

**Urban Development Directorate**  
**PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UPAZILAS**  
**(PACKAGE: 02): UDD**

**Bus/ Boat or Launch/ Train Passenger Interview Survey Questionnaire**

Name of Upazila : .....

Date : .....

Time of Interview : .....

Location of Interview point : .....

**A. Present Address of the respondent**

**B. Sex:** (a) Male (b) Female

**C. Age:** 1. Below 15 years 2. 16-20 Years 3. 21-30 Years 4. 31-40 Years 5. 41-50 Years 6. Above 51 Years

**D. Where did your trip begin?** .....

**E. Where did your trip end point?** .....

**F. What was the purpose of your trip?**

1. Work/Commute 2. Business related 3. Shopping 4. Education 5. Social 6. Recreation

**G. No. of trips in a week?** .....

**H. How many times you changed modes to complete this trip?**

1	2	3
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**I. What are types of modes you used to complete the trip?**

1. Bus 2. Motor cycle 3. Rickshaw 4. Van 5. Rail 6. Boat/Launch 5. On foot 6. Others (specify)

**J. Total travel time of the trip?** .....(In min/hour)

**K. Total costs of the trip?** ..... (In Taka)

**L. Total distances of the trip?** ..... (In k.m.)

**M. Any comments on transportation?** .....

Name of Enumerator: .....

Name of Supervisor: .....

Signature of Enumerator: .....

Signature of Supervisor: .....

**Urban Development Directorate**  
**PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UPAZILAS**  
**(PAGKAGE-02):UDD**

**Traffic and Transportation Survey**  
Traffic Volume Count Tally Sheet

**(24 Hours long) Weather condition**

Name of Upazila:

Date: .....

Route Name: .....

Hours counted: **Start** .....am/pm, **Finish** .....am/pm

Traffic Direction: From .....to.....

Intersection Name: .....

Type of traffic	Number of Traffic	Total
Bus/Minibus		
Heavy Truck/ Light Truck		
Car/Micro-bus/Jeep		
Auto Rickshaw/Tempo/Nosimon		
Motorcycle		
Rickshaw/Van		
Bicycle		
Animal cart/Push cart		
Pedestrian		
Others (specify)		

Name of Enumerator .....

Signature of Enumerator .....

Name of Supervisor .....

Signature of Supervisor .....

**Urban Development Directorate**  
**PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UPAZILAS**  
**(Package: 02): UDD**

**Roadside Interview Survey (O-D Survey) Questionnaire**

**Time: Every half an Hour Interval (24 hours clock)**

Name of Upazila: .....

Date: .....

Route Name: .....

Hours counted: **Start** .....am/pm, **Finish** .....am/pm

Traffic Direction: From .....to.....

**A. Vehicle Type:**

1. Truck      2. Bus      3. Car/Pickup/Jeep/Motorbus      4. Auto Rickshaw/Tempo      5. Motorcycle      6. Rickshaw/Van      7. Bicycle

**B. Where did your trip begin?**

City/Town.....

**C. What type of place is your trip start point?**

1. Residence      2. Workplace      3. Shopping      4. School/College/University      5. Social      6. Recreational

**D. Where did your trip end?**

City/Town.....

**E. What type of place is your trip end point?**

1. Residence      2. Workplace      3. Shopping      4. School/College/University      5. Social      6. Recreational

**F. What was the purpose of your trip?**

1. Work/Commute      2. Business related      3. Shopping      4. Education      5. Social      6. Recreation

**G. How many people were in the vehicle including the driver?**

No. of people.....

**H. Any comments on Transportation?**

Name of Enumerator: .....

Signature of Enumerator: .....

Name of Supervisor: .....

Signature of Supervisor: .....

**Urban Development Directorate**  
**PREPARATION OF DEVELOPMENT PLAN FOR FOURTEEN UPAZILAS**  
**(PACKAGE: 02): UDD**

**Questionnaire on Regional Transportation Network System**

Name of Upazila : .....

Date of survey : .....

***A. Information of trip going out from study area to other region (upazila/district)***

1) Type of Mode (Bus/Truck/Train/Water way):

**(Response will be collected from every mode)**

- 2) Name of trip destination point (Upazila/District):
- 3) No. of trips per day (hour basis)
- 4) Average no. of passengers carried by per mode (per trip):
- 5) Types of goods carried by per mode (per trip):

***B. Information of trip coming into study area from other region (upazila/district)***

1) Type of Mode (Bus/Truck/Train/Water way):

**(Response will be collected from every mode)**

- 2) Name of trip origin point (Upazila/District):
- 3) No. of trips per day (hour basis)
- 4) Average no. of passengers carried by per mode (per trip):
- 5) Types of goods carried by per mode (per trip):
- 6) Stoppage area inside the upazila area

**ORIGIN AND DESTINATION SURVEY**

**Table B-1: Types of Mode**

<b>Types of Vehicle</b>	<b>Frequency</b>	<b>Percent</b>
<b>Truck</b>	7	5.4
<b>Bus</b>	16	12.4
<b>Car/Pickup/Jeep/Motorbus</b>	4	3.1
<b>Auto Rickshaw/Tempo</b>	44	34.1
<b>Motorcycle</b>	20	15.5
<b>Rickshaw/Van</b>	32	24.8
<b>Bicycle</b>	6	4.7
<b>Total</b>	129	100

**Table B-2: Trip Purpose**

<b>Trip Purpose</b>	<b>Frequency</b>	<b>Percent</b>
<b>Work/Commute</b>	16	12.4
<b>Business Related</b>	26	20.2
<b>Shopping</b>	58	45
<b>Education</b>	15	11.6
<b>Social</b>	5	3.9
<b>Recreation</b>	9	7
<b>Total</b>	129	100

**Table B-3: Frequency of Passengers Occupancy**

<b>No. of people in vehicle</b>	<b>Frequency</b>	<b>Percent</b>
Below 5 persons	77	62.1
6 to 10 persons	34	27.4
11 to 20 persons	4	3.2
21 to 30 persons	2	1.6
31 to 40 persons	2	1.6
Above 40 persons	5	4
<b>Total</b>	124	100

**APPENDIX-B**

**Table B-4: Origin and Destination Pattern**

<div> <div>Destination</div> <div>Origin</div> </div>		Residence	Workplace	Shopping	School/College/ University	Social	Recreational	Total
Residence	Frequency	0	16	21	9	9	5	60
	Percentage	0.00%	26.70%	35.00%	15.00%	15.00%	8.30%	100.00%
	Percentage	0.00%	84.20%	87.50%	100.00%	75.00%	83.30%	46.50%
Workplace	Frequency	17	2	3	0	1	1	24
	Percentage	70.80%	8.30%	12.50%	0.00%	4.20%	4.20%	100.00%
	Percentage	28.80%	10.50%	12.50%	0.00%	8.30%	16.70%	18.60%
Shopping	Frequency	32	0	0	0	1	0	33
	Percentage	97.00%	0.00%	0.00%	0.00%	3.00%	0.00%	100.00%
	Percentage	54.20%	0.00%	0.00%	0.00%	8.30%	0.00%	25.60%
School/College/University	Frequency	8	1	0	0	0	0	9
	Percentage	88.90%	11.10%	0.00%	0.00%	0.00%	0.00%	100.00%
	Percentage	13.60%	5.30%	0.00%	0.00%	0.00%	0.00%	7.00%
Social	Frequency	0	0	0	0	1	0	1
	Percentage	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%
	Percentage	0.00%	0.00%	0.00%	0.00%	8.30%	0.00%	0.80%
Recreational	Frequency	2	0	0	0	0	0	2
	Percentage	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	Percentage	3.40%	0.00%	0.00%	0.00%	0.00%	0.00%	1.60%
Total	Frequency	59	19	24	9	12	6	129
	Percentage	45.70%	14.70%	18.60%	7.00%	9.30%	4.70%	100.00%
	Percentage	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

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**Table B-5: Origin and Destination Matrix**

Destination Origin	Bodor pur	CMB Ghat	Faridpu r	Kanaipu r	Munshibaz ar	Shibrampu r	Somespur bazar	Tepakhol a	Chandpu r	Gopalgan j	Hajigan j	Tambulkha na	Total
Bodorpur	0	0	0	1	0	0	0	0	0	0	0	0	1
CMB Ghat	0	0	1	0	0	0	0	2	0	0	0	0	3
Faridpur	1	0	0	0	2	0	0	0	0	1	0	1	5
Kanaipur	0	1	3	0	0	1	0	0	3	0	0	1	9
Munshibazar	0	0	4	0	0	0	0	0	0	0	0	0	4
Shibrampur	0	0	1	0	0	0	0	0	0	0	0	0	1
Somespur bazar	0	0	0	0	0	0	0	0	0	0	0	3	3
Tepakhola	0	5	7	0	0	0	1	0	0	0	2	0	15
Chandpur	0	0	0	1	0	0	0	0	0	0	0	0	1
Gopalganj	0	0	0	0	0	0	0	0	0	0	0	0	0
Hajiganj	0	0	0	0	0	0	0	0	0	0	0	0	0
Tambulkhana	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	6	16	2	2	1	1	2	3	1	2	5	42

**PASSENGERS INTERVIEW SURVEY**

**Table B-6: Types of Vehicle**

<b>Type of Vehicle</b>	<b>Frequency</b>	<b>Percentage</b>
Bus	97	83.6
Boat/Launch	10	8.6
Train	9	7.8
Total	116	100

**Table B-7: Gender of Respondents according to the Mode**

<b>Sex of the Respondent</b>	<b>Gender</b>		<b>Types of Mode</b>			
			<b>Bus</b>	<b>Boat/Launch</b>	<b>Train</b>	<b>Total</b>
	Male					
		Frequency	71	6	7	84
		Percentage	84.50%	7.10%	8.30%	100.00%
	Female					
		Frequency	26	2	2	30
		Percentage	86.70%	6.70%	6.70%	100.00%
	Total					
		Frequency	97	8	9	114
		Percentage	85.10%	7.00%	7.90%	100.00%

**Table B-8: Gender of Respondents according to Travel Distance**

Distance Gender		0.6-1km	1.1-2.0 km	2.1-3 km	3.1-5.0 km	5.1-10.0 km	10.1-20.00 km	20.1-30.00 km	Above 30.00 km	Total
<b>Male</b>	Frequency	1	3	1	2	12	13	15	35	82
	Percentage	1.20%	3.70%	1.20%	2.40%	14.60%	15.90%	18.30%	42.70%	100.00%
<b>Female</b>	Frequency	1	0	1	2	9	3	6	7	29
	Percentage	3.40%	0.00%	3.40%	6.90%	31.00%	10.30%	20.70%	24.10%	100.00%
<b>Total</b>	Frequency	2	3	2	4	21	16	21	42	111
	Percentage	1.80%	2.70%	1.80%	3.60%	18.90%	14.40%	18.90%	37.80%	100.00%

**Table B-9: Age variations according to the Trip Purpose**

Purpose Age		Work/Commute	Business Related	Shopping	Education	Recreation	Total
<b>Below 15 years</b>	Frequency	0	0	0	1	1	2
	Percentage	0.00%	0.00%	0.00%	50.00%	50.00%	100.00%
<b>16-20 years</b>	Frequency	1	0	2	5	2	10
	Percentage	10.00%	0.00%	20.00%	50.00%	20.00%	100.00%
<b>21-30 years</b>	Frequency	5	1	8	14	5	33
	Percentage	15.20%	3.00%	24.20%	42.40%	15.20%	100.00%

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<b>Age \ Purpose</b>		<b>Work/Commute</b>	<b>Business Related</b>	<b>Shopping</b>	<b>Education</b>	<b>Recreation</b>	<b>Total</b>
<b>31-40 years</b>	Frequency	11	12	6	1	8	38
	Percentage	28.90%	31.60%	15.80%	2.60%	21.10%	100.00%
<b>41-50 years</b>	Frequency	3	1	1	0	6	11
	Percentage	27.30%	9.10%	9.10%	0.00%	54.50%	100.00%
<b>Above 51 years</b>	Frequency	0	2	0	0	2	4
	Percentage	0.00%	50.00%	0.00%	0.00%	50.00%	100.00%
<b>Total</b>	Frequency	20	16	17	21	24	98
	Percentage	20.40%	16.30%	17.30%	21.40%	24.50%	100.00%

**Table B-10: Trip Purpose**

<b>Trip Purpose</b>	<b>Frequency</b>	<b>Percent</b>
<b>Work/Commute</b>	20	18.2
<b>Business Related</b>	21	19.1
<b>Shopping</b>	22	20
<b>Education</b>	21	19.1
<b>Recreation</b>	26	23.6
<b>Total</b>	110	100

**Table B-11: Number of Trips according to Gender**

Sex of the Respondent		No. of trips in a week							
		1	2	3	4	5	6	7	Total
Male	Frequency	42	15	7	2	8	9	1	84
	Percentage	50.00 %	17.90 %	8.30 %	2.40%	9.50%	10.70 %	1.20 %	100.00 %
Female	Frequency	15	3	1	0	3	8	0	30
	Percentage	50.00 %	10.00 %	3.30 %	0.00%	10.00 %	26.70 %	0.00 %	100.00 %
Total	Frequency	57	18	8	2	11	17	1	114
	Percentage	50.00 %	15.80 %	7.00 %	1.80%	9.60%	14.90 %	0.90 %	100.00 %

**Table B-12: Number of Trips according to Trip Purpose**

		No. of trips in a week							
		1	2	3	4	5	6	7	Total
(Frequency and Percentage)	Work/	10	0	1	0	3	5	1	20
	Commute	50.00 %	0.00 %	5.00 %	0.00%	15.00 %	25.00 %	5.00 %	100.00%
	Business	6	7	5	1	2	0	0	21
	Related	28.60 %	33.30 %	23.80 %	4.80%	9.50%	0.00%	0.00 %	100.00%

	No. of trips in a week							
	1	2	3	4	5	6	7	Total
<b>Shopping</b>	12	8	1	0	1	0	0	22
	54.50 %	36.40 %	4.50 %	0.00%	4.50%	0.00%	0.00 %	100.00%
<b>Education</b>	4	0	0	1	4	12	0	21
	19.00 %	0.00 %	0.00 %	4.80%	19.00 %	57.10 %	0.00 %	100.00%
<b>Recreation</b>	22	2	1	0	1	0	0	26
	84.60 %	7.70 %	3.80 %	0.00%	3.80%	0.00%	0.00 %	100.00%
<b>Total</b>	54	17	8	2	11	17	1	110
	49.10 %	15.50 %	7.30 %	1.80%	10.00 %	15.50 %	0.90 %	100.00%

**Table B-13: Modes used by Bus Passengers**

Types of Mode	Frequency	Percent
Bus	93	41.15
Rail	9	3.98
Boat/Launch	10	4.42
Rickshaw	30	13.27
Van	21	9.29
On foot	63	27.88
Total	226	100.00

**Table B-14: Travel Time for Bus Passengers**

Total travel time of the trip in min/hour	Percentage	Frequency
<b>Within 30 Minutes</b>	31	36
<b>30-60 Minutes</b>	38.8	45

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**APPENDIX-B**

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<b>Within 1-2 Hours</b>	16.4	19
<b>Within 2-3 Hours</b>	6	7
<b>Within 3-4 Hours</b>	5.2	6
<b>Within 4-5 Hours</b>	1.7	2
<b>Above 5 Hours</b>	0.9	1
<b>Total</b>	100	116

**Table B-15: Trip Cost according to the Distance**

<b>Cost</b> <b>Distance</b>	<b>Within 50 Taka</b>	<b>51-100 Taka</b>	<b>101-200 Taka</b>	<b>201-400 Taka</b>	<b>401-600 Taka</b>	<b>Total</b>
<b>0.6-1km</b>	2	0	0	0	0	2
<b>1.1-2.0 km</b>	3	0	0	0	0	3
<b>2.1-3 km</b>	2	0	0	0	0	2
<b>3.1-5.0 km</b>	4	0	0	0	0	4
<b>5.1- 10.0 km</b>	20	1	0	0	0	21
<b>10.1- 20.00 km</b>	16	0	0	0	0	16
<b>20.1-30.00 km</b>	17	2	0	2	0	21
<b>Above 30.00 km</b>	13	21	6	3	1	44
<b>Total</b>	77	24	6	5	1	113



## **EXECUTIVE SUMMARY**

Faridpur Sadar Upazila is well connected with all types of road network and communication. This area is historically important where several National and Zila Road has been gone through this Upazila. It has 11 Unions and 1 Pourashava. The National Highway N7 around 252 km has gone through it which has been served several Upazilas.

There are four types of roads namely Upazila, Union, Village-A and Village-B served by LGED. All roads are categorized into Pucca, Semi pucca and Katcha Road. There are few areas which are important but traffic congestions are occurred lack of maintenance or infrastructural problems.

For exploring the traffic scenario, seven intersections have been surveyed for traffic volume count. Origin and Destination survey has been done in prominent areas. Passenger Interview Survey has been done for Bus, Train and Truck where different glimpses are explored. Regional survey has served for Bus and Truck Terminal from the study can find out the regional linkage of its surrounding Upazilas.

Trip purpose, Types of Mode, Origin and Destination Pattern, Problems, Trip Frequency, Passenger Occupancy etc. scenarios have been drawn out from this survey.

This is a submission of the traffic and transportation survey report as a part of Survey Report as per TOR of the project and mainly describes the traffic and transportation survey activities performed as per TOR.

## **ABBREVIATION AND ACRONYMS**

LGED	- Local Government Engineering Department
MV	- Motorized Vehicle
NMV	- Non Motorized Vehicle
OD	- Origin and Destination
PCE	- Passenger Car Equivalent
PCU	- Passenger Car Unit
PRA	- Participatory Rural Appraisal
RHD	- Roads and Highway Department
TOR	- Terms of Reference
UDD	- Urban Development Directorate

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## **CHAPTER 1: INTRODUCTION**

### **1.1 Background of the Study**

In the present world countries, the roads within an upazila are important and fundamental issues for communications and transactions. Thus the roads need to be well efficient and organized to serve the demand. Faridpur is a district in the south central Bangladesh and Faridpur Sadar Upazila under Faridpur District has great importance for its medieval and colonial architecture. Bangladesh has higher transportation demand and the demand of transports in Faridpur Sadar Upazila is increasing day by day. Traffic scenario and demand forecasting is essential for the design of transportation facilities and services, and also for planning, investment, and policy development. To determine the future traffic demand, existing traffic exploration is essential. Traffic study has been taken for Preparation of Development Plan for Faridpur Sadar Upazila. It is critical that this study produces an accurate value as these values form the basis for the subsequent steps and the errors in this step can propagate in the entire estimation process.

### **1.2 Extent and Nature of Traffic and Transportation Study**

An inventory of road, railway, water way and airway network, regional transport network system and its linkage with Upazila area, information on pedestrian facilities, bus/ rail/ water way routes and parking facilities has been conducted and the base map will be upgraded with this information for providing traffic and transportation policy. A survey has provided to gather current traffic information not readily available from other sources and other relevant data have been collected from LGED, RHD and Upazila Parishad. Several traffic and transportation surveys have been done for analyzing the existing traffic behavior of Faridpur Sadar Upazila which will form the basis of traffic forecasting.

### **1.3 Study Area Profile**

Faridpur Sadar Upazila is under Faridpur District which is located near the banks of Padma River. Faridpur Sadar came into existence as a Thana in 1894. It is learnt that, there lived a renowned religious leader and pious saint named **Shah Farid** in this locality. He was buried in the present place of Faridpur town after his death. It is generally believed that the upazila might have derived its name Faridpur Sadar from the name of that great saint Shah Farid. Administration Faridpur Sadar Thana was formed in 1896 and it was turned into an upazila in 1983. It has 11 unions and 1 pourashava.

### **1.4 Regional Connectivity**

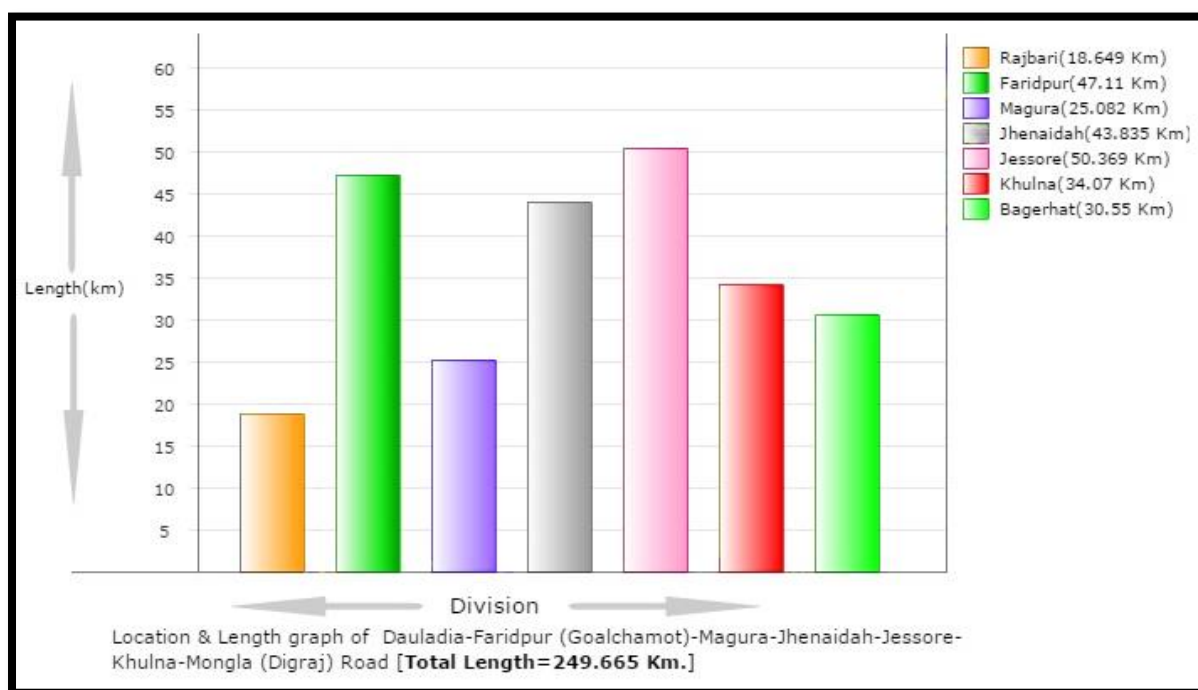
The upazila occupies an area of 412.86 sq.km. It is located between 23° 29' and 23° 34' north latitudes and between 89° 43' and 89° 56' east longitudes. The upazila is bounded on the north by Goalanda upazila of Rajbari zila and Shibalaya along with Harirampur upazilas of Manikganj zila, on the east

by Char Bhadrassan upazila, on the south by Nagarkanda and Boalmari upazilas and on the west by Madhukhali upazila and Rajbari Sadar upazila of Rajbari Zila. (Please see Map 1.1 & Map 1.2)

**Table 1.1: Faridpur Regional Road Network**

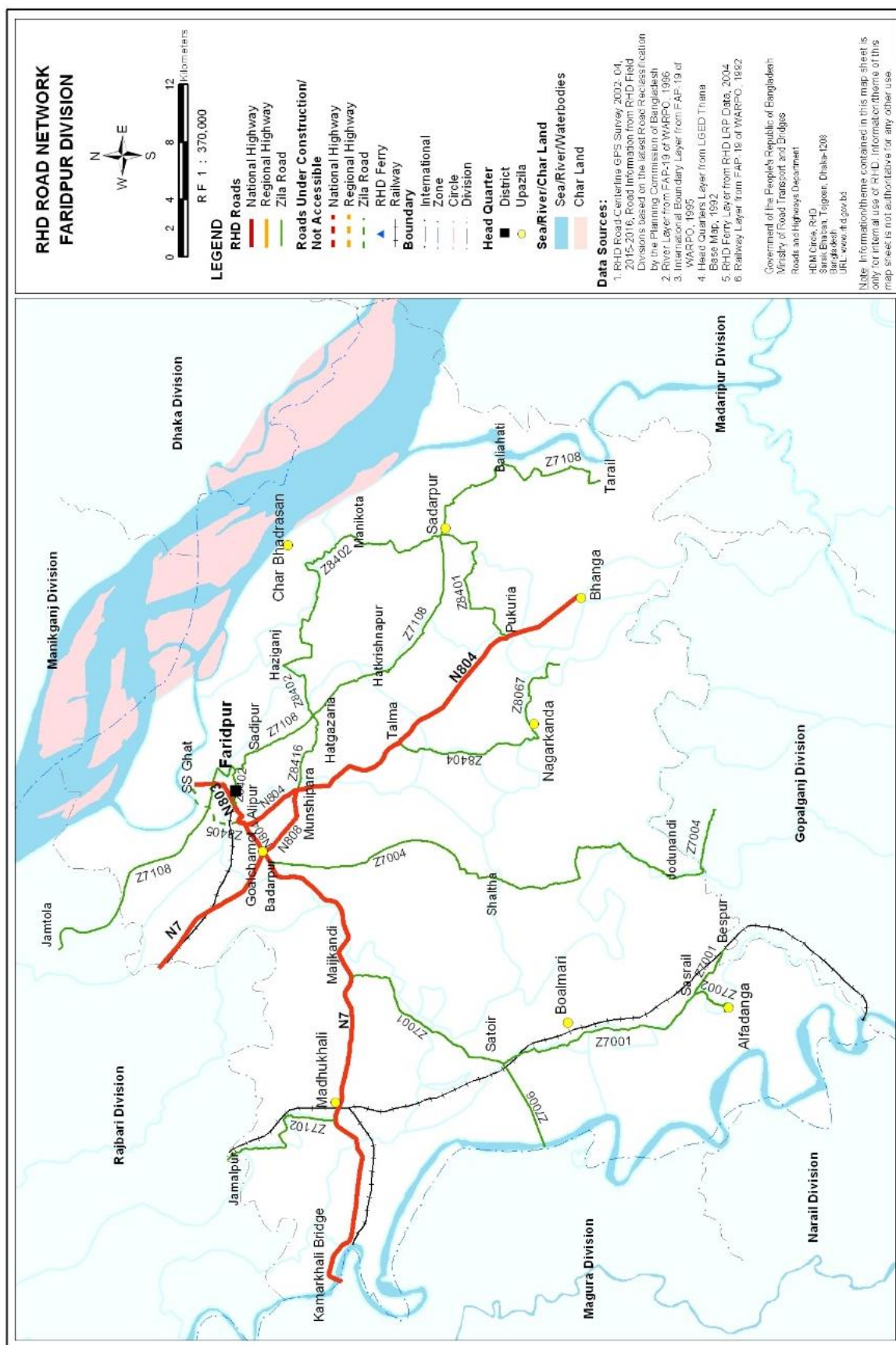
Division	Length (Km)
Rajbari	18.65
Faridpur	47.11
Magura	25.08
Jhenaidah	43.84
Jessore	50.37
Khulna	34.07
Bagerhat	30.55

Source: RHD, Road Database.



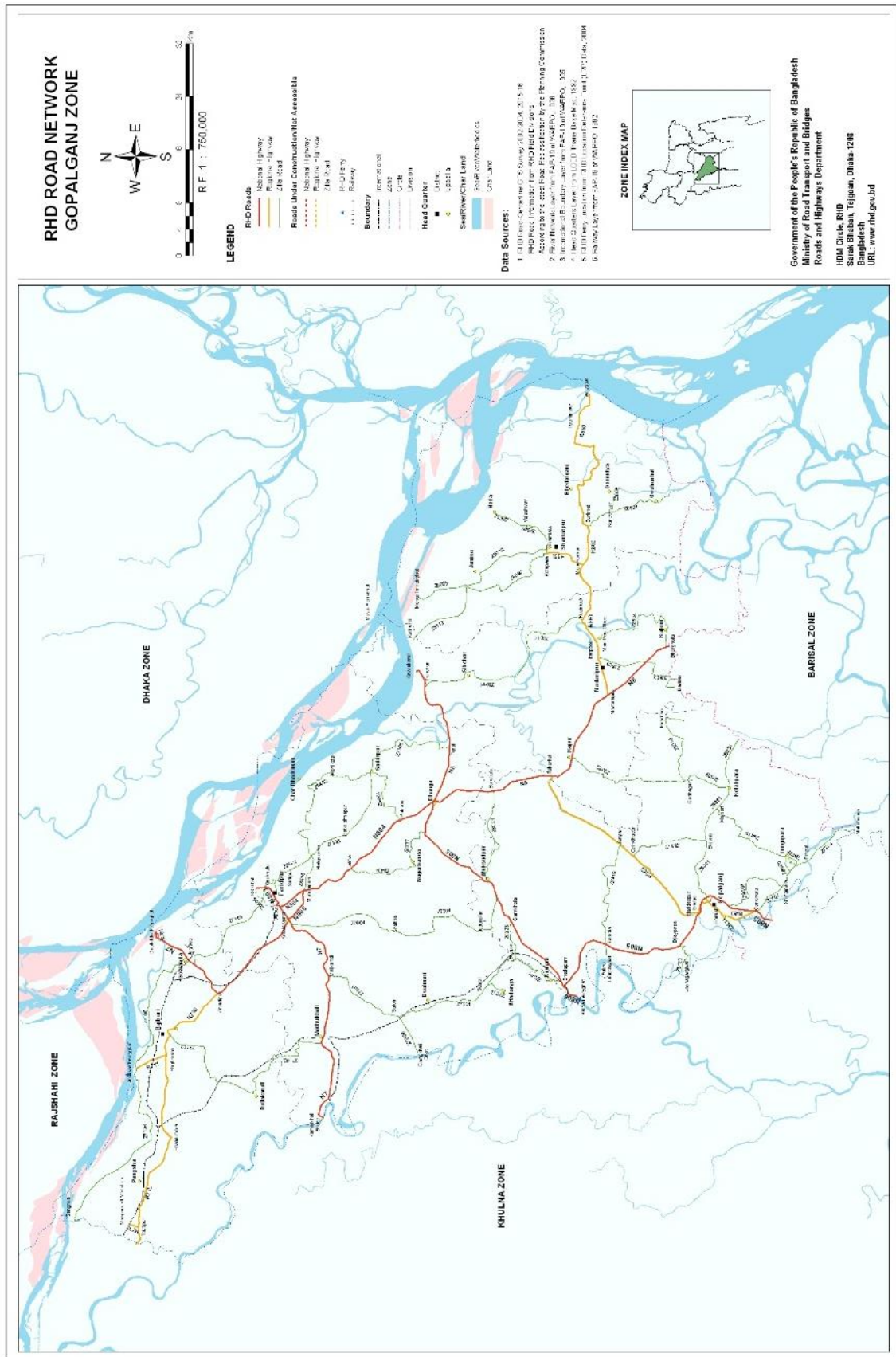
**Figure 1.1: Regional Road Length of Faridpur Sadar Upazila**

Source: RHD, Road Database.



Map 1.1: Regional Connectivity of Faridpur Sadar Upazila

Printed and Published by HDM Circle, RHD



Map 1.2: Regional Connectivity of Greater Faridpur Region

## 1.5 Road Network

### 1.5.1 Existing Road Network

Faridpur Sadar Upazila is viable in the context of road network. According to Banglapedia, 2017; Pucca road 223 km, Semi-pucca road 120 km, Katcha road 408 km; railway 25 km; waterway 40.50 nautical miles. (Please see **Map 1.3**) Road network data and other road infrastructure will be updated through physical feature survey.

**Table 1.2: Existing Road Infrastructure of Faridpur Sadar Upazila**

Road Type	Earthen Road (km)	Pavement Road (km)	Total Length (km)
Upazila Road	11.27	121.72	132.98
Union Road	30.33	118.16	148.48
Village Road-A	169.96	168.84	338.79
Village Road-B	275.93	100.73	376.66

Source: LGED, 2016

### 1.5.2 Major Road Inventory of Faridpur Sadar Upazila

The Regional Highway and several Zila Road has been passed through Faridpur Sadar Upazila. The major roads of Faridpur Sadar Upazila has shown in Table 1.2.

**Table 1.3: Major Roads of Faridpur Sadar Upazila**

Road ID	Name of the Road	Length of Road (km)
<b>N7</b>	Daulatdia Ferryghat - Goalchamot (N803) - Magura (N704) - Arappur (N704) - Jhenaidah - Hamdah (N703) - Palbari (N707, N708) - Chanchra (N706) - Murail (N707) - Phultala (N709) - Khulna - (ferry) - Kudir Battala (N709) - Digraj	252
<b>N803</b>	Goalchamot (N7) - Alipur (N804) - Faridpur	7
<b>N804</b>	Alipur (N803) - Bhanga (N8, N805)	32
<b>Z8402</b>	Faridpur-Hatgazaria-Char Bhadrason-Sadarpur Road	49
<b>Z8405</b>	Faridpur (Goalchamat)-Alipur (Ambikapur)- S.S.Ghat Road	10

Source: RHD, Road Database.

**Table 1.4: Detail Road Database of N7**

<u>Division</u> ▲	<u>Start location</u>			<u>End location</u>			<u>Length</u> ▲
	<u>LRP</u> ▲	<u>Offset</u> ▲	<u>Chainage</u> ▲	<u>LRP</u> ▲	<u>Offset</u> ▲	<u>Chainage</u> ▲	(Km)
Rajbari	LRPS	0	0	LRP018	629	18.649	18.649
Faridpur	LRP018	629	18.649	LRP064	1412	65.759	47.110
Magura	LRP064	1412	65.759	LRP089	1300	90.841	25.082
Jhenaidah	LRP089	1300	90.841	LRP134	1	134.676	43.835
Jessore	LRP134	1	134.676	LRP149	650	150.3	15.624
Jessore	LRP149	650	150.3	LRP184	546	185.045	34.745
Khulna	LRP184	546	185.045	LRP210	3330	213.345	28.300
Khulna	LRP210	3330	213.345	LRP219	624	219.115	5.770
Bagerhat	LRP219	624	219.115	LRPE	0	249.665	30.550

LRP – Location Referencing Points

Source: RHD, Road Database.

**Table 1.5: Traffic and Transportation Inventory**

Traffic ( AADT )	9325 (Motorized: 7404, Non-Motorized: 1921) Show details
Average width	7.50 (m) Width Detail
No. of bridges	68
No. of ferry ghats	0

Source: RHD, Road Database.

## 1.6 Waterway Network

There is a great option for waterway for the inhabitants of Faridpur Sadar Upazila. Waterway is 40.50 nautical miles for Faridpur but most of the waterway is underutilized. Observation during different surveys in Faridpur it is clear that water ways are mostly used for carrying goods and as a regular transportation people don't use water way network.

## 1.7 Railway Network

There is no regular Rail connection with Dhaka the capital city of Bangladesh. But, there are one main rail stations at Ward No. 8, Station Bazar, Mujib Sarak in Faridpur. In Railway master plan, Faridpur would be linked with the regional Rail Network. After completing the Padma Bridge, rail line will be linked with Faridpur City. At present, only train linked with Faridpur is Rajbari in the Morning. It reached from Rajbari at 9.00 am. All the rail lines are broad gauge system.

## **1.8 Airways**

There is no direct Air connection to Faridpur District. In Jessore, there is an Airport from where passenger can come to Faridpur and it will take less than two and half hours. Another closest Airport is at Barisal it takes about 2.5 hours. The capital city Dhaka where the main International Airport located and it takes 3.5 hours to travel to Faridpur.

## **1.9 Formulation and Mobilization of Survey Team**

### **1.9.1 Orientation & Meeting**

In order to carry out various surveys related with traffic and transportation, at first an orientation program was held at Faridpur Sadar Upazila Office (27<sup>th</sup> November, 2016) for giving a clear concept about the objectives of the project and different type of surveys. The Consultant team with expert had attended the orientation program and Mr. Shaheen Ahmed (Project Director and Senior Planner, UDD) was present in field during Survey on the behalf of UDD.

### **1.9.2 Guidance to the Survey Members**

After giving orientation, the consultants have provided guidelines to the survey members who are representatives of the Consultancy firm. The survey members have been guided by proper understanding of Questionnaire formats of different types of Survey, time schedule of conducting Survey, location of conducting Survey etc. Junior Urban Planner, Jahidul Ashik, Mehedi Hasan and Afnan Mohammad were always with the enumerator at a later stage to monitor the Transport survey.

### **1.9.3 Selection of Survey Locations**

Considering the intensity, linkage and movement of traffic different survey locations have been selected to conduct different types of survey including Volume Count, O-D Survey, Passenger Survey and Regional Transport Survey which refers as a reconnaissance survey. Major intersections, Major Roads, Bus Terminal have been identified for conducting different types of Survey. Details of survey location have been given in corresponding type of survey. Railway Station is not widely used in Faridpur, though there is a huge scope of using rail transport from Faridpur to the different parts of the country. Only a train comes from Rajbari to Faridpur in the Mohrning by 9am and it returns to Rajbari again at 9.30am. This is the only rail moves from Faridpur.

### **1.9.4 Formation of Survey Team**

The transport surveys have been carried out according to the consent of Transport Expert. The

surveyors were deployed sufficiently according to the need of each survey locations, the consultant team have considered the previous working experience of similar types of survey activities and educational qualifications. The following table represents the team formations for traffic and transportation survey at Faridpur Sadar Upazila:

**Table 1.6: List of members in Traffic and Transportation Survey**

Sl. No.	Name	No.	Activities
1	Transportation Expert Md. Abul Kashem	1	Planning, preparation of questionnaire and overall supervision of the survey activities and subsequent report preparation.
2	Planner Jahidul Ashik, Mehedi Hasan and Afnan Mohammad	3	Training, Monitoring and supervision of field level data collection and survey activities.
3	Mustaq Ahmed & Md. Halim	2	Data base format preparation and supervision of data entry activities according to the guidance of Team Leader
4	Survey Supervisor Md. Anisur Rahman	2	Inspection at every spots of Field Survey.
5	Enumerators	8	Field Survey at different locations in Faridpur
6	Data Entry Operators	10	Data Entry in Excel, Analysis and presentation in tabular format.
7	Planner Hasnat Arnab and Afnan Mohammad	2	Data checking and reviewing

*Source: Traffic and Transportation Survey, 2016-2017*



## CHAPTER 2: METHODOLOGY

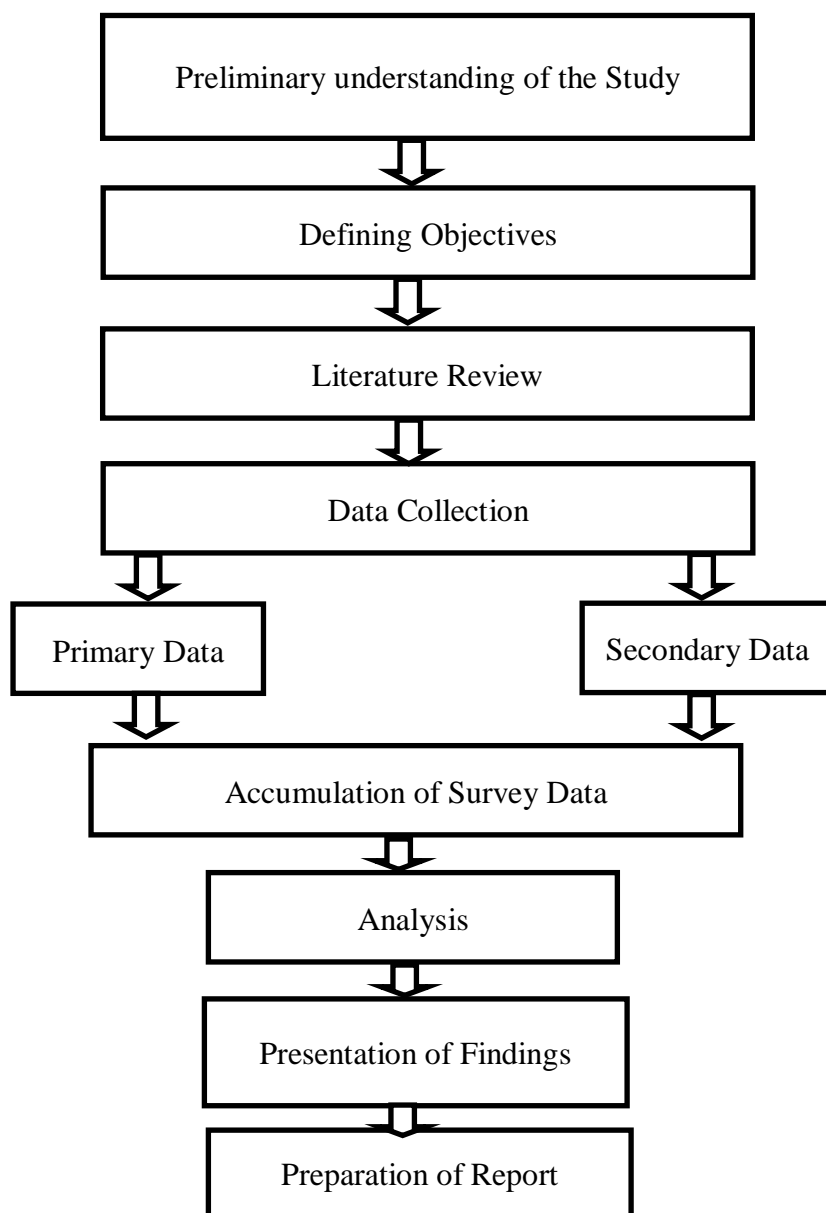


Figure 2.1: Working Methodology in Flow Chart

### 2.1 Introduction

Traffic and Transportation system is the backbone or mirror of an Upazila. It describes about the prospects of an Upazila. For preparation of a Development Plan, Transport is the prime issue for resolving different problems. For knowing different issues and problems, several surveys have been

selected for depicting the perfect scenario of the Upazila. To know the different scenario the consultants have conducted a number of surveys on traffic and transportation which are as follows:

- Traffic Volume Count Survey
- Origin & Destination (O D) Survey
- Passenger Interview Survey and
- Regional Transportation Survey

## **2.2 Reconnaissance Survey**

A reconnaissance survey has been carried out to identify where the above mentioned surveys will be done for having different impact of certain locations. According to the judgment, local knowledge and stakeholder consultation survey locations points has been selected for the above selected surveys. For this study, survey has been done on the basis of Hat Day/On Day and Non Hat Day/Off Day.

## **2.3 Sample Size Determination**

The initial sample size was determined by the following formula

$$n = \frac{z^2 pq}{d^2} \quad \text{Where,}$$

z is the normal variation and which has 1.96 for 95% confidence interval

p is the target proportion. In this case, we have assumed p= 0.5

p+q=1, therefore q=0.5

And d is the desired error which is 0.1.

The initial sample size is therefore:

$$n_0 = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.1)}$$

$$= 96.04$$

These sample size was adjusted by using the following formula:

$$n = \frac{n_0}{1 + \frac{n_0}{N}}$$

Where n is requiring sample size and N is no. of Population of Upazila.

Here, Faridpur Sadar Upazila has the population of 4, 69,410. After applying the above formula, it is found that minimum 96 samples will be surveyed for each category of survey. Considering the formula, the sample size of traffic and transportation surveys has been determined.

## **2.4 Conducted Traffic and Transportation Survey**

### **2.4.1 Traffic Volume Count Survey**

Traffic volume studies are conducted to determine the number, movements, and classifications of roadway vehicles at a given location. These data can help to identify critical flow time periods, determine the influence of large vehicles or pedestrians on vehicular traffic flow, or document traffic volume trends. For this study, Manual counting method has been applied for acquiring the required data. Manual counts are typically used to gather data for determination of vehicle classification, turning movements, direction of travel, pedestrian movements, or vehicle occupancy. The selection of study method should be determined using the count period. The count period should be representative of the time of day, day of month, and month of year for the study area. The count period should avoid special event or compromising weather conditions (Sharma 1994). Count periods may range from 5 minutes to 1 year. Typical count periods are 15 minutes or 2 hours for peak periods, 4 hours for Morning and afternoon peaks, 6 hours for Morning, midday, and afternoon peaks, and 12 hours for daytime periods (Robertson, 1994). For this survey, seven major intersections have been identified. The intersections are: Rajbari Raster Mohr, Raffle in Mohr, Janata Mohr, Bhangar Rastar Mohr, Munshi Bazar, Tambulkhana and Kanaipur. (Please see **Map 2.1**) Hat Day and Non Hat Day has been taken into consideration for each intersection. Peak hour and off peak hour have been varied in each intersection depending on its impact on the Upazila. The volume of traffic using the road in a given interval of time is one of the elemental measures of road traffic that is also termed as flow and expressed in vehicles per hour or vehicles per day. But the roads normally comprise different types of vehicles offering different degrees of interference to other traffic. However, it is obligatory to bring all types of vehicles to a common unit. The normal practice to convert the flow into common unit is Passenger Car Equivalence (PCE) or Passenger Car Unit (PCU) by using certain equivalency factors. The flow is then expressed as PCE /PCU per hour or PCE /PCU per day. The Table 2.1 represents the PCE value for the traffic volume calculation.

**Table 2.1: List of PCU value for various Vehicles**

<b>Sl. No.</b>	<b>Vehicle Categories</b>	<b>PCE</b>
1	Passenger Car	1.00
2	Light Goods Vehicle	1.00
3	Truck	3.00

Sl. No.	Vehicle Categories	PCE
4	Bus	3 .00
5	Auto-Rickshaw	0.75
6	Motor-cycle, moped, scooter	0.75
7	Paddle Cycle	0.50

*Source: Ministry of Communications, 2000 (Cited in Roads & Highways, 1994)*

#### **2.4.2 Origin and Destination (O-D) Survey**

Origin Destination (O-D) survey provides a detailed picture of the trip patterns and travel choices of a study area. The survey data related to households, individuals and trips allows stakeholders to understand travel patterns and characteristics; measure trends; provide input to travel demand model development, forecasting, and planning for area-wide transportation infrastructure needs and services; and, monitor progress in implementing transportation policies. The O D Survey has been taken in pertinent locations (Please see **Map 2.2**). The survey has carried out through random questionnaire according to the sample size.

#### **2.4.3 Passenger Interview Survey**

Passenger Interview Survey has done to know about the travel behavior of the passengers. In order to ensure the findings of the survey were representative, random sampling method was applied on this on-board face-to-face interview survey. Target respondents were picked by a random process. Passenger Interview Survey has been carried out in Bus Terminal, Bus stoppages etc. (Please see **Map 2.3**)

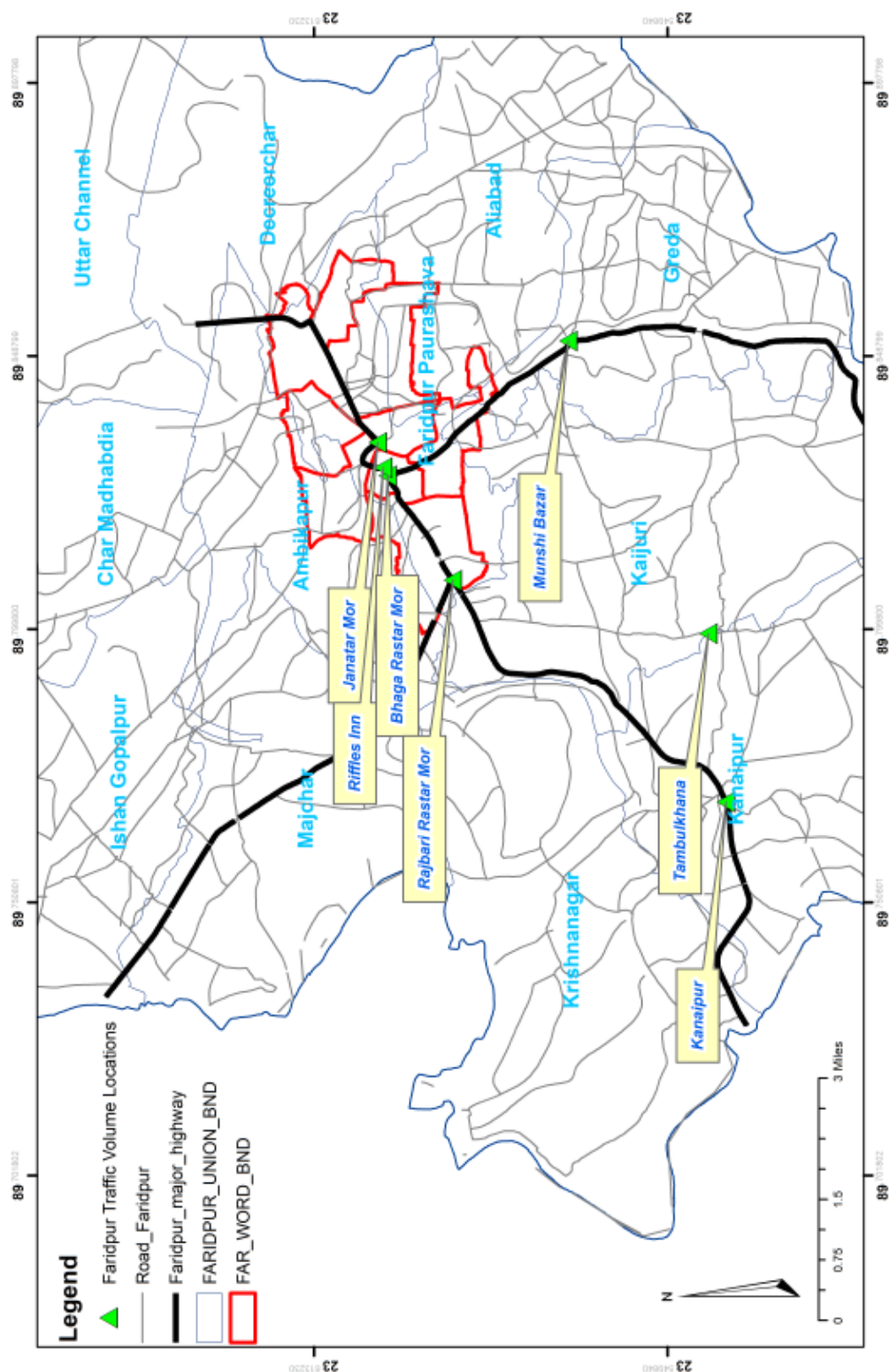
#### **2.4.4 Regional Transportation Survey**

Regional Transport is an enabler for growth but it can also be a catalyst for urban sprawl. It has implications not only for mobility and quality of life but also for the economic prosperity of cities. Regional Transport survey has been done to better understand the transport and mobility challenges and priorities for planning, infrastructure and service requirements over the short and longer term. For this survey, few locations have been considered where it will be easy to know the regional impact and regional transport network. The selected survey locations are shown in Map. (Please see **Map 2.4**)

**Table 2.2: Output and methodology of the conducted survey**

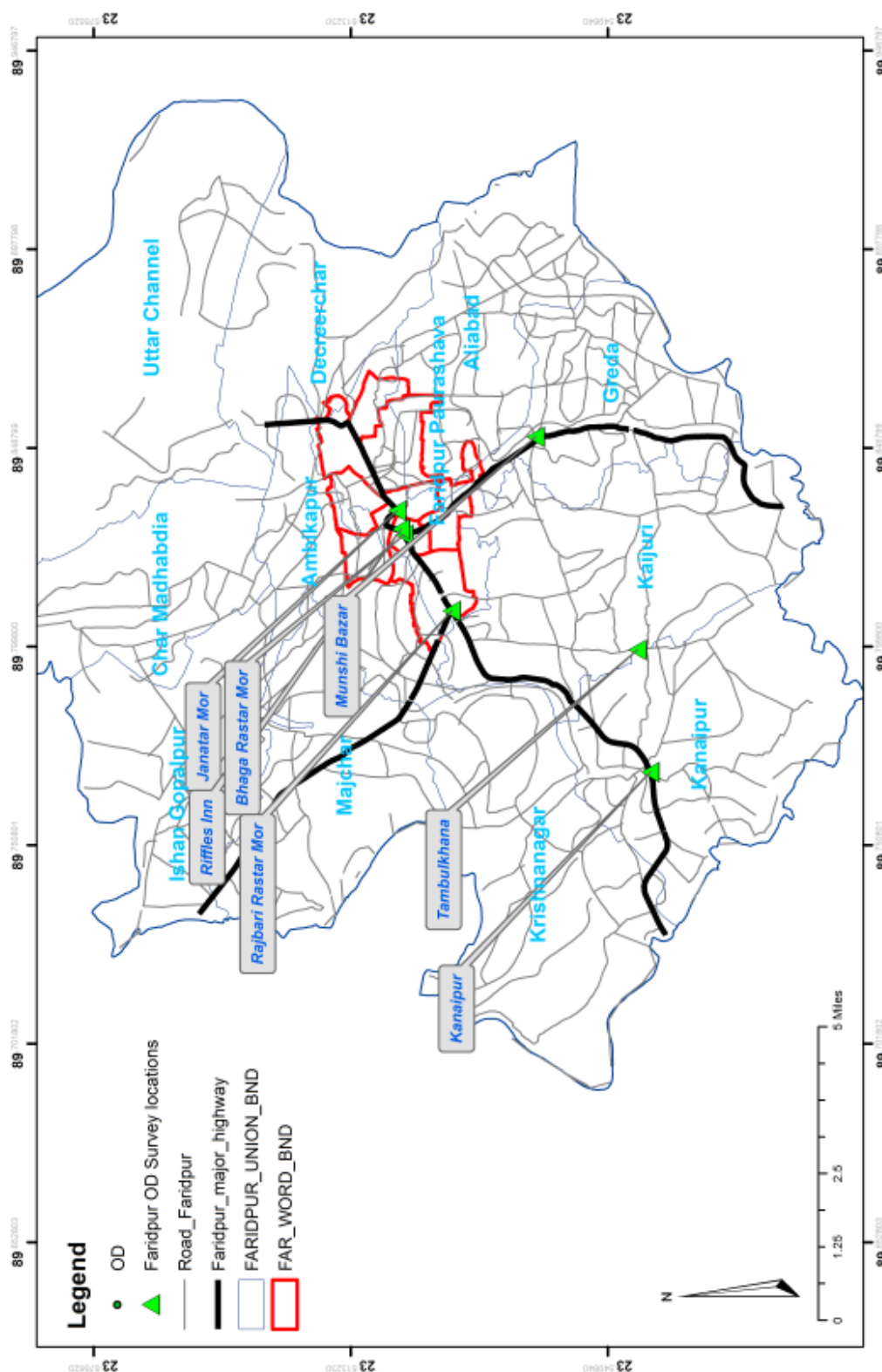
Survey	Data	Methodology
Traffic Volume Count	Details of vehicle classification, fluctuation of flow, specific vehicular movements, road features, no. of vehicle per hour.	<ul style="list-style-type: none"> <li>• Manual counting method</li> <li>• Hat/On Day and Non Hat/Off Day</li> <li>• Peak Hour and Off Peak Hour</li> </ul>
O D survey	Origin zones, destination zones, internal and external origin and destinations.	<ul style="list-style-type: none"> <li>• Simple Random Survey after determining the sample size.</li> <li>• Before conducting the interview, the questionnaire prepared for interviewing the travelers which is approved by UDD.</li> </ul>
Passenger Interview Survey	Trip destination, trip purpose, mode of transport, cost, distance etc.	<ul style="list-style-type: none"> <li>• Simple Random Survey</li> <li>• At first, the questionnaire has been prepared to cover all information required for the survey according to the TOR.</li> <li>• The questionnaire has been approved by UDD and finally a sample of passengers has been selected for collecting data through approved questionnaire.</li> </ul>
Regional Transport Network Survey	Urban growth, accessibility with nearer areas, communication and infrastructure facilities, potentiality of the area etc.	<ul style="list-style-type: none"> <li>• Simple Random Survey after determining sample size through approved questionnaire. (Please see <b>Appendix-C</b> for approved Questionnaire Format of all transport Surveys)</li> </ul>

## Location of Traffic Volume Count Survey of Faridpur Sadar Upazilla

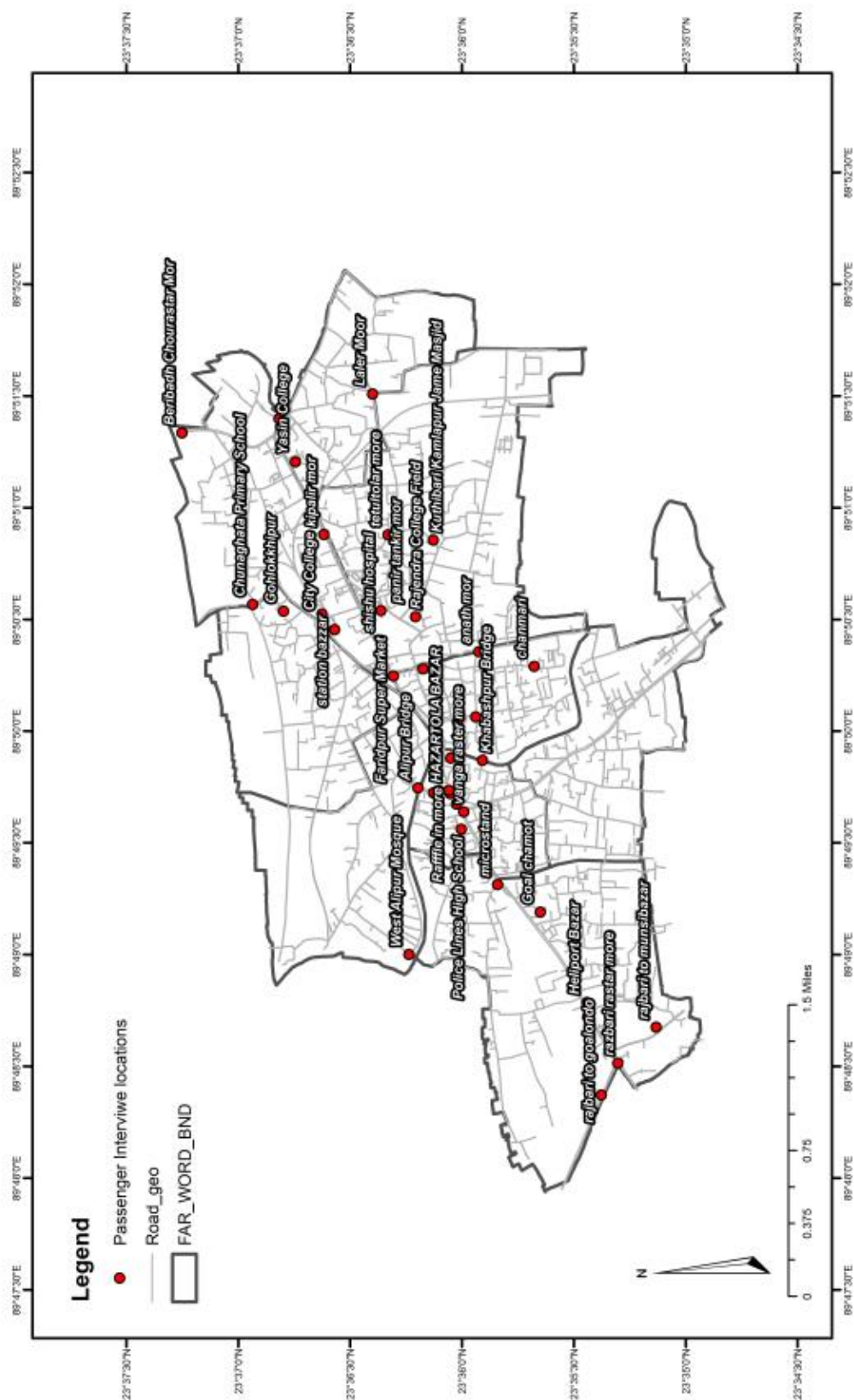


Map 2.1: Location of Traffic Volume Count at Faridpur Sadar Upazila

## Location of OD Survey of Faridpur Sadar Upazilla



Map 2.2: Location of O D Survey at Faridpur Sadar Upazila



Map 2.3: Location of Passenger Interview Survey at Faridpur Sadar Upazila

## CHAPTER 3: SURVEY FINDINGS AND ANALYSIS

### 3.1 Traffic Volume Count Survey

Traffic volume count survey has been done in seven important intersections. Peak time and off peak time vary according to the importance of the certain locations. In study area, On Day and Off day has been taken into consideration for depicting the exact scenario of traffic in Faridpur Sadar Upazila. The surveyed locations are given below:

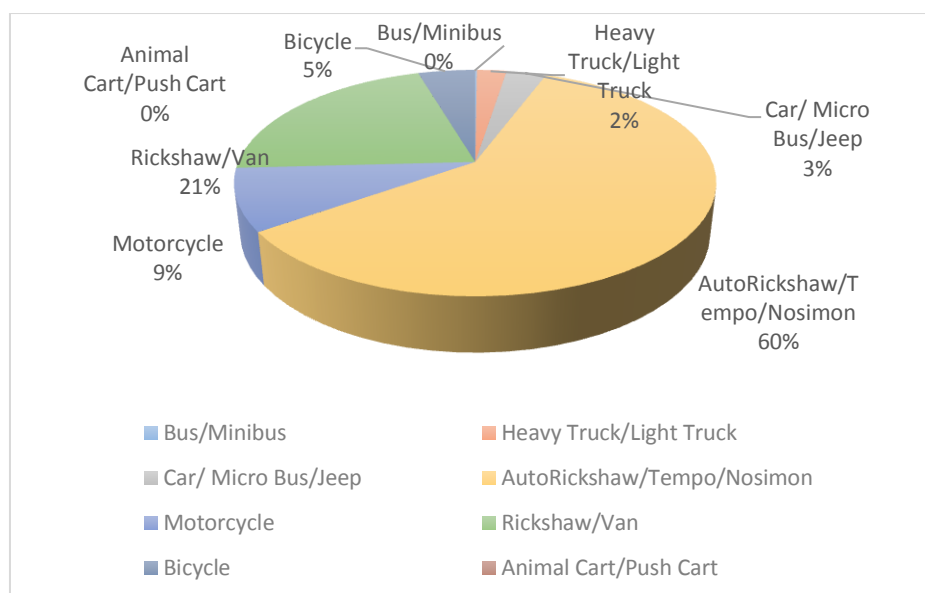
**Table 3.1: Surveyed Traffic Volume Count Locations**

Intersection	Date	Remarks
<ul style="list-style-type: none"><li>• Rajbari Raster Mohr</li><li>• Vanga to raffle in</li><li>• Janata Mohr</li></ul>	7-Mar-16	On Day
	4-Mar-16	Off Day
<ul style="list-style-type: none"><li>• Bhanga Rastar Mohr</li><li>• Munshi Bazar</li><li>• Tambulkhana</li></ul>	10-Mar-16	On Day
	7-Mar-16	Off Day
<ul style="list-style-type: none"><li>• Kanaipur</li></ul>	10-Mar-16	On Day
	11-Mar-16	Off Day

*Source: Traffic and Transportation Survey, 2016*

#### 3.1.1 Traffic flow at Janata Mohr

In Janata Mohr, there are three links which flow to D.C. office, Riffles Inn and Masrangar Shop Mohr. From the survey, it has been seen that traffic flows are busier in Riffles Inn link. The following vehicle flows represents the total average vehicle per hour in peak time during On Day.



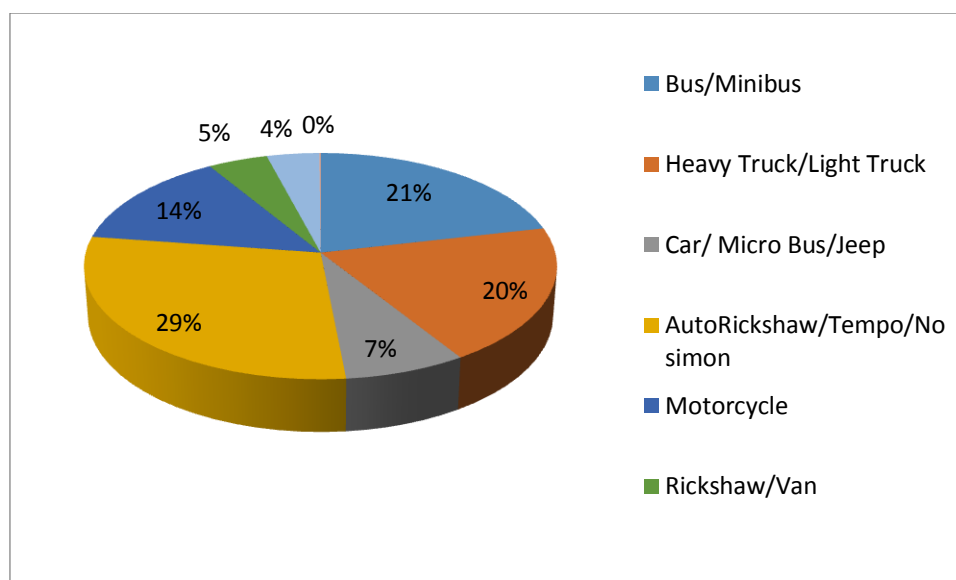
*Source: Traffic and Transportation Survey, 2016*

**Figure 3.1: Types of Mode at Janata Mohr**

From the data of above chart it is visible that in peak time per hour during on day 60% vehicles are Auto Rickshaw/Tempo/Nosimon. That means during On day passengers choose these vehicles most to reach their destinations. 21% rickshaw/van are noticed in peak time per hour. Other vehicles are motorcycle, bicycle, heavy/light truck and car/micro/jeep which percentages are 9%, 5%, 2% and 3% respectively.

### **3.1.2 Traffic flow at Rajbari Raster Mohr**

In Rajbari Raster Mohr, there are four links which flow to Munshi Bazar, Goalanda, Jessore and Bhanga Rastar Mohr. From the survey, it has been seen that traffic flows are busier in Goalanda link. The following vehicle flows represents the total average vehicle per hour in peak time during On Day.

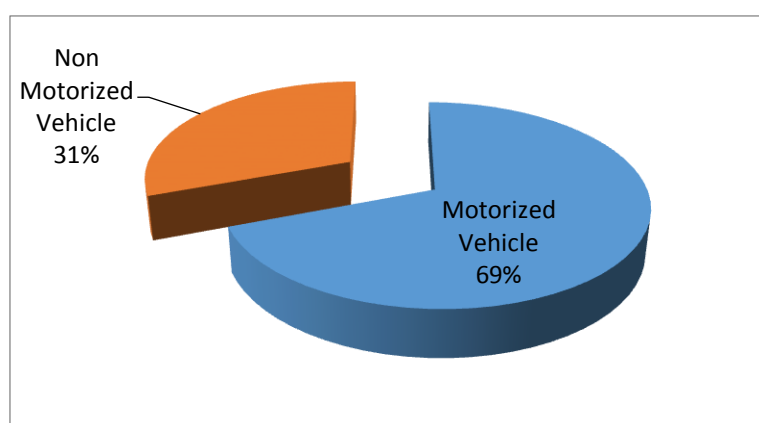


Source: Traffic and Transportation Survey, 2016

**Figure 3.2: Types of Mode at Rajbari Raster Mohr**

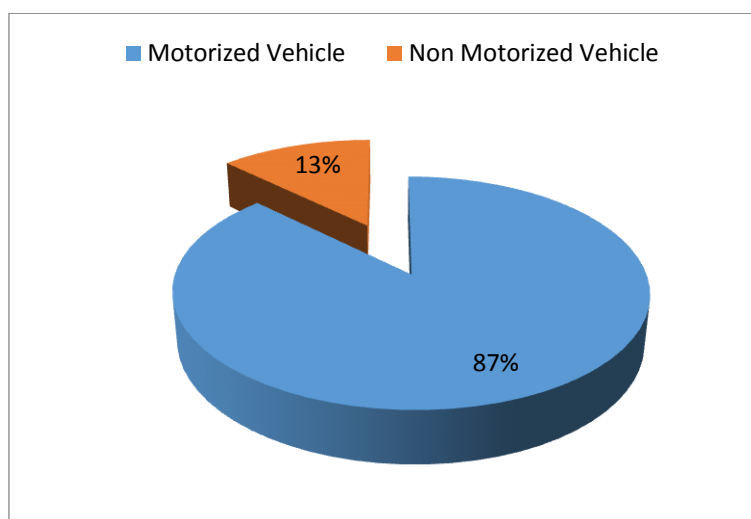
The data of above chart depicts the traffic flow Rajbari Raster Mohr. From the data of above chart it is visible that in peak time per hour during on day 29% vehicles are Auto Rickshaw/Tempo/Nosimon. That means during on day passengers choose these vehicles most to reach their destinations. 21% buses are noticed in peak time per hour. Other vehicles are motorcycle, heavy/light truck and car/micro/jeep which percentages are 14%, 20% and 7% respectively. The percentage of Rickshaw/van is only 5%.

### 3.1.3 Motorized Vehicle (MV) and Non-Motorized Vehicle (NMV)



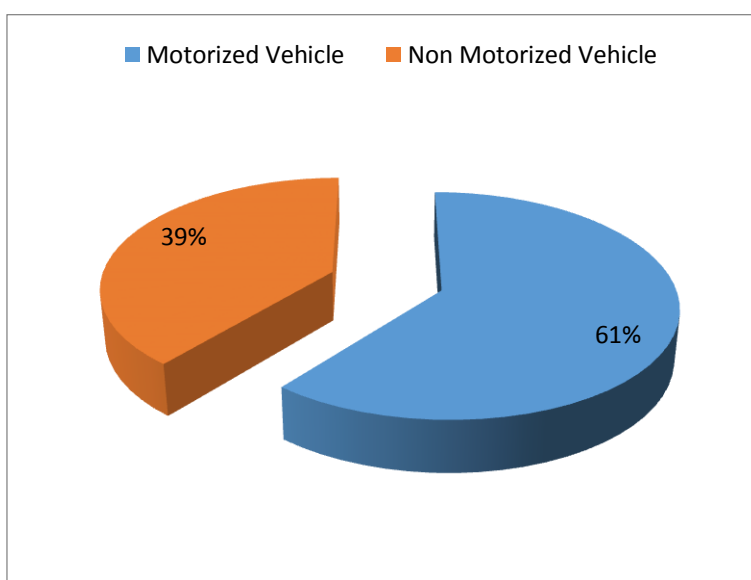
Source: Traffic and Transportation Survey, 2016

**Figure 3.3: MV and NMV at Bhanga Rastar Mohr**



Source: Traffic and Transportation Survey, 2016

**Figure 3.4: MV and NMV at Munshi Bazar**



Source: Traffic and Transportation Survey, 2016

**Figure 3.5: MV and NMV at Kanaipur**

The above pie charts show the percentages of motorized and non-motorized vehicles at three different points which are Bhanga Raster Mohr, Munshi Bazar and Kanaipur. The percentages of non-motorized vehicles are high at Munshi Bazar which is 87%. There is a slight difference between the percentages of Bhanga Raster Mohr and Kanaipur. Their percentages are 69% and 61%. In case of motorized vehicle Kanaipur is high which is 39%.

### 3.1.4 Traffic flows at Intersections

Traffic flows are occurred in different ways at every intersection. Traffic flows are varied from time to time. Sometimes traffic flows are higher at Off Day for having Regional Impact. The significant intersections are summarized in **Appendix-A**. The Average PCU and Vehicle have been shown in below table at a gist.

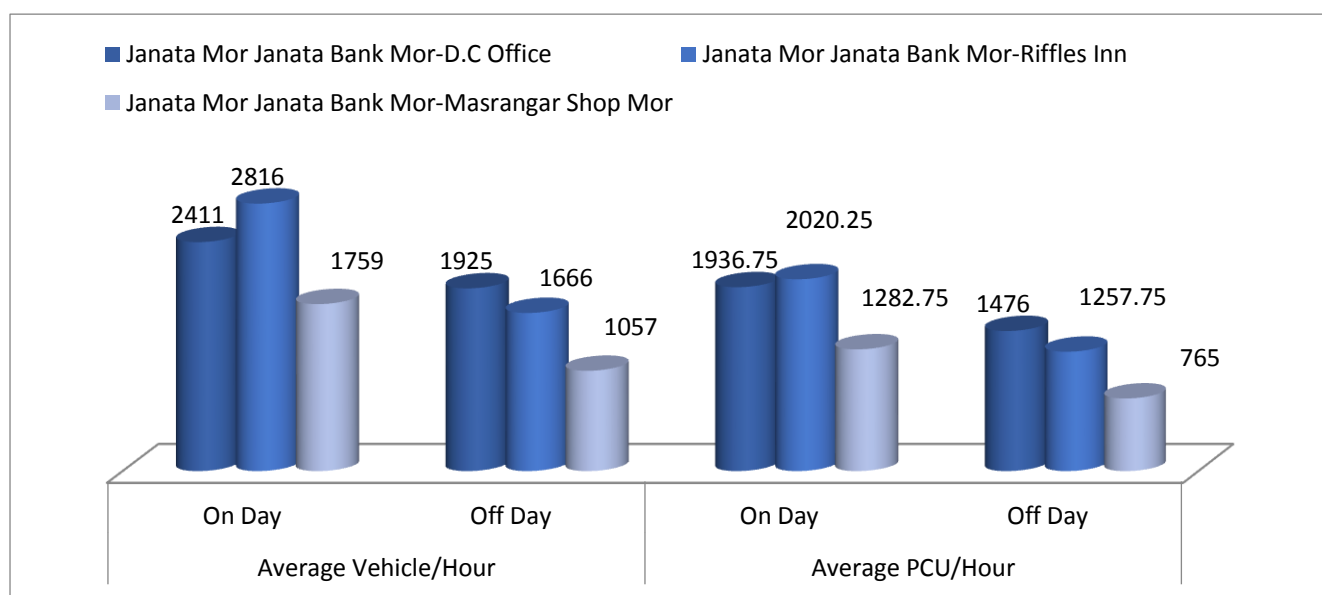
**Table 3.2: PCU and Traffic Volume at Intersections**

Intersection	Link	Average Vehicle/Hour		Average PCU/Hour	
		On Day	Off Day	On Day	Off Day
<b>Rajbari Raster Mohr</b>	Rajbari Rastar Mohr-Munshi Bazar	304	314	550	577.25
	Goalanda-Faridpur	1112	1017	2177	2000
	Jessore-Rajbari Rastar Mohr	767	926	1141.5	1520.5
	Sariatullah Bazar-Hazratola Mohr	1087	1062	1598.5	1236.5
<b>Vanga to Raffle in</b>	Raffles INN Mohr-Bhanga Rastar Mohr				2588.2
		2971	3441	2465.5	5
	Raffles-New Market	1575	1542	1197	1198
	Sariatullah Bazar-Hazratola Mohr	1252	1273	820.25	826
<b>Janata Mohr</b>	Janata Bank Mohr-D.C Office	2411	1925	1936.7	1476
				5	
	Janata Bank Mohr-Riffles Inn	2816	1666	2020.2	1257.7
				5	5
<b>Bhanga Rastar Mohr</b>	Janata Bank Mohr-Masrangar Shop Mohr	1759	1057	1282.7	765
				5	
	Bhanga Rastar Mohr-Goalchamot	1546	1398	1543.2	1350.7
				5	5
<b>Munshi Bazar</b>	Bhanga Rastar Mohr-Bhanga	3072	3171	2324.7	2337
				5	
	Bhanga Rastar Mohr-Raffles INN Mohr	3819	3681	2904.5	2820.5
<b>Tambulkhana</b>	Munshi Bazar-Bhanga Rastar Mohr	992	1320	833.25	1108.2
				5	
	Munshi Bazar-Rajbari Rastar Mohr	543	304	1179.2	550
	Munshi Bazar-Bhanga	727	664	5	946.25
	Tambulkhana-Bakunda	206		1025.5	250.25

	Tambulkhana-Kanaipur	499		568.5	
	Tambulkhana-Shalta	223		256	
	Tambulkhana-Badarpur	227		270.25	
<b>Kanaipur</b>	Kanaipur-Faridpur	1105	1200	1096.5	1229.2 5
	Kanaipur-Magura	1046	790	1259.5	1006.2 5
	Kanaipur-Krishna Nagar	451	374	288.25	239.75

Source: Traffic and Transportation Survey, 2016

Traffic flows are occurred in different ways at every intersection. The survey has conducted at different intersections. The data are represented in the above table in respect of each intersection. From the survey it has been depicted that Janata Mohr intersection is very significant. For example the data of this intersection is represented in the below table.



**Figure 3.6: Average PCU and Vehicle per Hour at Janata Mohr**

Source: Traffic and Transportation Survey, 2016

The first part of the chart shows the information of average vehicle per hour at Janata Bank Mohr-D.C Office, Janata Bank Mohr-Riffles Inn and Janata Bank Mohr-Masrangar Shop Mohr. During on day the average vehicles per hour are the highest at Janata Bank Mohr-Riffles Inn which is 2816. On the contrary during off day the pressure of vehicles is most at Janata Bank Mohr-Masrangar Shop Mohr. The adjacent part of the chart depicts the average PCU/hour of the same points. During on day the average PCU of two points is almost same the points are Janata Bank Mohr-D.C Office and Janata

Bank Mohr-Riffles Inn. The figure is 1936.75, 2020.25 respectively. During off day also these two points are mostly significant.

### 3.2 Origin and Destination Survey

Origin Destination Survey reflects the issues about travel behaviors and problems of passengers which has been summarized in below analysis.

#### 3.2.1 Trip Distribution Pattern

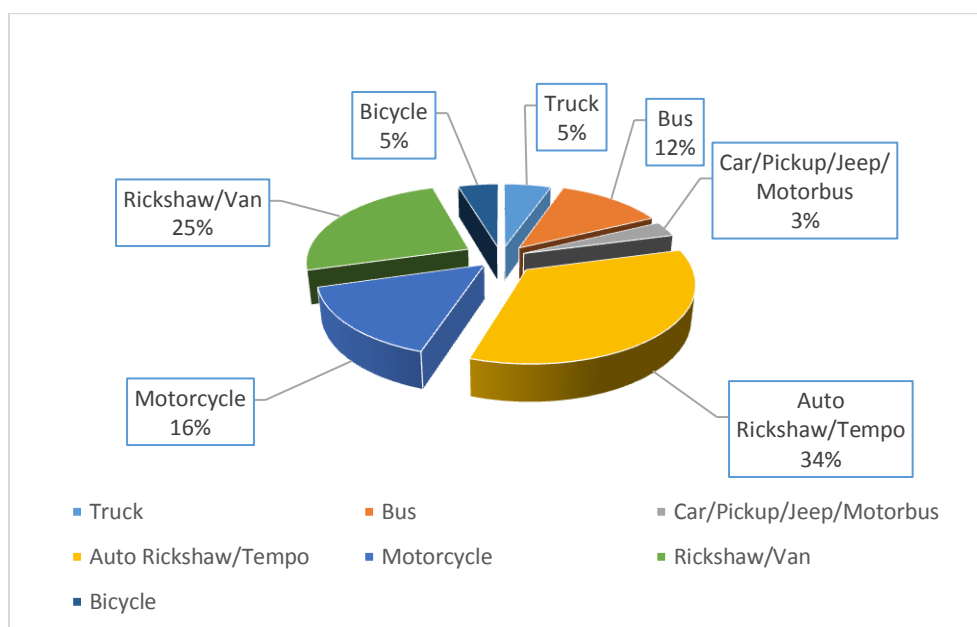
The number of O D survey has been carried out 129 where trip distribution pattern can easily determine. From the survey, it has been seen that people lean to travel internally within Unions and also travel other Upazilas and Districts. The following table represents the major trip distribution pattern of Faridpur Sadar Upazila.

**Table 3.3: Origin Destination Matrix**

Destination Origin	Bodorpur	CM B Ghat	Faridpur	Kanaipura	Munshibazar	Shibrampur	Somespur bazar	Tepakhol a	Chandpur	Gopalganj	Hajiganj	Tambulkhana	Total
Bodorpur	0	0	0	1	0	0	0	0	0	0	0	0	1
CMB Ghat	0	0	1	0	0	0	0	2	0	0	0	0	3
Faridpur	1	0	0	0	2	0	0	0	0	1	0	1	5
Kanaipura	0	1	3	0	0	1	0	0	3	0	0	1	9
Munshibazar	0	0	4	0	0	0	0	0	0	0	0	0	4
Shibrampur	0	0	1	0	0	0	0	0	0	0	0	0	1
Somespur bazar	0	0	0	0	0	0	0	0	0	0	0	3	3
Tepakhol a	0	5	7	0	0	0	1	0	0	0	2	0	15
Chandpur	0	0	0	1	0	0	0	0	0	0	0	0	1
Gopalganj	0	0	0	0	0	0	0	0	0	0	0	0	0
Hajiganj	0	0	0	0	0	0	0	0	0	0	0	0	0
Tambulkhana	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	6	16	2	2	1	1	2	3	1	2	5	42

Source: Traffic and Transportation Survey, 2016

### 3.2.2 Mode Choice

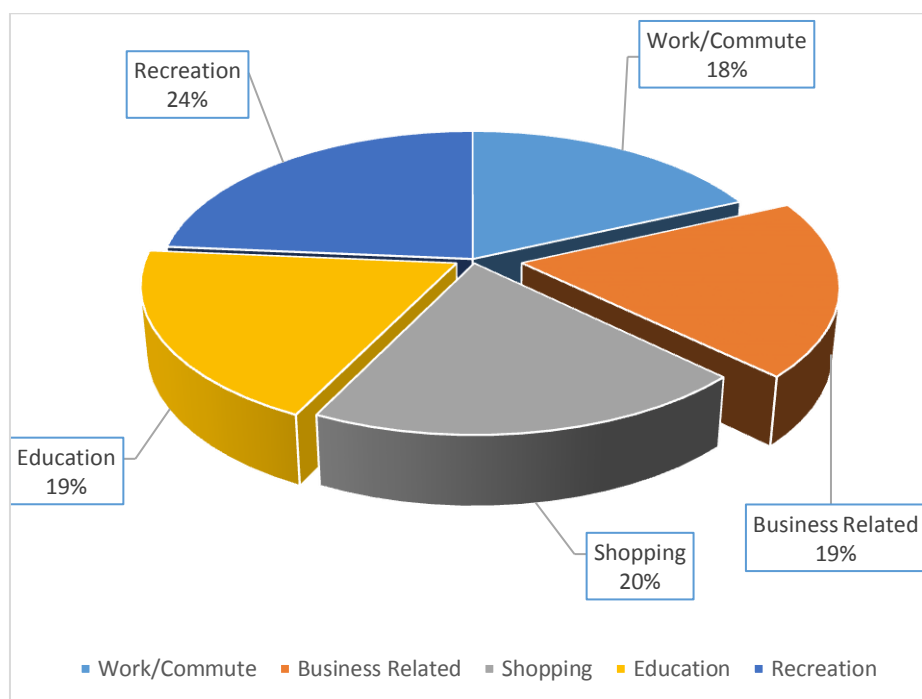


Source: Traffic and Transportation Survey, 2016

**Figure 3.7: Types of Mode**

The pie chart shows that the available modes which are roaming in this upazila and their percentages of usages. There are 7 types of mode of transport in this area. People use them according to their convenience. 34% people choose auto/rickshaw/tempo to reach to their destinations and it is the highest demanding mode in this area. The second one is rickshaw/van which is 25%. They use it to travel to nearby areas. 16% use motorcycle, 5% bicycle and truck, 12% bus and only 3% car/pickup/jeep/motorbus. These modes are used depending on need of the passengers such as they can be used for shopping purpose, education purpose, business purpose, etc.

### 3.2.3 Purpose of Trip



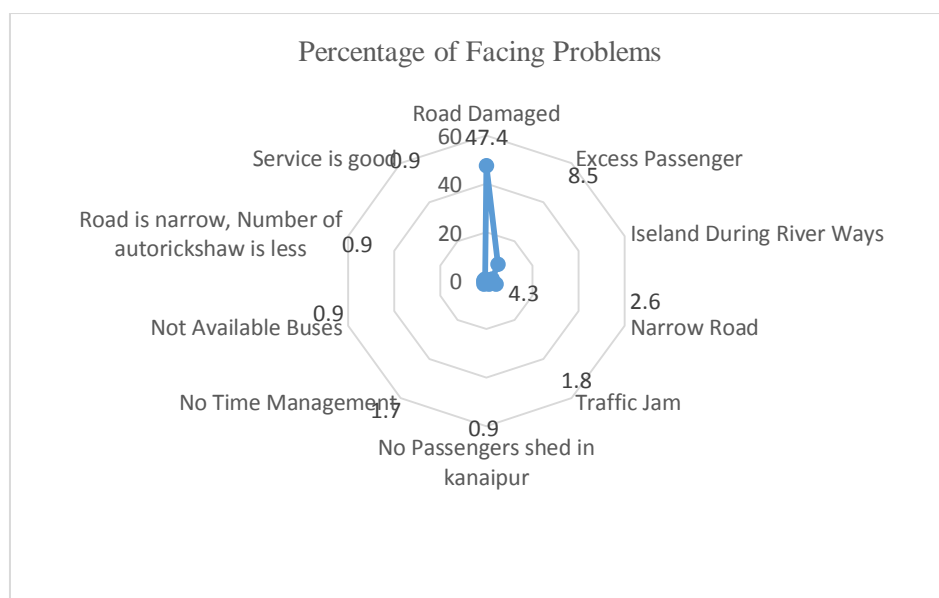
**Figure 3.8: Purpose of Trip**

*Source: Traffic and Transportation Survey, 2016*

From the information shown in this pie chart the large dark blue area resembles those whose purpose of travel is mainly recreational and which percentage is 24%. The dark ash area shows the percentage of those people who travel due to shopping and which percentage is 20%. The light blue area of the pie chart shows the percentage of those people who travel due to work and the percentage is 18%. The orange and yellow areas of the pie chart represent the percentages of those who travel because of business and education. The percentages are same in both of the cases which is 19%.

### 3.2.4 Major Prioritized Problems

From the survey, different problems have been drawn and the main problems which are facing most are categorized in below Figure 3.9.



*Source: Traffic and Transportation Survey, 2016*

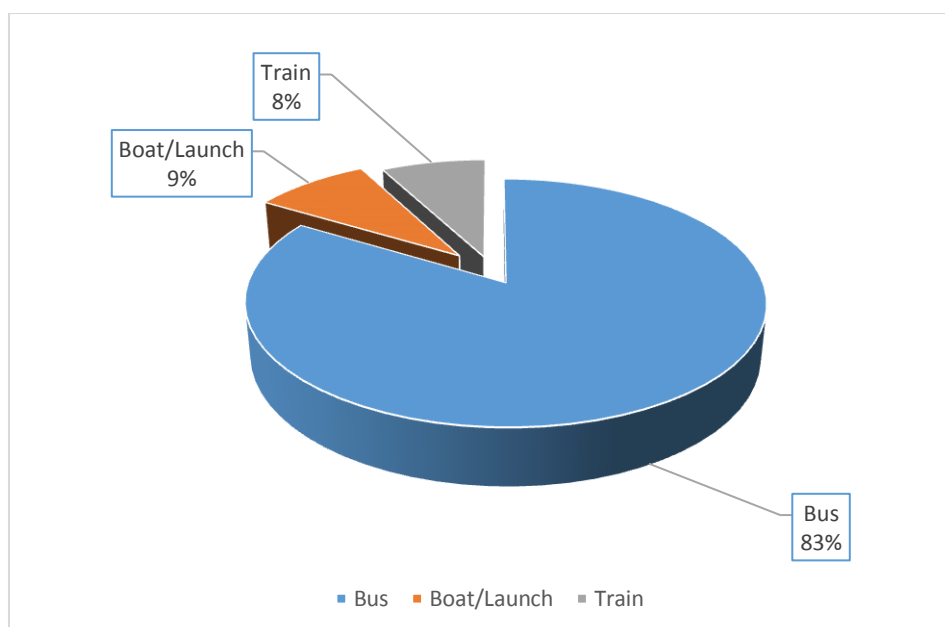
**Figure 3.9: Facing problems in Transportation**

The above figure represents the major problems faced by passengers. Most of them around 50% has responded that most the roads are damaged and it is required repairing or maintenance works.

### **3.3 Passenger Interview Survey**

#### **3.3.1 Types of Mode**

It's clear from the information given in this pie chart that shows the type of vehicle which are mostly available in the Faridpur Upazila. From the survey data it is visible that there are mostly three types vehicle which are bus, train, boat/launch. From the data it is Mohre understandable that in this upazila buses are mostly preferable and the percentage is 83%. On the other hand the percentages of train and boat/launch respectively are 8% and 9%. From this survey one thing is clear that people mostly use buses for their day to day journeys. For long distance journeys they prefer train or boat.



Source: Traffic and Transportation Survey, 2016

**Figure 3.10: Types of Mode**

### 3.3.2 Respondents Distribution

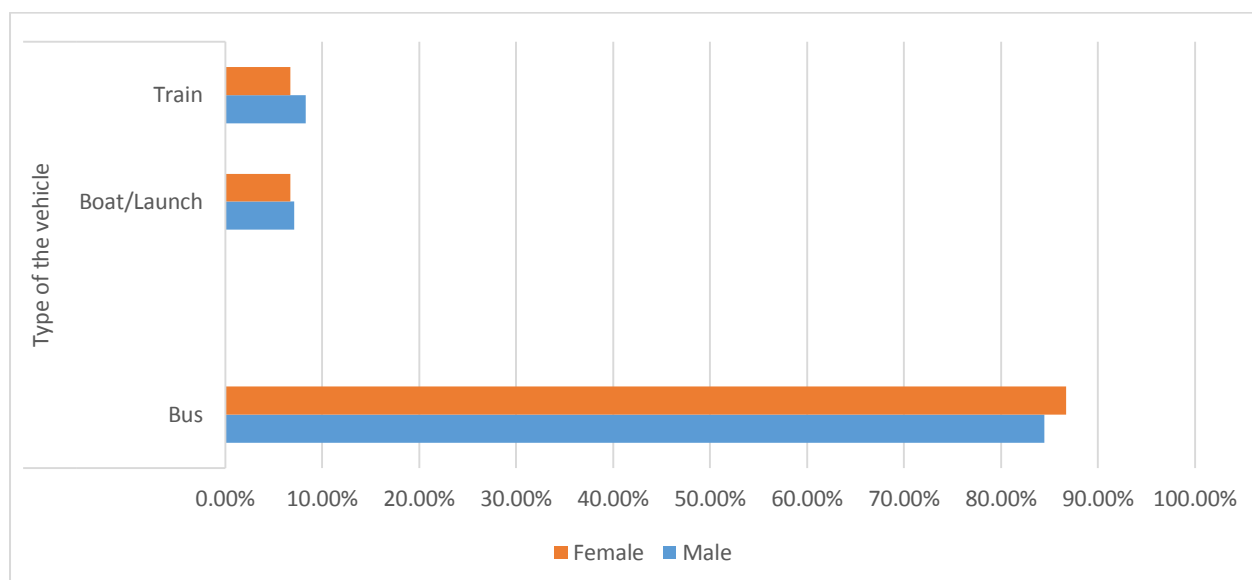
The respondents of the survey were both male and female. It is generalized that male and female prefer different types of vehicles due to some safety reasons. The table below shows a relation between sex of the respondents and types of vehicles used by them. It shows both the frequencies and percentages.

**Table 3.4: Gender of Respondents according to the Mode**

Sex of the Respondent	Gender		Types of Mode			
			Bus	Boat/Launch	Train	Total
	Male	Frequency	71	6	7	84
		Percentage	84.50%	7.10%	8.30%	100.00%
	Female	Frequency	26	2	2	30
		Percentage	86.70%	6.70%	6.70%	100.00%
	Total	Frequency	97	8	9	114
		Percentage	85.10%	7.00%	7.90%	100.00%

Source: Traffic and Transportation Survey, 2016

To visualize the relation Mohre effectively a bar chart has shown below:

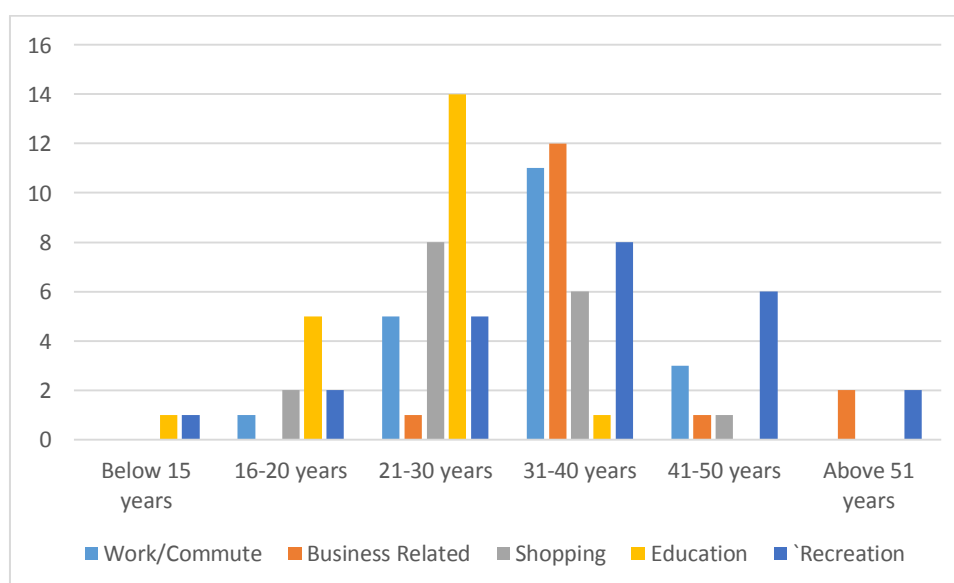


Source: Traffic and Transportation Survey, 2016

**Figure 3.11: Respondents variation according to the Mode**

The bar chart illustrates the percentages of male and female using different types of vehicle. In a comparison it can be seen that female use bus Mohre than male. If we see the data it will be Mohre representative. Almost 85% males use bus while nearby 90% females use bus. On the contrary the other two types of vehicles are mostly used by the males. The data also shows that. The percentages of train user are males nearly 10%, females less than 7%. The percentages of boat users are males Mohre than 6% and females Mohre than 4%.

### 3.3.3 Purpose of Trips according to the Age Pattern



Source: Traffic and Transportation Survey, 2016

**Figure 3.12 Purpose of Trip according to the Age Pattern**

The bar chart illustrates a relation between age of the respondents and the purpose of the trip. As with the age the need of people changes here the data also represents the fact. From the information it is visible that people below 15 years old travel due to education and recreation. The age group of 16-20 years old travel for work, shopping, education and recreation. In this age group most people's purpose of trip is education. The age group of 21-30 years old travel because of all purposes along with business. From the data it is also clear that this age group highly travel due to education. The second purpose is shopping and gradually their purposes are work, recreation and business. The inhabitants of this upazila mainly do businesses. That is why the age group of 31-40 travels mostly due to business and also for work. 41-50 years old age group's purpose of trip mostly is recreation, along with work, business and shopping purposes.

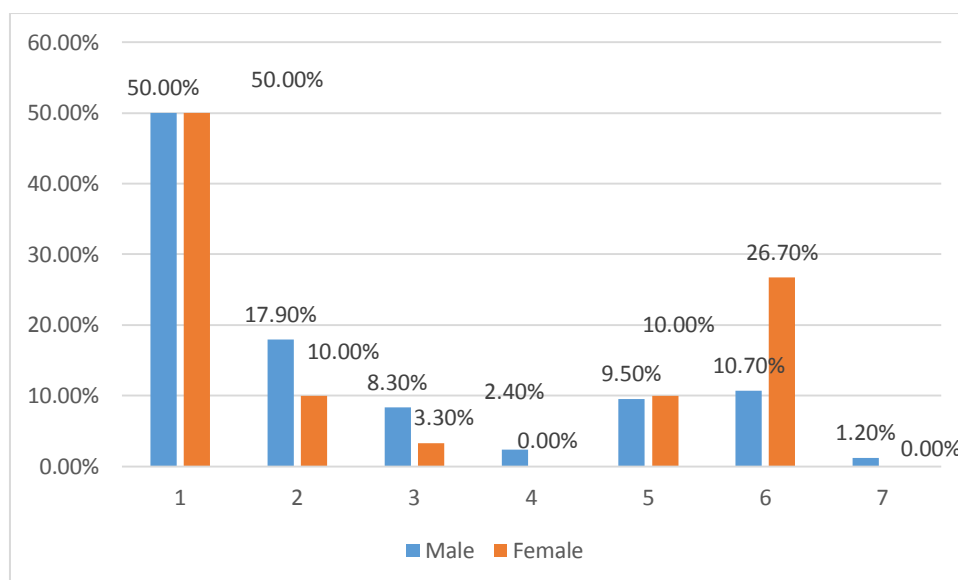
### 3.3.4 Number of Trips according to Gender

**Table 3.5: Number of Trips according to Gender**

Sex of the Respondent		No. of trips in a week							Total
		1	2	3	4	5	6	7	
Male	Frequency	42	15	7	2	8	9	1	84
	Percentage	50.00	17.90	8.30	2.40	9.50	10.70	1.20	100.00
Female	Frequency	15	3	1	0	3	8	0	30
	Percentage	50.00	10.00	3.30	0.00	10.00	26.70	0.00	100.00
Total	Frequency	57	18	8	2	11	17	1	114
	Percentage	50.00	15.80	7.00	1.80	9.60	14.90	0.90	100.00

Source: Traffic and Transportation Survey, 2016

The table shows the frequencies and percentages of the respondents according to their sex in respect of number of trip in a week. If the percentages are shown in a bar chart it will be more visible.



Source: Traffic and Transportation Survey, 2016

Figure 3.13: Number of Trips according to Gender

### 3.3.5 Number of Trips according to Trip Purpose

Table 3.6: Number of Trips according to Trip Purpose

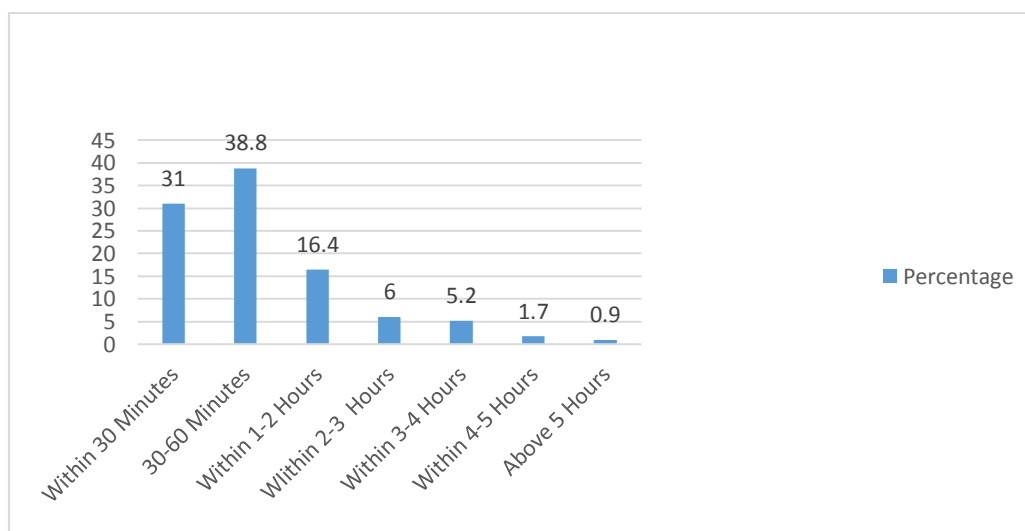
		No. of trips in a week						
		1	2	3	4	5	6	7
Purpose of Trip (Frequency and Percentage)	Work/Commute	10	0	1	0	3	5	1
		50.00%	0.00%	5.00%	0.00%	15.00%	25.00%	5.00%
	Business Related	6	7	5	1	2	0	0
		28.60%	33.30%	23.80%	4.80%	9.50%	0.00%	0.00%
	Shopping	12	8	1	0	1	0	0
		54.50%	36.40%	4.50%	0.00%	4.50%	0.00%	0.00%
	Education	4	0	0	1	4	12	0
		19.00%	0.00%	0.00%	4.80%	19.00%	57.10%	0.00%
	Recreation	22	2	1	0	1	0	0
		84.60%	7.70%	3.80%	0.00%	3.80%	0.00%	0.00%
Total		54	17	8	2	11	17	1
		49.10%	15.50%	7.30%	1.80%	10.00%	15.50%	0.90%

Source: Traffic and Transportation Survey, 2016

The table shows the relationship between the purpose of trip and number of trip in a week. There are different types of purposes mentioned in the table which are: work, business related, shopping, education and recreation. From the above information it is visible that people mostly travel once in a

week for different purposes. Especially for work, shopping and recreation they travel once in a week which percentages are respectively 50%, 54.50% and 84.60%. For education purpose they mostly travel 6 days in a week which percentage is 57.10%.

### 3.3.6 Travel Time of the Trip



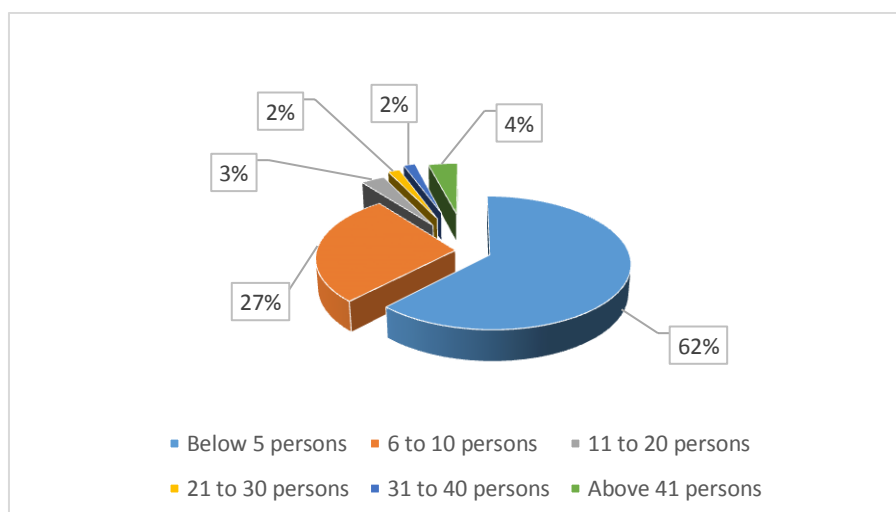
**Figure 3.14: Travel Time of the Trip**

Source: Traffic and Transportation Survey, 2016

From the information it can be seen that almost 38.8% people travel within 30-60 minute which means the distance to their workplace or school, college within 30-60 min. 31% people travel within 30 minutes. 16.4% travel within 1-2 hours. Rests of the 13.8% are for long distances which are 2 hours to above 5 hours.

### 3.3.7 Passengers Density

The below chart represents the passenger density in different vehicles.

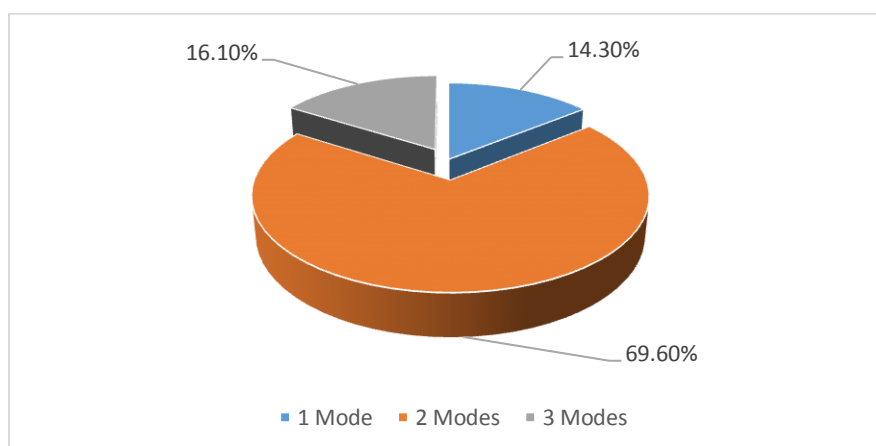


**Figure 3.15: Travel Time of the Trip**

Source: Traffic and Transportation Survey, 2016

The highest passenger density is above 41 persons. Then 31 to 40 gradually the densities are 21 to 30 persons, 11 to 20, 6 to 10 and below 5 persons.

### 3.3.8 Number of Trips

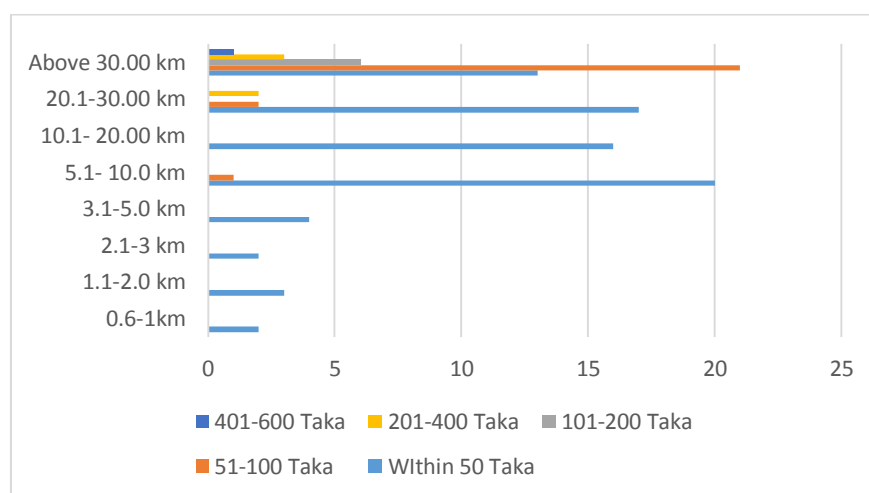


**Figure 3.16: Number of Trips per Day**

Source: Traffic and Transportation Survey, 2016

The above pie chart depicts the usage of multiple modes to complete a trip. The people of this upazila at least use two modes to complete their trip. From the data it is visible that 69.60% people use 2 modes to complete their trip whereas 14.30% use 3 modes to complete a trip. It can be by bus, then by rickshaw, by on foot or by other means of transportation. Only 16.10% people use 1 type of mode to complete their trip.

### 3.3.9 Travel Cost according to the Distance



**Figure 3.17: Travel Cost according to the Distance**

Source: Traffic and Transportation Survey, 2016

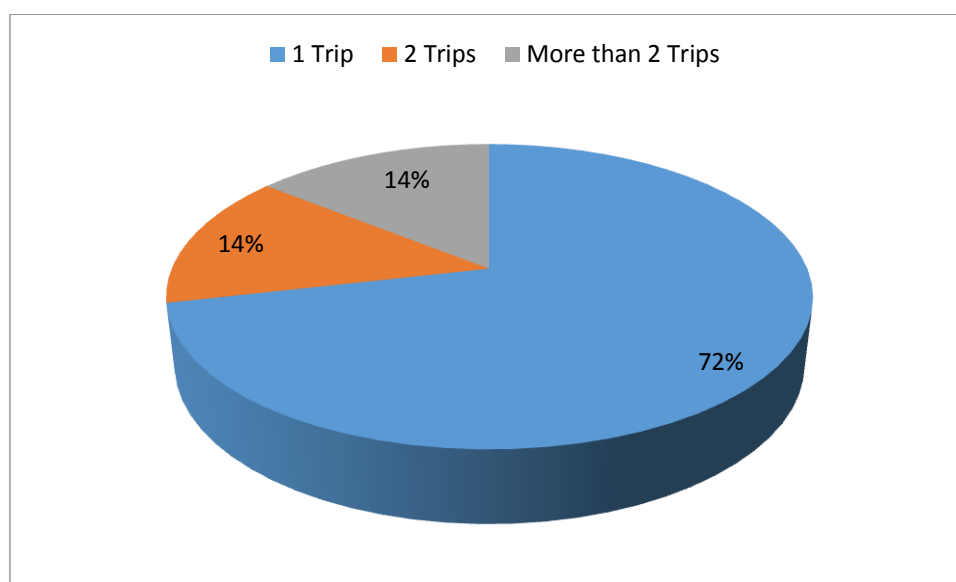
The above chart illustrates the distance and cost relationship of this upazila. The data shows that the travel distance of the people of this upazila is above 30 km. But it is remarkable that to travel to this distance they pay different fare. Most people pay 51-100 taka, the second highest is within 50 taka. Then gradually 101-200 taka, 401-600 taka and the last one is 201-400 taka. This variation to cover one distance is because of the choosing of modes by different people. The information clearly represents that people mainly pay within 50 taka to cover the distance of 1 km to 30 km.

### 3.4 Regional Transport Survey

Regional transport network survey has been done for Buses and Trucks which are coming into study area and going out form study area. From the survey, we can know the carrying capacity of the buses, types of goods carrying by trucks, connectivity pattern with other Upazilas and Districts.

#### 3.4.1 Trip Frequency of Regional Buses

The below pic chart depicts the percentages of regional buses depending upon their trip frequency. Some buses prefer 1 trip, some other 2 trips and also Mohre than 2 trips.

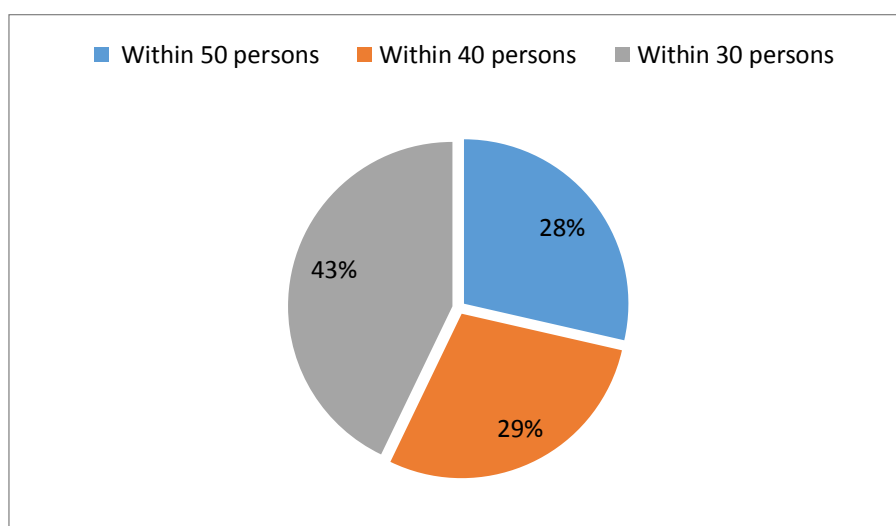


Source: Traffic and Transportation Survey, 2016

**Figure 3.18: Travel Time of the Trip**

From the information it is visible that 72% of regional buses require 1 trip per day. The percentages of other two types of frequencies are same which is 14%.

### 3.4.2 Passenger carrying capacity



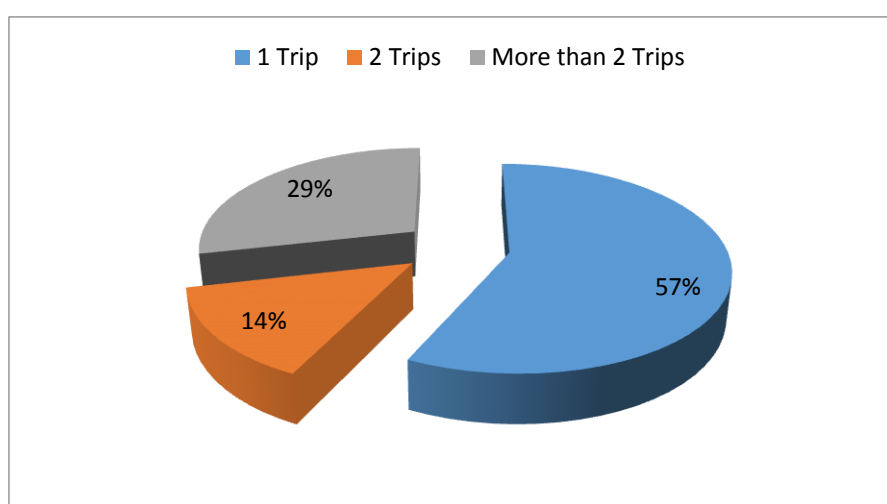
Source: Traffic and Transportation Survey, 2016

**Figure 3.19: Travel Time of the Trip**

Different buses have different capacity. From the survey data three types of buses are identified. Which are buses with the capacity of 50 persons, 40 persons and 30 persons. Buses with the capacity of 30 persons are mostly used by the passengers which percentage is 43%. Others are 28% and 29%.

### 3.4.3 Travel pattern of Trucks

Trucks are coming into study area or going out form study area for goods carrying purposes such as construction materials, agricultural products like paddy, departmental products etc.



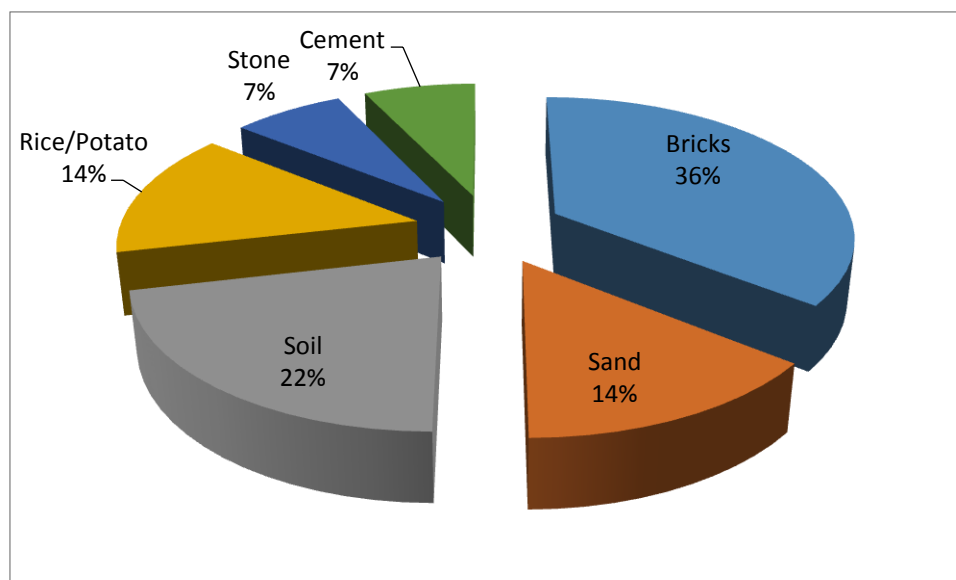
Source: Traffic and Transportation Survey, 2016

**Figure 3.20: Travel Time of the Trip**

If the frequencies of their trips is noticed it will be visible that most trucks prefer only 1 trip in a day which percentage is 57%. 29% make 2 trips and only 14% make more than 2 trips in a day.

### **3.4.4 Types of Goods carried by Trucks**

The trucks carry different types of goods which are bricks, sand, soil, rice/potato, stone and cement.



*Source: Traffic and Transportation Survey, 2016*

**Figure 3.21: Travel Time of the Trip**

From the survey the percentages of buses carrying different types of goods are identified. Most trucks carry bricks which percentage is 36. 22% carry soil, rice/potato and sand 14%. So it is noticeable that the trucks mostly carry construction materials.

## ***CHAPTER 4: CONCLUSION***

Faridpur Sadar Upazila has great potentiality because of having regional connectivity with other regions and train connectivity with several important regions. The growth of a region depends mostly on transportation. In the preparation of Development Plan for Faridpur Sadar Upazila, this transportation survey has inevitable impacts. This survey attempts to describe existing conditions of this upazila from different aspects. The survey data represents the present transport facilities of this upazila, the conditions of the vehicles, and the traffic flows of vehicles at different intersections depending on peak hour. People's perception and demand on road network and facilities identified through PRA and Socio-economic survey will be justified during preparation of draft plan for the concerned upazila. The total study on the transportation of this upazila will help to prepare a comprehensive development plan for this upazila which will be a sustainable one.

## **TRAFFIC VOLUME CALCULATION**

### **A) Rajbari Raster Mor**

**Table A-1: Hourly Traffic Volume according to the Vehicle Types for Rajbari Rastar Mor-Munshi Bazar link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Rajbari Rastar Mor to Munshibazar	Munshi Bazar to Rajbari Rastar Mor			
<b>MV</b>	Bus/Minibus	3	35	27	62	186	20.39
	Heavy Truck/Light Truck	3	32	50	82	246	26.97
	Car/ Micro Bus/Jeep	1	9	9	18	18	5.92
	Auto Rickshaw/Tempo/Nosimon	0.75	42	27	69	51.75	22.70
	Motorcycle	0.75	30	17	47	35.25	15.46
<b>NMV</b>	Rickshaw/Van	0.5	0	20	20	10	6.58
	Bicycle	0.5	0	6	6	3	1.97
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					278	537	91.45
<b>Total NMV</b>					26	13	8.55
<b>Grand Total</b>					304	550	100.00

**Table A-2: Hourly Traffic Volume according to the Vehicle Types for Rajbari Rastar Mor-Munshi Bazar link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Rajbari Rastar Mor to Munshibazar	Munshi Bazar to Rajbari Rastar Mor			
<b>MV</b>	Bus/Minibus	3	47	27	74	222	23.57
	Heavy Truck/Light Truck	3	37	39	76	228	24.20
	Car/ Micro Bus/Jeep	1	14	17	31	31	9.87
	Auto Rickshaw/Tempo/Nosimon	0.75	35	34	69	51.75	21.97
	Motorcycle	0.75	29	21	50	37.5	15.92
<b>NMV</b>	Rickshaw/Van	0.5	3	7	10	5	3.18
	Bicycle	0.5	1	3	4	2	1.27
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					300	570.25	95.54
<b>Total NMV</b>					14	7	4.46
<b>Grand Total</b>					314	577.25	100.00

**Table A-3: Hourly Traffic Volume according to the Vehicle Types for Goalanda-Faridpur link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Goalanda to Faridpur	Faridpur to Goalanda			
<b>MV</b>	Bus/Minibus	3	144	158	302	906	27.16
	Heavy Truck/Light Truck	3	136	148	284	852	25.54
	Car/ Micro Bus/Jeep	1	48	39	87	87	7.82
	Auto Rickshaw/Tempo/Nosimon	0.75	125	166	291	218.25	26.17
	Motorcycle	0.75	66	63	129	96.75	11.60
<b>NMV</b>	Rickshaw/Van	0.5	4	4	8	4	0.72
	Bicycle	0.5	8	0	8	4	0.72
	Animal Cart/Push Cart	3	0	3	3	9	0.27
<b>Total MV</b>					1093	2160	98.29
<b>Total NMV</b>					19	17	1.71
<b>Grand Total</b>					1112	2177	100.00

**Table A-4: Hourly Traffic Volume according to the Vehicle Types for Goalanda-Faridpur link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Goalanda to Faridpur	Faridpur to Goalanda			
<b>MV</b>	Bus/Minibus	3	124	141	265	795	26.06
	Heavy Truck/Light Truck	3	123	150	273	819	26.84
	Car/ Micro Bus/Jeep	1	54	41	95	95	9.34
	Auto Rickshaw/Tempo/Nosimon	0.75	106	140	246	184.5	24.19
	Motorcycle	0.75	61	59	120	90	11.80
	Rickshaw/Van	0.5	5	2	7	3.5	0.69

**APPENDIX-A**

<b>NMV</b>	Bicycle	0.5	3	5	8	4	0.79
	Animal Cart/Push Cart	3	0	3	3	9	0.29
<b>Total MV</b>					999	1983.5	98.23
<b>Total NMV</b>					18	16.5	1.77
<b>Grand Total</b>					1017	2000	100.00

**Table A-5: Hourly Traffic Volume according to the Vehicle Types for Jessore-Rajbari Rastar Mor link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Jessore to Rajbari Rastar Mor	Rajbari Rastar Mor to Jessore			
<b>MV</b>	Bus/Minibus	3	44	92	136	408	17.73
	Heavy Truck/Light Truck	3	40	79	119	357	15.51
	Car/ Micro Bus/Jeep	1	36	45	81	81	10.56
	Auto Rickshaw/Tempo/Nosimon	0.75	119	68	187	140.25	24.38
	Motorcycle	0.75	103	30	133	99.75	17.34
<b>NMV</b>	Rickshaw/Van	0.5	31	46	77	38.5	10.04
	Bicycle	0.5	18	16	34	17	4.43
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					656	1086	85.53
<b>Total NMV</b>					111	55.5	14.47
<b>Grand Total</b>					767	1141.5	100.00

**Table A-6: Hourly Traffic Volume according to the Vehicle Types for Jessore-Rajbari Rastar Mor link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Jessore to Rajbari Rastar Mor	Rajbari Rastar Mor to Jessore			
<b>MV</b>	Bus/Minibus	3	120	66	186	558	20.09
	Heavy Truck/Light Truck	3	107	69	176	528	19.01
	Car/ Micro Bus/Jeep	1	69	36	105	105	11.34
	Auto Rickshaw/Tempo/Nosimon	0.75	59	155	214	160.5	23.11
	Motorcycle	0.75	50	66	116	87	12.53
<b>NMV</b>	Rickshaw/Van	0.5	44	29	73	36.5	7.88
	Bicycle	0.5	27	22	49	24.5	5.29
	Animal Cart/Push Cart	3	7	0	7	21	0.76
<b>Total MV</b>					797	1438.5	86.07
<b>Total NMV</b>					129	82	13.93
<b>Grand Total</b>					926	1520.5	100.00

**Table A-7: Hourly Traffic Volume according to the Vehicle Types for Bhanga Rastar Mor-Rajbari Rastar Mor link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhanga Rastar Mor to Rajbari Rastar Mor	Rajbari Rastar Mor to Bhanga Rastar Mor			
<b>MV</b>	Bus/Minibus	3	97	103	200	600	18.40
	Heavy Truck/Light Truck	3	93	63	156	468	14.35
	Car/ Micro Bus/Jeep	1	32	26	58	58	5.34
	Auto Rickshaw/Tempo/Nosimon	0.75	248	148	396	297	36.43
	Motorcycle	0.75	91	57	148	111	13.62
<b>NMV</b>	Rickshaw/Van	0.5	36	9	45	22.5	4.14
	Bicycle	0.5	55	29	84	42	7.73
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					958	1534	88.13
<b>Total NMV</b>					129	64.5	11.87
<b>Grand Total</b>					1087	1598.5	100.00

**Table A-8: Hourly Traffic Volume according to the Vehicle Types for Bhanga Rastar Mor-Rajbari Rastar Mor link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhanga Rastar Mor to Rajbari Rastar Mor	Rajbari Rastar Mor to Bhanga Rastar Mor			
MV	Bus/Minibus	3	45	72	117	351	11.02
	Heavy Truck/Light Truck	3	39	48	87	261	8.19
	Car/ Micro Bus/Jeep	1	37	28	65	65	6.12
	Auto Rickshaw/Tempo/Nosimon	0.75	303	198	501	375.75	47.18
	Motorcycle	0.75	98	53	151	113.25	14.22
NMV	Rickshaw/Van	0.5	78	18	96	48	9.04
	Bicycle	0.5	25	20	45	22.5	4.24
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					921	1166	86.72
Total NMV					141	70.5	13.28
Grand Total					1062	1236.5	100.00

## B) Vanga to Raffle Inn

Table B-1: Hourly Traffic Volume according to the Vehicle Types for Raffles INN Mor-Bhanga Rastar Mor link during On Day, 7th March, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Raffles INN Mor to Bhanga Rastar Mor	Bhanga Rastar Mor to Raffles INN Mor			
MV	Bus/Minibus	3	1	0	1	3	0.03
	Heavy Truck/Light Truck	3	66	50	116	348	3.90
	Car/ Micro Bus/Jeep	1	39	54	93	93	3.13
	Auto Rickshaw/Tempo/Nosimon	0.75	1240	982	2222	1666.5	74.79
	Motorcycle	0.75	168	164	332	249	11.17
NMV	Rickshaw/Van	0.5	53	37	90	45	3.03
	Bicycle	0.5	83	33	116	58	3.90
	Animal Cart/Push Cart	3	0	1	1	3	0.03
Total MV					2764	2359.5	93.03
Total NMV					207	106	6.97
Grand Total					2971	2465.5	100

**Table B-2: Hourly Traffic Volume according to the Vehicle Types for Raffles INN Mor-Bhanga Rastar Mor link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Raffles INN Mor to Bhanga Rastar Mor	Bhanga Rastar Mor to Raffles INN Mor			
<b>MV</b>	Bus/Minibus	3	1	1	2	6	0.06
	Heavy Truck/Light Truck	3	37	60	97	291	2.82
	Car/ Micro Bus/Jeep	1	57	84	141	141	4.10
	Auto Rickshaw/Tempo/Nosimon	0.75	968	826	1794	1345.5	52.14
	Motorcycle	0.75	193	202	395	296.25	11.48
<b>NMV</b>	Rickshaw/Van	0.5	463	349	812	406	23.60
	Bicycle	0.5	72	127	199	99.5	5.78
	Animal Cart/Push Cart	3	1	0	1	3	0.03
<b>Total MV</b>					2429	2079.75	70.59
<b>Total NMV</b>					1012	508.5	29.41
<b>Grand Total</b>					3441	2588.25	100

**Table B-3: Hourly Traffic Volume according to the Vehicle Types for Raffles-New Market link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Raffles to New Market	New Market to Raffles			
<b>MV</b>	Bus/Minibus	3	0	1	1	3	0.06
	Heavy Truck/Light Truck	3	29	21	50	150	3.17
	Car/ Micro Bus/Jeep	1	19	46	65	65	4.13
	Auto Rickshaw/Tempo/Nosimon	0.75	327	470	797	597.75	50.60
	Motorcycle	0.75	65	136	201	150.75	12.76
<b>NMV</b>	Rickshaw/Van	0.5	158	156	314	157	19.94
	Bicycle	0.5	50	97	147	73.5	9.33
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					1114	966.5	70.73
<b>Total NMV</b>					461	230.5	29.27
<b>Grand Total</b>					1575	1197	100.00

**Table B-4: Hourly Traffic Volume according to the Vehicle Types for Raffles-New Market link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Raffles to New Market	New Market to Raffles			
<b>MV</b>	Bus/Minibus	3	3	2	5	15	0.32
	Heavy Truck/Light Truck	3	24	34	58	174	3.76
	Car/ Micro Bus/Jeep	1	25	53	78	78	5.06
	Auto Rickshaw/Tempo/Nosimon	0.75	281	439	720	540	46.69
	Motorcycle	0.75	65	137	202	151.5	13.10
	Rickshaw/Van	0.5	154	213	367	183.5	23.80

**APPENDIX-A**

<b>NMV</b>	Bicycle	0.5	31	81	112	56	7.26
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					1063	958.5	68.94
<b>Total NMV</b>					479	239.5	31.06
<b>Grand Total</b>					1542	1198	100.00

**Table B-5: Hourly Traffic Volume according to the Vehicle Types for Sariatullah Bazar-Hazratola Mor link during On Day, 7th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Sariatullah Bazar to Hazratola Mor	Hazratola Mor to Sariatullah Bazar			
<b>MV</b>	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	4	2	6	18	0.48
	Car/ Micro Bus/Jeep	1	7	2	9	9	0.72
	Auto Rickshaw/Tempo/Nosimon	0.75	285	331	616	462	49.20
	Motorcycle	0.75	43	40	83	62.25	6.63
<b>NMV</b>	Rickshaw/Van	0.5	266	178	444	222	35.46
	Bicycle	0.5	46	48	94	47	7.51
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					714	551.25	57.03
<b>Total NMV</b>					538	269	42.97
<b>Grand Total</b>					1252	820.25	100.00

**Table B-6: Hourly Traffic Volume according to the Vehicle Types for Sariatullah Bazar-Hazratola Mor link during Off Day, 4th March, 2016.**

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Sariatullah Bazar to Hazratola Mor	Hazratola Mor to Sariatullah Bazar			
<b>MV</b>	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	1	3	4	12	0.31
	Car/ Micro Bus/Jeep	1	3	1	4	4	0.31
	Auto Rickshaw/Tempo/Nosimon	0.75	313	306	619	464.25	48.63
	Motorcycle	0.75	39	52	91	68.25	7.15
<b>NMV</b>	Rickshaw/Van	0.5	248	198	446	223	35.04
	Bicycle	0.5	56	53	109	54.5	8.56
	Animal Cart/Push Cart	3	0	0	0	0	0.00
<b>Total MV</b>					718	548.5	56.40
<b>Total NMV</b>					555	277.5	43.60
<b>Grand Total</b>					1273	826	100.00