3.3.4. URBAN TRANSPORT SERVICES

This section intends to further analyze the quality of urban transport services from the content of the transport sector's role in facilitating the access to urban services required by the people. Primary concerns of the people are availability of transport means such as ownership of vehicles or access to public transport modes such as combi, microbus, and omnibus.

(1) Vehicle Ownership

As a result of the Person Trip survey, vehicle ownership can be estimated in Table 3.3-15. The ownership of private cars is indicated at 18.6% in the Study area. The higher ratio can be seen in the Central Area with more than 30%, while there is a ratio of 14% in the rest of areas. The ownership of both bicycle and motorcycle is 25.4% and 25.1%, respectively.

As shown in Table 3.3-16, the total number of private cars owned in the Study area is 421 thousand vehicles, which is equivalent to 52.3 vehicles per 1,000 people.

Table 3.3-15 Vehicle Ownership

Type	Home	Central Area		Others		Study Area Total	
		No. of H/H (1,000)	Rate (%)	No. of H/H (1,000)	Rate (%)	No. of H/H (1,000)	Rate (%)
Bicycle	No owning	378	74.5	960	74.6	1,338	74.5
	1 owning	92	18.1	237	18.4	328	18.3
	2 or more	38	7.5	90	7.0	128	7.1
	Total	***508***	***100.0***	***1,287***	***100.0***	***1,794***	***100.0***
Motorcycle	No owning	380	74.8	964	74.9	1,344	74.9
	1 owning	29	5.8	72	5.6	102	5.7
	2 or more	99	19.5	250	19.4	349	19.4
	Total	***508***	***100.0***	***1,287***	***100.0***	***1,794***	***100.0***
Car	No owning	354	69.8	1,106	85.9	1,460	81.4
	1 car owning	118	23.2	152	11.8	269	15.0
	2 cars or more	36	7.0	29	2.3	65	3.6
	Total	***508***	***100.0***	***1,287***	***100.0***	***1,794***	***100.0***

Table 3.3-16 Number of Vehicles Owned

Type of Vehicle	No. of Vehicles (1,000)		
	Central Area	Others	Study Area Total
Bicycle	177	445	622
Motorcycle	7	20	27
Car	193	194	386
Combi	5	14	19
Microbus	1	8	9
Bus	0	1	1
Truck	1	4	5
Trailer	0	0	1
Others	2	20	
Total	***386***	***706***	***421***

Figure 3.3-12 shows the relationship between vehicle ownership and monthly household income level. More than 90% of households in the highest income level group have private cars: 70% of the households have more than two cars. Almost half of the households in a group ranging from 2,001 to 3,000 own a car.

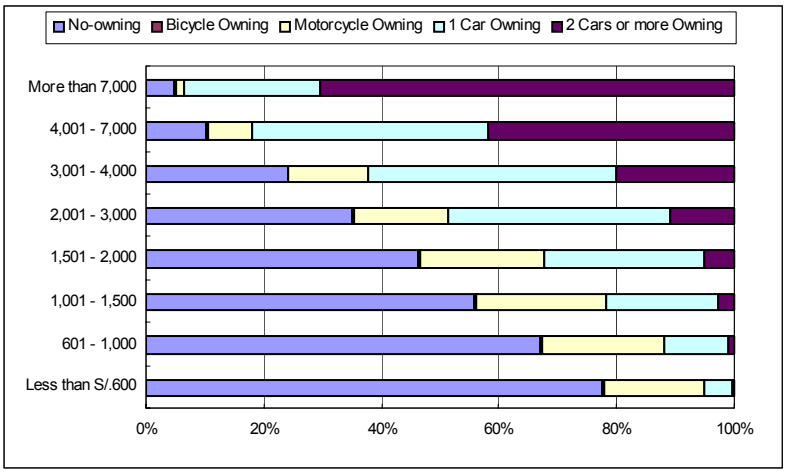

Figure 3.3-12 Vehicle Ownership by Household Income Level

(2) Modal Share by Attribute

Figure 3.3-13 illustrates the modal share by age and sex. It is clear that the share of walk trips is higher in the female group, while the share of car trips is higher in the male group.

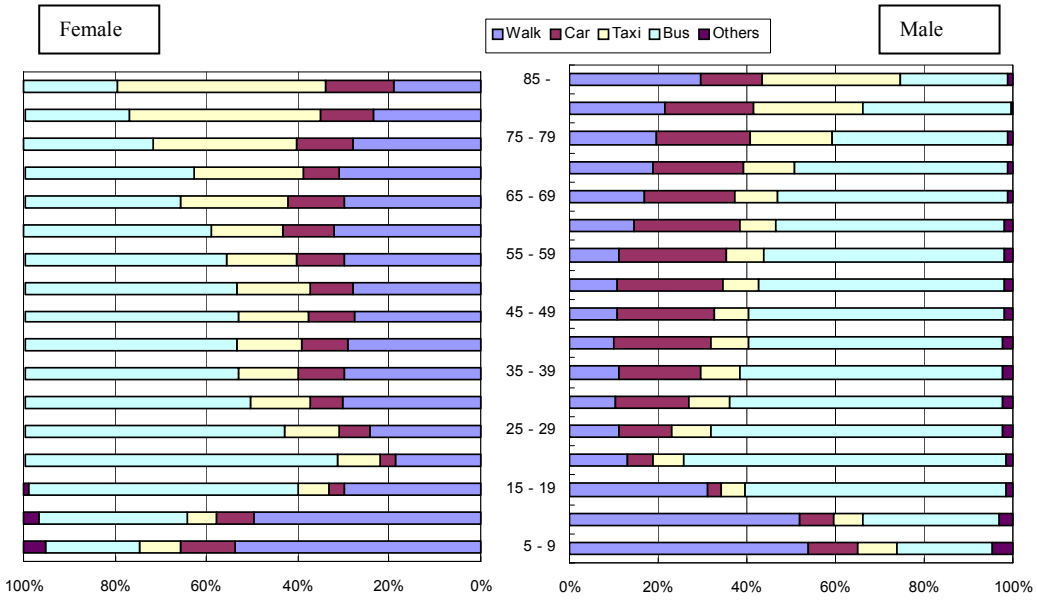

Figure 3.3-13 Modal Share by Age Group

The modal share of people by income ranks is shown in Figure 3.3-14. The modal share of private cars in the highest income group indicates 72.3%. The car is mainly used in the groups over 3,000 soles while the people in lower income groups use public transport. Modal share of walk trips in the lowest income rank group is highest at 37.5%. Travel behavior of the members in poor households will be discussed further in a later section.

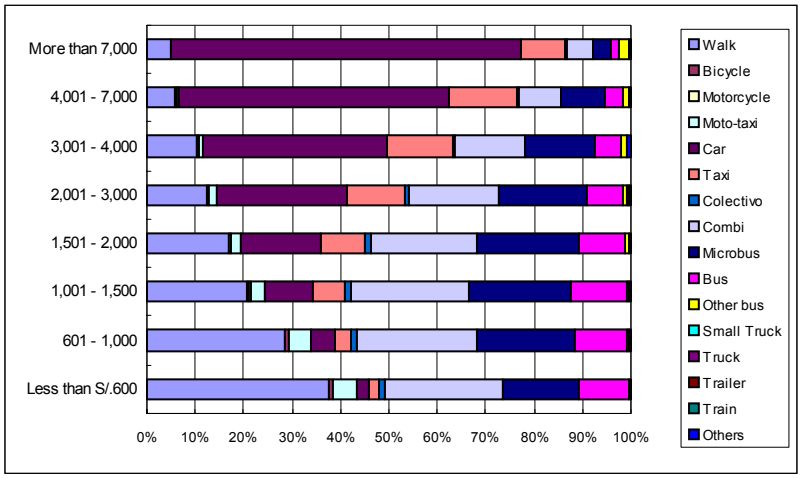

Figure 3.3-14 Modal Share by Household Income Level

(3) Access to Alternative Transport Modes

Figure 3.3-15 shows the modal share by vehicle ownership and Figure 3.3-16 shows that of the members of car owning households. 65% of the people in the households owning more than one car make a trip by car while only 34% in the households owning one car travel by car. The ownership of the rest of vehicles, such as bicycle and motorcycle, can't be seen to affect their modal share.

Even when some households own a car, all of the members can't use it at the same time. As shown in Figure 3.3-16, the household leader of the car owning family travels by car at 65%. This figures goes down to 30% in the case of the members (not a leader) in the car owning family. According to this, it can be said that public transport means also need to provide the services for the members of car owning families.

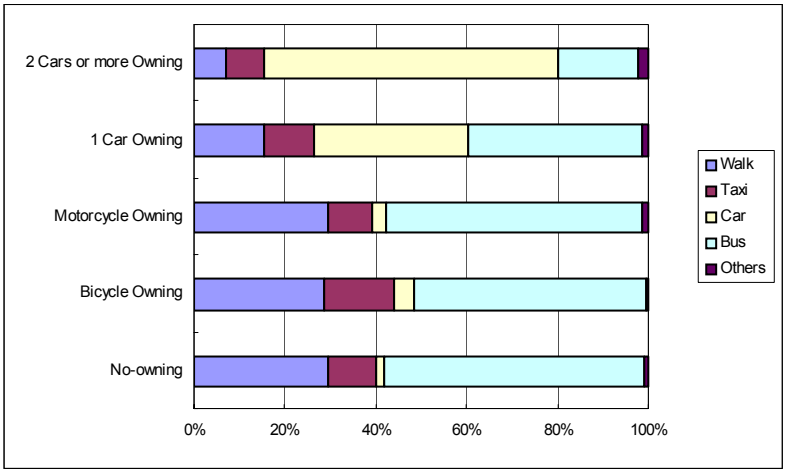

Figure 3.3-15 Modal Share by Vehicle Ownership

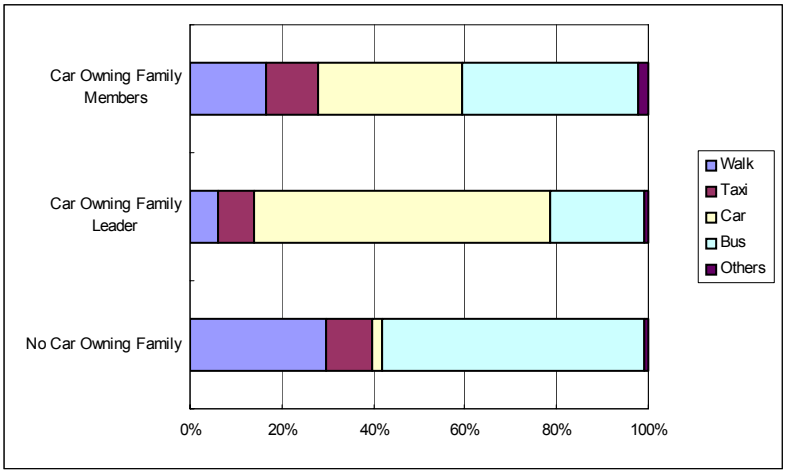

Figure 3.3-16 Modal Share by Vehicle Availability

Table 3.3-17 indicates modal share by travel purpose for trips generating from every integrated zone. The car is used for business trips, especially in business areas such as Area 4 and 5. Mototaxi is generally used in the peripheral areas.

Table 3.3-17 Modal Share by Area and Purpose

Area	To work	To school	Business	Private
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Legend

Walk : walking
M/C : motorcycle, mototaxi
Car : car, taxi, colectivo
Bus : combi, microbus, omnibus

Area

(4) Modal Choice and Its Reason

The residents' opinion surveys were conducted as a part of the Person Trip survey. This survey aims to obtain the context when people make a decision with regards to the modal choice of the first trip they made in the day.

Table 3.3-1 shows the reason of modal choice. Travel cost is the most important reason for public transport users, which indicates a 40% share of the total, followed by "no other option" at 31%. On the other hand, travel time is the most important reason for both colectivo and taxi users. A car user or a taxi user selects his mode considering the comfort of the mode.

Table 3.3-1 Reason for Modal Choice

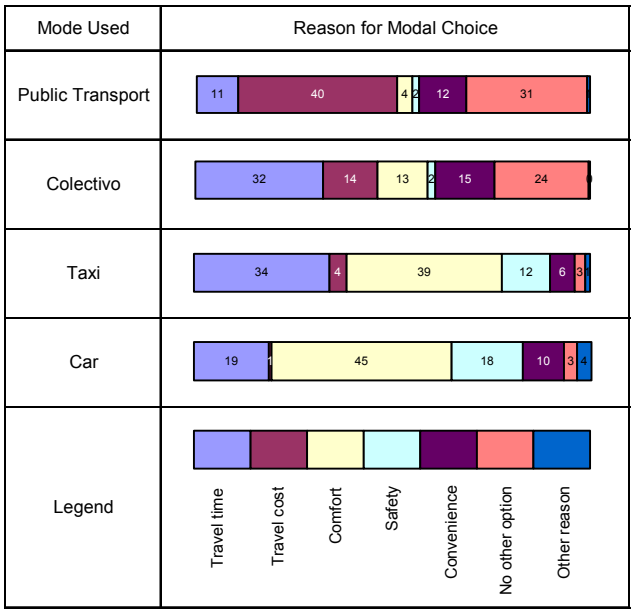

Table 3.3-18 shows the reasons for not using public transport. More than 50% of interviewees answered that public transport means are not comfortable; only 20% of them prefer the other mode even if public transport means are comfortable. Therefore, if the comfort of public transport is improved, passengers are expected to increase.

Table 3.3-18 Reasons for Not-Using Public Transport

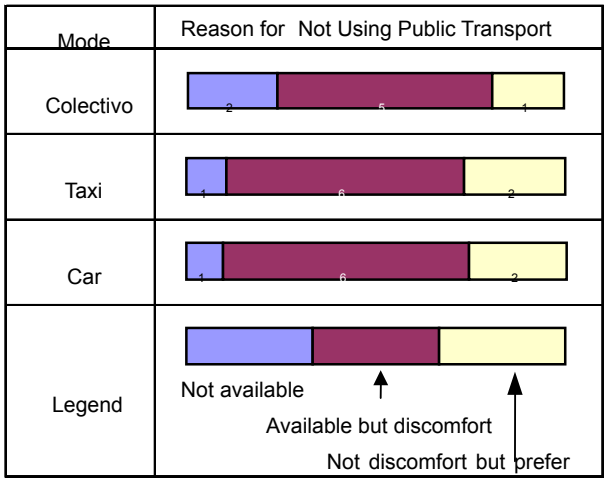

Figure 3.3-17 illustrates the distribution of walking distance to the nearest bus stop by people who use or don't use buses. No big difference is observed. Figure 3.3-18 describes the same distribution, but by people who answered if the bus is available or not. There is a slight but not big difference. Therefore, walking distance to the nearest bus stop is not an important factor for modal choice in case of public transport according to this analysis.

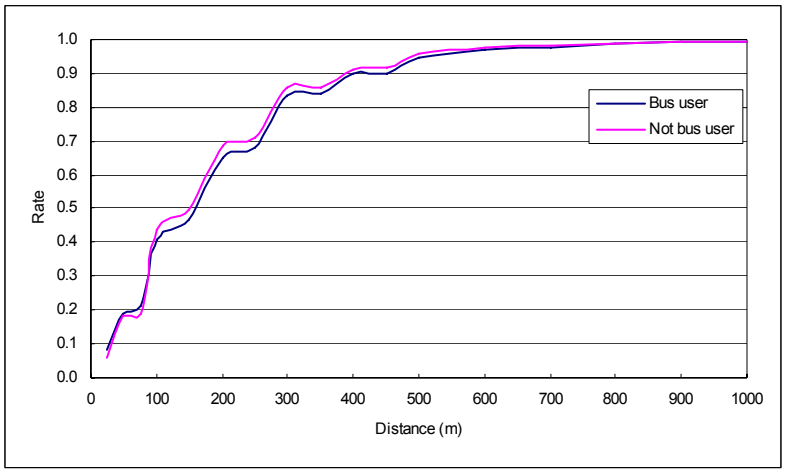

Figure 3.3-17 Walking Distance to the Nearest Bus Stop

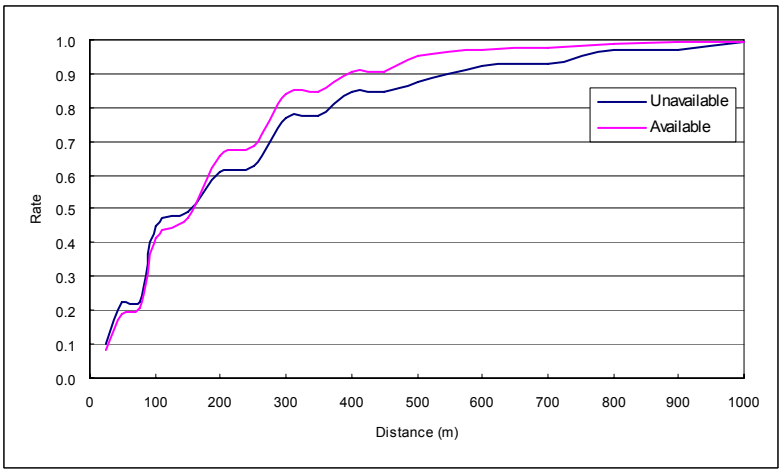

Figure 3.3-18 Walking Distance to the Nearest Bus Stop

Figure 3.3-19 exposes the distribution of travel time both by bus and alternative modes perceived by the bus user. It is obvious that bus travelers use a bus even taking longer than the alternative mode in the case of long trips that last more than 30 minutes.

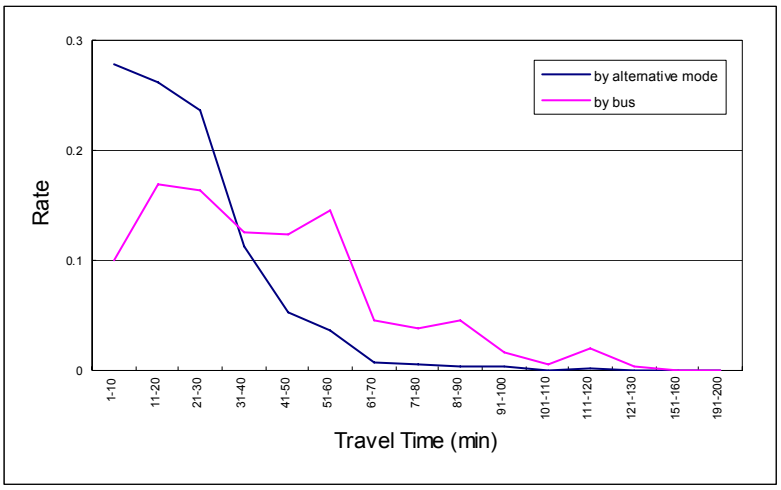

Figure 3.3-19 Travel Time Distribution

In the case of people who selected the alternative mode and answered that time is the most important factor, how much time differences affect their modal choice? The answer is shown in Figure 3.3-20. The figure plots the perception of travel time both by bus and by alternative mode. The result of the regression analysis between the two indicates 1.57. This means that they select the alternative mode because they think public transport takes 1.57 times longer than the alternative mode.

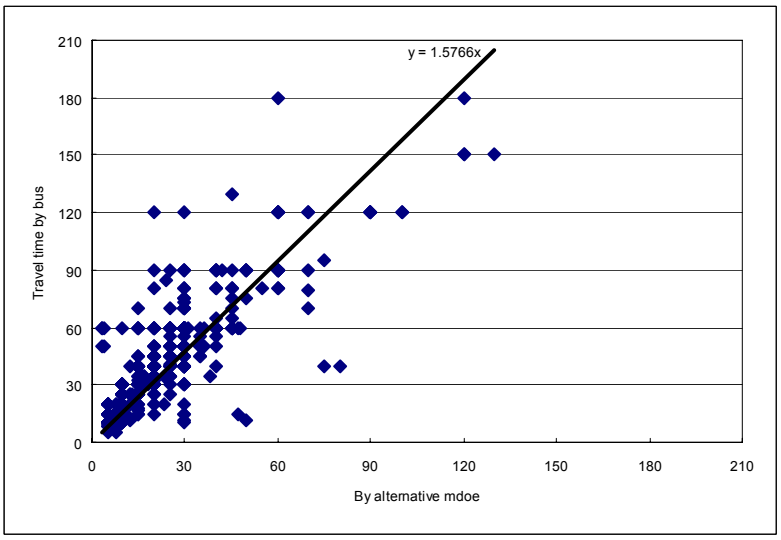

Figure 3.3-20 Travel Time Comparison

(5) Modal share by Travel Distance

Supposing that all trips generate from and attract to the center of each traffic zone, travel distance can be measured with the length between the centers of both traffic zones. Figure 3.3-21 shows the modal share by travel distance calculated by the above-mentioned distance. Walk trips are generated by less than 2 km. The longer they travel, the higher is shared by public transport.

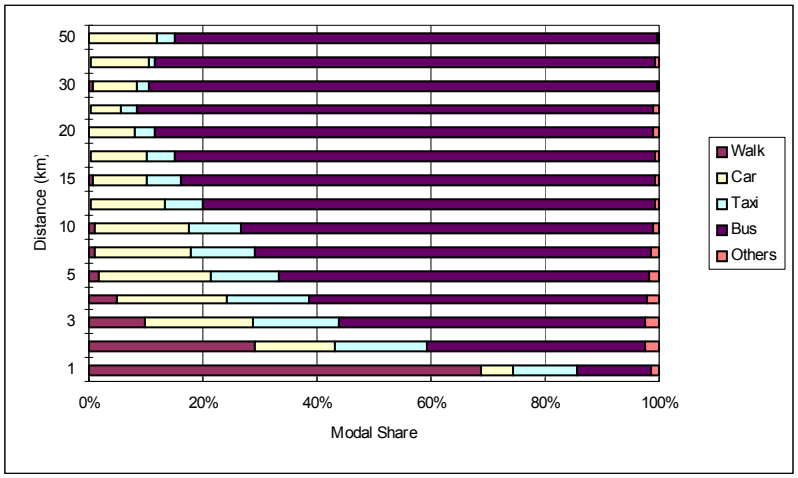

Figure 3.3-21 Modal Share by Travel Distance

Figure 3.3-22 shows the trip length distribution of whole trips including walk trips. 70% of whole trips are less than 7.5 km in length and 80% is less than 11 km. Average length of whole trips is approximately 7.1 km.

The comparison of travel time by mode can be seen in Figure 3.3-23. Traveling by taxi or car takes almost the same time. However, traveling by public transport takes longer.

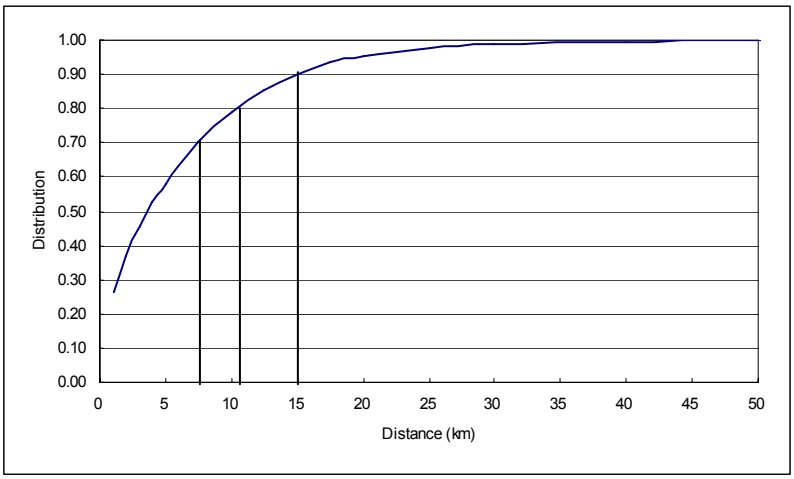

Figure 3.3-22 Distribution of Trip Length

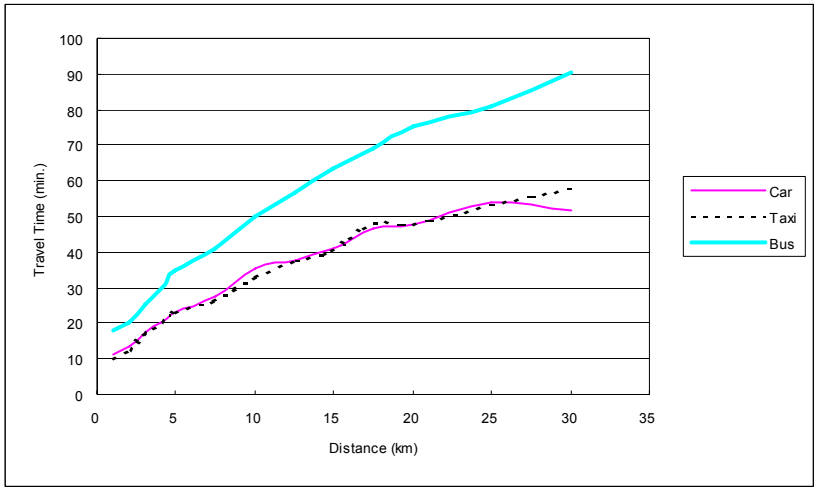

Figure 3.3-23 Comparison of Travel Time by Distance

(6) Travel Time by Integrated Zone

The average travel time of trips by travel purpose generated from every integrated zone is summarized in Table 3.3-19.

Average travel time of trips with "to work" purpose is 44 minutes in the Study area. The shortest (31 minutes) trips with "to work" purpose generate from integrated zone Nº 4 (San Isidro/Miraflores), while the longest (66 minutes) trips generate from Nº8 (Ventanilla/Ancon). Average travel time from zone Nº 13 (Lurin) is longer for business and private trips

Table 3.3-19 Average Travel Time by Integrated Zone

Unit: Minute

Area	To work	To school	Business	Private
1	34.9	30.0	28.7	26.5
2	40.8	38.3	44.2	36.7
3	45.8	35.8	41.3	34.9
4	31.1	35.8	34.0	32.3
5	37.6	34.4	40.7	32.1
6	42.0	29.9	30.6	29.0
7	48.0	32.0	38.6	28.6
8	66.0	36.8	43.0	33.6
9	51.3	30.2	26.1	24.1
10	48.7	31.4	30.2	24.4
11	40.7	34.6	40.5	33.4
12	50.5	35.8	41.0	34.3
13	52.1	41.1	48.6	43.8
14	61.5	36.6	41.5	37.3
Total	43.6	34.5	35.7	31.4

Figure 3.3-24 illustrates distance and average travel time to the city center (Centro) from each traffic zone center. In the figure, concentric circles describe the equal distance by 10 km from the city center. Traveling from the north part of the city to the city center takes longer time than traveling from the south part, within the area enclosed by a 20-radius circle.

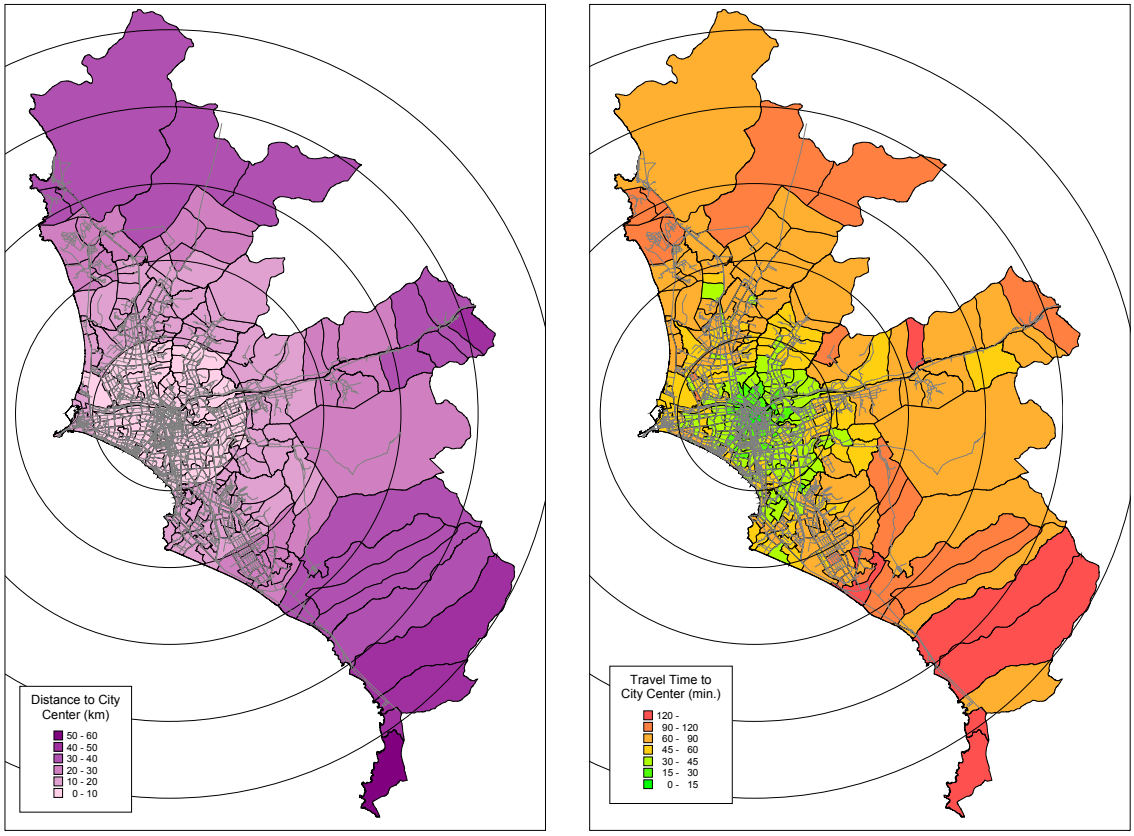

Figure 3.3-24 Average Travel Time to the City Center

(7) Combination of Transport Mode

It is important to analyze trip patterns in order to improve transport services, especially public transport. Table 3.3-20 describes what transport mode is used to make one trip. 83% of whole trips travel using only one transport mode, while the rest of the trips are composed of more than one transport mode.

Figure 3.3-25 illustrates the composition of the number of transport modes to be used for making one trip traveled by public transport. More than 20% of public transport users need to transfer at least one time to make one trip.

Table 3.3-20 Combination of Mode

Mode	1 ride		2 ride		3 ride		4 and more		Total	
	Trips (1,000)	Rate (%)	Trips (1,000)	Rate (%)	Trips (1,000)	Rate (%)	Trips (1,000)	Rate (%)	Trips (1,000)	Rate (%)
Bicycle	84	0.8	0	0.0	0	0.0	0	0.0	85	0.7
Motorcycle	30	0.3	0	0.0	0	0.0	0	0.0	30	0.2
Mototaxi	597	5.7	3	0.2	0	0.2	0	0.0	606	4.8
Car	1,852	17.7	4	0.2	0	0.0	0	0.0	1,874	14.8
Taxi	893	8.6	8	0.5	0	0.3	0	0.0	911	7.2
Colectivo	165	1.6	14	0.8	1	0.9	0	0.0	184	1.5
Combi	3,024	28.9	699	40.9	64	39.7	4	40.8	3,900	30.9
Microbus	2,391	22.9	618	36.2	58	36.2	3	34.3	3,166	25.1
Bus	1,260	12.1	360	21.1	37	22.7	2	24.9	1,715	13.6
Other bus	79	0.8	1	0.0	0	0.0	0	0.0	81	0.6
Small Truck	8	0.1	0	0.0	0	0.0	0	0.0	8	0.1
Truck	3	0.0	0	0.0	0	0.0	0	0.0	3	0.0
Trailer	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Train	0	0.0	0	0.0	0	0.0	0	0.0	1	0.0
Others	59	0.6	0	0.0	0	0.0	0	0.0	60	0.5
Total	***10,446***	***100.0***	***1,708***	***100.0***	***161***	***100.0***	***9***	***100.0***	***12,624***	***100.0***
Rate (%)	82.7		13.5		1.3		0.1		100.0	

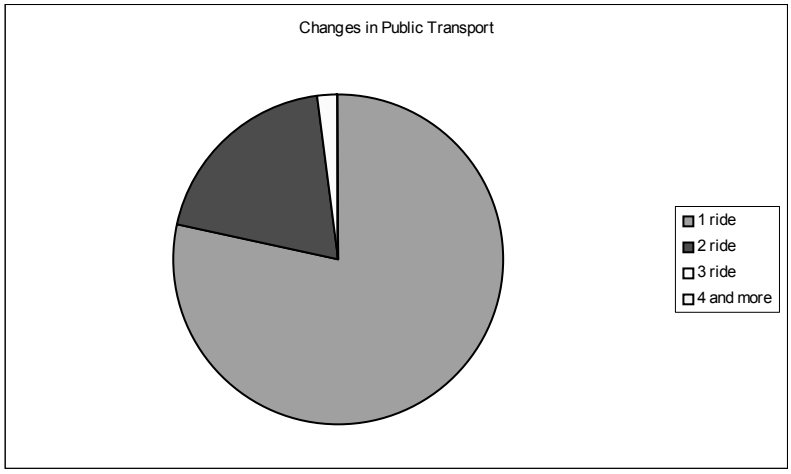

Figure 3.3-25 Mode Change in Public Transport

Table 3.3-21 describes the combination of transport mode traveling from each integrated zone. The farthest an integrated zone is located from the city center, the higher the combination of modes needed for making a trip.

Table 3.3-21 Trip Pattern by Integrated Zone

Area	1 ride		2 ride		3 ride	
1	88.8		10.6		0.5	
2	82.3		16.0		1.6	
3	84.0		14.8		1.2	
4	89.9		9.2		0.8	
5	81.2		16.3		2.2	
6	85.2		13.5		1.1	
7	85.0		13.9		1.0	
8	72.9		23.6		3.2	
9	76.8		19.9		3.1	
10	85.0		13.8		1.2	
11	78.0		19.4		2.5	
12	76.7		21.0		2.1	
13	79.5		18.0		2.4	
14	73.4		25.3		1.2	
Legend						

3.3.5. INTERFACE WITH OTHER CITIES

Trips traveling in the Study area are composed of not only the residents' trips obtained by the Person Trip survey but also from trips traveled by the residents outside the Study area. For obtaining the demand of the residents outside the Study area, a Cordon line survey was conducted. This section describes their demand captured by the survey.

(1) Traffic Volume at Boundary

The traffic demand counted at each cordon line station can be summarized in Table 3.3-22 and the location of survey points are shown in Figure 3.3-26. At all stations except CL-4 and Jorge Chavez international airport, there is no heavy traffic volume counted, at most 7,000 vehicles/day in both directions. In the east part of the Study area, a residential area has been sprawling and connecting to cities such as Piedra Grande, Ricardo Palma. Therefore, the traffic volume at CL-4 is higher than other boundaries.

Table 3.3-22 Traffic Volume Counted

Unit: vehicle/day

Station	Car	Inter-provincial Bus	Other Public Transport	Small Truck	Large Truck	Others	Total
CL-1	1	1,581	9	770	1,705	158	4,224
CL-2	1,593	2	90	681	10	7	2,383
CL-3	333	28	289	158	388	66	1,262
CL-4	6,230	464	4,050	759	1,875	588	13,966
CL-5	612	15	414	80	30	67	1,218
CL-6	2,280	1,200	379	621	1,930	195	6,605
CL-7	14,035	53	1,598	85	333	120	16,224

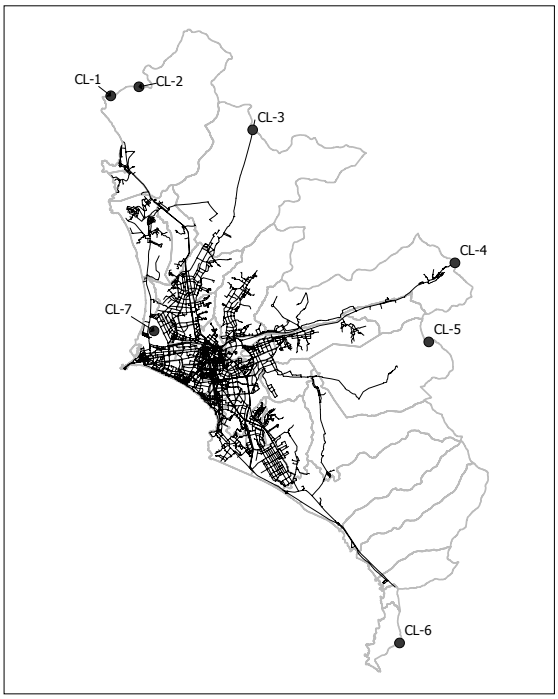

Figure 3.3-26 Cordon Line Survey Stations

(2) Inter-Provincial Demand

The demand on numbers of passengers' trips counted at each survey station is summarized in Table 3.3-23. More than 100 thousand trips were counted at Station CL-1, followed by 88 thousand trips at Station CL-6. Non-residents' trip rate is at most 52% at the stations mentioned above.

Table 3.3-23 Numbers of Passenger Trips Counted

Unit: 1,000 persons

Station	Residents (1,000)	Non-residents (1,000)	Total (1,000)	Non-residents Trip Ratio (%)
CL-1	49	55	104	52.7
CL-2	3	2	5	39.1
CL-3	4	2	6	36.2
CL-4	20	22	42	52.1
CL-5	5	1	6	20.8
CL-6	49	39	88	44.2
CL-7	28	5	34	16.0

Figure 3.3-27 to Figure 3.3-30 show the destination and origin of trips traveling across the Cordon line survey station CL-1 and CL-6 located on Av. Pan Americana Norte and Sur. Of the trips traveling into the Study area passing Station CL-1, 36% go to Comas-Los Olivos-Callao area, 38% go to the central area beyond Rimac River. On the other hand, of the trips traveling outside of the Study area, 21% go to Huaral, 22% to Ancash, and 33% to other northern provinces.

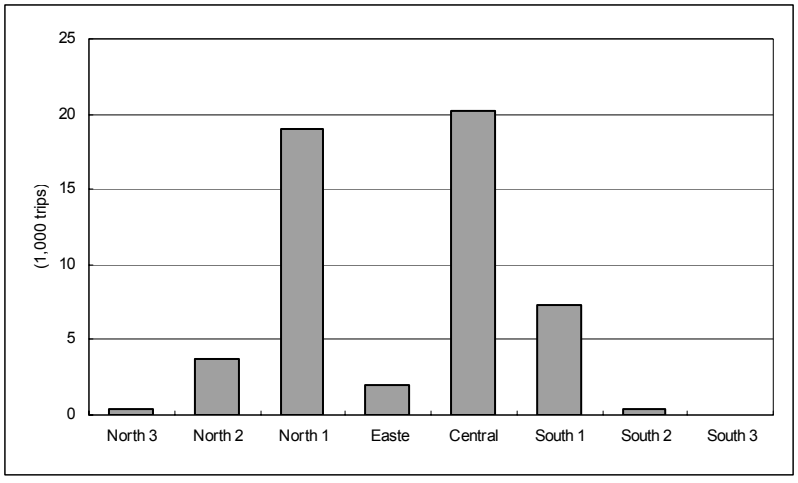

Figure 3.3-27 Destination of Trips (Station CL-1, from North)

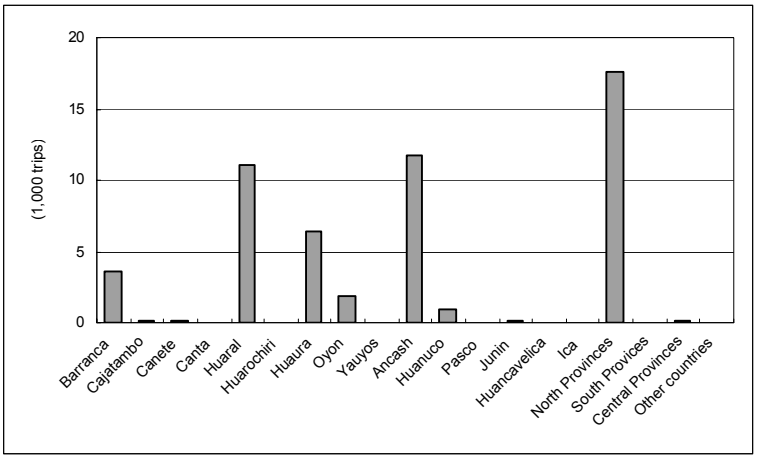

Figure 3.3-28 Origin of Trips (Station CL-1, from North)

Of the trips traveling into the Study area passing Station 6, 24% go to Surco-Chorrillos-Villa El Salvador area, 41% go to the central area of Lima. On the other hand, of the trips traveling outside of the Study area, 23% go to Cañete, 39% to Ica, and 32% to other southern provinces.

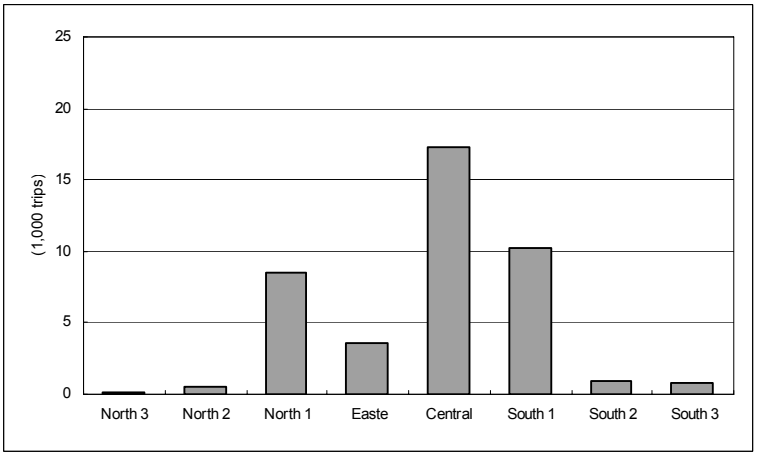

Figure 3.3-29 Destination of Trips (Station CL-6, from South)

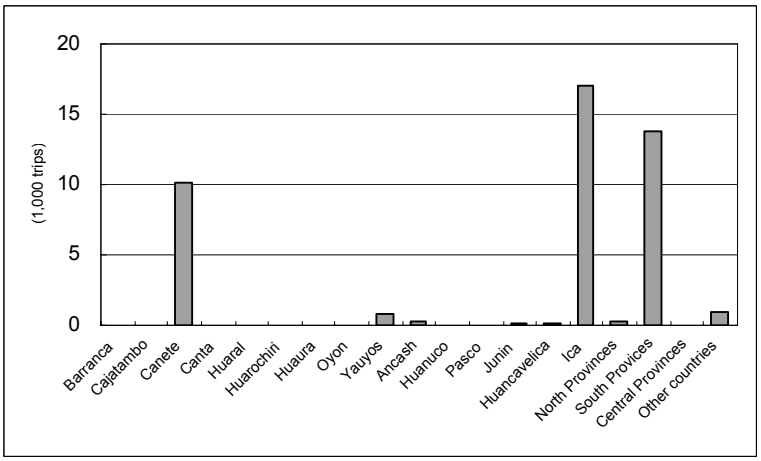

Figure 3.3-30 Origin of Trips (Station CL-6, from South)

3.4. DISCUSSION ON OTHER ASPECTS

3.4.1. TRAVEL DEMAND OF PEOPLE IN POVERTY

Figure 3.4-1 illustrates the ratio of poor households, which are defined as E-class in ESTRATO.

Traffic zones with poor household ratios exceeding 50 % are dispersed outside, such as Pachacútec, Carabayllo, Lurigancho, Villa El Salvador, etc.

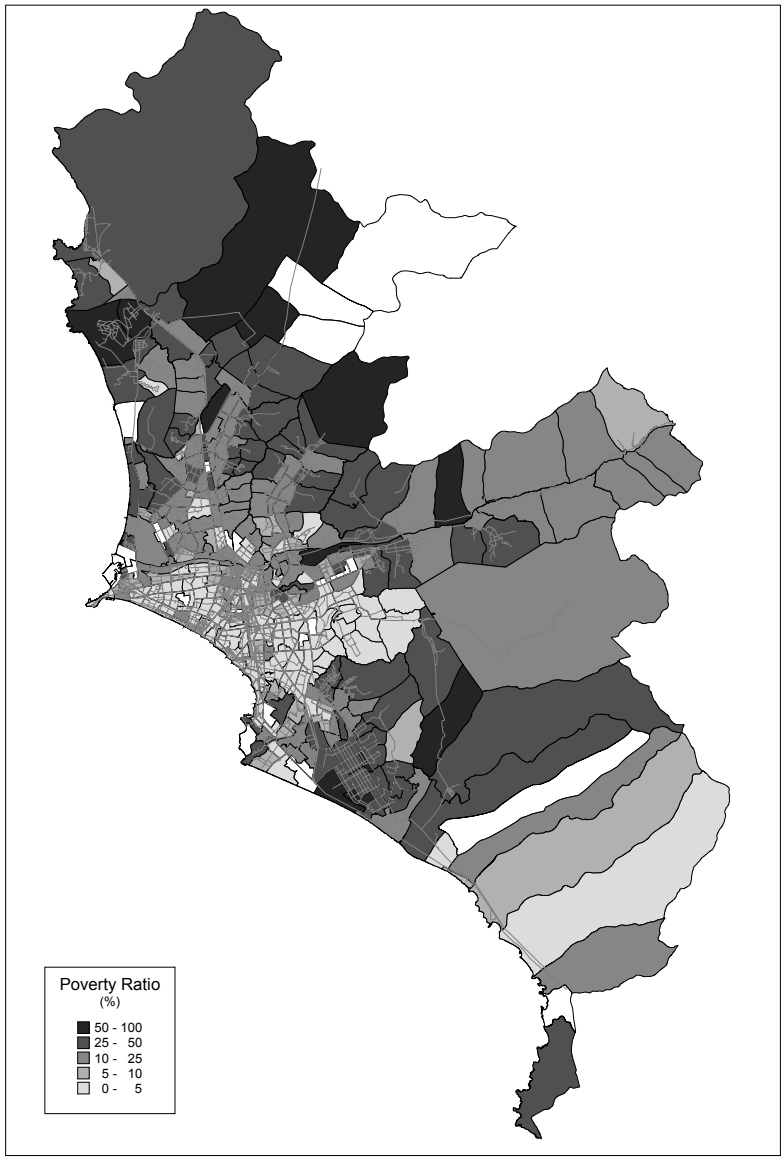

Figure 3.4-1 Poor Family Ratio by Traffic Zone

The demographic feature of these people is summarized in Table 3.4-1. Average age is younger, independent worker's ratio is higher; the ratio of students in superior schools is lower. Car ownership is shown in Table 3.4-2. There are hardly households owning a car. However, 75% of poor households own a television set as shown in Table 3.4-3.

Table 3.4-1 Demographic Features of Poor Families

Items	Poverty	Others
Average Age	25.9	32.0
Average No. of Household Members	4.1	4.5
Worker's rate (%)	48.2	48.3
Office worker	13.8	42.5
Independent	74.1	46.7
Security	12.1	10.7
Student rate (%)	28.9	28.1
Primary & secondary	89.4	68.3
Superior	10.6	31.7

Table 3.4-2 Car Ownership of Poor Families

Item	***Poverty***	***Rest***
Bicycle		
M/C		
Car		

Table 3.4-3 Demographic Feature of Poor Families

Item	***Poverty***	***Rest***
TV		
Telephone		
Refregerator		
Washing machine		
Computer		
Clearner		
Gas range		
Electrict range		
Microwave		

The following table shows the trip rates of poor families compared with the other families. The indicators, both the trip maker ratio and the trip rate in Table 3.4-4, show that poor people have the lowest mobility. As seen in Table 3.4-5, there is also much difference in the characteristics of modal choice between the poor people and the rest. The ratio of trips traveling by walking is extremely higher, that of private, para-transit, and public modes are lower as shown in Figure 3.4-2.

Table 3.4-4 Trip Rate of Poor Families

Home	Poverty	Others
Population (1,000)	1,229	6,814
Trip Maker (1,000)	860	5,010
Rate (%)	70.0	73.5
No. of Trips (1,000)	2,227	14,317
Trip Rate	1.8	2.1

Table 3.4-5 Trip Rate of Poor Family

Mode	Poverty		Others	
	Trip (000)	(%)	Trip (000)	(%)
Walk	900	40.5	3,308	23.2
Private	52	2.4	2,040	14.3
Car	31	1.4	1,825	12.8
Others	21	0.9	215	1.5
Paratransit	182	8.2	1,501	10.5
Mototaxi	119	5.4	481	3.4
Colectivo	27	1.2	154	1.1
Taxi	36	1.6	867	6.1
Public	1,089	49.0	7,436	52.1
Combi	527	23.7	3,264	22.9
Microbus	352	15.8	2,720	19.0
Bus	210	9.5	1,451	10.2
Total	2,223	100.0	14,285	100.0

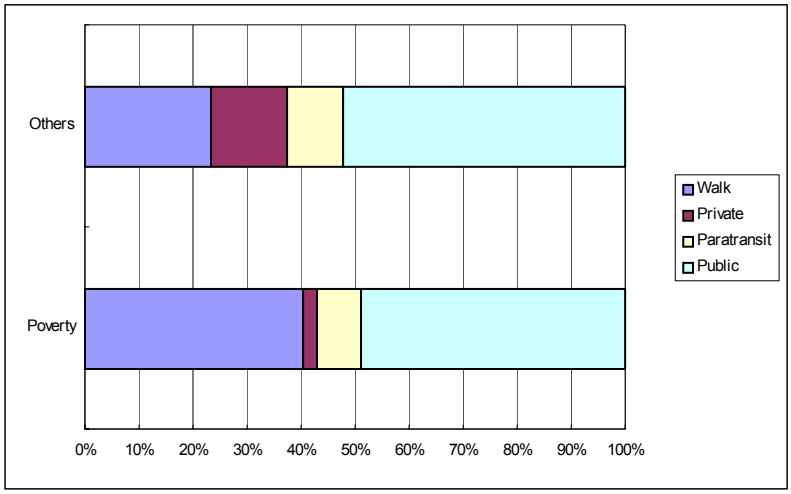

Figure 3.4-2 Modal Share

Figure 3.4-3 and Figure 3.4-4 show the travel distance and travel time, respectively. It is obvious that, although poor people averagely travel short distances, their trips take a longer time. According to the discussion in this section, poor people are probably confined to neighboring areas of their residence due to economic and social reasons.

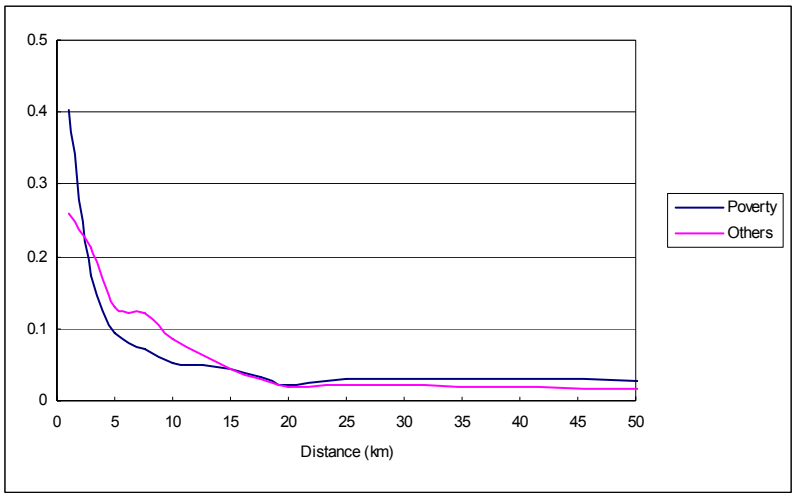

Figure 3.4-3 Travel Distance

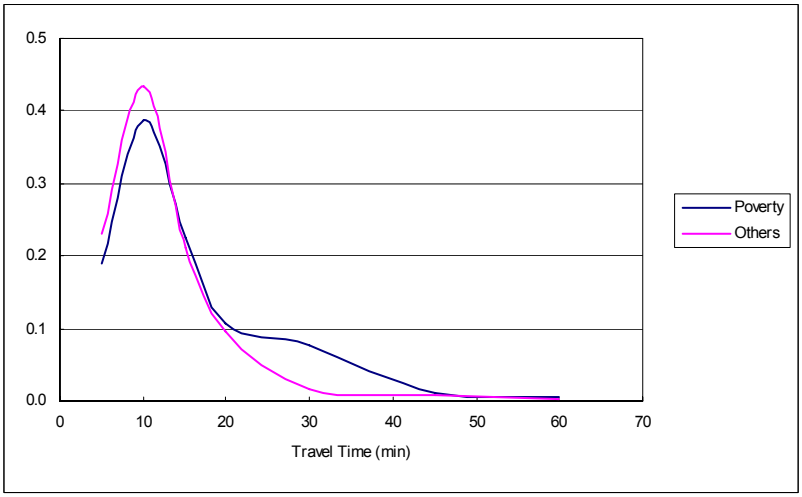

Figure 3.4-4 Travel Time Distribution

3.4.2. CHARACTERISTICS OF NON-MOTORIZED TRAVEL DEMAND

Table 3.4-6, the ratio of walk trips to the total number of trips produced by the residents in the Study area is about 25%, and that of bicycle trips is about 0.5%. The trip rate of both by walk and by bicycle trips is as small as 0.5 and 0.01, respectively. Non-motorized trips, like walking and by bicycle, are sometimes not considered important because they are small and don't affect the load of traffic. However, the analysis of non-motorized trips is indispensable for planning a pedestrian and bicycle network.

Table 3.4-6 Non-motorized Trip Rate

	No. of Trips (1,000)	Ratio (%)	Trip Rate
Total Trip	16,538	100.0	2.1
Walk Trip	4,208	25.4	0.5
Bicycle Trip	84	0.5	0.01

Figure 3.4-5 shows bicycle ownership and Figure 3.4-6 the relationship between bicycle ownership and vehicle ownership. The bicycle ownership is almost 25% to the whole households, and 7% of the households have more than one bicycle. Of the households having a bicycle, 75% is a household owning only a bicycle, while 25% has a motorcycle or a car.

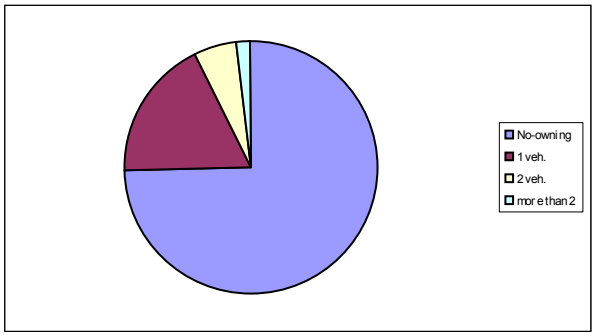

Figure 3.4-5 Bicycle Ownership

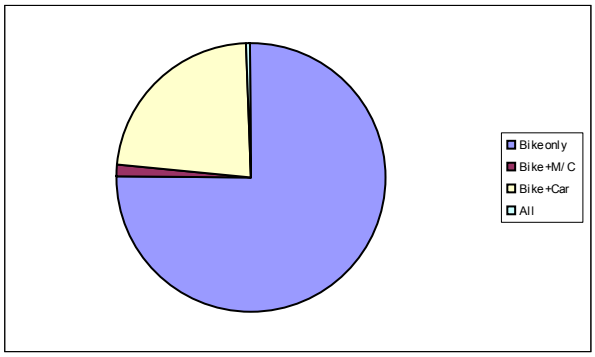

Figure 3.4-6 Bicycle and Vehicle Ownership

Figure 3.4-7 and Figure 3.4-8 illustrate who makes a trip by walking or bicycle. According to these figures, the people in the low age group ranging from 5 years old to 15 travel by walking, and a bicycle is mostly used by people ranging from 20 to 34. On the other hand, there is no big difference between income levels.

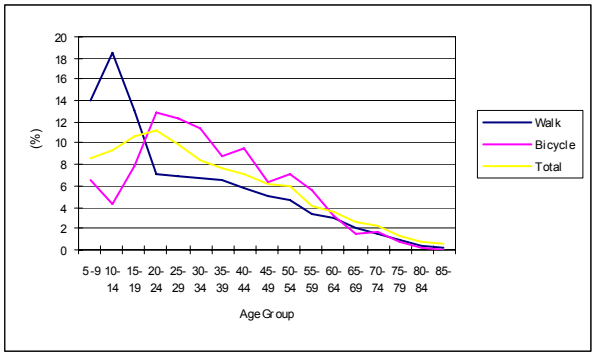

Figure 3.4-7 Age Group of Non-motorized Trip Makers

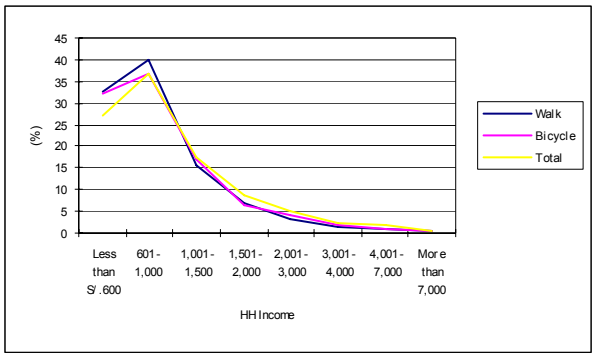

Figure 3.4-8 Household Income Level of Non-motorized Trip Makers

Regarding the trip purposes, a walk trip is mainly done for "to school" or "shopping" trips while a bicycle trip is for "to work" or "other private" trips as shown in Figure 3.4-9. Walk trips have the same travel time and the same travel distance regardless of the trip purpose. On the other hand, bicycle trips have different travel time and travel distance with the trip purpose as shown in Table 3.4-7.

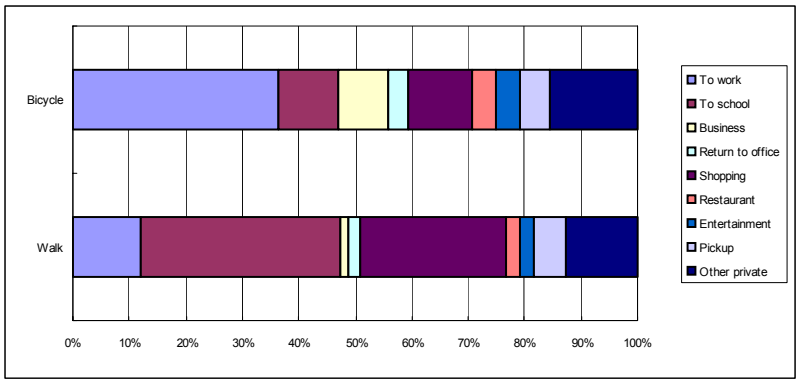

Figure 3.4-9 Trip Purpose Composition

Table 3.4-7 Travel Time and Travel Distance

Purpose	Walk		Bicycle	
	Time (minute)	Distance (km)	Time (minute)	Distance (km)
To work	12.1	0.7	18.4	2.3
To school	11.6	0.5	14.5	1.5
Business	12.1	0.6	14.6	2.2
Private	11.6	0.5	14.2	1.6

Figure 3.4-10 illustrates in which traffic zone the share of walk trips and bicycle trips are relatively high. The areas in which the walk trip ratio is high are located at the peripheral area. The ratio of both walk trips and bicycle trips is very small in the central part of the Study area.

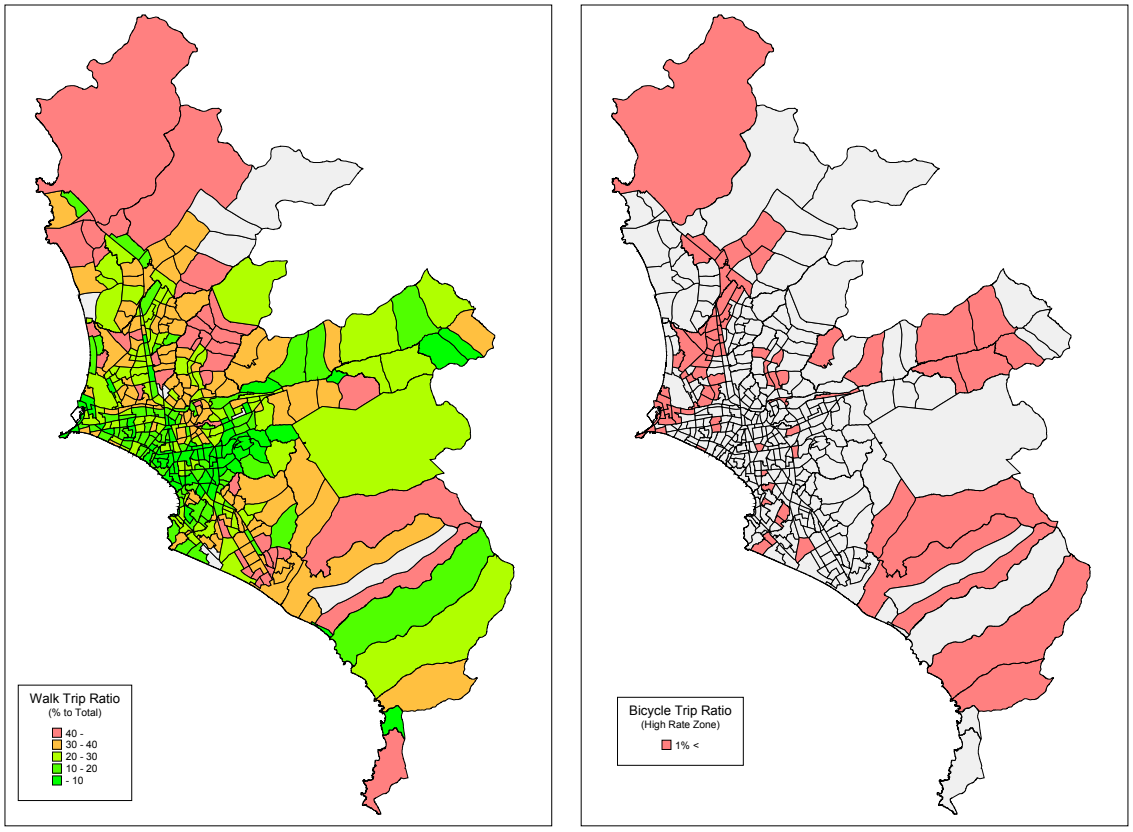

Figure 3.4-10 Trip Purpose Composition

3.4.3. ACCESS TO BUS STOPS

Table 3.4-8 indicates what mode is used to access bus stops to make a trip. Almost all access modes to bus stops are walking, which indicates 90%. There is also an access trip by mototaxi or by colectivo used for accessing the bus stops, although their share is very small. The average access time to a bus stop is 5 minutes. The average access time to a bus stop by traffic zone is displayed in Figure 3.4-11. As seen in the figure, the northern and eastern part of the Study area have poor accessibility to public transport, and even in the central area there are some places, such as Chorrillos and El Agustino, with a long access time to bus stops.

Table 3.4-8 Access Time to Bus Stop

Access Mode	No. of Trips (1,000)	Ratio (%)		Average Access Time (min.)
		Including Walk	Excluding Walk	
Walk	28,003	90.2	---	5.0
Bicycle	14	0.0	0.5	5.2
M/C	16	0.0	0.5	11.7
Mototaxi	1,348	4.3	44.1	7.6
Car	194	0.6	6.4	20.7
Taxi	147	0.5	4.8	25.2
Colectivo	1,334	4.3	43.7	17.5

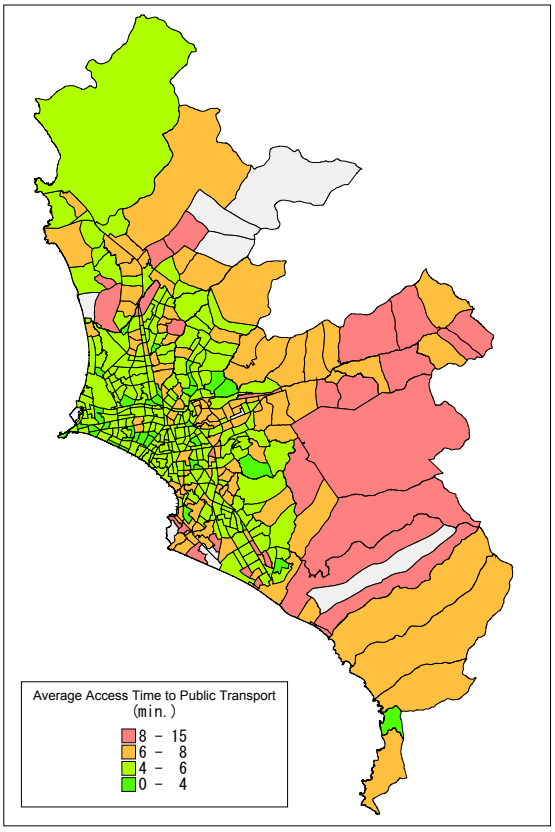

Figure 3.4-11 Poor Accessibility to Bus Stops

3.4.4. ROLE OF PARATRANSIT

The role of the paratransit mode is to complement public transport. In the Lima and Callao metropolitan area, transport means such as mototaxi, taxi, and colectivo are considered as the paratransit mode. How the residents use these modes is discussed in this section.

Table 3.4-9 shows the number of trips traveled by transit mode in terms of linked trips and unlinked trips. In the case of taxis, the numbers of linked and unlinked trips are almost the same. This means that if a user takes a taxi, he travels up to the destination by one ride. On the other hand, in the cases of both mototaxis and colectivos, there are differences between the number of linked and unlinked trips. Therefore, it can be said that these two modes are often used as an access mode.

Table 3.4-9 No. of Trips by Paratransit

Paratransit Mode	Linked Trips (1,000)	Unlinked Trips (1,000)	Linked/ Unlinked Rate
Mototaxi	600	992	0.61
Taxi	902	922	0.98
Colectivo	181	349	0.52

Figure 3.4-12 shows for which purpose the Para transit modes are used. The colectivo is mainly used for "to work" trips and "private" trips while the mototaxi is mainly used for "to school" trips and "private" trips.

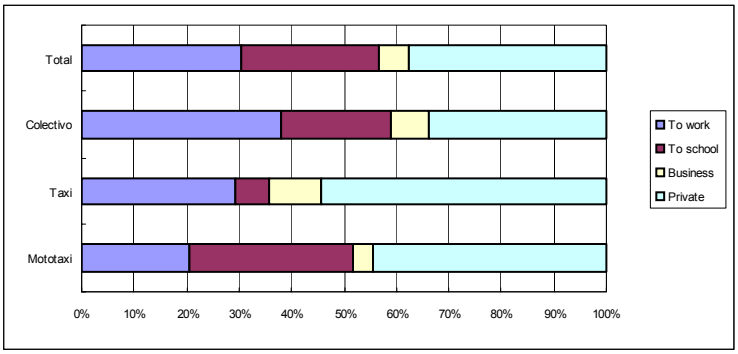

Figure 3.4-12 Paratransit Mode for Trip Purposes

Figure 3.4-13 shows who uses these modes. The mototaxi is comparatively used by a lower generation and the taxi by a higher one. Then, people in low-income groups use mototaxis more frequently. The higher the income level is, the more frequent the use of the colectivo or taxi.

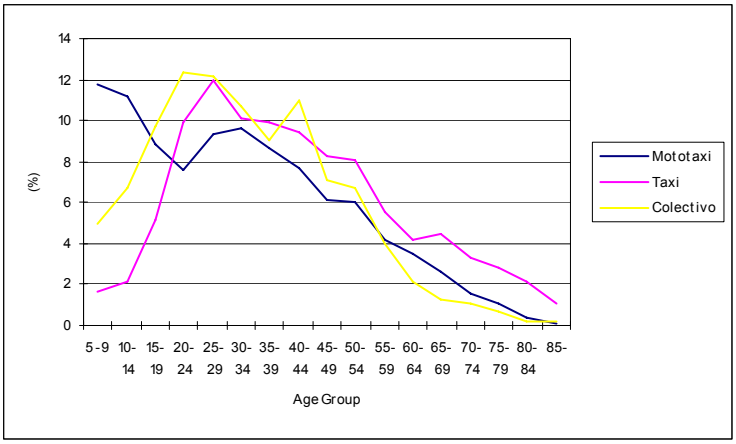

Figure 3.4-13 Age Distribution of Paratransit User

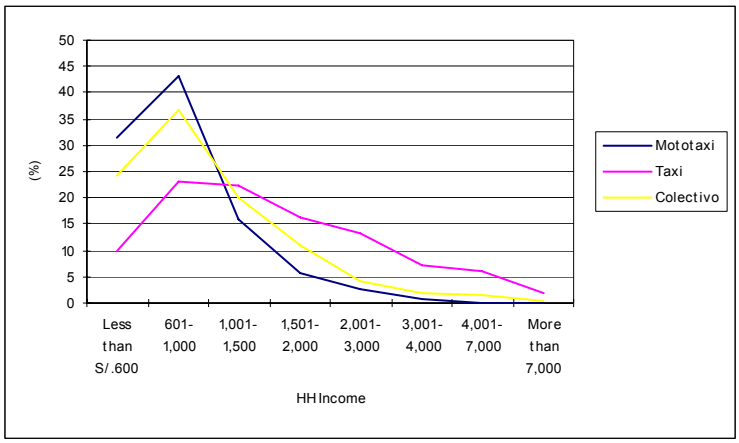

Figure 3.4-14 Usage of Paratransit Mode by Household Income

Figure 3.4-15 illustrates trip ratio of each Para transit mode by traffic zone. It is obvious that taxi is used in the central area and that the others are used in peripheral areas.

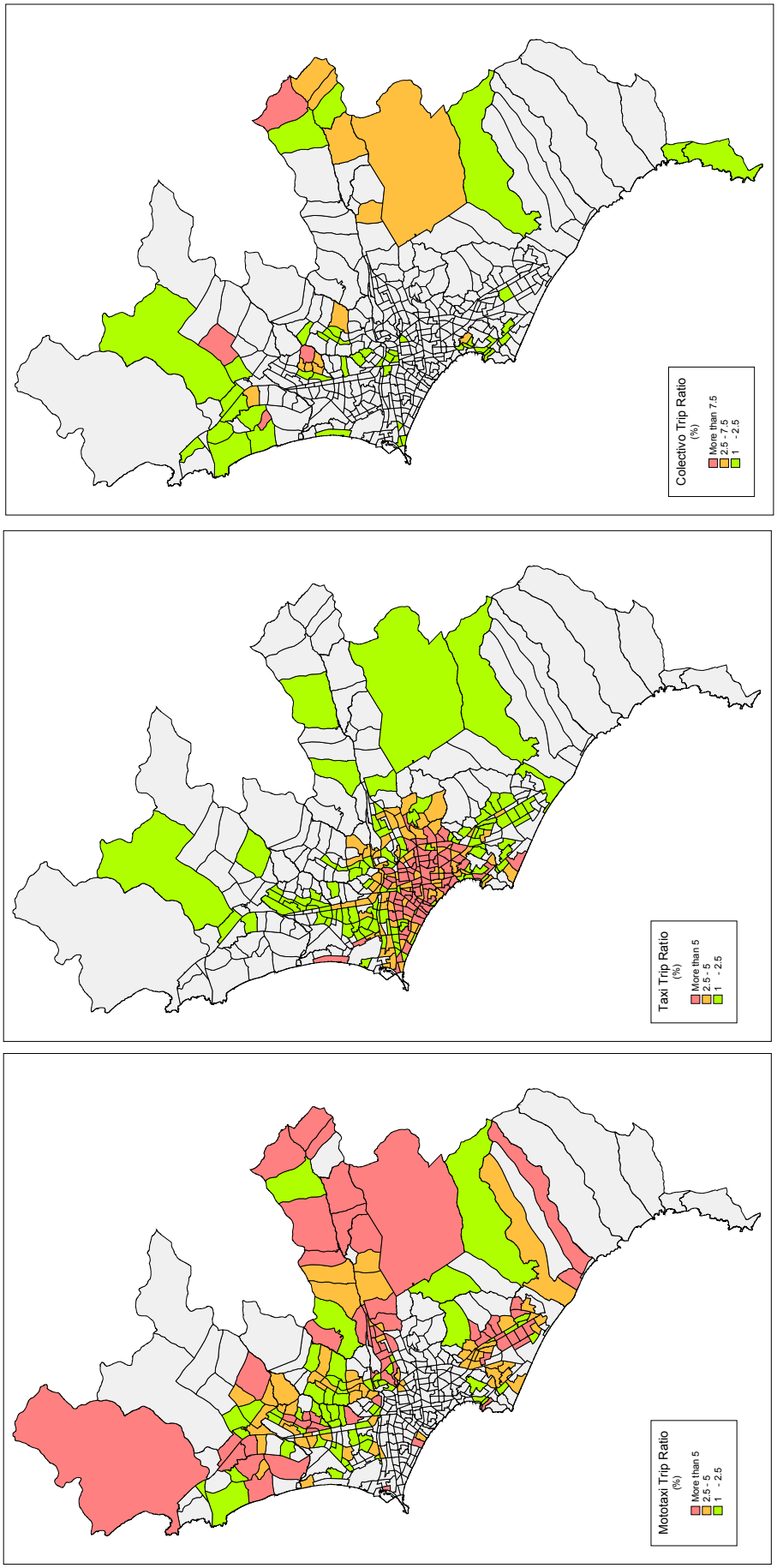

Figure 3.4-15 Frequent Usage Area of Para transit Mode

3.4.5. ANALYSIS ON TRAVEL COST

Trips cost is an important factor to establish the transport policies. This section discusses the costs people pay when making a trip. Figure 3.4-16 describes the cost of one ride by transport mode. A taxi averagely costs 5.8 soles, which is the most expensive mode, followed by a car at 4.4 soles. Every mode of public transport costs almost the same.

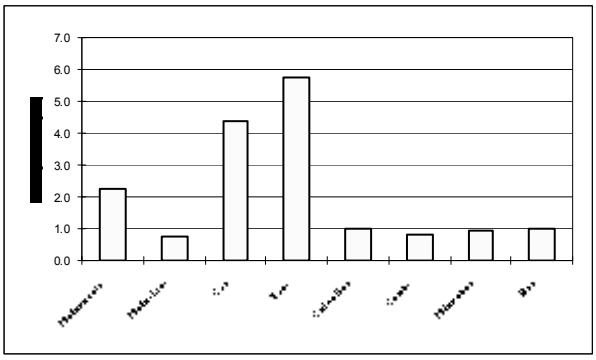

Figure 3.4-16 Cost by Transport Mode

The following figure illustrates the difference on travel cost by trip purpose. The most costly trip is a "business" trip costing 2.7 soles, followed by a "to work" trip at 2.1 soles averagely.

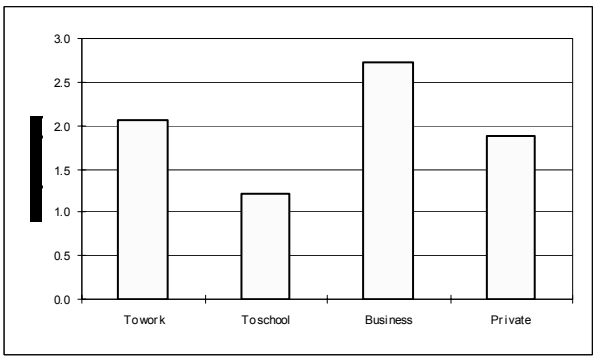

Figure 3.4-17 Cost by Trip Purpose

Table 3.4-10 shows the transport costs in households, by income rank. In the table, the transport cost is estimated by summarizing the total travel cost of the household members for the daily transport cost and the monthly cost, is estimated with the daily cost multiplied by 20 days. As shown in the table, the share of transport cost to the household income in low-income rank households is much higher, with more than 20%.

Table 3.4-10 Transport Cost in Households by Income Rank

Income Rank	Transport Cost per Household (S/. /day)				Average Household Income *2)	Transport Cost Ratio (%)
	Min	Max	Daily	Monthly *1)		
Less than S/.600	0.2	204.0	5.1	128	300	42.7
601 - 1,000	0.3	124.0	6.8	170	800	21.2
1,001 - 1,500	0.5	168.0	9.0	225	1,250	18.0
1,501 - 2,000	0.5	126.0	11.1	277	1,750	15.8
2,001 - 3,000	0.5	193.0	14.2	356	2,500	14.2
3,001 - 4,000	0.5	180.0	17.8	446	3,500	12.7
4,001 - 7,000	1.0	131.5	26.3	658	5,500	12.0
More than 7,000	1.5	118.0	34.7	868	10,000	8.7
Total			8.3			

Note: *1) One month is considered to be 20 days.
*2) Middle value of the range is applied as an average household income.