

## CHAPTER 4: BASIC ANALYSYS ON ROADSIDE INTERVIEW SURVEY

### 4.1 TRAFFIC VOLUME

Traffic count was carried out at more than 150 locations, which are distributed on the road network of the Egypt. The traffic count survey was carried out for 16 hours 6:00 AM till 10:00 PM. In addition, some representative locations were selected to conduct the traffic count for 24 hours in order to help gross-up the 16-hour counts into daily traffic counts.

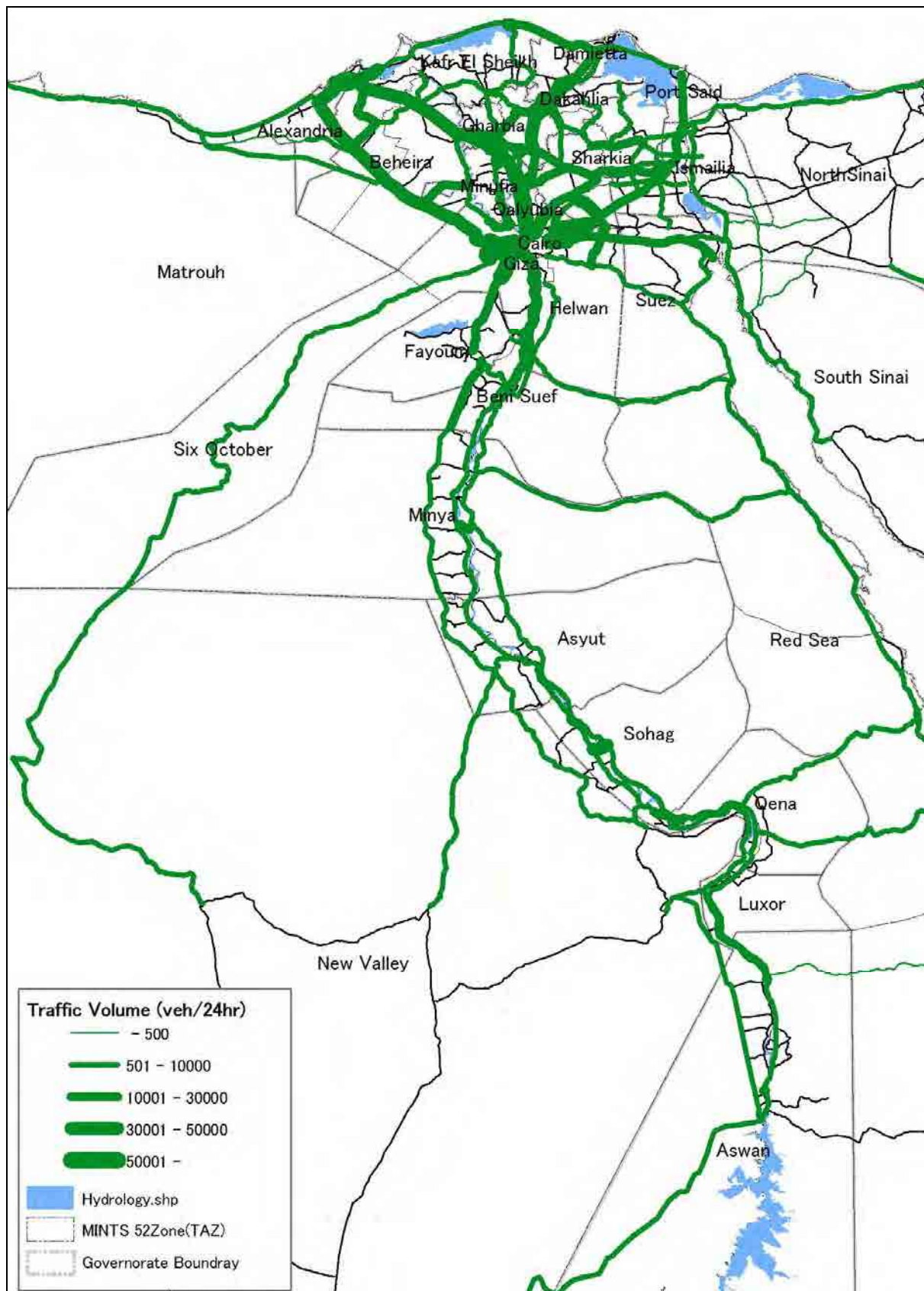
The grossed-up daily traffic volumes at all survey locations have assigned on the road network as illustrated in Figure 4.1.1 from which the following can be summarized:

- The most heavily traffic volume was observed at 26 July Corridor between Cairo/Giza and Six October (144,000 veh/day), followed by Cairo-Ismailia Desert Road inside of Ring Road (140,000 veh/day), Cairo-Alexandria Agriculture Road between Cairo and Benha (128,000 veh/day).
- Existing major corridors are:
  - Cairo – Alexandria (Desert Road)
  - Cairo – Tanta – Alexandria (Agriculture Road)
  - Mansoura – Damietta
  - Cairo – Ismailia (Desert Road) – Port Said
  - Cairo – Suez (Desert Road)
  - Cairo – Belbeis – Zaqaziq (Cairo - Sharkia)
  - Tanta – Zaqaziq – Ismailia (Gharbia – Sharkia -Ismailia)

### 4.2 HOURLY FLUCTUATION

Hourly Traffic volume is shown in Figures 3.2.2 and 3.2.3 for Delta region and whole Egypt, respectively. It should be noted that trucks have been aggregated to include Light Truck & Pickup, Single Unit Heavy Truck and Multiunit Heavy Truck. The following can be inferred from Figure 4.2.2:

- The peak hour was observed in the morning period in Cairo and Minya, although evening peak hour would occur at some other locations.
- Rural traffic is rather static fluctuation.
- The traffic volume on Cairo-Alexandria Agriculture road is rather heavy even during midnight, from 2am to 5am, the traffic volume was observed to be 2,000 veh/hour.
- As for traffic composition, trucks are dominant on Cairo-Asyut West Desert Road, whereas trucks account for 40% of total observed traffic volume.



Traffic volumes of 16 hour-survey locations are expanded to 24 hour volume, using 24 hour survey location's expansion rate.

Figure 4.2.1 Daily Traffic Volume During Normal Weekday

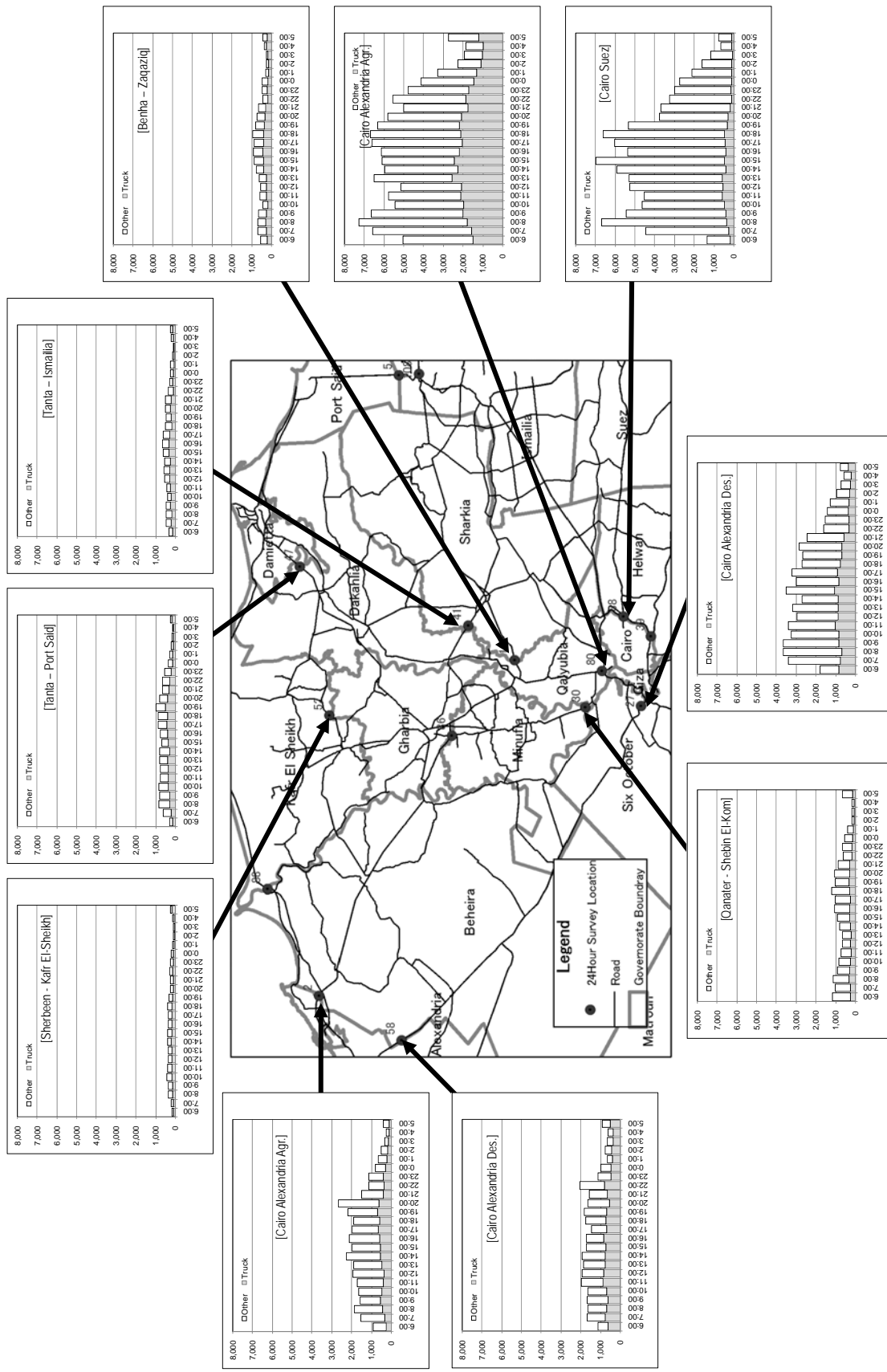


Figure 4.2.2 Hourly Traffic Volume on Major Corridor of Delta Region

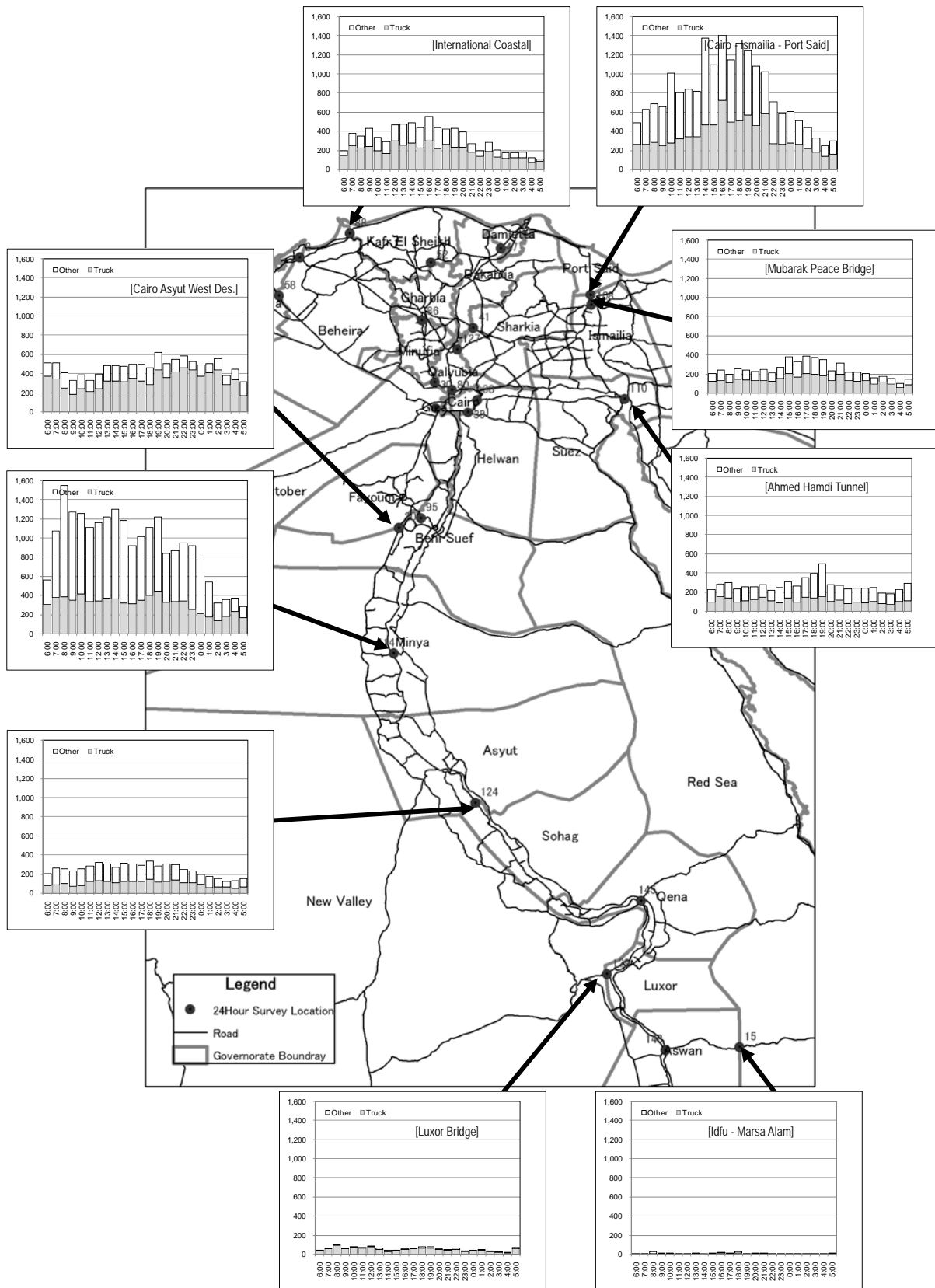


Figure 4.2.3 Hourly Traffic Volume on Major Corridors of Egypt

### 4.3 TRIP LENGTH ON MAJOR CORRIDORS

MINTS selected 11 major transport corridors for presenting the survey results as shown in Figure 4.3.1. The data of the origin-destination interview survey was analyzed to estimate the trip length distribution for the selected 11 corridors. The origins and destinations of different trips are coded based on the Survey Zone<sup>1</sup>.

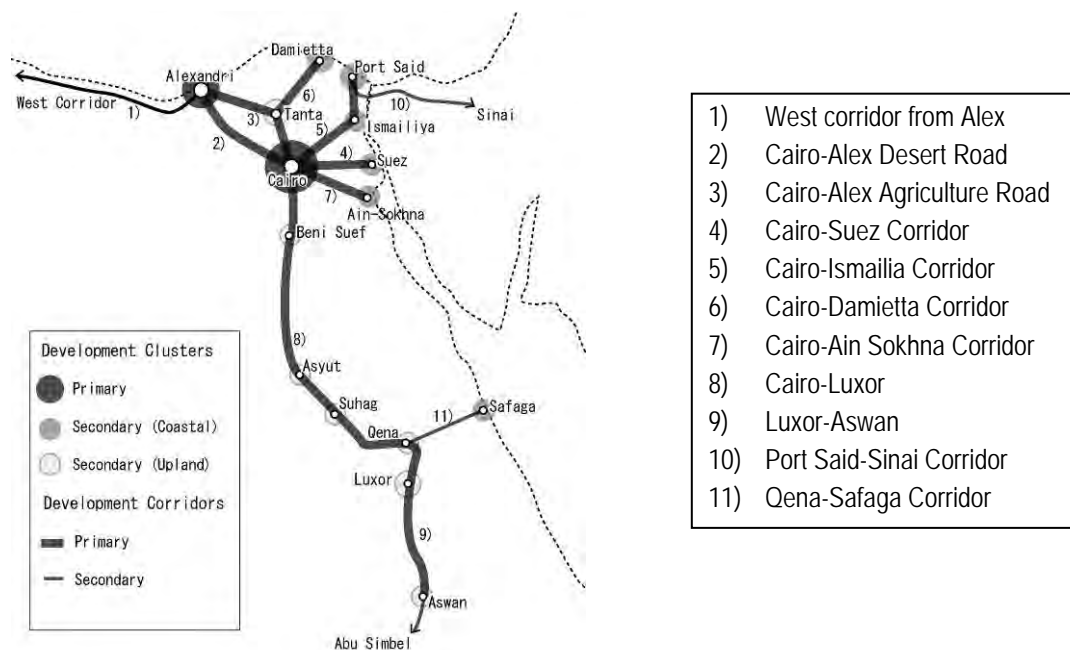


Figure 4.3.1 Selected Major Corridors in Egypt

Typical OD survey locations, which represent the characteristics of each corridor, are selected to illustrate the Desire Lines as shown in Figure 4.3.2.

Based on Figure 4.3.2, the following can be summarized by corridor:

- |                                |   |
|--------------------------------|---|
| 1) West corridor from Alex     | <ul style="list-style-type: none"> <li>● Around 93% of trips are made between Alexandria and Matrouh.</li> <li>● The trip length of the majority of vehicles is between 100~200km, while it is 300~500km for Private Bus.</li> </ul>  |
| 2) Cairo-Alex Desert Road      | <ul style="list-style-type: none"> <li>● Trips on this road are mainly made to-and-from Alexandria and other Governorate in Delta area.</li> <li>● There are long trips, i.e. up to Upper Egypt and Red Sea Governorate.</li> </ul>   |
| 3) Cairo-Alex Agriculture Road | <ul style="list-style-type: none"> <li>● Around 24% of trips are made between North East Minufia (Shebin El-Kom) and North Qalyubia (Benha), while 18% of trips are between East Minufia and Cairo.</li> <li>● The trip length of the majority of vehicles is between 50~100km, except for "Other vehicles" which have an average trip length of 10~30km</li> </ul> |

<sup>1</sup> Survey Zone is based on Markaz level, although some Markaz/zones are divided by Nile River. Distance between Survey Zones is estimated as the direct length between survey zone centroids.

- |                              |  |
|------------------------------|--|
| 4) Cairo-Suez Corridor       | <ul style="list-style-type: none"> <li>• This survey point is located near Suez City, so traffic volume at this point is not so high. Trips seem to be longer.</li> </ul>  |
| 5) Cairo-Ismailia Corridor   | <ul style="list-style-type: none"> <li>• Around 48% of trips is made between Cairo and South Qalyubia, while 20% of trips are between Cairo and 10 Ramadan.</li> <li>• The trip length of the majority of vehicles is between 10~30km.</li> </ul>  |
| 6) Cairo-Damietta Corridor   | <ul style="list-style-type: none"> <li>• 45% of trip is made between Damietta and Middle Dakhalia (Mansura), 27% is between Damietta and North Dakhalia (Sirbin).</li> <li>• The trip length of the majority of vehicles is between 50~100km, while it is 30~50km for Private Bus and 10~30km for other vehicles.</li> </ul> |
| 7) Cairo-Ain Sokhna Corridor | <ul style="list-style-type: none"> <li>• Traffic volume at this point is not so high. Trips seem to be longer, i.e. to-and-from Red Sea or Matrouh.</li> </ul>   |
| 8) Cairo-Luxor               | <ul style="list-style-type: none"> <li>• Around 60% of trips is made between 6<sup>th</sup> October and Giza, while 18% of trips are between 6<sup>th</sup> October and Cairo.</li> <li>• The trip length of the majority of vehicles is between 10~30km.</li> </ul>   |
| a) Cairo-Helwan              |  |
| b)Cairo-Fayoum               | <ul style="list-style-type: none"> <li>• Around 30% of trips is made between Fayoum and Giza, while 29% of OD trips are between Fayoum and West 6<sup>th</sup> October (6<sup>th</sup> October City).</li> <li>• The trip length of the majority of vehicles is between 50~100km.</li> </ul>                                 |
| 9) Luxor-Aswan               | <ul style="list-style-type: none"> <li>• Traffic volume at this point is not so high.</li> <li>• Trips seem to be long, i.e. between Aswan and Delta area.</li> </ul>  |
| 10) Port Said-Sinai Corridor | <ul style="list-style-type: none"> <li>• Around 40% of trips is between North Sinai and Cairo. In addition, 40% of trips are between North Sinai and West Ismailia (Ismailia).</li> <li>• The trip length of the majority of vehicles is between 30~50km.</li> </ul>   |
| 11) Qena-Safaga Corridor     | <ul style="list-style-type: none"> <li>• Around 67% of trips are between East Qena North (North side of East Bank) and Middle Red Sea (Hurghada).</li> <li>• The trip length of the majority of vehicles is between 100~200km.</li> </ul>  |

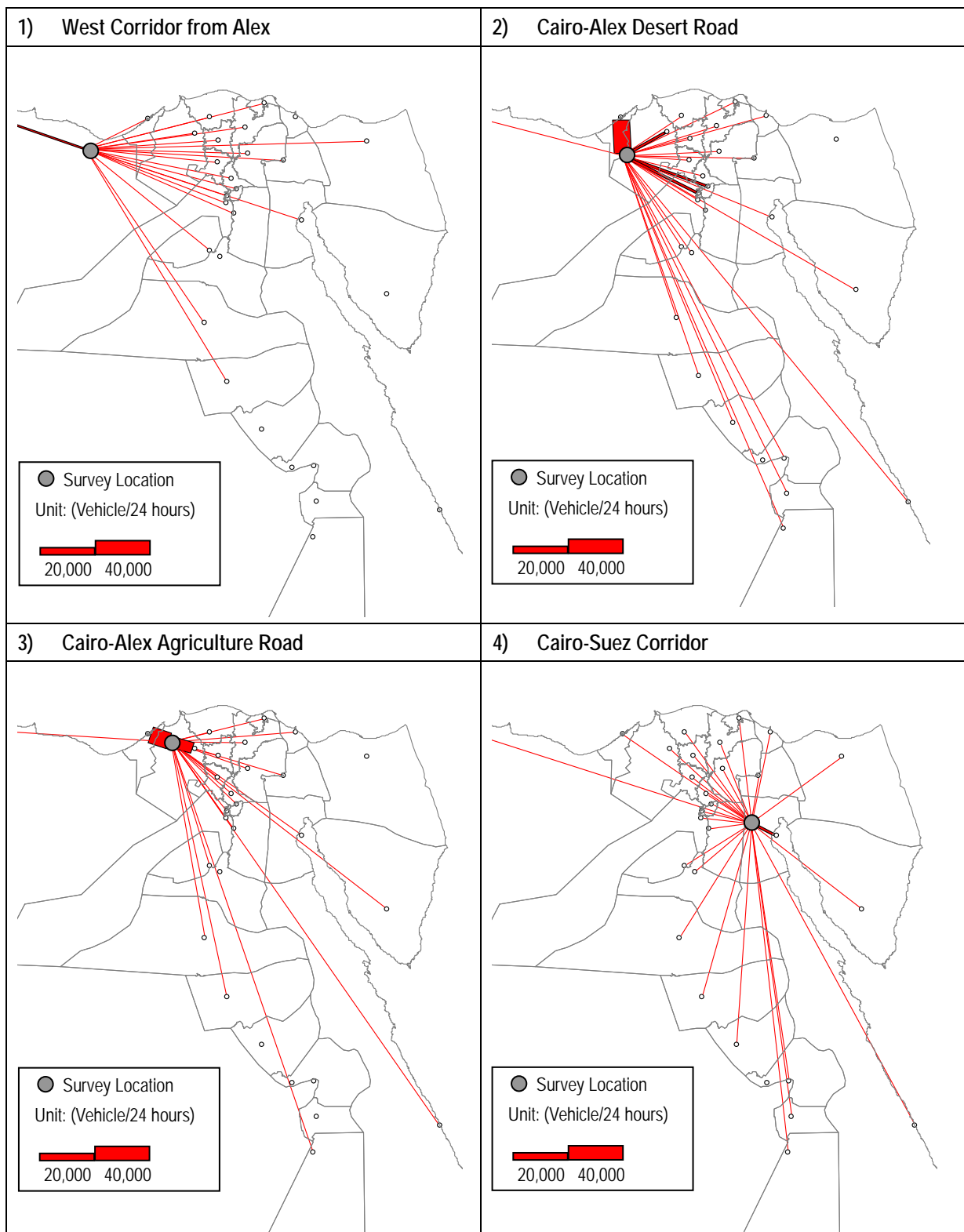


Figure 4.3.2 (1) Desire Lines at Major Corridors

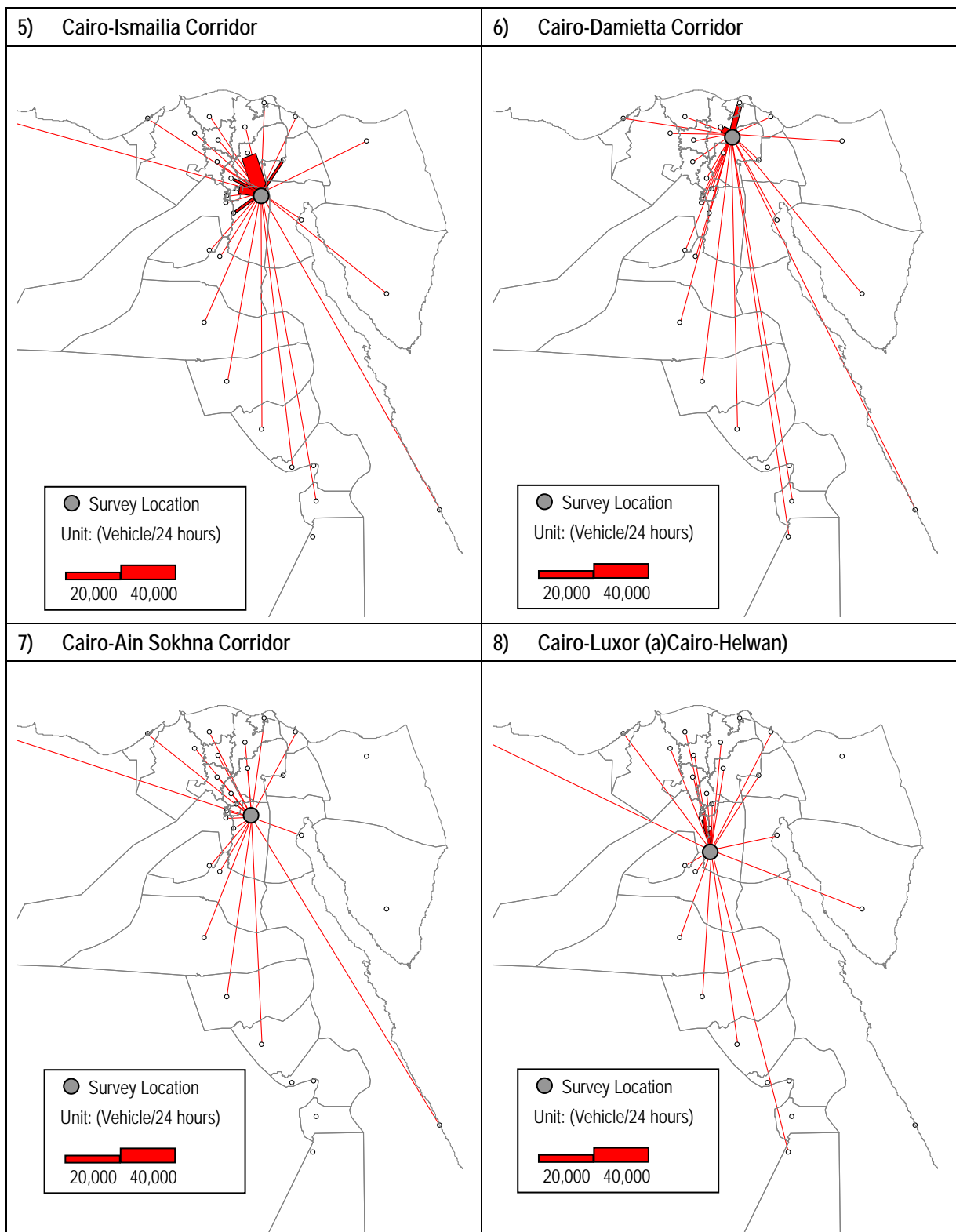


Figure 4.3.2 (2) Desire Lines at Major Corridors



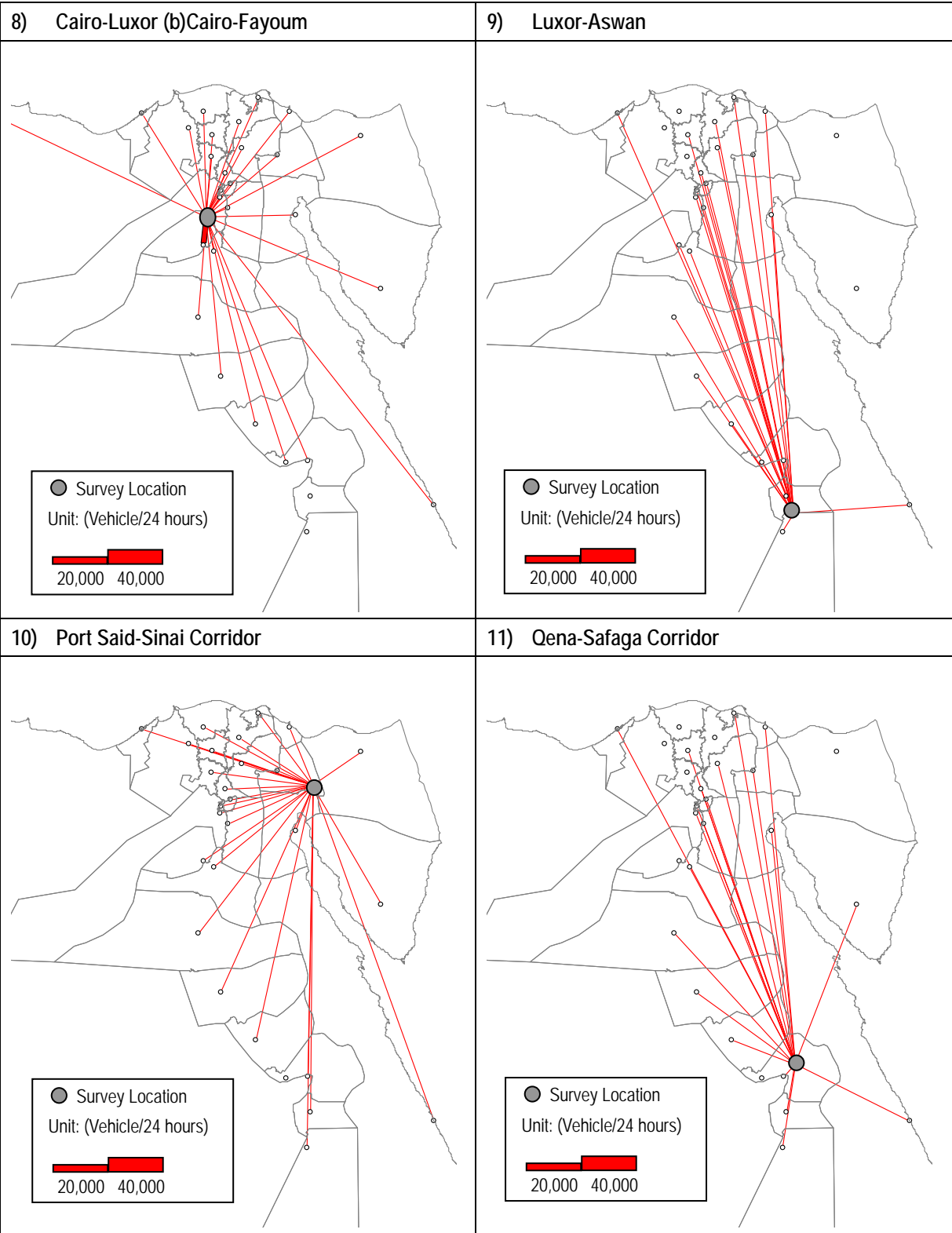


Figure 4.3.2 (3) Desire Lines at Major Corridors

#### 4.4 VEHICLE COMPOSITION ON MAJOR CORRIDORS

Vehicle compositions on each major corridor are shown in Figure 4.4.1, from which the following can be summarized:

- The characteristics of vehicle composition on corridors 1) West corridor from Alexandria to 6) Cairo Damietta Corridor which are located in delta area seems to be similar. Especially, that among 1) West corridor from Alexandria, 2) Cairo-Alexandria Desert Road and 3) Cairo Alexandria Agriculture Road seems to be quite similar.
- Shares of multi unit heavy truck on Cairo-Suez corridor and Cairo-Ain Sokhna Corridor are higher than other that of corridors.
- The trucks (Light Truck, Single Unit Heavy Truck and Multi Unit Heavy Truck) account for 80% or more on Cairo-Ain Sokhna Corridor. On the other hand, the share of Passenger Car is quit small on this corridor.
- Share of light truck is approximately 20 % constantly in each corridor.
- The vehicle composition both of Luxor-Aswan and Qena-Safaga is quit similar.

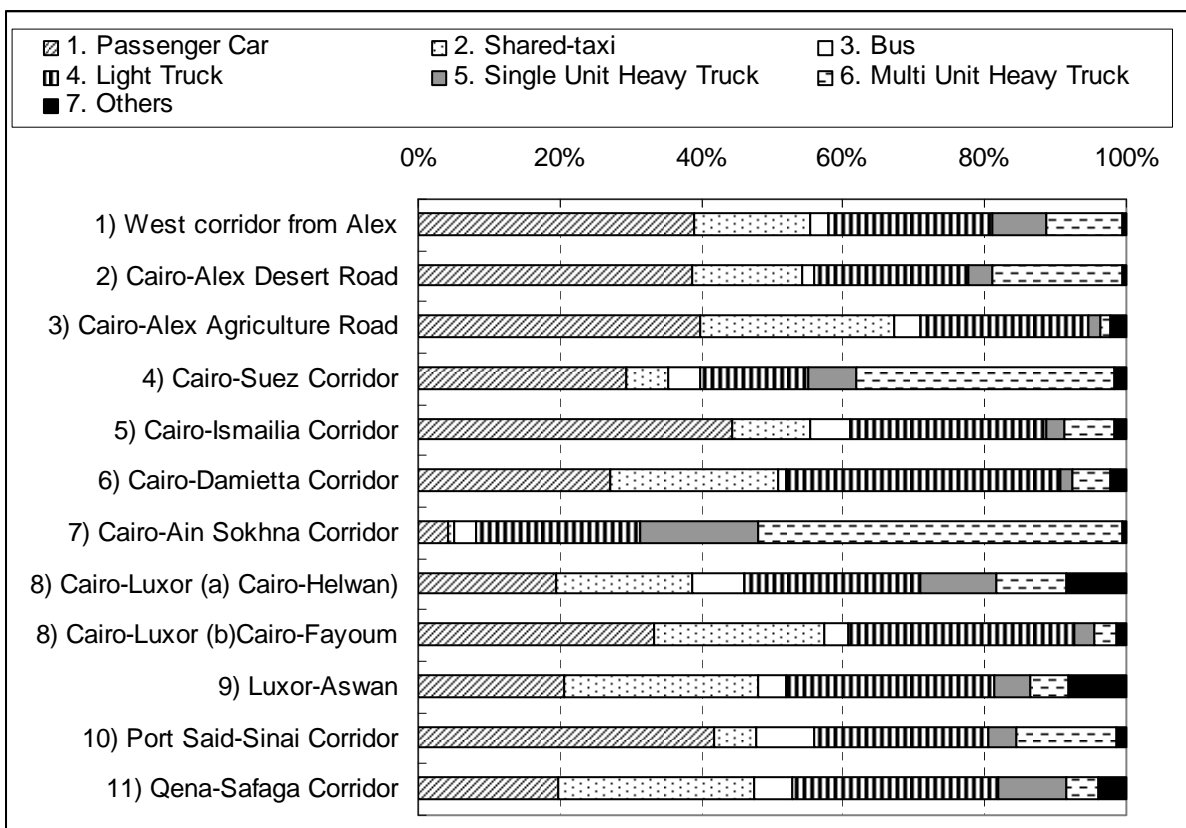


Figure 4.4.1 Vehicle Composition on Major Corridors

## 4.5 CARGO VOLUME ON MAJOR CORRIDORS

Cargo movements on each major corridor are shown in Figure 4.5.1, from which the following can be summarized:

- Cargo volumes on Cairo-Alex Desert Road, Cairo-Alex Agriculture Road, Cairo-Suez Corridor and Cairo-Ismailia Corridor are high compared with other corridors in Egypt.
- Majority of cargo on Cairo-Alexandria Desert Road are movement between Alexandria and its neighboring Governorate such as Benha, Minufia and 6th October.
- Majority of cargo on Cairo-Suez Corridor are movement between Suez and Governorates in delta regions such as Cairo, Helwan and Sharkia.
- The traffic volumes both of Luxor-Aswan and Qena Safaga corridors are smaller than that of other corridors. The trip lengths of cargo on these corridors tend to long compared with that on other corridors.

Cargo movements of major commodities and their volumes at each major corridor can be summarized as follows:

- "Stones/ Gravel/ Sand/Clay" represents the major commodity on the 1<sup>st</sup> Corridor (West Corridor from Alex), 5<sup>th</sup> Corridor (Cairo-Ismailia), 8<sup>th</sup> Corridor (Cairo-Luxor) and 10<sup>th</sup> Corridor (Port Sid-Sinai).
- Petroleum Products and Iron Ore represent the major commodities on the 3<sup>rd</sup> Corridor (Cairo-Alex Agriculture Road).
- Iron Ore represent the major commodity on the 6<sup>th</sup> Corridor (Cairo-Damietta).

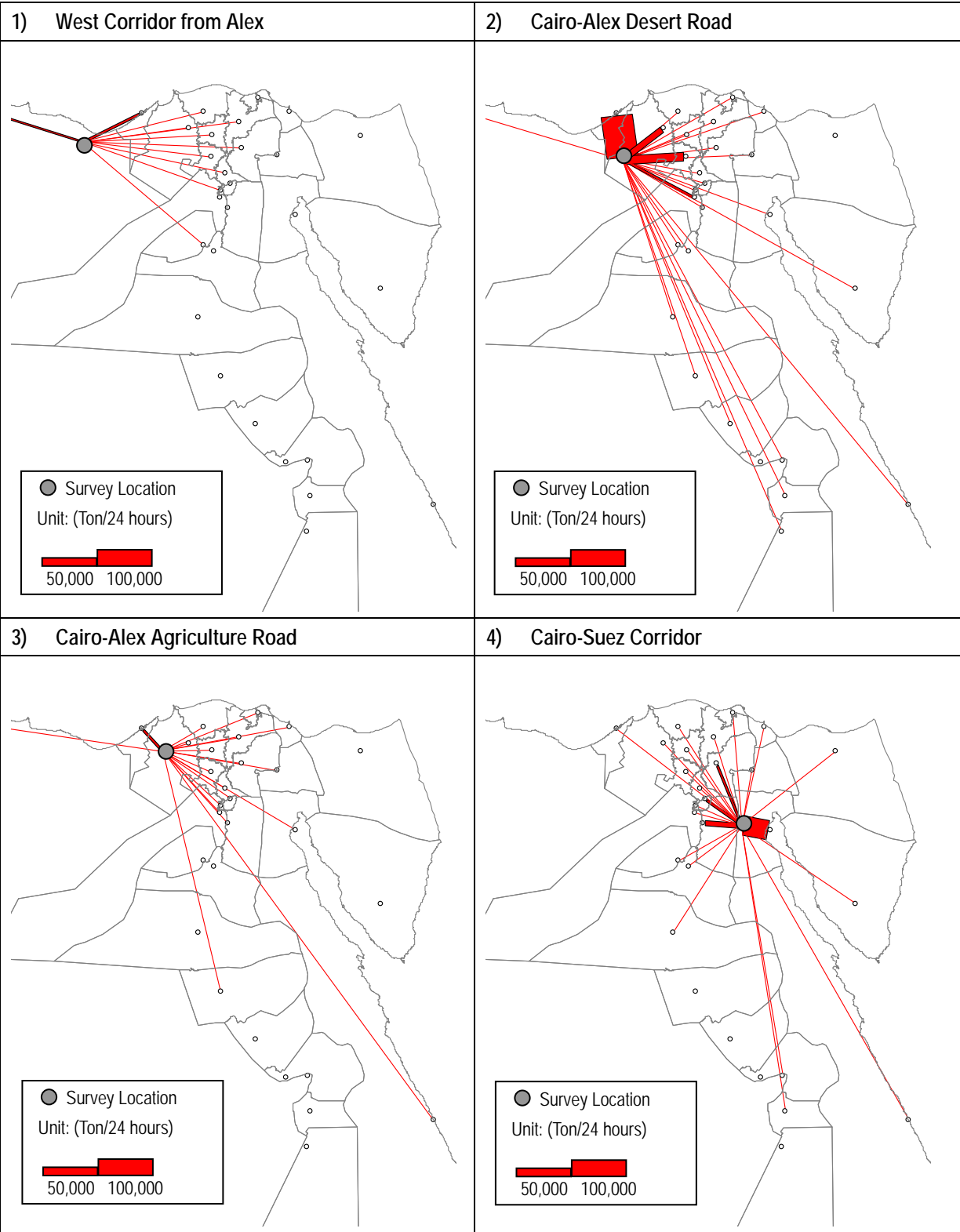


Figure 4.5.1(1) Desire Lines of Cargo Volume at Major Corridors

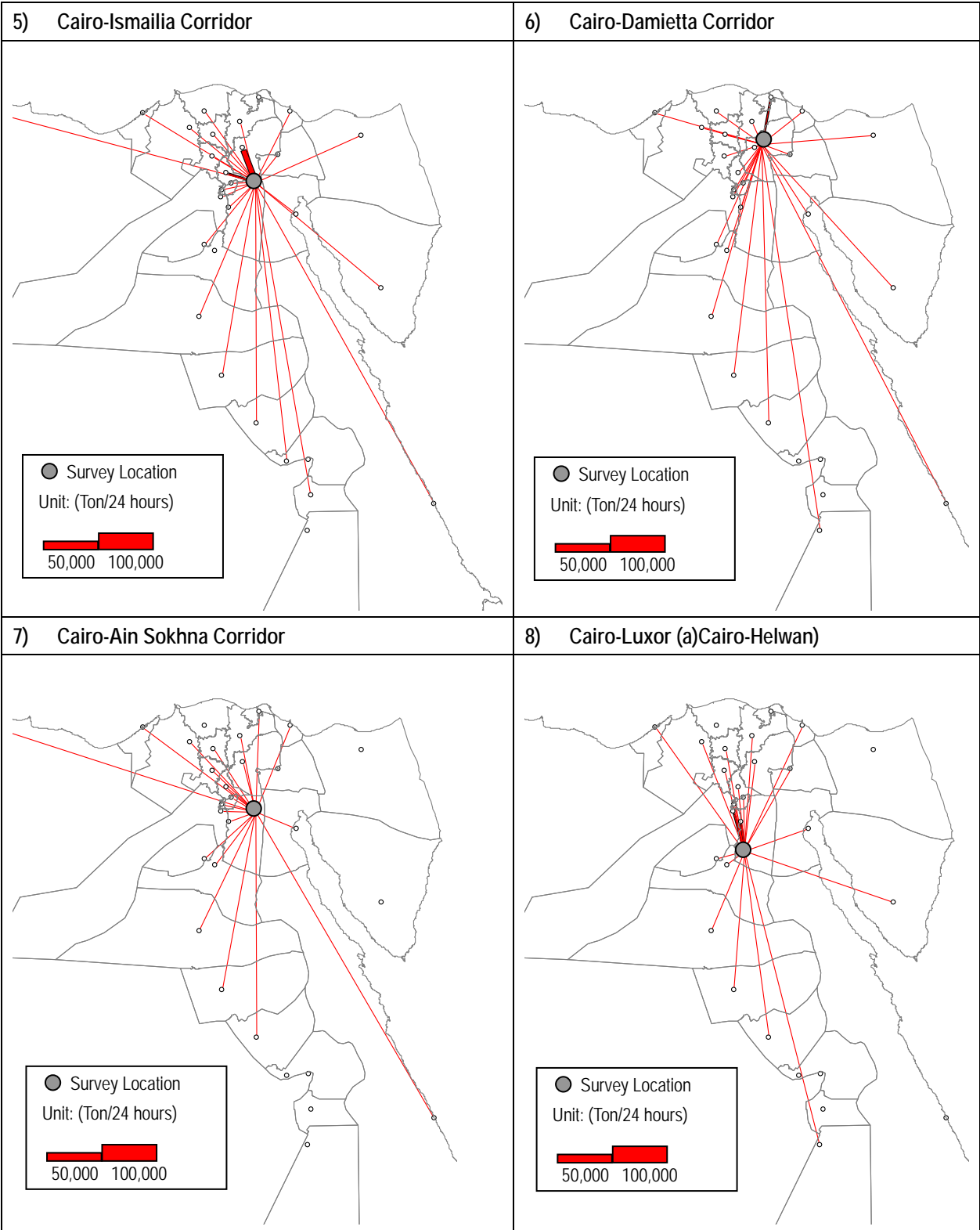


Figure 4.5.1 (2) Desire Lines of Cargo Volume at Major Corridors

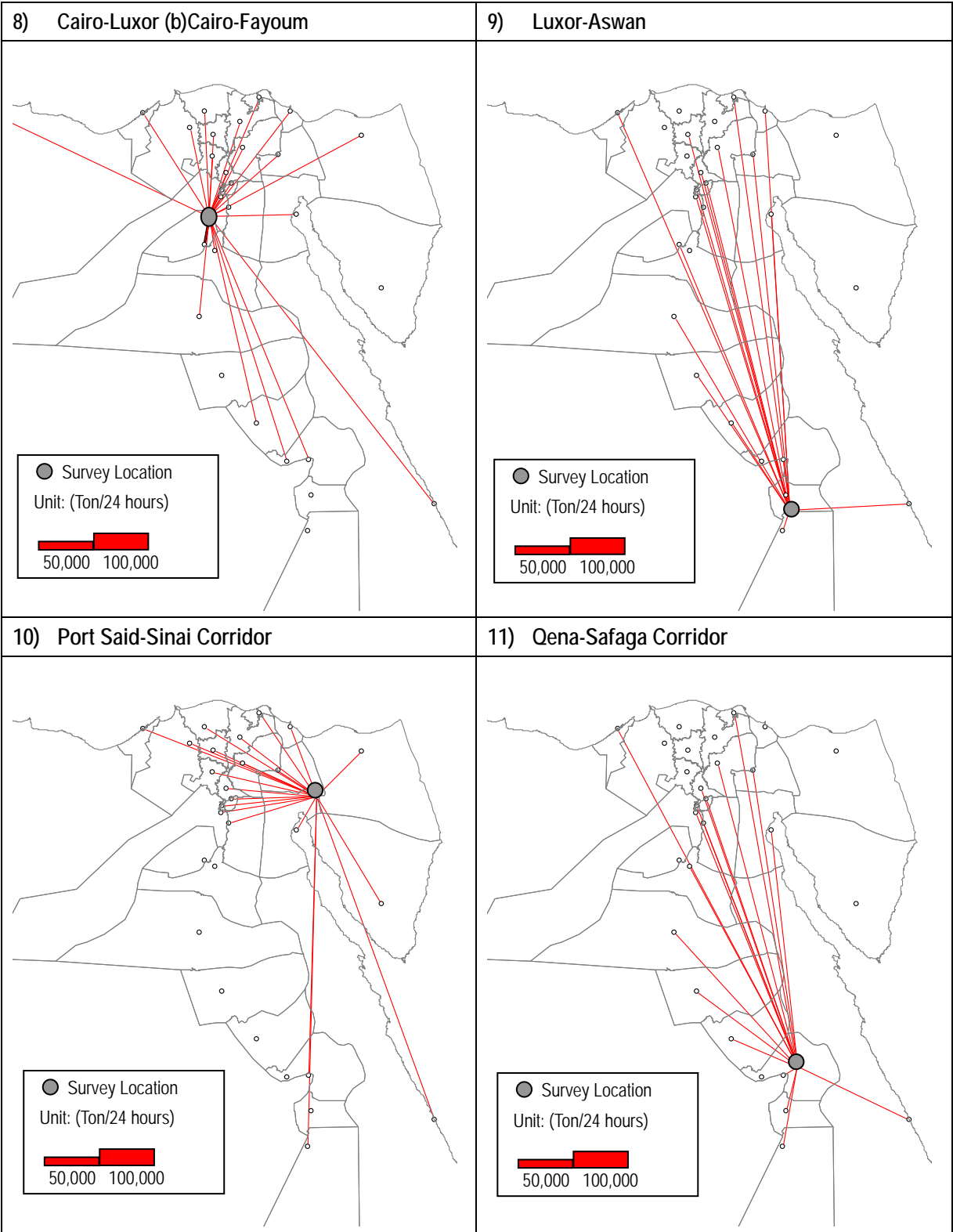


Figure 4.5.1 (3) Desire Lines of Cargo Volume at Major Corridors

#### 4.6 COMPARISON OF SURVEY RESULTS AND TRAFFIC COUNTS OF GARBLT

GARBLT has 15 fixed traffic counting stations and 44 temporary counting stations. Among the traffic count survey of MiNTS, 26 survey locations can be compared with traffic count data of GARBLT as shown in Table 3.6.1.

The comparison reveals that most of the survey results are similar to AADT of GARBLT in 2008.

Table 4.6.1 Traffic Volume Comparison MiNTS Study with GARBLT

No.	Code	GALBLT Station No.	GARBLT AADT2008 (a)	Traffic Volume(veh/24hr) (b)	(b)/(a)
1	0010-04 (57)	15	41,118	39,982	0.97
2	0014-01 (67)	5	13,094	10,264	0.78
3	0014-02 (41)	102	11,931	10,458	0.88
4	0015-04 (5)	143	19,971	19,738	0.99
5	0016-02 (34)	4	18,703	23,859	1.28
6	0017-04 (42)	108	10,921	9,346	0.86
7	0019-04 (127)	109	17,079	15,208	0.89
8	0019-10 (151)	111	60,594	89,618	1.48
9	0021-01 (80)	10	107,445	127,883	1.19
10	0021-05 (87)	2	45,121	44,565	0.99
11	0023-01 (40)	110	27,415	23,979	0.87
12	0025-03 (102)	121	35,814	27,938	0.78
13	0027-02 (4)	124	35,366	41,314	1.17
14	0027-03 (3)	12	31,425	39,677	1.26
15	0029-02 (21)	13	16,107	23,041	1.43
16	0031-01 (30)	115	20,219	19,853	0.98
17	0035-05 (132)	117	30,347	33,261	1.10
18	0037-02 (76)	9	20,623	23,295	1.13
19	0037-03 (47)	142	19,323	15,001	0.78
20	0041-01 (54)	122	8,067	8,430	1.04
21	0142-01 (104)	125	30,965	32,027	1.03
22	0143-01 (91)	140	4,867	4,687	0.96
23	0156-01 (95)	128	5,286	4,584	0.87
24	0229-01 (53)	120	4,589	4,663	1.02
25	0244-01 (11)	135	3,777	4,335	1.15
26	0249-02 (56)	123	11,704	14,145	1.21

■ : More than 1.20 or Less than 0.80

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## CHAPTER 5: BASIC ANALYSIS ON PASSENGER TRANSPORT TERMINAL SURVEY

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### 5.1 OUTLINE OF PASSENGER TRANSPORT TERMINAL SURVEY

The passenger transport terminal survey was conducted to accomplish the following objectives;

- To understand the passenger's movement by public transport modes such as railway, bus, share-taxi, air and ferry; and
- To derive the data for the parameters of passenger demand forecast.

### 5.2 RAILWAY PASSENGER MOVEMENT AT THE STATIONS

#### 1) Traffic Volume at Railway Stations

**Number of Departure by Trip Purpose:** Traffic Count Survey was conducted concurrently with the interview survey. Figure 5.2.1 depicts the number of surveyed passengers at 26 railway stations.

In terms of traffic volume (No. of surveyed passenger), Cairo station is ranked at the highest position, followed by Tanta station and Beni Suef Station. It is obvious that Cairo station is functioning as a gateway terminal in the capital city. The passengers who are using Cairo station have different trip purposes, among which "To/From Working Place" occupies the largest share. On the other hand, many students are using railway stations in rural cities, such as Tanta, Beni Suef and Zaqazeeq stations.



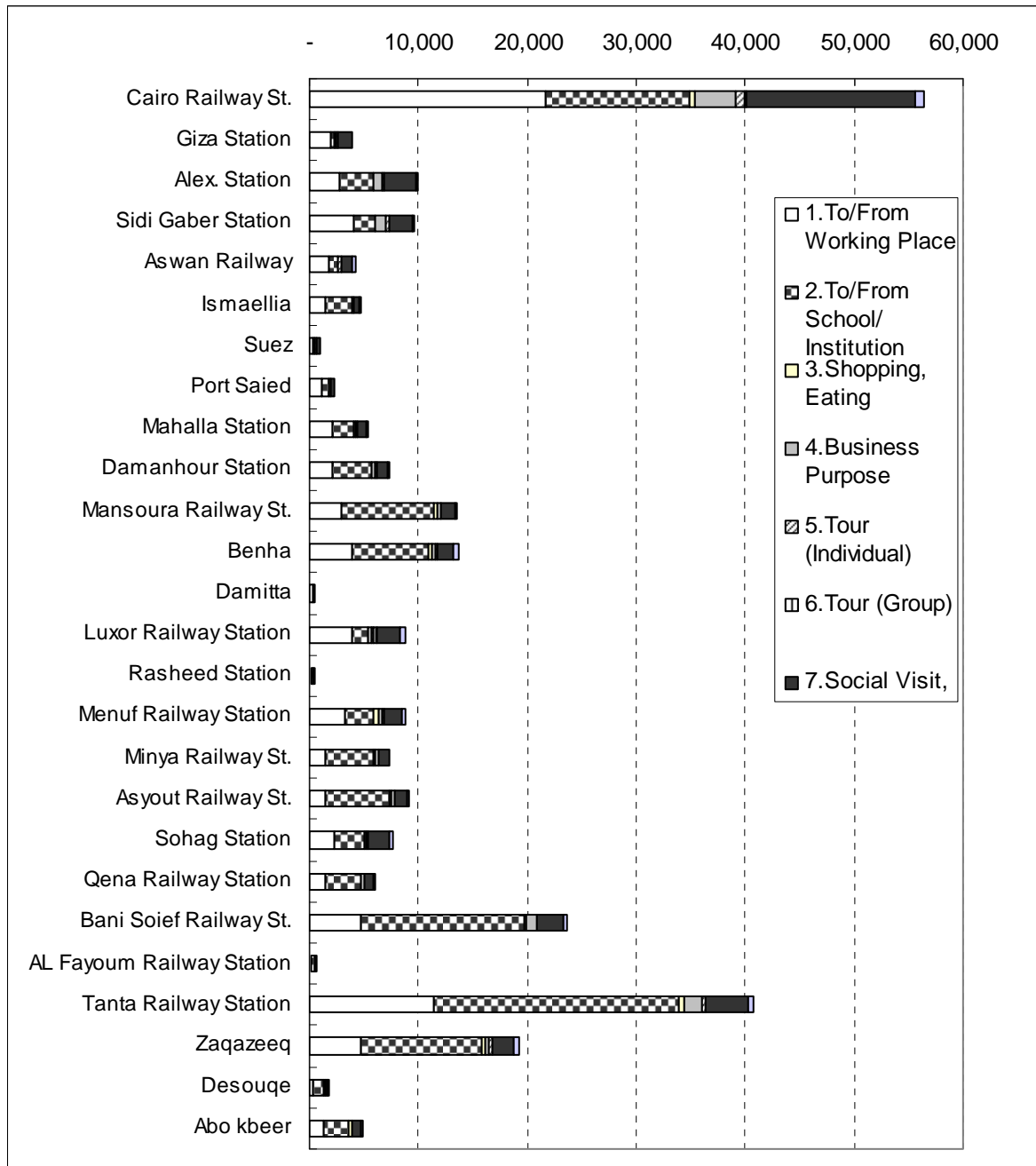


Figure 5.2.1 No. of Surveyed Passengers at Railway Station by Trip Purpose (Pax/day)

**Hourly Fluctuation of Railway Passengers:** As shown in Figure 5.2.2, the peak period of passengers at the railway station is occurred between 13:00 and 15:00. Passenger volume in the morning is not high compared with afternoon period

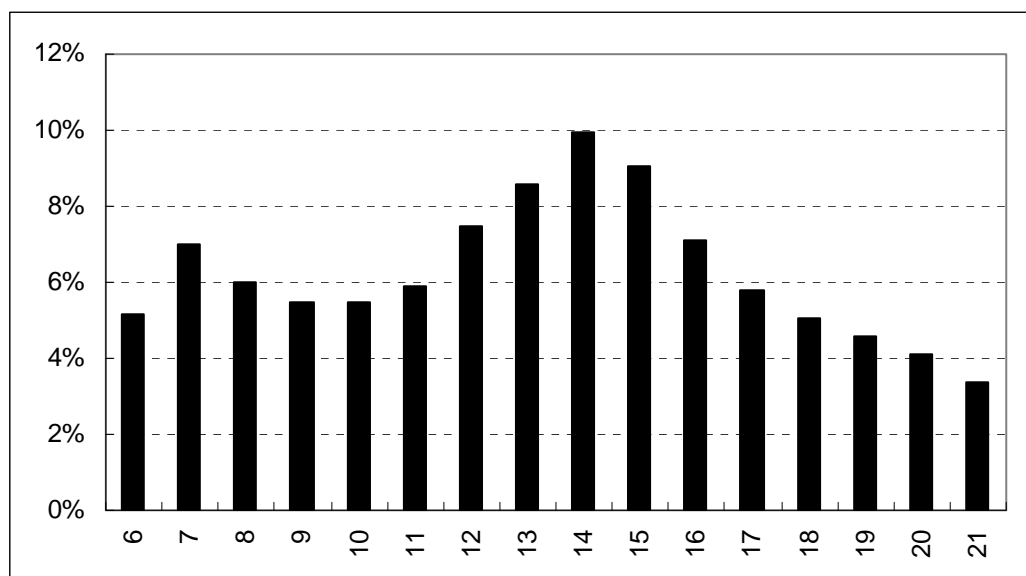


Figure 5.2.2 Hourly Fluctuation of Passengers at Railway Stations

## 2) Desire Lines at Railway Stations

Desire lines of railway passengers for 26 stations are illustrated in Figures 5.2.3 through 5.2.7, from which the following can be outlined:

- The section between Cairo Station and Alexandria Governorate is regarded as the busiest section, followed by the segment between Cairo Station and Minya Governorate. The share of long trips between Cairo and Upper Egypt such as Luxor or Aswan is also higher level. In addition, there is small number of trips from North West Coast to Upper Egypt or from South Sinai to Upper Egypt. It means that the passengers who travel long distance also use Cairo Station for transit use.
- At Giza Station, the passengers are mainly heading for Upper Egypt.
- The passenger at Alexandria and Sidi Gaber stations mainly travels to Cairo and its surrounding Governorates. In addition, a small number of passengers travel to Upper Egypt from these stations.
- The passengers at Luxor and Aswan stations are mostly made long-distance trips which are destined for Cairo Governorate.
- The most surveyed passengers in Delta area such as Ismaellia, Port Said, Suez, Tanta, Mahalla, Benha, Damietta and Menuf are travelling toward surrounding Governorates.
- There are considerable passenger movements between Beni Suef station and Minya. It appears that these trips could usually be made by students according to the result of trip purpose analysis as shown Figure 5.2.1.
- Trip distance from Minya and Asyut station seems to be longer than that from Delta area.

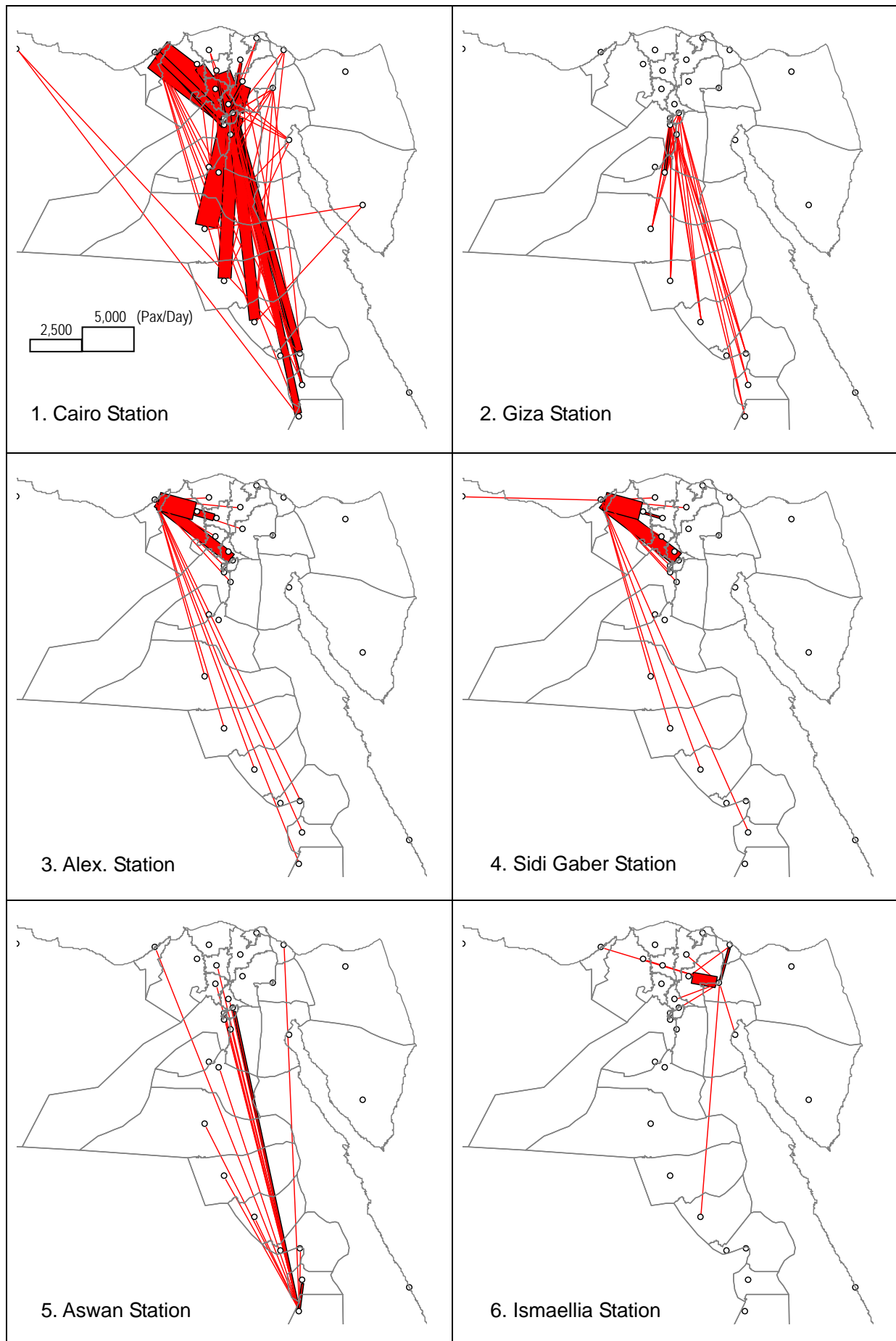


Figure 5.2.3 Desire Lines by Railway Station (1)

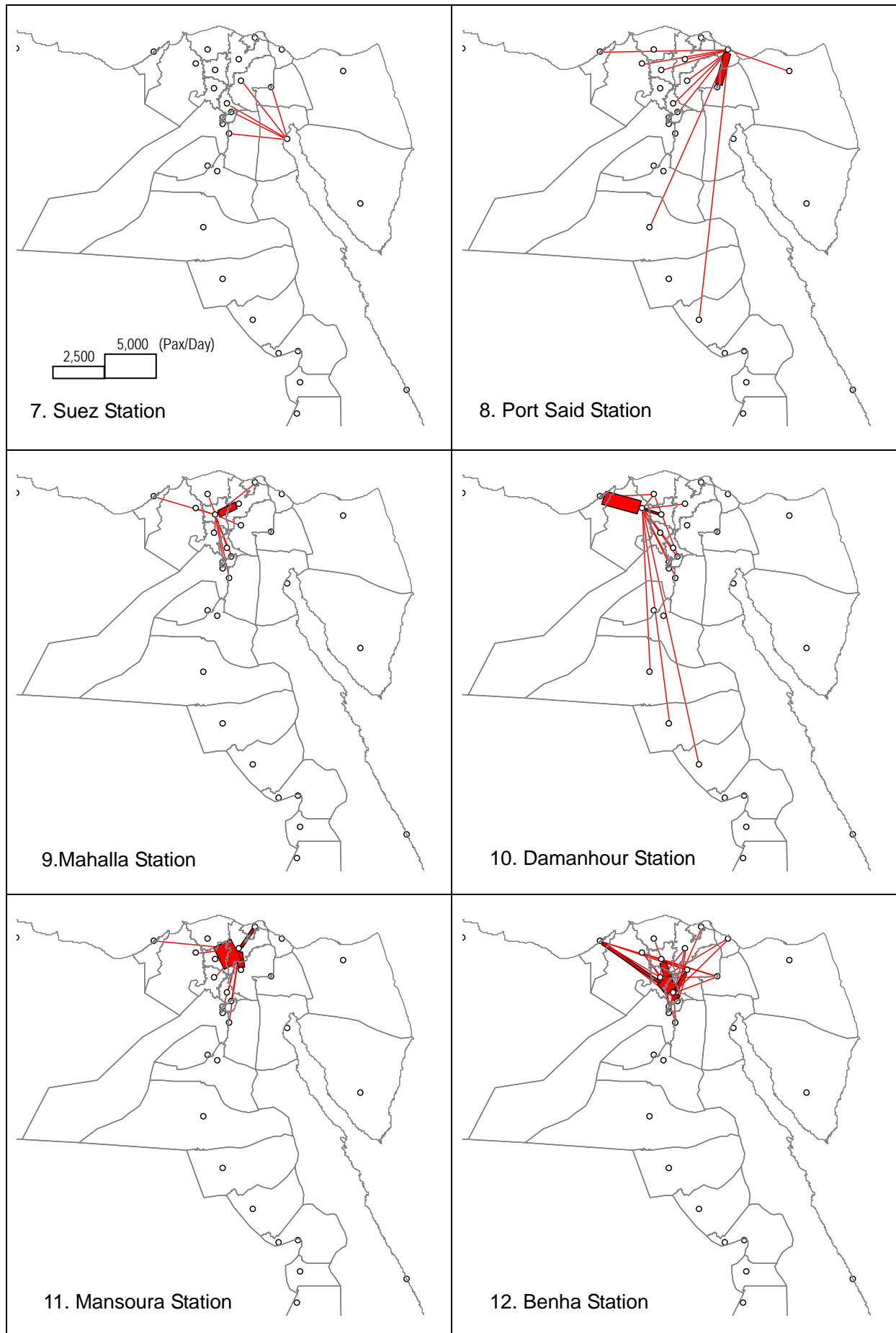


Figure 5.2.4 Desire Lines by Railway Station (2)

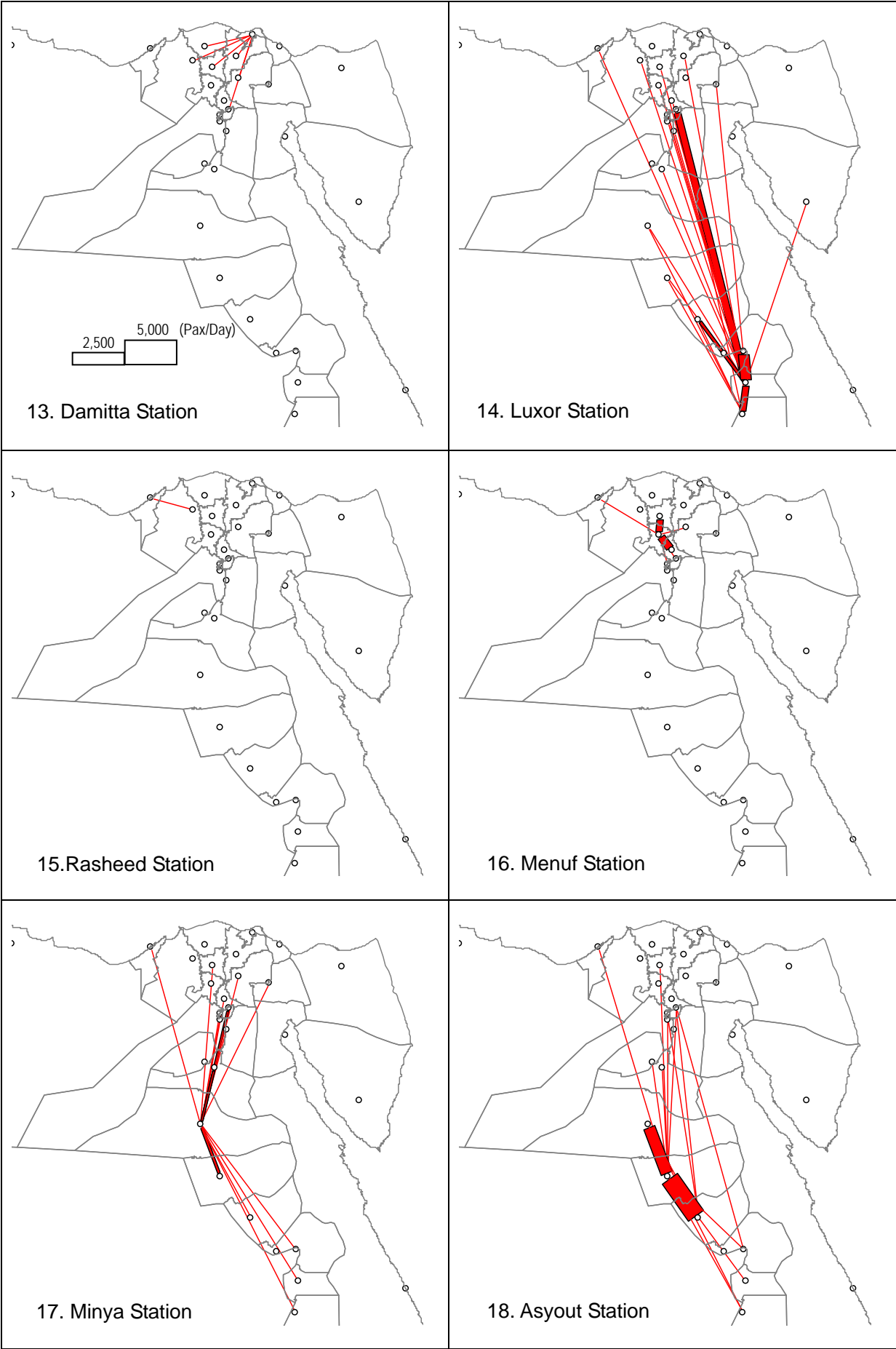


Figure 5.2.5 Desire Lines by Railway Station (3)

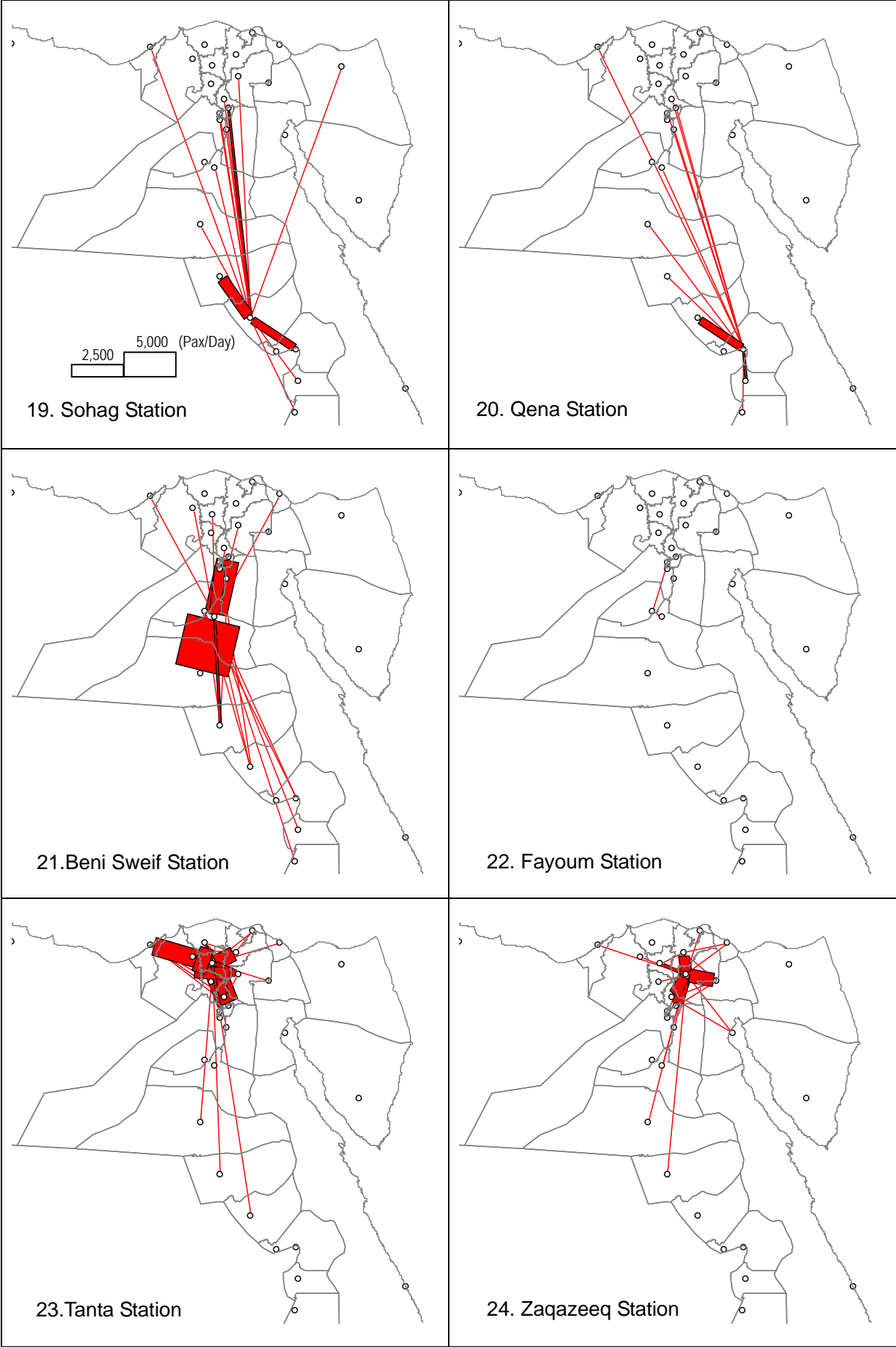


Figure 5.2.6 Desire Lines by Railway Station (4)

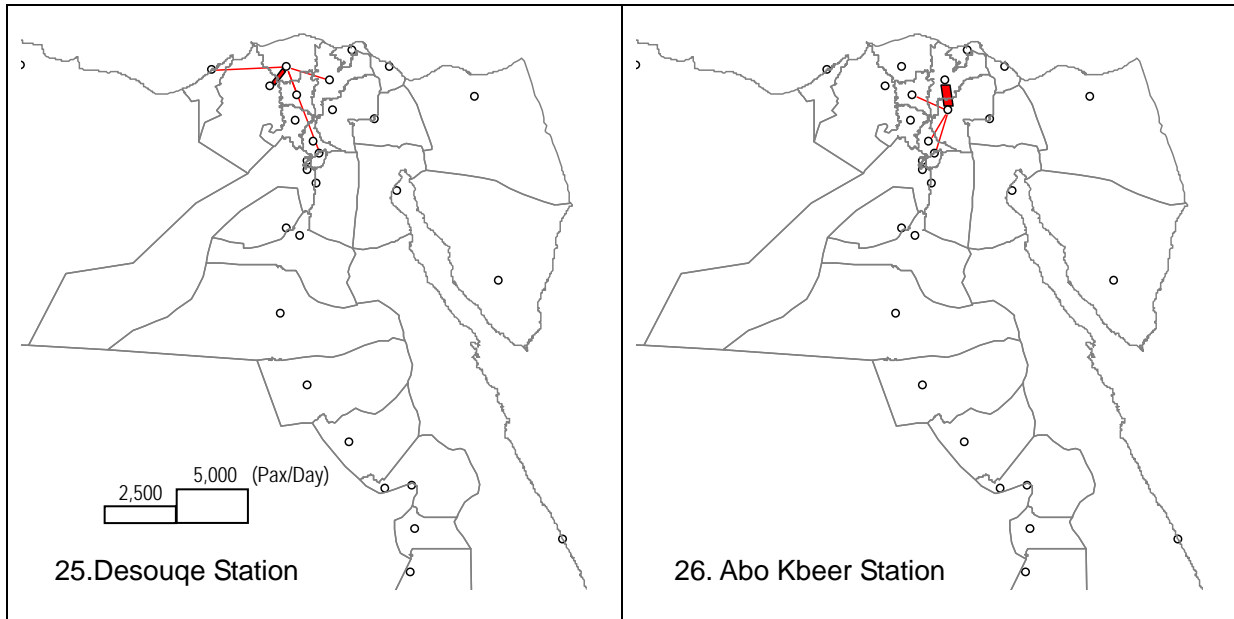


Figure 5.2.7 Desire Lines by Railway Station (5)

3) Characteristics of Access/Egress Trips of Railway Passengers

Figure 5.2.8 shows the modal share of vehicles for access and egress trips of railway users. It can be observed that shared taxi has the highest modal share, followed by walking and taxi. The characteristics of access and egress modes are not significantly different.

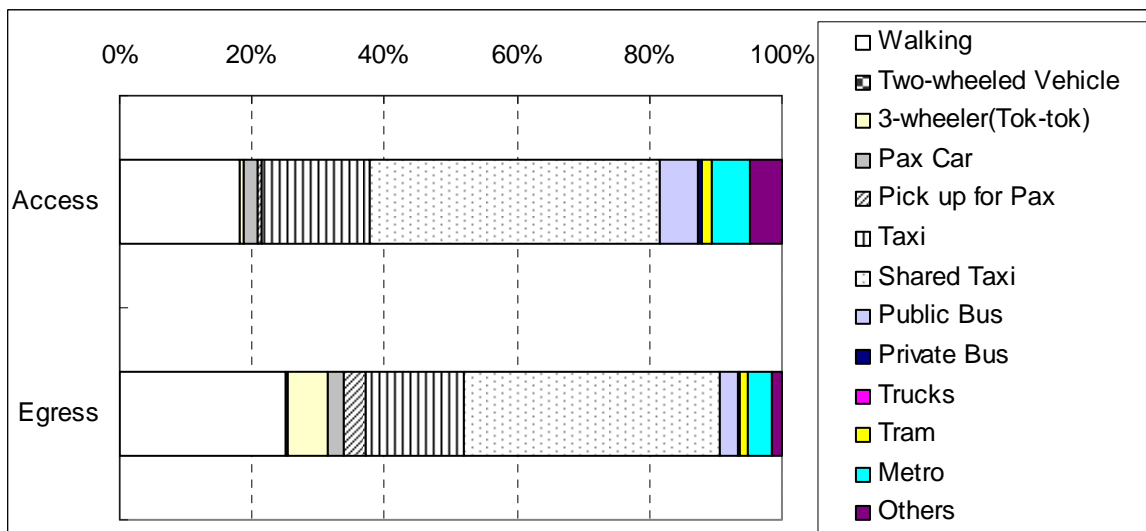


Figure 5.2.8 Access/Egress Modes to/from Railway Stations

The following figure illustrates the distribution of travel time for access and egress trip at railway station. More than 80% of railway users made access/egress trips involving 30 minutes and less.

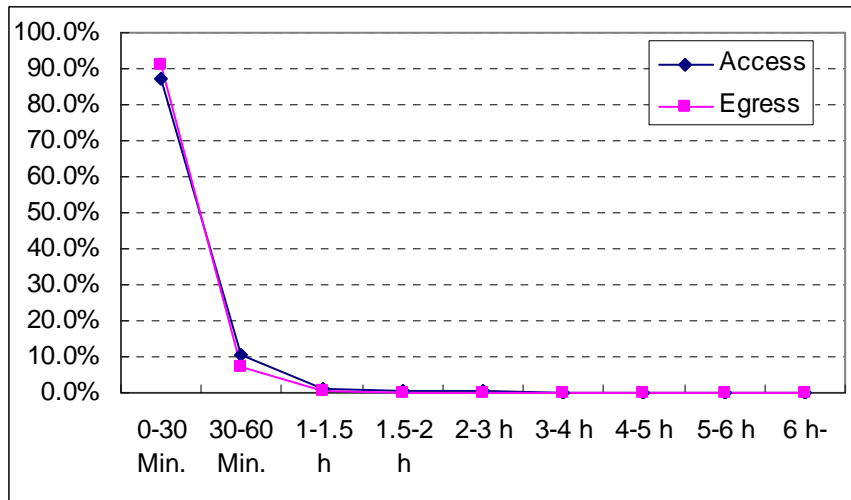


Figure 5.2.9 Distribution of Access/Egress Time to/from Railway Station



### 5.3 BUS PASSENGER MOVEMENT AT THE TERMINAL

#### 1) Traffic Volume at Bus Terminals

**Number of Surveyed Passengers by Trip Purpose:** Figure 5.3.1 illustrates the number of departures at bus terminals by Governorate and trip purpose<sup>1</sup>. This result is based on the survey data.

In terms of traffic volume (No. of surveyed passengers), Cairo Governorate is situated at the highest rank followed by Dakahlia, Alexandria, Gharbia and Fayoum Governorates with more than 6,000 passengers. The trip purpose "To/From Working Place" obtains the highest share among other trip purposes.

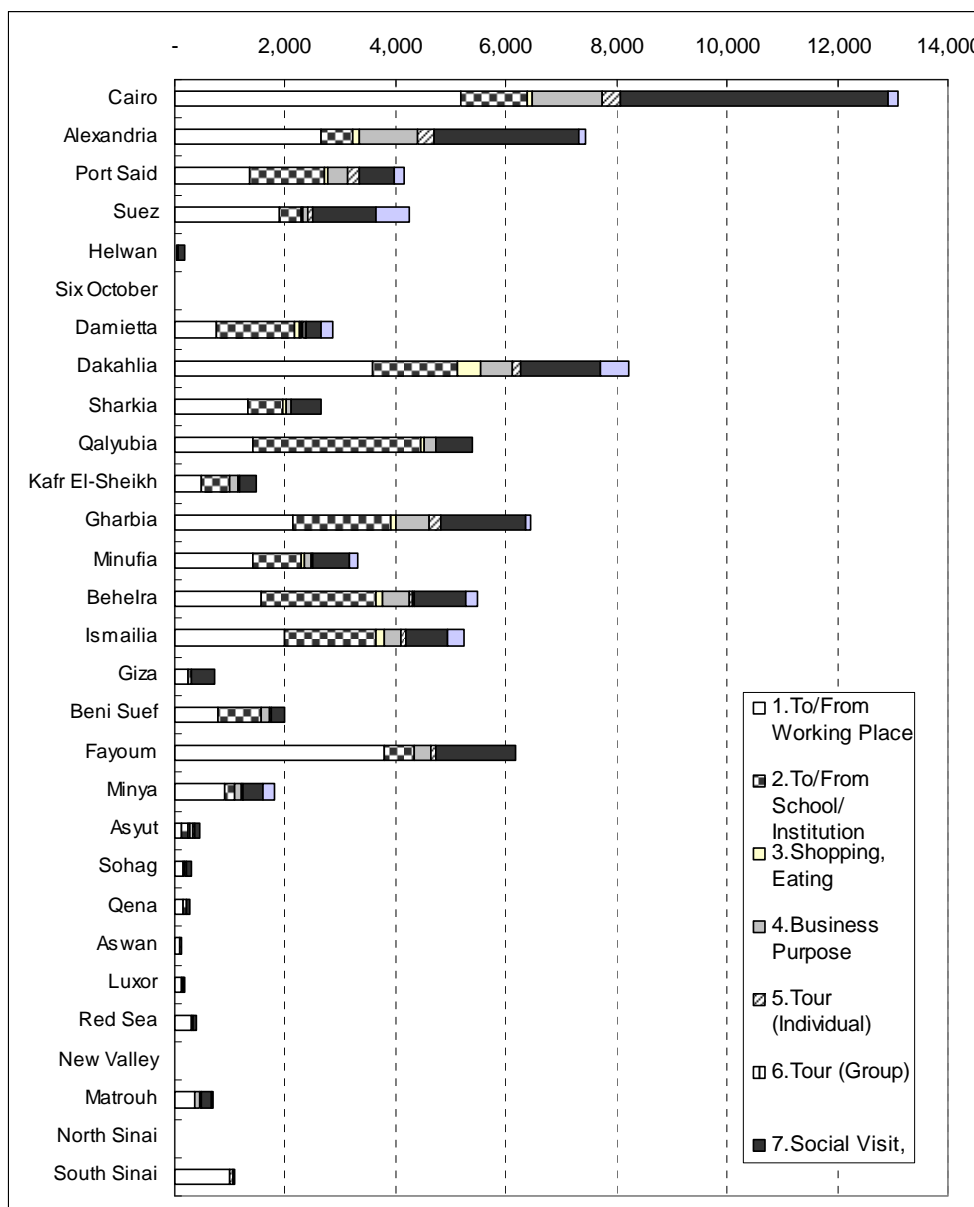


Figure 5.3.1 No. of Surveyed Passengers at Bus Terminal by Governorate and Trip Purpose (Pax/day)

<sup>1</sup> This result shows inter-Governorate trip only (excluding intra-Governorate trips).

**Hourly Fluctuation of Bus Passengers:** As shown in Figure 5.3.2, the peak period of bus passengers occurs between 8:00 and 10:00 AM. The morning peak period is a little bit higher than the afternoon peak period. In addition, the traffic fluctuation of shared taxis is smaller than the traffic variation of buses.

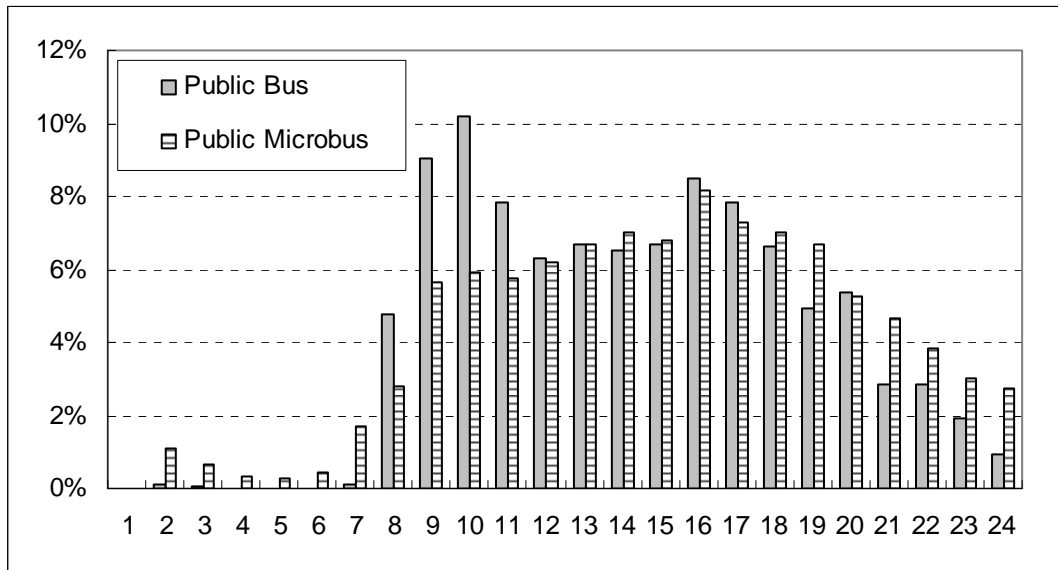


Figure 5.3.2 Hourly Fluctuation of Passengers at Bus Terminal

## 2) Desire Lines by Bus Terminal

Desire lines of bus passengers by Governorate are shown in Figures 5.3.3 through 5.3.7, from which the following can be observed:

- Generally, trip distance of bus passengers seems to be longer than that of railway passengers. For instance, trip distance from Cairo, Alexandria, Port Said and Suez tends to be long trips.
- The movement of bus passengers from Cairo to neighboring Governorates such as Giza, Helwan and Six October is not considerable in terms of the number of passengers. In addition, there are few trips from South Sinai to Upper Egypt. It means that the long-trip passengers have to transfer from a bus to other modes.
- Bus passenger trips in Upper Egypt are small compared with railway passengers. For instance, the number of bus passengers from Luxor and Aswan is very small.
- The passengers departing from bus terminals in Delta area (such as Ismailia, Dakahlia, Gharbia and Beheira) are usually travelling to the surrounding Governorates.
- Trip distance from Red Sea and South Sinai seems to be longer than that from other Governorates.
- Desire lines in Alexandria, Suez and Ismailia Governorates are not only trips to/from these Governorate but also trips between other Governorates.

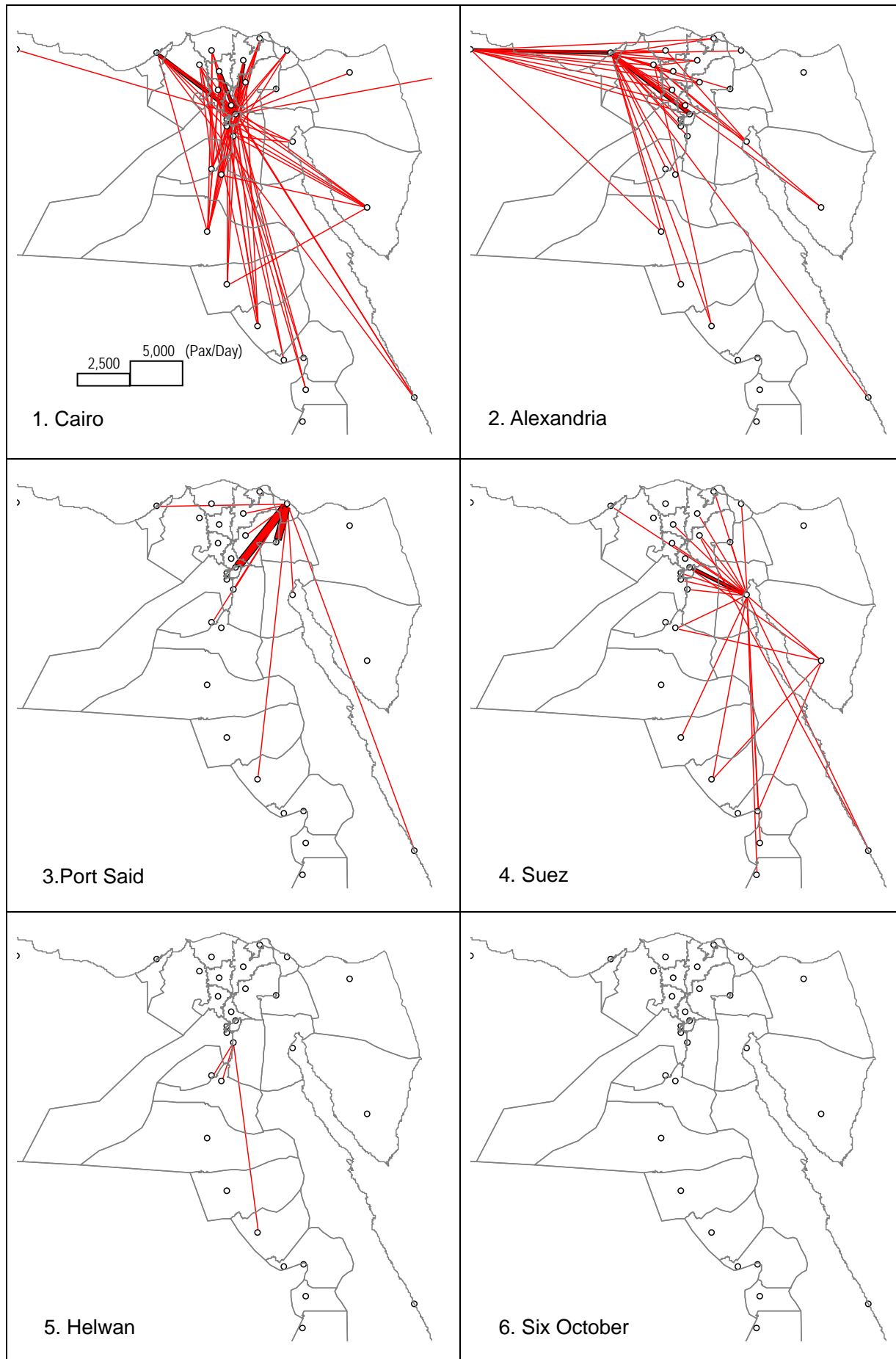


Figure 5.3.3 Desire Lines at Bus Terminal by Governorate (1)

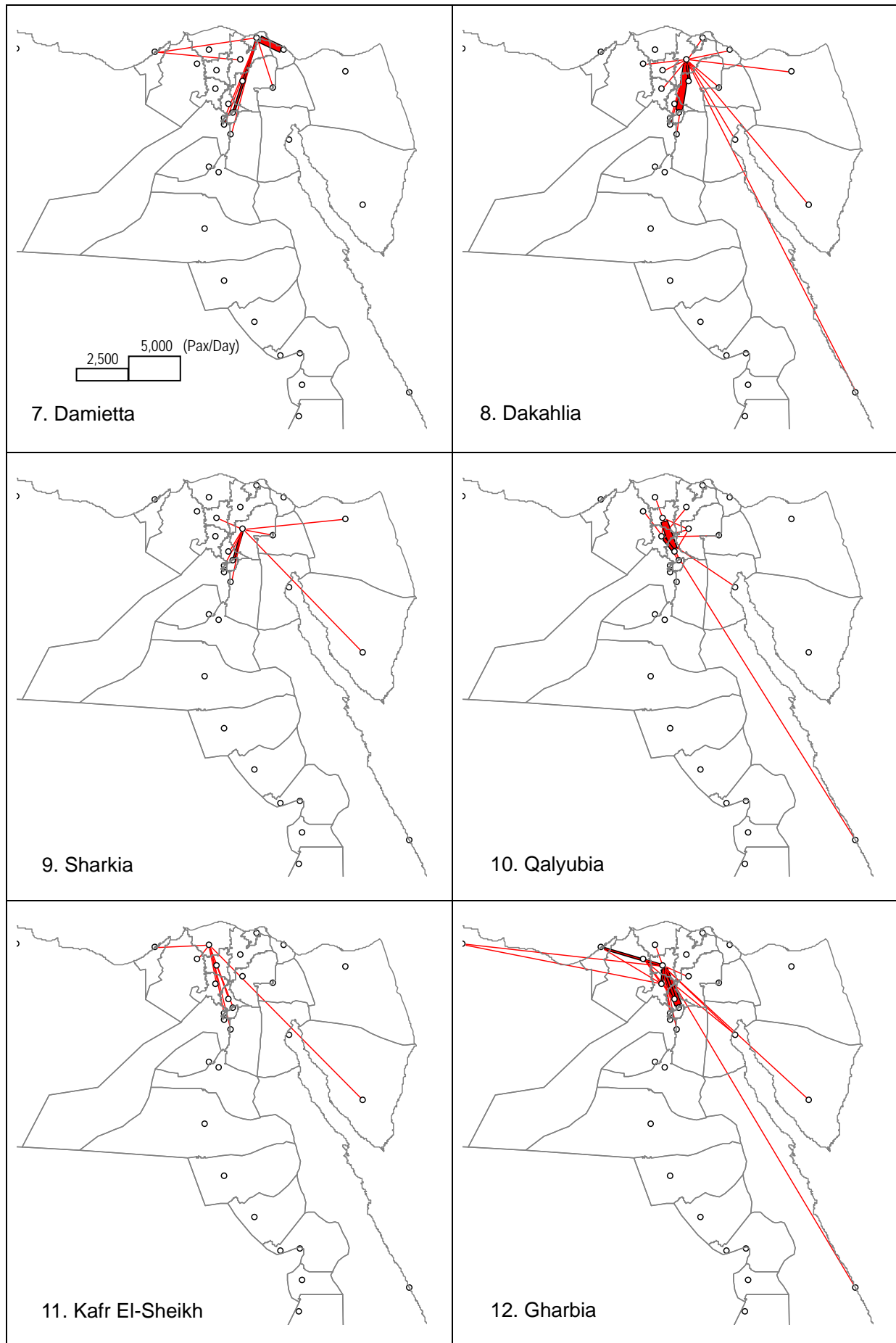


Figure 5.3.4 Desire Lines at Bus Terminal by Governorate (2)

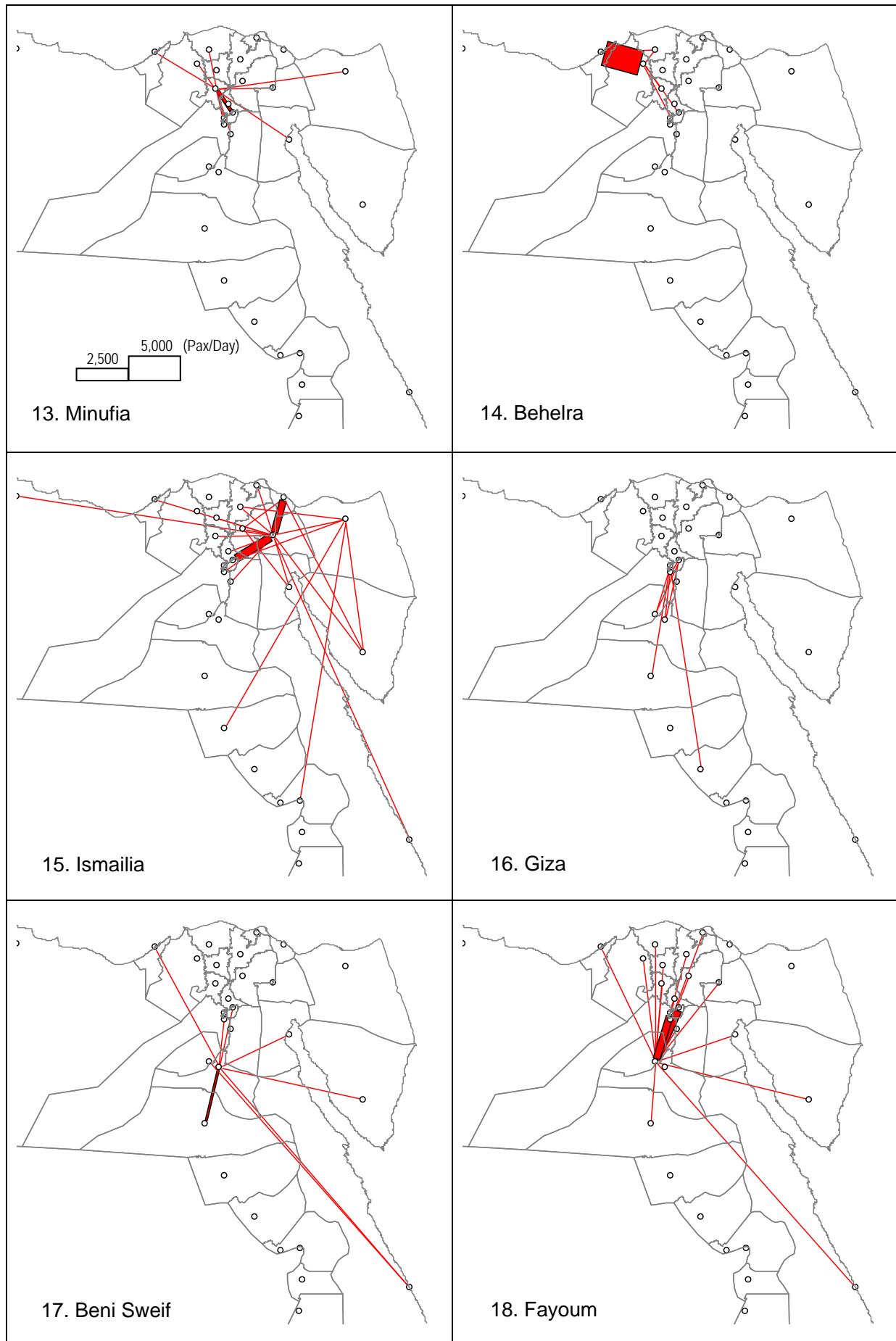


Figure 5.3.5 Desire Lines at Bus Terminal by Governorate (3)

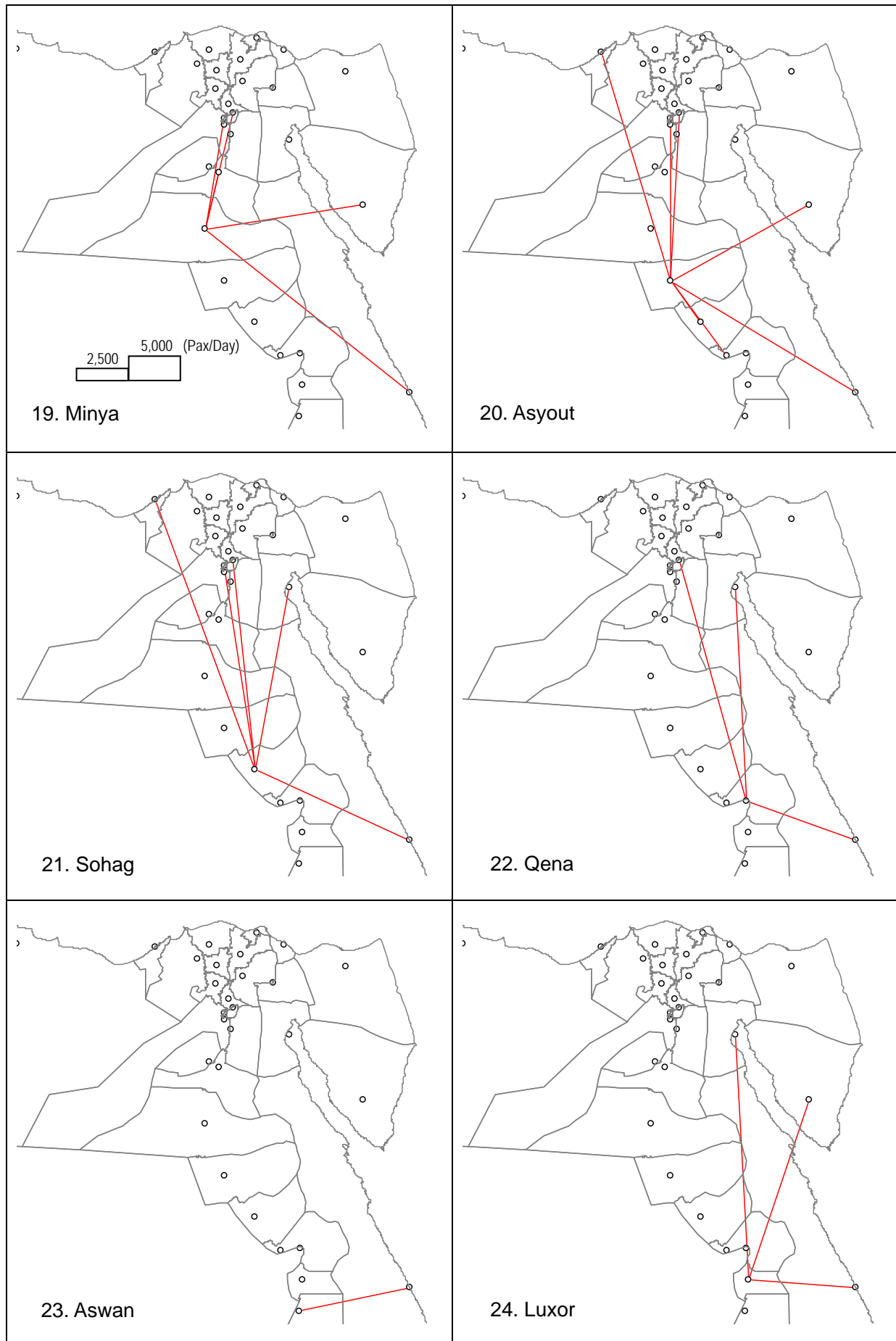


Figure 5.3.6 Desire Lines at Bus Terminal by Governorate (4)

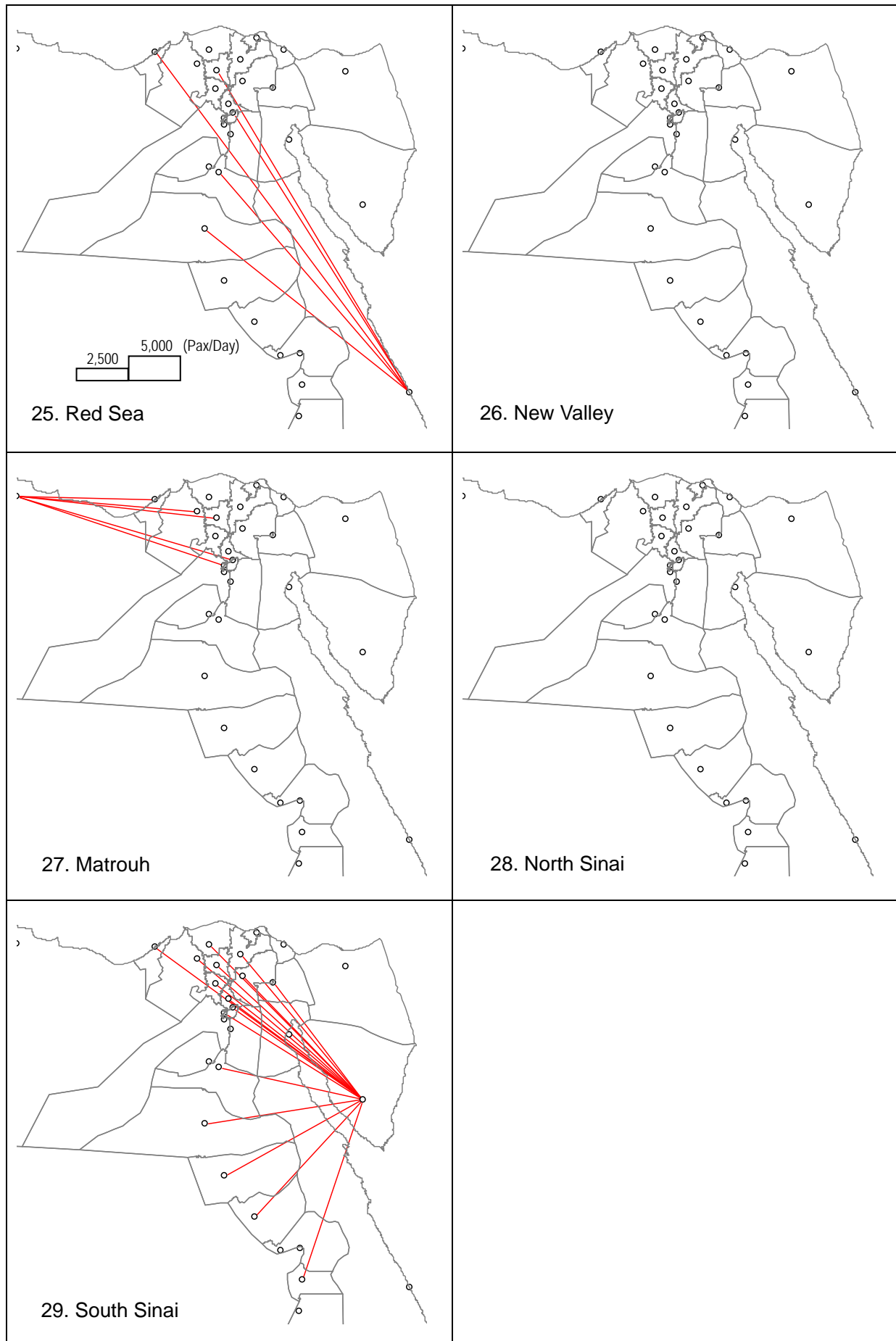


Figure 5.3.7 Desire Lines at Bus Terminal by Governorate (5)

3) Characteristics of Access/Egress Trips of Bus Passengers

Table 5.3.8 illustrates the modal share of access/egress modes for bus passenger. It is obvious that shared taxi has the highest share, followed by taxi and walking.

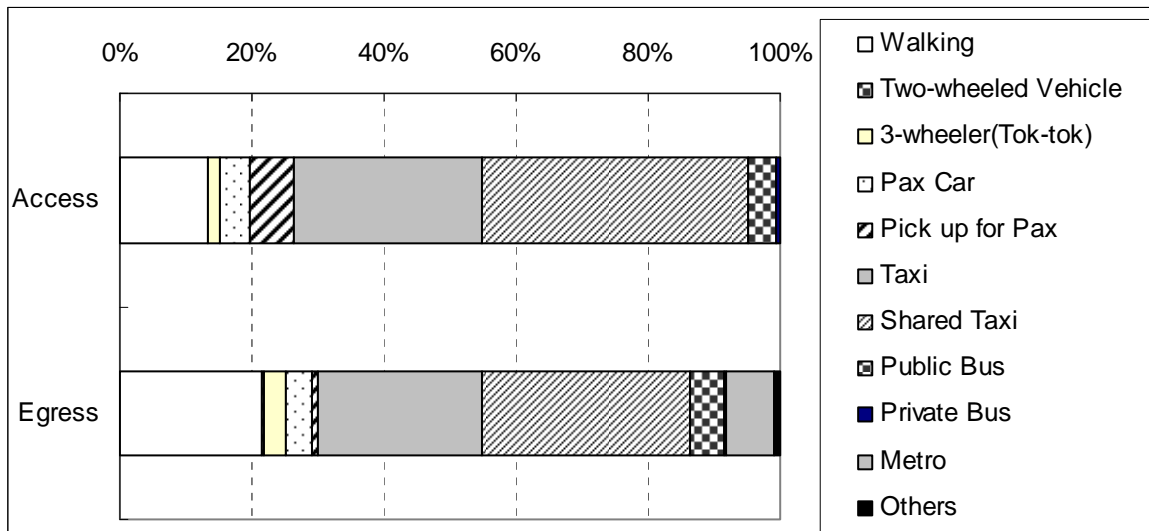


Figure 5.3.8 Access/Egress Mode to/from Bus Terminals

The following figure illustrates the distribution of travel time for access and egress. More than 80% of passengers made access/egress trips within 30 minutes.

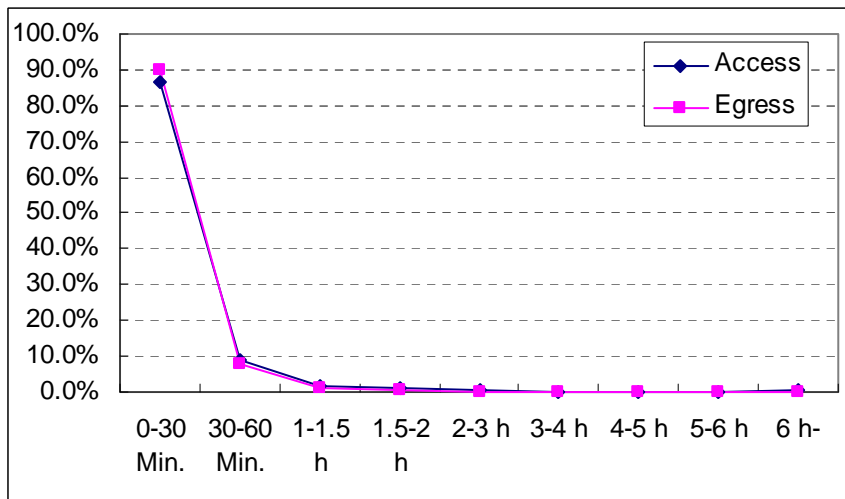


Figure 5.3.9 Distribution of Access/Egress Time to/from Bus Terminal



### 5.4 SHARED TAXI PASSENGER MOVEMENT AT THE TERMINAL

#### 1) Traffic Volume at Shared Taxi Terminals

**Number of Surveyed Passengers by Trip Purpose:** Figure 5.4.1 shows the number of surveyed passengers at shared taxi terminals by Governorate and trip purpose<sup>2</sup>. This result is based on the survey data.

In terms of traffic volume (No. of surveyed passengers), Cairo Governorate occupies the highest rank followed by Dakahlia and Qalyubia Governorates. Generally, the trip purpose "To/From Working Place" and "Social Visit" account for more than 50% of shared taxi passengers.

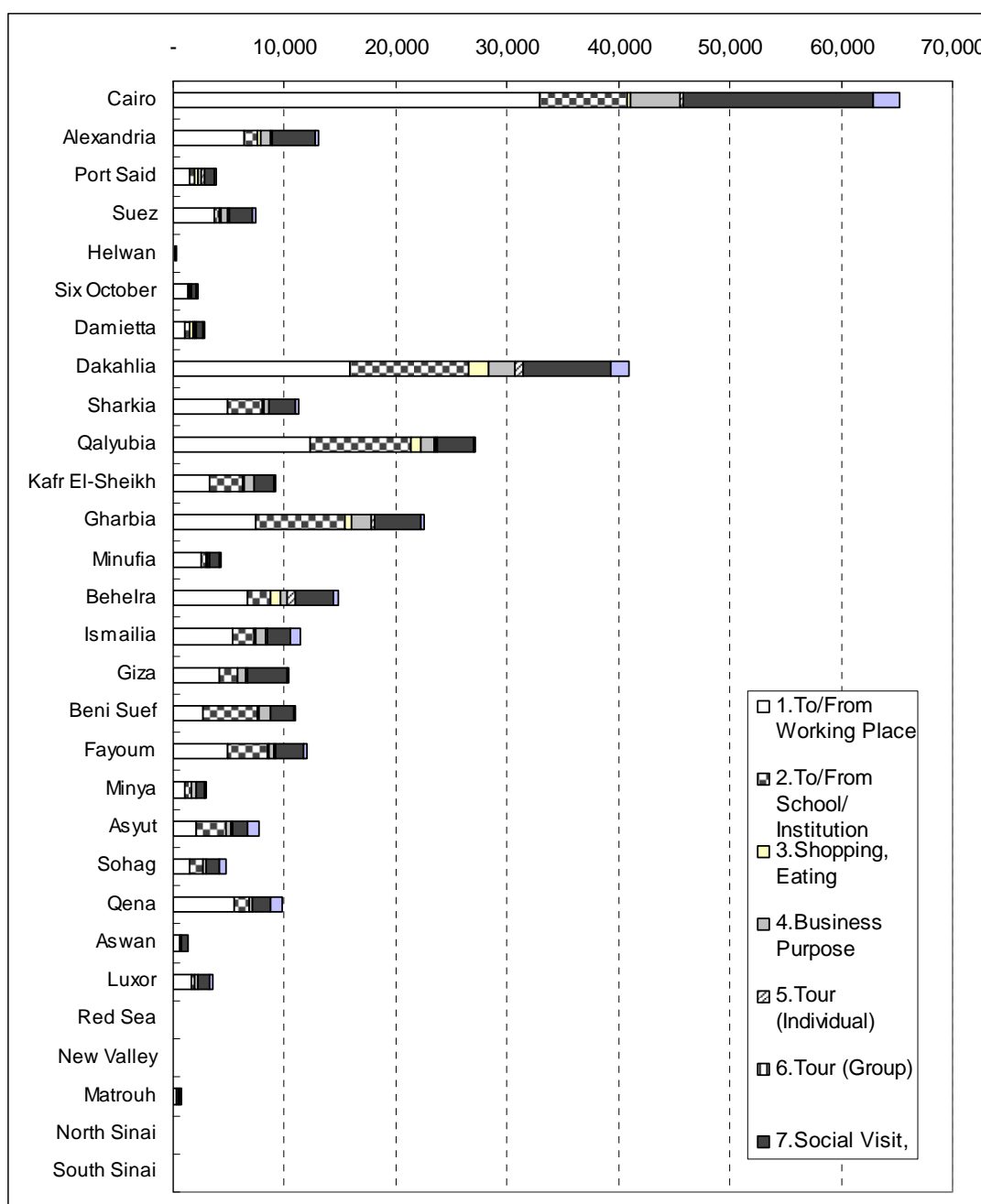


Figure 5.4.1 No. of Surveyed Passengers at Shared Taxi Terminal by Trip Purpose (Pax/day)

<sup>2</sup> This result shows inter-Governorate trip only (excluding intra-Governorate trips).

**Hourly Fluctuation of Shared Taxi Passengers:** As shown in Figure 5.4.2, the peak period of shared taxi passengers occurs between 9:00 and 11:00 AM in the morning and from 4:00 till 6:00PM in the afternoon. However, the traffic fluctuation is stable during the daytime. Despite the low traffic volumes after midnight, a small number of trips by shared taxi passengers exist.

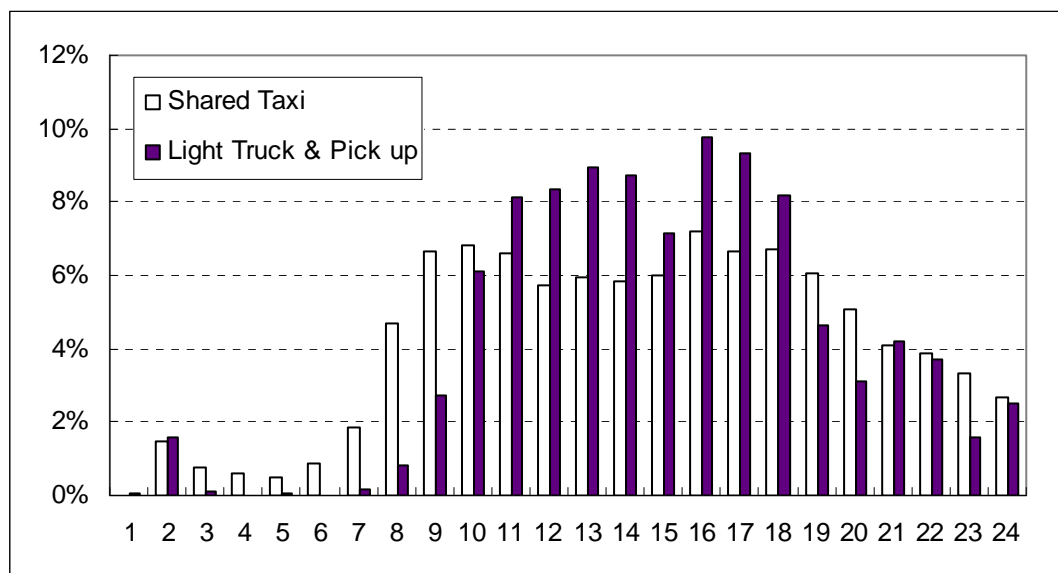


Figure 5.4.2 Hourly Fluctuation of Passengers at Shared Taxi Terminal

## 2) Desire Lines by Shared Taxi Terminals

Desire lines of shared taxi passengers from different Governorate are shown in Figures 5.4.3 through 5.4.7, from which the following can be observed:

- In general, the trip distance of shared taxi passengers is shorter than other public transport modes (e.g., Railways and buses).
- Cairo Governorates plays an important role in intercity transport including shared taxi. It seems that the passenger who transfers at Cairo is significant. However, this does not appear in other governorates such Alexandria, in which the shared taxi activity is concentrating on the west corridor (Matrouh). In other words, the passengers departing from Alexandria prefer to use buses or railways rather than shared taxi.
- It can be observed that shared taxi service is more suitable for short-distance trips for inter-Governorate trips.
- The passenger volume from Luxor and Aswan terminal is considerable compared with other Governorates in Upper Egypt, i.e. Sohag and Qena.
- Desire lines of Suez and Ismailia Governorates show not only trips to/from its Governorate but also trips between other Governorates. It means that the person who moves to Sinai area tends to use shared taxi terminal in Suez or Ismailia.

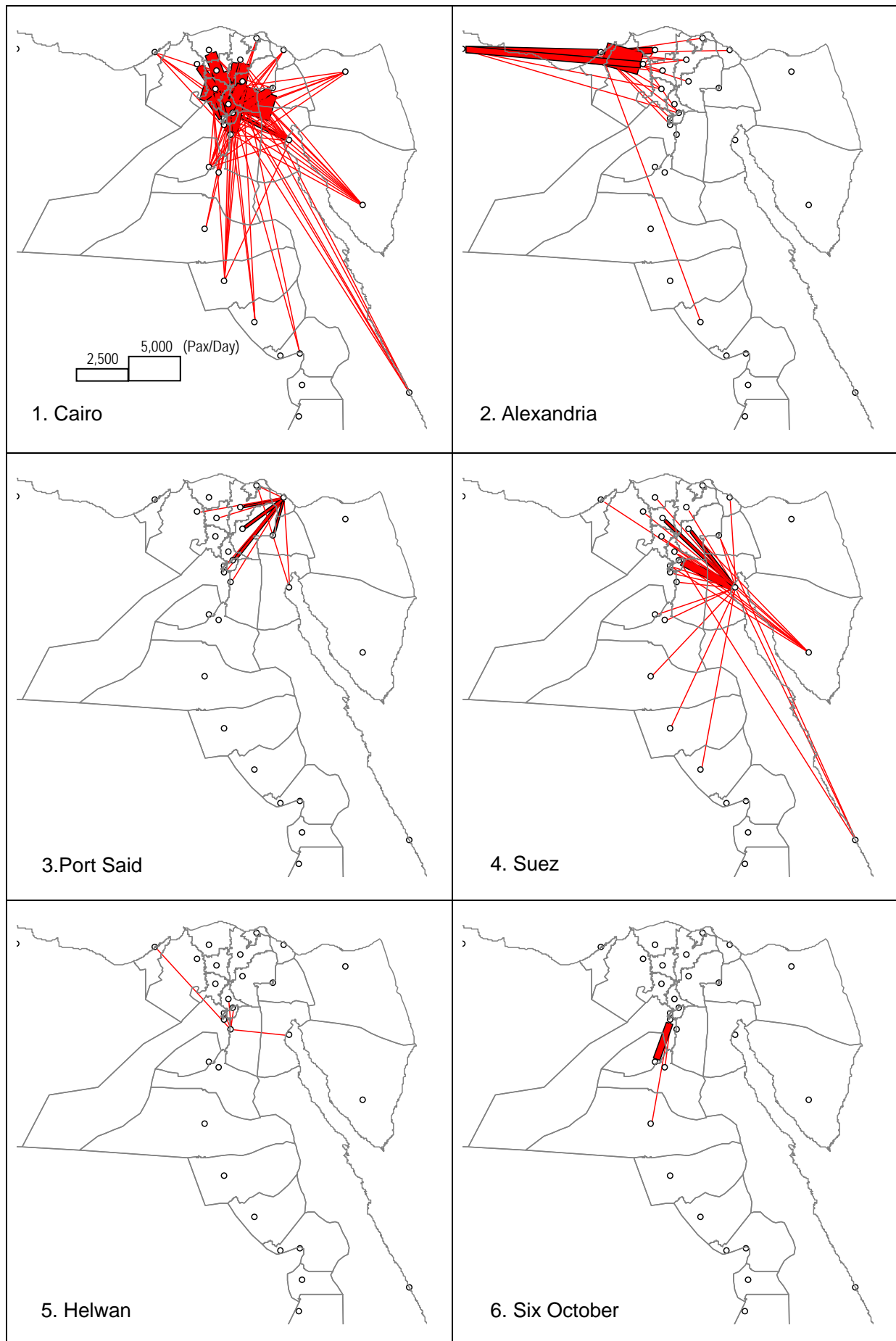


Figure 5.4.3 Desire Lines of Shared Taxi Terminals by Governorate (1)

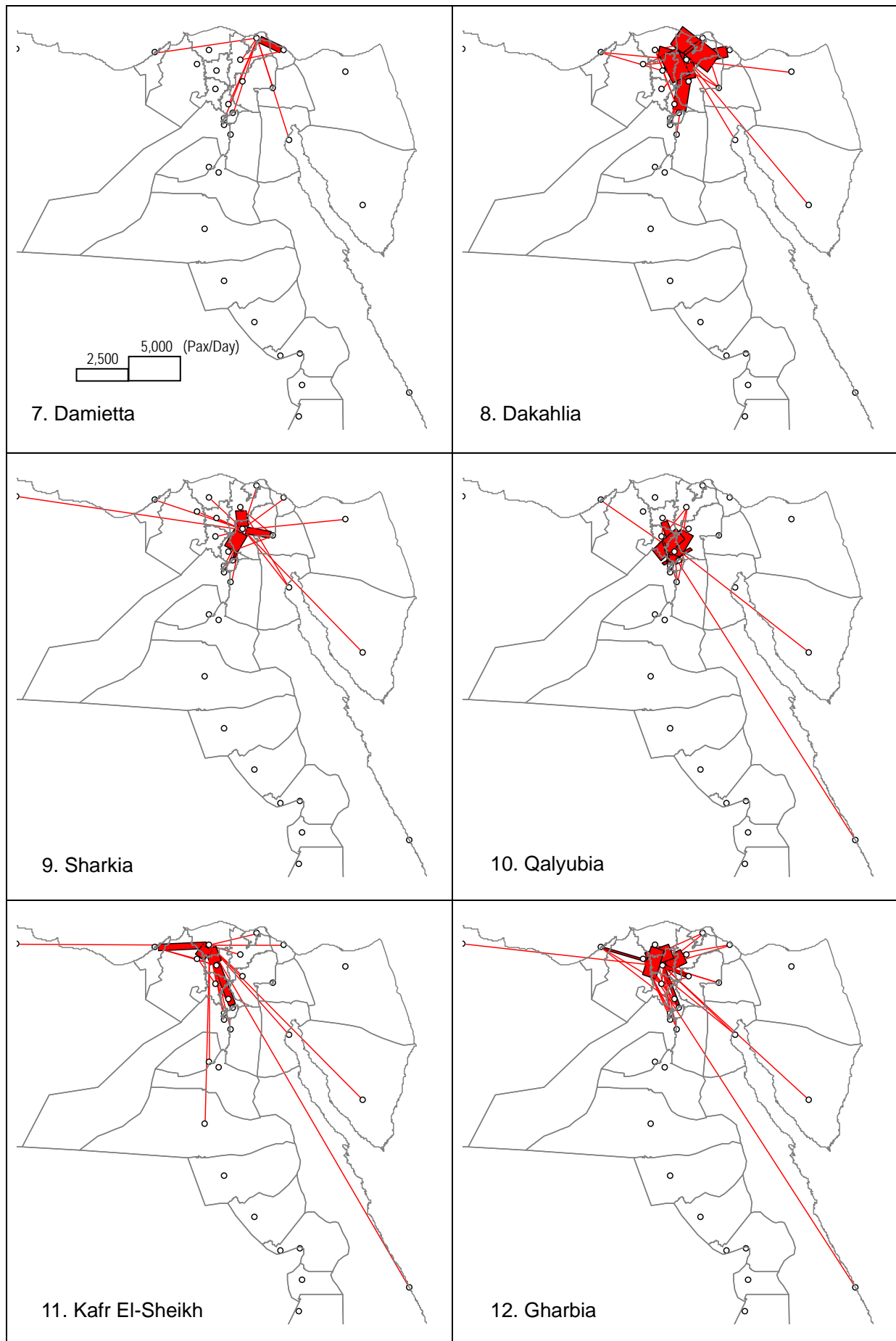


Figure 5.4.4 Desire Lines of Shared Taxi Terminals by Governorate (2)

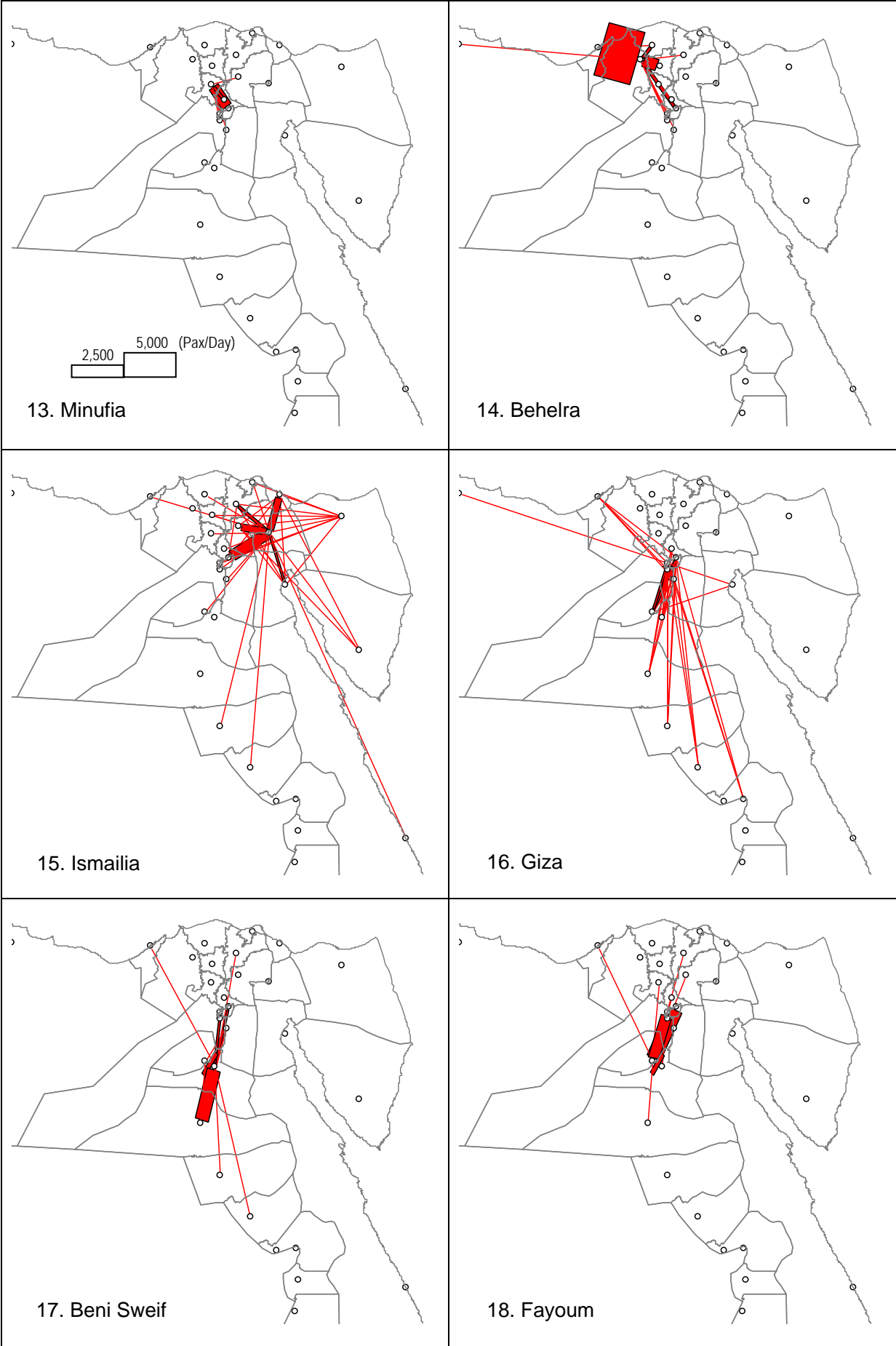


Figure 5.4.5 Desire Lines of Shared Taxi Terminals by Governorate (3)

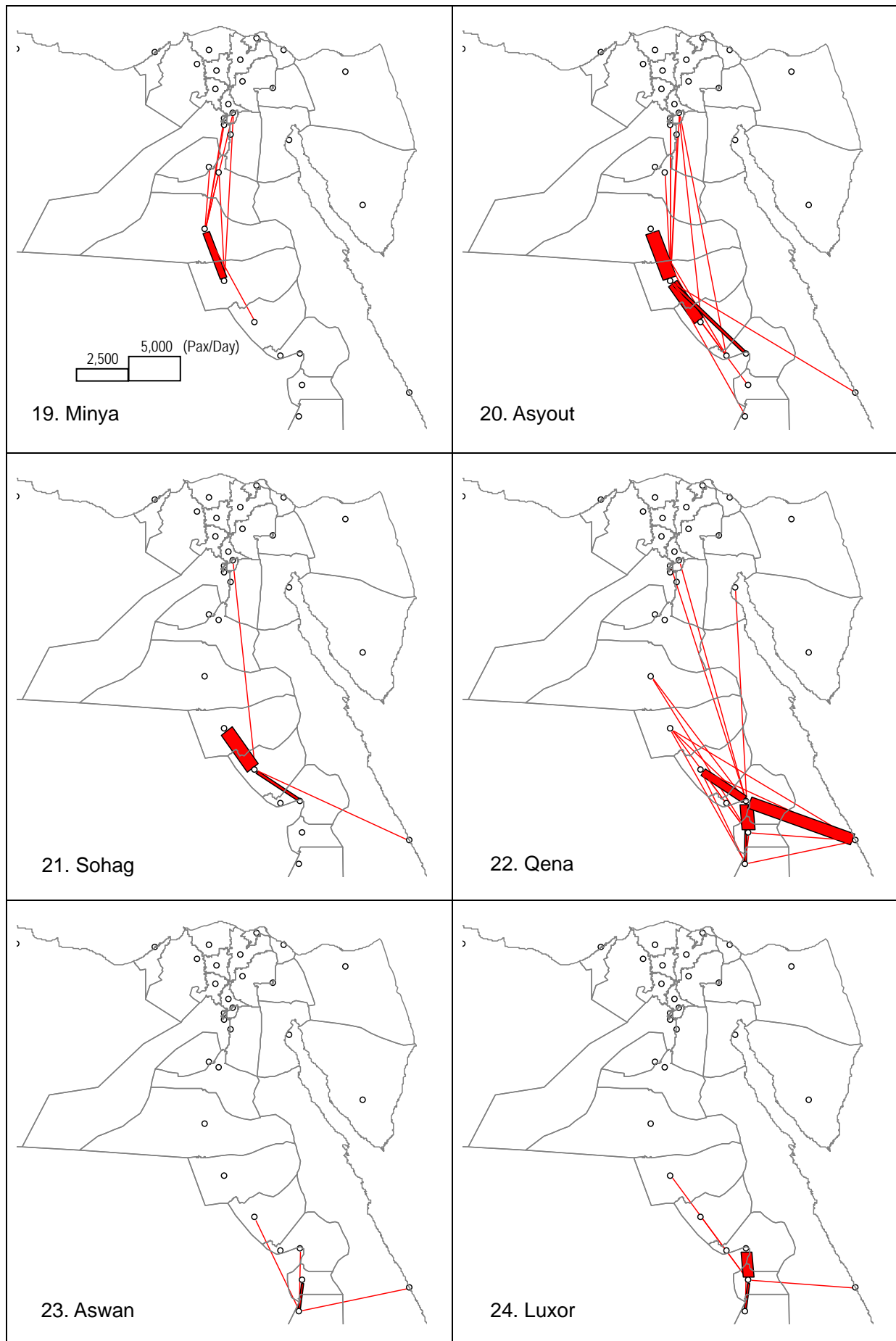


Figure 5.4.6 Desire Lines of Shared Taxi Terminals by Governorate (4)

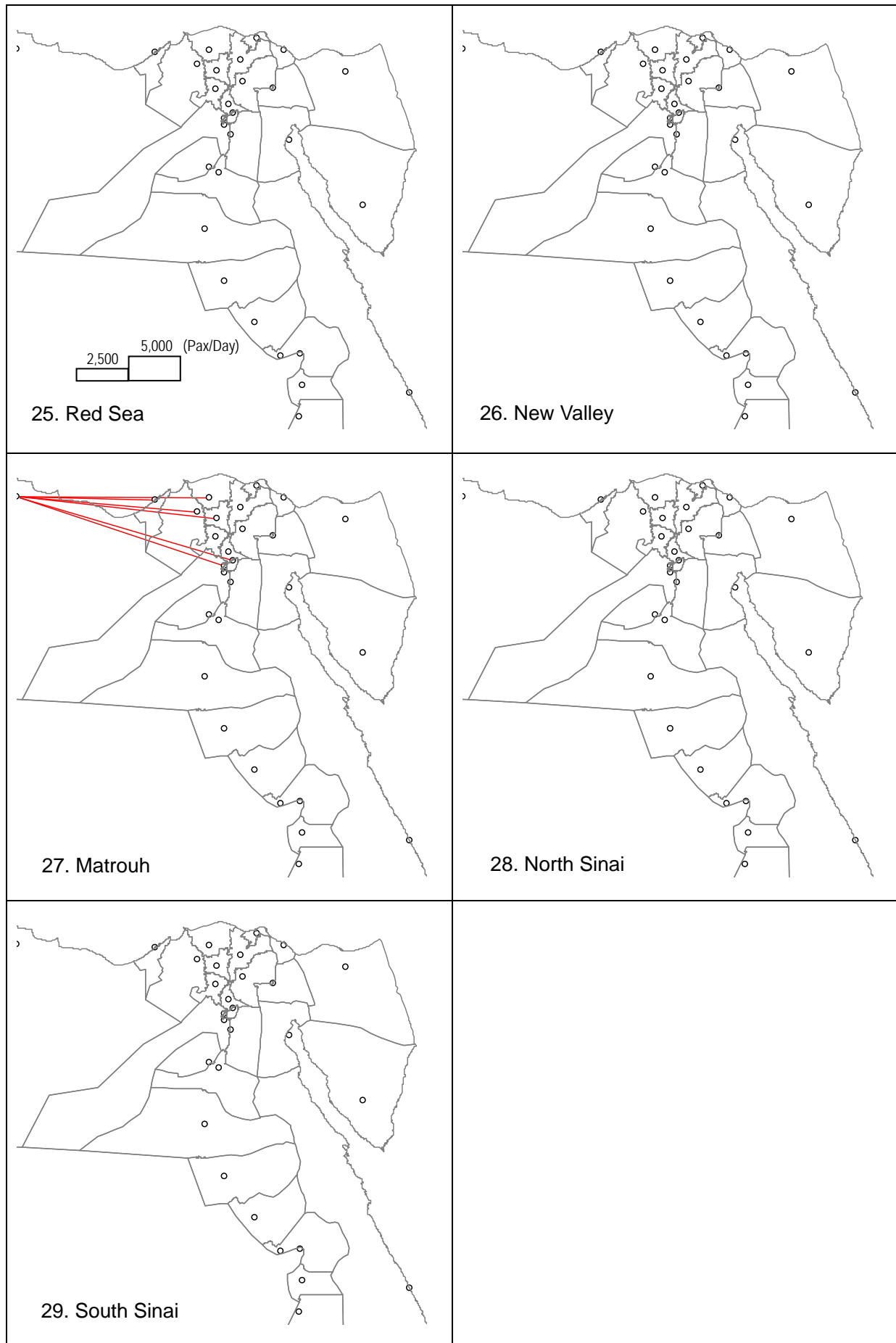


Figure 5.4.7 Desire Lines of Shared Taxi Terminals by Governorate (5)

3) Characteristics of Access/Egress Trips of Share Taxi Passengers

Figure 5.4.8 illustrates the modal share or traffic composition of access/egress modes which was used by shared taxi passengers. It is obvious that shared taxi of intra-governorates has the highest share, followed by walking and taxi. Shared taxi is highly used as an access mode compared with its usage as an egress mode, while walking is highly used as an egress mode. This can be attributed to the fact that some passengers would ask the driver of shared taxi to drop them off near their final destinations.

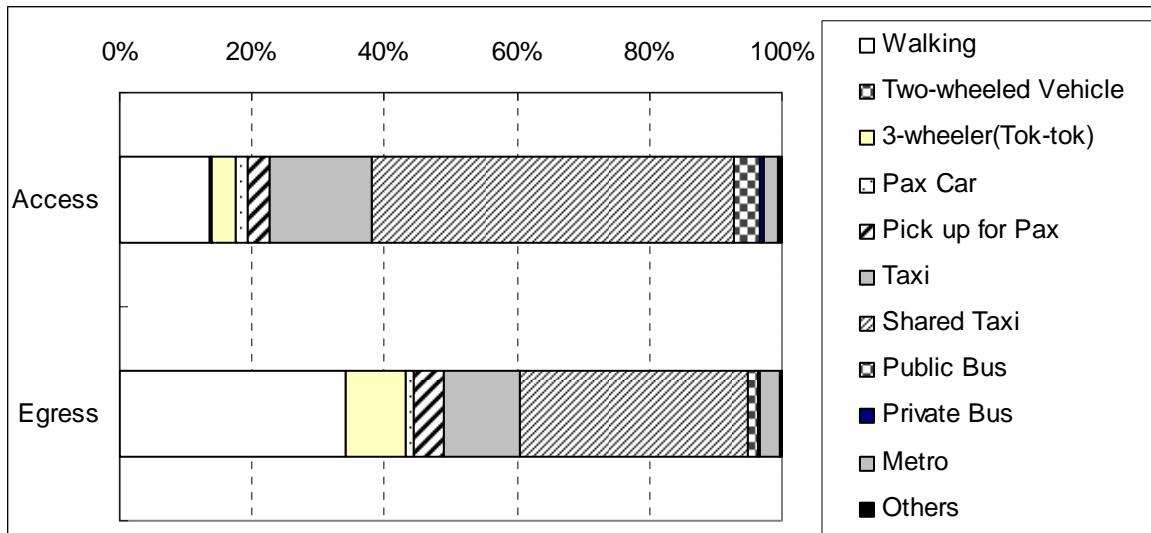


Figure 5.4.8 Access/Egress Mode to/from Shared Taxi Terminal

The following figure illustrates the distribution of travel time for access and egress. More than 80% of Shared Taxi users made access/egress trips within 30 minutes.

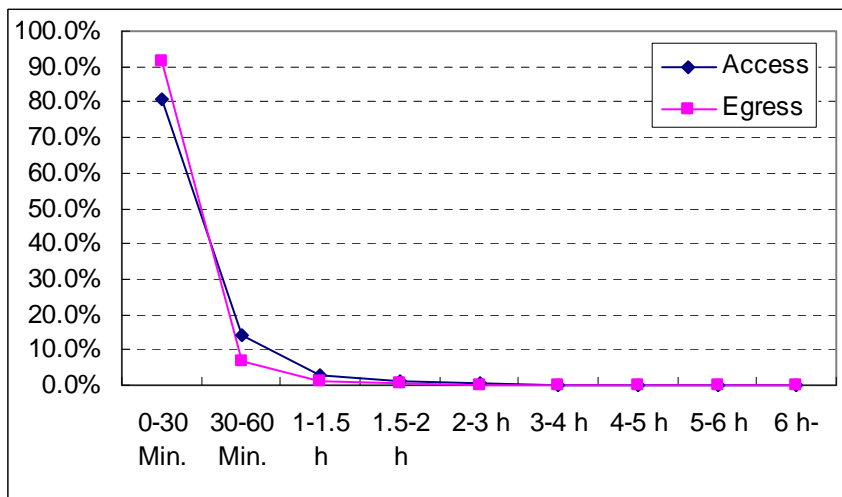


Figure 5.4.9 Distribution of Access/Egress Time to/from Shared Taxi Terminal



## 5.5 AIR PASSENGER MOVEMENT AT THE AIRPORTS

### 1) Characteristics of Airport Users

The characteristics of airport terminal users can be summarized as below:

- As for the composition of trip purpose of airport users, it can be presumed that there are 2 major purposes of airport usages, "business use" and "sightseeing use". The share of tourism (both of individuals and groups) in Abu Simbel, Aswan, Hurghada, Sharm El Sheikh is significantly high compared with other airports. Table 5.5.1 presents the composition of trip purposes by airport users.

**Table 5.5.1 Composition of Trip Purpose of Terminal Users by Airport**

Name of Airport	1.To/From Working Place & Business Purpose	2.To/From School/ Institution	3.Shopping, Eating	4.Tour (Individual)	5.Tour (Group)	6.Social Visit, Other Private Purpose	7.Other	Total
Abu Simbel	1%	0%	0%	36%	62%	0%	0%	100%
Nozha	56%	0%	0%	12%	1%	11%	19%	100%
Aswan	19%	0%	0%	44%	35%	2%	1%	100%
Asyout	83%	0%	0%	0%	0%	16%	2%	100%
Borg El Arab	46%	0%	0%	8%	1%	29%	17%	100%
Cairo	66%	1%	0%	18%	2%	7%	6%	100%
Hurghada	0%	0%	0%	58%	37%	1%	0%	100%
Luxor	32%	0%	0%	34%	31%	3%	0%	100%
Marsa Alam	3%	0%	0%	70%	25%	1%	0%	100%
Sharm El SHeikh	8%	0%	0%	88%	4%	0%	0%	100%
Taba	0%	0%	0%	100%	0%	0%	0%	100%
All Airport	24%	0%	0%	50%	19%	3%	2%	100%

- Table 5.5.2 indicates that 54% of airport users is destined for Europe, while other Middle East and North Africa have 16% share of air passengers. The share of domestic movement accounts for only 28%.

**Table 5.5.2 Composition of Trip Destinations by Nationality**

Trip Destination	Egyptian	Foreigner	Total
Egypt (Domestic)	15%	12%	28%
Foreign Countries (International)	16%	56%	72%
Asia	1%	0%	1%
Other Middle East and North Africa	13%	3%	16%
Europe	2%	51%	54%
North & South America	0%	0%	1%
Africa	0%	1%	1%
Australia and Oceania	0%	0%	0%
Total	32%	68%	100%

- Figure 5.5.1 illustrates hourly fluctuation of airport users. The peak period of airport is observed between 12:30 and 13:30. Hourly variation looks stable except night time.

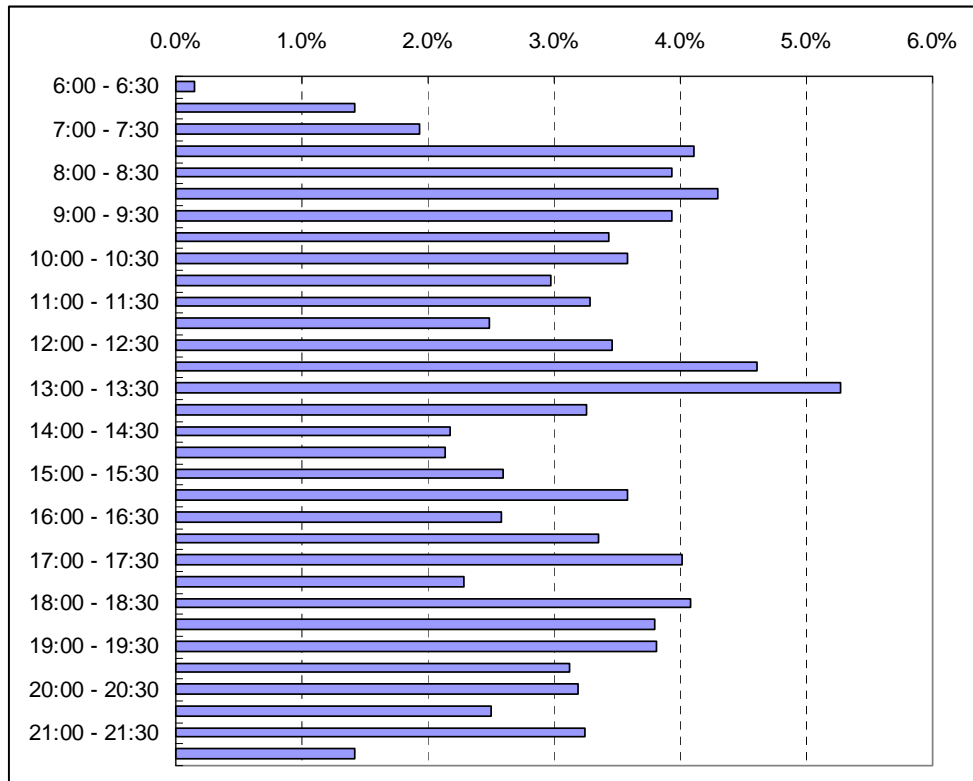


Figure 5.5.1 Hourly Fluctuation of Passengers at Airport

2) Characteristics of Access/Egress Trip at Airports

It is observed that the access mode to the airport depends on passenger’s nationality. Around 44 % of Egyptian are using passenger cars to the airport, followed by taxis (25%) and then private buses (22%). On the other hand, most of foreigners (83%) are using private buses, followed by taxis (10%).

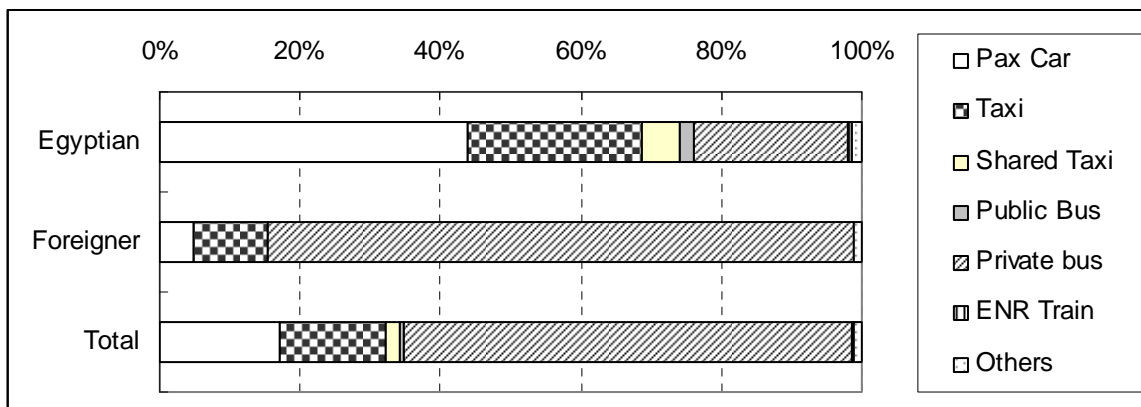


Figure 5.5.2 Composition of Access Modes to Airport

The following figure illustrates the distribution of travel time for access/egress. 50-60% of air passengers made access/egress trips within 30 minutes. It seems that trip distance to-and-from airport is longer than that of other terminals.

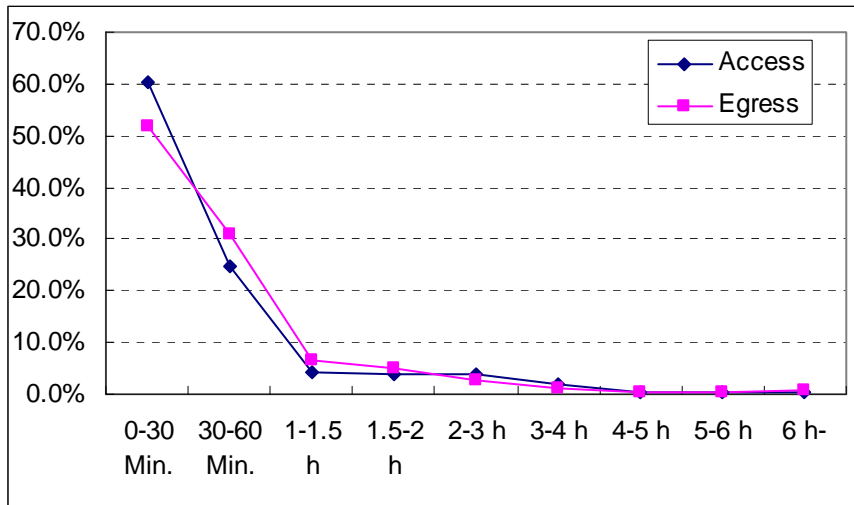


Figure 5.5.3 Distribution of Access/Egress Time to/from Air Port

The distribution of access time by Egyptian/Foreigner is shown in Figure 5.5.4. The access time by foreigner seems to be bigger than that of Egyptian. However, no remarkable difference is observed between nationalities.

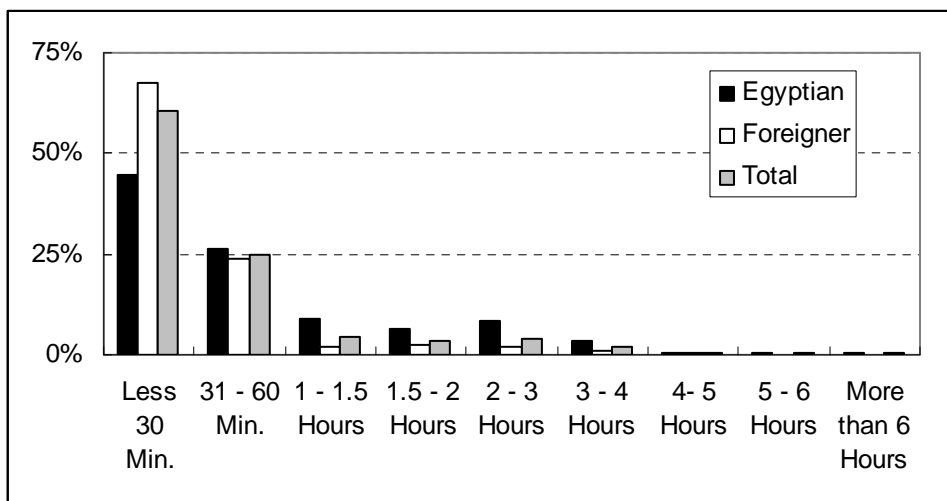


Figure 5.5.4 Distribution of Access Time to Airport by Egyptian/Foreigner

## 5.6 FERRY PASSENGER MOVEMENT AT THE SEA PORT

### 1) Traffic Volume at Seaports

**Number of Surveyed Passengers by Trip Purpose:** Figure 5.6.1 shows the number of surveyed passengers at 5 seaports, namely Nuwaiba, Safaga, Hurghada, Alexandria and Port Said.

In terms of passenger volume, Safaga Seaport occupies the largest share, followed by Port Said and Nuwaiba. The trip purpose varies by seaport. The trip purpose at Nuwaiba, Safaga and Hurghada is mainly "To/From Working Place", while at other two seaports, namely Alexandria and Port Said, the major trip purpose is "Individual Tour".

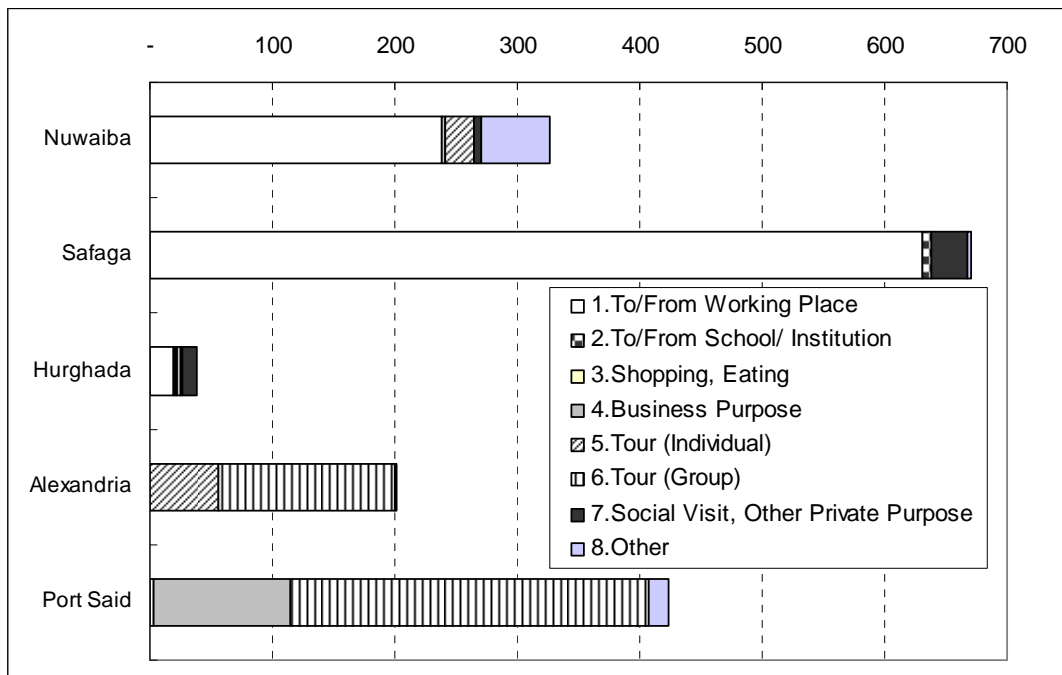


Figure 5.6.1 No. of Seaport Ferry Terminal Users by Sea Port and Trip Purpose (Pax/day)

Figure 5.6.2 illustrates the composition of passenger's nationality. It is observed that Egyptians are the dominant users of Nuwaiba, Safaga and Hurghada seaports, while foreigners are using Alexandria and Port Said seaports. This implies that the characteristics of seaports can be classified into two distinctive categories, which are used mainly by Egyptians for commuting and business trips and the seaports which are mainly used by foreigners for tourism.

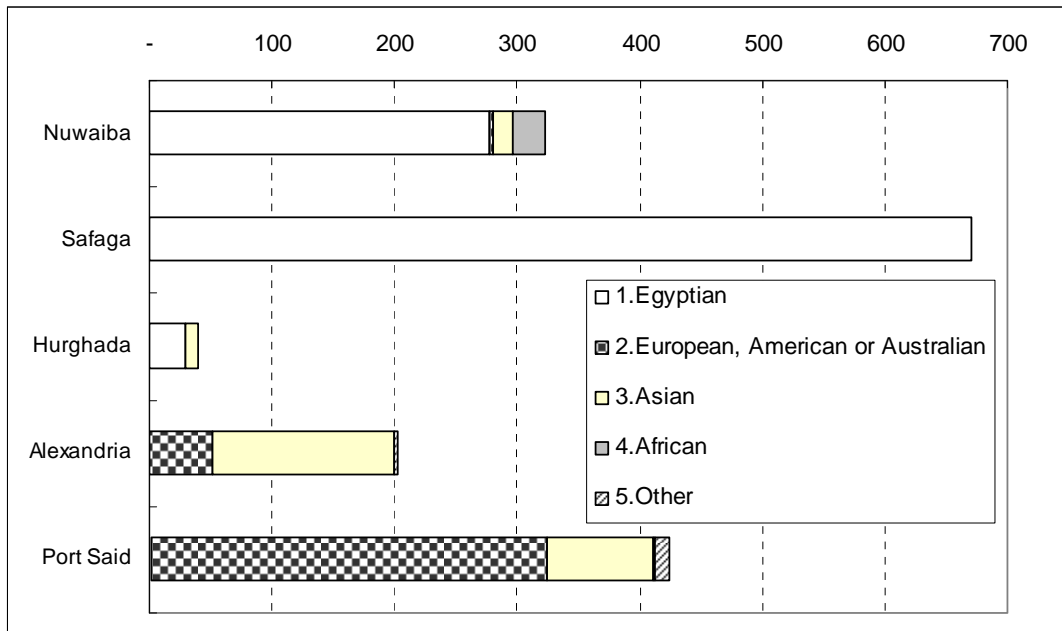


Figure 5.6.2 Composition of User's Nationality by Seaport

**Hourly Fluctuation at Seaports:** Figure 5.6.3 shows the hourly fluctuation of seaport users. The peak periods of ferry passengers was observed in the morning from 10:00 till 11:00 AM and evening from 07:00 till 08:00 PM.

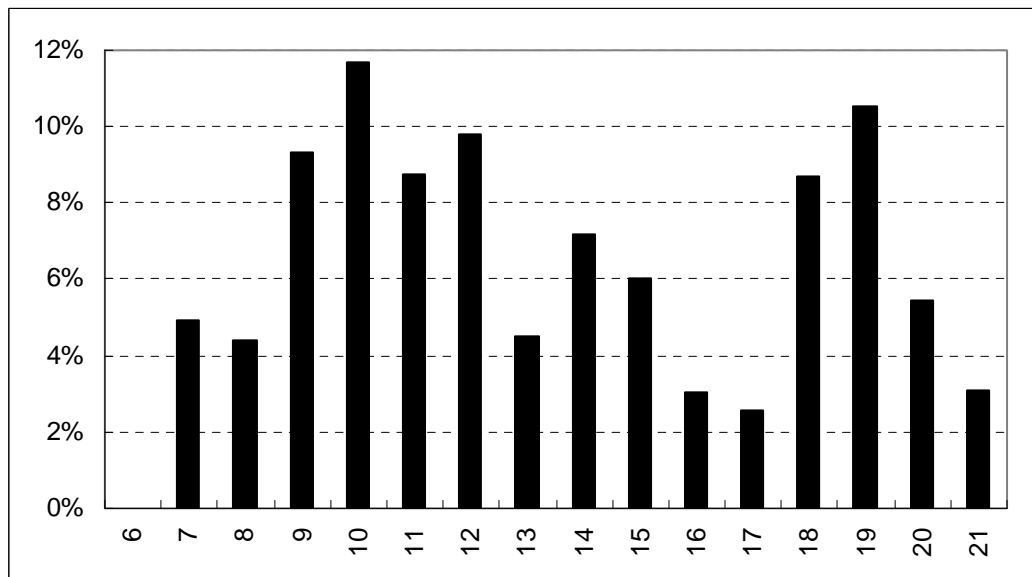


Figure 5.6.3 Hourly Fluctuation of Passengers at Sea Port

2) Characteristics of Access/Egress Trip of Seaports

It is observed that the access mode varies by the seaport as illustrated in Figure 5.6.4. At Nuwaiba and Sagaga seaports, the share of shared taxi and public bus is significantly high. However, the share of private buses account for more than 90% at Alexandria port. At Port Said Port, the share of walking accounts for more than 80%, which can be attributed to the major sightseeing activity by foreign tourists.

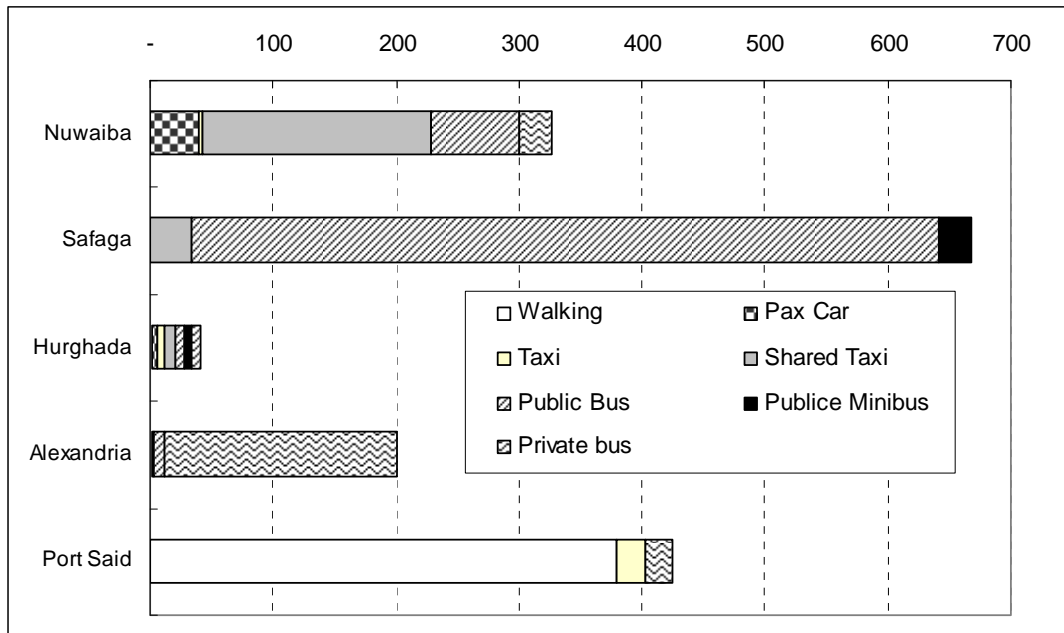


Figure 5.6.4 Composition of Access Modes to Different Seaports

The following figure illustrates the travel time distribution for access mode. More than 60% of ferry users made access trips within 30 minutes. On the other hand, approximately 18% of all passengers comes from faraway place from seaport (travel time with more than 6 hours). The available data of egress trip was not collected from the survey.

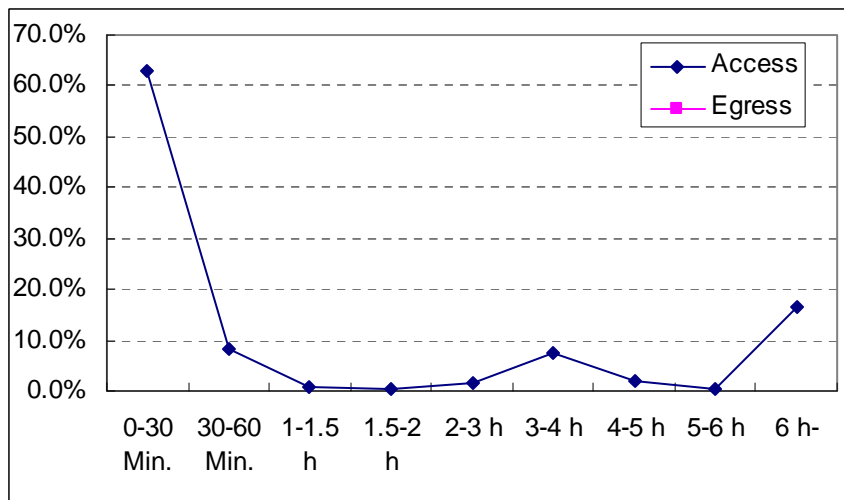


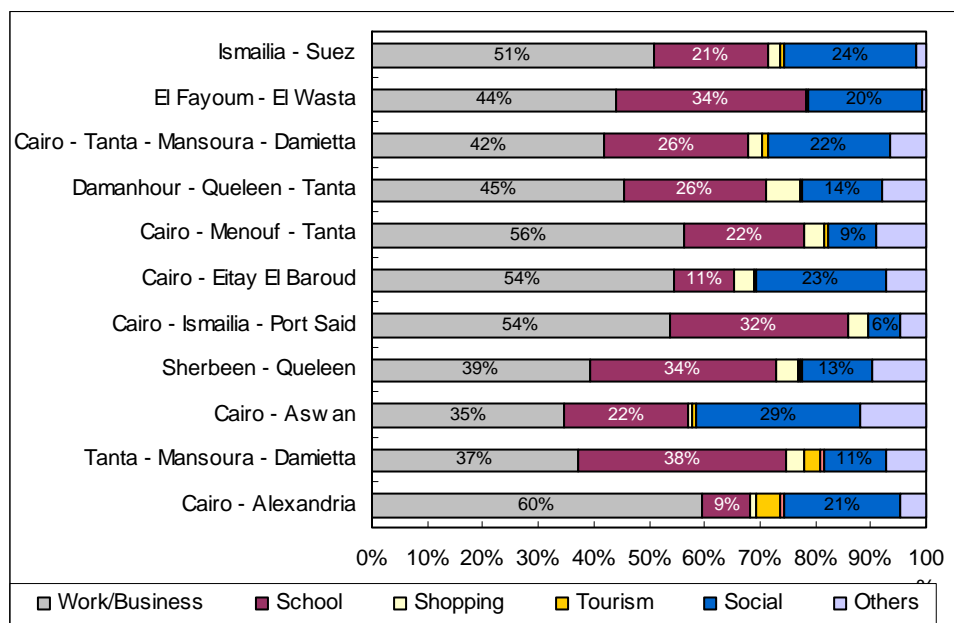
Figure 5.6.5 Distribution of Access Time to Ferry Terminal

## 5.7 RAILWAY PASSENGER'S CHARACTERISTICS (RAILWAY ONBOARD SURVEY)

This section shows the results from Railway On-Board Survey and is differentiated from the analysis in Section 5.2. The analysis here mainly focuses on the characteristics by line.

### 1) Trip Purpose

Figure 5.7.1 shows the composition of trip purpose by line. For almost all lines, passengers with the purpose of "Work/Business" occupy the dominant share. However, the share of "School Trip" reaches more than 30%.



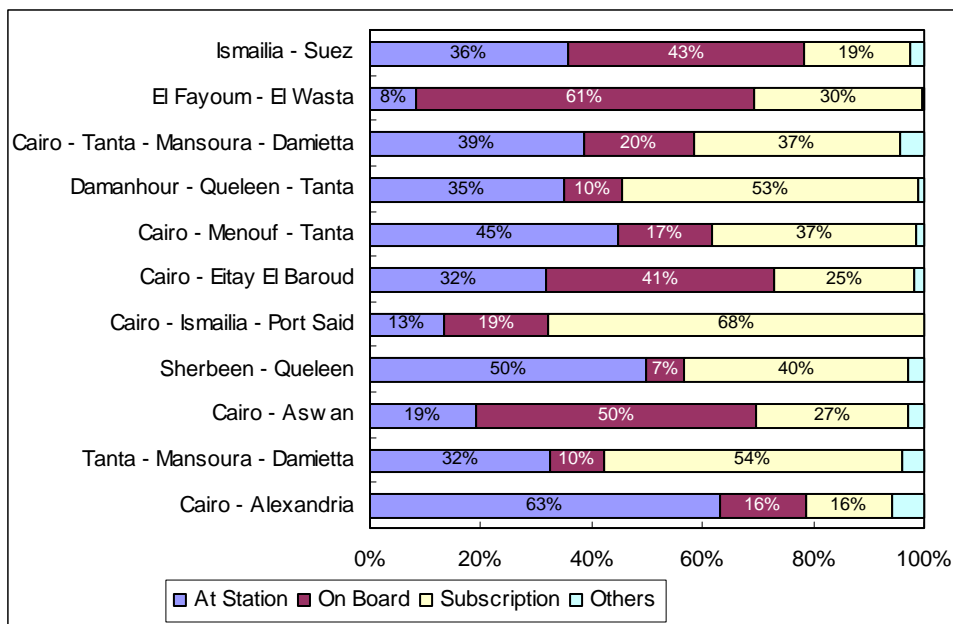
Source: JICA Study Team

Figure 5.7.1 Composition of Trip Purpose by Line

### 2) Ticket Purchase

There are several choices for purchasing the railway ticket; 1) At Station, 2) On Board, 3) Subscription (seasonal ticket) and 4) Others. First, the ticket is classified into 2 categories, that is, Single/Return Ticket and Subscription (seasonal ticket). Regarding a single/return ticket, the passenger can obtain the ticket at ticket office at the station or on board a train.

The method to obtain a ticket is diversified among 11 lines. On the line between El Fayoum and El Wasta, "On Board" has the dominant share with 61%. The share of "Subscription" is considerable on the line between Cairo and Port Said via Ismailia.

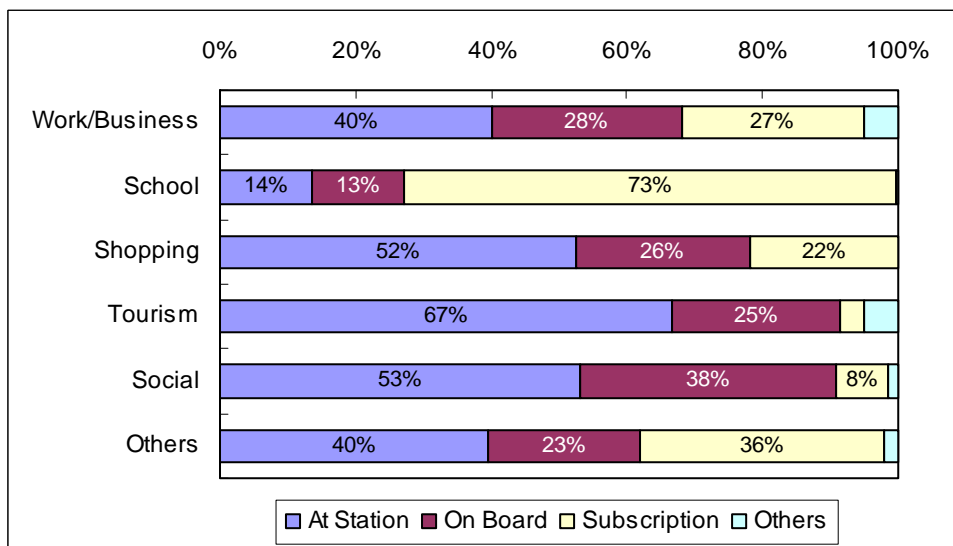


Source: JICA Study Team

Figure 5.7.2 Location of Ticket Purchase by Line

3) Trip Purpose vs. Ticket Purchase

Figure 5.7.3 shows the relation between trip purpose and ticket purchase. As it is clear, a student usually uses a subscription ticket and its share is approximately 70%. On the other hand, the share of business users has been diversifying among 4 options. Other than School trip, more than 20% of passengers purchase the ticket on board a train.



Source: JICA Study Team

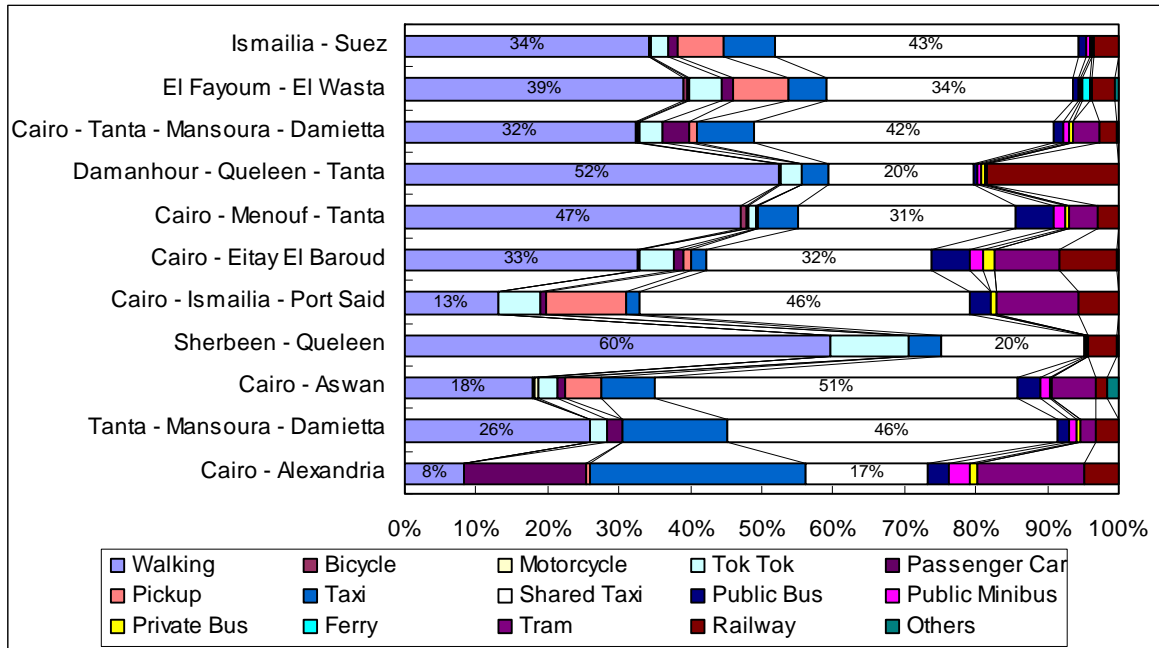
Figure 5.7.3 Trip Purpose vs. Ticket Purchase

4) Transport Mode from/to the Station (Access & Egress Mode)

Figure 5.7.4 and 5.7.5 present the modal share of access and egress trip made by railway passenger. It is obvious for both access and egress trips that walking and shared taxi has the dominant share among the modes. However, the difference of modal share by line could be considerable. For the passengers who travel between Cairo and Alexandria Stations, Taxi (35%) has the largest share among other access modes,

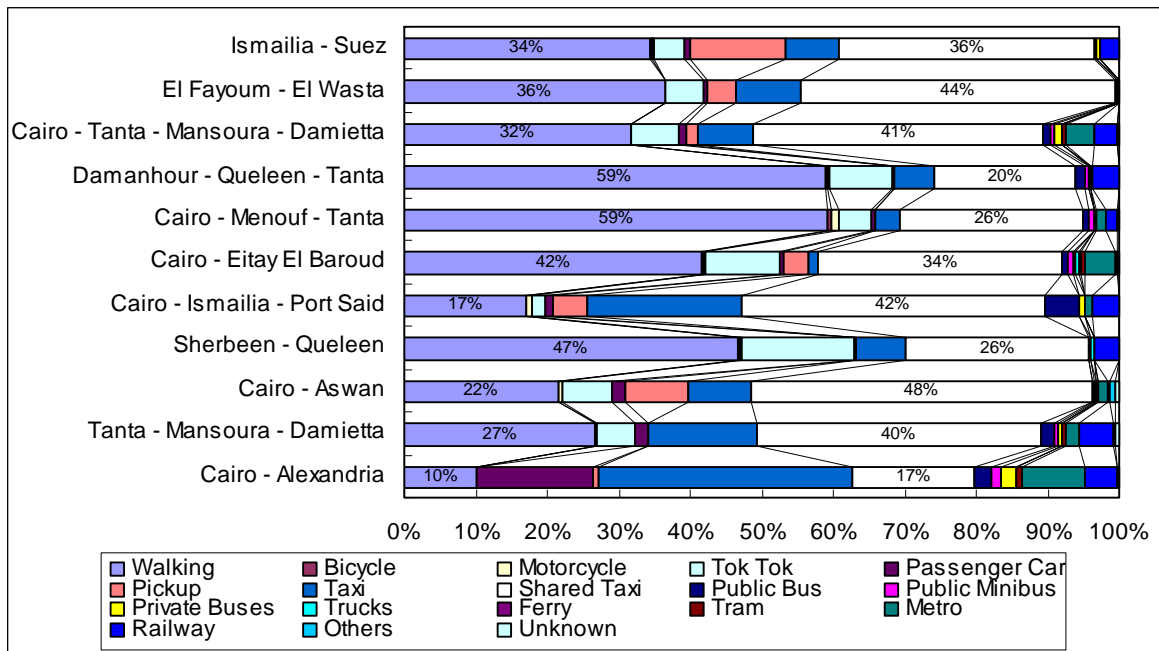


followed by Shared Taxi (17%) and Passenger Car (16%). On the other hand, the lines which are mainly operated to-and-from Tanta shows the higher dependence to Walking.



Source: JICA Study Team

Figure 5.7.4 Access Mode to Railway Station by Line



Source: JICA Study Team

Figure 5.7.5 Egress Mode from Railway Station by Line

## 5) Major Origin and Destination Places

Line 1: Cairo - Alexandria

More than 50% of passengers on this line made a trip between Cairo/Giza and Alexandria.

Table 5.7.1 Major Origin &amp; Destination (Line 1)

Trip Origin (Gov)	Trip Destination (Gov)	%
Alexandria	Cairo	24.1%
Cairo	Alexandria	19.8%
Alexandria	Gharbia	6.6%
Alexandria	Giza	6.5%
Giza	Alexandria	5.4%
Cairo	Gharbia	5.0%
Others	Others	32.7%
Total		100.0%

Line 2: Tanta – Mansoura – Damietta

Although “Damietta” is the destination station of this line, the passenger is mainly moving between Dakahlia and Gharbia Governorate.

Table 5.7.2 Major Origin &amp; Destination (Line 2)

Trip Origin (Gov)	Trip Destination (Gov)	%
Dakahlia	Gharbia	17.7%
Gharbia	Dakahlia	14.5%
Damietta	Dakahlia	12.0%
Gharbia	Gharbia	8.9%
Dakahlia	Dakahlia	8.5%
Damietta	Gharbia	6.5%
Dakahlia	Damietta	4.7%
Others	Others	27.1%
Total		100.0%

Line 3: Cairo – Aswan

Since this line is a long haul route traveling more than 800km and it passes through many Governorates, the trip origin and destination has been varied. Among several OD pairs, the passenger to-and-from Minya is relatively ranked at higher position.

Table 5.7.3 Major Origin &amp; Destination (Line 3)

Trip Origin (Gov)	Trip Destination (Gov)	%
Cairo	Minya	6.8%
Minya	Minya	6.4%
Asyut	Sohag	5.3%
Cairo	Sohag	3.7%
Minya	Asyut	3.4%
Cairo	Asyut	3.3%
Asyut	Qena	2.8%
Cairo	Beni Suef	2.8%
Qena	Qena	2.8%
Qena	Sohag	2.8%
Sohag	Sohag	2.7%
Luxor	Qena	2.6%
Giza	Minya	2.3%
Aswan	Luxor	2.1%
Beni Suef	Minya	2.0%
Others	Others	48.2%
Total		100.0%

Line 4: Sherbeen - Queleen

This line crosses Kafr El-Sheikh and Dakahlia Governorate. A majority of passenger on this line is moving within Kafr El-Sheikh.

Table 5.7.4 Major Origin &amp; Destination (Line 4)

Trip Origin (Gov)	Trip Destination (Gov)	%
Kafr El-Sheikh	Kafr El-Sheikh	55.4%
Dakahlia	Kafr El-Sheikh	16.3%
Kafr El-Sheikh	Dakahlia	14.6%
Others	Others	13.8%
Total		100.0%

Line 5: Cairo – Ismailia – Port Said

Though sample size for this line is smaller than other lines, a trip between Sharkia and Ismailia Governorate is ranked as top share of OD pair.

Table 5.7.5 Major Origin &amp; Destination (Line 5)

Trip Origin (Gov)	Trip Destination (Gov)	%
Sharkia	Ismailia	28.3%
Cairo	Sharkia	16.0%
Qalyubia	Sharkia	8.5%
Helwan	Sharkia	6.6%
Minufia	Ismailia	5.7%
Others	Others	34.9%
Total		100.0%

Line 6: Cairo - Eitay El Baroud

Cairo and Beheira Governorates where the terminal station of this line exists has the large share.

Table 5.7.6 Major Origin &amp; Destination (Line 6)

Trip Origin (Gov)	Trip Destination (Gov)	%
Beheira	Beheira	18.5%
Cairo	Beheira	13.8%
Cairo	Giza	8.0%
Giza	Beheira	6.8%
Cairo	Minufia	5.8%
Beheira	Cairo	5.2%
Cairo	Six October	5.0%
Others	Others	36.9%
Total		100.0%

Line 7: Cairo - Menouf - Tanta

This line runs parallel to the Line 6, though the final destination is not the same. A trip between Cairo and Minufia occupies about 50% of total trips.

Table 5.7.7 Major Origin &amp; Destination (Line 7)

Trip Origin (Gov)	Trip Destination (Gov)	%
Minufia	Minufia	27.0%
Cairo	Minufia	21.8%
Gharbia	Minufia	19.6%
Minufia	Gharbia	7.1%
Others	Others	24.5%
Total		100.0%

Line 8: Damanhour - Queleen - Tanta

Table 5.7.8 Major Origin &amp; Destination (Line 8)

The share of cross-Governorate trips is relatively small.

Trip Origin (Gov)	Trip Destination (Gov)	%
Kafr El-Sheikh	Kafr El-Sheikh	23.1%
Gharbia	Gharbia	20.2%
Gharbia	Kafr El-Sheikh	16.1%
Kafr El-Sheikh	Beheira	12.0%
Beheira	Kafr El-Sheikh	11.1%
Others	Others	17.5%
Total		100.0%

Line 10: Cairo - Tanta - Mansoura - Damietta

Table 5.7.9 Major Origin &amp; Destination (Line 9)

Though this line is also a long haul route, the share of long trip such as Cairo-Gharbia and Cairo-Damietta seems to be lower level.

Trip Origin (Gov)	Trip Destination (Gov)	%
Sharkia	Sharkia	15.9%
Dakahlia	Sharkia	13.6%
Gharbia	Cairo	7.1%
Dakahlia	Gharbia	6.5%
Dakahlia	Dakahlia	4.9%
Qalyubia	Sharkia	4.9%
Sharkia	Dakahlia	4.8%
Cairo	Qalyubia	4.2%
Sharkia	Cairo	4.0%
Others	Others	34.1%
Total		100.0

Line 11: El Fayoum - El Wasta

Table 5.7.10 Major Origin &amp; Destination (Line 10)

This line is a short haul route connecting Fayoum with Beni Suef Governorates. Trips between them has more than 90% of all trips.

Trip Origin (Gov)	Trip Destination (Gov)	%
Beni Suef	Fayoum	65.3%
Fayoum	Beni Suef	26.7%
Others	Others	8.0%
Total		100.0%

Line 12: Ismailia - Suez

Table 5.7.11 Major Origin &amp; Destination (Line 11)

Trips within Ismailia Governorate occupy more than 20% share; while the share of trips within Suez is only 4%.

Trip Origin (Gov)	Trip Destination (Gov)	%
Suez	Ismailia	22.8%
Ismailia	Suez	22.0%
Ismailia	Ismailia	21.3%
Sharkia	Suez	14.4%
Others	Others	19.4%
Total		100.0%

## CHAPTER 6: BASIC ANALYSIS ON FREIGHT TRANSPORT TERMINAL SURVEY

### 6.1 SEA PORT FREIGHT SURVEY

#### 6.1.1 Outline of Sea Port Freight Survey

The Sea Port Freight Survey was conducted to understand the freight volume and movement by commodity at the sea ports. The result of this survey can be used:

- To develop the OD movement for freight through sea port surveys.
- To derive the parameters for the cargo demand forecast, especially for modal split.

The survey consists of 2 components, Freight Port Survey I (Counting and Interview) and Freight Port Survey II (B/L and Manifest Collection).

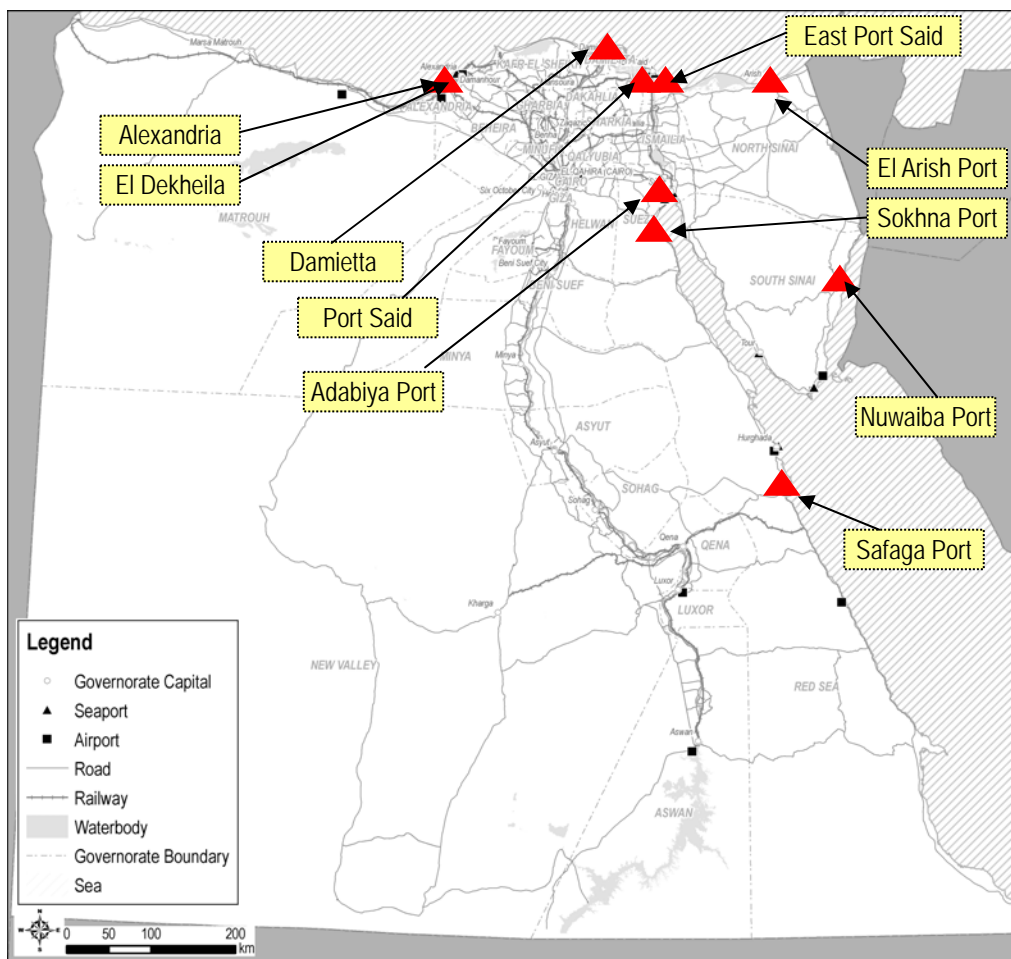
In Egypt, there are 15 commercial sea ports; however, approximately 75% of all cargoes are handled by top 5 ports in terms of tonnage, that is, Damietta, El Dekheila, Alexandria, East Port Said, and West Port Said. Moreover, top 10 ports cover almost 98% of cargoes at all ports. MiNTS, therefore, selected the following 10 sea ports to be surveyed, which are presented in Table 6.1.1 and illustrated in Figure 6.1.1. The survey was conducted for consecutive 7 days including weekend at each port. The detailed survey method and methodology are outlined in Appendix.)

Table 6.1.1 Schedule of Sea Port Freight Survey

No.	Port	Survey Date (Weekday)	Survey Day (Weekend)	Duration
1	Port Said Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days
2	Alexandria Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days
3	Damietta Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days
4	Nuwaiba Port	01/June/2010 - 03/June/2010 06/June/2010-07/June/2010	04/June/2010 05/June/2010	7 days
5	El Dekheila Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days
6	East Port Said Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days
7	Safaga Port	17/May/2010 - 20/May/2010 , 23/May/2010	21/May/2010 22/May/2010	7 days
8	Adabiya Port	27/May/2010 - 31/May/2010	25/May/2010 26/May/2010	7 days
9	El Arish Port	16/May/2010 - 20/May/2010	15/May/2010 21/May/2010	7 days

10	Sokhna Port	26/May/2010 ~ 27/May/2010 30/May/2010 ~ 01/June/2010	28/May/2010 29/May/2010	7 days
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Source: JICA Study Team



Source: JICA Study Team

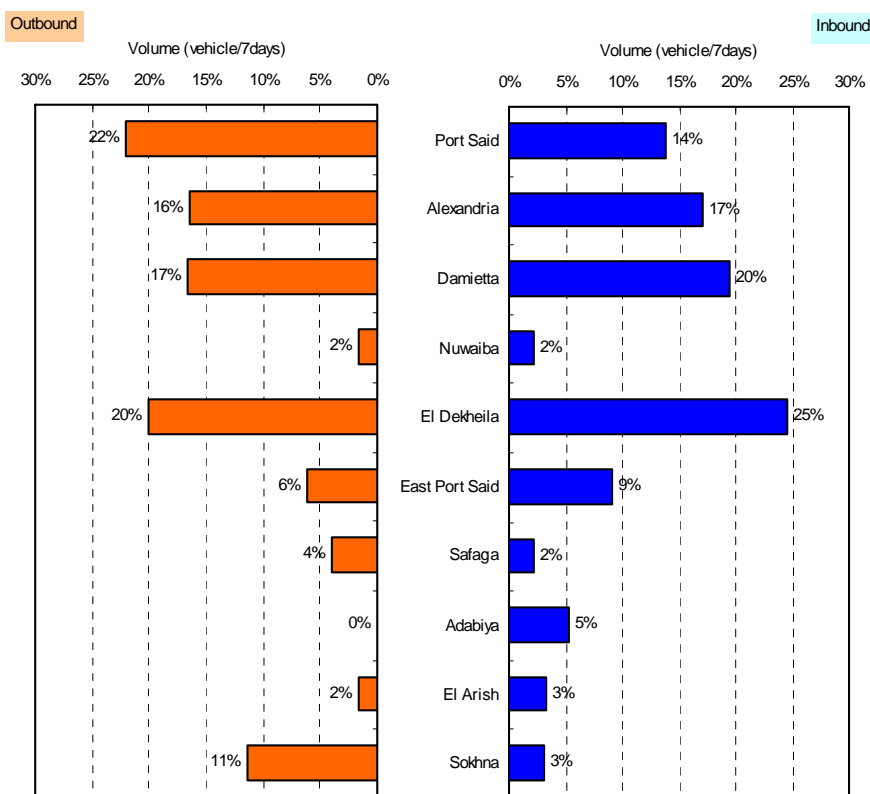
Figure 6.1.1 Location Map of Sea Port Freight Survey

### 6.1.2 Vehicle Movements at the Ports

#### 1) Traffic Volume

The survey was carried out at the gates of the port to interview truck drivers and to count the number of trucks arriving at and departing from the port by direction. Figure 6.1.2 shows the share of traffic volume by port and by direction. “Outbound” cargo means that a truck (cargo) gets out from the port; while, “Intbound” cargo that a truck enters the port.

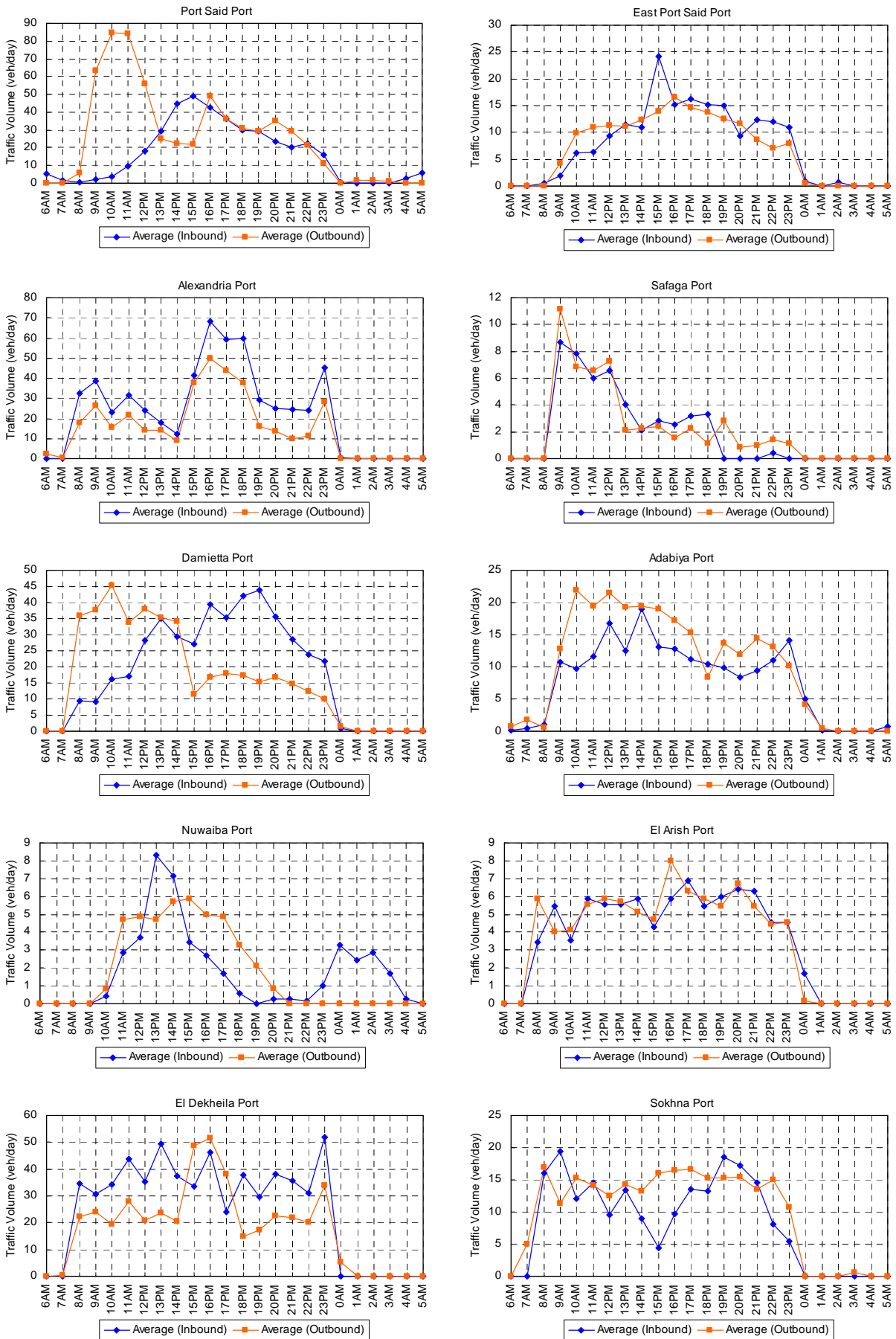
In terms of traffic volume, El Dekheila Port is ranked at the highest position (1,027 veh/day), followed by Port Said Port (1,002 veh/day) and Alexandria Port (926 veh/day). It can be observed that the inbound traffic volume is a bit higher than outbound traffic volume; especially for the sea ports that have traffic volume with more than 300 veh/day.



Source: JICA Study Team

Figure 6.1.2 Average Daily Inbound and Outbound Traffic Volumes at Surveyed Sea Ports

Figure 6.1.3 indicates hourly traffic fluctuation by sea port by direction. It is obvious that traffic volume could not be observed between 00:00 AM and 06:00 AM at most of sea ports. The peak hour varies from morning to evening by port. At Port Said, Damietta, Adabiya and Sokhna Ports, peak hour for inbound traffic is observed during morning time. Since it seems that peak hour for outbound traffic depends on arrival time of vessels, the trend of peak hour might be differentiated.



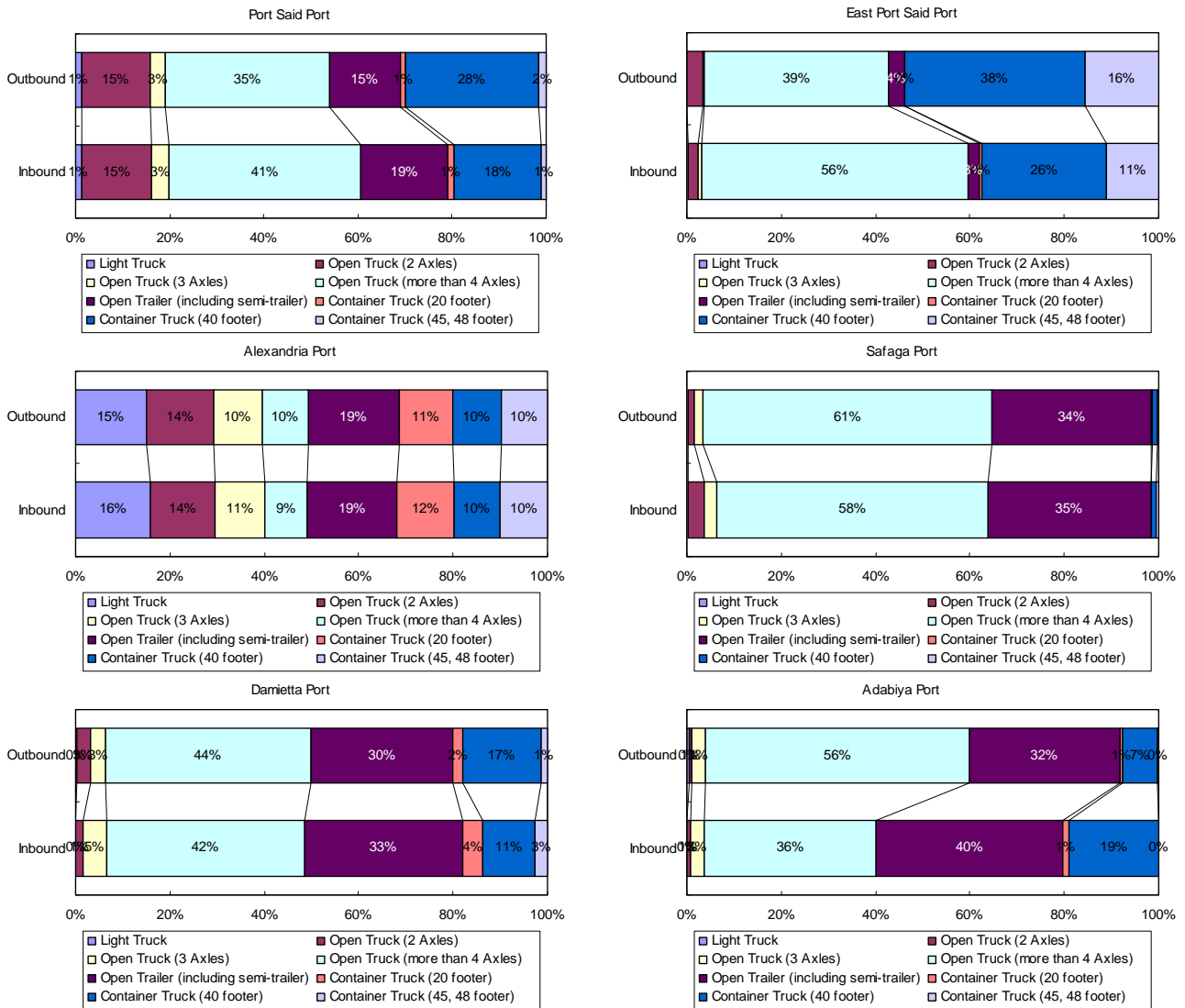
Source: JICA Study Team

Figure 6.1.3 Hourly Traffic Fluctuation at Surveyed Sea Ports



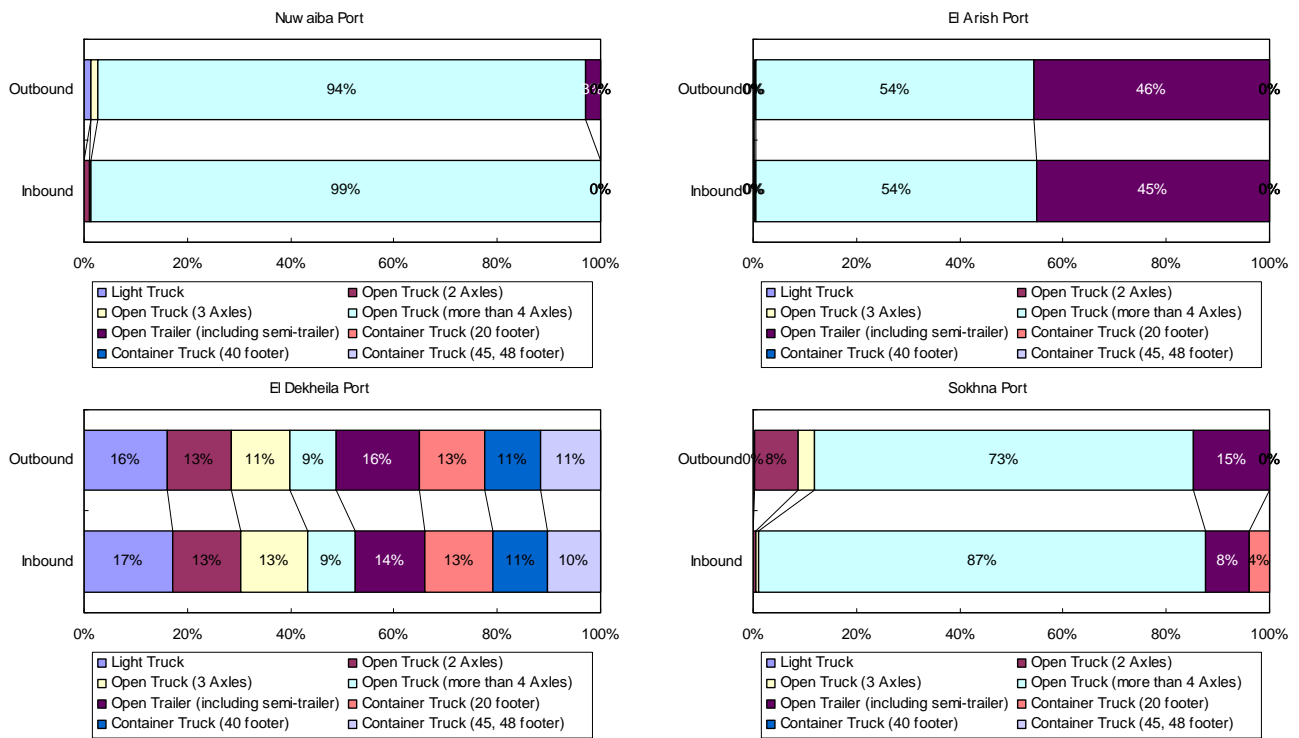
## 2) Vehicle Composition

During the Sea Port Freight Survey, the counted vehicles were classified into 8 categories. Figure 6.1.4 describes vehicle composition by sea port and by direction. It is apparently observed that traffic composition would be similar for inbound and outbound traffic. However, the traffic composition varies by sea port as depicted by Figure 6.1.4. Nuwaiba, Safaga, Sokhna and El Arish sea ports have clear tendency that more than 50% of all traffic are made by "Open Truck with more than 4 axles" and "Open Trailer".



Source: JICA Study Team

Figure 6.1.4 Vehicle Composition by Sea Port



Source: JICA Study Team

Figure 6.1.5 Vehicle Composition by Sea Port (cont'd)

### 6.1.3 Cargo Movements at the Sea Ports

#### 1) Cargo Volume

Figure 6.1.6 shows the total cargo volume by sea port and by direction. In terms of total cargo volume, El Dekheila Port is observed to have the largest cargo volume among the 10 sea ports, followed by Port Said and Alexandria ports. Both inbound and outbound cargo volume are balanced at most ports; however, El Dekheila Port tends to be biased to inbound cargo, while El Dekheila and Port Said ports have the opposite tendency.

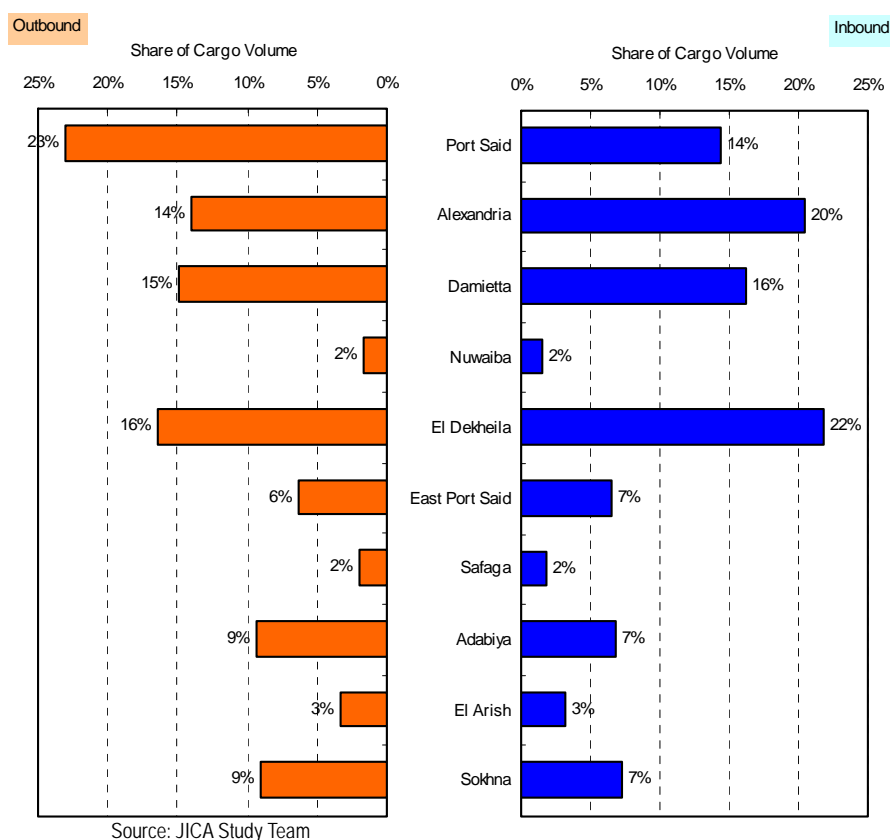


Figure 6.1.6 Cargo Volume by Port

## 2) Commodities Transported

This survey focuses on cargo movement at the port which is transported by road traffic. In general, commodities to be transported can be varied from vegetable to electronic devices. MiNTS decided to classify different commodities into 36 categories as shown in Table 5.1.2.

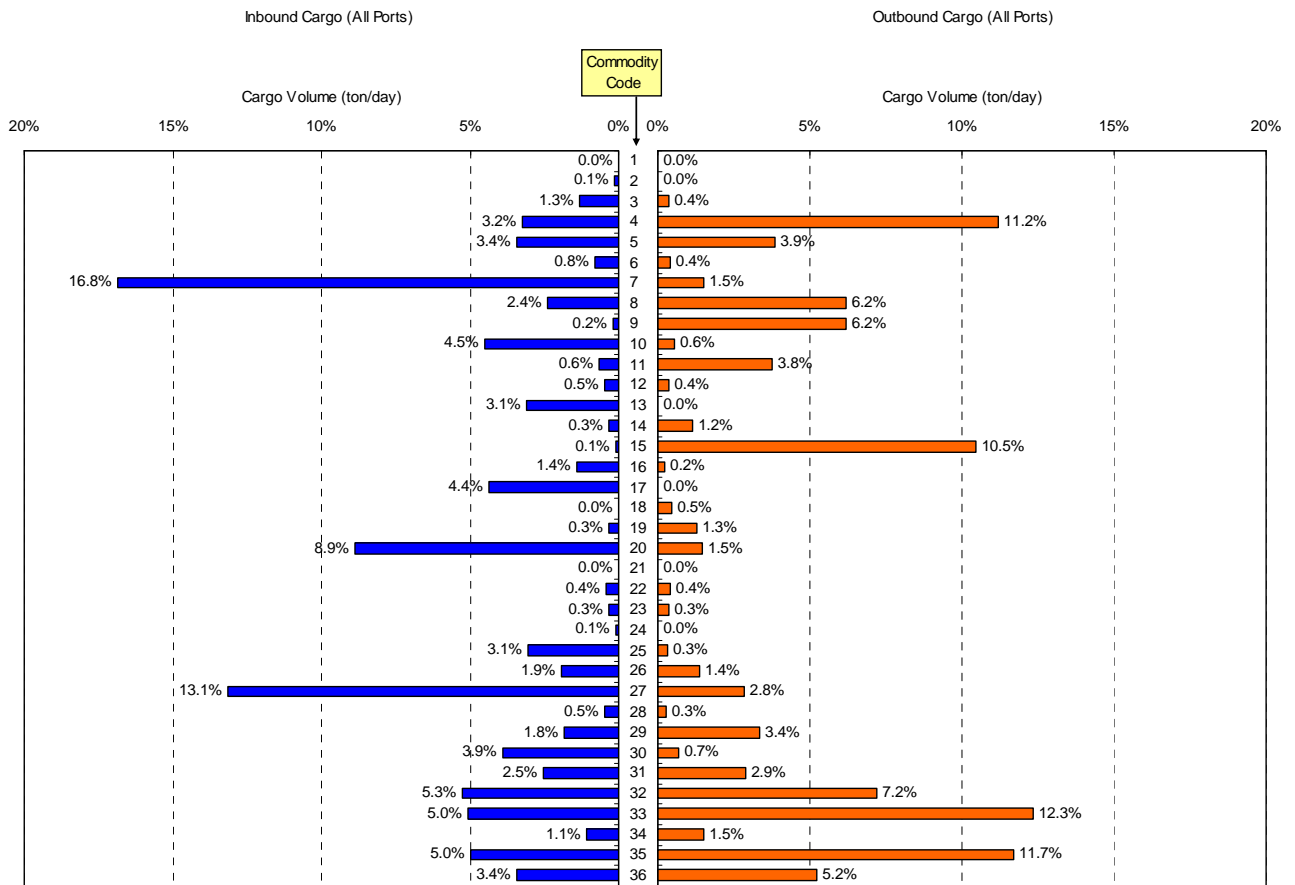
Table 6.1.2 Commodity Code

Code	Cargo Type	Code	Cargo Type
1	Empty Truck (Empty Container)	19	Edible Oil
2	Crude Oil, Natural Gas	20	Other crops, Other vegetables, Fruits
3	Petroleum Products	21	Live animals
4	Iron ore, iron and steel waste	22	Animal Products, Poultry
5	Coal, Coke, Tar	23	Dairy Products
6	Other Minerals	24	Wheat Flour, Bread
7	Stone, Gravel, Sand, Clay	25	Refined Sugar and Molasses
8	Cement, Lime	26	Other Food/Beverage
9	Wood	27	Chemical Products
10	Fertilizer, Agriculture input	28	Pharmaceutical Products
11	Corn, Maze	29	Metal/Metal Product
12	Cotton	30	Glass, Glassware, Ceramic product
13	Rice	31	Paper, Pulp, Waste paper
14	Peanut, Sesame, Sorghum, Soya Bean, Sugar Cane, Sunflower	32	Textile, Clothes and textile materials, Leather
15	Wheat, Barley	33	Other Manufactured products, Machinery, Transport equipment
16	Broad Bean, Clove, Fenugreek, Flax, Garlic, Lentil, Lupine, Sugar Beet	34	Mixed Commodities
17	Onion, Potatoes, Tomato	35	Container (unknown container box)
18	Fishery Product	36	Others and Unknown

Source: JICA Study Team

Figure 6.1.7 presents the aggregated (total volume at all ports) cargo volume by commodity and by direction. In terms of commodity weight, "Commodity No. 33" (Other Manufactured Products etc.) represents the largest share (12.3%) for outbound cargo, followed by "Commodity No. 35 (Container)" (11.7%), "Commodity No. 4 (Iron Ore, Iron and Steel Waste)" (11.2%).

As for inbound cargo, "Commodity No. 7 (Stone, Gravel, Sand and Clay)" has dominant share (16.8%), followed by "Commodity No.27 (Chemical Products)" (13.1%).

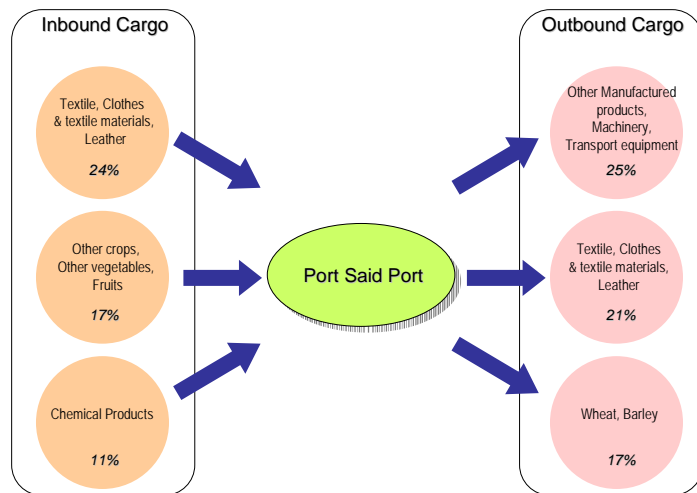


Source: JICA Study Team

Figure 6.1.7 Cargo Volume by Commodity (all ports)

3) **Commodity Type by Port**  
**Port Said Port**

Total volume of outbound cargo is more than twice as large as that of inbound cargo. Textile and manufactured products are the main commodities to be handled at the Port Said Port as shown in Figure 6.1.8.

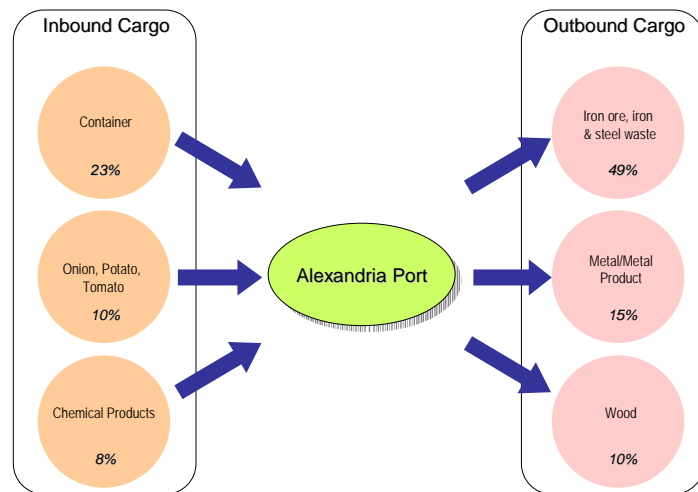


Source: JICA Study Team

Figure 6.1.8 Cargo Movement at Port Said Port

**Alexandria Port**

Figure 6.1.9 illustrates that the cargo volume for both inbound and outbound cargo is fairly balanced. Unprocessed products (iron ore, wood etc.) are transported through Alexandria Port.

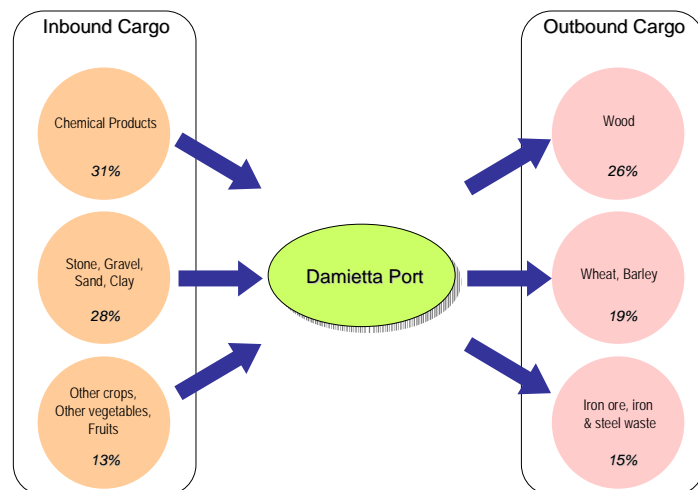


Source: JICA Study Team

Figure 6.1.9 Cargo Movements at Alexandria Port

**Damietta Port**

In general, this port does not handle industrial and processed products as can be observed from Figure 6.1.10.

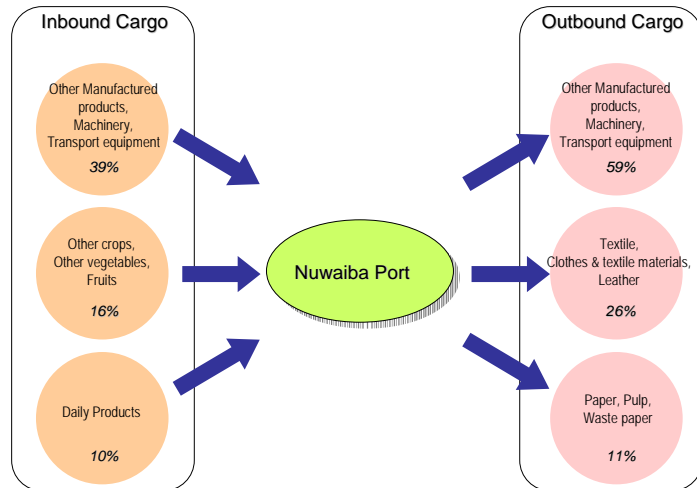


Source: JICA Study Team

Figure 6.1.10 Cargo Movement at Damietta Port

**Nuwaiba Port**

Nuwaiba Port is located on the western coast of Aqaba bay in South Sinai, approximately 168 km north of Sharm El-Sheikh. Though total handling volume is not huge, manufactured products would be a core commodity to-and-from Nuwaiba Port as illustrated in Figure 6.1.11.

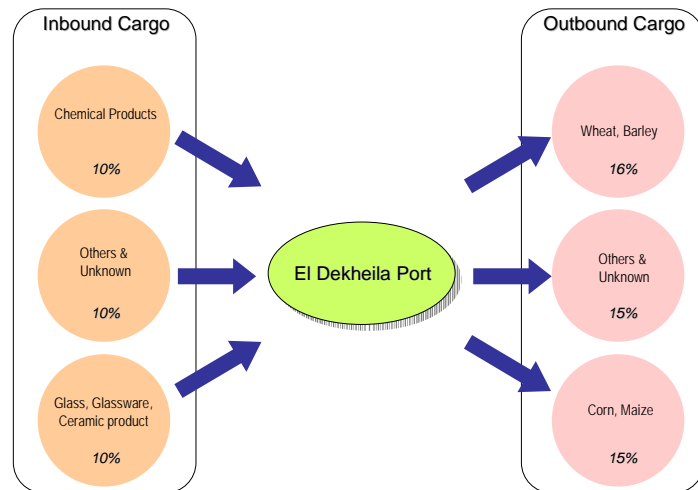


Source: JICA Study Team

**Figure 6.1.11 Cargo Movements at Nuwaiba Port**

**El Dekheila Port**

In terms of cargo volume, El Dekheila Port has the largest portion among 10 ports. Except Others and Unknown, Chemical Products and unprocessed food would be a considerable commodity as shown in Figure 6.1.12.

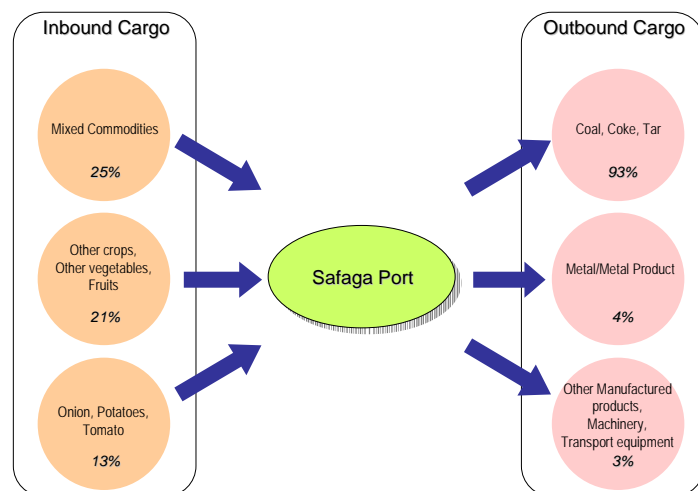


Source: JICA Study Team

**Figure 6.1.12 Cargo Movements at El Dekheila Port**

**Safaga Port**

Compared to Damietta and Alexandria Ports, total cargo volume at Safaga Port is less than one-tenth. Figure 6.1.13 shows that Coal, Coke and Tar represent the major outbound cargo. On the other hand, other crops, other mixed cargo account for the major inbound commodities.

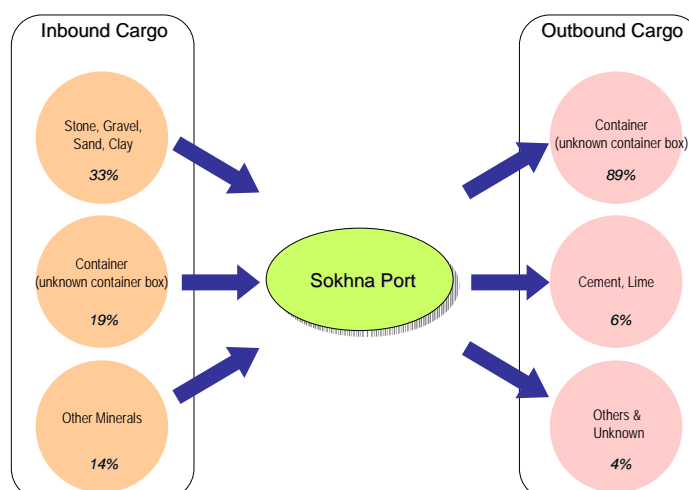


Source: JICA Study Team

**Figure 6.1.13 Cargo Movements at Safaga Port**

### Sokhna Port

As for outbound cargo, this port appears to be specialized as a container port. However, a considerable container movement for inbound cargo was not much observed as indicated by Figure 6.1.14.



Source: JICA Study Team

Figure 6.1.14 Cargo Movements at Sokhna Port

## 6.1.4 Cargo Generation and Attraction Zone

### 1) Cargo Generation and Attraction

As shown in Table 6.1.3, Alexandria has the highest portion of total cargo volume (14.8%), followed by Cairo (11.9%) and Suez (10.6%). It is apparent that commodities are mainly moving within the region of Nile Delta, which implies that the cargo movement within Upper Egypt is currently not significant.

Table 6.1.3 Cargo Volume by Sub-Governorate

Unit: ton / day

	LZ	Generation	Attraction	Total		LZ	Generation	Attraction	Total
1	Cairo	4.7%	7.2%	11.9%	28	North-West Behera	0.5%	0.2%	0.7%
2	Giza	0.2%	0.7%	0.9%	29	Alexandria	8.6%	6.3%	14.8%
3	South Qalyubia	0.4%	0.4%	0.8%	30	Fayoum	0.4%	0.2%	0.6%
4	North Qalyubia	0.4%	0.6%	1.0%	31	East Beni Suef	0.0%	0.0%	0.0%
5	New Cairo	2.5%	0.5%	3.0%	32	West Beni Suef	0.0%	0.0%	0.1%
6	North Helwan	4.7%	0.3%	5.0%	33	East Minya	0.3%	0.1%	0.4%
7	South Helwan	0.0%	0.0%	0.0%	34	West Minya	0.4%	0.1%	0.5%
8	Six October City	0.1%	0.0%	0.1%	35	East Asyut	0.0%	0.0%	0.0%
9	West Six October	2.4%	2.9%	5.3%	36	West Asyut	0.0%	0.1%	0.1%
10	East Sharkia	0.1%	0.1%	0.2%	37	East Sohag	0.0%	0.0%	0.0%
11	West Sharkia	0.2%	0.6%	0.8%	38	West Sohag	0.0%	0.0%	0.0%
12	10 Ramadan	2.6%	3.6%	6.2%	39	East Qena North	0.5%	1.2%	1.7%
13	North Dakhalia	1.0%	0.2%	1.1%	40	East Qena South	0.0%	0.0%	0.0%
14	Middle Dakhalia	0.6%	1.1%	1.7%	41	West Qena	0.2%	0.5%	0.8%
15	South Dakhalia	0.1%	0.1%	0.1%	42	East Luxor City	0.0%	0.0%	0.0%
16	Damietta	4.0%	2.5%	6.6%	43	West Luxor City	0.0%	0.0%	0.0%
17	East Port Said	0.0%	0.1%	0.1%	44	East Aswan	0.7%	0.1%	0.8%
18	West Port Said	0.2%	0.4%	0.6%	45	West Aswan	0.0%	0.0%	0.0%
19	East Ismailia	0.0%	0.0%	0.0%	46	North Red Sea	0.0%	0.0%	0.0%
20	West Ismailia	0.0%	0.1%	0.1%	47	Middle Red Sea	0.1%	0.0%	0.1%
21	Suez	7.8%	2.7%	10.6%	48	South Red Sea	0.0%	0.0%	0.0%
22	East Minufia	0.2%	0.3%	0.5%	49	North Sinai	2.1%	1.7%	3.8%
23	West Minufia	0.7%	2.3%	3.0%	50	South Sinai	0.5%	0.0%	0.5%
24	North Gharbia	0.4%	0.5%	0.9%	51	Matrouh	0.0%	0.1%	0.1%
25	South Gharbia	0.9%	0.4%	1.3%	52	New Valley	0.2%	0.3%	0.5%
26	Kafr El Sheik	1.1%	0.2%	1.3%		Unknown	5.4%	5.6%	11.1%
27	South-East Behera	0.4%	0.1%	0.5%		Total	55.5%	44.5%	100.0%

Source: JICA Study Team

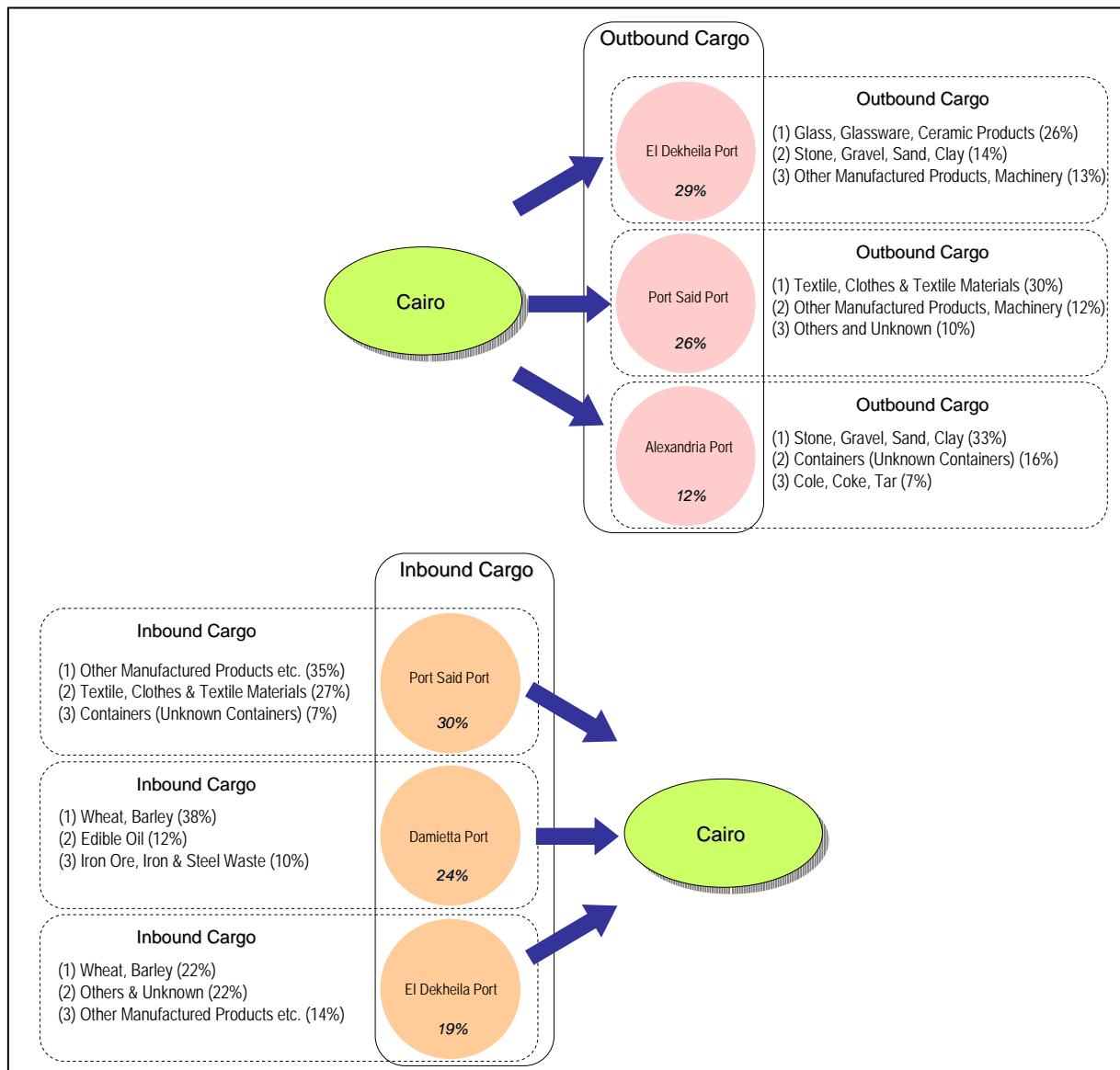
2) Analysis of Major Generation and Attraction Zones

In this section, specific cargo movements between different sea ports and inland zones are analyzed. The high cargo demand was observed in Sub-Governorate of Cairo and Alexandria as derived from Table 6.1.3 and Figure 6.1.15. In addition, Safaga and Sokhna Ports are also selected to be analyzed in order to understand the cargo movements along the Red Sea.

**Movements between Cairo and Different Sea Ports**

Total volume of commodities originated from Cairo to different sea ports is calculated. 29% of all outbound cargoes is shipped to El Dekheila Port, 26% to Port Said Port. The shipped commodities vary by port. However, it can be noted that the share of “Stone, Gravel, Sand, and Clay” has significant share among other commodities.

On the other hand, in terms of cargoes shipped from different sea ports to Cairo, 30% of all inbound cargoes is transported from Port Said Port and 24% from Damietta Port. In other words, Port Said and Damietta Ports could be the gateway to Cairo for the import of commodities.



Source: JICA Study Team

Figure 6.1.15 Cargo Movements between Cairo and Different Sea Ports

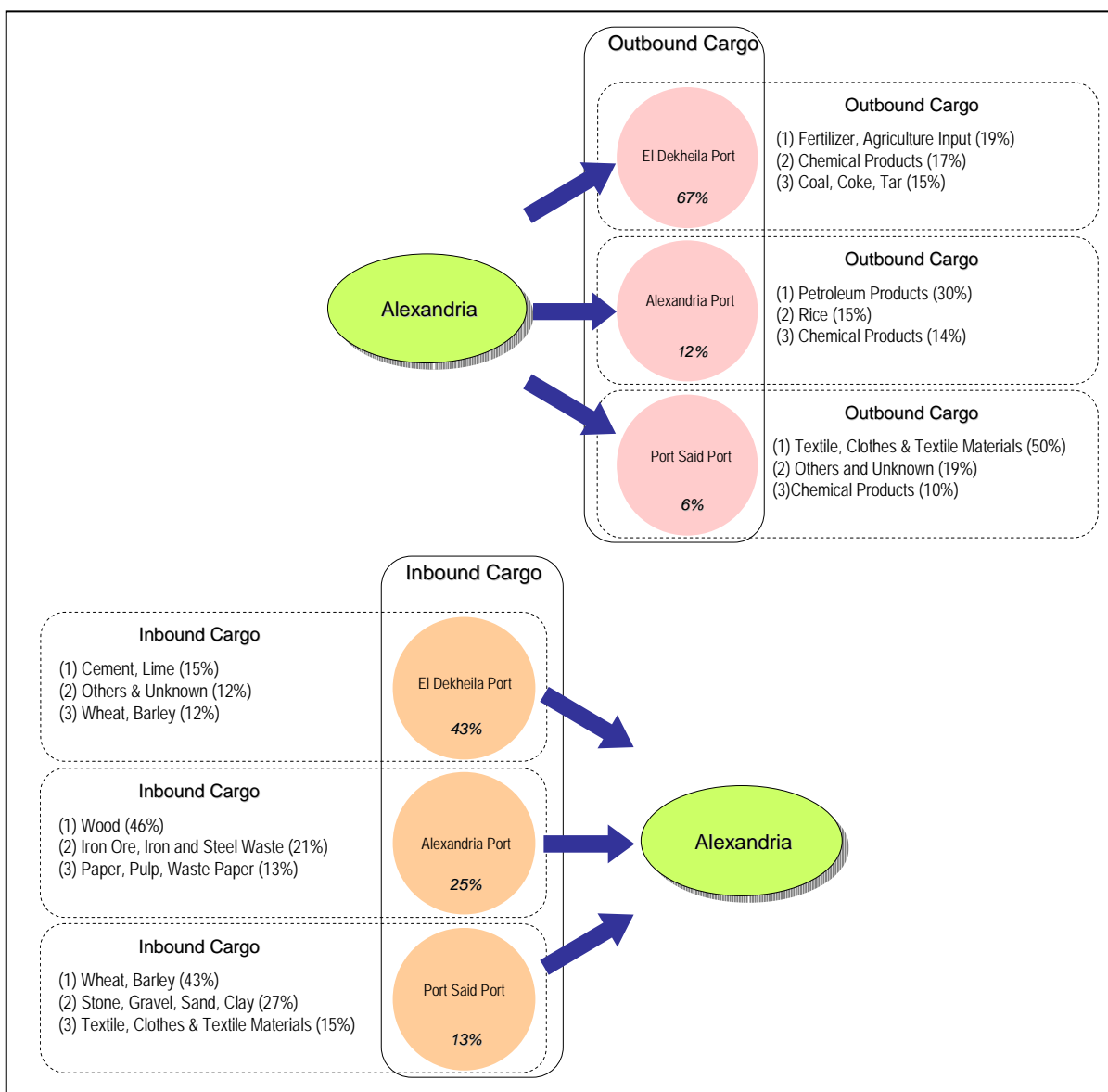


**Movements between Alexandria and Different Sea Ports**

Total volume of cargoes originated from Alexandria to ports is estimated. 67% of all outbound cargoes is shipped to El Dekheila Port, 12% to Alexandria Port and 6% to Port Said Port. Figure 6.1.16 illustrates the inbound and outbound movements of the top three commodities from/to different sea ports to-and-from Alexandria area. On the other hand 43%, 25% and 13% of all inbound cargoes arrive at Alexandria from Alexandria, El Dekheila and Port Said Ports, respectively.

The major movements between Alexandria and various sea ports can be characterized as mineral and fertilizer-centered movements. Meanwhile, total outbound cargo volume shipped from ports to Alexandria is relatively lower than inbound cargo volume.

Since both Alexandria and El Dekheila Ports are closely located in Alexandria, they can be considered as one sea port. Therefore, commodities to-and-from Alexandria would move within some particular zones.

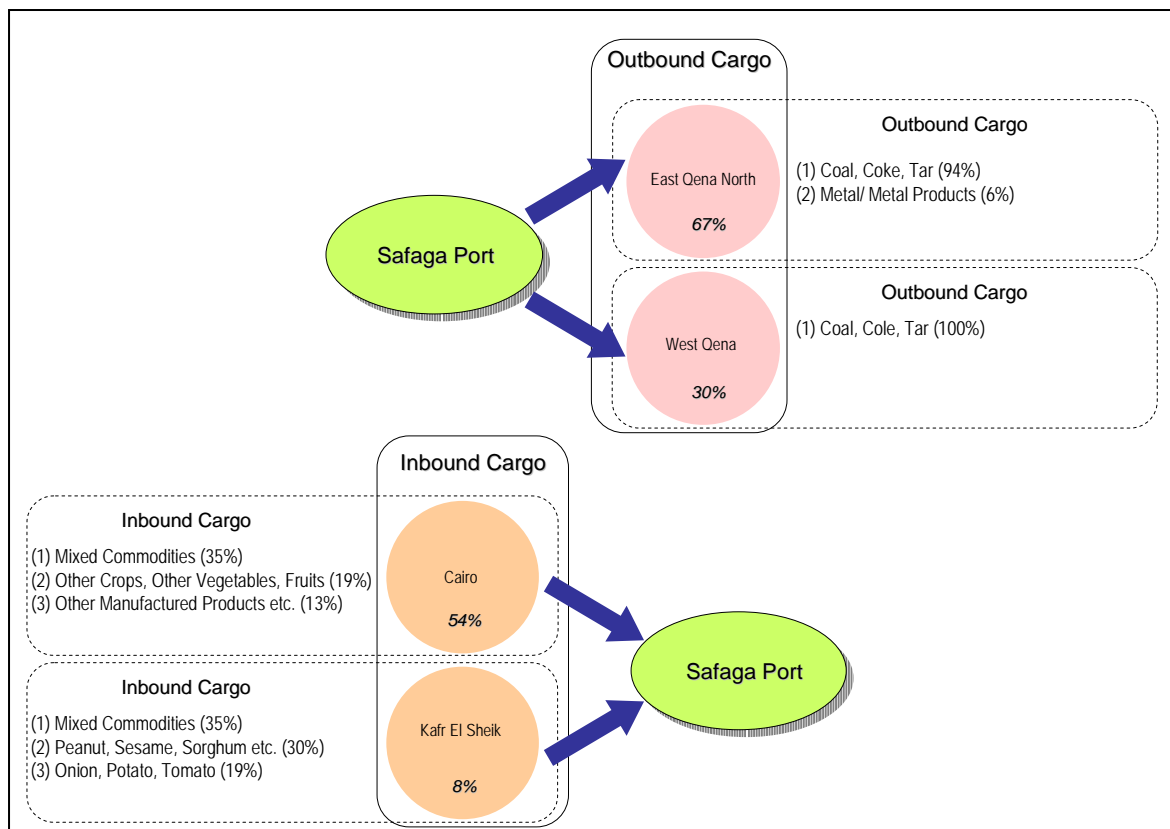


Source: JICA Study Team

**Figure 6.1.16 Cargo Movements between Alexandria and Different Sea Ports**

**Movements to-and-from Safaga Ports**

Safaga Port is the sole sea port which is located in Upper Egypt, and it could be the gateway to-and-from Upper Egypt. Outbound cargoes are concentrated in Qena Governorate as shown in Figure 6.1.17. On the other hand 54% and 8% of all inbound cargoes depart from Cairo and Kafr El-Sheik Governorates, respectively.



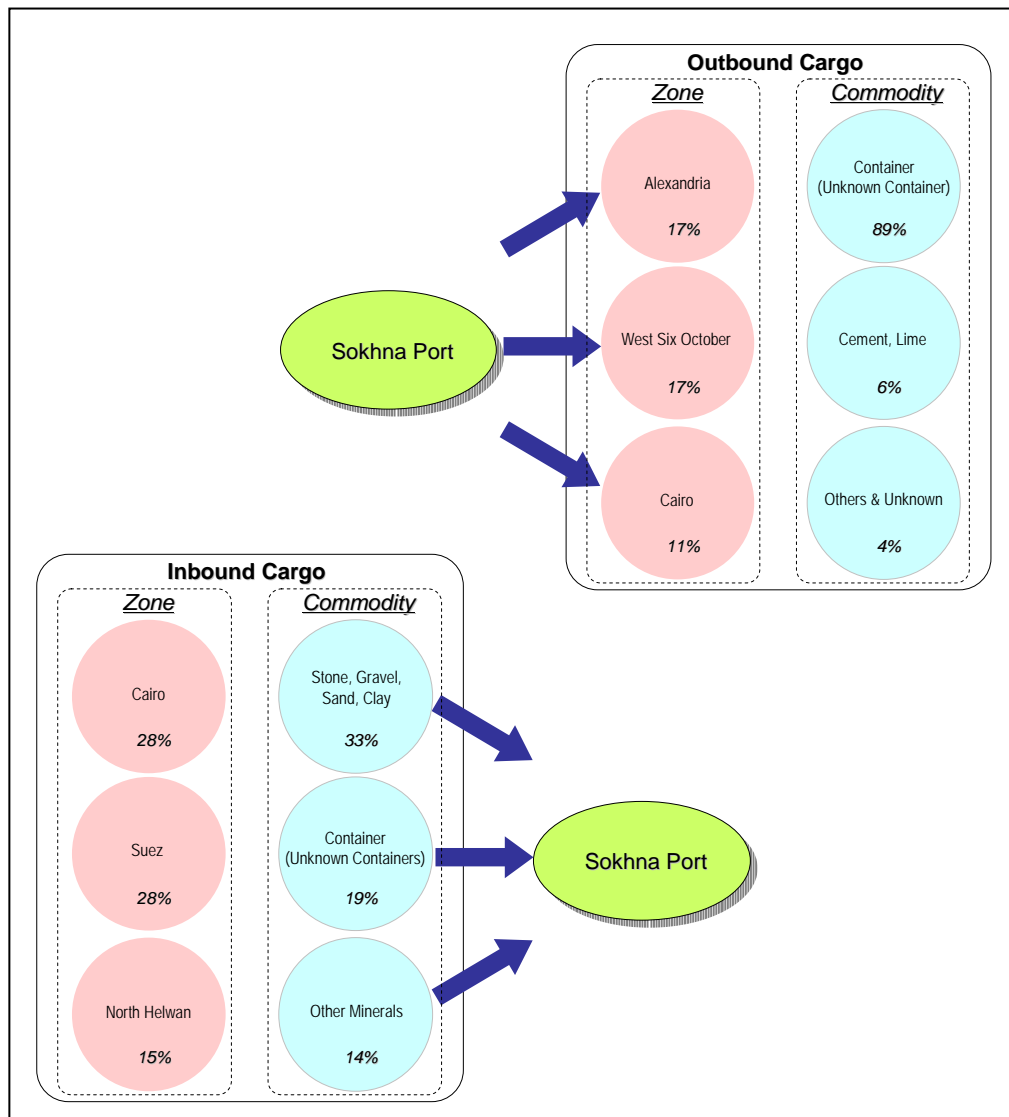
Source: JICA Study Team

**Figure 6.1.17 Cargo Movements**

**Movements to-and-from Sokhna Ports**

Sokhna Port is located on the Red Sea about 30km south of Adabiya Port. Cargo movement through Sokhna Port is destined for several places of Egypt. Figure 6.1.18 shows the share of outbound cargo movement from Sokhna Port to Alexandria, Six October and Cairo accounts for 17%, 17% and 11%, respectively. In addition, cargo movements from Sokhna Port can be characterized as “Container Traffic”.

On the other hand, Cairo and Suez are observed as major origin zones for inbound cargo at Sokhna port. Helwan has a good access road to Sokhna, that is, Cairo-Sokhna Desert Road, and this accessibility may leads the high demand from Helwan to Sokhna.



Source: JICA Study Team

Figure 6.1.18 Cargo Movements

### Movements to-and-from Qena Area

As shown in Table 6.1.3, it is clear that most cargo movements are occurred within Nile Delta. Meanwhile, Tables 6.1.4 and 6.1.5 indicate that Qena Governorate, which is located 50km north from Luxor, is the largest Governorate which attracts and generates the cargoes among Governorates of Upper Egypt.

In terms of accessibility to the sea port, Safaga Port is the best port for Qena-originated cargoes. Cargoes transported to Qena mainly come from Safaga Port; however, Qena-originated cargoes are mostly shipped not to Safaga Port, but to El Dekheila Port (55%) as shown in Table 6.1.5.

**Table 6.1.4 Cargo Movements from Ports to Qena**

Origin Port	Destination	%
Alexandria Port	Qena Governorate	4%
Safaga Port		93%
Sokhna Port		3%
Total		100%

Source: JICA Study Team

**Table 6.1.5 Cargo Movements from Qena to Ports**

Origin	Destination Port	%
Qena Governorate	Alexandria Port	39%
	El Dekheila Port	55%
	Safaga Port	4%
Total		100%

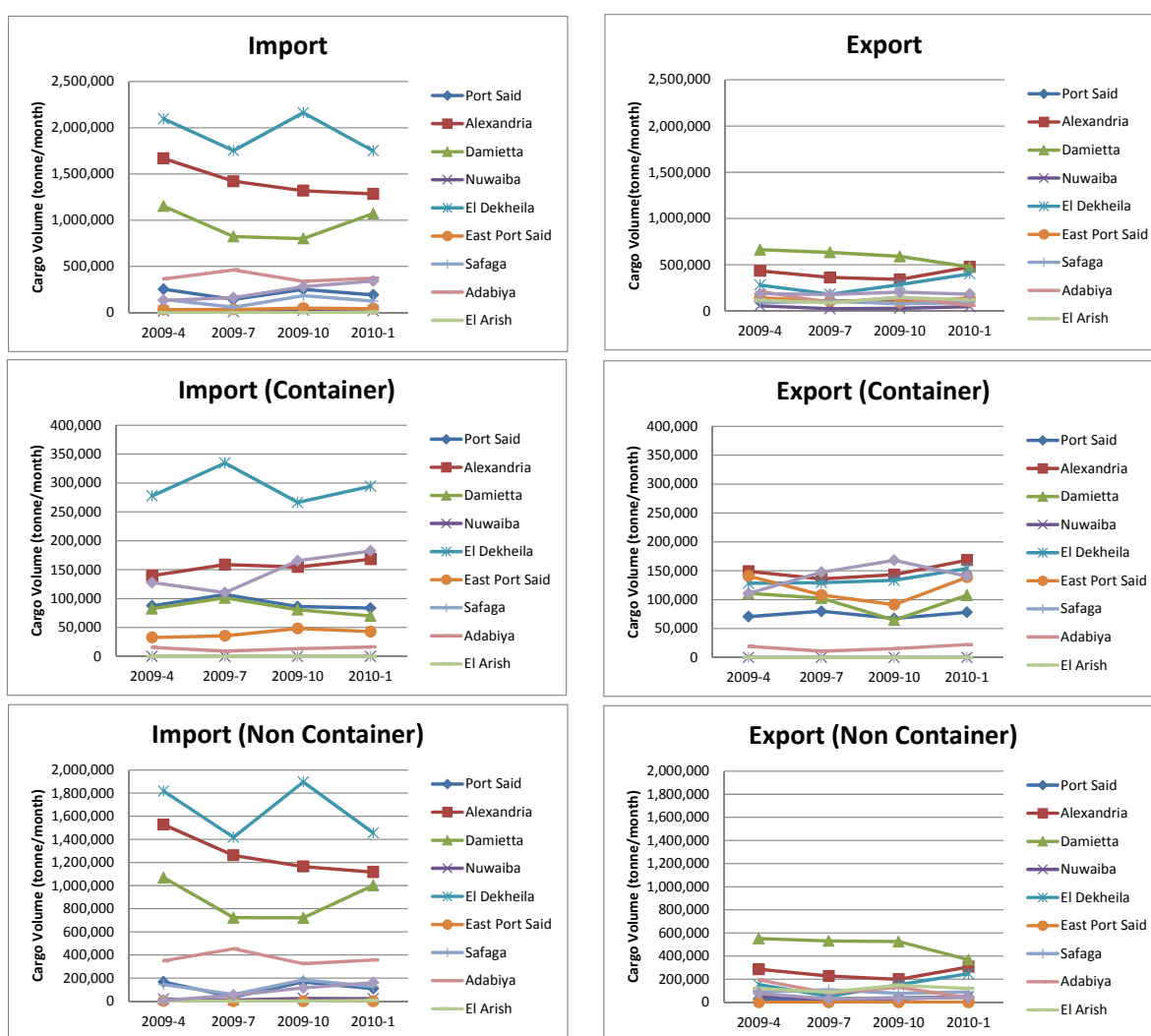
Source: JICA Study Team

### 6.1.5 Analysis of B/L Information

The Bill of Lading (Manifest) information for 10 major international ports has been collected from the related authorities. It includes origin/destination country of importing/exporting cargo, commodity name, cargo weight, and commodity status (Container or Non-container). In order to analyze seasonal variation, the quarterly data is collected (October 2009, April 2009, July 2009 and January 2010).

#### 1) Seasonal Variation

Figure 6.1.19 indicates the seasonal trading variation. Apparently, an unbalanced Egyptian trading can be seen between import and export. Import cargo volume is 2.6 times as much as export volume in total. Large variation is not observed for export cargo through the year; however, import cargo volume changes by month. Specifically, the ports located on Mediterranean Sea (El Dekheila, Alexandria and Damietta Ports) have a tendency to fluctuate import volume seasonally.



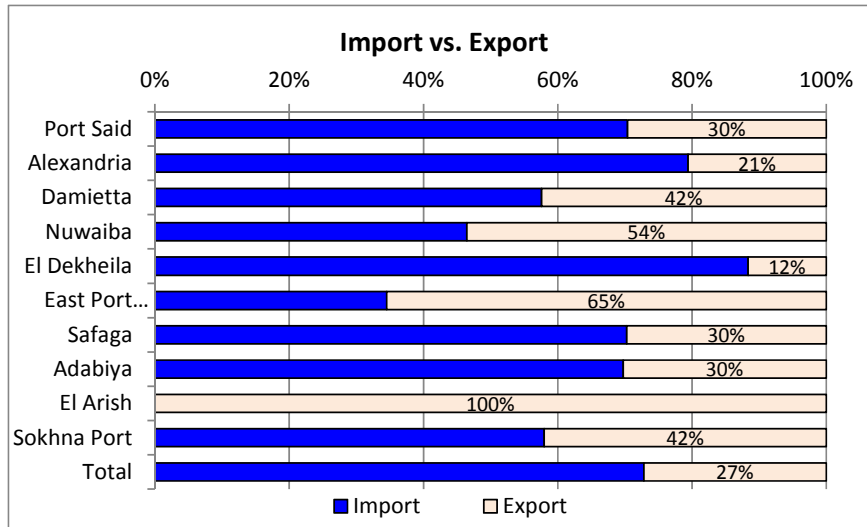
Source: JICA Study Team

Figure 6.1.19 Import and Export Volume by Port

#### 2) Import vs. Export

The share of handling volume between import and export cargo is varied among 10 ports. In general, import and export volume is clearly unbalanced. Of which, 3 ports (Nuwaiba, East Port Said and El Arish Ports) are

regarded as an export-specific port. El Arish port handles only export cargoes. Meanwhile, approximately 90 percent of all cargoes through El Dekheila port is import cargo.

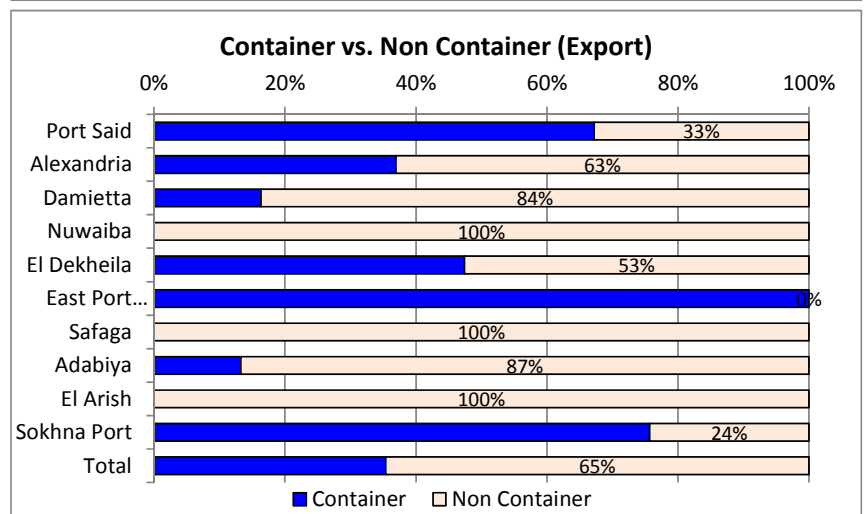
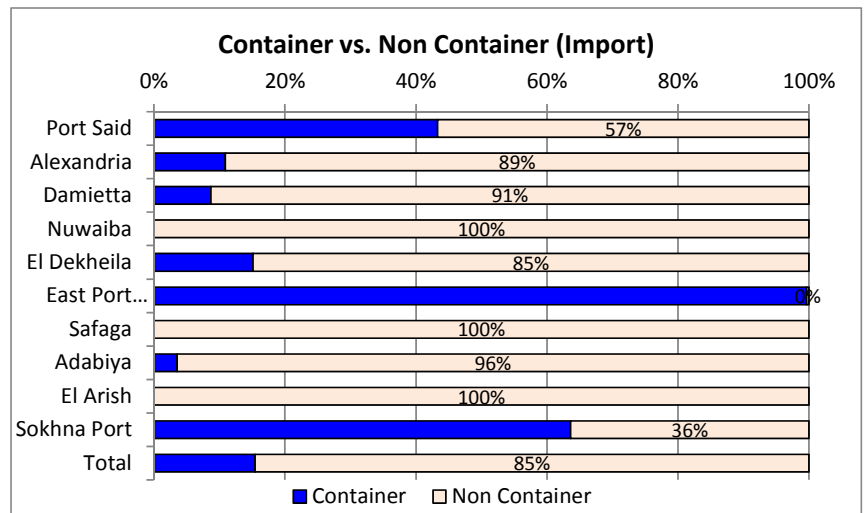


Source: JICA Study Team

Figure 6.1.20 Share of Handling Volume between Import and Export Cargo

3) Container vs. Non-Container

The figure below describes characteristics of the ports in terms of packing type. In general, the containerization ratio seems low level as its ratio of import and export remain below 40%. East Port Said port is completely specialized for container port as shown in the figure. On the other hand, Nuwaiba, Safaga, El Arish ports are for non-container ports.



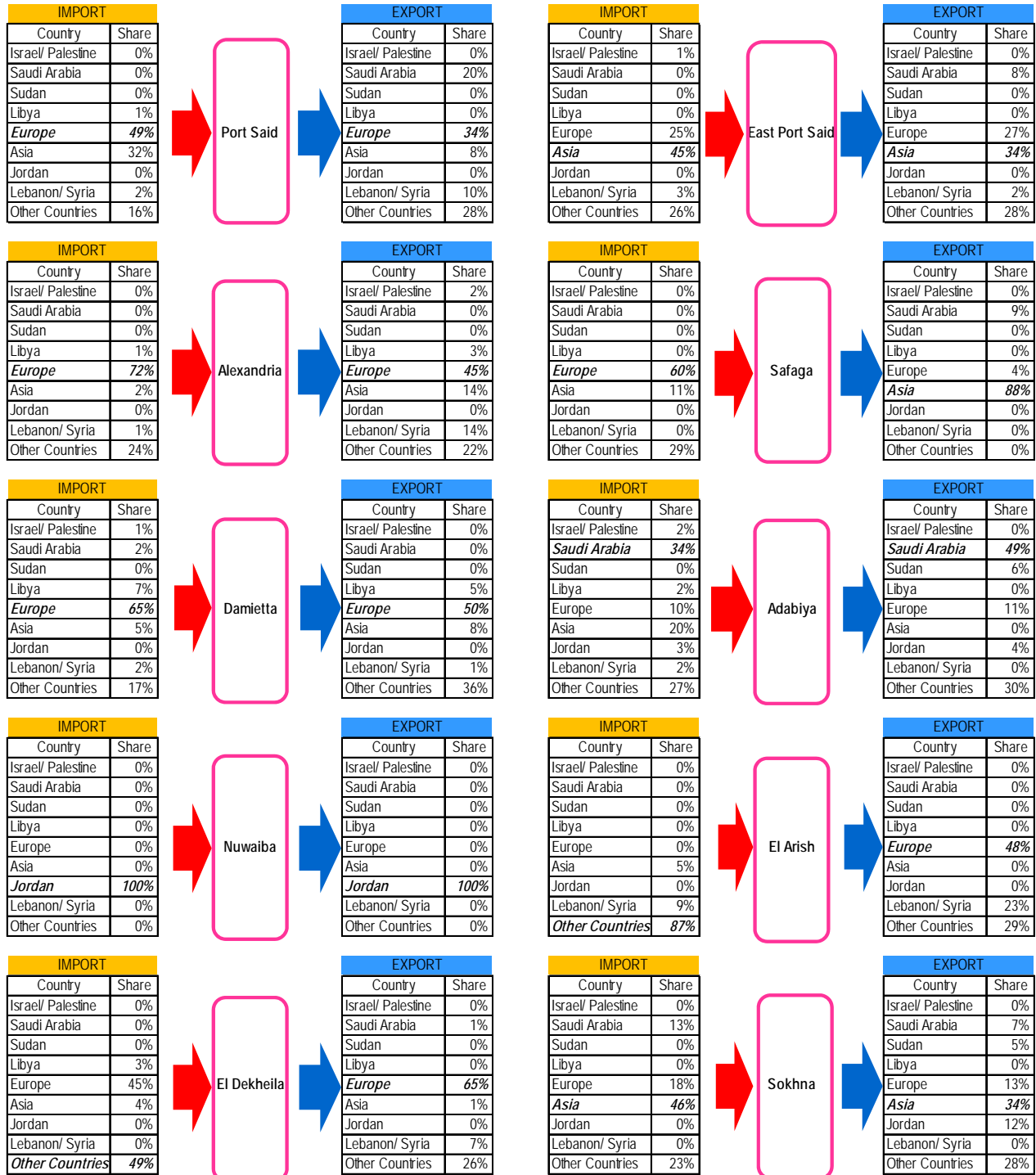
Source: JICA Study Team

Figure 6.1.21 Share of Handling Volume between Container and Non-Container

4) Origin and Destination of Trading Cargo

B/L information reveals origin and destination country of the cargo. Figure 6.1.22 shows the share of trading countries/ regions by port. Each port has different characteristics:

- Europe-centric ports: Port Said, Alexandria and Damietta
- Asia-centric ports: East Port Said and Sokhna
- Middle East-centric ports: Nuwaiba (Jordan) and Adabiya (Saudi Arabia)
- Others: El Dekheila, El Arish and Safaga



Source: JICA Study team

Figure 6.1.22 Origin and Destination Country by Port

## 5) Major Commodities

Table 6.1.6 shows top-3 commodities handled at the port. Resources and energy has been major exporting commodity for most of ports; while, importing cargo is specialized in food-related commodity. Alexandria port handles mainly resources, energy and construction materials.

Table 6.1.6 Top 3 Commodities by Port (Import and Export)

IMPORT			EXPORT		
Top 3 Commodities		Share	Top 3 Commodities		Share
Port Said Port (Import) : 7,000 tonne/day			Port Said Port (Export) : 3,700 tonne/day		
15	Wheat, Barley	37%	6	Other Minerals	27%
29	Metal/ Metal Products	29%	26	Other Food/ Beverage	13%
4	Iron Ore, Iron, Steel Waste	12%	36	Others (Unknown)	13%
Alexandria Port (Import) : 47,000 tonne/day			Alexandria Port (Export) : 13,500 tonne/day		
4	Iron Ore, Iron, Steel Waste	26%	3	Petroleum Products	31%
3	Petroleum Products	19%	33	Machinery, Manufactured Products	13%
9	Wood	15%	27	Chemical Products	11%
Damietta Port (Import) : 32,000 tonne/day			Damietta Port (Export) : 20,000 tonne/day		
15	Wheat, Barley	22%	3	Petroleum Products	44%
4	Iron Ore, Iron, Steel Waste	19%	27	Chemical Products	27%
11	Corn, Maize	14%	7	Stone, Gravel, Sand, Clay	5%
Nuwaiba Port (Import) : 600 tonne/day			Nuwaiba Port (Export) : 1,300 tonne/day		
20	Other Crops & Vegetables, Fruit	56%	20	Other Crops & Vegetables, Fruit	49%
33	Machinery, Manufactured Products	13%	26	Other Food/ Beverage	24%
27	Chemical Products	11%	33	Machinery, Manufactured Products	9%
El Dekheila Port (Import) : 64,700 tonne/day			El Dekheila Port (Export) : 9,600 tonne/day		
27	Chemical Products	27%	7	Stone, Gravel, Sand, Clay	22%
15	Wheat, Barley	23%	3	Petroleum Products	20%
11	Corn, Maize	13%	33	Machinery, Manufactured Products	15%
East Port Said Port (Import) : 1,300 tonne/day			East Port Said Port (Export) : 4,000 tonne/day		
36	Others (Unknown)	32%	6	Other Minerals	37%
20	Other Crops & Vegetables, Fruit	12%	20	Other Crops & Vegetables, Fruit	19%
27	Chemical Products	9%	32	Textile, Clothes	7%
Safaga Port (Import) : 4,300 tonne/day			Safaga Port (Export) : 3,000 tonne/day		
15	Wheat, Barley	60%	6	Other Minerals	81%
29	Metal/ Metal Products	29%	15	Wheat, Barley	7%
5	Coal, Coke, Tar	11%	20	Other Crops & Vegetables, Fruit	6%
Adabiya Port (Import) : 12,800 tonne/day			Adabiya Port (Export) : 4,300 tonne/day		
3	Petroleum Products	30%	27	Chemical Products	34%
19	Edible Oil	20%	6	Other Minerals	25%
4	Iron Ore, Iron, Steel Waste	17%	4	Iron Ore, Iron, Steel Waste	18%
El Arish Port (Import) : 60 tonne/day			El Arish Port (Export) : 4,000 tonne/day		
8	Cement, Lime	87%	7	Stone, Gravel, Sand, Clay	85%
33	Machinery, Manufactured Products	9%	8	Cement, Lime	14%
36	Others (Unknown)	5%	26	Other Food/ Beverage	0%
Sokhna Port (Import) : 7,700 tonne/day			Sokhna Port (Export) : 6,300 tonne/day		
7	Stone, Gravel, Sand, Clay	13%	6	Other Minerals	31%



IMPORT			EXPORT		
Top 3 Commodities		Share	Top 3 Commodities		Share
20	Other Crops & Vegetables, Fruit	12%	27	Chemical Products	17%
33	Machinery, Manufactured Products	12%	30	Glass, Ceramic Products	15%

## 6.2 FREIGHT TERMINAL SURVEY

### 6.2.1 Outline of the Survey

The main objective of this survey is to understand the freight volume and movement via a freight terminal. The survey was conducted at all types of freight terminals including railways, river ports, land ports, and air cargo terminals. As a result of this survey, the outputs will be utilized:

- To develop the freight OD movements, particularly at major intermodal points, including railway terminals, river ports, land ports, and airports; and
- To derive the parameters for the cargo demand forecast in general and modal split in particular.

In order to achieve these objectives, MiNTS carried out two kinds of survey, namely Counting Survey and Interview Survey.

The freight terminal survey had been conducted for three months since May, 2010. However, the uncertain operation of ports and terminals was observed during the survey. Even though the arrival time of trains has been scheduled, it sometimes was cancelled without any notice. In addition, all the selected terminals are not operating on a daily basis but rather temporary or on demand.

Table 6.2.1 shows all surveyed ports and terminals as well as sampling rate.

**Table 6.2.1 Selected Freight Terminals and Sampling Rate**

No.	Type of Terminal	Name of Terminal	No. of Sample	No. of Vehicle	Sampling Rate
1	River Port	Abo Genah - Minye	2	10	20.0%
2		El Khatatba	1	4	25.0%
3		El Sad El Ali	3	17	17.6%
4		El Shobk	5	40	12.5%
5		El Shobk El Sharki	4	66	6.1%
6		Elawa - Alexandria	8	23	34.8%
7		El-Sibaya	15	92	16.3%
8		Hassan Hamad	3	12	25.0%
9		Ibrahim Youssef	3	28	10.7%
10		Khaled - Aswan	4	30	13.3%
11		Mangabad	4	24	16.7%
12		Sammalout	6	24	25.0%
13		Shobra El-Khema	3	35	8.6%
14		Shubrah (Phosphate)	7	26	26.9%
15		Tanash	4	30	13.3%
1	Railway Terminal	Abu El Resh - Aswan (Petrol)	11	11	100.0%
2		Abu Zaabal	6	24	25.0%
3		Abu Zaabal Clay	8	41	19.5%
4		Adwa Clay	2	13	15.4%
5		Asuit Grain Silo	4	10	40.0%
6		Aswan	4	20	20.0%
7		Beni Haron	23	41	56.1%
8		Beni Suef Grain Silo	7	11	63.6%
9		El Adabeya (Dolomite)	2	13	15.4%
10		El Adabeya (Phosphat)	4	37	10.8%
11		El Rouysate	5	20	25.0%
12		El-Fayoum Silo	9	9	100.0%
13		Embaba Silo	11	33	33.3%
14		Fayoum (Petrol)	23	51	45.1%
15		Kafr El Sheikh	7	13	53.8%
16		Kilo 48	3	21	14.3%
17		Kilo 66	1	10	10.0%
18		Luxor (Petrol)	5	10	50.0%

No.	Type of Terminal	Name of Terminal	No. of Sample	No. of Vehicle	Sampling Rate
19		Mansoura	17	31	54.8%
20		Menya (Petrol)	43	52	82.7%
21		Menya Grain Silo	8	8	100.0%
22		Qena (Petrol)	27	31	87.1%
23		Shubra El-Kheima Clay	8	15	53.3%
24		Shubra Grain Silo	22	41	53.7%
25		Sohag (Petrol)	6	6	100.0%
26		Tanta Cement Yard	11	31	35.5%
27		Tanta Grain Silo	21	29	72.4%
1	Dry Port	10th Ramadan	60	410	14.6%
2		6th October	5	102	4.9%
3		Borg El Arab Alexandria	10	63	15.9%
4		SOSDI	7	47	14.9%
1	Free Zone	6th October	14	112	12.5%
2		Alexandria	40	791	5.1%
3		Ataka	16	79	20.3%
4		Damietta	9	380	2.4%
5		Ismalia	18	189	9.5%
6		Nasr City	43	396	10.9%
7		Port Said	26	244	10.7%
8		Port Tawfik	11	95	11.6%
9		Shebin El-Kom	13	30	43.3%
1	Air Cargo Terminal	Cairo Airport	219	1,184	18.5%

Source: JICA Study Team

### 6.2.2 Vehicle Movements at Freight Terminals

Hourly traffic volume at several types of terminals is summarized as shown in Figure 6.2.1.

#### River Ports

Generally, the observed traffic volumes at river ports are much lower than the sea ports, which implies the low freight demand of inland water transport. The operating hours would depend on the arrival or departure of vessels, yet the river ports are opened from 8:00 AM till 8:00 PM.

#### Railway Terminal

The traffic volume at the railway terminals was also observed at quite low level, though the terminals are selected among the terminals which deal with large cargo volume in a year.

#### Free Zone

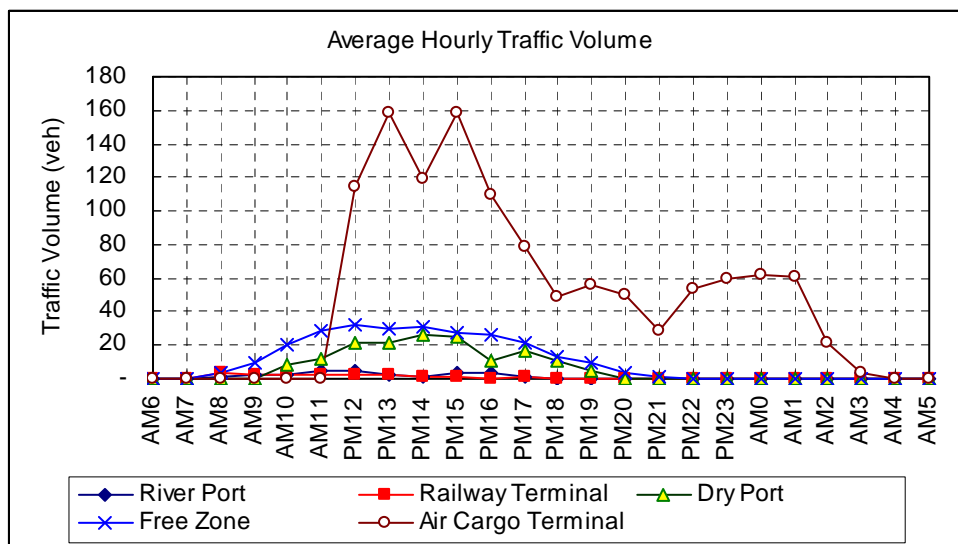
Compared to the other terminals such as railway and river port, traffic movement is much more vigorous. In most free zones, traffic movements are observed mainly between 8:00 AM and 10:00 PM.

#### Dry Port

The traffic volume at Dry Port is lower level than that of Free Zone. The movements were observed mainly between AM9:00 and PM7:00.

#### Airport

The heaviest traffic movement was observed at Cairo Air Cargo Terminal. Peak hour occurred between PM1:00 and PM3:00 with the volume of 160 veh/hour.



Source: JICA Study Team

Figure 6.2.1 Hourly Traffic Volume at Different Terminals

### 6.2.3 Modal Share

This survey classifies the vehicle type into 4 types. Based on the number of vehicles observed at the terminal, modal share by terminal is summarized as shown in Figure 6.2.2.

#### River Ports

Trucks going in and out the port are occupied by SU Heavy Truck and MU Heavy Truck which can be loaded with relatively large volume of cargo.

#### Railway Terminals

Vehicle type is varied from Light Truck to Tank Truck because each terminal handles different commodities. Basically, the railway terminal deals with a single commodity not multi-commodities. For instance, both Qena and Luxor are the railway terminals which are specialized for only Petroleum. As a result, the share of tank truck accounts for 100%.

#### Free Zones

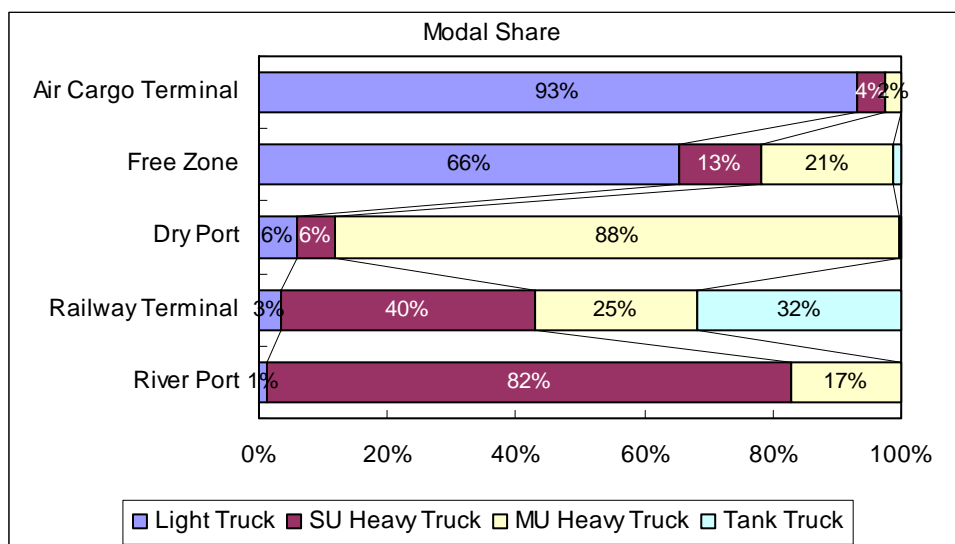
In other terminals and ports, heavy trucks have occupies the major modal share among other vehicle types; while, light truck could be the major transport mode in free zones. It is considered that cargoes are not actively moving to-and-from Free Zones.

#### Dry Ports

MU Heavy Truck occupies about 90% of all traffic.

#### Air Cargo Terminal

Most cargoes are transported by light truck. The total cargo volume might not be huge since the capacity of light truck is less than half of Heavy Truck.



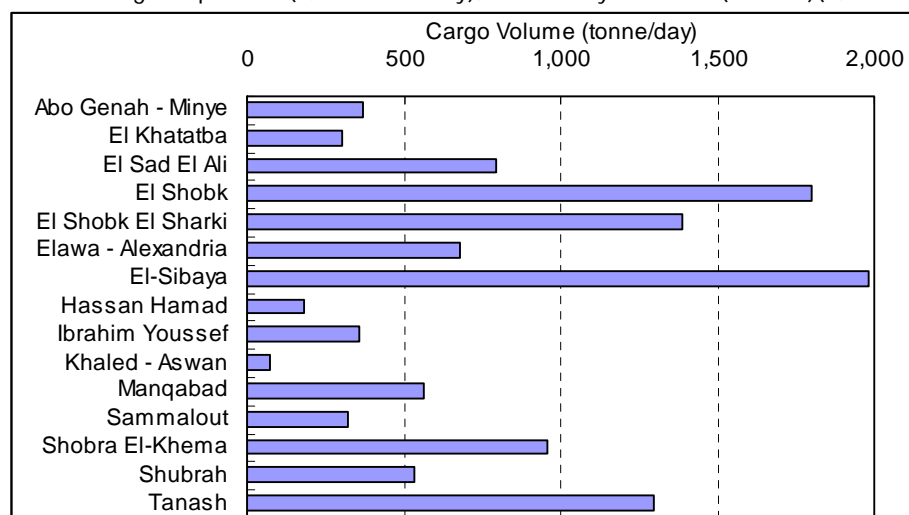
Source: JICA Study Team

Figure 6.2.2 Modal Share at River Ports

### 6.3 CARGO MOVEMENT AT THE RIVER PORT

#### 1) Cargo Volume at River Ports

Figure 6.3.1 depicts total volume of cargoes transported to-and-from river ports. El-Shibaya (Aswan) is ranked at the highest position (1,981 tonne/day), followed by El Shobk (Helwan)(1,800 tonne/day).



Source: JICA Study Team

Figure 6.3.1 Cargo Volume at River Ports

#### 2) Major Commodities at River Ports

Table 6.3.1 shows the first and second major commodities by port in terms of commodity weight transported to-and-from the Port. As it is obvious, most ports deal with only one commodity except El Sad El Ali and Elawa Ports.

Table 6.3.1 Major Commodities at River Ports

River Port	Major Commodity 1	Major Commodity 2
Abo Genah - Minye	Wheat, Barley (100%)	
El Khatatba	Stone, Gravel, Sand (100%)	
El Sad El Ali	Fertilizer (79%)	Metal/Metal Products (21%)
El Shobk	Cement, Lime (100%)	
El Shobk El Sharki	Iron Ore (100%)	
Elawa - Alexandria	Coal, Coke, Tar (51%)	Cement, Lime (49%)
El-Sibaya	Other Minerals (100%)	
Hassan Hamad	Stone, Gravel, Sand (100%)	
Ibrahim Youssef	Stone, Gravel, Sand (100%)	
Khaled - Aswan	Stone, Gravel, Sand (100%)	
Manqabad	Stone, Gravel, Sand (100%)	
Sammalout	Stone, Gravel, Sand (100%)	
Shobra El-Khema	Stone, Gravel, Sand (100%)	
Shubrah (Phosphate)	Other Minerals (100%)	
Tanash	Wheat, Barley (100%)	

Source: JICA Study Team

#### 3) Trip Distance

Trip distance to-and-from Port is broadly varied by port as shown in Table 6.3.2. Each port has different characteristics, and the geographical features cannot be observed from the result.

Table 6.3.2 Trip Distance by Port

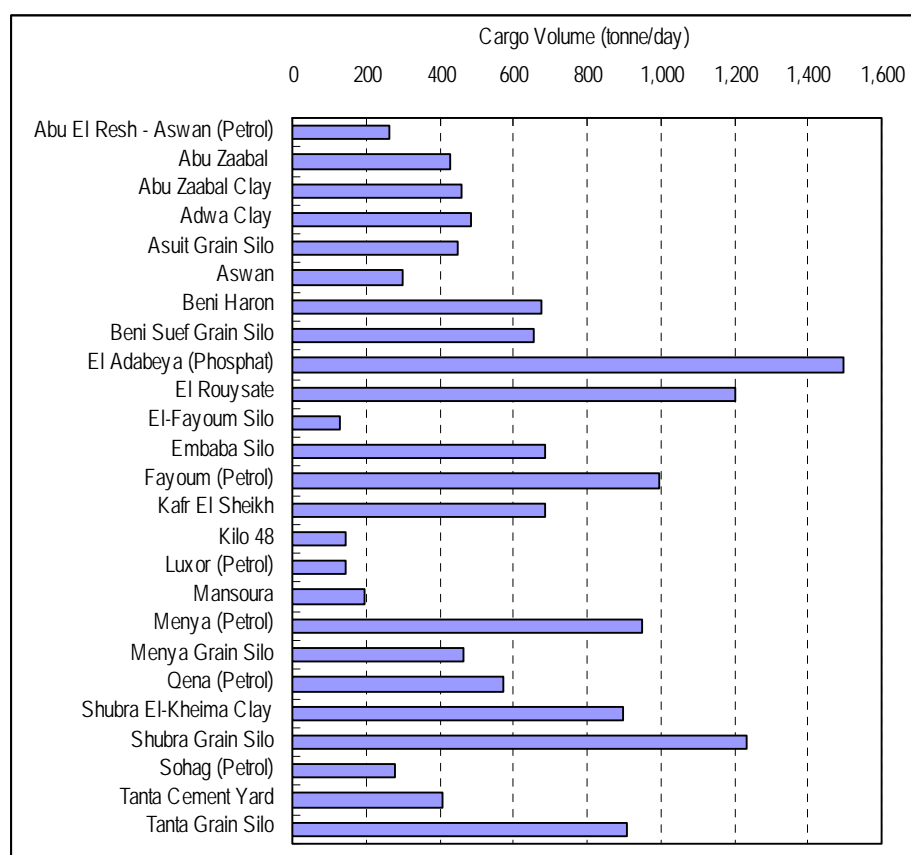
River Port	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
Elawa - Alexandria	Alexandria	0%	0%	25%	75%	0%
El Sad El Ali	Aswan	0%	0%	0%	0%	<b>100%</b>
El-Sibaya	Aswan	<b>100%</b>	0%	0%	0%	0%
Manqabad	Asyut	0%	<b>100%</b>	0%	0%	0%
El Khatatba	Behera	0%	0%	0%	<b>100%</b>	0%
Tanash	Giza	25%	75%	0%	0%	0%
El Shobk	Helwan	43%	57%	0%	0%	0%
El Shobk El Sharki	Helwan	0%	25%	75%	0%	0%
Shobra El-Khema	Kalyoubia	0%	0%	33%	67%	0%
Shubrah (Phosphate)	Kalyoubia	0%	0%	0%	<b>100%</b>	0%
Abo Genah - Minye	Minya	50%	50%	0%	0%	0%
Sammalout	Minya	33%	67%	0%	0%	0%

Source: JICA Study Team

## 6.4 CARGO MOVEMENT AT THE RAILWAY TERMINAL

### 1) Cargo Volume at Railway Terminals

Figure 6.4.1 depicts total volume of cargoes transported to-and-from railway freight terminal. El Adabeya (Suez) is ranked at the highest position (1,499 tonne/day), followed by Shubra Grain Silo (Qualyubia)(1,235 tonne/day).



Source: JICA Study Team

Figure 6.4.1 Cargo Volume at Railway Terminals

## 2) Major Commodities

Table 6.4.1 shows the first and second major commodities by terminal in terms of commodity weight transported to-and-from the Terminal. As it is obvious, almost all terminals deal with only one commodity except El Fayoum Silo and Menya Grain Silo.

**Table 6.4.1 Major Commodities at Railway Terminals**

Railway Terminal	Commodity 1	Commodity 2
Abu El Resh - Aswan (Petrol)	Petroleum (100%)	
Abu Zaabal	Other Minerals (100%)	
Abu Zaabal Clay	Stone, Gravel, Sand, Clay (100%)	
Adwa Clay	Stone, Gravel, Sand, Clay (100%)	
Asuit Grain Silo	Wheat, Barley (100%)	
Aswan	Stone, Gravel, Sand, Clay (100%)	
Beni Haron	Petroleum (100%)	
Beni Suf Grain Silo	Wheat, Barley (100%)	
El Adabeya (Phosphat)	Other Minerals (100%)	
El Rouysate	Stone, Gravel, Sand, Clay (100%)	
El-Fayoum Silo	Wheat, Barley (81%)	Wheat Flour, Bread (19%)
Embaba Silo	Wheat, Barley (100%)	
Fayoum (Petrol)	Petroleum (100%)	
Kafr El Sheikh	Wheat, Barley (100%)	
Kilo 48	Stone, Gravel, Sand, Clay (100%)	
Luxor (Petrol)	Petroleum (100%)	
Mansoura	Cement, Lime (100%)	
Menya (Petrol)	Petroleum (100%)	
Menya Grain Silo	Wheat, Barley (56%)	Wheat Flour, Bread (44%)
Qena (Petrol)	Petroleum (100%)	
Shubra El-Kheima Clay	Stone, Gravel, Sand, Clay (100%)	
Shubra Grain Silo	Wheat, Barley (100%)	
Sohag (Petrol)	Petroleum (100%)	
Tanta Cement Yard	Cement, Lime (100%)	
Tanta Grain Silo	Wheat, Barley (100%)	

Source: JICA Study Team

## 3) Trip Distance

Trip distance to-and-from Terminal is broadly dispersed on the different range of distance. Generally, it has a tendency that the commodity is transported within 10km from a terminal.

**Table 6.4.2 Trip Distance to-and-from Terminal**

Railway Terminal	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
Abu El Resh - Aswan (Petrol)	Aswan	17%	25%	8%	17%	33%
Aswan	Aswan	100%	0%	0%	0%	0%
Asuit Grain Silo	Asyut	10%	30%	60%	0%	0%
Beni Haron	Beni Suf	13%	9%	43%	30%	4%
Beni Suf Grain Silo	Beni Suf	0%	25%	13%	50%	13%
Adwa Clay	Fayoum	0%	0%	0%	100%	0%
El-Fayoum Silo	Fayoum	0%	0%	100%	0%	0%
Fayoum (Petrol)	Fayoum	0%	9%	57%	30%	4%
Mansoura	Gharbia	16%	21%	53%	0%	11%
Tanta Cement Yard	Gharbia	82%	0%	9%	9%	0%



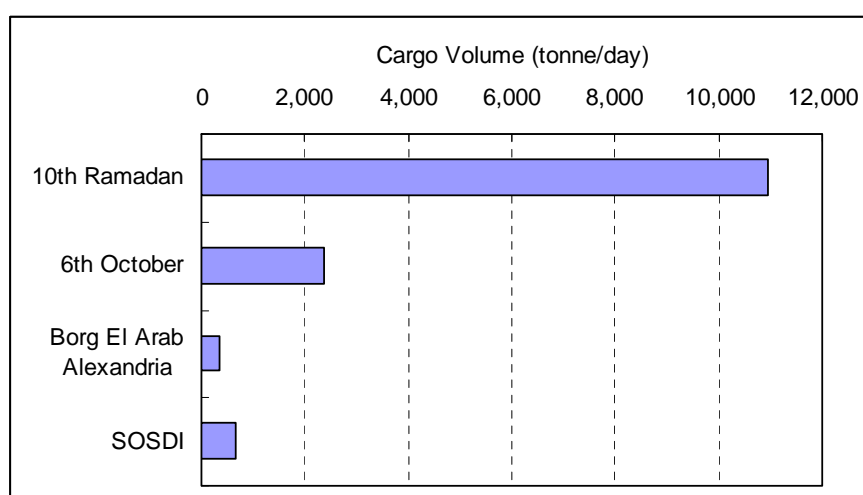
Railway Terminal	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
Tanta Grain Silo	Gharbia	0%	9%	27%	32%	32%
Embaba Silo	Giza	0%	27%	27%	9%	36%
Kafr El Sheikh	Kafr El Sheikh	0%	0%	0%	29%	71%
Abu Zaabal	Kalyoubia	100%	0%	0%	0%	0%
Abu Zaabal Clay	Kalyoubia	0%	100%	0%	0%	0%
Shubra El-Kheima Clay	Kalyoubia	0%	0%	0%	100%	0%
Shubra Grain Silo	Kalyoubia	0%	13%	38%	42%	8%
Luxor (Petrol)	Luxor	0%	40%	60%	0%	0%
El Rouysate	Matrouh	0%	0%	0%	100%	0%
Menya (Petrol)	Minya	14%	2%	23%	30%	32%
Menya Grain Silo	Minya	0%	0%	38%	0%	63%
Qena (Petrol)	Qena	0%	19%	33%	15%	33%
Kilo 48	Six October	0%	0%	100%	0%	0%
Kilo 66	Six October	0%	0%	100%	0%	0%
Sohag (Petrol)	Sohag	0%	0%	33%	0%	67%
El Adabeya (Dolomite)	Suez	100%	0%	0%	0%	0%
El Adabeya (Phosphat)	Suez	100%	0%	0%	0%	0%

Source: JICA Study Team

## 6.5 CARGO MOVEMENT AT THE DRY PORT

### 1) Cargo Volume at the Dry Port

Figure 6.5.1 depicts total volume of cargoes transported to-and-from a dry port. 10<sup>th</sup> of Ramadan (Sharkia) is ranked at the highest position (10,966 tonne/day) among 4 dry ports, followed by Six October (Six October)(2,380 tonne/day).



Source: JICA Study Team

Figure 6.5.1 Cargo Volume at Dry Ports

### 2) Major Commodities

Unlike River Port and Railway Terminal, it is observed that a dry port deals with multi commodities. It seems that 10<sup>th</sup> Ramadan focuses on the dairy products which lead to daily life. On the other hand, Six October mainly handles Chemical Products and Containers.

Table 6.5.1 Major Commodities at Dry Port

10th Ramadan			Borg El Arab		
Commodity_Type		Share	Commodity_Type		Share
36	Others & Unknown	50%	31	Paper, Pulp, Waste Paper	60%
23	Dairy Products	13%	25	Refined Sugar and Molasses	26%
26	Other Foods/ Beverage	7%	33	Other Manufactured Products	14%
	Others	29%			

Six October			SOSDI		
Commodity_Type		Share	Commodity_Type		Share
35	Container	64%	27	Chemical Products	49%
27	Chemical Products	36%	33	Other Manufactured Products	29%
			29	Metal/Metal Product	23%

Source: JICA Study Team

### 3) Trip Distance

Compared to other terminals, the terminal trip to-and-from Dry Port seems to be longer than others. Especially, Borg El Arab indicates the longest distance among them.

Table 6.5.2 Trip Distance by Dry Port

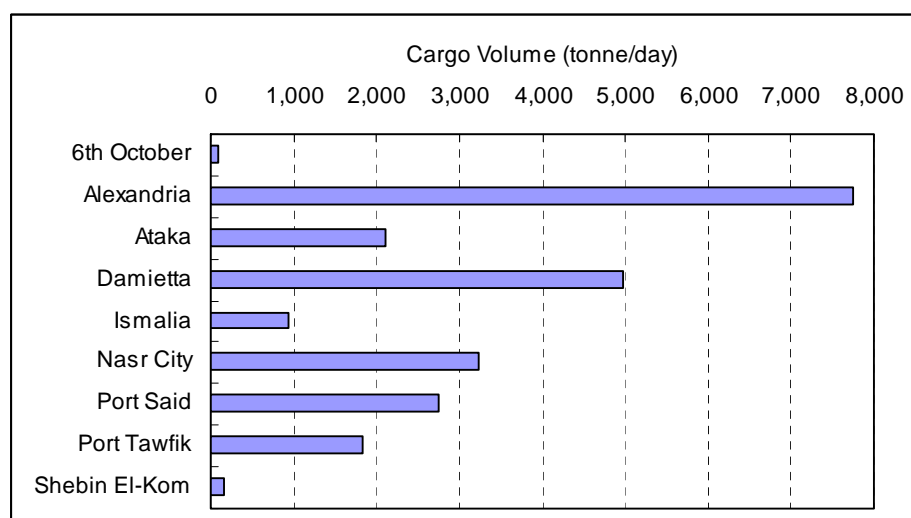
Dry Port	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
10th Ramadan	Sharkia	16%	24%	8%	5%	48%
6th October	Six October	46%	23%	6%	3%	23%
Borg El Arab Alexandria	Alexandria	5%	5%	21%	0%	68%
SOSDI	Six October	49%	16%	0%	5%	30%

Source: JICA Study Team

## 6.6 CARGO MOVEMENT AT THE FREE ZONE

### 1) Cargo Volume at the Free Zone

Figure 6.6.1 depicts total volume of cargoes transported to-and-from a free zone. Alexandria Free Zone (Alexandria) is ranked at the highest position (8,350 tonne/day) among 9 free zones, followed by Damietta Free Zone (Damietta)(4,966 tonne/day).



Source: JICA Study Team

Figure 6.6.1 Cargo Volume at Free Zones

## 2) Major Commodities

Most of Free Zones are specialized in the industrial cargoes as shown in Table 6.6.1. While, Port Said and Shebin El-Kom Free Zones would mainly be a textile-oriented zone.

Table 6.6.1 Major Commodities at Free Zones

6th October			Damietta		
Commodity_Type		Share	Commodity_Type		Share
36	Others and Unknown	92%	6	Other Minerals	43%
26	Other Food/Beverage	4%	33	Other Manufactured products etc.	19%
9	Wood	2%	30	Glass, Glassware, Ceramic product	17%
Alexandria			Ismalia		
Commodity_Type		Share	Commodity_Type		Share
35	Container (unknown container)	33%	35	Container (unknown container)	50%
3	Petroleum Products	23%	32	Textile, Clothes and textile materials, Leather	36%
36	Others and Unknown	14%	27	Chemical Products	11%
Ataka			Nasr City		
Commodity_Type		Share	Commodity_Type		Share
5	Coal, Coke, Tar	69%	36	Others and Unknown	36%
3	Petroleum Products	20%	33	Other Manufactured products etc.	16%
4	Iron ore, iron and steel waste	7%	26	Other Food/Beverage	15%
Port Said			Port Tawfik		
Commodity_Type		Share	Commodity_Type		Share
32	Textile, Clothes and textile materials, Leather	78%	35	Container (unknown container)	48%
36	Others and Unknown	19%	36	Others and Unknown	30%
31	Paper, Pulp, Waste paper	2%	29	Metal/Metal Product	18%
Shebin El-Kom					
Commodity_Type		Share			
32	Textile, Clothes and textile materials, Leather	85%			
36	Others and Unknown	8%			
31	Paper, Pulp, Waste paper	5%			

Source: JICA Study Team

## 3) Trip Distance

Characteristics of trip distance are completely different from other terminals. More than 50% of trips would be long trip, that is, more than 50km.

Table 6.6.2 Trip Distance by Free Zone

Free Zone	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
Alexandria	Alexandria	20%	5%	11%	12%	52%
Nasr City	Cairo	14%	5%	16%	14%	50%
Damietta	Damietta	36%	14%	11%	7%	32%
Ismalia	Ismalia	6%	3%	6%	0%	86%
Shebin El-Kom	Minuf	23%	8%	0%	8%	62%
Port Said	Port Said	45%	4%	6%	0%	45%
6th October	Six October	11%	18%	29%	21%	21%
Ataka	Suez	14%	0%	5%	18%	64%
Port Tawfik	Suez	0%	0%	0%	0%	100%

Source: JICA Study Team

## 6.7 CARGO MOVEMENT AT THE AIR CARGO TERMINAL

### 1) Cargo Volume at Air Cargo Terminal

In this category, only the Cairo Air Cargo Terminal was selected for the survey. The total traffic volume is 1,184 veh/day. In terms of vehicle volume, they have the highest portion among other terminals; however, cargo volume is not so considerable because most cargoes are transported by light truck.

## 2) Major Commodities

As shown in Table 6.7.1, this terminal is handling several types of commodities, other than construction materials such as stone, wood, sand etc.

**Table 6.7.1 Major Commodities at Air Cargo Terminal**

Commodity Type		Share
20	Other crops, Other vegetables, Fruits	26.5%
36	Others and Unknown	21.7%
33	Other Manufactured products etc.	21.7%
32	Textile, Clothes and textile materials, Leather	9.9%
35	Container (unknown container)	5.1%
3	Petroleum Products	4.5%
28	Pharmaceutical Products	3.0%
27	Chemical Products	2.5%
30	Glass, Glassware, Ceramic product	1.8%
31	Paper, Pulp, Waste paper	1.3%
26	Other Food/Beverage	1.2%
9	Wood	0.4%
17	Onion, Potatoes, Tomato	0.2%
22	Animal Products, Poultry	0.2%
Total		100.0%

Source: JICA Study Team

## 3) Trip Distance

Almost all air cargoes are concentrated in the Cairo International Airport. It means that the cargo could be coming from all parts in Egypt. Therefore, more than half of all trips are made with over 50km.

**Table 6.7.2 Trip Distance at Cairo Air Cargo Terminal**

Airport	Governorate	~ 5km	~ 10km	~ 30km	~ 50km	50km ~
Cairo Air Cargo Terminal	Cairo	3%	6%	21%	15%	54%

Source: JICA Study Team

## CHAPTER 7: BASIC ANALYSIS ON FREIGHT COMPANY INTERVIEW SURVEY

### 7.1 OUTLINE OF FREIGHT COMPANY INTERVIEW SURVEY

The freight company interview survey was conducted to fulfill the following objectives; (1) to grasp the transport cost (tariff) by trucking company and freight forwarder, (2) to understand the actual origin and destination and relation with industrial activities.

#### 1) Sample Size of Company Survey

The survey was conducted targeting three types of companies i.e. (a) trucking companies, (b) freight forwarders, (c) manufacturing companies. The total number of surveyed companies accounts for 364 samples. Table 7.1.1 presents the distribution of sample breakdown by company size and type.

**Table 7.1.1 Sample Size of Company Survey**

Company Size (No. of Employees)	Small 1-9	Medium 10-99	Large More than 100	Total
Trucking Companies	37	21	5	63

Company Size (No. of Employees)	Small 1-49	Medium 50-99	Large More than 100	Total
Freight Forwarders	49	5	4	58
Manufacturing Companies	117	66	60	243

In order to ensure the data accuracy and representativeness, the sample was designed to cover different geographic regions, company types and company sizes as shown in Table 7.1.2.

**Table 7.1.2 Sampling Rate by Region**

Location (Governorate)	Trucking Companies	Freight Forwarders	Manufacturing Companies
Cairo	40%	50%	40%
Alex	15%	25%	15%
Canal	10%	10%	10%
Delta	20%	10%	20%
Upper Egypt	15%	5%	15%
Total (%)	100%	100%	100%

Sample Companies	63	58	243
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## 2) Handling Cargo of Trucking Company and Freight Forwarder

The most frequent commodities (Top 3), which are transported by trucking companies were highlighted during the company survey. It can be observed from Table 7.1.3 that the top 3 commodities transported by trucking companies are food/ beverage (44.7%), wheat/barley (31%) as non-containerized cargo and metal/metal products (70.7%) as containerized cargo.

It should be noted that tonne and TEU units are used for non-containerized and containerized cargo, respectively.

**Table 7.1.3 Major Commodities Transported by Trucking Companies**

Non-container		Container	
Commodity	Tonne-base	Commodity	TEU-base
Food/Beverage	44.7%	Metal/Metal Product	70.7%
Wheat, Barley	31.0%	Textile, Clothes and textile materials, Leather	9.0%
Corn, Maze	6.2%	Other Manufactured products, Machinery, Transport equipment	8.2%
Other crops, Other vegetables, Fruits	4.9%	Chemical Products	6.2%
Petroleum Products	4.6%	Other Food/Beverage	2.5%
Rice	1.6%	Other crops, Other vegetables, Fruits	2.0%
Metal/Metal Product	1.5%	Refined Sugar and Molasses	1.3%
Iron ore, iron and steel waste	1.1%		
Textile, Clothes and textile materials, Leather	1.0%		
Stone, Gravel, Sand, Clay	1.0%		
Chemical Products	1.0%		
Refined Sugar and Molasses	0.8%		
Mixed Commodities	0.4%		
Other Manufactured products, Machinery, Transport equipment	0.1%		

Table 7.1.4 describes the distribution of total sample of freight forwarders (58) by major commodity type and company size.

**Table 7.1.4 Distribution of Sample Size of Freight Forwarders by Major Commodity Type and Company Size**

Type of Commodity	Company Size			Total
	Small	Medium	Large	
Iron ore, iron and steel waste	3			3
Other Minerals	2		1	3
Wood	1			1
Wheat, Barley	3			3
Other crops, Other vegetables, Fruits	7	1		8
Live animals	1			1
Refined Sugar and Molasses	1			1
Other Food/Beverage	5			5
Chemical Products	4		2	6
Metal/Metal Product	5			5
Paper, Pulp, Waste paper	1	1		2
Textile, Clothes and textile materials, Leather	11	2	1	14

Other Manufactured products, Machinery, Transport equipment	5	1		3
TOTAL SAMPLE	49	5	4	58

### 3) Company Profile of Manufacturing Industry

Table 7.1.5 shows the distribution of sample size from manufacturing industry by company size. A total of 25 industries were selected to represent the manufacturing companies to be surveyed.

**Table 7.1.5 Distribution of Sample Size of Manufacturing Industry by Industry Type and Company Size**

Code	Industry	Company Size			Total
		Small	Medium	Large	
1	Metal/ Steel/ Aluminum/ Copper industry	3	2	3	8
2	Paper making/ Paperboard industry	7	2	2	11
3	Textile/ clothing industry	32	21	28	81
4	Plastics industry	2	7		9
5	Glass industry	3		1	4
6	Paint industry		1	2	3
7	Printing and publishing	11	2	2	15
8	Alimental industry	20	5		25
9	Food/ grain milling industry	3	9	7	19
10	Marble and granite/ tile industry	2	1	1	4
11	Leather industry	16	3	2	21
12	Wood industry	11	7	5	23
13	Chemical industry	1	1	1	3
14	Advertising and media materials industry			1	1
15	Electric industry (lamp-keys-sheets)		1	2	3
16	Upholstery		1		1
17	Saddler	2			2
18	Carpets and rugs industry			1	1
19	Engineering industry		1		1
20	Tire industry	1	1		2
21	Insulation materials industry			1	1
22	Medical equipment industry		1		1
23	Perfume industry			1	1
24	Poultry industry	1			1
25	Gypsum decorations	2			2
	Total	117	66	60	243

Unit: No. of company

## 7.2 TRANSPORT COST

### 1) Transport Cost by Truck Size

Transport cost is a key factor to grasp the characteristics of cargo movement and to estimate the calibration parameters of cargo transport model, which will be used for cargo demand forecast in different planning years.

Transport cost by truck size and company type is shown in Table 7.2.1. As for 3-tonne truck, the transport cost or tariff was estimated as 1.50 and 1.86 LE/km for trucking companies and freight forwarders, respectively. The transport cost is not uniform by truck size, which implies that tariff would vary based on commodity type and/or company type. The transport cost of 15-tonne truck is relatively high (4 LE/Km) compared with other truck capacities.

**Table 7.2.1 Transport Cost by Truck Size and Company Type**

Truck Size	Trucking Company		Freight Forwarder	
	Transport Cost (LE/km)	No. of Sample	Transport Cost (LE/km)	No. of Sample
Truck 3 tonne	1.50	20	1.86	8
Truck 6 tonne	1.70	6	1.15	2
Truck 8 tonne	1.84	44	0.93	7
Truck 10 tonne	2.41	6	3.33	1
Truck 15 tonne	4.03	18	-	0
Truck 22 tonne	2.65	31	2.32	7
Container	3.66	14	1.99	21

Table 7.2.2 presents the loading/unloading cost by truck size by company type. Similarly, the cost of loading/ unloading is not uniform by truck size, which implies that the cost of loading/unloading would vary based on commodity type and/or company type.

**Table 7.2.2 Loading/Unloading Cost by Truck Size by Company Type**

Truck Size	Trucking Company		Freight Forwarder	
	Ave. Loading / unloading Cost (LE)	No. of Sample	Ave. Loading / unloading Cost (LE)	No. of Sample
Truck 3 tonne	90.0	20	153.8	8
Truck 6 tonne	100.0	6	100.0	2
Truck 8 tonne	175.5	41	128.6	7
Truck 10 tonne	341.7	6	-	0
Truck 15 tonne	242.2	18	-	0
Truck 22 tonne	183.8	31	176.0	5
Container	267.5	12	295.0	20

It can be observed that average loading/unloading cost is consistent for 6-tonne, 22-tonne and container, while some discrepancies exist for 3-tonne 8-tonne trucks. The average loading/unloading cost of 10-tonne truck is relatively high (342 LE) compared with other truck capacities.

### 2) Transport Cost by Commodity Type

Based on the company interview survey, the estimated transport cost by commodity type and by distance are summarized in Tables 6.2.3 and 6.2.4 for trucking companies and freight forwarders, respectively.



Table 7.2.3 Transport Cost (Tariff) by Commodity Type (Trucking Company)

Distance (km)	Commodity	Unit	Transport Costs (LE)		
			1 Loading unloading	2 Line-haul	(1+2) Total
Short distance 100 km (for example, from Alexandria to Tanta)	General Cargo	Tonne	15.1	45.7	60.8
	Dry Bulk Cargo		18.9	53.6	72.5
	Liquid Cargo		27.7	108.1	135.8
	Container 20 foot	TEU	188.0	825.0	1,013.0
Medium distance 200 km (for example from Cairo to Alexandria)	General Cargo	Tonne	18.7	80.2	98.9
	Dry Bulk Cargo		22.7	91.6	114.3
	Liquid Cargo		24.9	142.5	167.4
	Container 20 foot	TEU	223.0	1,341.7	1,564.7
Long distance 700 - 800 km (for example, from Cairo to Aswan)	General Cargo	Tonne	21.6	202.2	223.8
	Dry Bulk Cargo		24.4	236.2	260.6
	Liquid Cargo		24.9	284.5	309.4
	Container 20 foot	TEU	240.0	2,520.8	2,760.8

Table 7.2.4 Transport Cost (Tariff) by Commodity Type (Freight Forwarder)

Distance (km)	Commodity	Unit	Transport Costs (LE)		
			1 Loading unloading	2 Line-haul	(1+2) Total
Short distance 100 km (for example, from Alexandria to Tanta)	General Cargo	Tonne	15.7	52.5	68.2
	Dry Bulk Cargo		30.0	100.4	130.4
	Liquid Cargo		28.6	94.9	123.5
	Container 20 foot	TEU	172.4	866.7	1,039.1
Medium distance 200 km (for example from Cairo to Alexandria)	General Cargo	Tonne	17.2	86.5	103.7
	Dry Bulk Cargo		33.5	138.3	171.8
	Liquid Cargo		39.7	144.8	184.5
	Container 20 foot	TEU	211.4	1404.5	1,615.9
Long distance 700 - 800 km (for example, from Cairo to Aswan)	General Cargo	Tonne	24.5	207.3	231.8
	Dry Bulk Cargo		36.9	257.4	294.3
	Liquid Cargo		39.7	372.8	412.5
	Container 20 foot	TEU	395.5	2729.5	3,125.0

The following is inferred from Tables 6.2.3 and 6.2.4:

- The transport cost proportionally increases by distance.
- The transport cost of general cargo is slightly cheaper than that of dry bulk cargo in case of trucking companies, while it is significantly cheaper in case of freight forwarders.
- The loading and unloading cost of liquid bulk is almost the same transport cost of general cargo and dry bulk. But, the line-haul price is a higher than that of general cargo and dry bulk.

### 3) Transport Cost by Truck Size & Commodity Type

Table 7.2.5 shows the range of tariff (line-haul cost) by commodity type and truck size. It can be observed that the range of min. and max. tariff by commodity type by truck size. The trend from 3-tonne to 10-tonne truck indicates the increase by loading capacity. However, the trend of more than 10-tonne truck seems to be an irregular case.

**Table 7.2.5 Range of Tariff (Line-Haul Cost) by Commodity Type and Truck Size**

Commodity	Truck Size	Range of Min. & Max. Tariff (LE)		
General Cargo	Truck 3 tonne	215	-	305
	Truck 6 tonne	300	-	400
	Truck 8 tonne	372	-	872
	Truck 10 tonne	675	-	850
	Truck 15 tonne	400	-	1,000
	Truck 22 tonne	833		2,000
	Truck 22 tonne and More	447	-	1,214
Dry Bulk Cargo	Truck 3 tonne	200	-	220
	Truck 6 tonne	N.A.	-	N.A.
	Truck 8 tonne	407	-	921
	Truck 10 tonne	N.A.	-	N.A.
	Truck 15 tonne	500	-	1,150
	Truck 22 tonne	717		1,400
	Truck 22 tonne and More	900	-	1,350
Liquid Cargo	Truck 3 tonne	300	-	1,200
	Truck 6 tonne	N.A.	-	N.A.
	Truck 8 tonne	500	-	1,200
	Truck 10 tonne	N.A.	-	N.A.
	Truck 15 tonne	500	-	N.A.
	Truck 22 tonne	N.A.		N.A.
	Truck 22 tonne and More	1,150	-	N.A.
Container	Per Container	529	-	2,143

## 4) Price of Trucks

Table 7.2.6 shows truck price by size and type. This data includes the samples from both of tucking companies and forwarders. The unusual trend of truck price by capacity can be attributed to the fact that several models have been developed and it is sometimes imported from foreign countries.

Table 7.2.6 Truck Price by Truck Size and Type

	Vehicle Type	Ave. (LE)	No. of Sample
Truck	Flat truck (8 ton)	294,000	5
	Flat truck (15 ton)	402,000	5
	Flat truck (22 ton)	875,000	2
	Flat truck (over 22 ton)	350,000	2
	Box truck (8 ton)	288,000	12
	Box truck (15 ton)	375,000	3
	Box truck (22 ton)	460,000	3
	Box truck (over 22 ton)	250,000	1
	Semi-box truck (8 ton)	193,000	20
	Semi-box truck (15 ton)	190,000	1
	Semi-box truck (22 ton)	327,000	3
	Semi-box truck (over 22 ton)	500,000	1
	Truck-Trailer	Flat truck (8 ton)	250,000
Flat truck (15 ton)		277,000	3
Flat truck (22 ton)		533,000	7
Flat truck (over 22 ton)		450,000	10
Box truck (8 ton)		477,000	3
Box truck (15 ton)		300,000	1
Box truck (22 ton)		550,000	2
Box truck (over 22 ton)		520,000	4
Semi-box truck (22 ton)		1,000,000	1
Semi-box truck (over 22 ton)		400,000	1
Silo truck (22 ton)		700,000	1
Semi-Trailer	Flat truck (15 ton)	300,000	2
	Flat truck (over 22 ton)	380,000	1
	Box truck (15 ton)	300,000	1
	Box truck (over 22 ton)	650,000	2

### 7.3 CARGO MOVEMENT CHARACTERISTICS

In Freight Company Interview Survey, 243 samples were collected from manufacturing companies. The cargo movement characteristics were analyzed by using this data, as outlined below.

#### 1) Annual Production (Output Volume)

**Annual Productions (Output Volume) by Tonne base:** In terms of weight (tonne-base), Figure 7.3.1 shows that wheat/barley gains the largest share (36%) of output volume, followed by refined sugar and molasses (30%), and edible oil (30%). The demand between 6<sup>th</sup> October and Port Said represents the highest cargo demand related to the annual production (output volume).

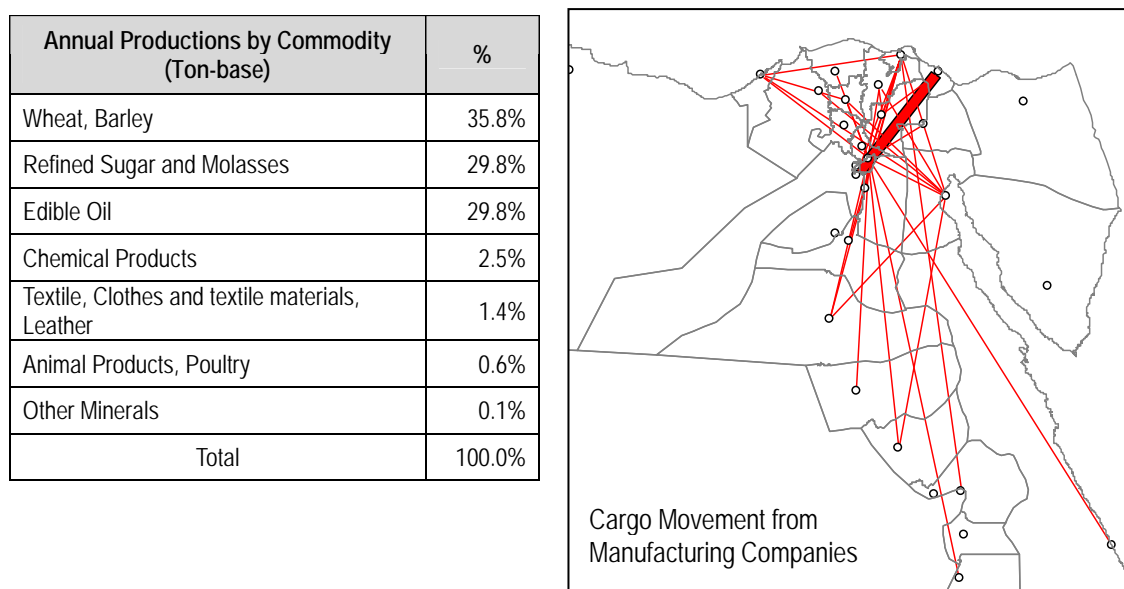


Figure 7.3.1 Annual Production (Tonne-base) from Manufacturing Companies

**Annual Productions (Output Volume) by Container:** In terms of container (TEU-base), Figure 7.3.2 illustrates that metal/metal product accounts for the largest share (59%) of output volume, followed by textile/clothes/textile materials/leather (30%). Cargo movement tends to be similar to the movement pattern of tonne-base.

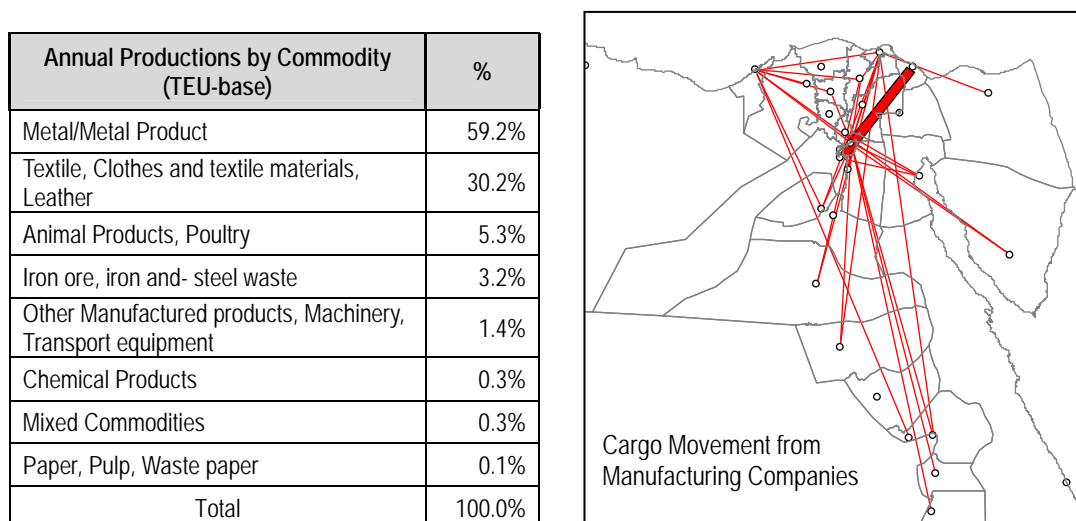


Figure 7.3.2 Annual Production (TEU base) from Manufacturing Companies

2) Input Volume

**Input Volume by Tonne-Base:** In terms of weight (tonne-base), Figure 7.3.3 shows that chemical products occupy the largest share (68%) of input volume, followed by textile/clothes/textile materials/leather (20%). It can be observed that cargo movement has extended to cover the whole country.

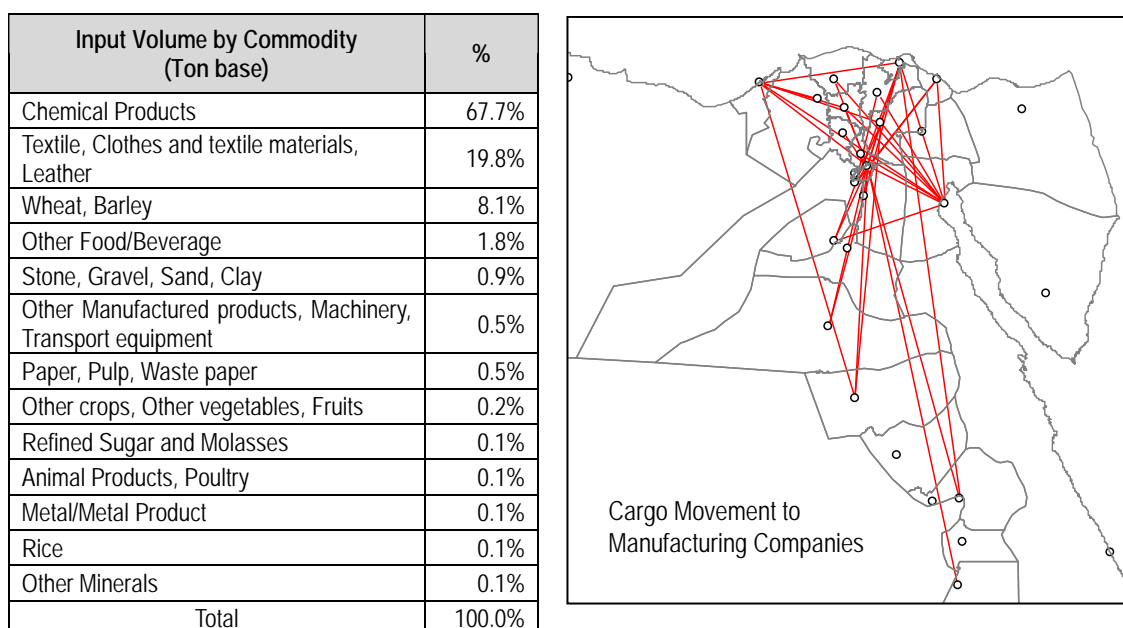


Figure 7.3.3 Input Volume (Tonne base) from Manufacturing Companies

**Input Volume by Container:** Around 71% of containers are used to transport textile/clothes/textile materials/ leather, while 21% of containers are transporting other manufactured products. Figure 5.3.4 illustrates that the heaviest two cargo movements occur between 6<sup>th</sup> October and both Alexandria and Port Said.

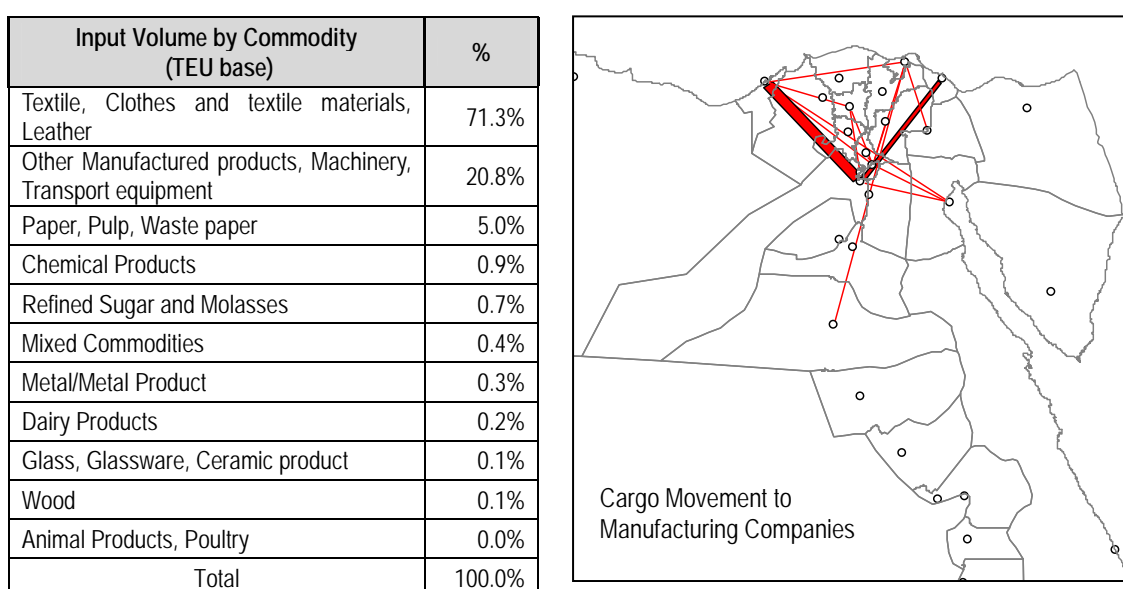


Figure 7.3.4 Input Volume (TEU-base) from Manufacturing Companies

## 7.4 PREFERENCE OF USAGE OF RAILWAYS & RIVER TRANSPORT

In order to investigate the possibility of modal shift from road transport to railways and river transport, the preference of usage of railways and river transport by manufacturing companies was examined during the company interview survey.

**Currently Used Mode:** Table 7.4.1 shows the currently used mode of transport, which is predominantly occupied by trucks (96.7%), while only 8 manufactures (3.3%) are using railways and river transport. The manufactures would select the railways and river transport due to safety and security reasons as indicated in Table 7.4.2. In addition, the answer of using river transport was revealed by Textile companies, while Food (Grain), Plastic, Textile and Leather (2) companies would use railways as alternative mode.

**Table 7.4.1 Currently Used Transport Mode by Manufacturers**

Mode	No. of Company	%
Truck	235	96.7
Rail	5	2.1
River	3	1.2

**Table 7.4.2 Reasons of Using Railway & River Transport**

	Railway	River
Low Cost	1	
Safety/ Security	3	2
Save Time		
Punctual	1	
Trustworthy		1

**Reason of Not-Using:** Table 7.4.3 shows the reasons of not using railways and river transport. The manufacturing companies emphasized the importance of the door-to-door service as main reason. Therefore, the improvement of their terminal facilities will be a major issue to promote the modal split.

**Table 7.4.3 Reasons of Not-Using Railway and River Transport**

Reason why not	Railway	River
1. It takes too long time.	21%	17%
2. This is not "door to door" service.	44%	33%
3. Distance is not long enough to use railway.	17%	18%
4. This transport is not safe and not guaranteed.	12%	10%
5. This transport is not available.	26%	35%
6. Other reasons	16%	8%

**Possibility of Shifting to Railways & River Transport:** Table 7.4.4 shows the possibility of modal shift from a truck, if railway and river transport will contribute to the reduction of transport time and cost. In case of the following condition (time by truck X 200% & cost by truck X 50%), Approximately 25% of manufacturing companies intend to shift to rail and river transport. In addition, manufacturing companies are sensitive to the travel time reduction as shown in Figure 7.4.1. Based on this observation, it can be concluded that the travel time will be a key factor in order to increase the modal share of railways and river transport.

Table 7.4.4 Possibility of Shifting to Railway & River Transport

Condition	Transport Time= Time by Truck x 2.0 Transport Cost = Cost by Truck x 0.5	
	No. of Sample	%
Yes, I will	59	24.3
No, I will not	184	75.7

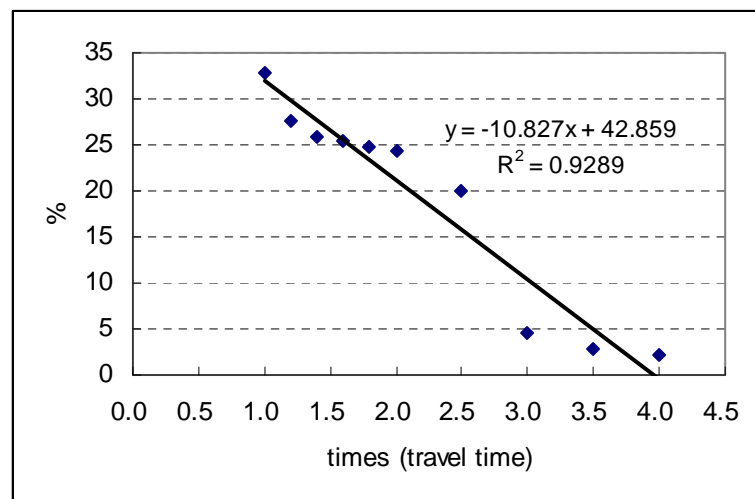


Figure 7.4.1 Sensitivity of Shifting to Railway & River Transport

## 7.5 DATA COLLECTION FROM COOPERATIVE COMPANIES

Data collection from cooperative companies was implemented to grasp the following things:

- To review the organizational structure and regulation of cooperative companies related freight land transport.
- To grasp commodities volume and its tariffs transported by cooperative companies.

### 1) Profile of Cooperatives

**Organizational Structure:** "General Association for Freight Land Transport Cooperatives" manages the cooperative associations at national level. This office is located at GCA at 111, gamaeat Alodowal Al Arabia Street, Mohandeseen, Giza. The cooperative associations for freight land transport operate at each governorate. Currently, 24 associations are operation in Egypt.

**Cooperative Rules and Regulations:** The outline of cooperative rules and regulations are as follows:

- All Egyptians who own or operate trucks can be cooperative member.
- There are no further rules concerning the type, loading capacity or fleet age.
- The truck has to hold a valid operating license form traffic police agency.
- The cooperative association negotiates and develop the rules for tariff structure under MOT and major clients.

### 2) Current Condition of Cooperatives

**No. of Members:** The membership of freight land transport cooperatives (FICA) has increased from 9,838 to 11,552 between 2000 and 2009, at an average rate of increase of about 1.6% annually.

**No. of Fleet & Truck Type:** The number of registered fleet has increased dramatically from 18,197 to 29,896 between 2000 and 2009, at an average rate of increase of about 5.7%. The majority of the fleet (around 49.9%) is single truck, followed by semi-trailer (38.8%) in 2009. The share of semi-trailer has increased in the last 10 years.

**Table 7.5.1 No. of Members & Fleet of Cooperative Companies**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
No. of Member	9,838	9,927	10,225	10,431	10,535	10,851	11,278	10,916	11,084	11,552
No. of Fleet	18,197	18,241	18,788	19,830	20,028	20,629	23,995	26,388	27,922	29,896



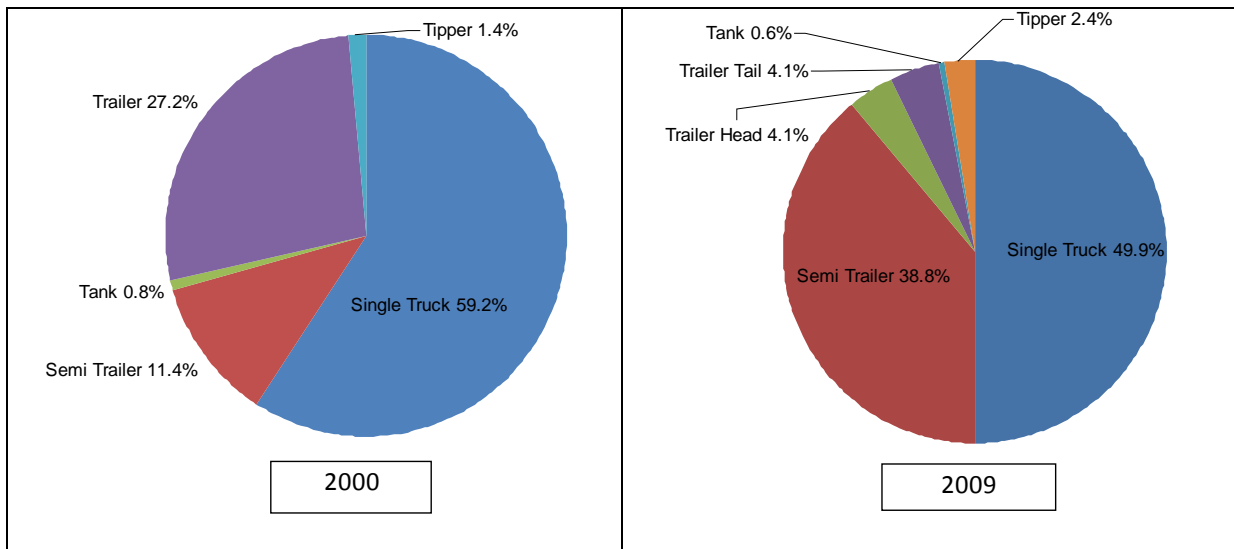


Figure 7.5.1 Composition of Truck Type in Cooperative Companies

The characteristics of registered fleet by Governorate have changed in the last 10 years. In 2000, Cairo Governorate Cooperative Association appeared to be dominating the market with more than 4,000 fleets, followed by Dakahia Governorate with 2,000 fleets. In 2009, the No. of fleet in Cairo Governorate dramatically decreased by one third, on the other hand, that of Dahahia, Asyut and Alexandria increased by more than 3 times.

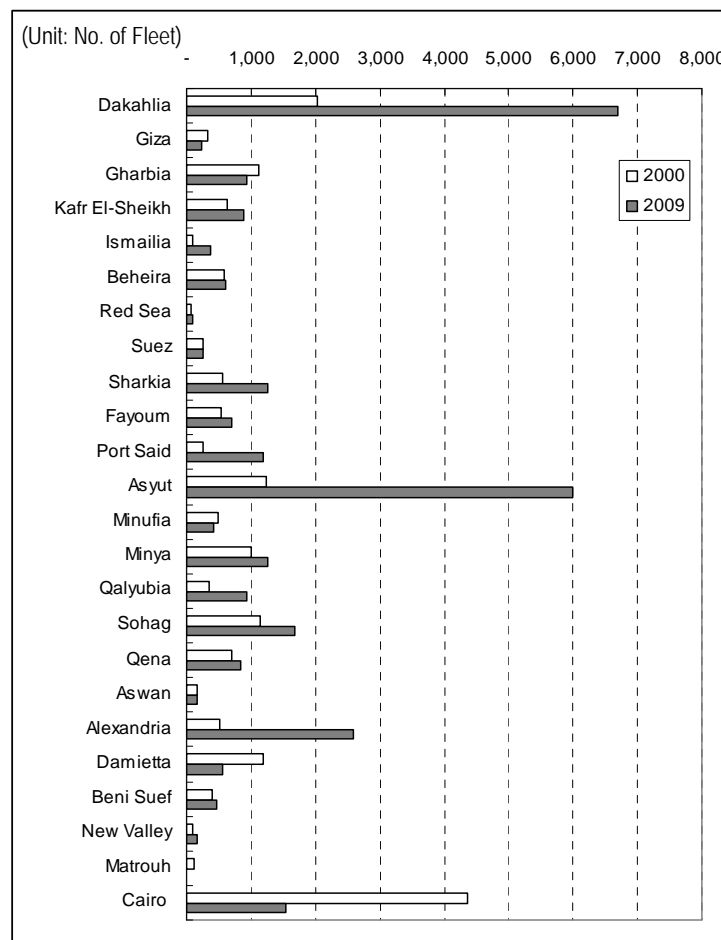


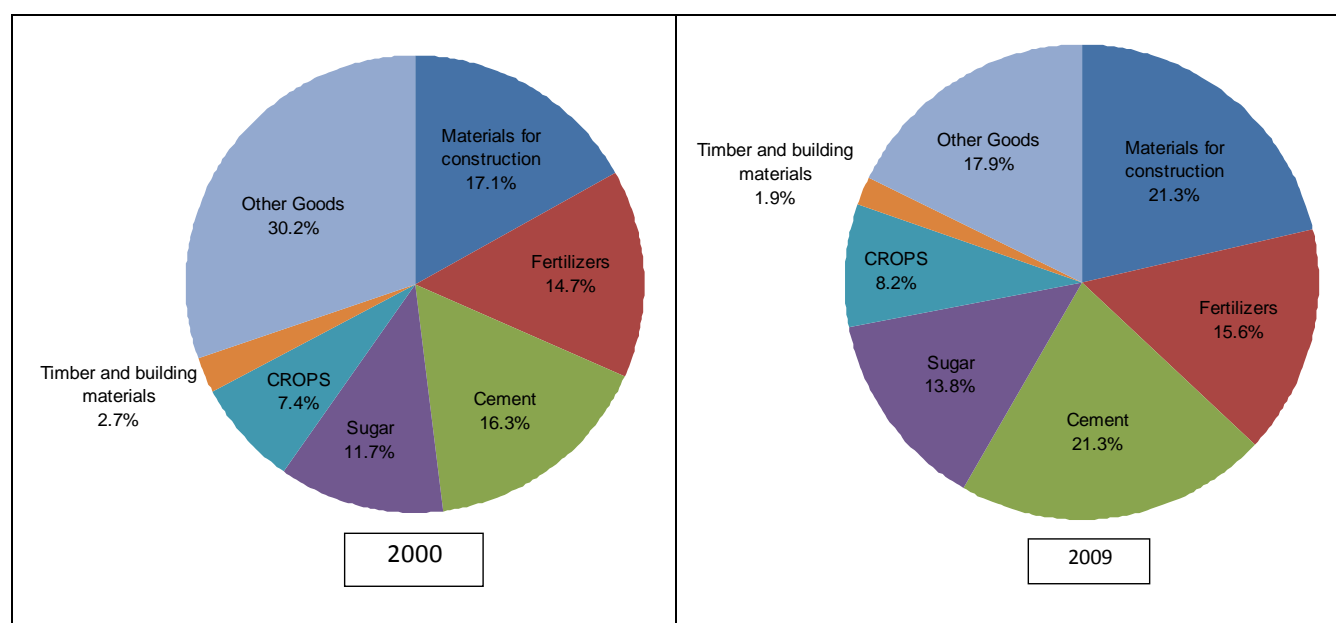
Figure 7.5.2 No. of Fleet owned by Cooperative Companies by Governorate

**Tonnage:** The total tonnage transported by all 24 Cooperative Associations has dropped from 24.3 up to 21.5 Million tonne, although the registered fleet has been increasing.

**Table 7.5.2 Tonnage transported by Cooperative Companies**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Tonnage (Million Ton)	24.3	23.5	24.8	25.0	25.4	26.1	20.1	23.1	20.0	21.5

**Type of Commodity:** Construction materials and Cement indicate the highest portion of 21.3% of total tonnage in 2009. The food such as Crops and Sugar also occupy around 20%. The share of construction material and cement has increased since 2000.



**Figure 7.5.3 Composition of Commodity Type (tonne-base)**

### 3) Tariffs by Cooperatives

**Total Revenue:** Total revenue has shown substantial increase from 350 to 777 million EGP, at an average of increase of about 10%, in the last 10 years. It is noted that continuous sharp increase has been taken place since 2006 and was not accompanied with increase in the volume of transported commodities.

**Tariff:** The average transport cost/tonne has increased since 2000 from 14.4 to 36.1 EGP/tonne. This is an increase about 150% and represents a constant annual increase of about 11%<sup>1</sup>. However, it may be impossible to understand the actual situation of cooperative tariff due to the compliance issue.

**Table 7.5.3 Revenue & Tariff of Cooperative Companies**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Revenue (Million EGP)	351	365	376	392	404	424	554	632	757	777
Tariff (EGP/tonne)	14.4	15.5	15.1	15.7	15.9	16.2	27.6	27.3	37.9	36.1

<sup>1</sup> It is to be noted that fuel prices have increased considerably during this period as well as there has been major increase in the rate of change of foreign currencies that let to substantial increase in all transport operation items.

## CHAPTER 8: BASIC ANALYSIS ON OPINION SURVEY

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### 8.1 OUTLINE OF OPINION SURVEY

The opinion survey was conducted to grasp the people's opinion of modal choice and relationship between selected mode and income level. Around 1,930 persons were interviewed during Passenger Transport Terminal and Roadside Interview Surveys. Table 8.1.1 summarizes the personal attributes of interviewees, from which the following can be outlined:

- The total sample is distributed among different modes of transport as 36%, 39, 16% and 9% for car users, bus/shared taxi users, railway users and user of other modes, respectively.
- Males represent the majority (86%) of the collected samples, while females account for only 14%.
- Around 48% of interviewees are below 30 years old, while 42% are between 31 and 60 years old.
- Almost all interviewees are Egyptians (99%).
- As for interviewees' profession, around 26% are professional workers and 17% are students.
- Almost half of the interviewees show the income with less than LE 1,000/month, while 22% and 11% of the sample "LE 1,000 to 2,000" and "LE 2,001 to 3,000", respectively. Only 7% of the sample gains an income with more than LE 3,000/month. One of the positive issues of this item can be derived by the fact that only 8% of the interviewees do not answer their income.
- As for housewives and students, around 41% did not reveal their family income.
- One of the proxy variables that can help identify the income level of interviewees is to know their average electricity bill per month. In that respect, half of the sample used to pay less than LE 40, while 36% and 11% of the sample used to pay "LE 41 to 100" and "more than LE 100" for their monthly electricity bill.
- As for car ownership, 60% of the sample does not have any available cars, while 36% own one car and 4% own two or more cars as shown in Table 8.1.1.

Table 8.1.1 Profile of Interviewees of Opinion Survey

Personal Attribute		No. of Respondents	%
Terminal Type	Car	700	36%
	Railway	310	16%
	Bus	272	14%
	Shared Taxi	333	17%
	Airport	120	6%
	Sea Port	50	3%
	Combined Terminal (Bus & Shared Taxi)	147	8%
	All Mode	1,932	100%
Gender	1.Male	1,658	86%
	2.Female	273	14%
	Total	1,932	100%
Age	1.Less 18	34	2%
	2.19-30	888	46%
	3.31-40	534	28%
	4.41-50	270	14%
	5.51-60	160	8%
	6.More than 60	46	2%
	Total	1,932	100%
Nationality	1.Egyptian	1,917	99%
	2.European, American or Australian	1	0%
	3.Asian	6	0%
	4.African	4	0%
	5.Other	2	0%
	Total	1,930	100%
Occupation	1.Legislature, Administrative or Managerial Worker	40	2%
	2.Professional Worker	495	26%
	3.Technicians or Assistance	51	3%
	4.Clerks and related	72	4%
	5.Sale and Service	111	6%
	6.Farmer, Fisher or Hunter	39	2%
	7.Craftsman and related	167	9%
	8.Production and related	48	2%
	9.Unskilled worker	94	5%
	10.Student	331	17%
	11.Housewife	72	4%
	12.Retired	61	3%
	13.Jobless	27	1%
	14.Others	324	17%
Total	1,932	100%	

Personal Attribute		No. of Respondents	%
Personal Income	1.Less than 250	36	3%
	2.250-500	196	14%
	3.500-750	194	14%
	4.750-1000	246	18%
	5.1000-1500	209	15%
	6.1500-2000	127	9%
	7.2000-2500	99	7%
	8.2500-3000	61	4%
	9.More than 3000	102	7%
	10.Unknown	79	6%
	No Answer	32	2%
	Sub. Total	1,381	100%
Family Income (only for Jobless, Housewives and Students)	1.Less than 250	20	4%
	2.250-500	39	7%
	3.500-750	47	9%
	4.750-1000	58	11%
	5.1000-1500	62	12%
	6.1500-2000	25	5%
	7.2000-2500	23	4%
	8.2500-3000	11	2%
	9.More than 3000	29	5%
	10.Unknown	217	40%
	No Answer	7	1%
	Sub. Total	538	100%
Ave. Electricity Bill Amount	0	56	3%
	1-10	48	2%
	11-20	270	14%
	21-30	339	18%
	31-40	301	16%
	41-50	271	14%
	51-75	235	12%
	76-100	202	10%
	101-200	148	8%
	More than 200	51	3%
	No Answer	3	0%
	Total	1,924	100%
Car Ownership	No Car	1,157	60%
	One Car	702	36%
	Two or more	68	4%
	Total	1,927	100%

## 8.2 TRIP CHARACTERISTICS BY MODE

### 1) Trip Purpose by Mode

The composition of trip purpose by mode is shown in Figure 8.2.1, from which the following can be summarized:

- Generally, around 40% of users for all modes is making commuting trips ("To/From Working Place") when travelling between different Governorates.
- Student trips (To/From School/Institution) account for around 40% of railway trips.
- The second highest share of bus users (30%) is "Social Visit and Other Private Purpose".
- Around 50% of shared taxi users make their trips with a purpose of "To/From Working Place", followed by the trip purpose of "To/From School/Institution" and "Social Visit and Other Private Purpose".
- Most of airport users have the trip purposes of "To/From Working Place" followed by "Tour" and "Social Visit and Other Private Purpose".

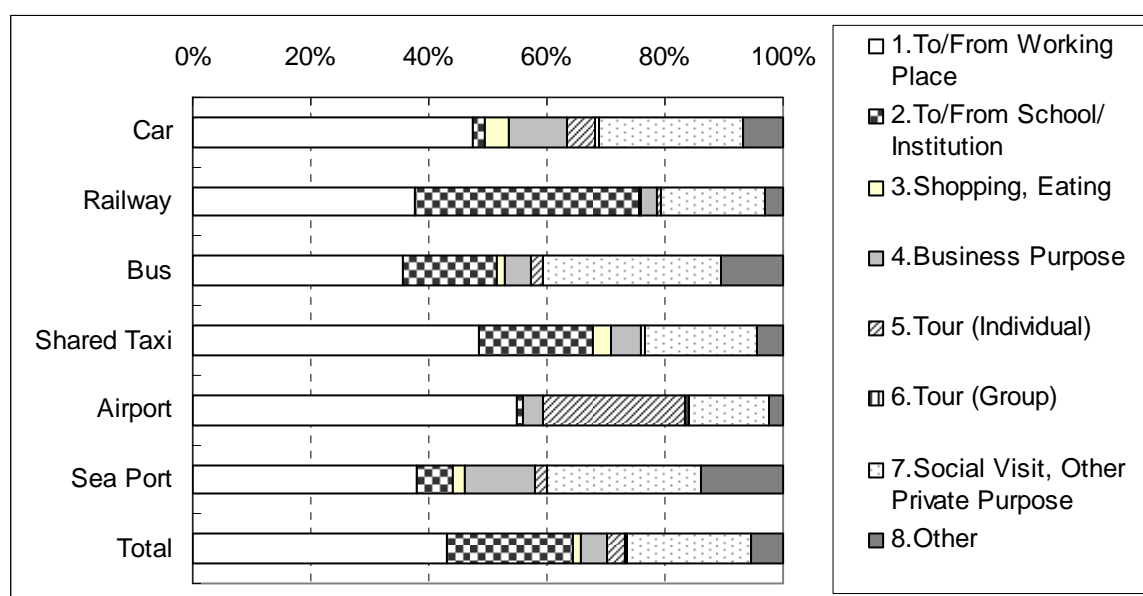


Figure 8.2.1 Composition of Trip Purpose by Mode

### 2) Travel Time by Mode

The distribution of travel time by mode is shown in Figure 8.2.2. The characteristics of travel time by mode can be summarized as follows:

- Around 50% of car drivers make their trips within one hour. Moreover, the travel time by car is shorter than the travel time by other public transport users.
- Around 70% of railway users make their trips within one hour. On the other hand, 10% of railway users travel for more than 3 hours.

- High percentage of bus users makes their trips with the range between one to three hours, while only 10% of bus users are making their trips with less than one hour.
- The majority of shared taxi users make their trips within two hours. In addition, the travel time of shared taxi is observed to be shorter than the travel time of other public modes.
- Around 40% of airplane users make their trips within one hour.
- As for ferry (sea transport), around 50 % of users travel with the range of 2 to 3 hours.

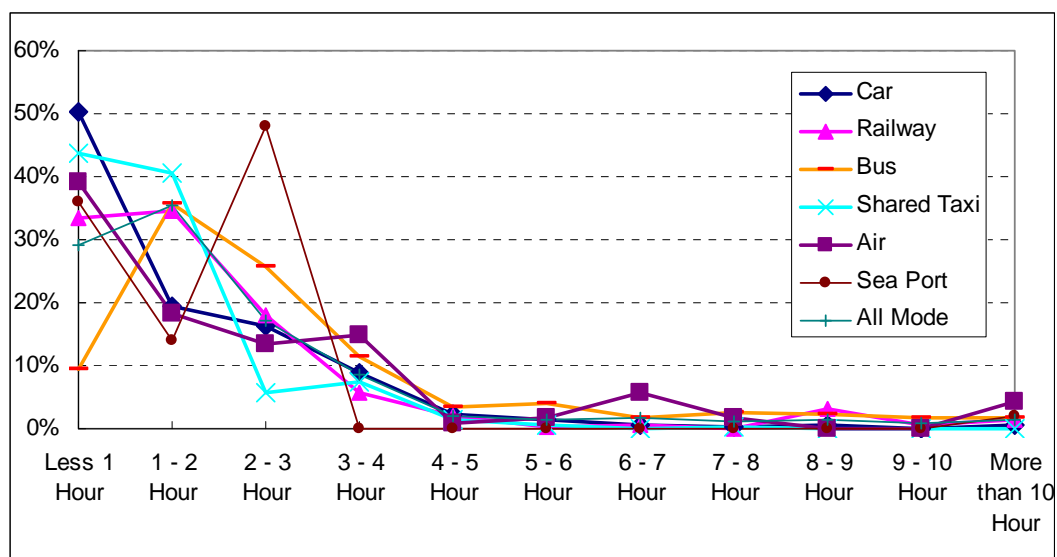


Figure 8.2.2 Distribution of Travel Time by Mode

### 8.3 INCOME LEVEL

**Personal Income by Mode:** The distribution of average personal income per month by mode is presented in Table 8.3.1, from which the following can be outlined:

- The more expensive and luxury mode of transport a passenger selects, the more personal income they gain. In other words, the high income group tends to use airplane and first class AC of trains and buses.
- Moreover, for the same mode, income level is proportional to the quality and luxury of the provided service (e.g., AC 1<sup>st</sup> Class, AC 2<sup>nd</sup> Class and Non-AC). This is valid for railway, bus and shared taxi, while it is applicable for 1<sup>st</sup> Class, Business and Economy in case of air transport.
- The average income level is similar for the users of railway 1<sup>st</sup> class and airplane economy class. This result indicates that, luxury service of railway can compete with air transport.
- The income level of car user is comparable with that of railway by AC 2<sup>nd</sup> class and bus by 1<sup>st</sup> class.
- The income levels of bus and railway users are almost the same.
- The income levels of shared taxi and ferry are a little bit lower than that of railway and bus users.

Table 8.3.1 Average Personal Income by Mode

Unit: L.E / Month

	Car	Railway				Bus			
		1.AC First Class	2.AC Second Class	3.Non AC	Total	1.AC First Class	2.AC Second Class	3.Non AC	Total
Personal Income	1,552	2,313	1,375	769	1,024	1,656	1,274	978	1,130
Sample Size	479	8	44	88	140	46	114	46	206

	Shared Taxi	Airport				Sea Port
		1. First Class	2. Business	3. Economy	Total	
Personal Income	754	3,222	2,625	2,409	2,537	889
Sample Size	232	2	9	85	96	36

**Ticket Class by Personal Income Level:** The composition of ticket class by personal income level is illustrated in Figure 8.3.1. The users by ticket class are classified into different income levels. It is obvious that AC class (AC 1<sup>st</sup> class and AC 2<sup>nd</sup> class) and non-AC class can be divided based on the income levels clearly. The users of first and business class of airplane are a part of high income group whose personal monthly income is below LE 1,500/month.



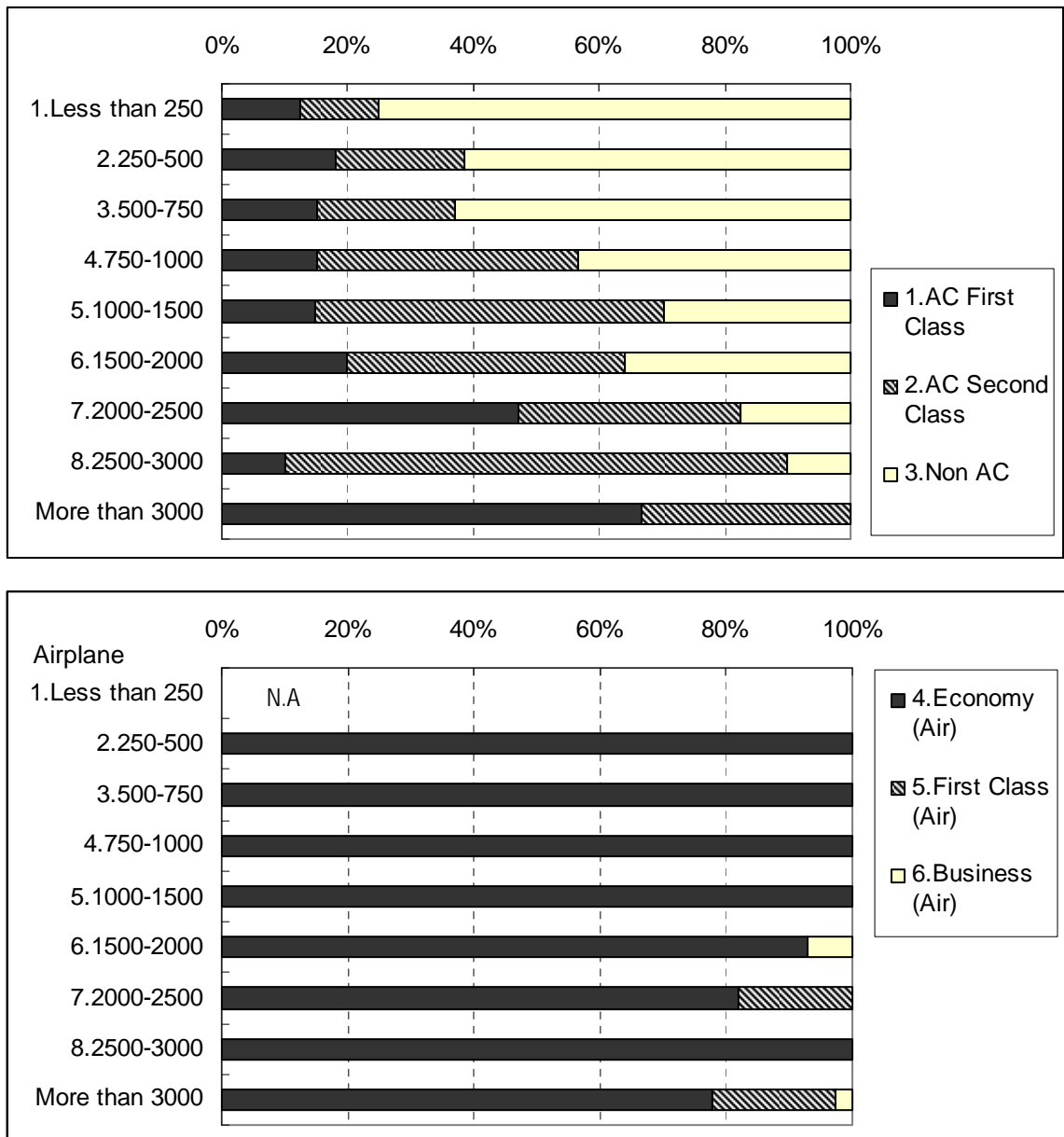


Figure 8.3.1 Composition of Ticket Class by Personal Income Level

### 8.4 SPARE TIME

When persons travel to somewhere on business, they maybe consider “spare time” in order to arrive at the destination on time. Table 8.4.1 presents the people’s opinion about spare time by trip purpose. Around 50% of the samples would take the spare time into consideration. In addition, trip purpose would not affect the consideration of spare time as it is not change by trip purpose. Table 8.4.2 shows the spare time by mode. It can be observed that 77% of air transport users would consider the spare time. Similarly, around 50% of the sample of different other modes of transport would consider the issue of spare time.

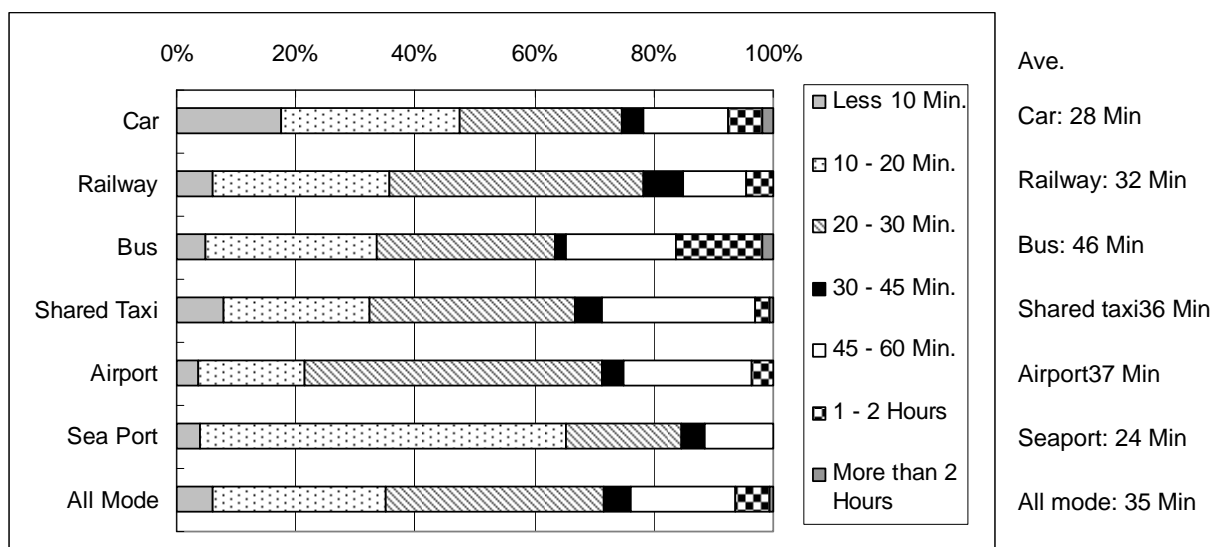
**Table 8.4.1 Spare Time by Trip Purpose**

	Trip Purpose								Total
	1.To/From Working Place	2.To/From School/ Institution	3.Shopping, Eating	4.Business Purpose	5.Tour (Individual)	6.Tour (Group)	7.Social Visit, Other Private Purpose	8.Other	
Consider	385	112	34	57	49	5	263	55	960
Not Consider	476	166	10	64	24	2	167	60	969
Total	861	278	44	121	73	7	430	115	1,929

**Table 8.4.2 Spare Time by Mode**

	Car	Railway	Bus	Shared Taxi	Airport	Sea Port	Total
Consider	50%	41%	60%	47%	77%	48%	52%
Not	50%	59%	40%	53%	23%	52%	48%
Total	100%	100%	100%	100%	100%	100%	100%

Figure 8.4.1 illustrates the distribution of spare time based on the persons who would consider the spare time. The average spare time of all modes is approximately 35 minutes. However, the spare time of bus users is observed as the highest value, that is, 46 minutes.



**Figure 8.4.1 Distribution of Spare Time by Mode**

### 8.5 PASSENGER’S PREFERENCE FOR MODAL CHOICE

#### 1) Time Value of Public Transport User

In order to analyze a relationship between travel time and cost, passenger’s preference when they use a new transport was asked during the opinion survey. Figure 8.5.1 shows the result of passenger’s opinion if they can use a new transport mode which would be twice faster compared with existing mode. The preference seems to be different by public transport user and car driver. Around 80% and 48% of public transport users and car drivers would use the new proposed transport mode. It can be observed that “willingness to pay” for a new transport mode depends on the person and the currently used mode.

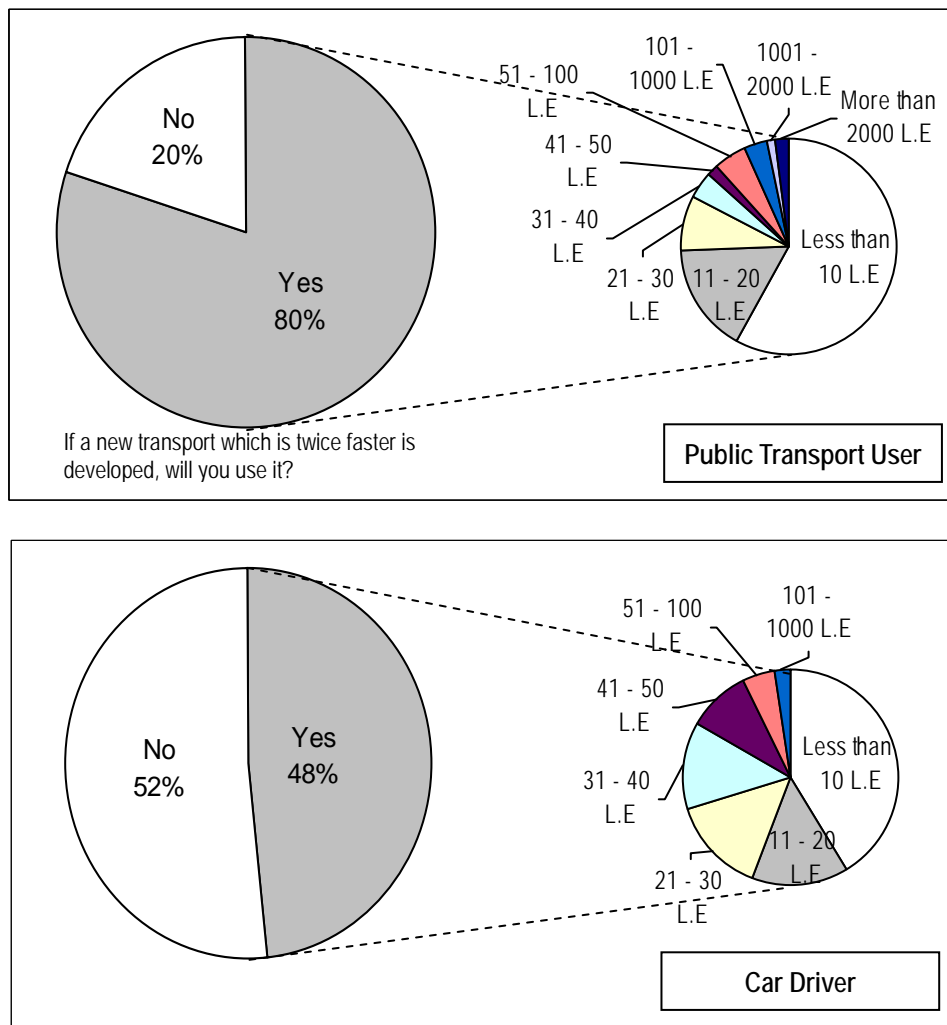


Figure 8.5.1 Preference of New Transport Use

Figure 8.5.1 illustrates estimated “willingness to pay” for faster transport mode or saving travel time as related the currently used transport mode. The time value of car driver can be estimated as 17.2 LE per hour, which is slightly higher than the time value of public transport modes except for ferry for which the time value is estimated as 18.7 LE per hour. However, the value of shared taxi user is lower than the time value of other transport modes.

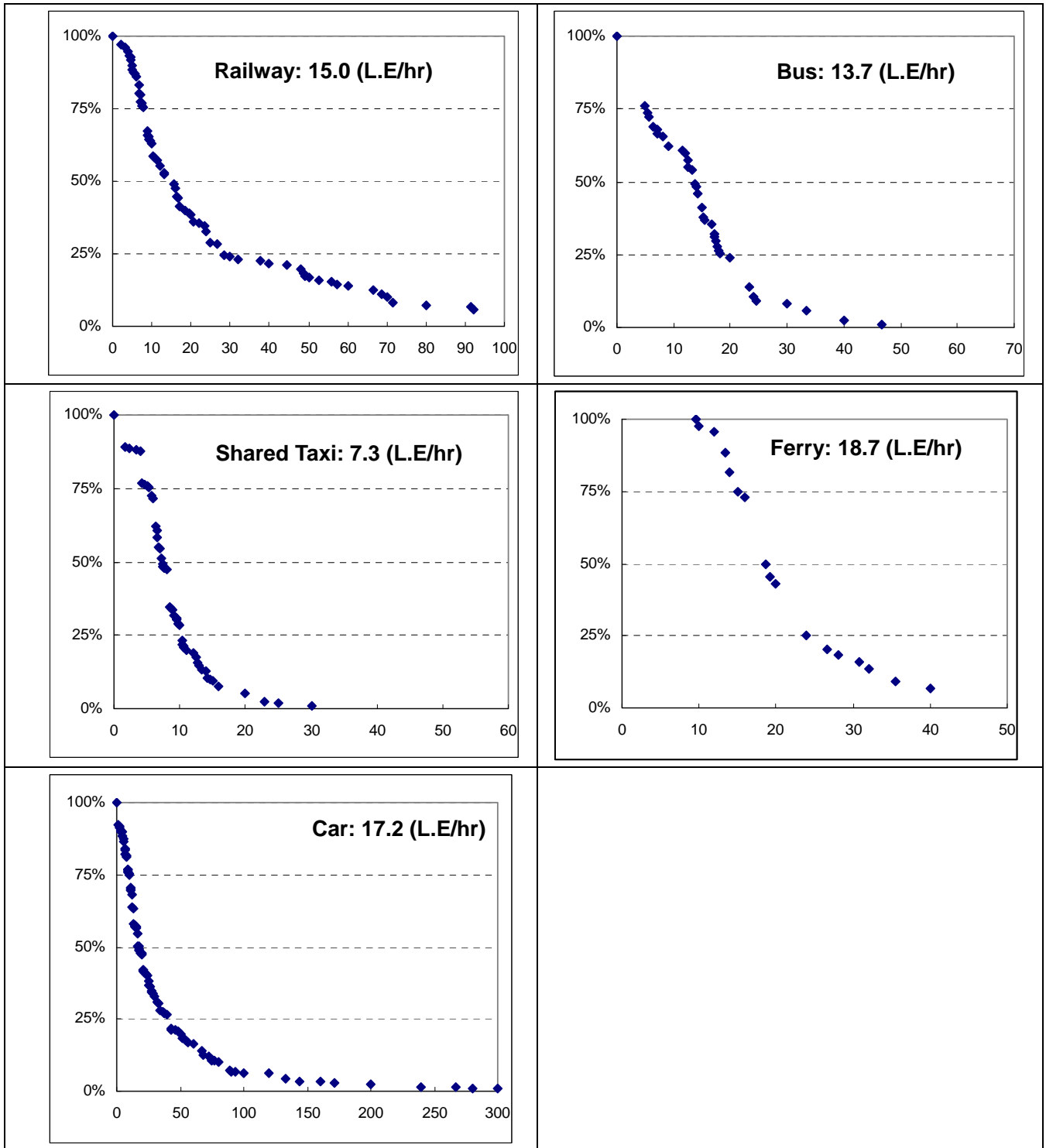


Figure 8.5.2 Willingness to Pay for Saving Travel Time

2) Major Issues to Select a Transport Mode

Figure 8.5.3 depicts the major factors when passenger considers modal choice. These issues include shorter travel time, smaller cost, more frequent, safety, good amenity and others.

**Public Transport Users:** The factors affecting to the modal choice depend on trip purpose. For example, more than 40% of public transport users, who are making business trips, revealed that “travel time” is the

major factor affecting to their modal choice. On the other hand, half of individual tourists, who are using public transport, reported the “good amenity”. It can be observed that “safety” is common issue regardless the trip purpose. In other words the share of safety is around 20% for different types of trip purposes.

**Car Drivers:** In case of car driver, the share of “good amenity” would affect the selection of transport mode significantly for most the trip purposes. Around 30-40 % of commuters (To/From Working Place and To/From School/Institution) pointed out that the main reason of selecting the current mode is faster or the “travel time is shorter”.

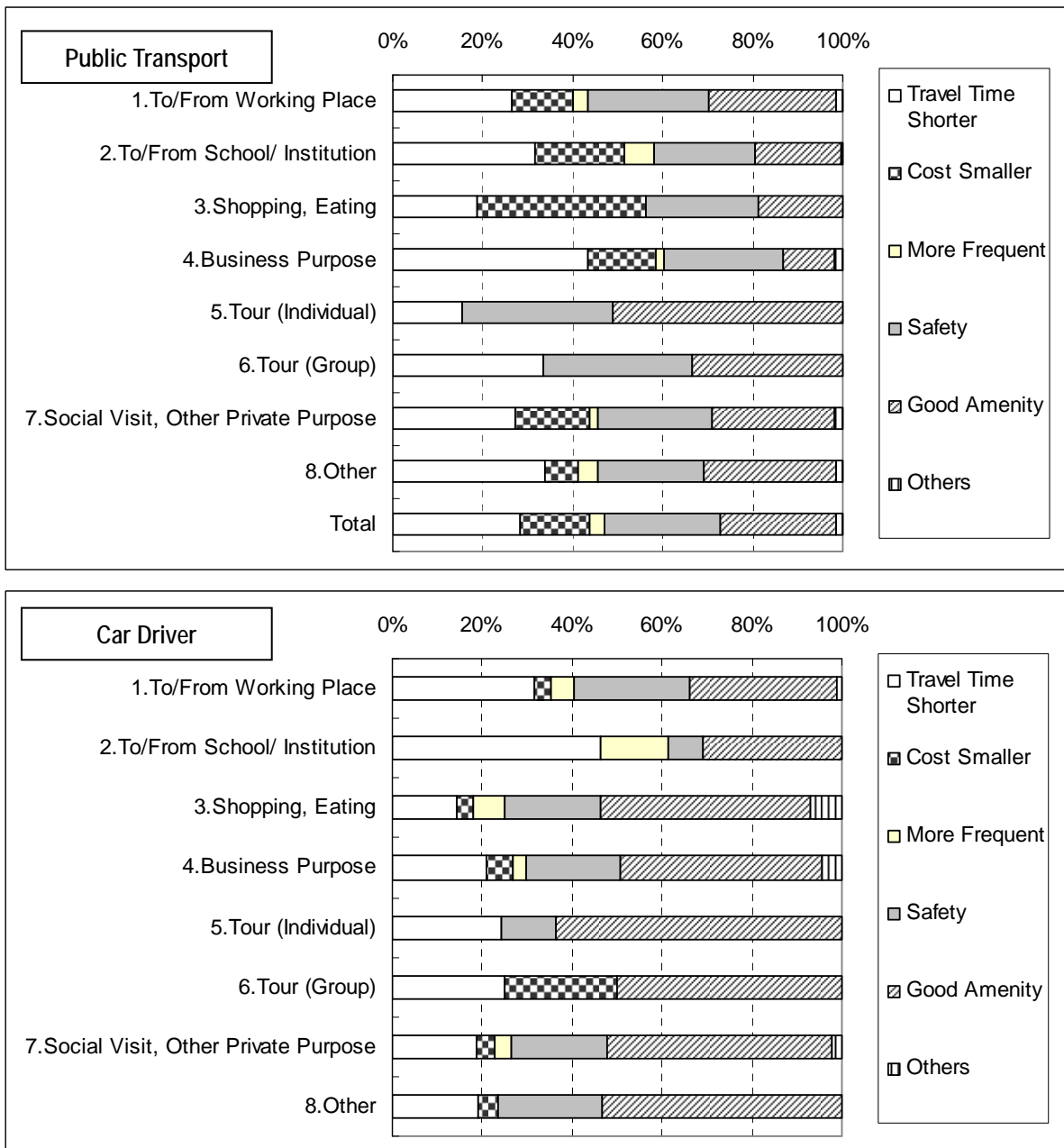


Figure 8.5.3 Issues to Select a Transport Mode by Trip Purpose