Executive Summary

The Formal-Informal Economic Survey Report is in compliance to the Terms of Reference for the Preparation of Development Plan for Bagmara Upazila under the project titled "Preparation of Development Plan for Fourteen Upazilas". The main task of the report is the comprehensive presentation of the outcome of all formal and informal economic survey works; investigation and observation made in the project site as well as find outs from the general opinions of the stakeholders. The broad objective of this survey report is to present the existing status of the Upazila in terms of its overall economic activities.Economy of an area is one of the major notions of the upazila's development condition. It also reveals, which sectors of economy has been flourished here, and which sectors of economy is favorable for this area. Bagmara Upazila has diverse types of economic activities like poultry, nursery, rice mills, brick fields etc. From survey works, it has been found that the upazila needs skilled labor but female is totally segregated from both of the formal and informal sectors of economy. Thus government could take necessary steps to build the young people of this area into working skilled labor by establishing new training centers and also encouraging women to enter into the economy by taking some appropriate steps. In addition, infrastructure development (road) along with provision of loan in low interest also was preferred by most of the industries. Moreover, one of the major economic success of this area is the local markets are capable of meeting the need for most of the economic units of this area. And, the products are going beyond the upazila boundary which is favorable for flourishing economy of a region. Thus the government could take necessary steps by shifting the informal sectors into formal sectors, and thus the informal sectors could be one of the major sources of government's revenue. In addition, the management committee of the economic units both of the formal and informal area is enough conscious about their laborer's health security, though there are small consciousness among them about waste management and their surrounding environment. Thus awareness building programs could be taken regarding this problem.

EXECUTIVE SUMMARY

Baghmara Upazila is well connected with all types of road network and communication. This area is one of the important Upazilas of Rajshashi District where several Zila Roads have been gone through this Upazila. The Regional Highway R685 has been linked with Zila road Z6853 and other Zila Roads such as Z6004, Z6856 have been passed through Baghmara Upazila. It has 16 Unions and 2 Pourashava.

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

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. Bangladesh has higher transportation demand and the demand of transports in every 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. Rajshahi (Town) stands on the bank of the river Padma. Rajshahi was a sub-division of the former Greater Rajshahi zila and Bagmara Upazila is one of its 13 Upazilas. Traffic study has been taken for Preparation of Development Plan for Bagmara 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

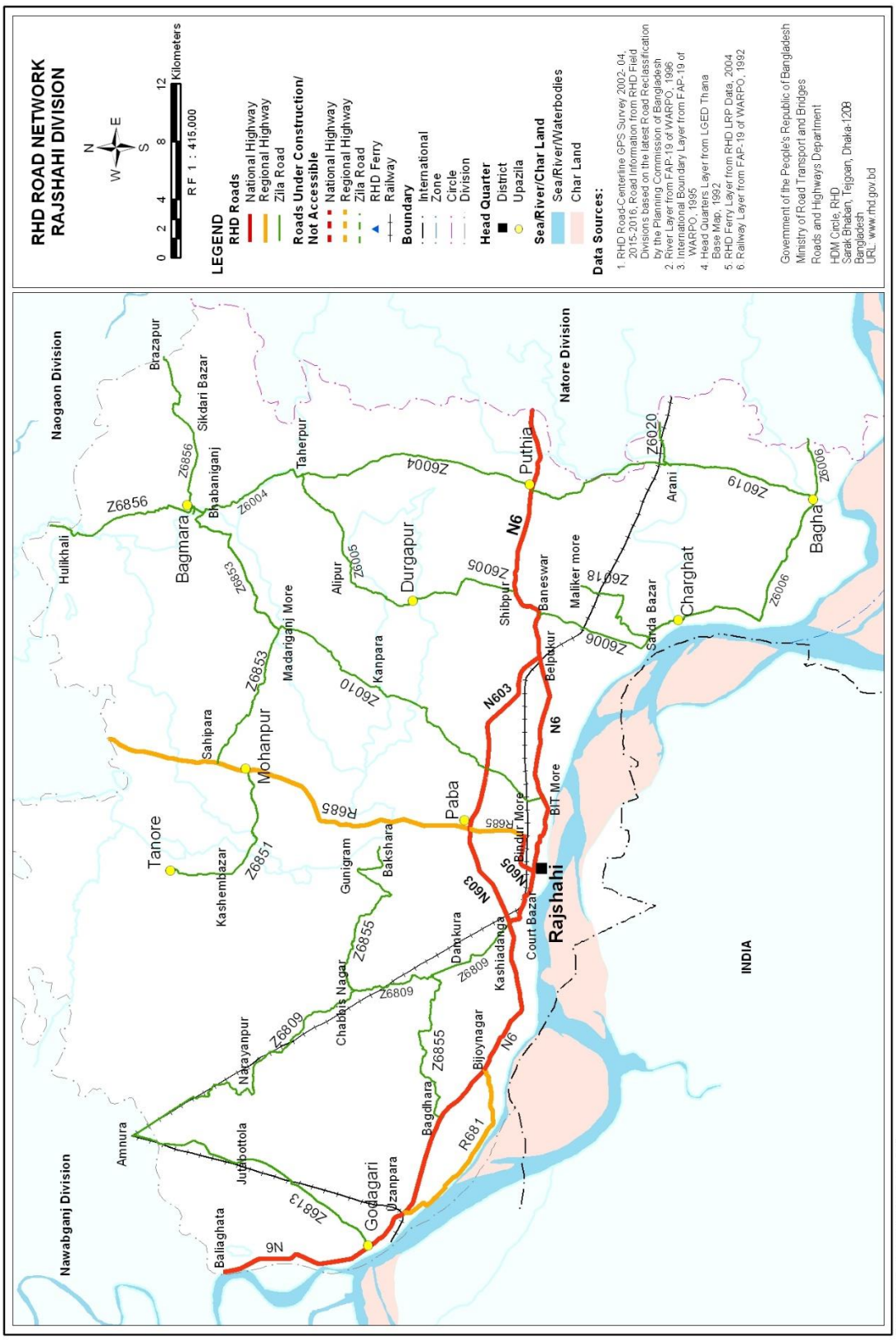
An inventory of road, railway, water way and airway network, regional transport network system and its linkage with Upazila area, information on pedestrian facilities, bus/ rail/ water way routes and parking facilities has been conducted and the base map will be upgraded with this information for providing 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 form LGED, RHD and Upazila Parishad. Several traffic and transportation surveys have been done for analyzing the existing traffic behavior of Bagmara Upazila which will form the basis of traffic forecasting.

1.3 Study Area Profile

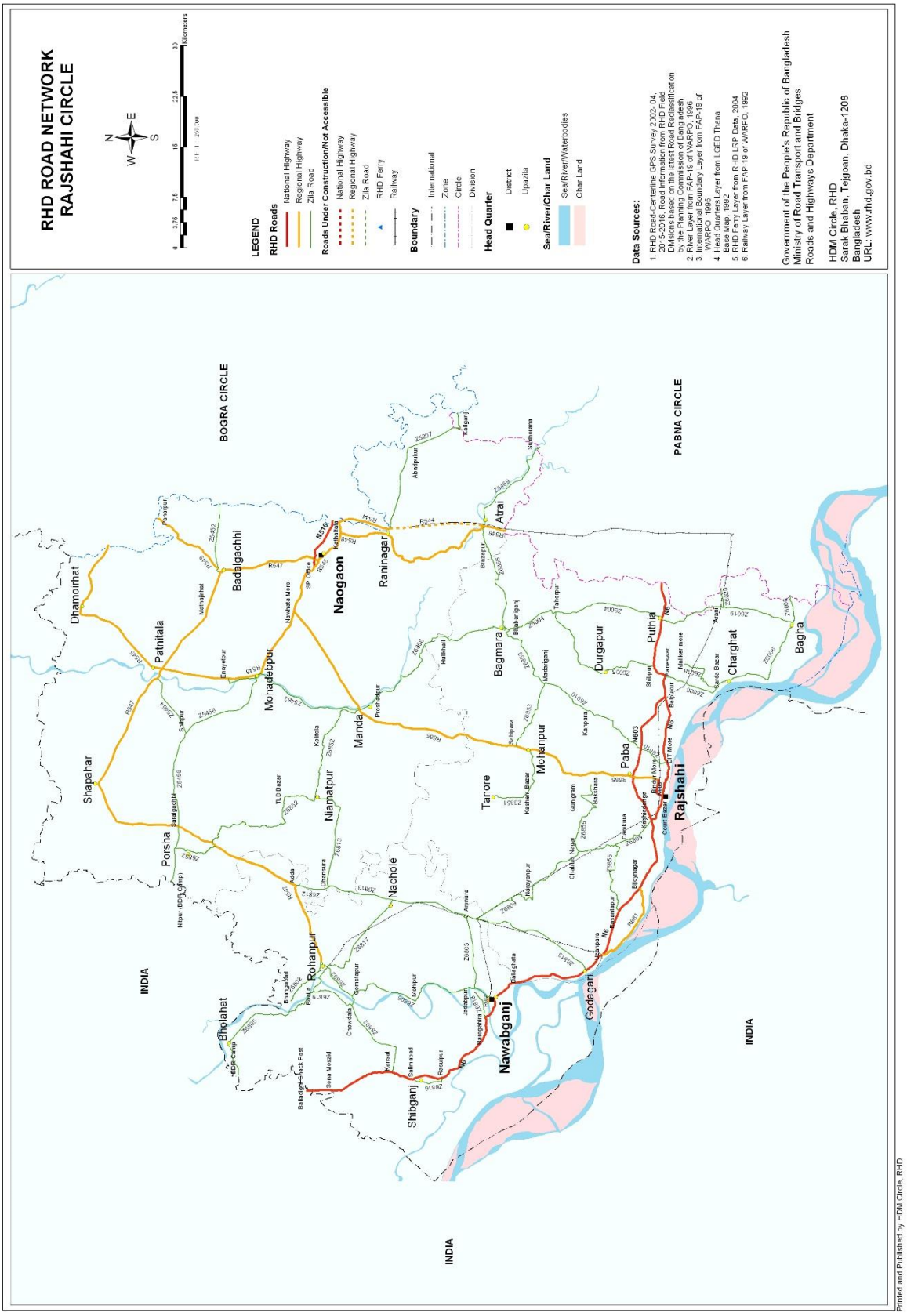
Bagmara came into existence in 1869 as Thana. Nothing is definitely known about the origin of the Upazila name. It is learnt that in the past this area was full of jungles and forest. There is a hearsay that while cleaning the jungles a Tiger means **Bagh** was killed and after that this area became popularly known as **Bagmara**. It has sixteen (16) Unions and two (2) Pourashavas.

1.4 Regional Connectivity

The Upazila occupies an area of 366.26 sq.km. It is located between 24º 30´ and 24º 41´ north latitudes and between 88º 41´ and 88º 58´ east longitudes. The Upazila is bounded on the north by Manda and Atrai Upazilas of Naogaon zila, on the east by Atrai and Natore sadar Upazila, on the south by Putia and Durgapur Upazilas and on the west by Mohanpur Upazila. (Please see **Map 1.1 & Map 1.2**)



Map 1.1: Regional Connectivity of Bagmara Upazila



Map 1.2: Regional Connectivity of Rajshahi Circle

1.5 Road Network

1.5.1 Existing Road Network

Bagmara Upazila is one of the largest Upazila of Rajshahi District. According to Banglapedia, 2017; Pucca road 127 km, Katcha road 406 km. Bagmara Upazila is served by all types of LGED Road. (Please see **Map 1.3)** Road network data and other road infrastructure will be updated through physical feature survey.

Table 1.1: Zone wise Road Length

Classification	Zone	Length (Km)
National Highway	Rajshahi	501.929
Regional Highway	Rajshahi	532.175

Source: RHD, Road Database, 2017.

Table 1.2: Existing Road Inventory of Bagmara Upazila

Road Type	Earthen Road (km)	Pavement Road (km)	Total Length (km)
Upazila Road	4.69	108.16	119.34
Union Road	44.93	85.05	147.35
Village Road-A	189.68	30.34	220.72
Village Road-B	91.82	2.63	94.9

Source: LGED, 2017.

1.5.2 Major Road Inventory of Bagmara Upazila

The National Highway N6 has gone through Rajshahi District, Regional Highway R685 has been linked with Zila road Z6853 and several Zila Roads have been passed through Bagmara Upazila. The major roads of Bagmara Upazila have shown in Table 1.4.

Table 1.3: Basic Info on Road no. N6

Road Name	Kashinathpur-Dasuria-Natore-Rajshahi-Nawabganj-Kansat-Sona Masjid-Baliadighi Border Road		
Class	National Highway	Starts at	Kashinathpur
Length	232.244 Km	Ends at	Baliadighi Border

Source: RHD, Road Database.

Table 1.4: Major Roads of Bagmara Upazila

Road ID	Name of the Road	Length of Road (km)
Z6853	Mohonpur-Bagmara (Bhabaniganj) Road	23
Z6004	Puthia-Bagmara Road	26
Z6856	Manda-Bagmara-Atrai Road	48

Source: RHD, Road Database, 2017.

Table 1.5: Regional Road Network of Bagmara Upazila

Road No.	Name	Length	Starts at	Ends at
Z6004	Puthia - Bagmara Road	26	Puthia	Bagmara
Z6853	Mohonpur-Bagmara (Bhabaniganj) Road	23	Mohonpur (Sahipara)	Bhabaniganj
Z6856	Manda-Bagmara-Atrai Road	47	Manda	Atrai

Source: RHD, Road Database, 2017.

Table 1.6: Traffic and Other Info of N6

Traffic (AADT)	6899 (Motorized: 5535 , Non-Motorized: 1364)
Average width	7.26 (m)
No. of bridges	34

Source: RHD, Road Database, 2017.

1.6 Waterway Network

There are two rivers in Bagmara Upazila area and those are: 1. Roni River and Barnai River. But it is not widely used for passenger transport. It usually used for local goods transport.

1.7 Railway Network

There is no direct rail network with Bagmara. But the Upazila is about 45km away by road from Rajshahi. So, people can come to the Upazila by bus from Rajshahi district.

1.8 Airways

Similarly, this Upazila has no direct link airway. Rajshahi has an Airport with Civil aviation. So, one can travel to Bagmara by air way from District. It will take hardly one and half hour to go to Bagmara by road.

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 Bagmara Upazila Office for giving a clear concept about the objectives of the project and different type of surveys. The Consultant team with expert has 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, Mehedi Hasan was always with the enumerator 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.

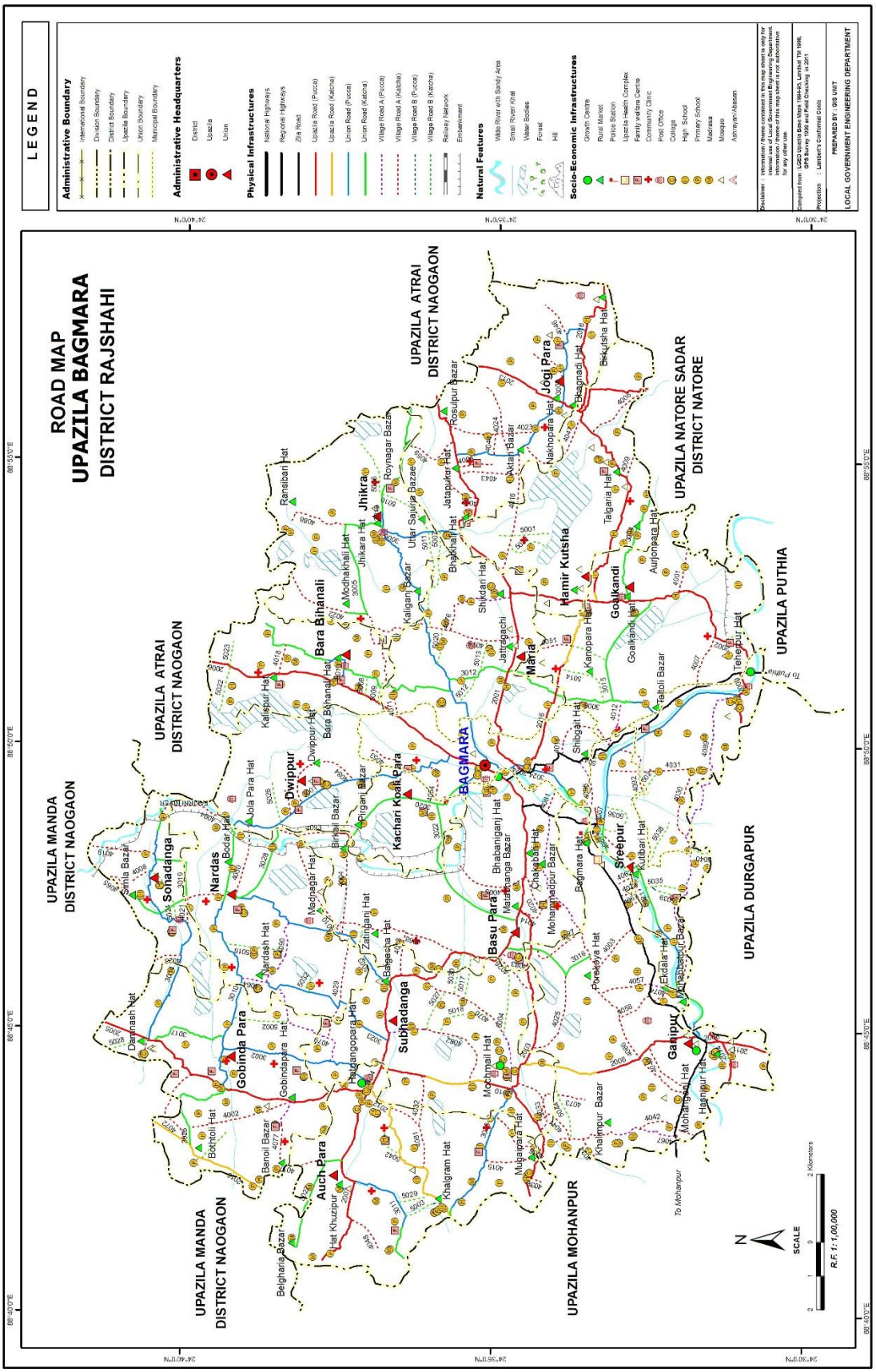
1.9.4 Formation of Survey Team

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 has 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 Bagmara Upazila:

Table 1.7: 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. Polash	2	Inspection at every spots of Field Survey.
5	Enumerators	8	Field Survey at different locations
6	Data Entry	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



Map 1.3: Road Map of Bagmara Upazila

CHAPTER 2: METHODOLOGY

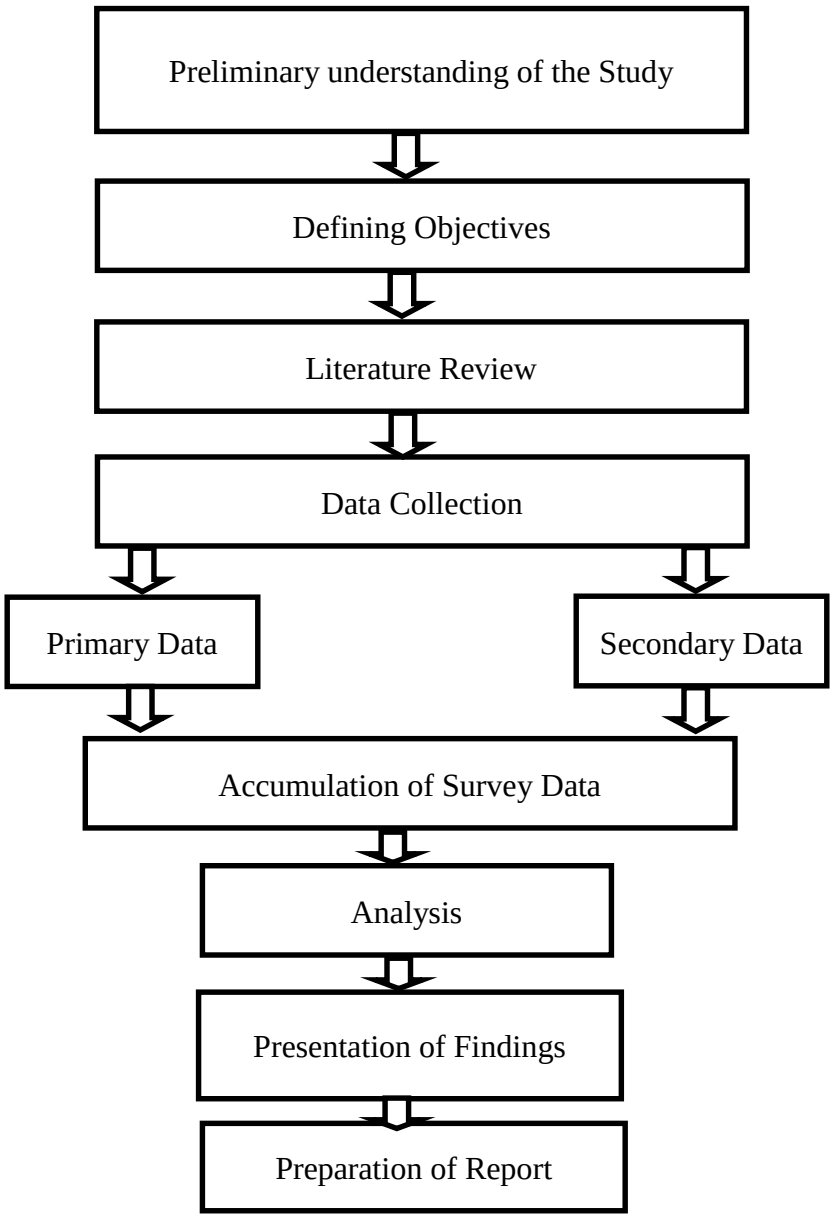


Figure 2.1: Working Methodology in Flow Chart

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 Sixe Determination

The initial sample size was determined by the following formula

$$n = \frac{z^2 pq}{d^2}$$ 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 0.12.

The initial sample size is therefore:

$$n_0 = \frac{(1.96)^2 \times 0.5 \times 0.5}{(0.12)}$$

$$= 67$$

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, Bagmara Upazila has the population of 3, 54,664. After applying the above formula, it is found that minimum 67 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). Seven intersections have been surveyed for traffic volume count which are Bhabanigonj, Taherpur, Hamir Kuthsa, Mohonpur, Shikdari, Hatgang para and Mosmoil (Please see **Map 2.1**) Hat Day and Non Hat Day have 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

Sl. No.	Vehicle Categories	PCE
1	Passenger Car	1.00
2	Light Goods Vehicle	1.00
3	Truck	3.00
4	Bus	3 .00

Sl. No.	Vehicle Categories	PCE
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

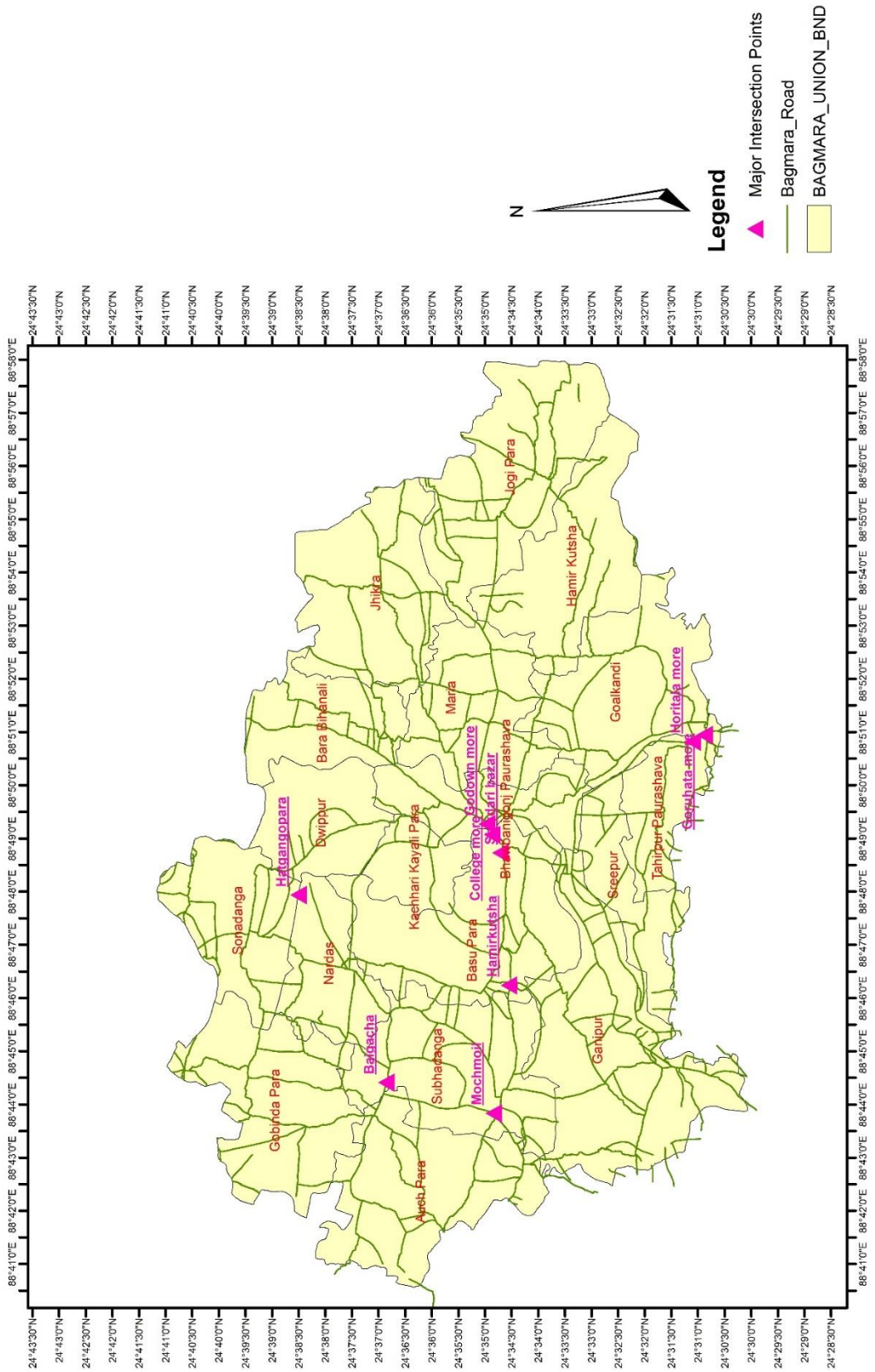
Passenger Interview Survey has done to know about the travel behavior of the passengers. In order to ensure the findings of the survey were representative, random sampling method was applied on this on-board face-to-face interview survey. Target respondents were picked by a random process. Passenger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

2.4.4 Regional Transportation Survey

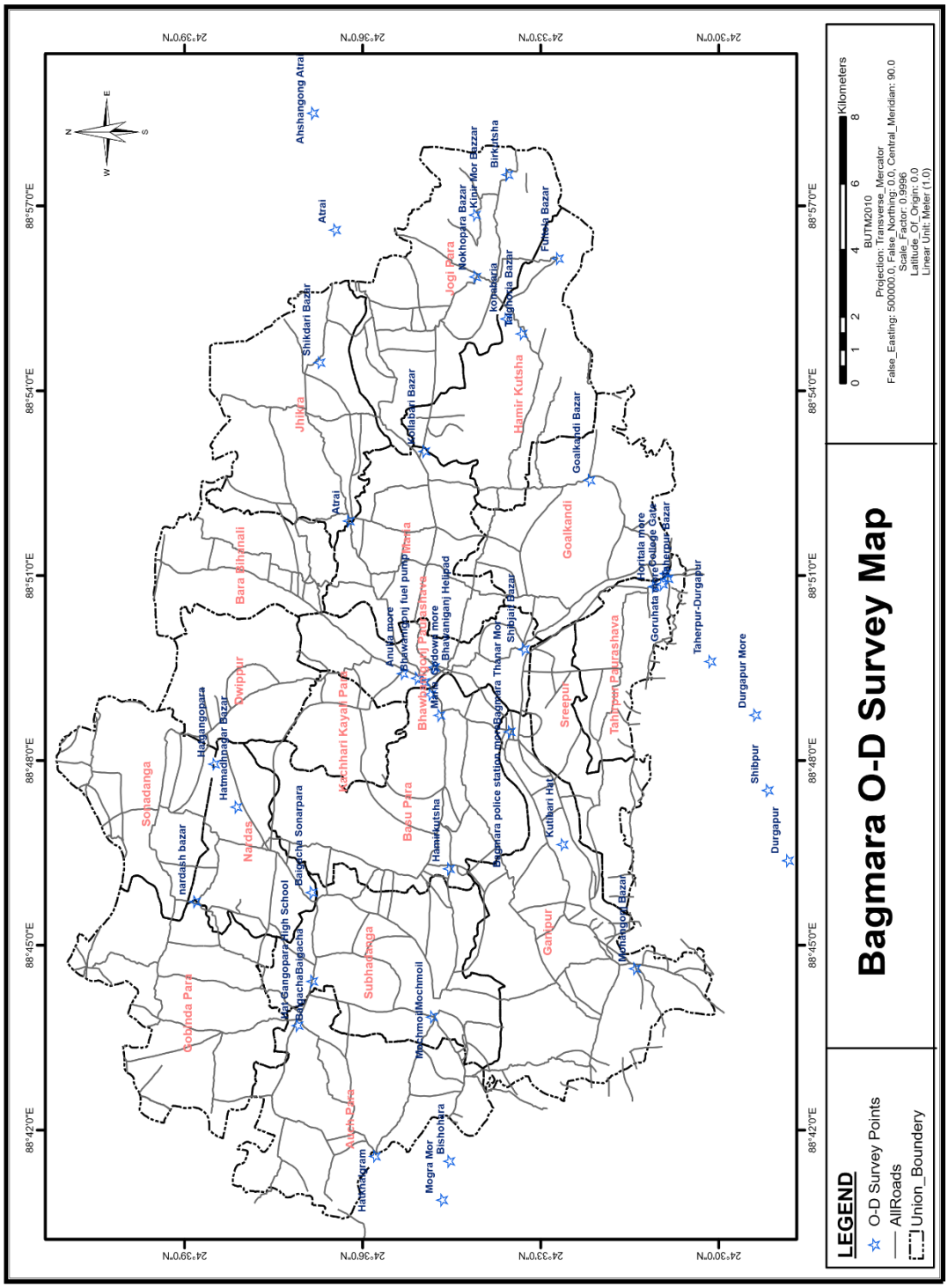
Regional Transport is an enabler for growth but it can also be a catalyst for urban sprawl. It has implications not only for mobility and quality of life but also for the economic prosperity of cities. Regional Transport survey has been done to better understand the transport and mobility challenges 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.

Table 2.2: Output and methodology of the conducted survey

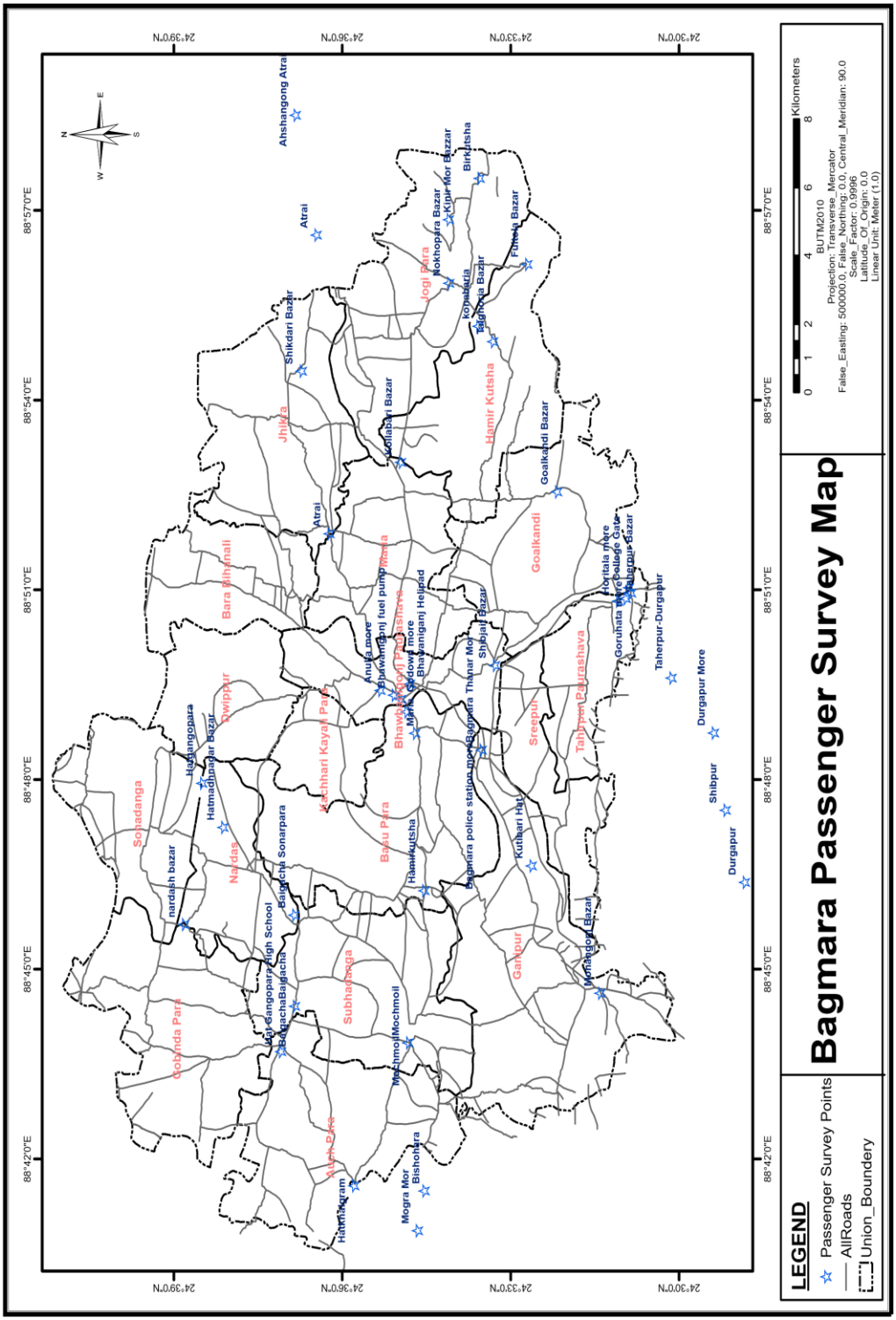
Survey	Data	Methodology
Traffic Volume Count	Details of vehicle classification, fluctuation of flow, specific vehicular movements, road features, no. of vehicle per hour.	• Manual counting method • Hat/On Day and Non Hat/Off Day • Peak Hour and Off Peak Hour
O D survey	Origin zones, destination zones, internal and external origin and destinations.	• Simple Random Survey after determining the sample size. • Before conducting the interview, the questionnaire prepared for interviewing the travelers which is approved by UDD.
Passenger Interview Survey	Trip destination, trip purpose, mode of transport, cost, distance etc.	• Simple Random Survey • At first, the questionnaire has been prepared to cover all information required for the survey according to the TOR. • The questionnaire has been approved by UDD and finally a sample of passengers has been selected for collecting data through approved questionnaire.
Regional Transport Network Survey	Urban growth, accessibility with nearer areas, communication and infrastructure facilities, potentiality of the area etc.	• Simple Random Survey after determining sample size through approved questionnaire. (Please see **Appendix-C** for approved Questionnaire Format of all transport Surveys)



Map 2.1: Location of Traffic Volume Count at Bagmara Upazila



Map 2.2: Location of O D Survey at Bagmara Upazila



Map 2.3: Location of Passenger Interview Survey at Bagmara 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 Bagmara Upazila. The surveyed locations are given below:

Table 3.1: Surveyed Traffic Volume Count Locations

Intersection	Date	Remarks
• Bhabanigonj • Taherpur	**2-Apr-16**	On Day
• Hamir Kuthsa	**5-Apr-16**	Off Day
• Mohonpur • Shikdari	**7-Apr-16**	On Day
• Hatgang para • Mosmoil	**8-Apr-16**	Off Day

Source: Traffic and Transportation Survey, 2016

3.1.1 Traffic flow at Hamir Kuthsa Intersection

In Hamir Kutsa Intersection four links are flown such as Hamir Kuthsa-Goalkandi, Hamir Kuthsa-Talghoria, Hamir Kuthsa-Shikdari Bazar and Hamir Kuthsa-Taherpur. Every link is accommodated by sufficient traffic. For understanding of vehicle types, the traffic scenario of Hamir Kuthsa-Shikdari Bazar link is shown below pie chart which is counted during the peak hour of On Day.

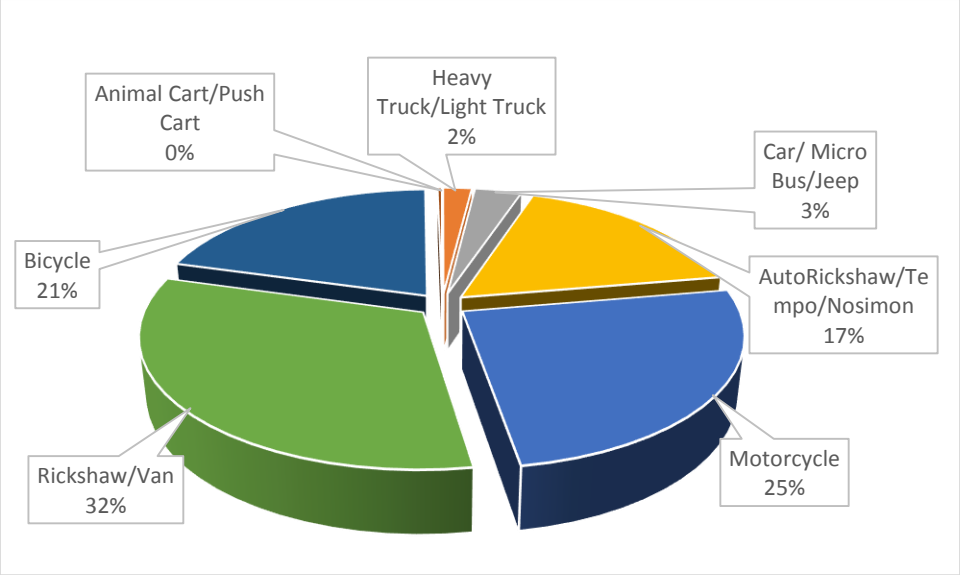


Figure 3.1: Types of Mode at Hamir Kuthsa Intersection

Source: Traffic and Transportation Survey, 2016

From the data of above chart it is seen that motorized and non-motorized vehicle has same influence in Hamir Kutsha intersection. Auto rickshaw, Motorbike and Rickshaw are main mode of transport where the percentages are respectively 17%, 25% and 32%.

3.1.2 Motorized Vehicle (MV) and Non-Motorized Vehicle (NMV)

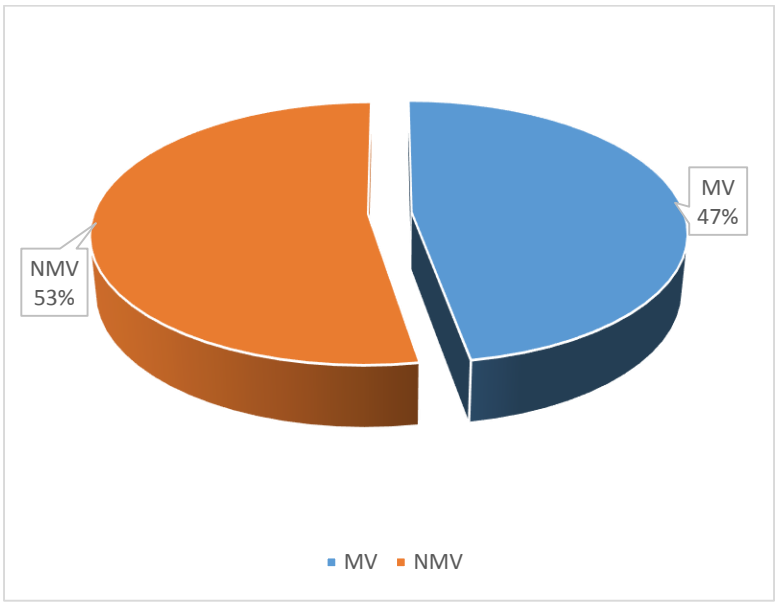


Figure 3.2: Percentages of MV and NMV at Hatgang para Intersection

Source: Traffic and Transportation Survey, 2016

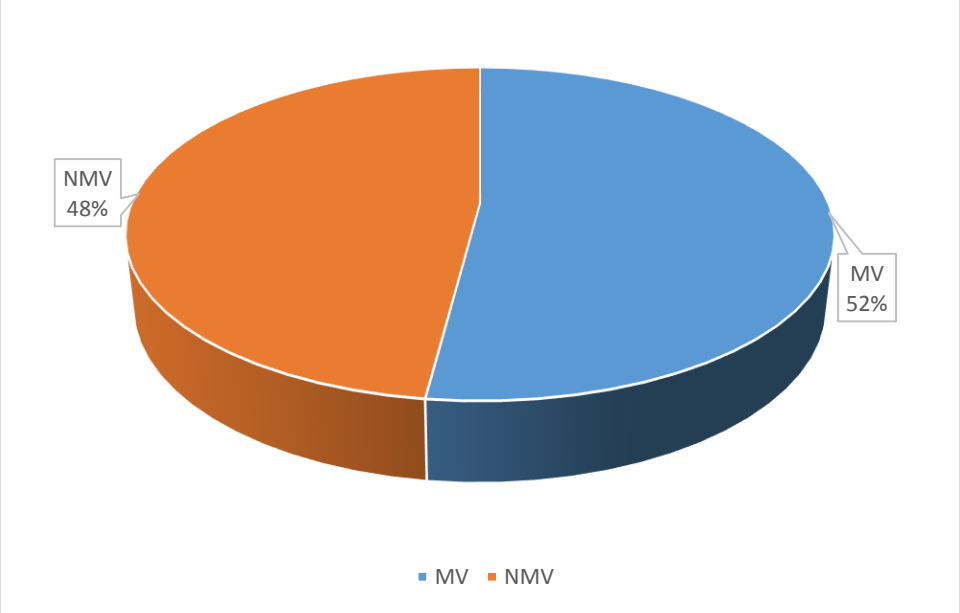


Figure 3.3: Percentages of MV and NMV at Taherpur Intersection

Source: Traffic and Transportation Survey, 2016

In Gangni Upazila, at every intersection motorized and non-motorized vehicles are plying almost at same percentages. In every link of intersection, non-motorized vehicles are important mode of travel. For visualization, the above pie charts represent the scenario of MV and NMV. In Taherpur-Naogaon link of Taherpur intersection, only 52% is MV and at Hatgang para-Suvodanga link of Hatgang para intersection 47% vehicles are motorized vehicle.

3.1.3 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
Bhabanigonj	Bhabanigonj-Shikdari	427	349	337	270
	Bhabanigonj-Paharpur	793	678	648	535
	Bhabanigonj-Mohonpur	444	452	311	326
	Bhabanigonj-Alimdi Mor	564	475	420	364
	Bhabanigonj-Taherpur	412	320	324	264
	Bhabanigonj-Mosmoil	277	218	213	178
	Bhabanigonj-Daulia	651	564	432	383
	Bhabanigonj-Kanopara	264	298	149	204
Taherpur	Taherpur-Bhabanigonj	437	332	333.5	244
	Taherpur-Rajshahi	332	249	294	214
	Taherpur-Putia	470	378	450.75	356
	Taherpur-Durgapur	349	275	236	190
	Taherpur-Daulia	421	347	311.25	264
	Taherpur-Hamir Kuthsa	684	597	509	454
	Taherpur-Naogaon	634	535	471	388
	Taherpur-Mohonpur	447	371	305.25	258
Hamir Kuthsa	Hamir Kuthsa-Goalkandi	574	499	388	332
	Hamir Kuthsa-Talghoria	602	529	356.75	312
	Hamir Kuthsa-Shikdari Bazar	717	637	485.75	436
	Hamir Kuthsa-Taherpur	721	644	506.5	458
Shikdari	Shikdari-Jata Pukur	270	201	203	160
	Shikdari-Bhabanigonj	365	289	247.75	201
	Shikdari-Hamir Kuthsa	717	614	485.75	422
	Shikdari-Atrai	542	469	373.5	326
Mohonpur	Mohonpur-Bhabanigonj	450	375	302.75	256
	Mohonpur-Taherpur	442	369	308.75	263
	Mohonpur-Sonadanga	442	371	308.75	264
	Mohonpur-Boro bihanoli	444	372	310.75	267
Hatgang para	Hatgang para-Auchpara	432	357	308	260
	Hatgang para-Baigacha	576	479	384	323
	Hatgang para-Gobinda Para	459	387	324.25	280
	Hatgang para-Suvodanga	635	547	447.75	393
Mosmoil	Mosmoil-Bhabanigonj	408	335	290.25	245
	Mosmoil-Basupara	468	391	325.5	277
	Mosmoil-Subhadanga	468	395	325.5	280
	Mosmoil-Gonipur	470	423	320.5	293

Source: Traffic and Transportation Survey, 2016

3.2 Origin and Destination Findings

Origin and Destination Survey has been reflected different desired issues such as types of mode used in study area, origin and destination pattern, behavior etc. The output of the O D Survey has been depicted in below paragraphs.

3.2.1 Trip Distribution Pattern

Origin and Destination survey has been carried out according to the sample size where the 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 tables represent the trip distribution pattern of Bagmara Upazila within Unions or other Upazilas/Districts.

Table 3.3: Origin Destination Matrix

Destination / Origin	Atrai	Bwabaniganj	Dewlia	Gangepara	Jhikra	Kaligonj	Keshorhat	Machmoil	Puthia	Rajshahi	Total
Atrai	0	2	0	0	0	0	0	0	0	0	2
Bwabaniganj	0	0	0	0	0	0	0	0	0	0	0
Dewlia	0	0	0	0	0	0	0	0	0	0	0
Gangepara	0	2	0	0	0	0	0	0	0	0	2
Jhikra	0	2	0	0	0	0	0	0	0	0	2
Kaligonj	0	2	0	0	0	0	0	0	0	0	2
Keshorhat	0	1	0	0	0	0	0	1	0	0	2
Machmoil	0	1	1	0	0	0	0	0	0	0	2
Puthia	0	0	0	0	1	0	0	0	0	0	1
Rajshahi	0	1	0	0	0	0	0	0	0	0	1
Total	0	11	1	0	1	0	0	1	0	0	14

Source: Traffic and Transportation Survey, 2016

The above table represents the origin and destination behavior of most travelled area. From the above table, it is seen that Bwabaniganj is experiencing most desired place for travelers during the survey period. And the other locations are also getting significance by passengers.

3.2.2 Mode Choice

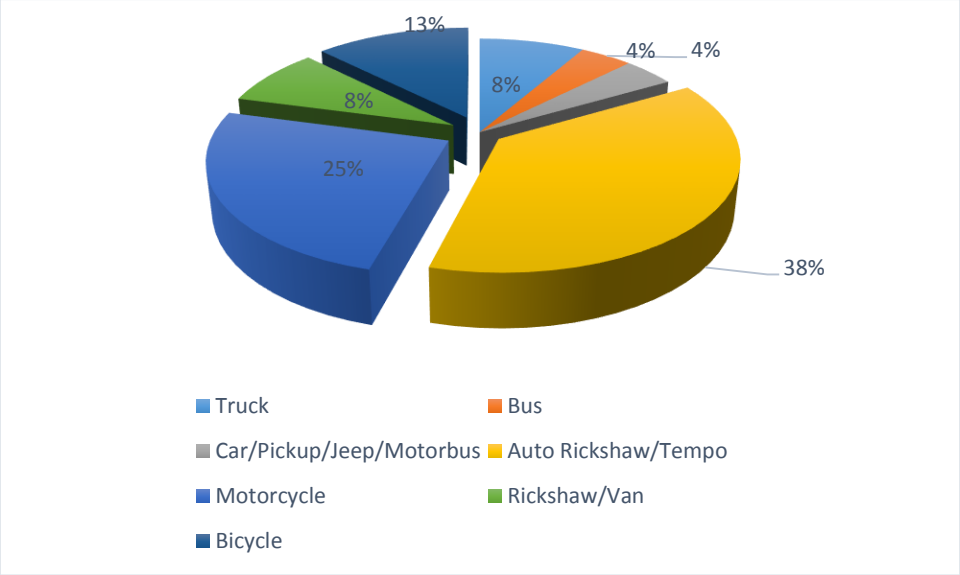


Figure 3.4: Types of Mode

Source: Traffic and Transportation Survey, 2016

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. 38% people choose auto/rickshaw/tempo to reach to their destinations and it is the highest demanding mode in this area. The second one is Motorcycle which is 25%. They use it to travel to nearby areas. 8% use Rickshaw, 13% bicycle, 8% truck, only 4% car/pickup/jeep/motorbus and Bus. 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

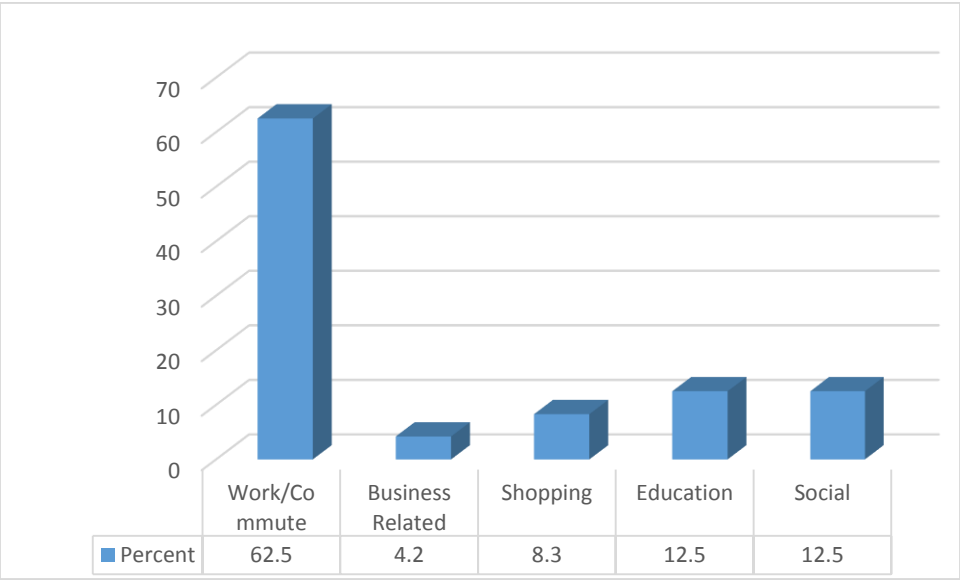


Figure 3.5: Purpose of Trip

Source: Traffic and Transportation Survey, 2016

The bar chart represents the origin destination behavior of the passengers. From the data it is shown that people mostly travel for work/commute purposes. 62.5% passengers travel due to work purpose. For the purpose of business, shopping, education and social are experiencing almost the similar percentages.

3.2.4 Origin Destination Behavior

Table 3.4: Origin Destination Behavior

Origin \ Destination		Residence	Work place	Shopping	School/College/University	Social	Recreational	Total
Residence	**Frequency**	1	5	1	0	0	1	8
	Percentage	12.50%	62.50%	12.50%	0.00%	0.00%	12.50%	100.00%
Workplace	**Frequency**	2	7	0	1	1	0	11
	Percentage	18.20%	63.60%	0.00%	9.10%	9.10%	0.00%	100.00%
Shopping	**Frequency**	0	1	1	0	0	0	2
	Percentage	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%
School/College/University	**Frequency**	1	1	0	0	1	0	3
	Percentage	33.30%	33.30%	0.00%	0.00%	33.30%	0.00%	100.00%
Total	**Frequency**	4	14	2	1	2	1	24
	Percentage	16.70%	58.30%	8.30%	4.20%	8.30%	4.20%	100.00%

Source: Traffic and Transportation Survey, 2016

From the cross tab chart, it can depict that trip origin purposes are mostly occurred for work purpose. People commute within or outside Upazila for their working purpose which is 62.50% from their residence. The others trip purposes are fluctuating. And, it is also seen that some people have to move from one work place to other work place which percentage is 63.60%. So, people's daily trip purposes are mostly related to residence and work place.

3.2.5 Passengers density in different vehicle mode

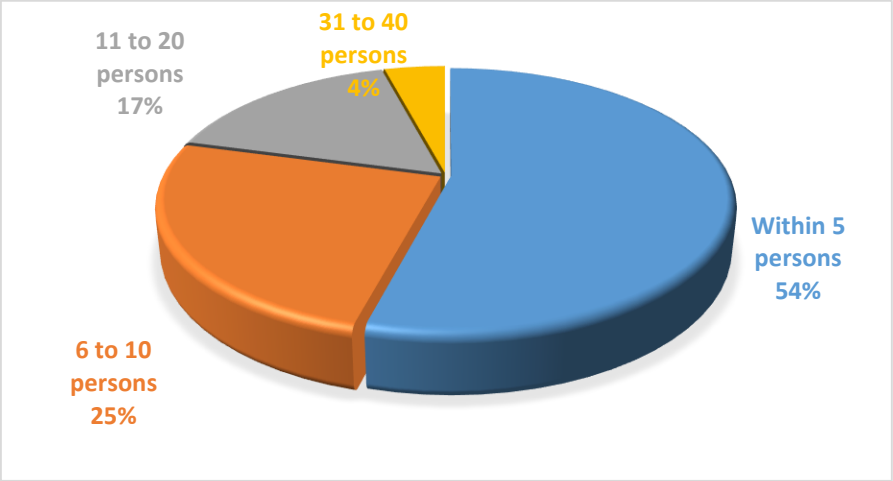


Figure 3.6: Occupancy of passengers in vehicle

Source: Traffic and Transportation Survey, 2016.

The graph shows that passengers mostly choose those vehicles which can hold a small number of passengers like within 5 persons that may be auto rickshaw for short time of travelling and the percentage is 54%. Data shows that 6 to 10 persons are willingly to travel and the percentage is 25%. 21% people travel by those vehicles which can hold between 11 to 40 persons.

3.2.6 Major Prioritized Problems

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

Table 3.5: Facing problems in Transportation

Problems	Demand
• High speed motorcycle movement • Reckless driving • High speed traffic movement • Illegal vehicle movement • Lack of commuters • High travel Cost • Narrow road • No awareness about safe driving	• Need fast access roads • Public vehicle needed • Bus Stoppage or stand

• No different lanes • Lack of repairing • Insufficiency of Road • Curving or Zigzag Road	

Source: Traffic and Transportation Survey, 2016

3.3 Passenger Interview Survey

Passenger's Interview Survey has been conducted for Bus, Boat and Train. As people mostly travel by bus, the findings reflect the transport communication through bus. The findings are when people prefer buses, travel cost, travel distance, types of modes for getting into buses through Bus terminal or bus stoppages.

3.3.1 Trip Purpose

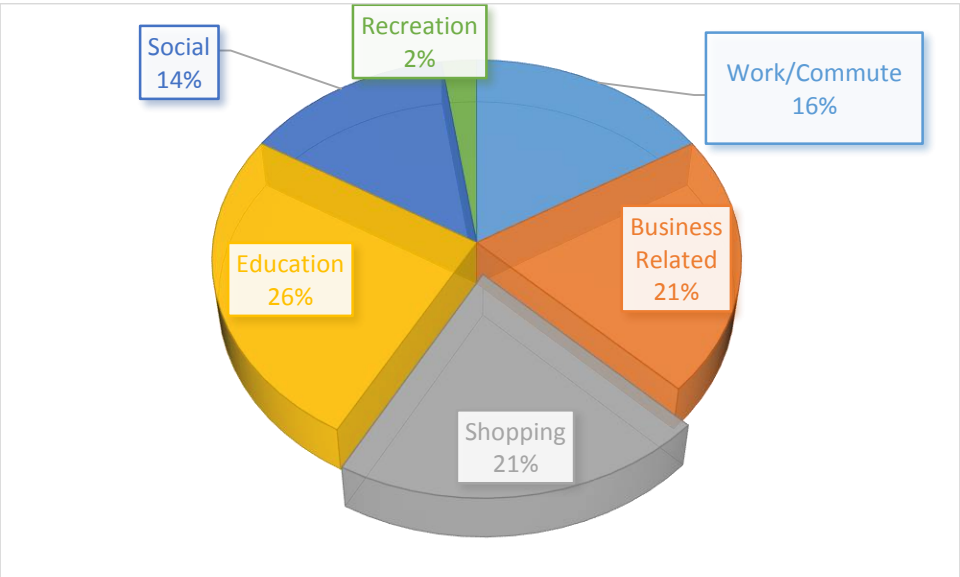


Figure 3.7: Percentages of trip purpose

Source: Traffic and Transportation Survey, 2016.

The chart displays that people prefer buses for Education, Shopping, Business and work purposes where the percentages are between 20%. The other purposes like recreation and social are also shown from this chart.

3.3.2 Respondents Distribution

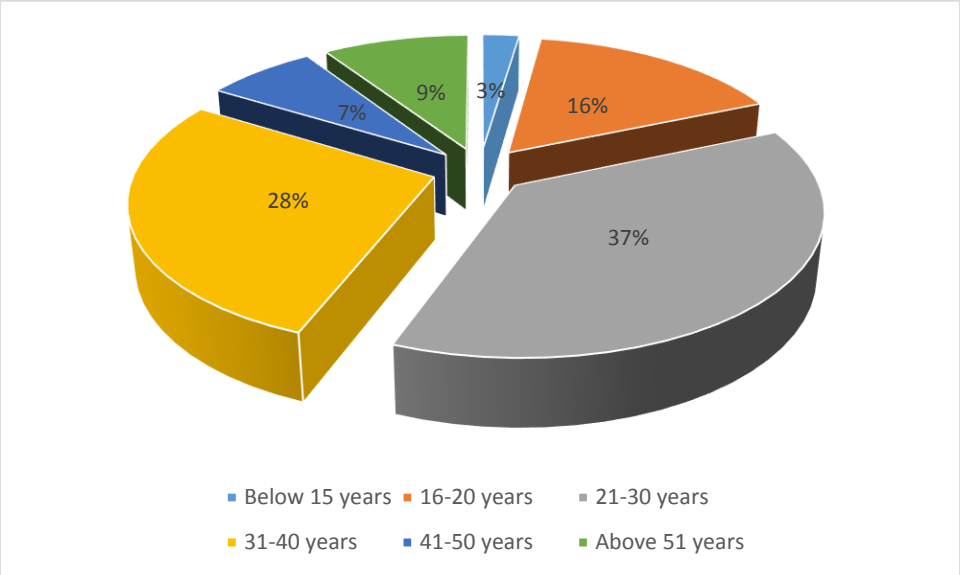


Figure 3.8: Percentages of Age Distribution of Passengers

Source: Traffic and Transportation Survey, 2016.

The above pie chart depicts the age variation of passengers which ranges of people have to travel most for their necessities. From the chart, it is shown that 37% of passengers are between 21 to 30 age range and 28% are between 31 to 40 ages. The other ranges are showing irregular passenger's percentage.

3.3.3 Age Distribution according to the Gender

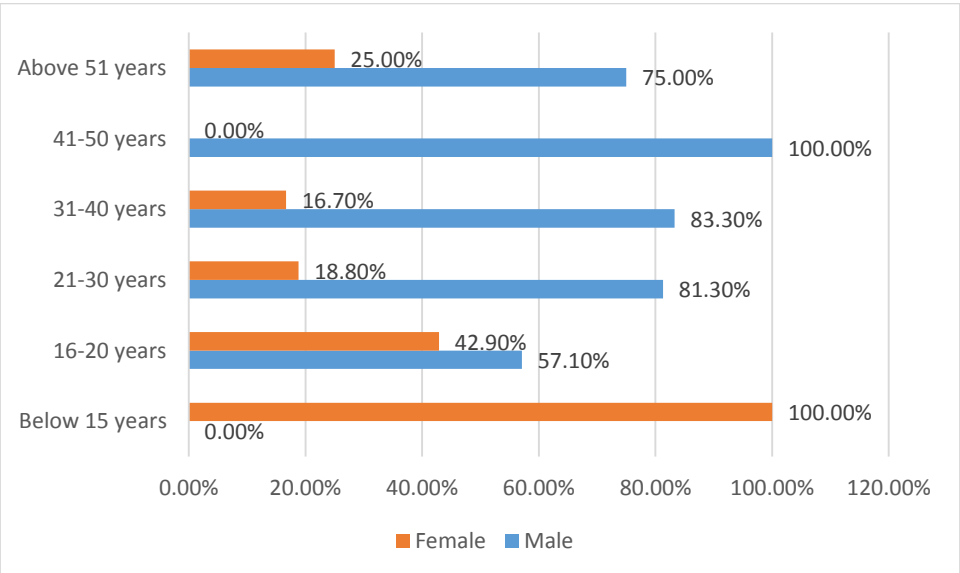


Figure 3.9: Percentages of Age Distribution of Passengers according to Gender

Source: Traffic and Transportation Survey, 2016.

The bar chart illustrates the percentages of male and female travelling by different types of vehicle. In a comparison it can be seen that male travel more than female. If we see the data it will be more representative. Almost 75% males are daily travelers for different purposes. The data also shows that the comparison between different age ranges according to gender.

3.3.4 Age group and trip purpose

Table 3.6: Trip production purpose according to the age group

Trip Purpose / Age		Work/Commute	Business Related	Shopping	Education	Social	Recreation	Total
Below 15 years	Frequency	0	0	0	1	0	0	1
	Percentage	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%
16-20 years	Frequency	0	0	1	6	0	0	7
	Percentage	0.00%	0.00%	14.30%	85.70%	0.00%	0.00%	100.00%
21-30 years	Frequency	4	3	3	3	2	1	16
	Percentage	25.00%	18.80%	18.80%	18.80%	12.50%	6.30%	100.00%
31-40 years	Frequency	3	3	3	1	2	0	12
	Percentage	25.00%	25.00%	25.00%	8.30%	16.70%	0.00%	100.00%
41-50 years	Frequency	0	1	2	0	0	0	3
	Percentage	0.00%	33.30%	66.70%	0.00%	0.00%	0.00%	100.00%
Above 51 years	Frequency	0	2	0	0	2	0	4
	Percentage	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%	100.00%

	Frequency	7	9	9	11	6	1	43
Total	Percentage	16.30%	20.90%	20.90%	25.60%	14.00%	2.30%	100.00%

Source: Traffic and Transportation Survey, 2016.

The people travel places for different purposes. Their trip purposes are varied according to their age range. From the chart, it is clear that where and what types of aging people mostly involve in travelling. It is seen that above 50 aged people travel for their social purposes. Between 16 to 20 years aged people have to go out education or shopping such as buying necessary needs respectively around 85% and 15%. Between 21 to 50 years aged people travel for their work purposes.

3.3.5 Travel cost and travel distance

Table 3.7: Travel Cost according to the Distance

Distance / Travel Cost		**Within 5 km**	**6 to 10 km**	**11 to 20 km**	**21 to 30 km**	**Total**
Within 50 taka	**Frequency**	2	1	0	2	5
	Percentage	40.00%	20.00%	0.00%	40.00%	100.00%
51 to 100 taka	**Frequency**	2	1	0	0	3
	Percentage	66.70%	33.30%	0.00%	0.00%	100.00%
101 to 150 taka	**Frequency**	1	1	3	2	7
	Percentage	14.30%	14.30%	42.90%	28.60%	100.00%
151 to 200 taka	**Frequency**	0	2	0	0	2
	Percentage	0.00%	100.00%	0.00%	0.00%	100.00%
Total	**Frequency**	5	5	3	4	17
	Percentage	29.40%	29.40%	17.60%	23.50%	100.00%

Source: Traffic and Transportation Survey, 2016

The above crosstab illustrates the distance and cost relationship of this upazila. The data shows that the travel cost are changing in terms of distance. For the same amount of money, they travel different distance because of choosing mode. The information clearly represents that people mainly pay within 50 taka to cover the distance within 10 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 Regional connectivity with surrounding regions

In Bagmara Upazila, Most of the buses have more than 30 person's carrying capacity. People daily travel most to Rajshahi, Nawga, Atrai, Putia, Gobindopur, Mohon Gonj, Rani nagor, Natore.

The statistics of following table shows the regional road information of Bagmara Upazila.

Table 3.8: Regional Road Information of Bagmara

Division	Length (Km)
Pabna	68.01
Natore	45.82
Rajshahi	76.23
Nawabganj	42.19

Source: RHD, Road Database, 2017.

3.4.2 Travel pattern of Buses

People choose travel in case of long distances. Buses passenger's occupancy varies from 30 to 40 persons. Buses make their trip from 1 to 3.

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 vegetables, agricultural products like paddy, departmental products etc.

CHAPTER 4: CONCLUSION

Bagmara 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 Bagmara 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. 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.

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TRAFFIC VOLUME CALCULATION

A) Bhawaniganj

Table A-1: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Shikdari link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Shikdari	Shikdari to Bhawaniganj			
MV	Bus/Minibus	3	2	2	4	12	0.94
	Heavy Truck/Light Truck	3	13	13	26	78	6.09
	Car/ Micro Bus/Jeep	1	3	7	10	10	2.34
	Auto Rickshaw/Tempo/Nosimon	0.75	36	27	63	47.25	14.75
	Motorcycle	0.75	70	40	110	82.5	25.76
NMV	Rickshaw/Van	0.5	82	51	133	66.5	31.15
	Bicycle	0.5	50	31	81	40.5	18.97
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**213**	**230**	**49.88**
Total NMV					**214**	**107**	**50.12**
Grand Total					**427**	**337**	**100**

Table A-2: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Shikdari link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Shikdari	Shikdari to Bhawaniganj			
	Bus/Minibus	3	2	2	4	12	1.15

MV	Heavy Truck/Light Truck	3	9	8	17	51	4.87
	Car/ Micro Bus/Jeep	1	5	12	17	17	4.87
	Auto Rickshaw/Tempo/Nosimon	0.75	27	19	46	34.5	13.18
	Motorcycle	0.75	60	31	91	68.25	26.07
NMV	Rickshaw/Van	0.5	71	40	111	55.5	31.81
	Bicycle	0.5	41	22	63	31.5	18.05
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**175**	**183**	**50.14**
Total NMV					**174**	**87**	**49.86**
Grand Total					**349**	**270**	**100**

Table A-3: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Paharpur link during On Day, 2nd April, 2016.

Mode of Transport		**PCU**	**Direction Name**		**Total Vehicle /Hour**	**Total PCU/ Hour**	**Percentage**
			Bhawaniganj to Paharpur	**Paharpur to Bhawaniganj**			
MV	Bus/Minibus	3	3	1	4	12	0.50
	Heavy Truck/Light Truck	3	27	26	53	159	6.68
	Car/ Micro Bus/Jeep	1	17	10	27	27	3.40
	Auto Rickshaw/Tempo/Nosimon	0.75	84	58	142	106.5	17.91
	Motorcycle	0.75	142	98	240	180	30.26
NMV	Rickshaw/Van	0.5	136	72	208	104	26.23
	Bicycle	0.5	82	37	119	59.5	15.01
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**466**	**485**	**58.76**
Total NMV					**327**	**164**	**41.24**
Grand Total					**793**	**648**	**100.00**

Table A-4: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Paharpur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Paharpur	Paharpur to Bhawaniganj			
MV	Bus/Minibus	3	3	1	4	12	0.59
	Heavy Truck/Light Truck	3	19	18	37	111	5.46
	Car/ Micro Bus/Jeep	1	11	9	20	20	2.95
	Auto Rickshaw/Tempo/Nosimon	0.75	73	50	123	92.25	18.14
	Motorcycle	0.75	126	84	210	157.5	30.97
NMV	Rickshaw/Van	0.5	124	62	186	93	27.43
	Bicycle	0.5	71	27	98	49	14.45
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**394**	**393**	**58.11**
Total NMV					**284**	**142**	**41.89**
Grand Total					**678**	**535**	**100.00**

Table A-5: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Mohonpur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Mohonpur	Mohonpur to Bhawaniganj			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	7	13	39	2.93
	Car/ Micro Bus/Jeep	1	4	7	11	11	2.48
	Auto Rickshaw/Tempo/Nosimon	0.75	49	45	94	70.5	21.17
	Motorcycle	0.75	49	60	109	81.75	24.55
	Rickshaw/Van	0.5	45	51	96	48	21.62

NMV	Bicycle	0.5	56	65	121	60.5	27.25
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**227**	**202**	**51.13**
Total NMV					**217**	**109**	**48.87**
Grand Total					**444**	**311**	**100.00**

Table A-6: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Mohonpur link during Off Day, 5th April, 2016.

Mode of Transport		**PCU**	**Direction Name**		**Total Vehicle /Hour**	**Total PCU/ Hour**	**Percentage**
			Bhawaniganj to Mohonpur	**Mohonpur to Bhawaniganj**			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	7	13	39	2.88
	Car/ Micro Bus/Jeep	1	4	7	11	11	2.43
	Auto Rickshaw/Tempo/Nosimon	0.75	124	36	160	120	35.40
	Motorcycle	0.75	40	49	89	66.75	19.69
NMV	Rickshaw/Van	0.5	36	43	79	39.5	17.48
	Bicycle	0.5	44	56	100	50	22.12
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**273**	**237**	**60.40**
Total NMV					**179**	**90**	**39.60**
Grand Total					**452**	**326**	**100.00**

Table A-7: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Alimdi Mor link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Alimdi Mor	Alimdi Mor to Bhawaniganj			
MV	Bus/Minibus	3	2	0	2	6	0.35
	Heavy Truck/Light Truck	3	8	17	25	75	4.43
	Car/ Micro Bus/Jeep	1	3	14	17	17	3.01
	Auto Rickshaw/Tempo/Nosimon	0.75	29	63	92	69	16.31
	Motorcycle	0.75	73	84	157	117.75	27.84
NMV	Rickshaw/Van	0.5	47	92	139	69.5	24.65
	Bicycle	0.5	42	90	132	66	23.40
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**293**	**285**	**51.95**
Total NMV					**271**	**136**	**48.05**
Grand Total					**564**	**420**	**100.00**

Table A-8: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Alimdi Mor link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Alimdi Mor	Alimdi Mor to Bhawaniganj			
MV	Bus/Minibus	3	2	0	2	6	0.42
	Heavy Truck/Light Truck	3	8	17	25	75	5.26
	Car/ Micro Bus/Jeep	1	3	14	17	17	3.58
	Auto Rickshaw/Tempo/Nosimon	0.75	19	51	70	52.5	14.74
	Motorcycle	0.75	59	73	132	99	27.79
NMV	Rickshaw/Van	0.5	35	80	115	57.5	24.21
	Bicycle	0.5	37	77	114	57	24.00
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**246**	**250**	**51.79**
Total NMV					**229**	**115**	**48.21**
Grand Total					**475**	**364**	**100.00**

Table A-9: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Taherpur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Taherpur	Taherpur to Bhawaniganj			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	15	28	84	25.91
	Car/ Micro Bus/Jeep	1	7	20	27	27	8.33
	Auto Rickshaw/ Tempo/Nosimon	0.75	36	21	57	42.75	13.18
	Motorcycle	0.75	31	51	82	61.5	18.97
NMV	Rickshaw/Van	0.5	51	84	135	67.5	20.82
	Bicycle	0.5	37	46	83	41.5	12.80
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**194**	**215**	**66.38**
Total NMV					**218**	**109**	**33.62**
Grand Total					**412**	**324**	**100.00**

Table A-10: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Taherpur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Taherpur	Taherpur to Bhawaniganj			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	15	28	84	31.82
	Car/ Micro Bus/Jeep	1	6	12	18	18	6.82
	Auto Rickshaw/Tempo/Nosimon	0.75	25	13	38	28.5	10.80
	Motorcycle	0.75	22	40	62	46.5	17.61
NMV	Rickshaw/Van	0.5	40	69	109	54.5	20.64
	Bicycle	0.5	30	35	65	32.5	12.31
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**146**	**177**	**67.05**
Total NMV					**174**	**87**	**32.95**
Grand Total					**320**	**264**	**100.00**

Table A-11: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Mosmoil link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Mosmoil	Mosmoil to Bhawaniganj			
MV	Bus/Minibus	3	2	0	2	6	2.82
	Heavy Truck/Light Truck	3	3	12	15	45	21.18
	Car/ Micro Bus/Jeep	1	1	1	2	2	0.94
	Auto Rickshaw/Tempo/Nosimon	0.75	16	21	37	27.75	13.06
	Motorcycle	0.75	38	47	85	63.75	30.00
NMV	Rickshaw/Van	0.5	35	45	80	40	18.82
	Bicycle	0.5	22	34	56	28	13.18
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**141**	**145**	**68.00**
Total NMV					**136**	**68**	**32.00**
Grand Total					**277**	**213**	**100.00**

Table A-12: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Mosmoil link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Mosmoil	Mosmoil to Bhawaniganj			
MV	Bus/Minibus	3	2	0	2	6	3.38
	Heavy Truck/Light Truck	3	3	12	15	45	25.32
	Car/ Micro Bus/Jeep	1	3	4	7	7	3.94
	Auto Rickshaw/Tempo/Nosimon	0.75	10	13	23	17.25	9.70
	Motorcycle	0.75	30	38	68	51	28.69
NMV	Rickshaw/Van	0.5	26	34	60	30	16.88
	Bicycle	0.5	17	26	43	21.5	12.10
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**115**	**126**	**71.03**
Total NMV					**103**	**52**	**28.97**
Grand Total					**218**	**178**	**100.00**

Table A-13: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Daulia link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Daulia	Daulia to Bhawaniganj			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	3	3	6	18	4.17
	Car/ Micro Bus/Jeep	1	5	19	24	24	5.56
	Auto Rickshaw/Tempo/Nosimon	0.75	54	76	130	97.5	22.57
	Motorcycle	0.75	93	95	188	141	32.64
NMV	Rickshaw/Van	0.5	90	94	184	92	21.30
	Bicycle	0.5	55	64	119	59.5	13.77
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**348**	**281**	**64.93**
Total NMV					**303**	**152**	**35.07**
Grand Total					**651**	**432**	**100.00**

Table A-14: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Daulia link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Daulia	Daulia to Bhawaniganj			
MV	Bus/Minibus	3	1	1	2	6	1.57
	Heavy Truck/Light Truck	3	3	4	7	21	5.49
	Car/ Micro Bus/Jeep	1	5	16	21	21	5.49
	Auto Rickshaw/Tempo/Nosimon	0.75	42	64	106	79.5	20.78
	Motorcycle	0.75	80	84	164	123	32.16
NMV	Rickshaw/Van	0.5	79	82	161	80.5	21.05
	Bicycle	0.5	47	56	103	51.5	13.46
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**300**	**251**	**65.49**
Total NMV					**264**	**132**	**34.51**
Grand Total					**564**	**383**	**100.00**

Table A-15: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Kanopara link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Kanopara	Kanopara to Bhawaniganj			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	0	0	0	0	0.00
	Car/ Micro Bus/Jeep	1	0	0	0	0	0.00
	Auto Rickshaw/Tempo/Nosimon	0.75	15	6	21	15.75	10.57
	Motorcycle	0.75	35	12	47	35.25	23.66
NMV	Rickshaw/Van	0.5	39	55	94	47	31.54
	Bicycle	0.5	58	44	102	51	34.23
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**68**	**51**	**34.23**
Total NMV					**196**	**98**	**65.77**
Grand Total					**264**	**149**	**100.00**

Table A-16: Hourly Traffic Volume according to the Vehicle Types for Bhawaniganj-Kanopara link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Bhawaniganj to Kanopara	Kanopara to Bhawaniganj			
MV	Bus/Minibus	3	2	2	4	12	5.90
	Heavy Truck/Light Truck	3	1	2	3	9	4.42
	Car/ Micro Bus/Jeep	1	5	3	8	8	3.93
	Auto Rickshaw/Tempo/Nosimon	0.75	38	50	88	66	32.43
	Motorcycle	0.75	32	12	44	33	16.22
NMV	Rickshaw/Van	0.5	28	44	72	36	17.69
	Bicycle	0.5	45	34	79	39.5	19.41
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**147**	**128**	**62.90**
Total NMV					**151**	**76**	**37.10**
Grand Total					**298**	**204**	**100.00**

B) Taherpur

Table B-1: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Bhawaniganj link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Bhawaniganj	Bhawaniganj to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	14	11	25	75	5.72
	Car/ Micro Bus/Jeep	1	15	7	22	22	5.03
	Auto Rickshaw/Tempo/Nosimon	0.75	19	49	68	51	15.56
	Motorcycle	0.75	52	46	98	73.5	22.43
NMV	Rickshaw/Van	0.5	87	56	143	71.5	32.72
	Bicycle	0.5	48	33	81	40.5	18.54
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**213**	**221.5**	**48.74**
Total NMV					**224**	**112**	**51.26**
Grand Total					**437**	**333.5**	**100**

Table B-2: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Bhawaniganj link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Bhawaniganj	Bhawaniganj to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	9	7	16	48	4.82
	Car/ Micro Bus/Jeep	1	9	5	14	14	4.22
	Auto Rickshaw/Tempo/Nosimon	0.75	10	41	51	38.25	15.36
	Motorcycle	0.75	37	34	71	53.25	21.39
NMV	Rickshaw/Van	0.5	73	44	117	58.5	35.24
	Bicycle	0.5	39	24	63	31.5	18.98
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**152**	**153.5**	**45.78**
Total NMV					**180**	**90**	**54.22**
Grand Total					**332**	**243.5**	**100**

Table B-3: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Rajshahi link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Rajshahi	Rajshahi to Taherpur			
MV	Bus/Minibus	3	0	1	1	3	0.30
	Heavy Truck/Light Truck	3	12	22	34	102	10.24
	Car/ Micro Bus/Jeep	1	2	7	9	9	2.71
	Auto Rickshaw/Tempo/Nosimon	0.75	36	18	54	40.5	16.27
	Motorcycle	0.75	50	40	90	67.5	27.11
NMV	Rickshaw/Van	0.5	48	37	85	42.5	25.60
	Bicycle	0.5	25	34	59	29.5	17.77
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**188**	**222**	**56.63**
Total NMV					**144**	**72**	**43.37**
Grand Total					**332**	**294**	**100.00**

Table B-4: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Rajshahi link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Rajshahi	Rajshahi to Taherpur			
MV	Bus/Minibus	3	0	1	1	3	0.40
	Heavy Truck/Light Truck	3	8	14	22	66	8.84
	Car/ Micro Bus/Jeep	1	2	7	9	9	3.61
	Auto Rickshaw/Tempo/Nosimon	0.75	26	13	39	29.25	15.66
	Motorcycle	0.75	39	30	69	51.75	27.71
NMV	Rickshaw/Van	0.5	37	30	67	33.5	26.91
	Bicycle	0.5	17	25	42	21	16.87
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**140**	**159**	**56.22**
Total NMV					**109**	**54.5**	**43.78**
Grand Total					**249**	**213.5**	**100.00**

Table B-5: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Putia link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Putia	Putia to Taherpur			
MV	Bus/Minibus	3	6	3	9	27	1.91
	Heavy Truck/Light Truck	3	18	38	56	168	11.91
	Car/ Micro Bus/Jeep	1	14	8	22	22	4.68
	Auto Rickshaw/Tempo/Nosimon	0.75	30	31	61	45.75	12.98
	Motorcycle	0.75	51	57	108	81	22.98
NMV	Rickshaw/Van	0.5	53	81	134	67	28.51
	Bicycle	0.5	30	50	80	40	17.02
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**256**	**344**	**54.47**
Total NMV					**214**	**107**	**45.53**
Grand Total					**470**	**451**	**100.00**

Table B-6: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Putia link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Putia	Putia to Taherpur			
MV	Bus/Minibus	3	6	3	9	27	2.38
	Heavy Truck/Light Truck	3	11	29	40	120	10.58
	Car/ Micro Bus/Jeep	1	14	8	22	22	5.82
	Auto Rickshaw/Tempo/Nosimon	0.75	22	21	43	32.25	11.38
	Motorcycle	0.75	43	47	90	67.5	23.81
NMV	Rickshaw/Van	0.5	44	69	113	56.5	29.89
	Bicycle	0.5	22	39	61	30.5	16.14
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**204**	**269**	**53.97**
Total NMV					**174**	**87**	**46.03**
Grand Total					**378**	**356**	**100.00**

Table B-7: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Durgapur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Durgapur	Durgapur to Taherpur			
MV	Bus/Minibus	3	0	3	3	9	0.86
	Heavy Truck/Light Truck	3	0	8	8	24	2.29
	Car/ Micro Bus/Jeep	1	2	5	7	7	2.01
	Auto Rickshaw/Tempo/Nosimon	0.75	12	20	32	24	9.17
	Motorcycle	0.75	37	53	90	67.5	25.79
NMV	Rickshaw/Van	0.5	46	65	111	55.5	31.81
	Bicycle	0.5	50	48	98	49	28.08
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**140**	**132**	**40.11**
Total NMV					**209**	**105**	**59.89**
Grand Total					**349**	**236**	**100.00**

Table B-8: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Durgapur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Durgapur	Durgapur to Taherpur			
MV	Bus/Minibus	3	0	3	3	9	1.09
	Heavy Truck/Light Truck	3	0	8	8	24	2.91
	Car/ Micro Bus/Jeep	1	2	5	7	7	2.55
	Auto Rickshaw/Tempo/Nosimon	0.75	7	12	19	14.25	6.91
	Motorcycle	0.75	25	43	68	51	24.73
NMV	Rickshaw/Van	0.5	37	53	90	45	32.73
	Bicycle	0.5	41	39	80	40	29.09
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**105**	**105**	**38.18**
Total NMV					**170**	**85**	**61.82**
Grand Total					**275**	**190**	**100.00**

Table B-9: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Daulia link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Daulia	Daulia to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	6	19	57	18.31
	Car/ Micro Bus/Jeep	1	9	6	15	15	4.82
	Auto Rickshaw/Tempo/Nosimon	0.75	50	21	71	53.25	17.11
	Motorcycle	0.75	71	41	112	84	26.99
NMV	Rickshaw/Van	0.5	79	31	110	55	17.67
	Bicycle	0.5	60	34	94	47	15.10
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**217**	**209**	**67.23**
Total NMV					**204**	**102**	**32.77**
Grand Total					**421**	**311**	**100.00**

Table B-10: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Daulia link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Daulia	Daulia to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	6	19	57	21.57
	Car/ Micro Bus/Jeep	1	9	6	15	15	5.68
	Auto Rickshaw/Tempo/Nosimon	0.75	39	12	51	38.25	14.47
	Motorcycle	0.75	60	32	92	69	26.11
NMV	Rickshaw/Van	0.5	69	23	92	46	17.41
	Bicycle	0.5	49	29	78	39	14.76
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**177**	**179**	**67.83**
Total NMV					**170**	**85**	**32.17**
Grand Total					**347**	**264**	**100.00**

Table B-11: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Hamir Kuthsa link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Hamir Kuthsa	Hamir Kuthsa to Taherpur			
MV	Bus/Minibus	3	3	0	3	9	1.77
	Heavy Truck/Light Truck	3	10	19	29	87	17.09
	Car/ Micro Bus/Jeep	1	8	16	24	24	4.72
	Auto Rickshaw/Tempo/Nosimon	0.75	58	72	130	97.5	19.16
	Motorcycle	0.75	80	90	170	127.5	25.05
NMV	Rickshaw/Van	0.5	102	104	206	103	20.24
	Bicycle	0.5	60	62	122	61	11.98
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**356**	**345**	**67.78**
Total NMV					**328**	**164**	**32.22**
Grand Total					**684**	**509**	**100.00**

Table B-12: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Hamir Kuthsa link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Hamir Kuthsa	Hamir Kuthsa to Taherpur			
MV	Bus/Minibus	3	3	0	3	9	1.98
	Heavy Truck/Light Truck	3	10	19	29	87	19.15
	Car/ Micro Bus/Jeep	1	8	16	24	24	5.28
	Auto Rickshaw/Tempo/Nosimon	0.75	48	59	107	80.25	17.67
	Motorcycle	0.75	70	78	148	111	24.44
NMV	Rickshaw/Van	0.5	91	91	182	91	20.03
	Bicycle	0.5	50	54	104	52	11.45
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**311**	**311**	**68.52**
Total NMV					**286**	**143**	**31.48**
Grand Total					**597**	**454**	**100.00**

Table B-13: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Naogaon link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Naogaon	Naogaon to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	25	11	36	108	22.93
	Car/ Micro Bus/Jeep	1	0	2	2	2	0.42
	Auto Rickshaw/Tempo/Nosimon	0.75	50	48	98	73.5	15.61
	Motorcycle	0.75	84	70	154	115.5	24.52
NMV	Rickshaw/Van	0.5	111	111	222	111	23.57
	Bicycle	0.5	72	50	122	61	12.95
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**290**	**299**	**63.48**
Total NMV					**344**	**172**	**36.52**
Grand Total					**634**	**471**	**100.00**

Table B-14: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Naogaon link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Naogaon	Naogaon to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	18	9	27	81	20.90
	Car/ Micro Bus/Jeep	1	0	2	2	2	0.52
	Auto Rickshaw/Tempo/Nosimon	0.75	39	36	75	56.25	14.52
	Motorcycle	0.75	72	59	131	98.25	25.35
NMV	Rickshaw/Van	0.5	100	100	200	100	25.81
	Bicycle	0.5	59	41	100	50	12.90
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**235**	**238**	**61.29**
Total NMV					**300**	**150**	**38.71**
Grand Total					**535**	**388**	**100.00**

Table B-15: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Mohonpur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Mohonpur	Mohonpur to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	5	11	33	10.81
	Car/ Micro Bus/Jeep	1	6	13	19	19	6.22
	Auto Rickshaw/Tempo/Nosimon	0.75	24	50	74	55.5	18.18
	Motorcycle	0.75	40	65	105	78.75	25.80
NMV	Rickshaw/Van	0.5	30	75	105	52.5	17.20
	Bicycle	0.5	33	100	133	66.5	21.79
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**209**	**186**	**61.02**
Total NMV					**238**	**119**	**38.98**
Grand Total					**447**	**305**	**100.00**

Table B-16: Hourly Traffic Volume according to the Vehicle Types for Taherpur-Mohonpur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Taherpur to Mohonpur	Mohonpur to Taherpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	5	11	33	12.78
	Car/ Micro Bus/Jeep	1	6	13	19	19	7.36
	Auto Rickshaw/Tempo/Nosimon	0.75	16	40	56	42	16.26
	Motorcycle	0.75	32	55	87	65.25	25.27
NMV	Rickshaw/Van	0.5	21	62	83	41.5	16.07
	Bicycle	0.5	25	90	115	57.5	22.27
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**173**	**159**	**61.67**
Total NMV					**198**	**99**	**38.33**
Grand Total					**371**	**258**	**100.00**

C) Hamir Kuthsa

Table C-1: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Goalkandi link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Goalkandi	Goalkandi to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	11	3	14	42	2.44
	Car/ Micro Bus/Jeep	1	3	1	4	4	0.70
	Auto Rickshaw/ Tempo/Nosimon	0.75	70	41	111	83.25	19.34
	Motorcycle	0.75	87	58	145	108.75	25.26
NMV	Rickshaw/Van	0.5	96	42	138	69	24.04
	Bicycle	0.5	85	77	162	81	28.22
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**274**	**238**	**47.74**
Total NMV					**300**	**150**	**52.26**
Grand Total					**574**	**388**	**100**

Table C-2: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Goalkandi link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Goalkandi	Goalkandi to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	3	10	30	2.00
	Car/ Micro Bus/Jeep	1	3	1	4	4	0.80
	Auto Rickshaw/Tempo/Nosimon	0.75	60	33	93	69.75	18.64
	Motorcycle	0.75	79	50	129	96.75	25.85
NMV	Rickshaw/Van	0.5	88	34	122	61	24.45
	Bicycle	0.5	78	63	141	70.5	28.26
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**236**	**201**	**47.29**
Total NMV					**263**	**132**	**52.71**
Grand Total					**499**	**332**	**100**

Table C-3: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Talghoria link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Talghoria	Talghoria to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	0	0	0	0	0.00
	Car/ Micro Bus/Jeep	1	0	0	0	0	0.00
	Auto Rickshaw/Tempo/Nosimon	0.75	39	39	78	58.5	12.96
	Motorcycle	0.75	64	81	145	108.75	24.09
NMV	Rickshaw/Van	0.5	86	102	188	94	31.23
	Bicycle	0.5	99	92	191	95.5	31.73
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**223**	**167**	**37.04**
Total NMV					**379**	**190**	**62.96**
Grand Total					**602**	**357**	**100.00**

Table C-4: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Talghoria link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Talghoria	Talghoria to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	0	0	0	0	0.00
	Car/ Micro Bus/Jeep	1	0	0	0	0	0.00
	Auto Rickshaw/Tempo/Nosimon	0.75	31	30	61	45.75	11.53
	Motorcycle	0.75	56	74	130	97.5	24.57
NMV	Rickshaw/Van	0.5	77	92	169	84.5	31.95
	Bicycle	0.5	88	81	169	84.5	31.95
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**191**	**143**	**36.11**
Total NMV					**338**	**169**	**63.89**
Grand Total					**529**	**312**	**100.00**

Table C-5: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Shikdari Bazar link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Shikdari Bazar	Shikdari Bazar to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	7	14	42	1.95
	Car/ Micro Bus/Jeep	1	4	19	23	23	3.21
	Auto Rickshaw/Tempo/Nosimon	0.75	80	43	123	92.25	17.15
	Motorcycle	0.75	70	110	180	135	25.10
NMV	Rickshaw/Van	0.5	111	118	229	114.5	31.94
	Bicycle	0.5	64	82	146	73	20.36
	Animal Cart/Push Cart	3	2	0	2	6	0.28
Total MV					**340**	**292**	**47.42**
Total NMV					**377**	**194**	**52.58**
Grand Total					**717**	**486**	**100.00**

Table C-6: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Shikdari Bazar link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Shikdari	Shikdari Bazar to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	7	14	42	2.20
	Car/ Micro Bus/Jeep	1	4	19	23	23	3.61
	Auto Rickshaw/Tempo/Nosimon	0.75	70	34	104	78	16.33
	Motorcycle	0.75	60	98	158	118.5	24.80
NMV	Rickshaw/Van	0.5	100	106	206	103	32.34
	Bicycle	0.5	56	74	130	65	20.41
	Animal Cart/Push Cart	3	2	0	2	6	0.31
Total MV					**299**	**262**	**46.94**
Total NMV					**338**	**174**	**53.06**
Grand Total					**637**	**436**	**100.00**

Table C-7: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Taherpur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Taherpur	Taherpur to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	8	21	63	2.91
	Car/ Micro Bus/Jeep	1	16	7	23	23	3.19
	Auto Rickshaw/ Tempo/Nosimon	0.75	78	71	149	111.75	20.67
	Motorcycle	0.75	95	84	179	134.25	24.83
NMV	Rickshaw/Van	0.5	117	111	228	114	31.62
	Bicycle	0.5	58	63	121	60.5	16.78
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**372**	**332**	**51.60**
Total NMV					**349**	**175**	**48.40**
Grand Total					**721**	**507**	**100.00**

Table C-8: Hourly Traffic Volume according to the Vehicle Types for Hamir Kuthsa-Taherpur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hamir Kuthsa to Taherpur	Taherpur r to Hamir Kuthsa			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	13	8	21	63	3.26
	Car/ Micro Bus/Jeep	1	16	7	23	23	3.57
	Auto Rickshaw/Tempo/Nosimon	0.75	69	62	131	98.25	20.34
	Motorcycle	0.75	83	74	157	117.75	24.38
NMV	Rickshaw/Van	0.5	105	101	206	103	31.99
	Bicycle	0.5	50	56	106	53	16.46
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**332**	**302**	**51.55**
Total NMV					**312**	**156**	**48.45**
Grand Total					**644**	**458**	**100.00**

D) Mohonpur

Table D-1: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Bhawaniganj link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Bhawaniganj	Bhawaniganj to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	4	9	27	2.00
	Car/ Micro Bus/Jeep	1	4	2	6	6	1.33
	Auto Rickshaw/Tempo/Nosimon	0.75	55	46	101	75.75	22.44
	Motorcycle	0.75	63	45	108	81	24.00
NMV	Rickshaw/Van	0.5	65	40	105	52.5	23.33
	Bicycle	0.5	69	52	121	60.5	26.89
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**224**	**189.75**	**49.78**
Total NMV					**226**	**113**	**50.22**
Grand Total					**450**	**302.75**	**100**

Table D-2: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Bhawaniganj link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Bhawaniganj	Bhawaniganj to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	4	9	27	2.40
	Car/ Micro Bus/Jeep	1	4	2	6	6	1.60
	Auto Rickshaw/Tempo/Nosimon	0.75	47	37	84	63	22.40
	Motorcycle	0.75	52	36	88	66	23.47
NMV	Rickshaw/Van	0.5	57	30	87	43.5	23.20
	Bicycle	0.5	57	44	101	50.5	26.93
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**187**	**162**	**49.87**
Total NMV					**188**	**94**	**50.13**
Grand Total					**375**	**256**	**100**

Table D-3: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Taherpur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Taherpur	Taherpur to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	2.94
	Car/ Micro Bus/Jeep	1	13	7	20	20	4.52
	Auto Rickshaw/Tempo/Nosimon	0.75	50	24	74	55.5	16.74
	Motorcycle	0.75	65	42	107	80.25	24.21
NMV	Rickshaw/Van	0.5	75	30	105	52.5	23.76
	Bicycle	0.5	100	23	123	61.5	27.83
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**214**	**195**	**48.42**
Total NMV					**228**	**114**	**51.58**
Grand Total					**442**	**309**	**100.00**

Table D-4: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Taherpur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Taherpur	Taherpur to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	3.52
	Car/ Micro Bus/Jeep	1	13	7	20	20	5.42
	Auto Rickshaw/Tempo/Nosimon	0.75	41	15	56	42	15.18
	Motorcycle	0.75	54	34	88	66	23.85
NMV	Rickshaw/Van	0.5	64	21	85	42.5	23.04
	Bicycle	0.5	90	17	107	53.5	29.00
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**177**	**167**	**47.97**
Total NMV					**192**	**96**	**52.03**
Grand Total					**369**	**263**	**100.00**

Table D-5: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Sonadanga link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Sonadanga	Sonadanga to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	2.94
	Car/ Micro Bus/Jeep	1	13	7	20	20	4.52
	Auto Rickshaw/Tempo/Nosimon	0.75	50	24	74	55.5	16.74
	Motorcycle	0.75	65	42	107	80.25	24.21
NMV	Rickshaw/Van	0.5	75	30	105	52.5	23.76
	Bicycle	0.5	100	23	123	61.5	27.83
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**214**	**195**	**48.42**
Total NMV					**228**	**114**	**51.58**
Grand Total					**442**	**309**	**100.00**

Table D-6: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Sonadanga link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Sonadanga	Sonadanga to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	3.50
	Car/ Micro Bus/Jeep	1	13	7	20	20	5.39
	Auto Rickshaw/Tempo/Nosimon	0.75	40	15	55	41.25	14.82
	Motorcycle	0.75	54	34	88	66	23.72
NMV	Rickshaw/Van	0.5	65	22	87	43.5	23.45
	Bicycle	0.5	91	17	108	54	29.11
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**176**	**166**	**47.44**
Total NMV					**195**	**98**	**52.56**
Grand Total					**371**	**264**	**100.00**

Table D-7: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Boro bihanoli link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Boro bihanoli	Boro bihanoli to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	6	13	39	2.93
	Car/ Micro Bus/Jeep	1	7	4	11	11	2.48
	Auto Rickshaw/Tempo/Nosimon	0.75	45	49	94	70.5	21.17
	Motorcycle	0.75	60	49	109	81.75	24.55
NMV	Rickshaw/Van	0.5	51	45	96	48	21.62
	Bicycle	0.5	65	56	121	60.5	27.25
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**227**	**202**	**51.13**
Total NMV					**217**	**109**	**48.87**
Grand Total					**444**	**311**	**100.00**

Table D-8: Hourly Traffic Volume according to the Vehicle Types for Mohonpur-Boro bihanoli link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mohonpur to Boro bihanoli	Boro bihanoli to Mohonpur			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	6	13	39	3.49
	Car/ Micro Bus/Jeep	1	7	4	11	11	2.96
	Auto Rickshaw/Tempo/Nosimon	0.75	37	41	78	58.5	20.97
	Motorcycle	0.75	51	41	92	69	24.73
NMV	Rickshaw/Van	0.5	43	36	79	39.5	21.24
	Bicycle	0.5	51	48	99	49.5	26.61
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**194**	**178**	**52.15**
Total NMV					**178**	**89**	**47.85**
Grand Total					**372**	**267**	**100.00**

E) Shikdari

Table E-1: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Jata Pukur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Jata Pukur	Jata Pukur to Shikdari			
MV	Bus/Minibus	3	0	1	1	3	0.37
	Heavy Truck/Light Truck	3	5	9	14	42	5.19
	Car/ Micro Bus/Jeep	1	4	2	6	6	2.22
	Auto Rickshaw/Tempo/Nosimon	0.75	17	26	43	32.25	15.93
	Motorcycle	0.75	23	44	67	50.25	24.81
NMV	Rickshaw/Van	0.5	29	47	76	38	28.15
	Bicycle	0.5	24	39	63	31.5	23.33
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**131**	**134**	**48.52**
Total NMV					**139**	**70**	**51.48**
Grand Total					**270**	**203**	**100**

Table E-2: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Jata Pukur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Jata Pukur	Jata Pukur to Shikdari			
MV	Bus/Minibus	3	0	1	1	3	0.50
	Heavy Truck/Light Truck	3	5	9	14	42	6.97
	Car/ Micro Bus/Jeep	1	4	2	6	6	2.99
	Auto Rickshaw/Tempo/Nosimon	0.75	11	16	27	20.25	13.43
	Motorcycle	0.75	14	35	49	36.75	24.38
NMV	Rickshaw/Van	0.5	22	36	58	29	28.86
	Bicycle	0.5	16	30	46	23	22.89
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**97**	**108**	**48.26**
Total NMV					**104**	**52**	**51.74**
Grand Total					**201**	**160**	**100**

Table E-3: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Bhawaniganj link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Bhawaniganj	Bhawaniganj to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	1	9	10	30	2.74
	Car/ Micro Bus/Jeep	1	5	1	6	6	1.64
	Auto Rickshaw/Tempo/Nosimon	0.75	22	27	49	36.75	13.42
	Motorcycle	0.75	54	46	100	75	27.40
NMV	Rickshaw/Van	0.5	65	61	126	63	34.52
	Bicycle	0.5	38	36	74	37	20.27
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**165**	**148**	**45.21**
Total NMV					**200**	**100**	**54.79**
Grand Total					**365**	**248**	**100.00**

Table E-4: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Bhawaniganj link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Bhawaniganj	Bhawaniganj to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	1	9	10	30	3.46
	Car/ Micro Bus/Jeep	1	5	1	6	6	2.08
	Auto Rickshaw/ Tempo/Nosimon	0.75	19	17	36	27	12.46
	Motorcycle	0.75	42	34	76	57	26.30
NMV	Rickshaw/Van	0.5	53	51	104	52	35.99
	Bicycle	0.5	30	27	57	28.5	19.72
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**128**	**120**	**44.29**
Total NMV					**161**	**81**	**55.71**
Grand Total					**289**	**201**	**100.00**

Table E-5: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Hamir Kuthsa link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Hamir Kuthsa	Hamir Kuthsa to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	7	14	42	1.95
	Car/ Micro Bus/Jeep	1	19	4	23	23	3.21
	Auto Rickshaw/Tempo/Nosimon	0.75	43	80	123	92.25	17.15
	Motorcycle	0.75	110	70	180	135	25.10
NMV	Rickshaw/Van	0.5	118	111	229	114.5	31.94
	Bicycle	0.5	82	64	146	73	20.36
	Animal Cart/Push Cart	3	0	2	2	6	0.28
Total MV					**340**	**292**	**47.42**
Total NMV					**377**	**194**	**52.58**
Grand Total					**717**	**486**	**100.00**

Table E-6: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Hamir Kuthsa link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Hamir Kuthsa	Hamir Kuthsa to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	7	7	14	42	2.28
	Car/ Micro Bus/Jeep	1	19	4	23	23	3.75
	Auto Rickshaw/Tempo/Nosimon	0.75	32	66	98	73.5	15.96
	Motorcycle	0.75	97	58	155	116.25	25.24
NMV	Rickshaw/Van	0.5	104	96	200	100	32.57
	Bicycle	0.5	69	53	122	61	19.87
	Animal Cart/Push Cart	3	0	2	2	6	0.33
Total MV					**290**	**255**	**47.23**
Total NMV					**324**	**167**	**52.77**
Grand Total					**614**	**422**	**100.00**

Table E-7: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Atrai link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Atrai	Atrai to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	10	7	17	51	3.14
	Car/ Micro Bus/Jeep	1	3	13	16	16	2.95
	Auto Rickshaw/Tempo/Nosimon	0.75	57	29	86	64.5	15.87
	Motorcycle	0.75	59	63	122	91.5	22.51
NMV	Rickshaw/Van	0.5	88	80	168	84	31.00
	Bicycle	0.5	59	74	133	66.5	24.54
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**241**	**223**	**44.46**
Total NMV					**301**	**151**	**55.54**
Grand Total					**542**	**374**	**100.00**

Table E-8: Hourly Traffic Volume according to the Vehicle Types for Shikdari-Atrai link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Shikdari to Atrai	Atrai to Shikdari			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	10	7	17	51	3.62
	Car/ Micro Bus/Jeep	1	3	13	16	16	3.41
	Auto Rickshaw/Tempo/Nosimon	0.75	47	20	67	50.25	14.29
	Motorcycle	0.75	44	52	96	72	20.47
NMV	Rickshaw/Van	0.5	76	69	145	72.5	30.92
	Bicycle	0.5	57	71	128	64	27.29
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**196**	**189**	**41.79**
Total NMV					**273**	**137**	**58.21**
Grand Total					**469**	**326**	**100.00**

F) Hatgang para

Table F-1: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Auchpara link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Auchpara	Auchpara to Hatgang para			
MV	Bus/Minibus	3	1	0	1	3	0.23
	Heavy Truck/Light Truck	3	9	4	13	39	3.01
	Car/ Micro Bus/Jeep	1	14	7	21	21	4.86
	Auto Rickshaw/Tempo/Nosimon	0.75	44	28	72	54	16.67
	Motorcycle	0.75	54	60	114	85.5	26.39
NMV	Rickshaw/Van	0.5	69	61	130	65	30.09
	Bicycle	0.5	32	49	81	40.5	18.75
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**221**	**203**	**51.16**
Total NMV					**211**	**106**	**48.84**
Grand Total					**432**	**308**	**100**

Table F-2: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Auchpara link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Auchpara	Auchpara to Hatgang para			
MV	Bus/Minibus	3	1	0	1	3	0.28
	Heavy Truck/Light Truck	3	9	4	13	39	3.64
	Car/ Micro Bus/Jeep	1	14	7	21	21	5.88
	Auto Rickshaw/Tempo/Nosimon	0.75	34	19	53	39.75	14.85
	Motorcycle	0.75	44	47	91	68.25	25.49
NMV	Rickshaw/Van	0.5	61	52	113	56.5	31.65
	Bicycle	0.5	23	42	65	32.5	18.21
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**179**	**171**	**50.14**
Total NMV					**178**	**89**	**49.86**
Grand Total					**357**	**260**	**100**

Table F-3: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Baigacha link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Baigacha	Baigacha to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	2.26
	Car/ Micro Bus/Jeep	1	0	1	1	1	0.17
	Auto Rickshaw/Tempo/Nosimon	0.75	47	60	107	80.25	18.58
	Motorcycle	0.75	55	90	145	108.75	25.17
NMV	Rickshaw/Van	0.5	58	79	137	68.5	23.78
	Bicycle	0.5	75	98	173	86.5	30.03
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**266**	**229**	**46.18**
Total NMV					**310**	**155**	**53.82**
Grand Total					**576**	**384**	**100.00**

Table F-4: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Baigacha link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Baigacha	Baigacha to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	8	13	39	2.71
	Car/ Micro Bus/Jeep	1	0	1	1	1	0.21
	Auto Rickshaw/Tempo/Nosimon	0.75	35	47	82	61.5	17.12
	Motorcycle	0.75	43	75	118	88.5	24.63
NMV	Rickshaw/Van	0.5	48	66	114	57	23.80
	Bicycle	0.5	65	86	151	75.5	31.52
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**214**	**190**	**44.68**
Total NMV					**265**	**133**	**55.32**
Grand Total					**479**	**323**	**100.00**

Table F-5: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Gobinda Para link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Gobinda Para	Gobinda Para to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	11	3	14	42	3.05
	Car/ Micro Bus/Jeep	1	15	3	18	18	3.92
	Auto Rickshaw/Tempo/Nosimon	0.75	43	25	68	51	14.81
	Motorcycle	0.75	87	48	135	101.25	29.41
NMV	Rickshaw/Van	0.5	93	52	145	72.5	31.59
	Bicycle	0.5	46	33	79	39.5	17.21
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**235**	**212**	**51.20**
Total NMV					**224**	**112**	**48.80**
Grand Total					**459**	**324**	**100.00**

Table F-6: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Gobinda Para link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Gobinda	Gobinda Para to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	11	3	14	42	3.62
	Car/ Micro Bus/Jeep	1	15	3	18	18	4.65
	Auto Rickshaw/ Tempo/Nosimon	0.75	32	25	57	42.75	14.73
	Motorcycle	0.75	76	35	111	83.25	28.68
NMV	Rickshaw/Van	0.5	82	42	124	62	32.04
	Bicycle	0.5	38	25	63	31.5	16.28
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**200**	**186**	**51.68**
Total NMV					**187**	**94**	**48.32**
Grand Total					**387**	**280**	**100.00**

Table F-7: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Suvodanga link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Suvodanga	Suvodanga to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	14	8	22	66	3.46
	Car/ Micro Bus/Jeep	1	8	15	23	23	3.62
	Auto Rickshaw/Tempo/Nosimon	0.75	56	36	92	69	14.49
	Motorcycle	0.75	71	92	163	122.25	25.67
NMV	Rickshaw/Van	0.5	102	93	195	97.5	30.71
	Bicycle	0.5	75	65	140	70	22.05
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**300**	**280**	**47.24**
Total NMV					**335**	**168**	**52.76**
Grand Total					**635**	**448**	**100.00**

Table F-8: Hourly Traffic Volume according to the Vehicle Types for Hatgang para-Suvodanga link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Hatgang para to Suvodanga	Suvodanga to Hatgang para			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	14	8	22	66	4.02
	Car/ Micro Bus/Jeep	1	8	15	23	23	4.20
	Auto Rickshaw/Tempo/Nosimon	0.75	44	28	72	54	13.16
	Motorcycle	0.75	61	78	139	104.25	25.41
NMV	Rickshaw/Van	0.5	89	80	169	84.5	30.90
	Bicycle	0.5	66	56	122	61	22.30
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**256**	**247**	**46.80**
Total NMV					**291**	**146**	**53.20**
Grand Total					**547**	**393**	**100.00**

G) Mosmoil

Table G-1: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Bhawaniganj link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Bhawaniganj	Bhawaniganj to Mosmoil			
MV	Bus/Minibus	3	0	1	1	3	0.25
	Heavy Truck/Light Truck	3	7	6	13	39	3.19
	Car/ Micro Bus/Jeep	1	7	3	10	10	2.45
	Auto Rickshaw/Tempo/Nosimon	0.75	45	33	78	58.5	19.12
	Motorcycle	0.75	60	47	107	80.25	26.23
NMV	Rickshaw/Van	0.5	51	42	93	46.5	22.79
	Bicycle	0.5	65	41	106	53	25.98
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**209**	**191**	**51.23**
Total NMV					**199**	**100**	**48.77**
Grand Total					**408**	**290**	**100**

Table G-2: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Bhawaniganj link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Bhawaniganj	Bhawaniganj to Mosmoil			
MV	Bus/Minibus	3	0	1	1	3	0.30
	Heavy Truck/Light Truck	3	7	6	13	39	3.88
	Car/ Micro Bus/Jeep	1	7	3	10	10	2.99
	Auto Rickshaw/Tempo/Nosimon	0.75	35	26	61	45.75	18.21
	Motorcycle	0.75	49	38	87	65.25	25.97
NMV	Rickshaw/Van	0.5	42	33	75	37.5	22.39
	Bicycle	0.5	53	35	88	44	26.27
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**172**	**163**	**51.34**
Total NMV					**163**	**82**	**48.66**
Grand Total					**335**	**245**	**100**

Table G-3: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Basupara link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Basupara	Basupara to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	8	14	42	2.99
	Car/ Micro Bus/Jeep	1	13	7	20	20	4.27
	Auto Rickshaw/Tempo/Nosimon	0.75	45	24	69	51.75	14.74
	Motorcycle	0.75	75	42	117	87.75	25.00
NMV	Rickshaw/Van	0.5	85	30	115	57.5	24.57
	Bicycle	0.5	110	23	133	66.5	28.42
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**220**	**202**	**47.01**
Total NMV					**248**	**124**	**52.99**
Grand Total					**468**	**326**	**100.00**

Table G-4: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Basupara link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Basupara	Basupara to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	8	14	42	3.58
	Car/ Micro Bus/Jeep	1	13	7	20	20	5.12
	Auto Rickshaw/Tempo/Nosimon	0.75	35	16	51	38.25	13.04
	Motorcycle	0.75	63	33	96	72	24.55
NMV	Rickshaw/Van	0.5	74	18	92	46	23.53
	Bicycle	0.5	101	17	118	59	30.18
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**181**	**172**	**46.29**
Total NMV					**210**	**105**	**53.71**
Grand Total					**391**	**277**	**100.00**

Table G-5: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Subhadanga link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Subhadanga	Subhadanga to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	8	14	42	2.99
	Car/ Micro Bus/Jeep	1	13	7	20	20	4.27
	Auto Rickshaw/Tempo/Nosimon	0.75	45	24	69	51.75	14.74
	Motorcycle	0.75	75	42	117	87.75	25.00
NMV	Rickshaw/Van	0.5	85	30	115	57.5	24.57
	Bicycle	0.5	110	23	133	66.5	28.42
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**220**	**202**	**47.01**
Total NMV					**248**	**124**	**52.99**
Grand Total					**468**	**326**	**100.00**

Table G-6: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Subhadanga link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Subhadanga	Subhadanga to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	6	8	14	42	3.54
	Car/ Micro Bus/Jeep	1	13	7	20	20	5.06
	Auto Rickshaw/Tempo/Nosimon	0.75	37	15	52	39	13.16
	Motorcycle	0.75	63	36	99	74.25	25.06
NMV	Rickshaw/Van	0.5	72	21	93	46.5	23.54
	Bicycle	0.5	100	17	117	58.5	29.62
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**185**	**175**	**46.84**
Total NMV					**210**	**105**	**53.16**
Grand Total					**395**	**280**	**100.00**

Table G-7: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Gonipur link during On Day, 2nd April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Gonipur	Gonipur to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	6	11	33	2.34
	Car/ Micro Bus/Jeep	1	4	4	8	8	1.70
	Auto Rickshaw/Tempo/Nosimon	0.75	55	49	104	78	22.13
	Motorcycle	0.75	63	49	112	84	23.83
NMV	Rickshaw/Van	0.5	65	45	110	55	23.40
	Bicycle	0.5	69	56	125	62.5	26.60
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**235**	**203**	**50.00**
Total NMV					**235**	**118**	**50.00**
Grand Total					**470**	**321**	**100.00**

Table G-8: Hourly Traffic Volume according to the Vehicle Types for Mosmoil-Gonipur link during Off Day, 5th April, 2016.

Mode of Transport		PCU	Direction Name		Total Vehicle /Hour	Total PCU/ Hour	Percentage
			Mosmoil to Gonipur	Gonipur to Mosmoil			
MV	Bus/Minibus	3	0	0	0	0	0.00
	Heavy Truck/Light Truck	3	5	6	11	33	2.60
	Car/ Micro Bus/Jeep	1	4	4	8	8	1.89
	Auto Rickshaw/Tempo/Nosimon	0.75	46	41	87	65.25	20.57
	Motorcycle	0.75	63	49	112	84	26.48
NMV	Rickshaw/Van	0.5	65	45	110	55	26.00
	Bicycle	0.5	51	44	95	47.5	22.46
	Animal Cart/Push Cart	3	0	0	0	0	0.00
Total MV					**218**	**190**	**51.54**
Total NMV					**205**	**103**	**48.46**
Grand Total					**423**	**293**	**100.00**

ORIGIN AND DESTINATION SURVEY

Table B-1: Types of Mode

Types of Vehicle	Frequency	Percent
Truck	2	8.3
Bus	1	4.2
Car/Pickup/Jeep/Motorbus	1	4.2
Auto Rickshaw/Tempo	9	37.5
Motorcycle	6	25
Rickshaw/Van	2	8.3
Bicycle	3	12.5
Total	24	100

Table B-2: Trip Purpose

Trip Purpose	Frequency	Percent
Work/Commute	15	62.5
Business Related	1	4.2
Shopping	2	8.3
Education	3	12.5
Social	3	12.5
Total	24	100

Table B-3: Frequency of Passengers Occupancy

No. of people in vehicle	Frequency	Percent
Within 5 persons	13	54.2
6 to 10 persons	6	25
11 to 20 persons	4	16.7
31 to 40 persons	1	4.2
Total	24	100

Table B-4: Nature of Origin

Origin Type	Frequency	Percent
Residence	8	33.3
Workplace	11	45.8
Shopping	2	8.3
School/College/University	3	12.5
Total	24	100

Table B-5: Nature of Destination

Destination Type	Frequency	Percent
Residence	4	16.7
Workplace	14	58.3
Shopping	2	8.3
School/College/University	1	4.2
Social	2	8.3
Recreational	1	4.2
Total	24	100

Table B-6: Origin and Destination Pattern

Origin \ Destination		Residence	Workplace	Shopping	School/College/University	Social	Recreational	Total
Residence	**Frequency**	1	5	1	0	0	1	8
	Percentage	12.50%	62.50%	12.50%	0.00%	0.00%	12.50%	100.00%
Workplace	**Frequency**	2	7	0	1	1	0	11
	Percentage	18.20%	63.60%	0.00%	9.10%	9.10%	0.00%	100.00%
Shopping	**Frequency**	0	1	1	0	0	0	2
	Percentage	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%
School/College/University	**Frequency**	1	1	0	0	1	0	3
	Percentage	33.30%	33.30%	0.00%	0.00%	33.30%	0.00%	100.00%
Total	**Frequency**	4	14	2	1	2	1	24
	Percentage	16.70%	58.30%	8.30%	4.20%	8.30%	4.20%	100.00%

Table B-7: Origin and Destination Matrix

Origin \ Destination	Atrai	Bwabanigonj	Dewlia	Gangepara	Jhikra	Kaligonj	Keshorhat	Machmoil	Puthia	Rajshahi	Total
Atrai	0	2	0	0	0	0	0	0	0	0	2
Bwabanigonj	0	0	0	0	0	0	0	0	0	0	0
Dewlia	0	0	0	0	0	0	0	0	0	0	0
Gangepara	0	2	0	0	0	0	0	0	0	0	2
Jhikra	0	2	0	0	0	0	0	0	0	0	2
Kaligonj	0	2	0	0	0	0	0	0	0	0	2
Keshorhat	0	1	0	0	0	0	0	1	0	0	2
Machmoil	0	1	1	0	0	0	0	0	0	0	2
Puthia	0	0	0	0	1	0	0	0	0	0	1
Rajshahi	0	1	0	0	0	0	0	0	0	0	1
Total	0	11	1	0	1	0	0	1	0	0	14

PASSENGERS INTERVIEW SURVEY

Table B-8: Trip Purpose of Passengers

Trip Purpose	Frequency	Percent
Work/Commute	7	16.3
Business Related	9	20.9
Shopping	9	20.9
Education	11	25.6
Social	6	14
Recreation	1	2.3
Total	43	100

Table B-9: Age of the Respondent

Age	Frequency	Percent
Below 15 years	1	2.3
16-20 years	7	16.3
21-30 years	16	37.2
31-40 years	12	27.9
41-50 years	3	7
Above 51 years	4	9.3
Total	43	100

Table B-10: Travel Cost for Passengers

Travel Cost	Frequency	Percent
Within 50 taka	5	26.3
51 to 100 taka	4	21.1
101 to 150 taka	7	36.8
151 to 200 taka	3	15.8
Total	19	100

Table B-11: Travel Distance for Passengers

Travel Distance	Frequency	Percent
Within 5 km	5	25
6 to 10 km	5	25
11 to 20 km	4	20
21 to 30 km	5	25
More than 30 km	1	5
Total	20	100

Table B-12: Age Distribution according to the Gender

Age \ Gender		Male	Female	Total
Below 15 years	**Frequency**	0	1	1
	Percentage	0.00%	100.00%	100.00%
16-20 years	**Frequency**	4	3	7
	Percentage	57.10%	42.90%	100.00%
21-30 years	**Frequency**	13	3	16
	Percentage	81.30%	18.80%	100.00%
31-40 years	**Frequency**	10	2	12
	Percentage	83.30%	16.70%	100.00%
41-50 years	**Frequency**	3	0	3
	Percentage	100.00%	0.00%	100.00%
Above 51 years	**Frequency**	3	1	4
	Percentage	75.00%	25.00%	100.00%
Total	**Frequency**	33	10	43
	Percentage	76.70%	23.30%	100.00%

Table B-13: Trip Purpose according to the Age Distribution

Age \ Trip Purpose		Work/Commute	Business Related	Shopping	Education	Social	Recreation	Total
Below 15 years	**Frequency**	0	0	0	1	0	0	1
	Percentage	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%
16-20 years	**Frequency**	0	0	1	6	0	0	7
	Percentage	0.00%	0.00%	14.30%	85.70%	0.00%	0.00%	100.00%
21-30 years	**Frequency**	4	3	3	3	2	1	16
	Percentage	25.00%	18.80%	18.80%	18.80%	12.50%	6.30%	100.00%
31-40 years	**Frequency**	3	3	3	1	2	0	12
	Percentage	25.00%	25.00%	25.00%	8.30%	16.70%	0.00%	100.00%
41-50 years	**Frequency**	0	1	2	0	0	0	3
	Percentage	0.00%	33.30%	66.70%	0.00%	0.00%	0.00%	100.00%
Above 51 years	**Frequency**	0	2	0	0	2	0	4
	Percentage	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%	100.00%
Total	**Frequency**	7	9	9	11	6	1	43

	Percentage	16.30%	20.90%	20.90 %	25.60 %	14.00 %	2.30%	100.00%

Table B-14: Trip Cost according to the Distance

Travel Cost \ Distance		**Within 5 km**	**6 to 10 km**	**11 to 20 km**	**21 to 30 km**	**Total**
Within 50 taka	**Frequency**	2	1	0	2	5
	Percentage	40.00%	20.00%	0.00%	40.00%	100.00 %
51 to 100 taka	**Frequency**	2	1	0	0	3
	Percentage	66.70%	33.30%	0.00%	0.00%	100.00 %
101 to 150 taka	**Frequency**	1	1	3	2	7
	Percentage	14.30%	14.30%	42.90%	28.60%	100.00 %
151 to 200 taka	**Frequency**	0	2	0	0	2
	Percentage	0.00%	100.00%	0.00%	0.00%	100.00 %
Total	**Frequency**	5	5	3	4	17
	Percentage	29.40%	29.40%	17.60%	23.50%	100.00 %

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

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: …… Name of Supervisor: …….
Signature of Enumerator: …… 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

Abbreviation/Acronyms

BDT---------- Bangladeshi Taka
BBS---------- Bangladesh Bureau of Statistics
BEZA---------- Bangladesh Economic Zone Authority
BDT---------- Bangladeshi Taka
CBOs ---------- Community Based Organizations
ECAL---------- Engineering Consultants & Associates Ltd.
EIA---------- Environmental Impact Assessment
FY---------- Fiscal Year
GDP---------- Gross Domestic Product
GoB---------- Government of Bangladesh
JV ---------- Joint Venture
LGED ---------- Local Government Engineering Department
MDGs ---------- Millennium Development Goals
NGO---------- Non-Government Organization
NSSS ---------- National Social Security Strategy
PRSP ---------- Poverty Reduction Strategy Paper
SDGs ---------- Sustainable Development Goals
SPSS---------- Statistical Packages for the Social Sciences
SRS ---------- Simple Random Sampling
SME ---------- Small and Medium Enterprises
SFYP ---------- Seventh Five Year Plan
TIN---------- Tax Identification Number
ToR ---------- Terms of Reference
TL ---------- Team Leader
UDD---------- Urban Development Directorate

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