22. Paranaque	8,990	24.0	1.3
23. Muntinlupa	1,955	8.0	1.0
24. Las Pinas	4,917	19.0	1.2
Metro Manila Total	104,481	9.5	1.4

Source: 1980 HIS

#### 4.4 CHARACTERISTICS BY AREA

##### 4.4.1 Socio-Economic Characteristics

- This section highlights the socio-economic characteristics by area. These are based on data from the analysis of the 1980 HIS on a 202-zone system which are explained in detail in Chapters 16 and 17. Major findings are given as follows:

- 1) **Population density:** is significantly high for areas within C-2, followed by the areas between C-2 and C-4. Although the developing urban places spread towards the outer areas, the population density is generally far less than the already developed areas (see Figure 17.6 of Chapter 17)
- 2) **Population density during daytime:** is more concentrated in a limited number of areas in the CBD of the City of Manila. High density is generally seen along the coastline linking Caloocan City, City of Manila, and Pasay City, (see Figure 17.8 of Chapter 17).

However, the concentration of gainful workers is different from the picture shown in Figure 17.8. Relatively higher employment opportunities are distributed along EDSA and the South Super Highway (see Figure 17.9 of Chapter 17).

Concentration of school attendance is significantly evident in some areas. It is mostly in the university belt (the City of Manila) followed by several areas scattered here and there. This implies that the concentration of daytime population in the City of Manila is largely due to students (see Figure 17.10 of Chapter 17)

- 3) The higher household income areas are noted to be along EDSA and in the south (Figure 17.13). On the other hand, the ratio of jobless is relatively higher in the north.
- 4) Car ownership structure: is well correlated to the household income. Some areas like Makati, San Juan, Quezon City and Parañaque show not only high car-ownership figures but also high number of cars owned by household (see Figure 17.15 of Chapter 17).

#### 4.4.2 Land Use Characteristics

##### 1) Criteria for Land Use Classification

- In order to classify the existing land use characteristics of Metro Manila as shown in Figure 4.7, the following two criteria were taken into account:

##### Criteria 1: Classification by Land Use

- a) **Commercial/Business/Educational Area:** is defined as the area where the percentage of trip generation/attraction to/from residential facilities to the total is less than 20 percent.
- b) **Mixed Use Area:** is defined as the area where the percentage of trip generation/attraction is larger than 20 percent but less than 50 percent (Metro Manila average). This area is further classified, depending upon the major component of facilities, into the following five types: Commercial, Commercial/Business, Industry, Education and Commercial/Education.
- c) **Residential Area:** is defined as the area where residential function is predominant. This area is further classified into two: one comprising of relatively higher mixture with other facilities (mainly factory) and the other comprising mainly of residential facilities.

##### Criteria 2: Classification by Population Density

- a) **Type I CBD:** is defined as the area where daytime population density is more than 1,000 persons/hectare, while night-time density is also high with approximately 200 persons/hectare (high night-time and daytime population density).
- b) **Type II CBD:** is defined as the area where night-time population density is extremely low (approximately 20 persons/hectare), while the ratio of night-time population against daytime population exceeds 20 (high daytime and low night-time population density).

##### 2) Classification of Land Use

- According to the above criteria, the land use characteristics of Metro Manila may be summarized as follows:

A. **Commercial/Education Area:** includes the downtown area of Manila and Makati as commercial/business financial centers, Cubao and Greenhills as commercial centers. The downtown area of the City of Manila consists of: Type I CBD (mainly north of Pasig River, and Type II CBD (mainly south of Pasig River).

**B. Mixed Use Area:** Consists of several types which are expressed by relatively significant land-uses of the area;

- a) **Commercial:** includes the adjoining areas of downtown Manila, several areas alongside EDSA (such as Baclaran), and town proper (such as Pasig and Marikina).
- b) **Commercial/Business:** includes areas such as those adjoining the Type II CBD and areas along EDSA. Particular regard is given to those along EDSA which overlap with areas of very high income levels. This is because the development of these areas is normally associated with that of residential areas.
- c) **Industry:** includes mainly three areas; those along Marikina and the eastern portion of Pasig river, those along South Super Highway, and those along Quirino Highway, North Diversion Road and McArthur Highway.
- d) **Education:** includes areas such as the university belt and areas around UP in Quezon City.
- e) **Commercial/Education:** includes Monumento and Kalentong where commercial and education centers co-exist.

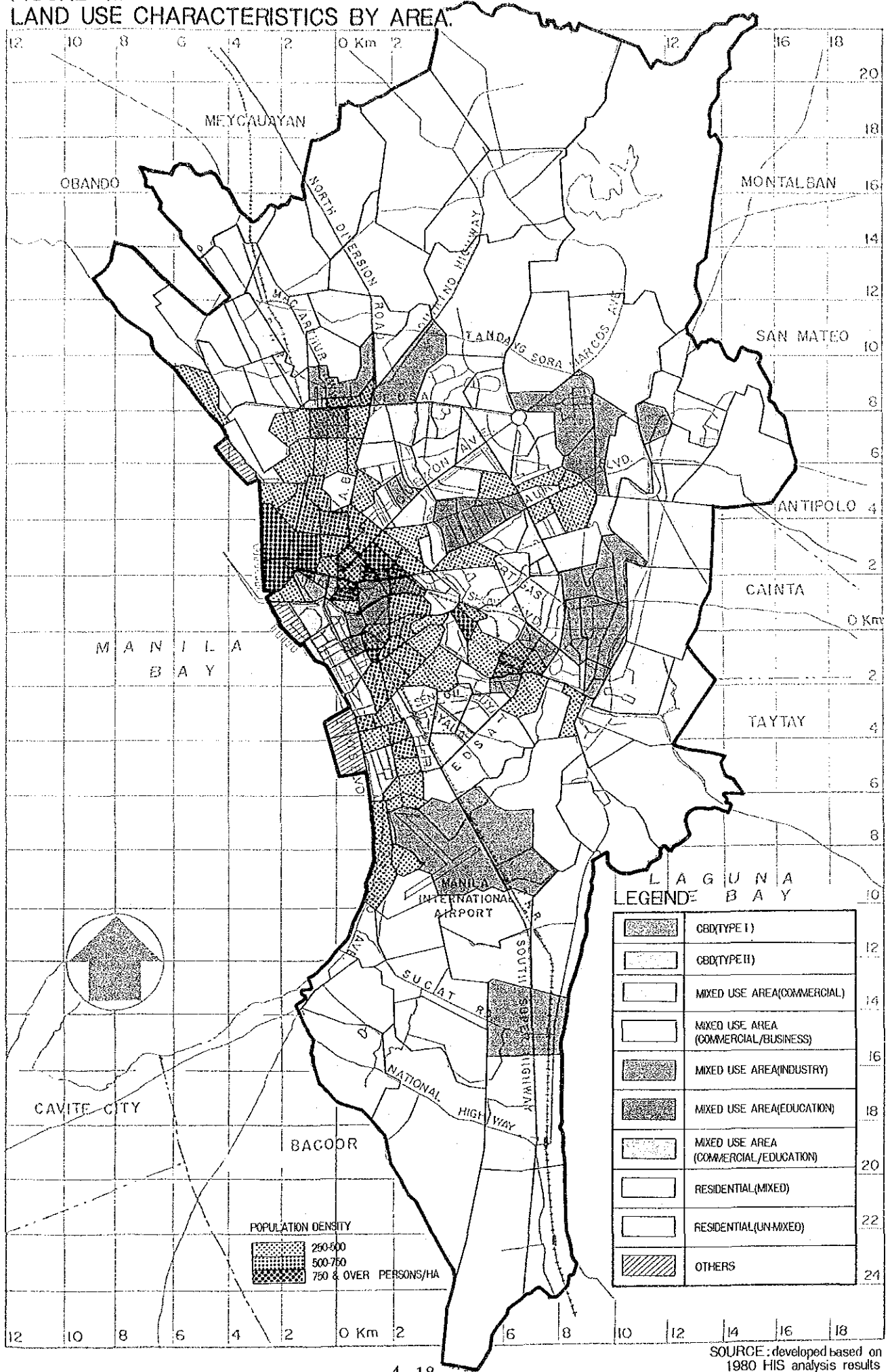
**C. Residential:**

- a) **Mixed Residential:** spreads outside of the mixed use areas (with industry).
- b) **Un-mixed Residential:** includes the following three types of areas:
  - i) Area densely inhabited (population density of more than 500 persons/hectare) and located around the CBD.
  - ii) The area sandwiched by the City of Manila and high quality residential areas along EDSA where population density is around 100-200 persons/hectare and mixed by both high income group and low/middle income group.
  - iii) The area located outside EDSA where subdivision development has recently progressed.





**FIGURE 4.7  
LAND USE CHARACTERISTICS BY AREA.**



Legend	Description	Coordinate
[Pattern]	CBD(TYPE I)	12
[Pattern]	CBD(TYPE II)	14
[Pattern]	MIXED USE AREA(COMMERCIAL)	16
[Pattern]	MIXED USE AREA (COMMERCIAL/BUSINESS)	18
[Pattern]	MIXED USE AREA(INDUSTRY)	20
[Pattern]	MIXED USE AREA(EDUCATION)	22
[Pattern]	MIXED USE AREA (COMMERCIAL/EDUCATION)	24
[Pattern]	RESIDENTIAL(MIXED)	
[Pattern]	RESIDENTIAL(UN-MIXED)	
[Pattern]	OTHERS	

**POPULATION DENSITY**

[Pattern]	250-500
[Pattern]	500-750
[Pattern]	750 & OVER PERSONS/HA

SOURCE : developed based on 1980 HIS analysis results



**Chapter 5.**  
**METRO MANILA OVERALL URBAN**  
**TRANSPORTATION**



## CHAPTER 5 METRO MANILA OVERALL URBAN TRANSPORTATION

### 5.1 URBAN TRANSPORT DEMAND

#### 5.1.1 Overall Demand and Its Characteristics

##### 1) Overall Demand Level and Trip Rate

- Total number of linked trips generated by Metro Manila residents (those seven years old and above or 4,796,400 persons out of the total population of 5,926,000 in 1980) is estimated to be 10,633 thousand per day in 1980. This excludes the walk trips.
- Trip rate is, therefore, 2.2 trips/day/person (seven years old and above). This can be further broken down by trip purpose as shown in Table 5.1

Table 5.1  
Trip Rate of Metro Manila Residents  
(Seven Years old and Above), 1980

Trip Purpose	Trip Rate
To Work	0.402
To School	0.360
Private	0.299
Business	0.093
To Home	1.063
Total	2.217

Source: 1980 HIS

##### 2) Trip Characteristics by Mode and Purpose

- Table 5.2 shows the trip generation by purpose and transport mode in terms of number of trips. Table 5.3 shows the trip purpose composition by mode and Table 5.4 gives the trip mode composition by purpose.
- The total trips comprise those using public transport modes (bus, jeepney, PNR, tricycle) and private transport modes (car/jeep, van/pick-up/truck, taxi). The former has a share of 74.4 percent or 7.9 million trips, while the latter 25.6 percent or 2.7 million trips. This is illustrated in Figure 5.1.
- Trip purposes of the total trips are presented in Figure 5.2. "To Home" trips have a 47.9 percent share of the total trips followed by the "to work" trips, 18.1 percent, "to school" trips, 16.3 percent, and "private" trips, 13.5 percent, while the "business or at work" trip has a share of only 4.2 percent.
- Of the public transport modes, jeepneys share a significant portion of the total demand. This mode comprises 54.6 percent of the total demand or 73.4 percent of the public transport demand. Although jeepneys are used for virtually any trip purpose, they are more frequently used for "to school" and "private" trips with trip lengths which are considered relatively shorter. On the other hand, the bus is used more for the "to work" trip with trip lengths that are relatively longer and where destinations are concentrated in a limited number of areas. This is usually in areas where bus services are fairly well available. Forty percent of "business" purpose trips are made by car.

Figure 5.1  
Overall Transport Demand  
by Transport Mode

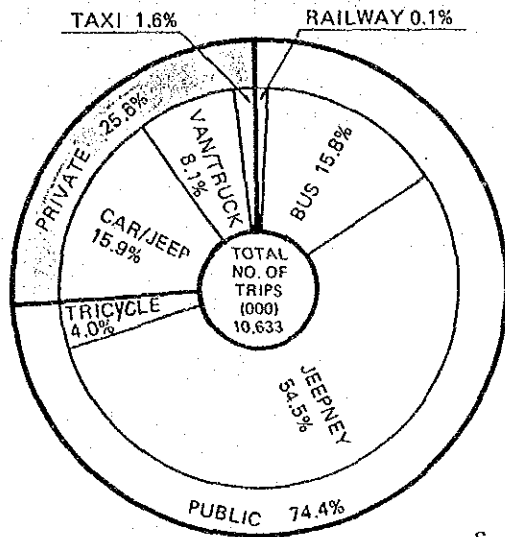
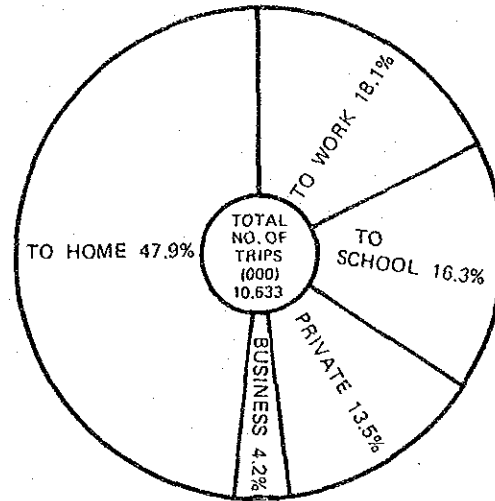


Figure 5.2  
Overall Transport Demand  
by Trip Purpose



Source: 1980 HIS

Table 5.2  
Trip Generation by Purpose and Mode

Mode	To Work	To School	Private	Business	To Home	Total
Public:	1,441,144	1,397,262	1,040,311	211,673	3,820,392	7,910,782
Train	1,894	1,542	875	225	5,494	10,030
Bus	443,566	190,417	184,882	50,429	804,935	1,674,229
Jeepney	954,476	1,116,867	776,560	148,744	2,799,835	5,796,482
Tricycle	41,208	88,436	77,994	12,275	210,128	430,041
Private:	488,382	331,178	391,966	234,210	1,276,501	2,722,237
Car	349,013	148,000	260,838	176,933	758,878	1,693,662
Taxi	24,743	7,826	44,136	16,674	74,364	167,743
Truck/Others	114,626	175,352	86,992	40,603	443,259	860,832
<b>Total</b>	<b>1,929,526</b>	<b>1,728,440</b>	<b>1,432,277</b>	<b>445,883</b>	<b>5,096,893</b>	<b>10,633,019</b>

Source: 1980 HIS

Table 5.3  
Trip Purpose Composition by Mode (%)

	To Work	To School	Private	Business	To Home	Total
Public:	18.2	17.6	13.2	2.7	48.3	100.0
Train	18.9	15.3	8.7	2.3	54.8	100.0
Bus	26.5	11.4	10.0	3.0	48.1	100.0
Jeepney	16.5	19.3	13.4	2.6	48.3	100.0
Tricycle	9.6	20.6	18.1	2.8	48.9	100.0
Private:	17.9	12.2	14.4	8.6	46.9	100.0
Car	20.6	8.7	15.4	10.5	44.8	100.0
Taxi	14.8	4.7	26.3	9.9	44.3	100.0
Truck/Others	13.3	20.4	10.1	4.7	51.5	100.0
Total	18.2	16.3	13.5	4.2	47.9	100.0

Source: 1980 HIS

Table 5.4  
Trip Mode Composition by Purpose (%)

	To Work	To School	Private	Business	To Home	Total
Public:	74.7	80.8	72.6	47.5	75.0	74.4
Train	0.1	0.1	0.1	0.0	0.1	0.1
Bus	23.0	11.0	12.9	11.3	15.8	15.8
Jeepney	49.5	64.6	54.2	33.4	54.9	54.5
Tricycle	2.1	5.1	5.4	2.8	4.1	4.0
Private:	25.3	19.2	27.4	52.5	25.0	25.6
Car	18.1	8.6	18.2	39.7	14.9	15.9
Taxi	1.3	0.5	3.1	3.7	1.4	1.6
Truck/Others	5.9	10.1	6.1	9.1	8.7	8.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1980 HIS

### 3) Trip Characteristics by Car-ownership/Income Level

- Table 5.5 shows the trip composition by mode and car-ownership. Of the total trips, 77 percent are made by persons who belong to non-car-owning households. On the other hand, 90 percent of the trips by public transport mode are made by those of noncar-owning households.
- Persons from car-owning households using cars share 52.9 percent and those using jeepney 23.4 percent. Those from non-car-owning households rely heavily on jeepneys (63.4 percent) and buses (18.5 percent).

Table 5.5  
Trip Composition by Mode and Car-Ownership

Mode	Trips made by persons of car-owning households		Trips made by persons of non car-owning households		Total	
	000	%	000	%	000	%
Public	770	(32.0)	7,141	(86.8)	7,910	(74.4)
Train	0	0.0	10	0.1	10	0.1
Bus	150	6.2	1,524	18.5	1,674	15.7
Jeepney	571	23.7	5,226	63.5	5,796	54.5
Tricycle	49	2.0	381	4.6	430	4.0
Private	1,637	(68.0)	1,085	(13.2)	2,723	(25.6)
Car	1,267	52.6	427	5.2	1,694	15.9
Taxi	38	1.6	130	1.6	168	1.6
Truck/Others	332	13.8	528	6.4	861	8.1
Total 000	2,407	(100.0)	8,226	(100.0)	10,633	(100.0)
%	(22.8)	-	(77.2)	-	(100.0)	-

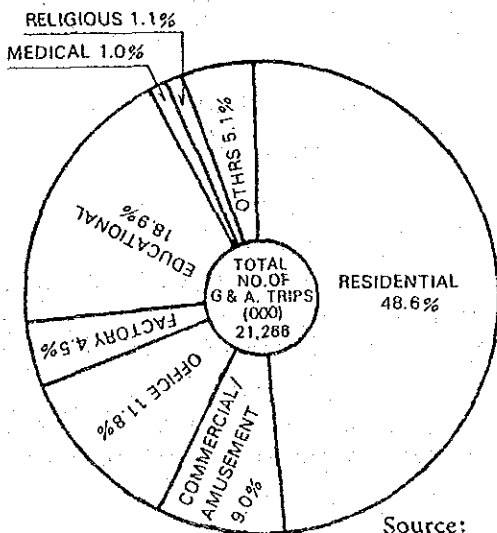
Source: 1980 HIS analysis results

- Transport users' characteristics with regards to household income level are shown in Figure 5.3. Approximately 90 percent of the total public mode users belong to the household income bracket of less than ₱2,500/month. On the other hand, about 80 percent of the private mode users constitute those from the income bracket of less than ₱4,000/month.

4) Trip Composition by Institution/Facilities

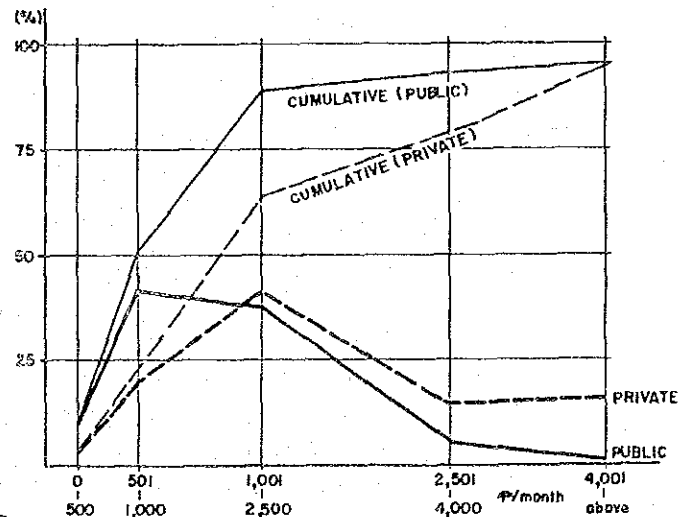
- Approximately 49 percent of the total trips are generated and attracted by residential institutions, while 19 percent by educational and 12 percent by office as shown in Figure 5.4.

Figure 5.4  
Distribution of Trips Generated and Attracted by Type of Institutions/Facilities



Source: 1980 HIS

Figure 5.3  
Household Income Level Distribution by Transport Mode

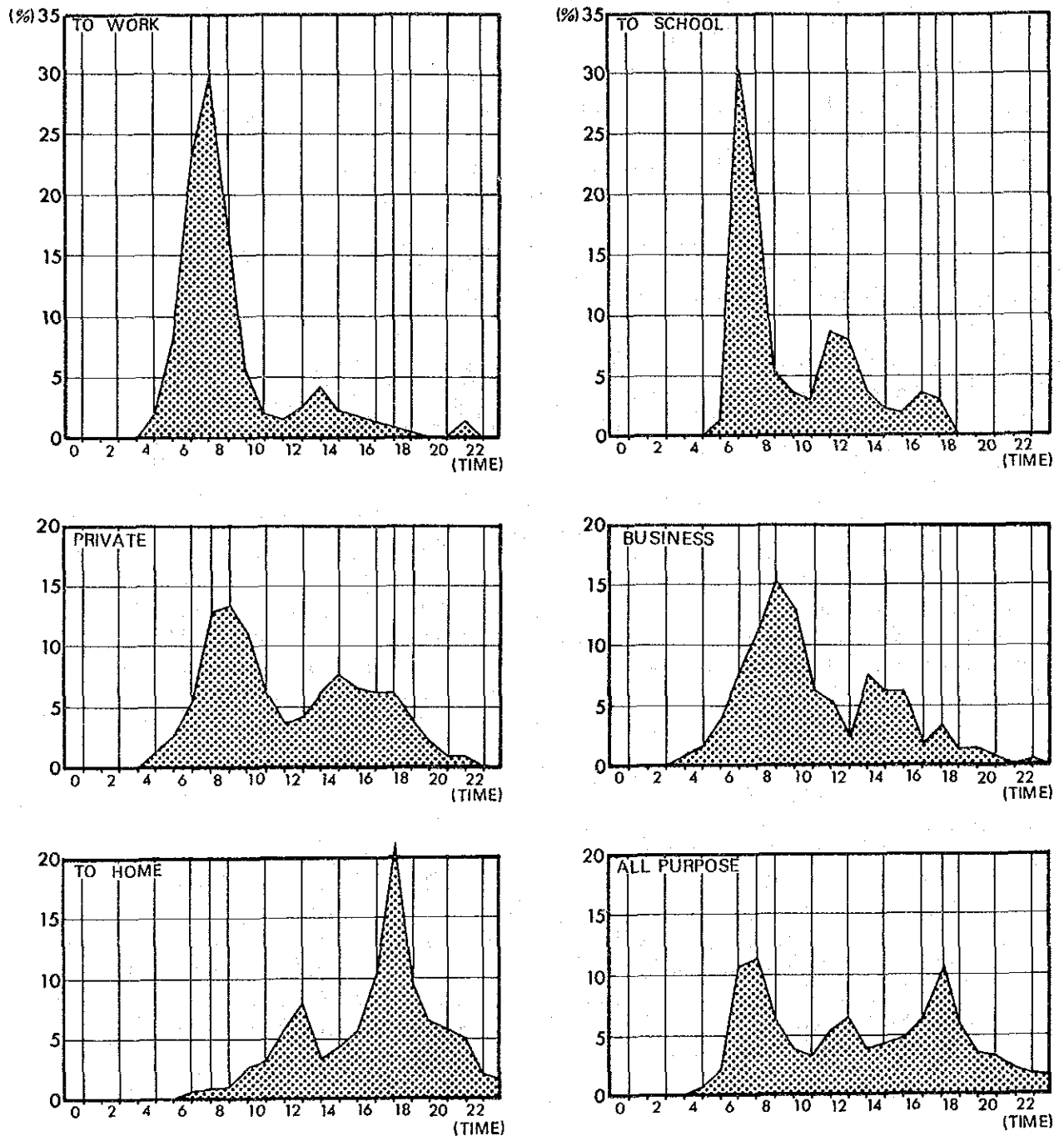




### 5) Hourly Fluctuation of Trips

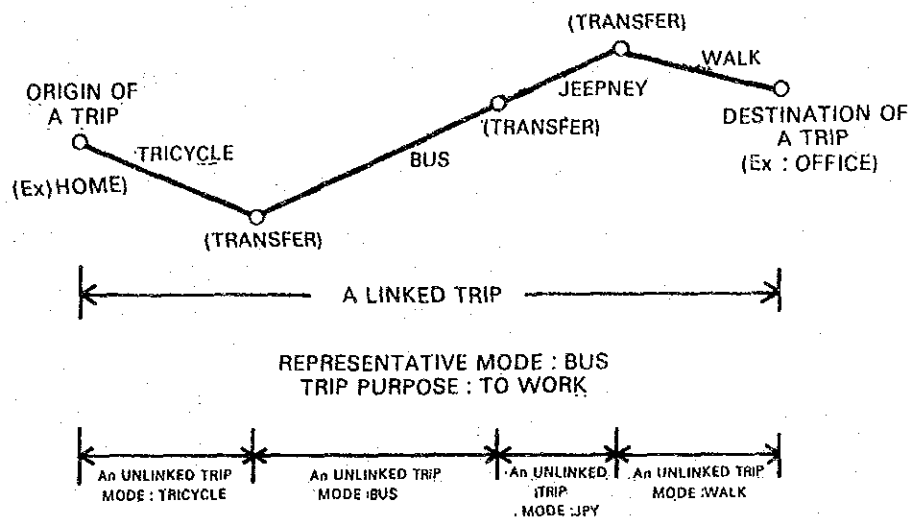
- The hourly distribution of trips in a day according to the departure time of each trip is shown in Figure 5.5. This is based on the 1983 HIS analysis results. The fluctuation pattern is dependent on the trip purpose and transport mode; e.g., "work" and "school" trips have sharp peaks in the morning, while the "private" and "business" trips do not have a significant peak.

Figure 5.5  
Hourly Distribution of Trip Generation by Trip Purpose



## 6) Unlinked Trips

- A linked trip is defined as a chain of trips between the origin and destination for a single trip purpose, while unlinked trips are components of a linked trip, as shown in the following illustrations:



- The total number of unlinked trips is 14,158,000 trips as against that of 10,633,000 for linked trips. Table 5.6 shows the mode composition of unlinked trips and the ratio of unlinked/linked trips.

Table 5.6  
Unlinked Trips by Mode

Mode	No. of Unlinked Trips		Unlinked Linked Ratio
	000	%	
<u>Public</u>	11,270	79.6	1.42
Train	10	0.0	1.00
Bus	1,755	12.4	1.05
Jeepney	8,631	61.0	1.49
Tricycle	874	6.2	2.03
<u>Private</u>	2,888	20.4	1.06
Car	1,711	12.1	1.01
Taxi	183	1.3	1.09
Truck/Others	994	7.0	1.16
<b>Total</b>	<b>14,158</b>	<b>100.0</b>	<b>1.33</b>

Source: 1980 HIS

## 5.1.2 Distribution of Trips

### 1) Trip Generation/Attraction

- Distribution of trip generation by mode and trip purpose composition for generation and attraction trips are shown in Figures 5.6, and 5.7, respectively, for each of the municipality.
- A large volume of trips is generated by the City of Manila, Quezon City, Makati, and Caloocan City. The characteristics of these municipalities in relation with the trip generation/attraction are summarized as follows:
  - a) “to work” trip: A large amount of “work” trips is attracted by Makati, City of Manila (4th and 2nd), Quezon City II and Pasig due to the fact that a lot of working facilities (such as offices, government agencies, shops, factories, and so on) are located in these areas.
  - b) “to school” trip: To “school” trip is significantly concentrated in the City of Manila (3rd, 4th, and 2nd) and Quezon City II. It is important to note that 456 thousand trips (24 percent of total) are attracted by the City of Manila 3rd alone where the university belt is located.
  - c) “private” trip: For the “private” trips, the City of Manila (2nd), Quezon City (III) and Makati have a great share of the total.
  - d) “Business” trip: “Business” trips are concentrated in the City of Manila (4th, 2nd) and Makati. This implies that business activities in daytime are mostly undertaken in these areas.
  - e) “to home” trip: This “home” trip distribution exactly reflects the night time population by area. The areas of the City of Manila (1st and 3rd), Quezon City II and Caloocan South, have a greater share than other areas.

### 2) Distribution of Trips

- Origin-Destination flows of the trips are shown in Figures 5.8, 5.9 and 5.10.
- Figure 5.8 indicates roughly the level of traffic flow among the four blocks of Metro Manila divided by the Pasig River and San Juan River and the PNR, which are set for screenlines. Overall person trip flow is relatively significant between east and west of the northern half of Metro Manila and between north and south of the western half of Metro Manila. The north-western block of Metro Manila generates/attracts the largest traffic volume. Public mode demand is distributed among all the blocks, while private mode demand is distributed more between the east and the west.
- Figure 5.9 shows more details of the public mode person traffic flow among 24 zones divided on the basis of municipality, district boundaries and external zones. Heavy concentration of traffic to/from the City of Manila is shown significantly, followed by that of to/from Quezon City and Makati.
- Figure 5.10 shows of the same for private mode person trip. Significant flows are seen between Makati – Manila and Makati – Parañaque.



**FIGURE 5.6  
TRIP GENERATION BY MODE**

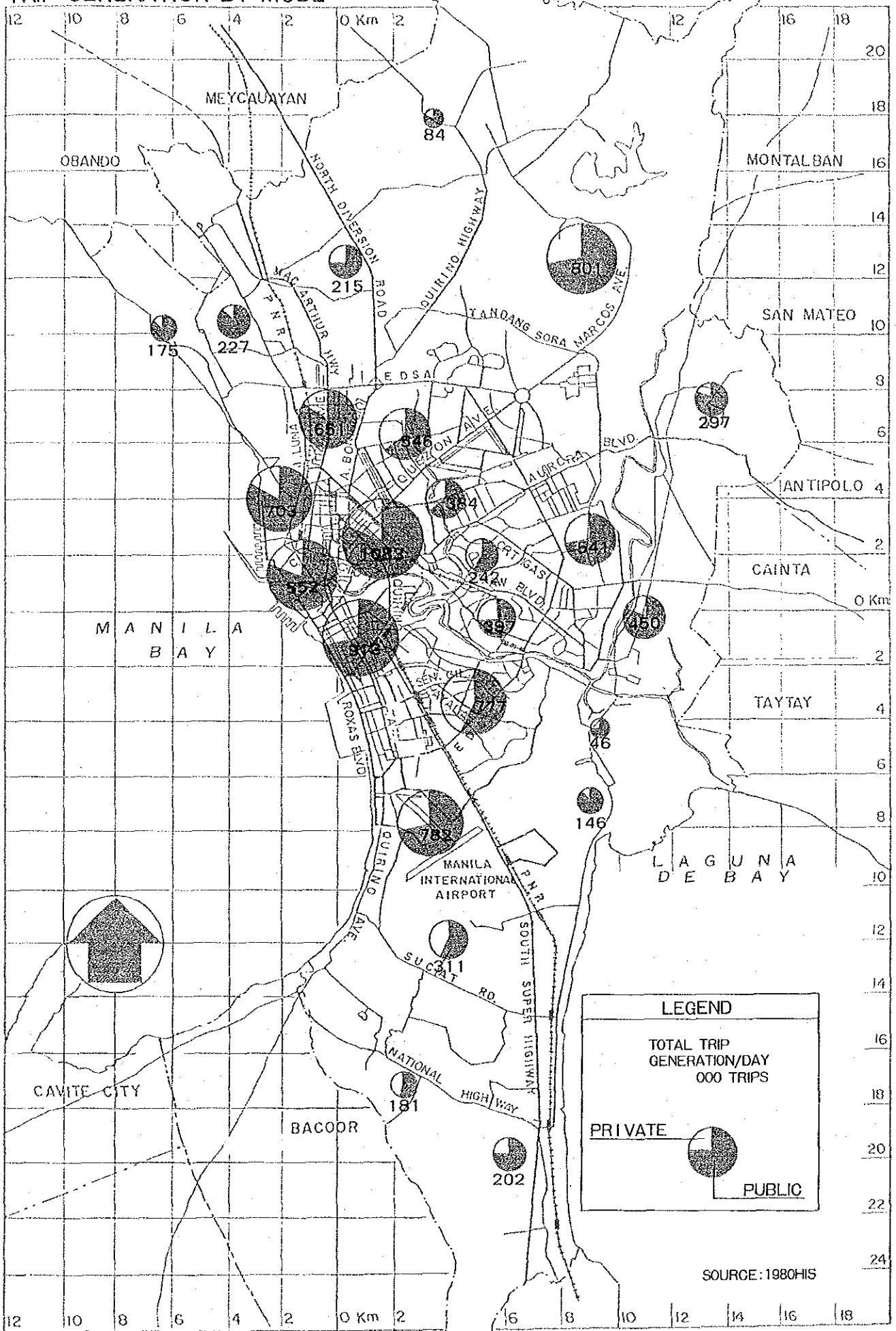
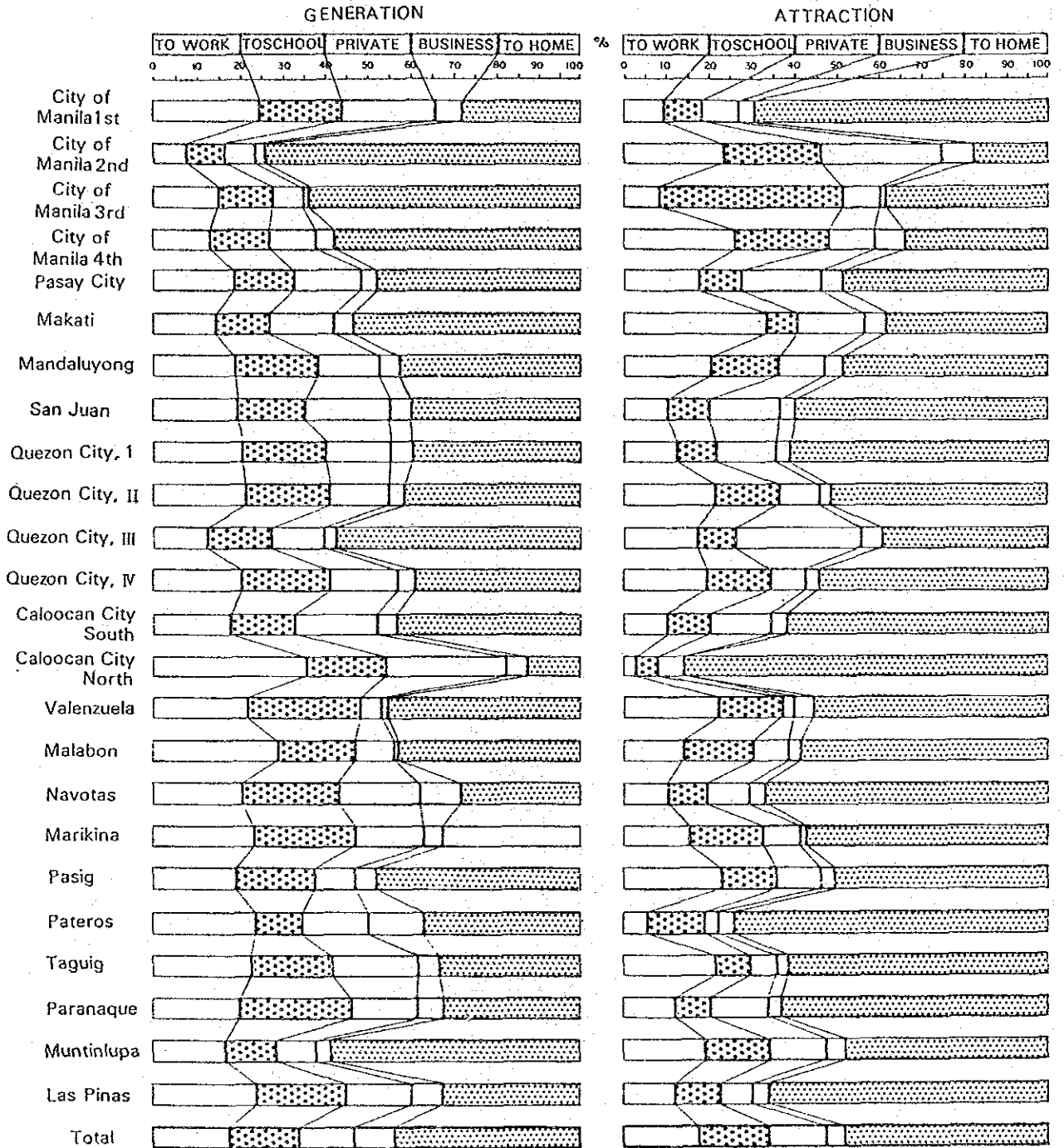


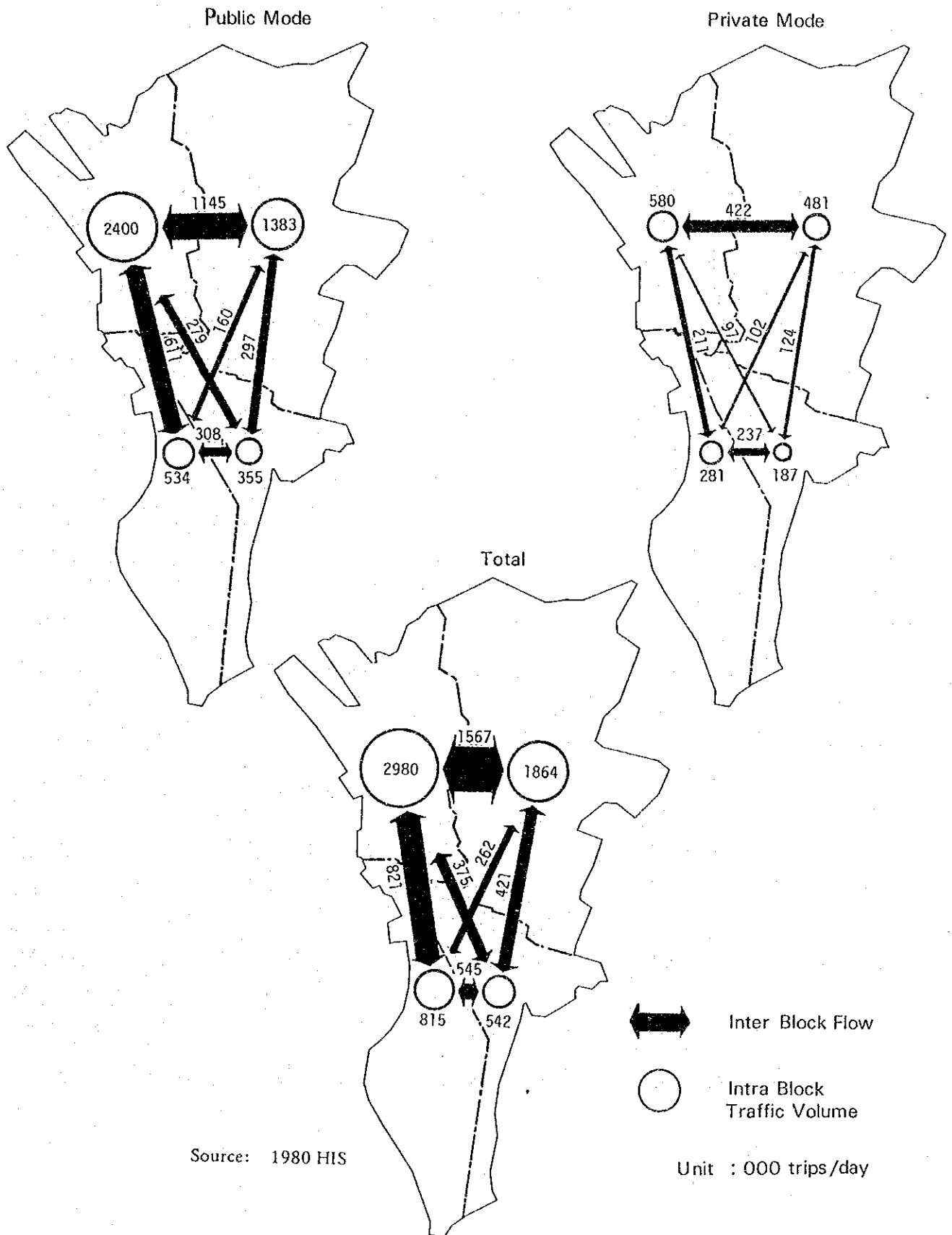


Figure 5.7  
Trip Purpose Composition



Source: 1980 HIS

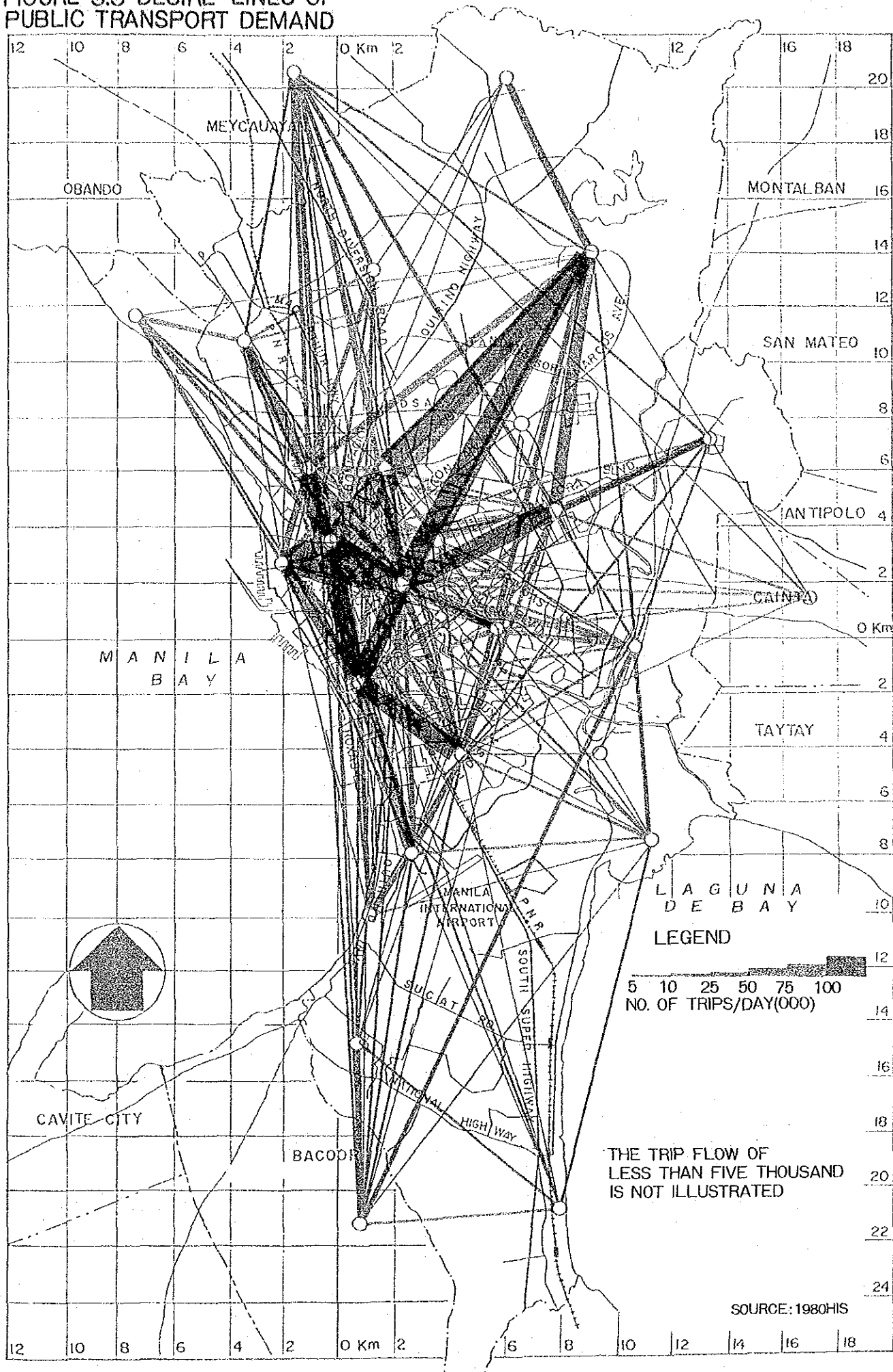
Figure 5.8  
Person Trip Flow Within Metro Manila



Source: 1980 HIS

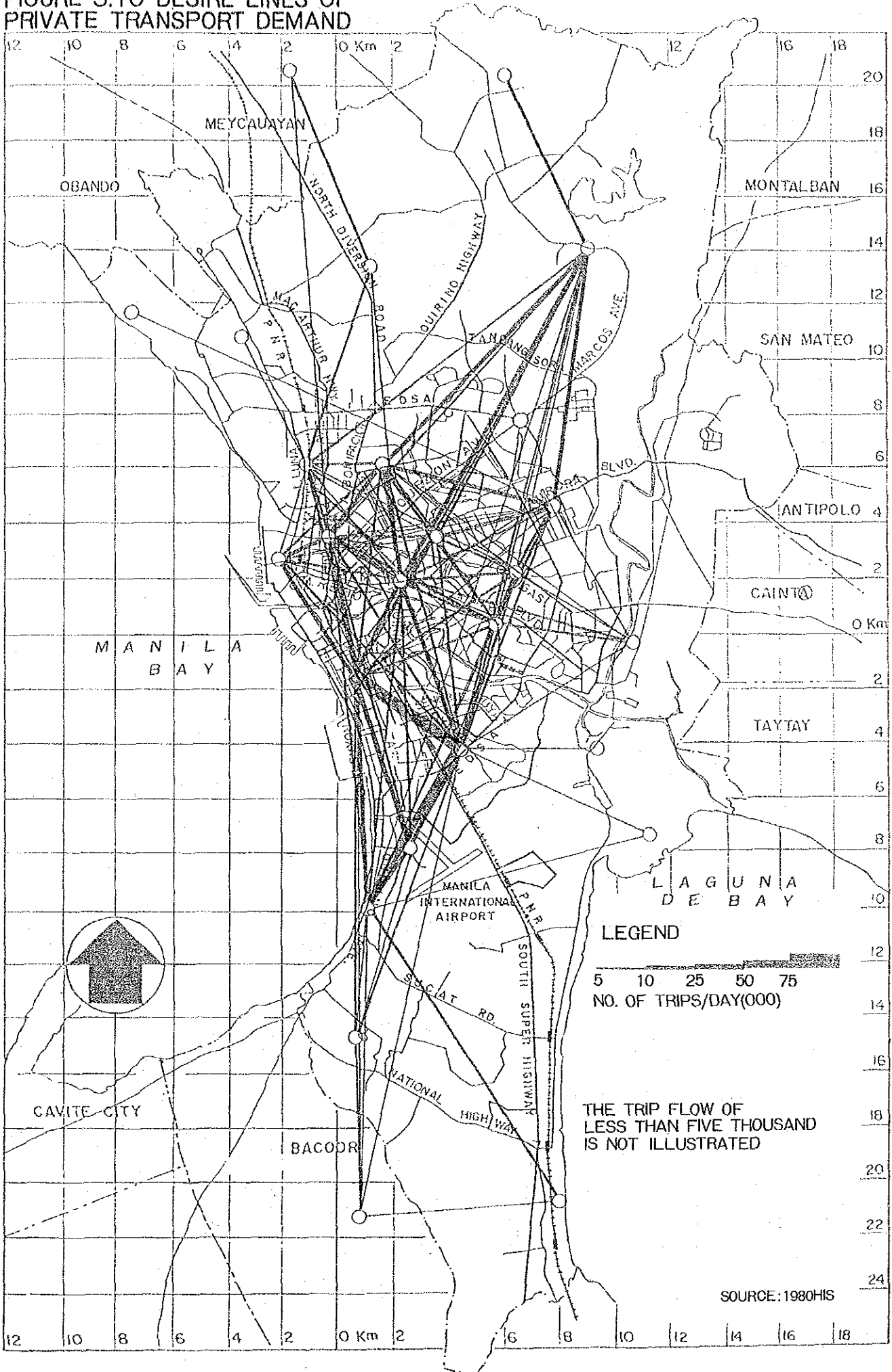


**FIGURE 5.9 DESIRE LINES OF PUBLIC TRANSPORT DEMAND**





**FIGURE 5.10 DESIRE LINES OF PRIVATE TRANSPORT DEMAND**





### 5.1.3. Modal Split

- Modal split, in general, depends upon passenger characteristics and the nature of the trip. Although there are many factors comprising these characteristics and nature, household income levels of passengers and trip length are chosen as correlation indices. The modal split is defined as the “public vs. private” and the “jeepney vs. bus” in consideration with the possible competitive transport mode.
- Figure 5.11 shows the modal split by household income level. It shows a clear tendency for the share of public mode to decrease in accordance with the increase of income level. However, the modal split of “jeepney vs. bus” does not indicate a significant relationship with the former as shown in Figure 5.12.

Figure 5.11  
Modal Split by Household Income Level  
(Public vs. Private)

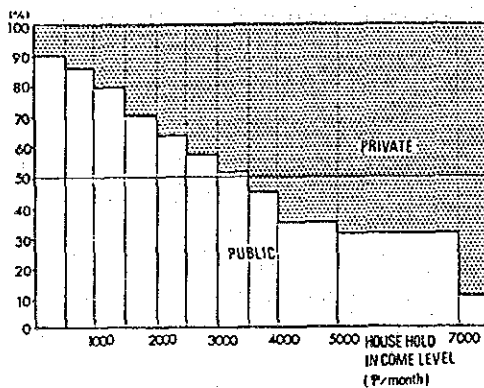
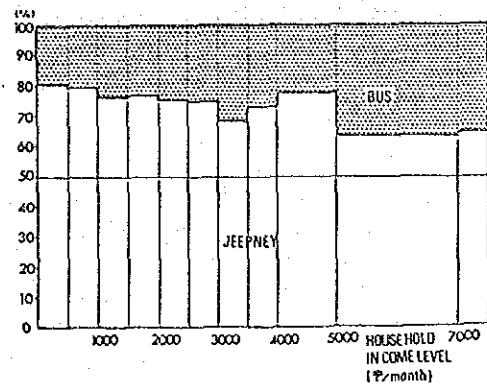


Figure 5.12  
Modal Split by Household Income Level  
(Jeepney vs. Bus)



- The modal split by trip length, as shown in Figure 5.13, indicates that as the trip length increases, the share of public vs. private mode of transportation shows a tendency to decrease from around 80 percent down to 45 percent for distances of 0-2.5 kilometers and above 40 kilometers, respectively. This implies that more people tend to use private modes of transportation than public for longer distances of travel.
- Figure 5.14 presents a more detailed picture of the public modal split, that is, jeepney vs. bus. It shows that as the trip length increases, the share of jeepney vs. bus as a mode of transportation decreases. For a distance of 0-2.5 kilometers the share is 95 percent, but this goes down to less than 15 percent for 30-40 kilometers. However, for trip distances of more than 40 kilometers, the jeepney vs. bus share increases to around 35 percent.

Figure 5.13  
Modal Split by Trip Length  
(Public vs. Private)

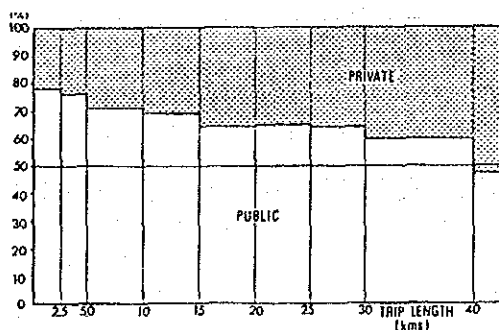
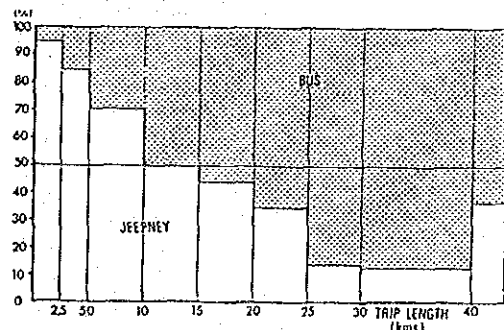


Figure 5.14  
Modal Split by Trip Length  
(Jeepney vs. Bus)



## 5.2 ROAD TRANSPORT

### 5.2.1 Road Network

- At present, the total length of roads in Metro Manila is approximately 2,800 kilometers. These roads are administratively classified into the following:

National road	:	790 kms.
Provincial road	:	164 kms.
City road	:	1,118 kms.
Municipal road	:	533 kms.
Barangay road	:	197 kms.
<b>Total</b>		<b>2,802 kms.</b>

- The administrative classification, however, does not necessarily match with the actual functional classification which has not been developed but has already been worked out in the MMUTSTRAP Study according to the criteria shown in Table 5.7.
- Figure 5.15 shows Metro Manila road network comprising the roads classified in MMUTSTRAP and those considered to be important from the viewpoint of public transport route planning. Therefore, they need to be upgraded from "local" to "secondary" classification.
- The basic network of the Metro Manila roads is composed of radial and circumferential roads. A grand design of ring and radial system was first adopted as early as 1945 in the Major Thoroughfares Plan for the future development of the road network. Many of the radial roads and a portion of the two innermost rings, C-1 and C-2, which comprise of 10 radial and six circumferential roads of arterial standard, already existed. C-4 (EDSA) was considered the most influential single development in the transport system of Metro Manila.
- At present, as shown in Figure 5.15, 10 radial roads with the exception of R-10 already existed but R-1 (Roxas Boulevard and its extension), R-4 (Imelda Avenue and its extension) and R-5 (Shaw Boulevard and its extension), were discontinued. R-1, R-2 (Taft Avenue, Quirino Avenue), and R-3 (South Super Highway) Toll Expressway link the South; R-4 and R-5 the southeast; R-5A (another portion of R-5 comprising Ortigas Avenue, Gilmore Avenue), and R-6 (R. Magsaysay Boulevard, Aurora Boulevard) the east; R-7 (España, Quezon Avenue) the northeast; and R-8 (Andalucia, Dimasalang, A. Bonifacio, Quirino Highway), R-9 (J.A. Santos, Rizal Avenue Extension, McArthur Highway) and R-10 the north.

Table 5.7  
Functional Classification of Roads (Generalized Criteria)

Classification	Function	Traffic Conditions	Through Traffic	Public Transport			Private Car Parking		Pedestrian Crossing Control
				Bus	Jpy.	Tri-cycle	Peak Period	Off-Peak	
Primary Roads	Freeways/Expressways Primary Arterials: Principal arterial routes for inter-suburban traffic movements	High volume and access control	Yes	Yes	Some	No	No	No	Signals or grade separated (i.e. bridge or underpass)
Secondary Roads	Secondary Arterials Collectors: Non-primary roads which distribute traffic between the primary roads and local roads	Medium volume and some access control	Some	Some	Yes	No	No	Maybe	Signals or Zebra crossing
Local Roads <sup>1/</sup>	Streets, not being primary or secondary roads, whose main function is to provide access to abutting property	Low volume without access control	No	No	Some	Yes	Yes	Yes	None

Source: MMUTSTRAP Part A: Final Report

<sup>1/</sup> "Local" here relates to function rather than administrative responsibility.

- Of the major circumferential roads, C-1, C-2, and C-4 already existed. C-1 (C.M. Recto-P. Burgos) and C-2 (Tayuman, A. Mendoza, Pres. Quirino Avenue) existed in an incomplete form before World War II, while the existing C-4 (EDSA) was constructed from 1955 to 1965. However, C-1 only links a number of busy streets. It is not a circumferential road in the true sense and has inadequate alignment. Both C-2 and C-4 are more circumferential and perform extremely important roles in the traffic system of Metro Manila. Expansion of the narrow sections of C-2 in the northern part may enhance its effectiveness. Only some sections of C-3 exist, such as Gregorio Araneta and Buendia Avenue. C-5 and C-6 exist only in concept (although Republic Avenue and other candidate routes have been identified as sections of C-5).
- Figure 5.16 shows the road network according to its road capacity (in terms of number of lanes), while Table 5.8 gives the summary of the status of major radial and circumferential roads.

Table 5.8  
Current Status of Radial/Circumferential Roads

Major Roads	Planned		Existing		Status of the Remaining Sections <sup>2/</sup>
	Length (Km)	No. of Lanes <sup>1/</sup>	Length (Km)	No. of Lanes <sup>1/</sup>	
R-1 Roxas Boulevard	16	D6	9	D6	Being designed
R-2 Taft Ave., Quirino Ave.	6	--	6	4 - D6	Completed
R-3 South Super Highway	24	--	26	D6	Completed
R-4 Imelda Ave. Mercedes Street	11	4	5	2	D/D completed (partially)
R-5 Shaw Boulevard	11	4	8	4	Under planning
R-5A Ortigas Avenue	9	4 partly 2	9	2 - 4	Under planning
R-6 R. Magsaysay Blvd. Aurora Blvd.	16	6-8	16	4 - D6	--
R-7 España, Quezon Ave., Don Marcos Ave.	17	6-10	17	D4 - 6	--
R-8 Andalucía, Dimasalang	16	4-D4	16	2 - D4	Under planning
R-9 J.A. Santos, Rizal Ave. Ext., McArthur Hwy.	14	4	14	2 - 6	--
R-10 not existing	13	4-6	--	--	D/D completed, partly under construction
C-1 C. M. Recto	7	4-8	7	2 - 8	Under planning
C-2 Pres. Quirino Ave. A. Mendoza, Tayuman					
C-3 5th Ave., Sgt. Rivera St., G. Araneta Ave., Buendia	10	6	19	2 - 6	D/D completed
C-4 EDSA, Samson Road	18	6	10	2 - 6	D/D completed
C-5 Rodriguez Ave. Katipunan	27	D10	24	2 - D10	Implementation being awaited
C-6 not existing	38	6	12	2	F/S partly completed
	49	6	--	--	Under planning

Source: Available Study Reports and Plans.

<sup>1/</sup>figures with "D" means number of lanes divided

<sup>2/</sup>D/D: detailed design, F/S : feasibility study





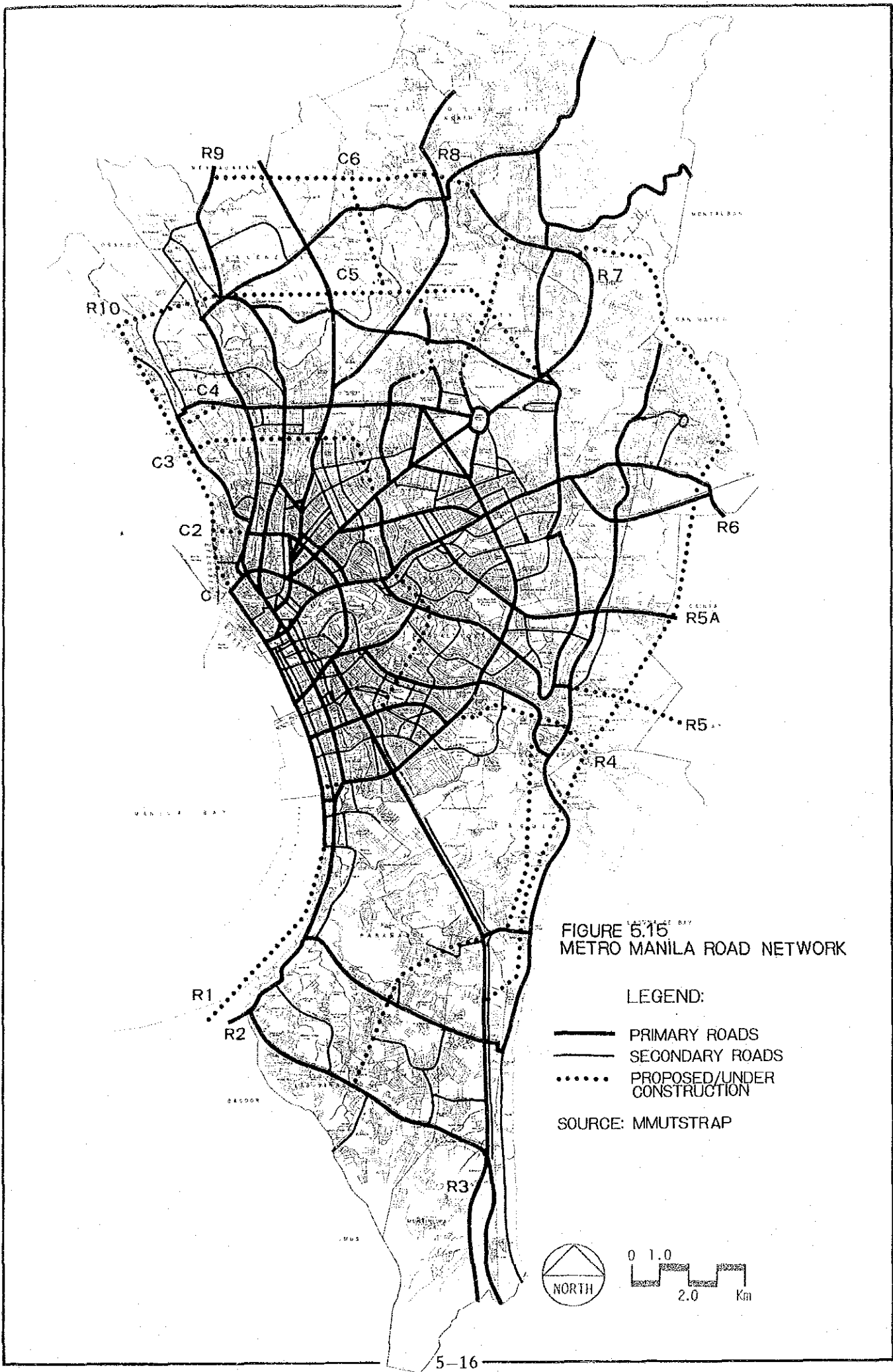
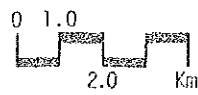


FIGURE 5.15  
METRO MANILA ROAD NETWORK

LEGEND:

- PRIMARY ROADS
- SECONDARY ROADS
- ..... PROPOSED/UNDER CONSTRUCTION

SOURCE: MMUTSTRAP





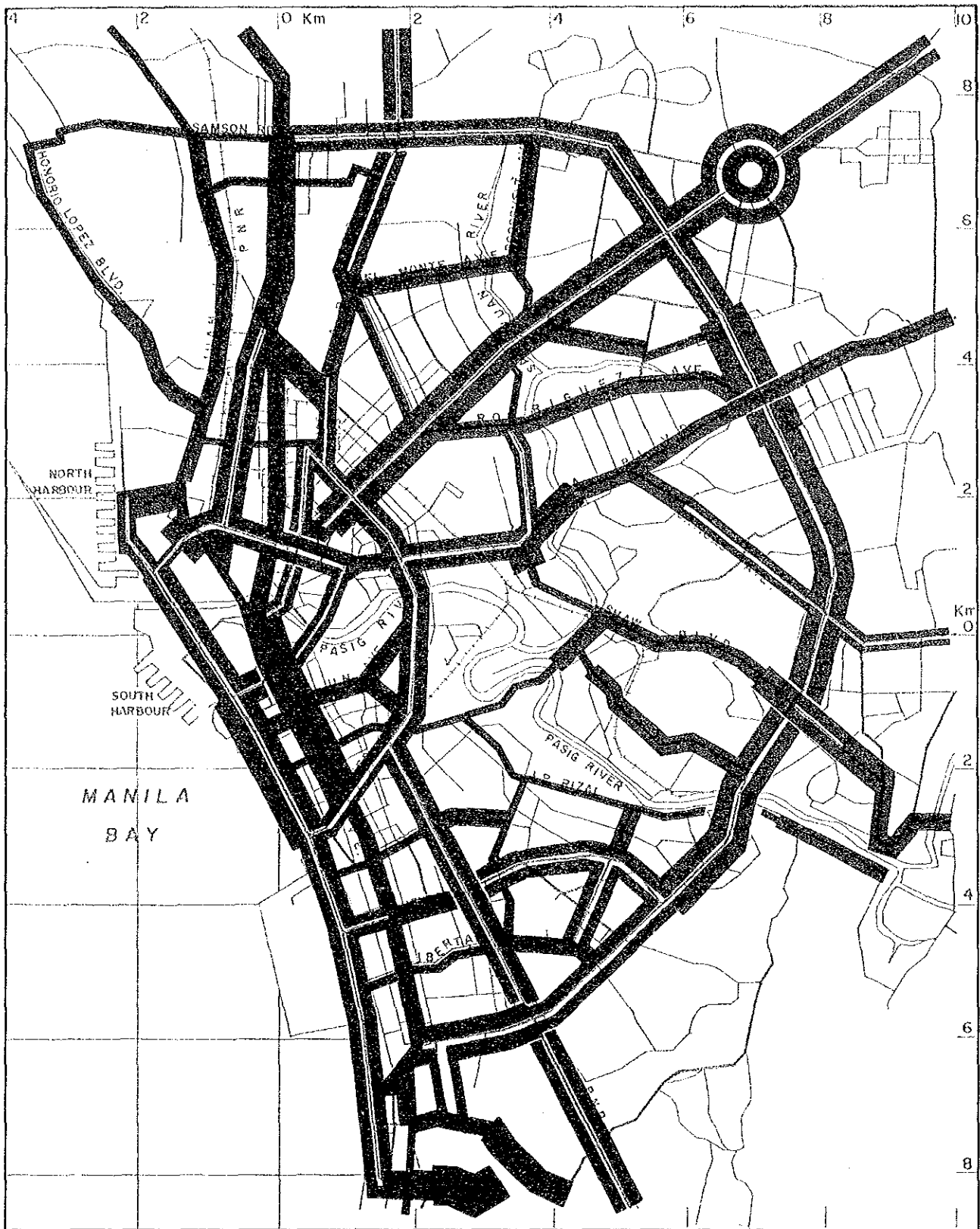
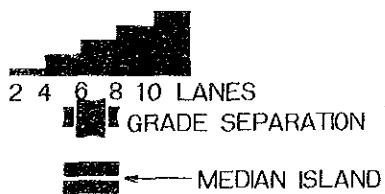


FIGURE 5.16 ROAD NETWORK ACCORDING TO NUMBER OF LANES



SOURCE: PREPARED BASED ON MMTEAM DATA



## 5.2.2 Road Traffic Flow

### 1) Vehicle Traffic Demand

- Traffic demand, in terms of vehicles, is summarized in Table 5.9. Estimated total vehicle-kilometers on Metro Manila roads is 16.2 million of which 67.5 percent is composed of private vehicles (car, taxi, truck), while 32.5 percent is composed of the bus and jeepney. This can be compared with 74.4 percent for public transport mode and 25.6 percent for private transport mode in terms of passenger demand. Considering the average size of the vehicles, available road spaces are used as follows: 40 percent by private car/taxi, 40 percent by bus/jeepney, and 20 percent by truck and others.

Table 5.9  
Vehicular Traffic Volume on Metro Manila Roads

Mode	No. of Trips	Vehicle-Kilometers/Day	
	000	000	%
<u>Private</u>	1,380	10,917	67.5
Car and Taxi	1,109	8,724	53.9
Truck and Others	271	2,193	13.6
<u>Public</u>	—	5,267	32.5
Bus	—	793	4.9
Jeepney	—	4,474	27.6
<b>Total</b>	—	16,184	100.0

Source: Estimated by JUMSUT

### 2) Average Daily Traffic Volume

- The observed traffic volume on major corridors for 1979/81 is summarized as shown in Table 5.10 and Figure 5.17. These were produced from the traffic count survey conducted by the TEAM/MPWH with some supplemental survey in JUMSUT. The capacity of major road is also analyzed with due consideration to the physical road conditions such as the width of carriageway, number of lanes, sided obstruction, and so on.
- The traffic volume ranges from 10 to 100 thousand vehicles per day. This depends upon the corridors and their number of lanes. Heavier vehicle volume was observed along EDSA, Quezon Boulevard, South Super Highway, Roxas Boulevard, and Taft Avenue. They exceed the volume of 65 thousand vehicles per day and reach as much as 100,000 along some sections (J.P. Rizal and Ayala) of EDSA.
- It is shown in Figure 5.17 that among these major roads, there is a relatively clear split in the share of total traffic depending upon the roads. EDSA, South Super Highway, Roxas Boulevard, P. Quirino (C-2), and Buendia are dominated by private transport vehicles, while most of other roads are by public transport vehicles. This is, however, largely due to the policy guided restrictions that jeepneys are banned along most of the sections of EDSA, Roxas Boulevard, and South Super Highway and no jeepney routes exist along Pres. Quirino, although there is a demand for these. Along EDSA, South Super Highway, and Roxas Boulevard, over 85 percent of total vehicular traffic consist of the private vehicles. About 60 percent of the total are occupied by the jeepney on Quezon Boulevard and Taft Avenue.

- The major characteristics of public vehicle flow, in comparison with private vehicle flow, are as follows:
  - a) In the northern half of Metro Manila, most of the roads are dominated by public vehicles; while private vehicles prevail in the south. The latter is evident especially along EDSA, South Super Highway, Roxas Boulevard, and P. Quirino Avenue.
  - b) The public vehicle flow is radial; while the private vehicles widely use major circumferential roads, including EDSA and P. Quirino Avenue.
- Jeepney and bus traffic flows on the major road network are presented in Table 5.11 and Figure 5.18. Heavy concentration of jeepney/bus traffic is seen in the following corridors:
  - a) J.A. Santos
  - b) Rizal Avenue/Rizal Avenue Extension/McArthur
  - c) Quezon Boulevard/España/Quezon Avenue
  - d) E. Rodriguez
  - e) Legarda/R. Magsaysay/Aurora
  - f) Shaw Boulevard
  - g) J.P. Rizal
  - h) Taft Avenue
  - i) Mabini/Harrison
  - j) C.M. Recto
  - k) EDSA
- The predominance of the jeepney as against the bus is noted in most corridors with the exception of EDSA, where the jeepney is banned. South Super Highway, Buendia/Ayala Avenue, North Diversion Road and part of Taft Avenue show a high percentage for bus.

### 3) Assessment of Road Links (Capacity Constraint)

- The traffic conditions on major corridors are summarized in Figure 5.17 and Table 5.10. The capacities of major roads are analyzed with due consideration of the physical road conditions such as the width of carriageway, number of lanes, sided obstruction, and so on. The comparison of capacity and traffic volume is calculated in terms of volume capacity (v/c) ratio.
- Many of the road sections have reached their full capacities. Although the traffic congestions can be attributed to various reasons (such as illegal parking, lack of traffic signals/traffic management schemes, frequent accidents on road), it is considered that the fundamental problem is an absolute lack of road space and capacity compared to its demand for the size of a city like Metro Manila. The problematic major corridors can be classified into two categories as follows:
  - a) Large volume – heavily congested: Taft Avenue, South Super Highway, Ayala/Buendia, Ortigas Avenue, Aurora Boulevard, E. Rodriguez, McArthur Highway, and EDSA.
  - b) Small volume – heavily congested: Aurora Boulevard (F. Roman-EDSA section), J. P. Rizal, and Mabini/Harrison.

Among the above corridors, Taft Avenue, Aurora Blvd., and E. Rodriguez show a high public traffic share – over 50 percent of the total.

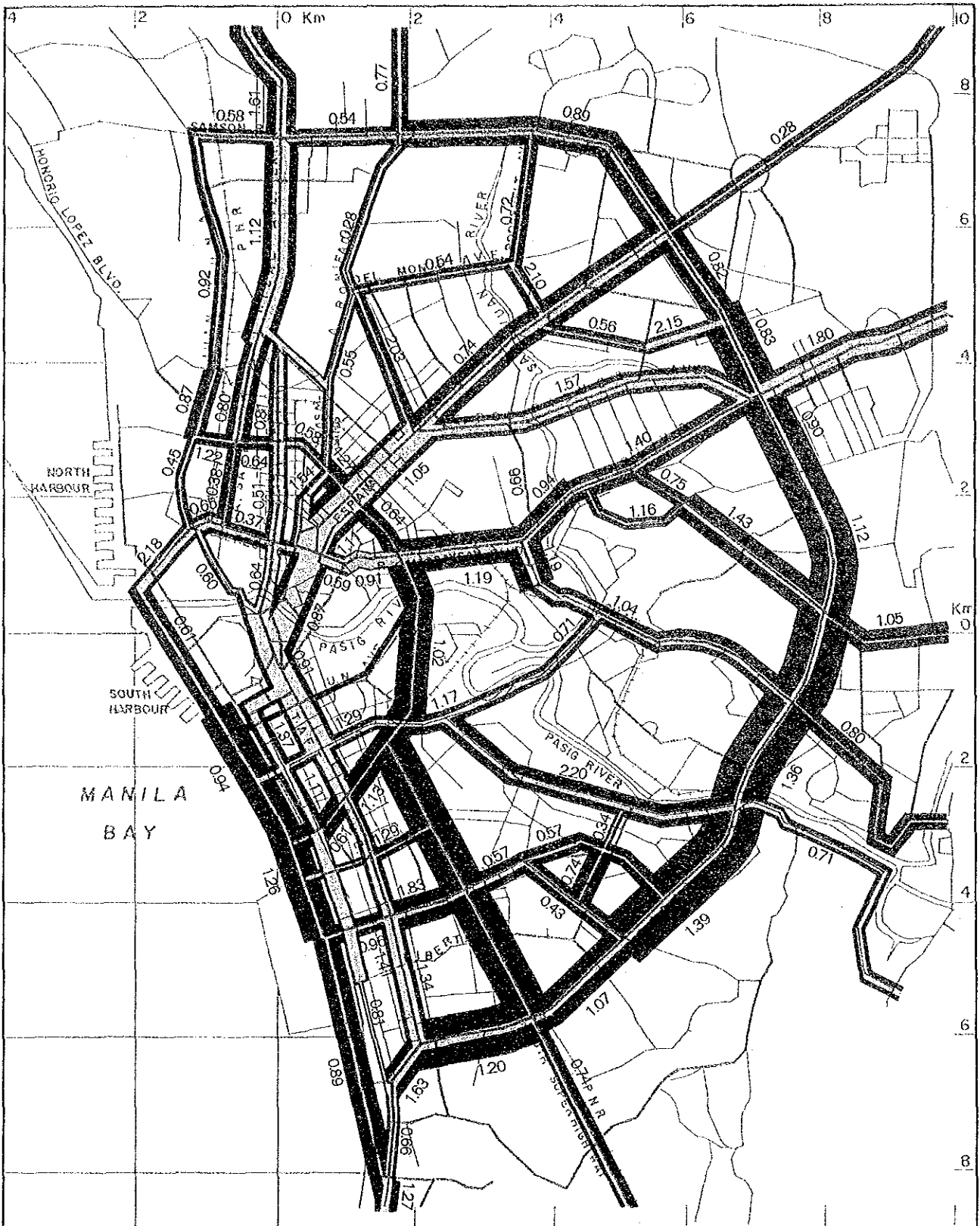
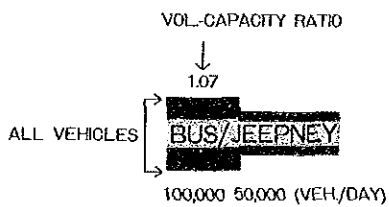


FIGURE 5.17 VEHICULAR TRAFFIC FLOW ON MAJOR ROADS



SOURCE: PREPARED BASED ON MMTEAM DATA





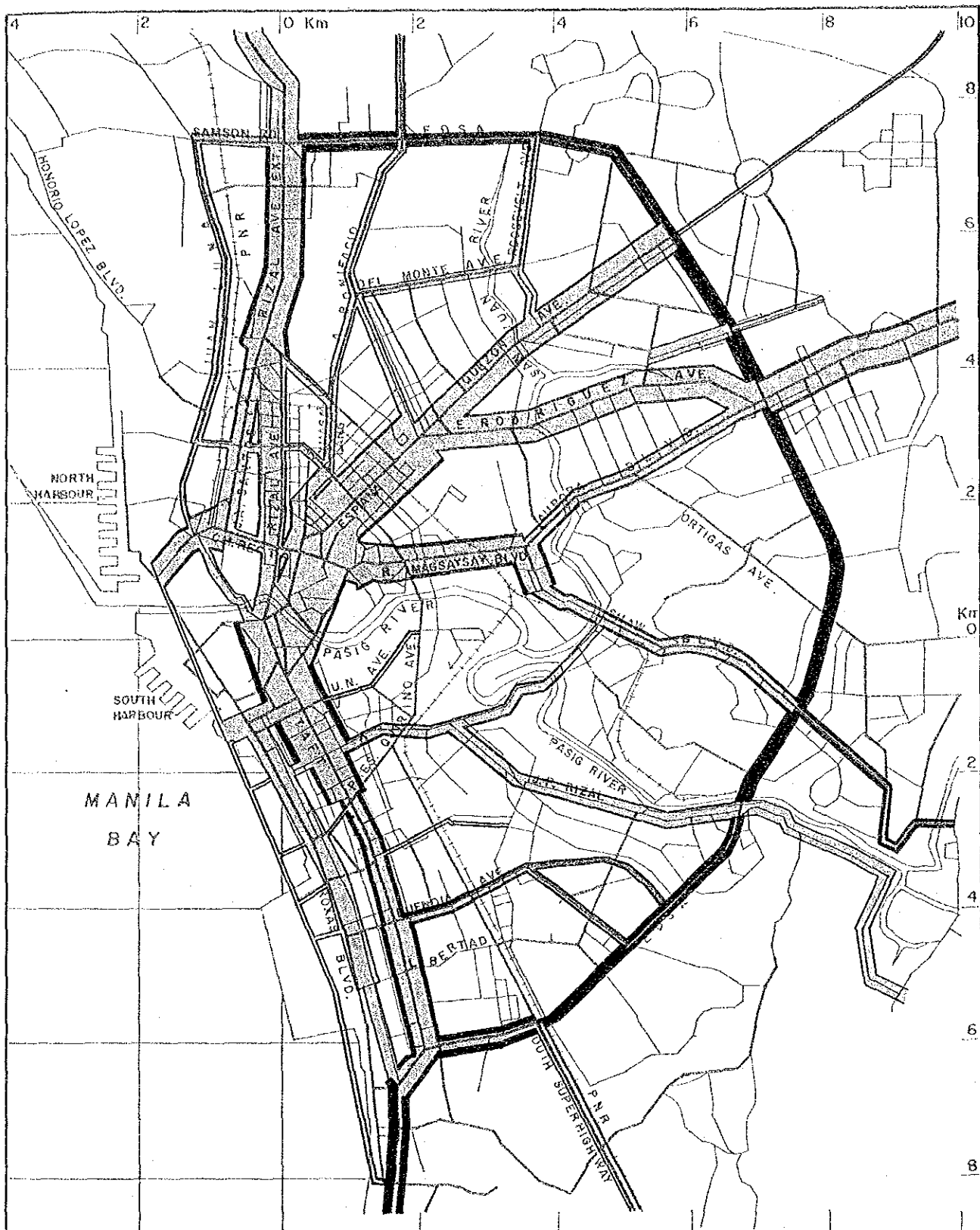
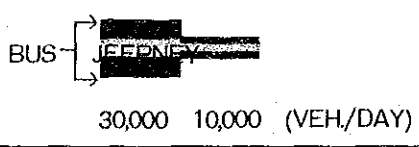


FIGURE 5.18 BUS/JEEPNEY VEHICULAR TRAFFIC FLOW ON MAJOR ROADS



SOURCE: PREPARED BASED ON MMTEAM DATA



Table 5.10  
Traffic Condition of Major Corridors, 1979-81  
(Before Commencement of LRT Construction)

Road Name	Width of Carriage-way in m. (Number of lanes)	Avail-ability of Side-Walks	Traffic Volume/Vehicle Type Composition					Volume/Capacity Ratio
			Total (Veh./day)	Car (%)	Public Bus (%)	Transport Jeepney (%)	Truck & Others (%)	
<b>1. Roxas Boulevard:</b>								
P. Burgos/P. Quirino	28.0 (8)		67,800	96.9	0.9	1.0	1.8	1.26
Libertad/MIA Road	28.0 (6)		48,100	81.5	5.2	10.6	2.7	0.89
<b>2. Quirino Avenue:</b>								
Redemptorist-MIA Rd.	14.0 (4)		18,500	17.3	15.7	66.5	0.5	0.66
MIA Road - Real	11.5 (2)		35,500	51.5	8.2	35.2	5.1	1.27
<b>3. Taft Avenue:</b>								
City Hall - P. Gil	27.0 (8)		65,400	28.9	10.7	59.5	0.9	0.91
Buendia/EDSA	13.0 (4)		37,600	32.2	9.6	56.1	2.1	1.34
<b>4. South Super Highway:</b>								
P. Quirino - EDSA	30.0 (6)		72,900	91.4	3.7	0.5	4.4	13.50
EDSA/SSH-Muntinlupa	30.0 (4)	none	26,500	69.0	7.2	18.5	5.3	0.74
<b>5. Ayala - Buendia:</b>								
Taft Ave./SSH	14.4 (4)		51,300	83.2	6.0	9.6	1.2	1.83
Ayala Ave./EDSA	26.4 (8)		30,700	83.4	6.5	9.1	1.0	0.43
<b>6. Shaw Blvd.:</b>								
S. Sanchez/EDSA	16.8 (4)		37,300	61.7	6.4	27.3	4.6	1.04
<b>7. Ortigas Avenue:</b>								
Santolan/EDSA	18.0 (4)		51,500	95.3	1.2	1.6	1.9	1.43
<b>8. C.M. Recto Avenue:</b>								
J. Luna/J. Abad Santos	23.0 (6)		35,400	16.4	7.3	71.8	4.5	0.65
<b>9. R. Magsaysay Blvd.:</b>								
Nagtahan/V. Mapa	24.0 (6)		64,400	60.6	4.2	33.2	2.0	1.19
<b>10. Aurora Blvd.:</b>								
F. Roman/EDSA	12.0 (4)		39,100	65.7	2.3	30.5	1.5	1.40
<b>11. Aurora Blvd.:</b>								
EDSA - Marikina	12.0 (4)		50,400	43.8	5.8	49.6	0.8	1.80
<b>12. E. Rodriguez:</b>								
Wel. Rtda./C. Benitez	12.0 (4)		44,000	45.7	3.0	50.4	0.9	1.57
<b>13. Quezon Blvd.:</b>								
Gov. Forbes/Wel. Rtda.	28.8 (8)		25,500	38.4	1.5	59.6	0.5	1.05
<b>14. Marcos Road:</b>								
AIT/IPO Road	9.2 (2)	none	14,900	88.6	5.4	4.0	2.0	1.24
<b>15. A. Bonifacio:</b>								
Laong-Laan/Del Monte	15.2 (4)	partial	15,400	50.0	1.3	43.5	5.2	0.55
<b>16. North Div. Road:</b>								
EDSA/Valenzuela	24.6 (4)		27,600	56.9	14.5	10.5	18.1	0.77
<b>17. Quitino Highway:</b>								
Baesa/Susano Rd.	16.0 (4)		No Available Data					
<b>18. Rizal Avenue:</b>								
Recto/Tayuman	25.7 (6)		27,600	22.8	4.4	72.1	0.7	0.51
Solis/EDSA	25.7 (6)		60,500	48.6	6.1	42.0	3.3	1.12
<b>19. J. Abad Santos:</b>								
Tayuman/Aurora Blvd.	26.0 (6)		43,300	61.7	3.9	30.0	4.4	0.80
<b>20. McArthur Hwy.:</b>								
EDSA/Meycauayan	14.0 (4)		45,100	48.8	0.2	45.9	5.1	1.61
<b>21. Juan Luna:</b>								
Solis/EDSA	11.3 (2)		11,000	39.1	0.9	56.4	3.6	0.92
<b>22. Pres. Quirino Ave.:</b>								
Abad Santos/R. Ave.	18.0 (4)		23,200	71.6	1.7	19.4	7.3	0.64
SSH/Taft Avenue	16.4 (4)		40,700	92.1	4.4	0.5	3.0	1.13
<b>23. EDSA:</b>								
Cloverleaf/Q. Ave.	24.0 (6)	none	48,100	73.4	18.5	0.8	7.3	0.89
P. Tuazon/Ortigas	25.6 (8)		80,600	85.2	11.9	0.0	2.9	1.12
J.P. Rizal/Ayala	35.6 (8)		99,900	85.3	10.0	1.3	3.4	1.39
<b>24. J.P. Rizal:</b>								
P. Gil/EDSA	9.0 (2)		26,400	53.8	5.3	37.9	3.0	2.20
<b>25. Mabini/Harrison:</b>								
Buendia/Libertad	10.1 (2)		17,300	49.1	2.9	44.5	3.5	1.44

Source: Worked out based on the available data.

Table 5.11  
Jeepney and Bus Traffic by Corridor  
(16 Hrs., Two-Way)

Road Name	Bus		Jeepney		Total Volume
	Volume	Share (%)	Volume	Share (%)	
1. Roxas Blvd.	1,160	33.1	2,340	66.9	3,500
2. Quirino Ave.	2,430	15.3	13,490	84.7	15,920
3. Taft Ave.	3,870	11.0	31,280	89.0	35,150
4. South Super Highway	1,990	43.6	2,570	56.4	4,560
5. Buendia/Ayala Ave.	3,100	43.1	4,090	56.9	7,190
6. Shaw Blvd.	970	8.5	10,380	91.5	11,350
7. Ortigas Ave.	970	14.9	5,520	85.1	6,490
8. C.M. Recto Ave.	940	4.9	18,360	95.1	19,300
9. R. Magsaysay Ave.	1,760	7.4	21,910	92.6	23,670
10. Aurora Blvd. (Inside EDSA)	430	3.4	12,400	96.6	12,830
11. Aurora Blvd. (Outside EDSA)	410	4.6	,600	95.4	9,010
12. E. Rodriguez Ave.	20	0.1	15,190	99.9	15,210
13. Quezon Ave.	900	3.7	23,710	96.3	24,610
14. D.M. Marcos Ave.	550	9.1	5,500	90.9	6,050
15. A. Bonifacio Ave.	1,280	6.7	17,910	93.3	19,190
16. North Diversion Rd.	1,440	41.7	2,010	58.3	3,450
17. Quirino Hi-Way	805	11.6	6,140	88.4	6,945
18. Rizal Ave.	350	2.6	13,370	97.4	13,720
19. J.A. Santos Ave.	410	4.9	8,020	95.1	8,430
20. McArthur Hi-Way	440	3.3	12,750	96.7	13,190
21. Juan Luna Ave.	290	4.3	6,470	95.7	6,760
22. Pres. Quirino Ave.	420	20.1	1,670	79.9	2,090
23. EDSA	9,370	80.4	2,280	19.6	11,650
24. J.P. Rizal	800	8.9	8,140	91.1	8,940
25. Mabini/Harrison	530	2.9	17,700	97.1	18,230

Source: JUMSUT Public Transport Survey