

**Coordinating Ministry for Economic Affairs  
Republic of Indonesia**

**JABODETABEK Urban Transportation  
Policy Integration Project Phase 2  
in the Republic of Indonesia**

**Annex 05: Working Paper on Transportation  
Surveys**

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## Abbreviation

ABM	Activity-Based Model
ADS	Activity-Travel Diary Survey
AGT	Automated Guideway Transit
ARS	Airport Railink Service
Angkot	Small Bus ( <i>Angkutan Kota</i> )
AT	At-Teminal
BRT	Bus Rapid Transit
BSD	Bumi Serpong Damai
CATI	Computer-Assisted Telephone Interview
CBD	Central Business District
CTS	Commuter Trip Survey
Desa	Village
DKI Jakarta	<i>Provinsi Daerah Khusus Ibukota Jakarta</i> (Jakarta Special Capital Province)
EJIP	East Jakarta Industrial Park
EPOCH	Code of Time and Date for survey / Unix time second elapse since January 1970
EF	Expansion Factor
GIS	Geographic Information System
GPS	Global Positioning System
HH	House Hold
JABODETABEK	Jakarta, Bogor, Depok, Tangerang and Bekasi
JICA	Japan International Cooperation Agency
JICT	Jakarta International Container Terminal
JIEP	Jakarta Industrial Estate Pulogadung
JUTPI	Project for JABODETABEK Urban Transportation Policy Integration
JUTPI 1	JUTPI Phase 1 (2010)
JUTPI 2	JUTPI Phase 2 (2018)
Kab. (Kabupaten)	Regency
KBN	<i>Kawasan Berikat Nusantara</i>
KCI	<i>Kereta Commuter Indonesia</i>
Kelurahan	Sub district (in a city)
Kesbanglinmas	Directorate General of Politics and National Unity, Ministry of Home Affairs
Kota	City
LOB	Limited On-Board
MC	Motorcycle
MEILI	Mobility Collector (JABODETABEK Travel Diary)
MS	Microsoft
MRT	Mass Rapid Transit
NMT	Non-Motorized Transportation
NPCT	New Priok Container Terminal
O-D	Origin-Destination
QR	Quick Response
PCE	Passenger Car Equivalent
PCU	Passenger Car Unit
POI	Point of Interest / End Point

PT	Public Transport
PT. KAI	<i>PT. Kereta Api Indonesia (Persero)</i> (State-Owned Railway Company)
Puskesmas	<i>Pusat Kesehatan Masyarakat</i> / Small Unit of Health Care Managed by Government
RSI	Road-Side Interview
RITJ	JABODETABEK Urban Transportation Master Plan
RTRW	Rencana Tata Ruang Wilayah (Regional Spatial Plan)
RT/RW	Small Scale Neighbourhood Unit
SD	<i>Sekolah Dasar</i> / Elementary School
SITRAMP	The Study on Integrated Transportation Master Plan for JABODETABEK
SMA	<i>Sekolah Menengah Atas</i> / Senior High School
SMS	Short Message Service
SMP	<i>Sekolah Menengah Pertama</i> / Junior High School
TAZ	Traffic Analysis Zone
TC	Traffic Counting
TK	<i>Taman Kanak-Kanak</i> / Kindergarten
TDM	Transportation Demand Management
TJ	Transjakarta
TOD	Transit Oriented Development
ToD	Time-of-Day
URL	Uniform Resource Locator
VoT	Value of Time





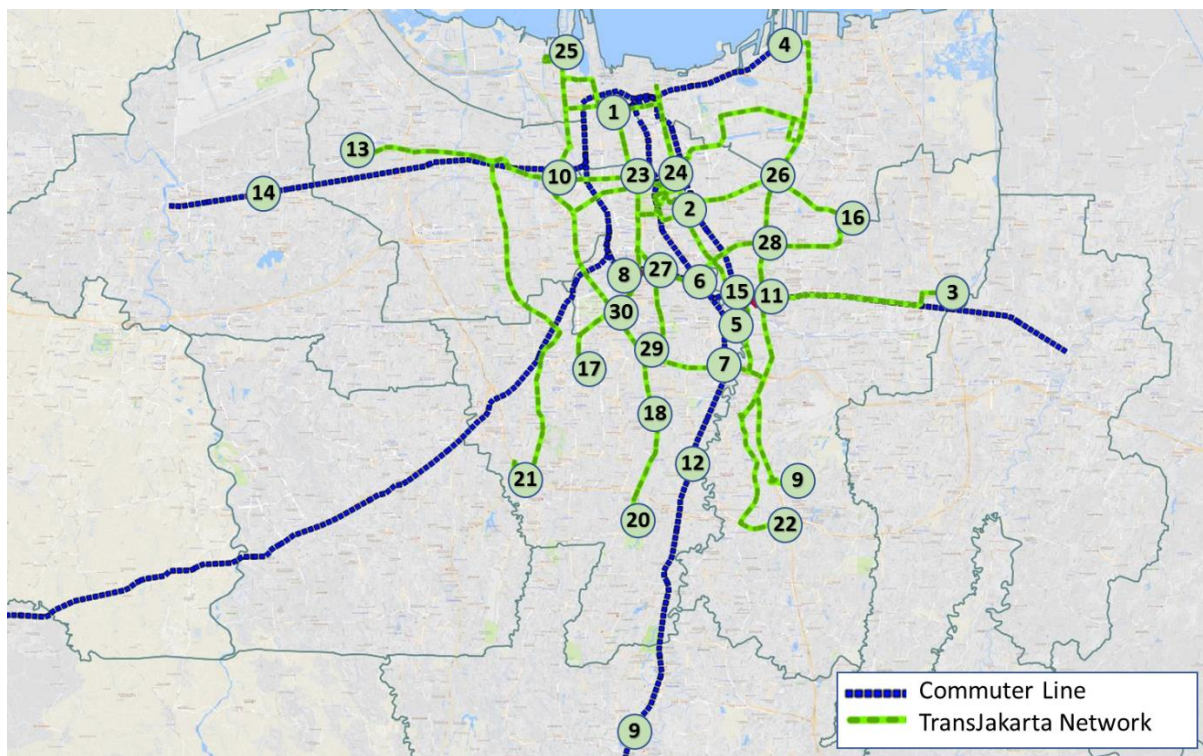
## Chapter 1 PASSENGER TRANSFER BOTTLENECK SURVEY

### 1.1 Survey Objective

The main objective of the Survey is to obtain data about passenger transfer bottleneck from and to conventional bus, BRT, and railway at transfer point facility that connect mass transport modes. Data should identify current bottleneck location at transfer point, the transfer time from one transfer mode to another, passenger's perception about transfer facilities, and opinion on how to improve the facilities.

### 1.2 Survey Location

Thirty major transfer points were selected around JABODETABEK where in each location transferring passenger can make a transfer from one mode to another mode including BRT to BRT when they want to change corridor. Survey locations was shown in table and figure below.



Source: JUTPI 2

**Figure 1 Survey Locations of Passenger Transfer Bottleneck Surveys**

**Table 1 Survey Locations of Passenger Transfer Bottleneck Surveys**

No.	Location	Integration		
		Transjakarta	Conventional Bus	Railway
1	Kalideres	v	v	v
2	Poris Plawad		v	v

No.	Location	Integration		
		Transjakarta	Conventional Bus	Railway
3	Lebak Bulus	v	v	
4	Pasar Minggu		v	v
5	Blok M	v	v	
6	Cawang	v		v
7	Kampung Melayu	v	v	v
8	Manggarai	v	v	v
9	Dukuh Atas	v		v
10	Senen	v	v	v
11	Kota	v		v
12	Tanjung Priok	v	v	v
13	Pulogadung	v	v	
14	Pulogebang	v	v	Stasiun Cakung
15	Depok		v	v
16	Harmoni	v		
17	Halimun - Latuharhari	v		
18	Semanggi - Bendungan Hilir	v		
19	Kuningan Timur - Kuningan Barat	v		
20	Pramuka BPKP - Pemuda Pramuka	v		
21	Cempaka Mas 2 - Cempaka Timur	v		
22	Grogol 1 - Grogol 2	v	v	v
23	Flyover Jatinegara - St. Jatinegara	v		v
24	Pasar Jatinegara - St. Jatinegara 2	v		v
25	Pinang Ranti	v	v	
26	Ragunan	v	v	
27	Kampung Rambutan	v	v	
28	PGC	v	v	
29	Pluit	v		
30	Pasar Baru	v		

Source: JUTPI 2

### 1.3 Survey Methodology

Within the scope of this the survey, the following two activities were conducted, namely:

#### a. Passenger Transfer Interview Survey

Passenger transfer interview survey was carried out by interviewed transfer passenger who arrived at bus stop/ train station/ BRT shelter and continues the journey with another mode at the transfer point or different bus stop/ train station/ BRT shelter. The collected interview was done 4 hours in the morning (6.00 to 10.00) and 4 hours in the evening (16.00-20.00) with 25 passengers interviewed in each period.

**b. Passenger Transfer facilities observation**

The observation was done for the purpose to get a real situation of transfer facilities such as bus stop/ train station/ BRT shelter at survey location. The results of the survey expected to obtain data not only on the bottleneck at the survey locations but also information about the condition of existing facilities.

**1.4 Survey Items**

During each of the survey, the following items were recorded:

**a. Passenger Transfer Interview Survey**

1. Interviewee Personal Data (Sex, Age, Household Income, etc.)
2. Trip Pattern (Origin and Destination, Trip Purpose)
3. Trip Attributes (Time from origin, time arrived at transfer point, first mile and last mile mode of transportation, waiting time, etc.)
4. Passenger Transfer Facilities Situation and Condition (previous and next transportation mode use by passenger, transfer passenger perception on current transfer facilities, etc.)

**b. Passenger Transfer facilities observation**

1. The bus stop/ BRT shelter/ train station sketch with adequate information
2. Transfer facilities situation plan between bus stop/ BRT shelter/ train station to another bus stop/ BRT shelter/ train station
3. Off peak period data on transfer point

**1.5 Survey Day and Duration**



The survey at each location was conducted for one site on weekdays (Tuesday, Wednesday, or Thursday). The survey was conducted for 8 hours, which is divided into two four-hour survey shifts as follows:

- a. Shift I : 06.00 – 10.00
- b. Shift II : 16.00 – 20.00

**1.6 Survey Forms**

The following survey forms were utilized during the survey:

- Interview survey form

	<b>SURVEI WAWANCARA PENYEMPITAN LAJUR PENUMPANG TRANSIT (PASSENGER TRANSFER BOTTLENECK INTERVIEW SURVEY) JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION Phase 2 SEPTEMBER 2017</b>			
<b>CONFIDENTIAL</b>				
<b>PASSENGER TRANSFER SURVEY</b> Location : _____ Date : ____ / ____ / 2017 Surveyor : _____ Time of Interview : _____ Supervisor : _____		FORM NUMBER		
<b>INTRODUCTION</b> This passenger transfer bottleneck survey is conducted by JUTPI Phase 2 team along with the local consultant to get information regarding bottleneck situation and mode transfer condition that happen during the day in Passenger Transfer Facility. Please answer all the question below based on your experience and observation while transferring from your previous mode to your next mode. All the data that you provided are solely for this project purpose only and secrecy guaranteed.				
<b>I PUBLIC TRANSPORTATION</b> A. What transport facility do you use before you reach this transfer facility? 1. <input type="checkbox"/> Bus terminal 2. <input type="checkbox"/> Bus Stop 3. <input type="checkbox"/> Train station 4. <input type="checkbox"/> BRT Shelter <table style="width:100%; border: none;"> <tr> <td style="width: 50%; border: none;"> <b>PREVIOUS MODE</b>                      B. From what mode do you transferring at this transfer facility?                      1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek                      2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus                      C. What do you use to get to your previous mode? [first mile]  <input type="checkbox"/> see Table A                      D. How much time do you need to reach this transfer point from your origin?                      1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> &gt; 30 min                 </td> <td style="width: 50%; border: none;"> <b>NEXT MODE</b>                      E. To what mode do you transferring at this transfer facility?                      1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek                      2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus                      F. What do you use to get to your last destination? [last mile]  <input type="checkbox"/> see Table A                      G. How much time do you need to reach your final destination from your last stop?                      1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> &gt; 30 min                 </td> </tr> </table>			<b>PREVIOUS MODE</b> B. From what mode do you transferring at this transfer facility? 1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek 2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus C. What do you use to get to your previous mode? [first mile] <input type="checkbox"/> see Table A D. How much time do you need to reach this transfer point from your origin? 1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> > 30 min	<b>NEXT MODE</b> E. To what mode do you transferring at this transfer facility? 1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek 2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus F. What do you use to get to your last destination? [last mile] <input type="checkbox"/> see Table A G. How much time do you need to reach your final destination from your last stop? 1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> > 30 min
<b>PREVIOUS MODE</b> B. From what mode do you transferring at this transfer facility? 1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek 2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus C. What do you use to get to your previous mode? [first mile] <input type="checkbox"/> see Table A D. How much time do you need to reach this transfer point from your origin? 1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> > 30 min	<b>NEXT MODE</b> E. To what mode do you transferring at this transfer facility? 1. <input type="checkbox"/> Conventional large bus 3. <input type="checkbox"/> BRT / Trans.Jabodetabek 2. <input type="checkbox"/> Train 4. <input type="checkbox"/> Medium bus F. What do you use to get to your last destination? [last mile] <input type="checkbox"/> see Table A G. How much time do you need to reach your final destination from your last stop? 1. <input type="checkbox"/> 0-10 min 2. <input type="checkbox"/> 11-20 min 3. <input type="checkbox"/> 21-30 min 4. <input type="checkbox"/> > 30 min			
<b>II MAIN ACTIVITY</b> A. What is your main activity : 1. <input type="checkbox"/> Working (fulltime) 3. <input type="checkbox"/> Highschool Student 5. <input type="checkbox"/> Housewife 7. <input type="checkbox"/> Jobless 2. <input type="checkbox"/> Working (parttime) 4. <input type="checkbox"/> College Student 6. <input type="checkbox"/> Retired 8. <input type="checkbox"/> Others, to specify : _____ B. How many cars are there in your household : _____ C. How many motorcycles are there in your household : _____ D. Travel by car availability : 1. <input type="checkbox"/> Yes,always 2. <input type="checkbox"/> Yes,sometimes 3. <input type="checkbox"/> No E. Travel by motorcycle availability : 1. <input type="checkbox"/> Yes,always 2. <input type="checkbox"/> Yes,sometimes 3. <input type="checkbox"/> No F. If you usually use private car to do your trip, is <b>ever/odd plate number policy</b> affect your decision to use public transportation? 1. <input type="checkbox"/> Yes,always 2. <input type="checkbox"/> Yes,sometimes 3. <input type="checkbox"/> No				
<b>III TRIP PATTERN</b> A. Trip Origin : 1. <input type="checkbox"/> Home 2. <input type="checkbox"/> Work 3. <input type="checkbox"/> School 4. <input type="checkbox"/> Others, to specify : _____ Building Name : _____ Road Name : _____ Regency/City : _____ District : _____ Sub-District : _____ Post Code : _____ B. Trip Destination : 1. <input type="checkbox"/> Home 2. <input type="checkbox"/> Work 3. <input type="checkbox"/> School 4. <input type="checkbox"/> Others, to specify : _____ Building Name : _____ Road Name : _____ Regency/City : _____ District : _____ Sub-District : _____ Post Code : _____ C. Purpose of Travel : 1. <input type="checkbox"/> Work (Commuter) 4. <input type="checkbox"/> Business C1. <input type="checkbox"/> going to ..... 2. <input type="checkbox"/> School / Academic Reason 5. <input type="checkbox"/> Personal reason C2. <input type="checkbox"/> coming from ..... 3. <input type="checkbox"/> Shopping 6. <input type="checkbox"/> Other, to specify : _____ D. Total transportation cost for one trip : Rp. _____ E. Travel Time : _____ hours _____ minutes [From your origin to your destination] F. How many days a week do you used to make this trip? 1. <input type="checkbox"/> once a week 4. <input type="checkbox"/> 4 days a week 7. <input type="checkbox"/> Everyday 10. <input type="checkbox"/> Other, to specify : _____ 2. <input type="checkbox"/> 2 days a week 5. <input type="checkbox"/> 5 days a week 8. <input type="checkbox"/> First time 3. <input type="checkbox"/> 3 days a week 6. <input type="checkbox"/> 6 days a week 9. <input type="checkbox"/> Rarely				
<b>IV TRIP ATTRIBUTES</b> <b>A. CURRENT TRIP</b> A1. Time to start trip from your origin : _____ WIB A2. How do you reach your next mode of transportation after you arrived? 1. <input type="checkbox"/> Walking 3. <input type="checkbox"/> Conventional Ojek 5. <input type="checkbox"/> Others, to specify : _____ 2. <input type="checkbox"/> Mini bus 4. <input type="checkbox"/> Online Ojek A3. How much time does it take to travel to your next mode of transportation? (excl. waiting time) 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes A4. If you answer others than 1 on question number 2, how much time do you spend to wait for the minibus/ conventional ojek/ online ojek? 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes A5. How much time do you spend to wait for your next transport mode to arrive at your next node? 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes A6. Your alternative mode of transportation : _____ A7. Your alternative route rather than your usual route : _____ [please elaborate the route]				
<b>B. USUAL TRIP</b> <i>→ If your current trip is your usual trip, please skip this and continue on to C. OPPOSITE TRIP</i> B1. Time to start trip from your origin : _____ WIB B2. How do you reach your next mode of transportation after you arrived? 1. <input type="checkbox"/> Walking 3. <input type="checkbox"/> Conventional Ojek 5. <input type="checkbox"/> Others, to specify : _____ 2. <input type="checkbox"/> Mini bus 4. <input type="checkbox"/> Online Ojek B3. How much time does it take to travel to your next mode of transportation? (excl. waiting time) 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes B4. If you answer others than 1 on question number 2, how much time do you spend to wait for the minibus/ conventional ojek/ online ojek? 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes B5. How much time do you spend to wait for your next transport mode to arrive at your next node? 1. <input type="checkbox"/> 0 - 5 minutes 3. <input type="checkbox"/> 11 - 15 minutes 5. <input type="checkbox"/> 21 - 25 minutes 7. <input type="checkbox"/> > 30 minutes 2. <input type="checkbox"/> 6 - 10 minutes 4. <input type="checkbox"/> 16 - 20 minutes 6. <input type="checkbox"/> 26 - 30 minutes to specify : _____ minutes B6. Your alternative mode of transportation : _____ B7. Your alternative route rather than your usual route : _____ [please elaborate the route]				



**SURVEI WAWANCARA PENYEMPITAN LAJUR PENUMPANG TRANSIT  
(PASSENGER TRANSFER BOTTLENECK INTERVIEW SURVEY)**

**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION Phase 2  
SEPTEMBER 2017**

**CONFIDENTIAL**

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**C. OPPOSITE TRIP**

**C1. Time to start trip from your origin :**    WIB

**C2. How do you reach your next mode of transportation after you arrived ?**

**C3. How much time does it take to travel to your next mode of transportation? (excl. waiting time)**

**C4. If you answer others than 1 on question number 2, how much time do you spend to wait for the minibus/ conventional ojek/ online ojek?**

**C5. How much time do you spend to wait for your next transport mode to arrive at your next node?**

**C6. Your alternative mode of transportation :** see Table B

**C7. Your alternative route rather than your usual route :**  
*[please elaborate the route]*

---

**III Respondent Personal Data**

**A. Sex :** 1.  Male 2.  Female *(fill by the surveyor)*

**B. Age :** 1.  < 14 years 2.  15-19 years 3.  20-24 years 4.  25-29 years 5.  30-34 years 6.  35-39 years 7.  40-44 years 8.  45-49 years 9.  50-54 years 10.  >60 years

**C. Personal Income :**  /month

01. < Rp.999.000	02. Rp.1.000.000 - Rp.1.499.999	03. Rp.1.500.000 - Rp.1.999.999	04. Rp.2.000.000 - Rp.3.499.999	05. Rp.3.500.000 - Rp.4.999.999	06. Rp. 5.000.000 - Rp. 6.499.999	07. Rp. 6.500.000 - Rp. 8.999.999	08. Rp. 9.000.000 - Rp.10.499.999	09. Rp.10.500.000 - Rp.11.999.999	10. Rp.12.000.000 - Rp.13.499.999	11. Rp.13.500.000 - Rp.14.999.999	12. Rp.15.000.000 - Rp.17.499.999	13. Rp.17.500.000 - Rp.19.999.999	14. Rp.20.000.000 - Rp.22.499.999	15. Rp.25.000.000 - Rp.27.499.999	16. Rp.27.000.000 - Rp.29.999.999	17. more than Rp.30.000.000
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**VI PASSENGER TRANSFER PERCEPTION AND OPINION**

**A. From a scale 1 to 5, where 1 is very satisfied and 5 is very dissatisfied, how would you rate your experience ?**

very satisfied	satisfied	normal	dissatisfied	very dissatisfied
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

**B. Please pick 3 facilities and services then put number based on rank from a list below that should become priority for transit area**

1. Pedestrian sidewalk with shade and weather protection	<input type="checkbox"/>	9. Barrier free facilities such as tactile paving and slope	<input type="checkbox"/>
2. Direct access to the nearest transfer point (shortcut)	<input type="checkbox"/>	10. Security officer on duty	<input type="checkbox"/>
3. Air Conditioning waiting area	<input type="checkbox"/>	11. More lighting around the transfer point	<input type="checkbox"/>
4. Escalator/ travelator	<input type="checkbox"/>	12. Signs and information related to transfer	<input type="checkbox"/>
5. Store	<input type="checkbox"/>	13. Closed circuit camera	<input type="checkbox"/>
6. Discount rate and integrated fare system	<input type="checkbox"/>	14. More frequent transit service on the next mode	<input type="checkbox"/>
7. Organized angkot/ bus stand for transfer	<input type="checkbox"/>	15. Real-time information for next bus/ train arrival	<input type="checkbox"/>
8. Safety precaution such as fence or guard rail	<input type="checkbox"/>	16. Others, to specify : _____	<input type="checkbox"/>

**C. Have you experienced any situation that caused you to feel unsafe during your transit experience**  
What kind of situation have you encountered ? *(you can pick more than one)*

1. Lack of lighting	<input type="checkbox"/>	4. Harrasment	<input type="checkbox"/>
2. Absence of formal officer	<input type="checkbox"/>	5. Criminal activity	<input type="checkbox"/>
3. Traffic Hazard	<input type="checkbox"/>	6. Vandalism	<input type="checkbox"/>

**D. In your opinion, what is a reasonable amount of time to wait for transit ?**

1. <input type="checkbox"/> 0 - 5 minutes	2. <input type="checkbox"/> 6 - 10 minutes	3. <input type="checkbox"/> 11 - 15 minutes	4. <input type="checkbox"/> 16 - 20 minutes	5. <input type="checkbox"/> 21 - 25 minutes
---	--	---	---	---

**E. How many metres do you tolerate to walk in the open space?**

1. <input type="checkbox"/> 100 metres	2. <input type="checkbox"/> 300 metres	3. <input type="checkbox"/> 500 metres	4. <input type="checkbox"/> 700 metres	5. <input type="checkbox"/> 1 kilometre
--	--	--	--	---

Please share if you have any suggestion to improve your transit experience :

---

01. Walking	05. Taxi	09. Medium bus	13. Becak
02. Bicycle	06. Online Taxi	10. Feeder Busway	14. Bajaj
03. Motorcycle	07. Ojek	11. Online Ojek	
04. Private Vehicle	08. Mini bus (angkot)	12. Drop by/ Pick up	

01. Walking	05. TransJakarta	09. Mini bus (angkot)	13. Online Ojek
02. Bicycle	06. Taxi	10. Medium bus	14. Bajaj
03. Motorcycle	07. Online Taxi	11. Bus	15. Becak
04. Private Vehicle	08. Ojek	12. Feeder Busway	16. Train

## 1.7 Survey Results and Major Findings

### a. Transfer Time

Worst ten locations with highest bottleneck transfer time:

- Morning peak

**Table 2 Worst ten locations with highest bottleneck transfer time at morning peak hour**

Location	Transfer Direction	Transfer Time (min.)	Off-peak Transfer Times Measured by Surveyor (min.)	Difference
		minute		
(a)	(b)	(c)	(d)	(d-c)
Grogol	Bus Terminal to BRT	17.7	6.1	-11.6
Lebak Bulus	BRT shelter to Bus Terminal	13.3	1.8	-11.5
Tanjung Priok	BRT to Train	18	8.5	-9.5
Jatinegara 1	BRT to Train	18	8.5	-9.5
Lebak Bulus	Bus Terminal to BRT Shelter	13.3	3.8	-9.5
Poris Plawad	Bus Terminal to BRT	11.5	3.2	-8.3
Blok M	BRT to Bus Terminal	9.5	1.6	-7.9
Ragunan	BRT to Bus Terminal	9.8	2.3	-7.5
Kota	Train to BRT	13	5.6	-7.4
Kampung Melayu	BRT to Bus Terminal	6.7	0.2	-6.5

Source: JUTPI 2

2. Evening peak

**Table 3 Worst ten locations with highest bottleneck transfer time at evening peak hour**

Location	Transfer Direction	Transfer Time (min.)	Off-peak Transfer Times Measured by Surveyor (min.)	Difference
		minute		
(a)	(b)	(c)	(d)	(d-c)
Grogol	Bus Terminal to BRT	18	6.1	-11.9
Blok M	BRT to Bus Terminal	12.4	1.6	-10.8
Lebak Bulus	BRT shelter to Bus Terminal	11.8	1.8	-10
Poris Plawad	BRT to Bus Terminal	13	3.2	-9.8
Kota	Train to BRT	14.3	5.6	-8.7
Ragunan	Bus Terminal to BRT	10.8	4.3	-6.5
Tanjung Priok	BRT to Train	14.3	8.5	-5.8
Jatinegara 1	BRT to Train	14.3	8.5	-5.8
Dukuh Atas	BRT to Train	16	10.5	-5.5
Pluit	Bus (feeder) stop to Pluit BRT Shelter	7.1	2.1	-5

Source: JUTPI 2

**b. Worst ten locations based on unsafety situation experience by respondent:**

**Table 4 Worst ten locations based on unsafety situation experience by respondent**

Worst 10 locations for Absence of Officer		Worst 10 locations for Criminal Activity	
Location	Absence of Security Officer	Location	Criminal Activity
Manggarai	14%	Semanggi	15%
Cawang	13%	Grogol	14%
Kota	7%	Blok M	11%
Senen	7%	Pramuka	11%
Tanjung Priok	5%	Pulogebang	10%
Grogol	3%	Dukuh Atas	10%
Blok M	3%	Kota	9%
Pulogebang	2%	Senen	9%
Kampung Melayu	2%	Poris Plawad	9%
Depok	2%	Jatinegara 2	9%

Worst 10 locations for Lack of Lighting	
Location	Lack of Lighting
Pulogebang	19%
Cawang	8%
Kota	2%
Senen	2%
Manggarai	2%

Worst 10 locations for Harassment	
Location	Harassment
Depok	10%
Cempaka Mas	9%
Pulogebang	8%
Kampung Rambutan	8%
Harmoni	8%

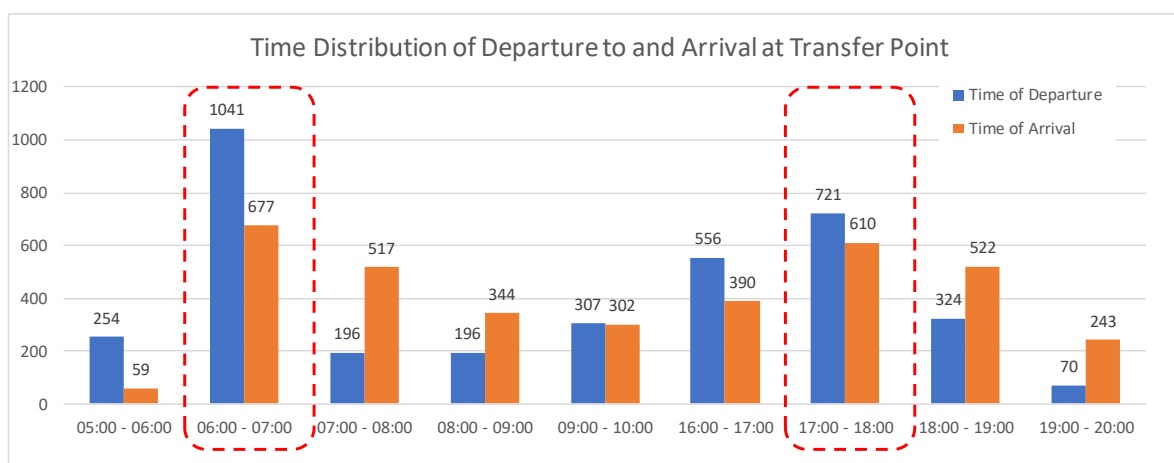
Worst 10 locations for Traffic Hazard	
Location	Traffic Hazard
Manggarai	11%
Depok	10%
Cawang	8%
Kampung Rambutan	8%
Pinang ranti	6%

Location	Vandalism
Manggarai	4%
Poris Plawad	4%
Pulogadung	3%
Senen	2%
Cempaka mas	2%

Source: JUTPI 2

**c. Time distribution of departure and arrival at transfer point**

Figure 2 shows that peak hours of departure and arrival time is around 6:00 to 7:00 in the morning and 17:00 to 18:00 in the evening.



Source: JUTPI 2

**Figure 2 Time distribution of departure and arrival at transfer point**



d. Mode distribution for access and egress mode

Table 5 Mode distribution for home access by each O-D direction

Home Access and Mode													
Access Travel Time (min)	Walking	Bicycle	Motorcycle	Private Car	Motorcycle Taxi (ojek)	Mini Bus (angkot)	Medium Bus	Freeder Transjakarta	Online Motorcycle Taxi	Drop by/ Pick up	Becak	Total	%
0 – 10	154		8		4	39	14					219	21.5%
11 – 20	223	2	21			71	21	2	6			346	34.0%
21 – 30	86		13		1	74	39		3		1	217	21.3%
>>30	115		24		2	70	20		3	1		235	23.1%
Total	578	2	66	0	7	254	94	2	12	1	1	1017	100%
%	56.8%	0.2%	6.5%	0.0%	0.7%	25.0%	9.2%	0.2%	1.2%	0.1%	0.1%	100%	

Source: JUTPI 2

Table 6 Mode distribution for destination access by each O-D direction

Destination Access and Mode													
Access Travel Time (min)	Walking	Bicycle	Motorcycle	Private Car	Motorcycle Taxi (ojek)	Mini Bus (angkot)	Medium Bus	Freeder Transjakarta	Online Motorcycle Taxi	Drop by/ Pick up	Becak	Total	%
0 – 10	106	1	3		1	24	4					139	17.7%
11 – 20	194		7			54	20	2	1			278	35.4%
21 – 30	73		1			41	28	1	2			146	18.6%
>>30	161		7	3	1	31	14	1	4	1		223	28.4%
Total	534	1	18	3	2	150	66	4	7	1	0	786	100%
%	67.9%	0.1%	2.3%	0.4%	0.3%	19.1%	8.4%	0.5%	0.9%	0.1%	0.0%	100%	

Source: JUTPI 2

**Table 7 Mode distribution for home egress by each O-D direction**

To Home Egress Time and Mode																
Egress Travel Time (min)	Walking	Bicycle	Motorcycle	Private Car	Taxi	Online Taxi	Motorcycle Taxi (ojek)	Mini Bus (angkot)	Medium Bus	Freeder Transjakarta	Online Motorcycle Taxi	Drop by/ Pick up	Becak	Bajaj	Total	%
0 – 10	309	1	19	1			9	30	6	3	18		3		399	51.0%
11 – 20	60		18	2		1	3	61	17	5	5		1		173	22.1%
21 – 30	15		4					38	17		1				75	9.6%
>>30	25		1			1		65	31	4	6	1	1		135	17.3%
Total	409	1	42	3	0	2	12	194	71	12	30	1	5		782	100%
%	52.3%	0.1%	5.4%	0.4%	0.0%	0.3%	1.5%	24.8%	9.1%	1.5%	3.8%	0.1%	0.6%	0.0%	100%	

Source: JUTPI 2

**Table 8 Mode distribution for destination egress by each O-D direction**

To Destination Egress Time and Mode																
Egress Travel Time (min)	Walking	Bicycle	Motorcycle	Private Car	Taxi	Online Taxi	Motorcycle Taxi (ojek)	Mini Bus (angkot)	Medium Bus	Freeder Transjakarta	Online Motorcycle Taxi	Drop by/ Pick up	Becak	Bajaj	Total	%
0 – 10	446		5				9	39	5	5	13	2	3	1	528	53.5%
11 – 20	84		5		1		3	80	26	4	8	2	2		215	21.8%
21 – 30	25		2					46	25	2	1				101	10.2%
>>30	34						1	67	38	1		1	1		143	14.5%
Total	589	0	12	0		0	13	232	94	12	22	5	6	1	987	100%
%	59.7%	0.0%	1.2%	0.0%	0.1%	0.0%	1.3%	23.5%	9.5%	1.2%	2.2%	0.5%	0.6%	0.1%	100%	

Source: JUTPI 2

**e. Respondents' purpose of travel**

**Table 9 Travel purpose**

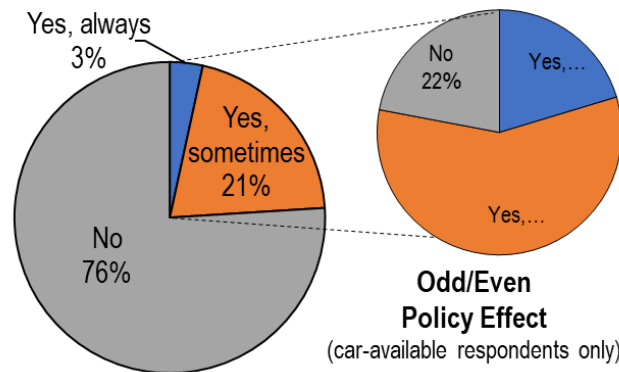
Activity	Going to...	Coming from
Work (Commuter)	902	669
School/Academic	74	75
Personal Reason	30	19
Others	20	9
Business	6	5
Shopping	4	5
Total	1036	782

Source: JUTPI 2

According from the time distribution we can tell that most of the respondents are commuter people who going to work in the morning and coming back from workplace in the evening.

**f. Respondents' car and motorcycle availability and ownership**

**1. Car availability**

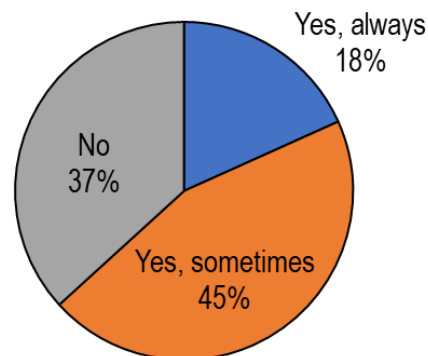


Source: JUTPI 2

**Figure 3 Car availability of public transport users**

Respondents of public transport users said most of them (76%) don't have availability of using car, 21% of them said sometimes they can use car, and the rest 3% said they always can use car to travel. However, when odd/even policy apply in 24% respondents who said they can use car, 22% of them said they will no longer use car if the policy affected them.

**2. Motorcycle availability**



Source: JUTPI 2

**Figure 4 Motorcycle availability of public transport users**

Respondents of public transport users said most of them (45%) they can use motorcycle sometimes, 37% of them said don't have availability of using motorcycle, and the rest 18% said they always can use motorcycle to travel.

**g. Transportation cost distribution for one trip**

**Table 10 Transportation cost distribution for one trip**

No.	Transportation cost	No. of respondent	%
1.	0 – 2,499	80	4.32%
2.	2,500 – 4,999	103	5.56%
3.	5,000 – 7,499	167	9.01%
4.	7,500 – 9,999	543	29.30%
5.	10,000 – 12,499	506	27.31%
6.	12,500 – 14,999	237	12.79%
7.	15,000 – 17,499	93	5.02%
8.	17,500 – 19,999	43	2.32%
9.	20,000 – 22,499	34	1.83%
10.	22,500 – 24,999	9	0.49%
11.	25,000 – 27,499	9	0.49%
12.	27,500 – 29,999	5	0.27%
13.	30,000 – 32,499	10	0.54%
14.	32,500 – 34,999	2	0.11%
15.	35,000 – 37,499	2	0.11%
16.	40,000 – 42,499	4	0.22%
17.	45,000 – 47,499	1	0.05%
18.	50,000 – 52,499	2	0.11%
19.	70,000 – 72,499	1	0.05%
20.	72,500 – 74,999	1	0.05%
21.	77,500 – 80,000	1	0.05%
Total		1853	100%

Source: JUTPI 2

Based on the survey result most of the respondents spend IDR 7,500 to IDR 12,500 for one trip or maximum Rp.25.000 a day.

**h. Respondents monthly income and alternative mode cross tabulation**

**Table 11 Monthly income and alternative mode cross tabulation**

Mode	Low Income	Middle Income	High Income
Walking	0.4%	0.4%	0.9%
Bicycle	0.0%	0.0%	0.0%
Motorcycle	4.1%	3.7%	0.6%
Private Car	0.8%	1.3%	1.2%
Transjakarta	7.3%	7.6%	9.6%
Taxi	0.0%	0.0%	0.3%
Online Taxi	0.1%	0.2%	0.9%
Motorcycle Taxi ( <i>Ojek</i> )	0.8%	0.6%	3.6%
Mini Bus ( <i>Angkot</i> )	12.5%	13.4%	25.4%
Medium Bus	35.0%	33.2%	22.2%
Large Bus	24.3%	24.2%	10.2%
Feeder Transjakarta	0.8%	0.9%	3.0%
Online Motorcycle Taxi	3.1%	3.2%	13.5%
Bajaj	0.0%	0.0%	0.0%
Becak	0.0%	0.0%	0.0%
Taxi	10.7%	11.2%	8.7%
Total	100.0%	100.0%	100.0%

\*Note:

Income range:

a. Low Income : Less than Rp.1.999.999

b. Middle Income : Rp.2.000.000 up to Rp.6.499.999

c. High Income : More than Rp.6.500.000

Source: JUTPI

Survey result shows that bus (mini, medium, large) become the most popular option for respondents as the alternative mode to use. Only 13.5% of the respondents from high income group use online ojek as their alternative mode.

**i. Trip frequency**

**Table 12 Trip frequency**

No.	Trip Frequency	No. of respondent	%
1.	Once a week	20	1.1%
2.	Two days a week	14	0.8%
3.	Three days a week	31	1.8%
4.	Four days a week	53	3.0%
5.	Five days a week	1029	58.5%
6.	Six days a week	528	30.0%
7.	Everyday	21	1.2%
8.	First time	4	0.2%
9.	Rarely	45	2.6%
10.	Others	14	0.8%
Total		1759	100.0%

Source: JUTPI 2

As mention in table above, since majority of the transferring passengers are worker, they are doing daily trip up to 5 days a week (working days).

**j. Travel Time**

**Table 13 Travel Time**

No.	Travel Time (Hour)	No. of respondent	%
1.	0.00 – 0.25	6	0.3%
2.	0.25 – 0.50	16	0.9%
3.	0.50 – 0.75	71	4.0%
4.	0.75 – 1.00	121	6.7%
5.	1.00 – 1.25	318	17.7%
6.	1.25 – 1.50	174	9.7%
7.	1.50 – 1.75	396	22.0%
8.	1.75 – 2.00	124	6.9%
9.	2.00 – 2.25	306	17.0%
10.	2.25 – 2.50	71	4.0%
11.	2.50 – 2.75	112	6.2%
12.	2.75 – 3.00	13	0.7%
13.	3.00 – 3.25	31	1.7%
14.	3.25 – 3.50	12	0.7%
15.	3.50 – 3.75	7	0.4%
16.	3.75 – 4.00	4	0.2%
17.	4.00 – 4.25	3	0.2%
18.	4.25 – 4.50	1	0.1%
19.	4.50 – 4.75	1	0.1%
20.	4.75 – 5.00	2	0.1%
21.	5.00 – 5.25	2	0.1%
22.	5.75 – 6.00	2	0.1%
23.	7.00 – 7.25	1	0.1%
24.	7.50 – 7.75	1	0.1%
25.	8.25 – 8.50	1	0.1%
Total		1796	100%

Source: JUTPI 2

Result shows that most of the trip by the respondent takes time around one and half hour to travel from origin to destination.

**k. Waiting Time**

Five locations with the longest waiting time:

1. Morning peak

**Table 14 Five locations with the longest waiting time at morning peak**

Location	Transfer Type	Off Peak Waiting Time	Waiting Time	Difference
		minute		
Grogol	Station to Terminal	10.0	23.0	13.0
Lebak Bulus	Terminal to BRT	8.0	14.4	6.4
Kota	BRT to Station	5.0	11.3	6.3
Senen	BRT to Station	10.8	16.3	5.5
Depok	Terminal to Station	3.0	8.0	5.0

Source: JUTPI 2

2. Evening peak

**Table 15 Five locations with the longest waiting time at evening peak**

Location	Transfer Type	Off Peak Waiting Time	Waiting Time	Difference
		minute		
Grogol	Station to Terminal	10.0	20.0	10.0
Lebak Bulus	Terminal to BRT	8.0	18.0	10.0
Jatinegara	Station to BRT	9.0	16.2	7.2
Kota	BRT to Station	5.0	10.9	5.9
Depok	Terminal to Station	3.0	8.0	5.0

Source: JUTPI 2

Results shows the acceptable waiting time or transit time according to the survey is 6.3 minutes.

**1. Opinion of Public Transport Users**

Based on the survey result, there are ten items that passenger transfer facilities need to be improve:

1. Pedestrian sidewalk with shades/canopy
2. Direct access to transfer point
3. Air-conditioned waiting room
4. Escalator/travelator
5. Discount and integrated fare system
6. Store
7. Organized “angkot”/feeder for transfer
8. Safe and barrier-free pedestrian path
9. Security personnel existence
10. Real-time schedule information

## Chapter 2 TRAVEL SPEED SURVEY

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### **2.1 Survey Objective**

The main objective of the survey is to obtain information on current road traffic situation and to identify bottlenecks of traffic flow.

### **2.2 Survey Method**

This survey was conducted by purchasing GPS point data from one of GPS providers. There are 350 million GPS point data in September-October 2017 with approximately 7,000 vehicles will be utilized for the analysis. To accommodate expansion of odd-even policy, additional purchase for GPS point data was made for October-November 2018.

To accommodate and analyse those GPS point data, GIS road network with roughly 5,000 links in JABODETABEK area and software for road identification, entry/exit point, and time estimation were developed. Detail program and manual to run the average speed calculation was attached in appendix.

### **2.3 Survey Time**

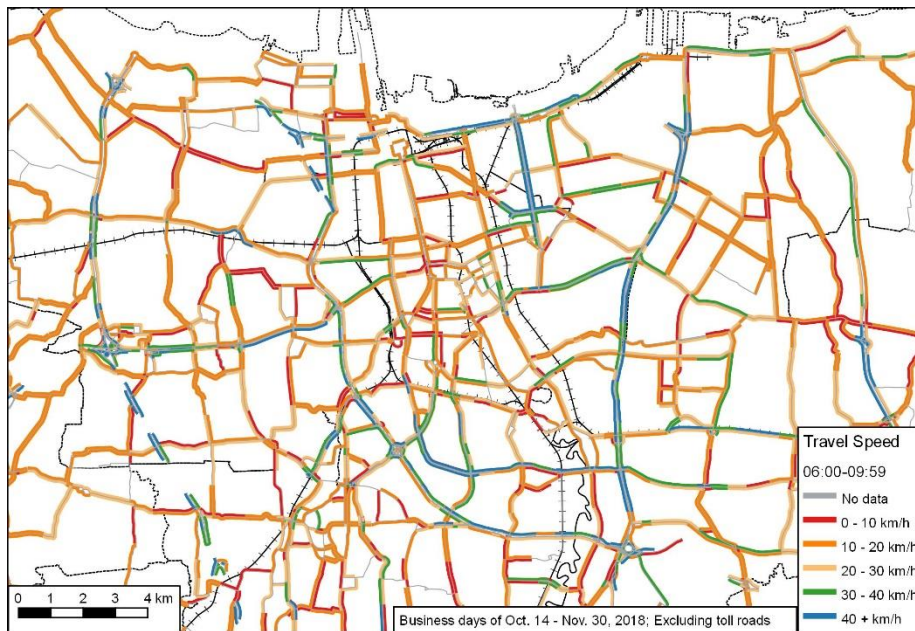
GPS point data contains data for each day in September-October 2017 and October-November 2018. But for the further analysis, Study Team only utilized data for normal business day (weekdays) and for year 2018 only selected data after 2018 Asian Para Games was completed, although all data is calculated.

### **2.4 Survey Result and Major Findings**

#### **2.4.1 Travel Speed in Arterial Roads**

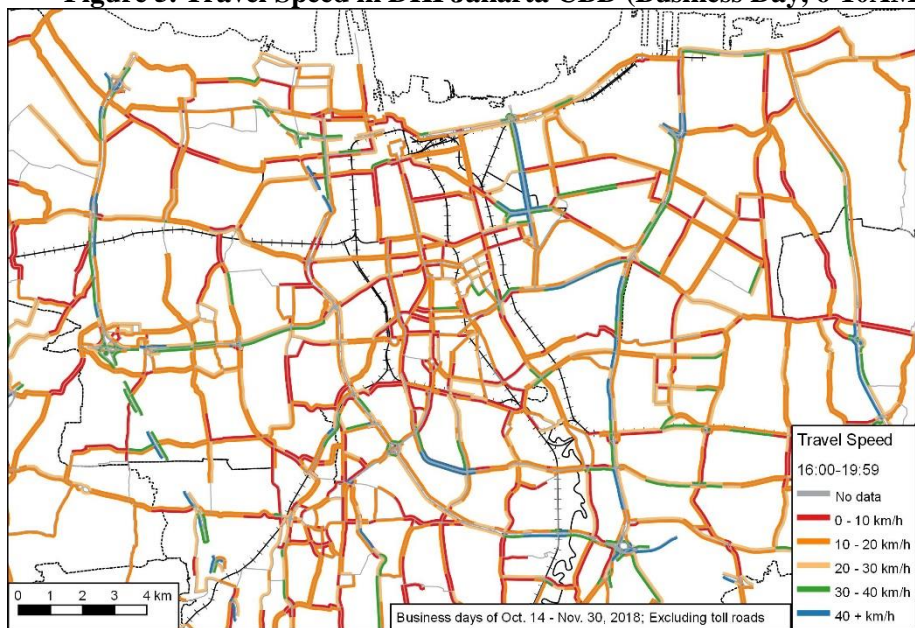
Based on the result, low speed is observed in all the Kota and Kabupaten in JABODETABEK during both morning and evening peak hour. Evening peak travel speeds are relatively lower than those of morning peak. Furthermore, lots of bottleneck intersections which are inter-connected each other are observed. Further detail study in each Kota and Kabupaten is awaited. JUTPI 2 travel speed survey results can be powerful tool for detail study.





Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018

**Figure 5. Travel Speed in DKI Jakarta CBD (Business Day, 6-10AM)**

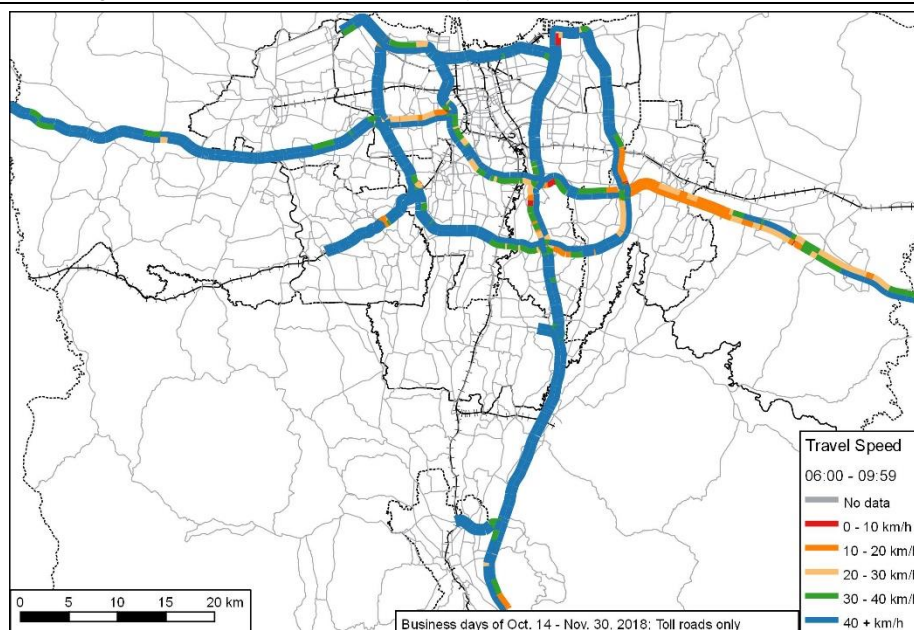


Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018

**Figure 6. Travel Speed in DKI Jakarta CBD (Business Day, 4-8PM)**

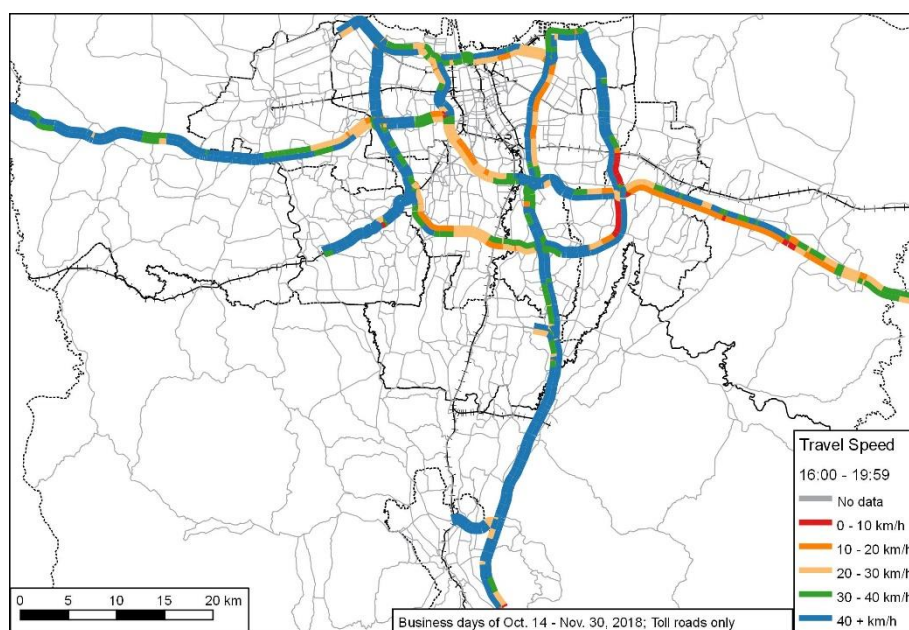
#### 2.4.2 Travel Speed in Toll Roads

Low speed is observed in Jakarta-Cikampek Toll Road and Intra-Urban Toll Road during morning peak hour. Low speed is also observed in many sections in JABODETABEK during evening peak such as Jakarta-Cikampek Toll Road, Intra-Urban Toll Road, South and East sections of Outer-Ring Road.



Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018

**Figure 7. Travel Speed in JABODETABEK Toll Road (Business Day, 6-10AM)**



Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018

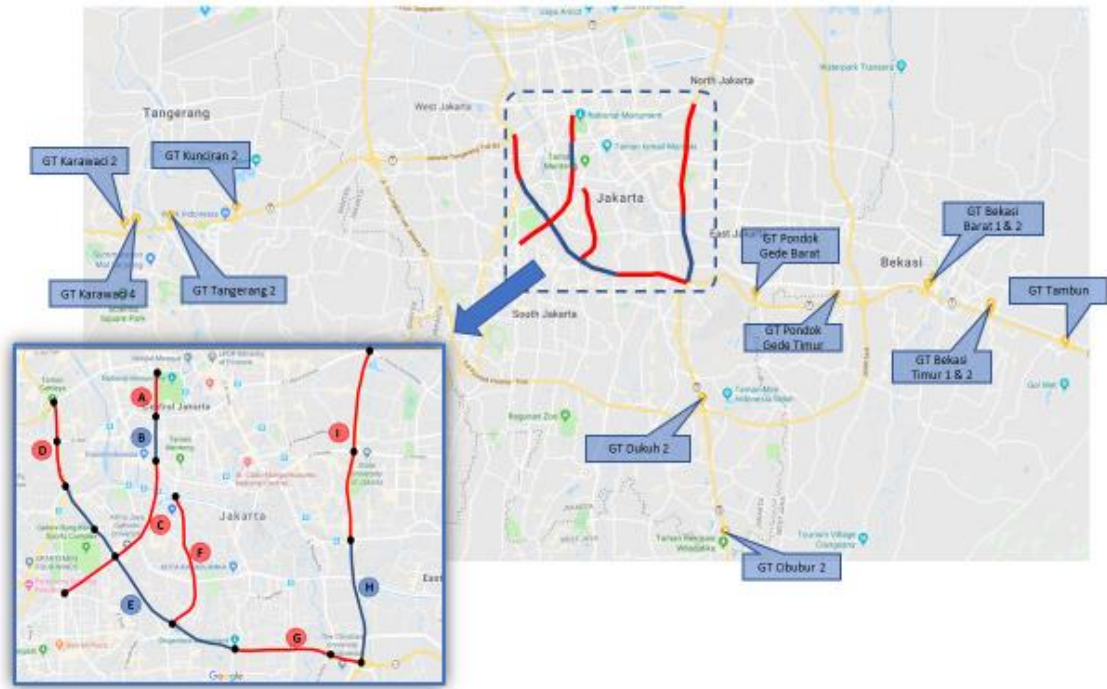
**Figure 8. Travel Speed in JABODETABEK Toll Road (Business Day, 4-8PM)**

### 2.4.3 Travel Speed Comparison After Expansion of Odd-Even Policy

DKI Jakarta implemented odd-even policy as traffic demand management starting from May 2016, replacing the older 3-in-1 policy. Odd-even policy limiting the use of vehicles with cars whose license plate ends in an even number are only allowed through certain roads and tollgates on even-numbered dates and vice versa, with several exceptions such as logistic trucks and public transportation.

Odd-even policy originally only applied on Jl. Sudirman and Jl. MH Thamrin. As times goes by, several modifications for odd-even policy was made, especially to accommodate Asian Games and Asian Para Games. Figure below shown location map off odd-even policy after Asian Para Games.



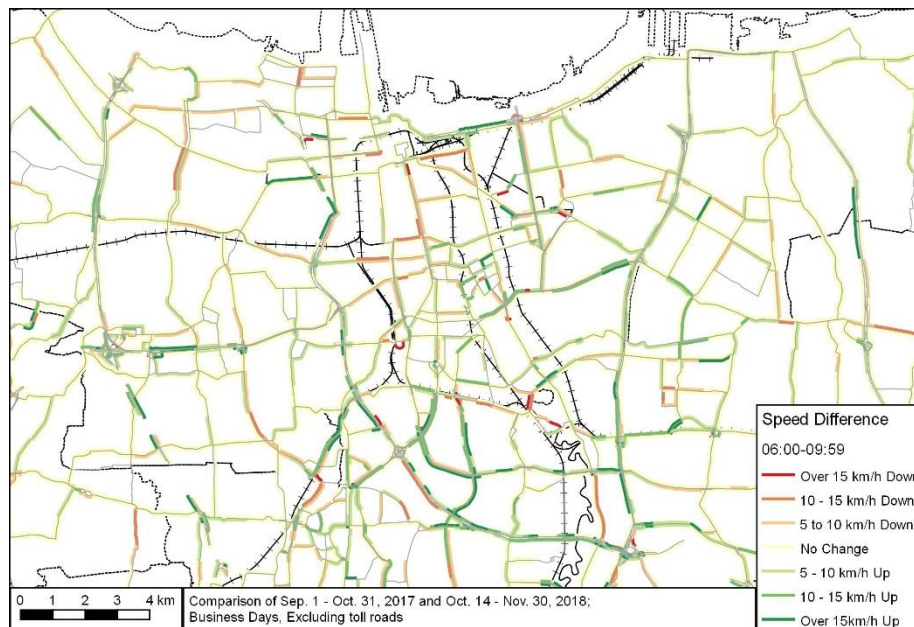


Source: JUTPI 2

**Figure 9. Location Map of Odd-Even Policy**

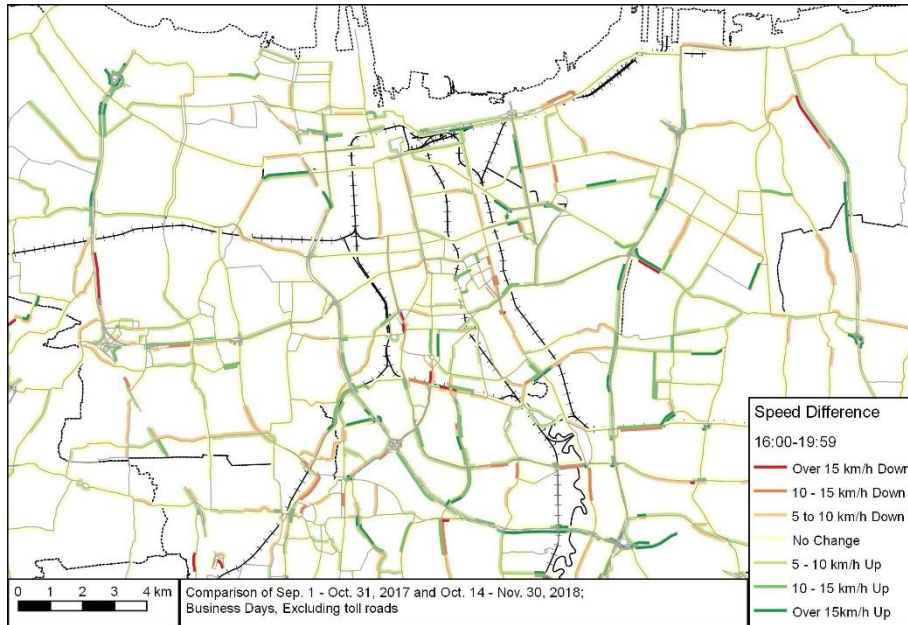
**a. Arterial Roads**

After expansion of the odd-even policy, increase of travel speeds are clearly observed on the target roads, but the increase is observed in other sections in DKI Jakarta also. Decrease of travel speeds are observed mainly at connecting sections of the target roads while there was no change for most sections of roads. In JABODETABEK, 1km/h increase of travel speeds are observed on average during peak hours.



Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018 and September 1 – October 31, 2017

**Figure 10. Travel Speed Comparison Before and After Expansion of Odd-Even Policy (Business Day, 6-10AM)**

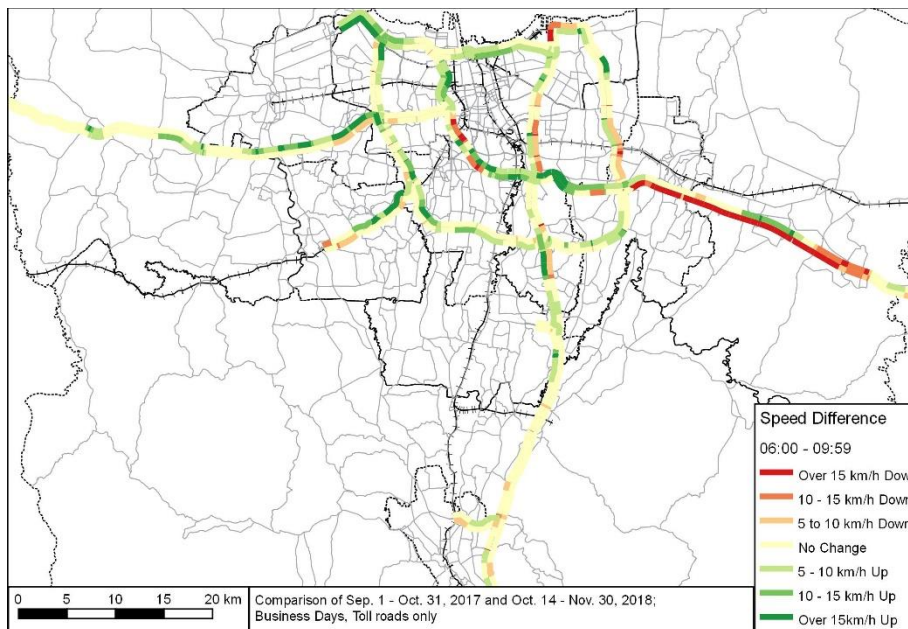


Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018 and September 1 – October 31, 2017

**Figure 11. Travel Speed Comparison Before and After Expansion of Odd-Even Policy (Business Day, 4-8PM)**

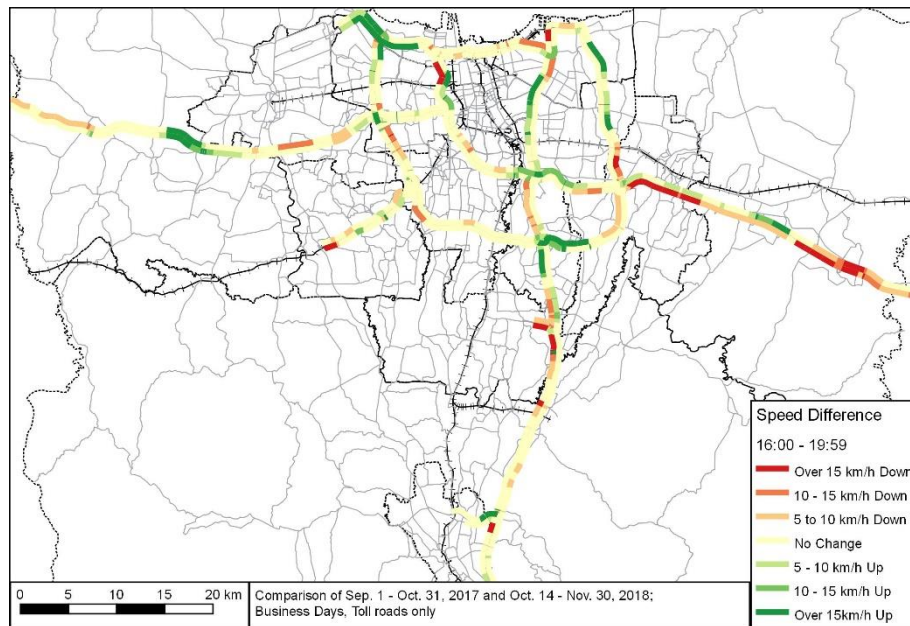
**b. Toll Roads**

Increase of travel speeds on toll roads are evident during evening peak hours. Although decrease of travel speeds on toll roads at sections close to the target roads. Significant decrease of travel speeds is observed at in-bound direction of Jakarta-Cikampek Toll Road. This might be affected by construction works.



Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018 and September 1 – October 31, 2017

**Figure 12. Travel Speed in JABODETABEK Toll Road Comparison Before and After Expansion of Odd-Even Policy (Business Day, 6-10AM)**

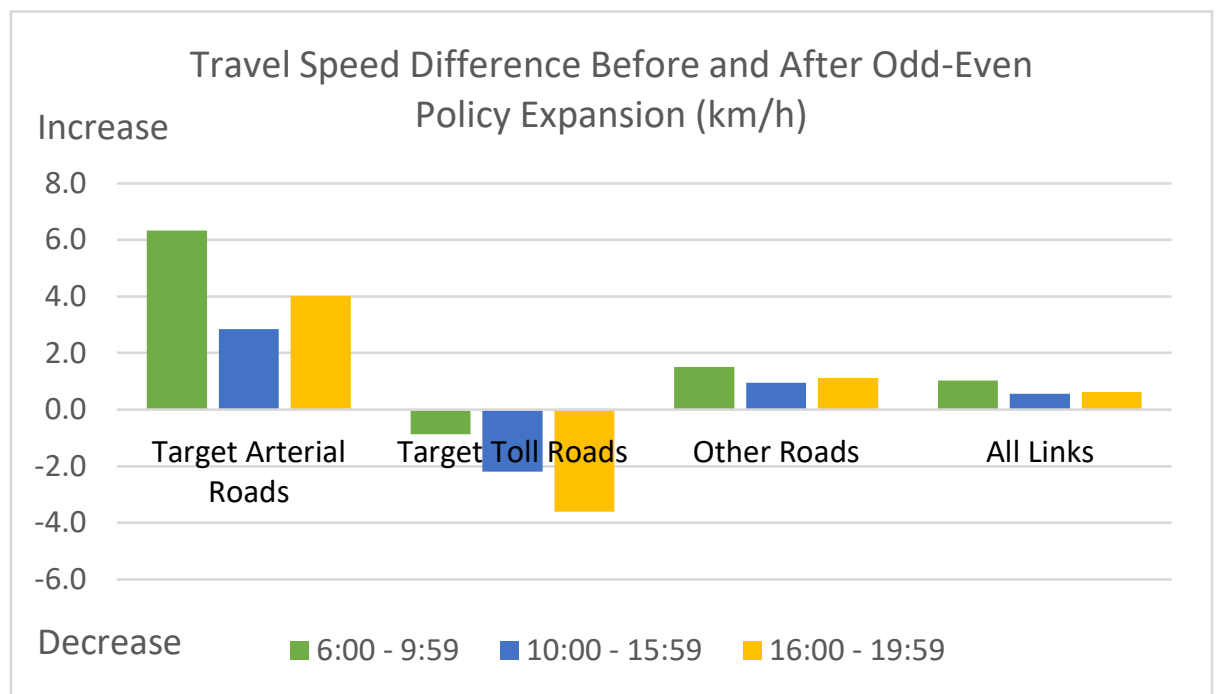


Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018 and September 1 – October 31, 2017

**Figure 13. Travel Speed in JABODETABEK Toll Road Comparison Before and After Expansion of Odd-Even Policy (Business Day, 4-8PM)**

**c. Summary**

In conclusion, on average, roughly 1km/h increase of travel speeds are observed for all links. Increase of travel speeds are evident at target roads especially during morning peak hours. On the other hand, travel speed decreased at target toll roads probably due to construction works.



Source: JUTPI 2 Travel Speed Survey, October 14 – November 30, 2018 and September 1 – October 31, 2017

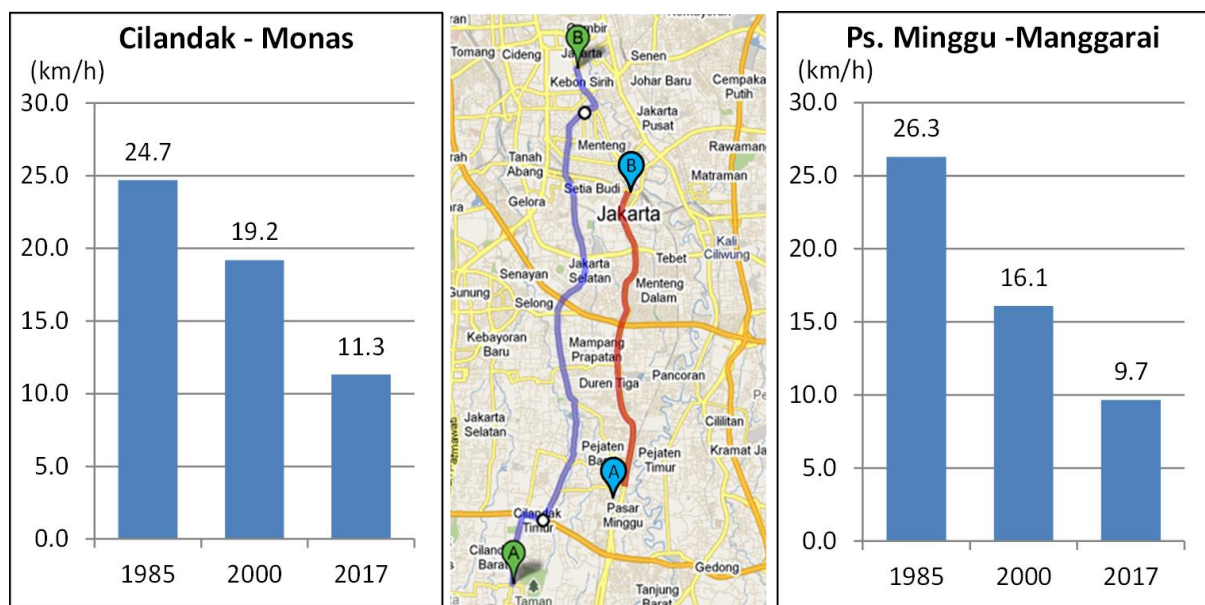
**Figure 14. Travel Speed Comparison Before and After Expansion of Odd-Even Policy**

**2.4.4 Travel Speed Changes by Time**

Travel speeds are getting lower and lower over years. In addition to minor bottleneck



improvement policies, fundamental countermeasures might be required considering further increasing demand of private modes.



Source: ARSDS (1985), SITRAMP Phase 1 Travel Speed Survey (2000) and JUTPI Phase 2 Travel Speed Survey (2017)

**Figure 15. Travel Speed Comparison with Previous Survey (Morning Peak Period)**

## Chapter 3 SCREENLINE AND CLASSIFIED VEHICLE COUNTING SURVEY

Screenline and classified vehicle counting survey is divided into two parts, namely full-scale screenline and vehicle counting and additional vehicle counting for comparison which was carried out in December 2018 to see the effect of extension odd-even number plate regulation

### 3.1 Full-scale Screenline and Vehicle Counting

#### 3.1.1 Survey Objective

The main objective of the survey is to verify the present OD matrices which are estimated based on the results of the Activity-Travel Diary Survey and to understand the annual growth rate by observing the traffic volume at some of the previous survey locations in JABODETABEK.

#### 3.1.2 Survey Location

In general, the screen line is set on the line where the project area is adequately divided into parts. A river, a canal, and a railway line are often used as a screen line. However, in JABODETABEK region, there is no river/canal that clearly bisects the area. The railway line was examined as a second candidate for the screen line. However, this line was not adopted as a screen line, because it was clarified that there are a lot of crossing points on the line, and that this line will not divide the study area into the census zone. Thus, the corridor of toll road was utilized although it does not always follow such corridor. Eventually, there are 91 locations observed, where 55 locations are within DKI Jakarta and 36 locations are in BODETABEK. Those locations then classified into 5 groups of line coded A, B, C, D, F.

Detailed survey locations are presented in Table 16 and Figure 16 which shows street name, location point by coordinate, and duration of survey. From the table below, it can be seen that most of the locations are situated in DKI Jakarta under A group which consists of 31 locations followed by group D with 20 locations. The least screen line is set in F group with 6 locations.

**Table 16 Screenline Survey Location**

Name	Street_Name	x	y	Survey_Hours
A1	Jl. Jampoa	106.89467	-6.10722	16
A2	Jl. Plumpang Raya	106.89681	-6.13067	16
A3	Jl. Boulevard Barat	106.88933	-6.15111	16
A4	Jl. Perintis Kemerdekaan	106.88308	-6.16831	16
A5	Jl. Pulomas	106.87775	-6.17653	16
A6	Jl. Pemuda	106.87892	-6.19275	24
A7	Jl. Rawamangun Muka	106.87633	-6.19692	16
A8	Jl. Bekasi Timur	106.87747	-6.21489	16
A9	Jl. Basuki Rachmad	106.87800	-6.22503	24
A10	Jl. Kebon Nanas	106.87822	-6.23194	16

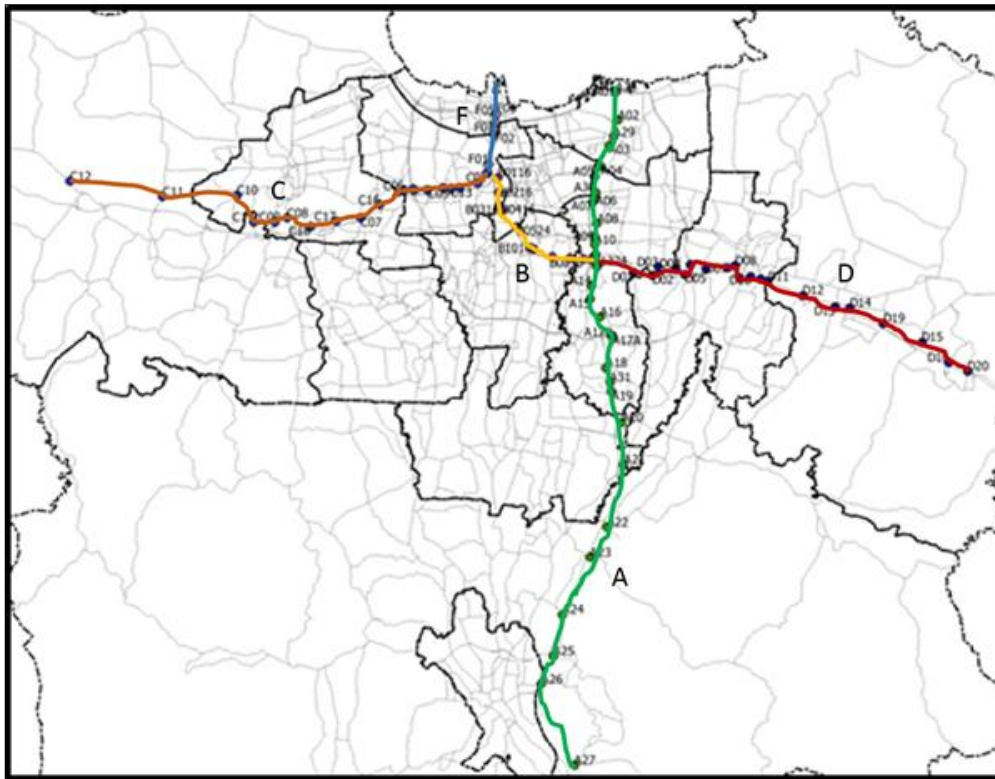
Name	Street_Name	x	y	Survey_Hours
A11	Jl. Kalimalang (Jl. Alvaro & Jl. Halim)	106.87938	-6.24001	16
A12	Jl. Tol Cikampek (Tol & access)	106.88119	-6.24755	24
A13	Jl. Halim Perdanakusumah	106.88011	-6.24986	24
A14	Jl. Cililitan Besar	106.87556	-6.26508	16
A15	Jl. Kerja Bakti	106.87492	-6.27625	24
A16	Jl. Pondok Gede Raya	106.88286	-6.29042	16
A17A	Jl. Mabes Hankam	106.89263	-6.30604	16
A17B	Jl. Kampung Rambutan	106.89250	-6.30684	16
A17C	Jl. Tol TMII Junction	106.89256	-6.30657	16
A18	Jl. Cipayung Raya	106.88780	-6.33168	16
A19	Jl. Lapangan Tembak	106.89247	-6.35106	16
A20	Jl. Trans Yogi (Alternatif Cibubur)	106.90079	-6.37595	16
A21	Jl. Jatikarya (Jl. Leuwinangung)	106.90267	-6.41022	16
A22	Gerbang Tol Gunung Putri	106.88917	-6.46131	24
A23	Jl. Mayor Oking	106.87532	-6.48586	24
A24	Jl. Sirkuit Sentul	106.85325	-6.53212	16
A25	Jl. MH Thamrin (Sentul)	106.84585	-6.56596	24
A26	Jl. Sukaraja (Cikeas)	106.83636	-6.58900	16
A27	Jl. Raya Puncak (Gadog)	106.86314	-6.65456	24
A28	Jl. Tol Tj Priok	106.89478	-6.10766	24
A29	Jl. Bulevard Artha Gading	106.89146	-6.14361	16
A30	Jl. H.Ten	106.87867	-6.18917	16
A31	Jl. Malaka	106.89090	-6.34346	16
B1	Jl. Tomang Raya	106.79942	-6.17750	16
B2	Jl. Katamso	106.80044	-6.18939	16
B3	Jl. Aipda KS. Tubun	106.80053	-6.20014	16
B4	Jl. Pejompongan	106.80286	-6.20342	16
B5	Jl. Sudirman	106.81517	-6.21719	24
B6	Jl. Rasuna Said	106.82811	-6.23556	16
B7	Jl. Prof. Dr. Supomo	106.84431	-6.24186	16
B8	Jl. Otista	106.86889	-6.24308	16
B9	Jl. DI. Panjaitan	106.87592	-6.24467	16
B10	Jl. Akses Balai Kartini	106.82695	-6.23488	16
B11	Jl. Tebet Timur Dalam	106.85854	-6.24156	16
B12	Jl. Tol Cililitan	106.87743	-6.24164	16
C1	Jl. Tol Semanggi Grogol	106.79150	-6.17461	24
C1A	Jl. S. Parman	106.79106	-6.17461	24
C2	Jl. Tanjung Duren Raya	106.78358	-6.18244	16
C3	Jl. Panjang	106.76850	-6.18606	16
C4	Jl. Pesanggrahan	106.75500	-6.18622	16
C5	Jl. Puri Kembang Timur	106.74303	-6.18753	16



Name	Street_Name	x	y	Survey_Hours
C6	Jl. Kembangan Selatan	106.72388	-6.18831	16
C7	Jl. KH Hasyim Ashari	106.68842	-6.21096	16
C8	Jl. M.H. Thamrin (Tangerang)	106.62892	-6.21106	24
C9	Jl. Imam Bonjol (Tangerang)	106.61914	-6.21406	24
C10	Jl. Gatot Subroto (Tangerang)	106.58803	-6.19244	24
C11	Jl. Pasar Kemis	106.52800	-6.19400	24
C12	Jl. Kresek	106.45289	-6.18172	24
C13	Jl. Kedoya Raya	106.76169	-6.18656	16
C14	Jl. Puri Lingkar Luar	106.73139	-6.18768	16
C15	Jl. Tol W2	106.73048	-6.18696	16
C16	Jl. Green Lake City Boulevard	106.70389	-6.20011	16
C17	Jl. HR Rasuna Said (1)	106.66837	-6.21374	16
C18	Jl. HR Rasuna Said (2)	106.64766	-6.21816	16
C19	Jl. Borobudur	106.60194	-6.21444	16
D1	Jl. Jatiwaringin Kalimalang	106.90958	-6.25444	16
D2	Jl. Raya Curug	106.92508	-6.25672	16
D3	Jl. SMA Kapin/Jati Bening	106.92972	-6.24972	16
D4	Jl. Kincan Raya	106.94372	-6.25092	16
D5	Jl. Caman	106.95147	-6.25553	16
D6	Jl. Tol Cikunir-Bintara	106.95567	-6.24753	24
D7	Jl. Jakasampurna	106.96864	-6.25089	16
D8	Jl. Jend. A. Yani	106.99217	-6.24838	24
D9	Jl. R.A. Kartini	106.99561	-6.25836	16
D10	Jl. Cut Meutia	107.00500	-6.25689	24
D11	Jl. H. Mulyadi Joyomartono	107.01866	-6.26119	16
D12	Jl. Setia Darma 2	107.04686	-6.27212	16
D13	Jl. Raya Setu	107.07349	-6.28137	24
D14	Pintu Tol Cibitung	107.08531	-6.28208	24
D15	Jl. Raya Industri 2 ( Cibarusah)	107.14358	-6.30964	24
D16	Jl. Orange Country Boulevard (Cibatu)	107.16554	-6.32628	16
D17	Jl. Akses Exit Tol	106.98560	-6.24978	16
D18	Jl. Pengasinan	107.01310	-6.25914	16
D19	Jl. Jarakosta	107.11262	-6.29444	16
D20	Jl. Raya Tegal Danas	107.18066	-6.33319	16
F1	Jl. Kyai Tapa	106.79185	-6.16654	16
F2	Jl. Pangeran Tubagus Angke	106.79697	-6.14240	16
F3	Jl. Bandengan Selatan	106.79648	-6.13686	16
F4	Jl. Tol Pelabuhan	106.79740	-6.13213	16
F5	Jl. Pluit Raya	106.79707	-6.12686	16
F6	Jl. Pluit Selatan Raya	106.79826	-6.12530	16

Source: JUTPI 2

Based on above table, the entire survey location for full-scale screenline and vehicle counting can be depicted in the figure below.

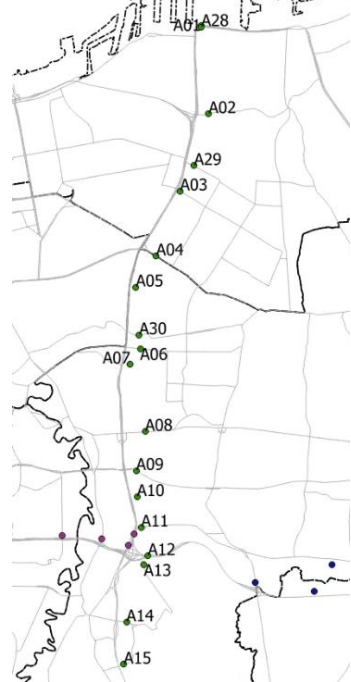
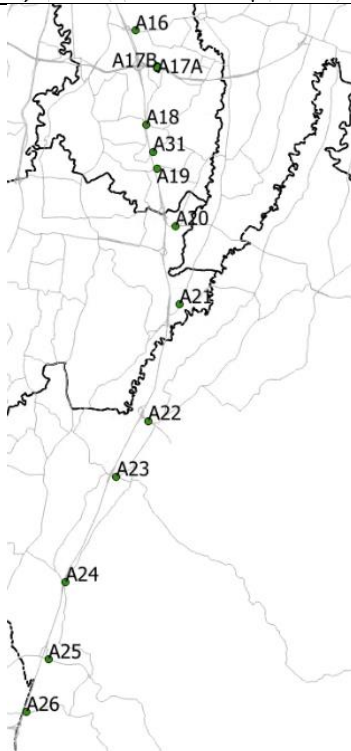


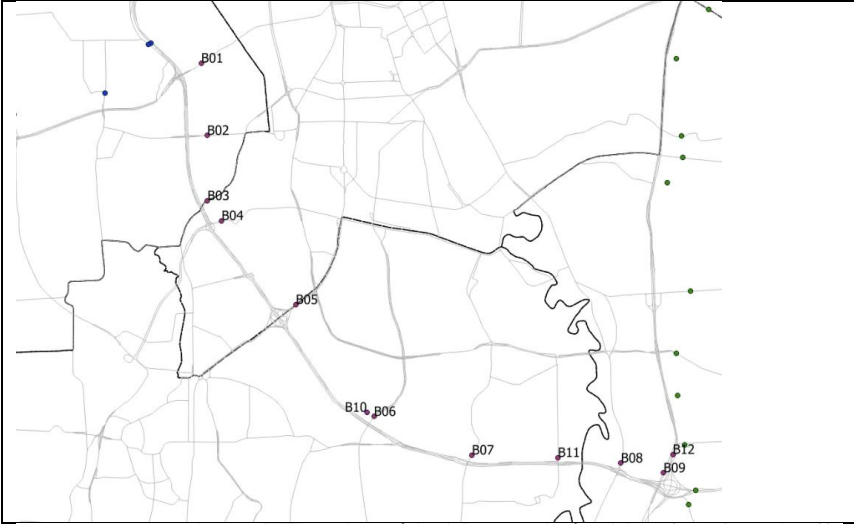
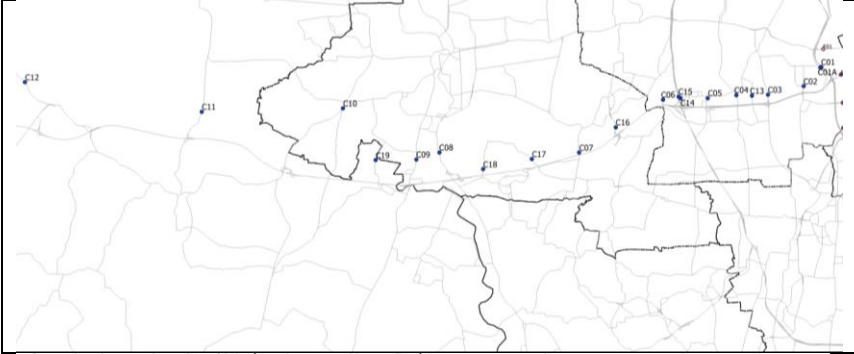
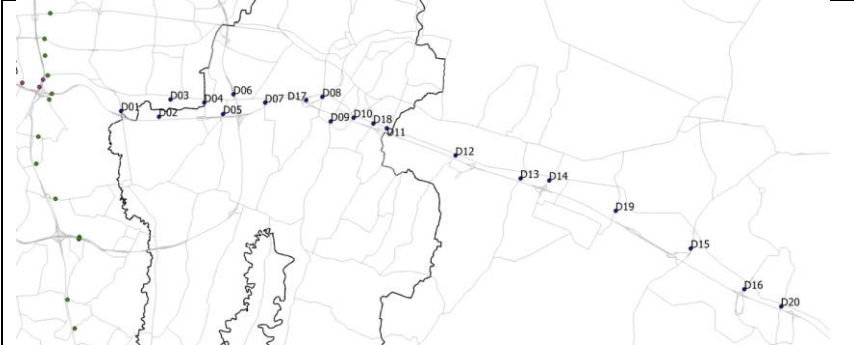
Source: JUTPI 2

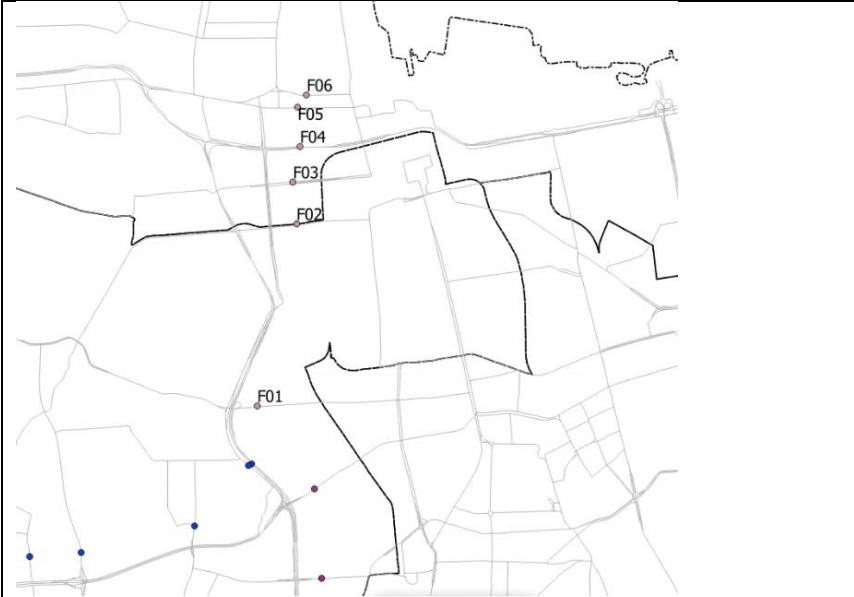
**Figure 16 Screenline Survey Location**

Individual Lines or classification of screenline lines can be shown in the table below

**Table 14 Individual Lines of Screenline Survey**

Screenline Lines	Remarks
 <p>A map showing the route of Screenline A (1) in North Jakarta. The route is marked with 18 points labeled A01 through A15. The points are distributed along a path that starts in the north and moves south, passing through various arterial roads and toll roads. Points A01, A02, A03, A04, A05, A06, A07, A08, A09, A10, A11, A12, A13, A14, and A15 are marked with green dots. Points A11, A12, and A13 are marked with purple dots. Points A14 and A15 are marked with blue dots. The map also shows a network of roads and a river.</p>	<p>Screenline A (1) located in North Jakarta towards East Jakarta and passing through both arterial and toll road in 18 points.</p>
 <p>A map showing the route of Screenline A (2) in East Jakarta. The route is marked with 13 points labeled A16 through A26. The points are distributed along a path that starts in the north and moves south, passing through various arterial roads and toll roads. Points A16, A17B, A17A, A18, A19, A20, A21, A22, A23, A24, A25, and A26 are marked with green dots. The map also shows a network of roads and a river.</p>	<p>Screenline A (2) consists of 13 points located in East Jakarta towards Kabupaten Bogor in the southern part.</p>

Screenline Lines	Remarks
	<p>Screenline B spanned in 12 points that located in West Jakarta, South Jakarta, and East Jakarta.</p>
	<p>Screenline C located in 20 points in South Jakarta and West Jakarta towards Kota Tangerang.</p>
	<p>Screenline D located in 20 points from East Jakarta and passing through Kota Bekasi towards Kabupaten Bekasi.</p>

Screenline Lines	Remarks
	<p>Screenline F located in West Jakarta towards seaport access in North Jakarta.</p>

Source: JUTPI 2

### 3.1.3 Survey Methodology

Within the scope of this the survey, there are two main activities conducted, namely:

- **Counting Survey**

The survey method of vehicle count is very simple. Number of vehicles that passed through the survey location was counted by type of vehicle, by time range, and direction. Thus, the traffic data was recorded for every 15 minutes over the whole survey duration. However, instead of directly conducted the count survey at the location, the surveyor was obligated to setup video recording device to capture video data of daily traffic, thus, conduct the actual count later on using those video data. This is useful for data assurance as well as back up.

- **Occupancy Survey**

Occupancy survey measures the number of passengers in every vehicle passing by the survey location. Vehicle occupancy survey was utilized for identifying high demand corridors and throughput passengers.

Number of passengers in every vehicle passing by the survey location, with the following requirements id fulfilled:

1. 30 vehicles per vehicle type per direction have been observed, or
2. 20 minutes of observation have been passed per direction and per hour

### 3.1.4 Vehicle Types

In conducting the survey, vehicle type is classified into 13 vehicle types, as follow:

- Motorcycle,
- Private passenger car,
- Taxi,
- Pick-up truck,
- Small/Medium truck (2 Axles),

- Medium Truck (3 Axles),
- Large truck (4 Axles),
- Small bus,
- Medium bus,
- Large bus,
- Transjakarta medium bus,
- Transjakarta large bus, and
- Transjakarta articulated bus

### **3.1.5 Survey Day and Duration**

The survey at designated location is conducted for one day on given weekdays (Tuesday, Wednesday, or Thursday). The vehicle counting survey is conducted by looking at the video data that were taken for either 16 or 24 hours starting from 06.00 am while the occupancy survey was conducted for 16 hours.

### **3.1.6 Survey Forms**

The following survey forms were utilized during the survey:

- a. Classified vehicle counting survey form: to record hourly vehicles
- b. Occupancy survey form: to record number of passengers in every vehicle passing by

**JABODETABEK Urban Transportation Policy Integration (Phase 2)**  
**Screen Line and Classified Vehicle Count**

Location Code : \_\_\_\_\_ Road Name : \_\_\_\_\_ Weather : \_\_\_\_\_  
 Date : \_\_\_\_\_ Direction Code : \_\_\_\_\_  
 Day : \_\_\_\_\_ Direction from & to : \_\_\_\_\_

Hour Begins	TYPE OF VEHICLES													TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	2 to 13	1 to 13
	Motorcycle	Car	Taxi	Pick up	Small Truck 2-Axle Truck	Medium Truck 3-Axle Truck	Large Truck ≥4-Axle Truck	Minibus (Angkot Mikrolet)	Medium Bus	Large Bus	Medium Bus Trans Jakarta	Large Bus Trans Jakarta	Articulated Bus Trans Jakarta	Without Motorcycle	TOTAL
06:00															
07:00															
08:00															
09:00															
10:00															
11:00															
12:00															
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22:00															
23:00															
00:00															
01:00															
02:00															
03:00															
04:00															
05:00															
Total Number of Vehicle															
24.hrs															

Source: JUTPI 2

**Figure 17 Screenline Survey Form**

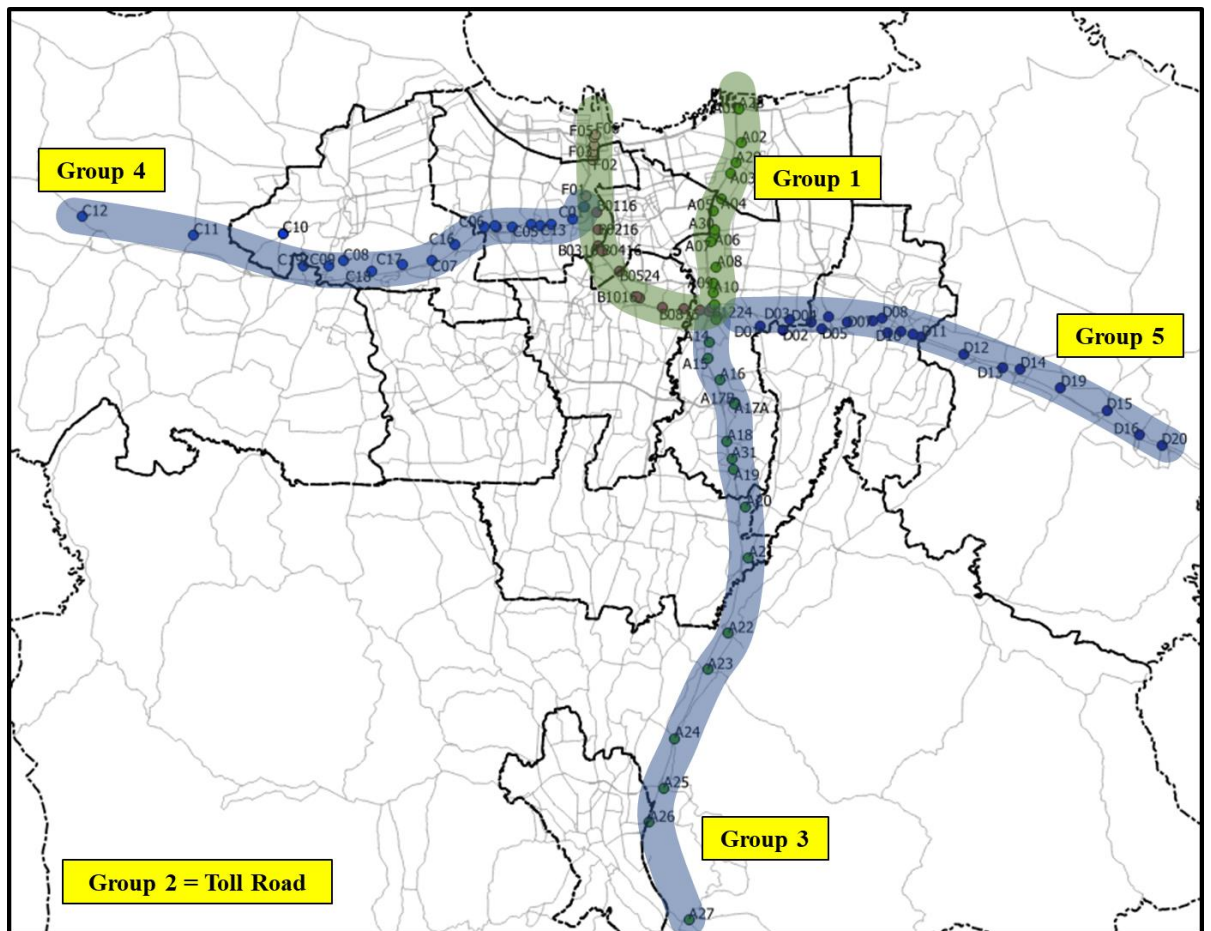
### 3.2 Survey Results and Major Findings

The clarification of present traffic condition addresses weekday traffic volume profile, vehicle mix, as well as vehicle occupancy and peak-hour time. Survey data were compiled at all locations by hour, by direction, and by vehicle types.

#### 3.2.1 Traffic Volume

Traffic volume data is collected for 16 and 24 hours as designated. Since not all the data collected is 24-hour data, expansion factor to convert 16-hour data to 24-hour data is necessary. Since five group of time was setup for OD matrices development, two different expansion factors are needed. For this purpose, the survey sites are categorized into several groups of similar traffic characteristics. The area of grouping is shown in Figure 18 while the percentage to expand traffic volume by area group is summarized in Table 17





Source: JUTPI 2

Figure 18 Area Grouping for Traffic Count Expansion Factor



**Table 17 Ratio to Expand Traffic Count**

Area Group	Time Group	Passenger Vehicle			Truck				Bus		
		1	2	3	4	5	6	7	8	9	10
		Motor Cycle	Car	Taxi	Pick Up	Small Truck	Medium Truck	Large Truck	Mini Bus	Medium Bus	Large Bus
1	5	0.079	0.113	0.213	0.177	0.248	0.787	0.113	0.196	0.033	0.070
1	1	0.046	0.059	0.098	0.100	0.307	0.456	0.250	0.291	0.244	0.373
2	5	0	0.100	0.305	0.101	0.211	0.354	0.407	0	0.081	0.101
2	1	0	0.027	0.047	0.057	0.109	0.109	0.165	0	0.094	0.192
3	5	0.083	0.105	0.116	0.138	0.174	0.458	0.295	0.039	0.055	0.075
3	1	0.042	0.058	0.038	0.084	0.110	0.232	0.297	0.036	0.088	0.053
4	5	0.107	0.116	0.269	0.115	0.112	0.301	0.390	0.054	0.037	0.082
4	1	0.046	0.057	0.088	0.063	0.090	0.142	0.185	0.068	0.170	0.334
5	5	0.105	0.113	0.304	0.140	0.374	0.848	1.103	0.040	0.072	0.161
5	1	0.072	0.059	0.097	0.088	0.231	0.332	0.481	0.065	0.153	0.192

Source: JUTPI 2

The aggregated volume by screenline shows that those who traverse to/from the west via screen line A is 878,364 PCU and 851,569 PCU respectively. Screenline B, C, and D capture traffic on north-south direction. Total 24-hour traffic traversing to/from the north via screen line B, C, and D are 1,526,439 PCU and 1,604,391 PCU respectively as shown in below table.

**Table 18 Summary of Traffic Count**

Group Code	Dir	Passenger Vehicle			Truck				Bus					
		1	2	3	4	5	6	7	8	9	10	11	12	13
		Motor Cycle	Car	Taxi	Pick Up	Small Truck	Medium Truck	Large Truck	Mini Bus	Medium Bus	Large Bus	Medium Bus TJ	Large Bus TJ	Articulated Bus TJ
A	A	1,038,118	374,669	18,394	46,250	26,560	12,161	26,966	26,878	2,554	3,423	436	1,670	340
	B	1,045,915	388,116	20,705	39,376	28,933	11,310	13,248	24,640	2,184	2,846	459	1,202	375
B	A	709,284	284,829	27,951	22,857	10,704	2,467	2,419	12,101	2,829	1,616	579	3,035	345
	B	676,306	255,398	29,179	20,908	11,177	3,767	2,314	9,696	2,227	1,687	258	2,583	356
C	A	603,810	257,660	14,773	33,440	13,930	3,739	2,856	11,390	1,549	2,331	203	790	263
	B	679,406	326,725	16,010	40,966	12,452	4,467	3,730	11,271	1,764	2,110	146	841	289
D	A	623,718	166,885	4,103	31,877	19,194	8,050	5,805	9,397	1,436	4,375	66	165	0
	B	637,485	180,439	3,748	31,960	19,171	8,401	7,381	8,783	1,392	4,216	54	228	0
F	A	268,490	104,901	6,539	24,447	7,620	3,172	18,883	6,011	1,127	665	800	439	295
	B	257,194	119,291	4,514	24,934	9,898	3,111	3,585	4,852	1,167	538	304	453	284

Note: direction A : Inbound

direction B: Outbound

Source: JUTPI 2

### 3.2.2 Vehicle Occupancy

Vehicle occupancy profile for each type of vehicle is shown in Table 19. Vehicle occupancy of motorcycle, car, and taxi throughout JABODETABEK is practically uniform with an average vehicle occupancy of 1.37, 1.62. and 1.53 respectively. For bus, the average capacities are 14 passengers for small bus, 25 for medium bus and 45 for large bus. Thus, with the current average occupancy from all type of bus, it can be inferred that the load factor of bus is less than half of its capacity in screenline location, showing an inefficiency in transportation.

**Table 19 Average Vehicle Occupancy**

Area Group	Passenger Vehicle			Truck				Bus		
	1	2	3	4	5	6	7	8	9	10
	Motor Cycle	Car	Taxi	Pick Up	Small Truck	Medium Truck	Large Truck	Mini Bus	Medium Bus	Large Bus
A	1.38	1.63	1.54	1.71	1.74	1.61	1.57	5.16	10.64	25.54
B	1.36	1.59	1.59	1.73	1.81	1.67	1.61	4.20	8.97	31.50
C	1.40	1.65	1.51	1.66	1.73	1.58	1.51	4.26	9.35	22.04
D	1.35	1.64	1.58	1.63	1.66	1.54	1.53	3.98	8.79	19.24
F	1.38	1.57	1.43	1.68	1.71	1.49	1.43	4.22	9.92	26.49
Average	1.37	1.62	1.53	1.68	1.73	1.58	1.53	4.36	9.53	24.96

Source: JUTPI 2

Typical seating capacities of buses are about 14 passengers for small bus, 25 for medium bus and 45 for large bus. Thus, with the current average occupancy from all type of bus, the load factor of most of these buses are less than half in screenline location.

In comparison to 1988, 2000, 2002 values in DKI Jakarta shows that, the average vehicle occupancy has been decreased that shows that decreasing of efficiency in transportation aspect.

**Table 20 Vehicle Occupancy Comparison**

Vehicle Type	Vehicle Occupancy			
	1988*	2000**	2002**	2018
Motorcycle			1.4	1.4
Sedan	1.8	1.8	1.8	1.6
Van	2.6	2.1	2.1	
Taxi	1.9	1.8	1.7	1.6
Pickup	1.8	1.8	1.9	1.7
Medium Truck	2.0	2.0	2.1	1.6

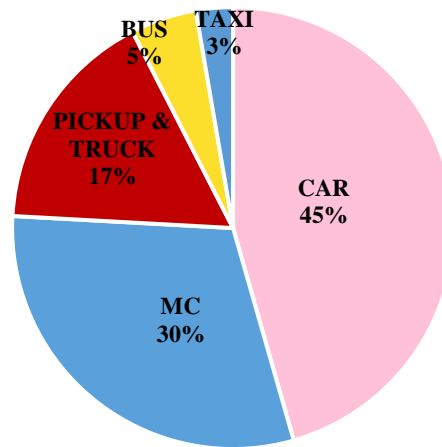
Vehicle Type	Vehicle Occupancy			
	1988*	2000**	2002**	2018
Large Truck	3.0	2.1	2.0	1.6

Source: \* Jakarta Outer Ring Road Study, 1988

\*\* SITRAMP

### 3.2.3 Modal Composition for Passenger Trip

Motorcycle represents the largest component of the passenger trip from traffic flow, but based on the PCU, car accounting for almost half of the share (45%), followed by motorcycle (30%), and pickup and truck (17%) as shown in below figure..



Source: JUTPI 2

**Figure 19 Average Modal Composition**

### 3.2.4 Estimated Passenger Flow

An estimated passenger flow was calculated by multiplying the number of vehicles with the average occupancy of each vehicle type. Table 21 summarizes the passenger volume estimate at each screen line together with its corresponding vehicular flows.

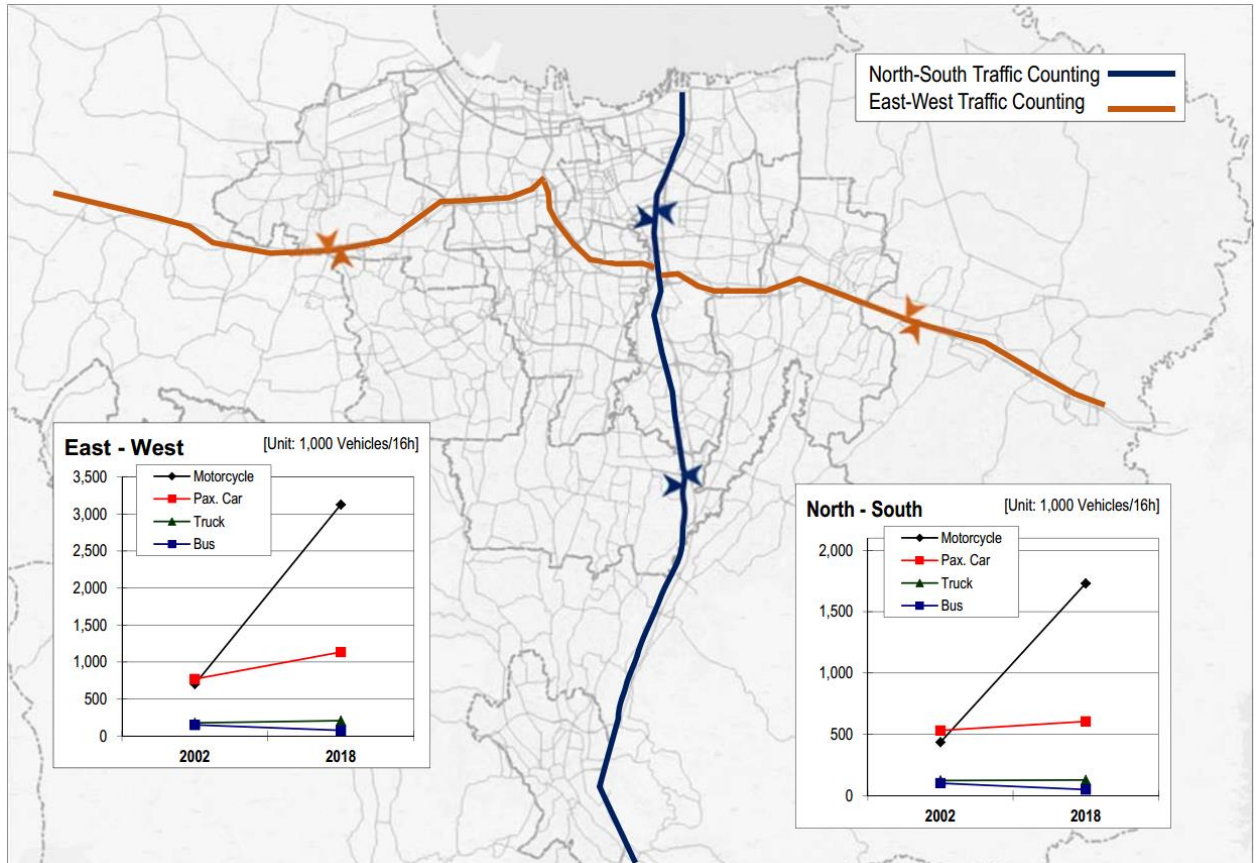
**Table 21 Aggregated Vehicle and Passenger Flow**

Group Code	Vehicle Flow (veh/day)	Passenger Flow (pax/day)
A	3,157,728	5,034,323
B	2,096,872	3,433,068
C	2,046,911	3,252,447
D	1,778,329	2,739,325
F	873,514	1,332,068

Source: JUTPI 2

### 3.2.5 Traffic Changes by Time

In order to see traffic changes by time, the present traffic is compared with the 2002 traffic count data inform the previous study. However, since the screen line and traffic count survey undertaken for this study covers additional location within screen line than the previous counts, the comparison is only performed for location that are common for the previous survey year. The result shows that motorcycle has grown significantly around four times in nearly 2 decades as seen in the figure below.



Remarks: Year 2018 total is only for location consistent with 2002 traffic counts  
 Source: JUTPI 2 and SITRAMP

**Figure 20 Traffic Growth in Screenline**

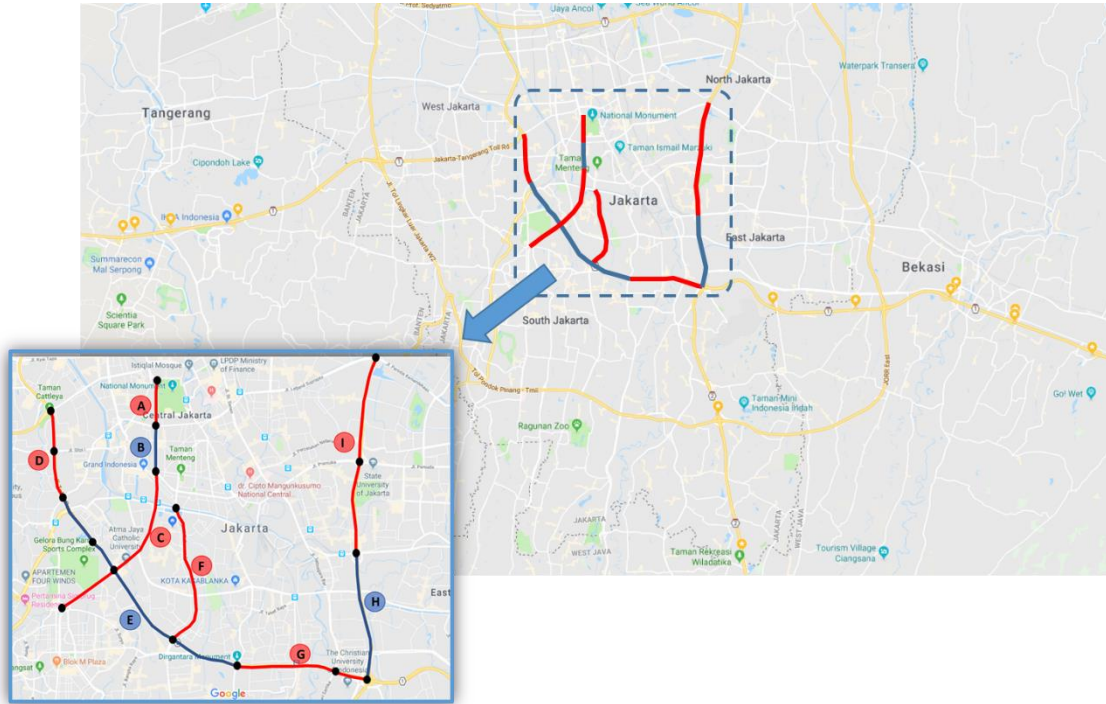
This condition happens because people are shifted from non-motorized transport and public transport to motorcycle due to its efficiency, affordability, and promptness. It is in line with the results of the travel modes described in section 6.8 in this report, where the share of motorcycle is very high compared to other modes. Meanwhile, trend of passenger car growth remains stable from 2002 to present.

## 3.3 Additional Vehicle Counting for Comparison

### 3.3.1 Location Map

Odd-even number plate regulation has been implemented in DKI Jakarta to replace 3-in-1 policy, started in May 2016. This regulation restricts the use of private cars to traverse designated roads in accordance to their plate numbers, with several exceptions such as

logistic trucks and public transportation. Odd-even number plate regulation was originally applied on Jl. Sudirman and Jl. MH Thamrin. In order to accommodate Asian Games and Asian Para Games event, several modifications was made. Figure below shows the location map of odd-even number plate regulation after Asian Para Games



Source: JUTPI 2

**Figure 21** Location Map of Odd-Even Number Plate after Asian Para Games

Based on Figure 21, there are 26 screen line survey location that are affected by odd even extension. Therefore, to observe the gap of traffic flow before Asian games and after Asian Para Games, additional traffic count survey was conducted. Locations of additional traffic count survey is shown in the following figure.

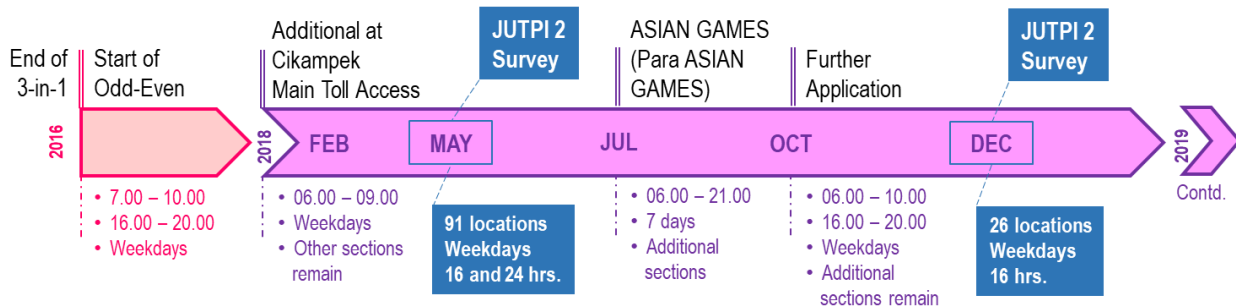


Source: JUTPI 2

Figure 22 Additional Traffic Counting Survey Location

3.3.2 Odd Even Policy Timeline

Screenline survey was conducted in May 2018 and due to Asian Games from mid-August to early September 2018, odd-even number plate regulation was extended from July until December 2018. Therefore, additional traffic counting survey was conducted in December 2018 to see the effect of extension odd-even number plate regulation. Below figure shows the timeline of screenline survey.



Source: JUTPI 2

Figure 23 Timeline of JUTPI 2 Screen Line and Additional Traffic Counting Survey

3.3.3 Traffic Impact (Comparison of JUTPI 2 Surveys)

a. Daily Traffic Impact

Daily traffic in the locations where odd-even number plate regulation applied shows that

motorcycle traffic decreased 5% in odd-even road, 10% decrease in access road to odd-even road, and 8% decrease in non-access road to odd-even road. On the other hand, the increasing trend shown in public transport traffic which increases 8% in odd-even road, 29% increase in access road to odd-even road, and 41% increase in non-access road to odd-even road as depicted in the following table.

**Table 22 Daily Traffic Impact**

	Motorcycle	Car	Taxi	Truck	Bus
Odd-Even Road	462,241 ↓ 5%	218,708 ↑ 22%	25,135 ↓ 14%	7,737 ↑ 126%	21,589 ↑ 8%
Access to Odd-Even Road	1,434,520 ↓ 10%	427,843 ↓ 8%	29,552 ↑ 23%	46,839 ↑ 87%	93,955 ↑ 29%
Non-Access to Odd-Even Road	560,946 ↓ 8%	138,106 ↓ 1%	9,473 ↑ 79%	26,323 ↑ 111%	43,245 ↑ 41%

Source: JUTPI 2

**b. Odd-Even Hour Traffic Impact**

Traffic in the odd-even hour shows that motorcycle decreased 10% in odd-even road, 18% decrease in the access road to odd-even road, and 30% increase in non-access road to odd-even road. An increasing trend shown in public transport which traffic increases 4% in odd-even road, 7% increase in access road to odd-even road, and 104% increase in non-access road to odd-even road as illustrated in the table below.

**Table 23 Odd-Even Hour Traffic Impact**

	Motorcycle	Car	Taxi	Truck	Bus
Odd-Even Road	227,391 ↓ 10%	95,171 ↑ 20%	12,011 ↓ 12%	2,786 ↑ 127%	6,402 ↑ 4%
Access to Odd-Even Road	660,003 ↓ 18%	200,715 ↓ 3%	13,626 ↑ 36%	19,031 ↑ 104%	17,720 ↑ 7%
Non-Access to Odd-Even Road	397,906 ↑ 30%	91,930 ↑ 43%	4,768 ↑ 105%	12,403 ↑ 150%	11,386 ↑ 104%

Source: JUTPI 2



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## Chapter 4 TRUCK OD INTERVIEW SURVEY

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### 4.1 Survey Objective

The primary objective of the transportation survey is to collect the base year field data pertaining to traffic (either vehicular or person trips) volume and characteristics on major transport corridors in JABODETABEK area to provide necessary information for:

- Understanding of current travel characteristics
- Identification of currently observed freight transportation problems
- Input to computerized transportation model
- Input to proposing heavy vehicle traffic regulation and policy

The specific objective of Truck OD Interview Survey is to understand the travel characteristics of truck vehicular trips and goods movement generated or attracted to/from major origin and destination such as ports and industrial estates. The survey results will be used for transportation facility planning for large freight vehicles and as well as basic data for the establishment of large vehicle traffic restriction.

### 4.2 Type of the Survey

Within the scope of this the survey, the following two activities were conducted, namely:

#### a Truck vehicle count

Truck vehicle count survey was carried out using manual traffic counters to record the number of trucks at observation site over a 16-hour period. Hourly number of trucks at gates of industrial estates as well as the port/airport was counted.

Since the survey was partially conducted during the month of Ramadhan, source of validation and calibration for truck movement before and during the month of Ramadhan is required. Time-series video-recorded truck movement data at three major truck trunklines was collected.

#### b Truck OD interview

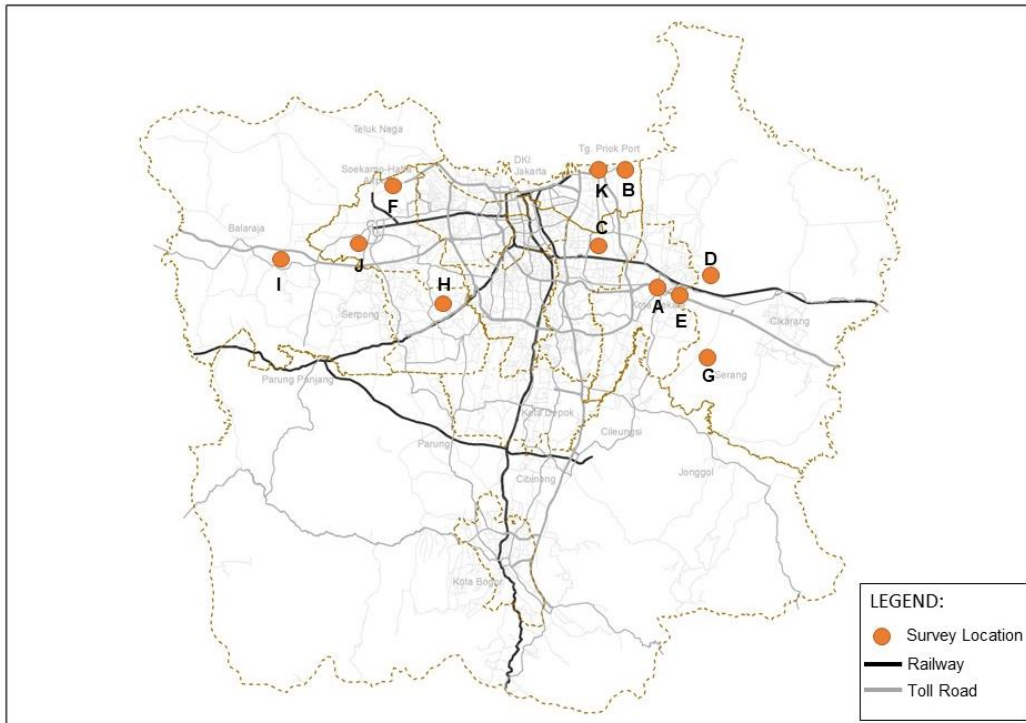
The interview was done for the purpose of observing the vehicular trip characteristics (origin-destination, etc.) of trucks through proper sampling procedure. The collected interview sample reached more than 10% providing adequate number of data to be analysed.

### 4.3 Survey Location

Many industrial estates have been operated in the JABODETABEK region. Pulo Gadung Industrial Estates located in the east of Jakarta has long been operated as the first industrial estate in Indonesia. In BODETABEK, a considerable number of industrial estates have been developed near toll road interchanges. In particular, medium- to large-scale industrial estates have been developed in Cikarang and Balaraja districts. As it is not possible to cover all of these in this survey, the focus

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will be on selected industrial areas and on Tanjung Priok Port. The selected industrial estates for survey are shown in Table 24 and Figure 24.



Source: JUTPI 2

**Figure 24 Survey Location**  
**Table 24 Survey Locations of Truck Surveys**

No	Group	Name of Industrial Estate	Number of Gates
1	Large-scale Industrial Estate	MM2100 (BFIE and MMID)	3
2		Kawasan Berikat Marunda	3
3		PT. Jakarta Industrial Estate Pulogadung (JIEP)	3
4		Jababeka	3
5	Medium-scale Industrial Estate	East Jakarta Industrial Park (EJIP)	2
6		Soetta-Cargo Terminal	2
7		Greenland International Industrial Center	1
8	Small-scale Industrial Estate	Taman Tekno BSD	3
9		Kawasan Industri & Pergudangan Cikupamas	1
10		Kawasan Industri Pasar Baru	2
11	Tanjung Priok	Tanjung Priok Gate I	1
12		Tanjung Priok Gate VIII	1
13		Tanjung Priok Gate IX	1
14		JICT	1
15		Koja	1

No	Group	Name of Industrial Estate	Number of Gates
16		NPCT I	1
17	Container Depot	..vary..	11
Total			40

Source: JUTPI 2

#### 4.4 Survey Methodology

Vehicle Type

The truck survey was conducted to the following five vehicle types:

- Pick-up truck,
- 2-Axle truck,
- 3-Axle truck,
- Connected truck, and
- Trailer/container

#### 4.5 Survey Items

During each of the survey, the following items were recorded:

**a Truck count:**

Hourly number of trucks at gates of industrial estates as well as the Tanjung Priok Port

**b Truck OD interview:**

Vehicle type, container ID, loading capacity, loading weight, contents of cargo, and loading volume

#### 4.6 Survey Day and Duration

The survey at each location was conducted for one day on given weekdays (Tuesday, Wednesday, or Thursday). The survey was conducted for 16 hours, which is divided into two eight-hour survey shifts as follows:

- Shift I : 06.00 – 14.00
- Shift II : 14.00 – 22.00

However, when determining the survey duration for the industrial estate, operational hour of each industrial estate was taken into consideration and adjusted to the actual field survey duration of total of 16 hours.

#### 4.7 Survey Forms

The following survey forms were utilized during the survey:

- Interview survey form: to record truck characteristics

- Truck vehicle count survey form: to record hourly vehicles (including trucks)

#### 4.8 Basic Survey Methodology

During each of the survey activities, the following items shall be recorded:

##### a Truck vehicle count

Truck vehicle count is conducted to achieve data of hourly number of trucks at gates of industrial estates as well as the port/airport and hourly number of traffic in three additional locations for validation and calibration of the month of Ramadhan.

##### b Truck OD interview

The characteristics and attribute of the truck i.e.: vehicle type, contents of cargo, and weight/dimension, as well as the trip origin and destination are information to be surveyed. The expected sampling rate is 10 percent for each hour.

#### 4.9 Survey Results and Major Findings

##### 4.9.1 Traffic Count and Sampling Ratio

The result of count and interview survey by survey location is shown in Table 25. Total truck volume of the count surveys for 16 hours at 40 gates was about 97,600 vehicles. Around 36,300 trucks were interviewed at the gates. The sampling ratio was 37 percent, which exceeded the target.

**Table 25 Summary Table of Traffic Count and Interview by Location**

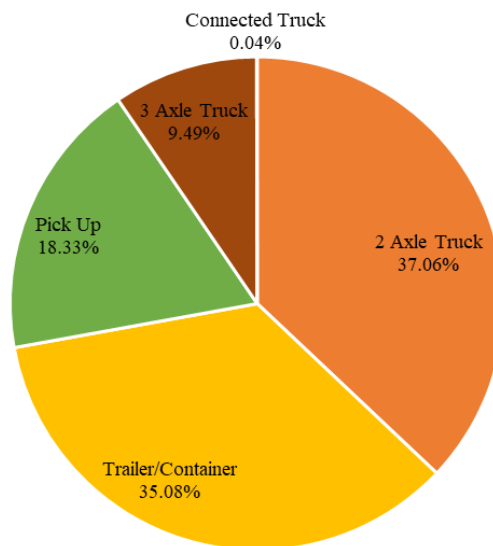
No	Location Code	Group	Name of Industrial Estate	Number of Gates
1	A	Large-scale Industrial Estate	MM2100 (BFIE and MMID)	3
2	B		Kawasan Berikat Marunda	3
3	C		PT. Jakarta Industrial Estate Pulogadung (JIEP)	3
4	D		Jababeka	3
5	E	Medium-scale Industrial Estate	East Jakarta Industrial Park (EJIP)	2
6	F		Soetta-Cargo Terminal	2
7	G		Greenland International Industrial Center	1
8	H	Small-scale Industrial Estate	Taman Tekno BSD	3
9	I		Kawasan Industri & Pergudangan Cikupamas	1
10	J		Kawasan Industri Pasar Baru	2
11	K	Tanjung Priok	Tanjung Priok Gate I	1
12			Tanjung Priok Gate VIII	1
13			Tanjung Priok Gate IX	1
14			JICT	1
15			Koja	1
16			NPCT I	1
17	Container Depot		..vary..	11

No	Location Code	Group	Name of Industrial Estate	Number of Gates
Total				40

Source: JUTPI 2

#### 4.9.2 Vehicle Composition

Vehicle composition of the result of the traffic count and interview is shown in Figure 25. The result of the count survey shows that 2-axle trucks have the highest share of 37.06 percent, followed by containers, pick up, 3-axle trucks, and connected trucks of which shares were 35.08 percent, 18.33 percent, 9.49 percent, and 0.04 percent, respectively.

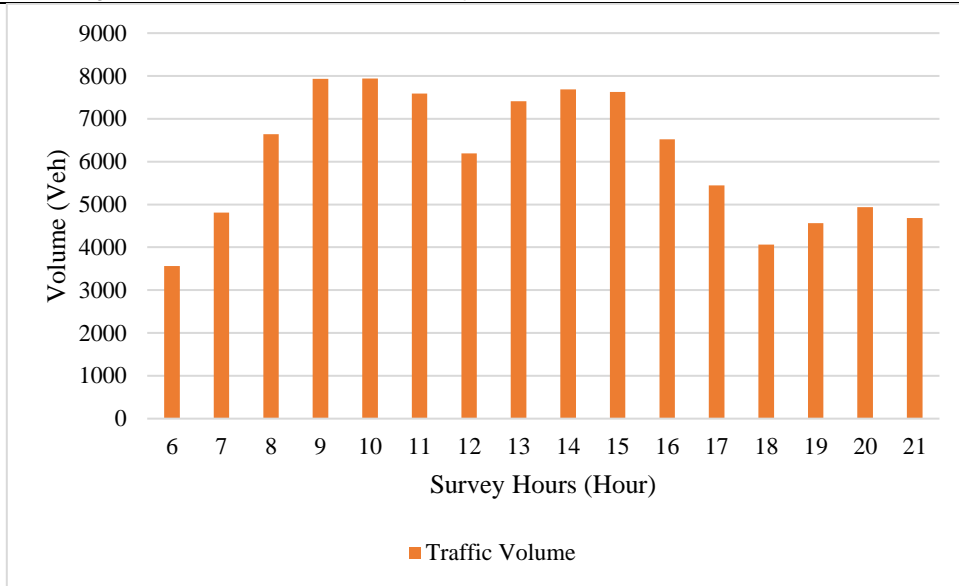


Source: JUTPI 2

**Figure 25 Average Vehicle Composition**

#### 4.9.3 Peak Hour

The traffic on roads generally has two peak periods, morning and afternoon. The dominant morning peak hours is 09:00-10:00 followed by 10:00-11:00. In the afternoon the dominant peak hour is 13:00-14:00 followed by 14:00-15:00. It shows at Figure 26 below:



Source: JUTPI 2

**Figure 26 Traffic Volume at Survey Hours**

#### 4.9.4 Hourly Fluctuation

Industrial areas are divided into three group based on their size of the area, business, and total truck who come and out from industrial areas. It shows at Table 26 below:

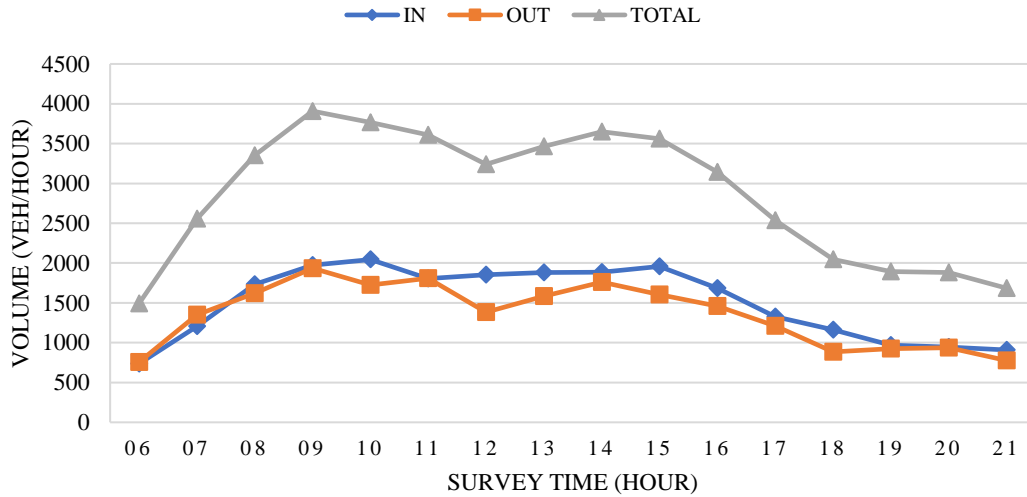
**Table 26 Industrial Area Information**

Group	Name of Industrial Estate	Area (Ha)	Tenant	Total Vehicle (in – out)
Large-scale Industrial Estate	MM2100 (BFIE and MMID)	805	188	22,000
	Kawasan Berikat Marunda	540	550	15,800
	PT. Jakarta Industrial Estate Pulogadung (JIEP)	500	359	15,500
	Jababeka	1,840	1650	13,400
Medium-scale Industrial Estate	East Jakarta Industrial Park (EJIP)	320	102	7,500
	Soetta-Cargo Terminal	30		6,700
	Greenland International Industrial Center	1430	80	5,700
Small-scale Industrial Estate	Taman Tekno BSD	200		4,900
	Kawasan Industri & Pergudangan Cikupamas	250	136	3,200
	Kawasan Industri Pasar Baru	90		900
Tanjung Priok	Tanjung Priok Gate I	1028	-	8,800
	Tanjung Priok Gate VIII			1,900
	Tanjung Priok Gate IX			17,590
	JICT			9,300
	Koja			4,600
	NPCT I	32	-	5,300
Container Depot	..vary..			9,700

Source: JUTPI 2

As shown on Figure 27, Figure 28, Figure 29, and Figure 30 at the traffic fluctuation has the typical morning and evening peak hours, around 10:00 for the morning peak and around 14:00-15:00 for the evening peak hours. But some decreasing happens at the 12:00 due to the peak hour of paper/administrative-related work, and in the Port & Depo group the decreasing happens again at 18:00.

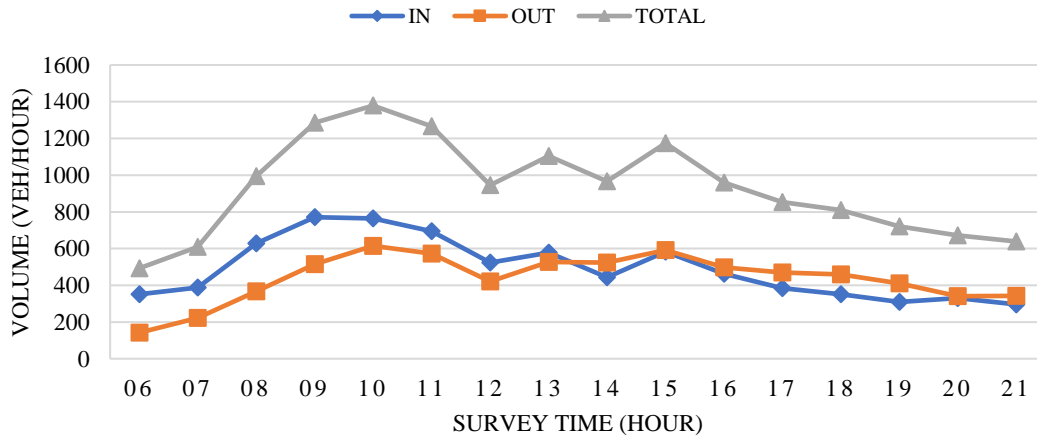
### TRAFFIC FLUCTUATION - LARGE GROUP



Source: JUTPI 2

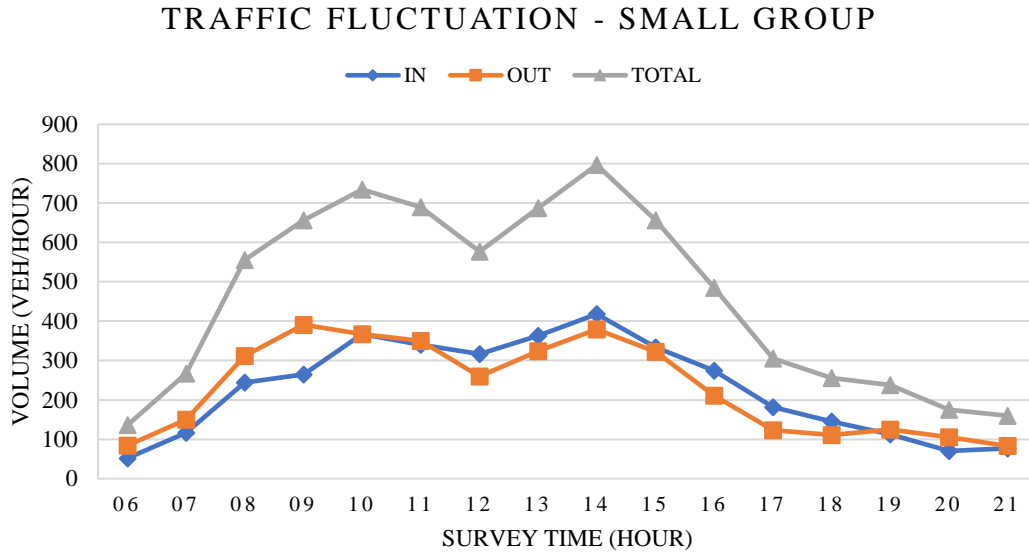
**Figure 27 Hourly Traffic Fluctuation - Large Group**

### TRAFFIC FLUCTUATION - MEDIUM GROUP



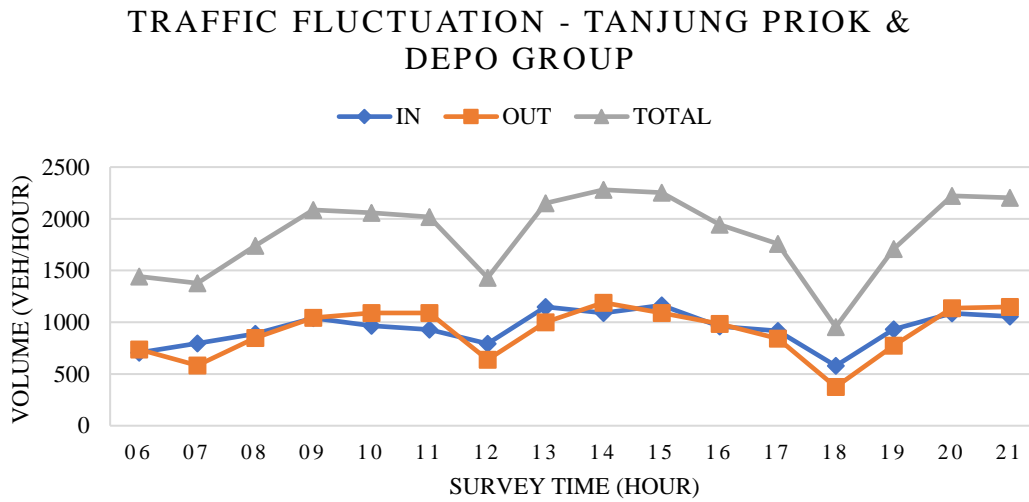
Source: JUTPI 2

**Figure 28 Hourly Traffic Fluctuation - Medium Group**



Source: JUTPI 2

**Figure 29 Hourly Traffic Fluctuation - Small Group**



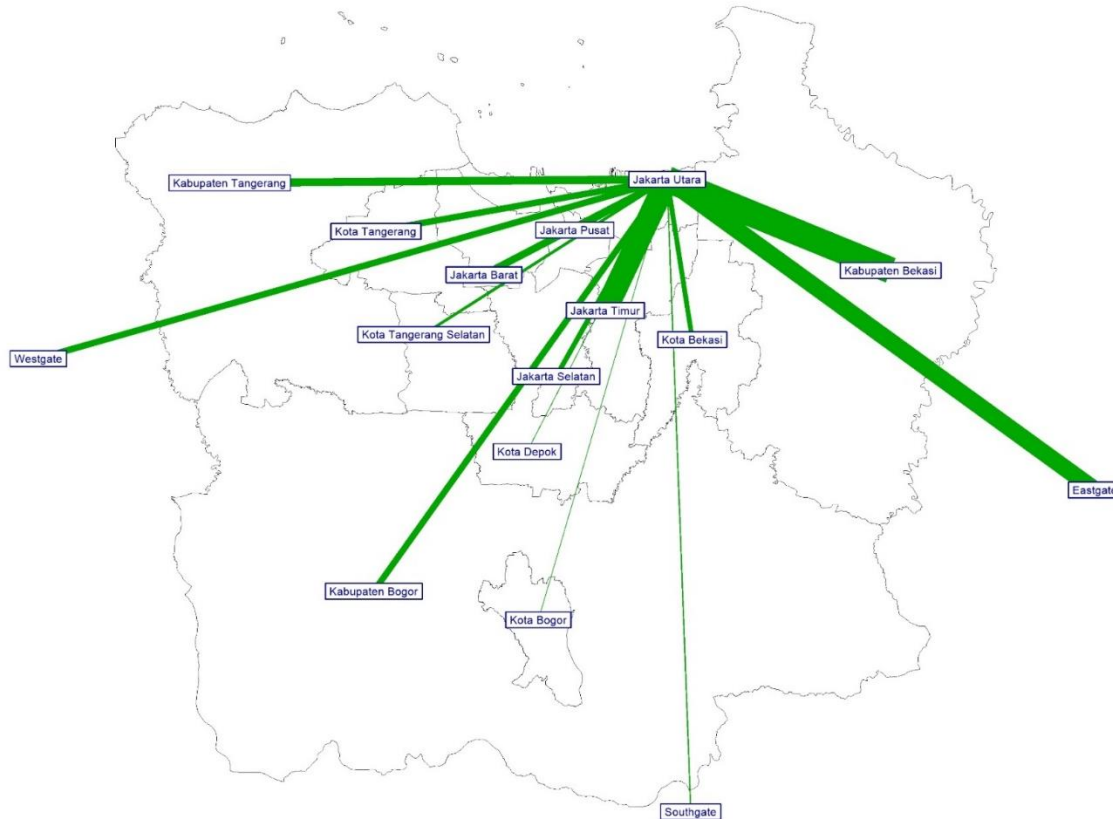
Source: JUTPI 2

**Figure 30 Hourly Traffic Fluctuation - Tanjung Priok & Depo Group**

**4.9.5 Truck Distribution**

The desire lines that shown in Figure 31, tell that the trips between Tanjung Priok port (define as from Jakarta Utara) by origin and destination zone and east side JABODETABEK is quite high, particularly for Kabupaten Bekasi and Eastgate. And for the movement within Jakarta is dominated by container-depot-related trip in Jakarta Utara to Tanjung Priok as many as 70% from total trips.





Source: JUTPI 2

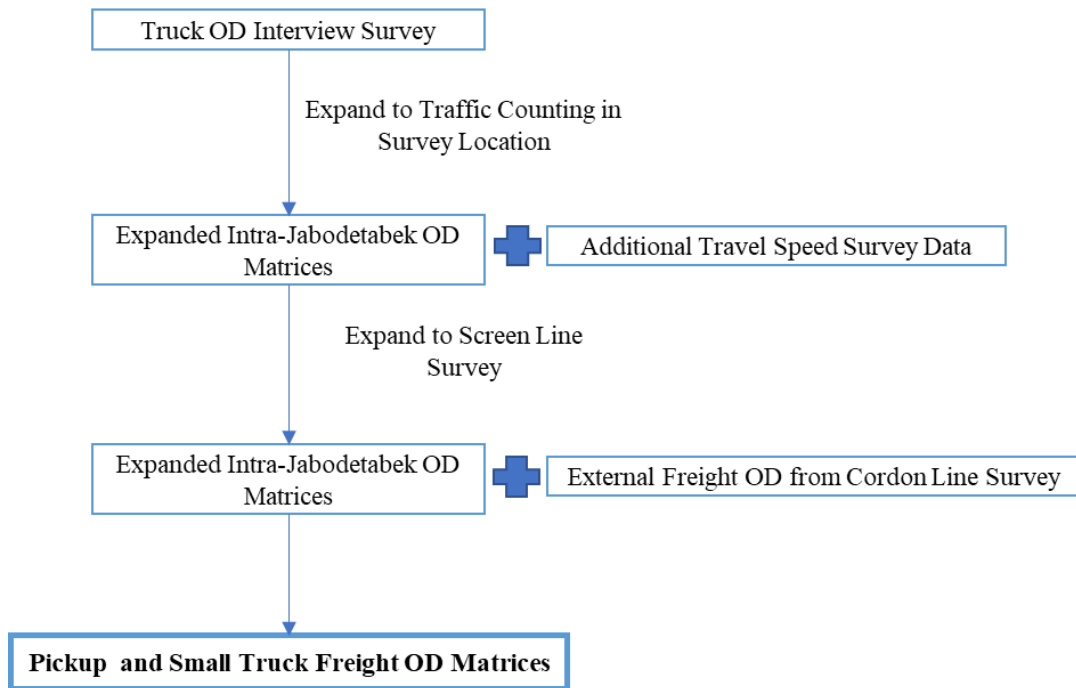
**Figure 31 Desire Line Trips to/from Tanjung Priok Port**

#### 4.9.6 Estimation of the OD Table

Several steps are needed to be notified in the making of O-D matrices for freight movement. Based on the collected data, O-D matrices are estimated based on each type of truck and expanded by traffic counting result in survey location.

The objective of O-D matrix calibration is to develop O-D matrix based on the observed O-D matrix resulted from Truck O-D interview. The calibration process involves estimation of freight vehicle from port and industrial area and calculation of expansion factor. O-D matrix calibration resulted two types of matrices, which are survey location-based O-D matrices and screen line-based O-D matrices. The calibration process follows the flow chart as shown in figure below.

- Flow chart of matrix calibration for pick up and small truck

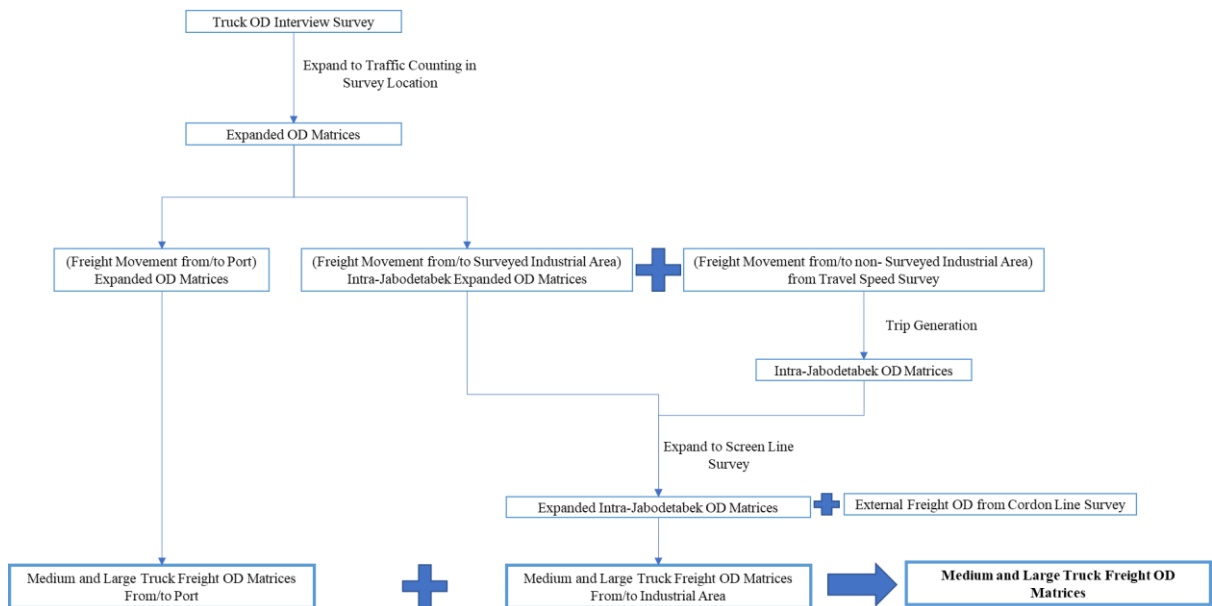


Source: JUTPI 2

**Figure 32** Flow chart of matrix calibration for pick up and small truck

- Flow chart of matrix calibration for Medium and Large truck

Freight O-D matrices was calculated by divided into from/to port or Tanjung Priok port area and Industrial Area



Source: JUTPI 2

**Figure 33** Flow chart of matrix calibration for medium and large truck

**4.9.6.1 Type 1 O-D Matrices**

The expansion factor is estimated from the ratio between total truck who got interviewed and total truck which come and leave survey location. This expansion factor is for each Truck O-D survey location, each time slices and each mode.

**Table 27 Expansion Factor by Truck Counting**

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
CONTAINER DEPO	IN	06:00-10:00	Pickup	12	7	1.71
CONTAINER DEPO	IN	06:00-10:00	Small Truck	40	30	1.33
CONTAINER DEPO	IN	06:00-10:00	Medium Truck	1	1	1.00
CONTAINER DEPO	IN	06:00-10:00	Large Truck	447	304	1.47
CONTAINER DEPO	IN	10:00-16:00	Pickup	25	15	1.67
CONTAINER DEPO	IN	10:00-16:00	Small Truck	84	54	1.56
CONTAINER DEPO	IN	10:00-16:00	Medium Truck	5	4	1.25
CONTAINER DEPO	IN	10:00-16:00	Large Truck	913	671	1.36
CONTAINER DEPO	IN	16:00-20:00	Pickup	4	2	2.00
CONTAINER DEPO	IN	16:00-20:00	Small Truck	17	11	1.55
CONTAINER DEPO	IN	16:00-20:00	Medium Truck	2	2	1.00
CONTAINER DEPO	IN	16:00-20:00	Large Truck	500	378	1.32
CONTAINER DEPO	IN	20:00-03:00	Pickup	2	2	1.00
CONTAINER DEPO	IN	20:00-03:00	Small Truck	5	4	1.25
CONTAINER DEPO	IN	20:00-03:00	Medium Truck	0	0	0.00
CONTAINER DEPO	IN	20:00-03:00	Large Truck	253	171	1.48
CIKUPA MAS	IN	06:00-10:00	Pickup	140	24	5.83
CIKUPA MAS	IN	06:00-10:00	Small Truck	99	36	2.75
CIKUPA MAS	IN	06:00-10:00	Medium Truck	8	4	2.00
CIKUPA MAS	IN	06:00-10:00	Large Truck	2	2	1.00
CIKUPA MAS	IN	10:00-16:00	Pickup	368	83	4.43
CIKUPA MAS	IN	10:00-16:00	Small Truck	404	128	3.16
CIKUPA MAS	IN	10:00-16:00	Medium Truck	31	12	2.58
CIKUPA MAS	IN	10:00-16:00	Large Truck	20	13	1.54
CIKUPA MAS	IN	16:00-20:00	Pickup	136	34	4.00
CIKUPA MAS	IN	16:00-20:00	Small Truck	165	54	3.06
CIKUPA MAS	IN	16:00-20:00	Medium Truck	10	4	2.50
CIKUPA MAS	IN	16:00-20:00	Large Truck	7	4	1.75
CIKUPA MAS	IN	20:00-03:00	Pickup	33	20	1.65
CIKUPA MAS	IN	20:00-03:00	Small Truck	49	33	1.48
CIKUPA MAS	IN	20:00-03:00	Medium Truck	5	5	1.00

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
CIKUPA MAS	IN	20:00-03:00	Large Truck	1	1	1.00
EJIP	IN	06:00-10:00	Pickup	299	53	5.64
EJIP	IN	06:00-10:00	Small Truck	612	129	4.74
EJIP	IN	06:00-10:00	Medium Truck	44	20	2.20
EJIP	IN	06:00-10:00	Large Truck	16	7	2.29
EJIP	IN	10:00-16:00	Pickup	472	109	4.33
EJIP	IN	10:00-16:00	Small Truck	891	292	3.05
EJIP	IN	10:00-16:00	Medium Truck	91	42	2.17
EJIP	IN	10:00-16:00	Large Truck	119	45	2.64
EJIP	IN	16:00-20:00	Pickup	107	34	3.15
EJIP	IN	16:00-20:00	Small Truck	303	116	2.61
EJIP	IN	16:00-20:00	Medium Truck	38	13	2.92
EJIP	IN	16:00-20:00	Large Truck	72	29	2.48
EJIP	IN	20:00-03:00	Pickup	27	15	1.80
EJIP	IN	20:00-03:00	Small Truck	140	59	2.37
EJIP	IN	20:00-03:00	Medium Truck	22	8	2.75
EJIP	IN	20:00-03:00	Large Truck	23	9	2.56
GIIC	IN	06:00-10:00	Pickup	166	27	6.15
GIIC	IN	06:00-10:00	Small Truck	458	93	4.92
GIIC	IN	06:00-10:00	Medium Truck	57	17	3.35
GIIC	IN	06:00-10:00	Large Truck	23	9	2.56
GIIC	IN	10:00-16:00	Pickup	174	31	5.61
GIIC	IN	10:00-16:00	Small Truck	385	85	4.53
GIIC	IN	10:00-16:00	Medium Truck	160	35	4.57
GIIC	IN	10:00-16:00	Large Truck	128	68	1.88
GIIC	IN	16:00-20:00	Pickup	76	19	4.00
GIIC	IN	16:00-20:00	Small Truck	118	36	3.28
GIIC	IN	16:00-20:00	Medium Truck	82	26	3.15
GIIC	IN	16:00-20:00	Large Truck	66	40	1.65
GIIC	IN	20:00-03:00	Pickup	19	8	2.38
GIIC	IN	20:00-03:00	Small Truck	45	19	2.37
GIIC	IN	20:00-03:00	Medium Truck	27	19	1.42
GIIC	IN	20:00-03:00	Large Truck	31	11	2.82
JABABEKA	IN	06:00-10:00	Pickup	390	111	3.51
JABABEKA	IN	06:00-10:00	Small Truck	809	316	2.56
JABABEKA	IN	06:00-10:00	Medium Truck	126	65	1.94

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
JABABEKA	IN	06:00-10:00	Large Truck	39	13	3.00
JABABEKA	IN	10:00-16:00	Pickup	975	193	5.05
JABABEKA	IN	10:00-16:00	Small Truck	1556	409	3.80
JABABEKA	IN	10:00-16:00	Medium Truck	240	101	2.38
JABABEKA	IN	10:00-16:00	Large Truck	100	45	2.22
JABABEKA	IN	16:00-20:00	Pickup	308	75	4.11
JABABEKA	IN	16:00-20:00	Small Truck	640	202	3.17
JABABEKA	IN	16:00-20:00	Medium Truck	84	41	2.05
JABABEKA	IN	16:00-20:00	Large Truck	41	19	2.16
JABABEKA	IN	20:00-03:00	Pickup	69	21	3.29
JABABEKA	IN	20:00-03:00	Small Truck	123	63	1.95
JABABEKA	IN	20:00-03:00	Medium Truck	39	29	1.34
JABABEKA	IN	20:00-03:00	Large Truck	11	8	1.38
JIEP	IN	06:00-10:00	Pickup	237	53	4.47
JIEP	IN	06:00-10:00	Small Truck	628	162	3.88
JIEP	IN	06:00-10:00	Medium Truck	108	30	3.60
JIEP	IN	06:00-10:00	Large Truck	54	11	4.91
JIEP	IN	10:00-16:00	Pickup	997	219	4.55
JIEP	IN	10:00-16:00	Small Truck	1865	379	4.92
JIEP	IN	10:00-16:00	Medium Truck	293	88	3.33
JIEP	IN	10:00-16:00	Large Truck	120	50	2.40
JIEP	IN	16:00-20:00	Pickup	357	95	3.76
JIEP	IN	16:00-20:00	Small Truck	907	207	4.38
JIEP	IN	16:00-20:00	Medium Truck	174	57	3.05
JIEP	IN	16:00-20:00	Large Truck	52	28	1.86
JIEP	IN	20:00-03:00	Pickup	65	28	2.32
JIEP	IN	20:00-03:00	Small Truck	186	49	3.80
JIEP	IN	20:00-03:00	Medium Truck	86	16	5.38
JIEP	IN	20:00-03:00	Large Truck	15	8	1.88
JICT	IN	06:00-10:00	Pickup	0	0	0.00
JICT	IN	06:00-10:00	Small Truck	0	0	0.00
JICT	IN	06:00-10:00	Medium Truck	0	0	0.00
JICT	IN	06:00-10:00	Large Truck	548	380	1.44
JICT	IN	10:00-16:00	Pickup	0	0	0.00
JICT	IN	10:00-16:00	Small Truck	0	0	0.00
JICT	IN	10:00-16:00	Medium Truck	0	0	0.00

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
JICT	IN	10:00-16:00	Large Truck	821	599	1.37
JICT	IN	16:00-20:00	Pickup	0	0	0.00
JICT	IN	16:00-20:00	Small Truck	0	0	0.00
JICT	IN	16:00-20:00	Medium Truck	0	0	0.00
JICT	IN	16:00-20:00	Large Truck	538	407	1.32
JICT	IN	20:00-03:00	Pickup	0	0	0.00
JICT	IN	20:00-03:00	Small Truck	0	0	0.00
JICT	IN	20:00-03:00	Medium Truck	0	0	0.00
JICT	IN	20:00-03:00	Large Truck	438	341	1.28
KOJA	IN	06:00-10:00	Pickup	0	0	0.00
KOJA	IN	06:00-10:00	Small Truck	1	1	1.00
KOJA	IN	06:00-10:00	Medium Truck	0	0	0.00
KOJA	IN	06:00-10:00	Large Truck	232	182	1.27
KOJA	IN	10:00-16:00	Pickup	0	0	0.00
KOJA	IN	10:00-16:00	Small Truck	0	0	0.00
KOJA	IN	10:00-16:00	Medium Truck	0	0	0.00
KOJA	IN	10:00-16:00	Large Truck	435	329	1.32
KOJA	IN	16:00-20:00	Pickup	0	0	0.00
KOJA	IN	16:00-20:00	Small Truck	1	1	1.00
KOJA	IN	16:00-20:00	Medium Truck	0	0	0.00
KOJA	IN	16:00-20:00	Large Truck	315	236	1.33
KOJA	IN	20:00-03:00	Pickup	0	0	0.00
KOJA	IN	20:00-03:00	Small Truck	0	0	0.00
KOJA	IN	20:00-03:00	Medium Truck	0	0	0.00
KOJA	IN	20:00-03:00	Large Truck	256	185	1.38
KBN MARUNDA	IN	06:00-10:00	Pickup	21	11	1.91
KBN MARUNDA	IN	06:00-10:00	Small Truck	162	115	1.41
KBN MARUNDA	IN	06:00-10:00	Medium Truck	134	77	1.74
KBN MARUNDA	IN	06:00-10:00	Large Truck	563	277	2.03
KBN MARUNDA	IN	10:00-16:00	Pickup	66	21	3.14
KBN MARUNDA	IN	10:00-16:00	Small Truck	229	101	2.27
KBN MARUNDA	IN	10:00-16:00	Medium Truck	292	99	2.95
KBN MARUNDA	IN	10:00-16:00	Large Truck	1180	355	3.32
KBN MARUNDA	IN	16:00-20:00	Pickup	21	7	3.00
KBN MARUNDA	IN	16:00-20:00	Small Truck	88	36	2.44
KBN MARUNDA	IN	16:00-20:00	Medium Truck	181	86	2.10

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
KBN MARUNDA	IN	16:00-20:00	Large Truck	735	246	2.99
KBN MARUNDA	IN	20:00-03:00	Pickup	4	4	1.00
KBN MARUNDA	IN	20:00-03:00	Small Truck	33	13	2.54
KBN MARUNDA	IN	20:00-03:00	Medium Truck	96	41	2.34
KBN MARUNDA	IN	20:00-03:00	Large Truck	389	107	3.64
MM2100	IN	06:00-10:00	Pickup	478	71	6.73
MM2100	IN	06:00-10:00	Small Truck	1501	242	6.20
MM2100	IN	06:00-10:00	Medium Truck	273	76	3.59
MM2100	IN	06:00-10:00	Large Truck	123	31	3.97
MM2100	IN	10:00-16:00	Pickup	822	278	2.96
MM2100	IN	10:00-16:00	Small Truck	1763	540	3.26
MM2100	IN	10:00-16:00	Medium Truck	566	193	2.93
MM2100	IN	10:00-16:00	Large Truck	365	142	2.57
MM2100	IN	16:00-20:00	Pickup	387	128	3.02
MM2100	IN	16:00-20:00	Small Truck	618	260	2.38
MM2100	IN	16:00-20:00	Medium Truck	283	105	2.70
MM2100	IN	16:00-20:00	Large Truck	265	78	3.40
MM2100	IN	20:00-03:00	Pickup	98	48	2.04
MM2100	IN	20:00-03:00	Small Truck	396	108	3.67
MM2100	IN	20:00-03:00	Medium Truck	150	50	3.00
MM2100	IN	20:00-03:00	Large Truck	93	32	2.91
NPCT1	IN	06:00-10:00	Pickup	6	4	1.50
NPCT1	IN	06:00-10:00	Small Truck	0	0	0.00
NPCT1	IN	06:00-10:00	Medium Truck	0	0	0.00
NPCT1	IN	06:00-10:00	Large Truck	445	276	1.61
NPCT1	IN	10:00-16:00	Pickup	0	0	0.00
NPCT1	IN	10:00-16:00	Small Truck	0	0	0.00
NPCT1	IN	10:00-16:00	Medium Truck	0	0	0.00
NPCT1	IN	10:00-16:00	Large Truck	549	393	1.40
NPCT1	IN	16:00-20:00	Pickup	0	0	0.00
NPCT1	IN	16:00-20:00	Small Truck	0	0	0.00
NPCT1	IN	16:00-20:00	Medium Truck	0	0	0.00
NPCT1	IN	16:00-20:00	Large Truck	351	233	1.51
NPCT1	IN	20:00-03:00	Pickup	0	0	0.00
NPCT1	IN	20:00-03:00	Small Truck	0	0	0.00
NPCT1	IN	20:00-03:00	Medium Truck	0	0	0.00

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
NPCT1	IN	20:00-03:00	Large Truck	215	132	1.63
PASAR BARU	IN	06:00-10:00	Pickup	28	27	1.04
PASAR BARU	IN	06:00-10:00	Small Truck	35	31	1.13
PASAR BARU	IN	06:00-10:00	Medium Truck	5	2	2.50
PASAR BARU	IN	06:00-10:00	Large Truck	16	13	1.23
PASAR BARU	IN	10:00-16:00	Pickup	44	35	1.26
PASAR BARU	IN	10:00-16:00	Small Truck	58	51	1.14
PASAR BARU	IN	10:00-16:00	Medium Truck	19	18	1.06
PASAR BARU	IN	10:00-16:00	Large Truck	38	35	1.09
PASAR BARU	IN	16:00-20:00	Pickup	4	4	1.00
PASAR BARU	IN	16:00-20:00	Small Truck	8	7	1.14
PASAR BARU	IN	16:00-20:00	Medium Truck	12	12	1.00
PASAR BARU	IN	16:00-20:00	Large Truck	22	21	1.05
PASAR BARU	IN	20:00-03:00	Pickup	0	0	0.00
PASAR BARU	IN	20:00-03:00	Small Truck	0	0	0.00
PASAR BARU	IN	20:00-03:00	Medium Truck	0	0	0.00
PASAR BARU	IN	20:00-03:00	Large Truck	3	3	1.00
SOEKARNO CARGO AIRPORT	IN	06:00-10:00	Pickup	158	39	4.05
SOEKARNO CARGO AIRPORT	IN	06:00-10:00	Small Truck	298	86	3.47
SOEKARNO CARGO AIRPORT	IN	06:00-10:00	Medium Truck	4	4	1.00
SOEKARNO CARGO AIRPORT	IN	06:00-10:00	Large Truck	2	1	2.00
SOEKARNO CARGO AIRPORT	IN	10:00-16:00	Pickup	283	93	3.04
SOEKARNO CARGO AIRPORT	IN	10:00-16:00	Small Truck	850	214	3.97
SOEKARNO CARGO AIRPORT	IN	10:00-16:00	Medium Truck	34	18	1.89
SOEKARNO CARGO AIRPORT	IN	10:00-16:00	Large Truck	1	1	1.00
SOEKARNO CARGO AIRPORT	IN	16:00-20:00	Pickup	130	7	18.57
SOEKARNO CARGO AIRPORT	IN	16:00-20:00	Small Truck	446	30	14.87
SOEKARNO CARGO AIRPORT	IN	16:00-20:00	Medium Truck	57	9	6.33
SOEKARNO CARGO AIRPORT	IN	16:00-20:00	Large Truck	13	6	2.17
SOEKARNO CARGO AIRPORT	IN	20:00-03:00	Pickup	0	0	0.00
SOEKARNO CARGO AIRPORT	IN	20:00-03:00	Small Truck	279	8	34.88



Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
SOEKARNO CARGO AIRPORT	IN	20:00-03:00	Medium Truck	14	3	4.67
SOEKARNO CARGO AIRPORT	IN	20:00-03:00	Large Truck	0	0	0.00
TAMAN TEKNO BSD	IN	06:00-10:00	Pickup	137	69	1.99
TAMAN TEKNO BSD	IN	06:00-10:00	Small Truck	197	129	1.53
TAMAN TEKNO BSD	IN	06:00-10:00	Medium Truck	9	7	1.29
TAMAN TEKNO BSD	IN	06:00-10:00	Large Truck	3	3	1.00
TAMAN TEKNO BSD	IN	10:00-16:00	Pickup	419	150	2.79
TAMAN TEKNO BSD	IN	10:00-16:00	Small Truck	682	234	2.91
TAMAN TEKNO BSD	IN	10:00-16:00	Medium Truck	37	30	1.23
TAMAN TEKNO BSD	IN	10:00-16:00	Large Truck	19	13	1.46
TAMAN TEKNO BSD	IN	16:00-20:00	Pickup	135	47	2.87
TAMAN TEKNO BSD	IN	16:00-20:00	Small Truck	189	71	2.66
TAMAN TEKNO BSD	IN	16:00-20:00	Medium Truck	19	10	1.90
TAMAN TEKNO BSD	IN	16:00-20:00	Large Truck	7	4	1.75
TAMAN TEKNO BSD	IN	20:00-03:00	Pickup	16	14	1.14
TAMAN TEKNO BSD	IN	20:00-03:00	Small Truck	29	25	1.16
TAMAN TEKNO BSD	IN	20:00-03:00	Medium Truck	11	8	1.38
TAMAN TEKNO BSD	IN	20:00-03:00	Large Truck	0	0	0.00
TANJUNG PRIUK GATE 1	IN	06:00-10:00	Pickup	44	14	3.14
TANJUNG PRIUK GATE 1	IN	06:00-10:00	Small Truck	68	24	2.83
TANJUNG PRIUK GATE 1	IN	06:00-10:00	Medium Truck	43	18	2.39
TANJUNG PRIUK GATE 1	IN	06:00-10:00	Large Truck	294	103	2.85
TANJUNG PRIUK GATE 1	IN	10:00-16:00	Pickup	153	31	4.94
TANJUNG PRIUK GATE 1	IN	10:00-16:00	Small Truck	215	40	5.38
TANJUNG PRIUK GATE 1	IN	10:00-16:00	Medium Truck	96	32	3.00
TANJUNG PRIUK GATE 1	IN	10:00-16:00	Large Truck	655	134	4.89
TANJUNG PRIUK GATE 1	IN	16:00-20:00	Pickup	58	11	5.27
TANJUNG PRIUK GATE 1	IN	16:00-20:00	Small Truck	66	16	4.13
TANJUNG PRIUK GATE 1	IN	16:00-20:00	Medium Truck	49	17	2.88
TANJUNG PRIUK GATE 1	IN	16:00-20:00	Large Truck	552	90	6.13
TANJUNG PRIUK GATE 1	IN	20:00-03:00	Pickup	10	4	2.50
TANJUNG PRIUK GATE 1	IN	20:00-03:00	Small Truck	8	5	1.60
TANJUNG PRIUK GATE 1	IN	20:00-03:00	Medium Truck	27	9	3.00
TANJUNG PRIUK GATE 1	IN	20:00-03:00	Large Truck	255	42	6.07
TANJUNG PRIUK GATE 9	IN	06:00-10:00	Pickup	87	22	3.95

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
TANJUNG PRIUK GATE 9	IN	06:00-10:00	Small Truck	173	31	5.58
TANJUNG PRIUK GATE 9	IN	06:00-10:00	Medium Truck	124	24	5.17
TANJUNG PRIUK GATE 9	IN	06:00-10:00	Large Truck	867	133	6.52
TANJUNG PRIUK GATE 9	IN	10:00-16:00	Pickup	123	38	3.24
TANJUNG PRIUK GATE 9	IN	10:00-16:00	Small Truck	259	73	3.55
TANJUNG PRIUK GATE 9	IN	10:00-16:00	Medium Truck	160	52	3.08
TANJUNG PRIUK GATE 9	IN	10:00-16:00	Large Truck	1599	427	3.74
TANJUNG PRIUK GATE 9	IN	16:00-20:00	Pickup	51	21	2.43
TANJUNG PRIUK GATE 9	IN	16:00-20:00	Small Truck	57	22	2.59
TANJUNG PRIUK GATE 9	IN	16:00-20:00	Medium Truck	90	45	2.00
TANJUNG PRIUK GATE 9	IN	16:00-20:00	Large Truck	738	293	2.52
TANJUNG PRIUK GATE 9	IN	20:00-03:00	Pickup	15	6	2.50
TANJUNG PRIUK GATE 9	IN	20:00-03:00	Small Truck	19	7	2.71
TANJUNG PRIUK GATE 9	IN	20:00-03:00	Medium Truck	55	12	4.58
TANJUNG PRIUK GATE 9	IN	20:00-03:00	Large Truck	583	153	3.81
TANJUNG PRIUK GATE 8	IN	06:00-10:00	Pickup	-	-	0.00
TANJUNG PRIUK GATE 8	IN	06:00-10:00	Small Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	06:00-10:00	Medium Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	06:00-10:00	Large Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	10:00-16:00	Pickup	-	-	0.00
TANJUNG PRIUK GATE 8	IN	10:00-16:00	Small Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	10:00-16:00	Medium Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	10:00-16:00	Large Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	16:00-20:00	Pickup	-	-	0.00
TANJUNG PRIUK GATE 8	IN	16:00-20:00	Small Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	16:00-20:00	Medium Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	16:00-20:00	Large Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	20:00-03:00	Pickup	-	-	0.00
TANJUNG PRIUK GATE 8	IN	20:00-03:00	Small Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	20:00-03:00	Medium Truck	-	-	0.00
TANJUNG PRIUK GATE 8	IN	20:00-03:00	Large Truck	-	-	0.00
CONTAINER DEPO	OUT	06:00-10:00	Pickup	12	8	1.50
CONTAINER DEPO	OUT	06:00-10:00	Small Truck	33	19	1.74
CONTAINER DEPO	OUT	06:00-10:00	Medium Truck	0	0	0.00
CONTAINER DEPO	OUT	06:00-10:00	Large Truck	465	321	1.45
CONTAINER DEPO	OUT	10:00-16:00	Pickup	49	11	4.45

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
CONTAINER DEPO	OUT	10:00-16:00	Small Truck	131	52	2.52
CONTAINER DEPO	OUT	10:00-16:00	Medium Truck	21	5	4.20
CONTAINER DEPO	OUT	10:00-16:00	Large Truck	999	709	1.41
CONTAINER DEPO	OUT	16:00-20:00	Pickup	10	4	2.50
CONTAINER DEPO	OUT	16:00-20:00	Small Truck	14	4	3.50
CONTAINER DEPO	OUT	16:00-20:00	Medium Truck	5	1	5.00
CONTAINER DEPO	OUT	16:00-20:00	Large Truck	509	342	1.49
CONTAINER DEPO	OUT	20:00-03:00	Pickup	3	1	3.00
CONTAINER DEPO	OUT	20:00-03:00	Small Truck	0	0	0.00
CONTAINER DEPO	OUT	20:00-03:00	Medium Truck	0	0	0.00
CONTAINER DEPO	OUT	20:00-03:00	Large Truck	279	187	1.49
CIKUPA MAS	OUT	06:00-10:00	Pickup	185	31	5.97
CIKUPA MAS	OUT	06:00-10:00	Small Truck	131	61	2.15
CIKUPA MAS	OUT	06:00-10:00	Medium Truck	22	11	2.00
CIKUPA MAS	OUT	06:00-10:00	Large Truck	4	2	2.00
CIKUPA MAS	OUT	10:00-16:00	Pickup	345	99	3.48
CIKUPA MAS	OUT	10:00-16:00	Small Truck	319	107	2.98
CIKUPA MAS	OUT	10:00-16:00	Medium Truck	29	8	3.63
CIKUPA MAS	OUT	10:00-16:00	Large Truck	20	14	1.43
CIKUPA MAS	OUT	16:00-20:00	Pickup	100	24	4.17
CIKUPA MAS	OUT	16:00-20:00	Small Truck	90	46	1.96
CIKUPA MAS	OUT	16:00-20:00	Medium Truck	17	8	2.13
CIKUPA MAS	OUT	16:00-20:00	Large Truck	18	12	1.50
CIKUPA MAS	OUT	20:00-03:00	Pickup	23	6	3.83
CIKUPA MAS	OUT	20:00-03:00	Small Truck	42	17	2.47
CIKUPA MAS	OUT	20:00-03:00	Medium Truck	4	3	1.33
CIKUPA MAS	OUT	20:00-03:00	Large Truck	11	7	1.57
EJIP	OUT	06:00-10:00	Pickup	170	25	6.80
EJIP	OUT	06:00-10:00	Small Truck	314	133	2.36
EJIP	OUT	06:00-10:00	Medium Truck	26	17	1.53
EJIP	OUT	06:00-10:00	Large Truck	22	13	1.69
EJIP	OUT	10:00-16:00	Pickup	432	137	3.15
EJIP	OUT	10:00-16:00	Small Truck	730	204	3.58
EJIP	OUT	10:00-16:00	Medium Truck	62	37	1.68
EJIP	OUT	10:00-16:00	Large Truck	89	48	1.85
EJIP	OUT	16:00-20:00	Pickup	157	51	3.08

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
EJIP	OUT	16:00-20:00	Small Truck	263	111	2.37
EJIP	OUT	16:00-20:00	Medium Truck	30	24	1.25
EJIP	OUT	16:00-20:00	Large Truck	48	24	2.00
EJIP	OUT	20:00-03:00	Pickup	34	11	3.09
EJIP	OUT	20:00-03:00	Small Truck	109	57	1.91
EJIP	OUT	20:00-03:00	Medium Truck	9	7	1.29
EJIP	OUT	20:00-03:00	Large Truck	29	17	1.71
GIIC	OUT	06:00-10:00	Pickup	67	12	5.58
GIIC	OUT	06:00-10:00	Small Truck	224	109	2.06
GIIC	OUT	06:00-10:00	Medium Truck	63	18	3.50
GIIC	OUT	06:00-10:00	Large Truck	35	12	2.92
GIIC	OUT	10:00-16:00	Pickup	87	29	3.00
GIIC	OUT	10:00-16:00	Small Truck	372	140	2.66
GIIC	OUT	10:00-16:00	Medium Truck	143	44	3.25
GIIC	OUT	10:00-16:00	Large Truck	117	33	3.55
GIIC	OUT	16:00-20:00	Pickup	37	12	3.08
GIIC	OUT	16:00-20:00	Small Truck	311	74	4.20
GIIC	OUT	16:00-20:00	Medium Truck	91	26	3.50
GIIC	OUT	16:00-20:00	Large Truck	105	33	3.18
GIIC	OUT	20:00-03:00	Pickup	13	4	3.25
GIIC	OUT	20:00-03:00	Small Truck	80	27	2.96
GIIC	OUT	20:00-03:00	Medium Truck	45	16	2.81
GIIC	OUT	20:00-03:00	Large Truck	34	16	2.13
JABABEKA	OUT	06:00-10:00	Pickup	405	148	2.74
JABABEKA	OUT	06:00-10:00	Small Truck	631	364	1.73
JABABEKA	OUT	06:00-10:00	Medium Truck	176	94	1.87
JABABEKA	OUT	06:00-10:00	Large Truck	34	16	2.13
JABABEKA	OUT	10:00-16:00	Pickup	777	213	3.65
JABABEKA	OUT	10:00-16:00	Small Truck	1259	527	2.39
JABABEKA	OUT	10:00-16:00	Medium Truck	257	124	2.07
JABABEKA	OUT	10:00-16:00	Large Truck	88	50	1.76
JABABEKA	OUT	16:00-20:00	Pickup	350	98	3.57
JABABEKA	OUT	16:00-20:00	Small Truck	458	242	1.89
JABABEKA	OUT	16:00-20:00	Medium Truck	148	78	1.90
JABABEKA	OUT	16:00-20:00	Large Truck	56	27	2.07
JABABEKA	OUT	20:00-03:00	Pickup	55	34	1.62

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
JABABEKA	OUT	20:00-03:00	Small Truck	121	92	1.32
JABABEKA	OUT	20:00-03:00	Medium Truck	60	42	1.43
JABABEKA	OUT	20:00-03:00	Large Truck	33	14	2.36
JIEP	OUT	06:00-10:00	Pickup	452	140	3.23
JIEP	OUT	06:00-10:00	Small Truck	1066	301	3.54
JIEP	OUT	06:00-10:00	Medium Truck	125	61	2.05
JIEP	OUT	06:00-10:00	Large Truck	53	44	1.20
JIEP	OUT	10:00-16:00	Pickup	751	179	4.20
JIEP	OUT	10:00-16:00	Small Truck	1469	326	4.51
JIEP	OUT	10:00-16:00	Medium Truck	283	134	2.11
JIEP	OUT	10:00-16:00	Large Truck	162	82	1.98
JIEP	OUT	16:00-20:00	Pickup	168	61	2.75
JIEP	OUT	16:00-20:00	Small Truck	389	134	2.90
JIEP	OUT	16:00-20:00	Medium Truck	139	78	1.78
JIEP	OUT	16:00-20:00	Large Truck	77	34	2.26
JIEP	OUT	20:00-03:00	Pickup	64	29	2.21
JIEP	OUT	20:00-03:00	Small Truck	174	73	2.38
JIEP	OUT	20:00-03:00	Medium Truck	102	45	2.27
JIEP	OUT	20:00-03:00	Large Truck	38	18	2.11
JICT	OUT	06:00-10:00	Pickup	0	0	0.00
JICT	OUT	06:00-10:00	Small Truck	0	0	0.00
JICT	OUT	06:00-10:00	Medium Truck	0	0	0.00
JICT	OUT	06:00-10:00	Large Truck	603	411	1.47
JICT	OUT	10:00-16:00	Pickup	0	0	0.00
JICT	OUT	10:00-16:00	Small Truck	22	1	22.00
JICT	OUT	10:00-16:00	Medium Truck	0	0	0.00
JICT	OUT	10:00-16:00	Large Truck	699	507	1.38
JICT	OUT	16:00-20:00	Pickup	0	0	0.00
JICT	OUT	16:00-20:00	Small Truck	0	0	0.00
JICT	OUT	16:00-20:00	Medium Truck	0	0	0.00
JICT	OUT	16:00-20:00	Large Truck	496	342	1.45
JICT	OUT	20:00-03:00	Pickup	0	0	0.00
JICT	OUT	20:00-03:00	Small Truck	0	0	0.00
JICT	OUT	20:00-03:00	Medium Truck	0	0	0.00
JICT	OUT	20:00-03:00	Large Truck	407	309	1.32

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
KOJA	OUT	06:00-10:00	Pickup	0	0	0.00
KOJA	OUT	06:00-10:00	Small Truck	0	0	0.00
KOJA	OUT	06:00-10:00	Medium Truck	0	0	0.00
KOJA	OUT	06:00-10:00	Large Truck	232	163	1.42
KOJA	OUT	10:00-16:00	Pickup	0	0	0.00
KOJA	OUT	10:00-16:00	Small Truck	0	0	0.00
KOJA	OUT	10:00-16:00	Medium Truck	0	0	0.00
KOJA	OUT	10:00-16:00	Large Truck	377	278	1.36
KOJA	OUT	16:00-20:00	Pickup	1	1	1.00
KOJA	OUT	16:00-20:00	Small Truck	0	0	0.00
KOJA	OUT	16:00-20:00	Medium Truck	0	0	0.00
KOJA	OUT	16:00-20:00	Large Truck	256	178	1.44
KOJA	OUT	20:00-03:00	Pickup	0	0	0.00
KOJA	OUT	20:00-03:00	Small Truck	1	1	1.00
KOJA	OUT	20:00-03:00	Medium Truck	0	0	0.00
KOJA	OUT	20:00-03:00	Large Truck	198	129	1.53
KBN MARUNDA	OUT	06:00-10:00	Pickup	17	10	1.70
KBN MARUNDA	OUT	06:00-10:00	Small Truck	99	52	1.90
KBN MARUNDA	OUT	06:00-10:00	Medium Truck	121	67	1.81
KBN MARUNDA	OUT	06:00-10:00	Large Truck	548	332	1.65
KBN MARUNDA	OUT	10:00-16:00	Pickup	80	29	2.76
KBN MARUNDA	OUT	10:00-16:00	Small Truck	253	120	2.11
KBN MARUNDA	OUT	10:00-16:00	Medium Truck	322	115	2.80
KBN MARUNDA	OUT	10:00-16:00	Large Truck	1102	474	2.32
KBN MARUNDA	OUT	16:00-20:00	Pickup	51	39	1.31
KBN MARUNDA	OUT	16:00-20:00	Small Truck	133	80	1.66
KBN MARUNDA	OUT	16:00-20:00	Medium Truck	176	104	1.69
KBN MARUNDA	OUT	16:00-20:00	Large Truck	620	297	2.09
KBN MARUNDA	OUT	20:00-03:00	Pickup	6	2	3.00
KBN MARUNDA	OUT	20:00-03:00	Small Truck	13	5	2.60
KBN MARUNDA	OUT	20:00-03:00	Medium Truck	93	50	1.86
KBN MARUNDA	OUT	20:00-03:00	Large Truck	385	153	2.52
MM2100	OUT	06:00-10:00	Pickup	449	47	9.55
MM2100	OUT	06:00-10:00	Small Truck	1046	142	7.37
MM2100	OUT	06:00-10:00	Medium Truck	270	43	6.28
MM2100	OUT	06:00-10:00	Large Truck	172	28	6.14

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
MM2100	OUT	10:00-16:00	Pickup	977	179	5.46
MM2100	OUT	10:00-16:00	Small Truck	1439	367	3.92
MM2100	OUT	10:00-16:00	Medium Truck	339	146	2.32
MM2100	OUT	10:00-16:00	Large Truck	306	152	2.01
MM2100	OUT	16:00-20:00	Pickup	382	72	5.31
MM2100	OUT	16:00-20:00	Small Truck	945	202	4.68
MM2100	OUT	16:00-20:00	Medium Truck	232	54	4.30
MM2100	OUT	16:00-20:00	Large Truck	154	88	1.75
MM2100	OUT	20:00-03:00	Pickup	101	20	5.05
MM2100	OUT	20:00-03:00	Small Truck	274	71	3.86
MM2100	OUT	20:00-03:00	Medium Truck	141	40	3.53
MM2100	OUT	20:00-03:00	Large Truck	52	30	1.73
NPCT1	OUT	06:00-10:00	Pickup	0	0	0.00
NPCT1	OUT	06:00-10:00	Small Truck	0	0	0.00
NPCT1	OUT	06:00-10:00	Medium Truck	0	0	0.00
NPCT1	OUT	06:00-10:00	Large Truck	290	232	1.25
NPCT1	OUT	10:00-16:00	Pickup	5	2	2.50
NPCT1	OUT	10:00-16:00	Small Truck	0	0	0.00
NPCT1	OUT	10:00-16:00	Medium Truck	3	1	3.00
NPCT1	OUT	10:00-16:00	Large Truck	397	230	1.73
NPCT1	OUT	16:00-20:00	Pickup	0	0	0.00
NPCT1	OUT	16:00-20:00	Small Truck	0	0	0.00
NPCT1	OUT	16:00-20:00	Medium Truck	0	0	0.00
NPCT1	OUT	16:00-20:00	Large Truck	175	97	1.80
NPCT1	OUT	20:00-03:00	Pickup	0	0	0.00
NPCT1	OUT	20:00-03:00	Small Truck	0	0	0.00
NPCT1	OUT	20:00-03:00	Medium Truck	0	0	0.00
NPCT1	OUT	20:00-03:00	Large Truck	270	131	2.06
PASAR BARU	OUT	06:00-10:00	Pickup	12	12	1.00
PASAR BARU	OUT	06:00-10:00	Small Truck	13	13	1.00
PASAR BARU	OUT	06:00-10:00	Medium Truck	0	0	0.00
PASAR BARU	OUT	06:00-10:00	Large Truck	4	4	1.00
PASAR BARU	OUT	10:00-16:00	Pickup	47	41	1.15
PASAR BARU	OUT	10:00-16:00	Small Truck	64	57	1.12
PASAR BARU	OUT	10:00-16:00	Medium Truck	5	5	1.00
PASAR BARU	OUT	10:00-16:00	Large Truck	71	30	2.37

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
PASAR BARU	OUT	16:00-20:00	Pickup	5	5	1.00
PASAR BARU	OUT	16:00-20:00	Small Truck	25	23	1.09
PASAR BARU	OUT	16:00-20:00	Medium Truck	14	12	1.17
PASAR BARU	OUT	16:00-20:00	Large Truck	19	12	1.58
PASAR BARU	OUT	20:00-03:00	Pickup	0	0	0.00
PASAR BARU	OUT	20:00-03:00	Small Truck	3	3	1.00
PASAR BARU	OUT	20:00-03:00	Medium Truck	7	6	1.17
PASAR BARU	OUT	20:00-03:00	Large Truck	34	34	1.00
SOEKARNO CARGO AIRPORT	OUT	06:00-10:00	Pickup	64	21	3.05
SOEKARNO CARGO AIRPORT	OUT	06:00-10:00	Small Truck	260	64	4.06
SOEKARNO CARGO AIRPORT	OUT	06:00-10:00	Medium Truck	1	1	1.00
SOEKARNO CARGO AIRPORT	OUT	06:00-10:00	Large Truck	0	0	0.00
SOEKARNO CARGO AIRPORT	OUT	10:00-16:00	Pickup	288	69	4.17
SOEKARNO CARGO AIRPORT	OUT	10:00-16:00	Small Truck	890	246	3.62
SOEKARNO CARGO AIRPORT	OUT	10:00-16:00	Medium Truck	35	26	1.35
SOEKARNO CARGO AIRPORT	OUT	10:00-16:00	Large Truck	4	2	2.00
SOEKARNO CARGO AIRPORT	OUT	16:00-20:00	Pickup	118	49	2.41
SOEKARNO CARGO AIRPORT	OUT	16:00-20:00	Small Truck	651	131	4.97
SOEKARNO CARGO AIRPORT	OUT	16:00-20:00	Medium Truck	24	9	2.67
SOEKARNO CARGO AIRPORT	OUT	16:00-20:00	Large Truck	0	0	0.00
SOEKARNO CARGO AIRPORT	OUT	20:00-03:00	Pickup	71	4	17.75
SOEKARNO CARGO AIRPORT	OUT	20:00-03:00	Small Truck	236	12	19.67
SOEKARNO CARGO AIRPORT	OUT	20:00-03:00	Medium Truck	23	2	11.50
SOEKARNO CARGO AIRPORT	OUT	20:00-03:00	Large Truck	0	0	0.00
TAMAN TEKNO BSD	OUT	06:00-10:00	Pickup	203	108	1.88
TAMAN TEKNO BSD	OUT	06:00-10:00	Small Truck	356	155	2.30
TAMAN TEKNO BSD	OUT	06:00-10:00	Medium Truck	5	5	1.00
TAMAN TEKNO BSD	OUT	06:00-10:00	Large Truck	2	1	2.00
TAMAN TEKNO BSD	OUT	10:00-16:00	Pickup	435	189	2.30
TAMAN TEKNO BSD	OUT	10:00-16:00	Small Truck	592	247	2.40
TAMAN TEKNO BSD	OUT	10:00-16:00	Medium	46	23	2.00



Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
			Truck			
TAMAN TEKNO BSD	OUT	10:00-16:00	Large Truck	29	20	1.45
TAMAN TEKNO BSD	OUT	16:00-20:00	Pickup	89	38	2.34
TAMAN TEKNO BSD	OUT	16:00-20:00	Small Truck	162	74	2.19
TAMAN TEKNO BSD	OUT	16:00-20:00	Medium Truck	14	12	1.17
TAMAN TEKNO BSD	OUT	16:00-20:00	Large Truck	17	11	1.55
TAMAN TEKNO BSD	OUT	20:00-03:00	Pickup	20	17	1.18
TAMAN TEKNO BSD	OUT	20:00-03:00	Small Truck	28	21	1.33
TAMAN TEKNO BSD	OUT	20:00-03:00	Medium Truck	12	12	1.00
TAMAN TEKNO BSD	OUT	20:00-03:00	Large Truck	4	4	1.00
TANJUNG PRIUK GATE 1	OUT	06:00-10:00	Pickup	19	4	4.75
TANJUNG PRIUK GATE 1	OUT	06:00-10:00	Small Truck	50	12	4.17
TANJUNG PRIUK GATE 1	OUT	06:00-10:00	Medium Truck	36	15	2.40
TANJUNG PRIUK GATE 1	OUT	06:00-10:00	Large Truck	453	94	4.82
TANJUNG PRIUK GATE 1	OUT	10:00-16:00	Pickup	108	25	4.32
TANJUNG PRIUK GATE 1	OUT	10:00-16:00	Small Truck	112	17	6.59
TANJUNG PRIUK GATE 1	OUT	10:00-16:00	Medium Truck	78	16	4.88
TANJUNG PRIUK GATE 1	OUT	10:00-16:00	Large Truck	681	103	6.61
TANJUNG PRIUK GATE 1	OUT	16:00-20:00	Pickup	41	12	3.42
TANJUNG PRIUK GATE 1	OUT	16:00-20:00	Small Truck	76	19	4.00
TANJUNG PRIUK GATE 1	OUT	16:00-20:00	Medium Truck	60	15	4.00
TANJUNG PRIUK GATE 1	OUT	16:00-20:00	Large Truck	327	68	4.81
TANJUNG PRIUK GATE 1	OUT	20:00-03:00	Pickup	5	1	5.00
TANJUNG PRIUK GATE 1	OUT	20:00-03:00	Small Truck	17	4	4.25
TANJUNG PRIUK GATE 1	OUT	20:00-03:00	Medium Truck	22	5	4.40
TANJUNG PRIUK GATE 1	OUT	20:00-03:00	Large Truck	166	32	5.19
TANJUNG PRIUK GATE 9	OUT	06:00-10:00	Pickup	16	6	2.67
TANJUNG PRIUK GATE 9	OUT	06:00-10:00	Small Truck	52	9	5.78
TANJUNG PRIUK GATE 9	OUT	06:00-10:00	Medium Truck	67	15	4.47
TANJUNG PRIUK GATE 9	OUT	06:00-10:00	Large Truck	668	183	3.65
TANJUNG PRIUK GATE 9	OUT	10:00-16:00	Pickup	41	12	3.42
TANJUNG PRIUK GATE 9	OUT	10:00-16:00	Small Truck	192	55	3.49
TANJUNG PRIUK GATE 9	OUT	10:00-16:00	Medium Truck	171	50	3.42
TANJUNG PRIUK GATE 9	OUT	10:00-16:00	Large Truck	1496	380	3.94
TANJUNG PRIUK GATE 9	OUT	16:00-20:00	Pickup	32	18	1.78
TANJUNG PRIUK GATE 9	OUT	16:00-20:00	Small Truck	42	23	1.83

Survey Location	Direction	Time Group	Mode	Sum of Vol_TC	Sum of Vol_Int	EF
TANJUNG PRIUK GATE 9	OUT	16:00-20:00	Medium Truck	93	27	3.44
TANJUNG PRIUK GATE 9	OUT	16:00-20:00	Large Truck	670	345	1.94
TANJUNG PRIUK GATE 9	OUT	20:00-03:00	Pickup	8	3	2.67
TANJUNG PRIUK GATE 9	OUT	20:00-03:00	Small Truck	46	12	3.83
TANJUNG PRIUK GATE 9	OUT	20:00-03:00	Medium Truck	69	17	4.06
TANJUNG PRIUK GATE 9	OUT	20:00-03:00	Large Truck	626	168	3.73
TANJUNG PRIUK GATE 8	OUT	06:00-10:00	Pickup	9	9	1.00
TANJUNG PRIUK GATE 8	OUT	06:00-10:00	Small Truck	13	9	1.44
TANJUNG PRIUK GATE 8	OUT	06:00-10:00	Medium Truck	2	1	2.00
TANJUNG PRIUK GATE 8	OUT	06:00-10:00	Large Truck	196	114	1.72
TANJUNG PRIUK GATE 8	OUT	10:00-16:00	Pickup	43	18	2.39
TANJUNG PRIUK GATE 8	OUT	10:00-16:00	Small Truck	163	57	2.86
TANJUNG PRIUK GATE 8	OUT	10:00-16:00	Medium Truck	40	18	2.22
TANJUNG PRIUK GATE 8	OUT	10:00-16:00	Large Truck	270	104	2.60
TANJUNG PRIUK GATE 8	OUT	16:00-20:00	Pickup	20	10	2.00
TANJUNG PRIUK GATE 8	OUT	16:00-20:00	Small Truck	25	10	2.50
TANJUNG PRIUK GATE 8	OUT	16:00-20:00	Medium Truck	10	9	1.11
TANJUNG PRIUK GATE 8	OUT	16:00-20:00	Large Truck	112	59	1.90
TANJUNG PRIUK GATE 8	OUT	20:00-03:00	Pickup	5	4	1.25
TANJUNG PRIUK GATE 8	OUT	20:00-03:00	Small Truck	4	2	2.00
TANJUNG PRIUK GATE 8	OUT	20:00-03:00	Medium Truck	17	11	1.55
TANJUNG PRIUK GATE 8	OUT	20:00-03:00	Large Truck	136	42	3.24

Source: JUTPI 2

#### 4.9.6.2 Type 2 O-D Matrices

The expansion factor is estimated from the total vehicle of each time slice and by crossing screen line (North-South line and East-West Line) as shown in the following table. These O-D were enhanced from the first O-D matrices.

The calculation of second expansion factor are divided by two group. For pick up and small truck by using additional data from travel speed survey due to the movement of pick up and small truck are mostly doesn't come from industrial area and port.

**Table 28 Expansion factor for Pick up and Small Truck**

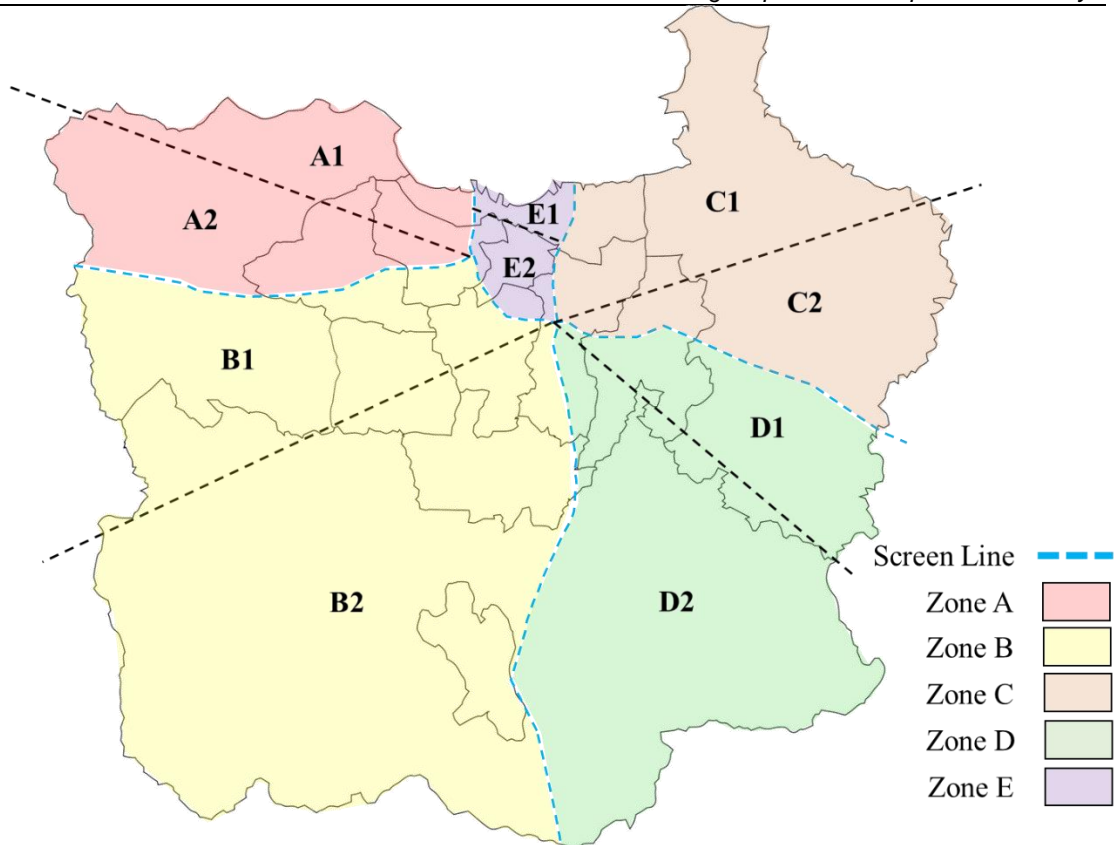
Time Group	Mode	Screen Line Zone	TOD	TSS
06:00-10:00	Pick-up	A-1	6.12	19.05
06:00-10:00	Pick-up	A-2	5.87	4.48
06:00-10:00	Pick-up	B-1	3.31	16.34
06:00-10:00	Pick-up	B-2	6.71	2.51

Time Group	Mode	Screen Line Zone	TOD	TSS
06:00-10:00	Pick-up	C-1	0.10	0.10
06:00-10:00	Pick-up	C-2	0.10	27.36
06:00-10:00	Pick-up	D-1	9.14	6.01
06:00-10:00	Pick-up	D-2	6.53	6.74
06:00-10:00	Pick-up	E-1	0.10	0.10
06:00-10:00	Pick-up	E-2	0.10	39.29
06:00-10:00	Small Truck	A-1	1.01	0.68
06:00-10:00	Small Truck	A-2	0.93	0.44
06:00-10:00	Small Truck	B-1	0.87	0.80
06:00-10:00	Small Truck	B-2	0.85	0.22
06:00-10:00	Small Truck	C-1	0.64	0.10
06:00-10:00	Small Truck	C-2	1.72	2.66
06:00-10:00	Small Truck	D-1	1.48	1.77
06:00-10:00	Small Truck	D-2	1.03	0.55
06:00-10:00	Small Truck	E-1	0.83	0.20
06:00-10:00	Small Truck	E-2	0.85	1.04
10:00-16:00	Pick-up	A-1	12.61	23.71
10:00-16:00	Pick-up	A-2	10.70	11.68
10:00-16:00	Pick-up	B-1	3.84	10.37
10:00-16:00	Pick-up	B-2	3.82	6.94
10:00-16:00	Pick-up	C-1	0.10	0.10
10:00-16:00	Pick-up	C-2	17.65	19.15
10:00-16:00	Pick-up	D-1	17.22	1.41
10:00-16:00	Pick-up	D-2	9.59	14.70
10:00-16:00	Pick-up	E-1	0.10	2.69
10:00-16:00	Pick-up	E-2	0.99	5.54
10:00-16:00	Small Truck	A-1	0.79	0.55
10:00-16:00	Small Truck	A-2	1.05	0.63
10:00-16:00	Small Truck	B-1	0.85	1.01
10:00-16:00	Small Truck	B-2	0.79	0.81
10:00-16:00	Small Truck	C-1	0.10	0.10
10:00-16:00	Small Truck	C-2	1.37	2.60
10:00-16:00	Small Truck	D-1	1.71	1.91
10:00-16:00	Small Truck	D-2	0.95	1.20
10:00-16:00	Small Truck	E-1	0.10	0.10
10:00-16:00	Small Truck	E-2	0.10	0.84
16:00-20:00	Pick-up	A-1	17.23	16.32
16:00-20:00	Pick-up	A-2	22.04	20.55
16:00-20:00	Pick-up	B-1	15.99	9.71
16:00-20:00	Pick-up	B-2	15.33	5.86
16:00-20:00	Pick-up	C-1	0.10	0.10

Time Group	Mode	Screen Line Zone	TOD	TSS
16:00-20:00	Pick-up	C-2	21.95	13.30
16:00-20:00	Pick-up	D-1	19.05	0.19
16:00-20:00	Pick-up	D-2	17.09	17.55
16:00-20:00	Pick-up	E-1	0.10	17.68
16:00-20:00	Pick-up	E-2	0.10	15.34
16:00-20:00	Small Truck	A-1	2.03	0.28
16:00-20:00	Small Truck	A-2	1.13	1.00
16:00-20:00	Small Truck	B-1	0.10	0.71
16:00-20:00	Small Truck	B-2	0.10	1.44
16:00-20:00	Small Truck	C-1	0.10	0.10
16:00-20:00	Small Truck	C-2	1.62	3.87
16:00-20:00	Small Truck	D-1	2.73	0.61
16:00-20:00	Small Truck	D-2	0.66	1.21
16:00-20:00	Small Truck	E-1	0.10	0.10
16:00-20:00	Small Truck	E-2	0.10	0.95
20:00-03:00	Pick-up	A-1	6.29	30.46
20:00-03:00	Pick-up	A-2	0.85	3.20
20:00-03:00	Pick-up	B-1	2.50	15.50
20:00-03:00	Pick-up	B-2	1.46	0.10
20:00-03:00	Pick-up	C-1	1.50	0.10
20:00-03:00	Pick-up	C-2	6.32	50.46
20:00-03:00	Pick-up	D-1	24.44	9.06
20:00-03:00	Pick-up	D-2	1.14	10.58
20:00-03:00	Pick-up	E-1	1.29	22.36
20:00-03:00	Pick-up	E-2	1.78	6.38
20:00-03:00	Small Truck	A-1	1.38	4.00
20:00-03:00	Small Truck	A-2	0.79	0.10
20:00-03:00	Small Truck	B-1	0.68	0.67
20:00-03:00	Small Truck	B-2	0.73	0.12
20:00-03:00	Small Truck	C-1	0.72	0.81
20:00-03:00	Small Truck	C-2	1.39	2.92
20:00-03:00	Small Truck	D-1	2.11	2.62
20:00-03:00	Small Truck	D-2	1.03	1.46
20:00-03:00	Small Truck	E-1	1.44	1.99
20:00-03:00	Small Truck	E-2	1.55	4.00

Source: JUTPI 2

In the table above shown the expansion factor of pick up and small truck from screen line zones by each time series for two survey Truck OD survey and Travel Speed survey.



Source: JUTPI 2

**Figure 34 Screen Line Zone**

The OD table for Freight movement was formed based on expansion factor above and aggregated by departure time from origin location. The OD table is presented in the provided Truck OD survey database.

## Chapter 5 CORDON LINE SURVEY

### 5.1 Inter-regional Toll Road OD Survey

#### 5.1.1 Survey Objective

The main objective of the Survey is to obtain trip pattern data of passengers and vehicles who are crossing the boundary of JABODETABEK region using toll road. The obtained information shall be helpful to identify Origin-Destination patterns in terms of passenger and vehicle movement in the JABODETABEK region.

#### 5.1.2 Survey Location

There are two toll roads crossing JABODETABEK borderline to be surveyed, Jakarta – Cikampek Toll Road and Tangerang – Merak Toll Road. The Survey shall be carried out at 10 toll gates for the Survey as shown in Figure 1 below. To cover all vehicles crossing the JABODETABEK border using the toll road, the Survey will be conducted in the nearest Toll Plaza from JABODETABEK border and three toll gates between the Toll Plaza and JABODETABEK border. At all these locations, traffic count should be conducted for 24 hours; and OD interview by web-based method along with vehicle occupancy should be conducted for 17 hours.



Source: JUTPI 2

Figure 35. Survey Location

In total there are about 87 toll booths to be surveyed. There will be one surveyor for each operational toll booth in each toll gate responsible for distributing the flyer to passenger or driver of each vehicle, also has to station sufficient surveyors to do traffic count and vehicle occupancy for each vehicle direction in ramp in and ramp out.

**Table 29. Cordon Line Toll Road Survey Location**

Toll Road	Toll Gate	No.	No. of Booth	Total Of Booth	Direction	OD Interview Period by Web-Based Method	Vehicle Occupancy Period	Traffic Counting Period
Tangerang - Merak	Cikupa	1	4+3	7	To Merak (Entrance)	17 Hours	17 Hours	24 hours
			4+4	8	To Jakarta (Exit)	17 Hours	17 Hours	24 hours
	Cikupa Satellite	2	7	7	To Jakarta (Exit)	17 Hours	17 Hours	24 hours
	Balaraaja Barat	3	5	5	Exit	17 Hours	17 Hours	24 hours
2			2	Entrance	17 Hours	17 Hours	24 hours	
Jakarta - Cikampek	Cikarang Utama 1	4	11+3	14	To Cikampek (Entrance)	17 Hours	17 Hours	24 hours
	Cikarang Utama 2	5	7	7	To Jakarta (Exit)	17 Hours	17 Hours	24 hours
	Cikarang Utama 3	6	13+2	15	To Jakarta (Exit)	17 Hours	17 Hours	24 hours
	Cikarang Barat 1	7	3	3	Entrance	17 Hours	17 Hours	24 hours
	Cikarang Barat 2	8	3	3	Exit	17 Hours	17 Hours	24 hours
	Cibatu	9	4	4	Entrance	17 Hours	17 Hours	24 hours
			8	8	Exit	17 Hours	17 Hours	24 hours
	Cikarang Timur	10	2	2	Entrance	17 Hours	17 Hours	24 hours
			2	2	Exit	17 Hours	17 Hours	24 hours

Source: JUTPI 2

### 5.1.3 Survey Method

#### a. Survey Task and Items

- OD Interview (Direct and by Web-Based Method)

This survey was carried out by direction, i.e., inbound (to JABODETABEK) and outbound (from JABODETABEK). There were two types of interview method for this survey, namely:

- **Direct Interview:** The direct interview was conducted at Rest Area before the JABODETABEK borderline where no Interchange before it. Vehicles coming in to the Rest Area and park then approached by the surveyor and the surveyor conducted interview utilizing paper-based survey form.
- **Web-based Method:** Quick Response Code (QR-code) and Uniform Resource Locator (URL) that enabled access to online survey form were provided. QR-code and URL were uniquely generated by location, direction, hour, and representative vehicle classification, and printed on flyers. Three different sets of flyers (for passenger cars, buses, and trucks) were printed with QR-code and URL designated for each hour and distributed to vehicles (one flyer for each vehicle) excluding those which had been direct-interviewed. In addition, incentive in the form of mobile phone credit was provided by lottery for the respondents who completed the online survey form in order to increase the response rate.

- **Traffic Count**

The survey method of traffic count is very simple. Number of vehicles that pass through the survey location was counted by type of vehicle and direction. The counting was conducted by period of time; every 15-minute period over survey duration.

• **Occupancy Survey**

Occupancy survey measures the number of passengers in every vehicle passing by the survey location. Vehicle occupancy survey was utilized for identifying high demand corridors and corridor throughput of passengers. Vehicle occupancy was observed targeting the same traffic direction as the traffic count and was conducted for every hour during the survey duration until one of the following requirements was fulfilled:

- 30 vehicles per vehicle type per direction was observed, or
- 20 minutes of observation was passed per direction and per hour.

**b. Vehicle Classification**

Since the vehicle classification used by toll operator is different from the Survey, it is important to understand classifications both for the toll road operators and for the Survey. Table 30 below defines both classifications.

**Table 30. Vehicle Classification for Toll Operators and The Survey**

Toll Operator	No	the Survey	
		for Traffic Count	for Flyers Distribution
Golongan I	2	Private Cars	Private Cars
	3	Taxi	
	4	Minibus (Angkot, Mikrolet)	Bus
	5	Medium Bus	
	6	Large Bus	
	7	Large Chartered Bus (Community Bus, Company Bus, School Bus, and Rental Bus)	
	8	Medium Chartered Bus (Community Bus, Company Bus, School Bus, and Rental Bus)	
	9	Small Chartered Bus (Community Bus, Company Bus, School Bus, and Rental Bus)	
	10	Pick Up, Box	Truck
	Golongan II	11	
Golongan III	12	Medium Truck (3-axle)	
Golongan IV and V	13	Large Truck (>3-axle)	

Source: JUTPI 2

**c. Survey day and duration**

The surveys at each location were conducted on weekdays excluding Monday and Friday (Tuesday, Wednesday or Thursday). OD interview and vehicle occupancy were conducted for 17 hours (05.00 – 22.00). Traffic count shall be conducted for 24 hours (05.00 – 05.00).

**d. Survey Forms**

There are 2 type of survey form for OD Interview: paper-based and web-based. The survey form either for direct interview or the web-based method contains the following items:

- Introduction (for web-based method only)



- Brief explanation about the Survey
  - Vehicle information
    - Private Car
    - Taxi
    - Minibus (angkot, mikrolet)
    - Medium Bus
    - Large Bus
    - Large Chartered Bus (Community, Company, School, and Rental Buses)
    - Medium Chartered Bus (Community, Company, School, and Rental Buses)
    - Small Chartered Bus (Community, Company, School, and Rental Buses)
    - Pick-up, Box
    - Small Truck (2-axle)
    - Medium Truck (3-axle)
    - Large Truck (>3-axle)
    - Articulated Truck
    - Truck Trailer
    - Number of occupants
    - Production Year
  - Cargo loading ratio and commodity (only for trucks)
    - Empty
    - Less than half
    - Half
    - More than half
    - Full
  - Commodity name (only for trucks)
  - Origin and Destination (if outside JABODETABEK, city/regency and province only)
    - Land mark/ Nearest Building name
    - Road Name
    - Sub-district
    - District
    - City/Regency
    - Province
    - Home or not
  - Trip Purposes (Going to / Returning from)
-

- Work
- Business
- Academic/study
- Private Business
- Family Business
- Leisure/hobby
- Others
- Personal Information (for web-based method only)
  - Mobile Phone Number (to contact for a prize or for further cooperation)
  - Willingness for further cooperation (Activity-Travel Diary Survey)

Figure 36 shows the flyers example used in the survey. Each flyer contained unique information such as survey location, distribution time, direction, and general vehicle types. Distribution rate of the flyers given compare to number of vehicles passing through and sample rate of the respondent accessed and answering the online OD survey form shown in tables below for first and second Actual Survey.



Source: JUTPI 2

Figure 36. Flyers with QR-Code and short URL

**JUTPI 2 SURVEY**

KEMENTERIAN KOORDINATOR  
 BIDANG PEKERJAAN  
 REPUBLIK INDONESIA

OD INTERVIEW SURVEY - CORDON LINE  
 - RSI at Ordinary Roads -  
 JABODETABEK URBAN TRANSPORTATION POLICY  
 INTEGRATION  
 JULY 2018

**jica**

Step 1  
 PENDAHULUAN

Step 2  
 INFORMASI KENDARAAN

Step 3a  
 ASAL PERJALANAN

Step 3b  
 TUJUAN PERJALANAN

Step 4  
 TUJUAN TRIP

Step 5  
 AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN

Previous Next

**Step 2 INFORMASI KENDARAAN**

Mohon pilih jenis kendaraan anda :

Mohon sebutkan jumlah penumpang dalam kendaraan anda :

Mohon sebutkan tahun produksi kendaraan anda :

Pada pukul berapa anda menerima sebaran survey :

Previous Next

**Step 3a ASAL PERJALANAN**

**ASAL PERJALANAN**

Sebutkan Provinsi asal perjalanan anda ?

Sebutkan Kota/Kabupaten asal perjalanan anda ?

Sebutkan Kecamatan asal perjalanan anda ?

Sebutkan Kelurahan asal perjalanan anda ?

Jika anda tidak mengetahui nama *Kelurahan* anda, mohon berikan detail lainnya mengenai lokasi dengan mengisi 2 kotak isian di bawah ini.

Sebutkan Nama Jalan asal perjalanan anda ?

Sebutkan penanda lokasi atau gedung di sekitar asal perjalanan anda

Apakah asal perjalanan anda sama dengan kediaman anda ?  
 Yes  
 No

Previous Next

**Step 3b TUJUAN PERJALANAN**

**TUJUAN**

Sebutkan Provinsi tujuan perjalanan anda ?

Sebutkan Kota/Kabupaten tujuan perjalanan anda ?

Sebutkan Kecamatan tujuan perjalanan anda ?

Sebutkan Kelurahan tujuan perjalanan anda ?

Jika anda tidak mengetahui nama *Kelurahan* anda, mohon berikan detail lainnya mengenai lokasi dengan mengisi 2 kotak isian di bawah ini.

Sebutkan Nama Jalan tujuan perjalanan anda ?

Sebutkan penanda lokasi atau gedung di sekitar tujuan perjalanan anda

Apakah tujuan perjalanan anda sama dengan kediaman anda ? ?  
 Yes  
 No

Previous Next

**Step 4 TUJUAN TRIP**

Mohon sebutkan tujuan perjalanan anda :

Pergi ke ...  
 Kembali dari ...

Previous Next

**Step 5 AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN**

**AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN**

Terima kasih telah menyelesaikan survei asal tujuan ini, respon anda turut berkontribusi demi sistem dan tata transportasi yang lebih baik di masa yang akan datang. Kami juga meminta kerja sama Bapak/Ibu dan saudara/i untuk kembali berpartisipasi dalam survei selanjutnya yang akan dilakukan secara online dengan mengunjungi website kami di [www.jutpi.id](http://www.jutpi.id) dan mendaftar pada survei aktivitas harian (Activity-Travel Diary Survey).



[Selesaikan Survey](#)

Previous Next

Source: JUTPI 2

Figure 37. Web-based Survey Form

Table 31. Direct Interview Survey Form

 <b>JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION Phase 2</b> CORDON LINE - OD Interview Survey at Rest Area 					
Lokasi/ Kode : _____ / _____ Arah : dari _____ menuju _____ Tanggal (dd/mm) : _____ / _____ / <b>2018</b>		Time slot : _____ : _____ 24 hr format Shift : _____ 1 _____ 2		Supervisor : _____ Surveyor : _____ Lembar ke. : _____	
INFO	TIBE KENDARAAN	ASAL	TUJUAN	MAKSUD PERJALANAN	
	01. Sepeda Motor 02. Mobil Pribadi 03. Taksi 04. Pick-Up, Box 05. Truk kecil (2-As) 06. Truk Medium (3-As) 07. Truk Besar (>3-As) 08. Truk Gandeng 09. Truk Trailer 10. Minibus (Angkot, Mikrolet) 11. Bus Medium (Angkutan Umum) 12. Bus Besar (Angkutan Umum) 13. Bus Besar Sewaan (Bus Perusahaan, Bus Rental) 14. Bus Medium Sewaan (Bus Perusahaan, Bus Rental) 15. Bus Kecil Sewaan (Elf, dsb)	A. Nama Jalan B. Kelurahan C. Kecamatan D. Kota/Kabupaten E. Penanda/ Gedung terdekat	A. Nama Jalan B. Kelurahan C. Kecamatan D. Kota/Kabupaten E. Penanda/ Gedung terdekat	Pergi ke... 01. Bekerja (berkaitan dengan pekerjaan) 02. Bisnis (berkaitan perjalanan bisnis) 03. Sekolah (berkaitan studi) 04. Urusan Pribadi 05. Urusan Keluarga 06. Belanja/rekreasi/wisata	Kembali dari... 07. Bekerja (berkaitan dengan pekerjaan) 08. Bisnis (berkaitan perjalanan bisnis) 09. Sekolah (berkaitan studi) 10. Urusan Pribadi 11. Urusan Keluarga 12. Belanja/rekreasi/wisata
1	<b>TIBE KENDARAAN :</b> _____ <b>TAHUN PRODUKSI :</b> _____ <i>Hanya untuk TRUK</i> Status muatan : _____ 01. Penuh 02. Hampir penuh 03. Setengah terisi 04. Hampir kosong 05. Kosong Komoditas : _____	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	Maksud perjalanan : _____ Lainnya, detailkan : _____ Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	
	<i>Hanya untuk Bus</i> Okupansi penumpang : _____ 01. Kosong 02. 25% kursi terisi 03. 50% kursi terisi 04. 75% kursi terisi 05. 100% kursi terisi 06. 150% kursi terisi 07. 175% kursi terisi 08. 200% kursi terisi baik yang duduk dan berdiri	Bagaimana kebijakan "Ganjil/Genap" mempengaruhi perjalanan anda ? 01. Merubah jam keberangkatan 02. Merubah rute perjalanan 03. Menggunakan mobil pribadi lainnya milik sendiri 04. Berganti moda ke sepeda motor 05. Menumpang mobil lain sebagai penumpang 06. Menggunakan angkutan umum 07. Membatalkan perjalanan		Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	
2	<b>TIBE KENDARAAN :</b> _____ <b>TAHUN PRODUKSI :</b> _____ <i>Hanya untuk TRUK</i> Status muatan : _____ 01. Penuh 02. Hampir penuh 03. Setengah terisi 04. Hampir kosong 05. Kosong Komoditas : _____	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	Maksud perjalanan : _____ Lainnya, detailkan : _____ Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	
	<i>Hanya untuk Bus</i> Okupansi penumpang : _____ 01. Kosong 02. 25% kursi terisi 03. 50% kursi terisi 04. 75% kursi terisi 05. 100% kursi terisi 06. 150% kursi terisi 07. 175% kursi terisi 08. 200% kursi terisi baik yang duduk dan berdiri	Bagaimana kebijakan "Ganjil/Genap" mempengaruhi perjalanan anda ? 01. Merubah jam keberangkatan 02. Merubah rute perjalanan 03. Menggunakan mobil pribadi lainnya milik sendiri 04. Berganti moda ke sepeda motor 05. Menumpang mobil lain sebagai penumpang 06. Menggunakan angkutan umum 07. Membatalkan perjalanan		Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	
3	<b>TIBE KENDARAAN :</b> _____ <b>TAHUN PRODUKSI :</b> _____ <i>Hanya untuk TRUK</i> Status muatan : _____ 01. Penuh 02. Hampir penuh 03. Setengah terisi 04. Hampir kosong 05. Kosong Komoditas : _____	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	A. _____ Nama Jalan B. _____ Kelurahan C. _____ Kecamatan D. _____ Kota/ Kabupaten E. _____ Penanda lokasi Silang jika asal anda adalah rumah anda : <input type="checkbox"/>	Maksud perjalanan : _____ Lainnya, detailkan : _____ Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	
	<i>Hanya untuk Bus</i> Okupansi penumpang : _____ 01. Kosong 02. 25% kursi terisi 03. 50% kursi terisi 04. 75% kursi terisi 05. 100% kursi terisi 06. 150% kursi terisi 07. 175% kursi terisi 08. 200% kursi terisi baik yang duduk dan berdiri	Bagaimana kebijakan "Ganjil/Genap" mempengaruhi perjalanan anda ? 01. Merubah jam keberangkatan 02. Merubah rute perjalanan 03. Menggunakan mobil pribadi lainnya milik sendiri 04. Berganti moda ke sepeda motor 05. Menumpang mobil lain sebagai penumpang 06. Menggunakan angkutan umum 07. Membatalkan perjalanan		Mohon berikan no telepon seluler anda untuk dapat disertakan dalam undian mendapatkan pulsa bagi 1000 responden beruntung. No Telp : 08- _____ Apakah anda bersedia untuk ikut serta dalam survei perjalanan lainnya? <input type="checkbox"/> 01. Bersedia 02. Tidak Bersedia	

Source: JUTPI 2

## **5.1.4 Survey Result and Major Finding**

### **5.1.4.1 Data Processing**

Collected data shall be input and validated to develop database of the survey.

#### **a. Data Input**

The Sub-Consultant shall prepare the MS Excel for input the survey data.

#### **b. Editing and Zone Coding**

Collected data shall be verified by the Sub-Consultant. After collecting the accomplished survey forms, the Sub-Consultant data coding staffs shall complete the zone coding of all written addresses in accordance with the zone code list provided by the Consultant. In case only building name, or landmark is written without mentioning full address, the Data Coding Staffs are required to identify the location and complete the quartier-based zone code entry accordingly.

#### **c. Data Error Checking**

Range and logical error of the survey shall be checked and removed. Allowable range of data and items for logical checking shall be provided by the Consultant and the Sub Consultant shall develop the error check program in accordance with the instruction to be provided by the Consultant. The Sub Consultant shall verify and correct the data if needed.

### **5.1.4.2 Survey Preparation**

Prior to the survey, the following preparation activities were performed:

#### **a. Coordination with the toll operator**

In order to facilitate the implementation of actual field survey, the consultant coordinate with the toll operator whose manage each toll road. Toll operator shall help the Sub-consultant to conduct the Survey by determining the surveyor spot in accordance to safety and coordinate will each toll gate coordinator. Secondary data of toll transaction around the time of the survey also collected from the toll operator, as well as clearance to conduct the survey in their area.

#### **b. Site Visit**

In order to familiarize the characteristic of survey location and to prepare survey implementation plan, site visit was conducted.

### **5.1.4.3 Survey Schedule**

#### **a. Pilot Survey**

Pilot survey conduct in toll gate barrier (Cikupa 1, Cikarang Utama 1 and 2) for both directions to assure that the Survey at the toll gates will be well performed and to foresee potential problems that may happen in the actual field survey.

The pilot survey shall simulate the actual survey in the peak period especially when surveyors distribute the flyers in all toll booths on Cikupa Toll Gate Barrier and Cikarang Utama 1 and 2 toll Gate Barriers. Hourly duration of pilot survey has been agreed on by the toll operator as one hour in the peak period. This pilot survey shall also be useful to measure the response rate of web-based method

- First pilot survey at 7 July 2018 in the Cikupa 1 Toll Gate
- Second pilot survey at 10 July 2018 in the Cikarang Utama 1 and 2 Toll Gate
- Third pilot survey at 17 July 2018 in the Cikupa 1 Toll Gate

**b. Actual Field Survey**

Actual field survey was conducted for 2 times because of the low distribution and sample rate.

➤ First Actual Field Survey

- First day of first actual survey on Tuesday, 24 July 2018 in the Cikarang Barat 1 Toll, Cikarang Barat 2 Toll, Cikarang Timur Toll, Cibatu Toll, Rest Area 39 and Rest Area 42 - (Jakarta – Cikampek Toll).
- Second day of first actual survey on Thursday, 26 July 2018 in the Cikarang Utama 1, 2 and 3 Toll (Cikarang Utama Toll Plaza).
- Third day of first actual survey on Thursday, 2 August 2018 in the Cikupa Toll Plaza, Cikupa 2, Balaraja Barat Toll, Rest Area KM 43 and Rest Area KM 45 (Tangerang -Merak Toll).

**c. OD Interview Survey**

➤ Web-based Interview Survey

Flyers distribution for Web-based Interview Survey conducted in the toll gate in 10 locations as mention in Table 29 above. Total number of flyers distributed to vehicle passing through shown in Table 32 below. Response rate by the respondents who fill in the online form shown in Table 33.

- First day of additional field survey on Thursday, 9 August 2018 in the Cikupa Toll Plaza, Cikupa 2 Toll, and Balaraja Barat.
- Second day of additional field survey on Tuesday, 14 August 2018 in the Cikarang Utama 1, 2 and 3 Toll (Cikarang Utama Toll Plaza).
- Third day of additional field survey on Wednesday, 15 August 2018 in the Cikarang Barat 1, Cikarang Barat 2, Cikarang Timur and Cibatu.

**Table 32 Distribution Rate of Flyers**

SURVEY DAY	LOCATION	DIRECTION	TOTAL		
			TC	Distributed	%tage
DAY 3	CIKUPA UTAMA	to Merak	27,430	27,430	100.0%
		to JABODETABEK	19,288	17,472	90.6%
	CIKUPA SATELITTE	to JABODETABEK	11,474	11,474	100.0%
	BALARAJA BARAT	Entrance	9,775	9,775	100.0%
		Exit	11,135	9,667	86.8%
DAY 2	CIKARANG UTAMA 1	to Cikampek	31,605	31,605	100.0%
	CIKARANG UTAMA 2-3	to JABODETABEK	36,605	33,892	92.6%
Day 1	CIKARANG BARAT 1	to Cikampek	3,141	3,141	100.0%
	CIKARANG BARAT 2	to JABODETABEK	4,968	4,915	98.9%
	CIBATU	Entrance	8,464	8,464	100.0%
		Exit	9,398	9,398	100.0%
	CIKARANG TIMUR	Entrance	7,830	7,433	94.9%
		Exit	7,254	6,834	94.2%
			<b>188,367</b>	<b>181,499</b>	<b>96.4%</b>

Source: JUTPI 2



**Table 33 Response Rate of Web-based Interview**

SURVEY DAY	LOCATION	DIRECTION	General Type									TOTAL		
			Private Vehicle			Bus			Truck			Distributed	Response	%tage
			Distributed	Response	%tage	Distributed	Response	%tage	Distributed	Response	%tage			
DAY 3	CIKUPA UTAMA	to Merak	16,221	452	2.8%	1,062	11	1.0%	10,147	85	0.8%	27,430	548	2.0%
		to Jabodetabek	11,078	242	2.2%	459	1	0.2%	5,935	30	0.5%	17,472	273	1.6%
	CIKUPA SATELITTE	to Jabodetabek	4,086	104	2.5%	622	1	0.2%	6,767	36	0.5%	11,474	141	1.2%
	BALARAJA BARAT	Entrance	5,149	79	1.5%	436	5	1.1%	4,190	14	0.3%	9,775	98	1.0%
Exit		4,969	90	1.8%	422	2	0.5%	4,276	16	0.4%	9,667	108	1.1%	
DAY 2	CIKARANG UTAMA 1	to Cikampek	15,768	544	3.5%	2,415	17	0.7%	13,423	121	0.9%	31,605	682	2.2%
	CIKARANG UTAMA 2	to Jabodetabek	16,040	606	3.8%	1,994	35	1.8%	15,858	213	1.3%	33,892	854	2.5%
Day 1	CIKARANG BARAT 1	to Cikampek	1,115	32	2.9%	255	2	0.8%	1,771	13	0.7%	3,141	47	1.5%
	CIKARANG BARAT 2	to Jabodetabek	1,916	43	2.2%	443	0	0.0%	2,556	9	0.4%	4,915	52	1.1%
	CIBATU	Entrance	5,389	174	3.2%	178	0	0.0%	2,897	35	1.2%	8,464	209	2.5%
		Exit	6,222	185	3.0%	247	1	0.4%	2,929	16	0.5%	9,398	202	2.1%
	CIKARANG TIMUR	Entrance	4,013	96	2.4%	134	1	0.7%	3,286	11	0.3%	7,433	108	1.5%
		Exit	3,775	71	1.9%	150	1	0.7%	2,910	9	0.3%	6,834	81	1.2%
			95,739	2,718	2.8%	8,814	77	0.9%	76,944	608	0.8%	181,497	3,403	1.9%

Source: JUTPI 2

#### d. Direct Interview Survey

Because of the low distribution rate and sample ratio so additional location was added and the direct interview survey was conducted in Rest Area near JABODETABEK border line where no Interchange before it. This survey activity in the additional location is focusing on Truck and Bus as counter measure for low sampling rate of Bus and Truck. The additional location is shown in Figure 38 below.



Source: JUTPI 2

**Figure 38. Rest Area Location**

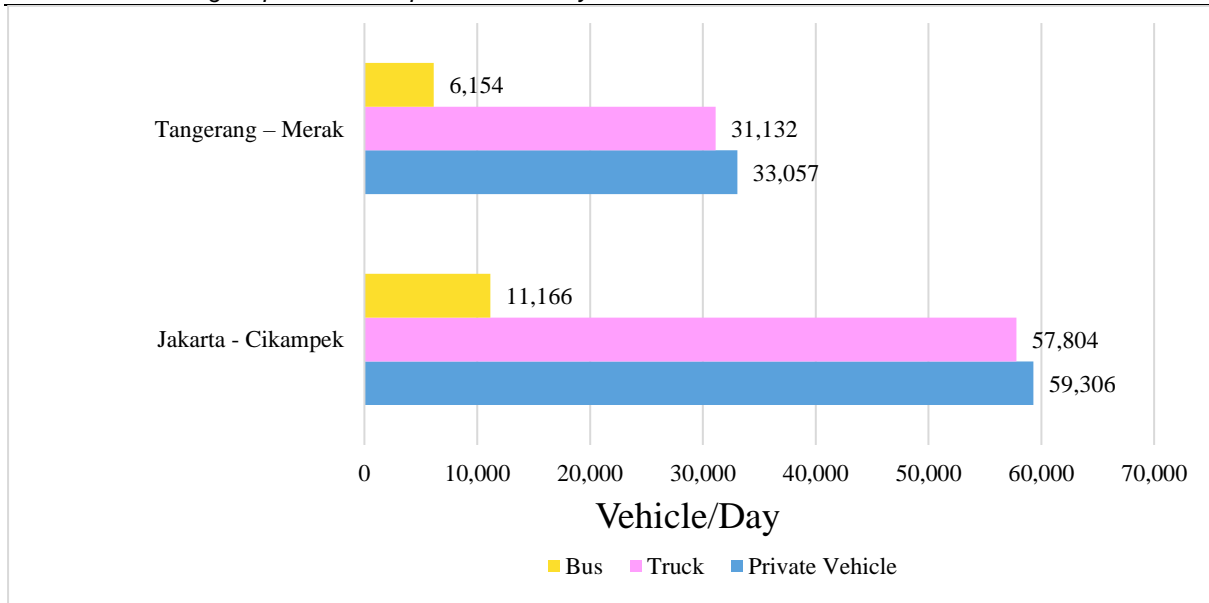
**Table 34. No. of Sample for Direct Interview**

Toll Road	Location	Direction	No. of Sample		
			Car & Taxi	Pick-Up & Bus	Bus
Jakarta - Cikampek	Rest Area KM 39	To Cikampek	87	701	99
	Rest Area KM 42	To JABODETABEK	4	377	34
Tangerang-Merak	Rest Area KM 43	To Merak	83	350	114
	Rest Area KM 45	To JABODETABEK	150	309	141
			324	1,737	388

Source: JUTPI 2

**e. Traffic Count Survey**

The traffic count survey data collected data for 24 hours as designated by each direction in the entrance / exit ramp. There are 12 vehicle classification were surveyed, with the private car being the most modes passing through the toll lane. Based on survey the number of vehicles going in and out from each toll gated form on its direction, traffic volume on the cross-section of the east west border of JABODETABEK is calculated. In terms of mode type, both in Tangerang – Merak and Jakarta – Cikampek has a same composition, private vehicle has the highest volume followed by truck, and bus. The result show that bus mode type is only 20% compare to other vehicles. Traffic volumes by direction are shown by Figure 39 below.



Source: JUTPI 2

**Figure 39. Vehicle Flow on Toll Road at JABODETABEK Border**

#### 5.1.4.4 Vehicle Occupancy

Occupancy survey measures the number of passengers in every vehicle passing by the Survey location. This occupancy survey shall be conducted by the surveyors standing on the roadside to count the number of passengers in every vehicle passing by.

Occupancy level for bus vehicles can be estimated by using percentages, namely:

- Empty
- 25%
- 50%: half full seat
- 75%
- 100%: full seat with no standing passenger
- 125%
- 150%: full seat with half full standing passenger
- 175%
- 200%: full/crowded

Vehicle occupancy for each type of vehicle is shown in Table 35 Vehicle Occupancy for Inter- Regional Toll Road Survey. Average occupancy of each public transport is minibus 9.32-person, medium bus 16.64-person, large bus 29.01-person, mini chartered bus 8.96-person, medium chartered bus 20.42-person and large chartered bus -person 27.84

**Table 35 Two Toll Road Crossing Jabodetabek Borderline Average Vehicle Occupancy Result**

Location Name	Direction	Private Car	Taxi	Pick up	Small Truck	Medium Truck	Large Truck	Minibus (Angkot, Mikrolet)	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus
		<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<b>Tangerang - Merak Toll Road</b>													
GT Cikupa 1	Entrance	1.90	1.86	1.79	1.52	1.54	1.39	9.64	14.65	26.43	-	8.00	39.00
	Exit	1.77	2.00	1.59	1.66	1.49	1.42	-	25.79	38.59	14.12	27.19	36.10
GT Cikupa 2	Entrance	1-direction only											
	Exit	2.05	1.50	1.76	1.49	1.42	1.34	10.49	21.86	42.49	16.33	24.33	32.21
GT Balaraja Barat	Entrance	1.93	1.33	1.72	1.50	1.49	1.39	9.00	16.74	35.55	10.91	36.21	40.87
	Exit	1.81	2.20	1.69	1.45	1.45	1.37	10.00	17.13	27.46	10.68	17.67	28.00
<b>Tangerang Merak Toll Road</b>	<b>Entrance</b>	1.92	1.60	1.76	1.51	1.52	1.39	9.32	15.70	30.99	10.91	22.11	39.94
	<b>Exit</b>	1.88	1.90	1.68	1.53	1.45	1.38	10.25	21.59	36.18	13.71	23.06	32.10
<b>Jakarta – Cikampek Toll Road</b>													
GT Cikarang Utama 1	Entrance	1.94	2.00	1.78	1.56	1.56	1.68	11.00	9.29	8.36	4.70	12.00	9.91
	Exit	1-direction only											
GT Cikarang Utama 2 & 3	Entrance	1-direction only											
	Exit	2.14	1.43	1.69	1.38	1.33	1.32	4.86	21.14	32.48	11.27	19.98	35.56
GT Cikarang Barat 1	Entrance	2.04	-	1.65	1.55	1.38	1.51	6.23	12.14	25.37	0.00	26.00	26.91
	Exit	1-direction only											
GT Cikarang Barat 2	Entrance	1-direction only											
	Exit	1.88	-	1.70	1.49	1.49	1.56	-	21.67	29.54	9.00	21.63	23.70
GT Cibatu	Entrance	1.71	1.00	1.58	1.47	1.49	1.46	11.00	11.00	17.50	6.63	19.29	27.00
	Exit	1.56	1.88	1.54	1.46	1.43	1.50	-	15.25	19.33	7.23	17.69	10.00
GT Cikarang Timur	Entrance	1.83	1.50	1.74	1.51	1.42	1.59	10.50	-	-	10.23	13.28	24.93
	Exit	1.82	3.00	1.67	1.48	1.41	1.58	10.50	13.00	45.00	6.38	22.25	27.77

<b>Location Name</b>	<b>Direction</b>	Private Car	Taxi	Pick up	Small Truck	Medium Truck	Large Truck	Minibus (Angkot, Mikrolet)	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus
		<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
<b>Jakarta Cikampek Toll Road</b>	Entrance	1.88	1.50	1.69	1.52	1.46	1.56	9.68	10.81	17.08	5.39	17.64	22.19
	Exit	1.85	2.10	1.65	1.45	1.42	1.49	7.68	17.77	31.59	8.47	20.39	24.26

Source: JUTPI 2

#### 5.1.4.5 Estimate of Passenger Flow

Traffic volume in cross section of the east and west border of JABODETABEK in the toll road was estimate by adding and subtract the number of vehicles going in and out from each toll gate based on its direction. An estimate of passenger flow was calculated by multiplying the number of vehicles in this two-cross section with the average occupancy of each vehicle type. Table summarizes the passenger volume estimate at each location together with its corresponding vehicular flows. Detailed passenger flow by each vehicle type is presented in Table 36.

**Table 36. Estimate Vehicle and Passenger Flow in JABODETABEK Border**

No.	Location	Vehicle Flow 2-way (veh/day)	Passenger Flow 2-way (pax/day)
1	JABODETABEK Border in Jakarta-Cikampek Toll Road (East Side)	96,137	287,692
2	JABODETABEK Border in Tangerang-Merak Toll Road (West Side)	68,757	183,996

Source: JUTPI 2

**Table 37. Estimate of Passenger Volume**

Location Name	Direction	Private Car	Taxi	Pick up	Small Truck	Medium Truck	Large Truck	Minibus	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus
		2	3	4	5	6	7	8	9	10	11	12	13
JABODETABEK Border in Jakarta-Cikampek Toll Road (East Side)	Outbound	33,937	168	4,894	16,029	5,652	7,132	1,107	3,041	35,714	7,085	3,154	7,085
	Inbound	48,056	320	11,290	11,510	5,368	5,656	229	12,613	48,539	12,304	3,158	3,651
		<b>81,993</b>	<b>488</b>	<b>16,184</b>	<b>27,540</b>	<b>11,020</b>	<b>12,787</b>	<b>1,336</b>	<b>15,654</b>	<b>84,253</b>	<b>19,389</b>	<b>6,312</b>	<b>10,736</b>
JABODETABEK Border in Tangerang-Merak Toll Road (West Side)	Outbound	26,990	45	5,511	6,452	3,526	2,082	103	1,444	15,928	1,921	2,321	13,537
	Inbound	34,643	171	9,229	13,317	6,371	5,055	840	6,089	18,993	4,703	807	3,917
		<b>61,633</b>	<b>216</b>	<b>14,741</b>	<b>19,769</b>	<b>9,897</b>	<b>7,137</b>	<b>943</b>	<b>7,533</b>	<b>34,922</b>	<b>6,623</b>	<b>3,128</b>	<b>17,454</b>

Source: JUTPI 2



#### 5.1.4.6 Traffic Changes by Time

In order to see traffic changes by time, the present traffic is compared with 2002 and 2008 traffic count data contained in previous studies with same or nearby location.

**Table 38. Survey Location Volume Comparison (2002-2017)**

Location Code	Traffic Volume (veh)		
	2002 <sup>(1)</sup>	2008 <sup>(2)</sup>	2017 <sup>(3)</sup>
JABODETABEK Border in Jakarta- Cikampek Toll Road (East Side)	47,708	90,904	96,137
JABODETABEK Border in Tangerang- Merak Toll Road (West Side)	22,389	29,768	68,757

Note: (1) Source: JICA SITRAMP Phase 1 Study  
(2) Source: JICA JUTPI Phase 1 Study  
(3) Source: JICA JUTPI Phase 2 Study

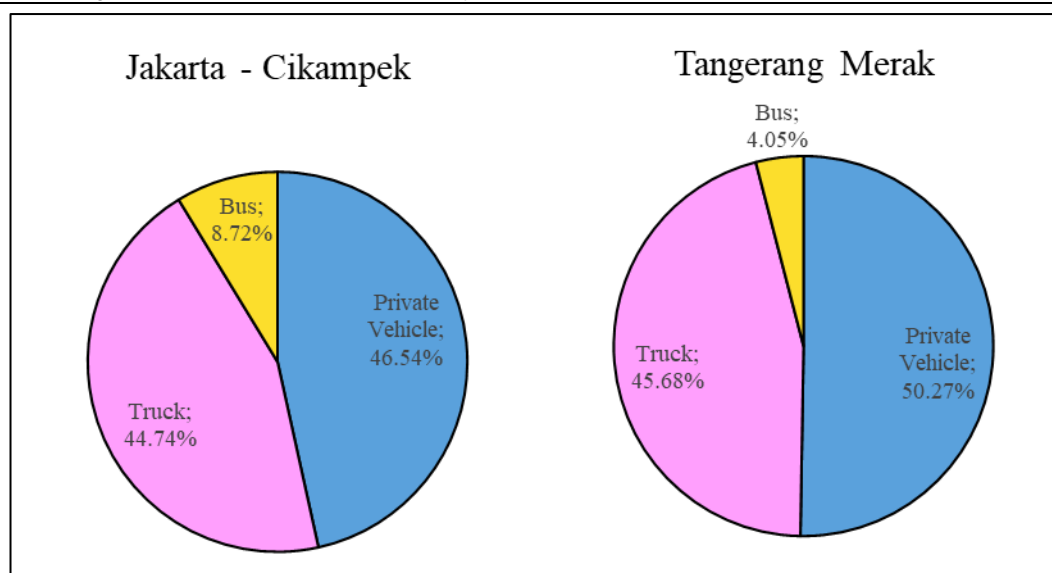
Location Code	Growth (% p.a)	
	2002 - 2008	2008 - 2017
JABODETABEK Border in Jakarta- Cikampek Toll Road (East Side)	11.3%	0.6%
JABODETABEK Border in Tangerang- Merak Toll Road (West Side)	4.9%	9.7%

Source: JUTPI 2

Between 2002 to present, Jakarta – Cikampek Toll Road have a decrease in growth per year that can be caused because it is reaching its capacity. The construction of new elevated tollway in Jakarta-Cikampek toll road support this assumption. Meanwhile Tangerang Merak toll road have an increase in terms of annual growth, better facility and road condition in the toll road make many freight transports using this toll road to access Merak Harbor.

#### 5.1.4.7 Modal Composition

As shown in Figure 40, private vehicle represents the most significant component of the traffic stream followed by truck and bus. Both in Tangerang – Merak and Jakarta – Cikampek has a similar proportion in mode type, the difference only in Tangerang – Merak Toll road, bus mode share is higher, and private car mode share is lesser compare to Jakarta – Cikampek Toll Road.



Source: JUTPI 2

**Figure 40. Average Modal Composition**

#### 5.1.4.8 Peak Profile

The traffic on roads generally has two peak periods, in the morning and in the evening. The morning peak hour in Jakarta Cikampek toll road starts at 9 AM and in Tangerang Merak toll road at 10 AM. The evening peak hour in Jakarta Cikampek toll road starts at 6 PM and in Tangerang Merak toll road at 3 PM. This pattern is constructed because of the truck banned in inner-city toll road and some arterial road in JABODETABEK.

**Table 39. Peak Traffic Profile**

Loc. Code	Road Name	2-ways 24 hr Vol. (PCU/Day)	AM Peak					PM Peak				
			2-ways 24 Peak Vol. (PCU/Day)	Peak Time	Peak Direction	Direction Distribution	Peak Hour Factor	2-ways 24 Peak Vol. (PCU/Day)	Peak Time	Peak Direction	Direction Distribution	Peak Hour Factor
JC	Jakarta - Cikampek Toll Road	114,170	6,952	09:00	Outbound	51 - 49	6.1%	7,714	18:00	Inbound	64-36	6.8
TM	Tangerang - Merak Toll Road	81,425	4,382	10:00	Inbound	60 - 40	5.4%	4,806	15:00	Inbound	60-40	5.9

Source: JUTPI 2

#### 5.1.4.9 OD Table

Tables below show OD Table for vehicles crossing the border in through Jakarta-Cikampek toll road in the West and Tangerang Merak toll road in the East separated by vehicle type.

**Table 40. OD Table for Passenger Car**

Passenger Car (PCU)	JABODETABEK	TOLL West (Merak)	TOLL East (Cikampek)
JABODETABEK	0	16,790	21,123
TOLL West (Merak)	21,035	0	1,437
TOLL East (Cikampek)	28,303	689	0

Source: JUTPI 2

**Table 41. OD Table for Truck**

Truck (PCU)	JABODETABEK	TOLL West (Merak)	TOLL East (Cikampek)
JABODETABEK	0	13,334	33,014
TOLL West (Merak)	18,492	34	3,613
TOLL East (Cikampek)	23,706	2,694	0

Source: JUTPI 2

**Table 42. OD Table for Bus**

Bus (PCU)	JABODETABEK	TOLL West (Merak)	TOLL East (Cikampek)
JABODETABEK	0	1,484	5,160
TOLL West (Merak)	1,496	0	175
TOLL East (Cikampek)	4,180	34	0

Source: JUTPI 2

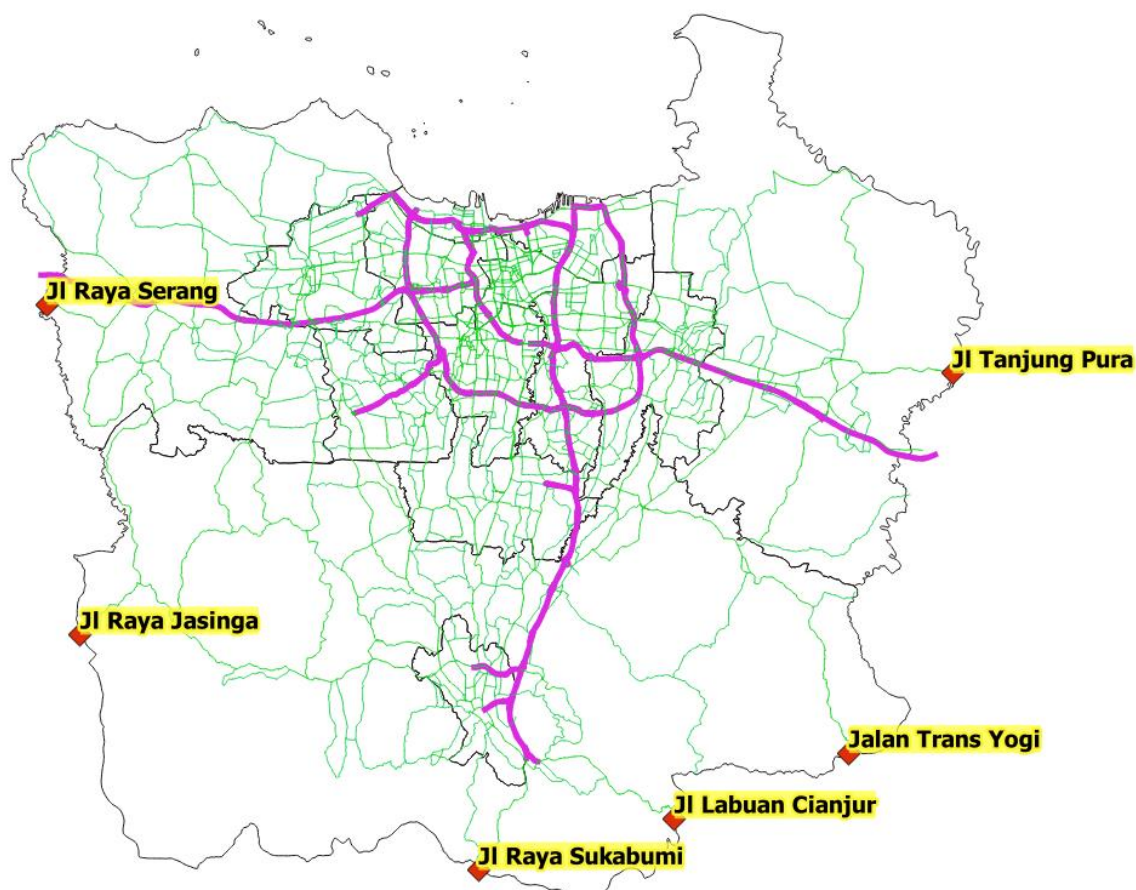
## 5.2 Roadside OD Survey at Ordinary Road

### 5.2.1 Survey Objective

The main objective of Roadside OD Survey at Ordinary Roads is to obtain trip pattern data from respondents who are crossing the boundary of JABODETABEK region using the ordinary road (non-toll road). The obtained informations are useful to identify Origin-Destination patterns in terms of passenger and vehicle movement crossing the JABODETABEK region.

### 5.2.2 Survey Location

The survey was carried out at six locations along the borderline of JABODETABEK as shown in Figure 41 and Table 43. At all of these locations, traffic count was conducted for 24 hours; and OD interview (web-based and direct method) along with vehicle occupancy were conducted for 17 hours.



Source: JUTPI 2

Figure 41 Roadside OD Survey Location at Ordinary Road

Table 43 Locations and Survey Type

No	Road Name	No. of Lanes	O-D Interview		TC	VO	Coordinates	
			Direct	Web-Based			Latitude	Longitude
1	Raya Serang	2	√	√	√	√	6°12'28.3"S	106°22'32.0"E
2	Raya Jasinga	2	√	√	√	√	6°31'53.70"S	106°24'27.86"E
3	Raya Sukabumi	2	√	√	√	√	6°45'45.80"S	106°48'5.83"E
4	Labuan Cianjur	2	√	√	√	√	6°42'40.43"S	106°59'40.18"E
5	TransYogi	2	√	√	√	√	6°38'42.2"S	107°09'57.4"E
6	Tanjung Pura	4	√	√	√	√	6°16'11.0"S	107°15'54.0"E

Source: JUTPI 2

### 5.2.3 Survey Method

#### a. Survey Tasks and Items

##### 1. OD Interview (Direct and by Web-Based Method)

This survey was carried out by direction, i.e., inbound (to JABODETABEK) and outbound (from JABODETABEK). There were two types of interview method for that was conducted in parallel, namely:

- **Direct Interview:** The direct interview was conducted at the roadside with assistance from local transportation agency and local traffic police officers to

pull over the target vehicles to designated location. Then, the surveyor conducted interview utilizing paper-based survey form. The number of the interview targeted 20% of total vehicles; except for motorcycle which was 10% of total motorcycle passing through.

- **Web-Based Method:** OD interview by web-based method was applied to vehicles in case that could not be pulled over for direct interview due to the absence of traffic officers or that they were forming queue which might cause traffic congestion. Quick Response Code (QR-code) and Uniform Resource Locator (URL) that enabled access to online survey form were provided. QR-code and URL were uniquely generated by location, direction, hour, and representative vehicle classification, and printed on flyers. Four different sets of flyers (for motorcycle, passenger cars, buses, and trucks) were printed with QR-code and URL designated for each hour and distributed to vehicles (one flyer for each vehicle) excluding those which had been direct-interviewed. In addition, incentive in the form of mobile phone credit was provided by lottery for the respondents who completed the online survey form in order to increase the response rate.

## 2. Traffic Count

The survey method of traffic count is very simple. Vehicle that passed through the survey location was counted by type of vehicle and direction. The count was conducted by period of time; every 15-minute period over survey duration.

## 3. Occupancy Survey

Occupancy survey measures the number of passengers in every vehicle passing by the survey location. Vehicle occupancy survey was utilized for identifying high demand corridors and corridor throughput of passengers. Vehicle occupancy was observed targeting the same traffic direction as the traffic count and was conducted for every hour during the survey duration until one of the following requirements was fulfilled:

- 30 vehicles per vehicle type per direction was observed, or
- 20 minutes of observation was passed per direction and per hour.

### b. Vehicle Classification

In conducting the survey, vehicle type was classified into 15 vehicle types, as follow:

- Motorcycle
- Car
- Taxi
- Pick Up
- Small Truck 2 Axle
- Medium Truck 3 Axle
- Large Truck >3 Axle
- Articulated Truck
- Truck Trailer
- Minibus (Angkot, Mikrolet)
- Medium Bus
- Large Bus
- Mini Chartered Bus
- Medium Chartered Bus
- Large Chartered Bus

### c. Survey day and duration

The surveys at each location were conducted on weekdays excluding Monday and Friday (Tuesday, Wednesday or Thursday). OD interview and vehicle occupancy were conducted for 17 hours (05.00 – 22.00). Traffic count was conducted for 24 hours (05.00

– 05.00).

**d. Survey Forms**

There are 2 type of survey form for OD Interview: paper-based and web-based. The survey form either for direct interview or the web-based method contains the following items:

- Introduction (for web-based method only)
  - Brief explanation about the Survey
- Vehicle information
  - Motorcycle
  - Private Car
  - Taxi
  - Minibus (angkot, mikrolet)
  - Medium Bus
  - Large Bus
  - Large Chartered Bus (Community, Company, School, and Rental Buses)
  - Medium Chartered Bus (Community, Company, School, and Rental Buses)
  - Small Chartered Bus (Community, Company, School, and Rental Buses)
  - Pick-up, Box
  - Small Truck (2-axle)
  - Medium Truck (3-axle)
  - Large Truck (>3-axle)
  - Articulated Truck
  - Truck Trailer
  - Number of occupants
  - Production Year
- Cargo loading ratio and commodity (only for trucks)
  - Empty
  - Less than half
  - Half
  - More than half
  - Full
- Commodity name (only for trucks)
- Origin and Destination (if outside JABODETABEK, city/regency and province only)
  - Land mark/ Nearest Building name
  - Road Name
  - Sub-district
  - District

- City/Regency
- Province
- Home or not
- Trip Purposes (Going to / Returning from)
  - Work
  - Business
  - Academic/study
  - Private Business
  - Family Business
  - Leisure/hobby
  - Others
- Personal Information (for web-based method only)
  - Mobile Phone Number (to contact for a prize or for further cooperation)
  - Willingness for further cooperation (Activity-Travel Diary Survey)

JABODETABEK Urban Transportation Policy Integration Project Phase 2 in the Republic of Indonesia  
Annex 05: Working Paper on Transportation Surveys



JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION Phase 2  
CORDONE LINE - Roadside OD Survey at Ordinary Roads



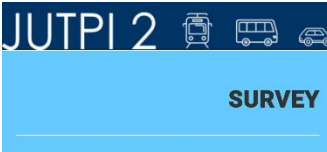
Lokasi / Kode :  a) /  b) Supervisor :  e)  
Arah : dari  c) ke  d) Surveyor :  f)  
Tanggal (dd/mm/yy):  /  / 2018 g) Jam :  :  h) Shift :  i) 1. (05.00 - 13.30) 2. (13.30 - 22.00)


INFO	JENIS KENDARAAN (01)	VOLUME MUATAN (03)	ASAL/TUJUAN PERJALANAN	OCCUPANCY PENUMPANG BUS (04)	MAKSUD PERJALANAN (02)
	01. Sepeda Motor 02. Mobil Pribadi 03. Taxi 04. Pickup, Box 05. Truck Kecil (2 AS) 06. Truck Sedang (3 AS) 07. Truck Besar (> 3 AS) 08. Truck Gandeng 09. Truck Trailer 10. Bus Kecil (Angkot) 11. Bus Sedang 12. Bus Besar 13. Bus Kecil (Chartered) 14. Bus Sedang (Chartered) 15. Bus Besar (Chartered)	01. Penuh terisi (1) 02. Hampir penuh (3/4) 03. Setengah terisi (1/2) 04. Hampir kosong (1/4) 05. Kosong (0)	A. Nama Jalan B. Kelurahan C. Kecamatan D. Kota/Kabupaten E. Bangunan terkenal (Landmark)	01. Kosong 02. 25% kursi terisi 03. 50% kursi terisi 04. 75% kursi terisi 05. 100% kursi terisi 06. 125% kapasitas terisi 07. 150% kapasitas terisi 08. 175% kapasitas terisi 09. 200% kapasitas terisi	Pergi untuk ..... Pulang dari ..... 01. Bekerja 02. Bisnis 03. Sekolah 04. Urusan Pribadi 05. Urusan Keluarga 06. Belanja/Rekreasi/Pariwisata 07. Bekerja 08. Bisnis 09. Sekolah 10. Urusan Pribadi 11. Urusan Keluarga 12. Belanja/Rekreasi/Pariwisata
1 WAKTU INTERVIEW : <input type="text"/> : <input type="text"/> j) (24 Jam format) JENIS KENDARAAN : <input type="text"/> k) PRODUKSI TAHUN : <input type="text"/> l) JUMLAH PENUMPANG : <input type="text"/> m) JUMLAH PENUMPANG BUS : <input type="text"/> n) Khusus untuk angkutan barang Volume Muatan : <input type="text"/> o) Nama Barang : <input type="text"/>	A. <input type="text"/> p) Nama jalan B. <input type="text"/> q) Kelurahan C. <input type="text"/> r) Kecamatan D. <input type="text"/> s) Kota/Kabupaten E. <input type="text"/> t) Bangunan terkenal/Landmark Apakah ASAL Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> u) 1. Ya 2. Tidak	A. <input type="text"/> v) Nama jalan B. <input type="text"/> w) Kelurahan C. <input type="text"/> x) Kecamatan D. <input type="text"/> y) Kota/Kabupaten E. <input type="text"/> z) Bangunan terkenal/Landmark Apakah TUJUAN Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> aa) 1. Ya 2. Tidak	Maksud Perjalanan : <input type="text"/> ab) Lain-lain, Sebutkan : <input type="text"/> ac)		
2 WAKTU INTERVIEW : <input type="text"/> : <input type="text"/> j) (24 Jam format) JENIS KENDARAAN : <input type="text"/> k) PRODUKSI TAHUN : <input type="text"/> l) JUMLAH PENUMPANG : <input type="text"/> m) JUMLAH PENUMPANG BUS : <input type="text"/> n) Khusus untuk angkutan barang Volume Muatan : <input type="text"/> o) Nama Barang : <input type="text"/>	A. <input type="text"/> p) Nama jalan B. <input type="text"/> q) Kelurahan C. <input type="text"/> r) Kecamatan D. <input type="text"/> s) Kota/Kabupaten E. <input type="text"/> t) Bangunan terkenal/Landmark Apakah ASAL Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> u) 1. Ya 2. Tidak	A. <input type="text"/> v) Nama jalan B. <input type="text"/> w) Kelurahan C. <input type="text"/> x) Kecamatan D. <input type="text"/> y) Kota/Kabupaten E. <input type="text"/> z) Bangunan terkenal/Landmark Apakah TUJUAN Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> aa) 1. Ya 2. Tidak	Maksud Perjalanan : <input type="text"/> ab) Lain-lain, Sebutkan : <input type="text"/> ac)		
3 WAKTU INTERVIEW : <input type="text"/> : <input type="text"/> j) (24 Jam format) JENIS KENDARAAN : <input type="text"/> k) PRODUKSI TAHUN : <input type="text"/> l) JUMLAH PENUMPANG : <input type="text"/> m) JUMLAH PENUMPANG BUS : <input type="text"/> n) Khusus untuk angkutan barang Volume Muatan : <input type="text"/> o) Nama Barang : <input type="text"/>	A. <input type="text"/> p) Nama jalan B. <input type="text"/> q) Kelurahan C. <input type="text"/> r) Kecamatan D. <input type="text"/> s) Kota/Kabupaten E. <input type="text"/> t) Bangunan terkenal/Landmark Apakah ASAL Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> u) 1. Ya 2. Tidak	A. <input type="text"/> v) Nama jalan B. <input type="text"/> w) Kelurahan C. <input type="text"/> x) Kecamatan D. <input type="text"/> y) Kota/Kabupaten E. <input type="text"/> z) Bangunan terkenal/Landmark Apakah TUJUAN Perjalanan ini tempat tinggal Anda? <input type="checkbox"/> aa) 1. Ya 2. Tidak	Maksud Perjalanan : <input type="text"/> ab) Lain-lain, Sebutkan : <input type="text"/> ac)		

Source: JUTPI 2

Figure 42 Road Side Interview Survey Paper-based Form








KEMENTERIAN KOORDINATOR  
BIDANG PEREKONOMIAN  
REPUBLIK INDONESIA

**OD INTERVIEW SURVEY - CORDON LINE  
- RSI at Ordinary Roads -  
JABODETABEK URBAN TRANSPORTATION POLICY  
INTEGRATION  
JULY 2018**



Step 1  
PENDAHULUAN

Step 2  
INFORMASI KENDARAAN

Step 3a  
ASAL PERJALANAN

Step 3b  
TUJUAN PERJALANAN

Step 4  
TUJUAN TRIP

Step 5  
AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN

Previous **Next**

### Step 2 INFORMASI KENDARAAN

Mohon pilih jenis kendaraan anda :

Klik disini ...

Mohon sebutkan jumlah penumpang dalam kendaraan :

Numbers 1 - 10

Mohon sebutkan tahun produksi kendaraan anda :

YYYY

Pada pukul berapa anda menerima selebaran survey :

hh:mm

Previous Next

### Step 3a ASAL PERJALANAN

ASAL PERJALANAN

Sebutkan Provinsi asal perjalanan anda ?

Klik disini ...

Sebutkan Kota/Kabupaten asal perjalanan anda ?

Klik disini .....

Sebutkan Kecamatan asal perjalanan anda ?

Klik disini ...

Sebutkan Kelurahan asal perjalanan anda ?

Klik disini ...

Jika anda tidak mengetahui nama *Kelurahan* anda, mohon berikan detail lainnya mengenai lokasi dengan mengisi 2 kotak isian di bawah ini.

Sebutkan Nama Jalan asal perjalanan anda ?

Sebutkan penanda lokasi atau gedung di sekitar perjalanan anda

Apakah asal perjalanan anda sama dengan kediaman anda ?

Yes  
 No

Previous Next

### Step 3b TUJUAN PERJALANAN

TUJUAN

Sebutkan Provinsi tujuan perjalanan anda ?

Klik disini ...

Sebutkan Kota/Kabupaten tujuan perjalanan anda ?

Klik disini .....

Sebutkan Kecamatan tujuan perjalanan anda ?

Klik disini ...

Sebutkan Kelurahan tujuan perjalanan anda ?

Klik disini ...

Jika anda tidak mengetahui nama *Kelurahan* anda, mohon berikan detail lainnya mengenai lokasi dengan mengisi 2 kotak isian di bawah ini.

Sebutkan Nama Jalan tujuan perjalanan anda ?

Sebutkan penanda lokasi atau gedung di sekitar tujuan perjalanan anda

Apakah tujuan perjalanan anda sama dengan kediaman anda ? ?

Yes  
 No

Previous **Next**

### Step 4 TUJUAN TRIP

Mohon sebutkan tujuan perjalanan anda :

Pergi ke ...  
 Kembali dari...

Klik disini ...

Previous **Next**

---

### Step 5 AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN

AJAKAN UNTUK MENGIKUTI SURVEY AKTIVITAS HARIAN

Terima kasih telah menyelesaikan survei asal tujuan ini, respon anda turut berkontribusi demi sistem dan tata transportasi yang lebih baik di masa yang akan datang. Kami juga meminta kerja sama Bapak/Ibu dan saudara/i untuk kembali berpartisipasi dalam survei selanjutnya yang akan dilakukan secara online dengan mengunjungi website kami di [www.jutpi.id](http://www.jutpi.id) dan mendaftar pada survei aktivitas harian (Activity-Travel Diary Survey).

Selesaikan Survey

Previous **Next**

Source: JUTPI 2

Figure 43 Web-based Survey Form

## 5.2.4 Survey Result and Major Finding

### 5.2.4.1 Data Processing

Collected data was inputted and validated to develop database of the survey.

- Data Input

The Sub-Consultant prepare the MS Excel for input the survey data.

- Editing and Zone Coding

Collected data was verified by the Sub-Consultant. After collecting the accomplished survey forms, the Sub-Consultant data coding staffs complete the zone coding of all written addresses in accordance with the zone code list provided by the Consultant. In case only building name, or landmark is written without mentioning full address, the Data Coding Staffs are required to identify the location and complete the quartier-based zone code entry accordingly.

- Data Error Checking

Range and logical error of the survey was checked and removed. Allowable range of data and items for logical checking was provided by the Consultant and the Sub Consultant develop the error check program in accordance with the instruction to be provided by the Consultant. The Sub Consultant should verify and correct the data if needed.

### 5.2.4.2 Survey Preparation

Prior to the survey, the following preparation activities were performed:

- Coordination with the local authorities

In order to facilitate the implementation of actual field survey, the consultant coordinate with local authorities like local traffic police and transportation agency. Local authorities support the Sub-consultant to conduct the Survey mainly to stop the vehicle so that the surveyor can interview the respondent.

- Site Visit

In order to familiarize the characteristic of survey location and to prepare survey implementation plan, site visit was conducted.

### 5.2.4.3 Actual Survey Schedule

Actual Survey schedule for each location shown in table below:

**Table 44 Actual Survey Dates**

No	Road Name	Survey Date
1	Jalan Raya Serang	Tuesday, 25 Sept 2018
2	Jalan Raya Jasinga	Tuesday, 4 Sept 2018
3	Jalan Raya Sukabumi	Thursday, 6 Sept 2018
4	Jalan Labuan Cianjur	Tuesday, 18 Sept 2018
5	Jalan TransYogi	Tuesday, 18 Sept 2018
6	Jalan Tanjung Pura	Thursday, 20 Sept 2018

Source: JUTPI 2

#### 5.2.4.4 Survey Activity

- OD Interview Survey

- Direct Interview Survey

In carrying out road side interview survey, many of the officers from formal institution were involved. Officer tasks were to stop the traffic so the surveyor could conduct direct interview and the deliver the flyers. Officers that were involved were from traffic police and from transportation agency.

Sample ratio of number of respondents from direct interview compared with TC result can be seen in Table 45 below. Average sample rate for direct interview survey is around 6.2 %.

Some issues for not achieving the target sample ratio are:

- The number of surveyors to conduct direct interview not balance with the high traffic flow.
- Not enough area for the respondent vehicle to stop that limit the number of respondents to interview.
- Local authorities' suggestion to stop the survey for some time because of traffic/safety reason.

**Table 45 Sample Ratio for Direct Interview OD Survey**

LOCATION CODE	LOCATION	DIR.	INFO	Motorcycle	Car & Taxi	Pick-Up & Bus	Bus
OD 1	Jl. Raya Serang	A	TC	14,168	1,745	3,625	1,243
			Sample	770	321	641	172
			Ratio	5.4%	18.4%	17.7%	13.8%
		B	TC	15,708	1,855	4,096	1,480
			Sample	738	346	775	194
			Ratio	4.7%	18.7%	18.9%	13.1%
OD 2	Jl. Jasinga	A	TC	1,329	322	348	230
			Sample	229	150	197	59
			Ratio	17.2%	46.6%	56.6%	25.7%
		B	TC	1,437	357	332	259
			Sample	390	194	192	118
			Ratio	27.1%	54.3%	57.8%	45.6%
OD 3	Jl.Sukabumi	A	TC	21,175	4,550	3,634	2,969
			Sample	539	352	525	237
			Ratio	2.5%	7.7%	14.4%	8.0%
		B	TC	20,047	3,460	3,400	2,387
			Sample	499	273	623	198
			Ratio	2.5%	7.9%	18.3%	8.3%
OD 4	Jl. Labuan Cianjur	A	TC	6,119	4,285	1,549	536
			Sample	451	647	338	123
			Ratio	7.4%	15.1%	21.8%	22.9%
		B	TC	6,717	5,316	1,729	557

LOCATION CODE	LOCATION	DIR.	INFO	Motorcycle	Car & Taxi	Pick-Up & Bus	Bus
			Sample	631	887	448	137
			Ratio	9.4%	16.7%	25.9%	24.6%
OD 5	Jl. Trans Yogi	A	TC	2,153	458	1,462	98
			Sample	297	139	523	55
			Ratio	13.8%	30.3%	35.8%	56.1%
		B	TC	2,228	547	1,441	103
			Sample	497	210	653	64
			Ratio	22.3%	38.4%	45.3%	62.1%
OD 6	Jl. Tanjung Pura*	A	TC	29,193	5,769	5,534	713
			Sample	355	263	348	31
			Ratio	1.2%	4.6%	6.3%	4.3%
		B	TC	27,253	4,623	4,859	689
			Sample	391	328	331	29
			Ratio	1.4%	7.1%	6.8%	4.2%

\*OD Interview Survey at Location 6 (Jl Tanjung Pura) had to be stopped at 4 PM because of the traffic incident.

Source: JUTPI 2

#### ➤ Web-based Interview Survey

Flyers was distributed in survey location on the same time of the direct interview survey for any vehicle that was not stopped. Due to the low response rate from the OD Interview Survey in 4 locations, additional survey was held but only for distributing flyers in Gas Station or at traffic light near survey location. Table 46 below shown additional survey schedule for re-distributing the flyers in the 4 locations

**Table 46. Additional Schedule for Re-Distributing Flyers**

No	Location Name	Location Code	October												
			8	9	10	11	15	16	17	18	22	23	24		
1	Jl. Raya Serang	OD 1													
2	Jl. Raya Sukabumi	OD 2													
3	Jl. Labuan Cianjur	OD 3													
4	Jl. Tanjung Pura	OD 4													

Source: JUTPI 2

Table 47 below shown the total numbers of flyers distributed for the OD Interview Survey including the additional survey day for re-distributing the flyers together with the number of respondents fill in the online survey form. Sample ratio for web-based interview survey is around 0.38 %. Low sample ratio was caused by several factors such as:

- Respondent not familiar with web-based survey where they must scan the QR-Code or put the URL in the browser.
- Respondent do not have much time to spend to fill in the survey form.
- Not enough introduction/ information to inform the respondent about the survey.

**Table 47 Sample Ratio for Web-based Interview Survey**

LOCATION CODE	LOCATION	DIR.	INFO	Motorcycle	Car & Taxi	Pick-Up & Bus	Bus
OD 1	Jl. Raya Serang	A	Flyers	6,605	1,203	2,107	1,091
			Sample	27	3	1	3
			Ratio	0.4%	0.2%	0.0%	0.3%
		B	Flyers	6,062	1,543	3,378	2,283
			Sample	24		2	4
			Ratio	0.4%	0.0%	0.1%	0.2%
OD 2	Jl. Jasinga	A	Flyers	561	163	120	106
			Sample	6			1
			Ratio	1.1%	0.0%	0.0%	0.9%
		B	Flyers	693	122	94	96
			Sample	1	1		
			Ratio	0.1%	0.8%	0.0%	0.0%
OD 3	Jl.Sukabumi	A	Flyers	9,415	1,675	2,732	1,311
			Sample	45	6	1	2
			Ratio	0.5%	0.4%	0.0%	0.2%
		B	Flyers	7,153	2,542	2,393	2,680
			Sample	58	13	5	10
			Ratio	0.8%	0.5%	0.2%	0.4%
OD 4	Jl. Labuan Cianjur	A	Flyers	3,531	2,497	1,902	900
			Sample	19	11	2	1
			Ratio	0.5%	0.4%	0.1%	0.1%
		B	Flyers	3,813	2,408	1,093	928
			Sample	25	10	3	8
			Ratio	0.7%	0.4%	0.3%	0.9%
OD 5	Jl. Trans Yogi	A	Flyers	465	155	520	52
			Sample	6			3
			Ratio	1.3%	0.0%	0.0%	5.8%
		B	Flyers	653	153	638	39
			Sample	3			
			Ratio	0.5%	0.0%	0.0%	0.0%
OD 6	Jl. Tanjung Pura	A	Flyers	7,639	2,807	3,364	1,070
			Sample	21	8		7
			Ratio	0.3%	0.3%	0.0%	0.7%
		B	Flyers	19,323	5,052	2,911	1,200
			Sample	95	11	2	4
			Ratio	0.5%	0.2%	0.1%	0.3%

Source: JUTPI 2

- Traffic Count Survey

Traffic count survey data was collected for 24 hours as designated by the survey location. Traffic volume sort by rank for traffic volume presented in Table 48.

Highest traffic volume is in Jl Tanjung Pura that act as main access for arterial road to go in and out of JABODETABEK in the East, followed by Jl Sukabumi in the South, and Jl Raya Serang in the West.

Traffic count survey data is collected for 24 hours in each location. Traffic volume sorted by rank is presented in Table 47. The highest traffic volume is in Jl Tanjung Pura that serves as an arterial road to go in and out of JABODETABEK in the East, followed by Jl Sukabumi in the south, and Jl Raya Serang in the west. In detail, traffic volume for each location are presented in Table 49.

**Table 48 Traffic Volume by Rank**

Volume Rank	Location Code	Street Name	Motorcycle	Car	Bus	Truck	Total
1	OD 6	Jl Tanjung Pura	62,491	12,581	1,952	15,414	92,438
2	OD 3	Jl Sukabumi	43,136	9,346	5,761	9,869	68,112
3	OD 1	Jl Raya Serang	34,020	4,098	2,952	10,435	51,505
4	OD 4	Jl Labuan Cianjur	14,099	11,460	1,119	4,378	31,056
5	OD 5	Jl Trans Yogi	4,693	1,220	243	3,896	10,052
6	OD 2	Jl Jasinga	2,896	769	520	815	5,000

Source: JUTPI 2

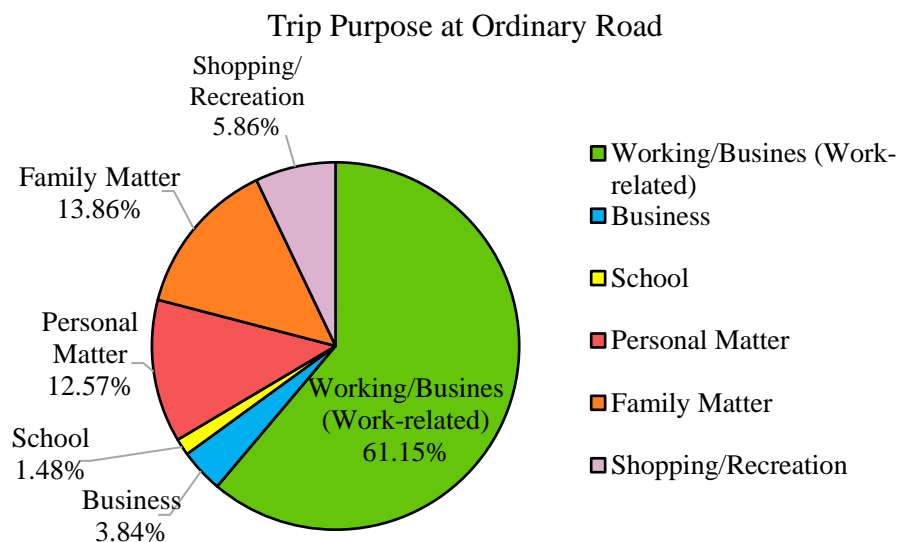
**Table 49 Summary of the Traffic Count Survey Result**

LOCATION NAME	From	To	Code	Motorcycle	Car	Taxi	Pick up	Small Truck 2-Axle	Medium Truck 3-Axle	Large Truck >3-Axle	Articulate d Truck	Truck Trailer	Minibus (Angkot, Mikrolet)	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Jl. Raya Serang	Tangerang	Serang	A	17699	2106	1	785	2986	845	51	29	486	1447	81	40	1	8	13
	Serang	Tangerang	B	16321	1981	10	619	3062	1054	131	39	348	1223	74	55	0	5	5
	Total			34020	4087	11	1404	6048	1899	182	68	834	2670	155	95	1	13	18
	Composition			66.1%	7.9%	0.0%	2.7%	11.7%	3.7%	0.4%	0.1%	1.6%	5.2%	0.3%	0.2%	0.0%	0.0%	0.0%
Jl. Jasinga	Bogor	Lebak	A	1503	403	1	202	186	21	0	0	0	262	5	0	1	0	3
	Lebak	Bogor	B	1393	365	0	209	171	26	0	0	0	259	6	0	0	0	0
	Total			2896	768	1	411	357	47	0	0	0	521	11	0	1	0	3
	Composition			57.7%	15.3%	0.0%	8.2%	7.1%	0.9%	0.0%	0.0%	0.0%	10.4%	0.2%	0.0%	0.0%	0.0%	0.0%
Jl. Raya Sukabumi Bogor	Bogor	Sukabumi	A	21145	4122	6	1359	2290	830	205	4	184	2430	89	71	2	14	29
	Sukabumi	Bogor	B	21991	5218	0	1661	2274	913	113	19	59	2975	58	59	6	11	17
	Total			43136	9340	6	3020	4564	1743	318	23	243	5405	147	130	8	25	46
	Composition			63.3%	13.7%	0.0%	4.4%	6.7%	2.6%	0.5%	0.0%	0.4%	7.9%	0.2%	0.2%	0.0%	0.0%	0.1%
Jl. Labuan Cianjur	Bogor	Cianjur	A	7328	6218	0	1470	858	0	0	0	0	536	0	0	35	1	0
	Cianjur	Bogor	B	6771	5241	1	1242	808	0	0	0	0	499	19	5	16	7	1
	Total			14099	11459	1	2712	1666	0	0	0	0	1035	19	5	51	8	1
	Composition			45.4%	36.9%	0.0%	8.7%	5.4%	0.0%	0.0%	0.0%	0.0%	3.3%	0.1%	0.0%	0.2%	0.0%	0.0%
Jl. Trans Yogi	Bogor	Cianjur	A	2386	642	0	420	1205	240	13	0	0	23	48	31	1	10	9
	Cianjur	Bogor	B	2307	578	0	373	1259	358	24	3	4	26	52	35	4	0	4
	Total			4693	1220	0	793	2464	598	37	3	4	49	100	66	5	10	13
	Composition			46.7%	12.1%	0.0%	7.9%	24.5%	5.9%	0.4%	0.0%	0.0%	0.5%	1.0%	0.7%	0.0%	0.1%	0.1%
Jl. Tanjung Pura	Bekasi	Karawang	A	30802	5972	3	1671	3827	1524	69	26	558	109	234	292	147	64	170
	Karawang	Bekasi	B	31749	6619	0	1538	3882	1900	142	66	404	72	231	472	51	58	86
	Total			62551	12591	3	3209	7709	3424	211	92	962	181	465	764	198	122	256
	Composition			67.4%	13.6%	0.0%	3.5%	8.3%	3.7%	0.2%	0.1%	1.0%	0.2%	0.5%	0.8%	0.2%	0.1%	0.3%

Source: JUTPI 2

### 5.2.4.5 OD Interview Survey

Based on the survey, most of the trip purpose is related to working/business (work-related) with a share of 61.15%. Besides, family matters and personal matters share more than 10% follows by shopping/recreation with 5.86%. Other activities like business and school share less than 4% as shown in below figure.

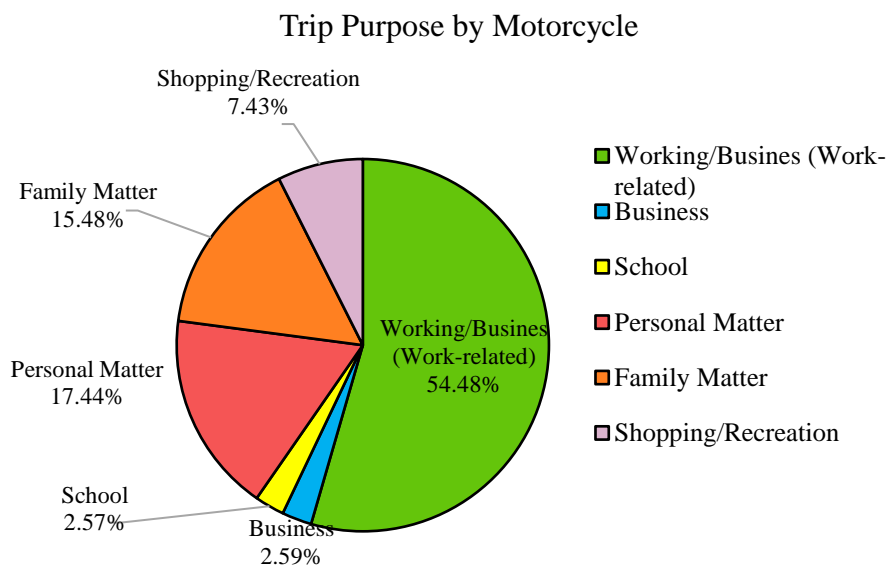


Source: JUTPI 2

**Figure 44 Trip Purpose at Ordinary Survey**

In general, working/business purpose has the largest share in all mode types. The highest share of working/business (work-related) is in truck with a share of 90.79%, followed by motorcycle, bus, and passenger car. Compare to all modes, trip purpose in passenger car seems more proportionally distributed compare to other modes.

Trip purpose by motorcycle can be seen in Figure 45. More than half of motorcycle users are using it for working/business (work-related), followed by personal matter and family matter.

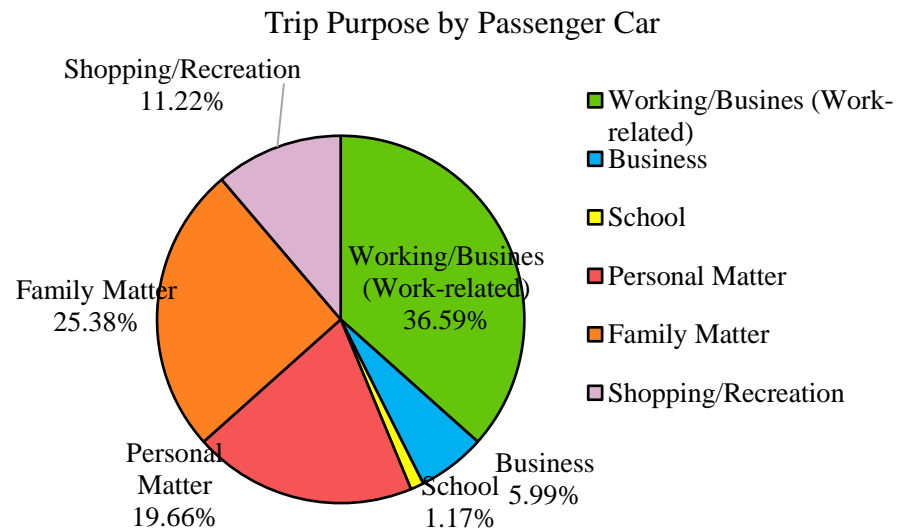


Source: JUTPI 2



**Figure 45 Trip Purpose by Motorcycle at Ordinary Road**

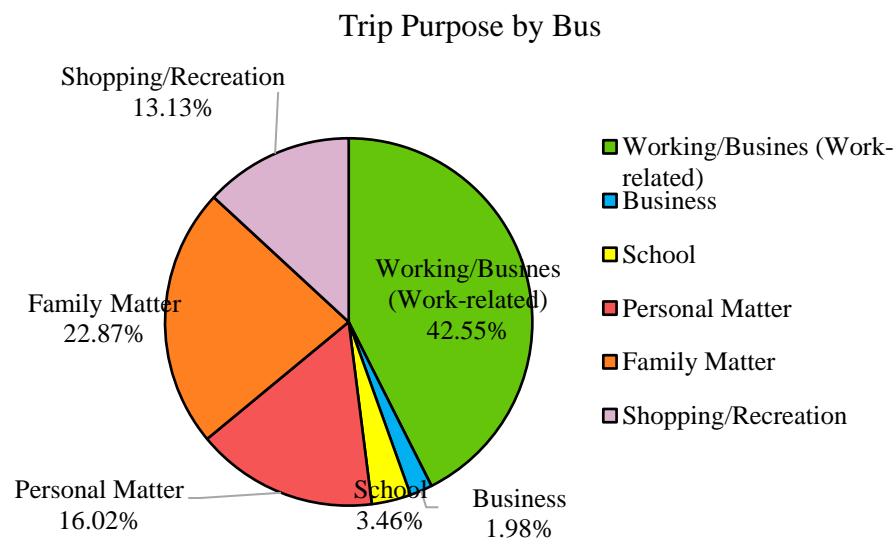
Trip purpose by passenger car is varied and proportionally distributed with working/business shares the highest contribution by 36.59% followed by family matter (25.38%) and personal matter (19.66%). Composition of trip purpose by passenger car is illustrated in the following figure.



Source: JUTPI 2

**Figure 46 Trip Purpose by Passenger Car at Ordinary Road**

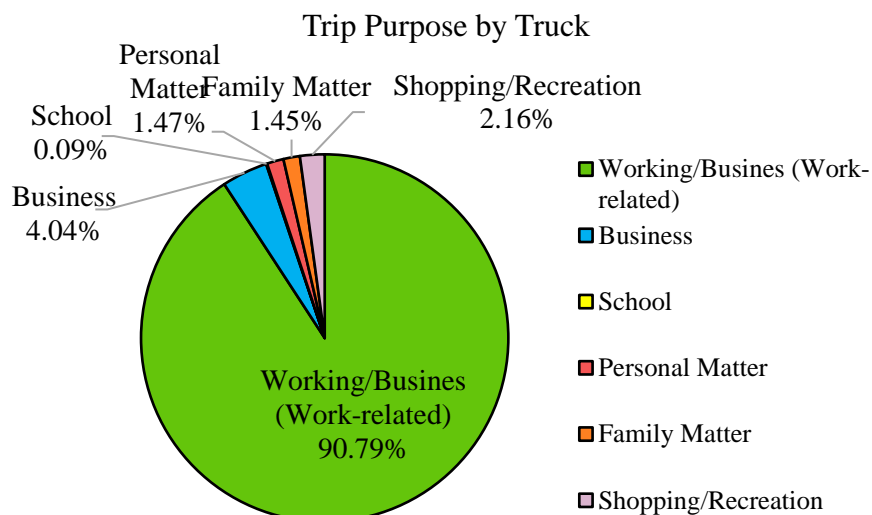
Trip purpose by bus looks evenly distributed in personal matter, family matter, and shopping/recreation despite most of the trip is aimed at working. Other than that, proportion of school and business trip by bus are relatively small.



Source: JUTPI 2

**Figure 47 Trip Purpose by Bus at Ordinary Road**

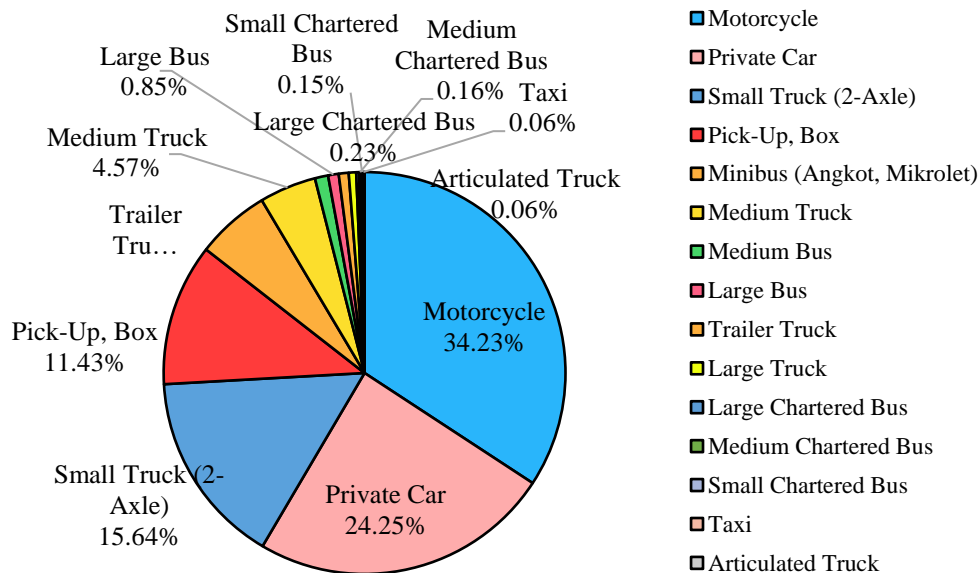
Trip purpose by truck is dominated by working/business (work-related), followed by business and shopping/recreation. Other than work-related purpose, the share is relatively small (less than 5%) as shown in the figure below.



Source: JUTPI 2

**Figure 48 Trip Purpose by Truck at Ordinary Road**

In terms of mode type, motorcycle shares the most proportion in the ordinary road traffic by 34.23%, followed by private car and small truck. The least share comes from taxi and articulated truck. Share of mode can be seen in the figure below.



Source: JUTPI 2

**Figure 49 Mode Share Based on Type on Ordinary Road**

#### 5.2.4.6 Occupancy Survey

Occupancy survey measures the number of passengers in every vehicle passing by the survey location. This occupancy survey was conducted by the surveyors standing on the roadside to count the number of passengers in every vehicle passing by.

Occupancy level for bus vehicles can be estimated by using percentages, namely:

- Empty
- 25%
- 50%: half full seat
- 75%
- 100%: full seat with no standing passenger
- 125%
- 150%: full seat with half full standing passenger
- 175%
- 200%: full/crowded

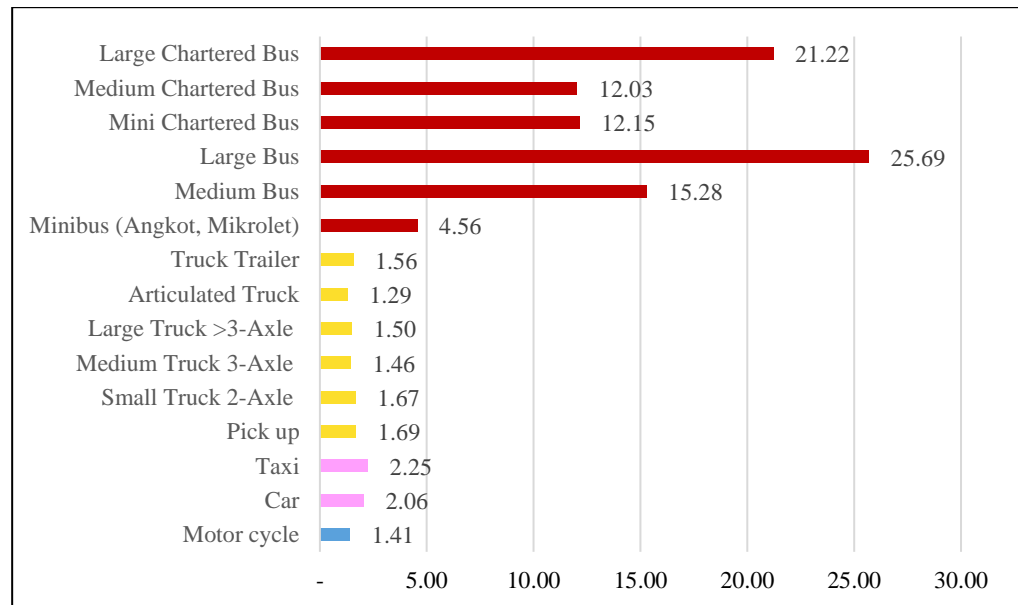
Vehicle occupancy profile for each type of vehicle is shown on Table 50

**Table 50 Vehicle Occupancy**

LOCATION	DIRECTION	Motor cycle	Car	Taxi	Pick up	Small Truck 2-Axle	Medium Truck 3-Axle	Large Truck >3-Axle	Articulated Truck	Truck Trailer	Minibus (Angkot, Mikrolet)	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus
SERANG	A	1.38	2.23	2.00	1.57	1.45	1.46	1.00	2.00	1.37	3.65	8.27	19.22	-	8.00	15.00
	B	1.37	1.45	2.50	1.46	1.56	1.57	1.62	1.50	1.50	3.45	11.29	18.24	-	10.67	10.00
JASINGA	A	1.47	2.85	-	1.84	1.73	1.00	-	-	-	4.04	25.00	-	-	-	-
	B	1.45	2.38	-	1.89	1.76	1.00	-	-	-	3.64	25.25	-	-	-	-
SUKABUMI	A	1.46	2.48	-	1.64	1.63	1.53	1.58	-	1.56	5.83	13.75	23.77	18.00	19.50	33.00
	B	1.37	1.60	-	1.57	1.72	1.79	1.82	-	1.77	4.76	10.41	20.29	11.50	16.00	25.00
LABUAN CIANJUR	A	1.46	2.07	-	1.72	1.62	-	-	-	-	5.90	-	-	12.83	-	-
	B	1.54	2.29	-	1.91	1.91	-	-	-	-	6.92	18.75	45.00	9.33	-	-
TRANS YOGI	A	1.40	2.29	-	1.75	1.57	1.44	1.00	-	-	5.00	16.75	37.67	18.00	-	33.00
	B	1.37	1.77	-	1.73	1.79	1.73	1.57	-	-	4.00	13.00	23.00	14.00	-	25.00
TANJUNG PURA	A	1.29	1.51	-	1.60	1.65	1.55	1.89	0.33	1.65	3.58	14.42	19.82	5.75	7.83	14.33
	B	1.32	1.77	-	1.63	1.62	1.48	1.50	1.33	1.49	3.93	11.19	24.21	7.78	10.20	14.44

Source: JUTPI 2

Based on Figure 50, average vehicle occupancy by type of vehicle is calculated. For the average occupancy among public transport, large bus share the highest occupancy of 26 persons while minibus (angkot, mikrolet) shares the least occupancy with 5 persons. Truck shows average occupancy of less than 2 while passenger car's average occupancy is around 2. For further information of average vehicle occupancy can be seen in the figure below.



Source: JUTPI 2

**Figure 50 Average Vehicle Occupancy at Ordinary Road**

#### 5.2.4.7 Estimation of Passenger Flow

An estimation of passenger flow is calculated by multiplying the number of vehicles with the average occupancy of each vehicle type. Table 51 summarizes the passenger volume estimated at each location together with its corresponding vehicular flows. It is shown that the highest passenger flow per day occurs in Jl. Tanjung Pura followed by Jl. Sukabumi and Jl. Raya Serang. Detailed passenger flow by each vehicle type is presented in Table 52.

**Table 51 Estimate Vehicle and Passenger Flow**

Location Code	Street Name	Vehicle Flow 2-way (veh/day)	Passenger Flow (pax/day)
OD 1	Jl Raya Serang	51,505	83,220
OD 2	Jl Jasinga	5,016	9,965
OD 3	Jl Sukabumi	68,154	130,832
OD 4	Jl Labuan Cianjur	31,056	61,633
OD 5	Jl Trans Yogi	10,055	19,691
OD 6	Jl Tanjung Pura	92,738	157,243

Source: JUTPI 2

**Table 52 Estimate of Passenger Volume**

Location Code	Direction	Motor cycle	Car	Taxi	Pick up	Small Truck 2-Axle	Medium Truck 3-Axle	Large Truck >3-Axle	Articulated Truck	Truck Trailer	Minibus (Angkot, Mikrolet)	Medium Bus	Large Bus	Mini Chartered Bus	Medium Chartered Bus	Large Chartered Bus	Total
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1-15
OD 1	A	24,362	4,705	2	1,235	4,325	1,234	51	58	664	5,283	670	769		64	195	<b>43,617</b>
	B	22,433	2,872	25	902	4,764	1,650	212	59	522	4,223	835	1,003		53	50	<b>39,603</b>
OD 2	A	2,206	1,148		372	323	21				1,059	125					<b>5,254</b>
	B	2,027	869		395	301	26				942	152					<b>4,711</b>
OD 3	A	30,930	10,211		2,233	3,736	1,271	325		286	14,160	1,224	1,688	36	273	957	<b>67,329</b>
	B	30,054	8,349		2,611	3,906	1,637	205		104	14,164	604	1,197	69	176	425	<b>63,503</b>
OD 4	A	10,726	12,851		2,534	1,392					3,161			449			<b>31,113</b>
	B	10,435	11,982		2,378	1,540					3,454	356	225	149			<b>30,520</b>
OD 5	A	3,340	1,469		737	1,890	346	13			115	804	1,168	18		297	<b>10,197</b>
	B	3,170	1,022		647	2,257	619	38			104	676	805	56		100	<b>9,494</b>
OD 6	A	39,680	9,034		2,671	6,301	2,361	130	9	919	390	3,374	5,788	845	501	2,437	<b>74,441</b>
	B	42,021	11,733		2,508	6,306	2,808	213	88	601	283	2,586	11,427	397	592	1,242	<b>82,803</b>
OD 8	A	34,342	144,491	58,258	2,801	4,103	851	203		42	70	4,453	15,369	1,193	516	1,413	<b>268,105</b>
	B	10,139	93,592	25,341	1,880	4,419	586	72		62	327	3,399	16,302	1,614	3,199	3,720	<b>164,653</b>
OD 9	A	48,157	19,798	4,552	786	675	44	18		26	100	180	161	256	765	60	<b>75,577</b>
	B	34,047	19,872	4,736	640	695	16	18		30	1,392	35	92	783	316	140	<b>62,811</b>

Source: JUTPI 2

#### 5.2.4.8 Traffic Changes by Time

In order to see traffic changes by time, the present traffic is compared with 2002 and 2008 traffic count data contained in previous studies with same or nearby location.

**Table 53 Survey Location Volume Comparison 2002 - 2017**

Location Code	Street Name	Traffic Volume		
		2002 <sup>(1)</sup>	2008 <sup>(2)</sup>	2017 <sup>(3)</sup>
OD 1	Jl Raya Serang	15,075	31,853	51,505
OD 2	Jl Jasinga	-	-	5,016
OD 3	Jl Sukabumi	19,571	41,376	68,154
OD 4	Jl Labuan Cianjur	11,468	16,721	31,056
OD 5	Jl Trans Yogi	2,063	14,233	10,055
OD 6	Jl Tanjung Pura	15,372	48,196	92,738

Note: (1) Source: JICA SITRAMP Phase 1 Study

(2) Source: JICA JUTPI Phase 1 Study

(3) Source: JICA JUTPI Phase 2 Study

**Table 54. Survey Location Traffic Growth 2002 - 2017**

Location Code	Street Name	Growth (% p.a)	
		2002 - 2008	2008 - 2017
OD 1	Jl Raya Serang	13.3%	5.5%
OD 2	Jl Jasinga	-	-
OD 3	Jl Sukabumi	13.3%	5.7%
OD 4	Jl Labuan Cianjur	6.5%	7.1%
OD 5	Jl Trans Yogi	38.0%	-3.8%
OD 6	Jl Tanjung Pura	21.0%	7.5%

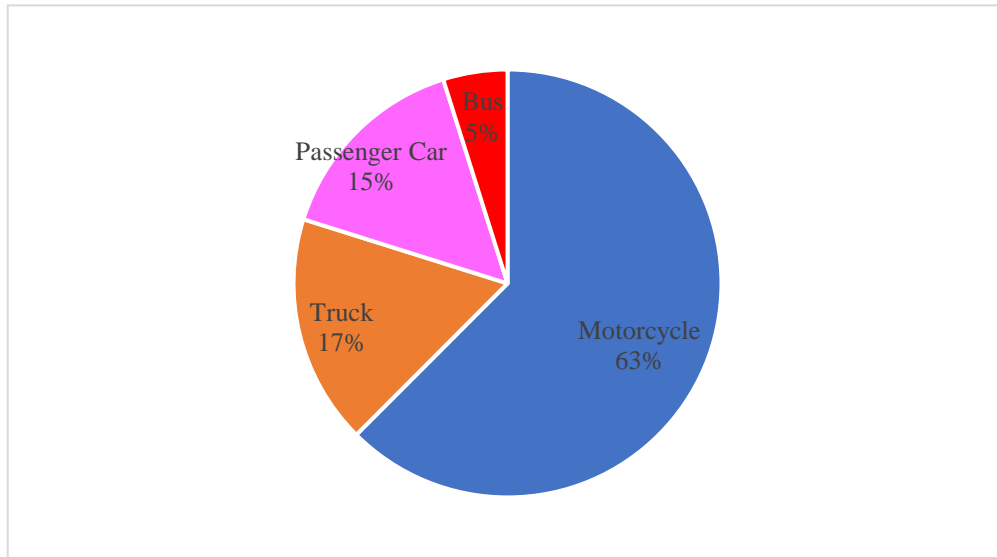
Source: JUTPI 2

Between 2002 to present, traffic on all survey location have a decrease in growth per year and only Jl Trans Yogi have a reduction in traffic volume that mainly affected by the tendency of using toll road to go in/out of JABODETABEK.

#### 5.2.4.9 Modal Composition

Motorcycle represent the largest component of the traffic stream aased on PCU,

accounted for almost half of the share (63%), followed by truck (17%), passenger passenger car (15%), and bus (5%) as shown in Figure 51. This composition is roughly maintained in all survey location.



Source: JUTPI 2

**Figure 51 Average Modal Composition**

#### 5.2.4.10 Peak Profile

The traffic on roads generally has two peak periods, in the morning and in the evening. The morning peak hour mainly are 06:00 – 07:00 (2 locations) and 12:00 – 13:00 (2 locations). In the afternoon, the dominant peak hour is 16:00 – 17:00 (2 locations) and 17:00 – 18:00 (2 locations).

**Table 55. Peak Traffic Profile**

Location Code	Road Name	2-Way 24 hr Vol (PCU/day)	AM Peak					PM Peak				
			2-Way Peak Vol (PCU/hr)	Peak Time	Peak Direction	Directional Distribution	Peak Hour Factor	2-Way Peak Vol (PCU/hr)	Peak Time	Peak Direction	Directional Distribution	Peak Hour Factor
OD-1	Jl. Raya Serang	33304	2231	06:00	Outbond	57-43	6.7%	1941	17:00	Inbond	53-47	5.8%
OD-2	Jl. Jasinga	3812	203	10:00	Outbond	62-38	6.4%	214	16:00	Inbond	53-47	6.7%
OD-3	Jl. Raya Sukabumi Bogor	42059	2746	06:00	Outbond	63-37	6.5%	3010	15:00	Inbond	67-33	7.2%
OD-4	Jl. Labuan Cianjur	21551	1314	12:00	Outbond	67-33	6.1%	1401	16:00	Inbond	56-44	6.5%
OD-5	Jl. Trans Yogi	8578	472	12:00	Outbond	54-46	5.5%	581	14:00	Inbond	52-48	6.8%
OD-6	Jl. Tanjung Pura	56436	3312	07:00	Inbond	52-48	5.9%	3166	17:00	Inbond	52-48	5.6%

Source: JUTPI 2



### 5.2.4.11 OD Table

Tables below show OD Table for vehicles crossing the border in 6 locations separated by vehicle type.

**Table 56 OD Table for Motorcycle**

Motorcycle (Veh)	JABODETABEK	RSI West (Jl. Serang)	RSI South (to Sukabumi)	RSI Southeast (Labuan Cianjur)	RSI Southeast (Transyogi)	RSI East (Tg. Pura)	RSI Southwest (Jasinga)
JABODETABEK	0	17,684	18,050	6,893	2,215	30,710	1,443
RSI West (Jl. Serang)	17,934	29	0	16	0	0	0
RSI South (to Sukabumi)	23,367	0	462	24	0	53	0
RSI Southeast (Labuan Cianjur)	7,422	26	0	552	0	0	0
RSI Southeast (Transyogi)	2,440	0	0	0	5	75	0
RSI East (Tg. Pura)	29,981	6	43	0	63	231	41
RSI Southwest (Jasinga)	1,484	0	16	14	0	25	0

Source: JUTPI 2

**Table 57 OD Table for Passenger Car**

Passenger Car (Veh)	JABODETABEK	RSI West (Jl. Serang)	RSI South (to Sukabumi)	RSI Southeast (Labuan Cianjur)	RSI Southeast (Transyogi)	RSI East (Tg. Pura)	RSI Southwest (Jasinga)
JABODETABEK	0	2,886	6,886	7,294	960	7,658	557
RSI West (Jl. Serang)	2,915	12	95	0	3	65	2
RSI South (to Sukabumi)	3,992	42	46	20	0	10	12
RSI Southeast (Labuan Cianjur)	7,295	33	28	184	0	9	10
RSI Southeast (Transyogi)	956	0	0	0	0	66	0
RSI East (Tg. Pura)	6,340	34	45	0	15	41	37
RSI Southwest (Jasinga)	536	0	51	24	0	9	0

Source: JUTPI 2

**Table 58 OD Table for Truck**

Truck (veh)	JABODETABEK	RSI West (Jl. Serang)	RSI South (to Sukabumi)	RSI Southeast (Labuan Cianjur)	RSI Southeast (Transyogi)	RSI East (Tg. Pura)	RSI Southwest (Jasinga)
JABODETABEK	0	4,124	3,870	944	1,331	5,600	166
RSI West (Jl. Serang)	4,121	16	255	49	20	382	4

Truck (veh)	JABODETABEK	RSI West (Jl. Serang)	RSI South (to Sukabumi)	RSI Southeast (Labuan Cianjur)	RSI Southeast (Transyogi)	RSI East (Tg. Pura)	RSI Southwest (Jasinga)
RSI South (to Sukabumi)	2,489	150	37	7	0	25	20
RSI Southeast (Labuan Cianjur)	909	7	6	5	0	0	0
RSI Southeast (Transyogi)	892	4	0	0	0	39	0
RSI East (Tg. Pura)	3,401	244	84	0	35	0	21
RSI Southwest (Jasinga)	166	0	2	2	0	16	0

Source: JUTPI 2

**Table 59. OD Table for Bus**

Bus (Veh)	JABODETABEK	RSI West (Jl. Serang)	RSI South (to Sukabumi)	RSI Southeast (Labuan Cianjur)	RSI Southeast (Transyogi)	RSI East (Tg. Pura)	RSI Southwest (Jasinga)
JABODETABEK	0	1,559	3,241	533	120	1,016	257
RSI West (Jl. Serang)	1,608	24	0	0	0	0	0
RSI South (to Sukabumi)	1,840	15	0	0	0	0	3
RSI Southeast (Labuan Cianjur)	559	0	0	31	0	0	0
RSI Southeast (Transyogi)	106	0	0	0	0	0	0
RSI East (Tg. Pura)	537	8	74	4	0	0	10
RSI Southwest (Jasinga)	239	0	0	0	0	8	0

Source: JUTPI 2

### 5.3 Railway Passenger OD Interview Survey

#### 5.3.1 Survey Objective

The objective of Railway Passenger OD Interview Survey is to obtain passenger information and trip pattern data from respondents who across the boundary of JABODETABEK region using railway (medium-long distance, local, and commuter line). The obtained information is helpful to identify external OD patterns of JABODETABEK.

### **5.3.2 Survey Location**

Railway Passenger OD Interview Survey was carried out for departing passengers at eleven stations. All stations were surveyed (see Figure 52) based on category of direction and type of railway services, which are:

➤ **East Line**

This line is divided into two categories which applies during survey, medium – long distance railway and local railway. Medium – long distance railway serves cross-border of eastbound of JABODETABEK for both medium distance (i.e. within West Java but outside JABODETABEK) and long distance (i.e.: Central Java, Yogyakarta, and East Java). Surveyed stations are Pasar Senen, Gambir, and Bekasi Stations.

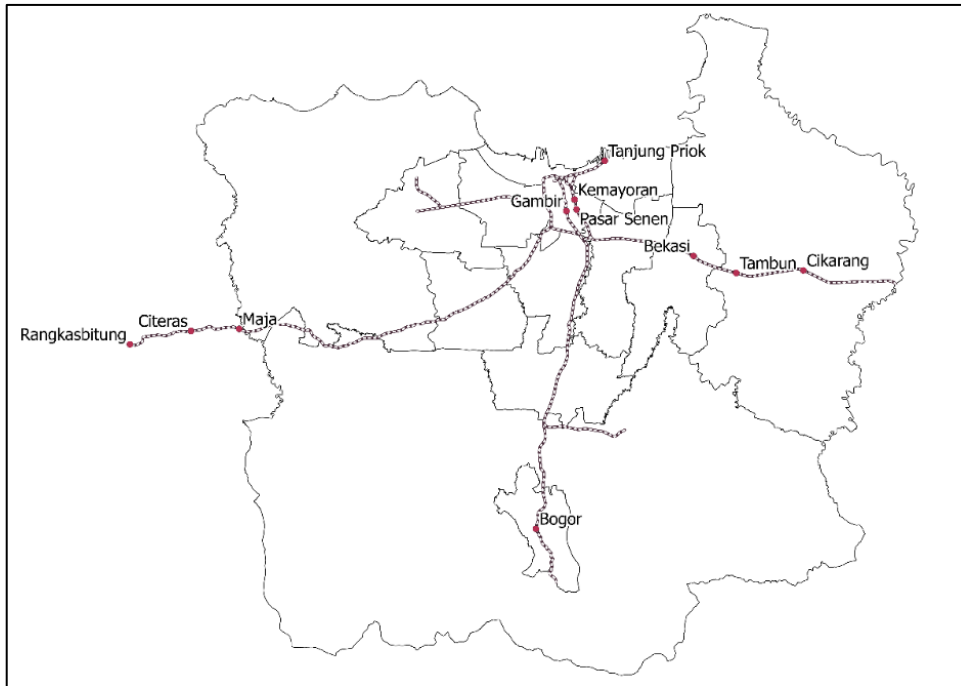
Local railway serves cross-border of eastbound of JABODETABEK for local-type railway service to Cikampek and Purwakarta. Both destinations are outside JABODETABEK and are not included in the medium distance category for they are served by specific local railway service. Surveyed stations are Tanjung Priok, Kemayoran, Tambun, and Cikarang Stations.

➤ **South Line**

This line serves cross-border of southbound of JABODETABEK for medium distance (i.e.: Sukabumi). Surveyed station is Bogor Station.

➤ **West Line**

This line serves cross-border of westbound of JABODETABEK that happens to be served by Commuterline. Surveyed stations are Maja, Citeras, and Rangkas Bitung Stations.



Source: JUTPI 2

**Figure 52 Survey Location for Cordon Line Railway Survey**

The schedule of implementation for Railway Passenger OD Interview Survey are mentioned in Table 60

**Table 60 Survey Location and Implementation Schedule**

No	Station	Train	Date
1	Pasar Senen	Medium – Long Distance Railway	19 July 2018
2	Gambir	Medium – Long Distance Railway	24 July 2018
3	Tanjung Priok	Local Railway	26 July 2018
4	Kemayoran	Local Railway	26 July 2018
5	Tambun	Local Railway	26 July 2018
6	Bekasi	Medium – Long Distance Railway	31 July 2018
7	Cikarang	Local Railway	31 July 2018
8	Bogor	Medium – Long Distance Railway	31 July 2018
9	Maja	Commuter line	2 August 2018
10	Citeras	Commuter line	2 August 2018
11	Rangkas Bitung	Commuter line	2 August 2018

Source: JUTPI 2

The survey was conducted at waiting room and platform of each station and sometimes

from inside of idling train upon station authority approval.

### **5.3.3 Survey Method**

#### **a Survey Tasks and Items**

Within the scope of this the survey, the following two activities were conducted, namely:

➤ **OD Interview**

The interview was done to collect passenger trip characteristics information through proper sampling procedure. Number of respondents was set to 20% of the total departing passenger on the day of the survey to provide adequate number of data to be analyzed. During the survey, conventional paper-based form was used.

➤ **Passenger Counting**

The passenger counting was carried out from the station platform and at the ticket gate for departing passenger only. Manual counter was used by to count.

#### **b Secondary Data Request**

To get the total number of departing passengers on the day of the survey, coordination meeting with the station operator and data request was pursued. The secondary data was requested to PT. Kereta Commuter Indonesia and PT. Kereta Api Indonesia in the comprehensive level of detail, such as: by station, train number, and hour.

#### **c Survey Day and Duration**

Railway Passenger OD Interview Survey was conducted in weekdays (Tuesday and Thursday) for two weeks with up to three locations being surveyed per day. The survey was firstly conducted in the third week of July 2018 and completed on August 2<sup>nd</sup>, 2018 (see Table 60). The survey was carried out for 17 hours per day.

#### **d Survey Form**

Figure 53 shows list of questions in the survey form for medium-long distance and local railways, and commuter line. The following information was collected from the respondent during the survey:

➤ Train Code

The train code information of respondent was collected to match the counting result as well as the secondary data of daily passenger. This information is useful to measure the properness of sampling work since the secondary data is detailed by train name and number.

➤ Origin address and type of origin

The origin here does not necessarily mean home address but the last point of interest the respondent visited before the railway station. Profound understanding is needed since the last point of interest must not include the activity of making a transit. In addition, the question of residential status was also asked.

➤ Access mode

The access mode to the railway station was set to transit possibilities up to four trip legs. Therefore, information such as; station to get on/off, access and egress modes to/from the station, and travel time was collected.

➤ Destination address and type of destination

Destination address is the address headed by the passenger once they arrive at the destination railway station. This destination could be in the form of workplace, school, hotel, and so on.

➤ Trip purpose

The trip purpose made by the respondent varies widely. However, the answers are narrowed down to several options in regard to the most logical answers.

➤ Mode choice, day/date and approximate time of departure for inbound trip



In the interview survey, the mode choice, day and approximate time of departure for inbound trip were part of the question which asked to the respondent

*JABODETABEK Urban Transportation Policy Integration Project Phase 2 in the Republic of Indonesia*  
*Annex 05: Working Paper on Transportation Surveys*

<b>JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION (JUTPI) Phase 2</b>			
<b>CORDON LINE SURVEY</b>			
<b>MEDIUM-LONG DISTANCE AND LOCAL RAILWAY PASSENGER OD INTERVIEW SURVEY</b>			
STATION CODE	<input type="text"/>	SURVEYOR NO.	<input type="text"/>
INTERVIEW TIME	<input type="text"/> h <input type="text"/> m <b>WIB 24 hours format</b>	SUPERVISOR NO.	<input type="text"/>
DATE/MONTH	<input type="text"/> / <input type="text"/> <b>2018</b>	SHEET NO.	<input type="text"/>
A Train Name Train Number Train Route	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
B Respondent No.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total number of passenger (including respondent and passenger travelling with respondent ≥ 5 years old)	<input type="text"/> person	<input type="text"/> person	<input type="text"/> person
C Origin address inside Jabodetabek (Origin is a place just before going/coming to this station) <b>**please circle (choose) one</b>	Area/Street Sub-District District City/Regency** Province Landmark (if location is not clear)	Area/Street Sub-District District City/Regency** Province Landmark (if location is not clear)	Area/Street Sub-District District City/Regency** Province Landmark (if location is not clear)
D Type of origin - see Table T1 (if others please specify)	<input type="text"/> (.....)	<input type="text"/> (.....)	<input type="text"/> (.....)
Departure time from origin	<input type="text"/> h <input type="text"/> m <b>WIB 24 hours format</b>	<input type="text"/> h <input type="text"/> m <b>WIB 24 hours format</b>	<input type="text"/> h <input type="text"/> m <b>WIB 24 hours format</b>
E Modes to this station (please mention in sequence from origin until this station) see Table T2 Travel time from Origin to This Station	ORIGIN <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> THIS STATION <input type="text"/> h <input type="text"/> m hour <input type="text"/> m <input type="text"/> s minute	ORIGIN <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> THIS STATION <input type="text"/> h <input type="text"/> m hour <input type="text"/> m <input type="text"/> s minute	ORIGIN <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> → <input type="text"/> THIS STATION <input type="text"/> h <input type="text"/> m hour <input type="text"/> m <input type="text"/> s minute
F Destination station	<input type="text"/>	<input type="text"/>	<input type="text"/>
G Destination address <b>**please circle (choose) one</b>	City/Regency** Province Landmark (if location is not clear)	City/Regency** Province Landmark (if location is not clear)	City/Regency** Province Landmark (if location is not clear)
H Residence during weekdays	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>
I Trip Purpose (If your residence during weekdays is 2, what is your trip purpose in Jabodetabek?)	1. Working/Business (working related) 2. School (study related) 3. Personal Matters 4. Family Matters 5. Shopping/Leisure/Tourism <input type="checkbox"/> 6. Others (.....) <input type="checkbox"/>	1. Working/Business (working related) 2. School (study related) 3. Personal Matters 4. Family Matters 5. Shopping/Leisure/Tourism <input type="checkbox"/> 6. Others (.....) <input type="checkbox"/>	1. Working/Business (working related) 2. School (study related) 3. Personal Matters 4. Family Matters 5. Shopping/Leisure/Tourism <input type="checkbox"/> 6. Others (.....) <input type="checkbox"/>
J.1 Plan to come back to Jabodetabek (check on selected day)	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek
J.2 Mode for trip above (J.1) - See Table T3	<input type="text"/> (.....)	<input type="text"/> (.....)	<input type="text"/> (.....)
K.1 Previous trip to JABODETABEK (check on selected day)	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek	<input type="checkbox"/> Mo <input type="checkbox"/> Tu <input type="checkbox"/> We <input type="checkbox"/> Th <input type="checkbox"/> Fr <input type="checkbox"/> Sa <input type="checkbox"/> Su <input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> s estimated time crossing boundary of Jabodetabek
K.2 Mode for trip above (K.1) - See Table T3	<input type="text"/> (.....)	<input type="text"/> (.....)	<input type="text"/> (.....)
T1 Type of Origin	<input type="checkbox"/> 01 Hotel <input type="checkbox"/> 02 Your residence <input type="checkbox"/> 03 Private house other than your residence <input type="checkbox"/> 04 Office	<input type="checkbox"/> 05 Restaurant <input type="checkbox"/> 06 Shop/mall/market/tourist attraction <input type="checkbox"/> 07 Private business place (Hospital, Bank, Religious Place, Police Station, etc.) <input type="checkbox"/> 08 Others	
T2 Mode Choice for Access	<input type="checkbox"/> 01 Walking, Bicycle <input type="checkbox"/> 02 Motorcycle <input type="checkbox"/> 03 Car, Omprengan <input type="checkbox"/> 04 Becak/Horse Wagon <input type="checkbox"/> 05 Bajaj, Kancil <input type="checkbox"/> 06 Motorcycle Taxi <input type="checkbox"/> 07 Online Motorcycle Taxi	<input type="checkbox"/> 08 Taxi <input type="checkbox"/> 09 Online Taxi <input type="checkbox"/> 10 Angkot, Bemo <input type="checkbox"/> 11 Metro Mini, Kopaja <input type="checkbox"/> 12 Chartered Bus <input type="checkbox"/> 13 Patas, Patas AC, Mayasari <input type="checkbox"/> 14 JR-Connexion, JA-Connexion	15 TransJabodetabek 16 Medium Feeder TransJakarta 17 TransJakarta (incl. Large Feeder, Articulated) 18 Trans Pakuan 19 CommuterLine 20 Airport Railink Service (ARS) 21 Others
T3 Mode Choice for previous/plan trip	<input type="checkbox"/> 01 Long Haul Train <input type="checkbox"/> 02 Long Haul Bus <input type="checkbox"/> 03 Airplane	<input type="checkbox"/> 04 Private Car <input type="checkbox"/> 05 Chartered Bus <input type="checkbox"/> 06 Others	

Source: JUTPI 2

**Figure 53 Survey Form (Medium-Long Distance and Local Railway)**

 <b>JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION (JUTPI) Phase 2</b> <b>CORDON LINE SURVEY</b> <b>COMMUTER LINE RAILWAY PASSENGER OD INTERVIEW SURVEY</b> 			
STATION CODE	<input type="text"/> <input type="text"/> <input type="text"/>	SURVEYOR NO.	<input type="text"/> <input type="text"/> <input type="text"/>
INTERVIEW TIME	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format	SUPERVISOR NO.	<input type="text"/> <input type="text"/> <input type="text"/>
DATE/MONTH	<input type="text"/> <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> 2018	SHEET NO.	<input type="text"/> <input type="text"/> <input type="text"/>
A Respondent No.	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total number of passenger (including respondent and passenger travelling with respondent ≥ 5 years old)	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format Departure Time of Train <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format Departure Time of Train <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format Departure Time of Train <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> : <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> WIB 24 hours format
B Origin address outside Jabodetabek (Origin is a place just before going/coming to this station) **please circle (choose) one	1. Home <input type="checkbox"/> 2. Not Home <input type="checkbox"/> City/Regency** _____ Province _____ Landmark (if location is not clear) _____	1. Home <input type="checkbox"/> 2. Not Home <input type="checkbox"/> City/Regency** _____ Province _____ Landmark (if location is not clear) _____	1. Home <input type="checkbox"/> 2. Not Home <input type="checkbox"/> City/Regency** _____ Province _____ Landmark (if location is not clear) _____
C Destination station in Jabodetabek			
D Destination address **please circle (choose) one	Area/Street _____ Sub-District _____ District _____ City/Regency** _____ Province _____ Landmark (if location is not clear) _____	Area/Street _____ Sub-District _____ District _____ City/Regency** _____ Province _____ Landmark (if location is not clear) _____	Area/Street _____ Sub-District _____ District _____ City/Regency** _____ Province _____ Landmark (if location is not clear) _____
E Type of Destination in Jabodetabek see Table T1 (if others please specify)	<input type="text"/> (.....)	<input type="text"/> (.....)	<input type="text"/> (.....)
F Plan modes to destination in JABODETABEK (please mention in sequence from destination station until destination location) - See Table T2 Estimated access time from destination station to destination	DESTINATION STATION <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> DESTINATION STATION h h hour m m minute	DESTINATION STATION <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> DESTINATION STATION h h hour m m minute	DESTINATION STATION <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> DESTINATION STATION h h hour m m minute
G Residence during weekdays	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>	1. Inside Jabodetabek <input type="checkbox"/> 2. Outside Jabodetabek <input type="checkbox"/>
H Trip Purpose (If your residence during weekdays is 1, what is your trip purpose outside Jabodetabek?)	1. Working (work related) 2. Business (business related) 3. School (study related) 4. Personal Matters 5. Family Matters 6. Shopping/Leisure/Tourism 7. Others (.....) <input type="checkbox"/>	1. Working (work related) 2. Business (business related) 3. School (study related) 4. Personal Matters 5. Family Matters 6. Shopping/Leisure/Tourism 7. Others (.....) <input type="checkbox"/>	1. Working (work related) 2. Business (business related) 3. School (study related) 4. Personal Matters 5. Family Matters 6. Shopping/Leisure/Tourism 7. Others (.....) <input type="checkbox"/>
I.1 (For Residents inside Jabodetabek during weekdays) Previous trip from Jabodetabek (Departure time from origin in Jabodetabek)	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format
I.2 Modes for trip above (I.1) - See Table T2	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)
J.1 (For Residents outside Jabodetabek during weekdays) Plan to come back to outside Jabodetabek (Departure time from origin in Jabodetabek)	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format	<input type="text"/> h <input type="text"/> m : <input type="text"/> m <input type="text"/> WIB 24 hours format
J.2 Modes for trip above (J.1) - See Table T2	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)	ORIGIN (JABODETABEK) <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> → <input type="text"/> <input type="text"/> STATION (JABODETABEK)
T1 Type of Destination	01 Hotel 02 Your residence 03 Private house other than your residence 04 Office	05 Restaurant 06 Shop/mall/market/tourist attraction 07 Private business place (Hospital, Bank, Religious Place, Police Station, etc.) 08 Others	
T2 Mode Choice for Access	01 Walking, Bicycle 02 Motorcycle 03 Car, Omprengan 04 Becak/Horse Wagon 05 Bajaj, Kancil 06 Motorcycle Taxi 07 Online Motorcycle Taxi	08 Taxi 09 Online Taxi 10 Angkot, Bemo 11 Metro Mini, Kopaja 12 Chartered Bus 13 Patas, Patas AC, Mayasari 14 JR-Connexion, JA-Connexion	15 Trans.Jabodetabek 16 Medium Feeder TransJakarta 17 Trans.Jakarta (incl. Large Feeder, Articulated) 18 Trans Pakuan 19 CommuterLine 20 Airport Rallink Service (ARS) 21 Others

Source: JUTPI 2

Figure 54 Survey Form (Commuterline Railway)



### **5.3.4 Survey Result and Major Findings**

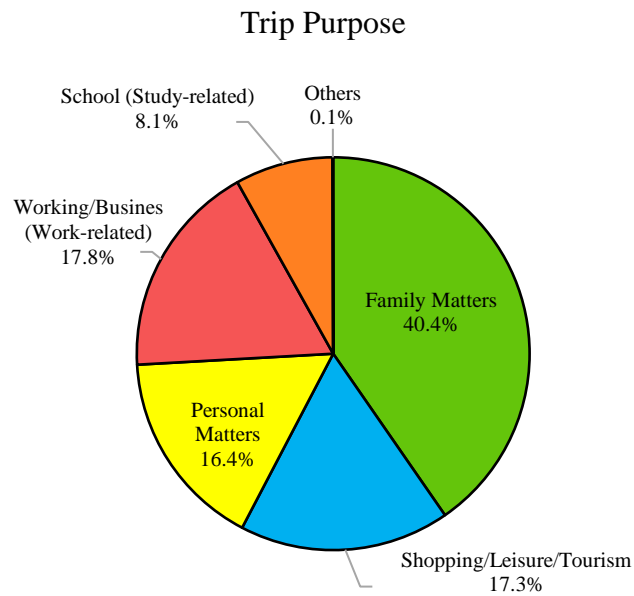
Data processing was performed based on the data obtained from the interview survey. The data processing includes the data input to computer file, zone number input, logical error check, and calculate expansion factor.

#### **5.3.4.1 Passenger OD Survey on East Line Medium – Long Distance Railway**

##### **a Characteristic of Passenger**

###### **1. Trip Purpose**

Over 9,918 interviewed respondents, most of the passengers of the East Line Medium – Long Distance Railway have the trip purpose of family matters, work-related, shopping/leisure/tourism, and personal matters with shares of 40.36%, 17.31%, 16.43%, and 16.43%, respectively. Family matters is the highest reasons for the passengers to take long-haul trip outside to the eastbound of JABODETABEK. It also shows that shopping/leisure/tourism is the second main reasons for passenger to have -medium or long-distance trip, it may be because there are several tourism area in Yogyakarta, East Java or Central Java. The distribution of trip purpose is shown at Figure 55:



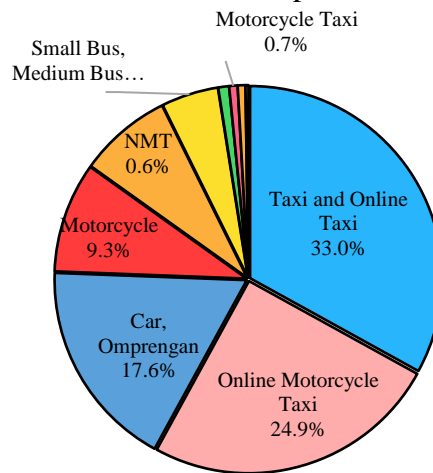
Source: JUTPI 2

**Figure 55 Distribution of Trip Purpose for Passengers on the East Line  
Medium – Long Distance Railway**

## 2. Access Mode to the Departure Station

The survey showed that the passengers ride taxi and online taxi (33.02%), online motorcycle taxi (24.94%), and car and *omprengan* (17.63%) to travel to the departure station. It seems that taxi and online taxi become the favorite choices since the passengers will take long trip outside JABODETABEK and it may be because they bring suitcase during their trip or passengers go along with their families.

### Access Mode to the Departure Station



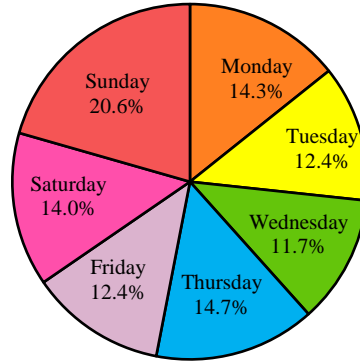
Source: JUTPI 2

**Figure 56 Access Mode to the Station for Passengers on the East Line  
Medium – Long Distance Railway**

### 3. Adjacent Trip and Mode

The definition of adjacent trip is the closest opposite trip a person did or will do that involves JABODETABEK and is related to the current trip. The survey shows that 20.57% of passengers conduct the adjacent trip during weekend, especially Sunday. Monday (14.28%), Thursday (14.67%), and Saturday (14.00%) are the chosen days besides Sunday. The distribution of passengers' preferences for the day of adjacent trip is shown below.

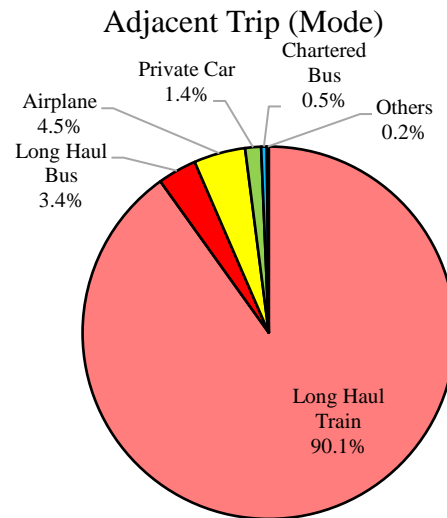
### Adjacent Trip (Day)



Source: JUTPI 2

**Figure 57 Adjacent Trip (Day) for Passengers on the East Line Medium – Long Distance Railway**

The definition of adjacent mode is the mode that person took or will take that to make adjacent trip. The survey shows that most of the passenger (90.11%) utilizes the same mode for the adjacent trip, which is, long haul train. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

**Figure 58 Adjacent Trip (Mode) for Passengers on the East Line Medium – Long Distance Railway**

**b Estimation of the OD Table**

1. Calculation of Expansion Factor

The expansion factor for passenger OD survey on the East Line Medium - Long Distance Railway was calculated for each station and in five classes of time range (3:00 – 6:00, 6:00 – 10:00, 10:00 – 16:00, 16:00 – 20:00, and 20:00 – 3:00). Result of the calculated expansion factor is shown in Table 61 Expansion Factor for Passengers OD Table on the East Line Medium – Long Distance Railway.

**Table 61 Expansion Factor for Passengers OD Table on the East Line Medium – Long Distance Railway**

Station	No. of Train Sampling	No. of Passenger Sampling	No. of Passenger	Exp. Factor
03:00 - 06:00				
Pasar Senen	1	143	396	2.77
Gambir	1	129	459	3.56
Bekasi	1	55	104	1.89
06:00 - 10:00				
Pasar Senen	6	725	2,062	2.84

Station	No. of Train Sampling	No. of Passenger Sampling	No. of Passenger	Exp. Factor
Gambir	9	1,460	2,947	2.02
Bekasi	5	211	278	1.32
10:00 - 16:00				
Pasar Senen	9	2,059	5,479	2.66
Gambir	8	1,180	2,622	2.22
Bekasi	8	236	373	1.58
16:00 - 20:00				
Pasar Senen	4	809	2,190	2.71
Gambir	10	1,057	3,031	2.87
Bekasi	5	85	136	1.60
20:00 - 03:00				
Pasar Senen	5	946	2,282	2.41
Gambir	5	775	1,670	2.15
Bekasi	2	48	80	1.67

Source: JUTPI 2

## 2. Estimated OD Table

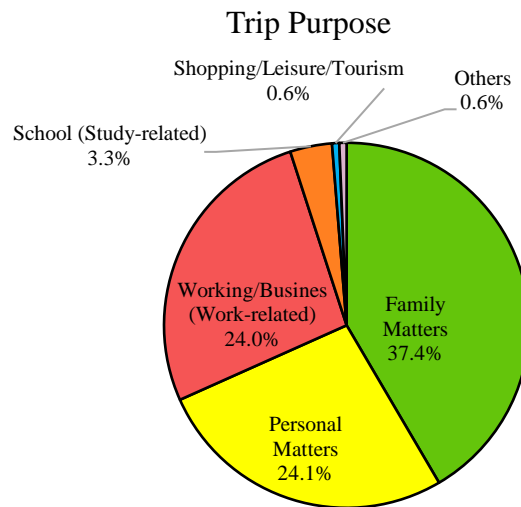
The OD table for railway passenger movement was formed based on the survey result. The OD table for the East Line Medium - Long Distance Railway is presented in the provided cordon line survey database.

### 5.3.4.2 Passenger OD Survey on East Line Local Railway

#### a) Characteristic of Passenger

##### 1. Trip Purpose

Over 1,737 interviewed respondents, most of the passengers of the East Line Local Railway have the trip purpose of family, personal, and work-related matters with shares of 37.36%, 24.06%, and 24.01%, respectively. Similar with East Line Medium – Long Distance Railway, family matter is the highest reason for passengers to travel to Cikampek and Purwakarta. The distribution of trip purpose by residential status is listed below:



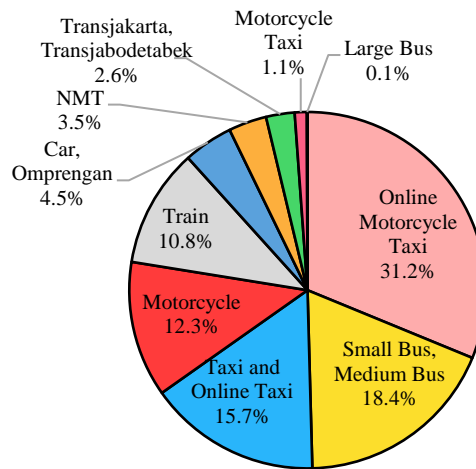
Source: JUTPI 2

**Figure 59 Distribution of Trip Purpose for Passengers  
on the East Line Local Railway**

## 2. Access Mode to the Departure Station

The survey showed that the passengers ride online motorcycle taxi (31.20%), small bus or medium bus (18.36%), and taxi or online taxi (15.66%) to travel to the departure station. The distribution of access mode used by the passenger is listed below:

### Access Mode to the Departure Station



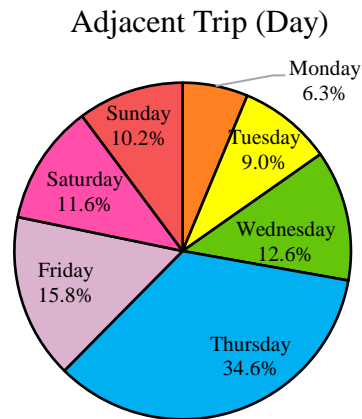
Source: JUTPI 2

**Figure 60 Access Modes to the Departure Station of External Railway Trips on East Line Local Railway**

### 3. Adjacent Trip and Mode

The survey shows that respondents tend to conduct the adjacent trip on Thursday (34.60%) and passengers may have preference to have opposite trip on the same day that they have a trip. It also shows that on the weekdays which are Wednesday (12.55%) and Friday (15.83%) are the chosen days to have adjacent trip rather than on the weekend. The distribution of passengers' preferences for adjacent trip and mode are shown as below:

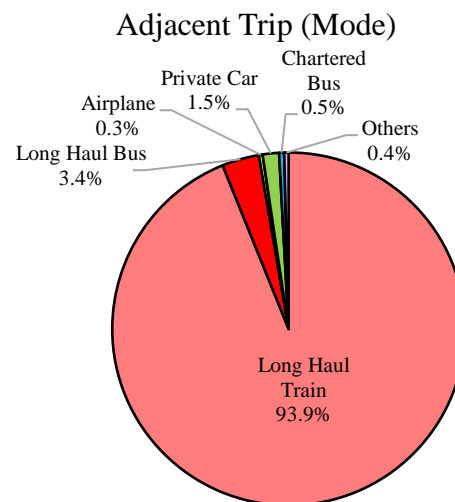




Source: JUTPI 2

**Figure 61 Adjacent Trip (Day) for Passengers on the East Line Local Railway**

The survey shows that most of the passenger utilizes the same mode for the adjacent trip, that is, the long-haul train. The distribution of passengers' preferences of adjacent mode is shown:



Source: JUTPI 2

**Figure 62 Adjacent Trip (Mode) for Passengers on the East Line Local Railway**

## b) Estimation of the OD Table

### 1. Calculation of Expansion Factor

As procedures, the expansion factor for passenger OD survey on the East Line Local Railway was calculated for each station and in five classes of time band (3:00–6:00, 6:00–10:00, 10:00–16:00, 16:00–20:00, and 20:00–3:00). Result of the calculated expansion factor is shown in Table 62.

**Table 62 Expansion Factor for Passengers OD Table on the East Line Local Railway**

Station	No. of Train Sampling	No. of Passenger Sampling	No. of Passenger	Exp. Factor
03:00 - 06:00				
Tanjung Priok	-	-	-	-
Kemayoran	-	-	-	-
Tambun	-	-	-	-
Cikarang	-	-	-	-
06:00 - 10:00				
Tanjung Priok	1	86	152	1.77
Kemayoran	-	-	-	-
Tambun	-	-	-	-
Cikarang	-	-	-	-
10:00 - 16:00				
Tanjung Priok	1	44	79	1.80
Kemayoran	2	393	669	1.70
Tambun	2	91	177	1.95
Cikarang	2	46	73	1.59
16:00 - 20:00				
Tanjung Priok	3	286	1,111	3.88
Kemayoran	3	642	2,381	3.71
Tambun	3	87	263	3.02
Cikarang	2	44	82	1.86
20:00 - 03:00				
Tanjung Priok	-	-	-	-
Kemayoran	-	-	-	-
Tambun	-	-	-	-
Cikarang	1	18	34	1.89

Source: JUTPI 2

### 2. Estimated OD Table

The OD table for railway passenger movement was formed based on the survey result. The OD table for the East Line Local Railway is presented in

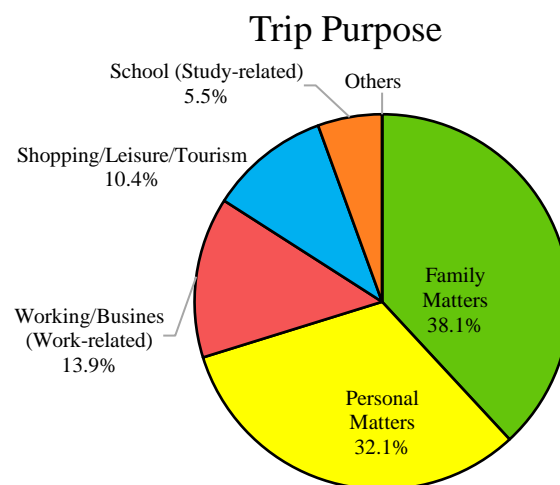
the provided cordon line survey database.

### 5.3.4.3 Passenger OD Survey on South Line Medium Distance Railway

#### a Characteristic of Passenger

##### 1. Trip Purpose South Line Medium Distance Railway

Over 433 interviewed respondents, most of the passengers of the South Line Medium Distance Railway have the trips purpose of family, personal and work-related matters with shares of 38.11%, 32.10% and 13.86% respectively. Similar with the both East Line services, family matter is the highest reason for passenger to travel to Sukabumi. The distribution of trip purpose by residential status is listed below:

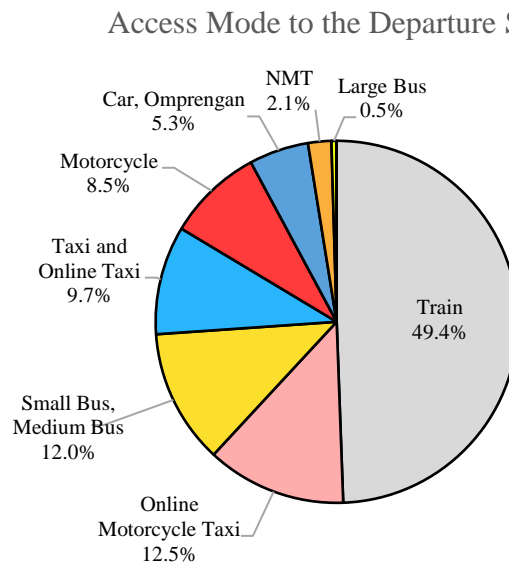


Source: JUTPI 2

**Figure 63 Trip Purposes of External Railway Trips  
on South Line Medium Distance Railway**

##### 2. Access Mode to the Departure Station

The survey showed that almost 50% of the passenger ride Commuterline Train (49.42%), online motorcycle taxi (12.47%), and small bus or medium bus (12.01%) to travel to the departure station. The distribution of access mode used by the passenger are listed below:



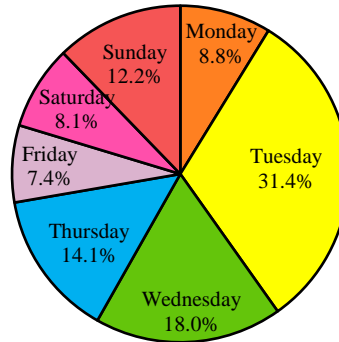
Source: JUTPI 2

**Figure 64 Access Modes to the Departure Station of External Railway Trips on South Line Medium Distance Railway**

### 3. Adjacent Trip and Mode

The survey shows that respondents tend to conduct the adjacent trip on Tuesday (31.40%) or on day after; 18.01% on Wednesday. Similar to the the East Line local Railway, the distance between Bogor Station and the destination station of this line (Sukabumi Station) is quite short compared to the Medium and Long – Distance railway. Therefore, the tendency of passengers conducted this trip is on the same day or the day after the current trip. The distribution of passengers' preferences for the day of adjacent trip is shown below:

Adjacent Trip (Day)

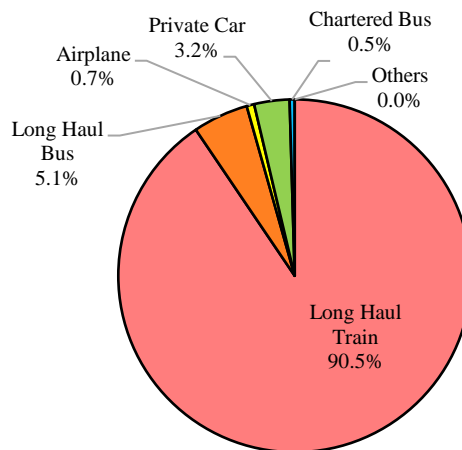


Source: JUTPI 2

**Figure 65 Adjacent Trip (Mode) for Passenger on the South Line Medium Distance Railway**

The graphic indicates similar trend with East Line Medium – Long Distance Railway and East Line Local Railway that long-haul train is the most chosen mode by the passengers (90.53%) to have adjacent trip. The distribution of passengers’ preferences of adjacent mode is shown below:

Adjacent Trip (Mode)



Source: JUTPI 2

**Figure 66 Adjacent Trip (Mode) for Passenger on the South Line Medium Distance Railway**

**b Estimation of the OD Table**

1. Calculation of Expansion Factor

As procedures, the expansion factor for passenger OD survey on the South Line Medium Distance Railway was calculated for each station and in five classes of time band (3:00 – 6:00, 6:00 – 10:00, 10:00 – 16:00, 16:00 – 20:00, and 20:00 – 3:00). Result of the calculated expansion factor is shown in Table 63.

**Table 63 Expansion Factor for Passengers OD Table on the South Line**

**Medium Distance Railway**

Station	No. of Train Sampling	No. of Passenger Sampling	No. of Passenger	Exp. Factor
03:00 - 06:00				
Bogor	-	-	-	-
06:00 - 10:00				
Bogor	1	133	256	1.92
10:00 - 16:00				
Bogor	1	136	419	3.08
16:00 - 20:00				
Bogor	1	164	411	2.51
20:00 - 03:00				
Bogor	-	-	-	-

2. Estimated OD Table

The OD table for railway passenger movement was formed based on the survey result. The OD table for the South Line Medium Distance Railway is presented in the provided cordon line survey database.

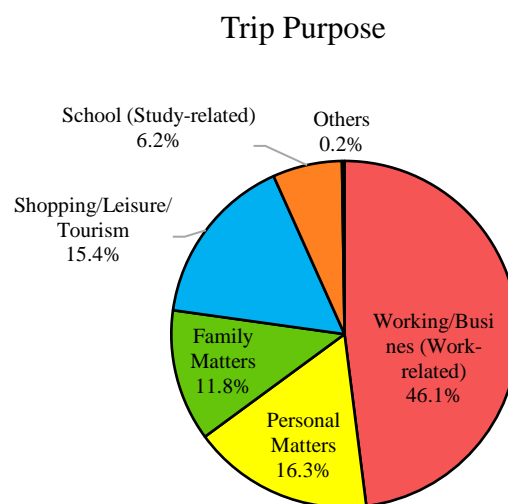
**5.3.4.4 Passenger OD Survey on West Line Commuterline**

Since April 2017, railway service for west line is operated by Commuterline (PT. Kereta Commuter Indonesia). There are three stations outside JABODETABEK served by this Commuterline, which where this survey was conducted in.

**a) Characteristic of Passenger**

**1. Trip Purpose West Line Commuterline**

Over 2,681 interviewed respondents, West Line Commuterline has different tendency among the others railway services. The most popular purpose of passengers to take this line because of working/business (46.07%). It is because the destinations of this line are Citeras, Maja and Rangkas Bitung where people have business options to be done in that area. Following the other purposes are personal (16.25%), family (11.80%) and shopping/leisure/tourism (15.43%). The distribution of trip purpose by passengers is listed below:



Source: JUTPI 2

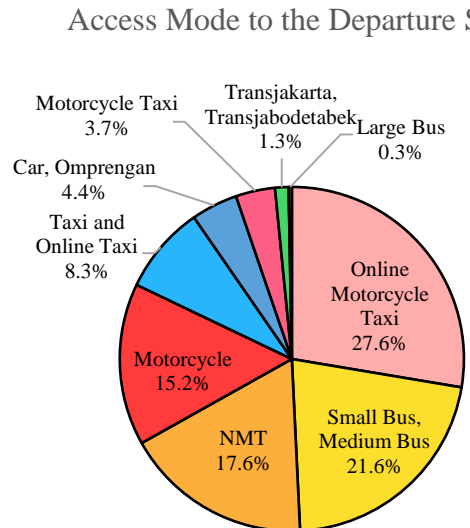
**Figure 67 Trip Purposes of External Railway Trips on West Line Commuterline**

**2. Access Mode to the Destination**

Unlike the other line, this survey was conducted at three stations outside JABODETABEK. Therefore, the question regarding access mode is from destination station in JABODETABEK to destination place in JABODETABEK.

The survey showed that the passengers ride online motorcycle taxi

(27.64%), small bus or medium bus (21.60%), NMT (17.64%), and motorcycle (15.22%). The distribution of access mode used by the passenger is listed below:



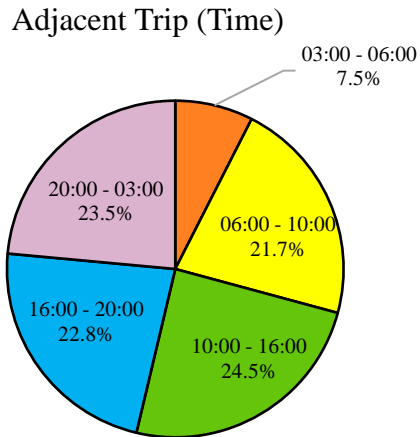
Source: JUTPI 2

**Figure 68 Access Modes to the Departure Station of External Railway Trips on West Line Commuterline**

### 3. Adjacent Trip and Mode

Since all of interviewed passengers are commuting on the same day, the survey indicates that most respondents take adjacent trip at 10 AM – 4 PM (24.51%) and 8 PM – 3 AM (23.54%). The distribution of passengers' preferences for the day of adjacent trip is shown below:

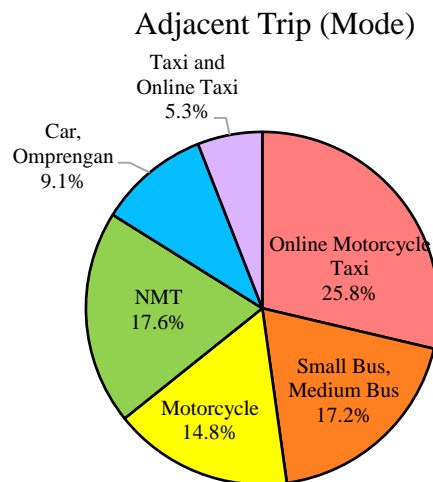




Source: JUTPI 2

**Figure 69 Adjacent Trip (Time) for Passengers on the West Line Commuterline**

The survey shows all passengers will use Commuterline for their adjacent trip. However, regarding adjacent trip from destination to the station in JABODETABEK, most passengers utilize Online Motorcycle Taxi (25.77%) and followed by Small Bus, Medium Bus (17.16%) and NMT (17.64%). The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

**Figure 70 Adjacent Trip (Mode) From and To the Station and Destination in JABODETABEK for Passenger on the West Line Commuterline**

**b) Estimation of the OD Table**

1. Calculation of Expansion Factor

As procedures, the expansion factor for passenger OD survey on the West Line Commuterline was calculated for each station and in five classes of time band (3:00 – 6:00, 6:00 – 10:00, 10:00 – 16:00, 16:00 – 20:00, and 20:00 – 3:00). Result of the calculated expansion factor is shown in Table 64.

2. Estimated OD Table

The OD table for railway passenger movement was formed based on the survey result. The OD table for the West Line Commuterline is presented in the provided cordon line survey database.

**Table 64 Expansion Factor for Passengers OD Table on the West Line Commuterline**

Station	No. of Passenger Sampling	No. of Passenger	Exp. Factor
03:00 - 06:00			
Maja	98	626	6.39
Citeras	20	88	4.40
Rangkas Bitung	206	1082	5.25
06:00 - 10:00			
Maja	213	777	3.65
Citeras	78	149	1.91
Rangkas Bitung	560	2170	3.88
10:00 - 16:00			
Maja	155	342	2.21
Citeras	75	113	1.51
Rangkas Bitung	647	1955	3.02
16:00 - 20:00			
Maja	141	225	1.60
Citeras	35	69	1.97
Rangkas Bitung	369	828	2.24
20:00 - 03:00			
Maja	29	36	1.24
Citeras	8	14	1.75
Rangkas Bitung	47	56	1.19

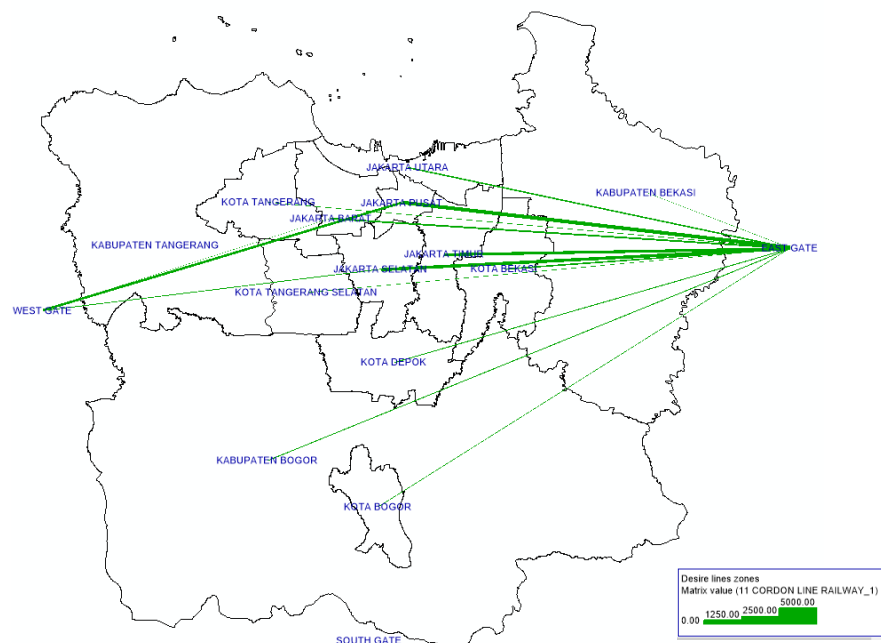
Source: JUTPI 2

### 3. Desired Lines of Railway Passenger

Desire lines are used to illustrate the flows of people or goods on a map, from point to point based on the values from an origin-destination matrix. Desired lines in this report is showing railway passengers' movement from/to JABODETABEK through respective 'gates' used in this study, which are 634 (West Gate), 635 (South Gate), and 636 (East Gate). Five-time groups are also used in this study, with range of times as follows:

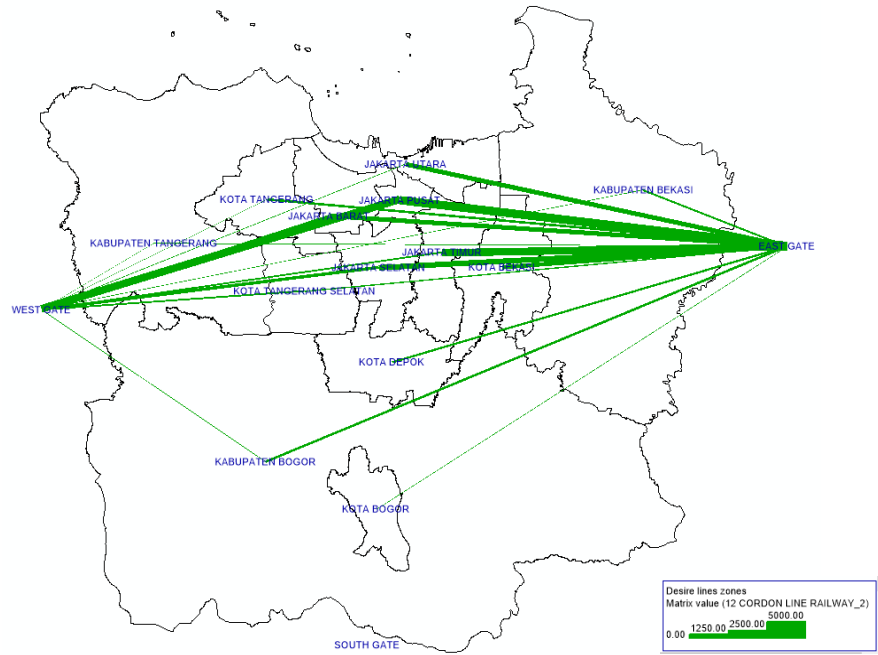
- Time Group 1: 03.00 – 05.00
- Time Group 2: 06.00 – 09.00
- Time Group 3: 10.00 – 15.00
- Time Group 4: 16.00 – 19.00
- Time Group 5: 20.00 – 02.00

Desired lines of railway passengers' movement which are developed with these time group constraints, are shown below:



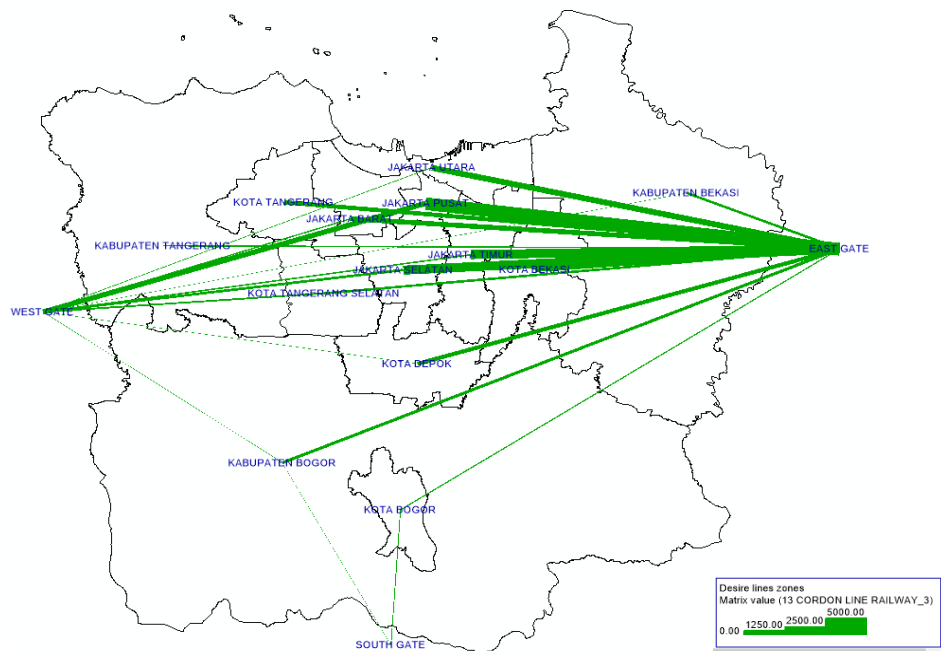
Source: JUTPI 2

**Figure 71 Railway Passengers' Desired Lines for Time Group 1**



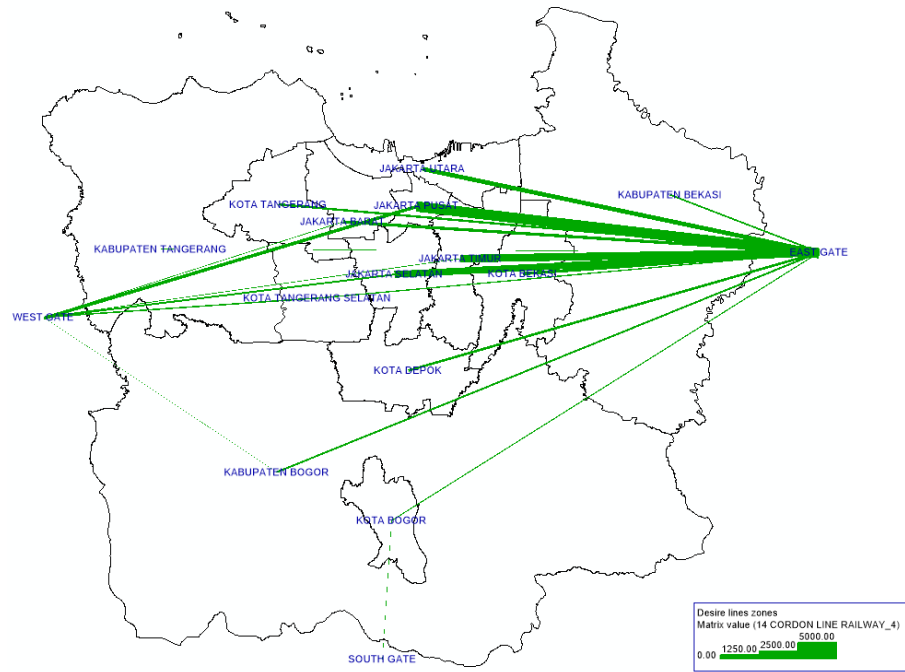
Source: JUTPI 2

**Figure 72 Railway Passengers' Desired Lines for Time Group 2**



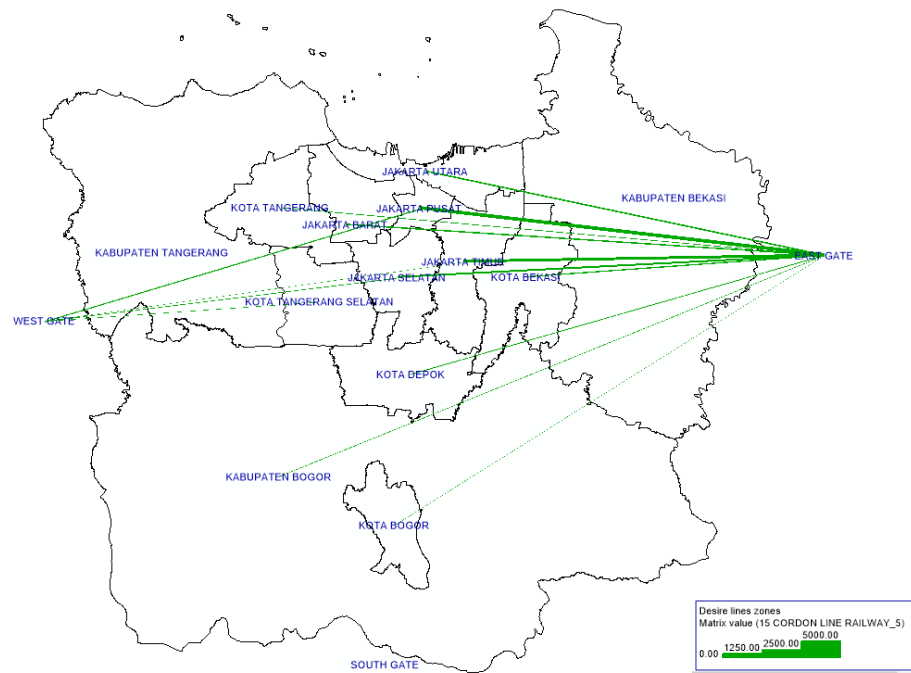
Source: JUTPI 2

**Figure 73 Railway Passengers' Desired Lines for Time Group 3**



Source: JUTPI 2

**Figure 74 Railway Passengers' Desired Lines for Time Group 4**



Source: JUTPI 2

**Figure 75 Railway Passengers' Desired Lines for Time Group 5**

The results shown from these desired lines are:

- Passengers' movement from/to East Gate is much higher than West and moreover the South Gate. It can be caused by the variative destination options of East Gate railway service compares to other gates. Based on distance, the East Gate railway also serves longer coverage area.
- Most of the trips generated from DKI Jakarta area and its' surrounding area.
- Overall, passengers' movement is gradually increasing from time group 1, reach the peak in the time group 3, and showing decreasing trend afterwards.

## **5.4 Airport Passenger OD Interview Survey**

### **5.4.1 Survey Objective**

The objective of the Survey is to obtain passenger information and trip pattern data from air passengers who are crossing the boundary of JABODETABEK region. The obtained information shall be helpful to identify external OD patterns in the JABODETABEK.

### **5.4.2 Survey Location**

The survey carried out at two airports; Soekarno-Hatta Airport and Halim Perdanakusuma Airport, at the waiting room/boarding lounge inside each departure terminal building.



Source: JUTPI 2

**Figure 76 Survey Location for Cordon Line Airport Survey**

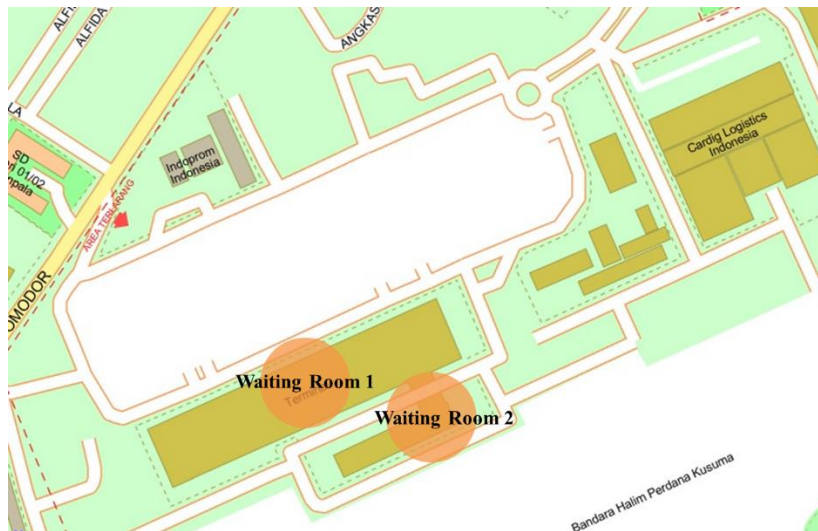
- In Soekarno-Hatta Airport, the survey implemented at the waiting room/boarding lounge of each departure terminal as follows:
  - Terminal 1A: Gates A1, A2, A3, A4, A5, A6, A7 (domestic).
  - Terminal 1B: Gates B1, B2, B3, B4, B5, B6, B7 (domestic).
  - Terminal 1C: Gates C1, C2, C3, C4, C5, C6, C7 (domestic).
  - Terminal 2D: Gates D1, D2, D3, D4, D5, D6, D7 (international).
  - Terminal 2E: Gates E1, E2, E3, E4, E5, E6, E7 (domestic).
  - Terminal 2F: Gates F1, F2, F3, F4, F5, F6, F7 (domestic).
  - Terminal 3: Gate 1 to Gate 10 (international).
  - Terminal 3: Gate 11 to Gate 28 (domestic).



Source: JUTPI 2

**Figure 77 Survey Location at Soekarno-Hatta Airport**

- In Halim Perdanakusuma Airport, the survey implemented at the waiting room/boarding lounge of Batik Air and Citilink (two waiting room/boarding lounge).



Source: JUTPI 2

**Figure 78 Survey Location at Halim Perdanakusuma Airport**



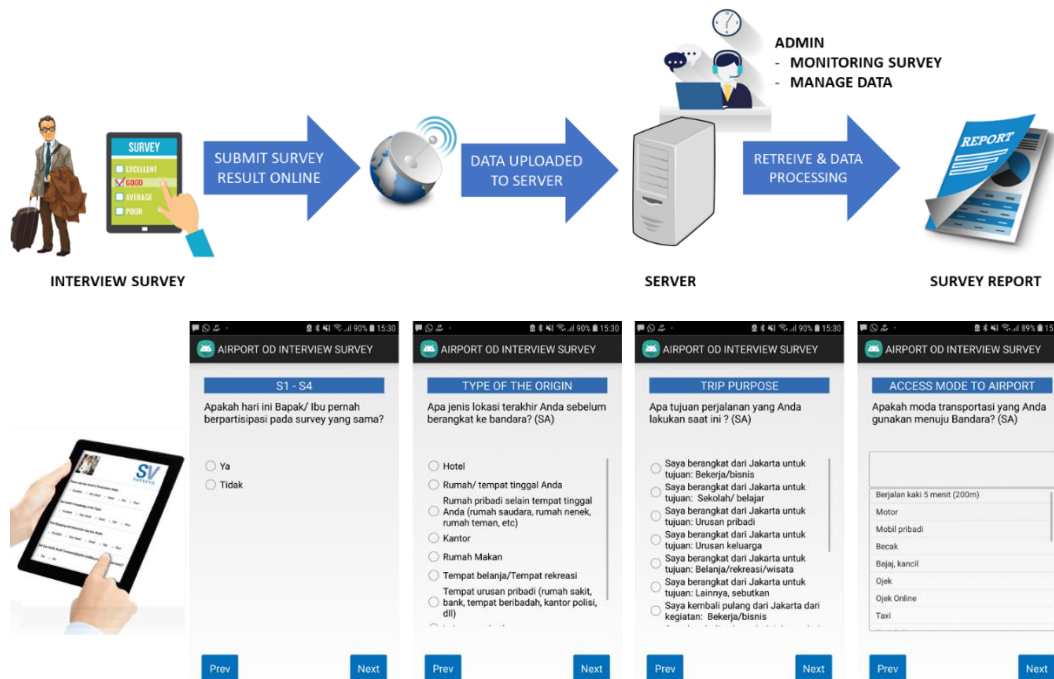
### 5.4.3 Survey Methodology

#### a Survey Task and Item

Within the scope of this the survey, the following activity was conducted, namely:

- OD Interview

The interview was done to collect passenger trip characteristics information through proper sampling procedure. Number of respondents was set to 20% of the total departing passenger on the day of the survey to provide adequate number of data to be analyzed. During the survey, surveyor use tablet to interview passenger than later they upload it into server, like the following flow chart:



Source: JUTPI 2

Figure 79 Procedure of Passenger OD Interview

#### b Survey Items

Flight number, origin address, type of origin, Access mode, destination address, type of destination, trip purpose, and travel time

#### c Survey Day and Duration

The survey was conducted on the third week of July 2018 (17, 18, 19 July 2018), on

weekdays excluding Monday and Friday. In Soekarno-Hatta Airport, the survey duration was conducted for 24 hours, while in Halim Perdanakusuma, the survey duration was conducted for 16 hours.

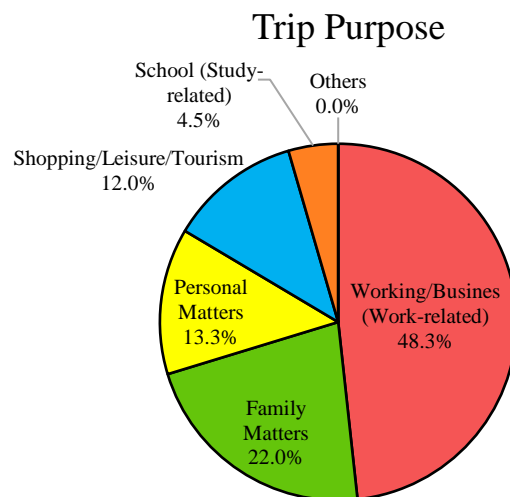
#### 5.4.4 Survey Result and Major Finding

##### 5.4.4.1 Airport Passenger Trip Characteristic

###### a Soekarno-Hatta Airport

###### 1. Trip Purpose

Total 17,175 interviewed respondents, most of the passengers of Soekarno-Hatta Airport had the trip purpose of work/business, family and personal matters with shares 48.27%, 22.01% and 13.26%, respectively. Work matters was the highest reasons for the passengers to have a trip outside JABODETABEK. Then, the survey shows that second and third rank were the reason related to personal/family matters. The distribution of trip purpose by residential status is listed below:



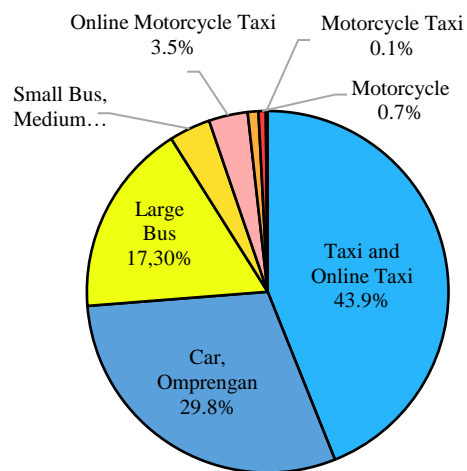
Source: JUTPI 2

**Figure 80 Trip Purposes of Airport Passengers on Soekarno-Hatta Airport**

## 2. Access Mode to the Airport

The survey shows that taxi and online taxi (43.93%) was the largest portion for airport passengers to access Soekarno-Hatta Airport and followed by the usage of car (29.82%) and large bus (17.30%). It seems that since the passengers needs to bigger vehicle to take their luggage. However, type of motorcycle became the least popular for passengers.

Access Mode to the Soekarno-Hatta Airport



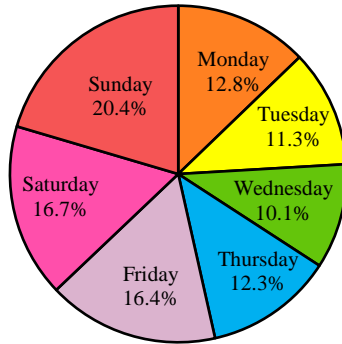
Source: JUTPI 2

**Figure 81 Access Mode to Soekarno-Hatta Airport**

## 3. Adjacent Trip and Mode

The survey shows that passengers conduct the adjacent trip during weekend especially Sunday (20.43%) and Saturday (16.66%). Monday (12.80%) is the chosen days besides weekend and it seems that passengers want to start their working days on the first day of week. The distribution of passengers' preferences for the day of adjacent trip is shown below.

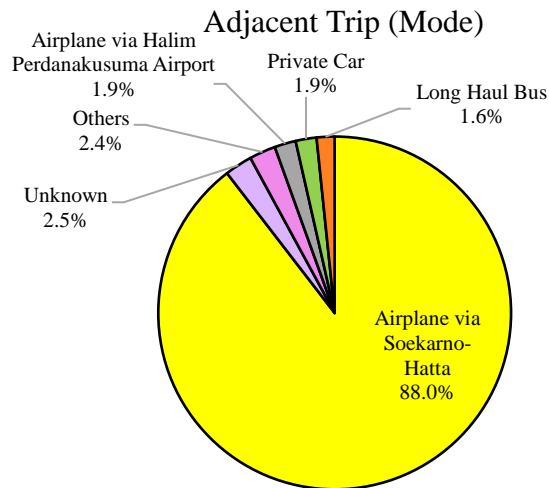
Adjacent Trip (Day)



Source: JUTPI 2

**Figure 20 Adjacent Trip (Day) for Passengers on Soekarno-Hatta Airport**

The survey shows that most of the passenger (87.96%) utilizes the same mode for the adjacent trip, which is, airplane to Soekarno-Hatta Airport as well. The distribution of passengers' preferences of adjacent mode is shown below:



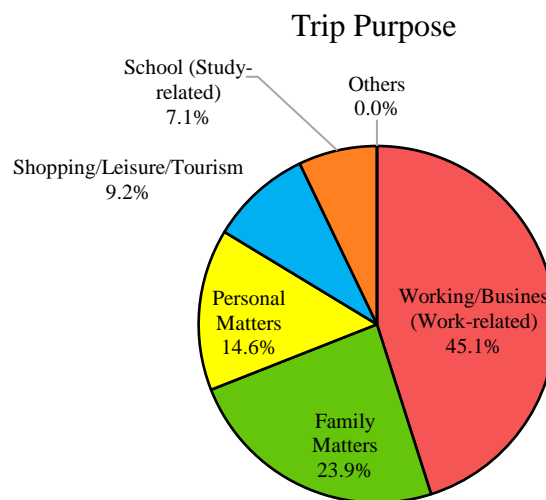
Source: JUTPI 2

**Figure 82 Adjacent Trip (Mode) for Passengers at Soekarno-Hatta Airport**

## b Halim Perdanakusuma Airport

### 1. Trip Purpose

Total 3,509 interviewed respondents, the survey shows similar trend with Soekarno-Hatta Airport that most of the passengers of Soekarno-Hatta Airport had the trip purpose of work/business, family and personal matters with shares 45.08%, 23.94% and 14.65%, respectively.

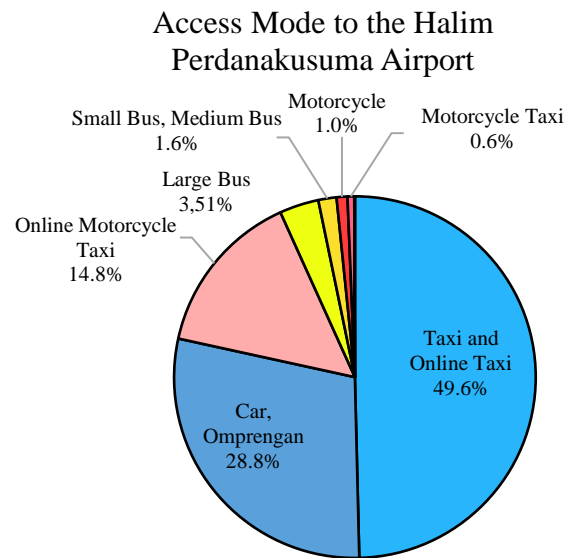


Source: JUTPI 2

**Figure 83 Trip Purposes of Airport Passengers on Halim Perdanakusuma Airport**

### 2. Access Mode to the Airport

Significant portion of mode usage by airport passengers to access the airport were taxi or online taxi (49.62%) and car (28.81%). Furthermore, online motorcycle taxi (14.82%) is one of the popular options. However, the survey illustrates that motorcycle taxi was the least popular mode among others.

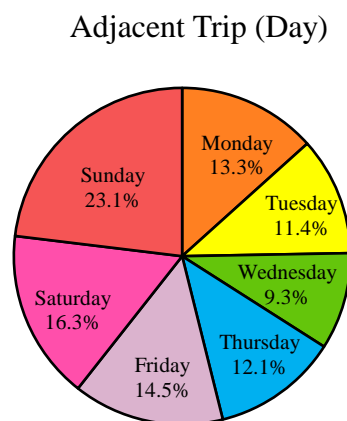


Source: JUTPI 2

**Figure 84 Access Modes to the Halim-Perdanakusuma Airport**

### 3. Adjacent Trip and Mode

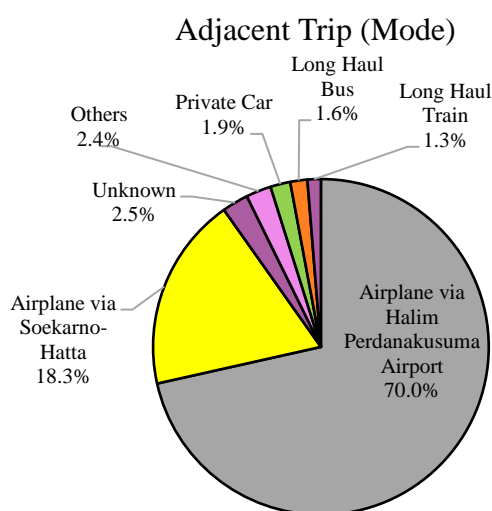
The survey shows similar trends with Soekarno-Hatta Airport that passengers conduct the adjacent trip during weekend especially Sunday (23.08%) and Saturday (16.30%). Friday (14.51%) and Monday (12.80%) were the other day that was selected by passengers.



Source: JUTPI 2

**Figure 85 Adjacent Trip (Day) for Passengers on Halim Perdanakusuma Airport**

The result of survey shows that large portion of the passenger utilized the same mode for the adjacent trip, which is, airplane. The passengers choose to have two-ways trips to same airport, Halim Perdanakusuma Airport (70.02%) and different airport to Soekarno-Hatta Airport (18.32%). The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

**Figure 86 Adjacent Trip (Mode) for Passengers on Halim Perdanakusuma Airport**

#### 5.4.4.2 Estimation of The OD Table

##### a) Calculation of Expansion Factor

The expansion factor for passenger OD survey was calculated for each Airport, Terminal, Domestic or International, and in five classes of time range (3:00 – 6:00, 6:00 – 10:00, 10:00 – 16:00, 16:00 – 20:00, and 20:00 – 3:00). Result of the calculated expansion factor is shown in Table below:

**Table 65 Expansion Factor for Passenger OD Survey**

Airport	Terminal	Domestic/ International	Time Group	PAX Departure	PAX Interview	EF
Soekarno-Hatta Airport	1A	D	1	1938.70	308.00	6.30
	1A	D	2	2948.20	458.00	6.40
	1A	D	3	4287.40	1469.00	2.90
	1A	D	4	4248.90	693.00	6.10

Airport	Terminal	Domestic/ International	Time Group	PAX Departure	PAX Interview	EF
	1A	D	5	1084.30	452.00	2.40
	1B	D	1	1333.70	344.00	3.90
	1B	D	2	2951.30	902.00	3.30
	1B	D	3	5273.40	1730.00	3.00
	1B	D	4	3334.00	876.00	3.80
	1B	D	5	948.50	165.00	5.70
	1C	D	1	2232.80	1320.00	1.70
	1C	D	2	5346.80	2358.00	2.30
	1C	D	3	5666.20	1531.00	3.70
	1C	D	4	3440.50	449.00	7.70
	1C	D	5	2342.90	903.00	2.60
	2D	I	1	416.30	207.00	2.00
	2D	I	2	2105.80	992.00	2.10
	2D	I	3	2527.90	820.00	3.10
	2D	I	4	2196.70	623.00	3.50
	2D	I	5	2603.80	570.00	4.60
	2E	I	1	0.00	0.00	0.00
	2E	I	2	168.00	77.00	2.20
	2E	I	3	52.00	37.00	1.40
	2E	I	4	0.00	0.00	0.00
	2E	I	5	204.00	0.00	0.00
	2F	D	1	860.80	172.00	5.00
	2F	D	2	3064.10	935.00	3.30
	2F	D	3	4457.30	2079.00	2.10
	2F	D	4	2148.00	917.00	2.30
	2F	D	5	1808.60	474.00	3.80
	3	D	1	3295.10	1104.00	3.00
	3	D	2	5895.70	1873.00	3.10
	3	D	3	9034.80	3943.00	2.30
	3	D	4	5109.50	2307.00	2.20
	3	D	5	2033.30	1295.00	1.60
	3	I	1	255.40	141.00	1.80
	3	I	2	2813.50	510.00	5.50
	3	I	3	4581.80	653.00	7.00
	3	I	4	4188.10	334.00	12.50
	3	I	5	3563.90	301.00	11.80
Halim Perdanakusuma Airport	Halim Perdanakusuma Lounge 1	D	1	527.00	0.00	0.00
	Halim Perdanakusuma Lounge 1	D	2	1052.50	750.00	1.40



<b>Airport</b>	<b>Terminal</b>	<b>Domestic/ International</b>	<b>Time Group</b>	<b>PAX Departure</b>	<b>PAX Interview</b>	<b>EF</b>
	Halim Perdanakusuma Lounge 1	D	3	1748.50	1169.00	1.50
	Halim Perdanakusuma Lounge 1	D	4	1480.50	769.00	1.90
	Halim Perdanakusuma Lounge 1	D	5	506.50	462.00	1.10
	Halim Perdanakusuma Lounge 2	D	1	461.50	0.00	0.00
	Halim Perdanakusuma Lounge 2	D	2	801.00	600.00	1.30
	Halim Perdanakusuma Lounge 2	D	3	1910.00	843.00	2.30
	Halim Perdanakusuma Lounge 2	D	4	1990.00	1059.00	1.90
	Halim Perdanakusuma Lounge 2	D	5	754.00	640.00	1.20

Source: JUTPI 2

### **b) Estimated OD Table**

The OD table for Airport passenger movement was formed based on the survey result. The OD table is presented in the provided survey database.

## **5.5 Intercity Bus Passenger OD Interview Survey**

### **5.5.1 Survey Objective**

The main objective of the survey is to obtain passenger information and trip pattern data from respondents who cross the boundary of JABODETABEK region using intercity buses. The obtained information is helpful to identify Origin-Destination patterns in terms of person movements crossing JABODETABEK region.

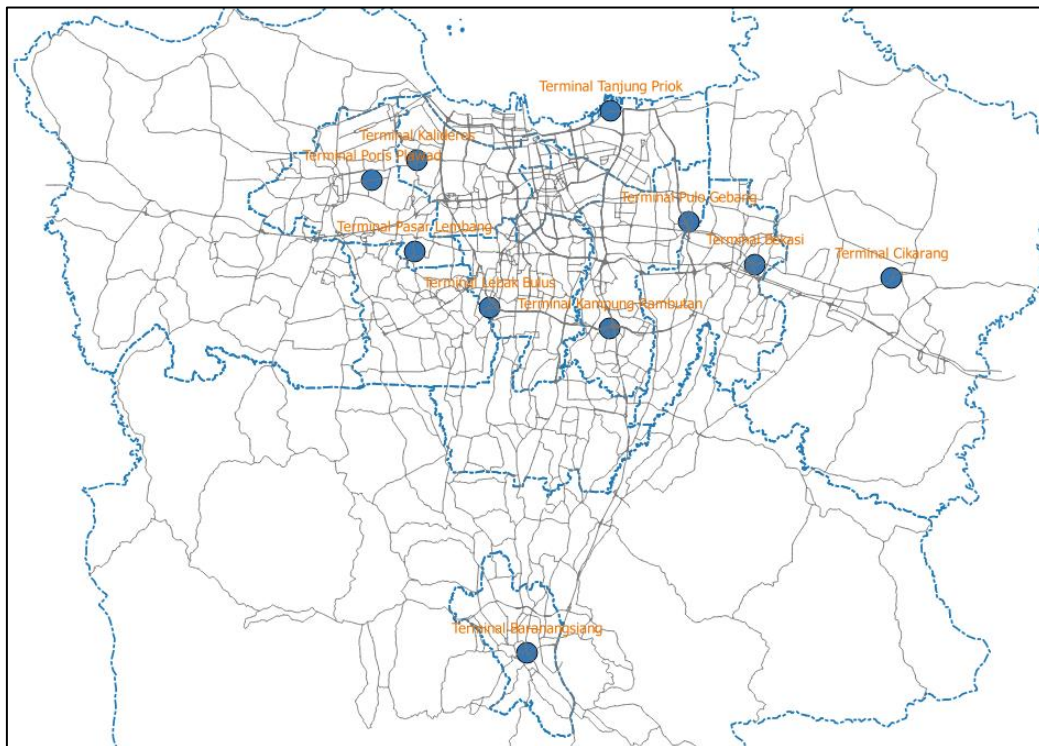
### **5.5.2 Survey Location**

The survey locations are located at the origin bus terminals inside JABODETABEK area. The list of bus terminals within the scope of the survey is shown below.

**Table 66. Survey Location for Intercity Bus Terminal-JABODETABEK**

No	Location Name	Location
01	Kampung Rambutan	DKI Jakarta
02	Kalideres	DKI Jakarta
03	Lebak Bulus	DKI Jakarta
04	Pulo Gebang	DKI Jakarta
05	Tanjung Priok	DKI Jakarta
06	Baranangsiang	Kota Bogor
07	Bekasi	Kota Bekasi
08	Cikarang	Kabupaten Bekasi
09	Poris Plawad	Kota Tangerang
10	Ciledug (Pasar Lembang)	Kota Tangerang

Source: JUTPI 2



Source: JUTPI 2

**Figure 87. Survey Location for Intercity Bus Terminal-JABODETABEK**

### 5.5.3 Survey Methodology

#### a) Survey Tasks and Items

Within the scope of Intercity Bus Passenger Interview Survey, the following two activities were conducted, namely:

- **OD Interview (for departing passenger only)**

The interview was done to collect the passenger trip characteristics (origin-destination, etc.) through proper sampling procedure. The sample rate is over 20% and provides adequate number of data to be analyzed. However, inadequate information as well as secondary data regarding bus schedule and bus route – let alone the so called “shadow terminals” that are scattered – requires specific method in order to avoid double survey. The main objective of specific methods is to distinguish targeted respondent based on type of bus services without having them double surveyed. Further detail of the method is discussed in the next sub-section.

- **Bus Occupancy (for departing passenger only)**

The bus occupancy data collection was done to get bus occupancy data during the survey duration. Further detail of the method is discussed in the next sub-section.

**b) Methods of the OD Interview**

Before discussion of the OD interview methods, it is important to understand a terminology that was utilized specifically for this survey. Such “made-up” terminology is necessary to avoid misinterpretation in the field survey caused by the inadequate information as well as secondary data availability. In order to get the bus that is authentically originated from the bus terminal, the terminology of “authentic intercity bus” is utilized. This is to distinguish the survey to be conducted twice or more over the same bus since the intercity bus may make some stops at other bus terminals before leaving JABODETABEK borderline. Therefore, the interview was conducted only to the “authentic bus” by asking the local authorities and/or the bus driver to distinguish whether the intercity bus is authentic or not. Hereinafter, the word “bus” mentioned in further explanation represents the “authentic intercity bus”.

- **At-Terminal (AT)**

This method is applied only to the bus that does not make any further stops and

directly goes crossing the boundary. The definition of AT is that the surveyor conducted the interview at the waiting room of bus terminal or at idling bus and be done with it just before the bus departs. Thus, the surveyor would note down the number of total passengers as the reflection of bus occupancy right before the bus departs. Surveyor was obligated to put a mark (a sticker) in front of the bus to avoid double count of bus occupancy survey that was conducted at the exit gate of the bus terminal.

- **Limited On-Board (LOB)**

This method is applied to bus that was believed would make stops on its way crossing the borderline. Despite the term is “on-board”, the surveyor was highly encouraged to start the interview at the waiting room to conserve time. Eventually, the surveyor was obligated to be on-board and conduct the interview until the bus reaches the last stop/transit point (could be the other bus terminals, toll gate, bus operator checkpoint, or shadow terminal) before leaving JABODETABEK area. From the exit gate of bus terminal up to the last stop/transit point, boarding and alighting passenger data was noted down as the reflection of bus occupancy. Surveyor was also obligated to put a mark (a sticker) in front of the bus to avoid double count of bus occupancy survey that was conducted at the exit gate of the bus terminal.

In summary, AT and LOB are survey methods that cover OD interview as well as the bus occupancy.

- c) **Methods of the Bus Occupancy**

Conventional count for the total passenger in a bus was applied only for those buses that did not have mark (sticker) on it. The bus occupancy survey was conducted at the exit gate of each bus terminal at which actual number of bus passenger and the bus capacity (or type of bus) was noted down.

- d) **Survey day and duration**

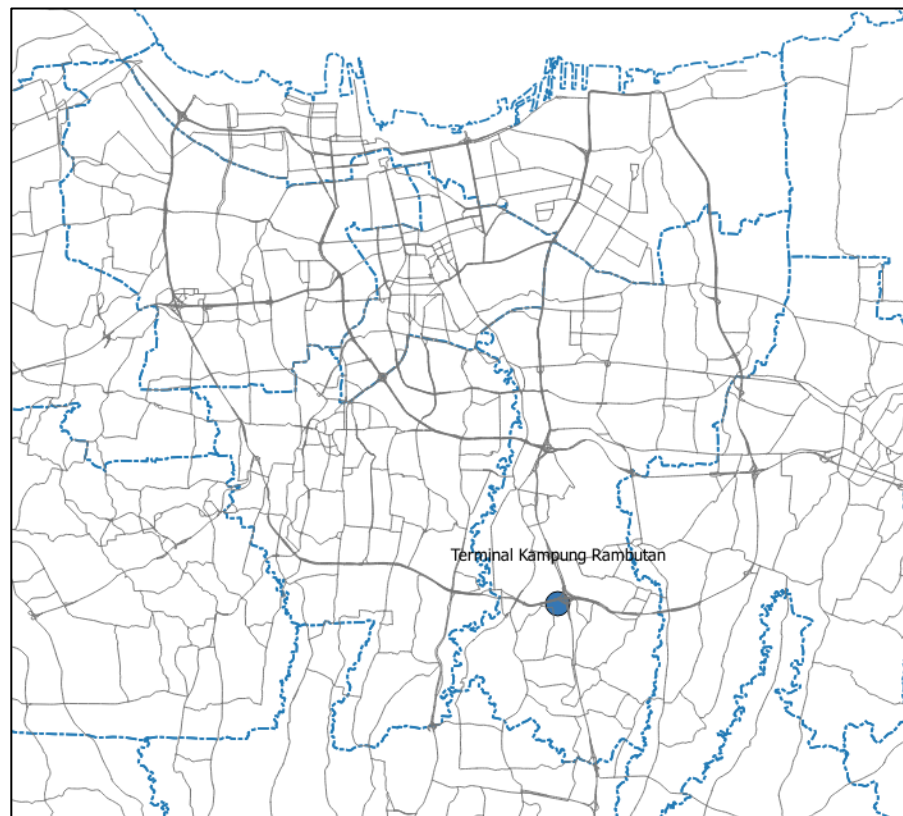
The field survey was conducted on weekday excluding Monday and Friday in a typical week for 17 hours a day between 5:00 and 22:00.

## 5.5.4 Survey Result and Major Finding

### 5.5.4.1 Intercity Bus Passenger Trip Characteristic

#### a Kampung Rambutan

Kampung Rambutan Bus Terminal is located at East Jakarta. Both entrance and exit gates are accessible only from Jalan T.B. Simatupang. This terminal serves many different various bus services including the intercity routes. Figure 88 shows the name of intercity bus operator, the routes, and the number of bus. The terminal is designed with the attribute of special lanes in order to manage the bus queue inside the terminal. Survey at this location was conducted on August 2<sup>nd</sup>, 2018 and furthermore of this section, results and major findings are explained.



Source: JUTPI 2

**Figure 88. Location of Kampung Rambutan Bus Terminal**

**Table 67. Service Route and Trip of Intercity Bus Operator at Kampung Rambutan Bus Terminal**

No	Operator	Route	No. of Bus
1	Agra Mas	Kampung Rambutan - Bojonegoro	2
		Kampung Rambutan - Kw. Anten	1
2	Agung Makmur	Kampung Rambutan - Bandung	1
3	AJP	Kampung Rambutan - Merak	1
4	Antar Jaya	Kampung Rambutan - Solo	1
5	Arimbi	Kampung Rambutan - Merak	4
6	Asli Prima	Kampung Rambutan - Merak	4
7	Berkah Jaya	Kampung Rambutan - Banjar	1
		Kampung Rambutan - Banturajeg	1
		Kampung Rambutan - Majalengka	2
8	Bima Suci	Kampung Rambutan - Cilegon	1
9	Bineka	Kampung Rambutan - Cirebon	1
10	Bintang Permata Sari	Kampung Rambutan - Bandung	4
11	BSI	Kampung Rambutan - Cikampek	1
12	Budiman	Kampung Rambutan - Banjar	9
		Kampung Rambutan - Cianjur	2
		Kampung Rambutan - Madura	1
		Kampung Rambutan - Tasikmalaya	13
13	Cahaya Bakti	Kampung Rambutan - Sumedang	1
14	CBU	Kampung Rambutan - Sumedang	6
		Kampung Rambutan - Yogyakarta	1
15	Damri	Kampung Rambutan - Cilacap	3
16	Deni	Kampung Rambutan - Singaparna	1
17	Dewi Sri	Kampung Rambutan - Margasari	1
		Kampung Rambutan - Pekalongan	1
		Kampung Rambutan - Tegal	1
18	Dieng Indah	Kampung Rambutan - Wonosobo	2
19	DMI	Kampung Rambutan - Cilacap	1
		Kampung Rambutan - Purwokerto	1
		Kampung Rambutan - Slawi	1
20	Doa Ibu	Kampung Rambutan - Karang Nunggal	2
		Kampung Rambutan - Karang Pucung	6
		Kampung Rambutan - Merak	2
		Kampung Rambutan - Purwokerto	1
		Kampung Rambutan - Sidareja	2
		Kampung Rambutan - Solo	1
21	Dwi	Kampung Rambutan - Tasikmalaya	11
		Kampung Rambutan - Cilacap	1
22	Gapuraning Rahayu	Kampung Rambutan - Banjar	1
		Kampung Rambutan - Ciamis	1

No	Operator	Route	No. of Bus
		Kampung Rambutan - Cilacap	4
		Kampung Rambutan - Karang Pucung	3
		Kampung Rambutan - Pangandaran	1
		Kampung Rambutan - Sidareja	2
		Kampung Rambutan - Wangan	1
		Kampung Rambutan - Wangon	4
23	Garuda Mas	Kampung Rambutan - Blora	1
24	Gunung Harta	Kampung Rambutan - Madiun	1
		Kampung Rambutan - Madura	2
		Kampung Rambutan - Malang	1
25	Harum Bsi	Kampung Rambutan - Bandung	1
26	Haryanto	Kampung Rambutan - Ngawi - Semarang	1
27	Hasta Putra	Kampung Rambutan - Solo	1
28	Hiba Utama	Kampung Rambutan - Garut	2
29	Jaya Perkasa	Kampung Rambutan - Merak	1
30	Karina	Kampung Rambutan - Surabaya	1
31	Karunia Bakti	Kampung Rambutan - Garut	11
		Kampung Rambutan - Singaparna	4
		Kampung Rambutan - Sumatera Utara	2
32	Karunia Putra	Kampung Rambutan - Bengkulu	1
33	Kerta Jati	Kampung Rambutan - Subang	4
34	Kramat DJati	Kampung Rambutan - Kw. Anten	1
		Kampung Rambutan - Subang	3
35	Kramat Jati	Kampung Rambutan - Denpasar	1
		Kampung Rambutan - Malang	1
		Kampung Rambutan - Palembang	1
36	Laju Prima	Kampung Rambutan - Blora	1
		Kampung Rambutan - Merak	4
		Kampung Rambutan - Palembang	1
		Kampung Rambutan - Pekalongan	2
37	Lana Jaya	Kampung Rambutan - Sukabumi	5
38	Lantra Jaya	Kampung Rambutan - Lahat (Pagar Alam)	1
39	Lintas Jaya	Kampung Rambutan - Lintas Sumatera	1
40	Lorena	Kampung Rambutan - Blitar	1
41	Lunajaya	Kampung Rambutan - Sukabumi	1
42	Luragung Jaya	Kampung Rambutan - Kuningan	3
43	Madukismo	Kampung Rambutan - Klaten	1
44	Majoemuda Mandiri	Kampung Rambutan - Solo	1
45	Marita	Kampung Rambutan - Cianjur	33
		Kampung Rambutan - Merak	1
46	Medal Sekarwangi	Kampung Rambutan - Sumedang	11
		Kampung Rambutan - Wado Sumedang	1

No	Operator	Route	No. of Bus
47	Medina Karya Utama	Kampung Rambutan - Lampung Liwa	1
48	Menara Jaya	Kampung Rambutan - Tegal	1
49	Merdeka	Kampung Rambutan - Pangandaran	1
50	MGI	Kampung Rambutan - Bandung	1
		Kampung Rambutan - Cimahi	10
		Kampung Rambutan - Sumedang	1
51	Mt Jati	Kampung Rambutan - Subang	1
52	Muara Dua Tunggal	Kampung Rambutan - Lampung	1
53	Muaraz Expres	Kampung Rambutan - Muaraz Lampung	1
54	Muji Jaya	Kampung Rambutan - Jepara	1
55	Murni Jaya	Kampung Rambutan - Merak	4
		Kampung Rambutan - Wonosobo	1
		Kampung Rambutan - Yogyakarta	2
56	Nusantara	Kampung Rambutan - Kudus	1
57	Pahala Kencana	Kampung Rambutan - Tegal	1
		Kampung Rambutan - Cianjur	2
		Kampung Rambutan - Malang	1
		Kampung Rambutan - Prabumulih	1
		Kampung Rambutan - Purwodadi	1
		Kampung Rambutan - Surabaya	1
58	Po Handoyo	Kampung Rambutan - Klaten	1
		Kampung Rambutan - Yogyakarta	1
59	Prima Raya	Kampung Rambutan - Tasikmalaya	1
60	Primajasa	Kampung Rambutan - Bandung	1
		Kampung Rambutan - Merak	43
		Kampung Rambutan - Merak	1
		Kampung Rambutan - Tasikmalaya	11
61	Putra Belitang	Kampung Rambutan - Belitang	1
62	Putra Mulya	Kampung Rambutan - Klaten	1
63	Putri Jaya	Kampung Rambutan - Purwokerto	1
64	Rahayu	Kampung Rambutan - Cilacap	2
		Kampung Rambutan - Pangandaran	1
		Kampung Rambutan - Rangat	1
		Kampung Rambutan - Sidareja	1
65	Rencana Jaya	Kampung Rambutan - Sukabumi	3
66	Rosalia Indah	Kampung Rambutan - Solo	1
67	Safari	Kampung Rambutan - Solo	3
68	Sahabat	Kampung Rambutan - Cirebon	1
		Kampung Rambutan - Kuningan	1
69	Santi	Kampung Rambutan - Madiun	1
70	Sari Indah	Kampung Rambutan - Surabaya	1
71	Sempati Stars	Kampung Rambutan - Palembang	1

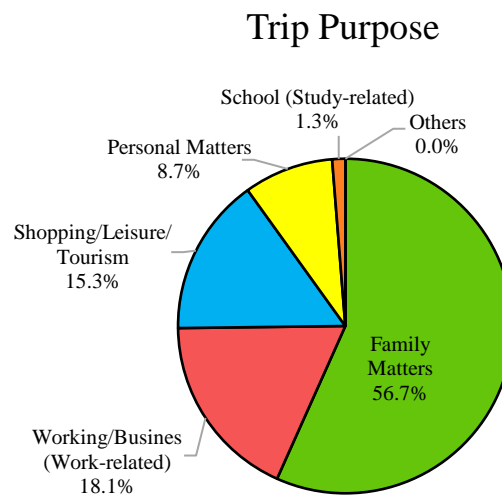


<b>No</b>	<b>Operator</b>	<b>Route</b>	<b>No. of Bus</b>
72	Setia Negara	Kampung Rambutan - Kuningan	2
		Kampung Rambutan - Pekalongan	1
73	Sinar Dempo	Kampung Rambutan - Pagar Alam	1
74		Kampung Rambutan - Bobotsari	3
		Kampung Rambutan - Bumiayu	1
		Kampung Rambutan - Cilacap	4
		Kampung Rambutan - Pekalongan	4
		Kampung Rambutan - Purwokerto	4
		Kampung Rambutan - Purworejo	2
		Kampung Rambutan - Purworejo - Wates	1
		Kampung Rambutan - Slawi	2
		Kampung Rambutan - Sukabumi	1
		Kampung Rambutan - Tegal	4
		Kampung Rambutan - Tegal Slawi	1
		Kampung Rambutan - Wonosobo	1
		Kampung Rambutan - Yogyakarta	1
75	Sinar Remaja	Kampung Rambutan - Sukabumi	2
76	SM Prima	Kampung Rambutan - Merak	3
77	Sugih Jaya	Kampung Rambutan - Sukabumi	1
78	Sumber Alam	Kampung Rambutan - Yogyakarta	1
79	Tasik Jakarta	Kampung Rambutan - Tasikmalaya	1
80	Telaga Indah	Kampung Rambutan - Pendopo Pagar Alam	1
81	Tisfa 86	Kampung Rambutan - Lampung Muara	1
82	Vispa	Kampung Rambutan - Lampung	1
83	Wahyu	Kampung Rambutan - Purwokerto	1
84	Warga Baru	Kampung Rambutan - Brebes	1
		Kampung Rambutan - Cikampek	3
		Kampung Rambutan - Garut	1
		Kampung Rambutan - Indramayu	1
		Kampung Rambutan - Karawang	2
		Kampung Rambutan - Pegaden	1
		Kampung Rambutan - Purwakarta	6
		Kampung Rambutan - Subang	6
Kampung Rambutan - Sumedang	2		

Source: JUTPI 2

### Trip purpose

The graphic indicates that family matters (56.69%) was the most popular reason for intercity bus to travel to outside JABODETABEK from Kampung Rambutan Terminal. The passengers also had consideration to take bus for business purposes (18.11%) and shopping/leisure/tourism (15.28%). The least frequent reason for passengers was for school (1.26%).



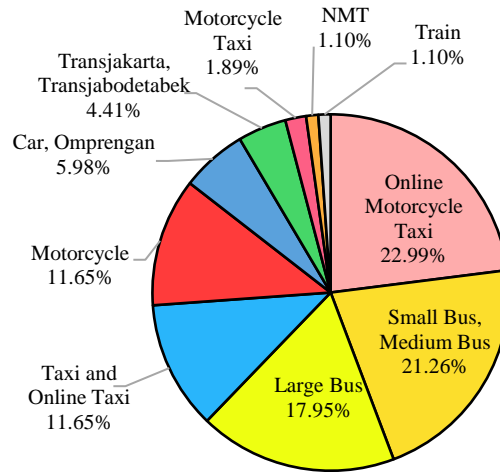
Source: JUTPI 2

**Figure 89 Trip Purposes of Passengers on Kampung Rambutan Terminal**

### Access mode to the departure terminal

The survey gives information that online motorcycle taxi and small - medium bus were sharing similar portion, at 22,99% and 21.26%. Large buses (17.95%) were also used for passengers to go to terminal and motorcycle-based vehicle were share same proportion for online taxi and motorcycle, at 11.65% for both modes.

Access Mode to the Terminal



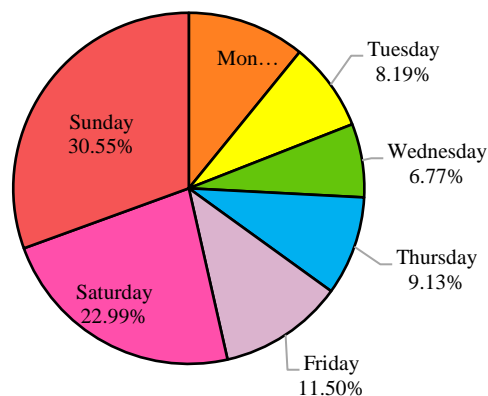
Source: JUTPI 2

**Figure 90 Access Modes to the Kampung Rambutan Terminal**

Adjacent trip (day)

In Kampung Rambutan Terminal, passengers chose to conduct adjacent trip during weekend especially Sunday (30.55%) and Saturday (22.99%). Friday (11.50%) and Monday (10.87%) are the other day that selects by passengers. The distribution of passengers’ preferences for the day of adjacent trip is shown below.

Adjacent Trip (Day)

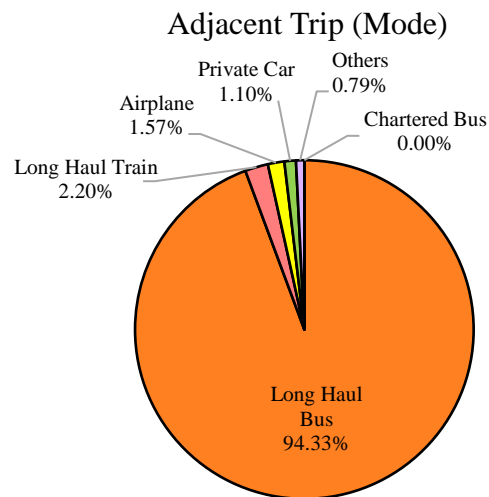


Source: JUTPI 2

**Figure 91 Adjacent Trip (Day) for Passengers on Kampung Rambutan Terminal**

Adjacent trip (mode)

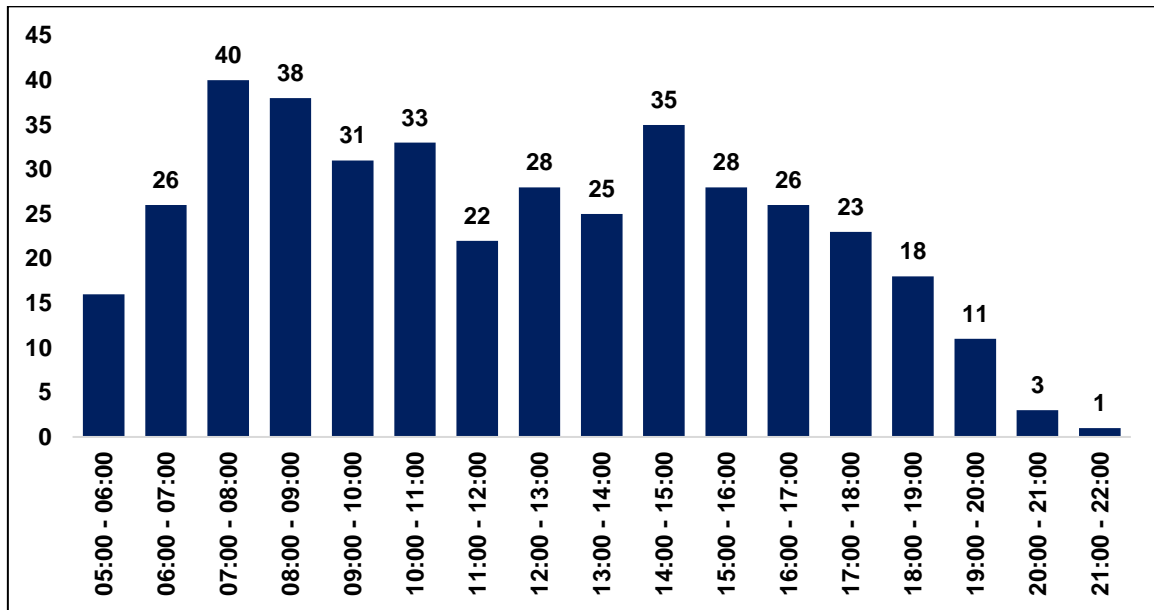
The result of survey shows that large portion of the passenger utilized the same mode for the adjacent trip, which was, long haul bus (94,33%). Small portions of passengers chose long haul train, airplane, and car to go back to their initial departure. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

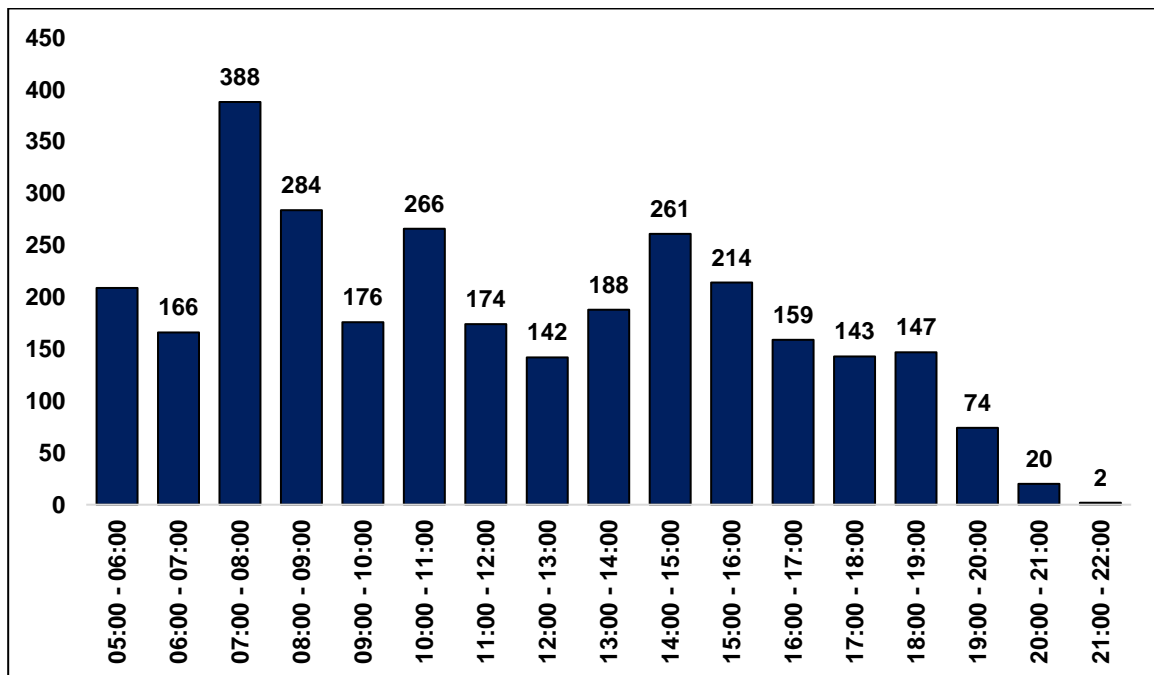
**Figure 92 Adjacent Trip (Mode) for Passengers on Kampung Rambutan Terminal**

Passenger Flow



Source: JUTPI 2

Figure 93. Hourly Bus Frequency Fluctuation at Kampung Rambutan Bus Terminal



Source: JUTPI 2

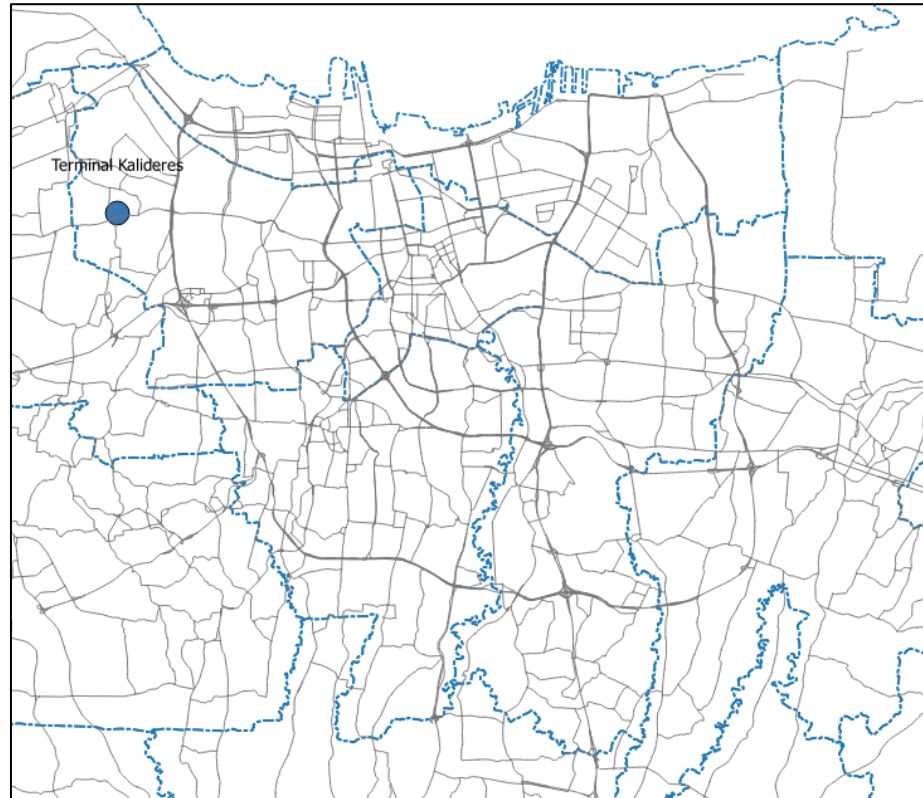
Figure 94. Hourly Passenger Fluctuation at Kampung Rambutan Bus Terminal

**b Kalideres**

Kalideres Bus Terminal is located on the western part of Jakarta. It serves more than 50 bus routes connecting Jakarta and major cities in Java and Sumatera.

However, this terminal was not supported with specific lanes to separate intracity and intercity routes, thus, the conflict between both routes often occurs.

Terminal Kalideres serves medium and long-distance routes. Survey conducted on 1st August 2018.



Source: JUTPI 2

**Figure 95. Location of Kalideres Bus Terminal**

**Table 68. Service Route and Trip of Intercity Bus Operator at Kalideres Bus Terminal**

No	Operator	Route	No. of Bus
1	ALS	Kalideres - Malang	2
		Kalideres - Medan	1
2	Arimbi	Kalideres - Bandung	18
		Kalideres - Merak	8
3	Arimbi Jaya	Kalideres - Labuan	1
		Kalideres - Merak	33
4	Arya Prima	Kalideres - Jambi	1
5	Asli Prima	Kalideres - Labuan	15
		Kalideres - Merak	5

No	Operator	Route	No. of Bus
		Kalideres - Serang	1
6	Baladika	Kalideres - Brebes	1
7	Bima Suci	Kalideres - Merak	8
8	Budiman	Kalideres - Banjar	1
		Kalideres - Tasikmalaya	4
9	Damri	Kalideres - Jambi	1
		Kalideres - Purworejo	1
10	Dedi Jaya	Kalideres - Purwokerto	1
		Kalideres - Tegal	2
11	Dewi Sri	Kalideres - Pekalongan	3
		Kalideres - Tegal	1
12	Gapuraning Rahayu	Kalideres - Cilacap	1
		Kalideres - Majenang	1
13	Garuda Mas	Kalideres - Jepara	1
		Kalideres - Medan	1
		Kalideres - pati	1
14	Handoyo	Kalideres - Bandung	1
		Kalideres - Purwodadi	1
		Kalideres - Solo	1
15	Harta Sanjaya	Kalideres - Ponorogo	1
		Kalideres - Tegal	1
16	Hartika	Kalideres - Jepara	1
17	Haryanto	Kalideres - Jepara	1
18	Karunia Bakti	Kalideres - Garut	1
19	Karya Bakti	Kalideres - Singaparna	1
20	Karya Sari	Kalideres - Purworejo	1
21	Kencana	Kalideres - Lampung	1
22	Kramat DJati	Kalideres - Kw Anten	1
23	Kramat Jati	Kalideres - Semarang	1
24	Kramat Jati	Kalideres - Solo	1
25	Krui Putra	Kalideres - Bengkulu	1
26	Kurnia Bakti	Kalideres - Garut	2
		Kalideres - Singaparna	1
27	Laju Prima	Kalideres - Cepu	1
		Kalideres - Pekalongan	1
28	Lautan jaya	Kalideres - Lahat	1
29	Lautan Jaya	Kalideres - Lahat	1
30	Luragung	Kalideres - Kuningan	1
31	Mekar Prima	Kalideres - Cilacap	1
		Kalideres - Cilegon	1
32	Merdeka	Kalideres - Pangandaran	1
33	Minanga	Kalideres - Belitung	3

No	Operator	Route	No. of Bus
		Kalideres - Lampung	1
		Kalideres - Palembang	3
34	Muji Jaya	Kalideres - Jepara	1
		Kalideres - Purwokerto	1
35	Murex	Kalideres - Muara Duo	1
36	Murni	Kalideres - Labuan	3
37	Murni Jaya	Kalideres - Cilacap	2
		Kalideres - Karawang	1
		Kalideres - Kebumen	1
		Kalideres - Labuan	35
		Kalideres - Labuan - Yogyakarta	1
		Kalideres - Merak	1
		Kalideres - Yogyakarta	4
38	Mutiara	Kalideres - Labuan	2
39	New Santika	Kalideres - Rembang	1
		Kalideres - Semarang	1
40	Nusantara	Kalideres - Kudus	1
41	Nusantara	Kalideres - Kudus	1
42	Pahala Kencana	Kalideres - Wonosobo	1
43	Pandu Jaya	Kalideres - Sukabumi	3
44	Primajasa	Kalideres - Bandung	14
45	Putra Sulung	Kalideres - Palembang	3
46	Putri Candi	Kalideres - Lampung	3
47	Safari	Kalideres - Solo	4
48	Sahabat	Kalideres - Cirebon	3
49	Sari Indah	Kalideres - Surabaya	1
50	Sedya Mulya	Kalideres - Pacitan - Wonogiri	1
51	Sedya Mulya	Kalideres - Brebes	1
52	Setia Negara	Kalideres - Pekalongan	4
		Kalideres - Semarang	1
53	Sinar Jaya	Kalideres - Bandung	1
		Kalideres - Cilacap	2
		Kalideres - Pekalongan	3
		Kalideres - Purwokerto	6
		Kalideres - Purworejo	1
		Kalideres - Slawi	5
		Kalideres - Tegal - Slawi	2
		Kalideres - Tegal	4
Kalideres - Wonosobo	2		
54	Sumba Putra	Kalideres - Wonogiri	1
55	Tiga Kencana	Kalideres - Lampung	1
56	Tugu Jaya	Kalideres - Sukabumi	3

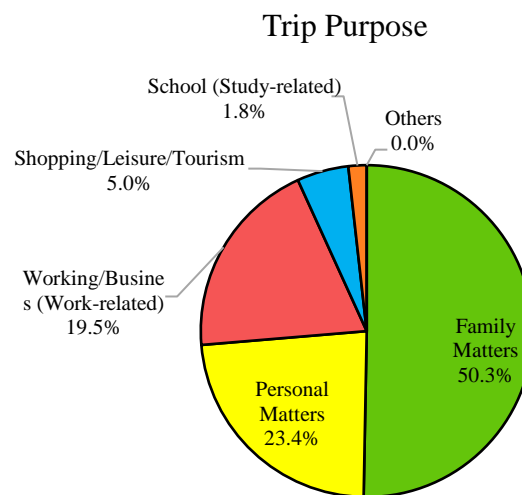


No	Operator	Route	No. of Bus
57	Warga Baru	Kalideres - Cikampek	1
		Kalideres - Karawang	3
58	Zentrum	Kalideres - Cebu	1

Source: JUTPI 2

### Trip purpose

Similar with passengers' characteristic of Kampung Rambutan Terminal, people chose bus from Kalideres Terminal to go outside JABODETABEK for family matters (50.30%) by using a bus. The other reasons for passengers were personal (23.37%) and business matters (19.53%).

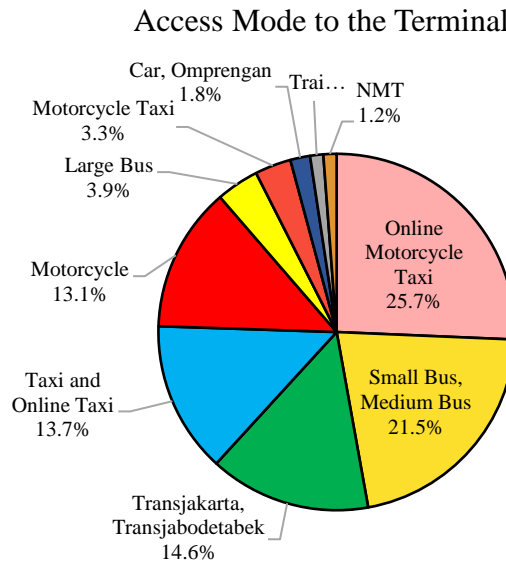


Source: JUTPI 2

### **Figure 96 Trip Purposes of Intercity Bus Passengers on Kalideres Terminal**

#### Access mode to the departure terminal

The survey gives information that online motorcycle taxi and small - medium bus had similar portion, at 26.00% and 21.00%. Transjakarta or Transjabodetabek (15.00%) were also used for passengers to go to terminal and motorcycle-based vehicle were share similar proportion; online taxi and motorcycle, at 14.00% and 13% respectively.



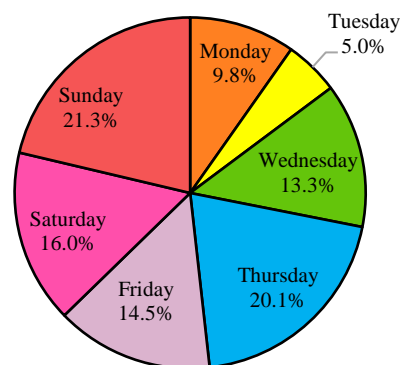
Source: JUTPI 2

**Figure 97 Access Modes to the Kalideres Terminal**

Adjacent trip (day)

In Kalideres Terminal, passengers chose to conduct adjacent trip during weekend especially Sunday (21.30%) and Saturday (15.98%). Thursday (20.12%) and Friday (14.50%) was the other preferred days for passengers to have the adjacent trip. The distribution of passengers' preferences for the day of adjacent trip is shown below.

### Adjacent Trip (Day)

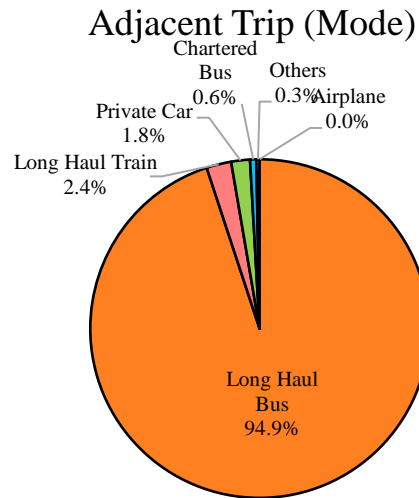


Source: JUTPI 2

**Figure 98 Adjacent Trip (Day) for Passengers on Kalideres Terminal**

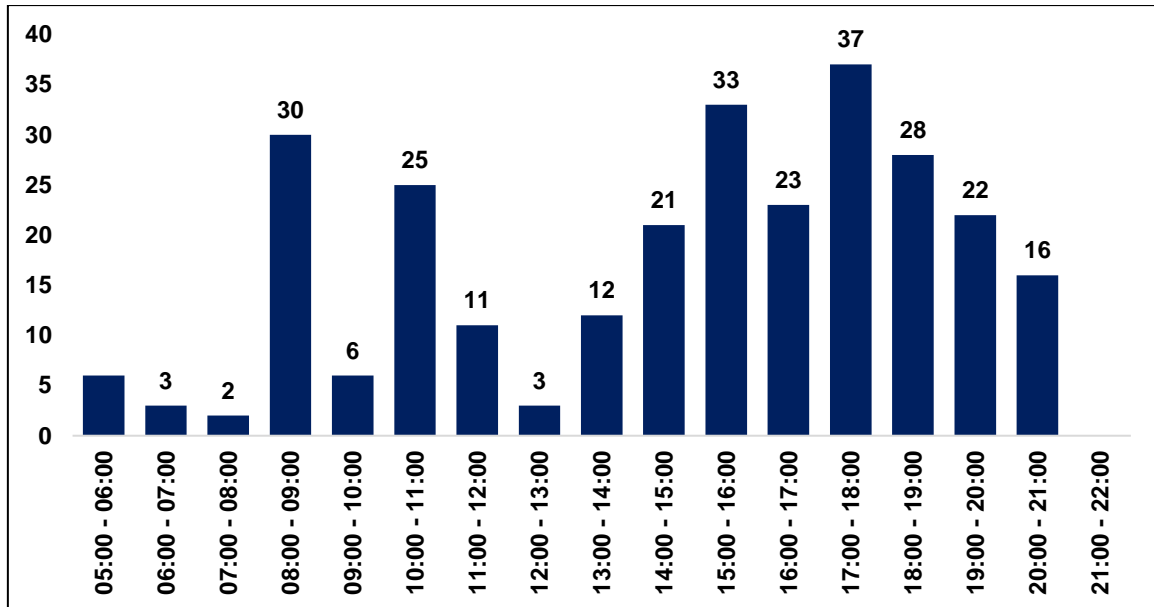
Adjacent trip (mode)

Similar with other locations, long haul bus was the chosen mode to take the adjacent trip. Only small portions of passengers took long haul train, car and chartered bus to go back to their initial departure. The distribution of passengers' preferences of adjacent mode is shown below:



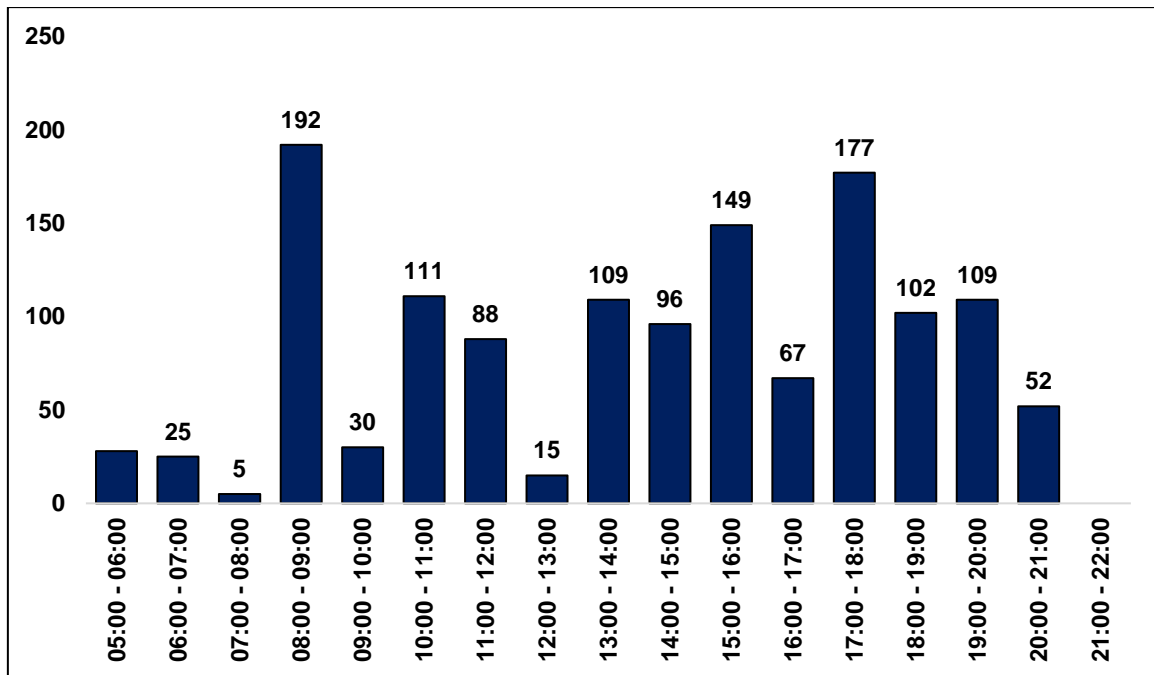
Source: JUTPI 2

**Figure 99 Adjacent Trip (Mode) for Passengers on Kalideres Terminal**  
Passenger Flow



Source: JUTPI 2

**Figure 100. Hourly Bus Frequency Fluctuation at Kalideres Bus Terminal**

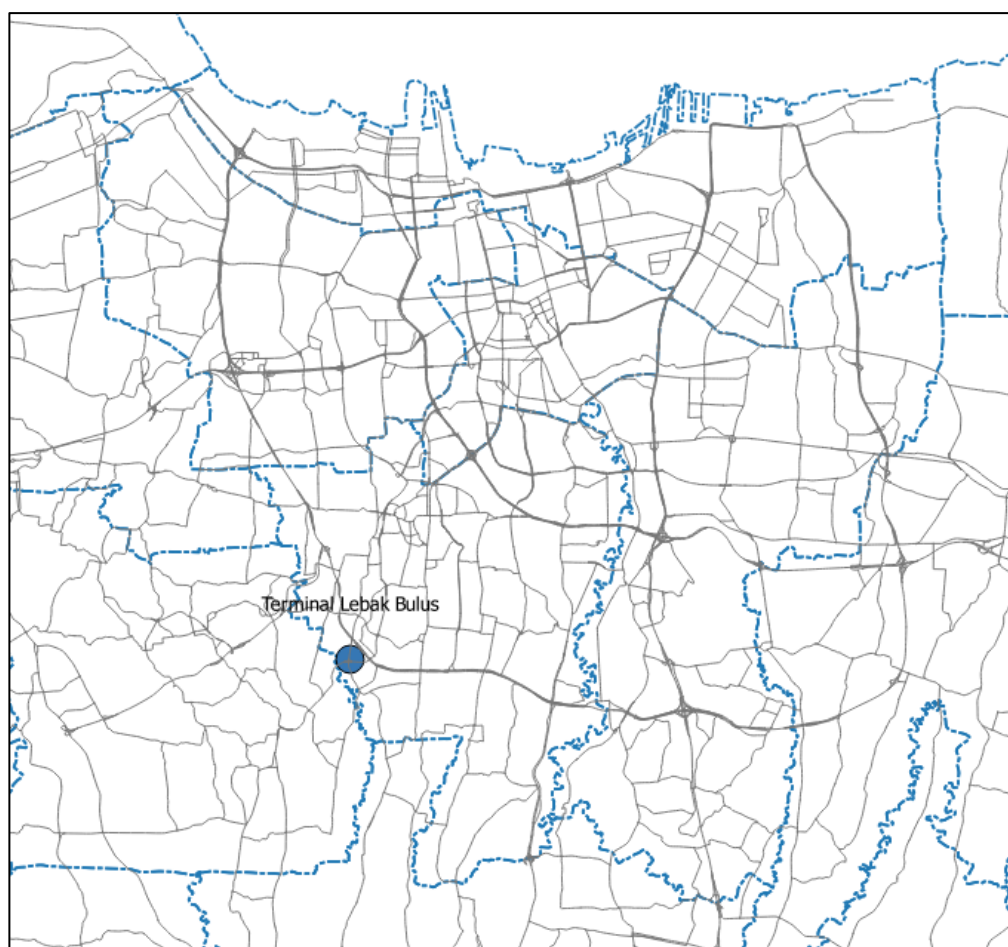


Source: JUTPI 2

**Figure 101. Hourly Passenger Fluctuation at Kalideres Bus Terminal**

**c Lebak Bulus**

Lebak Bulus bus terminal is located in Lebak Bulus, South Jakarta. Because of the MRT station construction on that existing area, intercity bus that usually serves Lebak Bulus bus terminal, scattered around existing bus terminal. Survey was conducted on August 2<sup>nd</sup>, 2018.



Source: JUTPI 2

**Figure 102. Location of Lebak Bulus Bus Terminal**

**Table 69. Service Route and Trip of Intercity Bus Operator at Lebak Bulus Bus Terminal**

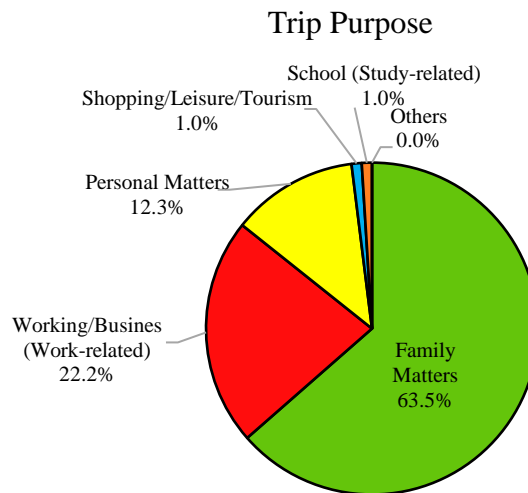
No	Operator	Route	No. of Bus
1	Agra Mas	Lebak Bulus - Jepara	1
		Lebak Bulus - Pacitan	1
2	Aneka Jaya	Lebak Bulus - Pacitan	2
		Lebak Bulus - Solo	7
3	Asli Prima	Lebak Bulus - Wonosobo	1
4	Bejeu	Lebak Bulus - Jepara	1
5	Dedi Jaya	Lebak Bulus - Tegal	1
6	Dieng Indah	Lebak Bulus - Wonosobo	2
7	Gajah Mulia Sejahtera	Lebak Bulus - Solo	1
8	Gapuraning Rahayu	Lebak Bulus - Sidareja	2
		Lebak Bulus - Wangon	2
9	Garuda Mas	Lebak Bulus - Cepu	1
10	Gunung Harta	Lebak Bulus - Madura	3
		Lebak Bulus - Malang	1

No	Operator	Route	No. of Bus
11	Gunung Mulia	Lebak Bulus - Wonogiri	2
12	Haryanto	Lebak Bulus - Cepu	2
		Lebak Bulus - Klaten	1
		Lebak Bulus - Kudus	2
13	Hasta Putra	Lebak Bulus - Solo	1
14	Jaya	Lebak Bulus - Ponorogo	1
15	Laju Prima	Lebak Bulus - Blora	1
		Lebak Bulus - Solo	2
		Lebak Bulus - Wonogiri	1
16	Muji Jaya	Lebak Bulus - Jepara	2
17	Murai Jaya	Lebak Bulus - Bobotsari	1
18	Murni Jaya	Lebak Bulus - Purworejo	1
19	New Santika	Lebak Bulus - Jepara	1
20	Nusantara	Lebak Bulus - Kudus	1
21	Pahala Kencana	Lebak Bulus - Madura	1
		Lebak Bulus - Malang	1
		Lebak Bulus - Ponorogo	1
22	PO. Handoyo	Lebak Bulus - Solo	1
23	PO. Haryanto	Lebak Bulus - Jepara	16
		Lebak Bulus - Madura	11
		Lebak Bulus - Ponorogo	1
		Lebak Bulus - Wonogiri	5
24	Prayogo	Lebak Bulus - Klaten	1
25	Primajasa	Lebak Bulus - Bandung	25
		Lebak Bulus - Garut	35
		Lebak Bulus - Tasikmalaya	31
26	Putra Luragung	Lebak Bulus - Kuningan	19
27	Putra Mulya	Lebak Bulus - Wonogiri	1
28	Ramayana	Lebak Bulus - Yogyakarta	1
29	Rosalia Indah	Lebak Bulus - Ponorogo	1
		Lebak Bulus - Solo	2
		Lebak Bulus - Surabaya	1
		Lebak Bulus - Yogyakarta	2
30	Selamat Trans Abadi	Lebak Bulus - Pati	1
31	Sinar Jaya	Lebak Bulus - Cilacap	1
32	Sindang Laut	Lebak Bulus - Cirebon	5
		Lebak Bulus - Kuningan	2
		Lebak Bulus - Pacitan	1
33	Sumba Putra	Lebak Bulus - Solo	1
34	Sumber Harapan	Lebak Bulus - Purwadadi	1
35	Tunggal Jaya	Lebak Bulus - Ponorogo	1
36	Zentrum	Lebak Bulus - Blora	1

Source: JUTPI 2

### Trip purpose

The survey shows that most of the bus passengers at Lebak Bulus Terminal had the trip purpose of family matters, business and personal matters with shares 63.55%, 22.17% and 12.32%, respectively. However, only few (0.99%) students chose bus for their option to travel outside JABODETABEK.



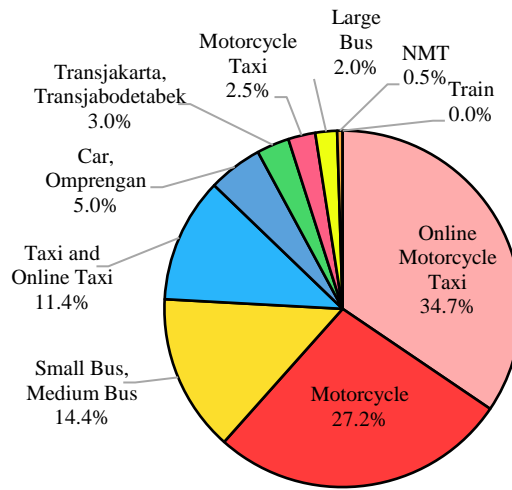
Source: JUTPI 2

**Figure 103 Trip Purposes of Bus Passengers on Lebak Bulus Terminal**

### Access mode to the departure station

The survey gives information that at 34.65% of passengers chose to go to station by online motorcycle, followed by motorcycle, which made up 27.23% of total passengers. Conversely, people were not keen on travelling to terminal by walking, large bus, motorcycle taxi, Transjakarta and car.

### Access Mode to the Terminal



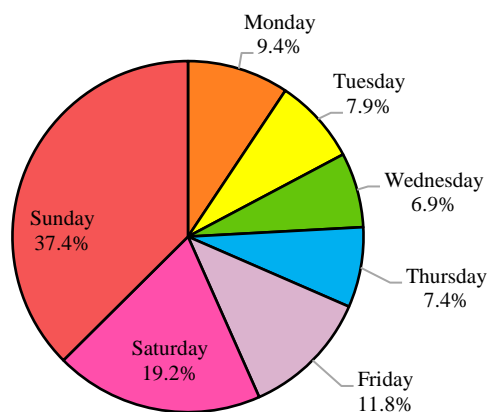
Source: JUTPI 2

**Figure 104 Access Modes to the Lebak Bulus Terminal**

### Adjacent trip (day)

In Lebak Bulus Terminal, significant portions of passengers prefer to have adjacent trip on Sunday (37.44%), followed by Saturday, at 19.21%. The day before and after weekend also became the chosen day for passengers, which are Friday and Monday. The distribution of passengers' preferences for the day of adjacent trip is shown below.

### Adjacent Trip (Day)



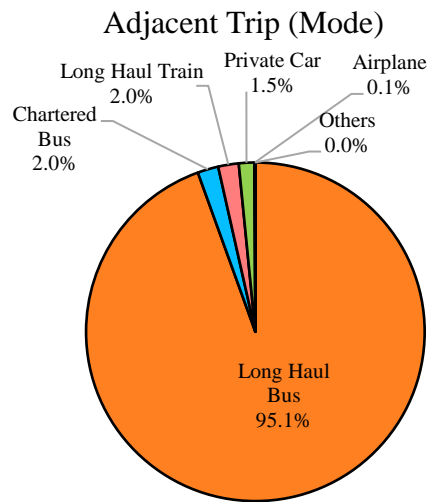
Source: JUTPI 2

**Figure 105 Adjacent Trip (Day) for Passengers on Lebak Bulus Terminal**



Adjacent trip (mode)

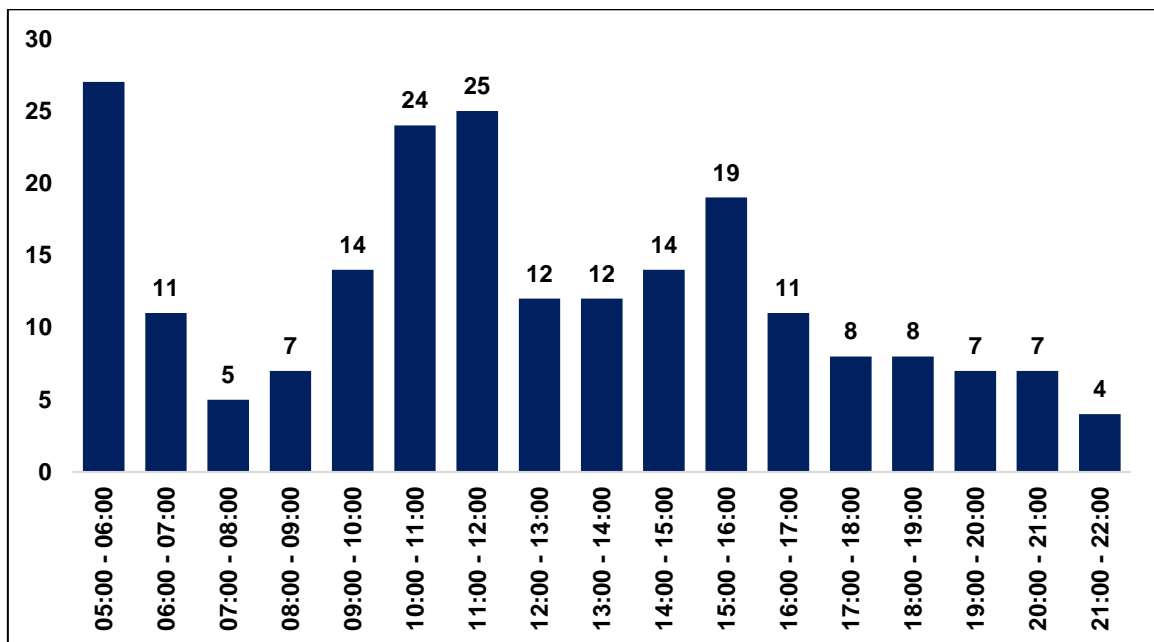
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Lebak Bulus Terminal. Only small portions of passengers took bus, car and long haul train as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

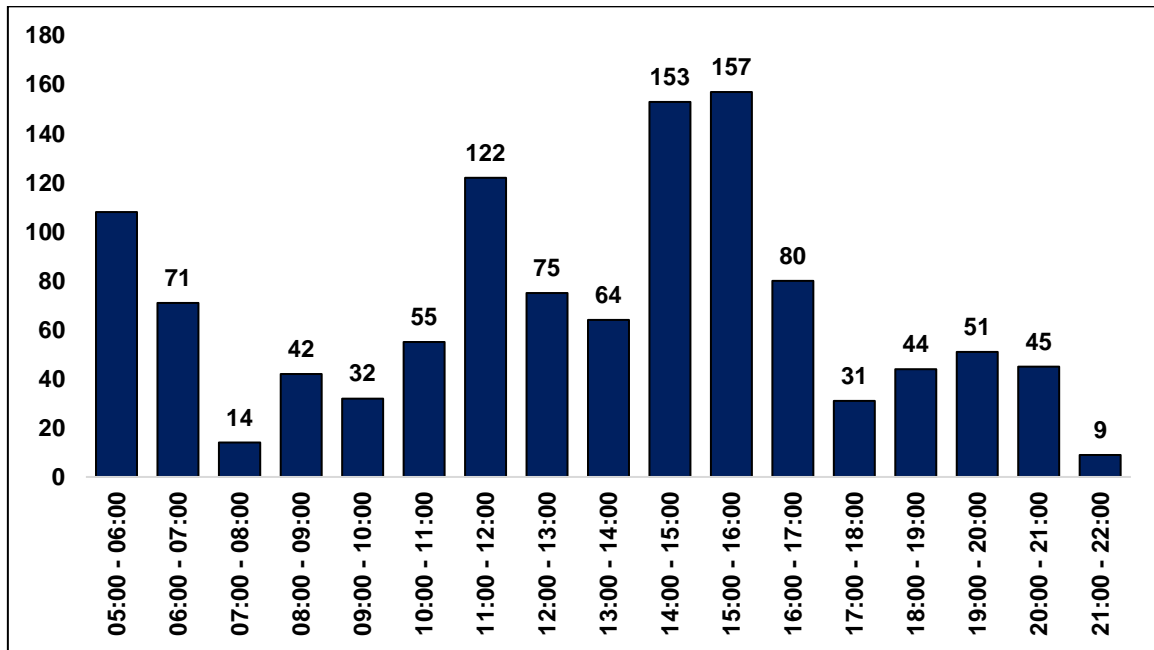
**Figure 106 Adjacent Trip (Mode) for Passengers on Lebak Bulus Terminal**

Passenger Flow



Source: JUTPI 2

**Figure 107. Hourly Bus Frequency Fluctuation at Lebak Bulus Bus Terminal**



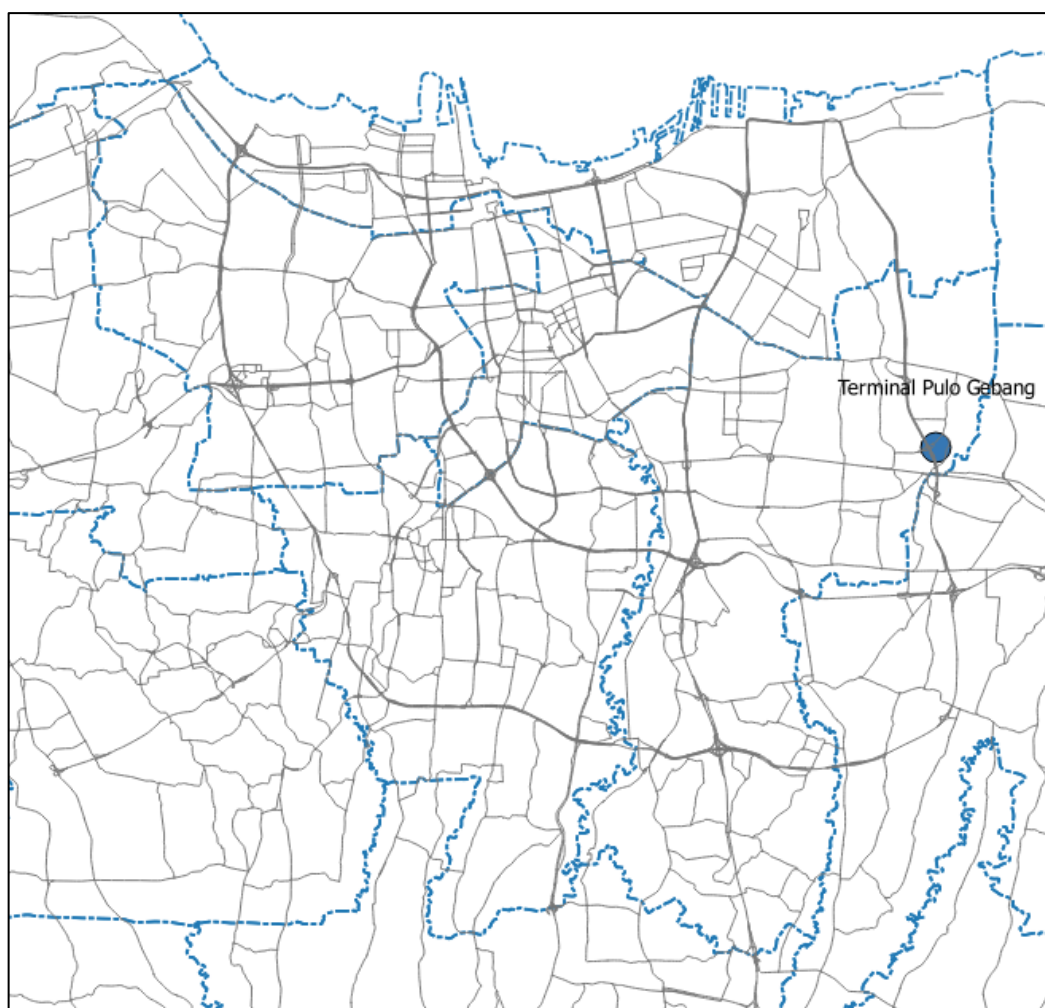
Source: JUTPI 2

**Figure 108. Hourly Passenger Fluctuation at Lebak Bulus Bus Terminal**

#### **d Pulo Gebang**

Pulo Gebang Terminal is a type A bus terminal at Cakung, in East Jakarta, Indonesia, which is arguably the largest of its kind in Southeast Asia. The terminal was opened in 28 December 2016. Buses to and from Central & East Java serves this terminal.

It is connected with other terminals of Jakarta by Transjakarta feeder bus. Some of the feeder routes connecting the terminal operates 24 hours. Survey was conducted on July 31<sup>st</sup>, 2018.



Source: JUTPI 2

**Figure 109. Location of Pulo Gebang Bus Terminal**

**Table 70. Service Route and Trip of Intercity Bus Operator at Pulo Gebang Bus Terminal**

No	Operator	Route	No. of Bus
1	Agra Mas	Pulo Gebang - Banyumas	1
		Pulo Gebang - Solo	1
2	Akas Asri	Pulo Gebang - Jember	1
3	ANS BA	Pulo Gebang - Padang	1
4	Arimbi	Pulo Gebang - Kuningan	1
		Pulo Gebang - Merak	2
5	Arimbi Jaya Agung	Pulo Gebang - Merak	1
6	Asli Prima	Pulo Gebang - Merak	1
7	Bangun Asih	Pulo Gebang - Surabaya	1
8	Bejeu	Pulo Gebang - Jepara	4
9	Budiman	Pulo Gebang - Banjar	1
		Pulo Gebang - Bojonegoro	1

No	Operator	Route	No. of Bus
		Pulo Gebang - Cirebon	1
		Pulo Gebang - Kuningan	1
		Pulo Gebang - Merak	1
		Pulo Gebang - Tasikmalaya	7
		Pulo Gebang - Wonosobo	1
10	Dahlia Indah	Pulo Gebang - Bima	1
		Pulo Gebang - Solo	3
11	Damri	Pulo Gebang - Cilacap	1
12	Dewi Sri	Pulo Gebang - Kuningan	1
		Pulo Gebang - Slawi	5
		Pulo Gebang - Suradadi	1
13	DMI	Pulo Gebang - Cilacap	1
		Pulo Gebang - Purwokerto	1
14	Duta mas	Pulo Gebang - Bima	2
15	Family Jaya	Pulo Gebang - Padang	1
		Pulo Gebang - Solo	1
16	Garuda Mas	Pulo Gebang - Brebes	1
		Pulo Gebang - Jepara	1
		Pulo Gebang - Pati	1
		Pulo Gebang - Purwodadi	1
17	Gunung Harta	Pulo Gebang - Bali	1
		Pulo Gebang - Madiun	1
18	Gunung Mulia	Pulo Gebang - Solo	1
		Pulo Gebang - Wonogiri	2
19	Harapan Jaya	Pulo Gebang - Blitar	1
20	Haryanto	Pulo Gebang - Bojonegoro	1
		Pulo Gebang - Demak	1
		Pulo Gebang - Kudus	1
		Pulo Gebang - Madura	4
		Pulo Gebang - Ponorogo	1
		Pulo Gebang - Purworejo	1
21	Jaya Perkasa	Pulo Gebang - Merak	1
22	Jaya Putih	Pulo Gebang - Wonogiri	1
23	Karya Sari	Pulo Gebang - Purworejo	1
24	Kramat Jati	Pulo Gebang - Pekalongan	1
25	Lorena	Pulo Gebang - Cilacap	1
		Pulo Gebang - Malang	1
		Pulo Gebang - Pamekasan	1
		Pulo Gebang - Pekalongan	1
		Pulo Gebang - Sumatra	1
26	Luragung	Pulo Gebang - Ajibarang	1
27	Luragung Jaya	Pulo Gebang - Cirebon	9
		Pulo Gebang - Kuningan	8

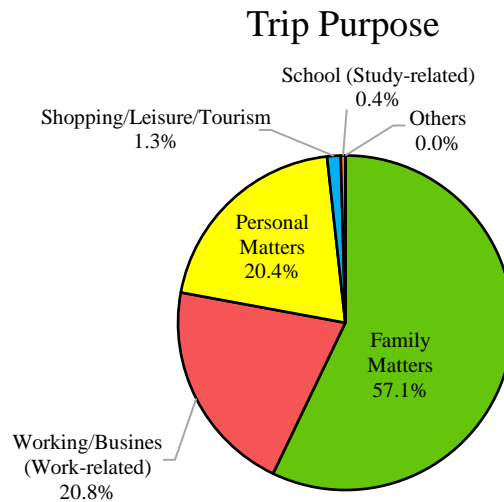
No	Operator	Route	No. of Bus		
		Pulo Gebang - Tasikmalaya	1		
28	Luragung Termuda	Pulo Gebang - Kuningan	1		
29	Madukismo	Pulo Gebang - Madura	3		
30	Maju Jaya	Pulo Gebang - Jepara	1		
31	Majumuda Mandiri	Pulo Gebang - Solo	1		
32	Murni Jaya	Pulo Gebang - Ajibarang	1		
		Pulo Gebang - Bojonegoro	1		
		Pulo Gebang - Merak	2		
		Pulo Gebang - Pekalongan	1		
		Pulo Gebang - Wonogiri	1		
32	Murni Jaya	Pulo Gebang - Wonosobo	1		
		33	Nusantara	Pulo Gebang - Kudus	1
		34	Pahala Kencana	Pulo Gebang - Bali	1
				Pulo Gebang - Bojonegoro	1
				Pulo Gebang - Madura	7
Pulo Gebang - Palembang	1				
Pulo Gebang - Ponorogo	3				
Pulo Gebang - Purwokerto	1				
Pulo Gebang - Solo	1				
Pulo Gebang - Surabaya	3				
Pulo Gebang - Wonosobo	1				
35	Po Handoyo	Pulo Gebang - Klaten	1		
36	Po Haryanto	Pulo Gebang - Kuningan	1		
37	Putra Mugi	Pulo Gebang - Yogyakarta	1		
38	Putra Mulya	Pulo Gebang - Wonogiri	1		
38	Ramayana	Pulo Gebang - Yogyakarta	1		
39	Rasa Sayang	Pulo Gebang - Bima	2		
		Pulo Gebang - Kuningan	1		
40	Raya	Pulo Gebang - Semarang	1		
		Pulo Gebang - Solo	1		
41	Safari Darma Raya	Pulo Gebang - Semarang	2		
42	SAN	Pulo Gebang - Blitar	2		
43	San Liner	Pulo Gebang - Bengkulu	1		
44	Semarang Jaya	Pulo Gebang - Semarang	1		
44	Setia Jaya	Pulo Gebang - Kuningan	3		
45	Setia Negara	Pulo Gebang - Cirebon	1		
		Pulo Gebang - Kuningan	18		
		Pulo Gebang - Merak	2		
		Pulo Gebang - Pekalongan	2		
45	Setia Negara	Pulo Gebang - Tasikmalaya	1		
		46	Shantika	Pulo Gebang - Jepara	3
		Pulo Gebang - Kudus	1		
47	Sinar Jaya	Pulo Gebang - Bali	1		
		Pulo Gebang - Bobotsari	2		

No	Operator	Route	No. of Bus
		Pulo Gebang - Brebes	2
		Pulo Gebang - Bumi Ayu	6
		Pulo Gebang - Cilacap	4
		Pulo Gebang - Demak	1
		Pulo Gebang - Kuningan	2
		Pulo Gebang - Madura	1
		Pulo Gebang - Pamekasan	1
		Pulo Gebang - Pekalongan	18
		Pulo Gebang - Pemalang	2
		Pulo Gebang - Purbalingga	1
		Pulo Gebang - Purwokerto	14
		Pulo Gebang - Purworejo	1
		Pulo Gebang - Slawi	3
		Pulo Gebang - Solo	1
47	Sinar Jaya	Pulo Gebang - Tegal	5
		Pulo Gebang - Wonogiri	1
		Pulo Gebang - Wonosobo	4
48	SM Prima	Pulo Gebang - Merak	8
		Pulo Gebang - Ponorogo	1
49	Sudiro Tunggal Jaya	Pulo Gebang - Ponorogo	1
50	Tiara Mas	Pulo Gebang - Mataram	1
51	Titian Mas	Pulo Gebang - NTB	1

Source: JUTPI 2

#### Trip purpose

The survey shows that significant number of the bus passengers at Pulo Gebang Terminal chose intercity bus to go outside JABODETABEK for family matters, business, and personal matters with shares 57.11%, 20.79% and 20.35%, respectively. However, only few (0.99%) students chose bus for their option to travel outside JABODETABEK.

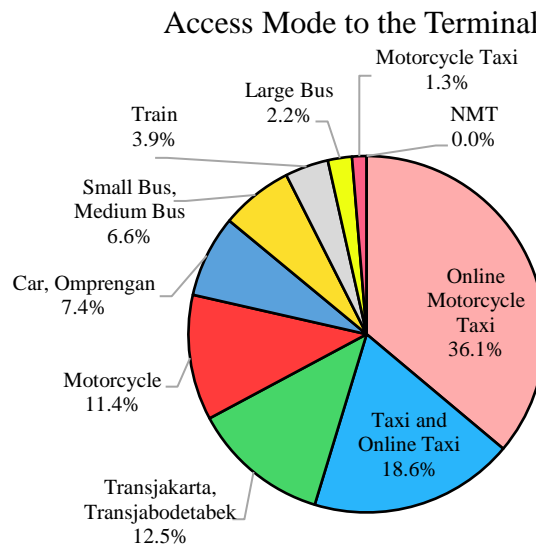


Source: JUTPI 2

**Figure 110 Trip Purposes of Bus Passengers on Pulo Gebang Terminal**

Access mode to the departure terminal

The survey gives information that 36.11% of passengers chose to go to station by online motorcycle taxi, followed by taxi or online taxi, which made up 18.60% of total passengers. Conversely, people were not keen on travelling to terminal by walking, motorcycle taxi, large bus, train and small-medium bus.

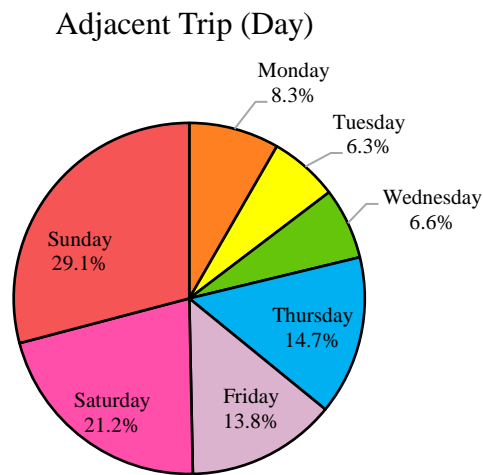


Source: JUTPI 2

**Figure 111 Access Modes to the Pulo Gebang Terminal**

Adjacent trip (day)

Same trends at Lebak Bulus Terminal has shown in Pulo Gebang Terminal that popular day to take adjacent trip was Sunday (29.10%), followed by Saturday (21.23%). The day before and after weekend also became the chosen day for passengers, which are Friday and Monday. The distribution of passengers' preferences for the day of adjacent trip is shown below.



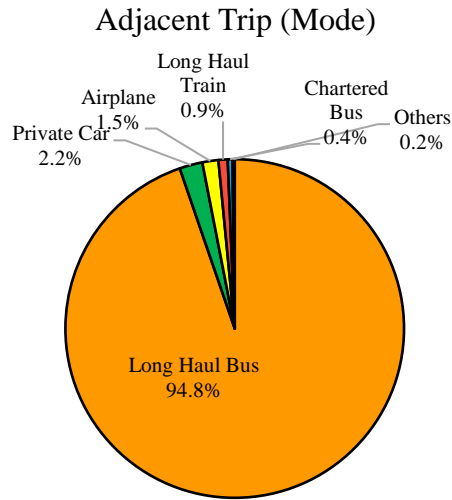
Source: JUTPI 2

**Figure 112 Adjacent Trip (Day) for Passengers on Pulo Gebang Terminal**

Adjacent trip (mode)

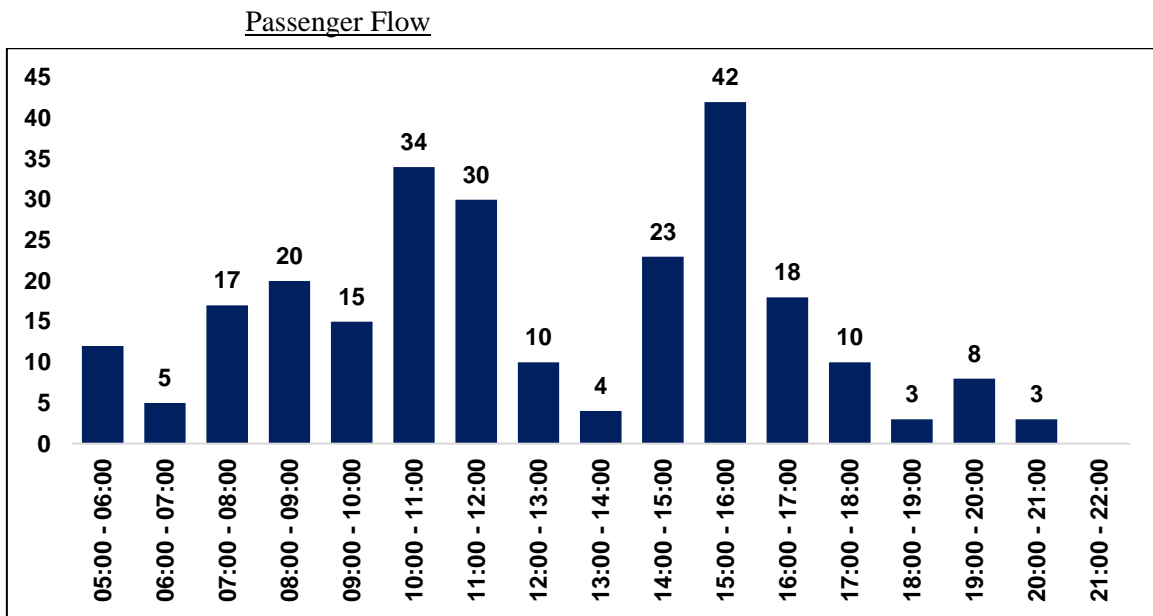
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Pulo Gebang Terminal. Only small portions of passengers took car, airplane and train as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:





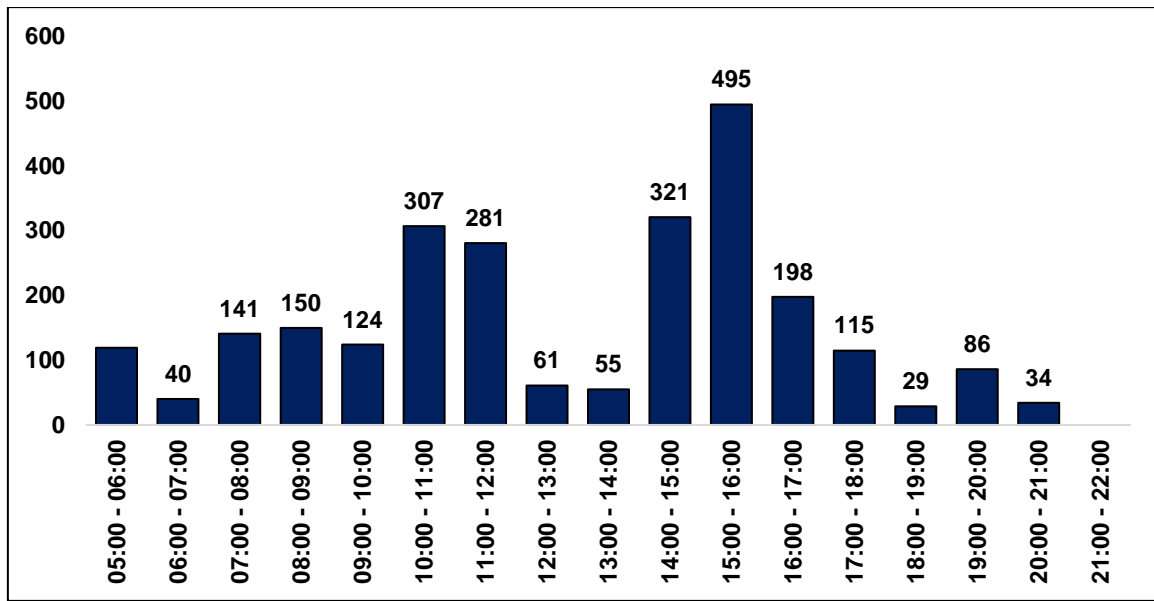
Source: JUTPI 2

**Figure 113 Adjacent Trip (Mode) for Passengers on Pulo Gebang Terminal**



Source: JUTPI 2

**Figure 114. Hourly Bus Frequency Fluctuation at Pulo Gebang Bus Terminal**

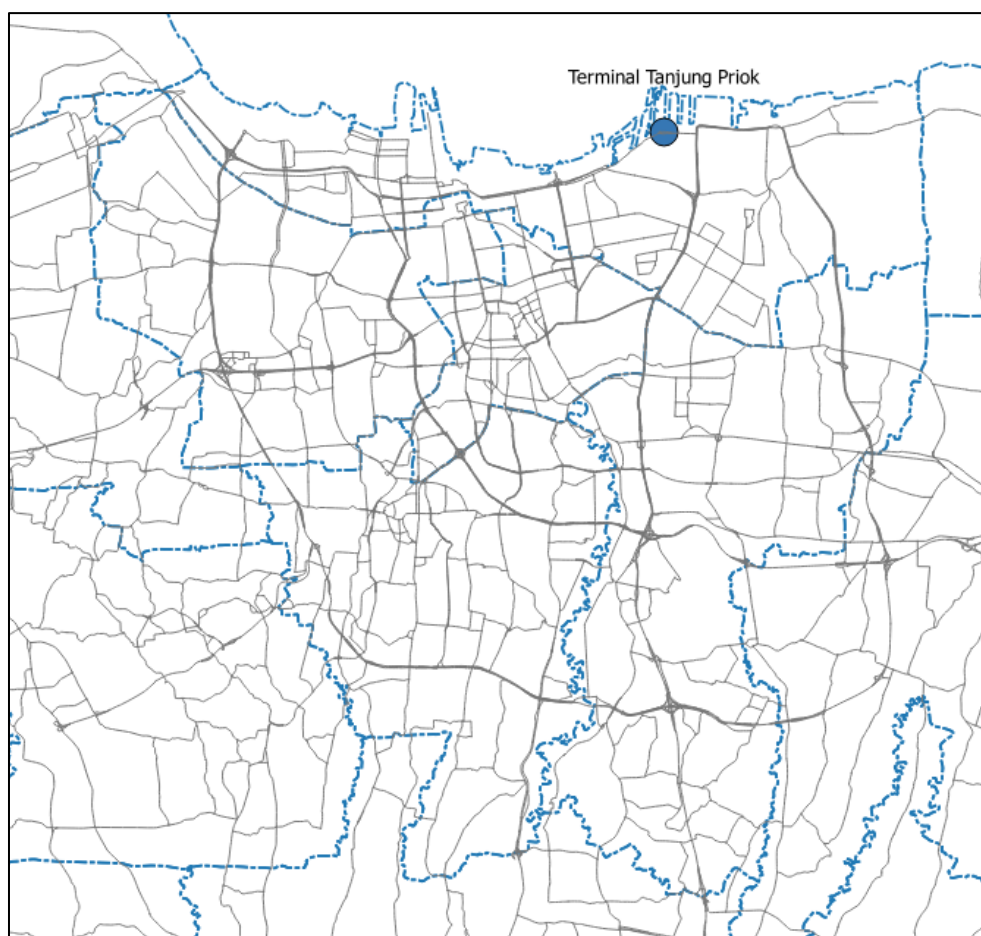


Source: JUTPI 2

**Figure 115. Hourly Passenger Fluctuation at Pulo Gebang Bus Terminal**

#### **e Tanjung Priok**

Tanjung Priok Bus Terminal is located in the northern part of Jakarta precisely at Kelurahan Tanjung Priok, North Jakarta. Tanjung Priok Terminal serves medium and long-distance routes to Serang, West Jawa, Central Java and East Java. Mostly, the bus operators provide large bus with economy class. Some of the operators also provide the business and executive class. The survey was conducted on August 7<sup>th</sup>, 2018.



Source: JUTPI 2

**Figure 116. Location of Tanjung Priok Bus Terminal**

**Table 71. Service Route and Trip of Intercity Bus Operator at Tanjung Priok Bus Terminal**

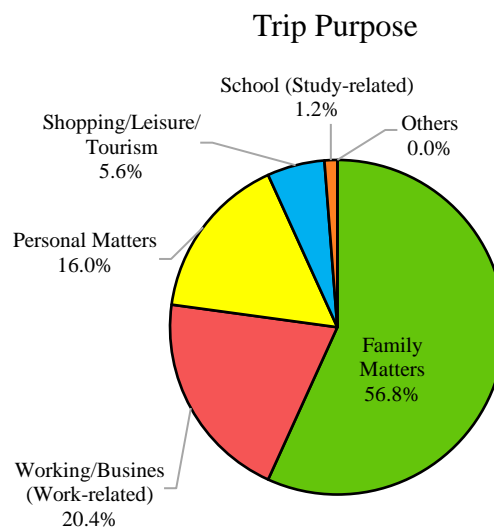
No	Operator	Route	No. of Departing Bus
1	Arimbi	Tanjung Priok - Merak	11
2	Budiman	Tanjung Priok - Tasikmalaya	3
3	Dewi Sri	Tanjung Priok - Bumi Ayu	1
		Tanjung Priok - Semarang	1
4	Garuda Mas	Tanjung Priok - Blora	1
5	Haryanto	Tanjung Priok - Madura	1
		Tanjung Priok - Wonogiri	1
6	Karina	Tanjung Priok - Madura	2
7	Laju Utama	Tanjung Priok - Sukabumi	2
8	Lorena	Tanjung Priok - Madura	1
9	Luragung Jaya	Tanjung Priok - Cirebon	1
		Tanjung Priok - Kuningan	2
10	Madukismo	Tanjung Priok - Klaten	1
11	Murni Jaya	Tanjung Priok - Cilacap	2

No	Operator	Route	No. of Departing Bus
		Tanjung Priok - Purwokerto	1
		Tanjung Priok - Purworejo	1
		Tanjung Priok - Yogyakarta	1
12	Pahala Kencana	Tanjung Priok - Madura	3
		Tanjung Priok - Wonosobo	1
13	Pandu Jaya	Tanjung Priok - Sukabumi	1
14	Primajasa	Tanjung Priok - Bandung	12
		Tanjung Priok - Merak	13
		Tanjung Priok - Rangkas Bitung	8
15	Purijaya Baru	Tanjung Priok - Pekalongan	1
16	Sahabat	Tanjung Priok - Kuningan	1
17	Setia Negara	Tanjung Priok - Cirebon	1
		Tanjung Priok - Kuningan	1
		Tanjung Priok - Pematang	1
18	Sinar Jaya	Tanjung Priok - Bumi Ayu	1
		Tanjung Priok - Cilacap	1
		Tanjung Priok - Majenang	1
		Tanjung Priok - Pekalongan	4
		Tanjung Priok - Purwodadi	1
		Tanjung Priok - Purwokerto	1
		Tanjung Priok - Purworejo	1
		Tanjung Priok - Sidareja	1
		Tanjung Priok - Tegal Slawi	2
		Tanjung Priok - Wonosobo	1
19	Sudiro Tungga Jaya	Tanjung Priok - Ponorogo	1
20	Warga Baru	Tanjung Priok - Karawang	2

Source: JUTPI 2

### Trip purpose

The majority of number of the bus passengers at Tanjung Priok Terminal chose intercity bus to go outside JABODETABEK because they were doing some family matters (56.79%), though the portion of passengers going outbound JABODETABEK for business and personal matters was noticeably only around 20% for each reason. Only small portion of passengers were travelling for shopping/leisure/tourism (5.56%) and school (1.23%).

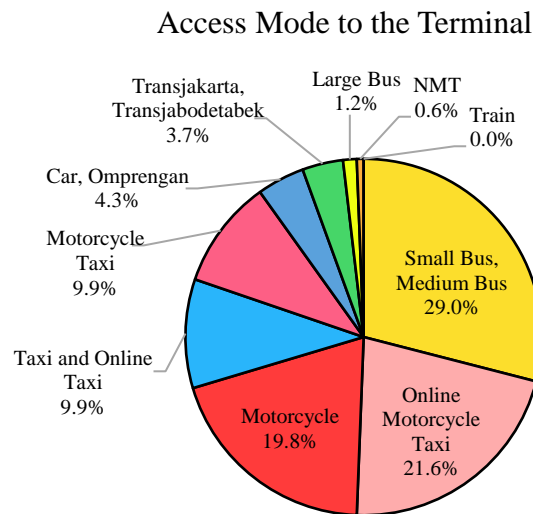


Source: JUTPI 2

**Figure 117 Trip Purposes of Bus Passengers on Tanjung Priok Terminal**

### Access mode to the departure terminal

The survey gives information that number of passengers (29.01%) chose to go to terminal by small-medium bus, followed by online motorcycle taxi, which made up 21.60% of total passengers. A different concern that only few people were using train, walk, large bus, Transjakarta and car to go to the terminal.

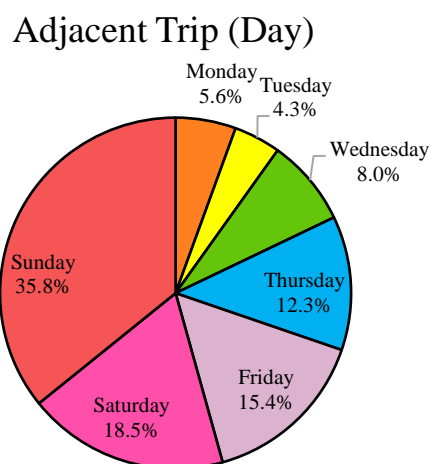


Source: JUTPI 2

**Figure 118 Access Modes to the Tanjung Priok Terminal**

Adjacent trip (day)

Passengers at Tanjung Priok Terminal had similar tendency with several surveyed location that the most preferred day to take adjacent trip was Sunday (35.80%), followed by Saturday (18.52%). Friday and Thursday were the day on weekdays that popular among passengers to be a chosen day for having adjacent trip. The distribution of passengers' preferences for the day of adjacent trip is shown below.

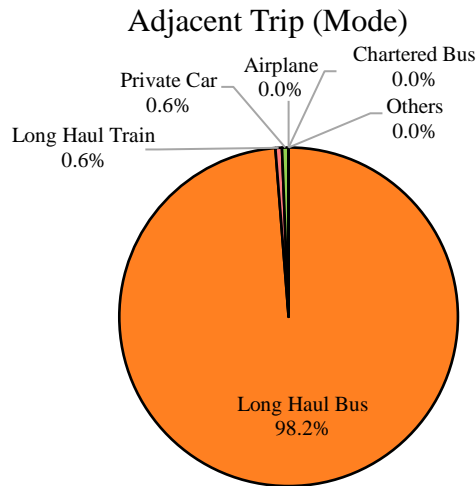


Source: JUTPI 2

**Figure 119 Adjacent Trip (Day) for Passengers on Tanjung Priok Terminal**

Adjacent trip (mode)

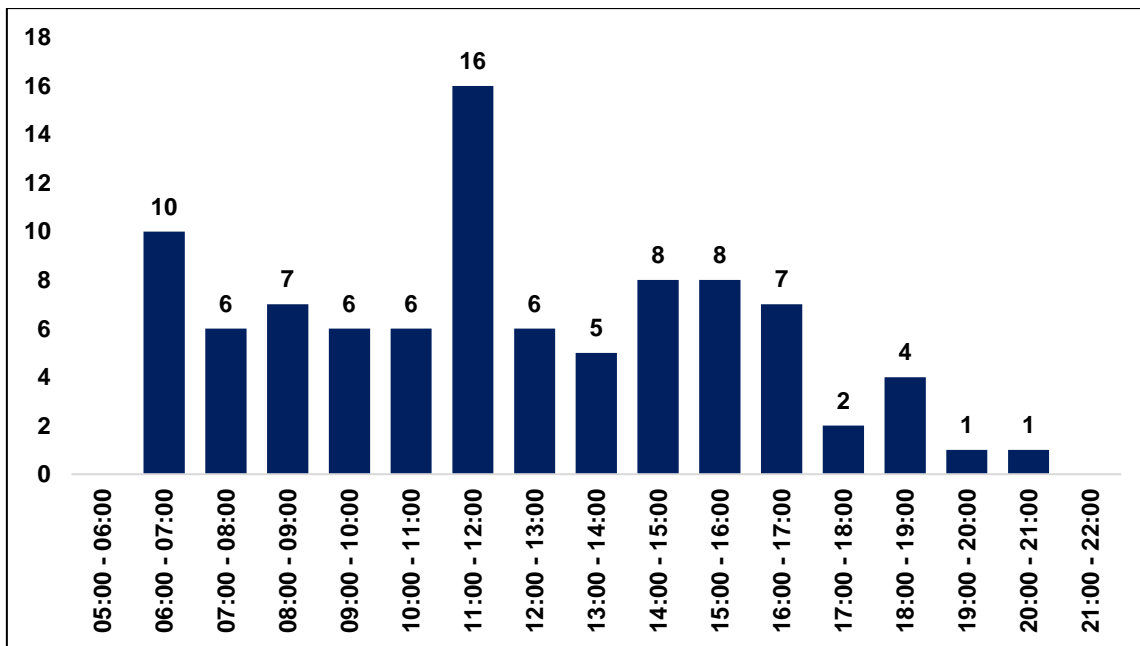
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Tanjung Priok Terminal. Only small portions of passengers took train car, and airplane as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

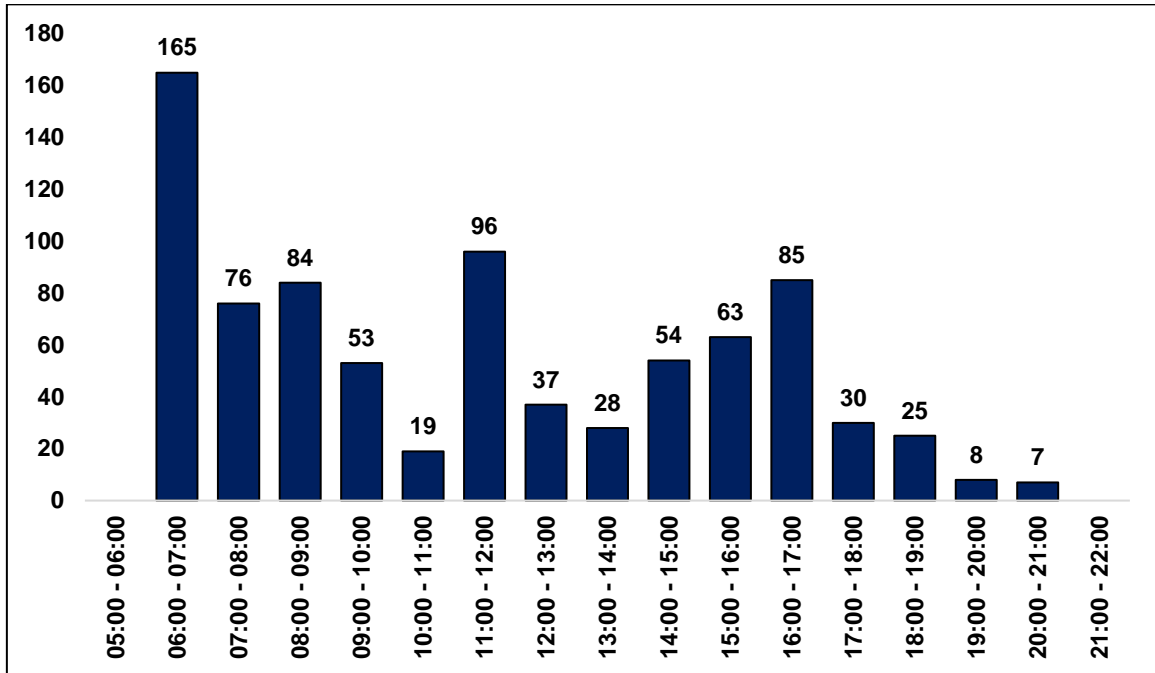
**Figure 120 Adjacent Trip (Mode) for Passengers on Tanjung Priok Terminal**

Passenger Flow



Source: JUTPI 2

**Figure 121. Hourly Bus Frequency Fluctuation at Tanjung Priok Bus Terminal**



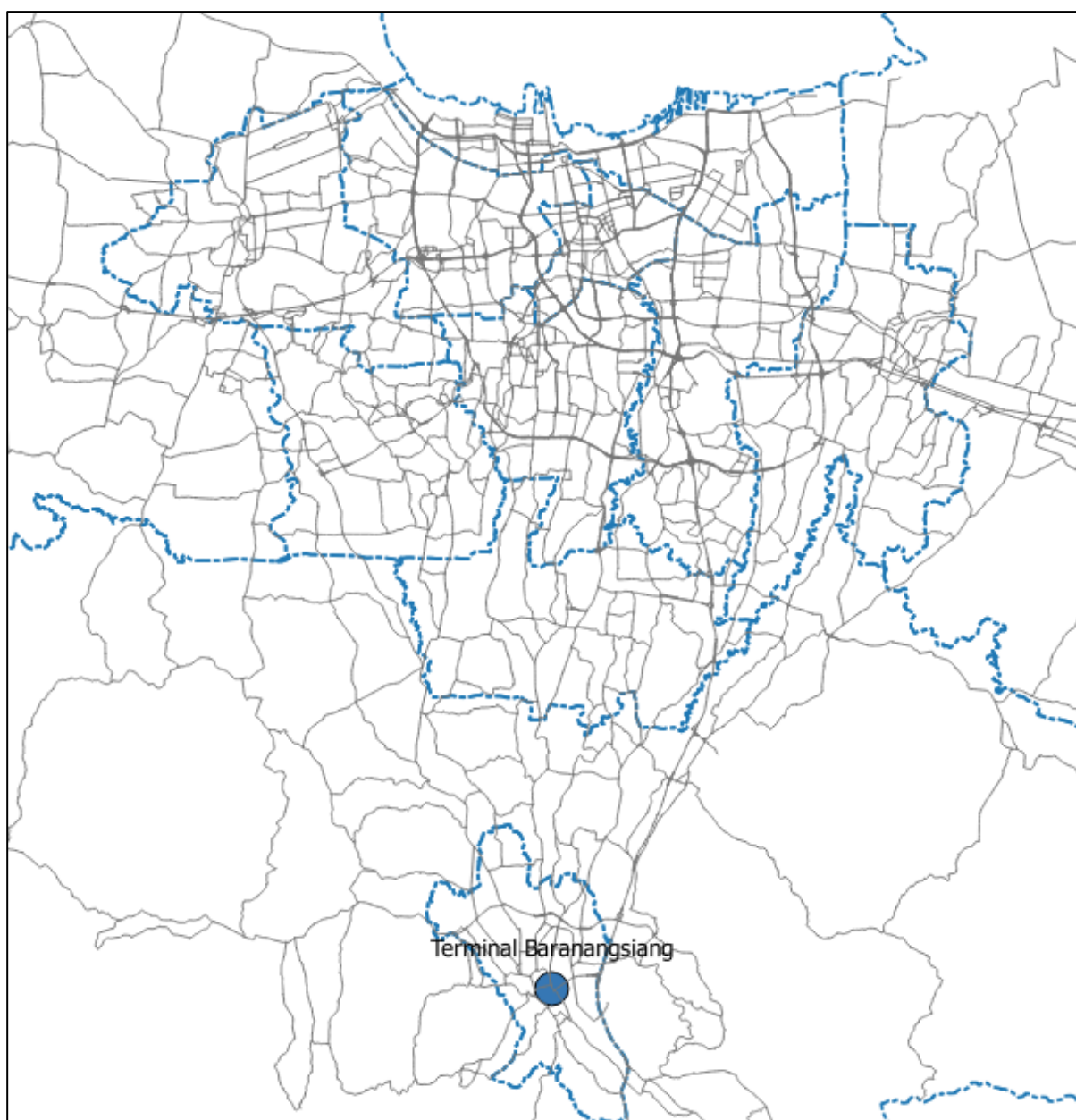
Source: JUTPI 2

**Figure 122. Hourly Passenger Fluctuation at Tanjung Priok Bus Terminal**

**f Baranangsiang**

Baranangsiang Bus Terminal is located in the City of Bogor, precisely at Kelurahan Baranangsiang, Bogor. This terminal delivers intercity routes to most cities in Jawa Barat. There are two types of bus that provide intercity routes, medium and large bus. Survey conducted on 2<sup>nd</sup> and 3<sup>rd</sup> August 2018. The survey was conducted in 2 days due to the permit from the Chief of Terminal.





Source: JUTPI 2

**Figure 123. Location of Baranangsiang Bus Terminal**

**Table 72. Service Route and Trip of Intercity Bus Operator at Baranangsiang Bus Terminal**

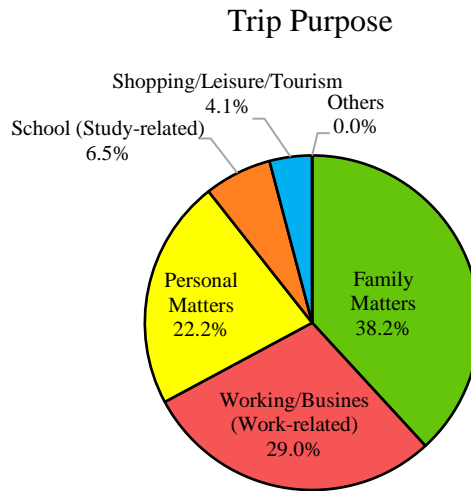
No	Operator	Route	No. of Bus
1	Agra Mas	Baranangsiang - Karawang	10
2	ALS	Baranangsiang - Medan	1
3	Arimbi	Baranangsiang - Merak	9
4	Bahagia	Baranangsiang - Bandung	5
5	Bela Utama	Baranangsiang - Bandung	3
6	Bima Suci	Baranangsiang - Merak	5

No	Operator	Route	No. of Bus
7	Bintang Labuan	Baranangsiang - Bandung	3
8	Dewi Sri	Baranangsiang - Pekalongan	3
9	Gagak Rimang	Baranangsiang - Bandung	5
10	Gardena	Baranangsiang - Bandung	3
11	Gianjar Rahayu	Baranangsiang - Karawang	2
12	Karawang Indah	Baranangsiang - Karawang	2
		Baranangsiang - Karawang	1
13	Kramat Jati	Baranangsiang - Purwakarta	5
14	Luragung Jaya	Baranangsiang - Kuningan	4
15	Merdeka	Baranangsiang - Bandung	4
16	MGI	Baranangsiang - Bandung	9
		Baranangsiang - Karawang	1
		Baranangsiang - Pelabuhan Ratu	12
		Baranangsiang - Sukabumi	1
17	NPM	Baranangsiang - Payakumbu	1
18	Prima Jaya	Baranangsiang - Bandung	5
19	Putra Bahari	Baranangsiang - Pelabuhan Ratu	13
20	Putri Luragung	Baranangsiang - Kuningan	1
21	Rudi	Baranangsiang - Banten	1
		Baranangsiang - Rangkasbitung	4

Source: JUTPI 2

#### Trip purpose

The purpose of passengers at Baranangsiang Terminal travelled were to have family matters (38.16%). However, the percentage of those having a trip were quite similar for business and personal matters, at 28.99% and 22.22% respectively. Only small portion of passengers were travelling for school (6.52) and shopping/leisure/tourism (4.11%).

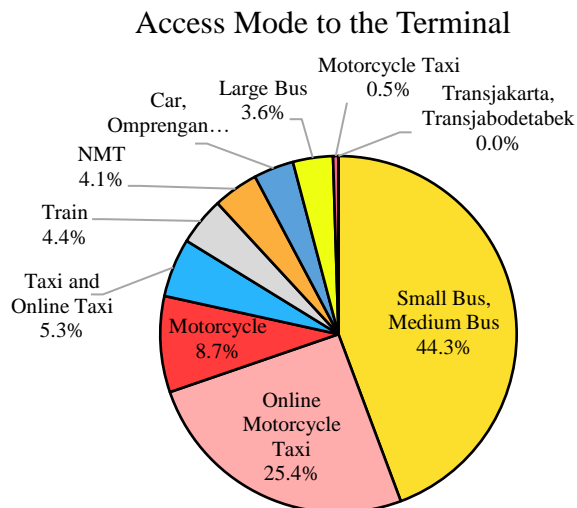


Source: JUTPI 2

**Figure 124 Trip Purposes of Bus Passengers on Baranangsiang Terminal**

Access mode to the departure terminal

The survey gives information that significant number of passengers (44.31%) chose to go to terminal by small – medium bus, followed by online motorcycle taxi, which made up 25.42% of total passengers. A different concern that only few people were using Transjakarta, motorcycle taxi, large bus, car, walk, train and taxi or online taxi.

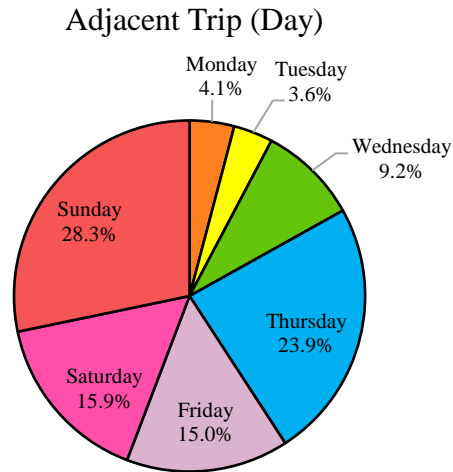


Source: JUTPI 2

**Figure 125 Access Modes to the Baranangsiang Terminal**

Adjacent trip (day)

The tendency of passengers at Baranangsiang Terminal to take adjacent trip was Sunday (28.26%) and Thursday (23.91%). Different trend was shown at Kota Bogor that one of day at weekdays had significant portions of passengers to take adjacent trip. However, Saturday and Friday still popular among passengers.

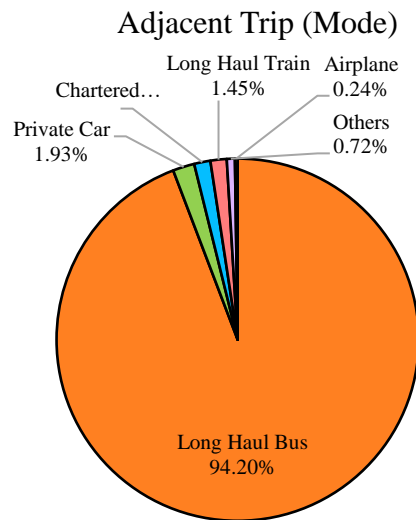


Source: JUTPI 2

**Figure 126 Adjacent Trip (Day) for Passengers on Baranangsiang Terminal**

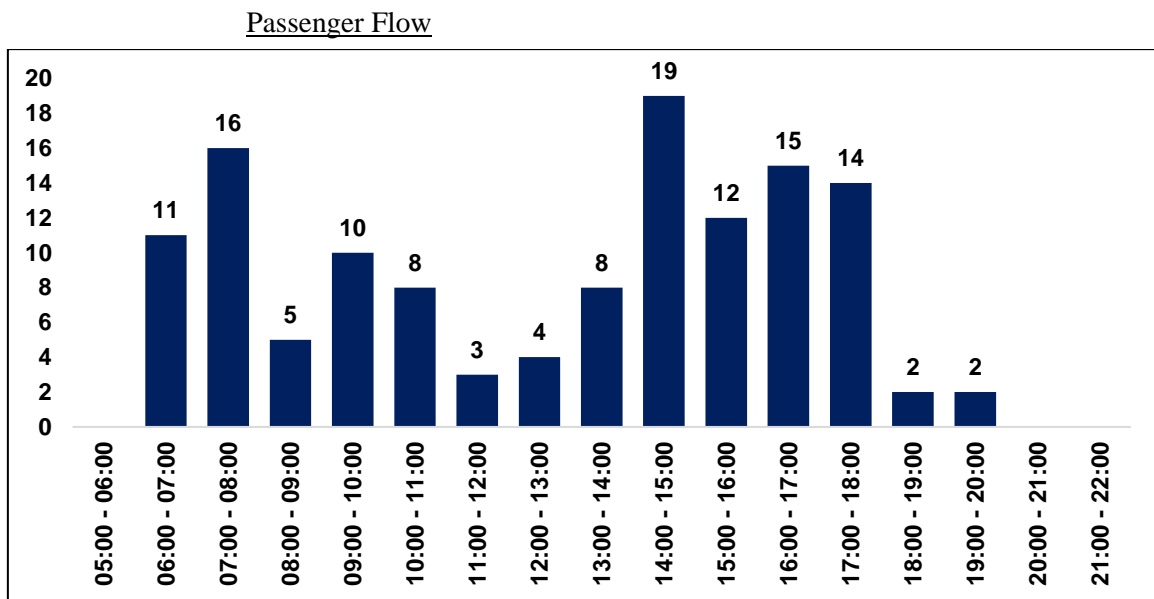
Adjacent trip (mode)

Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Baranangsiang Terminal. Only small portions of passengers took car, bus and train as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:



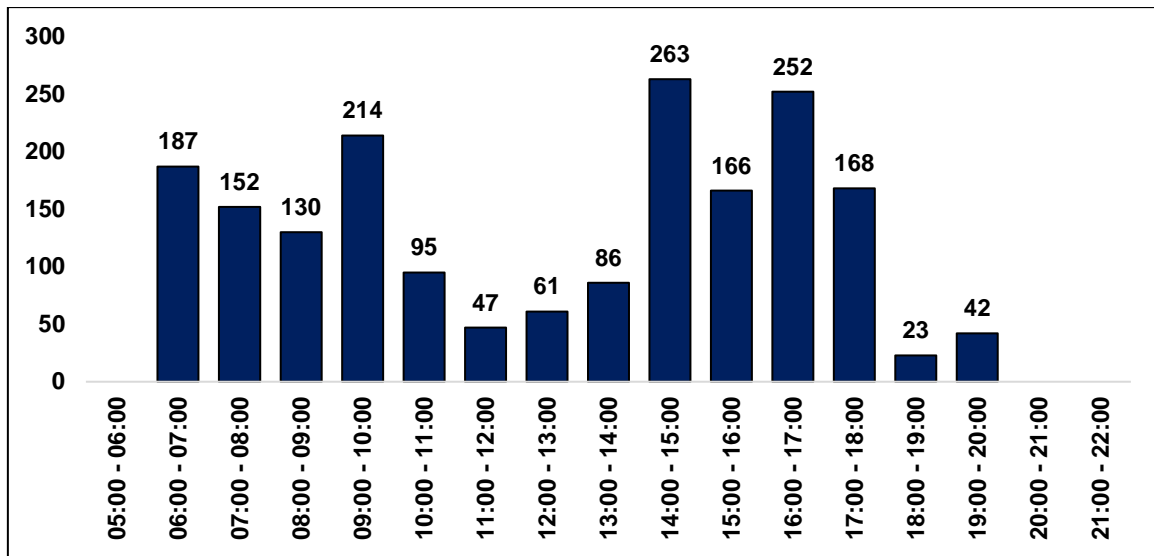
Source: JUTPI 2

**Figure 127 Adjacent Trip (Mode) for Passengers on Baranangsiang Terminal**



Source: JUTPI 2

**Figure 128. Hourly Bus Frequency Fluctuation at Baranangsiang Bus Terminal**



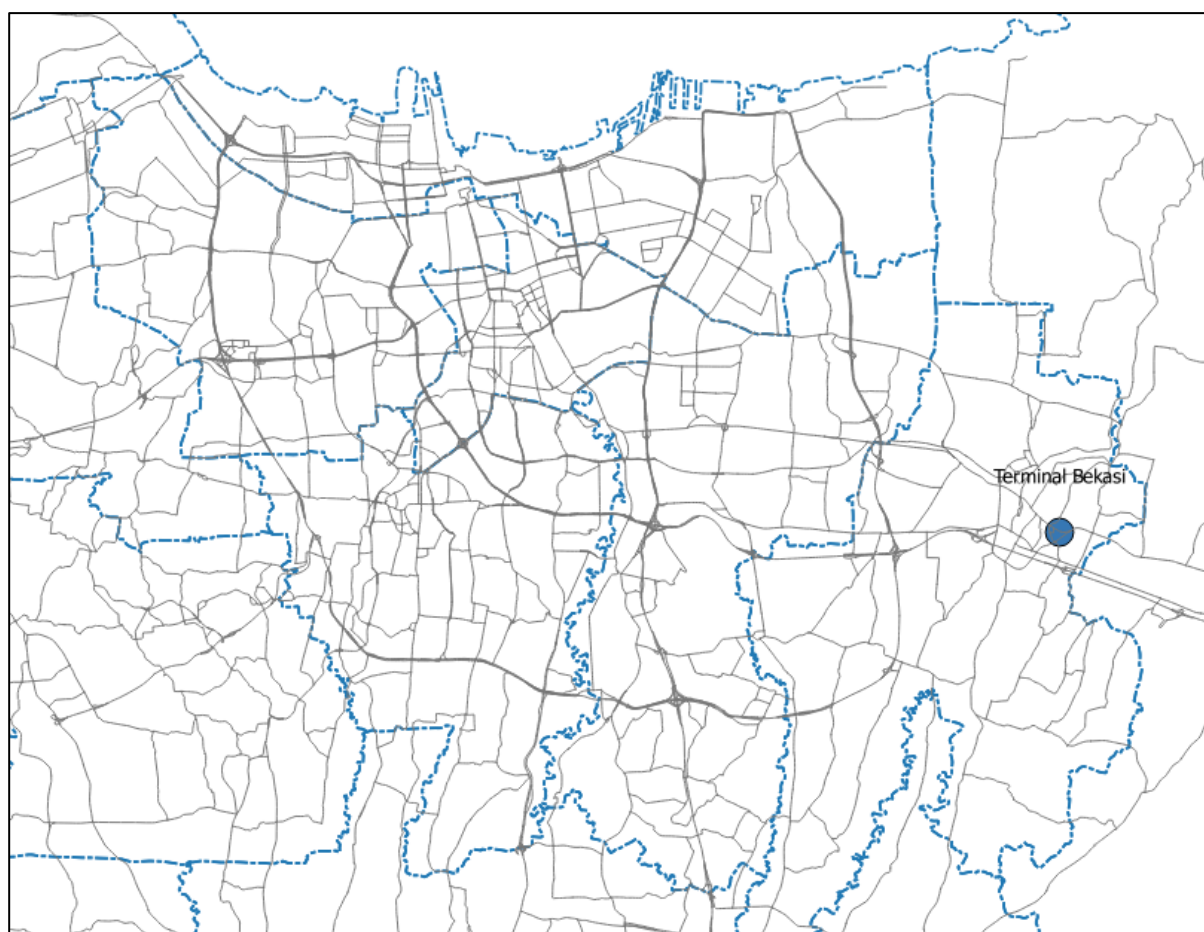
Source: JUTPI 2

**Figure 129. Hourly Passenger Fluctuation at Baranangsiang Bus Terminal**

### **g Bekasi**

Bekasi Bus Terminal is located on the eastern part of Jakarta. Typically, this terminal is surrounded by traditional market and shopping center which affects activities in the terminal.

It is situated between Jalan Ir. H. Juanda and Cut meutia. Both streets are one-way system which is supposed to minimize traffic congestion caused by activities at the terminal entrance, where most of passengers alight the bus in his area. Survey was conducted on 2<sup>nd</sup> August 2018.



Source: JUTPI 2

**Figure 130. Location of Bekasi Bus Terminal**

**Table 73. Service Route and Trip of Intercity Bus Operator at Bekasi Bus Terminal**

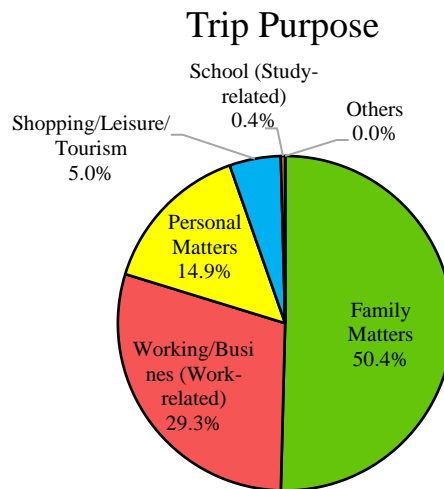
No	Operator	Route	No. of Bus
1	Agung Jaya	Bekasi - Cianjur	6
		Bekasi - Jonggol	2
2	AJS	Bekasi - Wado	1
3	Andawuri	Bekasi - Wado	2
4	Arimbi	Bekasi - Merak	12
6	Berkah Jaya	Bekasi - Rajagaluh	6
		Bekasi - Subang	1
7	Bintang Sanepa	Bekasi - Baturajeg	2
		Bekasi - Majalengka	1
		Bekasi - Sumedang	4
8	Budiman	Bekasi - Pangandaran	1
		Bekasi - Tasikmalaya	13
9	CBU	Bekasi - Bandung	1
		Bekasi - Sumedang	4

No	Operator	Route	No. of Bus
10	Dedi Jaya	Bekasi - Tegal	5
11	Dewi Sri	Bekasi - Pekalongan	1
12	DMI	Bekasi - Cilacap	1
13	Hiba Putra	Bekasi - Garut	4
14	Laju Utama	Bekasi - Sukabumi	4
15	Lentra Jaya	Bekasi - Lahat	2
16	Luragung	Bekasi - Cirebon	1
17	Murni Jaya	Bekasi - Merak	1

Source: JUTPI 2

Trip purpose

More than half (50.41%) of the people at Bekasi Terminal travel for family reasons. The percentage of passengers who had a trip for business and personal matters, were 29.34% and 14.88% respectively. Only small portion of passengers were travelling for shopping/leisure/tourism (4.96%) and school (0.41%).



Source: JUTPI 2

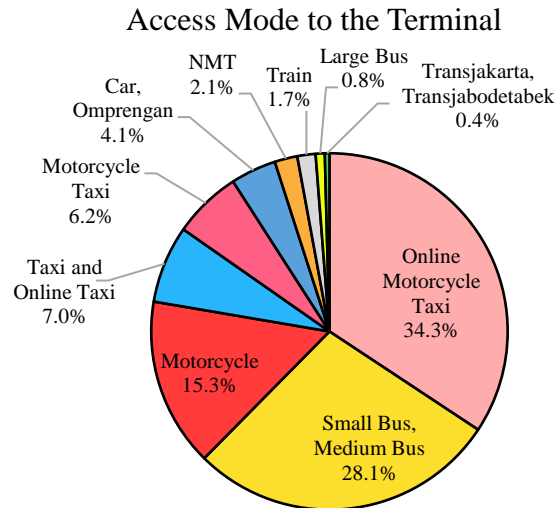
**Figure 131 Trip Purposes of Intercity Bus Passengers on Bekasi Terminal**

Access mode to the departure terminal

Most popular mode for passengers to go to Bekasi terminal was online motorcycle taxi (34.30%), followed by small-medium bus (28.10%) and



motorcycle (15.29%). However, Transjakarta was the least used mode for passengers, followed by large bus, train, NMT, car and motorcycle taxi.

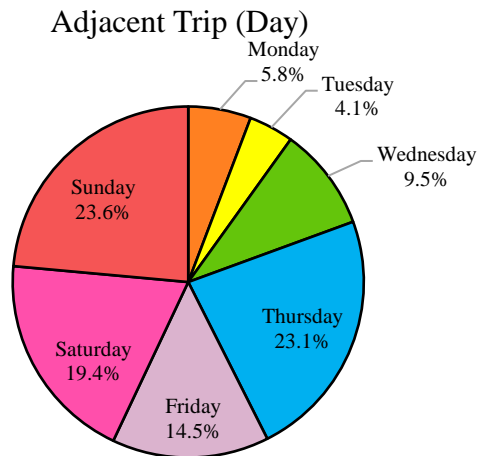


Source: JUTPI 2

**Figure 132 Access Modes to the Bekasi Terminal**

Adjacent trip (day)

The tendency of passengers at Bekasi Terminal was similar with Baranangsiang Terminal that one day during weekdays become one of popular day to take adjacent trip. At Bekasi Terminal, two preferred day were Sunday (23.55%) and Thursday (23.14%). However, Saturday and Friday still popular among passengers. The distribution of passengers' preferences for the day of adjacent trip is shown below

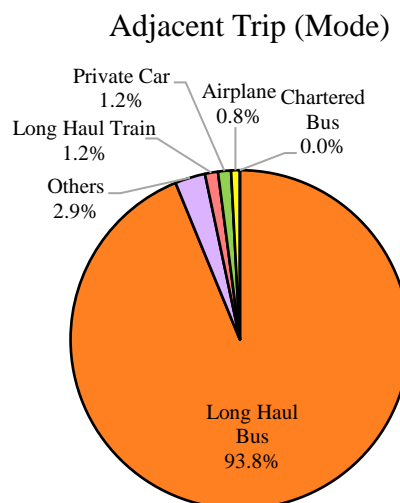


Source: JUTPI 2

**Figure 133 Adjacent Trip (Day) for Passengers on Bekasi Terminal**

Adjacent trip (mode)

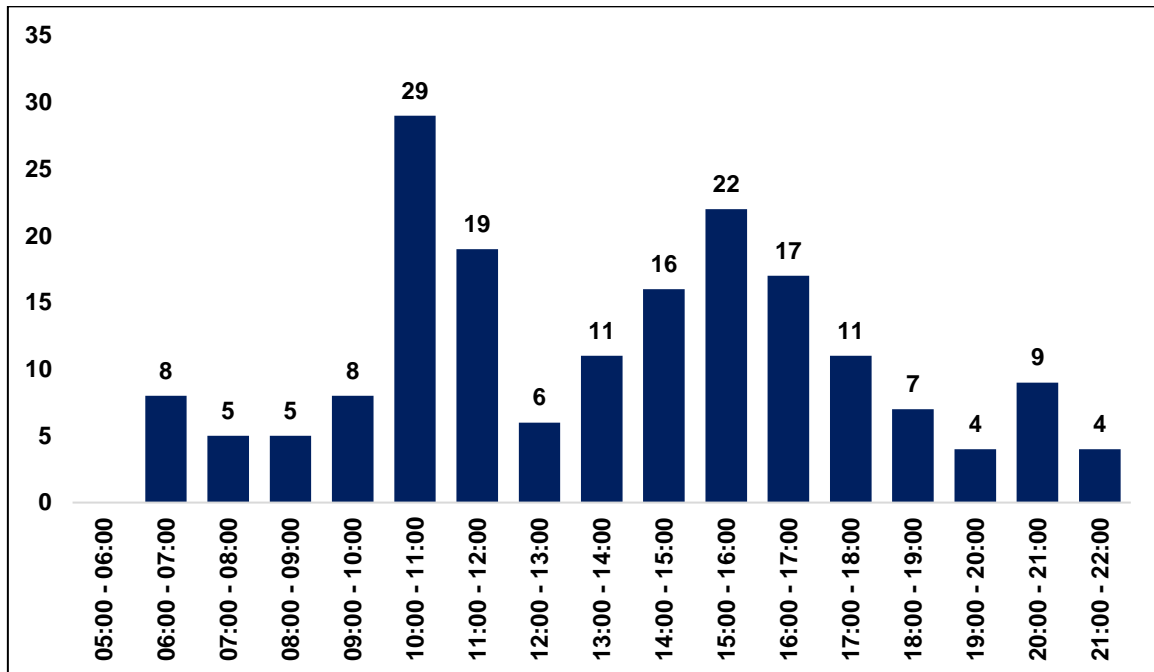
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip for passengers at Bekasi Terminal. Only small portions of passengers took train, car, and airplane as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

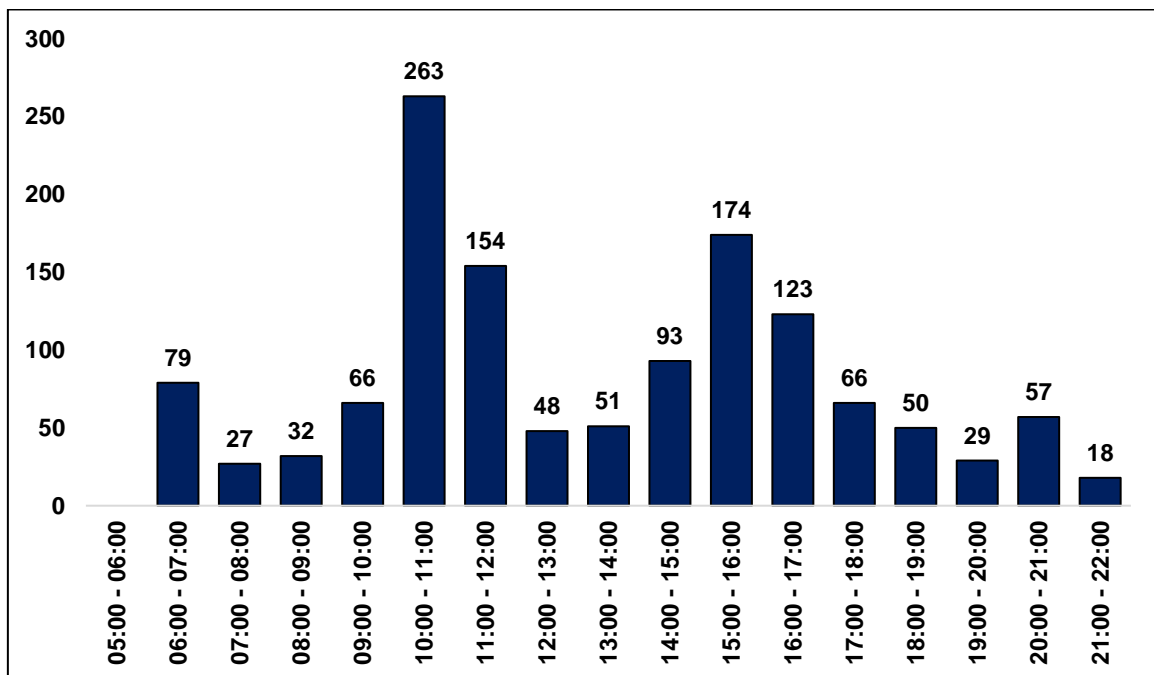
**Figure 134 Adjacent Trip (Mode) for Passengers on Bekasi Terminal**

Passenger Flow



Source: JUTPI 2

Figure 135. Hourly Bus Frequency Fluctuation at Bekasi Bus Terminal

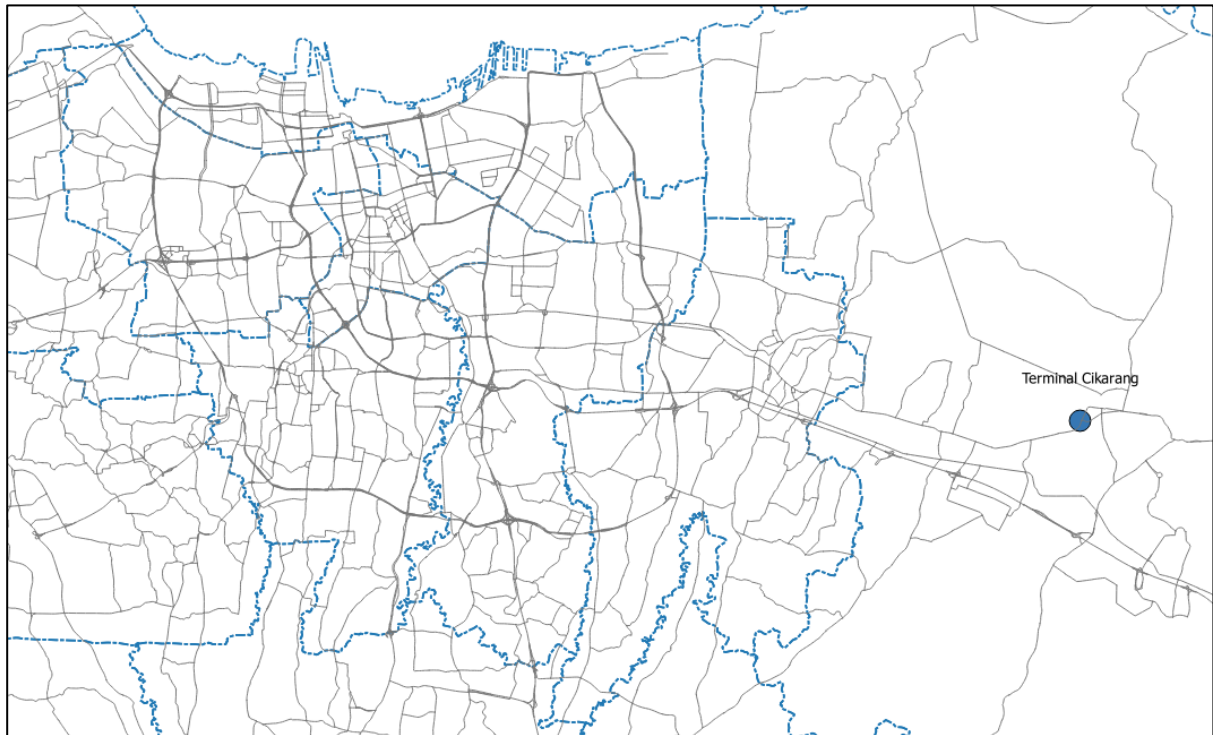


Source: JUTPI 2

Figure 136. Hourly Passenger Fluctuation at Bekasi Bus Terminal

## h Cikarang

Cikarang Intercity Bus Terminal, which is part of Cikarang bus terminal is located on the eastern part of Jakarta, precisely at Cikarang, Bekasi. This terminal serves intercity routes to Jawa Barat and mainly surrounded by industrial activity, since it lies on the biggest industrial estate in Bekasi, East Java.



Source: JUTPI 2

**Figure 137. Location of Cikarang Bus Terminal**

**Table 74. Service Route and Trip of Intercity Bus Operator at Cikarang Bus Terminal**

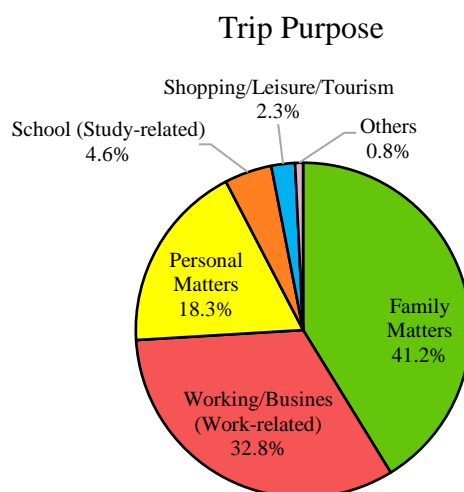
No	Operator	Route	No. of Bus
1	Bahagia	Cikarang - Merak	8
2	Bhinneka	Cikarang - Merak	4
3	Bintang Sanepa	Cikarang - Cikijing	1
4	Budiman	Cikarang - Banjar	1
		Cikarang - Pangandaran	3
		Cikarang - Tasikmalaya	10
5	Cipta Raya	Cikarang - Wado	1
6	Doa Ibu	Cikarang - Tasikmalaya	5
7	Karunia Bakti	Cikarang - Garut	5

No	Operator	Route	No. of Bus
		Cikarang - Tasikmalaya	1
8	Murni Jaya	Cikarang - Yogyakarta	1
9	Primajasa	Cikarang - Bandung	43
10	Putra Luragung	Cikarang - Kuningan	3
11	Setia Negara	Cikarang - Cirebon	2
		Cikarang - Kuningan	1
12	Sinar Jaya	Cikarang - Semarang	1
		Cikarang - Tegal	2
		Cikarang - Wangon	1
		Cikarang - Wonosobo	1
13	Trans Banten	Cikarang - Merak	2
14	Widia	Cikarang - Rajagaluh	10

Source: JUTPI 2

### Trip purpose

Passengers at Cikarang Terminal travelled to have family matters were 41.22% of total passengers. However, those having a trip outside JABODETABEK were quite similar with business matter, at 32.82%. Only small portion of passengers were travelling for school (4.58%) and shopping/leisure/tourism (2.29%).



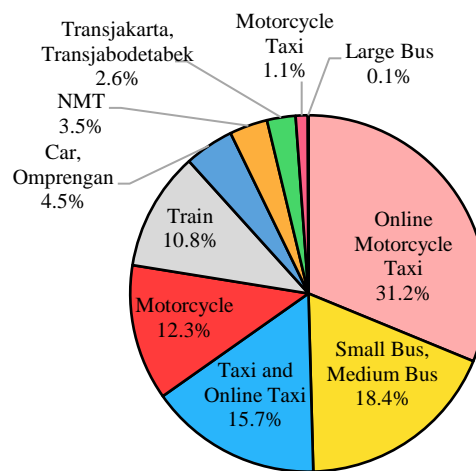
Source: JUTPI 2

**Figure 138 Trip Purposes of Intercity Bus Passengers on Cikarang Terminal**

Access mode to the departure terminal

The survey gives information that the most popular mode for passenger to go to terminal was online motorcycle taxi (31.20%), followed by small–medium bus (18.36%) and taxi or online taxi (15.66%). However, large bus was the least used mode for passengers, followed by motorcycle taxi, Transjakarta, NMT and car.

Access Mode to the Departure Terminal



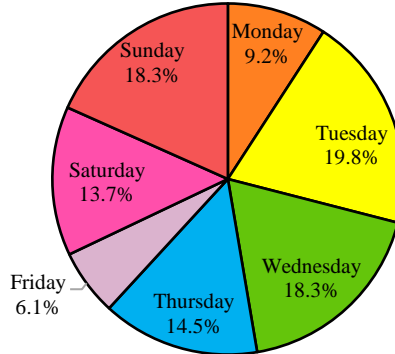
Source: JUTPI 2

**Figure 139 Access Modes to the Cikarang Terminal**

Adjacent trip (day)

Passengers at Cikarang Terminal had three preferred days to took adjacent trips, Tuesday (19.85%), Wednesday (18.32%) and Sunday (18.32). Friday was the least chosen day for passengers to have adjacent trip.

Adjacent Trip (Day)



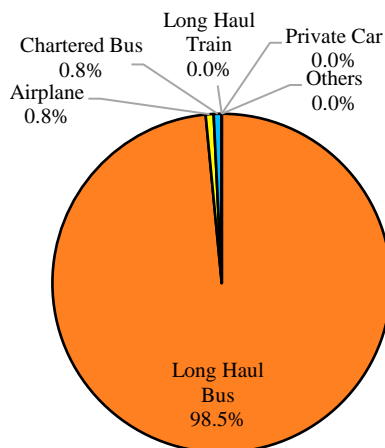
Source: JUTPI 2

**Figure 140 Adjacent Trip (Day) for Passengers on Cikarang Terminal**

Adjacent trip (mode)

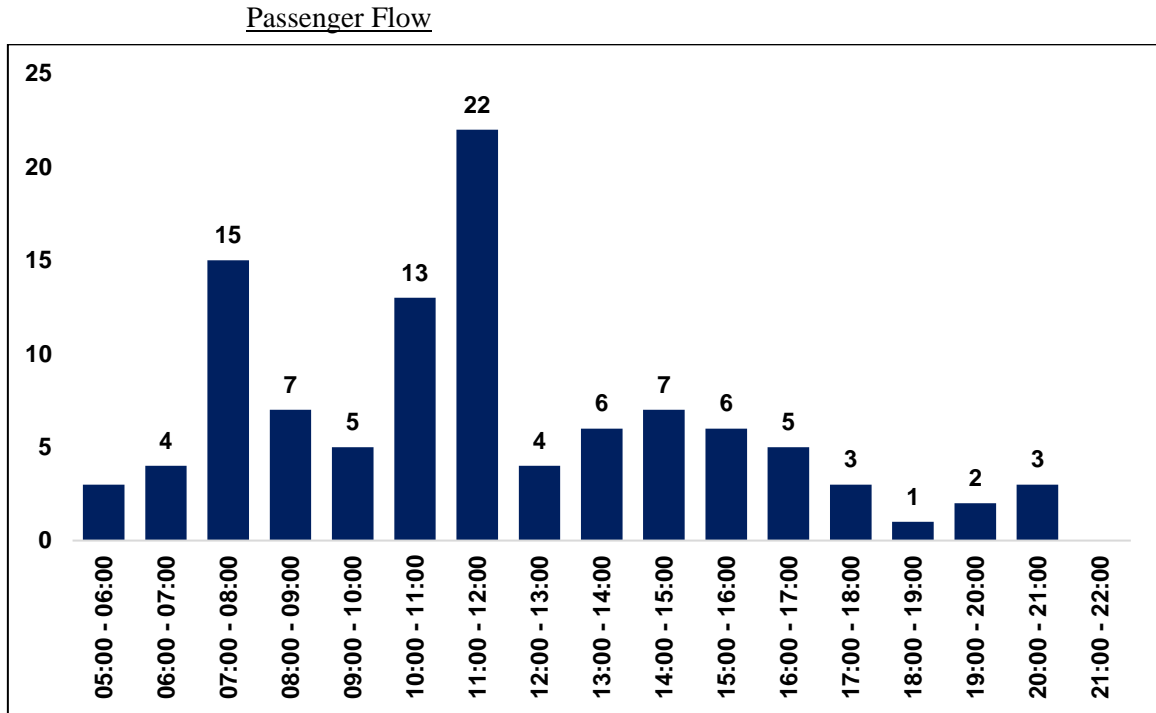
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Cikarang Terminal. Only small portions of passengers took airplane and bus as their option modes.

Adjacent Trip (Mode)



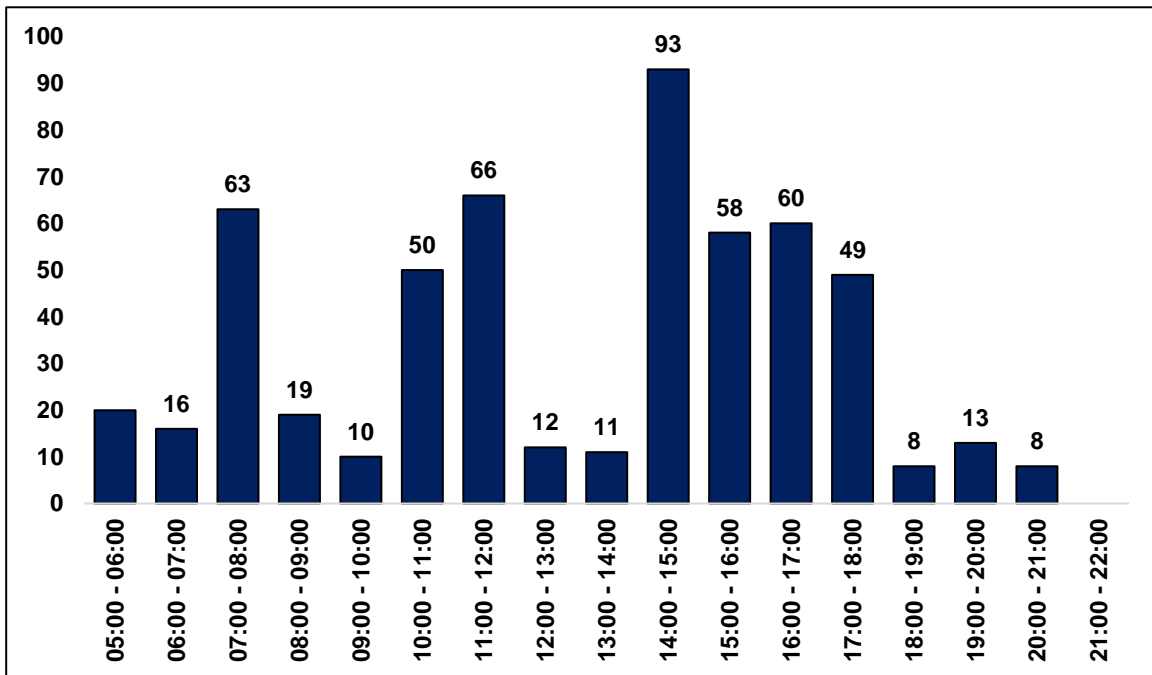
Source: JUTPI 2

**Figure 141 Adjacent Trip (Mode) for Passengers on Cikarang Terminal**



Source: JUTPI 2

**Figure 142. Hourly Bus Frequency Fluctuation at Cikarang Bus Terminal**



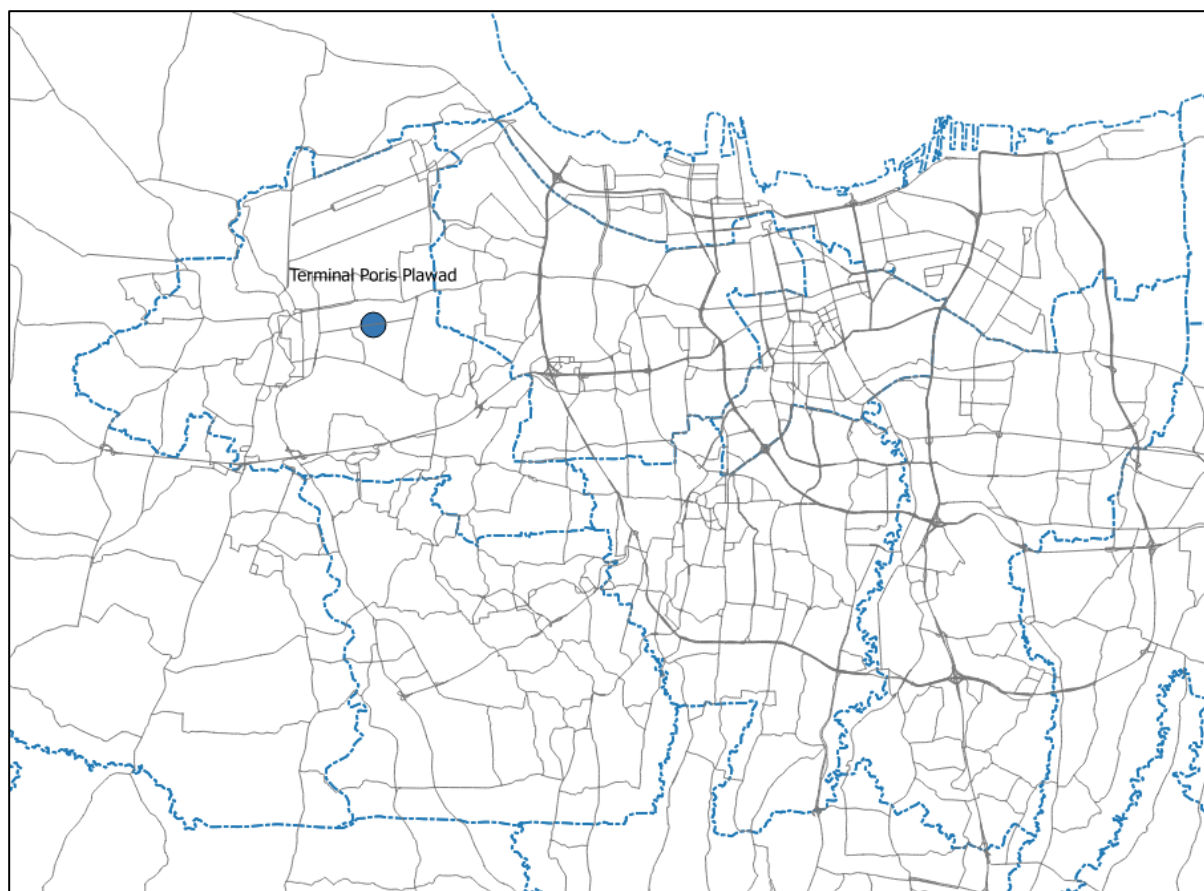
Source: JUTPI 2

**Figure 143. Hourly Passenger Fluctuation at Cikarang Bus Terminal**



### i Poris Plawad

Poris Plawad bus terminal is located in Tangerang City, Banten. Poris Plawad bus terminal serves long distance and medium distance routes. Mostly the bus operator provides large bus with class variant more to economy class rather than business and executive class. Survey was conducted on July 31<sup>st</sup> 2018.



Source: JUTPI 2

**Figure 144. Location of Poris Plawad Bus Terminal**

**Table 75. Service Route and Trip of Intercity Bus Operator at Poris Plawad Bus Terminal**

No	Operator	Route	No. of Bus
1	Agra Mas	Poris Plawad - Pacitan	1
		Poris Plawad - Ponorogo	2
		Poris Plawad - Purwantoro	2
		Poris Plawad - Purwodadi	1
		Poris Plawad - Puwantoro	1
		Poris Plawad - Wonogiri	5
2	Andhora	Poris Plawad - Ponorogo	3

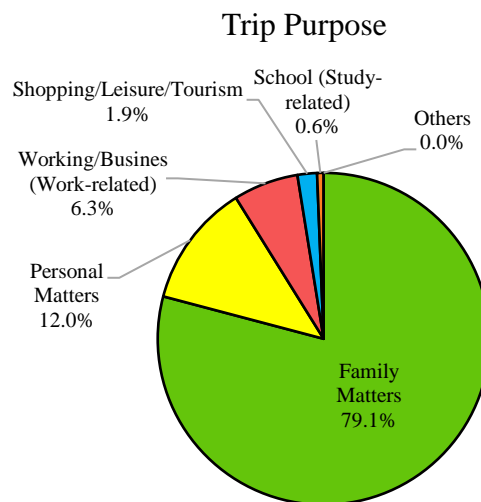
No	Operator	Route	No. of Bus
3	Asli Prima	Poris Plawad - Cirebon	1
4	Bejeu	Poris Plawad - Jepara	1
		Poris Plawad - Lampung	7
5	Bhineka Tunggal Ika	Poris Plawad - Cirebon	6
		Poris Plawad - Cirebon - Kuningan	5
		Poris Plawad - Merak - Cirebon	1
		Tangerang - Kuningan	3
6	Cbh Rahayu Sentosa	Poris Plawad - Bengkulu	1
7	Csa 88	Poris Plawad - Bengkulu	2
8	Damri	Poris Plawad - Purwokerto	1
9	DMI	Poris Plawad - Bobotsari	2
10	Garuda Mas	Poris Plawad - Cepu	2
		Poris Plawad - Purwadadi	1
		Poris Plawad - Purwodadi	2
11	Gunung Harta	Poris Plawad - Blitar	3
		Poris Plawad - Madura	1
		Poris Plawad - Ponorogo	2
		Poris Plawad - Yogyakarta	1
12	Harapan Jaya	Poris Plawad - Blitar	4
		Poris Plawad - Madiun	4
		Poris Plawad - Tulung Agung	1
		Poris Plawad - Wonogiri	1
13	Haris Budiyono	Poris Plawad - Cepu	1
14	Haryanto	Poris Plawad - Madiun	1
		Poris Plawad - Madura	1
		Poris Plawad - Solo - Wonogiri	2
15	Jaya	Poris Plawad - Ponorogo	2
16	Karya Sari	Poris Plawad - Yogyakarta	1
17	Kramat Jati	Poris Plawad - Pasar Kemis - Ponorogo	2
		Poris Plawad - Yogyakarta	1
18	Laju Prima	Poris Plawad - Cepu	1
		Poris Plawad - Klaten	4
		Poris Plawad - Ponorogo	1
19	Madukismo	Poris Plawad - Madura	1
20	Maju Lancar	Poris Plawad - Yogyakarta	2
21	Medali Mas	Poris Plawad - Malang	2
22	Mitra Titian	Poris Plawad - Bima	1
23	Muara Dua Tunggal	Poris Plawad - Sumatera	1
24	Murni Jaya	Poris Plawad - Wonosari	1
		Poris Plawad - Yogyakarta	2
25	NPM	Poris Plawad - Padang	1
26	Pahala Kencana	Bitung - Bojonegoro	1

No	Operator	Route	No. of Bus
		Poris Plawad - Bitung - Bojonegoro	1
		Poris Plawad - Madura	2
		Poris Plawad - Malang	1
		Poris Plawad - Purwodadi	2
		Poris Plawad - Solo	1
27	Po Handoyo	Poris Plawad - Madiun	1
		Poris plawad - Wonosobo	4
28	Putra Jaya	Poris Plawad - Pekalongan	1
29	Putra Luragung	Poris Plawad - Cirebon	1
30	Putra Mulya	Poris Plawad - Malang	2
		Poris Plawad - Pacitan	1
		Poris Plawad - Yogyakarta	1
31	Putri Jaya Bali	Poris Plawad - Pekalongan	1
32	Ramayana	Poris Plawad - Yogyakarta	1
33	Safari	Poris Plawad - Klaten	1
		Poris Plawad - Solo	4
34	Sahabat	Poris Plawad - Cirebon	1
35	Sahabat Putra Bali	Poris Plawad - Cirebon	1
36	Santika	Poris Plawad - Pekalongan	1
37	Santoso	Poris Plawad - Yogyakarta	2
38	Sidino tunggal	Poris Plawad - Ponorogo	1
39	Sinar Jaya	Poris Plawad - Purwodadi	7
		Poris Plawad - Purwokerto	3
		Poris Plawad - Yogyakarta	2
40	Sudiro Tunggal	Poris Plawad - Ponorogo	1
41	Sumber Alam	Poris Plawad - Yogyakarta	5
42	Telaga Armada	Poris Plawad - Pendopo	1
43	Transport Express	Poris Plawad - Padang	2
44	Zentrum	Poris Plawad - Cepu	5
		Poris Plawad - Purwodadi	1

Source: JUTPI 2

Trip purpose

The majority of passengers at 79.11% left JABODETABEK for the purpose for family matters. The percentage of passengers who have a trip for business and personal matters, were 12.03% and 6.33% respectively. Only a minority of passengers were travelling for shopping/leisure/tourism (1.90%) and school (0.63%).



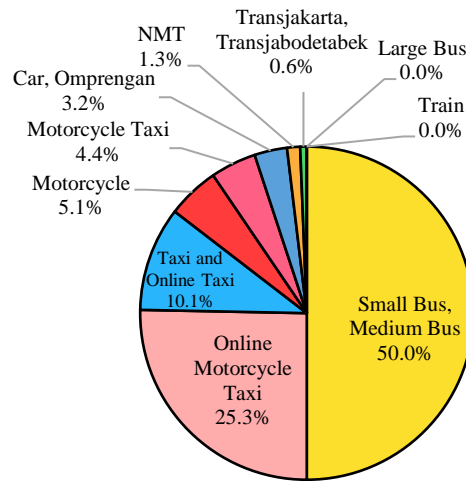
Source: JUTPI 2

**Figure 145 Trip Purposes of Bus Passengers on Poris Plawad Terminal**

Access mode to the departure terminal

Half of passengers at Poris Plawad Terminal took small–medium bus to go to terminal. Passengers also chose to take online motorcycle taxi (25.32%) and taxi or online taxi (10.13%). Conversely, the survey shows modes that rarely used by passengers to go to terminal were train, large bus, Transjakarta, NMT and car.

Access Mode to the Terminal



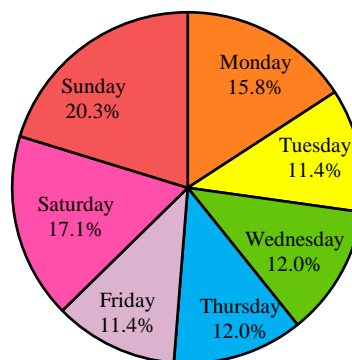
Source: JUTPI 2

**Figure 146 Access Modes to the Poris Plawad Terminal**

Adjacent trip (day)

Two preferred days for passengers at Poris Plawad to take adjacent trip were Sunday (23.25%) and Saturday (17.09%). The distribution of passengers' preferences for the day of adjacent trip is shown below:

Adjacent Trip (Day)

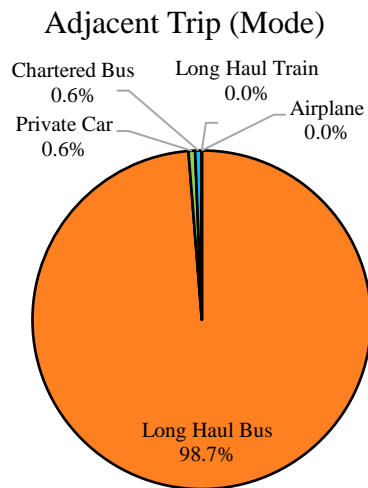


Source: JUTPI 2

**Figure 147 Adjacent Trip (Day) for Passengers on Poris Plawad Terminal**

Adjacent trip (mode)

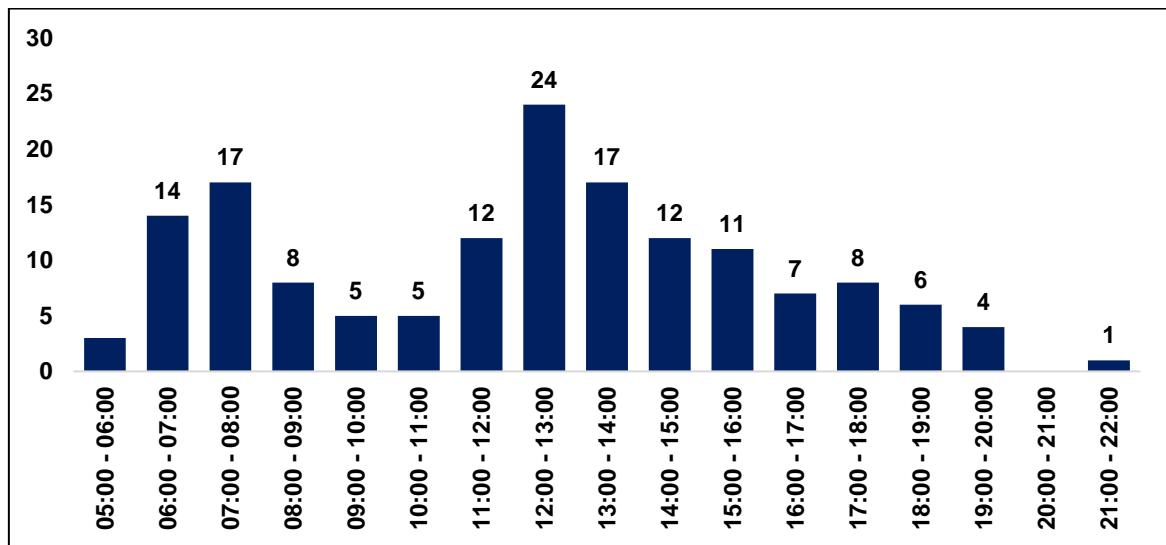
Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Poris Plawad Terminal. Only small portions of passengers took car and chartered bus as their option modes. The distribution of passengers' preferences of adjacent mode is shown below:



Source: JUTPI 2

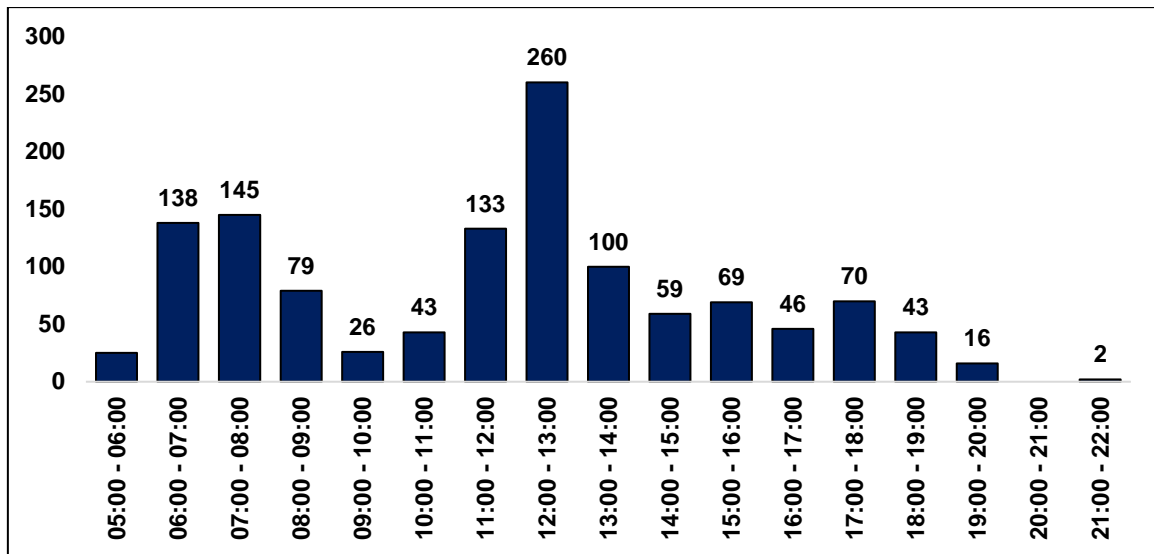
**Figure 148 Adjacent Trip (Mode) for Passengers on Poris Plawad Terminal**

Passenger Flow



Source: JUTPI 2

**Figure 149. Hourly Bus Frequency Fluctuation at Poris Plawad Bus Terminal**

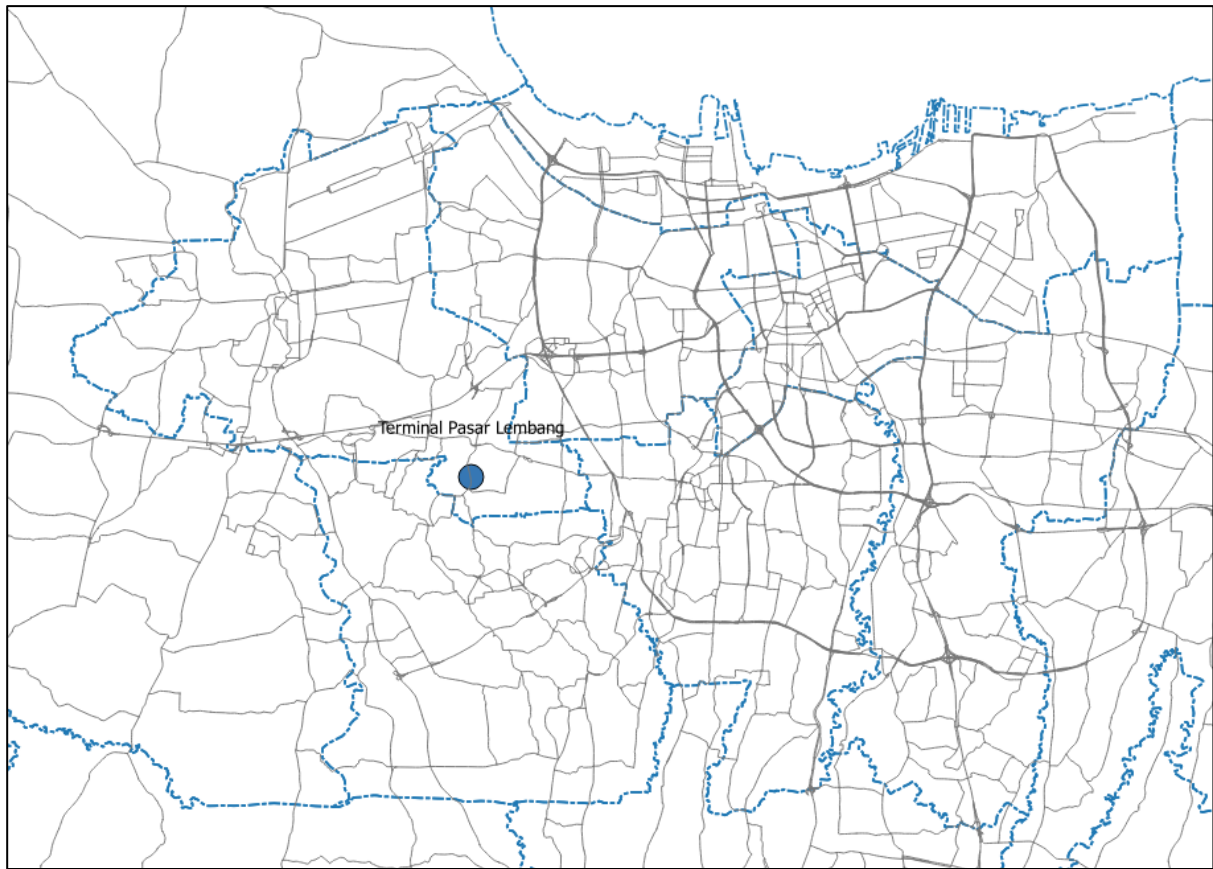


Source: JUTPI 2

**Figure 150. Hourly Passenger Fluctuation at Poris Plawad Bus Terminal**

#### **j Ciledug (Pasar Lembang)**

Ciledug (Pasar Lembang) bus terminal is located in Tangerang. It serves Intercity bus to Serang and also Java. Most of the bus operators serves long distance route with large and executive bus class. Actually, Ciledug (Pasar Lembang) is not official intercity bus terminal, but since there are more than 20 routes that serves this bus terminal, it is considered worth to survey at this location. Survey was conducted on August 1st 2018.



Source: JUTPI 2

**Figure 151. Location of Ciledug (Pasar Lembang) Bus Terminal**

**Table 76. Service Route and Trip of Intercity Bus Operator at Ciledug (Pasar Lembang) Bus Terminal**

No	Operator	Route	No. of Bus
1	Agra Mas	Ciledug - Pacitan	4
		Ciledug - Wonogiri	2
2	Aneka Jaya	Ciledug - Solo	1
3	Bejeu	Ciledug - Jepara	1
4	Dieng Indah	Ciledug - Wonosobo	1
5	Garuda Mas	Ciledug - Blora	2
		Ciledug - Sragen	1
7	Gunung Harta	Ciledug - Madiun	1
8	Haryanto	Ciledug - Pati	2
		Ciledug - Wonogiri	1
9	Kramat DJati	Ciledug - Purwodadi - Wonosari - Ngawen	1
10	Laju Prima	Ciledug - Cepu	1
		Ciledug - Semarang	1
		Ciledug - Solo	2
11	Muji Jaya	Ciledug - Jepara	1

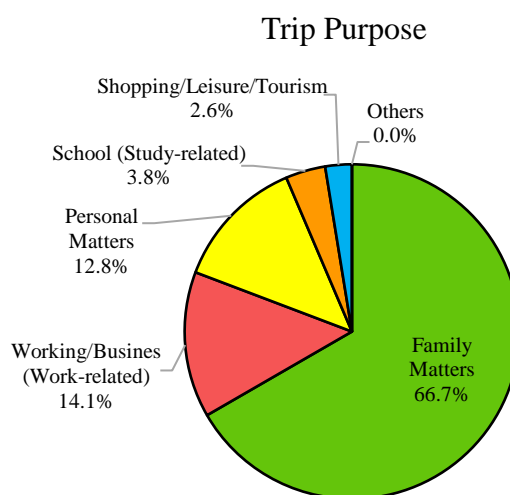


No	Operator	Route	No. of Bus
12	Murni Jaya	Ciledug - Yogyakarta	1
13	Murni Jaya	Ciledug - Yogyakarta - Wonosari	1
14	Pahala Kencana	Ciledug - Bojonegoro	1
15	Po Handoyo	Ciledug - Yogyakarta	1
16	Prayogo	Ciledug - Klaten	1
17	Putra Luragung	Ciledug - Cirebon	1
		Ciledug - Kuningan	1
18	Putra Mulya	Ciledug - Manyar - Wonogiri	1
		Ciledug - Pacitan	1
		Ciledug - Wonogiri	1
19	Raya	Ciledug - Solo	2
		Ciledug - Wonogiri	1
20	Setyanegara Luragung	Ciledug - Depok - Kuningan	1
21	Shantika	Ciledug - Jepara	1
22	Sumber Harapan	Ciledug - Purwodadi	1

Source: JUTPI 2

### Trip purpose

The majority of passengers at 66.67% left JABODETABEK for the purpose for family matters. The percentage of passengers who have a trip for business and personal matters were similar, at 14.10% and 12.82% respectively. Only a minority of passengers were travelling for school (3.85%) and shopping/leisure/tourism (2.56%).

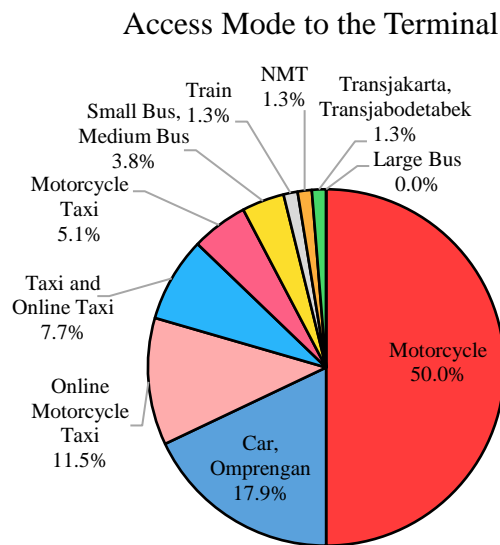


Source: JUTPI 2

**Figure 152 Trip Purposes of Intercity Bus Passengers on Ciledug Terminal**

Access mode to the departure terminal

Similar portion of two chosen mode by passengers were car (17.95%) and online motorcycle taxi (11.54%) Some modes were being least used by passengers, which are large bus, Transjakarta, NMT, train, small – medium bus, motorcycle taxi and taxi or online taxi.



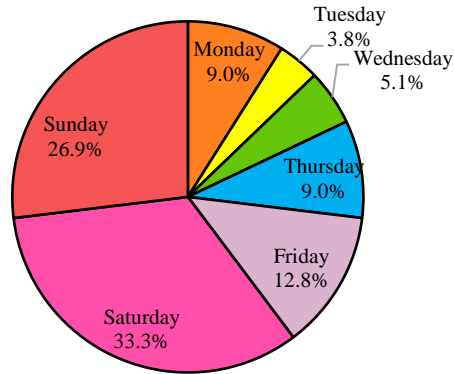
Source: JUTPI 2

**Figure 153 Access Modes to the Ciledug Terminal**

Adjacent trip (day)

Two preferred day at Poris Plawad to take adjacent trip were Sunday (26.92%) and Saturday (33.33%). The distribution of passengers' preferences for the day of adjacent trip is shown below:

### Adjacent Trip (Day)



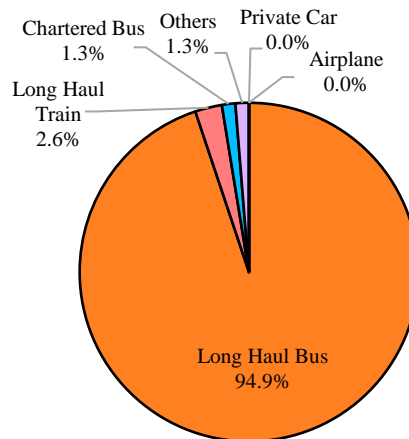
Source: JUTPI 2

**Figure 154 Adjacent Trip (Day) for Passengers on Ciledug Terminal**

### Adjacent trip (mode)

Similar with other locations, long haul bus was the chosen mode to take the adjacent trip at Ciledug Terminal. Only small portions of passengers took train and chartered bus as their option modes.

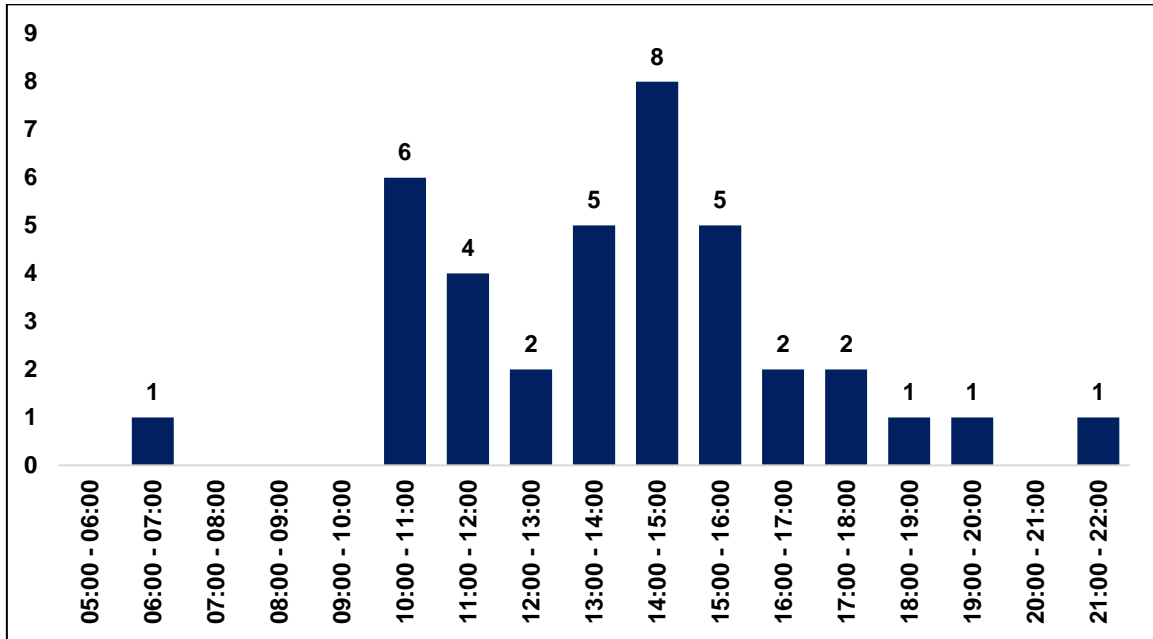
### Adjacent Trip (Mode)



Source: JUTPI 2

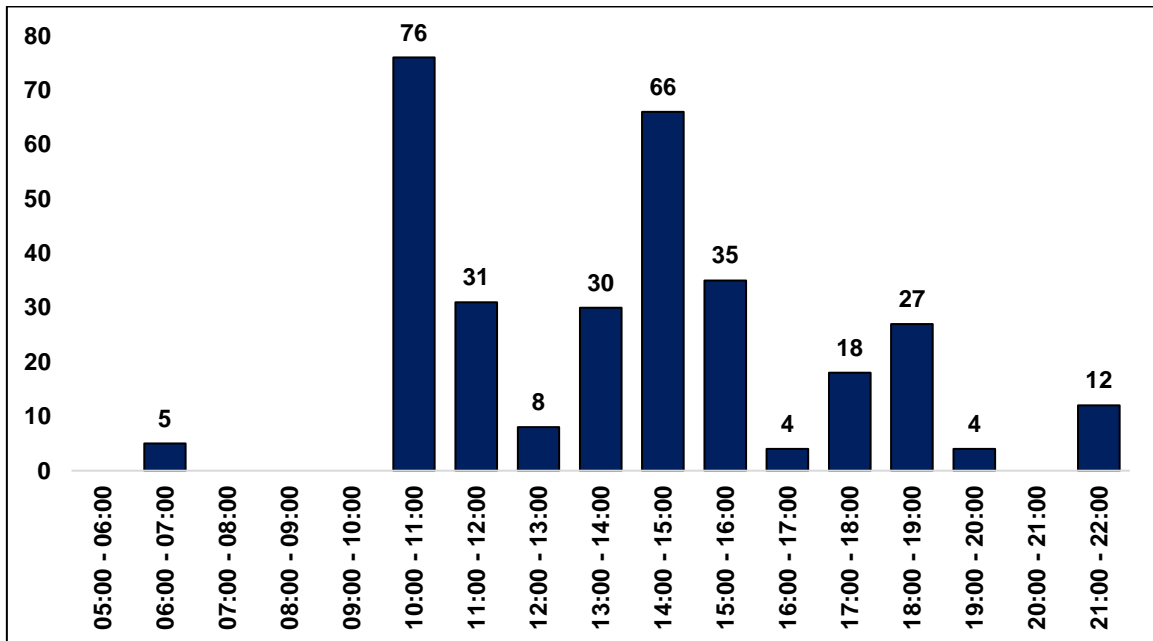
**Figure 155 Adjacent Trip (Mode) for Passengers on Ciledug Terminal**

Passenger Flow



Source: JUTPI 2

Figure 156. Hourly Bus Frequency Fluctuation at Ciledug (Pasar Lembang) Bus Terminal



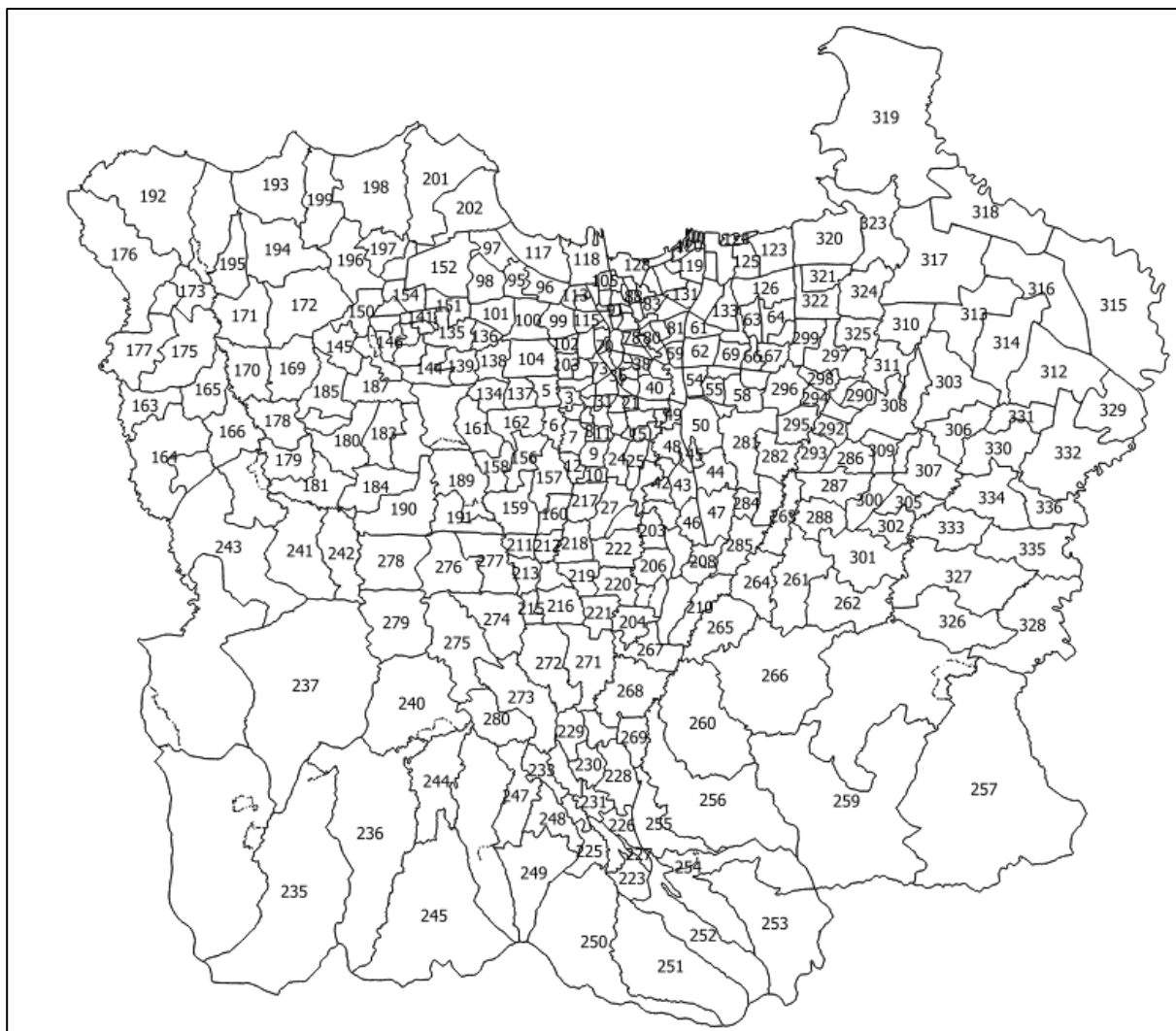
Source: JUTPI 2

Figure 157. Hourly Passenger Fluctuation at Ciledug (Pasar Lembang) Bus Terminal

### 5.5.4.2 Intercity Bus Passenger Trip Production

#### a) Zoning System

The zoning system for JABODETABEK area consists of 336 zones based on administrative area of Kelurahan as shown in Figure below. Each zone represented by group of kelurahan. This zoning system was established by JICA Study Team since SITRAMP study. The zoning system basically divided by two categories which are internal zone system (the 336 zones) and external zone system. The zone system for JABODETABEK is shown in figure below.

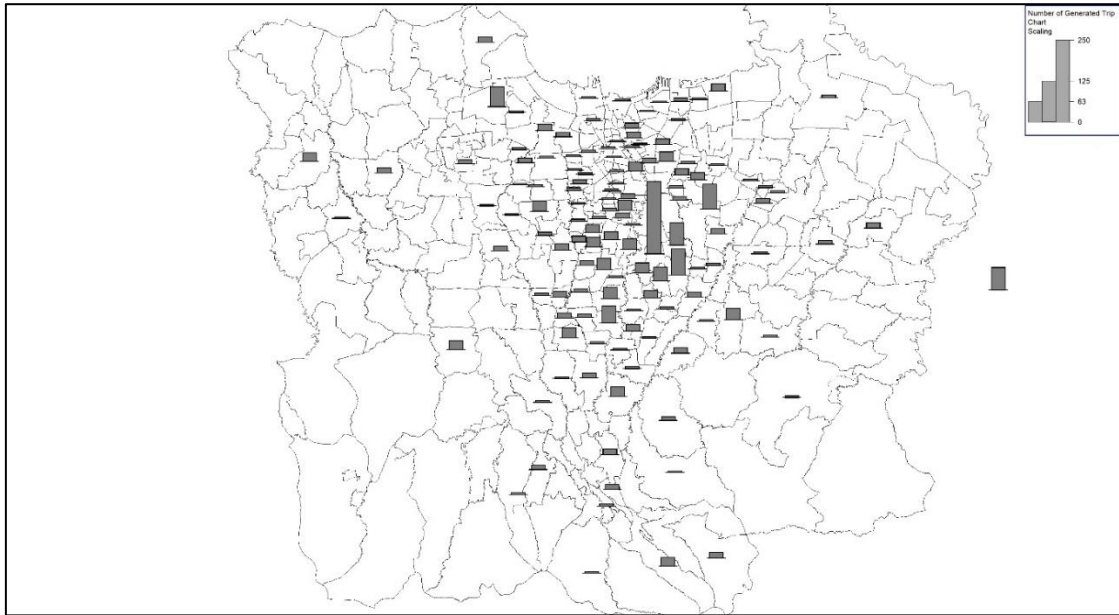


Source: JUTPI 2

**Figure 158. Zoning System for JABODETABEK**

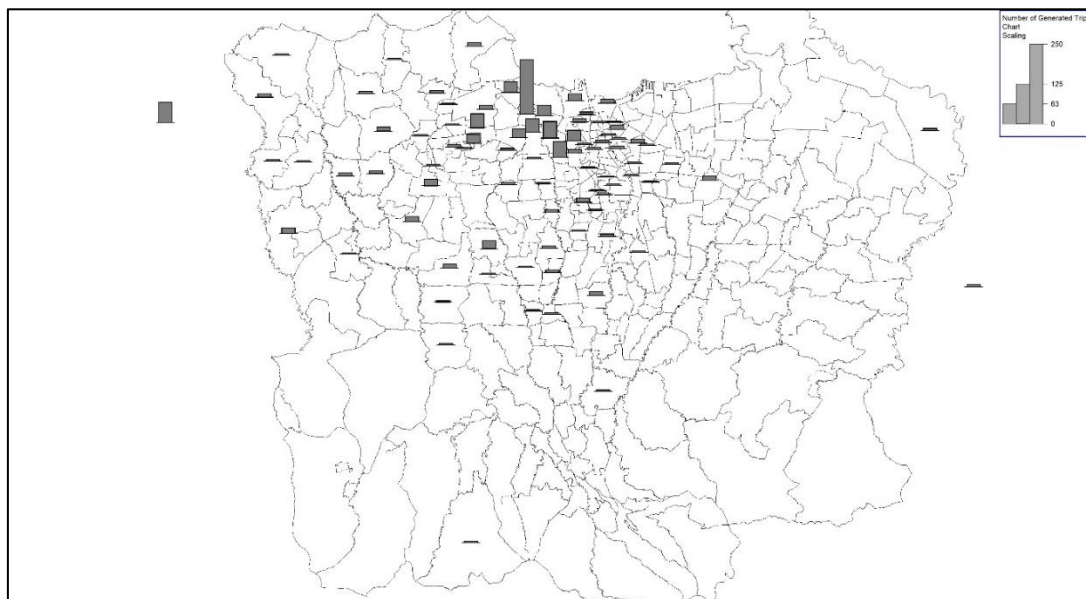
**b) Bus Passenger Trip Production**

Based on collected data, bus passenger trip production can be developed. Trip production is presented in zoning map consist of trip production at initial origin. The results for trip production for each terminal are shown in the following figures.



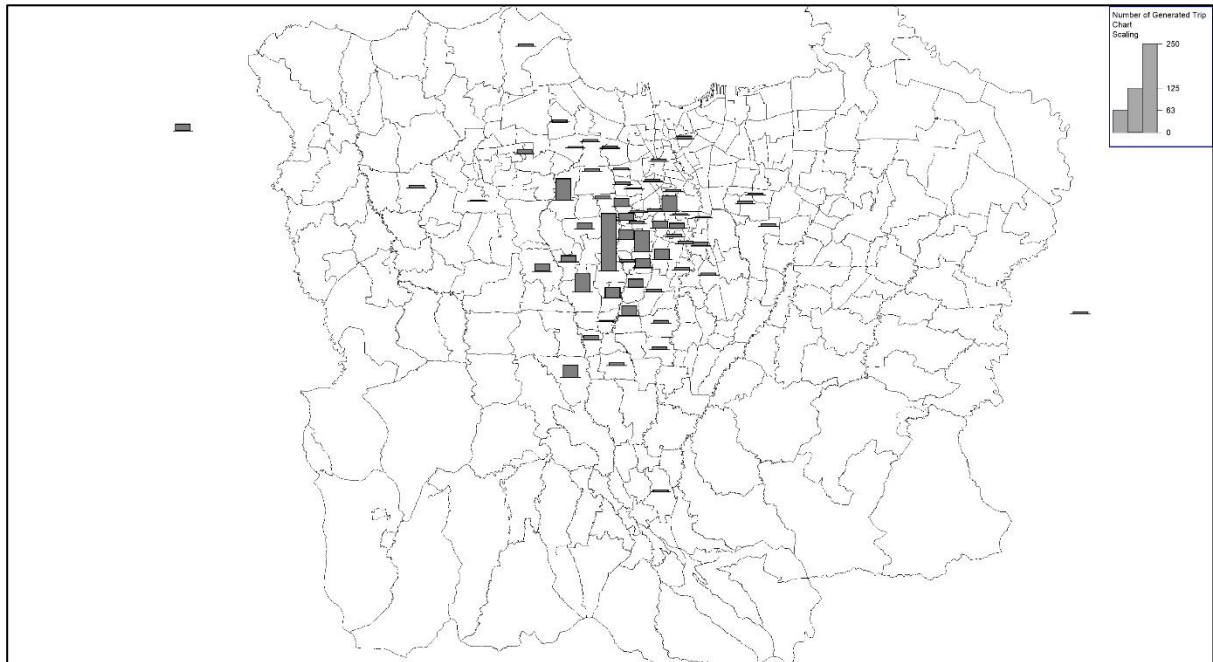
Source: JUTPI 2

**Figure 159. Bus Passenger Trip Generation by Origin Zone at Kampung Rambutan Bus Terminal**



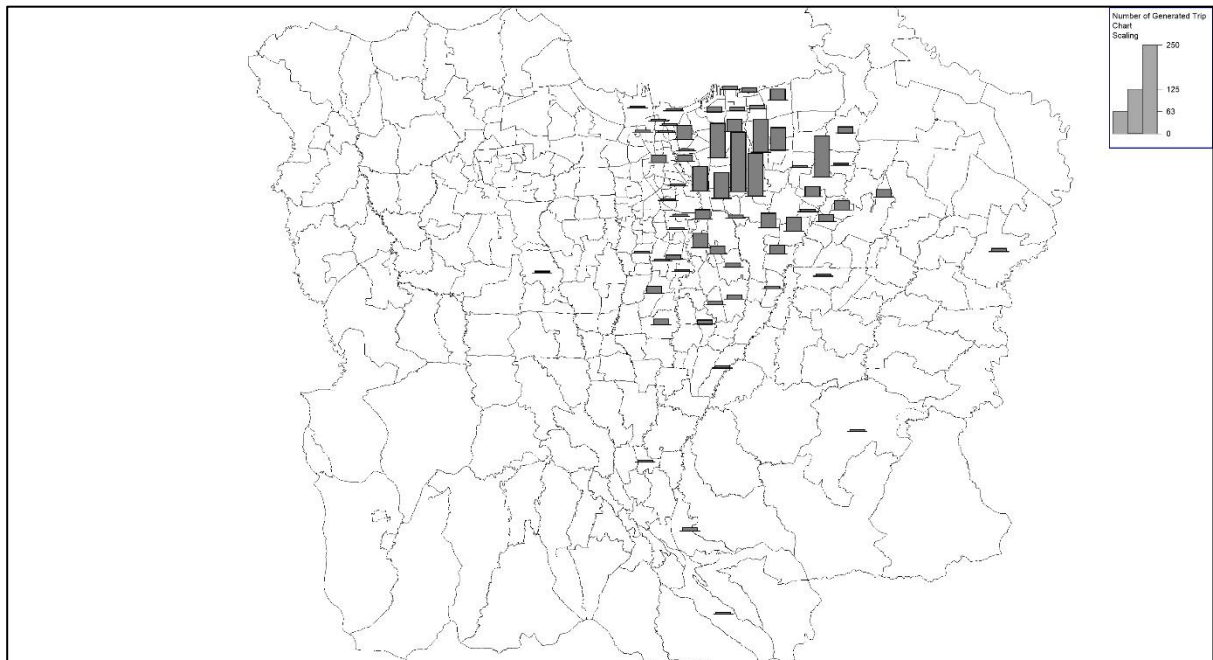
Source: JUTPI 2

**Figure 160. Bus Passenger Trip Generation by Origin Zone at Kalideres Bus Terminal**



Source: JUTPI 2

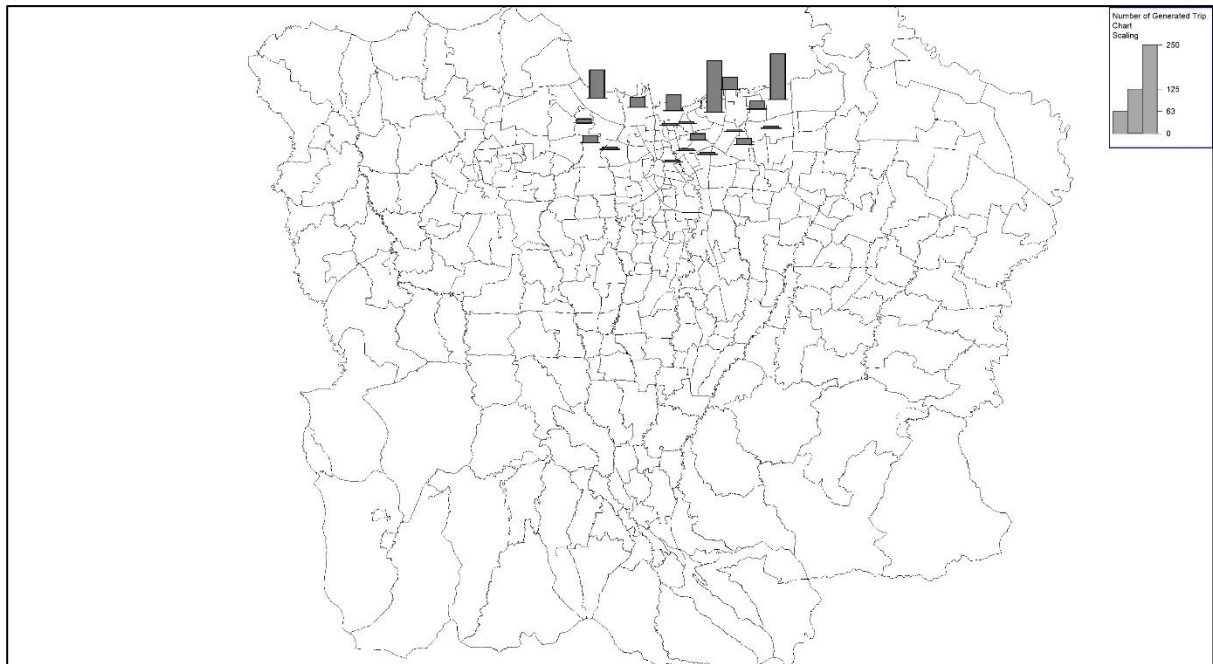
**Figure 161. Bus Passenger Trip Generation by Origin Zone at Lebak Bulus Bus Terminal**



Source: JUTPI 2

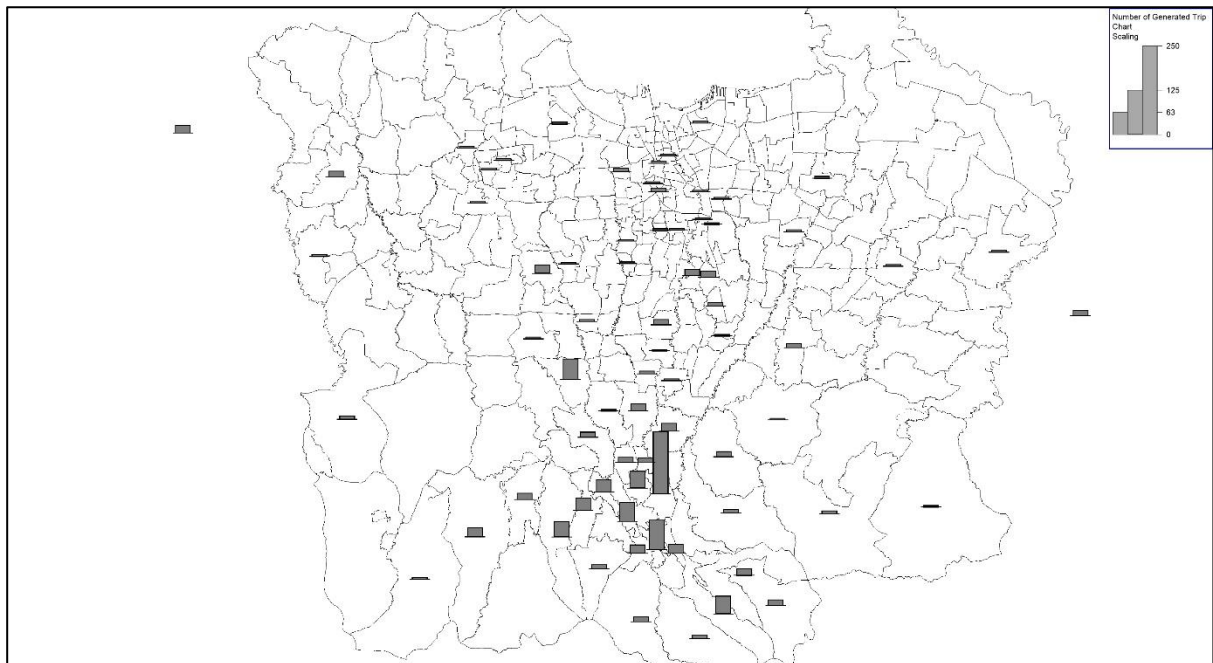
**Figure 162. Bus Passenger Trip Generation by Origin Zone at Pulo Gebang Bus Terminal**





Source: JUTPI 2

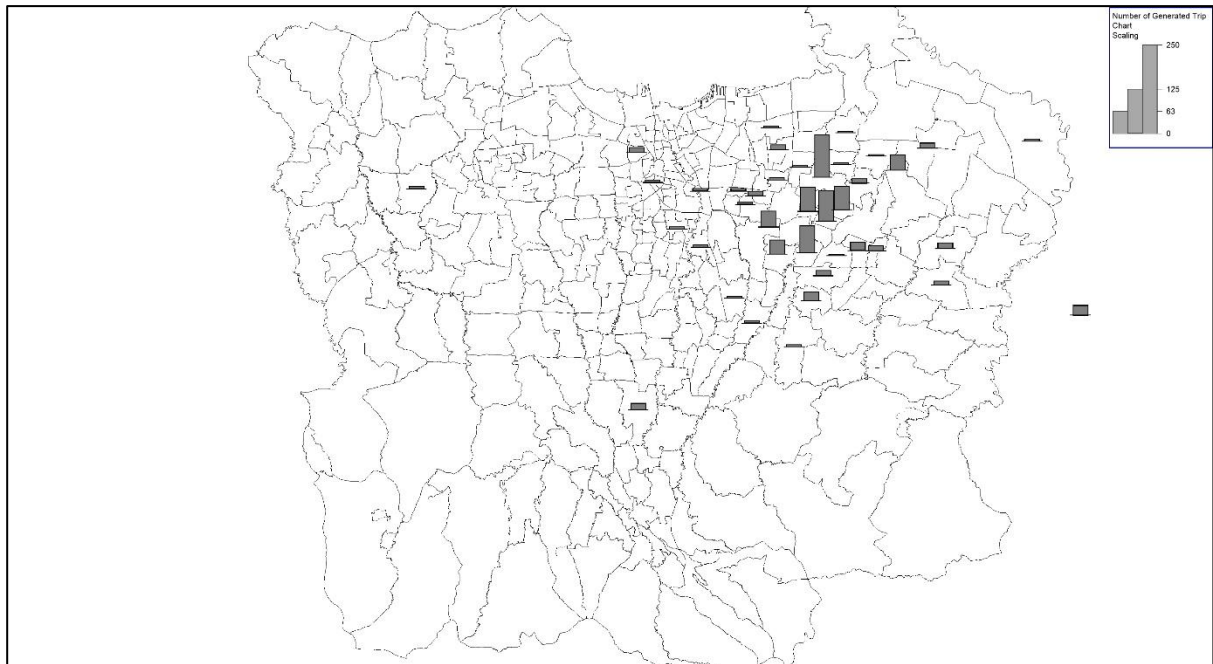
**Figure 163. Bus Passenger Trip Generation by Origin Zone at Tanjung Priok Bus Terminal**



Source: JUTPI 2

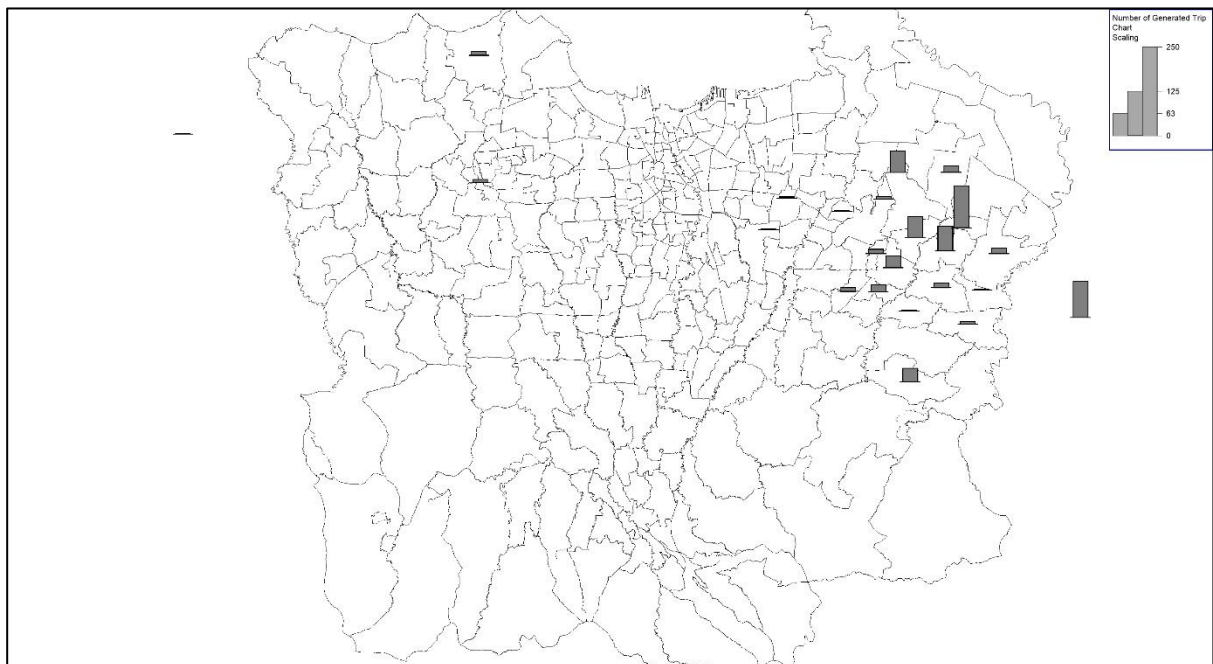
**Figure 164. Bus Passenger Trip Generation by Origin Zone at Baranangsiang Bus Terminal**





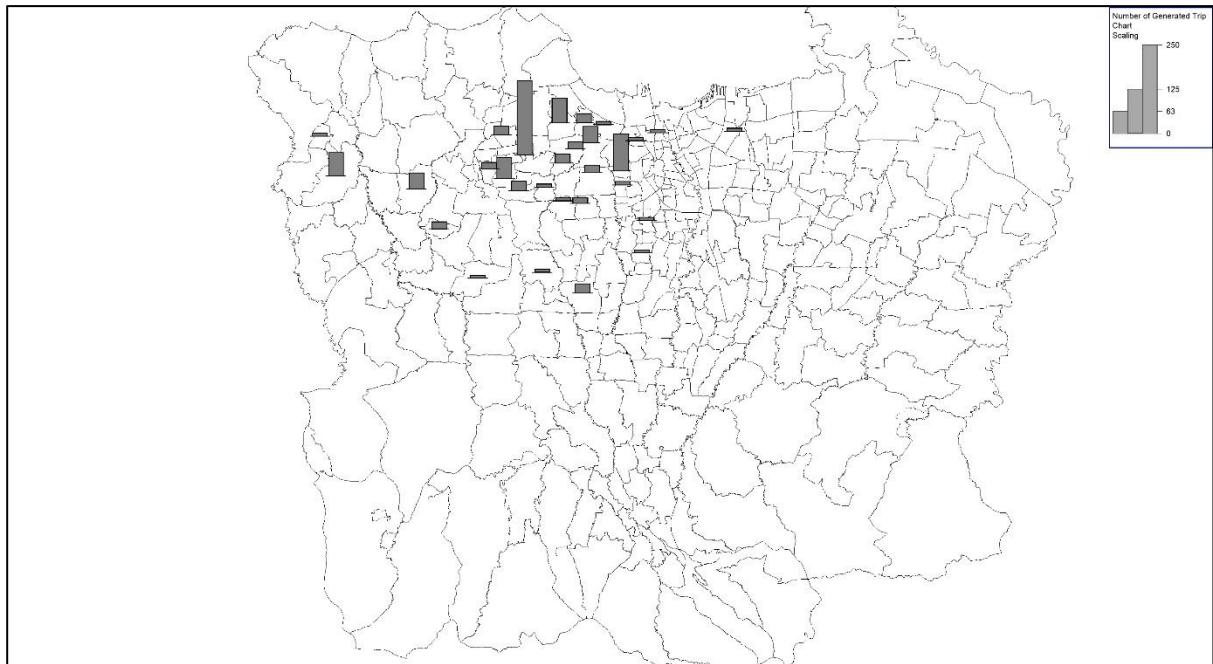
Source: JUTPI 2

**Figure 165. Bus Passenger Trip Generation by Origin Zone at Bekasi Bus Terminal**



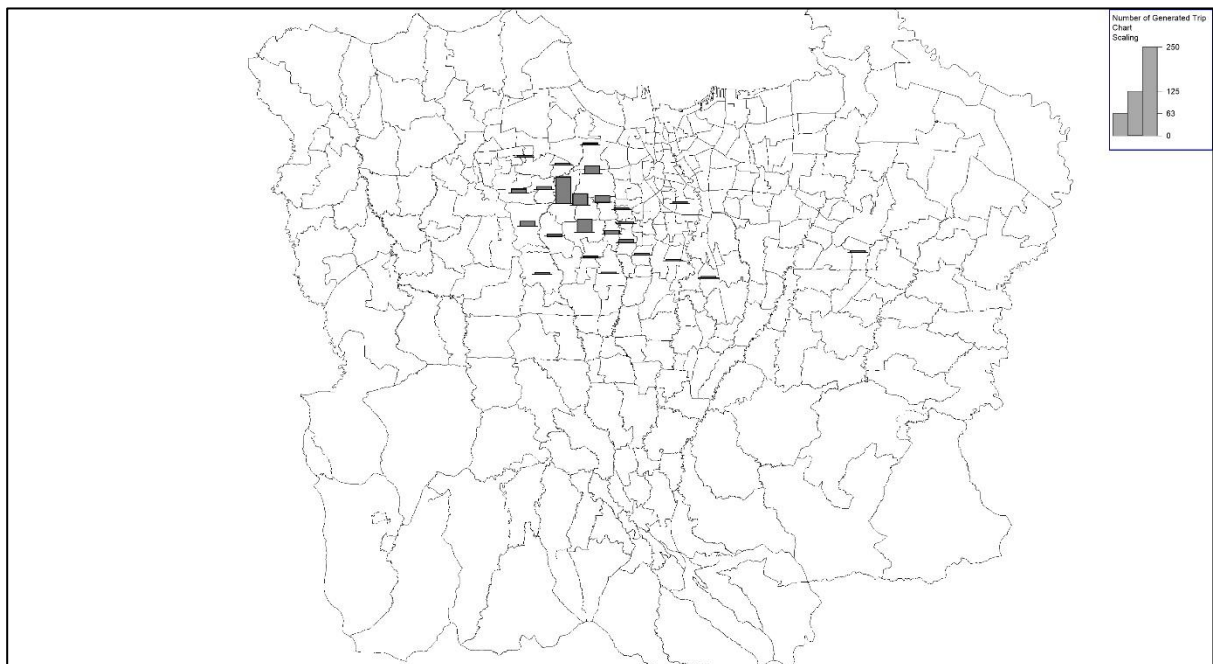
Source: JUTPI 2

**Figure 166. Bus Passenger Trip Generation by Origin Zone at Cikarang Bus Terminal**



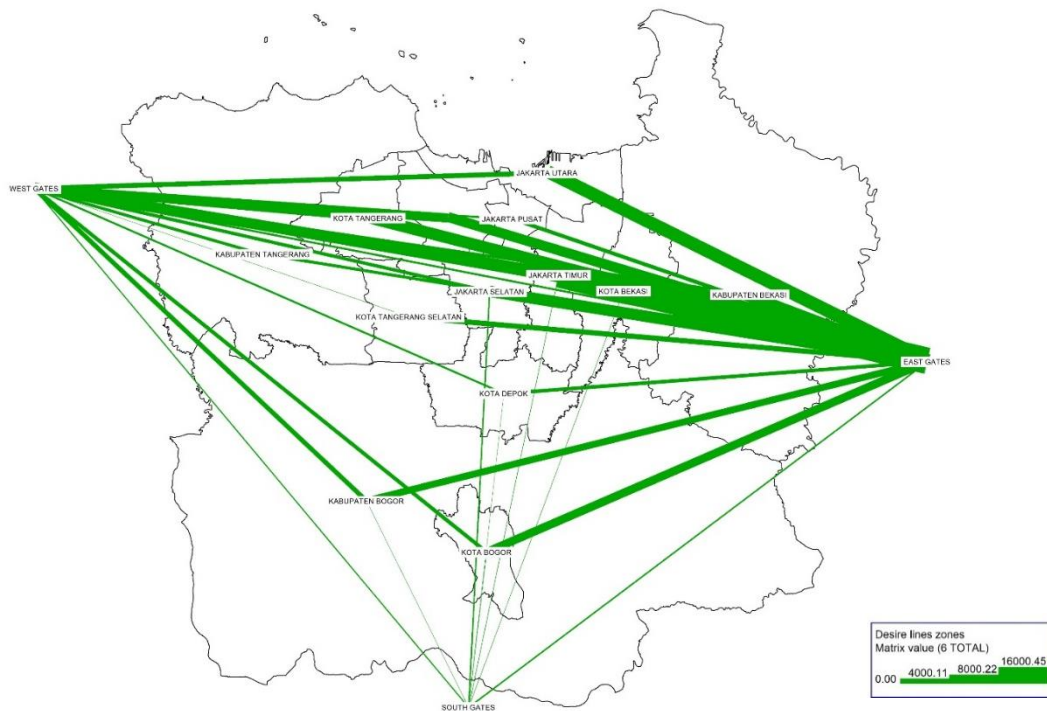
Source: JUTPI 2

**Figure 167. Bus Passenger Trip Generation by Origin Zone at Poris Plawad Bus Terminal**



Source: JUTPI 2

**Figure 168. Bus Passenger Trip Generation by Origin Zone at Ciledug Bus Terminal**



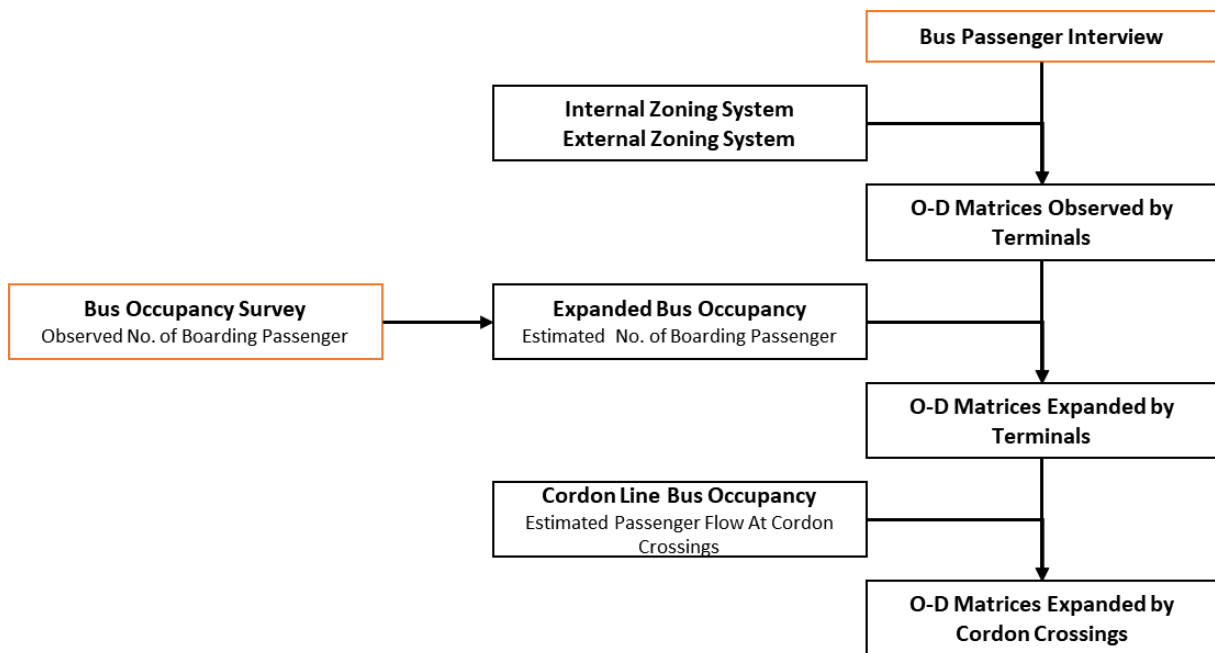
Source: JUTPI 2

**Figure 169. Bus Passenger Desire Line for Surveyed Terminal (Survey Result)**

### 5.5.4.3 Intercity Bus Passenger O-D Matrix

Several steps are needed to be notified in the making of O-D matrices for intercity bus passenger movement. Based on the collected data, O-D matrices are estimated based on the sample of O-D matrices adopted from bus interview survey and expanded by passenger flow, which adopted from bus occupancy survey.

The objective of O-D matrix calibration is to develop O-D matrix based on the observed O-D matrix resulted from passenger interview. The calibration process involves estimation of passenger flow from terminals, checking the sampling rate and calculation of expansion factor. O-D matrix calibration resulted two types of matrices, which are terminal based O-D matrices and cordon crossing based O-D matrices. The calibration process follows the flow chart as shown in figure below.



Source: JUTPI 2

**Figure 170. The Process of Matrix Calibration for Intercity Bus Terminal**

As shown in figure above, firstly, data from bus passenger interview survey were coded into zoning system, which are adopted from SITRAMP zoning system. Those data are then cross-tabulated according by their origin and destination by time slices, the results are observed terminal based O-D matrices.

**a) Type 1 O-D Matrices**

The expansion factor is estimated from the ratio between the total population (total boarding passenger that crossing JABODETABEK boundary that already adjusted based on the on-board occupancy survey) and sample size for each terminal for each time slices. This expansion factor then is applied for those particular terminals.

**Table 77. Sample for Intercity Bus Passenger Survey**

Bus Terminal	Departing Bus	40% Departing Bus	Surveyed Bus	50% Total Passenger (from 40% Departing Bus)	Total Passenger Interviewed
Baranangsiang	122	49	49	380	381
Bekasi	184	74	74	237	237
Cikarang	91	37	37	123	136
Ciledug (Pasar Lembang)	37	15	15	77	78
Kalideres	322	129	130	349	349
Kampung Rambutan	285	114	114	540	540
Lebak Bulus	67	27	27	176	176
Poris Plawad	71	29	30	157	157
Pulo Gebang	208	84	84	453	453
Tanjung Priok	108	44	44	109	112

Source: JUTPI 2

**Table 78. Expansion Factor by Passenger Boarding**

No.	Bus Terminal	Time Band	Expansion Factor
1	Baranangsiang	3AM - 10AM	4.05
		10AM - 4PM	5.13
		4PM - 3AM	5.22
2	Bekasi	3AM - 10AM	3.64
		10AM - 4PM	7.15
		4PM - 3AM	5.44
3	Cikarang	3AM - 10AM	3.84
		10AM - 4PM	10.53
		4PM - 3AM	2.23
4	Ciledug (Pasar Lembang)	3AM - 10AM	1.67
		10AM - 4PM	4.66
		4PM - 3AM	4.41

No.	Bus Terminal	Time Band	Expansion Factor
5	Kalideres	3AM - 10AM	6.36
		10AM - 4PM	4.12
		4PM - 3AM	4.14
6	Kampung Rambutan	3AM - 10AM	6.15
		10AM - 4PM	5.04
		4PM - 3AM	3.99
7	Lebak Bulus	3AM - 10AM	7.63
		10AM - 4PM	6.32
		4PM - 3AM	3.77
8	Poris Plawad	3AM - 10AM	9.18
		10AM - 4PM	8.28
		4PM - 3AM	10.30
9	Pulo Gebang	3AM - 10AM	8.86
		10AM - 4PM	5.83
		4PM - 3AM	4.58
10	Tanjung Priok	3AM - 10AM	5.81
		10AM - 4PM	5.66
		4PM - 3AM	4.60

Source: JUTPI 2

#### b) Type 2 O-D Matrices

The expansion factor is estimated from the ratio between the total population of each time slices as shown in table, and by crossing point to cordon line (grouped into three direction to outside JABODETABEK) as shown in the following table. These O-D matrices were enhanced from the first O-D matrices.

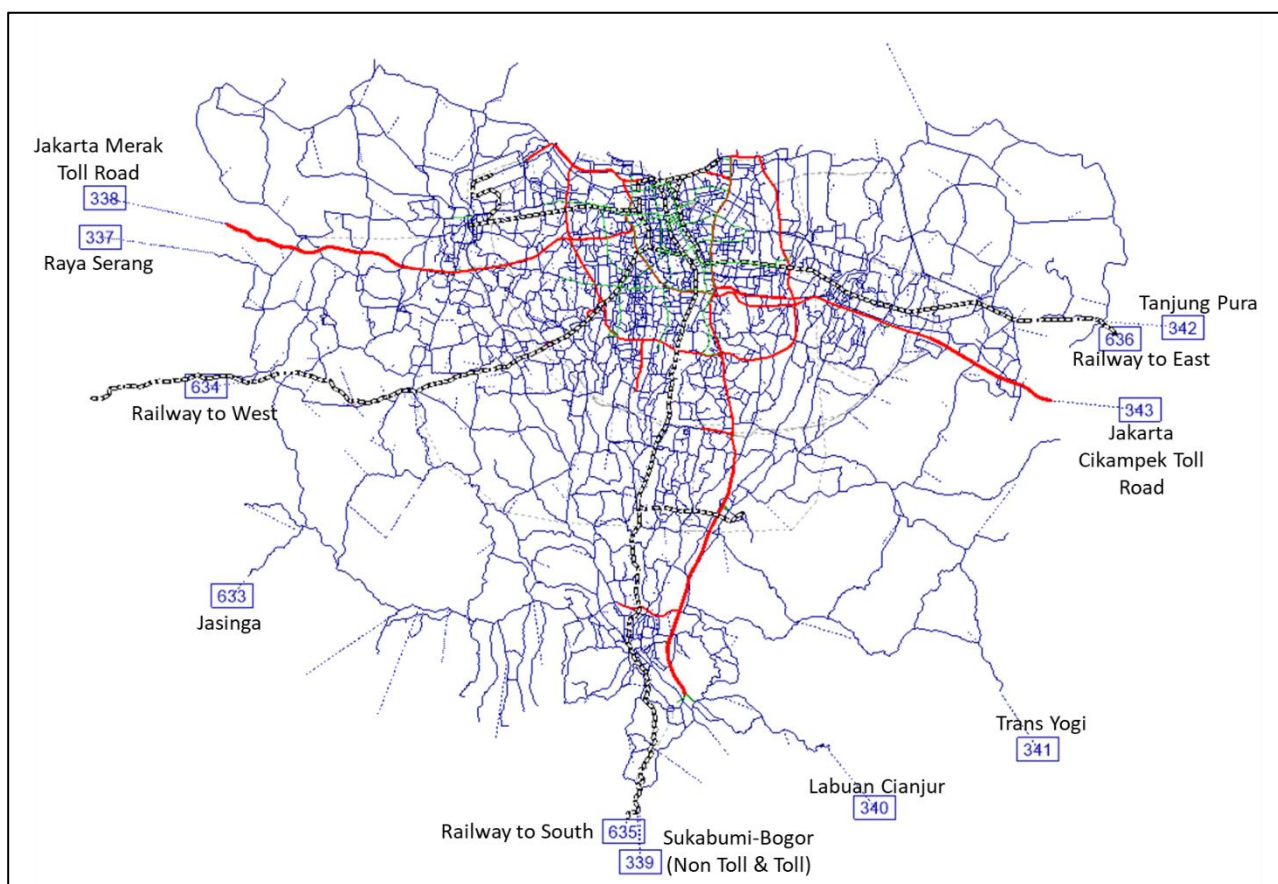
Trip from each terminal, which was described into O-D matrices, is then split based on its cordon line. It is classified into three crossing point as west, south, and east. Then, the external zones were developed into 7 (seven) major gates to determine each critical crossing point. The external zone for cordon line is shown in the following table.



**Table 79. The External Zones for Cordon Line**

Direction	Road Type	Name of Road	Zone
West	Arterial Road	Raya Serang	337
	Toll Road	Jakarta-Merak Toll Road	338
	Arterial Road	Jasinga	633
South	Arterial Road	Sukabumi-Bogor	339
	Arterial Road	Labuan Cianjur	340
	Arterial Road	Trans Yogi	341
East	Arterial Road	Tanjung Pura	342
	Toll Road	Jakarta-Cikampek Toll Road	343

Source: JUTPI 2



Source: JUTPI 2

**Figure 171. The External Zones for Cordon Line**

Based on the bus occupancy data on each critical crossing point, the second expansion factor can be estimated, both for intercity bus and chartered bus, assuming chartered bus will have same O-D pattern like intercity bus passenger. The expansion factor is shown in table below.

**Table 80. Expansion Factor for Cordon Line**

No.	Direction	Time Band	No. of Passenger	No. of Passenger at Boundary (Incl. Chartered Bus)	Expansion Factor
1	West	3AM - 10AM	464	11,189	24.11
		10AM - 4PM	1,050	9,451	9.00
		4PM - 3AM	1,025	14,317	13.96
2	South	3AM - 10AM	169	901	5.31
		10AM - 4PM	415	1,156	2.78
		4PM - 3AM	349	298	1.17
3	East	3AM - 10AM	2,452	19,032	7.76
		10AM - 4PM	4,741	15,034	3.17
		4PM - 3AM	4,691	30,517	6.51

Source: JUTPI 2

The OD table for intercity bus and chartered bus passenger movement was formed based on expansion factor above and aggregated by departure time from origin location. The OD table is presented in the provided cordon line survey database.

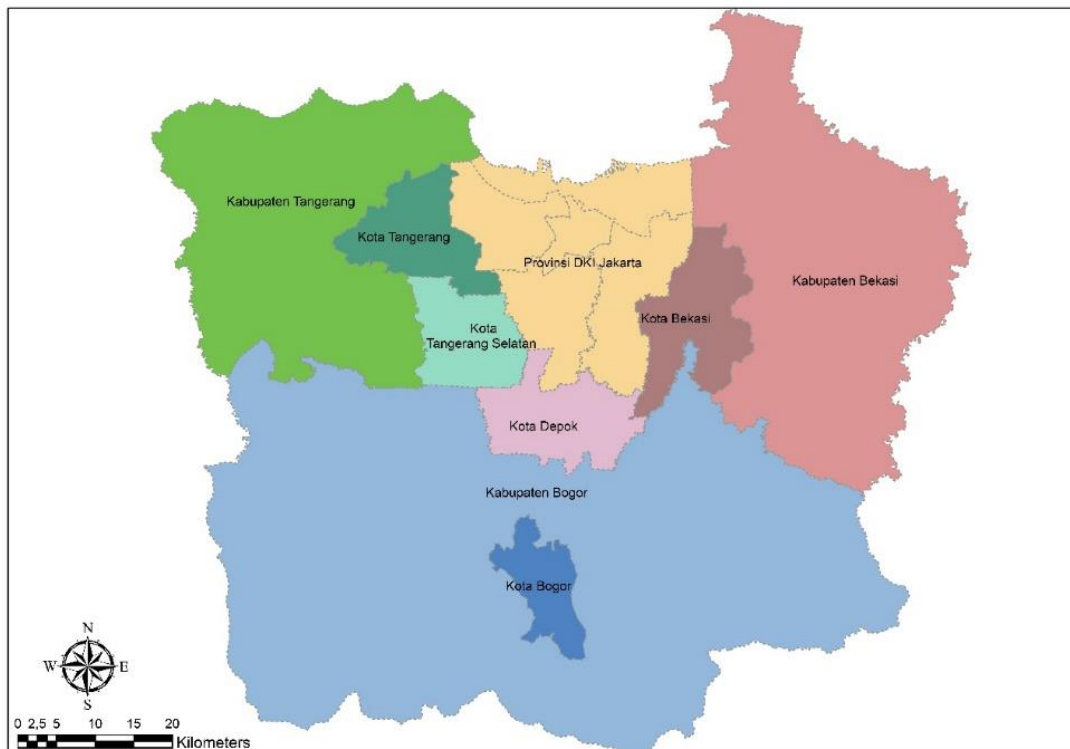


## Chapter 6 ACTIVITY-TRAVEL DIARY SURVEY (PAPER- AND SMARTPHONE-BASED)

### 6.1 Introduction

#### 6.1.1 Background

The JICA Study Team conducted “JABODETABEK Urban Transportation Policy Integration Project Phase 2 (JUTPI 2) in the Republic of Indonesia” in cooperation with Coordinating Ministry of Economic Affairs and BAPPENAS, as representatives of the Government of Indonesia.



Source: JUTPI 2

Figure 172 Study Area

Origin-Destination trip information is required to understand the current pattern of residents' trip demand. The data is used as basic data for creating transportation demand model. The data is included as a part of urban transportation database and demand forecast is conducted based on the updated database. The JABODETABEK Urban Transport Policy Integration Project Phase 1 should be revised with this updated transportation information.

As illustrated in Figure 172, the study area consists of DKI Jakarta, Kota Bogor, Kabupaten Bogor, Kota Tangerang, Kota Tangerang Selatan, Kabupaten Tangerang, Kota Depok, Kota Bekasi and Kabupaten Bekasi.

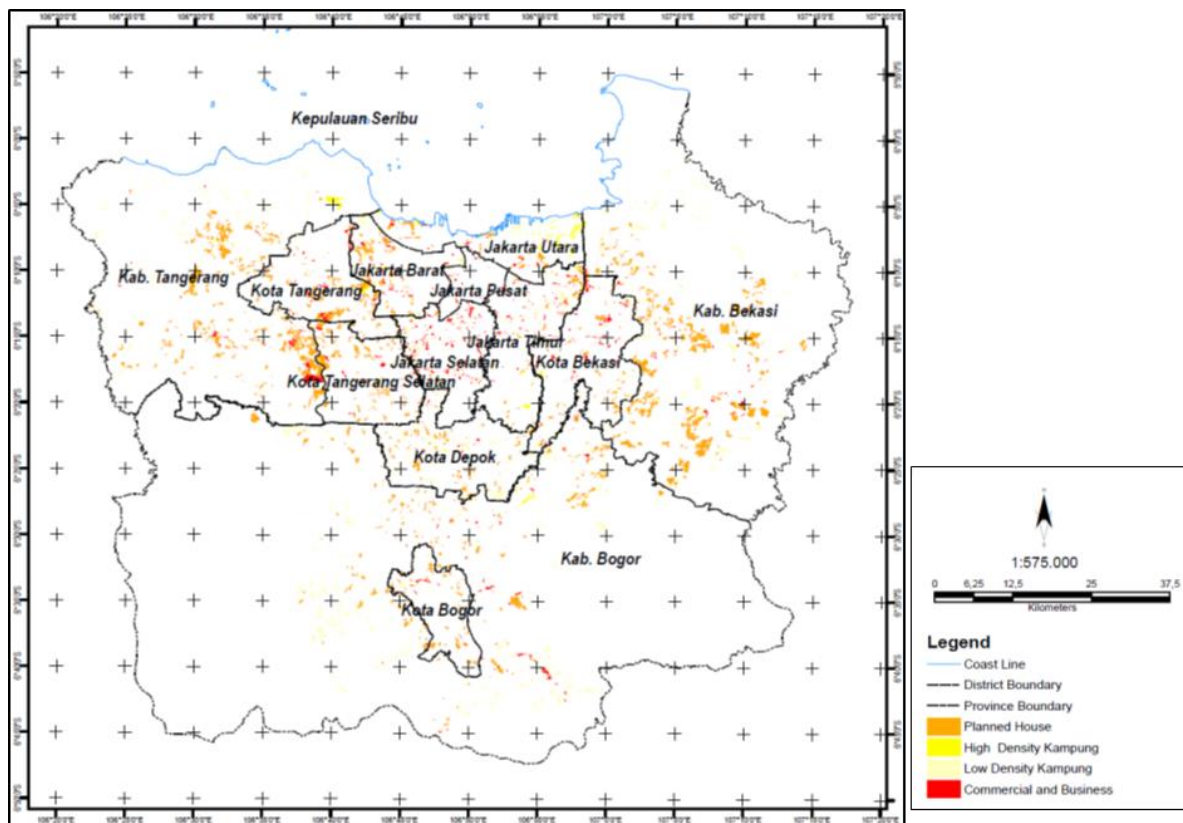
### **6.1.2 Objectives**

This survey was conducted to understand the characteristics of commuting trips (e.g., destination, mode, travel time, cost, etc.) of worker(s) and student(s) of each household and to update socioeconomic data collected from the older large-scale Commuter Trip Survey (CTS) that was conducted in the JUTPI 1, by collecting the comprehensive socio-economic information of the household and one household member for each household in the study area.

### **6.1.3 Activity-Travel Diary Survey (ADS) Using Paper-Based and Smartphone Application**

#### **6.1.3.1 ADS Using Paper-Based (ADS Paper-based)**

The main objective of ADS Paper-based is to obtain data of daily activity-travel from each respondent within JABODETABEK area. The Survey especially focuses on respondents who live in the newly developed area (see Figure 173) since the JUTPI Commuter Survey in 2010 as well as respondents who do not have smartphones and/or have the preference of being tracked by paper-and-pencil method. Data should include the respondent's travel pattern and behavior through daily activity-travel reporting. Socioeconomic data for household and household members is also collected.



Source: JUTPI 2

**Figure 173 Newly Developed Area since JUTPI 2010**

### 6.1.3.2 ADS using Smartphone Application (MEILI)

The main objective of ADS MEILI is to obtain data of daily activity-travel from each respondent within the JABODETABEK area. Data should include respondent's travel pattern and behavior through daily activity-travel reporting. Socioeconomic data for household and household members should also be collected.

The data of daily activity-travel is collected by application installed in respondents' smartphones which is so-called mobility collector with a "machine learning" algorithm or referred as "Application". The Application automatically collects data once the Application starts and all daily activity-travel of respondents is recorded. There are many kinds of direction of how the "machine learning" algorithm shall be developed in which the main idea is to make the role of surveyor is replaced by the smartphone.

## **6.2 Activity – Travel Diary Using Paper Based Diary**

### **6.2.1 Outline of ADS Paper-Based**

#### **6.2.1.1 Methodology**

The ADS Paper-based was implemented in several steps as shown in Figure 174. The methodology of survey implementation is divided into 3 (three) phases:

##### **a. Preparation and Planning Phase**

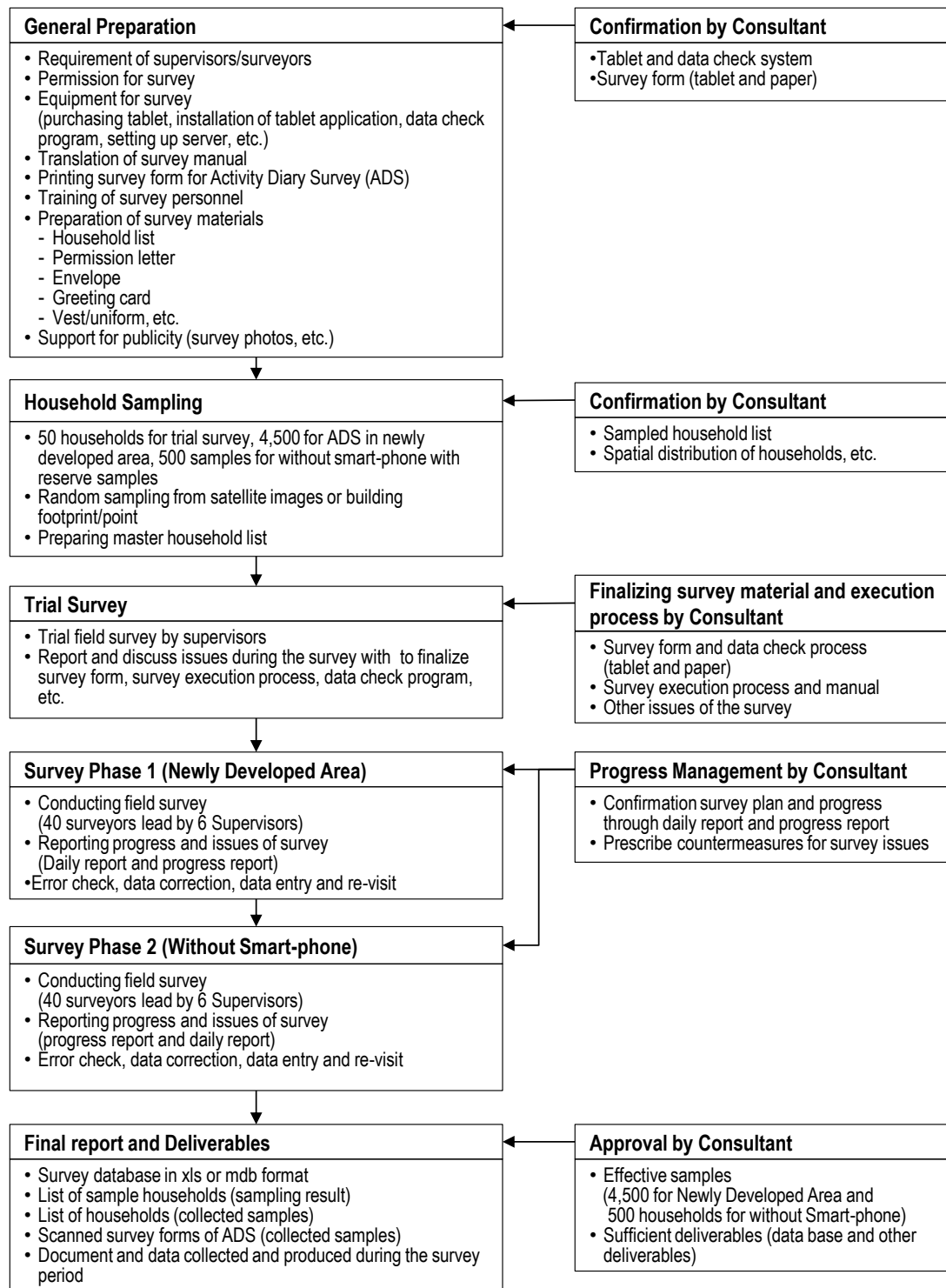
In the preparation and planning phase, the samples and general preparation such as survey team, survey form design, survey module, license and public relations, survey logistic (permission letter, hat, ID Card, etc), and recruitment/training of field staff are being prepared. Trial survey was also conducted to understand the field condition, finalize the survey form, survey execution process, and data checking program.

##### **b. Implementation Phase**

Implementation phase is the execution of the preparation and planning phase. This phase was planned to be conducted in 11 weeks, which includes licensing arrangements, producing logistics and forms, survey phase 1 (focus on Newly Developed Area), survey phase 2 (focus on respondents without smartphone).

##### **c. Inputting, Data Processing, and Reporting**

It is the final phase to obtain the expected output. Editing, coding, error checking and tabulating process are the main activities in this phase.



Source: JUTPI 2

**Figure 174 Methodology of ADS Paper-based Diary Implementation**

Implementation schedule of the ADS Paper-based is shown in Table 81. Entire

duration of the survey implementation is four months; three weeks for preparation, one week for trial survey and feedback, six weeks for the survey phase 1, two weeks for survey phase 2.

It was noted that field survey for the activity-travel should not be conducted during ASIAN game which is assumed to start from the middle of August to capture actual travel behavior and daily activities. The actual schedule for the implementation of this survey is as follows.

**Table 81 ADS Paper-based Schedule**

No	Job Description	July			August				September				October				
		3	4	5	1	2	3	4	1	2	3	4	1	2	3	4	
<b>STUDY PREPARATION AND KICK OFF</b>																	
1	101 Kick of meeting																
	102 Permitting																
	- Permit to Kesbanglinmas																
	- Permit to RT and RW																
	103 Preparation of Survey Materials																
	Translation of Survey Execution Manuals																
	Survey Materials																
	104 Training																
	- Supervisor																
	- Surveyor																
	105 Trial Survey																
2	<b>Field Survey</b>																
	201 Interview Survey																
	202 Data Input and Tabulation																
	203 Error Checking																
3	<b>REPORTING AND PRESENTATION</b>																
	301 Preparation of Weekly Report																
	302 Preparation of Draft Report																
	303 Submission of Draft Report																
	304 Client's Review and Presentation																
	305 Revision of Final Report based on Client's Input																
	306 Submission of Final Report																

Source: JUTPI 2

### 6.2.1.2 Coverage and Sample Size

ADS Paper-based was conducted for the newly developed area in a huge urban area of the JABODETABEK metropolitan area. The targeted number of samples to be collected is effective 5,000 respondents from 5,000 households – one respondent for each household within JABODETABEK. The samples include 4,500 samples from the newly developed area in each Kota and Kabupaten by type of settlement area, which is shown in Table 82. Also, the 4500 respondents that fill the household member information should live in the same address as the head of the household. The rest 500 is collected from the household in the previous Commuter Trip Survey who lives in the study area. They were initially

purposed for ADS MEILI but prefers to be surveyed using the pencil-and-paper method.

**Table 82 Number of Effective Sample Respondents/Households in Each Kota/Kabupaten**

No	Regions in JABODETABEK	Number of Collected Samples				Total
		Planned House	High Density Kampung	Low Density Kampung	Commercial and Business	
1	DKI Jakarta	298	187	30	288	803
2	Kabupaten Bekasi	829	21	155	47	1052
3	Kabupaten Bogor	398	23	213	99	733
4	Kabupaten Tangerang	672	71	82	58	883
5	Kota Bekasi	114	20	11	65	210
6	Kota Bogor	70	0	8	23	101
7	Kota Depok	114	8	39	6	167
8	Kota Tangerang	217	31	13	58	319
9	Kota Tangerang Selatan	180	16	1	35	232
	Total	2892	377	552	679	4500

Note: Colors of the columns match the legend in Figure 173

Source: JUTPI 2

### 6.2.1.3 Survey Form Design

#### a. Survey Task and Items

Within the scope of ADS Paper-based, the following data/information was collected:

- Household Information:
  - Zone code; household member composition (gender, age, status, etc.); household income; and vehicle ownership.
- Respondent's (only 1 household member) Information:
  - Address of work/school place; departure/arrival travel time; transport mode; car/motorcycle availability; travel frequency; monthly transport cost; occupation and work type; and weekday residential.
- Activity-Travel Diary (for three consecutive weekdays):

Activities at home (for every 15 minutes); activities outside home (for every 15 minutes and address of major locations); transport mode used and attribute of cost factors between activities at home and other places; and characteristics of the day (whether it was usual weekday or busy day).

**b. Survey Forms**


The following survey forms were utilized during the survey:

- Form 1: to record household information
- Form 2: to record respondent's personal information
- Form 3: to record respondent's activity-travel diary

**c. Survey Forms Format**

- d. The Survey Form 1 and 2 are conducted by using tablet devices to avoid errors in writing and inputting responses as well as expediting data input and avoiding misconduct of the Surveyors. The output files from tablet devices is stored in data base server through internet. Error check program is used to extract data files from tablet devices and to detect errors in the data files shared with Surveyors through Supervisors for correction or re visit/phone call.
- e. The Survey Form 3 is available in paper or tablet device format. Method of filling in the diary survey forms are explained by surveyors and respondents are asked to fill in the forms by themselves.





**ACTIVITY-TRAVEL DIARY SURVEY**  
**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION PHASE 2**  
**2018**

Form 1

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**CONFIDENTIAL**

BUILDING TYPE: \_\_\_\_\_ LAND USE TYPE: \_\_\_\_\_ SURVEYOR ID: \_\_\_\_\_ ZONE CODE: \_\_\_\_\_ HOUSEHOLD ID: \_\_\_\_\_

**I. HOUSEHOLD INFORMATION:**

(1) Head of the family name: \_\_\_\_\_  
 (3) House fixed line phone: \_\_\_\_\_  
 (4) Mobile phone number: \_\_\_\_\_  
 (5) Housing type: 1. Permanent 2. Semi-Permanent 3. Flat  
 (6) House ownership: 1. Personal owned 2. Family owned 3. Official residence 4. Rent 5. Others: \_\_\_\_\_

(7) Total household income/month: \_\_\_\_\_ (only for the member of core family)

**TABLE A** 01. Less than Rp. 1,500,000  
 02. Rp. 1,500,000 - s/d Rp. 1,999,999  
 03. Rp. 2,000,000 - s/d Rp. 2,499,999  
 04. Rp. 2,500,000 - s/d Rp. 2,999,999  
 05. Rp. 3,000,000 - s/d Rp. 3,499,999  
 06. Rp. 3,500,000 - s/d Rp. 3,999,999

(8) How long do you have stayed at your current place?: \_\_\_\_\_ years

(9) If this is not your first place, where is your previous place?  
 Street name: \_\_\_\_\_  
 Kelurahan: \_\_\_\_\_  
 Kecamatan: \_\_\_\_\_

(10) How many vehicles are there in your household?  
 For use of your household member:  
 a. Sedan, MPV, SUV: \_\_\_\_\_ unit Plate \_\_\_\_\_  
 b. Pick-up, box, van, truck: \_\_\_\_\_ unit Plate \_\_\_\_\_  
 c. Motorcycle: \_\_\_\_\_ unit  
 d. Bicycle: \_\_\_\_\_ unit

For commercial use/renting purpose:  
 a. Taxi, angkot, sedan, kijang, minibus, etc: \_\_\_\_\_ unit  
 b. Pick-up, box, truck, etc: \_\_\_\_\_ unit  
 c. Small/medium bus: \_\_\_\_\_ unit  
 d. Bajaj/bemo: \_\_\_\_\_ unit  
 e. Motorcycle: \_\_\_\_\_ unit

(11) Household member  
 For all household member that live in your house such as brothers/sisters, parents, kids (including yourself), and including maids, drivers, or others, please provide information in the box below:

No.	Household member	Give X mark if you are the respondent	Age	Sex (MF)	Relation with the head of family (TABLE B)	Same/Different KK (TABLE C)	Main Activity (TABLE D)	Type of Occupation (TABLE E)	Driving License (TABLE F)
1.	Head of family				0 1				
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									

**TABLE B**  
 01. Head of family  
 02. Spouse  
 03. Son/daughter in law  
 04. Son/daughter in law  
 05. Grandchild  
 06. Grandchild  
 07. Grandchild  
 08. Relative to son/daughter in law  
 09. Relative to son/daughter in law  
 10. Relative to son/daughter in law  
 11. Room tenant

**TABLE C**  
 1. Included in the list of main KK  
 2. Separated from main KK/own KK


**TABLE D**  
 01. Working (full time, permanent employee, government)  
 02. Working (full time, contract/honorary employee, government)  
 03. Working (full time, permanent employee, private)  
 04. Working (full time, contract/honorary employee, private)  
 05. Working (part time, permanent employee, government)  
 06. Working (part time, contract/honorary employee, government)  
 07. Working (part time, permanent employee, private)  
 08. Working (part time, contract/honorary employee, private)  
 09. Entrepreneur  
 10. Student (Kindergarten)  
 11. Student (Elementary School/MI)  
 12. Student (Junior High School/MTs)  
 13. Student (Senior High School/SMK/MA)  
 14. Student (University/Higher education)  
 15. Housewife  
 16. Retired  
 17. Has no job  
 18. Others

**TABLE E**  
 01. Farmer, fisherman, miner  
 02. Factory workers/laborers  
 03. Craftsman (weaver, wood, stone)  
 04. Construction laborer  
 05. Industry/business owner  
 06. Lecturer  
 07. Professor, manager, director, etc.  
 08. Expert (technical, chemist, physicist, biologist, lecturer, teacher, lawyer, etc.)  
 09. Armed Force/Police  
 10. Professional (doctor, engineer, accountant, lawyer, etc.)  
 11. Administration staff (seller, data entry)  
 12. Technician  
 13. Writer, bartender  
 14. Goods transport driver (box car, goods truck, motorcycle)  
 15. Public transport driver (including online transportation)  
 16. Private driver  
 17. Housemaid, office boy, cleaning service, gardener  
 18. Postal officer  
 19. Police officer  
 20. Others

**TABLE F**  
 1. SIM A  
 2. SIM B  
 3. SIM C  
 4. SIM D  
 5. SIM A & SIM C  
 6. SIM B & SIM C  
 7. Do not have SIM

Source: JUTPI 2

Figure 175 Form 1 – Household Information



**ACTIVITY-TRAVEL DIARY SURVEY**  
**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION PHASE 2**  
2018

Form 2

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CONFIDENTIAL

NAME OF RESPONDENT: \_\_\_\_\_ MOBILE PHONE NUMBER: \_\_\_\_\_ HOUSEHOLD CODE: \_\_\_\_\_

\_\_\_\_\_

---

II. HOUSEHOLD MEMBER INFORMATION:

If you reside in different address from the one stated in Form 1, please fill your domicile address:

How many days in a week do you stay in that address? \_\_\_\_\_ days

Street name: \_\_\_\_\_  
Kelurahan: \_\_\_\_\_  
Post code: \_\_\_\_\_

Kecamatan: \_\_\_\_\_  
Kota/Kabupaten: \_\_\_\_\_  
Landmark: \_\_\_\_\_

---

**A. THIS SECTION IS FILLED ONLY BY THE WORKER'S RESPONDENT**

(1) Type of work field (see TABLE G):  1. YES  2. NO (please continue to number 11)

(5) Type of work place (see TABLE G): \_\_\_\_\_

(2) Are you working at home?  1. YES (please continue to number 12)  2. NO

(3) Is your workplace fixed during the survey?  1. YES  2. NO (please continue to number 11)

(4) Work place address: \_\_\_\_\_  
Street name: \_\_\_\_\_  
Kelurahan: \_\_\_\_\_  
Post code: \_\_\_\_\_  
Kecamatan: \_\_\_\_\_  
Kota/Kabupaten: \_\_\_\_\_  
Landmark: \_\_\_\_\_

(fill time information with 24 hour format)

(6) Regular time to leave for work: \_\_\_\_\_

(7) Regular time to arrive at office: \_\_\_\_\_

(8) Regular time to leave office for home: \_\_\_\_\_

(9) Regular time to arrive at home: \_\_\_\_\_

(10) Is your commuting trip covered by allowance?  1. YES, fully covered  2. YES, partially covered  3. NOT covered

(11) Days to go to work in a week: \_\_\_\_\_ days

(12) Your average personal income per month (see TABLE A in Form 1): \_\_\_\_\_ Rp. \_\_\_\_\_ /month

---

**B. THIS SECTION IS FILLED ONLY BY THE STUDENTS RESPONDENT**

(1) Your current education level:  1. Senior high school/SM/MA  2. Academy (at grade as D3/D4)  3. University (at grade as S1)  4. Post Graduate (S2/S3)

(fill information with 24 hour format)

(3) Regular time to leave for school: \_\_\_\_\_

(4) Regular time to arrive at school: \_\_\_\_\_

(5) Regular time to leave school for home: \_\_\_\_\_

(6) Regular time to arrive at home: \_\_\_\_\_

(7) Days to go to school in a week: \_\_\_\_\_ days

(8) School type:  1. Public school  2. Private school

---

**C. THIS SECTION IS FILLED BY ALL RESPONDENT**

(1) Travel by car availability:  1. YES, always available  2. YES, sometimes available  3. Not available

(2) Travel by motorcycle availability:  1. YES, always available  2. YES, sometimes available  3. Not available

For other respondent, if you answer 1. YES, always available in the question number (1) or (2), please fill section E

Filled by the worker's and students respondent

(3) In general, how do you go to work or to school?  1. Walking/Bicycle  2. Public transport (please fill section D & E)  3. Private vehicle (please fill section E)  4. Park & Ride (please fill section D & E)  5. Park & Ride (please fill section D & E)

---

**D. THIS SECTION IS FILLED BY PUBLIC TRANSPORT USER**

(1) How many public transport modes do you take to reach your destination?  
 1. One  2. Two  3. Three  4. Four  5. Five  6. More than five

Please fill information below if you use commuter train, TransJakarta, TransJabodetabek and conventional large bus as your public transport mode:

(2) What is your main mode of transport from your home to the above mentioned public transport mode? (see TABLE I)

(3) What is your main mode of transport from the above mentioned public transport to your destination? (see TABLE I)

Rp. \_\_\_\_\_

(4) How much do you spend for transportation expenses in 1 month?  
Rp. \_\_\_\_\_

---

**E. THIS SECTION IS FILLED BY PRIVATE VEHICLE USER**

(1) What type of private vehicle that you use?  
 1. Motorcycle  2. Sedan, MPV, SUV  3. Pick-up/Box  4. Truck

(2) Who is driving the vehicle?  
 1. Myself  2. Other person

(3) How many passengers in the vehicle?  
 1. One (driving alone)  2. Two  3. Three  4. Four  5. Five  6. More than five

(4) How much do you spend for parking expenses in 1 month?  
Rp. \_\_\_\_\_

TABLE G

01. Home/boarding house  
02. Government office/Public facility  
03. Company/private company office  
04. Educational institution (TK, SD, SMP, SMA, etc.)  
05. Health center, clinic, hospital, etc.  
06. Hospital/patient's clinic  
07. Hotel, lodge, entertainment place  
08. Restaurant, food court, food stalls  
09. Grocery store, traditional market, minimarket  
10. Shopping center, plaza, mall, department store  
11. Shopping center, plaza, mall, department store  
12. Grocery market, central market  
13. Factory, workshop  
14. Warehouse, storage  
15. Office, airport, seaport  
16. Installation (gas, water, electricity)  
17. Recreational facility, Sports facility  
18. Parks, national park  
19. Agriculture, forestry, mining, fishery site  
20. Construction, building, works site  
21. Others: \_\_\_\_\_

TABLE I

01. TransJakarta feeder  
02. Medium bus (micro mini, kopong)  
03. Minibus (angkot, mikrobus)  
04. Transline bus  
05. Taxi  
06. Bajaj  
07. Online motorcycle taxi  
08. Motorcycle taxi  
09. Motorcycle  
10. Drop-off/pick-up (by car)  
11. Motorcycle  
12. Drop-off/pick-up (by motorcycle)  
13. Becak  
14. Wayang  
15. Walking

Source: JUTPI 2

Figure 176 Form 2 – Respondent's Personal Information

RAHASIA



**SURVEI REKAM AKTIVITAS-PERJALANAN HARIAN (ACTIVITY-TRAVEL DIARY SURVEY)**  
**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION PHASE 2**  
 2018



ID RUMAH TANGGA:

NAMA RESPONDEN:

Source: JUTPI 2

**Figure 177 Form 3 – Respondent’s Activity-Travel Diary (Part 1)**

RAHASIA



**SURVEI REKAM AKTIVITAS-PERJALANAN HARIAN (ACTIVITY-TRAVEL DIARY SURVEY)**  
**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION PHASE 2**  
 2018



ID RUMAH TANGGA:       KODE ANGGOTA KELUARGA:

**PETUNJUK PENGISIAN:**

1. Mohon isi masing-masing kolom (A, B-1, B-2, C-1, C-2) sesuai dengan kode angka/kode huruf dan isian yang terdapat di box TABEL A, TABEL B, TABEL C.

2. Untuk memudahkan pengisian alamat di luar rumah yang sering anda kunjungi, anda dapat mengisi alamat tersebut di bagian "DAFTAR ALAMAT YANG SERING DIKUNJUNGI".

3. Setelah mengisi Daftar Alamat yang Sering Dikunjungi dan Keterangan Alamat, selanjutnya anda cukup mengisikan kode angka dari masing-masing alamat tersebut ke dalam isian kode yang terdapat di kolom C-2.

**DAFTAR ALAMAT YANG SERING DI KUNJUNGI:**

Untuk memudahkan pengisian kolom C-2, anda dapat mengisi alamat yang sering anda kunjungi pada kotak isian dibawah ini. Mohon isikan juga "Keterangan Alamat" (contohnya: rumah makan A). Masing-masing alamat tersebut memiliki "Kode Alamat" yang nanti harus anda cantumkan di kolom KODE yang terdapat di kolom C-2. Untuk responden yang bekerja Kode Alamat 1 adalah alamat kantor anda, dan untuk responden yang belajar (pelajar, mahasiswa) Kode Alamat 2 adalah alamat sekolah anda.

Kode Alamat	Keterangan Alamat:	Nama jalan:	Kecamatan:	Bangunan penanda:
1	Alamat kantor		Kabupaten/Kota:	
2	Alamat Sekolah		Kabupaten/Kota:	
3			Kabupaten/Kota:	
4			Kabupaten/Kota:	
5			Kabupaten/Kota:	
6			Kabupaten/Kota:	
7			Kabupaten/Kota:	
8			Kabupaten/Kota:	

Source: JUTPI 2

**Figure 178 Form 3 – Respondent’s Activity-Travel Diary (Part 2)**

JABODETABEK Urban Transportation Policy Integration Project Phase 2 in the Republic of Indonesia  
Annex 05: Working Paper on Transportation Surveys

TABEL A (kode huruf di isi di kolom A)		TABEL B (kode angka di isi di kolom B-1). Kolom B-2 di isi dengan nominal biaya transportasi yang anda keluarkan			TABEL C (kode huruf di isi di kolom C-1)							
KEGIATAN DI RUMAH		MODA TRANSPORTASI			KEGIATAN DI LUAR RUMAH							
A. Tidur B. Mandi & PERSIAPANNYA C. MAKAN D. PEREKAMAN RUMAH TANGGA E. BEKERJA DI RUMAH F. BELAJAR G. KEGIATAN BADAN KEKERHANNIBAN H. CLAHRAGA, KEGIATAN HOBI I. TV/RADIO/PPC/INTERNET J. BERSEKOLAH K. LAINNYA, sebutkan		1. Jalan kaki 2. Sepeda 3. Sepeda motor 4. Mobil pribadi (perangai) 5. Mobil pribadi (perangai) 6. Pick up, box 7. Trek 8. Tak konvensional 9. O-Car, GrabCar (pribadi) 10. O-Car/GrabCar (sharing) 11. Onprengan 12. Bajaj, kencel 13. Ojek pangkalan			14. Ojek online (GoJek, GrabBike) 15. Becak/dalman 16. KA konvensional 17. KA Airport Railink Service (ARS) 18. KA ekonomi jarak jauh 19. Transjakarta (pemandang) 20. Transjakarta, feeder Transjakarta (bus besar) 21. Feeder Transjakarta (bus sedang) 22. Transjabodetabek 23. TransPalakan 24. JR Connexion, JA Connexion 25. DAMRI Bandara, Primajasa, Hiba Utama 26. Patas, Patas AC, Mayasari 27. Bus sedang ekonomi/ekonomi 28. Angkot, bus 29. Angkot, bus 30. Bus charter besar (bus karyawan, bus sekolah, parwisata, rental) 31. Bus charter sedang (bus karyawan, bus sekolah, parwisata, rental) 32. Bus charter kecil (bus karyawan, bus sekolah, parwisata, rental) 33. Lainnya, sebutkan				A. BEKERJA - Kantor B. BEKERJA - Selaipangriman C. BEKERJA - Meeting, dsb. D. SEKOLAH E. URUSAN PRIBADI F. MENGANTRIMEN/EMPUP G. URUSAN KELUARGA H. BELANJA - Linka keuarga/pribadi I. BELANJA - Linka kesenangan pribadi J. CLAHRAGA/REKREASI K. MEKUNJUNGI TEMAN/SAUDARA L. MAKANMINUM M. LAINNYA, sebutkan			
HARI KE <b>1</b> TANGGAL KEGIATAN (tg/bln): <input type="text"/> / <input type="text"/> / <input type="text"/>		Apabila anda tidur sebelum jam 03.00 pagi, mohon tuliskan jam nya: <input type="text"/> : <input type="text"/> (dalam format 24 jam)										
WAKTU	A	B-1		B-2	C-1		C-2					
		KODE	Lainnya, sebutkan		KODE	Lainnya, sebutkan	KODE	Nama jalan	Kelurahan	Kecamatan	Kabupaten/Kota	Bangunan penanda
03:00 - 03:15												
03:15 - 03:30												
03:30 - 03:45												
03:45 - 04:00												
04:00 - 04:15												
04:15 - 04:30												
04:30 - 04:45												
04:45 - 05:00												
05:00 - 05:15												
05:15 - 05:30												
05:30 - 05:45												
05:45 - 06:00												
06:00 - 06:15												
06:15 - 06:30												
06:30 - 06:45												
06:45 - 07:00												

Source: JUTPI 2

Figure 179 Form 3 – Respondent’s Activity-Travel Diary (Part 3)

TABEL A (kode huruf di isi di kolom A)		TABEL B (kode angka di isi di kolom B-1). Kolom B-2 di isi dengan nominal biaya transportasi yang anda keluarkan			TABEL C (kode huruf di isi di kolom C-1)							
KEGIATAN DI RUMAH		MODA TRANSPORTASI			KEGIATAN DI LUAR RUMAH							
A. Tidur B. Mandi & PERSIAPANNYA C. MAKAN D. PEREKAMAN RUMAH TANGGA E. BEKERJA DI RUMAH F. BELAJAR G. KEGIATAN BADAN KEKERHANNIBAN H. CLAHRAGA, KEGIATAN HOBI I. TV/RADIO/PPC/INTERNET J. BERSEKOLAH K. LAINNYA, sebutkan		1. Jalan kaki 2. Sepeda 3. Sepeda motor 4. Mobil pribadi (perangai) 5. Mobil pribadi (perangai) 6. Pick up, box 7. Trek 8. Tak konvensional 9. O-Car, GrabCar (pribadi) 10. O-Car/GrabCar (sharing) 11. Onprengan 12. Bajaj, kencel 13. Ojek pangkalan			14. Ojek online (GoJek, GrabBike) 15. Becak/dalman 16. KA konvensional 17. KA Airport Railink Service (ARS) 18. KA ekonomi jarak jauh 19. Transjakarta (pemandang) 20. Transjakarta, feeder Transjakarta (bus besar) 21. Feeder Transjakarta (bus sedang) 22. Transjabodetabek 23. TransPalakan 24. JR Connexion, JA Connexion 25. DAMRI Bandara, Primajasa, Hiba Utama 26. Patas, Patas AC, Mayasari 27. Bus sedang ekonomi/ekonomi 28. Angkot, bus 29. Angkot, bus 30. Bus charter besar (bus karyawan, bus sekolah, parwisata, rental) 31. Bus charter sedang (bus karyawan, bus sekolah, parwisata, rental) 32. Bus charter kecil (bus karyawan, bus sekolah, parwisata, rental) 33. Lainnya, sebutkan				A. BEKERJA - Kantor B. BEKERJA - Selaipangriman C. BEKERJA - Meeting, dsb. D. SEKOLAH E. URUSAN PRIBADI F. MENGANTRIMEN/EMPUP G. URUSAN KELUARGA H. BELANJA - Linka keuarga/pribadi I. BELANJA - Linka kesenangan pribadi J. CLAHRAGA/REKREASI K. MEKUNJUNGI TEMAN/SAUDARA L. MAKANMINUM M. LAINNYA, sebutkan			
HARI KE <b>1</b> TANGGAL KEGIATAN (tg/bln): <input type="text"/> / <input type="text"/> / <input type="text"/>		Apabila anda tidur sebelum jam 03.00 pagi, mohon tuliskan jam nya: <input type="text"/> : <input type="text"/> (dalam format 24 jam)										
WAKTU	A	B-1		B-2	C-1		C-2					
		KODE	Lainnya, sebutkan		KODE	Lainnya, sebutkan	KODE	Nama jalan	Kelurahan	Kecamatan	Kabupaten/Kota	Bangunan penanda
07:00 - 07:15												
07:15 - 07:30												
07:30 - 07:45												
07:45 - 08:00												
08:00 - 08:15												
08:15 - 08:30												
08:30 - 08:45												
08:45 - 09:00												
09:00 - 09:15												
09:15 - 09:30												
09:30 - 09:45												
09:45 - 10:00												
10:00 - 10:15												
10:15 - 10:30												
10:30 - 10:45												
10:45 - 11:00												

Source: JUTPI 2

Figure 180 Form 3 – Respondent’s Activity-Travel Diary (Part 4)









18.00 - 18.15											
18.15 - 18.30											
18.30 - 18.45											
18.45 - 19.00											
19.00 - 19.15											
19.15 - 19.30											
19.30 - 19.45											
19.45 - 20.00											
20.00 - 20.15											
20.15 - 20.30											
20.30 - 20.45											
20.45 - 21.00											
21.00 - 21.15											
21.15 - 21.30											
21.30 - 21.45											
21.45 - 22.00											
22.00 - 22.15											
22.15 - 22.30											
22.30 - 22.45											
22.45 - 23.00											
23.00 - 23.15											
23.15 - 23.30											
23.30 - 23.45											
23.45 - 24.00											
24.00 - 24.15											
24.15 - 24.30											
24.30 - 24.45											
24.45 - 01.00											

Source: JUTPI 2

Figure 187 Form 3 – Respondent’s Activity-Travel Diary (Part 11)

WAKTU	A	B-1		B-2		C-1		C-2				
		KODE	Lainnya, sebutkan	Biaya perjalanan (Rp)	KODE	Lainnya, sebutkan	KODE	Nama jalan	Alamat di luar rumah			Bangunan penanda
								Kelurahan	Kecamatan	Kabupaten/Kota		
01.00 - 01.15												
01.15 - 01.30												
01.30 - 01.45												
01.45 - 02.00												
02.00 - 02.15												
02.15 - 02.30												
02.30 - 02.45												
02.45 - 03.00												

Mohon jawab pertanyaan berikut mengenai kondisi hari ini:

(1) Apakah hari ini kurang lebih sama dengan hari kerja biasanya?  1. Sama seperti biasanya 3. Hari yang spesial  
 2. Sedikit berbeda dari biasanya

(2) Apakah hari ini adalah hari yang sibuk atau tenang?  1. Hari yang sibuk 3. Hari yang normal 5. Hari yang tenang  
 2. Cenderung sibuk 4. Cenderung tenang

Di isi oleh surveyor:

ID RUMAH TANGGA:

KODE ANGGOTA KELUARGA:

Source: JUTPI 2

Figure 188 Form 3 – Respondent’s Activity-Travel Diary (Part 12)



**TABEL A** (kode huruf di isi di kolom A)      **TABEL B** (kode angka di isi di kolom B-1)      Kolom B-2 di isi dengan nominal biaya transportasi yang anda keluarkan      **TABEL C** (kode huruf di isi di kolom C-1)

**KEGIATAN DI RUMAH**  
A. TIDUR  
B. MANDI & PERSIAPAN NYA  
C. MAKAN  
D. PEKERJAAN RUMAH TANGGA  
E. BERKELUAR DI RUMAH  
F. BELAJAR  
G. KEGIATAN IBADAH/KEROHANEAN  
H. OLAHRAGA, KEGIATAN HOBI  
I. TV/RADIO/HP/INTERNET  
J. BERHENTI RAHAT  
K. LAINNYA, sebutkan

**MODA TRANSPORTASI**  
1. Jalan kaki  
2. Sepeda  
3. Sepeda motor  
4. Mobil pribadi (pengemudi)  
5. Mobil pribadi (penumpang)  
6. Pick-up, bus  
7. Truk  
8. Taksi konvensional  
9. GoCar, GrabCar (pribadi)  
10. Grab-Hor-Car (sharing)  
11. Ompangan  
12. Bajaj, koral  
13. Ojak pangkalan  
14. Ojak online (GoJek, GrabBike)  
15. BeoKoridoran  
16. KA, commuter line  
17. KA Airport Railink Service (ARS)  
18. KA ekonomi jarak jauh  
19. Transjakarta (gandeng)  
20. Transjakarta, feeder Transjakarta (bus besar)  
21. Feeder Transjakarta (bus sedang)  
22. Transjabodetabek  
23. TransPaksi  
24. JRT Commuter, JA Commuter  
25. DAMRI Bandara, PrimaJasa, Hiba Utama  
26. Palas, Palas AC, Mayasar  
27. Bus sedang ekonomis/ekonomis jarak jauh  
28. Mufidom, kopaja  
29. Angkot, beca  
30. Bus charter besar (bus karyawan, bus sekolah, pariwisata, rental)  
31. Bus charter sedang (bus karyawan, bus sekolah, pariwisata, rental)  
32. Bus charter kecil (bus karyawan, bus sekolah, pariwisata, rental)  
33. Lainnya, sebutkan

**KEGIATAN DI LUAR RUMAH**  
A. BEKERJA - Kantor  
B. BEKERJA - Sambilan/jajirman  
C. BEKERJA - Meeting, dbt.  
D. SEKOLAH  
E. URUSAN PRIBADI  
F. MENGINTAR/MENJEMPUT  
G. URUSAN KELUARGA  
H. BELANJA - Untuk keluarga/pribadi  
I. BELANJA - Untuk keperluan pribadi  
J. OLAHRAGA/REKREASI  
K. MENGGUNJING TEMAN/SAUDARA  
L. MANGAMBIUM  
M. LAINNYA, sebutkan

HARI KE: **3**      TANGGAL KEGIATAN (gg/bb/):      /      /      Apabila anda tidur sebelum jam 03:00 pagi, mohon tuliskan jam nya:      :      (dalam format 24 jam)

WAKTU	A	B-1		B-2	C-1		C-2				Bangunan penanda	
		KODE	Lainnya, sebutkan		KODE	Lainnya, sebutkan	KODE	Nama jalan	Kelurahan	Kecamatan		Kabupaten/Kota
03:00 - 03:15												
03:15 - 03:30												
03:30 - 03:45												
03:45 - 04:00												
04:00 - 04:15												
04:15 - 04:30												
04:30 - 04:45												
04:45 - 05:00												
05:00 - 05:15												
05:15 - 05:30												
05:30 - 05:45												
05:45 - 06:00												
06:00 - 06:15												
06:15 - 06:30												
06:30 - 06:45												
06:45 - 07:00												

Source: JUTPI 2

Figure 189 Form 3 – Respondent’s Activity-Travel Diary (Part 13)

**TABEL A** (kode huruf di isi di kolom A)      **TABEL B** (kode angka di isi di kolom B-1)      Kolom B-2 di isi dengan nominal biaya transportasi yang anda keluarkan      **TABEL C** (kode huruf di isi di kolom C-1)

**KEGIATAN DI RUMAH**  
A. TIDUR  
B. MANDI & PERSIAPAN NYA  
C. MAKAN  
D. PEKERJAAN RUMAH TANGGA  
E. BERKELUAR DI RUMAH  
F. BELAJAR  
G. KEGIATAN IBADAH/KEROHANEAN  
H. OLAHRAGA, KEGIATAN HOBI  
I. TV/RADIO/HP/INTERNET  
J. BERHENTI RAHAT  
K. LAINNYA, sebutkan

**MODA TRANSPORTASI**  
1. Jalan kaki  
2. Sepeda  
3. Sepeda motor  
4. Mobil pribadi (pengemudi)  
5. Mobil pribadi (penumpang)  
6. Pick-up, bus  
7. Truk  
8. Taksi konvensional  
9. GoCar, GrabCar (pribadi)  
10. Grab-Hor-Car (sharing)  
11. Ompangan  
12. Bajaj, koral  
13. Ojak pangkalan  
14. Ojak online (GoJek, GrabBike)  
15. BeoKoridoran  
16. KA, commuter line  
17. KA Airport Railink Service (ARS)  
18. KA ekonomi jarak jauh  
19. Transjakarta (gandeng)  
20. Transjakarta, feeder Transjakarta (bus besar)  
21. Feeder Transjakarta (bus sedang)  
22. Transjabodetabek  
23. TransPaksi  
24. JRT Commuter, JA Commuter  
25. DAMRI Bandara, PrimaJasa, Hiba Utama  
26. Palas, Palas AC, Mayasar  
27. Bus sedang ekonomis/ekonomis jarak jauh  
28. Mufidom, kopaja  
29. Angkot, beca  
30. Bus charter besar (bus karyawan, bus sekolah, pariwisata, rental)  
31. Bus charter sedang (bus karyawan, bus sekolah, pariwisata, rental)  
32. Bus charter kecil (bus karyawan, bus sekolah, pariwisata, rental)  
33. Lainnya, sebutkan

**KEGIATAN DI LUAR RUMAH**  
A. BEKERJA - Kantor  
B. BEKERJA - Sambilan/jajirman  
C. BEKERJA - Meeting, dbt.  
D. SEKOLAH  
E. URUSAN PRIBADI  
F. MENGINTAR/MENJEMPUT  
G. URUSAN KELUARGA  
H. BELANJA - Untuk keluarga/pribadi  
I. BELANJA - Untuk keperluan pribadi  
J. OLAHRAGA/REKREASI  
K. MENGGUNJING TEMAN/SAUDARA  
L. MANGAMBIUM  
M. LAINNYA, sebutkan

HARI KE: **3**      TANGGAL KEGIATAN (gg/bb/):      /      /      Apabila anda tidur sebelum jam 03:00 pagi, mohon tuliskan jam nya:      :      (dalam format 24 jam)

WAKTU	A	B-1		B-2	C-1		C-2				Bangunan penanda	
		KODE	Lainnya, sebutkan		KODE	Lainnya, sebutkan	KODE	Nama jalan	Kelurahan	Kecamatan		Kabupaten/Kota
07:00 - 07:15												
07:15 - 07:30												
07:30 - 07:45												
07:45 - 08:00												
08:00 - 08:15												
08:15 - 08:30												
08:30 - 08:45												
08:45 - 09:00												
09:00 - 09:15												
09:15 - 09:30												
09:30 - 09:45												
09:45 - 10:00												
10:00 - 10:15												
10:15 - 10:30												
10:30 - 10:45												
10:45 - 11:00												

Source: JUTPI 2

Figure 190 Form 3 – Respondent’s Activity-Travel Diary (Part 14)





### 6.2.2.2 Sampling Method

#### a. Population in Newly Developed Area

To decide the number of samples, total number of populations in the newly developed area is estimated.

##### 1. Approach

- Bottom-up approach: To identify major new buildings and estimate population with floor area, average household size and average unit size.
- Top-down approach: To estimate development area by land use by region and estimate population from average population density by land use by region in 2016.

##### 2. Population in Major New Buildings

- 88 buildings are identified from “Skyscraper Center”, a real estate database.
- Population in the high-rise buildings is estimated with following assumptions such as the number of floors, average unit area, average occupancy ratio and average people in family.
  - Average occupancy rate: 71.2% (DKI), 69.6% (Other area). Source: Colliers International.
  - Average size of condominium 80 sqm/unit. Source: Colliers International.
  - Average exclusive area ratio: 75%.
  - Average household size: 3.8 (DKI, Jawa Barat), 4.1(Banten).

**Table 84 List of Major New Buildings after 2010**

No.	Building Name	City	Height (m)	Floors	Completed	Use	No.of Resident Unit	Building Area (sqm)	Estimated Total Population
1	Grand Dhika City	Bekasi	85	26	2015	residential	N/A	1,579	950
2	Kemang View Apartment	Bekasi	-	23	2015	residential	1500	2,818	3,967
3	Grand Dhika City Jatiwarna Tower Emerald	Bekasi	-	22	2016	residential	793	1,846	2,097
4	Bogor Valley Condotel	Bogor	-	22	2014	residential	625	2,726	1,653
5	Mahogany Tower	Cikarang	-	28	2016	residential	624	2,401	1,650


*JABODETABEK Urban Transportation Policy Integration Project Phase 2 in the Republic of Indonesia*  
*Annex 05: Working Paper on Transportation Surveys*

No.	Building Name	City	Height (m)	Floors	Completed	Use	No. of Resident Unit	Building Area (sqm)	Estimated Total Population
6	Green Palace Residence Tower Banyan	Cikarang	-	25	2016	residential	285	1,132	754
7	Green Palace Residence Tower Acacia	Cikarang	-	25	2016	residential	447	956	1,182
8	Trivium Terrace Apartment NorthTower	Cikarang	-	22	2015	residential	422	2,180	1,116
9	Trivium Terrace Apartment SouthTower	Cikarang	-	22	2015	residential	342	1,912	905
10	Gama Tower	Jakarta	286	64	2016	hotel / office	272	2,655	736
11	Raffles Hotel	Jakarta	253	52	2015	residential / hotel	173	1,334	468
12	The Pakubuwono Signature	Jakarta	252	50	2014	residential	188	1,592	509
13	Seaview Condominium @ Green Bay Pluit Tower M	Jakarta	208	48	2015	residential / retail	752	1,281	2,035
14	Seaview Condominium @ Green Bay Pluit Tower L	Jakarta	208	48	2015	residential	752	1,281	2,035
15	Seaview Condominium @ Green Bay Pluit Tower K	Jakarta	208	48	2015	residential	752	1,281	2,035
16	Seaview Condominium @ Green Bay Pluit Tower J	Jakarta	208	48	2015	residential	752	1,282	2,035
17	Ciputra World Residential Tower	Jakarta	207	49	2014	residential	88	1,920	238
18	Infinity Apartment @ District 8	Jakarta	205	51	2017	residential	280	1,908	758
19	Eternity Apartment @ District 8	Jakarta	205	51	2017	residential	400	2,037	1,082
20	Denpasar Residence Ubud Tower	Jakarta	203	53	2012	residential	550	3,178	1,488
21	Denpasar Residence Kintamani Tower	Jakarta	203	53	2012	residential	550	2,552	1,488
22	The Ritz Kemang Village	Jakarta	192	41	2012	residential	N/A	936	912
23	Central Park Residences Tower 3	Jakarta	188	49	2011	residential	342	1,752	925
24	Central Park Residences Tower 2	Jakarta	188	49	2011	residential	342	1,482	925
25	Central Park Residences Tower 1	Jakarta	188	49	2011	residential	342	1,283	925
26	Residence 8 @ Senopati Tower B	Jakarta	188	43	2012	residential	325	1,032	879
27	Residence 8 @ Senopati Tower A	Jakarta	188	43	2012	residential	325	860	879
28	The Orchard Satrio	Jakarta	171	44	2017	residential	349	1,090	944
29	The Residence Satrio	Jakarta	171	44	2017	serviced apartments / residential	119	1,613	322
30	The Pakubuwono View Lacewood Tower	Jakarta	159	37	2011	residential	192	1,110	519
31	The St. Moritz Tower	Jakarta	158	42	2016	hotel / office	N/A	2,017	2,025
32	The Pakubuwono House	Jakarta	150	32	2015	residential	188	1,452	509
33	Seasons City Tower 3	Jakarta	144	42	2010	residential / retail	N/A	1,588	1,558
34	Seasons City Tower 2	Jakarta	144	42	2010	residential / retail	N/A	1,203	1,246
35	Seasons City Tower 1	Jakarta	144	42	2010	residential / retail	N/A	1,413	1,402
36	The Pakubuwono View Redwood Tower	Jakarta	125	34	2011	residential	192	1,786	519
37	South Quarter Tower C	Jakarta	85	20	2015	office / retail	N/A	2,126	1,011
38	South Quarter Tower B	Jakarta	85	20	2015	office / retail	N/A	2,126	1,011
39	South Quarter Tower A	Jakarta	85	20	2015	office / retail	N/A	2,126	1,011
40	SOHO @ Podomoro City	Jakarta	-	46	2017	residential / office / retail	480	8,449	1,299
41	Ancol Mansion Tower 2	Jakarta	-	42	2011	residential / retail	N/A	828	779
42	Ancol Mansion Tower 1	Jakarta	-	42	2011	residential / retail	N/A	2,200	2,181
43	Tamansari Semanggi Tower B	Jakarta	-	35	2013	residential	611	993	1,653
44	Tamansari Semanggi Tower A	Jakarta	-	35	2012	residential	611	1,033	1,653
45	Bayview Apartment @ Green Bay Pluit Tower H	Jakarta	-	34	2012	residential	812	1,151	2,197
46	Bayview Apartment @ Green Bay Pluit Tower G	Jakarta	-	34	2012	residential	784	1,359	2,121
47	Bayview Apartment @ Green Bay Pluit Tower F	Jakarta	-	34	2012	residential	784	1,288	2,121
48	Bayview Apartment @ Green Bay Pluit Tower E	Jakarta	-	34	2012	residential	812	1,711	2,197
49	Coastview Apartment @ Green Bay Pluit Tower D	Jakarta	-	33	2012	residential	1120	1,240	3,030
50	Coastview Apartment @ Green Bay Pluit Tower C	Jakarta	-	33	2012	residential	1120	1,202	3,030
51	Coastview Apartment @ Green Bay Pluit Tower B	Jakarta	-	33	2012	residential	1120	657	3,030


No.	Building Name	City	Height (m)	Floors	Completed	Use	No. of Resident Unit	Building Area (sqm)	Estimated Total Population
52	Coastview Apartment @ Green Bay Pluit Tower A	Jakarta	-	33	2012	residential	1120	1,338	3,030
53	Providence Park	Jakarta	-	32	2015	residential	N/A	2,055	1,531
54	Soho Pancoran South Wing Tower	Jakarta	-	30	2016	residential / retail	208	974	563
55	The Westmark Apartment	Jakarta	-	30	2014	residential	620	1,657	1,677
56	La Maison Barito	Jakarta	-	30	2015	residential	80	2,203	216
57	Sudirman Suites Apartment	Jakarta	-	30	2016	hotel / residential	380	1,675	1,028
58	The Royal Olive Residence	Jakarta	-	29	2016	residential	225	1,088	609
59	Lucky Tower Residence	Jakarta	-	29	2016	residential / hotel	N/A	1,078	745
60	Puri Matahari Tower	Jakarta	-	27	2016	residential / office	N/A	1,767	1,087
61	Pluit Sea View Apartment Tower Belize	Jakarta	-	26	2017	residential	300	1,417	812
62	Pluit Sea View Apartment Tower Ibiza	Jakarta	-	26	2016	residential	500	1,394	1,353
63	Pluit Sea View Apartment Tower Bahama	Jakarta	-	26	2016	residential	650	832	1,759
64	Holiday Inn Hotel & Suites Jakarta Gajah Mada	Jakarta	-	25	2016	residential / hotel	N/A	2,290	1,368
65	One Casablanca Residence	Jakarta	-	24	2016	residential	N/A	2,319	1,311
66	Sherwood Residence Tower 3	Jakarta	-	24	2014	residential	138	1,265	373
67	Sherwood Residence Tower 2	Jakarta	-	24	2014	residential	138	1,298	373
68	Sherwood Residence Tower 1	Jakarta	-	24	2014	residential	138	1,315	373
69	GP Plaza	Jakarta	-	23	2013	office / residential	320	1,871	866
70	Satu 8 Residence	Jakarta	-	23	2015	residential	N/A	1,423	752
71	The H Residence	Jakarta	-	22	2015	residential	383	2,229	1,036
72	The Nest Dipuri Apartment	Jakarta	-	21	2015	residential	N/A	3,792	1,900
73	Soho Pancoran North Wing Tower	Jakarta	-	20	2016	residential / retail	138	956	373
74	Oak Tower Gading ICon	Jakarta	-	19	2016	residential	N/A	3,706	1,642
75	Four Winds	Jakarta	-	17	2015	residential	122	440	330
76	U-Residence Tower 2	Tangerang	209	59	2015	residential	N/A	2,548	3,805
77	U-Residence Tower 1	Tangerang	157	41	2012	residential	N/A	2,655	2,788
78	Alfa Group Tower	Tangerang	154	30	2018	residential / office	N/A	1,717	1,308
79	Saumata Apartment	Tangerang	108	34	2016	residential	N/A	1,630	1,353
80	Ayodhya Residence Tower Indigo	Tangerang	78	24	2016	residential / retail	770	2,438	2,197
81	Ayodhya Residence Tower Coral	Tangerang	78	24	2016	residential / retail	770	2,085	2,197
82	Ayodhya Residence Tower Sienna	Tangerang	78	24	2016	residential / retail	770	1,961	2,197
83	Ayodhya Residence Tower Jade	Tangerang	78	24	2016	residential / retail	770	1,892	2,197
84	Paddington Heights Apartment	Tangerang	-	39	2016	residential	512	4,272	1,461
85	The Paragon Square Apartment	Tangerang	-	26	2016	residential / retail	N/A	3,538	2,358
86	The Paragon Biz Hotel	Tangerang	-	25	2016	hotel / retail	N/A	875	492
87	Tuscany Residence	Tangerang	-	20	2016	residential	N/A	6,075	3,038
88	The Medina Apartment	Tangerang	-	18	2015	residential	620	1,878	1,769

Source: <http://www.skyscrapercenter.com/country/indonesia> and JUTPI 2

**Table 85 Sample of population estimation**

	<p><b><u>No.1 Apartment Grand Dhaka in Bekasi</u></b>  <b><u>Available data</u></b>                  Floors: 26                  Use: Residential Only                  No. of unit: N/A                  Building Area: N/A (1,579 sqm from google map)</p> <p><b><u>Estimated Population:</u></b>  <math>1,579 \text{ sqkm} \times 0.75 \text{ (excluding public space)} / 80 \text{ sqkm (ave.unit area)}</math>  <math>= 14 \text{ units/ floor}</math>  <math>214 \text{ units} \times 25 \text{ F} \times 0.696 \text{ (occupancy rate)} \times 3.8 \text{ people / unit}</math></p>
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	=950 people
	<p><b><u>No.9 Raffles Hotels in Jakarta DKI</u></b></p> <p><b><u>Available data</u></b></p> <p>Floors: 52 Use: Residential/Hotel No. of apartment unit:342 Building Area: N/A</p> <p><b><u>Estimated Population:</u></b></p> <p>342 units x 0.696 (occupancy rate) x 3.8 people / unit =905 people</p>

Source: JUTPI 2

### 3. Population in Newly Developed Area Excluding High-rise Building

Besides the above high-rise buildings, new residence area has been sprawled. To estimate the population in those area, average population density by land use in 2010 was estimated based on multiple regression analysis with population and area by land use by *Kelurahan/ Desa*, 1501 zones. The population for each zone is estimated as shown in following formula.

$$Pop_i = 0.012001 \cdot Area_{LU21i} + 0.022403 \cdot Area_{LU22i} + 0.006049 \cdot Area_{LU23i} + 0.005804 \cdot Area_{LU24i} + 0.021027 \cdot Area_{LU25i} + 0.010926 \cdot Area_{LU26i} + 0.000343 \cdot Area_{LU29i}$$

where,  $Pop_i$  : Future population at zone  $I$ ,

$Area_{LU_{ni}}$  : Area (sqm) of land use category  $n$  in zone  $i$ .

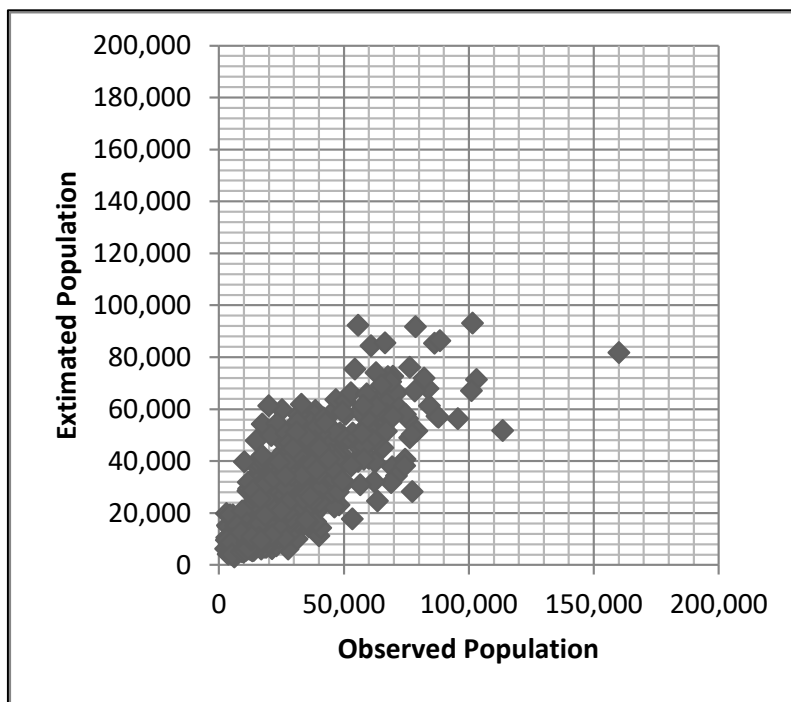
**Table 86 Estimated Parameter of Land Use Population Model<sup>1</sup>**

LU ID	LU Name	Coefficients	t-Value	P-Value	R Square	Observation
21	Planned House	0.012001	21.83	6.45E-92	0.848	1501
22	High Density Kampung	0.022403	39.34	6.72E-233		
23	Low Density	0.006049	17.65	1.70E-63		

<sup>1</sup> Those coefficients mean the number of population per square meter in each land use. For instance, one person lives in 83.3 ( $\approx 1/0.012001$ ) sqm in the land use of “planned house”. Multiple regression models “by region” were also tried to be developed by JICA Study Team. However, logical model can’t be developed.

LU ID	LU Name	Coefficients	t-Value	P-Value	R Square	Observation
	Kampung					
24	Industry & Warehouse	0.005804	10.96	5.83E-27		
25	Commercial & Business	0.021027	9.54	5.79E-21		
26	Education & Public Facility	0.010926	3.6	0.000334		
29	Agriculture & Open Space	0.000343	3.71	0.000215		

Source: JUTPI 2



Source: JUTPI 2

**Figure 194 Comparison Between Observed Population and Estimated Population by kelurahan/desa in 2010**

4. Population Estimation in 2017

Based on the above mentioned land use model and high-rise building information, total population in newly developed area is estimated and



shown in the table below.

**Table 87 Estimated Population in Newly Developed Area between 2010 and 2017**

No	Region in JABODETABEK Area	Planned House		HighDensity Kampung		Low Density Kampung		Commercial and Business		Total
		Non high-rise	High-rise	Non high-rise	High-rise	Non high-rise	High-rise	Non high-rise	High-rise	
1	DKI Jakarta	155,154	796	110,642	-	7,188	-	156,678	82,032	512,489
2	Kabupaten Bogor	241,269	-	12,380	-	141,190	-	72,464	-	467,303
3	Kabupaten Bekasi	522,553	-	5,833	-	76,438	-	50,559	5,607	660,990
4	Kota Bogor	42,499	-	-	-	4,176	-	16,263	1,653	64,591
5	Kota Bekasi	49,831	-	10,158	-	6,143	-	64,126	7,014	137,272
6	Kota Depok	66,444	-	6,071	-	25,016	-	9,150	-	106,682
7	Kabupaten Tangerang	374,850	492	39,746	-	41,454	-	92,926	8,362	557,829
8	Kota Tangerang	113,908	5,172	13,596	-	4,815	-	55,416	10,096	203,002
9	Kota Tangerang Selatan	109,786	-	1,906	-	1,059	-	27,709	3,038	143,498
<b>Total</b>		<b>1,676,294</b>	<b>6,459</b>	<b>200,332</b>	<b>-</b>	<b>307,479</b>	<b>-</b>	<b>545,291</b>	<b>117,802</b>	<b>2,853,656</b>

Source: JUTPI 2

Considering the control total of population which is estimated in framework study, total number of population by *kelurahan/ desa* is also adjusted.

**b. Population by Main Activity in Newly Developed Area**

Compared to the population share by main activity in 2010 and 2015, the share of female worker has been increased from 10% to 19% of total population for 15 years and over. The share of population by main activity by region in 2017 is assumed as same share in 2015.

**Table 88 Share of Population for 15 years and over by Main Activity in 2010**

Kota/Kab	Male			Female		
	Worker	Student	Others	Worker	Student	Others
DKI Jakarta	34%	5%	11%	11%	5%	33%
Kabupaten Bekasi	34%	3%	14%	8%	2%	40%
Kabupaten Bogor	38%	2%	11%	9%	6%	34%
Kabupaten Tangerang	32%	6%	14%	10%	5%	34%
Kota Bekasi	34%	5%	11%	9%	4%	35%
Kota Bogor	35%	4%	12%	7%	5%	37%
Kota Depok	34%	5%	12%	10%	4%	34%
Kota Tangerang	36%	4%	10%	11%	7%	32%
Kota Tangerang Selatan	34%	7%	9%	10%	5%	35%

Kota/Kab	Male			Female		
	Worker	Student	Others	Worker	Student	Others
<b>TOTAL</b>	<b>35%</b>	<b>4%</b>	<b>12%</b>	<b>10%</b>	<b>5%</b>	<b>35%</b>

Source: Commuter Trip Survey Database in JUPTI 1

**Table 89 Share of Population for 15 years and over by Main Activity in 2015**

Kota/Kab	Male			Female		
	Worker	Student	Others	Worker	Student	Others
DKI Jakarta	38%	5%	7%	24%	5%	21%
Kabupaten Bekasi	39%	5%	7%	18%	5%	27%
Kabupaten Bogor	38%	4%	8%	16%	5%	28%
Kabupaten Tangerang	39%	5%	7%	18%	5%	27%
Kota Bekasi	39%	6%	7%	14%	7%	27%
Kota Bogor	38%	5%	8%	14%	6%	29%
Kota Depok	37%	6%	7%	20%	6%	25%
Kota Tangerang	38%	5%	8%	14%	6%	29%
Kota Tangerang Selatan	31%	4%	7%	16%	7%	34%
<b>TOTAL</b>	<b>38%</b>	<b>5%</b>	<b>7%</b>	<b>19%</b>	<b>5%</b>	<b>26%</b>

\*Highlighted shares are estimated by JICA Study Team since statistical data isn't available.

Source: Dalam Angka of each Kota/ Kabupaten

**Table 90 Share of Population for 15 years and over by Main Activity in DKI Jakarta from 2010 until 2017**

Year	Worker	Student	Others
DKI_2010	60%	10%	30%
DKI_2015	62%	9%	29%
DKI_2017	58%	11%	31%

Source: Dalam Angka for Indonesia in 2010-2017

### 6.2.2.3 Result of Sampling Work

All the respondents should be 15 years old and over since it is difficult to ask activity diary and household information to young people. Also, it should be noted that the household member information in Form 1 (question 11) should be collected even less than 15 years old.

Considering the previous mentioned information for population and population by

main activity, the number of samples by region by land use by main activity is decided as below..

**Table 91 Target Samples for ADS Paper-based**

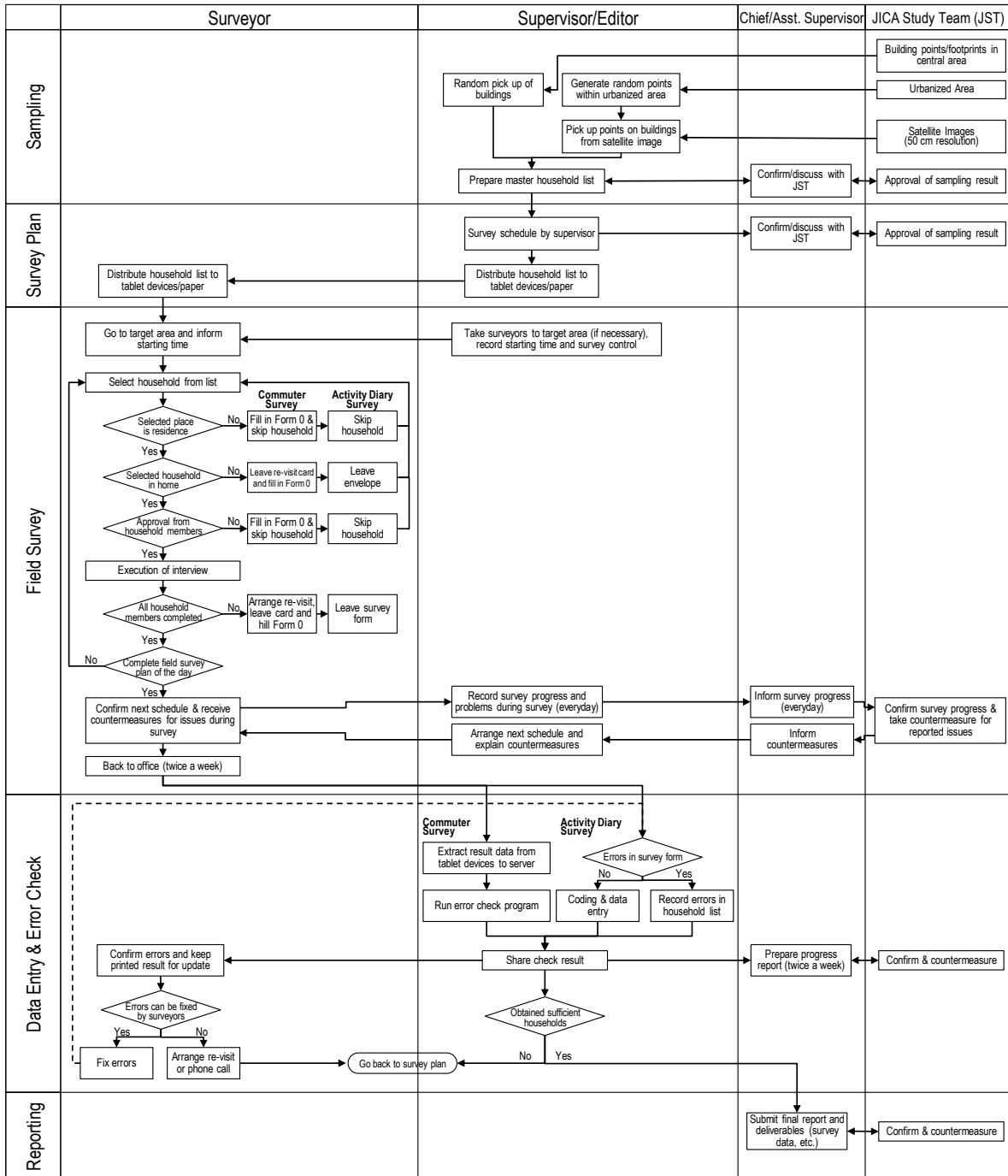
ID	Kota/Kab	Land Use		Male			Female			Total
				Worker	Student	Others	Worker	Student	Others	
1	DKI Jakarta	Planned House	Non-high rise	93	11	17	58	11	54	244
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	66	8	12	42	8	38	174
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	3	0	0	3	0	3	9
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	93	12	15	61	12	54	247
			High-rise	51	3	9	32	3	31	129
2	Kabupaten Bogor	Planned House	Non-high rise	316	39	68	131	40	234	828
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	4	0	1	1	1	3	10
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	48	3	10	19	4	37	121
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	33	3	6	14	3	24	83
			High-rise	4	0	1	1	1	3	10
3	Kabupaten Bekasi	Planned House	Non-high rise	151	19	25	67	16	107	385
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	8	1	1	4	1	5	20
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	85	12	15	36	9	62	219
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	43	5	6	19	5	31	109
			High-rise	0	0	0	0	0	0	0
4	Kota Bogor	Planned House	Non-high rise	38	8	10	15	9	31	111
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	3	0	1	1	0	3	8
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	15	1	2	5	1	13	37
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	5	0	0	2	0	4	11
			High-rise	0	0	0	0	0	0	0
5	Kota Bekasi	Planned House	Non-high rise	31	4	5	13	5	20	78
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	5	1	1	2	1	3	13
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	3	0	0	2	0	2	7
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	39	4	8	15	8	28	102
			High-rise	3	0	1	2	1	3	10
6	Kota Depok	Planned House	Non-high rise	221	35	44	117	35	147	599
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	24	3	4	12	3	16	62
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	23	2	2	14	2	18	61
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	57	7	10	28	7	38	147
			High-rise	5	1	1	3	1	3	14
7	Kabupaten Tangerang	Planned House	Non-high rise	27	4	5	13	3	18	70
			High-rise	0	0	0	0	0	0	0
		High Density Kampung	Non-high rise	0	0	0	0	0	0	0
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	2	0	0	1	0	1	4
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	9	1	2	4	1	7	24
			High-rise	1	0	0	1	0	1	3
8	Kota Tangerang	Planned House	Non-high rise	69	10	14	25	11	54	183
			High-rise	4	0	0	2	0	2	8

ID	Kota/Kab	Land Use		Male			Female			Total
				Worker	Student	Others	Worker	Student	Others	
9	Kota Tangerang Selatan	High Density Kampung	Non-high rise	8	1	2	3	1	6	21
			High-rise	0	0	0	0	0	0	0
		Low Density Kampung	Non-high rise	3	0	0	1	0	2	6
			High-rise	0	0	0	0	0	0	0
		Commercial and Business	Non-high rise	32	3	7	11	6	26	85
			High-rise	6	1	1	2	1	5	16
		Planned House	Non-high rise	56	7	12	29	13	61	178
			High-rise	0	0	0	0	0	0	0
	High Density Kampung	Non-high rise	1	0	0	0	0	1	2	
		High-rise	0	0	0	0	0	0	0	
	Low Density Kampung	Non-high rise	0	0	0	0	0	0	0	
		High-rise	0	0	0	0	0	0	0	
	Commercial and Business	Non-high rise	15	2	3	8	4	15	47	
		High-rise	2	0	0	1	0	2	5	
<b>Total</b>				<b>1,705</b>	<b>211</b>	<b>321</b>	<b>820</b>	<b>227</b>	<b>1,216</b>	<b>4,500</b>

Source: JUTPI 2

### 6.2.3 Survey Implementation

In this stage, parties directly involved in the process are JICA Study Team (JUTPI 2), Chief of Survey Team, Supervisors, Surveyors, and Respondents. With the list of household sampling in each targeted area, the Chief of Survey Team assigned Supervisors and Surveyors to collect information from respondents through conventional home-visit survey. Entering and validating data were done parallelly as surveyors working with the tablet devices. With this method, error data input can be avoided, accurate location information is available with GPS/mapping function, and real-time monitoring of the survey is achievable.



Source: JUTPI 2

Figure 195 Flowchart of ADS Paper-based Diary Implementation

6.2.3.1 Survey Activity

a. Preparation and Planning Phase

1. Permitting

Obtain survey permission from the relevant government agencies (police, RT, RW, Kecamatan, etc) and private institutions (housing/real estate managements) and to acknowledge the situation of the survey area by conducting a preliminary survey before the survey execution.

2. Survey Manual

Preparation of survey execution manual, recruiting and training supervisors and surveyors towards well understanding of the Survey's objectives and procedures.

3. Survey Materials

Preparation of survey materials such as: tablet devices, greeting letters for respondents and households folded in envelopes, copy of survey permission from related government agencies. Armbands, caps, or uniforms to show the status of surveyors' activity, photo ID cards, printed survey form of form 3, gifts for cooperation by respondents were also prepared by survey team.



Source: JUTPI 2

**Figure 196 Caps and ID Cards as Survey Team Identity**



Source: JUTPI 2

**Figure 197 Tablet Device for Data Input**



Source: JUTPI 2

**Figure 198 Cooperation Gift for Respondents**

#### 4. Training

Training is divided into two main parts, training for supervisors and advocated for surveyors. The first part is training for supervisors. The

training objectives are:

- Supervisor understand their main job desk;
- Divide supervisors to regions in JABODETABEK;
- Supervisor understand the objectives of the survey projects, the survey forms, and step-by-step to perform the interview and data collection according to the Survey Manual.

The second part is advocated for surveyors, coding staffs, and data entry staffs. The training objectives are:

- Surveyors understand their job description;
- Allocate surveyors to each region in JABODETABEK;
- Surveyors understand the objectives of the survey projects, the survey forms, and step-by-step to perform the interview and data collection according to the Survey Manual.





Source: JUTPI 2

**Figure 199 Documentation of Survey Team Training Day - 1**



Source: JUTPI 2

**Figure 200 Documentation of Survey Team Training Day – 2**

**b. Implementation Phase**

**1. Pilot Survey**

Pilot survey is conducted by supervisors in order to understand the regional

situation of their respective regions, including the location of each survey locations, traffic condition and directions, and condition in each survey locations. Supervisors also visited the Head of RT/RW in each survey location to give formal information regarding the survey plan by showing survey permission from Kesbanglinmas (Directorate General of Politics and National Unity, Ministry of Home Affairs) and informally obtain information regarding the general situation of the survey location, including the characteristic of the community and the best way to approach the respondents. In addition, supervisors also conducted trial survey and evaluated survey form based on the result of the trial survey.

In the trial survey, supervisors experience rejection and hesitation from prospective respondents for several reasons, such as privacy issue, incompleteness of permission letters and assignments, and so on. Some respondents commented that Form 3 is too complicated and not very easy to read and understand because of the size of the paper. With this comment, JUTPI 2 team changed the form 3 format into booklet for easier reading and understanding. Survey team is also encouraged to accelerate the preparation of permission letter for the actual main survey. It is also calculated that the average number of respondents able to be surveyed is around 5 - 6 respondents per day.



Source: JUTPI 2

### **Figure 201 Documentation of Pilot Survey**

#### **2. Main Survey**

Main survey is conducted by all supervisors and surveyors. Socioeconomic data is collected by surveyors according to the questions in Survey Form 1 and Form 2 by face to face interview with respondents. Surveyor directly input the respondent's answers into the tablet device. Prior to the interview, surveyor check and make sure the availability of internet connection and mobile data. In the case where internet connection is poor or not available, surveyor write in the hardcopy of Form 1 and Form 2 to be inputted in the

online survey forms later when internet connection is available.

In case of activity-travel data, prior to collecting the data, surveyors explain clearly regarding Form 3 and make sure that the respondent understands it. Surveyors also request for the respondent's contact information and also give their own contact information as well for further communication. Surveyors are required to contact and encourage respondents to continue to fill in Form 3 for three consecutive weekdays by providing daily reminders through Short Message Services (SMS) or phone calls. Surveyors offer the respondent options of the method for filling Form 3. The method options are as follow:

- Surveyor may leave the hardcopy of the survey forms to be filled by respondent independently and make an appointment for a revisit to collect filled-in survey forms. Upon the revisit, surveyor check and conduct supplemental interview to finalize Form 3 and avoid errors in inputting the written responses.
- Surveyor provide the link to the online survey Form 3 on JUTPI 2's website to be filled independently by the respondent. Surveyor collect supplementary inquiries by phone.

In general, surveyor should follow the Survey Manual in performing the survey, such as:

- Upon finding the sampled household, the surveyors introduce themselves properly and explain the survey objectives.
- Surveyors take photo of the location and coordinate information for each household visit as evidence. In the case of absence of all the household members, the surveyor leave a revisit card which indicates the revisit time and day. Surveyor revisit the household in the evening of the survey day or another day such as a weekend.
- The surveyors give a gift for cooperation to the respondent upon the completion of the survey.





Source: JUTPI 2

**Figure 202 Documentation of Main Survey in Non-High-rise building area**



Source: JUTPI 2

**Figure 203 Documentation of Main Survey in High-rise building area**

### 6.2.3.2 Problems and Measures of Survey

Due to some unexpected conditions and findings from the field survey, some adjustments are made to the method of survey. The problems and measures are as follows:

#### a. Samples Issue

##### 1. Survey for 4500 samples in Newly Developed Area

The target sample has been distributed to the above criteria for each Kecamatan in JABODETABEK area and listed per code within each delineation area in GIS file. There might be some special cases found where:

- The real area has different land use from the listed code or;
- The new high-rise building (apartment, condominium, etc.) is still empty or;
- All target households in a delineation area do not want to be a respondent or decline the survey.

Therefore, in order to meet the target sample, it is possible for surveyors to find a new target from outside of delineation area if the new area uses the same main access road as the target area. However, if it is placed far from the delineation area, the new area should meet the listed requirements below:

- The new area is a newly developed area after 2010, which means the surveyors need to ask whether the area has been existed as the particular land use for 7 years or less.
- The new area is still in the same Kecamatan.
- The new area has the same specific type of land use or buildings, as previously described.

##### 2. Survey for the remaining 500 samples

The remaining 500 samples are based on the targeted samples of using

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Smartphone who prefer the conventional paper-based survey. Survey team confirms the availability of the targeted samples to be interviewed by telephone and/or messages. However, many of targeted samples do not response phone calls and messages or agree to participate in the survey. Due to the limited of time, some adjustments are made to reach the total participants. Surveyors conduct survey and find respondents based on priority list as follows.

**Priority 1:** Surveyors visit the respondents who have been contacted and expressed his willingness to be interviewed

**Priority 2:** Surveyors visit the respondents who have not been successfully contacted (do not answer phone calls or messages), located close to the address of respondents in the first priority category, and have a complete address (until the number of house).

**Priority 3:** Surveyors visit the respondents who have not been successfully contacted (do not answer phone calls or messages) and do not have complete address.

The priority of prospective respondents are given to those family members who frequently travel outside their house on weekdays.

The process of finding respondents location from the list of targeted samples is quite time consuming because the majority of addresses are not complete, incorrect, or has changed. In general, surveyors need to spend a big portion of time to look for more information about respondents and their addresses before they are able to find the exact location, by meeting the head of RT/RW or asking residents in the surrounding area. This method helps in finding information and updates related to respondents such as respondents who have moved out from their previous address according to the list or respondent who have passed away. However, in some cases there are also many residents and Head of RT/RW who do not have any knowledge regarding the name and address as stated in the list.

If surveyors cannot interview respondents from the above priority (priority

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1 to 3) due to several reasons, such as sudden change of respondents' availability (refusal due to busy, lazy, or other activity) or respondents are not in the location, the surveyors can take samples randomly from the surrounding location of respondents in the list priority 1 to 3.

**b. Technical Issue**

Some technical issues are found during the field survey as listed below:

1. Head of RT/RW or related authorities are not available when surveyors visit the locations/ buildings. It delays the disposition of permission letter, which also delay the time to conduct field survey.
2. Signal loss or weak internet connection in certain areas.
3. Many people hesitate to participate in the survey due to the complexity of survey, especially form 3. Most respondents need help from the surveyors in filling activity-travel information or form 3 when the surveyors revisit respondent to collect form 3. In addition, people falter due to privacy issues or being recorded/ tracked for 3 days straight. Furthermore, some people also suspect this survey has connection to the presidential election in 2019.
4. For Commercial and Business area, surveyors are having difficulties in finding respondent due to several reasons such as: areas are shop houses but not occupied, areas are warehouses and offices only. Moreover, some high-rise buildings in the targeted area are still under construction or newly finished which indicates no residents live in that locations, which eventually delay the survey process in finding respondents.

To counter the above issues, there are several measures taken by survey team as follows:

1. Survey team should manage their time properly in order to revisit certain authorities and accelerate the process in getting permission letter. They have to group into smaller team and spread out to go to many places for faster process. JUTPI 2 and survey team are reach out for local government cooperation and assistance while approaching the targeted area (i.e. housing

cluster, apartment, and housing complex).

2. For signal issues, surveyors are encouraged to use the paper-based form to interview respondents. Surveyors input it online later when the internet connection is available.
3. Surveyors should be more persuasive and encourage targeted samples to participate in the survey. In addition, surveyors should also explain thoroughly the background, objective, purpose, and result of the survey to persuade them, as well as give deep understanding that all data is secure and only be used for analysis purpose.
4. Surveyors are encouraged to find targeted samples with the same attributes from other delineation area to reach the target participants that fit the requirements of certain gender, main activity, land use, and so on.

**c. Weather Issue**

During the survey period, generally the weather condition in several survey locations in JABODETABEK was rainy, with heavy rain and followed by minor flood in some area. By considering the safety of the team during survey when driving motorcycle, protection of survey equipment, and the health of the survey team, they went to take shelter first during raining condition and wait until the rain stops before resuming the survey.

## **6.3 ADS Using Smartphone Application (ADS MEILI)**

### **6.3.1 Outline of ADS MEILI**

#### **6.3.1.1 Methodology**

In terms of the survey method, the ADS MEILI was implemented and divided into 3 (three) phases:

**a. Planning and Preparation Phase**

Planning and preparation phase consist of several activities to ensure the survey conducts according to the original plan and target.

**b. Implementation Phase**

Consists of pilot, main survey, and monitoring and evaluation activities.

**c. Data Processing**

This process is including data confirmation, logical checking, and data cleaning.

**6.3.1.2 Coverage and Sample Size**

ADS MEILI was conducted within JABODETABEK area with targeted number of samples of 5,000 respondents from 5,000 households – one respondent for each household.

**6.3.1.3 Survey Form Design**

**a. Survey Task and Items**

Within the scope of ADS MEILI, the following data/information was collected:

1. Household Information:

Zone code; household member composition (gender, age, status, etc.); household income; and vehicle ownership.

2. Respondent's (only 1 household member) Information:

Address of work/school place; departure/arrival travel time; transport mode; car/motorcycle availability; travel frequency; monthly transport cost; occupation and work type; and weekday residential.

3. Activity-Travel Diary (for seven consecutive days):

Activities at home; activities outside home (including address of origin and destination locations); transport mode used and attribute of cost factors between activities at home and other places.


**b. Survey Forms**

The following survey forms were utilized during the survey:

1. Form 1: to record household information
2. Form 2: to record respondent's personal information
3. Form 3: to record respondent's activity-travel diary



Formulir 2



**SURVEI REKAM AKTIVITAS-PERJALANAN HARIAN MENGGUNAKAN APLIKASI SMARTPHONE (ACTIVITY-TRAVEL DIARY SURVEY USING SMARTPHONE APPLICATION)**  
**JABODETABEK URBAN TRANSPORTATION POLICY INTEGRATION PHASE 2**  
2018

**RAHASIA**

NAMA RESPONDEN: \_\_\_\_\_ E-MAIL: \_\_\_\_\_ NO. HP: \_\_\_\_\_ KODE ANGGOTA KELUARGA: \_\_\_\_\_

**II. INFORMASI ANGGOTA RUMAH TANGGA:**  
Apabila anda tinggal di alamat yang berbeda dari alamat yang disebutkan di Formulir 1, mohon isi alamat tempat tinggal anda:  
Berapa hari dalam 1 minggu anda tinggal di alamat tersebut di atas? \_\_\_\_\_ hari

**A. BAGIAN INI HANYA DI ISI OLEH RESPONDEN YANG BEKERJA**  
(1) Jenis lapangan pekerjaan (lihat TABEL H): \_\_\_\_\_  
(2) Apakah anda bekerja di rumah?  1. YA (lanjutan ke nomor 12)  2. TIDAK  
(3) Apakah tempat kerja anda tetap selama pelaksanaan survei ini?  1. YA  2. TIDAK (lanjutan ke nomor 11)  
(4) Alamat Pekerjaan: \_\_\_\_\_  
Nama jalan: \_\_\_\_\_ Kecamatan: \_\_\_\_\_  
Kelurahan: \_\_\_\_\_ Kota/Kabupaten: \_\_\_\_\_  
Kode pos: \_\_\_\_\_ Bangunan penanda: \_\_\_\_\_  
(5) Jenis Tempat Pekerjaan (lihat TABEL G): \_\_\_\_\_  
(6) Jam berangkat ke tempat kerja: \_\_\_\_\_  
(7) Jam tiba di tempat kerja: \_\_\_\_\_  
(8) Jam pulang ke rumah dari tempat kerja: \_\_\_\_\_  
(9) Jam tiba di rumah dari tempat kerja: \_\_\_\_\_  
(10) Apakah perjalanan anda tersebut dianggung oleh tunjangan perjalanan?  1. YA, ditanggung penuh  2. YA, ditanggung sebagian: Rp. \_\_\_\_\_ / bulan  
(11) Dalam jangka waktu satu minggu, berapa hari anda pergi bekerja? \_\_\_\_\_ hari  
(12) Jumlah rata-rata pendapatan anda per bulan (lihat TABEL A di Formulir 1): \_\_\_\_\_

**B. BAGIAN INI HANYA DI ISI OLEH RESPONDEN YANG SEKOLAH**  
(1) Tingkat pendidikan anda saat ini:  1. SMA/SMK/MA  2. Universitas  
 3. Dikemi (seingkat D3/D4)  4. Pasca Sarjana (S2/S3)  
(2) Alamat Sekolah: \_\_\_\_\_  
Nama jalan: \_\_\_\_\_ Kecamatan: \_\_\_\_\_  
Kelurahan: \_\_\_\_\_ Kota/Kabupaten: \_\_\_\_\_  
Kode pos: \_\_\_\_\_ Bangunan penanda: \_\_\_\_\_  
(3) Jam berangkat ke sekolah: \_\_\_\_\_  
(4) Jam tiba di sekolah: \_\_\_\_\_  
(5) Jam pulang ke rumah dari sekolah: \_\_\_\_\_  
(6) Jenis sekolah:  1. Sekolah Negeri  2. Sekolah Swasta  
(7) Dalam jangka waktu satu minggu, berapa hari anda pergi ke sekolah? \_\_\_\_\_ hari

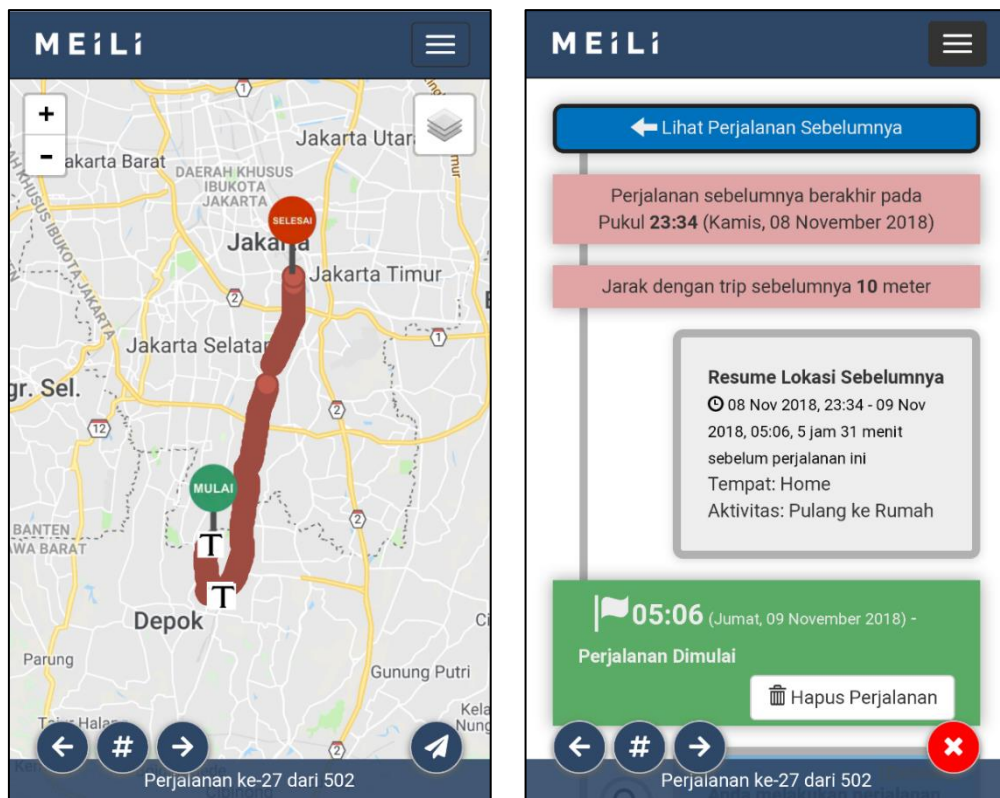
**C. BAGIAN INI DI ISI OLEH SEMUA RESPONDEN**  
(1) Ketersediaan mobil untuk perjalanan:  1. YA, selalu tersedia  2. YA, kadang-kadang tersedia  3. Tidak tersedia  
(2) Ketersediaan sepeda motor untuk perjalanan:  1. YA, selalu tersedia  2. YA, kadang-kadang tersedia  3. Tidak tersedia  
Untuk responden lainnya, apabila di nomor (1) atau (2) menjawab 1. YA, selalu tersedia, silahkan isi bagian E  
Di isi oleh responden yang bekerja dan sekolah:  
(3) Biasanya anda pergi bekerja/abu sekolah menggunakan:  1. Jalan kaki/sepeda  3. Kendaraan pribadi (isi bagian E)  5. Park & Ride (isi bagian D & E)  
 2. Kendaraan umum (isi bagian D)  4. Kios & Ride (isi bagian D & E)  
 6. Lainnya: \_\_\_\_\_

**D. DI ISI OLEH PENGGUNA KENDARAAN UMUM**  
(1) Berapa kali anda menggunakan kendaraan umum sampai dengan ke tujuan akhir anda?  1. Satu kali  3. Tiga kali  5. Lima kali  
 2. Dua kali  4. Empat kali  6. Lebih dari lima kali  
Mohon isi informasi berikut apabila moda transportasi umum yang anda gunakan adalah kereta komuter, Transjakarta, Transjabodetabek dan bus besar komersional:  
(2) Moda mana apa yang anda gunakan dari rumah menuju ke transportasi umum tersebut?  1. Jalan kaki/sepeda  2. Jalan kaki/sepeda  3. Bus  4. Bus  5. Bus  6. Bus  7. Bus  8. Bus  9. Bus  10. Bus  11. Bus  12. Bus  13. Bus  14. Bus  15. Bus  16. Bus  17. Bus  18. Bus  19. Bus  20. Bus  21. Bus  22. Bus  23. Bus  24. Bus  25. Bus  26. Bus  27. Bus  28. Bus  29. Bus  30. Bus  31. Bus  32. Bus  33. Bus  34. Bus  35. Bus  36. Bus  37. Bus  38. Bus  39. Bus  40. Bus  41. Bus  42. Bus  43. Bus  44. Bus  45. Bus  46. Bus  47. Bus  48. Bus  49. Bus  50. Bus  51. Bus  52. Bus  53. Bus  54. Bus  55. Bus  56. Bus  57. Bus  58. Bus  59. Bus  60. Bus  61. Bus  62. Bus  63. Bus  64. Bus  65. Bus  66. Bus  67. Bus  68. Bus  69. Bus  70. Bus  71. Bus  72. Bus  73. Bus  74. Bus  75. Bus  76. Bus  77. Bus  78. Bus  79. Bus  80. Bus  81. Bus  82. Bus  83. Bus  84. Bus  85. Bus  86. Bus  87. Bus  88. Bus  89. Bus  90. Bus  91. Bus  92. Bus  93. Bus  94. Bus  95. Bus  96. Bus  97. Bus  98. Bus  99. Bus  100. Bus  
(3) Moda mana apa yang anda gunakan dari rumah menuju ke transportasi umum tersebut?  1. Jalan kaki/sepeda  2. Jalan kaki/sepeda  3. Bus  4. Bus  5. Bus  6. Bus  7. Bus  8. Bus  9. Bus  10. Bus  11. Bus  12. Bus  13. Bus  14. Bus  15. Bus  16. Bus  17. Bus  18. Bus  19. Bus  20. Bus  21. Bus  22. Bus  23. Bus  24. Bus  25. Bus  26. Bus  27. Bus  28. Bus  29. Bus  30. Bus  31. Bus  32. Bus  33. Bus  34. Bus  35. Bus  36. Bus  37. Bus  38. Bus  39. Bus  40. Bus  41. Bus  42. Bus  43. Bus  44. Bus  45. Bus  46. Bus  47. Bus  48. Bus  49. Bus  50. Bus  51. Bus  52. Bus  53. Bus  54. Bus  55. Bus  56. Bus  57. Bus  58. Bus  59. Bus  60. Bus  61. Bus  62. Bus  63. Bus  64. Bus  65. Bus  66. Bus  67. Bus  68. Bus  69. Bus  70. Bus  71. Bus  72. Bus  73. Bus  74. Bus  75. Bus  76. Bus  77. Bus  78. Bus  79. Bus  80. Bus  81. Bus  82. Bus  83. Bus  84. Bus  85. Bus  86. Bus  87. Bus  88. Bus  89. Bus  90. Bus  91. Bus  92. Bus  93. Bus  94. Bus  95. Bus  96. Bus  97. Bus  98. Bus  99. Bus  100. Bus  
(4) Dalam 1 bulan, jumlah pengeluaran anda untuk biaya transportasi: \_\_\_\_\_ Rp. \_\_\_\_\_  
(5) Dalam 1 bulan, jumlah pengeluaran anda untuk biaya parkir: \_\_\_\_\_ Rp. \_\_\_\_\_

**E. DI ISI OLEH PENGGUNA KENDARAAN PRIBADI**  
(1) Jenis kendaraan pribadi apa yang anda gunakan?  1. Sepeda motor  3. Pick-up/Box  5. Sepeda sendiri  7. Sepeda motor  9. Sepeda motor  11. Sepeda motor  13. Sepeda motor  15. Sepeda motor  17. Sepeda motor  19. Sepeda motor  21. Sepeda motor  23. Sepeda motor  25. Sepeda motor  27. Sepeda motor  29. Sepeda motor  31. Sepeda motor  33. Sepeda motor  35. Sepeda motor  37. Sepeda motor  39. Sepeda motor  41. Sepeda motor  43. Sepeda motor  45. Sepeda motor  47. Sepeda motor  49. Sepeda motor  51. Sepeda motor  53. Sepeda motor  55. Sepeda motor  57. Sepeda motor  59. Sepeda motor  61. Sepeda motor  63. Sepeda motor  65. Sepeda motor  67. Sepeda motor  69. Sepeda motor  71. Sepeda motor  73. Sepeda motor  75. Sepeda motor  77. Sepeda motor  79. Sepeda motor  81. Sepeda motor  83. Sepeda motor  85. Sepeda motor  87. Sepeda motor  89. Sepeda motor  91. Sepeda motor  93. Sepeda motor  95. Sepeda motor  97. Sepeda motor  99. Sepeda motor  
 2. Sedan, MPV, SUV  4. Truck  6. Bus  8. Bus  10. Bus  12. Bus  14. Bus  16. Bus  18. Bus  20. Bus  22. Bus  24. Bus  26. Bus  28. Bus  30. Bus  32. Bus  34. Bus  36. Bus  38. Bus  40. Bus  42. Bus  44. Bus  46. Bus  48. Bus  50. Bus  52. Bus  54. Bus  56. Bus  58. Bus  60. Bus  62. Bus  64. Bus  66. Bus  68. Bus  70. Bus  72. Bus  74. Bus  76. Bus  78. Bus  80. Bus  82. Bus  84. Bus  86. Bus  88. Bus  90. Bus  92. Bus  94. Bus  96. Bus  98. Bus  100. Bus  
 1. Satu (mengemudi sendiri)  3. Tiga  5. Lima  7. Lima  9. Lima  11. Lima  13. Lima  15. Lima  17. Lima  19. Lima  21. Lima  23. Lima  25. Lima  27. Lima  29. Lima  31. Lima  33. Lima  35. Lima  37. Lima  39. Lima  41. Lima  43. Lima  45. Lima  47. Lima  49. Lima  51. Lima  53. Lima  55. Lima  57. Lima  59. Lima  61. Lima  63. Lima  65. Lima  67. Lima  69. Lima  71. Lima  73. Lima  75. Lima  77. Lima  79. Lima  81. Lima  83. Lima  85. Lima  87. Lima  89. Lima  91. Lima  93. Lima  95. Lima  97. Lima  99. Lima  
 2. Dua  4. Empat  6. Lebih dari lima

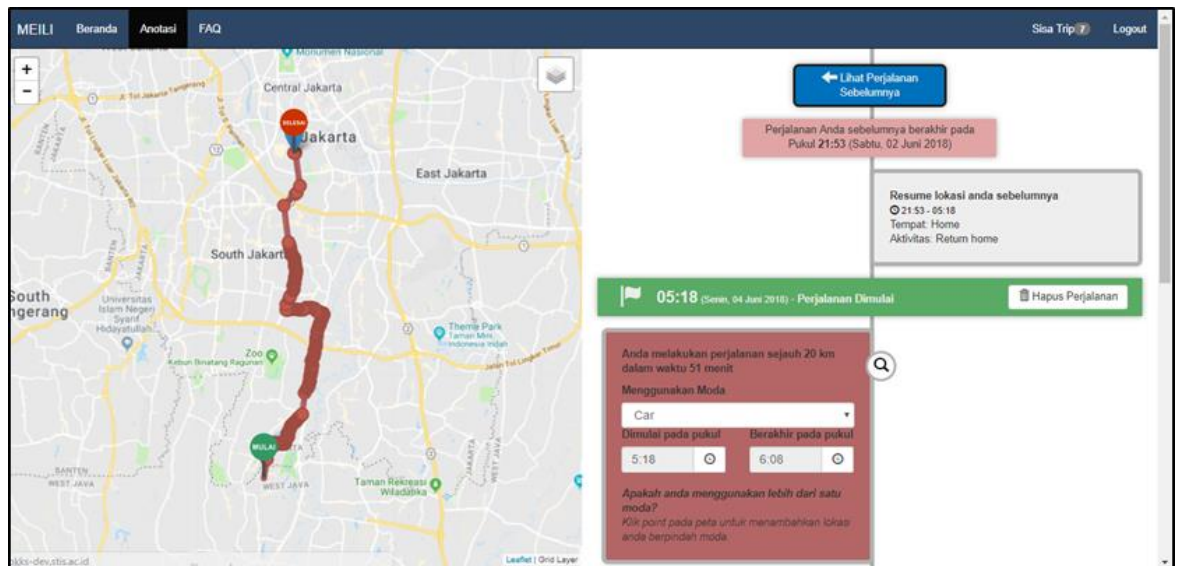
Source: JUTPI 2

Figure 205 Form 2 – Respondent’s Personal Information



Source: JUTPI 2

Figure 206 Phone Annotation (as Form 3) for Respondent’s Activity-Travel Diary (Part 1)



Source: JUTPI 2

Figure 207 Web Annotation (as Form 3) for Respondent’s Activity-Travel Diary (Part 2)

### **6.3.2 Sampling**

Targeted number of samples was 5,000 respondents, including 50 respondents for pilot survey, to get targeted 35,000 day-trips. All prospective respondents were selected based on criteria, namely, gender, the social status based on main activities (worker, student and non-worker) and household income level. Samples are chosen by stratified random sampling considering rejections. Stratified random sampling is a technique which attempts to restrict the possible samples to those which are “less extreme” by ensuring that all parts of the population are represented in the sample. This way, all groups of the population can be represented in the samples. Over 20,000 thousand telephone numbers were contacted for this survey. However, due to technical matters, such as inactive and/or contact number changes, and also rejection from prospective respondents, there were around 4,000 eligible respondents with total of 35,377 day-trips obtained.

#### **6.3.2.1 Determination of Sample Size**

ADS samples that were collected and screened from JUTPI 1 Commuter Trip Survey Database.

#### **6.3.2.2 Sampling Method**

ADS using Smartphone is intended to update JUTPI 1 Commuter Travel Diary Survey database. JUTPI 2 team analyze and collect all respondents who had telephone number as potential respondents for ADS MEILI survey. A total of 93,373 respondent who had phone number was able to collect from JUTPI 1 CTS database but not all can be used because of some reasons. There are some telecommunication providers that already stop their service and had to be removed from the list and there also incomplete phone number in the list. In general, there are 72,651 respondents with phone number that need to be checked for consistency with the respondent personal info whether the phone number already changed, the phone number is inactive and their domicile not in JABODETABEK anymore. By doing so, finally, the total of 24,732 list of respondents' phone number to represent the household is set to be sample for ADS MEILI survey.



**Table 92 Sample Screening from JUTPI 1 CTS Database**

City/ Regency	Number of Sample		
	1 <sup>st</sup> Screening*	2 <sup>nd</sup> Screening*	Final Sample Size*
Jakarta Barat	7094	5038	1875
Jakarta Pusat	4481	3468	1148
Jakarta Selatan	6616	5035	1707
Jakarta Timur	10809	8428	2709
Jakarta Utara	5866	4487	1227
Kota Bekasi	11627	9155	3001
Kabupaten Bekasi	4695	3840	2098
Kota Bogor	3609	3598	942
Kabupaten Bogor	9204	8713	2204
Kota Depok	7057	4995	2289
Kota Tangerang	7518	5209	1795
Kota Tangerang Selatan	8027	5578	1944
Kabupaten Tangerang	6770	5107	1793
<b>TOTAL</b>	<b>93373</b>	<b>72651</b>	<b>24732</b>

Note: \*1<sup>st</sup> screening is to search household with listed phone number

\*2<sup>nd</sup> screening is to delete phone number from telecommunication provider which has stop their service.

\*Final sample size is phone number that match with household info and most probably active.

Source: JUTPI Phase 2

Since the ADS is meant to update the JUTPI 1 CTS database then using the coefficient value from disproportionate stratified random sampling of each stratum like household income, gender, and social status then sample size is determined for each region by each stratum. Households that represent by the respondents from the screened list that are acquired from JUTPI CTS database are contacted.

**Table 93 Coefficient Table for Each Stratum**

City/ Regency	HH Income	Gender	Coefficient			Number of Person			
			W	S	NW	Worker	Student	Non-Worker	Total
Jakarta Barat	Low Income	Male	0.3331	0.3762	0.5098	120,275	15,562	48,246	184,084
		Female	0.5935	0.6425	1.0000	30,219	17,690	129,068	176,976
	Middle Income	Male	0.3536	0.4079	0.5094	410,559	63,020	117,764	591,342
		Female	0.6154	0.6663	1.0000	123,081	59,143	387,404	569,628
	High Income	Male	0.3403	0.4034	0.4768	75,230	13,947	16,233	105,410
		Female	0.6346	0.6946	1.0000	34,890	13,277	67,512	115,679

City/ Regency	HH Income	Gender	Coefficient			Number of Person			
			W	S	NW	Worker	Student	Non-Worker	Total
Jakarta Pusat	Low Income	Male	0.2957	0.3391	0.5024	41,150	6,050	22,719	69,918
		Female	0.5966	0.6551	1.0000	13,116	8,145	47,997	69,258
	Middle Income	Male	0.3321	0.3945	0.5074	158,058	29,704	53,688	241,450
		Female	0.6263	0.6861	1.0000	56,602	28,460	149,392	234,453
	High Income	Male	0.3006	0.4022	0.4767	18,417	6,225	4,562	29,204
		Female	0.6596	0.7495	1.0000	11,209	5,510	15,345	32,064
Jakarta Selatan	Low Income	Male	0.2837	0.3299	0.4906	71,459	11,636	40,465	123,561
		Female	0.5859	0.6465	1.0000	23,990	15,268	89,028	128,285
	Middle Income	Male	0.3414	0.3999	0.5047	419,944	71,936	129,022	620,901
		Female	0.6044	0.6646	1.0000	122,614	74,088	412,550	609,252
	High Income	Male	0.3201	0.4162	0.4918	82,053	24,639	19,388	126,081
		Female	0.6148	0.7007	1.0000	31,519	22,035	76,729	130,283
Jakarta Timur	Low Income	Male	0.2941	0.3410	0.5061	89,370	14,283	50,172	153,825
		Female	0.5843	0.6391	1.0000	23,764	16,660	109,678	150,102
	Middle Income	Male	0.3428	0.4058	0.5092	579,721	106,425	174,925	861,071
		Female	0.6224	0.6829	1.0000	191,439	102,271	536,191	829,901
	High Income	Male	0.3339	0.4138	0.4841	86,902	20,799	18,292	125,994
		Female	0.6904	0.7729	1.0000	53,668	21,477	59,108	134,253
Jakarta Utara	Low Income	Male	0.3268	0.3642	0.5017	74,243	8,500	31,232	113,975
		Female	0.5844	0.6249	1.0000	18,800	9,193	85,216	113,209
	Middle Income	Male	0.3342	0.3845	0.5023	284,178	42,847	100,145	427,169
		Female	0.6133	0.6628	1.0000	94,384	42,113	286,745	423,243
	High Income	Male	0.2925	0.3704	0.4658	90,615	24,153	29,562	144,331
		Female	0.5951	0.6583	1.0000	40,054	19,571	105,869	165,494
Kabupaten Bekasi	Low Income	Male	0.2632	0.2938	0.5043	165,728	19,308	132,509	317,545
		Female	0.5577	0.6025	1.0000	33,625	28,220	250,318	312,164
	Middle Income	Male	0.3607	0.4041	0.5101	434,708	52,286	127,753	614,748
		Female	0.5967	0.6427	1.0000	104,299	55,420	430,630	590,349
	High Income	Male	0.3173	0.4025	0.4664	10,885	2,920	2,195	16,000
		Female	0.6261	0.6955	1.0000	5,477	2,380	10,446	18,303
Kabupaten Bogor	Low Income	Male	0.3631	0.3875	0.5147	797,103	53,353	279,282	1,129,738
		Female	0.5742	0.5974	1.0000	130,712	50,897	883,634	1,065,243
	Middle Income	Male	0.3827	0.4360	0.5150	313,327	43,640	64,696	421,662
		Female	0.5951	0.6428	1.0000	65,621	39,065	292,455	397,140
	High Income	Male	0.3843	0.4312	0.4681	30,399	3,714	2,917	37,029
		Female	0.5958	0.6407	1.0000	10,103	3,549	28,425	42,078
Kabupaten Tangerang	Low Income	Male	0.2645	0.3259	0.5104	181,379	42,069	126,481	349,929
		Female	0.5687	0.6354	1.0000	40,027	45,692	250,004	335,724
	Middle Income	Male	0.3228	0.4055	0.5076	352,325	90,252	111,328	553,905
		Female	0.6021	0.6876	1.0000	103,203	93,307	340,912	537,422

City/ Regency	HH Income	Gender	Coefficient			Number of Person			
			W	S	NW	Worker	Student	Non-Worker	Total
	High Income	Male	0.3250	0.4723	0.5345	13,551	6,143	2,595	22,289
		Female	0.6424	0.7339	1.0000	4,499	3,816	11,095	19,410
Kota Bekasi	Low Income	Male	0.3051	0.3445	0.5060	111,827	14,446	59,199	185,472
		Female	0.5793	0.6229	1.0000	26,850	16,010	138,209	181,069
	Middle Income	Male	0.3394	0.4039	0.5027	530,829	100,921	154,421	786,171
		Female	0.5984	0.6619	1.0000	149,711	99,228	528,835	777,775
	High Income	Male	0.3441	0.4339	0.4975	92,765	24,193	17,145	134,103
		Female	0.6596	0.7430	1.0000	43,702	22,483	69,271	135,456
Kota Bogor	Low Income	Male	0.3308	0.3733	0.5184	115,403	14,809	50,636	180,848
		Female	0.5899	0.6340	1.0000	24,929	15,382	127,689	168,000
	Middle Income	Male	0.3527	0.4295	0.5227	93,115	20,293	24,600	138,009
		Female	0.6210	0.6875	1.0000	25,963	17,560	82,501	126,024
	High Income	Male	0.3517	0.4224	0.4860	8,412	1,691	1,521	11,624
		Female	0.6361	0.7311	1.0000	3,590	2,275	6,431	12,296
Kota Depok	Low Income	Male	0.3090	0.3518	0.5000	72,467	10,036	34,741	117,243
		Female	0.5610	0.6086	1.0000	14,295	11,161	91,789	117,245
	Middle Income	Male	0.3423	0.4037	0.5098	314,484	56,418	97,440	468,341
		Female	0.5799	0.6401	1.0000	64,398	55,297	330,650	450,345
	High Income	Male	0.3146	0.4106	0.5097	20,687	6,312	6,513	33,512
		Female	0.6068	0.7220	1.0000	6,381	7,575	18,280	32,236
Kota Tangerang	Low Income	Male	0.3404	0.3758	0.5148	101,191	10,539	41,327	153,057
		Female	0.5931	0.6354	1.0000	23,262	12,575	108,404	144,241
	Middle Income	Male	0.3573	0.4134	0.5066	361,749	56,866	94,377	512,993
		Female	0.6103	0.6659	1.0000	104,982	56,322	338,288	499,592
	High Income	Male	0.3575	0.4539	0.5326	21,925	5,912	4,827	32,664
		Female	0.6773	0.7503	1.0000	8,871	4,474	15,315	28,660
Kota Tangerang Selatan	Low Income	Male	0.3116	0.3750	0.5031	52,872	10,763	21,730	85,366
		Female	0.5784	0.6564	1.0000	12,786	13,242	58,299	84,327
	Middle Income	Male	0.3344	0.4202	0.5101	237,598	60,951	63,853	362,403
		Female	0.6063	0.6839	1.0000	68,330	55,190	224,555	348,074
	High Income	Male	0.3168	0.4339	0.4777	54,789	20,256	7,559	82,604
		Female	0.6347	0.7490	1.0000	27,162	19,765	43,405	90,333

Source: JUTPI 2

### 6.3.2.3 Result of Sampling Work

All the respondents should be 15 years old and over since it is difficult to ask activity diary and household information to young people. Also, it should be noted that the household member information in Form 1 (question 11) should be

collected even less than 15 years old.

The number of samples by region by household income by gender and by main activity is decided as below.

**Table 94 Target Samples for ADS MEILI**

City/ Regency	HH Income	Male			Female			Grand Total
		Non-Worker	Student	Worker	Non-Worker	Student	Worker	
Jakarta Barat	Low Income	7	7	28	27	5	7	81
	Middle Income	18	9	92	103	9	34	265
	High Income	2	-	9	9	-	1	21
Jakarta Pusat	Low Income	7	2	10	15	2	5	41
	Middle Income	17	9	48	56	9	26	165
	High Income	1	1	3	2	2	1	10
Jakarta Selatan	Low Income	12	5	17	30	4	5	73
	Middle Income	32	13	95	73	14	36	263
	High Income	1	3	7	11	2	-	24
Jakarta Timur	Low Income	20	9	27	37	6	9	108
	Middle Income	46	37	149	144	18	70	464
	High Income	2	2	6	7	5	5	27
Jakarta Utara	Low Income	12	3	19	37	5	7	83
	Middle Income	22	12	81	73	13	21	222
	High Income	4	5	10	12	4	-	35
Kabupaten Bekasi	Low Income	11	1	13	24	2	-	51
	Middle Income	24	9	88	70	15	29	235
	High Income	-	-	-	2	-	-	2
Kabupaten Bogor	Low Income	56	9	166	141	10	31	413
	Middle Income	15	7	70	74	9	16	191
	High Income	-	3	4	1	2	3	13
Kabupaten Tangerang	Low Income	14	5	26	39	9	2	95
	Middle Income	27	20	70	72	24	30	243
	High Income	-	-	-	1	-	1	2
Kota Bekasi	Low Income	14	3	37	43	7	10	114
	Middle Income	44	23	169	143	25	47	451
	High Income	2	2	13	14	3	14	48
Kota Bogor	Low Income	16	5	42	40	6	7	116
	Middle Income	2	4	28	19	7	11	71
	High Income	-	2	3	2	-	1	8
Kota Depok	Low Income	4	6	11	31	-	4	56
	Middle Income	34	22	74	97	14	18	259
	High Income	-	1	5	2	1	1	10
Kota Tangerang	Low Income	10	2	27	30	2	4	75
	Middle Income	29	12	93	88	9	28	259

City/ Regency	HH Income	Male			Female			Grand Total
		Non-Worker	Student	Worker	Non-Worker	Student	Worker	
	High Income	1	1	2	6	-	2	12
Kota Tangerang Selatan	Low Income	12	6	20	22	4	2	66
	Middle Income	26	28	98	76	21	42	291
	High Income	1	3	12	8	7	6	37
<b>Grand Total</b>		<b>545</b>	<b>291</b>	<b>1672</b>	<b>1681</b>	<b>275</b>	<b>536</b>	<b>5000</b>

Source: JUTPI 2

### 6.3.3 Survey Implementation

#### 6.3.3.1 Survey Activity

##### a. Planning and Preparation Phase

##### 1. Application Development

To collect respondent's daily travel and activity data in this survey, an open-source smartphone application for mobility collector called MEILI is adopted. This application had been successfully experimented on in Stockholm and Gothenburg, Sweden between 2014 and 2017. MEILI basically will start to record GPS location when respondent is considered moving, which is determined by a certain accelerometer value, and will keep collecting GPS locations along the movement of respondents until it considers "stop" (end of trip) under particular condition. This application is also able to be adjusted with different machine learning techniques to automatically detect mode, tariff (for public transport with fixed tariff), and activity, to aid users during data annotation stages. Adjusted MEILI for the ADS MEILI, hereinafter referred to as ADS-MEILI in this report, is called MEILI JABODETABEK. Several adjustments were made in order to fit the transportation condition in JABODETABEK. Revision and adjustment are made thoroughly for, namely:

- Points of interest (POI),
- Base maps, transit lines, and (open source) road network, and
- Type of transport mode and its characteristic (i.e. speed, acceleration,

fare, etc.).

## 2. Data and Application Servers

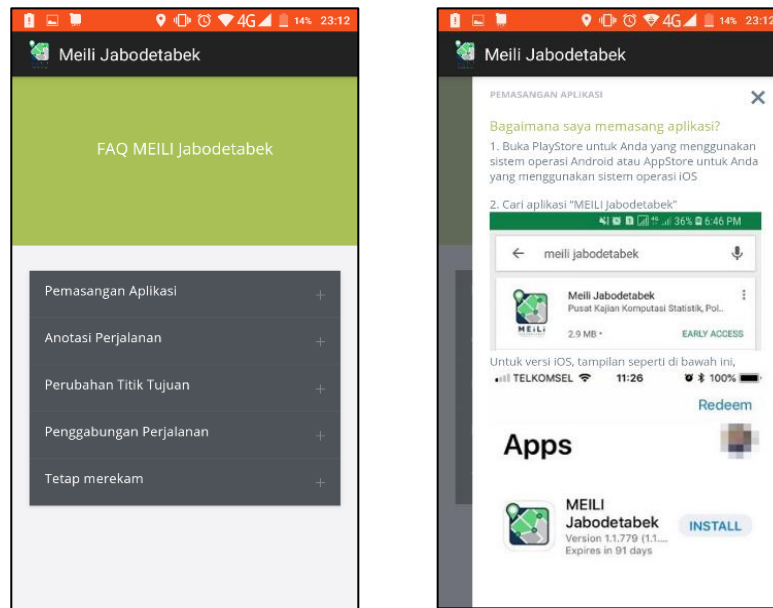
To keep all recorded data, a database center (server) has been prepared. Two units of storage server with dedicated 5 Mbps bandwidth which supports internet connectivity, and smooth running of the data storage process are available.

## 3. Control Central Establishment

This survey was carried out by Computer-Assisted Telephone Interview (CATI) approach, where the Control Center is needed to conduct the survey, started from introduction, socioeconomic interview, the pre-processing of respondent's daily trip within 24 hours and send it to the respondent to be confirmed and annotated, once prospective respondent agrees to participate (install the application). Control Center should monitor and remind the participation of respondents by providing 24-hour assistance if problem occurs throughout the duration of the Survey. Reminder system is integrated with the application in the form of telephone calls and/or SMS.

## 4. Application Manual

Application Manual for respondents is developed to guide respondents in installing and running the applications. The manual includes introduction to the Survey and instruction to annotate the trip attributes for each trip.



Source: JUTPI 2

### Figure 208 Application Manual

Survey guideline for the surveyors is also prepared to facilitate surveyors during the interview. Application manual can be accessed online from the main website and from mobile application. Some topics in the guidance are published as online video platform.

#### 5. Application Registration and Accessibility



Source: JUTPI 2

### Figure 209 MEILI JABODETABEK Application Icon

MEILI JABODETABEK application (icon shown below) were registered and can be downloaded via digital distribution service since August 31, 2018 for free.

#### 6. Survey Dissemination and Registration of Official SMS Blast

To convince prospective respondents to participate in this survey, official announcement was made through JUTPI 2 and Coordinating Ministry for Economic Affairs (CMEA) website, as well as SMS blast with CMEA as a sender. The message is in Indonesian as shown below.

*“Kemenko Perekonomian & JUTPI 2 sdg melakukan survei perjalanan & sosial-ekonomi (ekon.go.id/jutpi2). Anda akan dihub. 021-50813664 & dipandu. Terima kasih.”*

#### 7. Surveyor Briefing and Training

Surveyor briefing were conducted before the Pilot Survey was started, in order to brief surveyor on how to conduct the survey step by step and how to communicate with respondents by phone. Conversation scripts provision enables standardized initial conversation and respondents probing. To ensure that all the surveyors are ready to perform the pilot survey, simulation of phone call making was conducted for several scenarios over 3 respondents.

Besides surveyor briefing, surveyor training was also conducted to ensure the quality of data collected by the surveyors. In this training, all necessary information including the purpose and the goal of the survey, the target population which become the target of observation, and all concepts and definitions were explained and have to be understood to prevent errors from the staff and from the respondent. Other than that, the surveyors were given several examples of cases which is useful to increase the sensitivity of cases that might happen. The training was conducted in two days for surveyors and three days for supervisors.

#### **b. Implementation Phase**

ADS MEILI consists of socioeconomic and activity-travel diary survey. Both surveys were designed to be electronic, where socioeconomic survey was using online survey form and activity-travel diary was conducted by using



smartphone application, MEILI JABODETABEK. Socioeconomic survey was conducted to acquire socioeconomic information of respondents, while the activity-travel diary survey using smartphone application was to record respondents' detail trips.

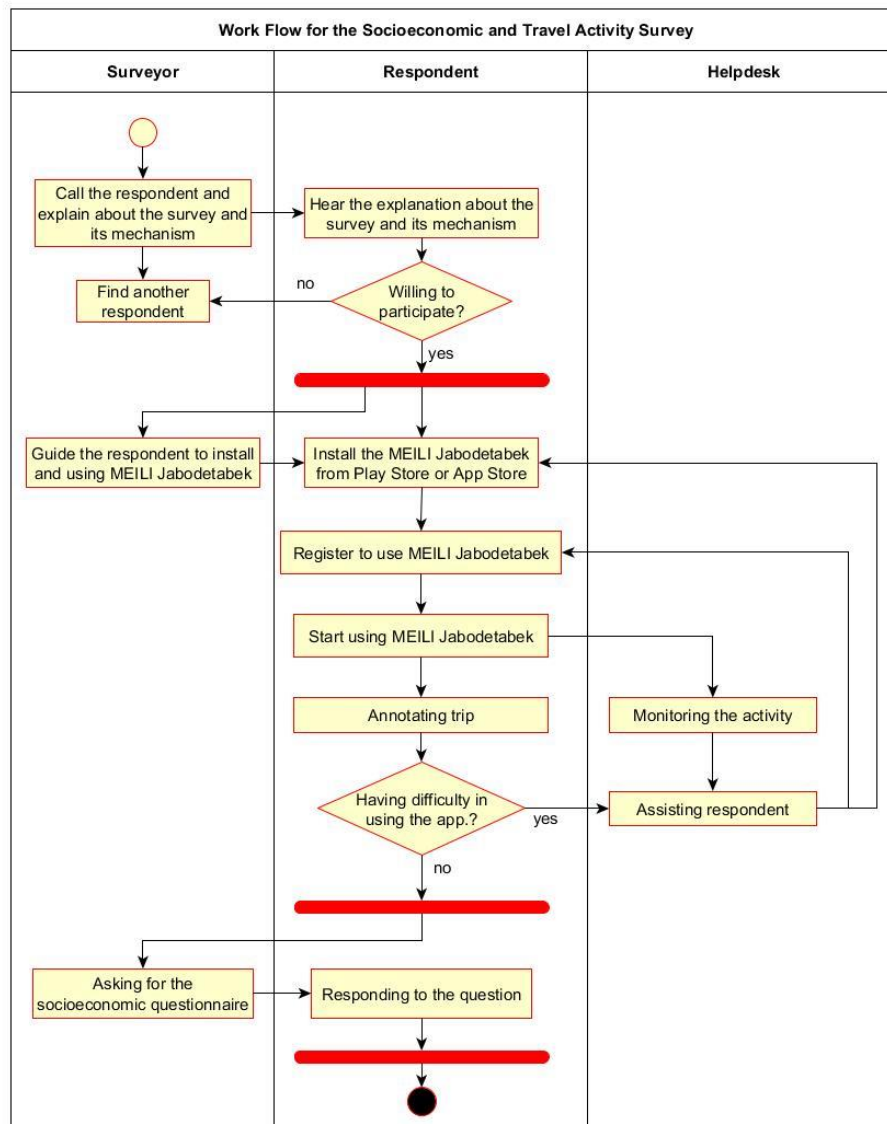
As mentioned in the previous chapter, this survey was carried out by computer-assisted telephone interviewing (CATI) approach, which involves interviewer or surveyor that follows conversation script. In cooperation with national government, this survey was started by sending an SMS with official sender ID. The SMS content was briefly informed respondents about the survey, encourage them to participate, and notification that respondent will be called by specific number to be surveyed. About three hours after the SMS sent, surveyor called the respondent to explain in more detail about the survey and invite them to participate. Right after respondents agreed to participate, surveyor assisted respondent to install MEILI JABODETABEK application, which already available in two platforms, which are Android (Play Store) and iOS (AppStore).

#### 1. Pilot Survey

Pilot Survey was conducted in order to test the preparedness of the survey system using small sample (50 respondents). However, due to the very low response rate, the time has been extended until November 11, 2018. A list of phone number from JUTPI 1 database (2010) is provided to administrate the needs of receiving valid 50 respondents based on several categories such as gender, working status, and main activity. A valid respondent is the one who fills up socioeconomic information and participates in 7-days MEILI JABODETABEK application thoroughly. Other than survey system preparedness testing, the purpose of this pilot survey is to explore particular issues that may potentially have a negative impact on the survey results, as well. These issues include the appropriateness of questions to the target population, the effectiveness of surveyors and sampling frames efficiency.

## 2. Main Survey

The main phone survey was started on November 12, 2018. Main survey was conducted entirely by phone survey method, with the implementation of a socioeconomic survey and monitoring MEILI JABODETABEK application separated in two teams, the surveyor (handled the socioeconomic interview only) and the monitoring team (handled application installation and monitoring trip). However, this method shows slow progress and low response rate, allegedly due to suspicion of prospective respondents with different personal who contacted them. Therefore, another method was implemented, where both socioeconomic interview and monitoring of MEILI JABODETABEK applications are carried out by one surveyor team only, where each surveyor must follow-up targeted and assigned respondents. In this method, prospective respondents were also approached to install the application.



Source: JUTPI 2

**Figure 210 The Original Workflow of the Survey**

With the consent of the respondent, MEILI JABODETABEK installed in respondent's smartphone which is capable to track respondent's daily trips as it records all the movement once the application is installed for seven consecutive days. Three days after installation, another call is made to collect respondents' socioeconomic information and filled it in using online form by the surveyor. During the survey, Control Centre were responsible to remind respondent to do the 'annotation' (confirmation of respondents' activities and detail trips) via MEILI JABODETABEK application or web-

based annotation system in daily basis and also to respond and assist respondents with the application, and/or even answering any question regarding this survey. General workflow of the survey can be seen in Figure 210. Incentive system in form of phone credit was also applied in order to test more respondent's willingness to participate.



Source: JUTPI 2

**Figure 211 Control Centre during Phone Survey**

### 3. Field (on-site) Survey

Due to the low response rate and the survey target was not reached in the specified time, on the 21 November 2018, the field survey preparation was initiated. The field surveyors were trained on 22-23 November 2018, on how to conduct the survey, including socioeconomic interview and how to install MEILI JABODETABEK on different devices. The field survey was conducted until 17 December 2018.

The mechanism of Field Survey is listed below:

- The field surveyor receives a prospective respondent database (from telephone survey database), based on the residence area of the respondent;
- The field surveyor called the respondent to make an appointment, and the surveyor come to meet with the respondent and explained how to install MEILI JABODETABEK and explained how it works;

- There are also surveyors who directly come to the respondent's house according to the address in the database. If the name of respondent in the data base does not match, the surveyor interviews the person in the house with the age that matches the specified criteria;
- If the candidate respondent is not on the address (died or moved), or the exact address is not found, surveyors also look for new respondents with the specified criteria of respondents (worker, student, and/or other);
- The surveyors guided and provided the respondents with guidance on installing MEILI JABODETABEK and monitoring its journey;
- If the respondents' trip is not detected, surveyors come to see and to find out why the trip cannot be detected. Problem on detect and recording trips usually caused by the compatibility of respondent's phone. In this case surveyors would find another respondent;
- All respondent's socioeconomic information was recorded manually in the printed questionnaire and input to the online questionnaire at the end of the day.
- Monitoring surveyor then followed-up the respondent to annotate their trip.



Source: JUTPI 2

**Figure 212 ADS MEILI Field Survey**

### 6.3.3.2 Problems and Measures of Survey

There are two major problems occurred while conducting the survey, namely:

- a. Inactive telephone number** of CTS respondents and/or change in phone number's owner. This condition shows the tendency of people to change their numbers within 8 years.

Measures: Field survey were conducted to fulfil the target number of respondents. By conducting field survey, updated and more detail information regarding existence of previous respondents can be obtained. This method is proven to increase response rate since prospective respondent meet the surveyor in person.

- b. Low response rate** caused by:

1. Suspicion and insecurity of respondents to the survey since it was conducted by phone that is considered as a fraud.
2. Application rating is still low due to low number of people who access and download the application.

3. Refusal to install the application due to personal reasons (i.e.: unable to use the application, privacy)

Measures: To increase the low response rate, several approaches were made, such as, registered the application to digital distribution service, official SMS blast system, also announcement in government and JUTPI 2 website.

- c. Difficulties on follow/up respondents' socioeconomic and trip data** due to several reasons, such as:

1. Respondents are disturbed as they receive the call while in the middle of errand.
2. Respondents feel uncomfortable because of the time-consuming survey process, about 20 minutes in average from introduction up to socioeconomic interview and, and around 40 minutes to conform respondents' trip.
3. The respondents' limited knowledge on using smartphone, especially for elderly people.
4. The quality of respondents' smartphone (application could not be installed)

Measures: These challenges were solved by asking respondents' time availability to be contacted, excellent communication and technical skill to interview, to assist respondent on trip annotation, also provided FAQ and manual for several phone type.

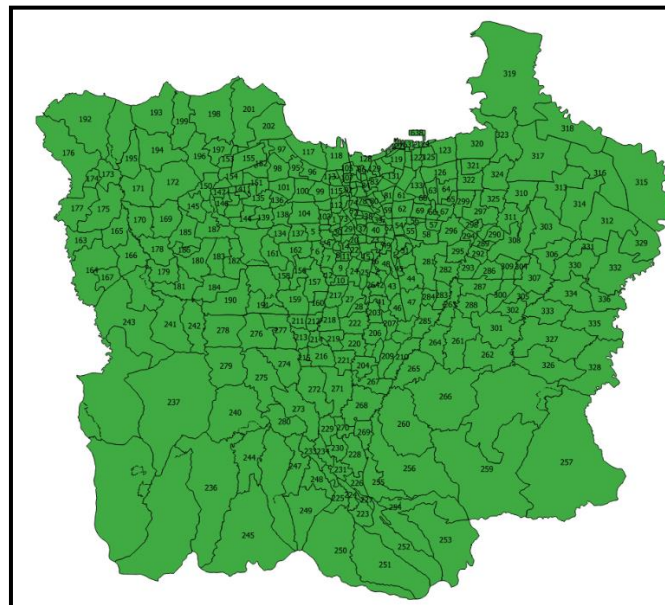
## **6.4 Premesis, Survey Data Processing, and Result**

### **6.4.1 Premises**

#### **6.4.1.1 Zoning System of Analysis**

In JUTPI 2, the study area is dissected into analysis zones that can be accurately represented by a few variables and that all movement to and from a zone can be described as starting and ending at a single point in a zone – the centroid. JUTPI

2 adopted the SITRAMP 343 zone system for the analysis. The zoning is mainly based on Kelurahan boundary. However, through the course of JUTPI 2 forecasting procedure, there are 6 additional zones (4 additional external zone and 2 additional zone as a result of Tanjung Priok Port development). This created 349 traffic analysis zones, that also can be disaggregated into 638 traffic analysis zones for further analysis for public transport assignment if needed. The Figure 213 shows the 349 zones system.



Source: JUTPI 2

**Figure 213 Traffic Analysis Zone System**

#### **6.4.1.2 Transport Mode and Its Integration**

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

In JUTPI 2, the priority was defined based on the following considerations:

- a. Public mode has a higher priority than private mode.



- b. Line-haul mode has a higher priority than feeder mode.
- c. Mass transit public mode has a higher priority than a lower capacity public mode.
- d. Motorized vehicle has a higher priority than a non-motorized vehicle.

There are 33 modes listed as option modes in ADS Paper-Based (Form 3). Modes that were used in the main trip (Work, School, Other) of a tour will be chosen as the representative mode of that tour. If multiple modes are used in the main trip, then the representative mode will be based on the priority list of 9 integration of modes. The 33 modes are converted to 9 modes which can be seen in below Table 95 and table 114 respectively.

**Table 95 Mode list and Priority of ADS Paper-Based**

No	Mode Type	ADS Paper-Based		
		Code	Integration of Modes	
			9 Modes	4 Modes
1	Walking	1	8	3
2	Bicycle	2	8	3
3	Motorcycle	3	7	1
4	Private car (driver)	4	6	1
5	Private car (passenger)	5	6	1
6	Pick up, box	6	6	1
7	Truck	7	6	1
8	Conventional Taxi	8	4	2
9	GoCar, GrabCar (private)	9	4	2
10	GrabHitchCar (share)	10	4	2
11	Omprengan	11	3	2
12	Bajaj, kancil	12	4	2
13	Motorcycle taxi	13	5	2
14	Online motorcycle taxi (GoJek, GrabBike)	14	5	2
15	Becak/horse wagon	15	8	3
16	Commuter line	16	1	2
17	Airport Railink Service (ARS)	17	1	2
18	Economy long train haul	18	1	2

No	Mode Type	ADS Paper-Based		
		Code	Integration of Modes	
			9 Modes	4 Modes
19	Transjakarta (articulated)	19	2	2
20	Transjakarta, feeder Transjakarta (large bus)	20	2	2
21	Feeder Transjakarta (medium bus)	21	2	2
22	TransJABODETABEK	22	2	2
23	TransPakuan	23	2	2
24	JR Connexion, JA Connexion	24	3	2
25	DAMRI Airport, Primajasa, Hiba Utama	25	3	2
26	Patas, Patas AC, Mayasari	26	3	2
27	Economy/ executive medium bus long haul	27	3	2
28	Metromini, kopaja	28	3	2
29	Angkot, bemo	29	3	2
30	Large chartered bus (company bus, school bus, tourist bus, rental bus)	30	3	2
31	Medium chartered bus (company bus, school bus, tourist bus, rental bus)	31	3	2
32	Small chartered bus (company bus, school bus, tourist bus, rental bus)	32	3	2
33	Others, please specify	33	9	4

Note: Integrated transport modes are as follows

Source: JUTPI 2

**Table 96 Integration of Modes of ADS Paper-Based**

Integrated Mode Number	9 Modes		4 Modes
	ADS Paper-Based	Priority	
1	Train	1	Private Transport
2	Transjakarta	2	Public Transport
3	Bus	3	NMT
4	Taxi, Bajaj	4	Other
5	Ojek	5	
6	Private Car	6	
7	Motorcycle	7	
8	NMT	8	

Integrated Mode Number	9 Modes		4 Modes
	ADS Paper-Based	Priority	
9	Other	9	

Source: JUTPI 2

There are 33 modes listed as transportation mode in the questionnaire of ADS survey. However, in case of ADS MEILI, only 31 type of modes are recorded and thus, only 31 modes are listed for ADS MEILI. The conversion of modes shall follow .

**Table 97 Mode List and Priority of ADS MEILI**

No	Mode Type	ADS Smartphone-Based			
		Code	Priority	Integration of Modes	
				9 Modes	4 Modes
1	Walking	29	31	8	3
2	Bicycle	12	29	8	3
3	Motorcycle	9	27	2	1
4	Private car (driver)	1	24	1	1
5	Private car (passenger)	2	23	1	1
6	Pick up, box	3	25	1	1
7	Truck	4	26	1	1
8	Conventional Taxi	5	17	6	2
9	GoCar, GrabCar (private)	6	18	6	2
10	GrabHitchCar (share)	-			
11	Omprengan	7	19	3	2
12	Bajaj, kancil	8	20	6	2
13	Motorcycle taxi	10	22	5	2
14	Online motorcycle taxi (GoJek, GrabBike)	11	21	5	2
15	Becak/horse wagon	13	28	8	3
16	Commuter line	14	2	4	2
17	Airport Railink Service (ARS)	15	1	4	2
18	Economy long train haul	16	3	4	2
19	Transjakarta (articulated)	17	8	7	2
20	Transjakarta, feeder Transjakarta (large bus)	18	9	7	2
21	Feeder Transjakarta (medium bus)	19	10	7	2

No	Mode Type	ADS Smartphone-Based			
		Code	Priority	Integration of Modes	
				9 Modes	4 Modes
22	TransJABODETABEK	20	4	7	2
23	TransPakuan	21	11	7	2
24	JR Connexion, JA Connexion	-			
25	DAMRI Airport, Primajasa, Hiba Utama	31	7	3	2
26	Patas, Patas AC, Mayasari	22	5	3	2
27	Economy/ executive medium bus long haul	23	6	3	2
28	Metromini, kopaja	24	12	3	2
29	Angkot, bemo	25	13	3	2
30	Large chartered bus (company bus, school bus, tourist bus, rental bus)	28	14	3	2
31	Medium chartered bus (company bus, school bus, tourist bus, rental bus)	27	15	3	2
32	Small chartered bus (company bus, school bus, tourist bus, rental bus)	26	16	3	2
33	Others, please specify	30	30	9	4

Note: Integrated transport modes are as follows.

Integrated Mode Number	9 Modes		4 Modes
	ADS Smartphone-Based	Priority	
1	Private Car	6	Private Transport
2	Motorcycle	7	Public Transport
3	Bus	3	NMT
4	Train	1	Other
5	Ojek	5	
6	Taxi, Bajaj	4	
7	Transjakarta	2	
8	NMT	8	
9	Other	9	

Source: JUTPI 2

Moreover, there are 15 access mode options that could be taken to reach main mass transit modes such as Commuter Train, Transjakarta,

TransJABODETABEK, and conventional large bus. The access mode priority was defined based on the following considerations:

- a. Public mode has a higher priority than private vehicle.
- b. Mass transit public mode has a higher priority than a lower capacity public mode.
- c. Motorized vehicle has a higher priority than a Non-motorized vehicle.

**Table 98 Priority of Access Mode**

No	Access Mode	Mode Priority
1	Transjakarta feeder	1
2	Medium bus (metro mini, kopaja)	2
3	Minibus (angkot, mikrolet)	3
4	Online taxi	4
5	Taxi	5
6	Bajaj	6
7	Online motorcycle taxi	7
8	Motorcycle taxi	8
9	Private car	9
10	Drop off/ pick up (by car)	10
11	Motorcycle	11
12	Drop off/ pick up (by motorcycle)	12
13	Becak	13
14	Bicycle	14
15	Walking	15

Source: JUTPI 2

## 6.4.2 Challenges on Verification of The Survey Data

### 6.4.2.1 ADS Paper-based

Using the tablet, respondent's information is recorded directly into online database. However, it is inevitable that some illogical patterns might occur. At this point, surveyors are obligated to confirm the data to respondents directly by phone calls or revisiting their houses. The challenge occurs when respondents are uncontactable through SMS or phone calls, or they are not available when surveyors revisit their place. However, survey team is encouraged to repeat the

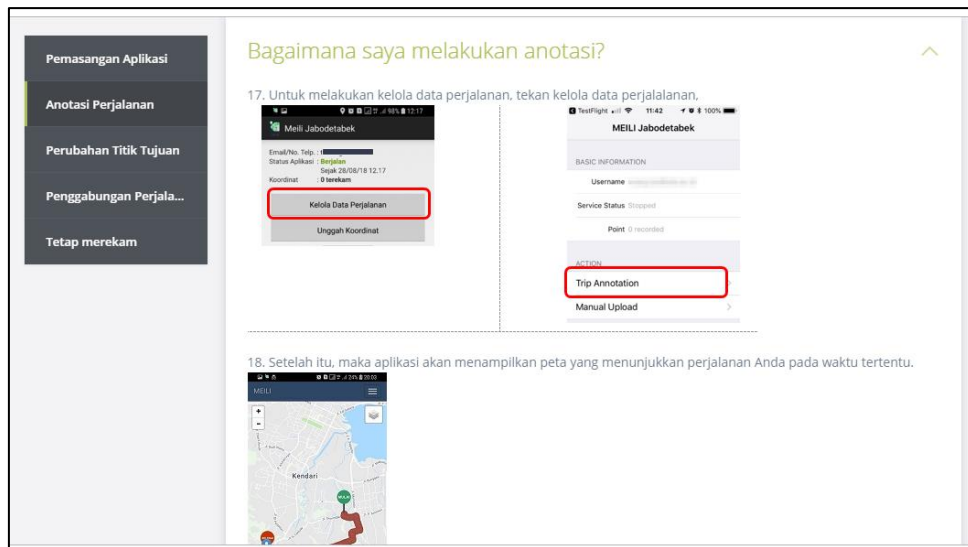
process until they can manage to confirm the respondents' information.

The other challenge is the limited allocation time for survey. Nevertheless, survey team leader and all the members are encouraged to finish collecting respondents along with verification process at the same time within the allocated time despite many challenges in the field. Survey management of the team is required in order to finish all the survey elements on time while maintaining the good result.

#### **6.4.2.2 ADS MEILI**

Along with the field survey, verification and data cleaning are carried out. In this phase, there are challenges related to socioeconomic data and travel verification. Regarding socioeconomic data, because field surveys use printed survey forms, challenges occur during data input due to unclear handwriting from surveyors. In addition, there are some answers that are considered illogical with other related answers. To verify this information, surveyors made a phone call to the respondents. However, calling the respondent itself was very challenging. Unanswered call and/or to make an appointment to call respondents were fundamental challenges in this phase.

Another challenging process is also to assist respondents in the annotation process. As mention in the Chapter 3, besides socioeconomic survey, trip data was also obtained from this survey using digital Form 3, MEILI JABODETABEK application, where it collected and recorded respondent's trip based on the GPS points along the trips. Each trip recorded then annotated based on respondent's statement and verification to get valid detail trip data. Annotation itself ideally should be done by the respondents through MEILI JABODETABEK App. or web annotation, therefore the annotation guidelines were provided for the respondents (Figure 214). However, due to various understanding to annotate using MEILI JABODETABEK, assistance from surveyor to annotate respondents' trip were provided to get more reliable data. Dashboard of the annotation monitoring can be seen in Figure 215.



Source: JUTPI 2

**Figure 214 Annotation Guidelines**

ID	App No	Username	Phone	Day Time	Last Seen	Mode No	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode	Mode
1	100101	user@meji.com	08123456789	2019-07-21 07:00	2019-07-21 07:15	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
2	100102	user@meji.com	08123456789	2019-07-21 07:30	2019-07-21 07:45	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
3	100103	user@meji.com	08123456789	2019-07-21 08:00	2019-07-21 08:15	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
4	100104	user@meji.com	08123456789	2019-07-21 08:30	2019-07-21 08:45	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
5	100105	user@meji.com	08123456789	2019-07-21 09:00	2019-07-21 09:15	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
6	100106	user@meji.com	08123456789	2019-07-21 09:30	2019-07-21 09:45	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
7	100107	user@meji.com	08123456789	2019-07-21 10:00	2019-07-21 10:15	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
8	100108	user@meji.com	08123456789	2019-07-21 10:30	2019-07-21 10:45	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
9	100109	user@meji.com	08123456789	2019-07-21 11:00	2019-07-21 11:15	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1
10	100110	user@meji.com	08123456789	2019-07-21 11:30	2019-07-21 11:45	001	Walking	1	1	1	1	1	1	1	1	1	1	1	1

Source: JUTPI 2

**Figure 215 Annotation Monitoring Dashboard**

Because there were extensive number of unannotated trips by the respondents, surveyors found it difficult to remind respondents of their detail trip in few days or even weeks ago. In this annotation process, surveyors are also required to have technical abilities in performing annotation, such as validating data based on predetermined criteria (i.e. speed by mode, trip length and duration), combining and/or separating trips, determining transit points and stopping on maps, and also

communication ability to make respondent comfortable during annotation process.

Because of the above conditions, verification and data cleaning process takes longer. Nevertheless, at the end of this survey, there are near 30,000 day-trips data were used for data processing from 35,000 day-trips recorded.

### **6.4.3 Data Cleaning and Processing**

#### **6.4.3.1 Socioeconomic Data**

Since there are many surveyors in charge of inputting respondent's data, data checking is necessary. For socioeconomic data, data checking was done by using excel-macro function that specifically made for this survey which is made by JUTPI 2 team. Along with survey team, JUTPI 2 included in the data cleaning process. Illogical data will then be recorded and confirmed by survey team.

#### **6.4.3.2 Trip Data**

There are some differences in trip data of ADS Paper-based and Smartphone Application, such as methodology, data pattern, and total collected days. Thus, trip data of each survey will be verified exclusively by using a suitable method for each survey.

##### **a. ADS Paper-based**

In order to utilize all the recorded trips, there are several criteria that were required to be recognized as valid trips, such as:

1. Speed range by mode:
  - Car: 3 - 70 km/h
  - Bus: 3 - 60 km/h
  - Railway: 3 - 60 km/h
  - Motorcycle: 5 - 50 km/h
  - Bicycle: 5 - 30 km/h



- Walk: 1 - 10 km/h
  - All modes: 1 - 70 km/h
2. Travel distance by mode:
- Car: 0.1 - 60 km
  - Bus: 0.2 - 60 km
  - Railway: 0.5 - 70 km
  - Motorcycle: 0.05 - 60 km
  - Bicycle: 0.1 - 30 km
  - Walk: 0.05 - 10 km
  - All modes: 0.05 - 70 km
3. Example of Duration Range:
- 1 – 180 minutes

The activity and travel data from Form 3 is verified using the above criteria through excel formula. Illogical data is confirmed later by survey team by SMS, phone calls re-visiting respondent's house.

**b. ADS MEILI**

In order to utilize all the recorded trips by MEILI JABODETABEK, there are several criteria that were assigned to the server so that it could produce valid trips, such as:

1. Speed range by mode:
- Car: 3 - 70 km/h
  - Bus: 3 - 60 km/h
  - Railway: 3 - 60 km/h
  - Motorcycle: 5 - 50 km/h
  - Bicycle: 5 - 30 km/h

- Walk: 1 - 10 km/h
  - All modes: 1 - 70 km/h
2. Travel distance by mode:
- Car: 0.1 - 60 km
  - Bus: 0.2 - 60 km
  - Railway: 0.5 - 70 km
  - Motorcycle: 0.05 - 60 km
  - Bicycle: 0.1 - 30 km
  - Walk: 0.05 - 10 km
  - All modes: 0.05 - 70 km
3. Example of Duration Range:
- 1 – 180 minutes

With these criteria assigned to the server, recorded trips can be considered as a valid trip or not (anomaly). Output of the processed trip and detail explanation are as follows:

user_id	reg_no	trip_id	trip_inf_id	trip_from_time	trip_from_lon	trip_from_lat	FROM_TAZ	FROM_ZC	FROM_KOT_KAB
1	2	3	4	5	6	7	8	9	10
9	1009369	129	203	05-09-18 14:36	106.8119033	-6.572706667	228	3271030001	Kota Bogor
9	1009369	130	205	05-09-18 14:59	106.8124417	-6.569956667	228	3271030001	Kota Bogor
9	1009369	92582	971	12-09-18 14:31	106.8102317	-6.576116667	228	3271030001	Kota Bogor
9	1009369	92594	1035	13-09-18 11:31	106.699335	-6.272856667	161	3674060004	TANGERANG SELATAN
9	1009369	92624	1523	13-09-18 13:41	106.7059383	-6.295921667	158	3674040002	TANGERANG SELATAN
9	1009369	92635	1563	14-09-18 10:23	106.71231	-6.296863333	158	3674040002	TANGERANG SELATAN
13	1008069	18	71	03-09-18 10:30	106.847885	-6.20876941	39	3171090007	JAKARTA SELATAN
13	1008069	19	101	03-09-18 17:00	106.8165135	-6.21578449	71	3173010002	JAKARTA PUSAT
13	1008069	22	143	04-09-18 9:35	106.8476129	-6.20419745	76	3173020002	JAKARTA PUSAT
13	1008069	23	149	04-09-18 17:02	106.8163316	-6.22733465	29	3171060010	JAKARTA SELATAN
13	1008069	33	177	04-09-18 18:37	106.8434612	-6.20355404	75	3173020001	JAKARTA PUSAT
13	1008069	36	181	05-09-18 11:28	106.8482674	-6.20382877	76	3173020002	JAKARTA PUSAT
13	1008069	37	191	05-09-18 13:37	106.8149602	-6.21931198	36	3171100001	JAKARTA SELATAN
13	1008069	39	233	05-09-18 17:35	106.8434389	-6.20353522	75	3173020001	JAKARTA PUSAT
13	1008069	42	245	06-09-18 9:34	106.8481856	-6.20372894	76	3173020002	JAKARTA PUSAT

Source: JUTPI 2

**Figure 216 Display of Trip Database (Output)**

1. Each line represents each trip. One trip can consist of a maximum of 5 triplegs or 4 mode transfers.
2. Registration number (reg\_no) is reference ID of each respondents.

3. Longitude and latitude points are available for FROM (origin), TO (destination), POI\*. POI definition in the output is the end point that automatically assigned by the system when typing the nearest landmark or street to the real End Point (in Google Maps).

**Table 99 List of Trip Database (Output)**

No.	Code	Definition/Remarks
1	user_id	Respondent's ID
2	reg_no	Respondent's Registration Number in MEILI JABODETABEK App.
3	trip_id	Trip ID (1)
4	trip_inf_id	Trip Inference ID (2)
5	trip_from_time	Start Time of Start Point
6	trip_from_lon_	Longitude of Start Point of Trip
7	trip_from_lat_	Latitude of Start Point of Trip
8	from_taz	Start Point TAZ
9	from_zc	Start Point Zone Code
10	from_kot_kab	Start Point Kota/Kabupaten
11	trip_to_time	End Time of End Point
12	trip_to_lon_	Longitude of End Point of Trip
13	trip_to_lat_	Latitude of End Point of Trip
14	to_taz	End Point TAZ
15	to_zc	End Point Code
16	to_kot_kab	End Point Kota/Kabupaten
17	destination_poi_id	End Point (POI) ID
18	poi_name	End Point (POI) Name
19	poi_lon_	Longitude of End Point (POI) of Trip
20	poi_lat_	Latitude of End Point (POI) of Trip
21	poi_taz	End Point (POI) TAZ
22	poi_zc	End Point (POI) Code
23	poi_kot_kab	End Point (POI) Kota/Kabupaten
24	distance_poi_end_point	Distance Difference between End Point with End Point (POI)
25	fixed_act_id_1	Activity ID of the Trip (1)
26	fixed_act_name_1	Activity Name of the Trip (1)
27	fixed_act_id_2	Activity ID of the Trip (2)

No.	Code	Definition/Remarks
28	fixed_act_name_2	Activity Name of the Trip (2)
29	fixed_act_id_3	Activity ID of the Trip (3)
30	fixed_act_name_3	Activity Name of the Trip (3)
31	representative_act_id	Representative Activity ID of the Trip
32	representative_act_name	Representative Activity Name of the Trip
33	phone_model	Respondent's Phone Model
34	phone_number	Respondent's Phone Number
35	tripleg_id_1	Tripleg's ID (1)
36	tripleg_inf_id_1	Tripleg's Inference ID (1)
37	from_time_1	Start Time (Epor) of Start Point of Tripleg (1)
38	from_lon_1	Longitude of Start Point of Tripleg (1)
39	from_lat_1	Latitude of Start Point of Tripleg (1)
40	to_time_1	End Time (Epor) of End Point of Tripleg (1)
41	to_lon_1	Longitude of End Point of Tripleg (1)
42	to_lat_1	Latitude of End Point of Tripleg (1)
43	transport_main_id_1	Transport Mode ID (Level 1) for Tripleg (1)
44	transport_sub_id_1	Transport Mode ID (Level 2) for Tripleg (1)
45	tariff_1	Transport Expense for Tripleg (1)
46	parking_1	Parking Expense for Tripleg (1) if any
47	transport_main_name_en_1	Transport mode Name (Level 1) for Tripleg (1)
48	transport_sub_name_en_1	Transport mode Name (Level 2) for Tripleg (1)
49	tripleg_distance_1	Tripleg (1) Distance
50	tripleg_straight_line_distance_1	Tripleg (1) Straight Line Distance
51	tripleg_distance_diff_1	Difference Between Distance and Straight-Line Distance Tripleg (1)
52	toll_1	Toll Tariff for Tripleg (1) if any
53	human_from_time_1	Start Time of Start Point of Tripleg (1)
54	human_to_time_1	End Time of End Point of Tripleg (1)
55	tripleg_duration_1	Tripleg (1) Duration
56	tripleg_speed_1	Speed of Mode for Tripleg (1) Speed
57	Rep_Mode	Representative Mode Code of the Trip
58	Rep_Mode_name	Representative Mode Name of the Trip

Notes: Triplegs information as shown in column no. 35-56 is available for 5 triplegs.

Source: JUTPI 2

All valid trips then being processed by the developed program to produce a tour-based data for Activity-Based Model (ABM) purpose.

#### 6.4.4 Survey Result

##### 6.4.4.1 ADS Paper-based

###### a. Demographic Features of the Collected Samples

The ADS Paper-Based focuses on samples in newly developed area since 2010. Therefore, most of the samples are collected from households in BODETABEK area. From the total targeted 5000 households, the share of households in BODETABEK and DKI Jakarta, respectively, amount to 79.34% (3,967 households) and 20.66% (1,033 households). For population or total household members, the total in BODETABEK measures up to 14,686, while the total in DKI Jakarta is only 3,595 people. In other words, the average household size in BODETABEK is bigger than in DKI Jakarta, which are 3.70 and 3.48, respectively.

**Table 100 Population and Households by Each Kota/Kabupaten of ADS Paper-Based**

City/ Regency		Population	No. of HH	Ave.HH Size
DKI Jakarta	Jakarta Barat	946	276	3.43
	Jakarta Pusat	257	76	3.38
	Jakarta Selatan	780	209	3.73
	Jakarta Timur	738	209	3.53
	Jakarta Utara	874	263	3.32
	Sub Total	3,595	1,033	3.48
BODETABEK	Kabupaten Bekasi	3,782	1,072	3.53
	Kabupaten Bogor	3,041	768	3.96
	Kabupaten Tangerang	3,331	908	3.67
	Kota Bekasi	1,069	296	3.61
	Kota Bogor	468	119	3.93
	Kota Depok	654	176	3.72
	Kota Tangerang	1,331	362	3.68

City/ Regency		Population	No. of HH	Ave.HH Size
	Kota Tangerang Selatan	1,010	266	3.80
	Sub Total	14,686	3,967	3.70
TOTAL		18,281	5,000	3.66

Source: JUTPI 2

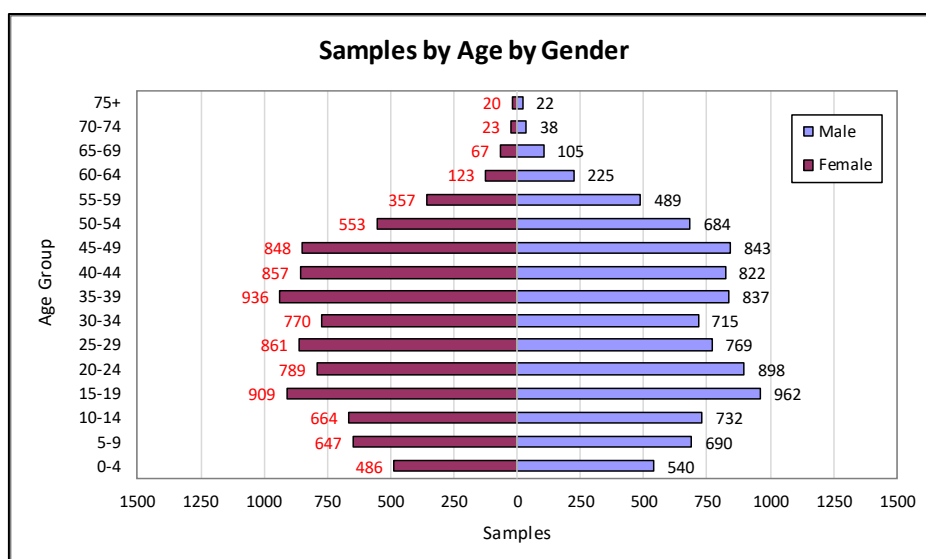
### 1. Samples by Gender and Age Group

The male and female population in ADS Paper-Based account for 51.2% and 48.8%, respectively. Of the total 18,281 people, the highest percentage age group is in the range of 15-19 years old with 10.2%, followed by age group 35-39, 40-44, 45-49, and 20-24 years old, which have share more than 9% each.

**Table 101 Population by Gender and Age Group of ADS Paper-Based**

Age Group	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
0-4	540	5.8	486	5.5	1,026	5.6
5-9	690	7.4	647	7.3	1,337	7.3
10-14	732	7.8	664	7.5	1,396	7.6
15-19	962	10.3	909	10.2	1,871	10.2
20-24	898	9.6	789	8.9	1,687	9.2
25-29	769	8.2	861	9.7	1,630	8.9
30-34	715	7.6	770	8.6	1,485	8.1
35-39	837	8.9	936	10.5	1,773	9.7
40-44	822	8.8	857	9.6	1,679	9.2
45-49	843	9.0	848	9.5	1,691	9.3
50-54	684	7.3	553	6.2	1,237	6.8
55-59	489	5.2	357	4.0	846	4.6
60-64	225	2.4	123	1.4	348	1.9
65-69	105	1.1	67	0.8	172	0.9
70-74	38	0.4	23	0.3	61	0.3
75+	22	0.2	20	0.2	42	0.2
Total	9,371	100.0	8,910	100.0	18,281	100.0

Source: JUTPI 2



Source: JUTPI 2

**Figure 217 Population by Age by Gender of ADS Paper-Based**

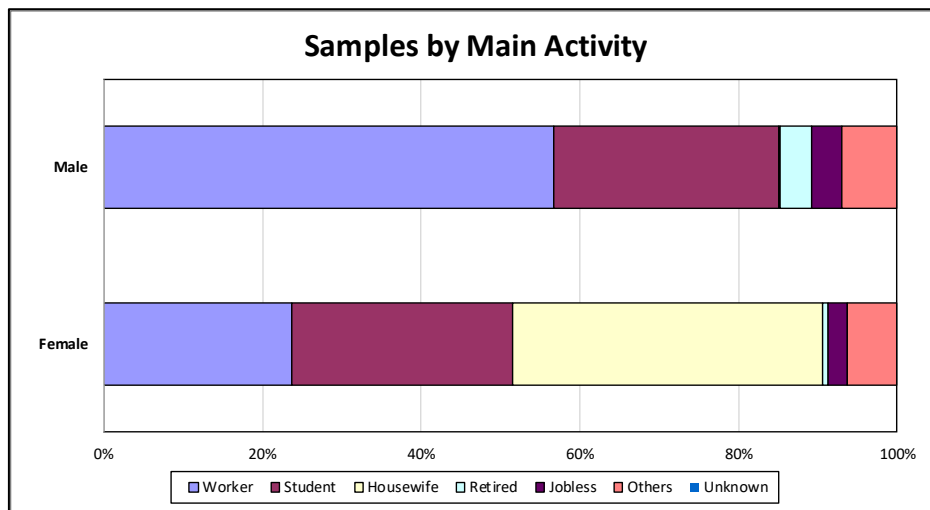
## 2. Population by Main Activity

The share of worker’s population is dominating the overall samples by 40.7%, and furthermore in both male and female by 56.7% and 23.8%, respectively. The student portion is the second highest population with around 28% in average. Housewife’s population accounts for the third highest population with 19.2%. Following those shares is retired, jobless and others with less than 10% each.

**Table 102 Population by Main Activity of ADS Paper-Based**

Main Activity	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Worker	5,318	56.7	2,118	23.8	7,436	40.7
Student	2,661	28.4	2,467	27.7	5,128	28.1
Housewife	9	0.1	3,493	39.2	3,502	19.2
Retired	371	4.0	59	0.7	430	2.4
Jobless	356	3.8	214	2.4	570	3.1
Others	656	7.0	559	6.3	1,215	6.6
Unknown	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>9,371</b>	<b>100.0</b>	<b>8,910</b>	<b>100.0</b>	<b>18,281</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 218 Population by Main Activity of ADS Paper-Based**



### 3. Worker's Profile

In terms of total workers, Factory workers/ labors amounts to 20.6 % or the highest share of occupation while Porter (station, seaport, airport, warehouse, etc.) accounts for the least portion with only 0.3%. The option of Factory workers/ labors is the most popular with 23.7% for male, while the highest share in female population is sales or merchant with 22.1%.

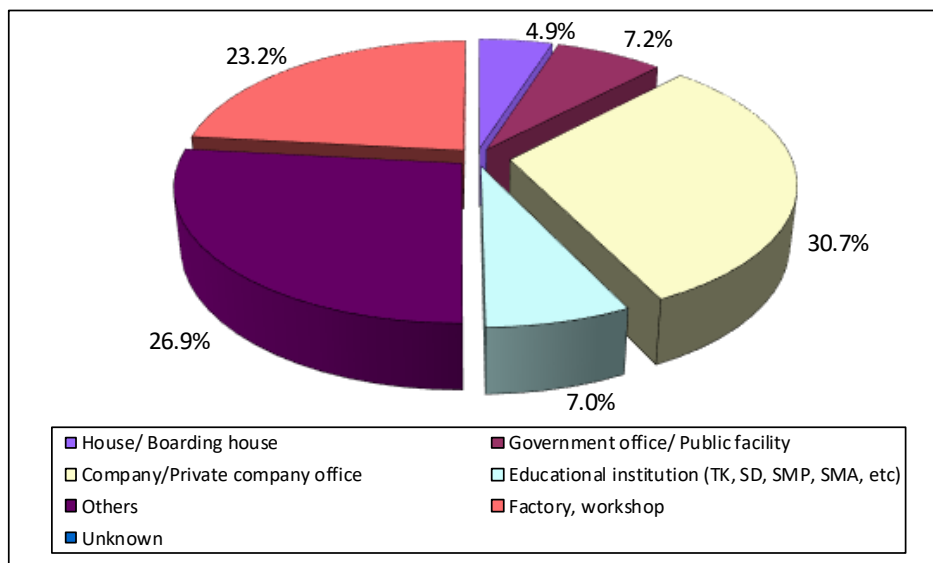
**Table 103 Number of Workers by Occupation of ADS Paper-Based**

Occupation	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Farmer, fisherman, miner	36	0.7	5	0.2	41	0.6
Factory works/labors	1260	23.7	269	12.7	1529	20.6
Craftman (jewelry, wood, stone)	30	0.6	2	0.1	32	0.4
Construction laborer	58	1.1	1	0.0	59	0.8
Industry/business owner	611	11.5	250	11.8	861	11.6
Sales, merchant	600	11.3	469	22.1	1069	14.4
Professor, manager, director, etc	262	4.9	42	2.0	304	4.1
Expert (technical, chemist, physics, biology), lecturer, teacher, trainer, etc	661	12.4	290	13.7	951	12.8
Armed forces/Police	59	1.1	1	0.0	60	0.8
Professionals (doctor, engineer, accountant, pilot, machinist)	319	6.0	124	5.9	443	6.0
Administration staff (teller, data entry)	426	8.0	377	17.8	803	10.8
Technician	320	6.0	5	0.2	325	4.4
Waiter, bartender	96	1.8	51	2.4	147	2.0
Goods transport driver (box car, goods truck, tank truck)	42	0.8	0	0.0	42	0.6
Public transport driver (including online transportation)	78	1.5	0	0.0	78	1.0
Private driver	46	0.9	2	0.1	48	0.6
Housemaid, office boy, cleaning service, gardener	42	0.8	147	6.9	189	2.5
Security officer	157	3.0	2	0.1	159	2.1
Porter (station, seaport, airport, warehouse, etc.)	20	0.4	0	0.0	20	0.3
Others	197	3.7	81	3.8	278	3.7

Occupation	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Unknown	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>5,320</b>	<b>100.0</b>	<b>2,118</b>	<b>100.0</b>	<b>7,438</b>	<b>100.0</b>

Source: JUTPI 2

In terms of workplace facilities, the highest share is placed in company or private company with 30.7%, followed by others and factory/ workshop with 26.9% and 23.2 %, respectively. Looking at the worker’s workplace facilities in detail, the portion of Other option is high. This might due to the respondents’ who prefer not to mention their workplace for privacy reason or unsure with the provided options. The remaining options are government office/ public facility, educational institutions, and house/ boarding house with less than 10% each.



Source: JUTPI 2

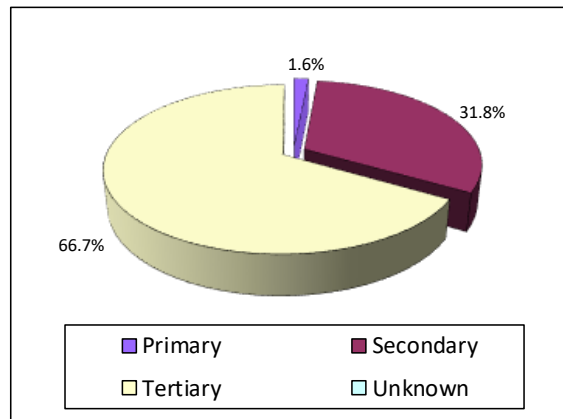
**Figure 219 Composition of Workplace Facilities of ADS Paper-Based**

The most popular workplace facilities for both male and female is company/ private company office with 31.2% and 29.2% respectively. The second option is factory/ workshop that accounts for 26.3% or male population and 15.8% of female population.

**Table 104 Workers by Workplace Facilities of ADS Paper-Based**

Type of Workplace	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
House/ Boarding house	68	4.0	50	7.2	118	4.9
Government office/ Public facility	125	7.4	48	6.9	173	7.2
Company/Private company office	529	31.2	203	29.2	732	30.7
Educational institution (TK, SD, SMP, SMA, etc)	98	5.8	69	9.9	167	7.0
Worship place (mosque, church, temple, etc)	3	0.2	1	0.1	4	0.2
Hospital, puskesmas, clinic	29	1.7	45	6.5	74	3.1
Hotel, lodge, entertainment place	28	1.7	8	1.2	36	1.5
Restaurant, food court, food stalls	59	3.5	45	6.5	104	4.4
Grocery store, traditional market, minimarket	74	4.4	44	6.3	118	4.9
Supermarket	12	0.7	7	1.0	19	0.8
Shopping center, plaza, mall, department store	46	2.7	35	5.0	81	3.4
Grocery market, central market	21	1.2	0	0.0	21	0.9
Factory, workshop	445	26.3	110	15.8	555	23.2
Warehouse, storage	32	1.9	7	1.0	39	1.6
Station, bus terminal, airport, seaport	14	0.8	3	0.4	17	0.7
Installation (gas, water, electricity)	4	0.2	1	0.1	5	0.2
Recreational facility, Sports facility	5	0.3	4	0.6	9	0.4
Parks, national park	0	0.0	1	0.1	1	0.0
Agriculture, forestry, mining, fishery site	12	0.7	0	0.0	12	0.5
Construction, building works site	28	1.7	3	0.4	31	1.3
Others	61	3.6	11	1.6	72	3.0
Unknown	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>1,693</b>	<b>100.0</b>	<b>695</b>	<b>100.0</b>	<b>2,388</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 220 Employment by Industrial Sector of ADS Paper-Based**

The pie chart illustrates that the greatest portion of employment by industrial sector accounts for tertiary sector by 66.7%. This number is followed by secondary and primary sector with 31.8% and 1.6%, respectively.

**Table 105 Workers by Industry of ADS Paper-Based**

Work Field/ Industry	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Agriculture/forestry/fishery	19	1.0	3	0.3	22	0.8
Mining/excavation/drilling	20	1.0	2	0.2	22	0.8
Industry/factory	613	31.8	149	16.8	762	27.1
Building/construction project	112	5.8	20	2.3	132	4.7
Transportation & communication	105	5.4	18	2.0	123	4.4
Bank, financial institution	71	3.7	93	10.5	164	5.8
Large and retail trade	343	17.8	278	31.4	621	22.1
Electricity, gas & drinking water	18	0.9	3	0.3	21	0.7
Central government	27	1.4	12	1.4	39	1.4
Regional government	90	4.7	60	6.8	150	5.3
Armed forces/police	15	0.8	0	0.0	15	0.5
Rental services	22	1.1	6	0.7	28	1.0
Services (hotel, entertainment, research, doctor, consultant, spirituality, etc)	273	14.1	139	15.7	412	14.6
Others	202	10.5	102	11.5	304	10.8

Work Field/ Industry	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
<b>Total</b>	<b>1,930</b>	<b>100.0</b>	<b>885</b>	<b>100.0</b>	<b>2,815</b>	<b>100.0</b>

Source: JUTPI 2

From the total workers by industry, the highest share is in industry/factory with 27.1%, followed by large and retail trade by 22.1%. Meanwhile, the least share of industry is in armed forces/ police option. The largest portion for male population is in industry/factory which amounts to 31.8%, followed by large and retail trade with 17.8%. In contrast, for female population, the highest portion is in large and retail trade with 31.4%, followed by industry/factory with 16.8%.

**Table 106 Employment by Industrial Sector and by Region of ADS Paper-Based**

Region	Primary		Secondary		Tertiary		Total	
	Sum	%	Sum	%	Sum	%	Sum	%
DKI Jakarta	10	1.6	151	24.5	455	73.9	616	100.0
Kabupaten Bekasi	13	2.2	284	48.9	284	48.9	581	100.0
Kabupaten Bogor	13	3.0	75	17.2	348	79.8	436	100.0
Kabupaten Tangerang	3	0.6	232	44.2	290	55.2	525	100.0
Kota Bekasi	1	0.6	42	24.9	126	74.6	169	100.0
Kota Bogor	2	2.8	14	19.7	55	77.5	71	100.0
Kota Depok	0	0.0	13	14.1	79	85.9	92	100.0
Kota Tangerang	1	0.5	53	27.2	141	72.3	195	100.0
Kota Tangerang Selatan	1	0.8	30	23.1	99	76.2	130	100.0
<b>Total</b>	<b>44</b>	<b>1.6</b>	<b>894</b>	<b>31.8</b>	<b>1877</b>	<b>66.7</b>	<b>2815</b>	<b>100.0</b>

Source: JUTPI 2

For primary sector, the highest employment occurs in Kabupaten Bogor and Kota Bogor with almost 3% each. While for secondary sector, the biggest portion of employee is found in Kabupaten Bekasi with 48.9, followed by Kabupaten Tangerang with 44.2%. On the other hand, the highest share in tertiary sector is in Kota Depok with 85.8%, followed by Kabupaten Bogor with 79.8%.

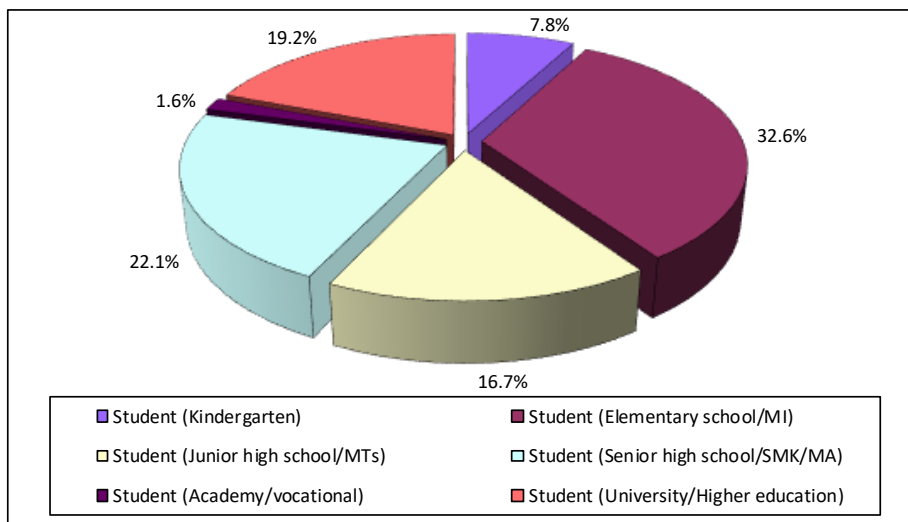
#### 4. Student's Profile

Total students are including all household member that is recorded as students, not only respondents who filled activity-travel questionnaire (Form 3). The highest share of students is in Elementary School/MI level with 32.6%, followed by Senior High School/SMK/MA level with 32.6%. These numbers are followed by University/ Higher Education, Junior High School/MTS, Kindergarten, and Academy/ Vocational level with less than 20% each.

**Table 107 Students by Education Level of ADS Paper-Based**

School Type	Sum	%
Student (Kindergarten)	402	7.8
Student (Elementary school/MI)	1,671	32.6
Student (Junior high school/MTs)	854	16.7
Student (Senior high school/SMK/MA)	1,135	22.1
Student (Academy/vocational)	83	1.6
Student (University/Higher education)	983	19.2
<b>Total</b>	<b>5,128</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 221 Students by Education Level of ADS Paper-Based**

## **b. Household Features**

### **1. Housing Building Type**

Housing building type, which is strongly related to household income level and land use, is classified in Table 108. It is notable that most type of houses in both DKI Jakarta and BODETABEK is permanent with 93.94% in total. The second and third option is semi-permanent house and apartment with 2.68% and 1.76%, respectively. The remaining options, such as flat, boarding house, shop house, and others are less than 1% each.

**Table 108 Housing Type Distribution of ADS Paper-Based**

Housing Type	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Permanent	890	86.16%	3807	95.97%	4697	93.94%
Semi-Permanent	47	4.55%	87	2.19%	134	2.68%
Flat	31	3.00%	4	0.10%	35	0.70%
Apartment	60	5.81%	28	0.71%	88	1.76%
Boarding house	5	0.48%	12	0.30%	17	0.34%
Shop house	0	0.00%	27	0.68%	27	0.54%
Others	0	0.00%	2	0.05%	2	0.04%
<b>Total</b>	<b>1033</b>	<b>100.00%</b>	<b>3967</b>	<b>100.00%</b>	<b>5000</b>	<b>100.00%</b>

Source: JUTPI 2

### **2. Household Income**

As shown in Table 109, the share of middle-income group (4.0 – 10.0 million Rupiah) accounts for more than half of the total households or 54.76%. This trend is likely occurred in BODETABEK area compared to DKI Jakarta. Meanwhile, the portion of low-income group, which can be defined as households earning less than 4.0 million Rupiah per month, amounts to more than 22%. Moreover, high-income group is close to low-income group accounts for 23.08%, and more likely occurred in DKI Jakarta compared to BODETABEK area.

**Table 109 Monthly Household Income of ADS using Paper-Based**

Household Income	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Less than 1.500.000	8	0.77%	65	1.64%	73	1.46%
1.500.000-1.999.000	16	1.55%	69	1.74%	85	1.70%
2.000.000-2.499.999	16	1.55%	88	2.22%	104	2.08%
2.500.000-2.999.999	30	2.90%	129	3.25%	159	3.18%
3.000.000-3.499.999	43	4.16%	225	5.67%	268	5.36%
3.500.000-3.999.999	76	7.36%	343	8.65%	419	8.38%
4.000.000-4.499.999	68	6.58%	353	8.90%	421	8.42%
4.500.000-4.999.999	52	5.03%	255	6.43%	307	6.14%
5.000.000-5.999.999	88	8.52%	420	10.59%	508	10.16%
6.000.000-6.999.999	76	7.36%	353	8.90%	429	8.58%
7.000.000-7.999.999	78	7.55%	303	7.64%	381	7.62%
8.000.000-8.999.999	90	8.71%	347	8.75%	437	8.74%
9.000.000-9.999.999	47	4.55%	208	5.24%	255	5.10%
10.000.000-11.999.999	87	8.42%	265	6.68%	352	7.04%
12.000.000-13.999.999	58	5.61%	152	3.83%	210	4.20%
14.000.000-15.999.999	32	3.10%	114	2.87%	146	2.92%
16.000.000-17.999.999	17	1.65%	51	1.29%	68	1.36%
18.000.000-19.999.999	38	3.68%	51	1.29%	89	1.78%
20.000.000-22.499.999	41	3.97%	59	1.49%	100	2.00%
22.500.000-24.999.999	21	2.03%	29	0.73%	50	1.00%
25.000.000-29.999.999	22	2.13%	18	0.45%	40	0.80%
30.000.000-34.999.999	11	1.06%	24	0.60%	35	0.70%
35.000.000-39.999.999	6	0.58%	17	0.43%	23	0.46%
More than 40.000.000	12	1.16%	29	0.73%	41	0.82%
<b>Total</b>	<b>1033</b>	<b>100.00%</b>	<b>3967</b>	<b>100.00%</b>	<b>5000</b>	<b>100.00%</b>

Source: JUTPI 2

### 3. Vehicle Ownership

In ADS Paper-Based, the share of households without cars amounts to 62.3%, followed by household which owned 1 car with 29.8%, and owned 2 car or more with 7.9%. In contrast, the share of household without motorcycle is small with 7.6% only. Most of household samples or 43.9%



owning 2 motorcycles, followed by those who owned only 1 motorcycle with 36.9%. The remaining samples or 11.6% are having 3 or more motorcycles.

**Table 110 Car Ownership of ADS Paper-Based**

Car Ownership	No. of HH	%	Total Cars
0	3115	62.3%	0
1	1492	29.8%	1492
2+	393	7.9%	872
Total	5000	100%	2364
<b>Average No. of Cars Owned per Own HHs</b>			<b>1.3</b>

Source: JUTPI 2

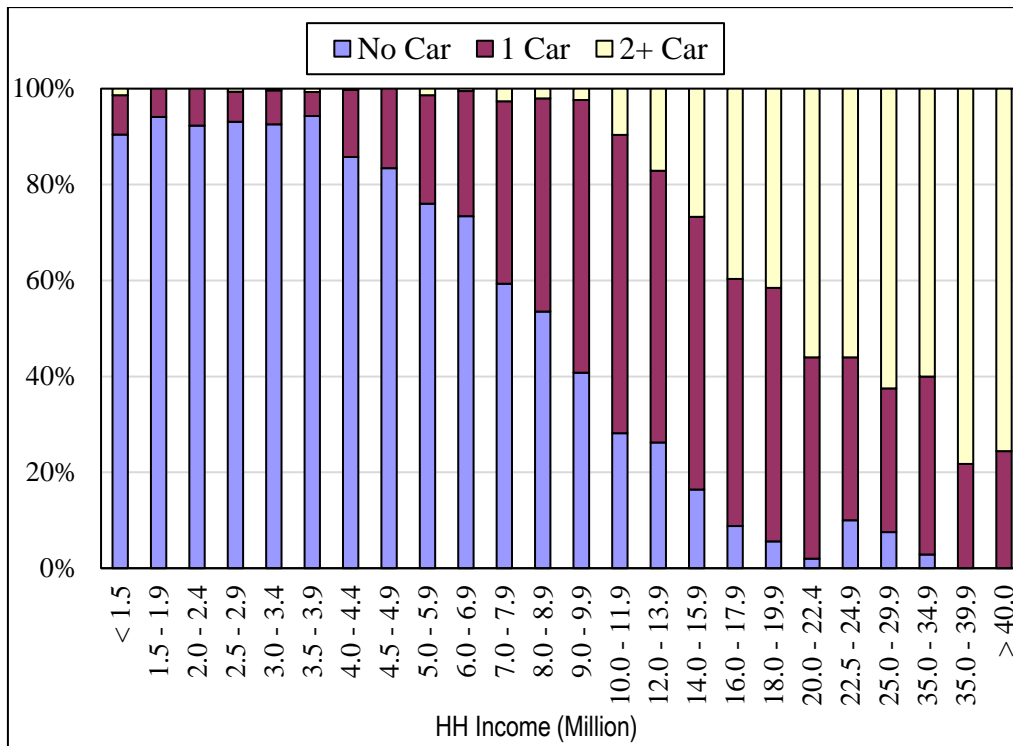
**Table 111 Motorcycle Ownership of ADS Paper-Based**

Motorcycle Ownership	No. of HH	%	Total Motorcycles
0	378	7.6%	0
1	1847	36.9%	1847
2	2194	43.9%	4388
3+	581	11.6%	1827
Total	5000	100.0%	8062
<b>Average No. of Cars Owned per Own HHs</b>			<b>1.7</b>

Source: JUTPI 2

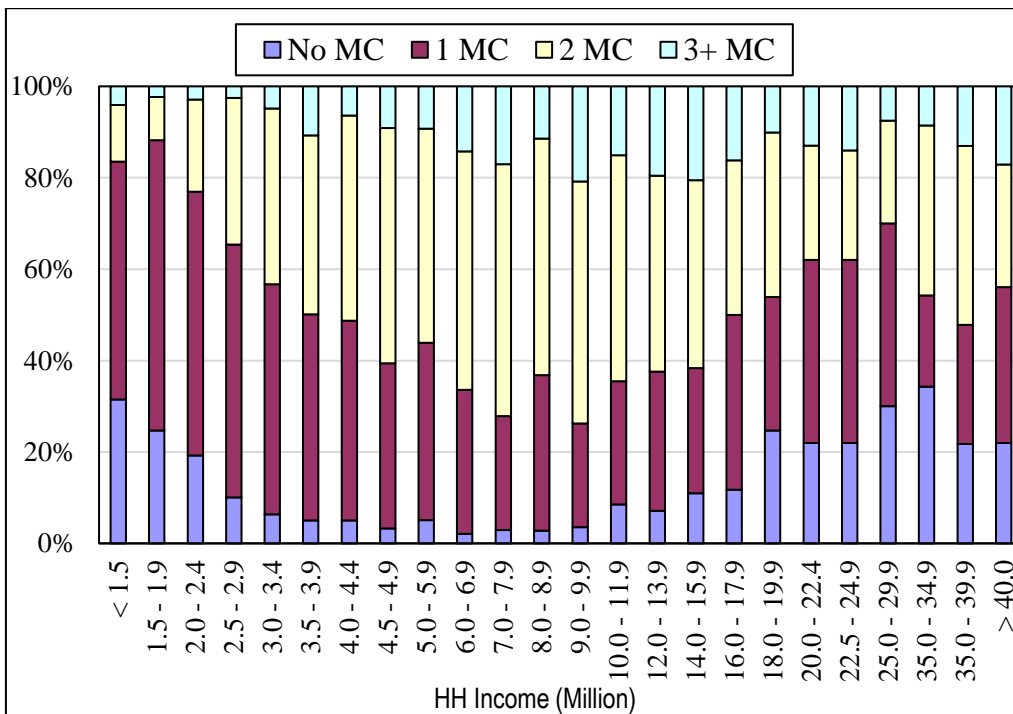
#### 4. Vehicle Ownership by Household Income

In Figure 222, it can be inferred that the share of car owning household is getting bigger as the household income gets higher. It is notable that car ownership has strong relation with household income level. Meanwhile, the pattern of motorcycle ownership is quite different from car ownership. It is illustrated in Figure 52 that motorcycle ownership is found in any level of household income. It means that the popularity of owning a motorcycle occurs across different household income levels.



Source: JUTPI 2

**Figure 222 Car Ownership by Income Level of ADS Paper-Based**



Source: JUTPI 2

**Figure 223 Motorcycle Ownership by Income Level of ADS Paper-Based**

**c. Trip**

**1. Tour Purpose in JABODETABEK in General**

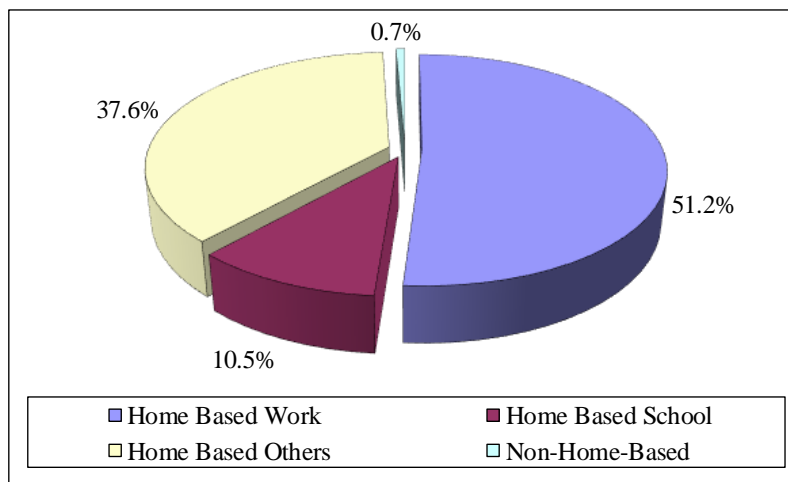
From the trip information, it can be seen that the highest share of tour type in ADS Paper-Based is made by workers, which amounts to 51.2% of total tours. The second highest share is recorded for Home Based Others tour with 37.6%, followed by Home Based School tour and Non-Home-Based tour with 10.5% and 0.7%, respectively.

**Table 112 Tour Purpose of ADS Paper-Based**

Tour Type	No. of Tour	% Share
Home Based Work	6,003	51.2
Home Based School	1,226	10.5
Home Based Others	4,410	37.6
Non-Home-Based	80	0.7
<b>Grand Total</b>	<b>11,719</b>	<b>100</b>

Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

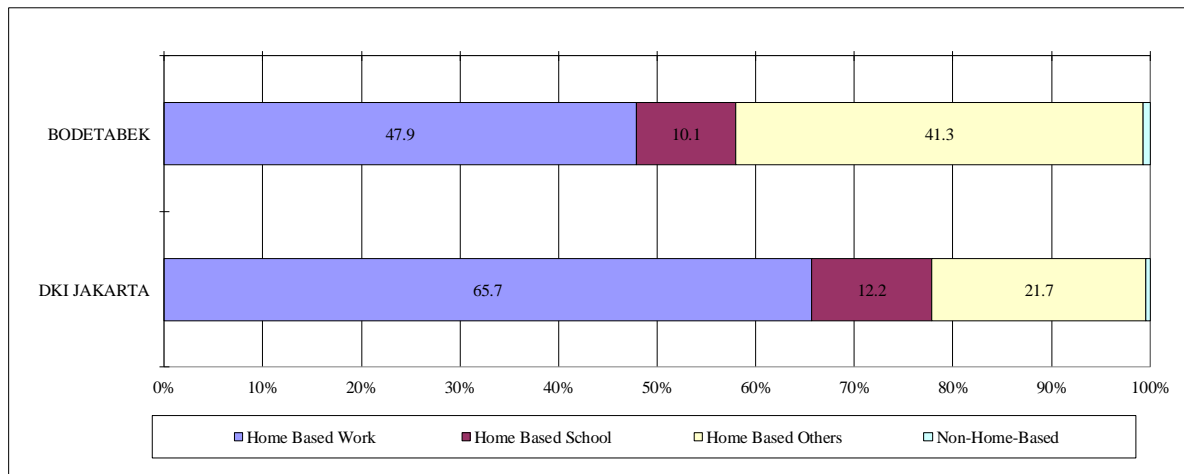


Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 224 Trip Purpose Composition of ADS Paper-Based**

## 2. Tour Purpose by Region



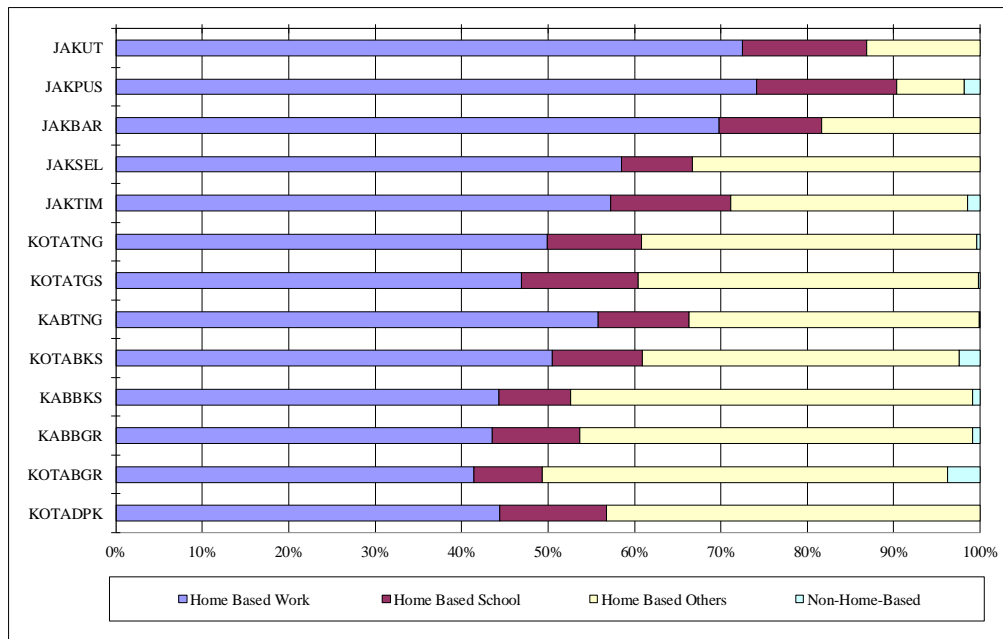
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 225 Tour Purpose Comparison between DKI Jakarta and BODETABEK of ADS  
 Paper-Based**

In terms of tour purpose by region, both in DKI Jakarta and BODETABEK have the highest portion of Home-Based Work tour with 65.7% and 47.9%, respectively. The second highest share in DKI Jakarta amounts to 21.7% for Home Based Others tour, followed by Home Based School with 12.2%, and Non-Home-Based tour with less than 1%. Meanwhile, in BODETABEK area, the second highest portion accounts for 41.3% for Home Based Others tour, followed by Home Based School tour with 10.1%, and Non-Home-Based tour that occurred under 1%.

If we look further details in each Kota/ Kabupaten, it can be clearly seen that Home-Based Work tour is still dominating the share of tours, especially in central Jakarta with almost 75%. Despite Kota/ Kabupaten, the share of Home-Based Others tour is placed the second highest in each area, followed by Home Based School tour, and Non-Home-Based tour.



Note: Estimation made excluding the tour with NMT and Other as representative modes

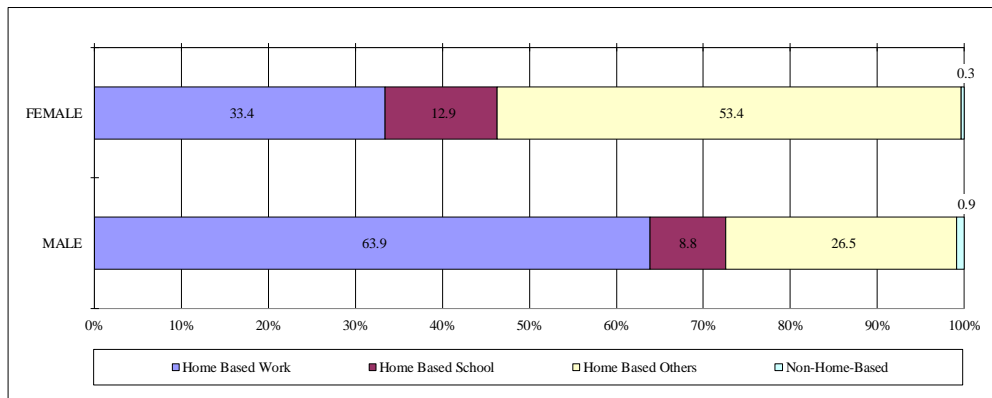
Source: JUTPI 2

**Figure 226 Tour Purpose Composition by Region of ADS Paper-Based**

### 3. Tour Purpose by Socioeconomic Group

#### - By Gender

More than half or 63.9% of male population made Home Based Work tour, which indicates many male respondents are worker. In contrast, the highest share of tour in female population amounts to 53.4% is made for Home Based Others tour. It can be inferred that many female samples are housewives or not workers.



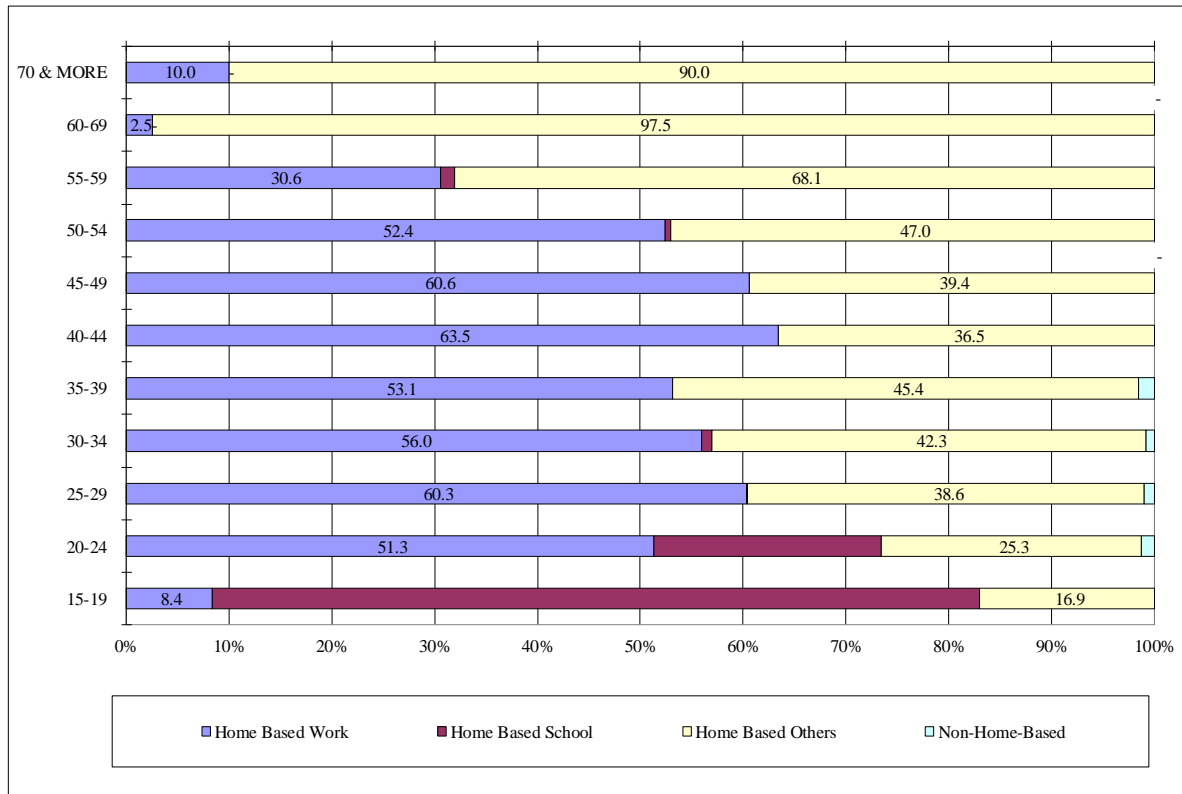
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 227 Tour Purpose Composition by Gender of ADS Paper-Based**

- By Age Group

From Figure 228, it can be inferred that the highest share of Home-Based Work tour is made by population in productive ages 20-54 years old. Meanwhile, the share of Home-Based School tour is likely occurred in age under 20 years old. Moreover, the Home-Based Others tour is made by all group of ages, especially those in 54 years old.



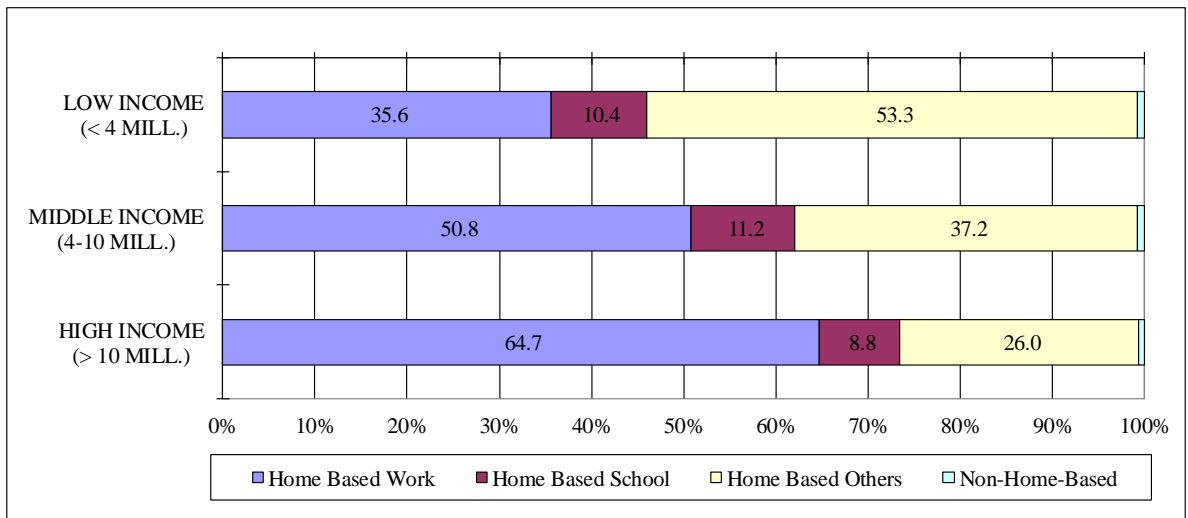
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 228 Tour Purpose Composition by Age Group of ADS Paper-Based**

- By Household Income Group

For Middle- and High-income level, the highest share of tour is made for work purpose with 50.8% and 64.7%, respectively. On the other hand, the highest share of tour for low income group is for Home Based Others with 53.3%. Despite its income level, the least share is occurred in Home Based School with less than 12% each.



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

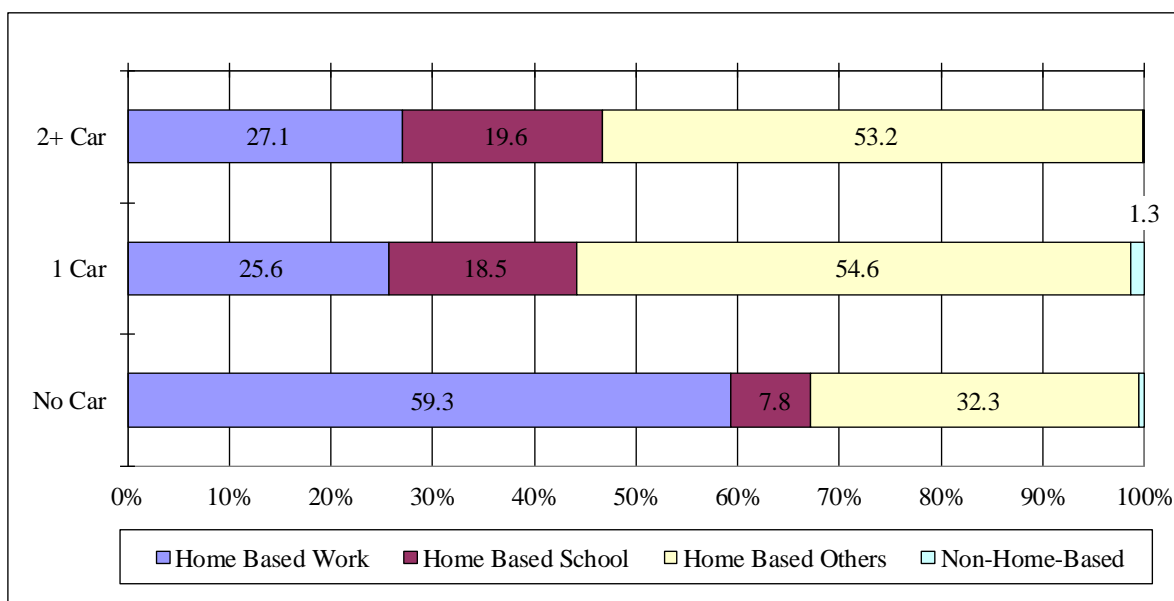
**Figure 229 Tour Purpose Composition by Household Income Group of ADS Paper-Based**

- By Vehicle Ownership

In terms of tour by car ownership, the highest share of samples with no car is for Home Based Work Tour with 59.3%. Meanwhile, those who owned at least one car have the highest share in Home Based Others tour that amounts to more than 50% of recorded tour.

The share pattern of tour by motorcycle ownership is quite similar with tour by car ownership. Samples without motorcycle have the highest share of Home-Based Work with 91.6% while those who owned only 1 motorcycle have the highest share with 60.6%. On the other hand, the highest Home-Based Others tours were made by samples who owned 2 motorcycles and 3 or more motorcycles have the share of 60.0% and 62.8%, respectively.

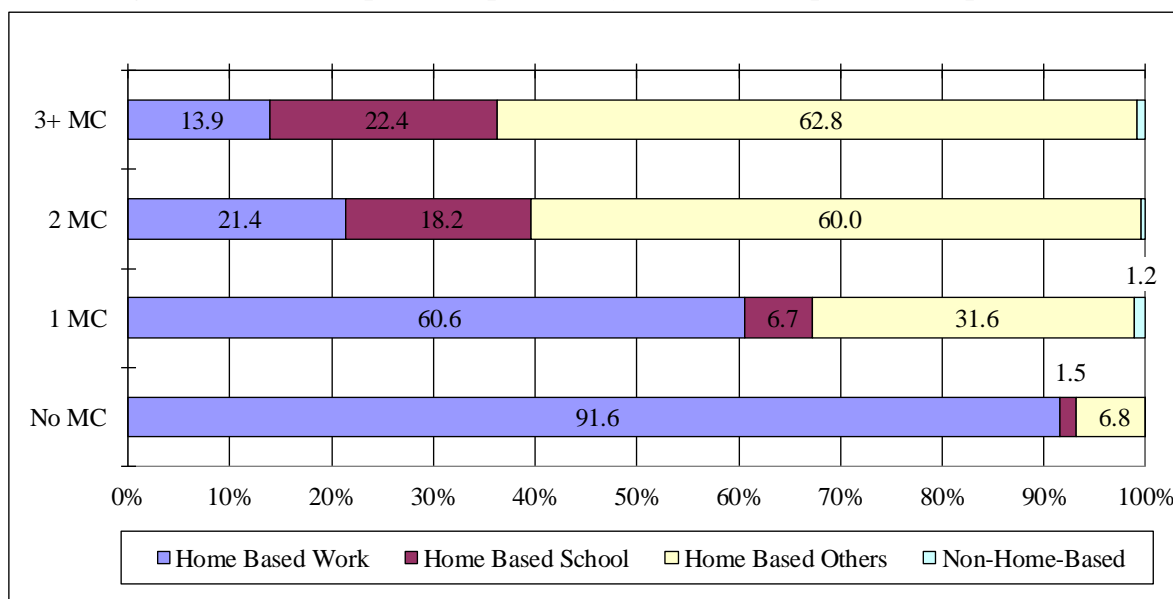




Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 230 Tour Purpose Composition by Car Ownership of ADS Paper-Based**



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 231 Tour Purpose Composition by Motorcycle Ownership of ADS Paper-Based**

#### 6.4.4.2 ADS MEILI

##### a. Demographic Features of the Collected Samples

Table 113 shows that from 4,000 sample households, a total of samples amounts to 12,375 (6,900 in DKI Jakarta and 5,475 in BODETABEK) and the highest number of samples is in Jakarta Timur, followed by Jakarta Selatan with the total of 2,129 and 1,699 persons, respectively. Average household sizes in DKI Jakarta and in BODETABEK were calculated at 3.07 and 3.13, respectively.

**Table 113 Population and Households by Kota/Kabupaten of ADS MEILI**

City/ Regency		Population	No. of HH	Ave.HH Size
<b>DKI Jakarta</b>	Jakarta Barat	1,100	383	2.87
	Jakarta Pusat	967	296	3.27
	Jakarta Selatan	1,699	568	2.99
	Jakarta Timur	2,129	694	3.07
	Jakarta Utara	1,005	308	3.26
	Sub Total	6,900	2,249	3.07
<b>BODETABEK</b>	Kabupaten Bekasi	489	162	3.02
	Kabupaten Bogor	637	208	3.06
	Kabupaten Tangerang	254	80	3.18
	Kota Bekasi	1,182	386	3.06
	Kota Bogor	872	270	3.23
	Kota Depok	1,148	326	3.52
	Kota Tangerang	408	156	2.62
	Kota Tangerang Selatan	485	163	2.98
	Sub Total	5,475	1,751	3.13
<b>TOTAL</b>	<b>12,375</b>	<b>4,000</b>	<b>3.09</b>	

Source: JUTPI 2

##### 1. Population by Gender and Age Group

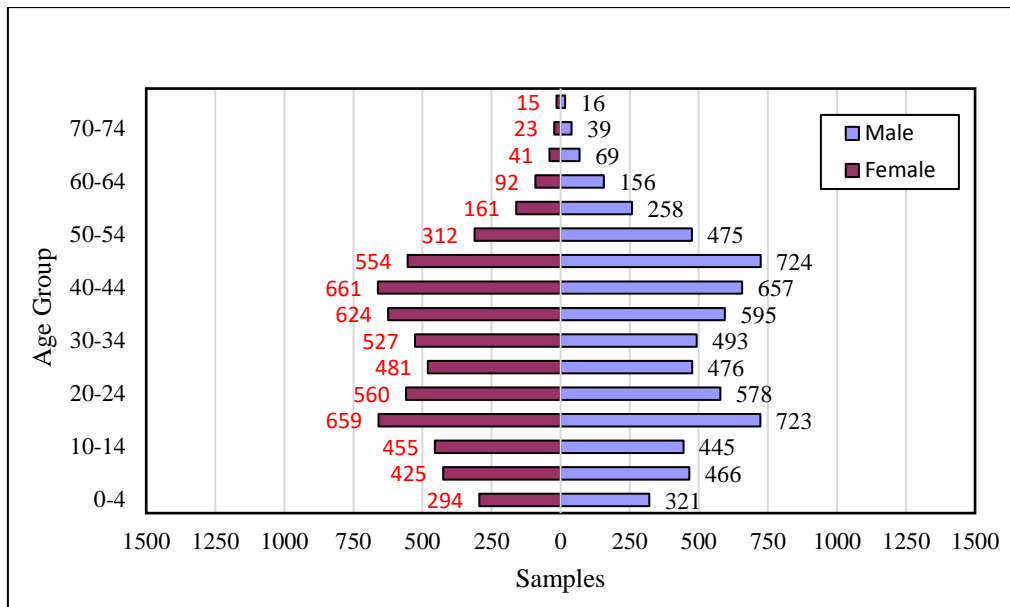
Of the total 12,375 samples, considering all ages, male and female account

for 52% and 48%, respectively. However, considering samples above 15 years old and above, the male accounts for 53% and female for 47%. By looking at sample's distribution according to age group, the highest proportion is found in a range aging 15-19 years old, followed by age group of 40-44 and 45-49 years old.

**Table 114 Population by Gender and Age Group of ADS MEILI**

Age Group	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
0-4	321	4.9	294	5.0	615	5.0
5-9	466	7.2	425	7.2	891	7.2
10-14	445	6.9	455	7.7	900	7.3
15-19	723	11.1	659	11.2	1,382	11.2
20-24	578	8.9	560	9.5	1,138	9.2
25-29	476	7.3	481	8.2	957	7.7
30-34	493	7.6	527	9.0	1,020	8.2
35-39	595	9.2	624	10.6	1,219	9.9
40-44	657	10.1	661	11.2	1,318	10.7
45-49	724	11.2	554	9.4	1,278	10.3
50-54	475	7.3	312	5.3	787	6.4
55-59	258	4.0	161	2.7	419	3.4
60-64	156	2.4	92	1.6	248	2.0
65-69	69	1.1	41	0.7	110	0.9
70-74	39	0.6	23	0.4	62	0.5
75+	16	0.2	15	0.3	31	0.3
<b>Total</b>	<b>6,491</b>	<b>100.0</b>	<b>5,884</b>	<b>100.0</b>	<b>12,375</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 232 Population by Age by Gender of ADS MEILI**

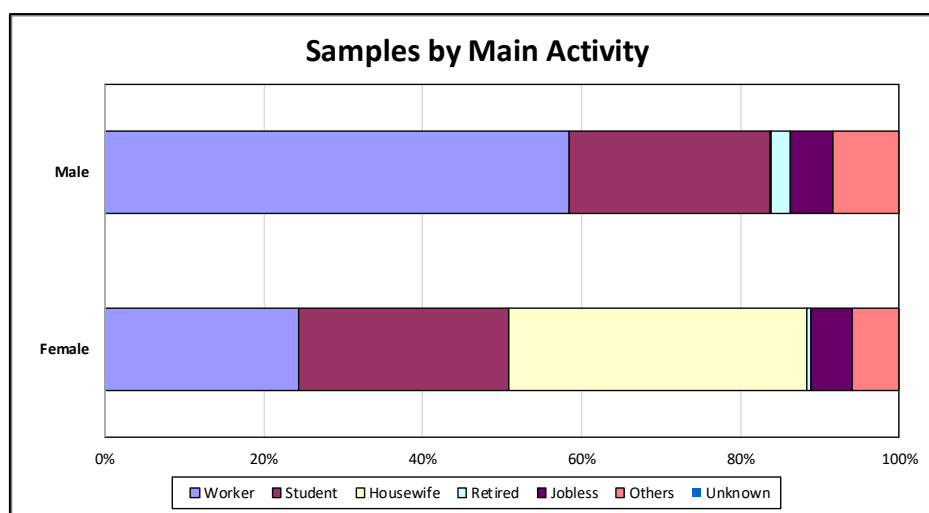
## 2. Population by Main Activity

Employment portion is significantly different depending on gender. As shown in Table 115, the portion of male worker is 58.4% while female worker is 24.4%. On the other hand, the share of female housewife is quite large, accounting for 37.6%. Results also disclose that regardless of gender, the same share of about 26% in terms of student. Jobless ratio is estimated at 5.3%, showing minor difference between male and female.

**Table 115 Number of Samples by Main Activity of ADS MEILI**

Main Activity	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Worker	3,793	58.4	1,433	24.4	5,226	42.2
Student	1,643	25.3	1,562	26.6	3,205	25.9
Housewife	12	0.2	2,210	37.6	2,222	18.0
Retired	149	2.3	26	0.4	175	1.4
Jobless	349	5.4	310	5.3	659	5.3
Others	545	8.4	342	5.8	887	7.2
Unknown	0	0.0	1	0.0	1	0.0
<b>Total</b>	<b>6,491</b>	<b>100.0</b>	<b>5,883</b>	<b>100.0</b>	<b>12,374</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 233 Samples by Main Activity of ADS MEILI**

### 3. Worker's Profile

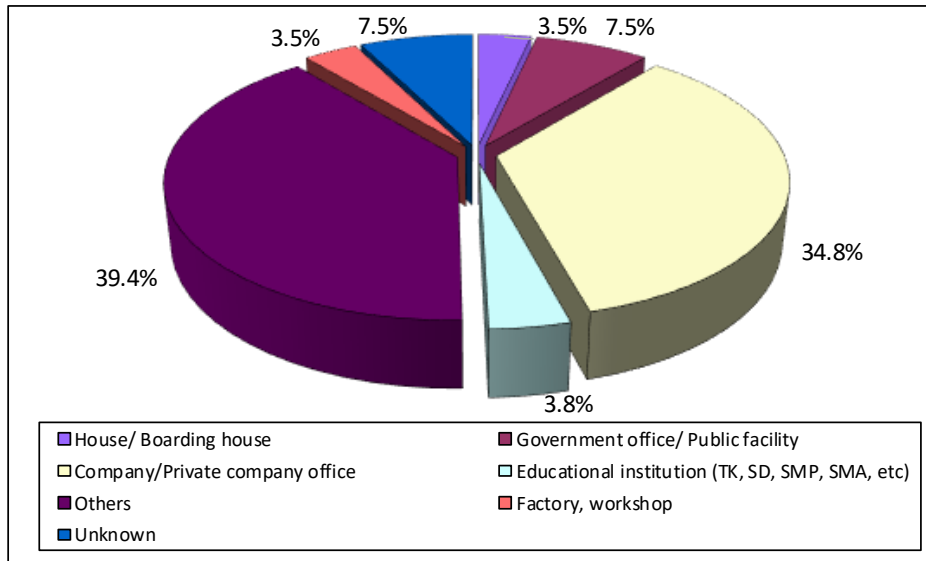
Looking at the worker's occupation in detail, the portion of other type of work is high. This might due to the respondents' who prefer not to mention type of work for privacy reason or unsure with the provided type of work option. Other than that, the portion of Administration staff (teller, data entry), Sales and Merchant, and Factory works/labors is the highests three among all. Workplace facilities for workers are dominated by company/private company office.

**Table 116 Number of Worker Samples by Occupation of ADS MEILI**

Type of Work	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Farmer, fisherman, miner	11	0.3	2	0.1	13	0.2
Factory works/labors	496	13.0	120	8.3	616	11.7
Craftman (jewelry, wood, stone)	32	0.8	6	0.4	38	0.7
Construction laborer	23	0.6	0	0.0	23	0.4
Industry/business owner	215	5.6	68	4.7	283	5.4
Sales, merchant	527	13.8	277	19.1	804	15.3
Professor, manager, director, etc	61	1.6	20	1.4	81	1.5

Type of Work	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Expert (technical, chemist, physics, biology), lecturer, teacher, trainer, etc	205	5.4	134	9.3	339	6.4
Armed forces/Police	36	0.9	4	0.3	40	0.8
Professionals (doctor, engineer, accountant, pilot, machinist)	176	4.6	78	5.4	254	4.8
Administration staff (teller, data entry)	543	14.3	346	23.9	889	16.9
Technician	201	5.3	18	1.2	219	4.2
Waiter, bartender	53	1.4	41	2.8	94	1.8
Goods transport driver (box car, goods truck, tank truck)	48	1.3	0	0.0	48	0.9
Public transport driver (including online transportation)	252	6.6	8	0.6	260	4.9
Private driver	56	1.5	2	0.1	58	1.1
Housemaid, office boy, cleaning service, gardener	35	0.9	32	2.2	67	1.3
Security officer	117	3.1	6	0.4	123	2.3
Porter (station, seaport, airport, warehouse, etc.)	24	0.6	2	0.1	26	0.5
Others	684	18.0	277	19.1	961	18.3
Unknown	14	0.4	7	0.5	21	0.4
<b>Total</b>	<b>3,809</b>	<b>100.0</b>	<b>1,448</b>	<b>100.0</b>	<b>5,257</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 234 Composition of Workplace Facilities of ADS MEILI**

**Table 117 Number of Samples by Workplace Facilities of ADS MEILI**

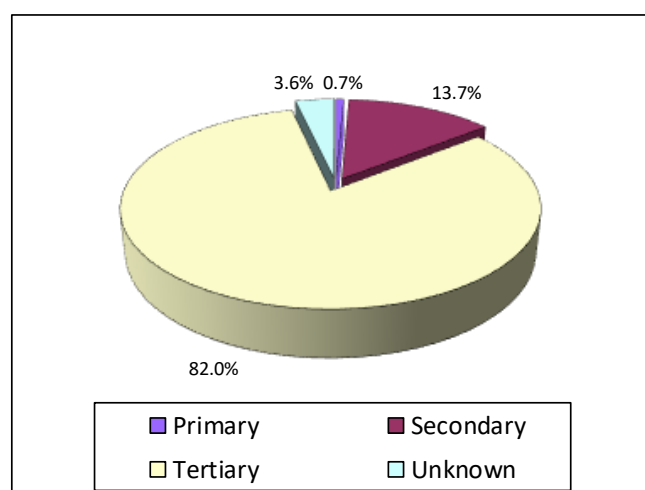
Type of Workplace	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
House/ Boarding house	33	2.8	29	4.8	62	3.5
Government office/ Public facility	92	7.8	42	7.0	134	7.5
Company/Private company office	422	35.9	196	32.7	618	34.8
Educational institution (TK, SD, SMP, SMA, etc)	30	2.5	37	6.2	67	3.8
Worship place (mosque, church, temple, etc)	2	0.2	0	0.0	2	0.1
Hospital, puskesmas, clinic	14	1.2	29	4.8	43	2.4
Hotel, lodge, entertainment place	24	2.0	15	2.5	39	2.2
Restaurant, food court, food stalls	17	1.4	12	2.0	29	1.6
Grocery store, traditional market, minimarket	41	3.5	22	3.7	63	3.5
Supermarket	6	0.5	5	0.8	11	0.6
Shopping center, plaza, mall, department store	24	2.0	22	3.7	46	2.6
Grocery market, central market	9	0.8	1	0.2	10	0.6
Factory, workshop	50	4.2	13	2.2	63	3.5
Warehouse, storage	21	1.8	3	0.5	24	1.4
Station, bus terminal, airport, seaport	19	1.6	1	0.2	20	1.1
Installation (gas, water, electricity)	7	0.6	1	0.2	8	0.5
Recreational facility, Sports facility	2	0.2	2	0.3	4	0.2
Parks, national park	1	0.1	3	0.5	4	0.2
Agriculture, forestry, mining, fishery site	3	0.3	0	0.0	3	0.2
Construction, building works site	30	2.5	8	1.3	38	2.1
Others	234	19.9	121	20.2	355	20.0

Type of Workplace	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Unknown	96	8.2	37	6.2	133	7.5
<b>Total</b>	<b>1,177</b>	<b>100.0</b>	<b>599</b>	<b>100.0</b>	<b>1,776</b>	<b>100.0</b>

Source: JUTPI 2

Figure 235 shows that some workers are highly engaged in tertiary activities for 82%, whereas the rest belong to the secondary sector which amounts for 13.7% and primary sectors itself has very small portion. The tertiary sector is further strengthened in DKI Jakarta for about 83.9%, but the portion of the primary and secondary sectors becomes larger in Kabupaten Bekasi, Kabupaten Tangerang, and Kota Tangerang.





Source: JUTPI 2

**Figure 235 Employment by Industrial Sector of ADS MEILI**

**Table 118 Number of Worker Samples by Industry of ADS MEILI**

Work Field/ Industry	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Agriculture/forestry/fishery	7	0.5	2	0.3	9	0.4
Mining/excavation/drilling	7	0.5	1	0.1	8	0.3
Industry/factory	168	10.8	63	8.3	231	10.0
Building/construction project	69	4.4	16	2.1	85	3.7
Transportation & communication	219	14.1	40	5.3	259	11.2
Bank, financial institution	60	3.9	37	4.9	97	4.2
Large and retail trade	231	14.9	161	21.2	392	17.0
Electricity, gas & drinking water	32	2.1	4	0.5	36	1.6
Central government	25	1.6	13	1.7	38	1.6
Regional government	43	2.8	26	3.4	69	3.0
Armed forces/police	8	0.5	0	0.0	8	0.3
Rental services	16	1.0	12	1.6	28	1.2
Services (hotel, entertainment, research, doctor, consultant, spirituality, etc)	238	15.3	149	19.6	387	16.7
Others	360	23.2	221	29.1	581	25.1
Unknown	69	4.4	14	1.8	83	3.6
<b>Total</b>	<b>1,552</b>	<b>100.0</b>	<b>759</b>	<b>100.0</b>	<b>2,311</b>	<b>100.0</b>

Source: JUTPI 2

**Table 119 Employment by Industrial Sector and by Region of ADS MEILI**

Region	Primary		Secondary		Tertiary		Unknown		Total	
	Sum	%	Sum	%	Sum	%	Sum	%	Sum	%
DKI Jakarta	9	0.7	130	10.5	1035	83.9	59	4.8	1233	100.0
Kabupaten Bekasi	0	0.0	30	30.9	66	68.0	1	1.0	97	100.0
Kabupaten Bogor	0	0.0	24	17.6	109	80.1	3	2.2	136	100.0
Kabupaten Tangerang	0	0.0	22	36.7	38	63.3	0	0.0	60	100.0
Kota Bekasi	0	0.0	49	18.0	212	77.9	11	4.0	272	100.0
Kota Bogor	4	2.6	16	10.5	131	86.2	1	0.7	152	100.0
Kota Depok	4	2.1	19	9.9	163	85.3	5	2.6	191	100.0
Kota Tangerang	0	0.0	20	24.7	59	72.8	2	2.5	81	100.0
Kota Tangerang Selatan	0	0.0	6	6.7	82	92.1	1	1.1	89	100.0
<b>Total</b>	<b>17</b>	<b>0.7</b>	<b>316</b>	<b>13.7</b>	<b>1895</b>	<b>82.0</b>	<b>83</b>	<b>3.6</b>	<b>2311</b>	<b>100.0</b>

Source: JUTPI 2

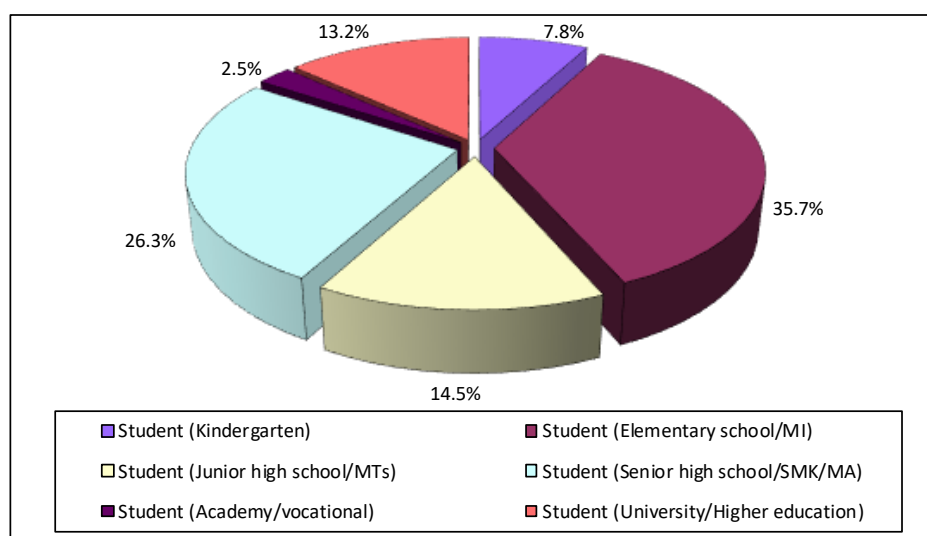
#### 4. Student's Profile

Table 120 shows the number of students by educational level most of which are dominated by elementary school, followed by senior high and then university/higher education student for 35.7%, 26.3%, and 13.2%, respectively.

**Table 120 Number of Samples by Education Level of ADS MEILI**

School Type	Sum	%
Student (Kindergarten)	250	7.8
Student (Elementary school/MI)	1,143	35.7
Student (Junior high school/MTs)	466	14.5
Student (Senior high school/SMK/MA)	843	26.3
Student (Academy/vocational)	79	2.5
Student (University/Higher education)	424	13.2
<b>Total</b>	<b>3,205</b>	<b>62.5</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 236 Number of Students by Education Level of ADS MEILI**

## b. Household Features

### 1. Housing Building Type

Result shows that housing building type, which is strongly related to household income level and land use, is highly dominated by permanent housing throughout DKI Jakarta and BODETABEK, followed by semi-permanent housing. Compared to JABODETABEK, there is no substantial differences with DKI Jakarta.

**Table 121 Housing Type Distribution of ADS MEILI**

Housing Type	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Permanent	2117	94.13%	1678	95.83%	3795	94.88%
Semi-Permanent	88	3.91%	41	2.34%	129	3.23%
Flat	4	0.18%	1	0.06%	5	0.13%
Apartment	5	0.22%	2	0.11%	7	0.18%
Boarding house	24	1.07%	25	1.43%	49	1.23%
Shop house	3	0.13%	1	0.06%	4	0.10%
Others	8	0.36%	3	0.17%	11	0.28%
<b>Total</b>	<b>2249</b>	<b>100.00%</b>	<b>1751</b>	<b>100.00%</b>	<b>4000</b>	<b>100.00%</b>

Source: JUTPI 2

## 2. Household Income

As shown in Table 122, the portion of middle-income group, which can be defined as households earning between 4 to 10 million rupiah per month, is substantially high and it amounts to more than 50%. This trend is evenly throughout DKI Jakarta and BODETABEK.

**Table 122 Monthly Household Income of ADS MEILI**

Household Income	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Less than 1.500.000	13	0.58%	32	1.83%	45	1.13%
1.500.000-1.999.000	19	0.84%	22	1.26%	41	1.03%
2.000.000-2.499.999	39	1.73%	41	2.34%	80	2.00%
2.500.000-2.999.999	103	4.58%	77	4.40%	180	4.50%
3.000.000-3.499.999	250	11.12%	171	9.77%	421	10.53%
3.500.000-3.999.999	464	20.63%	247	14.11%	711	17.78%
4.000.000-4.499.999	415	18.45%	235	13.42%	650	16.25%
4.500.000-4.999.999	232	10.32%	182	10.39%	414	10.35%
5.000.000-5.999.999	271	12.05%	202	11.54%	473	11.83%
6.000.000-6.999.999	133	5.91%	126	7.20%	259	6.48%
7.000.000-7.999.999	73	3.25%	78	4.45%	151	3.78%
8.000.000-8.999.999	68	3.02%	73	4.17%	141	3.53%
9.000.000-9.999.999	52	2.31%	53	3.03%	105	2.63%
10.000.000-11.999.999	54	2.40%	84	4.80%	138	3.45%
12.000.000-13.999.999	12	0.53%	21	1.20%	33	0.83%
14.000.000-15.999.999	16	0.71%	32	1.83%	48	1.20%
16.000.000-17.999.999	8	0.36%	10	0.57%	18	0.45%
18.000.000-19.999.999	3	0.13%	9	0.51%	12	0.30%
20.000.000-22.499.999	6	0.27%	21	1.20%	27	0.68%
22.500.000-24.999.999	4	0.18%	3	0.17%	7	0.18%
25.000.000-29.999.999	3	0.13%	9	0.51%	12	0.30%
30.000.000-34.999.999	6	0.27%	8	0.46%	14	0.35%
35.000.000-39.999.999	0	0.00%	6	0.34%	6	0.15%
More than 40.000.000	5	0.22%	9	0.51%	14	0.35%
<b>Total</b>	<b>2249</b>	<b>100.00%</b>	<b>1751</b>	<b>100.00%</b>	<b>4000</b>	<b>100.00%</b>

Source: JUTPI 2

### 3. Vehicle Ownership

Out of 4,000 households, 664 households or 16.6% own car(s). Table 123 presents the breakdown of household car ownership by number of cars owned. The number of households with more than one car is 93 households, accounting for 2.3%. Average number of cars owned per car-owning household is 1.2.

**Table 123 Car Ownership of ADS MEILI**

Car Ownership	No. of HH	%	Total Cars
0	3336	83.4%	0
1	571	14.3%	571
2+	93	2.3%	201
Total	4000	100.0%	772
<b>Average No. of Cars Owned per Own HHs</b>			<b>1.2</b>

Source: JUTPI 2

On the other hand, 3,408 households or 85.2% own motorcycle out of 4,000 households. Table 124 shows the breakdown of household motorcycle ownership by number of motorcycles owned. The number of households with more than one motorcycle is 1,391 households, accounting for 35%. Average number of motorcycles owned per motorcycle-owning household is 1.5.

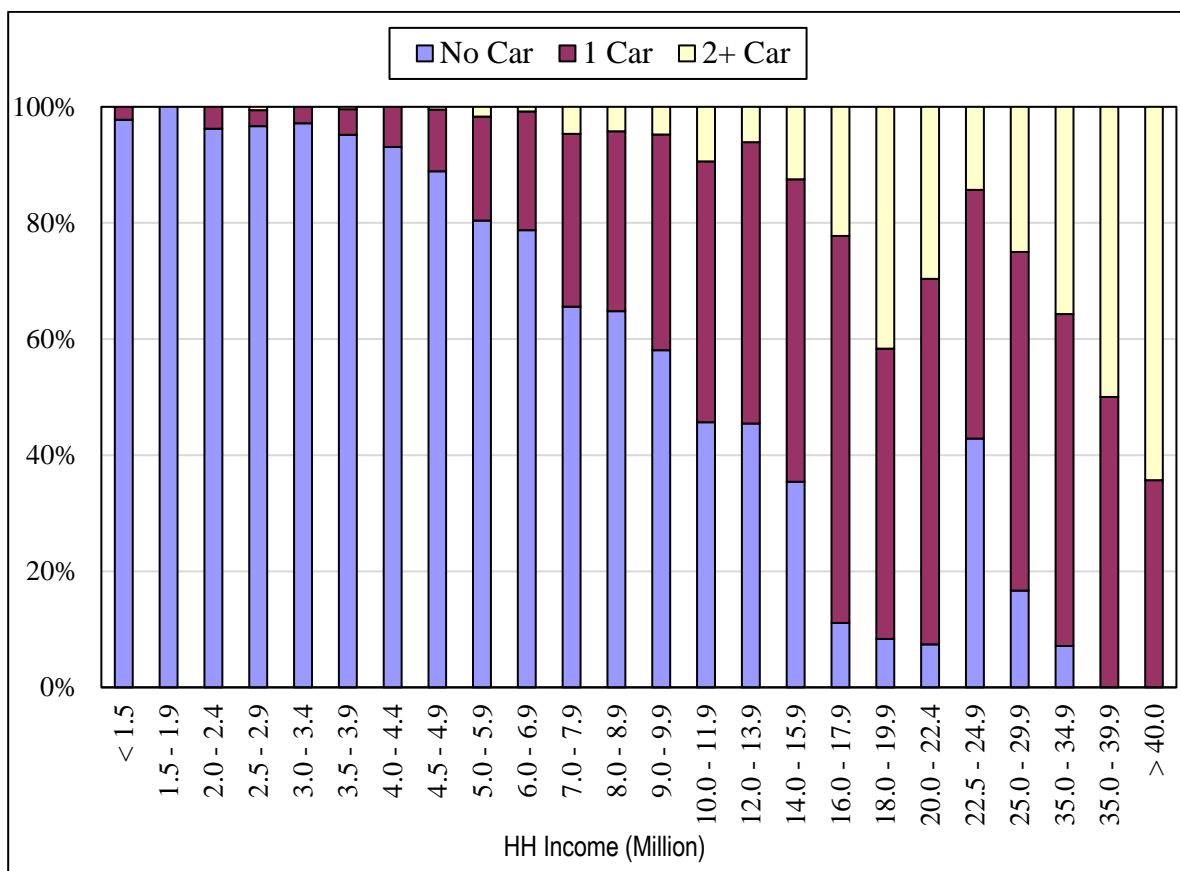
**Table 124 Motorcycle Ownership of ADS MEILI**

Motorcycle Ownership	No. of HH	%	Total Motorcycles
0	592	14.8%	0
1	2017	50.4%	2017
2	1085	27.1%	2170
3+	306	7.7%	1013
Total	4000	100.0%	5200
<b>Average No. of Cars Owned per Own HHs</b>			<b>1.5</b>

Source: JUTPI 2

#### 4. Vehicle Ownership by Household Income

In general, income factor has strong impact on vehicle ownership. Figure 237 illustrates the distribution of car ownership by income levels. Clearly, the car ownership grows as income level goes up. Though the share is low, there is a tendency of lower-income households already have one car. It should also be noted that, if monthly household income exceeds 5 million rupiah, they begin to have capability to own more than one car.

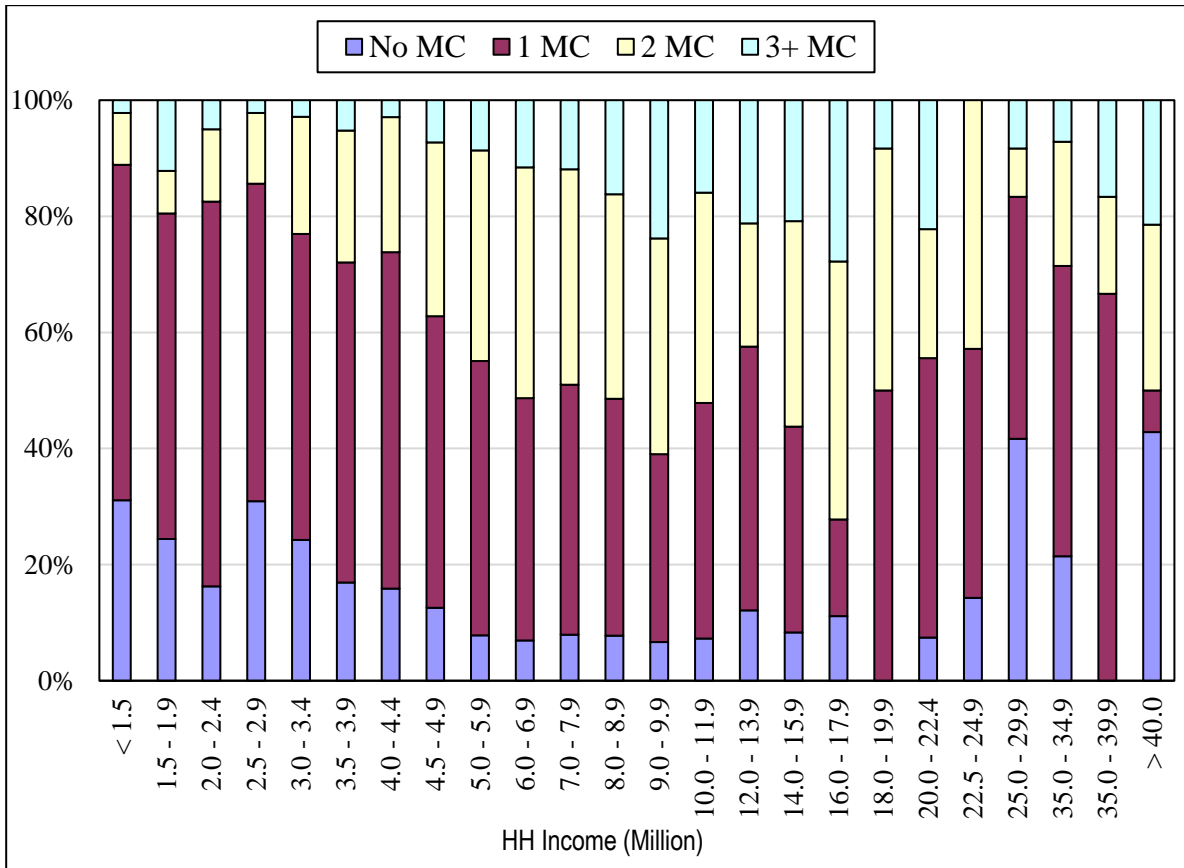


Source: JUTPI 2

**Figure 237 Car Ownership by Income Level of ADS MEILI**

Figure 238 shows the distribution of motorcycle ownership by income levels. Same as the tendency of car ownership, motorcycle ownership grows as income level goes up. However, this figure shows that 80% of the lower-income households have at least 1 motorcycle and even higher-

income households seems prefer to have more and more motorcycles also including car(s). The share of no motorcycle households is only around 20-30% throughout household income groups. This remarkable tendency of motorcycle ownership may occur due to the simple purchase scheme and affordable price of motorcycle.



Source: JUTPI 2

**Figure 238 Motorcycle Ownership by Income Level of ADS MEILI**

**c. Trip**

**1. Tour Purpose in JABODETABEK in General**

Considering the origin and destination, the purposes were rearranged into 3 home-based purposes as shown in Table 125. Hereafter, analyses by purpose is carried out by using these home-based purposes except for “Non-Home-Based” in which the origin of the tour is not Home.

In the Table 125, total tour and the shares are shown by purpose. Most of

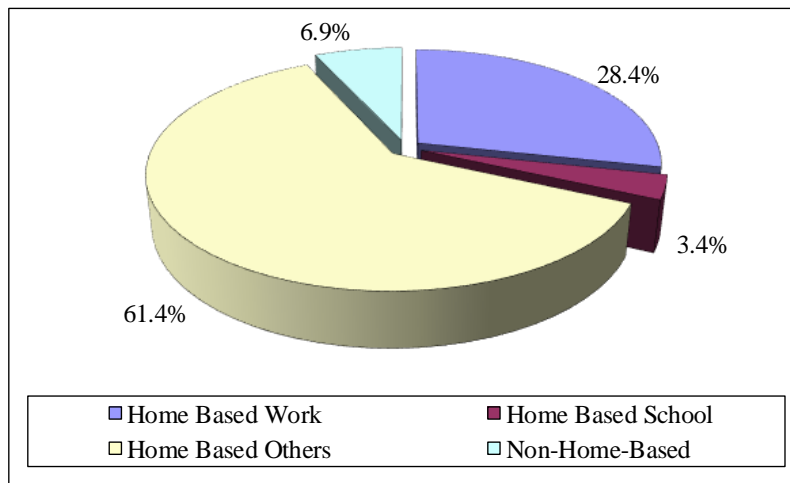
trips are dominated by “Home Based Others” and “Home Based Work”, accounting for 61.4% and 28.4% respectively, followed by “Non-Home-Based” and “Home Based School” tour.

**Table 125 Tour Purpose of ADS MEILI**

Tour Type	No. of Tour	% Share
Home Based Work	4,073	28.4
Home Based School	483	3.4
Home Based Others	8,813	61.4
Non-Home-Based	991	6.9
<b>Grand Total</b>	<b>14,360</b>	<b>100.0</b>

Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

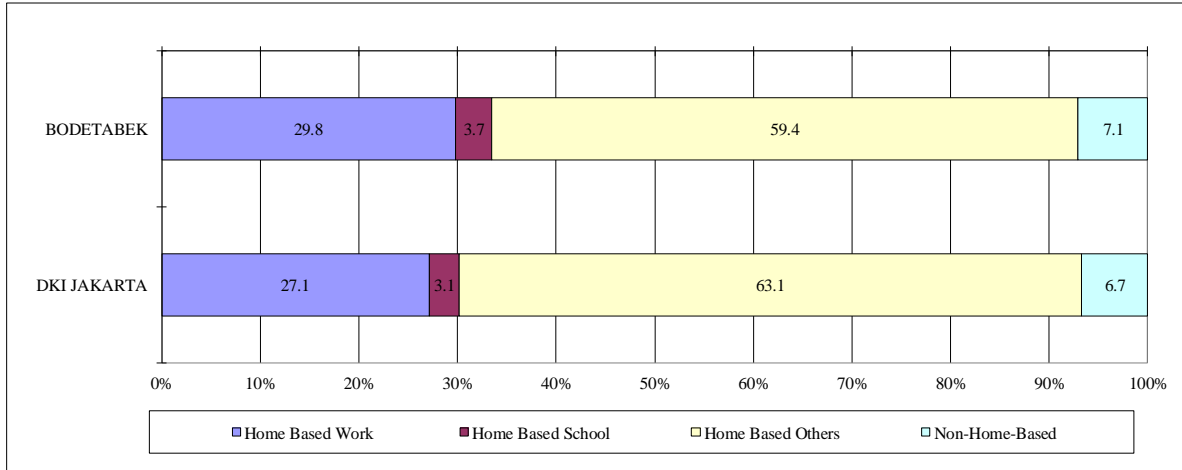
**Figure 239 Trip Purpose Composition of ADS MEILI**

**2. Tour Purpose by Region**

Figure 240 presents tour purpose comparison between DKI Jakarta and BODETABEK. In general, there is no difference of tour purpose difference between JABODETABEK and DKI Jakarta. Both JABODETABEK and DKI Jakarta tour purpose shares show that the “Home Based Others” tour



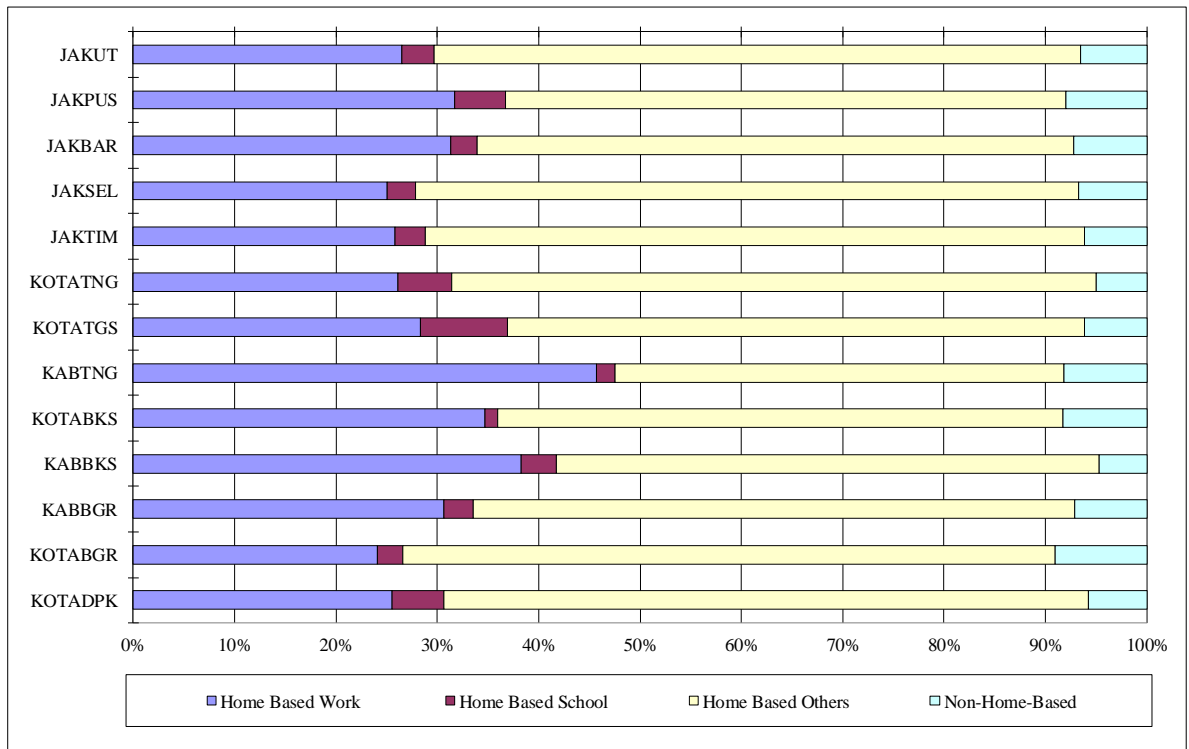
has the highest share, accounts of 60%, followed by “Home Based Work”, “Non-Home Based”, and “Home Based School”.



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 240 Tour Purpose Comparison between DKI Jakarta and BODETABEK of ADS  
 MEILI**



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

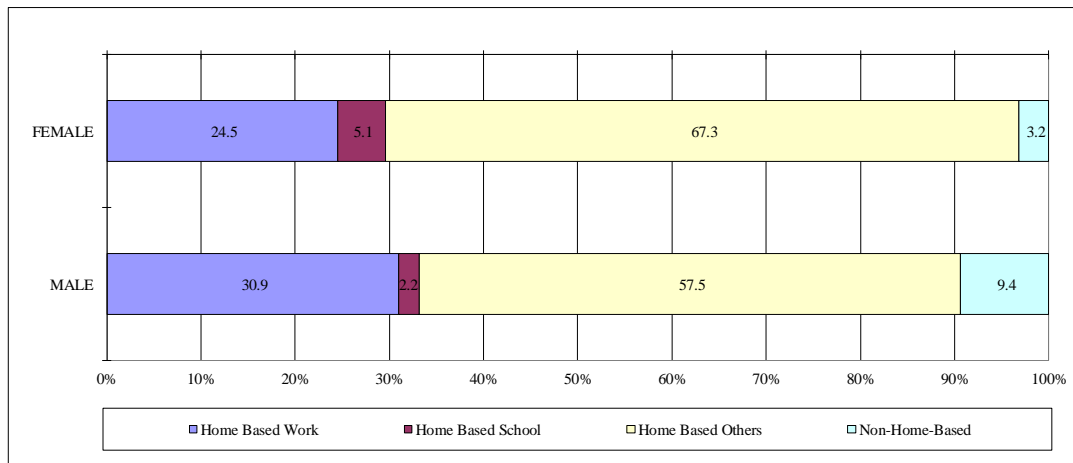
**Figure 241 Tour Purpose Composition by Region of ADS MEILI**

Figure 241 shows tour purpose composition by region. In general, the portion of “Home Based Work” tour is high in Kabupaten Tangerang, Kota Bekasi, and Kabupaten Bekasi. However, “Home Based Others” tour is higher in Kotas, especially in Jakarta Selatan, Jakarta Timur, Jakarta Utara, Kota Bogor, and Kota Depok.

### 3. Tour Purpose by Socioeconomic Group

#### - By Gender

As for male, the portion of “Home based Work” tour is high. On the other hand, the share of “Home Based Others” is high for female.



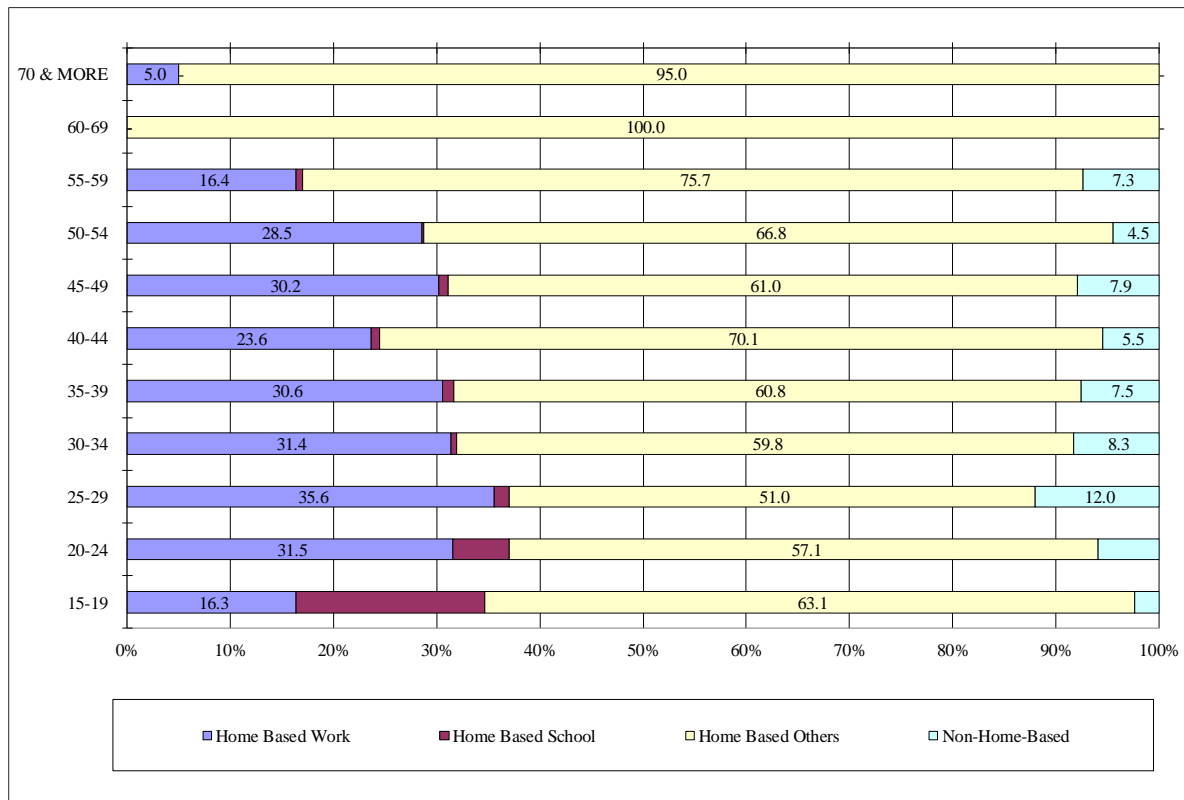
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 242 Tour Purpose Composition by Gender of ADS MEILI**

- By Age Group

As for age group, “Home Based Work” has share of over 20% from age group 20-24 until 50-54. The share of “Home Based Others” Tour has similar proportion for age group 15-54 but it increases for age 55 and above.



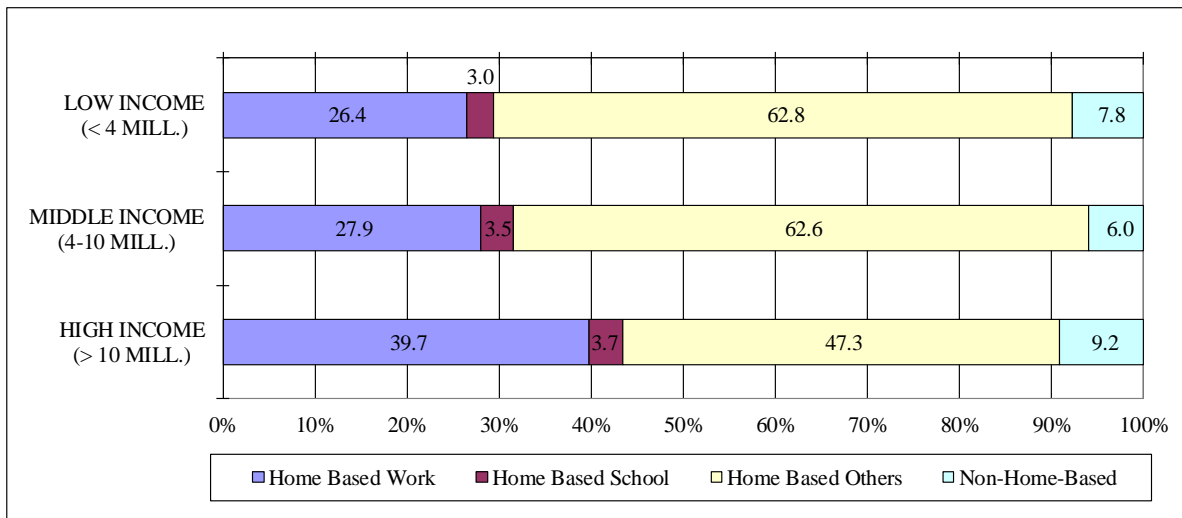
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 243 Tour Purpose Composition by Age Group of ADS MEILI**

- By Household Income Group

It is known from Figure 244 that the number of “Home Based Work” Tour increases as household income grows. For “Home Based School” the proportion is quite similar throughout income groups, just like “Home Based Others” for lower and medium household income level, but it decreases when the income level increases.



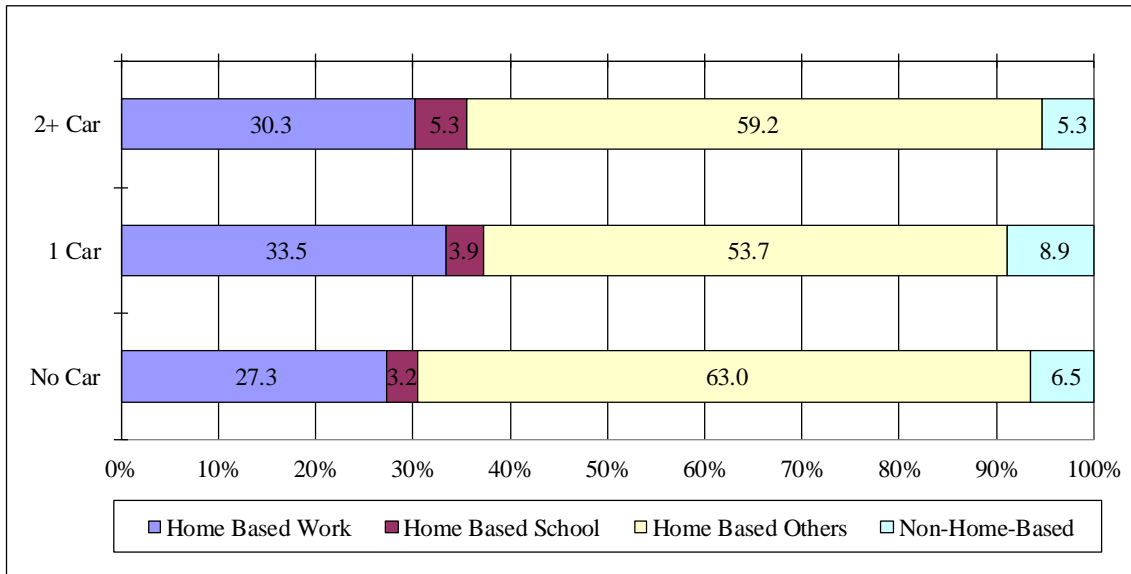
Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 244 Tour Purpose Composition by Household Income Group of ADS MEILI**

- By Vehicle Ownership

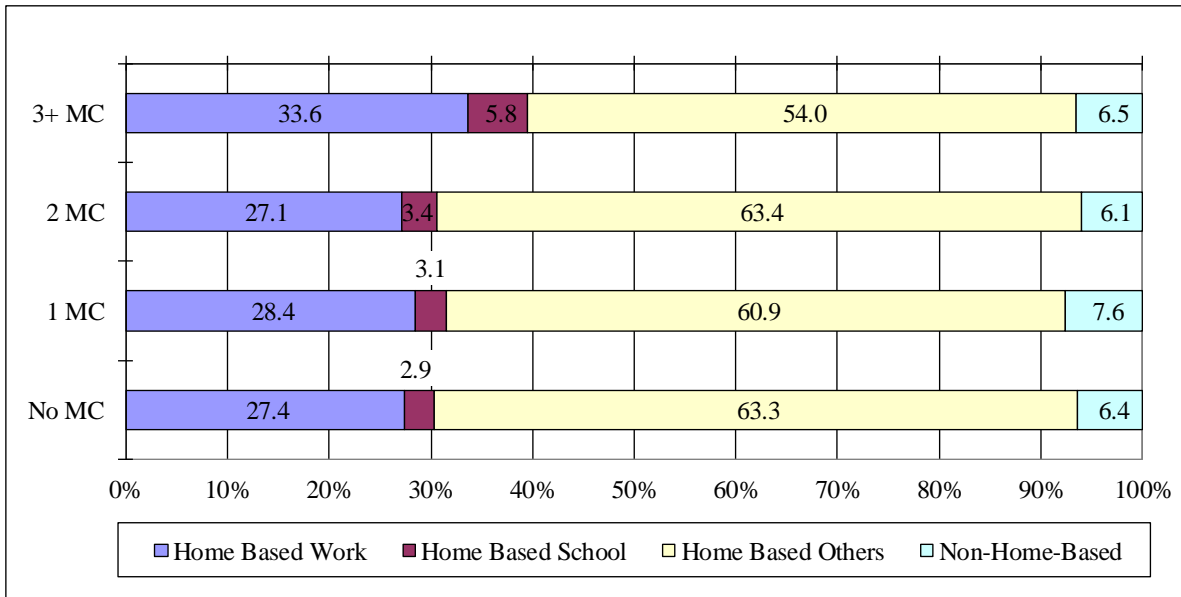
As shown in tour purpose composition by household income, the share of “Home Based Work” tour increases as vehicle ownership grows in term of both car and motorcycle.



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 245 Tour Purpose Composition by Car Ownership of ADS MEILI**



Note: Estimation made excluding the tour with NMT and Other as representative modes

Source: JUTPI 2

**Figure 246 Tour Purpose Composition by Motorcycle Ownership of ADS MEILI**

## **6.5 Combined Database of JUTPI Phase 1 and JUTPI Phase 2**

### **6.5.1 Database of Updated CTS and ADS**

#### **6.5.1.1 Background**

A large-scale transport survey, called Commuter Survey (CTS), was conducted in JUTPI 1 in 2010 to around 180,000 households and 317,000 commuters to update the socioeconomic data of households and individuals like the population census data. In addition to Activity – Travel Diary Survey (ADS) in 2018, this large-scale database is utilized to produce current database in 2018. Updated database of CTS in JUTPI Phase 1 and ADS in JUTPI 2 are combined into one final database of JUTPI 2.

#### **6.5.1.2 Panel Data**

To combine both data, database of Commuter Survey will be updated using panel data or list of households who were surveyed both in 2010 and 2018. The total of 250 households which participated in both surveys are analyzed by comparing the changes in several targeted indices. The targeted indices are household size, income, vehicle ownership, and information about moving to other area. The other targeted indices are related to the household member, such as age, main activity, workplace, and mode to commute. These indices are compared by effective time (2010 or 2018) and place (DKI Jakarta or BODETABEK) by clarifying the reason of change and issue in the current situation. The comparison of each index can be seen in the following section.

##### **a. Comparison of Panel Data by Household Size**

Decreasing of household size over the last 8 years may occurs due to the possibility of family member (“child” in JUTPI 1) that moved to other place from existing address (build a new family). Meanwhile, the possibility of increasing of household size because of childbirth exists. It is possible that family member deceased has increased the number of households with only one member (living alone).

In average, increasing of household size occurs both in DKI Jakarta and BODETABEK area. From the perspective of region, families in DKI Jakarta is composed of 3 or 4 persons, while families in BODETABEK area mainly has 5 or more person.



**Table 126 Comparison of Panel Data by Household Size**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
HH size	1	0%	6%	6%	7%	5%	-1%
	2	9%	9%	0%	8%	10%	2%
	3	27%	21%	-6%	18%	25%	6%
	4	31%	37%	6%	36%	39%	3%
	5	22%	17%	-5%	20%	13%	-6%
	6	9%	8%	-1%	8%	6%	-2%
	>=7	2%	2%	0%	3%	1%	-2%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

### b. Comparison of Panel Data by Household Income

Over the last 8 years, the percentage of HH monthly income below 6 million is decreasing while above 6 million is increasing. This trend indicates an increase in income for most of the observed household.

Insignificant difference is shown between DKI Jakarta and BODETABEK area (higher income value is shown for DKI Jakarta area). Share of Housholds with monthly income above 10 million in BODETABEK is higher than DKI Jakarta area.

**Table 127 Comparison of Panel Data by Household Income**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
HH monthly Income	< 1.5M	18%	2%	-16%	2%	1%	-1%
	1.5-6.0M	69%	54%	-16%	52%	57%	5%
	6.0-10.0M	9%	22%	13%	20%	25%	4%
	10.0M<	4%	21%	16%	24%	15%	-9%
	Unknown	0%	2%	2%	2%	2%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

### c. Comparison of Panel Data by Car Ownership

The share of households without car is decreased since 2010. It means more households have owned one or more car. In region perspective, there are more households with no car in DKI Jakarta than in BODETABEK area. The number of household Ownership (at least) 1 car in BODETABEK area is higher than in DKI Jakarta area. It may be caused by wider area and insufficient public transport in BODETABEK area.

**Table 128 Comparison of Panel Data by Car Ownership**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
Car Owning	0	79%	63%	-16%	53%	79%	26%
	1	18%	30%	12%	38%	18%	-21%
	2	3%	5%	2%	7%	2%	-5%
	3	0%	1%	1%	1%	1%	0%
	4	0%	0%	0%	0%	0%	0%
	more than 5	0%	0%	0%	0%	0%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### d. Comparison of Panel Data by Motorcycle Ownership

In general, the number of motorcycles is increasing compared to 8 years ago (1 motorcycle per household is not enough). It is affirmed by the share of households without motorcycle which has decreased since 2010.

Households in both DKI Jakarta and BODETABEK area tend to have more motorcycle than car. In both area, there is at least one motorcycle owned by most of households. Compared to DKI Jakarta, the share of households owned more than 2 or more motorcycle is higher in BODETABEK area

**Table 129 Comparison of Panel Data by Motorcycle Ownership**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
MC Owning	0	14%	8%	-6%	8%	7%	-1%
	1	51%	37%	-13%	33%	44%	11%
	2	24%	37%	13%	39%	34%	-5%
	3	10%	14%	5%	16%	11%	-5%
	4	1%	3%	2%	3%	2%	-1%
	more than 5	1%	1%	0%	1%	1%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

**e. Comparison of Panel Data by Household Movement**

Insignificant changing of share since 2010 indicates some households in DKI Jakarta and BODETABEK area are moving within the same area. Compared to BODETABEK area, more households in DKI Jakarta are moving within the same area.

**Table 130 Comparison of Panel Data by Household Movement**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
Moving from in 8 years	DKI	47%	49%	2%	21%	95%	75%
	Kota/Kab Bekasi	15%	18%	4%	29%	0%	-29%
	Kota/Kab Bogor	4%	7%	4%	9%	5%	-4%
	Kota/Kabu Tangerang/Selatan	22%	20%	-2%	32%	0%	-32%
	Kota Depok	5%	5%	0%	9%	0%	-9%
	Others	7%	0%	-7%	0%	0%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### f. Comparison of Panel Data by Household-member's Age

From 2010 to 2018, the percentage of age range years of 17 and above is increasing simply because of the family member is getting older. Composition of each age range between DKI Jakarta and BODETABEK area is quite similar.

**Table 131 Comparison of Panel Data by Household-member's Age**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
Age (person)	<5 year	7%	3%	-4%	3%	2%	-1%
	5-17 years	25%	20%	-6%	19%	20%	1%
	17-	68%	78%	10%	78%	78%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### g. Comparison of Panel Data by Household-member's Main Activity

Since 2010, the percentage of workers is increasing while the share of housewife and student are decreasing. This also indicates the trend of 'working parent' due to increasing of living cost or students who start to work.

In region perspective, the number of workers is higher than the number of students in both DKI Jakarta and BODETABEK area. Furthermore, it can be seen that the number of workers in DKI Jakarta is greater than in BODETABEK area which indicating a higher availability of job opportunities in DKI Jakarta compared to BODETABEK area.

**Table 132 Comparison of Panel Data by Household-member's Main Activity**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
HH Activities (person)	Worker	37%	40%	3%	39%	42%	2%
	Students	33%	31%	-2%	32%	30%	-2%
	Housewife	22%	19%	-3%	19%	18%	-1%
	Retired	3%	4%	1%	4%	4%	0%
	No job	5%	6%	1%	6%	7%	1%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### **h. Comparison of Panel Data by Workplace of Head of Household**

In the last 8 years, no changing on household head workplace is occurred in DKI Jakarta area, yet it is dominating compared to other area. It means, household heads' workplaces are still concentrated in DKI Jakarta even from 8 years ago. It is also shown in the Table 133 that there is no significant changing on household head's workplace who lives in BODETABEK area.

Most of household head's workplaces are located in DKI Jakarta. Almost all of household heads' who are living in DKI area have workplace in DKI Jakarta. Meanwhile, household heads' workplace who are living in BODETABEK area is spreading evenly throughout BODETABEK area.

**Table 133 Comparison of Panel Data by Workplace of Head of Household**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
Hhead Workplace	DKI	56%	56%	0%	38%	91%	53%
	Kota/Kab Bekasi	10%	13%	3%	18%	2%	-16%
	Kota/Kab Bogor	10%	11%	1%	15%	2%	-13%
	Kota/Kabu Tangerang/Selatan	19%	17%	-2%	23%	4%	-19%
	Kota Depok	4%	4%	0%	6%	0%	-6%
	Others	1%	0%	-1%	0%	0%	0%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### i. Comparison of Panel Data by Mode Used by Head of Household

There are 3 mode options that is used by head of household to go to work, which are walking, private vehicle, and public vehicle. A decreasing trend in walking to office can be seen in the last 8 years. Meanwhile, the private vehicle usage is still dominant and increasing. On the other hand, the percentage of public transport usage is still considered too low even though it has increased since 2010.

Household heads in both DKI Jakarta and BODETABEK area prefer to use private vehicle than public vehicle to commute with higher value is shown for DKI Jakarta area. Meanwhile, more household heads in BODETABEK use public transport than those in DKI Jakarta area.



**Table 134 Comparison of Panel Data by Mode Used by Head of Household**

250HH		Difference by Time			Difference by region		
		JUTPI1	JUTPI2	2018-2010	JUTPI2(2018)		
		Total	Total		Bodetabek	DKI	Difference
Hhead Mode	Walk	13%	3%	-9%	3%	5%	2%
	Private	79%	82%	2%	79%	86%	8%
	Public	8%	15%	7%	19%	9%	-9%

Note:

(green), + value: Result of JUTPI 2 > JUTPI 1 (increasing)

(Orange), - value: Result of JUTPI 2 < JUTPI 1 (decreasing)

(pink), + value: Result of DKI Jakarta area > BODETABEK area

(blue), - value: Result of DKI Jakarta area < BODETABEK area

Source: JUTPI 2

#### j. Cross Analysis by Household Income

In Table 135, there is no significant changing in the size of households for low- and middle-income household while decrement happened for high-income group. On the other hand, car ownership in each income class household is showing an increasing trend, especially for the low-income group. The car ownership trend is slightly different from the trend of motorcycle ownership. Unlike the low- and middle-income household, which is showing an increasing tendency, high-income household is showing a decreasing trend of motorcycle ownership. The cross analysis by household income is as follows.

**Table 135 Cross Analysis of Panel Data by Household Income**

Income Class (as of JUTPI1) (Rp./month)	household size			the number of cars			the number of motorcycles			HH income		
	JUTPI1	JUTPI2	Growth (2018/2010)	JUTPI1	JUTPI2	Growth (2018/2010)	JUTPI1	JUTPI2	Growth (2018/2010)	JUTPI1	JUTPI2	Growth (2018/2010)
Low (< 1.5M)	3.90	4.06	1.04	0.02	0.31	13.13	0.79	1.31	1.67	0.96	5.32	5.51
Mid (1.5-6.0M)	3.91	3.83	0.98	0.20	0.46	2.27	1.44	1.72	1.19	3.29	7.43	2.26
High (> 6.0M)	4.67	3.36	0.72	0.83	1.00	1.20	1.80	1.55	0.86	9.22	11.46	1.24

Source: JUTPI 2

### 6.5.1.3 Updating Database of CTS in JUTPI 1

From the comparison of several indices in JUTPI 1 and JUTPI 2 over the last 8 years, the growth and increment of indices can be calculated. To update the database of CTS in JUTPI 1, the growth factor will be utilized for updating household size, household monthly income, and number of motorcycles. Meanwhile, the increment value will be used to update the number of cars. The growth and increment value of several indices and household income group are shown in Table 136.

**Table 136 Growth and Increment of Indices by Income Group**

Index	Growth			Increment		
	Low(JUTPI1)	Mid(JUTPI1)	High(JUTPI1)	Low(JUTPI1)	Mid(JUTPI1)	High(JUTPI1)
household size	1.040	0.982	0.721	0.158	-0.071	-1.303
the number of cars	13.125	2.275	1.200	0.289	0.258	0.167
the number of motorcycles	1.670	1.192	0.859	0.527	0.276	-0.255
HH income	5.512	2.258	1.242	4.351	4.139	2.232

Income Group	hhd_size growth	no_cars growth	no_motors growth	HH_inc growth	hhd_size increment	no_cars increment	no_motors increment
Low(JUTPI1)	1.040	13.125	1.670	5.512	0.158	0.289	0.527
Mid(JUTPI1)	0.982	2.275	1.192	2.258	-0.071	0.258	0.276
High(JUTPI1)	0.721	1.200	0.859	1.242	-1.303	0.168	-0.255

Source: JUTPI 2

### 6.5.2 Calculation of Expansion Factor

In this study, there are three ways of calculating expansion factor of population and household sample. The first calculation utilized the combination of updated CTS and ADS database, while the second and third one used ADS database only. The difference between these EFs is the way in which they are used in data analysis process; EF1 is used to analyze socioeconomic related data, while EF2 and EF 3 are for trip related information. EF1 calculation is based on combined CTS and ADS data because socioeconomic information of samples was collected in the same format in both surveys. On the other hand, data collection of trip information was conducted in different ways, thus the expansion factor calculation 2 and 3 (EF 2 and EF 3) can only use ADS database.

### 6.5.2.1 EF1 (Database of CTS & ADS)

The calculation of EF1 was conducted in several steps as follows:

The first step is to prepare initial expansion factor of both individual and household samples. Initial individual EF is the ratio of estimation population and person samples by age group by gender by Kelurahan. Estimation of population by age by gender by Kelurahan is calculated using the secondary data of population by Kota/Kab by age group by gender with the assumption that age composition is same for all Kelurahan in one Kota/Kab. On the other hand, initial household EF is the ratio of estimation household and household samples by Kelurahan. The initial EF is validated using the total population by secondary data.

The second step is to revise the initial expansion factor using vehicle ownership data. Private car ownership was estimated about 3.10 million cars with the initial expansion factor. Meanwhile, statistics of car registration at Polda Metro Jaya (Metro Jaya Police), West Java Police, and Banten Police showed an estimate of 4.58 million vehicles as of 2018. Credibility of car registration statistics was examined, and it was first considered to be generally reliable enough because registration has to be made every year. Initial EF was adjusted using below statistics.

**Table 137 Vehicle Ownership Data (Police Statistics and Initial EF 1)**

Area	Polda Metro Jaya		Initial EF ADS	
	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	281,399	1,324,415
Jakarta Timur	428,090	1,861,128	369,227	1,625,285
Jakarta Utara	360,630	1,254,392	225,332	890,971
Jakarta Barat	807,630	2,029,429	293,781	1,433,933
Jakarta Pusat	444,413	1,226,881	92,794	477,576
DKI Jakarta	2,789,377	8,136,410	1,262,532	5,752,181
Kota Tangerang	233,462	1,563,771	179,971	1,038,519
Kabupaten Tangerang	385,154	1,799,586	264,262	1,429,127
Kota Tangerang Selatan	233,640	806,378	169,632	789,251

Area	Polda Metro Jaya		Initial EF ADS	
	Car	MC	Car	MC
Banten	852,256	4,169,735	613,865	3,256,897
Kota Depok	184,775	1,156,550	178,567	1,025,817
Kota Bogor	110,997	442,688	84,869	351,745
Kabupaten Bogor	175,567	1,758,497	434,148	1,893,712
Kota Bekasi	287,956	1,588,741	285,568	1,253,973
Kabupaten Bekasi	180,657	1,619,431	249,603	1,435,539
Jawa Barat	939,952	6,565,907	1,232,755	5,960,786
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,109,152</b>	<b>14,969,864</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

Adjustment is prepared in two categories, which are car-owning household and non-car-owning household. The number of cars is 100% matched while the number of motorcycles is still below the statistics. At this point, the total of motorcycles will be adjusted later using the auto-ownership model (Chapter 4 of Demand Forecast Report). Estimated number of private cars and motorcycles as of 2018 is presented in Table 138 below.

**Table 138 Vehicle Ownership Data (Police Statistics, Initial EF 1, and after adjustment EF 1)**

Area	Polda Metro Jaya		Estimated vehicle with Initial EF		Estimated vehicle after adjustment EF	
	Car	MC	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	281,399	1,324,415	414,663	1,330,182
Jakarta Timur	428,090	1,861,128	369,227	1,625,285	544,086	1,653,511
Jakarta Utara	360,630	1,254,392	225,332	890,971	332,044	897,551
Jakarta Barat	807,630	2,029,429	293,781	1,433,933	432,910	1,434,304
Jakarta Pusat	444,413	1,226,881	92,794	477,576	136,739	470,722
DKI Jakarta	2,789,377	8,136,410	1,262,532	5,752,181	1,860,442	5,786,270
Kota Tangerang	233,462	1,563,771	179,971	1,038,519	265,202	1,040,514
Kabupaten Tangerang	385,154	1,799,586	264,262	1,429,127	389,411	1,419,645
Kota Tangerang Selatan	233,640	806,378	169,632	789,251	249,967	802,449
Banten	852,256	4,169,735	613,865	3,256,897	904,580	3,262,608
Kota Depok	184,775	1,156,550	178,567	1,025,817	263,133	1,012,390

Area	Polda Metro Jaya		Estimated vehicle with Initial EF		Estimated vehicle after adjustment EF	
	Car	MC	Car	MC	Car	MC
Kota Bogor	110,997	442,688	84,869	351,745	125,061	348,489
Kabupaten Bogor	175,567	1,758,497	434,148	1,893,712	639,752	1,857,904
Kota Bekasi	287,956	1,588,741	285,568	1,253,973	420,808	1,301,797
Kabupaten Bekasi	180,657	1,619,431	249,603	1,435,539	367,810	1,413,693
Jawa Barat	939,952	6,565,907	1,232,755	5,960,786	1,816,563	5,934,273
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,109,152</b>	<b>14,969,864</b>	<b>4,581,585</b>	<b>14,983,152</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

The third step is to revise the initial expansion factor by household income information. In this stage, revision is made by multiply it with the new adjustment factors for the purpose of accommodating household without income information.

By going through the above steps, expansion factor of individual and household using combined database of updated CTS and ADS or EF1 was calculated.

#### **6.5.2.2 EF2 (Database of ADS Only)**

The calculation of EF2 is similar with EF1, except that only ADS database is used in the calculation of EF2. Thus, data of 9000 respondents of ADS is utilized. The calculation step is as follows:

The first step is to prepare initial expansion factor of both individual and household samples. Initial individual EF is the ratio of estimation population and person samples by age group by gender by Kota/ Kabupaten using the secondary data. Meanwhile, the initial household EF is the ratio of estimation household and household samples by Kota/ Kabupaten. The initial EF is validated using the total population by secondary data.

The second step is to revise the initial expansion factor using vehicle ownership data. Private car ownership was estimated about 3.14 million cars with the initial expansion factor. Meanwhile, statistics of car registration at Polda Metro Jaya (Metro Jaya Police), West Java Police, and Banten Police showed an estimate of 4.58 million vehicles as of 2018. Thus, initial EF was adjusted using below

statistics.

**Table 139 Vehicle Ownership Data (Police Statistics and Initial EF 2)**

Area	Polda Metro Jaya		Initial EF ADS	
	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	184,838	959,875
Jakarta Timur	428,090	1,861,128	168,011	1,246,338
Jakarta Utara	360,630	1,254,392	229,236	680,575
Jakarta Barat	807,630	2,029,429	334,757	1,109,918
Jakarta Pusat	444,413	1,226,881	29,903	374,942
DKI Jakarta	2,789,377	8,136,410	946,745	4,371,648
Kota Tangerang	233,462	1,563,771	189,317	963,291
Kabupaten Tangerang	385,154	1,799,586	449,458	1,463,429
Kota Tangerang Selatan	233,640	806,378	182,149	717,587
Banten	852,256	4,169,735	820,925	3,144,307
Kota Depok	184,775	1,156,550	192,636	949,583
Kota Bogor	110,997	442,688	65,472	312,661
Kabupaten Bogor	175,567	1,758,497	508,870	2,023,329
Kota Bekasi	287,956	1,588,741	288,499	1,050,959
Kabupaten Bekasi	180,657	1,619,431	321,911	1,359,894
Jawa Barat	939,952	6,565,907	1,377,388	5,696,427
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,145,058</b>	<b>13,212,383</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

Adjustment is prepared in two categories, which are car-owning household and non-car-owning household. The number of cars is 100% matched while the number of motorcycles is still below the statistics. At this point, the total of motorcycles is adjusted later using the auto-ownership model (Chapter 4 of Demand Forecast Report). Estimated number of private cars and motorcycles as of 2018 is presented in Table 140 below.

**Table 140 Vehicle Ownership Data (Police Statistics, Initial EF 2, and after adjustment EF 2)**

Area	Polda Metro Jaya		Estimated vehicle with Initial EF		Estimated vehicle after adjustment EF	
	Car	MC	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	184,838	959,875	269,557	970,510
Jakarta Timur	428,090	1,861,128	168,011	1,246,338	251,091	1,193,084
Jakarta Utara	360,630	1,254,392	229,236	680,575	343,369	677,103
Jakarta Barat	807,630	2,029,429	334,757	1,109,918	500,046	1,178,142
Jakarta Pusat	444,413	1,226,881	29,903	374,942	46,708	345,491
DKI Jakarta	2,789,377	8,136,410	946,745	4,371,648	1,410,771	4,364,330
Kota Tangerang	233,462	1,563,771	189,317	963,291	276,626	1,016,524
Kabupaten Tangerang	385,154	1,799,586	449,458	1,463,429	642,891	1,578,541
Kota Tangerang Selatan	233,640	806,378	182,149	717,587	264,275	748,185
Banten	852,256	4,169,735	820,925	3,144,307	1,183,792	3,343,249
Kota Depok	184,775	1,156,550	192,636	949,583	276,417	971,845
Kota Bogor	110,997	442,688	65,472	312,661	95,200	307,398
Kabupaten Bogor	175,567	1,758,497	508,870	2,023,329	722,229	2,030,870
Kota Bekasi	287,956	1,588,741	288,499	1,050,959	432,396	1,136,869
Kabupaten Bekasi	180,657	1,619,431	321,911	1,359,894	460,779	1,410,310
Jawa Barat	939,952	6,565,907	1,377,388	5,696,427	1,987,022	5,857,291
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,145,058</b>	<b>13,212,383</b>	<b>4,581,585</b>	<b>13,564,870</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

The third step is to revise the initial expansion factor by household income information. In this stage, revision is made by multiply it with the new adjustment factors for the purpose of accommodating household without income information.

By going through the above steps, expansion factor of individual and household using database of ADS only or EF2 was calculated.

### 6.5.2.3 EF3 (Database of ADS with Valid Trips Only)

The calculation of EF3 is similar with EF2, except that only data of ADS respondents with valid trips is used in the calculation of EF3. The calculation step is as follows:

The first step is to prepare database of respondents with valid trips, followed by

initial expansion factor of both individual and household samples. Initial individual EF is the ratio of estimation population and person samples by age group by gender by Kota/ Kabupaten using the secondary data. Meanwhile, the initial household EF is the ratio of estimation household and household samples by Kota/ Kabupaten. The initial EF is validated using the total population by secondary data.

The second step is to revise the initial expansion factor using vehicle ownership data. Private car ownership was estimated about 3.45 million cars with the initial expansion factor. Meanwhile, statistics of car registration at Polda Metro Jaya (Metro Jaya Police), West Java Police, and Banten Police showed an estimate of 4.58 million vehicles as of 2018. Thus, initial EF was adjusted using below statistics.



**Table 141 Vehicle Ownership Data (Police Statistics and Initial EF 2)**

Area	Polda Metro Jaya		Initial EF ADS	
	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	218,874	1,006,072
Jakarta Timur	428,090	1,861,128	204,092	1,241,307
Jakarta Utara	360,630	1,254,392	284,405	668,022
Jakarta Barat	807,630	2,029,429	406,020	1,180,685
Jakarta Pusat	444,413	1,226,881	39,878	398,776
DKI Jakarta	2,789,377	8,136,410	1,153,268	4,494,862
Kota Tangerang	233,462	1,563,771	204,795	1,020,249
Kabupaten Tangerang	385,154	1,799,586	452,951	1,472,090
Kota Tangerang Selatan	233,640	806,378	191,424	746,327
Banten	852,256	4,169,735	849,170	3,238,666
Kota Depok	184,775	1,156,550	215,825	968,255
Kota Bogor	110,997	442,688	78,186	317,288
Kabupaten Bogor	175,567	1,758,497	523,805	2,026,685
Kota Bekasi	287,956	1,588,741	307,777	1,033,879
Kabupaten Bekasi	180,657	1,619,431	326,101	1,367,058
Jawa Barat	939,952	6,565,907	1,451,693	5,713,165
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,454,131</b>	<b>13,446,693</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

Adjustment is prepared in two categories, which are car-owning household and non-car-owning household. The number of cars is 100% matched while the number of motorcycles is still below the statistics. At this point, the total of motorcycles will be adjusted later using the auto-ownership model (Chapter 4 of Demand Forecast Report). Estimated number of private cars and motorcycles as of 2018 is presented in Table 142 below.

**Table 142 Vehicle Ownership Data (Police Statistics, Initial EF 3, and after adjustment EF 3)**

Area	Polda Metro Jaya		Estimated vehicle with Initial EF		Estimated vehicle after adjustment EF	
	Car	MC	Car	MC	Car	MC
Jakarta Selatan	748,614	1,764,580	218,874	1,006,072	290,316	998,817

Area	Polda Metro Jaya		Estimated vehicle with Initial EF		Estimated vehicle after adjustment EF	
	Car	MC	Car	MC	Car	MC
Jakarta Timur	428,090	1,861,128	204,092	1,241,307	270,709	1,193,076
Jakarta Utara	360,630	1,254,392	284,405	668,022	377,237	661,760
Jakarta Barat	807,630	2,029,429	406,020	1,180,685	538,548	1,206,783
Jakarta Pusat	444,413	1,226,881	39,878	398,776	52,894	370,455
DKI Jakarta	2,789,377	8,136,410	1,153,268	4,494,862	1,529,704	4,430,890
Kota Tangerang	233,462	1,563,771	204,795	1,020,249	271,641	1,040,490
Kabupaten Tangerang	385,154	1,799,586	452,951	1,472,090	600,797	1,537,919
Kota Tangerang Selatan	233,640	806,378	191,424	746,327	253,907	749,491
Banten	852,256	4,169,735	849,170	3,238,666	1,126,345	3,327,900
Kota Depok	184,775	1,156,550	215,825	968,255	286,271	987,678
Kota Bogor	110,997	442,688	78,186	317,288	103,706	312,940
Kabupaten Bogor	175,567	1,758,497	523,805	2,026,685	694,779	2,019,513
Kota Bekasi	287,956	1,588,741	307,777	1,033,879	408,238	1,074,302
Kabupaten Bekasi	180,657	1,619,431	326,101	1,367,058	432,543	1,388,025
Jawa Barat	939,952	6,565,907	1,451,693	5,713,165	1,925,537	5,782,459
<b>TOTAL</b>	<b>4,581,585</b>	<b>18,872,052</b>	<b>3,454,131</b>	<b>13,446,693</b>	<b>4,581,585</b>	<b>13,541,250</b>

Source: Metro Jaya Police, West Java Police, Banten Police, and JUTPI 2

The third step is to revise the initial expansion factor by household income information. In this stage, revision is made by multiply it with the new adjustment factors for the purpose of accommodating household without income information.

By going through the above steps, expansion factor of individual and household using database of ADS respondents with valid trips only or EF3 was calculated.

## 6.6 Demographic Features of the Study Area

Analysis of socioeconomic information in this report is using EF 1 (Combination of Updated CTS and ADS data) that is already explained in Chapter 5. In the following sections, Population and Households, Worker's profile, and Student's profile are calculated using EF 1.

### 6.6.1 Population and Number of Households

As of 2018, the total population account for 33,9 million (10,6 million in DKI Jakarta and 23,3 million in BODETABEK area) and the total household measures up to 9,1 million (3,4 million in DKI Jakarta and 5,7 million in BODETABEK area). The average household size in BODETABEK is higher with 4.07, while in DKI Jakarta only 3.12 which makes the average in JABODETABEK become 3.71.

**Table 143 Population, Number of Households, and Average Household Size**

City/ Regency		Population ('000)	No. of HH ('000)	Average HH members
<b>DKI Jakarta</b>	Jakarta Barat	2,579.77	848.70	3.04
	Jakarta Pusat	919.95	284.85	3.23
	Jakarta Selatan	2,300.43	731.93	3.14
	Jakarta Timur	2,997.53	950.84	3.15
	Jakarta Utara	1,851.08	599.56	3.09
	Sub Total	10,648.75	3,415.88	3.12
<b>BODETABEK</b>	Kabupaten Bekasi	3,570.35	881.16	4.05
	Kabupaten Bogor	5,656.63	1,462.58	3.87
	Kabupaten Tangerang	3,615.78	824.17	4.39
	Kota Bekasi	3,088.03	701.73	4.40
	Kota Bogor	1,098.36	261.47	4.20
	Kota Depok	2,318.98	567.57	4.09
	Kota Tangerang	2,178.71	580.03	3.76
	Kota Tangerang Selatan	1,749.16	445.40	3.93
	Sub Total	23,275.99	5,724.10	4.07
<b>TOTAL</b>	<b>33,924.74</b>	<b>9,139.98</b>	<b>3.71</b>	

Source: JUTPI 2

### 6.6.2 Population by Gender and Age Group

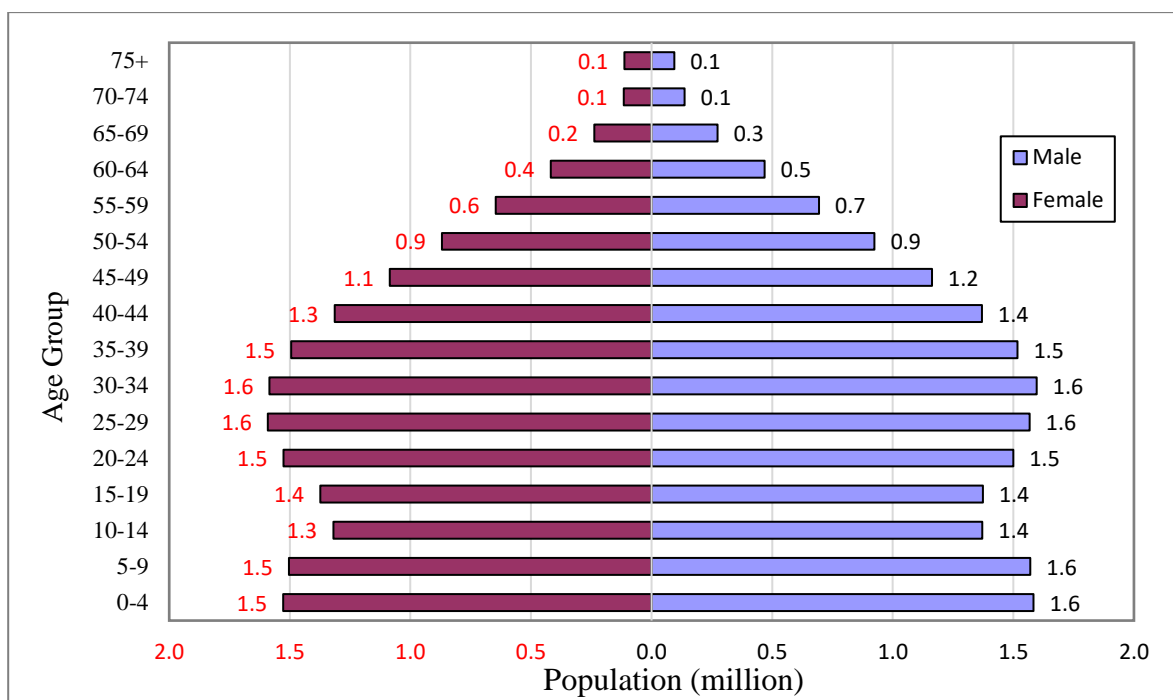
The share of male and female population amounts to 50.7% and 49.3%, respectively. Out of 33.9 million population, the highest percentage is shown in age group 30-34 years old with the share of 9.38%, followed by age group 25-29 years with 9.31%, group 0-4 years with 9.17% and 5-9 years with 9.06%. Overall, population of age of 0-44 years are

dominating with more than almost or more than 8% each.

**Table 144 Population by Gender and Age Group**

Age Group	Male		Female		Total	
	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%
0-4	1,584.09	9.21	1,527.12	9.13	3,111.21	9.17
5-9	1,570.79	9.13	1,504.00	9.00	3,074.79	9.06
10-14	1,371.63	7.97	1,319.66	7.89	2,691.29	7.93
15-19	1,373.55	7.98	1,373.20	8.21	2,746.75	8.10
20-24	1,499.64	8.72	1,525.84	9.13	3,025.49	8.92
25-29	1,567.94	9.11	1,590.44	9.51	3,158.38	9.31
30-34	1,596.76	9.28	1,584.01	9.48	3,180.77	9.38
35-39	1,517.46	8.82	1,494.35	8.94	3,011.81	8.88
40-44	1,370.10	7.96	1,314.18	7.86	2,684.28	7.91
45-49	1,162.66	6.76	1,085.31	6.49	2,247.97	6.63
50-54	924.45	5.37	869.26	5.20	1,793.71	5.29
55-59	694.14	4.03	646.58	3.87	1,340.73	3.95
60-64	469.10	2.73	418.14	2.50	887.24	2.62
65-69	273.41	1.59	237.20	1.42	510.61	1.51
70-74	137.22	0.80	115.51	0.69	252.73	0.74
75+	94.08	0.55	112.90	0.68	206.99	0.61
<b>Total</b>	<b>17,207.02</b>	<b>100.00</b>	<b>16,717.72</b>	<b>100.00</b>	<b>33,924.74</b>	<b>100.00</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 247 Population by Sex and Age Group**

### 6.6.3 Population by Main Activity

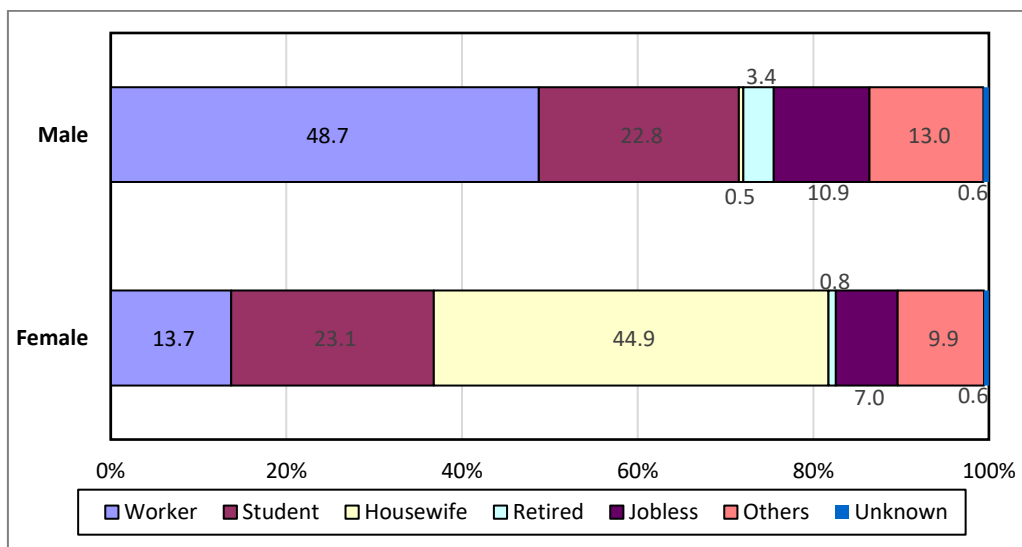
From the total population, the highest share accounts for 31.48% for worker, followed by students with 22.94% and housewives with 22.39%. The remaining status, such as retired, jobless, others, and unknown have less than 12 % share each. For male population, the highest share is worker population with 48.75%, followed by student and others with 22.79% and 12.98%, respectively. On the other hand, the highest share of female population is housewife, which accounts for 44.93%, followed by student and worker with 23.10% and 13.70%, respectively.

**Table 145 Population by Main Activity by Gender**

Main Activity	Male		Female		Total	
	Sum ('000)	%	Sum	%	Sum	%
Worker	8,388.39	48.75	2,290.12	13.70	10,678.51	31.48
Student	3,921.20	22.79	3,862.59	23.10	7,783.79	22.94
Housewife	86.35	0.50	7,510.57	44.93	7,596.92	22.39

Main Activity	Male		Female		Total	
	Sum ('000)	%	Sum	%	Sum	%
Retired	593.09	3.45	138.71	0.83	731.80	2.16
Jobless	1,879.41	10.92	1,175.12	7.03	3,054.54	9.00
Others	2,233.58	12.98	1,647.58	9.86	3,881.16	11.44
Unknown	105.00	0.61	93.03	0.56	198.03	0.58
<b>Total</b>	<b>17,207.02</b>	<b>100.00</b>	<b>16,717.72</b>	<b>100.00</b>	<b>33,924.74</b>	<b>100.00</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 248 Population by Main Activity by Sex**

### 6.6.3.1 Worker's Profile

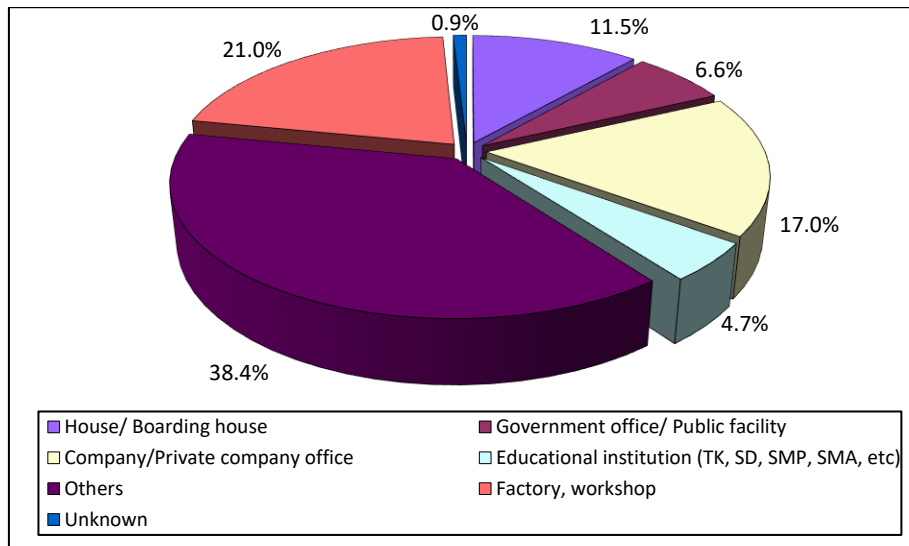
The highest portion of type of work is found in factory works/ labors, which accounts for 22.59%, followed by sales/ merchant and administration staff (teller, data entry) with 15.78% and 10.13%, respectively. Moreover, both the male and female population shows the same pattern with the total population. The greatest share of occupation in both male and female population are observed in factory workers/ labors with 22.69% and 22.18%, respectively. The second highest occupation share in male population is discovered in sales or merchant with 16.18% while in female population with 18.2%.

**Table 146 Number of Workers by Occupation**

Occupation	Male		Female		Total	
	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%
Farmer, fisherman, miner	304.13	4.00	18.23	0.96	322.36	3.39
Factory works/labors	1725.57	22.69	422.69	22.18	2148.25	22.59
Craftman (jewelry, wood, stone)	176.36	2.32	16.30	0.86	192.66	2.03
Construction laborer	51.11	0.67	0.47	0.02	51.58	0.54
Industry/business owner	404.13	5.31	86.01	4.51	490.14	5.15
Sales, merchant	1154.48	15.18	346.82	18.20	1501.30	15.78
Professor, manager, director, etc	108.64	1.43	18.15	0.95	126.80	1.33
Expert (technical, chemist, physics, biology), lecturer, teacher, trainer, etc	420.31	5.53	217.76	11.43	638.07	6.71
Armed forces/Police	135.30	1.78	26.16	1.37	161.46	1.70
Professionals (doctor, engineer, accountant, pilot, machinist)	93.76	1.23	45.27	2.38	139.03	1.46
Administration staff (teller, data entry)	690.63	9.08	273.27	14.34	963.90	10.13
Technician	328.72	4.32	18.49	0.97	347.21	3.65
Waiter, bartender	250.26	3.29	127.46	6.69	377.73	3.97
Goods transport driver (box car, goods truck, tank truck)	144.33	1.90	4.76	0.25	149.09	1.57
Public transport driver (including online transportation)	105.89	1.39	0.76	0.04	106.65	1.12
Private driver	151.61	1.99	6.03	0.32	157.64	1.66
Housemaid, office boy, cleaning service, gardener	111.91	1.47	61.34	3.22	173.25	1.82
Security officer	363.21	4.78	18.96	0.99	382.17	4.02
Porter (station, seaport, airport, warehouse, etc.)	175.66	2.31	40.56	2.13	216.21	2.27
Others	653.86	8.60	138.11	7.25	791.97	8.33
Unknown	55.74	0.73	18.01	0.94	73.75	0.78
<b>Total</b>	<b>7605.58</b>	<b>100</b>	<b>1905.62</b>	<b>100</b>	<b>9511.20</b>	<b>100</b>

Source: JUTPI 2

The highest share of workplace facilities is observed in others option with 38.4%, followed by factory/workshop with 21.0% and private company office with 17.0%. these numbers are followed by house/ boarding house that accounts for 11.5%. The remaining options are government office/ public facility, educational institutions, and unknown with less than 7% each.



Source: JUTPI 2

**Figure 249 Composition of Workplace Facilities**

The most popular workplace facilities for both male and female is factory/workshop with 20.7% and 22.1%, respectively. The second most dominated workplace is private company office for 17.0% of male population and 16.7% of female population.

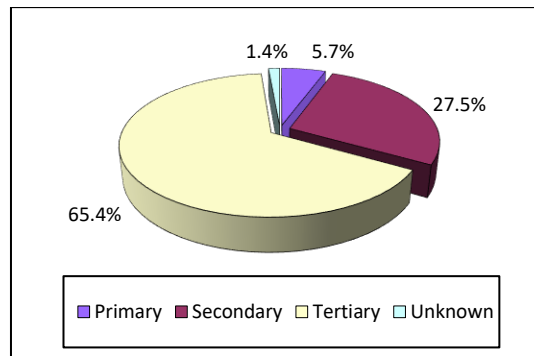
**Table 147 Workplace Facility**

Type of Workplace	Male		Female		Total	
	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%
House/ Boarding house	784.48	10.76	256.95	14.43	1,041.43	11.48
Government office/ Public facility	501.36	6.88	92.75	5.21	594.11	6.55
Company/Private company office	1,241.48	17.03	298.30	16.75	1,539.78	16.98
Educational institution (TK, SD, SMP, SMA, etc)	262.94	3.61	162.84	9.14	425.78	4.69



Type of Workplace	Male		Female		Total	
	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%
Worship place (mosque, church, temple, etc)	19.58	0.27	4.08	0.23	23.66	0.26
Hospital, puskesmas, clinic	70.21	0.96	58.80	3.30	129.01	1.42
Hotel, lodge, entertainment place	95.10	1.30	20.52	1.15	115.62	1.27
Restaurant, food court, food stalls	102.92	1.41	40.31	2.26	143.24	1.58
Grocery store, traditional market, minimarket	629.16	8.63	149.55	8.40	778.71	8.59
Supermarket	40.81	0.56	26.73	1.50	67.54	0.74
Shopping center, plaza, mall, department store	206.29	2.83	110.98	6.23	317.27	3.50
Grocery market, central market	139.54	1.91	20.54	1.15	160.07	1.76
Factory, workshop	1,509.22	20.71	393.76	22.11	1,902.98	20.98
Warehouse, storage	83.71	1.15	7.59	0.43	91.31	1.01
Station, bus terminal, airport, seaport	201.27	2.76	5.63	0.32	206.90	2.28
Installation (gas, water, electricity)	26.51	0.36	1.28	0.07	27.79	0.31
Recreational facility, Sports facility	30.42	0.42	5.32	0.30	35.74	0.39
Parks, national park	25.24	0.35	1.81	0.10	27.05	0.30
Agriculture, forestry, mining, fishery site	365.11	5.01	25.92	1.46	391.03	4.31
Construction, building works site	236.24	3.24	3.63	0.20	239.87	2.64
Others	654.82	8.98	74.05	4.16	728.87	8.04
Unknown	62.60	0.86	19.48	1.09	82.08	0.90
<b>Total</b>	<b>7,289.01</b>	<b>100.00</b>	<b>1,780.82</b>	<b>100.00</b>	<b>9,069.83</b>	<b>100.00</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 250 Employment by Industrial Sector**

It is shown in Figure 250 that the greatest portion of employment by industrial sector accounts for tertiary sector by 65.4%, followed by secondary, tertiary, and unknown sector with 27.5%, 5.7%, and 1.4%, respectively.

**Table 148 Number of Workers by Industry**

Work Field/ Industry	Male		Female		Total	
	Sum	%	Sum	%	Sum	%
Agriculture/forestry/fishery	409,604.80	5.60	32,583.09	1.81	442,187.89	4.85
Mining/excavation/drilling	67,894.12	0.93	7,631.95	0.42	75,526.07	0.83
Industry/factory	1,628,564.88	22.26	460,395.64	25.62	2,088,960.51	22.92
Building/construction project	396,411.32	5.42	18,792.13	1.05	415,203.45	4.56
Transportation & communication	485,776.10	6.64	40,600.96	2.26	526,377.06	5.78
Bank, financial institution	171,134.01	2.34	71,252.33	3.97	242,386.34	2.66
Large and retail trade	1,368,740.41	18.71	437,523.83	24.35	1,806,264.24	19.82
Electricity, gas & drinking water	92,993.94	1.27	7,733.65	0.43	100,727.59	1.11
Central government	119,343.04	1.63	34,263.91	1.91	153,606.95	1.69
Regional government	200,895.60	2.75	59,176.77	3.29	260,072.37	2.85
Armed forces/police	97,819.23	1.34	7,140.67	0.40	104,959.90	1.15
Rental services	63,303.68	0.87	12,249.40	0.68	75,553.07	0.83
Services (hotel, entertainment, research, doctor, consultant, spirituality, etc)	911,452.12	12.46	276,719.56	15.40	1,188,171.67	13.04
Others	1,201,680.41	16.43	302,260.34	16.82	1,503,940.74	16.50
Unknown	100,237.11	1.37	28,654.37	1.59	128,891.48	1.41
<b>Total</b>	<b>7,315,850.75</b>	<b>100.00</b>	<b>1,796,978.59</b>	<b>100.00</b>	<b>9,112,829.34</b>	<b>100.00</b>

Source: JUTPI 2

The highest percentage of total workers is observed in industry/factory, which accounts for 22.9%. This number is followed by large and retail trade with 19.8% and others with 16.5%. Both male and female population, share the same pattern with total workers with the highest share amounts to 22.3% for male and 25.6% for female in industry/factory, followed by large and retail trade with 18.7% for male and 24.4% for female, and others with 16.4% for male and 16.8% for female.

**Table 149 Employment by Industrial Sector by Region**

Region	Primary		Secondary		Tertiary		Unknown		Total	
	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%	Sum ('000)	%
DKI Jakarta	52.13	1.77	519.07	17.67	2,302.84	78.41	62.93	2.14	2,936.96	100.00
Kabupaten Bekasi	77.06	8.75	399.29	45.33	396.25	44.99	8.16	0.93	880.75	100.00
Kabupaten Bogor	272.40	18.12	444.89	29.59	781.68	52.00	4.39	0.29	1,503.37	100.00
Kabupaten Tangerang	50.41	5.74	393.74	44.82	427.03	48.61	7.32	0.83	878.50	100.00
Kota Bekasi	16.90	1.86	299.15	32.90	580.07	63.79	13.28	1.46	909.40	100.00
Kota Bogor	14.78	4.80	68.95	22.42	222.84	72.44	1.04	0.34	307.61	100.00
Kota Depok	13.69	2.35	124.20	21.36	427.43	73.49	16.26	2.80	581.58	100.00
Kota Tangerang	8.89	1.41	189.13	30.06	423.95	67.37	7.28	1.16	629.24	100.00
Kota Tangerang Selatan	11.46	2.36	65.74	13.54	399.97	82.40	8.24	1.70	485.41	100.00
Total	517.71	5.68	2,504.16	27.48	5,962.06	65.42	128.89	1.41	9,112.83	100.00

Source: JUTPI 2

For primary sector, the highest employment occurs in Kabupaten Bogor and Kabupaten Bekasi with 18.1% and 8.8%, respectively. Meanwhile, for secondary sector, the biggest portion of employee is found in Kabupaten Bekasi with 45.3%, followed by Kabupaten Tangerang with 44.8%. On the other hand, the highest share in tertiary sector is in Kota Tangerang Selatan with 82.4%, followed by DKI Jakarta with 78.4%.

### 6.6.3.2 Student's Profile

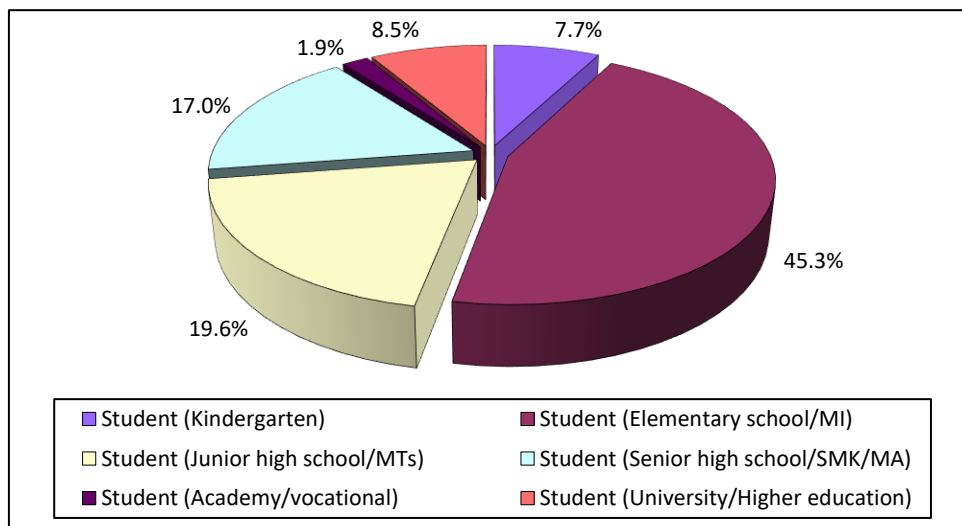
From all students, almost half or 45.3% are Elementary student, followed by student in Junior High School level and Senior High School level with 19.6% and

17.0%, respectively. The remaining levels, such as University/Higher education, Kindergarten, and Academy/Vocational are less than 10% each.

**Table 150 Number of Students by Education Level**

School Type	Sum ('000)	%
Student (Kindergarten)	599	7.7
Student (Elementary school/MI)	3,525	45.3
Student (Junior high school/MTs)	1,525	19.6
Student (Senior high school/SMK/MA)	1,325	17.0
Student (Academy/vocational)	149	1.9
Student (University/Higher education)	660	8.5
<b>Total</b>	<b>7,784</b>	<b>100.0</b>

Source: JUTPI 2



Source: JUTPI 2

**Figure 251 Composition of Students by Education level**

## 6.7 Future Mass Transit Network

### 6.7.1 Housing Building Type

For Housing Building Type, EF 1 is used for calculation. From Table 151, it is notable that most type of houses in both DKI Jakarta and BODETABEK is permanent with the share of 84.21% in total and the highest in both DKI Jakarta and BODETABEK. The second greatest share is semi-permanent house 13.19 % and the remaining options, such as flat, apartment, boarding house, shop house, and others are less than 1% each.

**Table 151 Housing Building Type**

Housing Type	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Permanent	2,907,301.42	85.11	4,789,764.61	83.68	7,697,066.02	84.21
Semi-Permanent	393,345.22	11.52	811,885.36	14.18	1,205,230.57	13.19
Flat	20,983.41	0.61	8,985.49	0.16	29,968.89	0.33
Apartment	11,469.41	0.34	4,042.22	0.07	15,511.62	0.17
Boarding house	17,972.03	0.53	17,967.75	0.31	35,939.78	0.39
Shop house	18,697.96	0.55	35,401.02	0.62	54,098.98	0.59
Others	34,191.33	1.00	40,512.46	0.71	74,703.79	0.82
Unknown	11,917.86	0.35	15,543.21	0.27	27,461.06	0.30
<b>TOTAL</b>	<b>3,415,878.61</b>	<b>100.00</b>	<b>5,724,102.11</b>	<b>100.00</b>	<b>9,139,980.72</b>	<b>100.00</b>

Source: JUTPI 2

### 6.7.2 Household Income

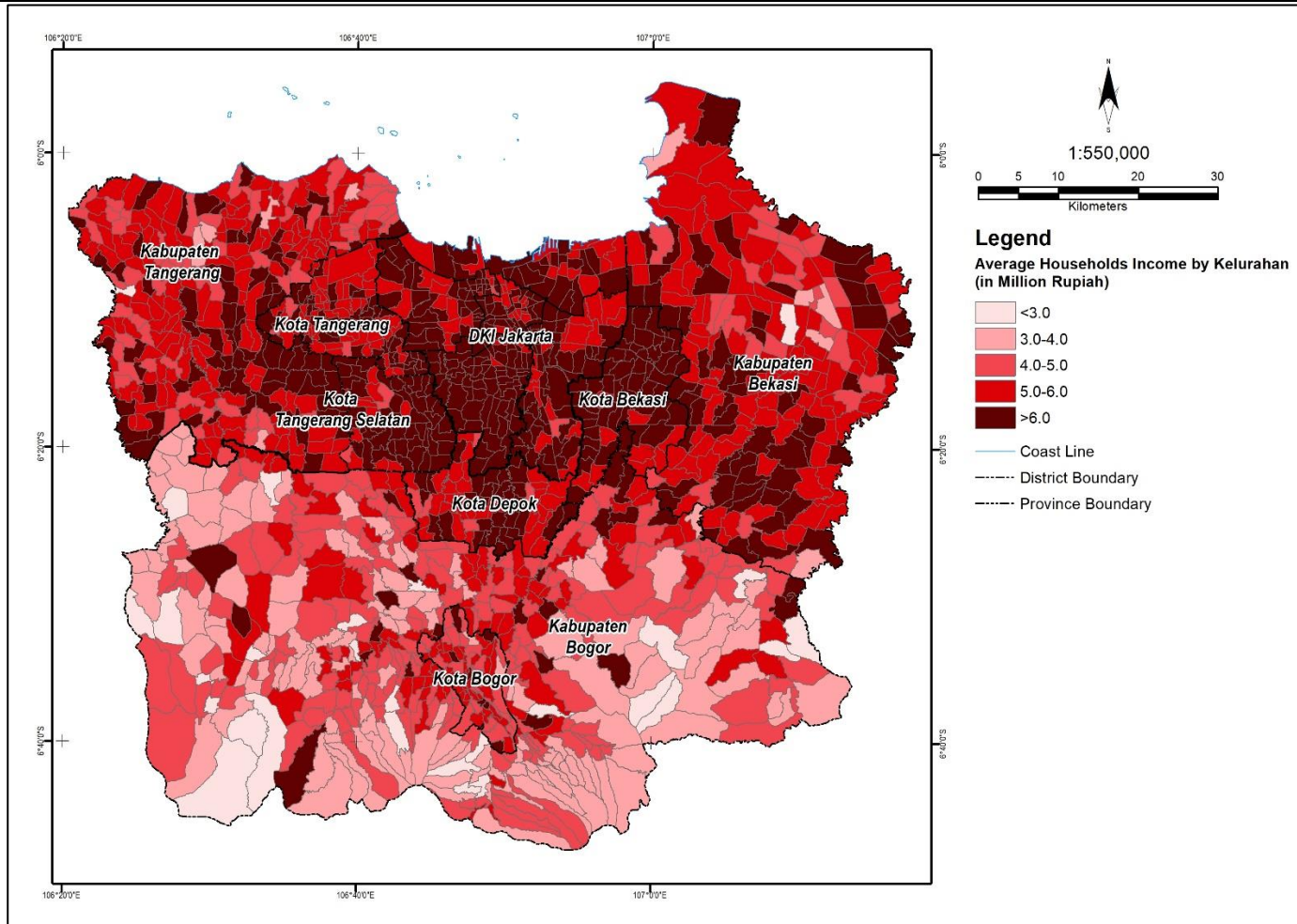
As part of socioeconomic features, EF 1 is used in household income calculation. In Table 71, the portion of low-income group, which can be defined as households earning less than 4.0 million Rupiah per month, is substantially high and it amounts to 36%. This trend is more significant in BODETABEK area compared to DKI Jakarta. Middle-income group, which is specified as households with income between 4 and 10 million rupiah, accounts for 53%. The remaining portion or 11% of households is in high-income category or households with income more than 10 million rupiah per month. It can be estimated that the average monthly household income in 2018 is around 6.15 million rupiah.

**Table 152 Household Monthly Income**

Household Income	DKI Jakarta		BODETABEK		JABODETABEK	
	Sum	%	Sum	%	Sum	%
Less than 1.000.000	1,007.19	0.03	3,480.11	0.06	4,487.30	0.05
1.000.000 - 1.499.999	-	-	-	-	-	-
1.500.000 - 1.999.999	1,590.83	0.05	3,411.54	0.06	5,002.37	0.05
2.000.000 - 2.999.999	155,621.13	4.56	1,054,675.92	18.43	1,210,297.05	13.24
3.000.000 - 3.999.999	811,394.56	23.75	1,261,048.74	22.03	2,072,443.30	22.67
4.000.000 - 4.999.999	38,730.94	1.13	41,007.67	0.72	79,738.61	0.87
5.000.000 - 5.999.999	755,402.89	22.11	955,228.06	16.69	1,710,630.94	18.72
6.000.000 - 7.999.999	991,232.06	29.02	1,861,325.16	32.52	2,852,557.22	31.21
8.000.000 - 9.999.999	116,785.38	3.42	97,331.84	1.70	214,117.22	2.34
10.000.000 - 12.499.999	438,946.59	12.85	357,778.76	6.25	796,725.35	8.72
12.500.000 - 14.999.999	41,833.67	1.22	43,171.15	0.75	85,004.82	0.93
15.000.000 - 17.499.999	12,184.29	0.36	9,390.01	0.16	21,574.30	0.24
17.500.000 - 19.999.999	4,066.52	0.12	3,622.26	0.06	7,688.77	0.08
20.000.000 - 22.499.999	17,176.41	0.50	12,555.09	0.22	29,731.50	0.33
22.500.000 - 24.999.999	4,646.10	0.14	4,155.07	0.07	8,801.17	0.10
More than 25.000.000	25,260.07	0.74	15,920.73	0.28	41,180.80	0.45
<b>Total</b>	<b>3,415,878.61</b>	<b>100.00</b>	<b>5,724,102.11</b>	<b>100.00</b>	<b>9,139,980.72</b>	<b>100.00</b>

Source: JUTPI 2

Moreover, spatial distribution of household income is illustrated in Figure 252, which reveals that high-income group is mainly located in DKI Jakarta and central kota or kabupaten.



Source: JUTPI 2

Figure 252 Spatial Distribution of Household Income

### 6.7.3 Vehicle Ownership

Vehicle ownership is related to the trip information of respondents, thus, EF2 (ADS database only) will be used in calculation. It is estimated that the total car is 4.5 million across JABODETABEK. The share of households without cars amounts to 58.85%, followed by household which owned 1 car with 33.1%, and owned 2 cars with 6.62%. Moreover, the share of households with 3 cars is 1.2% and the share of more than 3 cars is only 0.2%. Overall, the average number of cars per owned households is about 1.23.

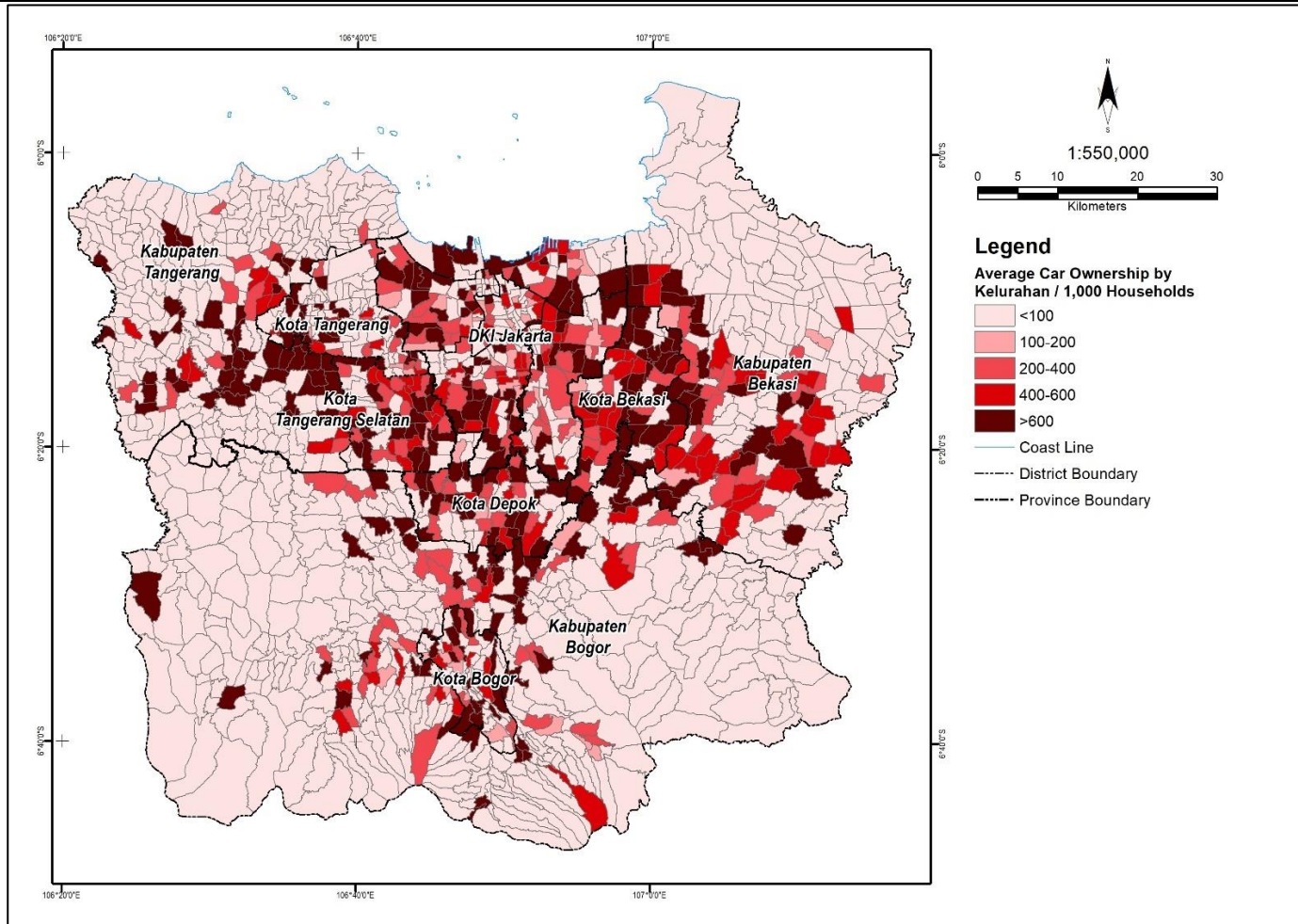
Figure 253 illustrates the distribution of average car ownership by Kelurahan for every 1000 households. It can be inferred from this figure the average number gets higher in central corridor of DKI Jakarta and other central Kota/ Kabupaten. Meanwhile, the outskirts of JABODETABEK area tend to have lesser average number of car ownership.

**Table 153 HH Car Ownership by Number of Cars Owned**

Car Ownership	No. of HH	%	Total Cars
0	5,310,622.69	58.85%	-
1	2,990,308.18	33.14%	2,990,308.18
2	597,668.75	6.62%	1,195,337.51
3	103,799.65	1.15%	311,398.94
3+	21,135.09	0.23%	84,540.38
Total	9,023,534.37	100.00%	4,581,585.00
<b>Average No. of Cars Owned per Own HHs</b>			<b>1.23</b>

Source: JUTPI 2





Source: JUTPI 2

**Figure 253 Spatial Distribution of Cars Owned per Households**

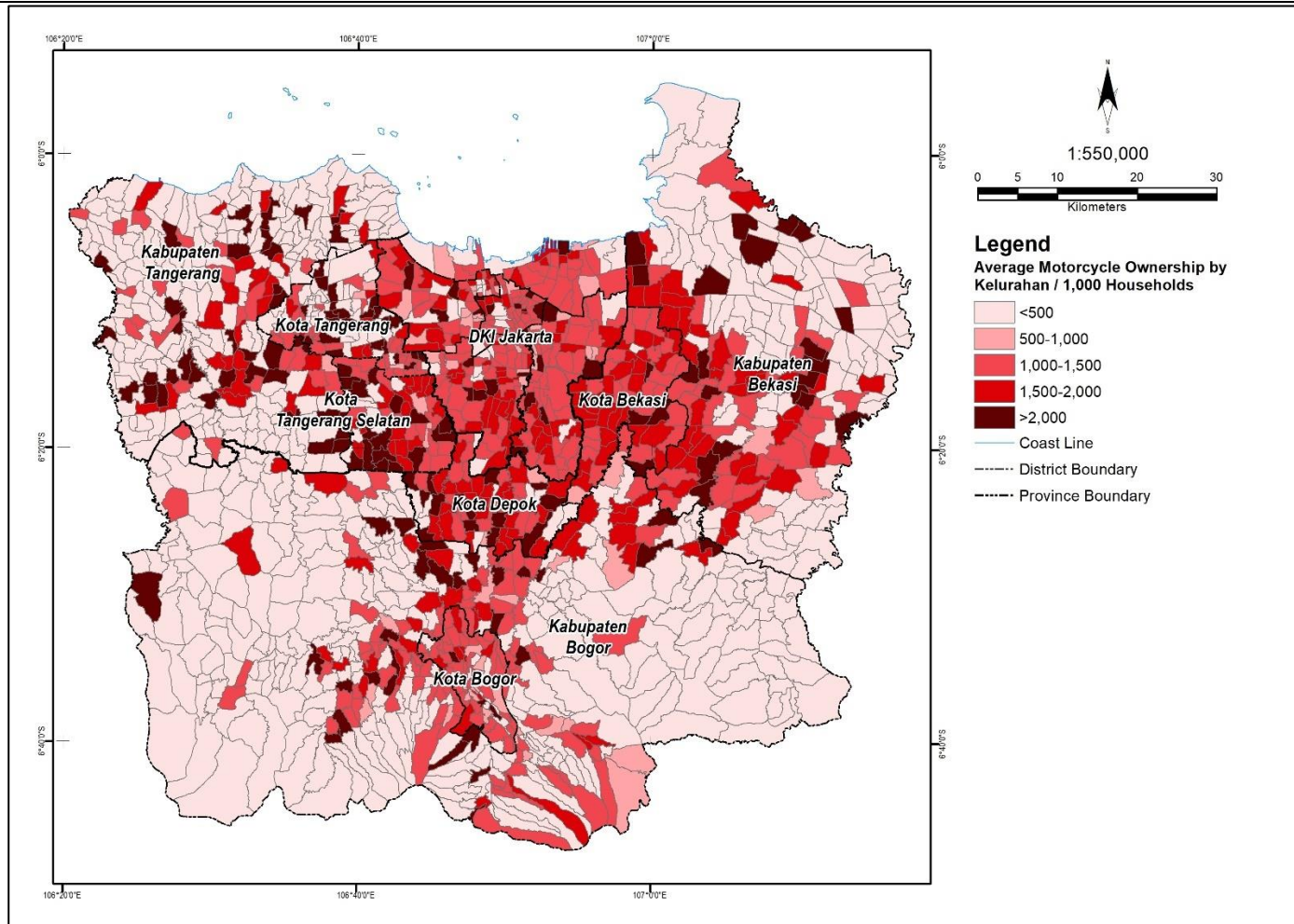
In contrast to car ownership, the share of household without motorcycle is small with 11.01% only. Most of household samples or 42.5% owning at least 1 motorcycle, followed by having 2 motorcycles with 36%. The remaining households or those who have 3 motorcycles and more than 3 motorcycles amounts to 8.7% and 1.8%, respectively. Overall, the average number of cars per owned households is about 1.67.

The distribution of average motorcycle ownership by Kelurahan for every 1000 households is illustrated in Figure 254 illustrates. It can be inferred from this figure that the average number gets higher in not only central corridor of DKI Jakarta, but also in Kabupaten area.

**Table 154 HH Motorcycle Ownership by Number of Motorcycles Owned**

<b>Motorcycle Ownership</b>	<b>No. of HH</b>	<b>%</b>	<b>Total Motorcycles</b>
0	993,496.51	11.01%	-
1	3,833,971.75	42.49%	3,833,971.75
2	3,247,805.61	35.99%	6,495,611.22
3	783,947.84	8.69%	2,351,843.51
3+	164,312.66	1.82%	697,066.24
Total	9,023,534.37	100.00%	13,378,492.72
<b>Average No. of Motorcycles Owned per Own HHs</b>			<b>1.67</b>

Source: JUTPI 2

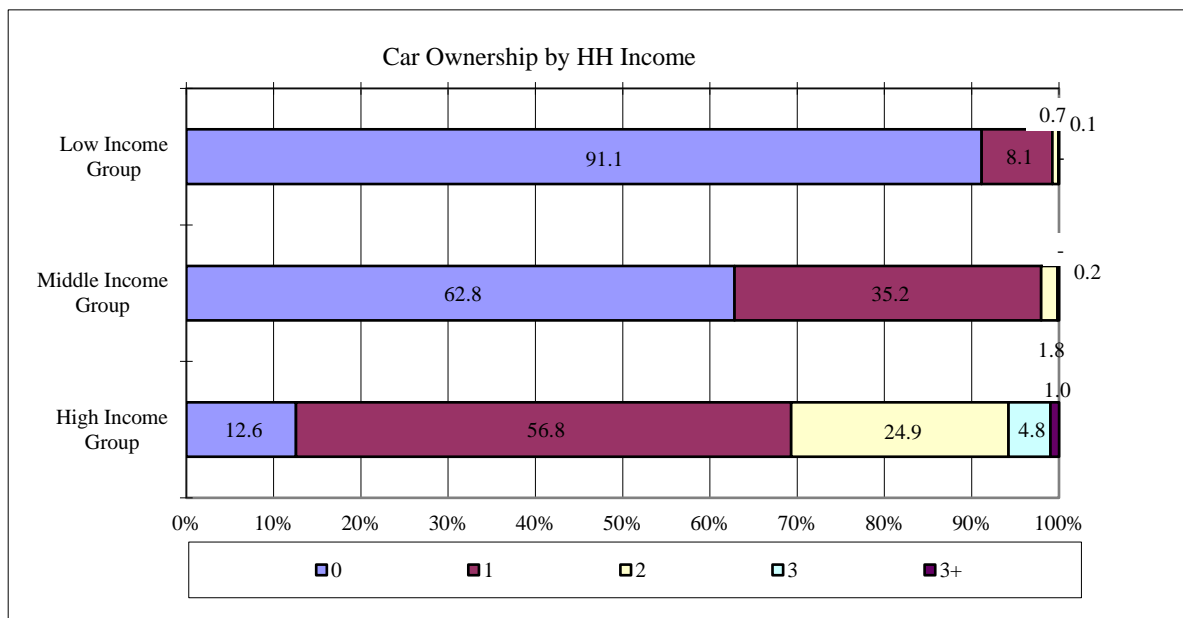


Source: JUTPI 2

Figure 254 Spatial Distribution of Motorcycles Owned per Households

### 6.7.4 Vehicle Ownership by Household Income

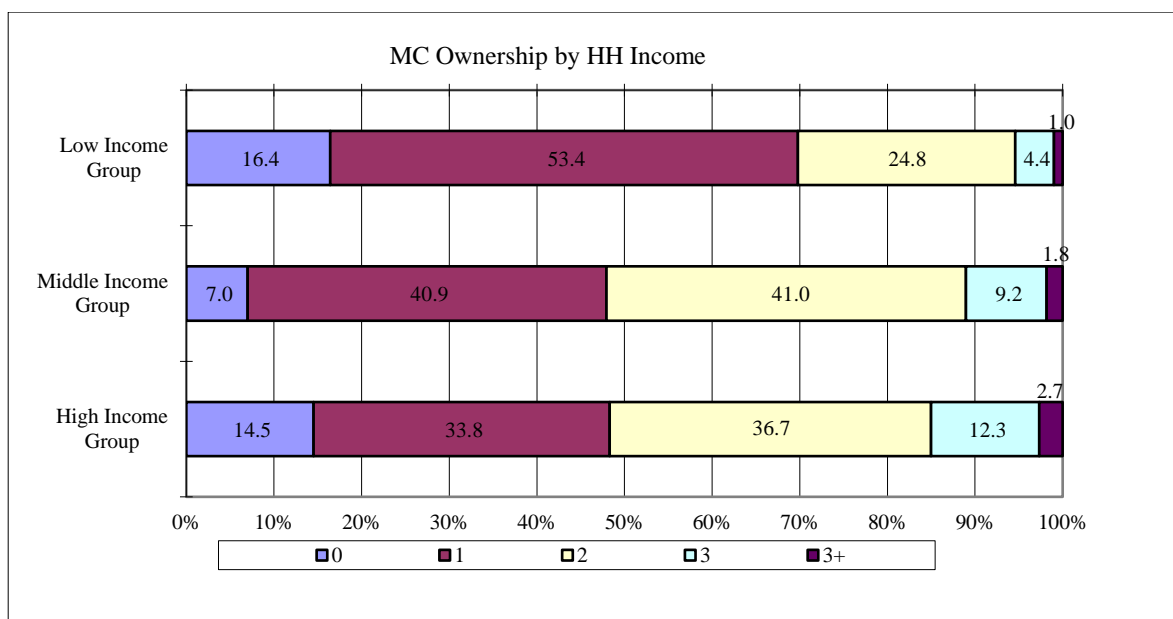
Using EF 2, vehicle ownership by household income was calculated. In Figure 255, it can be observed that the share of car owning household is getting bigger as the household income gets higher. It is notable that car ownership has strong relation with the household income level. Almost all households or 91.1% in low-income group have no car while only 8.1% has one car. In middle-income group, 62.8% is having no car while 35.3% has one car. In contrast, only 12.6% of high-income group has no car, and the remaining households have at least one car.



Source: JUTPI 2

**Figure 255 Car Ownership by Income Level**

On the other hand, the pattern of motorcycle ownership is quite different from car ownership. It is illustrated in Figure 256 that motorcycle ownership is found in any level of household income. It means that the popularity of owning a motorcycle occurs across different household income level. Among all income levels, the highest share of having at least one motorcycle occurs in middle-income level with 93%, followed by high-income group with 85.5%, and low-income group with 83.6%.



Source: JUTPI 2

**Figure 256 Motorcycle Ownership by Income Level**

## 6.8 Trip Production and Transport Mode

### 6.8.1 Trip Production Rate and Number of Trip Produced (by Tour Type)

Trip data are recorded by the application and processed using executable program to arrange them into complete tour by activity types for each respondent. There are 4 activity types: work, school, maintenance (e.g., shopping, banking, visiting doctor), and discretionary (e.g., social/recreational activities, eating out). Each tour by activity types can be breakdown again into 24 tour type, exclude stay at home. Each tour type has different number of trips that is utilized to calculate the total number of trips produced and trip production rate.

**Table 155 Primary Tour Type Classification**

Code	Primary Tour Type	Description	
0	H	Staying at home all day	
1	HWH	Primary work tour	without any stops on the way
2	HOWH		with stop(s) on the way from home
3	HWOH		with stop(s) on the way back home
4	HOWOH		with stop(s) on both directions
5	HWOWH		without any stops on the way

Code	Primary Tour Type	Description	
6	HOWOWH	Primary work tour plus work-based sub-tour	with stop(s) on the way from home
7	HWOWOH		with stop(s) on the way back home
8	HOWOWOH		with stop(s) on both directions
9	HWHWH	Primary work tour plus intermediate return home	without any stops on the way
10	HOWHWH		with stop(s) on the way from home
11	HWHWOH		with stop(s) on the way back home
12	HOWHWOH		with stop(s) on both directions
13	HSH	Primary school tour	without any stops on the way
14	HOSH		with stop(s) on the way from home
15	HSOH		with stop(s) on the way back home
16	HOSOH		with stop(s) on both directions
17	HMH	Primary maintenance tour	without any stops on the way
18	HOMH		with stop(s) on the way from home
19	HMOH		with stop(s) on the way back home
20	HOMOH		with stop(s) on both directions
21	HDH	Primary discretionary tour	without any stops on the way
22	HODH		with stop(s) on the way from home
23	HDOH		with stop(s) on the way back home
24	HODOH		with stop(s) on both directions

Source: Yagi, Sadayuki (2006). An Activity-Based Microsimulation Model of Travel Demand, Ph.D. Thesis, Department of Civil and Materials Engineering, University of Illinois at Chicago.

Note:

H: Home

S: School

W: Work

O: Other

D: Discretionary

The results of trip produced, and trip production rate is different by type of survey. Trip rate based on ADS paper-based is 1.89 while trip rate based on ADS MEILI is 3.22. The result of each trip rate can be seen in the following tables.

**Table 156 Trip Production rate (by Tour Type)**

Tour Type	#Trips	Average Weekdays	
		Primary	Secondary
H	0	0	0
HWH	2	11792	0
HOWH	3	294	0
HWOH	3	462	0
HOWOH	4	156	0
HWOWH	4	440	0
HOWOWH	5	25	0
HWOWOH	5	175	0
HOWOWOH	6	36	0
HWHWH	4	464	0
HOWHWH	5	60	0
HWHWOH	5	5	0
HOWHWOH	6	6	0
HSH	2	2452	0
HOSH	3	12	0
HSOH	3	231	0
HOSOH	4	16	0
HMH	2	5034	2530
HOMH	3	81	48
HMOH	3	516	198
HOMOH	4	8	32
HDH	2	2140	1076
HODH	3	0	0
HDOH	3	30	15
HODOH	4	4	0
H		24,439	3,899
<b>Trip Rate</b>			<b>1.89</b>

Work Tour
School Tour
Maintenance Tour
Discretionary Tour

Source: JUTPI 2

Table 174 ADS Smartphone Based Trip Rate Estimation Based on Tour Types

Tour Type	#Trips	Average Weekdays	
		Primary	Secondary
H	0	0	-
HWH	2	1,154	-
HOWH	3	323	-
HWOH	3	1,075	-
HOWOH	4	394	-
HWOWH	4	156	-
HOWOWH	5	50	-

Tour Type	#Trips	Average Weekdays	
		Primary	Secondary
HWOWOH	5	276	-
HOWOWOH	6	104	-
HWHWH	4	273	-
HOWHWH	5	25	-
HWHWOH	5	82	-
HOWHWOH	6	10	-
HSH	2	198	-
HOSH	3	39	-
HSOH	3	167	-
HOSOH	4	40	-
HMH	2	2,233	1,277
HOMH	3	246	147
HMOH	3	1,829	616
HOMOH	4	272	105
HDH	2	582	441
HODH	3	-	-
HDOH	3	120	67
HODOH	4	56	22
H		9,704	2,675
<b>Trip Rate</b>			<b>3.22</b>

Source: JUTPI 2

### 6.8.2 Trip Production Rate and Number of Trip Produced (by Tour Type)

In order to model the time-of-day (TOD) choice, a day is divided into five time periods which described in below table.

**Table 157 Five Time Periods in A Day**

Time of Day	Time Code	Time Periode
Early moorning	EM	03:00 – 05:59
AM peak	AM	06:00 – 09:59
Midday	MD	10:00 – 15:59
PM peak	PM	16:00 – 19:59
Late night	LN	20:00 – 02:59

Source: JUTPI 2

These five time periods are distinguished by considering the characteristic of hourly traffic



volume and the operation of DKI Jakarta's odd-even number plate regulation (i.e., morning operation from 06:00 to 10:00 and evening operation from 16:00 to 21:00).

Frequencies of tours starting in AM peak are relatively high in JABODETABEK both for ADS Paper-Based and ADS MEILI, especially for ADS Paper-Based where their residential is far from the city centre. A worker tends to go back home in PM peak meanwhile students are in the midday time period. Maintenance activity in the newly developed area that is represented by ADS Paper-Based tends to start and end in AM peak because most of the public office such as bank, market, and the hospital is nearby. Meanwhile for the established area represented by ADS MEILI start and end in the midday time period since they have to take care of their family member and in-house activities before going to do their maintenance activities. Most of the respondents for ADS Paper-Based is a small family compared to the ADS MEILI.

**Table 158 Time-of-Day Choice Frequency by Purpose: Start of The Tour (ADS Paper-Based)**

Purpose	EM	AM	MD	PM	LN	Total
Work	8.9%	85.3%	4.2%	1.0%	0.6%	100.0%
School	5.4%	88.9%	5.1%	0.5%	0.0%	100.0%
Maintenance	11.7%	42.6%	26.8%	17.8%	1.2%	100.0%
Discretionary	10.4%	35.7%	22.8%	23.9%	7.1%	100.0%
All Purpose	9.7%	64.9%	14.3%	9.5%	1.6%	100.0%

Source: JUTPI 2

**Table 159 Time-of-Day Choice Frequency by Purpose: Start of The Tour (ADS MEILI)**

Purpose	EM	AM	MD	PM	LN	Total
Work	5.1%	41.7%	37.7%	12.8%	2.7%	100.0%
School	8.2%	40.2%	36.8%	12.2%	2.6%	100.0%
Maintenance	3.0%	25.2%	40.0%	21.6%	10.2%	100.0%
Discretionary	2.6%	19.6%	32.8%	26.7%	18.4%	100.0%
All Purpose	3.8%	30.2%	38.5%	19.0%	8.4%	100.0%

Source: JUTPI 2

**Table 160 Time-of-Day Choice Frequency by Purpose: Start of The Returning Segment of The Tour (ADS Paper-Based)**

Purpose	EM	AM	MD	PM	LN	Total
Work	0.1%	1.6%	39.7%	51.2%	7.4%	100.0%

Purpose	EM	AM	MD	PM	LN	Total
School	0.0%	0.2%	76.6%	22.5%	0.7%	100.0%
Maintenance	6.7%	40.7%	29.0%	19.6%	4.0%	100.0%
Discretionary	0.3%	6.1%	31.1%	43.4%	19.1%	100.0%
All Purpose	2.4%	15.3%	38.3%	36.9%	7.1%	100.0%

Source: JUTPI 2

**Table 161 Time-of-Day Choice Frequency by Purpose: Start of The Returning Segment of The Tour (ADS MEILI)**

Purpose	EM	AM	MD	PM	LN	Total
Work	0.5%	10.5%	37.9%	36.8%	14.4%	100.0%
School	0.7%	5.0%	57.6%	23.7%	13.1%	100.0%
Maintenance	0.9%	12.3%	37.1%	28.5%	21.3%	100.0%
Discretionary	0.6%	9.4%	28.7%	27.6%	33.7%	100.0%
All Purpose	0.7%	11.2%	37.3%	30.7%	20.0%	100.0%

Source: JUTPI 2

Alternatives are created by combining the time period to leave home to start the tour and the time period to leave the destination of the main activity to start the returning segment of the tour by purpose. Assuming for simplicity that there are no tours that last overnight then 15 ToD combinations are identified.

Combination of time-of day frequency from ADS paper-based shows that most of the activities are started at AM peak and finished at mid day, especially school purpose, while for work purpose, the activity usually ends at PM peak as illustrated in the table below.

**Table 162 Combination of Time-of-Day Choice Frequency by Purpose: Start of The Tour and Returning Segment of The Tour (ADS paper-Based)**

Alternatives	Purpose				
	Work	School	Maintenance	Discretionary	All Purpose
EMEM	0.1%	0.0%	6.7%	0.3%	2.4%
EMAM	0.5%	0.1%	4.3%	0.7%	1.8%
EMMD	4.1%	4.7%	0.4%	4.4%	2.9%
EMPM	4.0%	0.7%	0.2%	4.9%	2.5%
EMLN	0.2%	0.0%	0.0%	0.1%	0.1%
AMAM	1.1%	0.2%	36.4%	5.4%	13.5%
AMMD	34.6%	71.4%	5.7%	14.2%	25.6%

Alternatives	Purpose				
	Work	School	Maintenance	Discretionary	All Purpose
AMPM	45.9%	17.4%	0.4%	15.8%	24.2%
AMLN	3.7%	0.0%	0.0%	0.3%	1.7%
MDMD	1.0%	0.6%	22.9%	12.6%	9.8%
MDPM	1.2%	4.4%	3.7%	9.1%	3.3%
MDLN	2.0%	0.2%	0.2%	1.1%	1.1%
PMPM	0.1%	0.0%	15.2%	13.5%	6.9%
PMLN	0.9%	0.5%	2.6%	10.4%	2.6%
LNLN	0.6%	0.0%	1.2%	7.1%	1.6%
<b>Grand Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: JUTPI 2

Showing a different pattern, combination of time-of day frequency from ADS MEILI infers that most of the activities are started and finished at mid day, especially work and maintenance purpose, while for school purpose, the activity usually starts at AM peak and ends at midday as illustrated in the table below.

**Table 163 Combination of Time-of-Day Choice Frequency by Purpose: Start of The Tour and Returning Segment of The Tour (ADS MEILI)**

Alternatives	Purpose				
	Work	School	Maintenance	Discretionary	All Purpose
EMEM	0.5%	0.7%	0.9%	0.6%	0.7%
EMAM	1.0%	0.3%	1.2%	1.2%	1.1%
EMMD	1.3%	5.8%	0.7%	0.2%	1.0%
EMPM	2.0%	1.4%	0.2%	0.5%	0.8%
EMLN	0.3%	0.0%	0.1%	0.1%	0.1%
AMAM	9.5%	4.6%	11.1%	8.2%	10.1%
AMMD	15.4%	29.6%	10.5%	8.2%	12.5%
AMPM	14.0%	4.8%	2.8%	2.1%	6.2%
AMLN	2.8%	1.2%	0.8%	1.0%	1.4%
MDMD	21.2%	22.2%	26.0%	20.3%	23.8%
MDPM	11.9%	11.5%	11.6%	9.6%	11.5%
MDLN	4.6%	3.1%	2.5%	2.8%	3.2%
PMPM	8.8%	6.0%	13.8%	15.3%	12.2%
PMLN	3.9%	6.2%	7.8%	11.3%	6.9%
LNLN	2.7%	2.6%	10.2%	18.4%	8.4%
<b>Grand Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: JUTPI 2

### **6.8.3 Modal Share**

#### **6.8.3.1 Modal Share in JABODETABEK**

Calculation of modal share in this report is using EF 3 (Database of ADS with valid trips only), which already explained in Chapter 5. The EF that assigned to respective respondents in the database then adjusted by proportion of total number of Workers, Students, and Others in the whole population and divided by survey days to get new EF for trip of respondents in one day by their main activity. Modal share in this report was calculated by assigning this new adjusted EF to each respective respondent which have tours with representative modes.

Since all the data is taken from the survey result, modal share in this report represents the condition of JABODETABEK modal share in more detail, since it also includes short tour in the same zone (intra-zonal). Result that represents JABODETABEK modal share in general and in the main corridor are explained in document Annex 06: Travel Demand Forecast Report.

Based on number of tours, as shown in Table 164, private transport dominating modal share in JABODETABEK, accounting for 90.3% details of which are explained 14.2% of private car and 76.1 of motorcycle. While other transport modes portion is below 10%.

**Table 164 Modal Share in JABODETABEK**

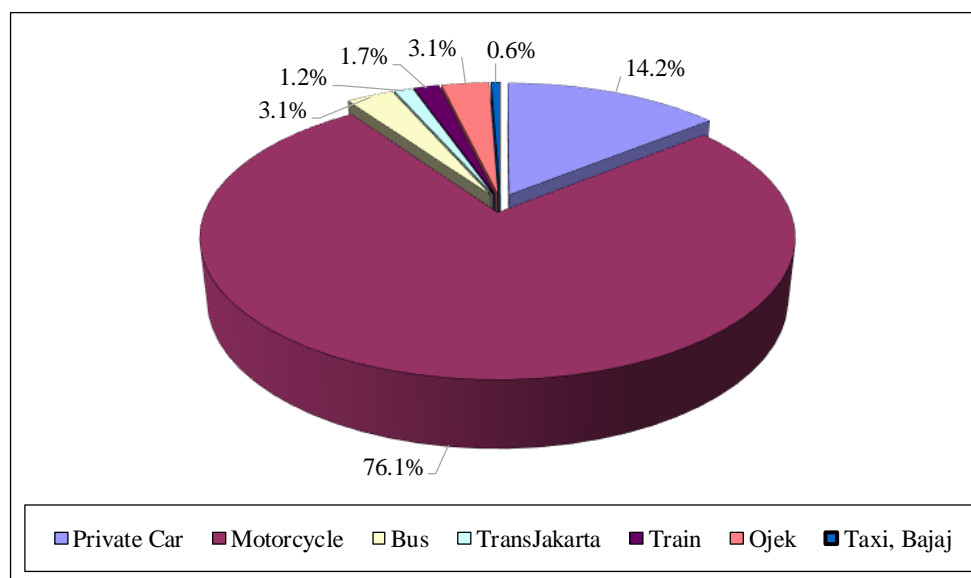
Transport Mode	All Modes	
	No. of Tour ('000)	% Share
Private Car	4,281	14.2
Motorcycle	22,896	76.1
Bus	934	3.1
Transjakarta	368	1.2
Train	502	1.7
Ojek	944	3.1
Taxi, Bajaj	176	0.6
<b>Grand Total</b>	<b>30,102</b>	<b>100.0</b>

Note:

- Estimation made excluding the tour with NMT and Other as representative modes.

- Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.

Source: JUTPI 2



Note:

- Estimation made excluding the tour with NMT and Other as representative modes.

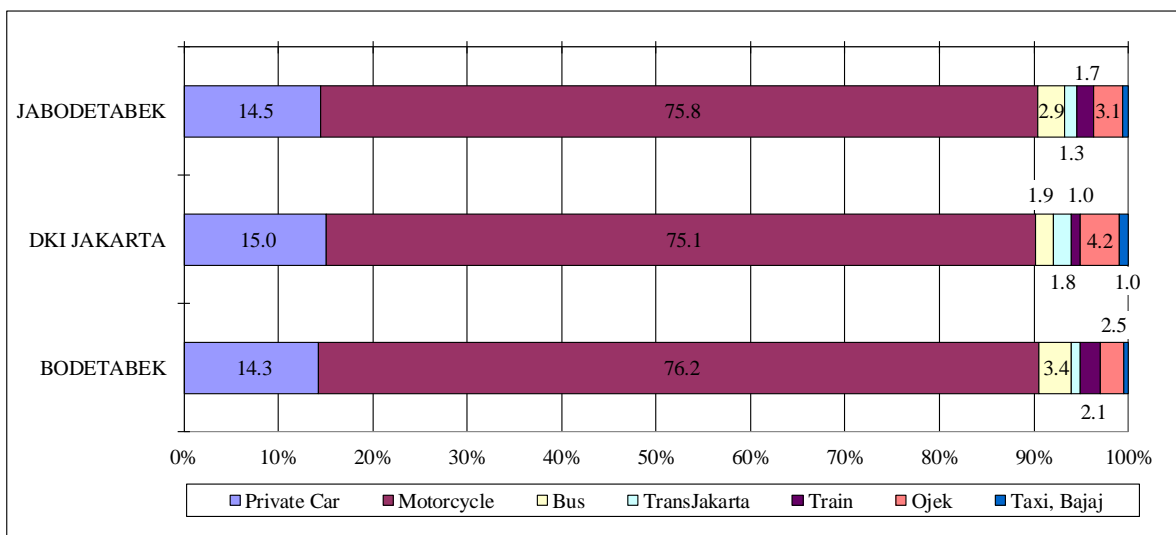
- Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.

Source: JUTPI 2

**Figure 257 Modal Share Composition in JABODETABEK**

### 6.8.3.2 Comparison of Modal Share

Modal shares in JABODETABEK, DKI Jakarta and BODETABEK is shown in Figure 258. It is obvious that largest portion of modal share is motorcycle and private car with amounts of 76% and 15%, respectively. Meanwhile, for other modes, the portion of Ojek in JABODETABEK is higher may due to its' large portion in DKI Jakarta, followed by share of conventional bus due to its usage in BODETABEK area. Compared to DKI Jakarta, the share of train is higher in BODETABEK while the portion of Transjakarta is larger in DKI Jakarta. This tendency is reasonable by looking at the service network of train (Commuterline) and Transjakarta..



Note:

- Estimation made excluding the tour with NMT and Other as representative modes.
- Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.
- Calculated from number of tours multiplied by number of trips according to the tour type (see Table 164).

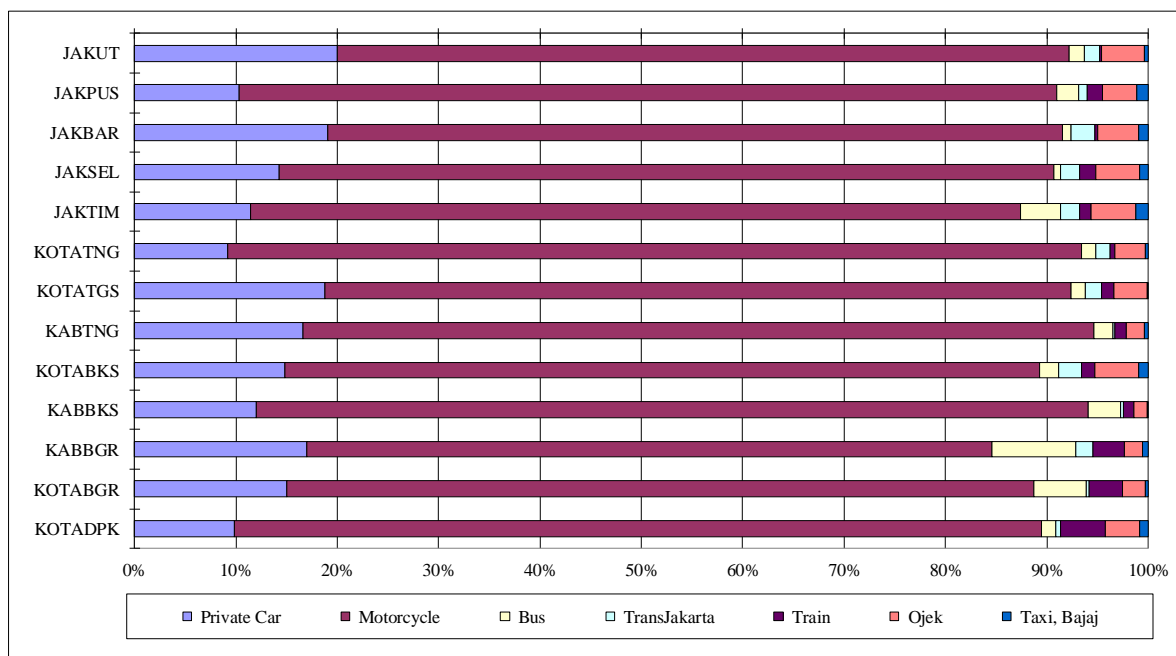
Source: JUTPI 2

**Figure 258 Modal Share in JABODETABEK, DKI Jakarta, and BODETABEK**

### 6.8.4 Modal Share by Region

Modal share by region is presented in Figure 259. Higher modal share of motorcycle is

made in *kota* (especially Kota Tangerang, Kota Bekasi, and Jakarta Pusat) whereas more trips by public transport are made in BODETABEK.



Note:

Estimation made excluding the tour with NMT and Other as representative modes.

Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.

Calculated from number of tours multiplied by number of trips according to the tour type (see Table 164).

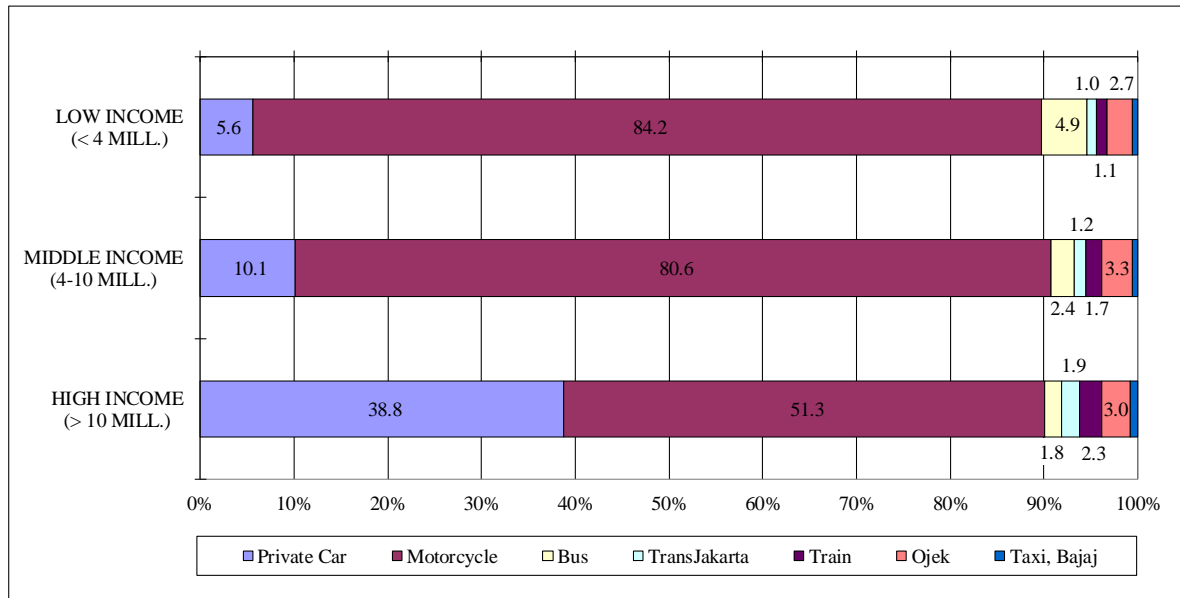
Source: JUTPI 2

**Figure 259 Modal Share by Region**

### 6.8.5 Modal Share by Income Group

Modal share by income group is shown in Figure 260 where all household income groups rely on private transport, private car and motorcycle. The use of private car increases along with the increase of household income level. Residents belonging to high-income group make use of a private car is higher compare to low- and middle-income group and its modal share accounts for about 40%. Interesting fact from this result is the share of public transport which is similar throughout household-income groups, accounts for 10%, which can be interpreted as a high possibility of mode shift from private transport to public transport once improvement made to the public transport services.

Among public transport modes, Ojek portion is higher than other modes except in the low-income household group, conventional bus still plays important role in JABODETABEK.



Note:

- Estimation made excluding the tour with NMT and Other as representative modes.
- Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.
- Calculated from number of tours multiplied by number of trips according to the tour type (see Table 164).

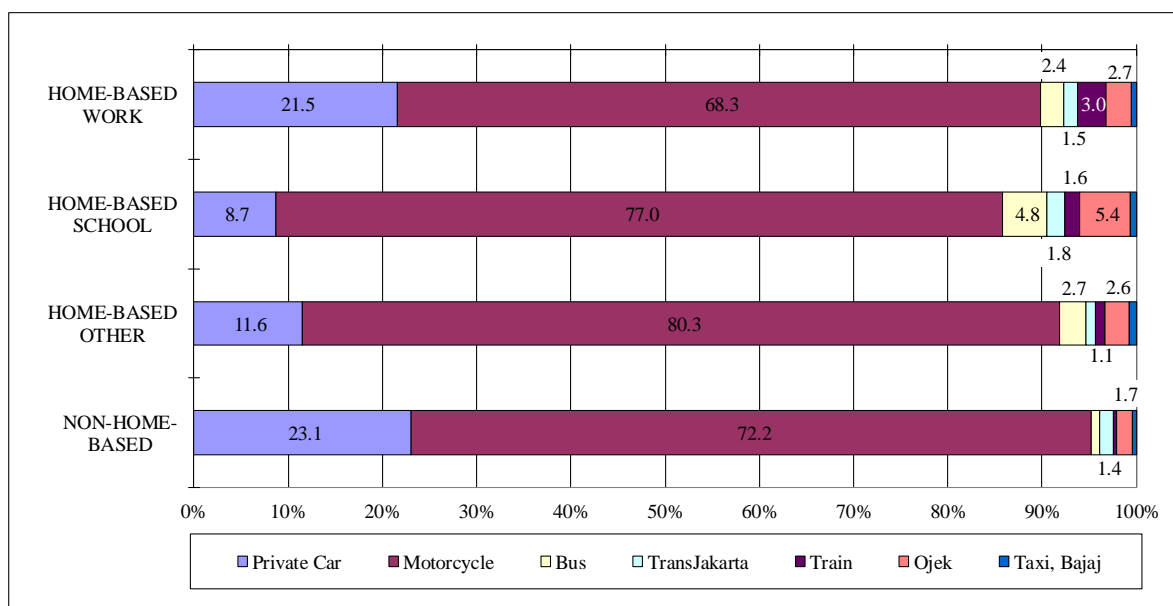
Source: JUTPI 2

**Figure 260 Modal Share by Income**

### 6.8.6 Modal Share by Tour Purpose

Modal share by tour purpose is presented in Figure 261. Even though modal share for all tour purposes basically dominated by private transport, and public transport share is around 9%-10% in average. Compare to other tour purposes, “Home-Based School” tour has the largest portion of public transport, composed of Ojek for 5.4%, conventional bus for 4.8% and others below 2%. This figure also shows that among all public transport, Ojek has the largest scale throughout all tour purposes, followed by conventional bus and train.





Note:

- Estimation made excluding the tour with NMT and Other as representative modes.
- Public Transport (PT): Conventional Bus, Transjakarta, Commuterline (Train), Ojek, Taxi, Bajaj.
- Calculated from number of tours multiplied by number of trips according to the tour type (see Table 164).

Source: JUTPI 2

**Figure 261 Modal Share by Trip Purpose**