

LETTER OF TRANSMITTAL

To,

10th December, 2017

PD

Preparation of Development Plan for Fourteen Upazilas

Urban Development Directorate (UDD)

82, Segun Bagicha, Dhaka-1000, Bangladesh

Sub: Submission of Dohar Upazila Transportation Survey Report

Please find attached to this letter, the Transportation Survey Report of Dohar Upazila of Package-1 of the project 'Preparation of Development Plan for Fourteen Upazilas'. The report has been prepared based on Terms of Reference and the subsequent instructions received from your office time to time.

Hope the current report will meet your requirements.

Thanking you so much.

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Executive Summary

A traffic and transportation survey is undertaken to investigate into the existing transportation infrastructure, transportation modes and modal share scenario and to estimate the anticipated transportation needs of the future.

Dohar Upazila has 266 km metaled, 228 km semi-metaled and 228km katcha road. It has 20 km Water way round the year (river + canal). Regional linkage of this Upazila is mainly Dhaka based. There is no National highway and railways passing through this Upazila. Waterway connection is very important for this upazila as it established the easy connection of Sadarpur upazila, Faridpur with this upazila. The internal accessibility within the Upazila is strong as well as inter district connectivity. Six types of various survey (Traffic volume survey in inter-sections and Road segments, O-D survey, Bus Passengers Survey, Pedestrian Survey and Regional Transportation Survey) works have been performed by appointing experienced supervisors and enumerators through approved formats of UDD (Sample size and number of spots also were approved by UDD). Data entry works been completed properly and analyzed those accordingly (Attached in the Annexures).

Transportation survey reveals that the pedestrians are the significant road users within the urban area. However, in roads, pedestrians are often forced to share the same road ways with vehicular traffic due to lack of footpath. Every day almost 2000 (two thousand) passengers and 100-150 tons freight regularly move to different destinations from this Upazila by bus, truck, pickup and other mode of transports. Truck plays prominent role for carrying goods than other vehicles. Situation is almost same for the opposite direction traffic coming from outsides. Non-motorized transports are mainly used locally for transportation of passengers and goods. However, the survey reveals poor condition of roads and narrow width of carriageway that interrupts smooth vehicular movement. Most of the roads in this Upazila is either semi-pucca or Katcha and almost 93% of the access road width is below 3.0 meters that connect the households. There is no well-designated bus stand and terminal for bus and trucks. As a result, indiscriminate parking is observed everywhere. Buses pick up passengers from almost anywhere in the road. A complete disorder is observed in traffic management system.

The inhabitants of urban area are mostly dependent on non-motorized vehicles for their local mobility. However, as cheaper and faster mode, the electric powered auto-rickshaw, as public transport is gaining rapid popularity replacing manually operated rickshaws. Rickshaw/van and bicycle are the dominant modes of transport among non-motorized vehicles. Other significant motorized vehicles include trucks, pickups for freight goods movements.

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Abbreviation and Acronym

UDD	=	Urban Development Directorate
LGED	=	Local Government Engineering Department
PRA	=	Participatory Rapid Appraisal
HBB	=	Herring-Bone-Bond
MV	=	Motorized Vehicle
NMV	=	Non-Motorized Vehicle
O-D	=	Origin-Destination
PMO	=	Project Management Office
RHD	=	Roads and Highways Department
NGO	=	Non-Government Organization
PCE	=	Passenger Car Equivalent
PCE	=	Passenger Car Units
V/C	=	Volume/Capacity
DITS	=	Dhaka Integrated Transport Study
RMSS	=	Road Materials and Standards Study

Table of Contents

	Page No.
Letter of Transmittal	i
Executive Summary	ii
Abbreviations	iii
Table of Contents	iv
List of Tables	vi
List of Figures	vii
List of Maps	viii
List of Photographs	viii
Chapter-1: Introduction	1
1.1 Background	1
1.2 Understanding of Transportation Infrastructure and Facilities	1
1.3 Survey Methodology	1
1.3.1 Surveys	1
1.3.2 Format and Techniques for Traffic Survey	2
1.3.3 Sampling Size and Methods	2
1.3.4 PCE standards	3
1.3.5 Intersection Capacity	3
1.4 Conducted Surveys	4
1.4.1 Orientation & Meeting	4
1.4.2 Team Formation	4
1.4.3 Formats used for Traffic Survey	7
1.4.4 Survey Conducting Period	7
1.5 Conducting Traffic and Transportation Survey	7
1.5.1 Traffic Volume Count Survey	7
a. Survey Methodology	7
b. Manual Counts	7
c. Intersections and Justification of the Selections	8
d. Survey Schedule	8
e. Database Preparation and Data Processing	11
f. Finding and Analysis	11
1.5.2 Origin-Destination (O-D) Survey	11
a. Survey Methodology	11
	iv

b. Survey Location and Schedule	12
c. Questionnaire Design	12
d. Database Preparation and analysis	12
1.5.3 Bus Passenger Interview Survey	14
1.5.4 Pedestrian Interview Survey	14
Chapter-2: Existing Transportation Network and Facilities	17
2.1 Introduction	17
2.2 Road Communication and Regional Connectivity	17
2.3 Available Transport Modes	17
2.4 Regional Connectivity	18
2.5 Inventory of important roads of the study area	19
2.5.1 Existing Road Network of Dohar Upazila	19
2.6 Functional Classification of Road	21
2.7 Existing Infrastructure	21
2.8 Major Traffic Congestion Areas	22
Chapter-3: Analysis of Survey Findings	25
3.1 Traffic Volume Count Survey	25
3.1.1 Average Daily Traffic Volume	25
3.1.2 Traffic Volume in Surveyed Intersection	28
3.1.3 Peak Period Traffic Volume	30
3.1.4 Traffic Condition of Road Sections	33
3.1.5 Off-Peak Period Traffic Volume	34
3.1.6 Traffic Volume and PCE at Roadway Segments	36
3.1.7 Pedestrian Traffic Volume Survey	37
3.2 Origin-Destination (O-D) Survey Findings	37
3.2.1 Trip purpose and Mode Used	37
3.2.2 Origin and Destination of Passenger Modes	38
3.2.3 Capacity of Passenger Modes	39
3.2.4 Destination Pattern of Different Union of Dohar Upazila	40
3.2.5 Passengers Density in Different Vehicle Mode	40
3.2.6 Major Prioritized Problems	41
3.3 Passenger Interview Survey Findings	41
3.3.1 Demographic Information	41
3.3.2 Trip Purpose	42

3.3.3 Age Group and Trip Purpose	42
3.3.4 Types of Mode	43
3.3.5 Trip Distribution by Passengers	43
3.3.6 Gender and Trip Productions per Week	44
3.4 Pedestrian Survey	44
3.4.1 Demographic Information	44
3.4.2 Purpose of Trips and Distance Traveled	45
3.5 Regional Network System	46
3.5.1 Trip Frequency	46
3.5.2 Regional Connectivity with Surrounding Regions	47
3.5.3 Regional Transport Network System	47
3.5.4 Transport Going Out from Study Area to Other Region	47
3.5.5 Transport Coming from other region to study area	50
Chapter-4: Findings from PRA & Socio Economic Survey	51
4.1 Findings from PRA	51
4.2 Findings from Socio Economic Survey	51
4.2.1 Status of Access Road	51
4.2.2 Distance of Main Road from Household	52
4.2.3 Condition of the road	52
Chapter-5: Conclusion	53
Reference	54
Annexure	55

List of Tables:

Table 1.1: Sample size and location number according to surveys	3
Table 1.2: PCE of different modes considered in different projects.....	3
Table 1.3: Intersection Status Criteria for Planning Critical v/c Ratio	4
Table 1.4: Survey Team Conducting Traffic and Transportation Survey	4
Table 1.5: Conducting Period of Traffic and Transportation Survey	7
Table 1.6: Name of the Intersections for volume survey in Dohar Upazila	8
Table 1.7: Name of the intersection and corresponding links	8
Table 2.1: Registered and non- Registered Number vehicles in Dohar Upazila in 2016	18
Table 2.2: Major Routes from Dohar.....	18
Table 2.3: Road Types according to Surface and Hierarchy	21
Table 3.1: PCE and Traffic Volume at Intersection	25
Table 3.2: Capacity of the roads in Dohar Upazila.....	34
Table 3.3: Traffic Volume and PCE at Roadway Segments.....	37
Table 3.4: Pedestrian density in selected intersections	37

Table 3.5: O-D matrix	39
Table 3.6: Carrying capacity of passenger modes (in percentage)	40
Table 3.7: Trip distribution pattern according to the trip purpose (in percentage).....	40
Table 3.8: Age- Sex structure of bus users	42
Table 3.9: Age Group and Trip Purpose (in percentage).....	42
Table 3.10: Age composition according to gender of the pedestrian	45
Table 3.11: Trip purpose according to the gender of the pedestrian	46
Table 3.12 Trips Rate of the vehicles travelling away from Dohar Upazila	48
Table 3.13: Carrying capacities of some major vehicles in Dohar Upazila.....	50
Table 3.14: Goods carried by freight vehicles travelling away from Dohar Upazila	50

List of Figures:

Figure 3.1: Average Frequency of Vehicle/Hour at Links of Three Intersection	26
Figure 3.2: Kartikpur Bazar Intersection	27
Figure 3.3 Lotakhula Intersection	27
Figure 3.4 Poshcim Char Intersection.....	28
Figure 3.5 Thanar Mor Intersection	28
Figure 3.6: Traffic Volume of Kartikpur Bazar	29
Figure 3.7: Traffic Volume of Lotakhula	29
Figure 3.8: Traffic Volume of Poshcim char	30
Figure 3.9: Traffic Volume of Thanar mor	30
Figure 3.10: Peak Period Traffic Volume of Kartikpur bazar	31
Figure 3.11: Peak Period Traffic Volume of Lotakhula	31
Figure 3.12: Peak Period Traffic Volume of Poschim char	32
Figure 3.13: Peak Period Traffic Volume of Thanar mor.....	32
Figure 3.14: Peak Hour Traffic Volume	33
Figure 3.15: Off-peak Period Traffic Volume of Kartikpur bazar.....	35
Figure 3.16: Off-peak Period Traffic Volume of Lotakhula.....	35
Figure 3.17: Off-peak Period Traffic Volume of Poshcim char	36
Figure 3.18: Off-peak Period Traffic Volume of Thanar mor	36
Figure 3.19: Percentage of mode uses	38
Figure 3.20: Percentage of Trip Purpose	38
Figure 3.21: Occupancy of Passengers in Vehicle.....	41
Figure 3.22: Major problems	41
Figure 3.23: Trip purpose (in percentage)	42
Figure 3.24: Types of Mode (in percentage)	43
Figure 3.25: Trip Frequency (in percentage)	43
Figure 3.26: Trip frequency per week according to the gender	44
Figure 3.27: Age Composition of Pedestrian of Dohar (in percentage)	45
Figure 3.28: Pedestrian Distance Traveled	46
Figure 3.29: Trip Frequency	46
Figure 3.30: Regional Connectivity with Surrounding Regions (in percentage).....	47
Figure 4.1: Width of the road in front of houses.....	51
Figure 4.2: Distance of Main Road from Houses	52
Figure 4.4: Percentage Distribution of Household by Problems of Roads	52

List of Maps:

Map 1.1: Survey locations in Dohar Upazila.....	6
Map 1.2: Intersection Survey Locations in Dohar Upazila.....	9
Map 1.3: O-D Survey Location	13
Map 1.4: Bus Passenger Survey Location	15
Map 1.5: Pedestrian Survey Location	16
Map 2.1: Upazila Road Network Map	20
Map 2.2: Major traffic Congestion areas in Dohar Upazila.....	24
Map 3.1: Regional Connectivity of Dohar Upazila	49

List of Photographs:

Picture 1.1: 2 O-D Survey Locations (Meghula and College Road Mor)	12
Picture 1.2: Bus Passenger Survey Locations (Moinot Ghat and Thanar Mor)	14
Picture 2.1: Satvita Narisha, Dohar	17
Picture 2.2: A Major Road of Dohar Town	17
Picture 2.3: Condition of the road in an Access road (Sutarpara)	19
Picture 2.4: Condition of the road in an Access road (Satvita)	19
Picture 2.5: Bus, Truck stand and Ghat at Moinot Ghat.....	22
Picture 2.6: Auto Stand College Mor	22
Picture 2.7: CNG stand, Moinot Ghat	22
Picture 2.8: Traffic congestion at Dohar	23
Picture 2.9: Traffic congestion at Dohar due to narrow road and lack of maintenance	23

Chapter-1: Introduction

1.1 Background

Transportation is a very important aspect of planning, which has a greater impact on the other facts like land use or the environment and thus it is very crucial for any plan preparation. Efficient and effective transportation are also a central requirement for city dwellers as well as masses of surrounding countries. The planned transportation system provides efficient movement of people from one place to another. Thus, the assessment of the detailed features and characteristics of the transport infrastructure and transport users of Dohar Upazila will provide much needed information for suggesting useful tools and techniques as well as infrastructure for meeting the existing transport demand and the future challenges.

This chapter contains the detailed assessment of existing transport features, travel characteristics and travel demand, survey techniques & methodology, and regional connectivity of this Upazila. A conclusion has been included at the end outlining the results for further plan preparation later.

1.2 Understanding of Transportation Infrastructure and Facilities

The term infrastructure encompasses the physical facilities and systems that serve the public at large. These include structures that facilitate transportation, communication and other essential daily processes. These structures can range from standard roads to major accomplishments such as dams and canals. Some of the most visible infrastructure systems are in transportation, since most of these systems are exclusively public. The various forms of roadways, including highway and freeway systems, are an example of transportation infrastructure. Overpasses and bridges are also examples of transportation infrastructure and facilities.

1.3 Survey Methodology

1.3.1 Surveys

The following surveys were conducted during 11.02.2016 to 18.02.2016 in the Dohar Upazila to get a complete picture of this Upazila transportation system, which has predominately road-based network.

- Traffic Volume Count- Motorized, Non-motorized vehicles (for intersection and road segments)
- O-D survey
- Bus Passenger Interview Survey
- Pedestrian Survey
- Regional Transport survey

Details of the above have been discussed in the later part of this chapter.

1.3.2 Format and Techniques for Traffic Survey

Checklists and survey questionnaires (**Annexure 1-5**) covering the detailed aspects of relevant issues were used to conduct the traffic and transportation survey for Package: 01- Preparation of Development Plan for Fourteen Upazilas project under UDD. The formats were prepared and finalized in consultation with consultants, experts (Team Leader, Transportation Specialist and Urban Planner) and Project Management Office (PMO).

1.3.3 Sampling Size and Methods

The most important measure for a successful survey is a level of participation that relies on origin-destination survey methods. Therefore, reliable assistance of as many respondents as possible is the key to a successful survey. Some of which can be done for a respondent friendly survey are:

1. Design the questionnaires in a typed format that people can read a clear layout, and understandable questions.
2. Keep the questionnaires as short as possible.

Origin Destination survey methods for data collection includes:

- Roadside Interview
- License plate Mail-out surveys
- Telephone survey
- Internet surveys
- Mail surveys

Calculating sample size

This sample size calculated by hand, and used the following formula:

Sample size calculator equation

$$Sample\ Size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)} \quad (\text{Cochran, 1963})$$

Population Size = N / Margin of error = e / z-score = z
e is percentage, put into decimal form (for example, 3% = 0.03).

For O-D survey, the roadside interview method were followed and data was recorded in prescribed formats supplied and accordingly approved by the PMO. Traffic volume data were collected for one-hour interval in each direction at four locations. The survey was conducted at four points. For this, Manual counting method was followed to conduct the traffic volume survey and data was recorded in prescribed formats. Bus passenger survey was carried out at the Moinot Ghat and Thanar Mor. Pedestrian survey was also conducted in the Joypara and Thanar Mor (Please see the map 1.1).

Table 1.1: Sample size and location number according to surveys

Types of Survey	Sample Size/Locations	Name of the Spot
Traffic Volume Count	Intersection Survey: 4 nodes (13 links at nodes) and one road	Kartikpur bazar Lotakhula Posheim char Thanar mor
	Road Segments Survey: 4 Roads	Fire service office Muksudpur Palamganj bazar Srinagar road (Fultola)
O-D Survey	200 Samples at four nodes	Meghula Satvita Moinot Ghat College Road Mor
Bus Passenger Survey	40 samples at two locations	Moinot Ghat Thanar Mor
Pedestrian Survey	40 samples at two locations	Joypara Thanar Mor
Regional Transportation System	4 locations	College Road Mor Moinot Ghat Meghula Bazar Satvitar Hat

1.3.4 PCE standards

PCEs standard varies according to different studies. The following standards were considered for this project based on the decision and practice from previous projects (Table 1.2). Using the PCEs, the peak hour and off-peak hour volumes are calculated and described below.

Table 1.2: PCE of different modes considered in different projects

Vehicles Types		PCEs for different project				PCEs for this project
		DITS 1994	RMSS 1994	British Practice	Indian Practice	
MV	Bus	2.5	3	3	3	3
	Truck	2.5	3	2	3	3
	Car/Jeep/Microbus	1	1	1	1	1
	Auto-rickshaw	-	0.5	0.75	-	.75
	Motor-cycle	0.3	0.75	0.75	0.5	0.5
	Tempo	0.5	0.75		1	1
	Pickup Van/Light truck	1	1	1	1	1
NMV	Rickshaw/Van	0.8	2	-	2	1.25
	Bi-cycle	0.2	0.5	0.33	0.5	0.33
	Push Cart	4	4	-	3	4

Note: MV= Motorized Vehicles, NMV= Non-Motorized Vehicles.

Source: DITS= Dhaka Integrated Transport Study, RMSS=Road Materials and Standards Study.

1.3.5 Intersection Capacity

The new Highway Capacity Manual (HCM) approach for signalized intersection capacity analysis of planning and design decisions that uses the critical volume/capacity ratio of the critical approach volumes. A level of service cannot be determined from the HCM planning capacity analysis results; however, the expected operational status was expressed as “over”, “at”, “near”, or “under” capacity. This is a defaulted version of the method for operational analysis.

Table 1.3: Intersection Status Criteria for Planning Critical v/c Ratio

Critical v/c Ratio X_{cm}	Capacity Condition
$X_{cm} \leq 0.85$	Under capacity
$0.85 < X_{cm} \leq 0.95$	Near capacity
$0.95 < X_{cm} \leq 1.00$	At capacity
$X_{cm} < 1.00$	Over capacity

Source: Highway Capacity Manual (HCM), 1994.

1.4 Conducted Surveys

1.4.1 Orientation & Meeting

Selection procedure of the surveyors and training: The whole survey of traffic and transportation work was conducted by appointing a good survey team consist of 2(two) numbers of qualified supervisors having enough previous knowledge regarding the traffic count survey. Total 8 (Eight) persons were engaged for 5 (five) types various traffic counting (Everybody having Diploma in Civil Eng.). They have been provided proper training 1 (one) day in Project Director’s office 2(two) days in Consultant’s office with the Supervision of Transport Planning Specialist regarding traffic count procedure in the field level.

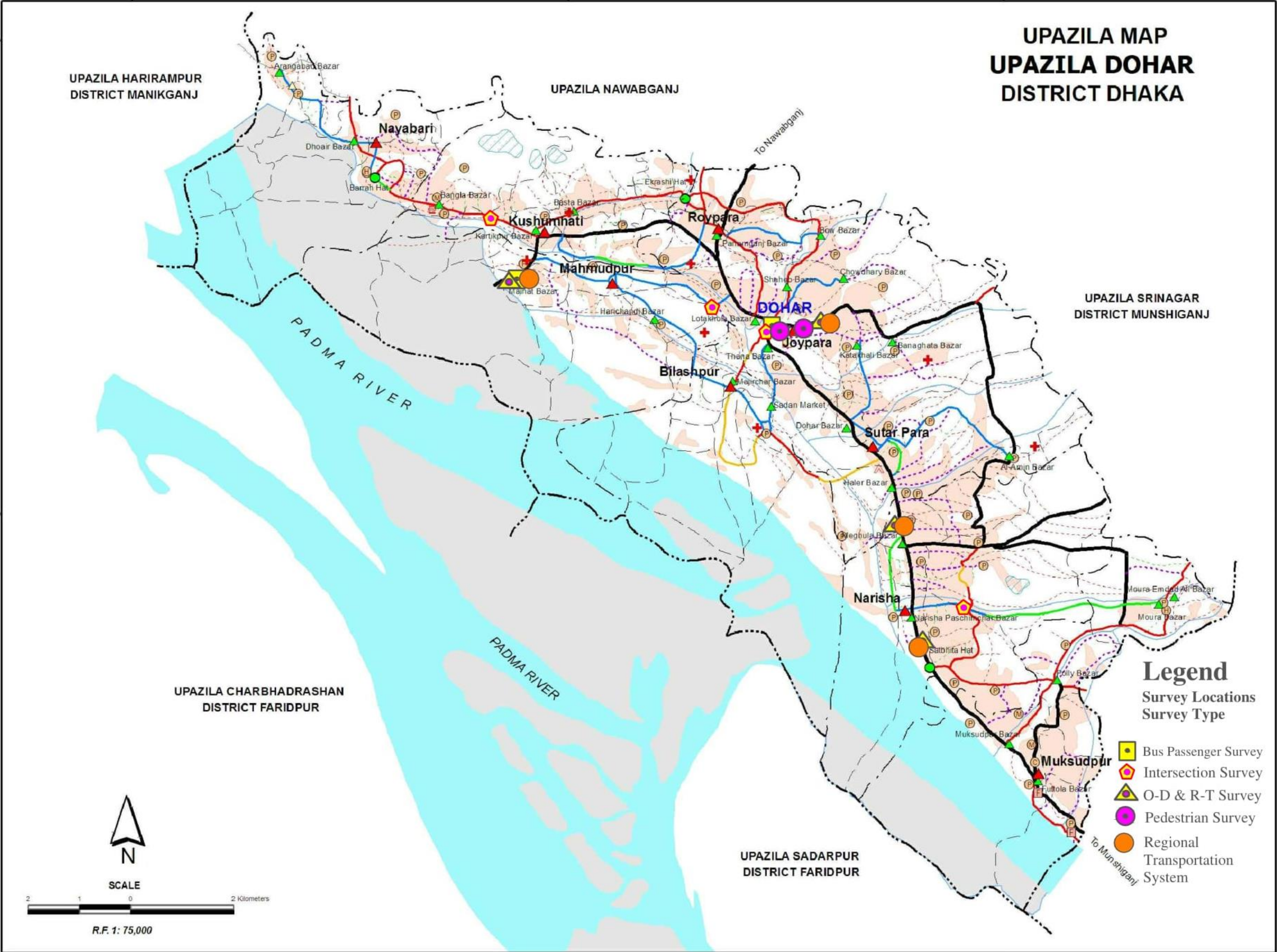
1.4.2 Team Formation

The survey team conducting for the full scale of traffic and transportation survey is deployed in the following manner.

Table 1.4: Survey Team Conducting Traffic and Transportation Survey

Sl. No	Designation	No	Qualification	Year of Experience	Responsibilities
1.	Transport Expert	1	M. Eng in Civil and Transport Engineering	More than 35 years	Overall supervision and co-ordination of traffic survey, data processing and Mapping
2.	Supervisor	2	Masters in Geography and Diploma in Civil Engineering	25-30 years	Supervision of total survey
3.	Traffic Volume Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction
4.	Intersection Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction

5.	Road Segment Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction
6.	O-D Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting different categories of traffic passing through the town and rural areas according to origin and destination.
7.	Pedestrian Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interview of the pedestrians
8.	Bus Passenger Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interview of the passengers
9.	Regional Traffic Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interviews of the drivers of different vehicles



Map 1.1: Survey locations in Dohar Upazila

Source: Local Government Engineering Department (LGED), 2015.

1.4.3 Formats used for Traffic Survey

Traffic data have been collected from the field according to the following format as provided by PMO office, UDD (Please see the Annexure: 1-5).

1.4.4 Survey Conducting Period

Table 1.5: Conducting Period of Traffic and Transportation Survey

Sl.	Types of Survey	Conducting Date
1	Traffic Volume Count Survey	11/02/2016-13/02/2016
2	O-D Survey	14/02/2016-16/02/2016
3	Bus Passenger Survey	11/02/2016
4	Pedestrian Survey	13/02/2016
5	Regional Transportation System	17/02/2016-18/02/2016

1.5 Conducting Traffic and Transportation Survey

1.5.1 Traffic Volume Count Survey

a. Survey Methodology

To analyze the existing traffic situation, four key locations have been identified where the volume count survey were conducted for 15-hour basis considering both office day and hat day (Thursday at Joypara Union named, Debinagar hat, around 7000 people gathered; Sunday at Kartikpur Bazar, around 1500-2000 people gathered; Monday and Friday at Meghula Bazar, around 1500-2000 people gathered). The survey was carried out by firm recruited surveyors after proper training for survey. The data was collected according to different modes like Truck, Bus, Car, Auto-Rickshaw, Motor-cycle, Non-motorized Vehicles (Cycle Rickshaw, Bicycle, Push cart) and Pedestrian. Traffic volume is defined as the number of vehicles that passes a point along a roadway or traffic lane per unit of time. It measures the quantity of traffic flow and is expressed in vehicles per day, vehicles per hour, vehicles per minute etc. Volume is a variable of greatest importance to the transportation planners and essentially a counting process referring to the quantity of movement per unit of time at a specified location.

b. Manual Counts

It is the commonly used method to count traffic volume where the observers record not only the traffic volume but also note vehicle composition and direction of movements. In this method throughout a definite duration of time traffic volume is counted of a selected road segment as it is not possible to have manual counts for all the 24 hours of the day and all the days around the year. Still, this is the most reliable and best method to obtain classified volume and directional volume for short counts.

Survey was conducted on four locations of Dohar Upazila. Volume of vehicular traffic is counted at four road intersections (in table 1.6). It considers both peak and off peak times (Later shown by figure 3.10-3.18, it's based on maximum & minimum no. of traffic flows at that time orderly) within 6am to 9pm and volume survey was conducted for 1-hour duration. Different modes of traffics are counted separately.

c. Intersections and Justification of the Selections

The Traffic Volume survey was conducted on the following four intersections (Shown in table 1.5 and map 1.2) which are very important considering the locational importance as these locations do not only cover the inter-district traffic but also provide accurate view of the local traffic.

Table 1.6: Name of the Intersections for volume survey in Dohar Upazila

Sl	Name of the Intersection/Link	Number of road	Roads considered for volume survey
1	Kartikpur bazar	3	3
2	Lotakhula	3	3
3	Poshcim char	3	3
4	Thanar mor	4	4

Source: Transportation Survey of Dohar Upazila, 2016

Table 1.7: Name of the intersection and corresponding links

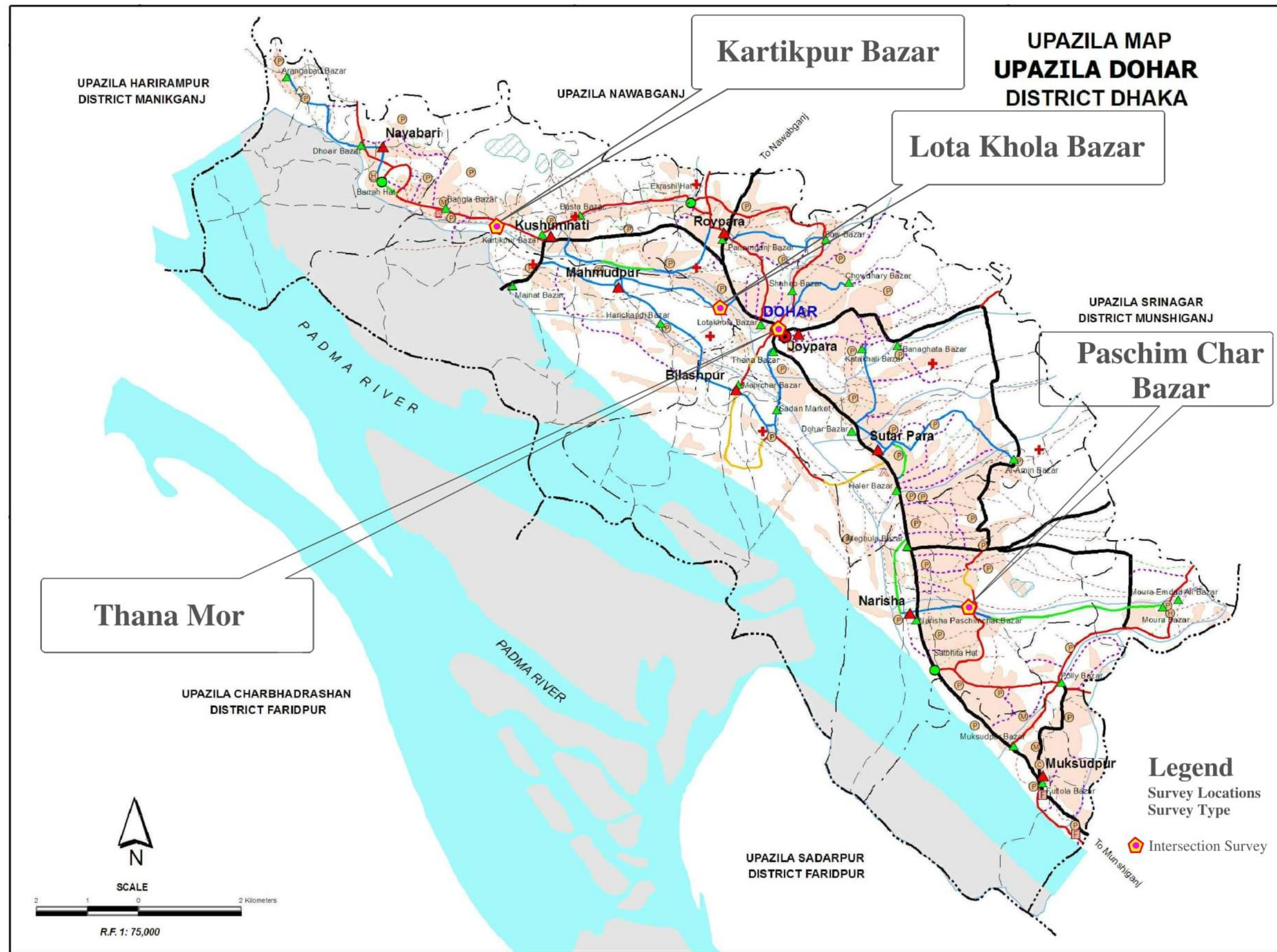
Intersection	Traffic Directions	Roads
Kartikpur bazar	Kartikpur bazar to Dhaka and vice versa	Road 1
	Kartikpur bazar to Barrah and vice versa	Road 2
	Kartikpur bazar to Moinot Ghat and vice versa	Road 3
Lotakhula	Lotakhula to Barrah and vice versa	Road 1
	Lotakhula to Dhaka and vice versa	Road 2
	Lotakhula to Joypara and vice versa	Road 3
Poshcim char	Poshcim char to Dohar and vice versa	Road 1
	Poshcim char to Moura Ghat and vice versa	Road 2
	Poshcim char to Srinagar and vice versa	Road 3
Thanar mor	Thanar mor to Bilaspur and vice versa	Road 1
	Thanar mor to Dhaka and vice versa	Road 2
	Thanar mor to Moinot ghat vice versa	Road 3
	Thanar mor to Joypara vice versa	Road 4

Source: Transportation Survey of Dohar Upazila, 2016

Location of volume count survey at various intersections have been shown the map and detailed through Sketch. There is also count traffic volume at four road segments in Dohar Upazila and these are – 1. Fire Service Office; 2. Muksudpur; 3. Palamganj Bazar; and 4. Srinagar Road. All these locations connect major trips attracting points like proper area (local administration), Upazila Mor, Katcha Bazar, school colleges and markets with the trip generation points.

d. Survey Schedule

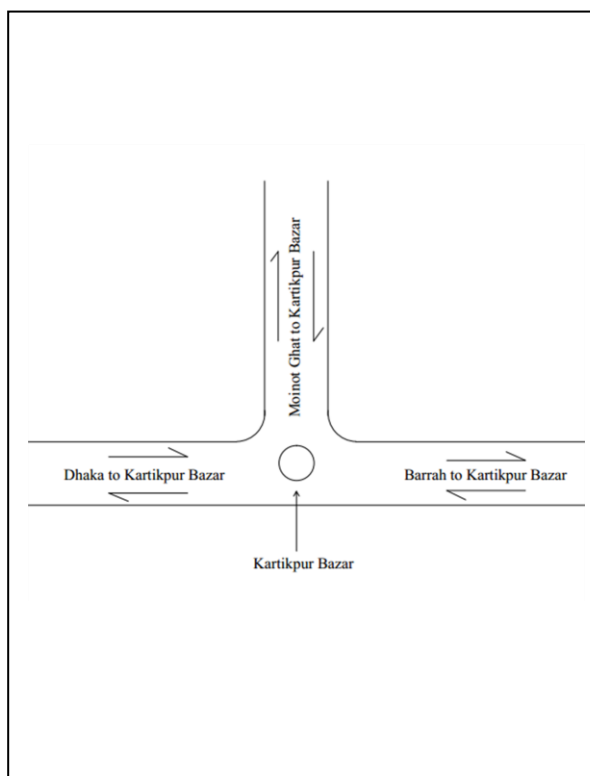
Traffic volume survey was carried out in four intersections using format prepared by consultants with the direction given by UDD for 2 days in 15-hour basis. Another traffic volume survey was conducted on 11-02-2016, and 15-02-2016 at four segment of road. In each spot two surveyors and one supervisor were responsible to conduct the survey.



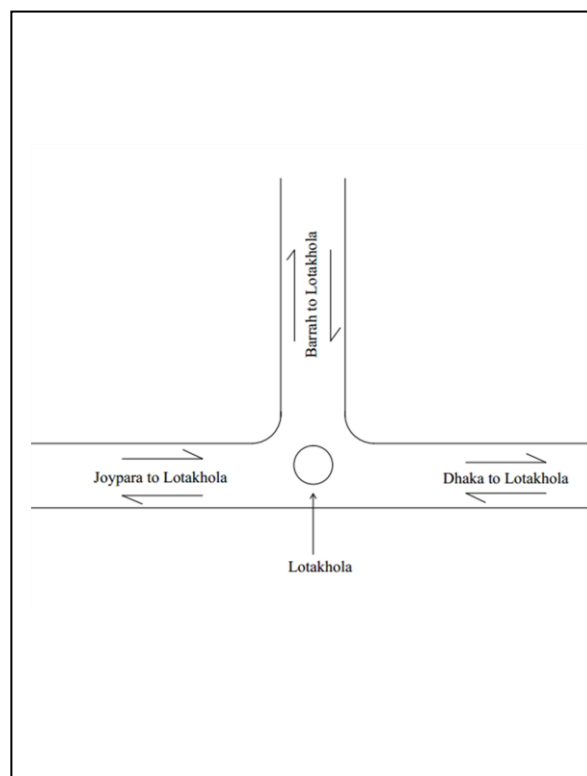
Map 1.2: Intersection Survey Locations in Dohar Upazila

Source: Local Government Engineering Department (LGED), 2015.

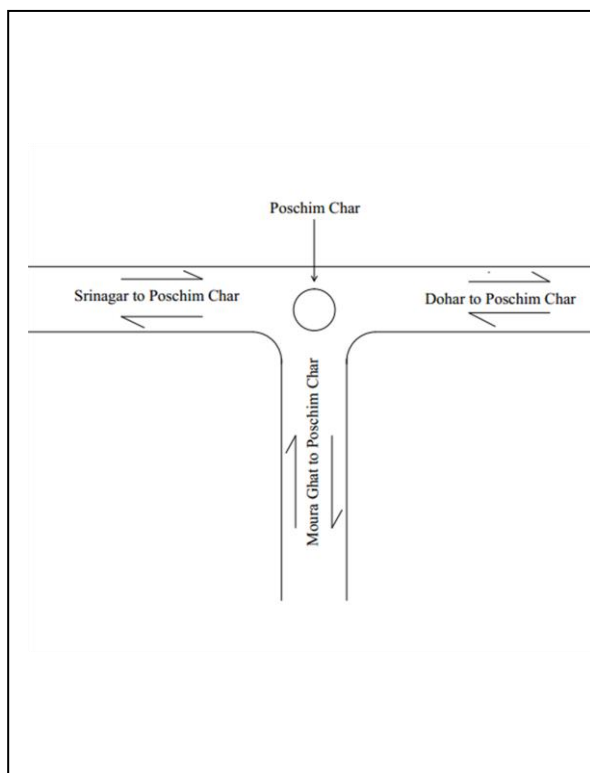
Intersection Survey Locations in Dohar Upazila



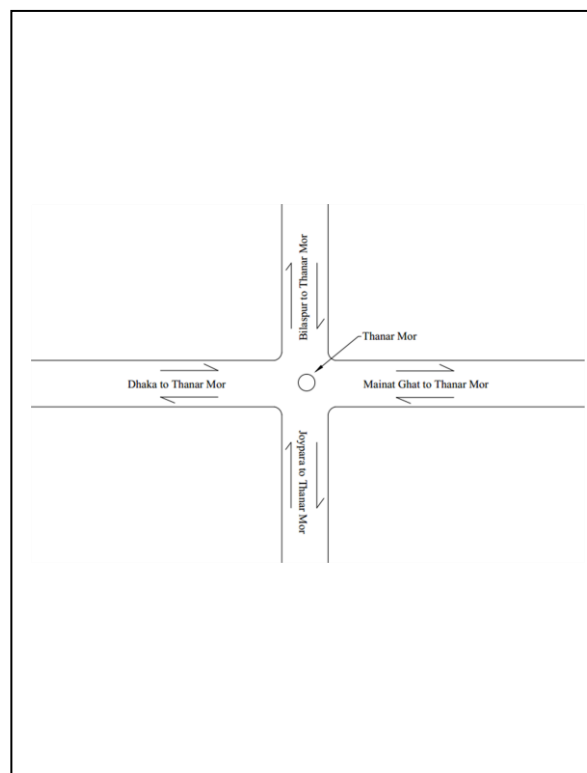
Kartikpur bazar



Lotakhola



Poshcim char



Thanar mor

e. Database Preparation and Data Processing

The collected data were stored and analyzed by using the SPSS and Microsoft Excel software. Analyzed data has been presented in tabular and graphical form with necessary illustration and maps.

f. Finding and Analysis

The term traffic volume study can be termed as **traffic flow survey or simply the traffic survey**. It is defined as the procedure to determine mainly volume of traffic moving on the roads at a particular section during a particular time. Traffic survey is very important because with the help of these, we can maintain the road properly, by performing the following

1. Increase the efficiency and life of roads
2. Reduces traffic volume at a particular section
3. Provide better means for development of infrastructures
4. Provide better means to utilize other roads in case of special events in the city
5. Provide estimate of no vehicles against no of persons

1.5.2 Origin-Destination (O-D) Survey

Origin-destination (O-D) surveys provide a detailed picture of the trip patterns and travel choices of a city's or region's residents. These surveys collect valuable data related to households, individuals and trips. This information allows stakeholders to understand: Travel patterns and characteristics Measure Trends Provide input to travel demand model development forecasting, and planning for area-wide transportation needs and services Progress in implementing transportation policies.

This is a study to determine and analyse trips. Trips are defined as one-way movement, from where a person starts (origin) to where the person is going (destination). Trips are further classified as follows:

Internal--From one point on post to another point on post.

External--From on-post to off-post or vice versa.

Through--From off-post to off-post, by going through the installation.

O-D survey provides valuable information including the needs of traffic intervention whether the surveyed area needs any by-pass or not.

a. Survey Methodology

Origin Destination (O-D) Survey has been carried out through roadside interview process. To carry out this survey systematically, every 4th vehicle in each category was stopped by the side of the road with assistance of the local authority and a standard format has been used to collect data. In case of passenger vehicles, interview has been conducted on passengers about their purpose of journey; their origin and destination; types of transport modes they use; number of

seats available and comments on the transportation. The survey was accomplished by enumerators who were locally recruited and adequately oriented and trained by experienced supervisors.

b. Survey Location and Schedule

The origins and destinations of traffic are among the most important of these characteristics. For the purposes of conducting the origins and destinations of traffic survey, a roadside origin-destination (Shown in Picture 1.1) study was undertaken to measure travel characteristics in the four locations at half an hour interval (in the Map 1.3) for two days.

The survey was conducted on the following four locations which are very important considering the importance of inter-district traffic as well as local traffic. Although, according to the population, this Upazila is small sized city and apparently needs separate cordon lines, the road network pattern and traffic composition provide justification of no division of the separate cordon line for this survey.



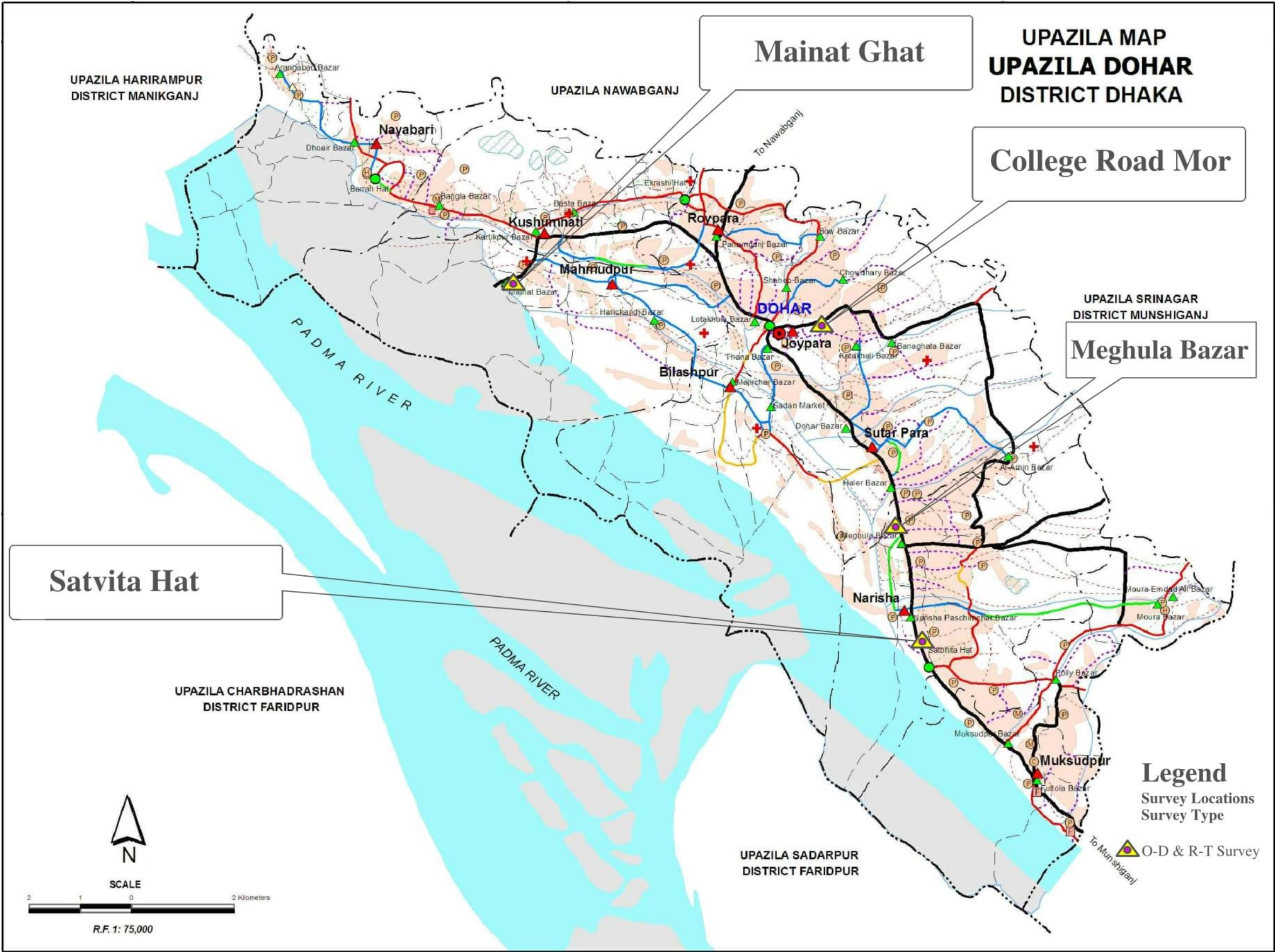
Picture 1.1: 2 O-D Survey Locations (Meghula and College Road Mor)

c. Questionnaire Design

A survey questionnaire was designed to facilitate the passenger's ability to answer questions necessary to develop effective traffic management measures. A standard survey has been prepared by the concerned authority of UDD and suggestion from the all assigned consultants.

d. Database Preparation and analysis

The collected data (200) were stored and analyzed by using the Microsoft Excel software as well as Statistical Package for Social Science/SPSS software. Analyzed data has been presented in tabular and graphical form with necessary illustration and maps.



Map 1.3: O-D Survey Location

Source: Local Government Engineering Department (LGED, 2015)

1.5.3 Bus Passenger Interview Survey

Passenger/pedestrian interview survey has been carried out to find out peoples' perception about mode/facilities which they use usually. The questionnaire covers transportation problem, travel time, distance and issues about their used modes/facilities.

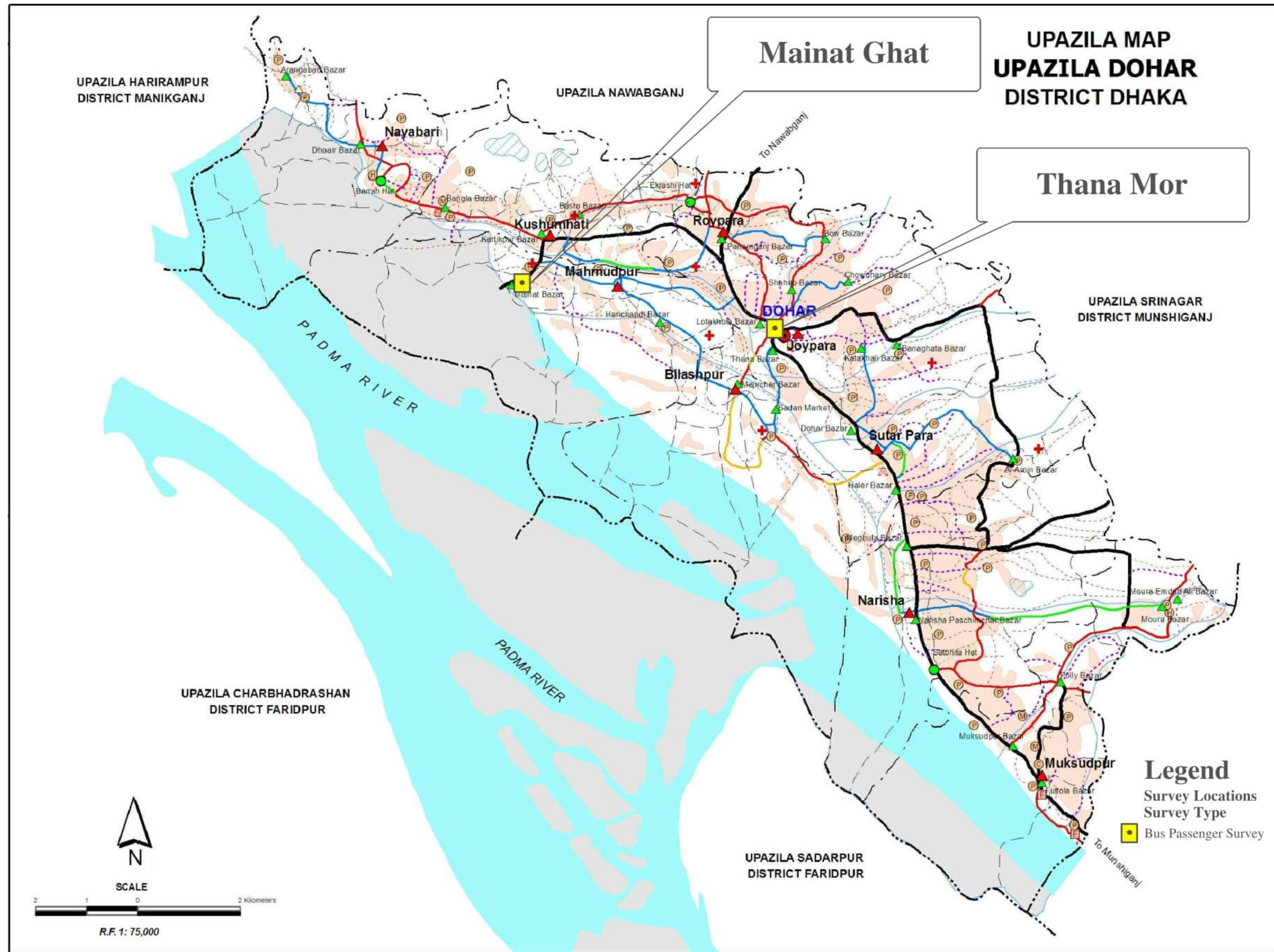
Between them, passenger interview survey has been carried out to find out peoples' perception transportation problem, travel time, distance and issues about their used mode. Interviews have been conducted on passengers (Show in picture 1.2) in various locations e.g. including Moinot Ghat and Thanar Mor, Passenger interview survey locations have been presented on Map 1.4.



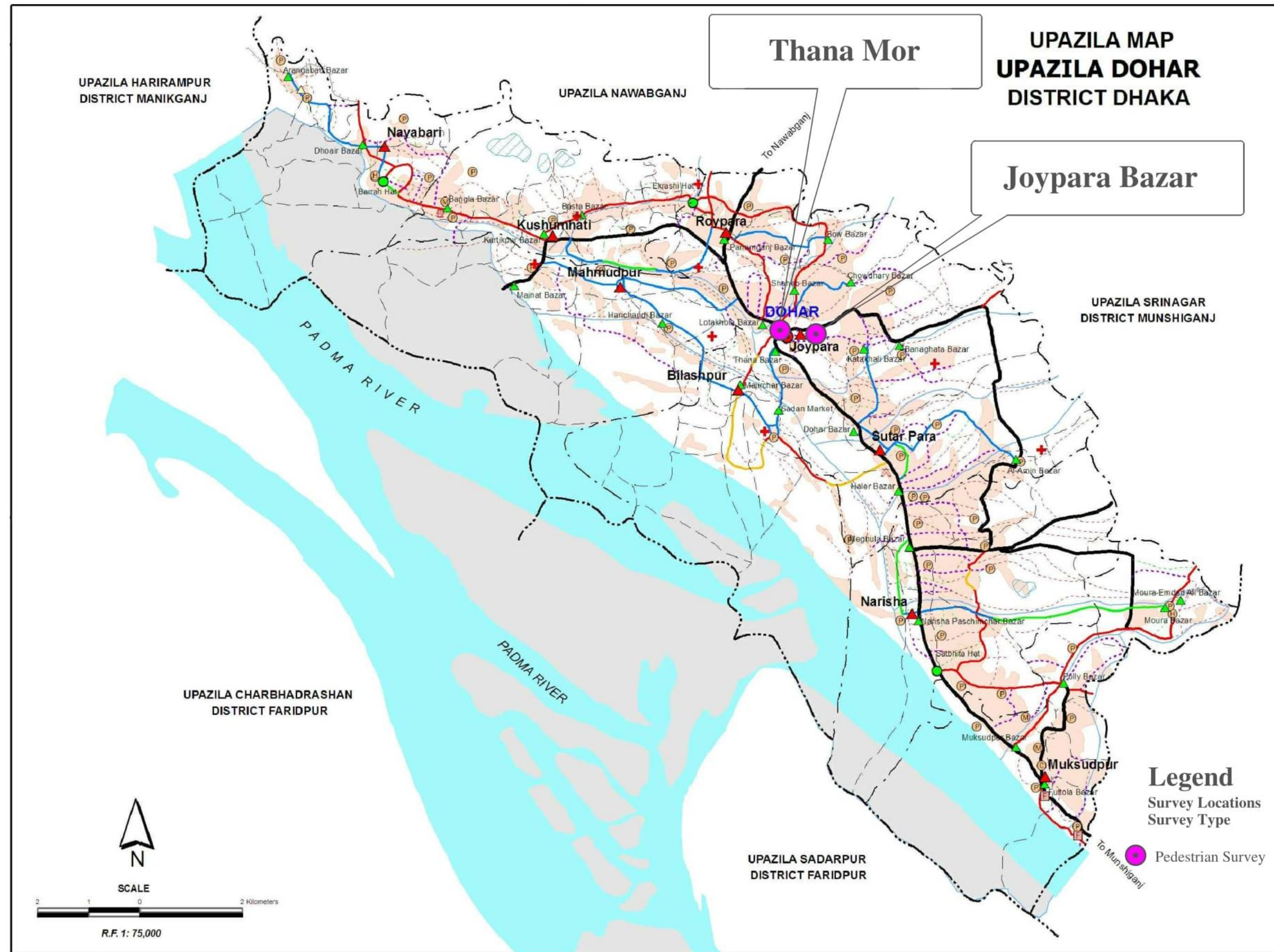
Picture 1.2: Bus Passenger Survey Locations (Moinot Ghat and Thanar Mor)

1.5.4 Pedestrian Interview Survey

Pedestrian interview survey has been conducted mainly in Joypara and Thanar Mor (showed in Map 1.5). To carry out this survey systematically, a standard format has been prepared by the assigned consultants considering all relevant issues such as about their purpose of journey, their origin and destination, types of transport modes they use as supporting mode to complete the trip, number of trips in a week, travel time, travel cost, distance etc. The survey was accomplished by enumerators who were recruited by the consultant and adequately oriented and trained by experienced supervisors.



Source: Local Government & Engineering Department (LGED, 2016)



Source: Local Government & Engineering Department (LGED, 2016)

Chapter-2: Existing Transportation Network and Facilities

2.1 Introduction

The road network of Dohar Upazila was developed and established according to the demand resulting time to time and following the development pattern and meeting short-term need but maintenance and repair is irregular in these roads. Besides, most of the cases road network is established after the development of infrastructure resulting poor layout of road network, narrow road, pedestrian problem, utility services problem, emergency services problem etc. Unauthorized encroachments are common problems especially along the roadside in hat-bazaar areas. On the top of that, sometimes traffic jam occurs in Meghula Bazar, Thanar Mor, Lotakhula Bazar etc. locations. Details of these has been discussed the latter of this chapter.

2.2 Road Communication and Regional Connectivity

The Upazila has 266 km metaled, 228 km semi-metaled and 228km katcha road. It has 20 km Water way round the year (river + canal), 18 km canal road, 23 bridges, 8 baily bridge, 41 culvert, 5 pool and 16 Shako (Zila Series, Dhaka, 2011). The Upazila has a good road communication with Dhaka and adjoining Upazilas.



Picture 2.1: Satvita Narisha, Dohar



Picture 2.2: A Major Road of Dohar Town

There is also communication system through water, important routes are Dohar-Munshigonj, Dohar-Gulistan, Dohar – Keraniganj, other districts like Kushtia via Dohar Upazila etc. Major roads of RHD passes through Dohar Upazilas are R820, Z8207, MNG66, and MNG77.

2.3 Available Transport Modes

The following table 2.1 shows the registered vehicles both motorized and non-motorized vehicles in the Dohar Upazila. However, many other vehicles are operating in the study area registered elsewhere. Again, in waterway, there are 31 registered troller, 16 registered speed boat operate.

Table 2.1: Registered and non- Registered Number vehicles in Dohar Upazila in 2016

Type	Mode	Registered Number	Source
Motorized	Bus	195	Upazila Parishad, Union parishad office, bus/truck terminals and rickshaw/tempo/scooter stands, Malik samiti
	Tempo	50 (estimated)	
	CNG	500 (estimated)	
	Truck	75 (1 ton, 3 ton 20, 4 ton 35)	
	Auto-Rickshaw	4000 (estimated)	
Non-Motorized	Van	N/A (estimated 150)	
	Rickshaw	N/A (estimated 300)	

Source: Transportation Survey of Dohar Upazila, 2016

The traffic composition of the area illustrates that both passenger and freight vehicles visits frequently Dohar Upazila area. Although slow modes like van are predominant in this area, frequent movement of the freight vehicles due to presence of market and other central commercial places in this area also gaining importance. Slow modes include rickshaws, van and electric powered auto rickshaw. The recent growth of auto rickshaw, which functions, since public transport restricts the use of rickshaw. Besides, the low capital cost along with some financial offers from different NGOs also influence growth of this modes. Non-motorized traffic classification includes rickshaw, bi-cycle and van (used for both passenger and freight mode) whereas motorized traffic includes bus (local and direct bus service), truck, pickup van, jeep, auto rickshaw motor-cycle etc. which are available in this area.

2.4 Regional Connectivity

The intra district communications for Dohar Upazila are – Dohar to Nawabganj, Keraniganj and Dhaka City. Inter District connections are Dohar Upazila to Faridpur, Sadarpur Upazila Munshiganj, Madaripur etc. There is also communication system through water, important routes are Dohar to Faridpur etc. Several Major routes are mentioned in the table 2.2.

Buses running from 5:30am to 7:50pm having 15 20 minutes' interval for district services. However, no exclusive local bus service was yet developed.

Table 2.2: Major Routes from Dohar

Destination	Fare in taka per trip/cost per trip
Dhaka	75 (Bus)
Nawabganj	25 (Tempo/Auto/CNG)
Sadarpur Upazila, Faridpur	160 (Speed Boat), 75 (Troller)
Munshiganj	35 (Bus)
Maoa Ghat	120 (Bus)
Kartikpur Bazar	20 (Tempo/Auto/CNG)
Majhir Kandi	15-20 (Tempo/Auto/CNG)
Moinot Ghat	35-40 (Tempo/Auto/CNG)
Nayabari	40 (Tempo/Auto/CNG)
Meghula Bazar	15-20 (Tempo/Auto/CNG)
Shikaripara	30 (Tempo/Auto/CNG)

Source: Transportation Survey of Dohar Upazila, 2016

These communications with other districts have developed through the regional highway at Dohar Upazila. There is no National highway within the study area. It has been observed that high speed vehicles including passenger and freight vehicles, running along with slow modes in this road throughout of the day. Thus, accident between these modes is common problem. These accidents are accelerated by uneven shoulder level compare to metaled road surface of the road. Thus, slow modes feel very uncomfortable to give space for the high-speed mode to overtake having ineffective shoulders. There are no launch terminal in the Upazila but have a prominent troller and speed boat ghat named “Moinot Ghat”.

2.5 Inventory of important roads of the study area

2.5.1 Existing Road Network of Dohar Upazila

The transport network of Dohar Upazila (Map 2.1) is below having approximately 37% paved road surface. Besides, semi-pucca and Kutcha road having significant proportions show the necessity of investment in transport infrastructure here (Table 2.3). Although, pucca road contribute greater proportion than others of the total road network, the actual condition of the pucca road is overall satisfactory. Though, some of the roads required regular maintenance and repair. Especially Kartikpur-Moinot Ghat road needs high scale maintenance than others. Moreover, Meghula to Churain and Galimpur to Meghula roads also require immediate maintenance.

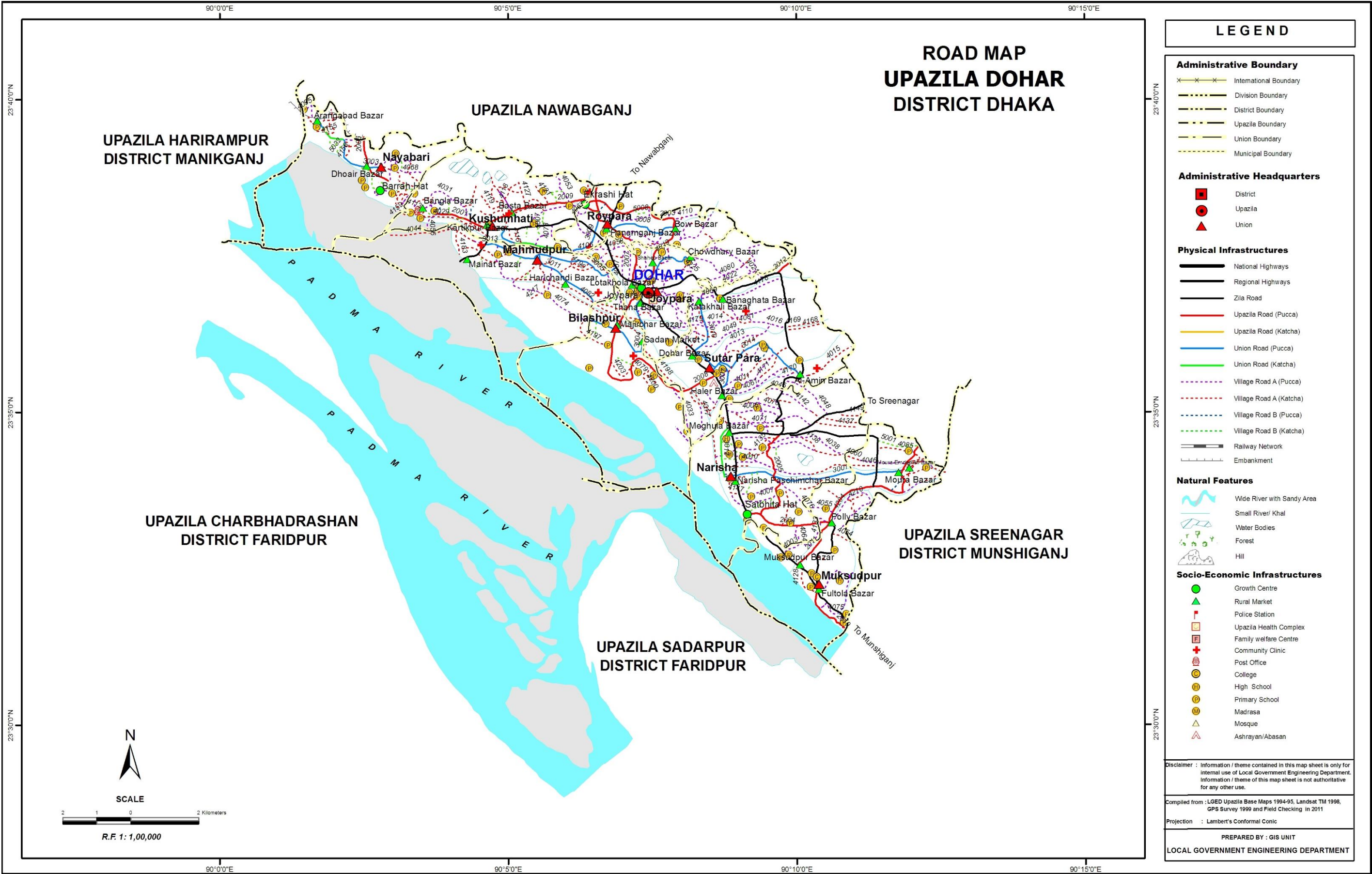
All communications with other districts and Upazilas have developed through the regional highway at Dohar. This is a very busy road and requires immediate traffic management and some engineering intervention. It is observed that high speed vehicles including passenger and freight vehicles running along with slow modes in this road through out of the day.



Picture 2.3: Condition of the road in an Access road (Sutarpara)



Picture 2.4: Condition of the road in an Access road (Satvita)



Map 2.1: Upazila Road Network Map

Source: Local Government Engineering Department (LGED, 2015)

2.6 Functional Classification of Road

Most of the Upazila roads are earthen and narrow in width, very few amount of Pucca, Semi-pucca (HBB) roads found during survey period.

Table 2.3: Road Types according to Surface and Hierarchy

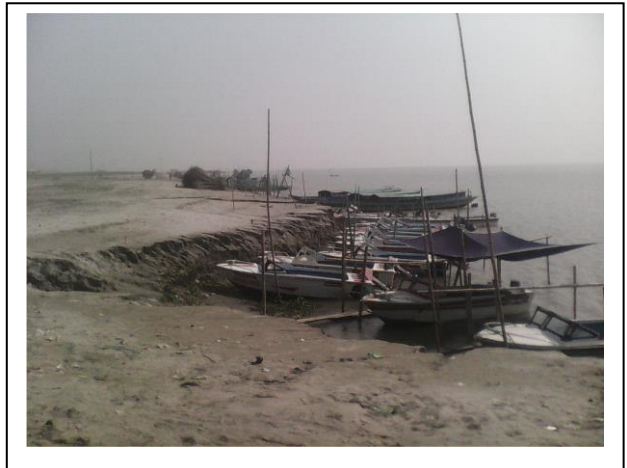
Road Types	Classification	Road Length (in km)	Percentage %	No. of Road
Regional Highway	Pavement	15	100(Paved)	1
Zilla Road	Pavement	10	100(paved)	2
Upazila Road	Pavement	35.82	100	
	HBB	0.0	0	
	Earthen	0.0	0	
	Total	35.82		12
Union Road	Pavement	30.14	89.49	
	HBB	0.60	1.78	
	Earthen	2.95	8.76	
	Total	33.68		14
Village Road-A	Pavement	122.68	38.07	
	HBB	30.60	9.50	
	Earthen	167.18	51.87	
	Total	322.29		230
Village Road-B	Pavement	2.33	7.80	
	HBB	2.71	9.07	
	Earthen	24.84	83.13	
	Total	29.88		53
Grand Total	Pavement	190.97	45.57	309
	HBB	33.91	8.10	
	Earthen	194.94	46.53	

Source: Local Government Engineering Department (LGED), 2015

So, from table it could be easily understandable that the prevailing poor road condition is deterring the existing travel facilities. However, a good network has developed for inter district communication though road.

2.7 Existing Infrastructure

There are three informal bus terminals found in the whole Upazila and they are at Thanar Mor (Eidgah Math), Moinot Ghat and Upazila Market (Showed in picture 2.3), and the only troller and Speed Boat Ghat is at Moinot Ghat. All of the inter district and local buses start from these stands. Rail lines are also not available at this Upazila. Though there are no specific terminal for truck, they are mainly parked at Moinot Ghat and Thanar Mor. There are some informal Auto/Tempo/CNG stand in the Upazila College Mor, Moinot Ghat, Kamar Ali Mor, in front of the Joypara Upazila Parishad and other areas. Besides, Auto/Tempo/CNG routs mostly within the Upazila area including Satvita, Joypara etc.



Picture 2.5: Bus, Truck stand and Ghat at Moinot Ghat



Picture 2.6: Auto Stand College Mor

Picture 2.7: CNG stand, Moinot Ghat

2.8 Major Traffic Congestion Areas

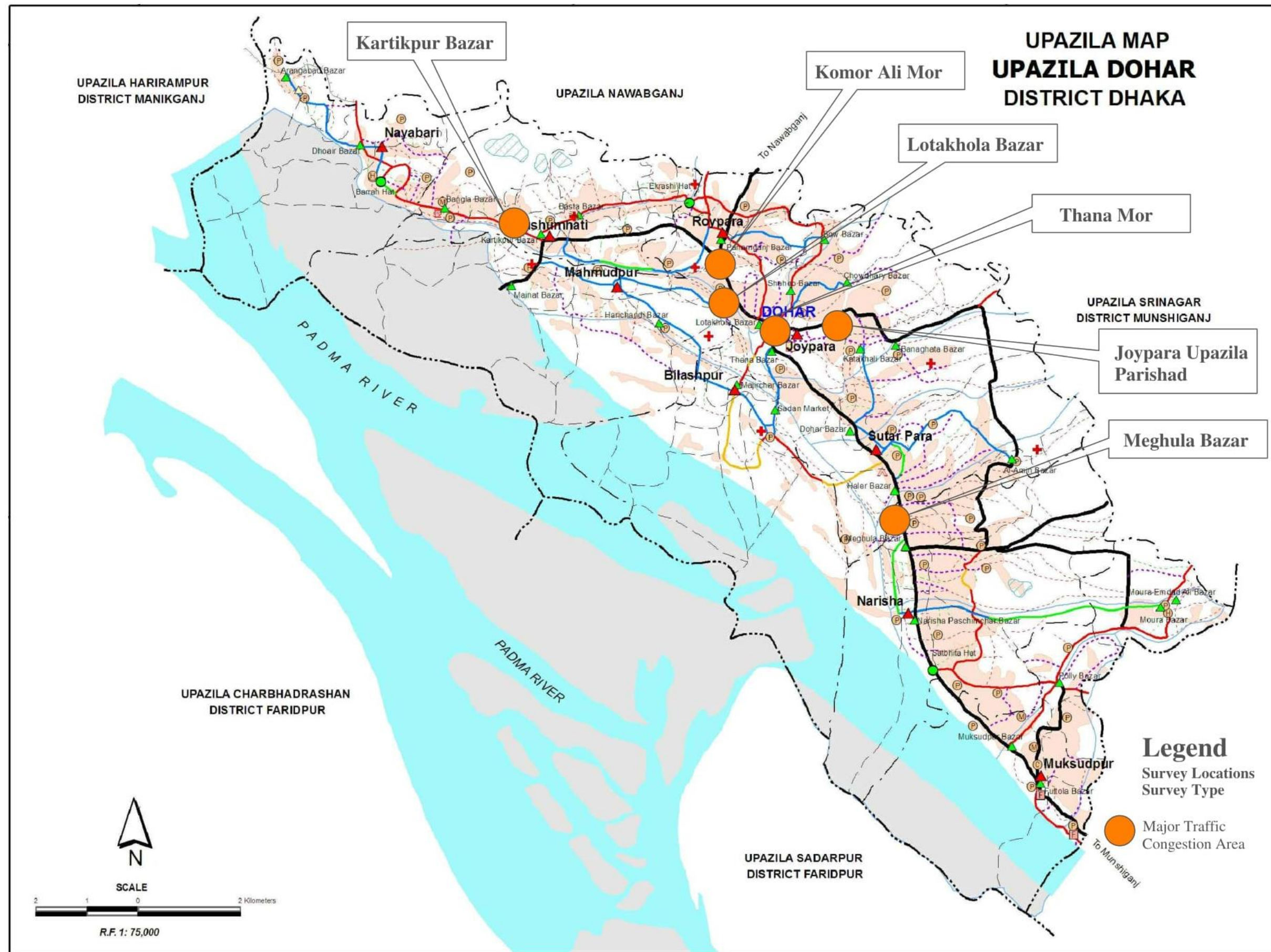
It has been observed that, the town does not appear to demonstrate serious signs of traffic congestion but some traffic congestions are observed at the Meghula Bazar (because of unauthorized and scattered parking, narrow road and temporary bazar), Thanar Mor (because of unauthorized bus stand and scattered bus parking), in front of the Joypara Upazila Parishad (because of narrow road and unauthorized auto stand), Lotakhula Bazar (because of narrow Bridge), Kamar Ali Mor (because of unauthorized tempo stand, haphazard parking), Kartikpur Bazar (because of shortage of space in the intersection) etc. in peak hour.



Picture 2.8: Traffic congestion at Dohar



Picture 2.9: Traffic congestion at Dohar due to narrow road and lack of maintenance



Source: Local Government Engineering Department (LGED), 2015

Chapter-3: Analysis of Survey Findings

3.1 Traffic Volume Count Survey

3.1.1 Average Daily Traffic Volume

Average daily traffic (ADT) is the average number of vehicles or PCEs (two-way) passing a specific point in a 24-hour period (considering local context). ADT is the standard measurement for vehicle traffic load on a section of road.

Table 3.1: PCE and Traffic Volume at Intersection

Intersection Name	Link	Average PCE/Hour		Average Vehicle/Hour	
		Non-Hat Day	Hat Day	Non-Hat Day	Hat Day
Kartikpur bazar	Kartikpur bazar to Dhaka and vice versa	128.63	173.95	116.89	158.08
	Kartikpur bazar to Barrah and vice versa	150.03	188.70	138.43	174.11
	Kartikpur bazar to Moinot Ghat and vice versa	92.73	105.09	94.15	106.70
Lotakhula	Lotakhula to Barrah and vice versa	236.13	316.95	174.66	234.43
	Lotakhula to Dhaka and vice versa	124.47	133.62	105.25	112.99
	Lotakhula to Joypara and vice versa	383.73	516.34	253.27	340.79
Poshcim char	Poshcim char to Dohar and vice versa	152.03	190.13	123.32	154.22
	Poshcim char to Moura Ghat and vice versa	75.07	99.64	52.94	70.27
	Poshcim char to Srinagar and vice versa	151.57	160.13	129.97	137.31
Thanar mor	Thanar mor to Bilaspur and vice versa	267.00	353.74	210.00	278.22
	Thanar mor to Dhaka and vice versa	276.63	293.51	208.66	221.39
	Thanar mor to Moinot ghat vice versa	272.20	339.64	203.02	253.32
	Thanar mor to Joypara vice versa	658.90	895.85	441.60	600.41

Source: Transportation Survey of Dohar Upazila, 2016

From the above table (Please see table 3.1), it has been seen that, in Kartikpur Bazar intersection, the highest PCE has been found at the road connecting Kartikpur bazar with Barrah. In Hat day, the PCE became about double of Kartikpur Bazar-Moinot ghat road of non-hat day. In hat day road connecting Moinot ghat with this intersection increased only about 13% of non-hat day.

Moreover, in Lotakhula intersection the roads connecting the intersection with Joypara possess more PCEs than other two roads. PCE at that road is about double of Lotakhula-Dhaka road. Even only this road possesses more PCEs than total PCE of other twos. In, hat day the change of PCE is lowest in Lotakhula-Dhaka road (about 7%) as the road mainly used for intra district journey.

In addition, in Poshcim Char intersection, the two roads (except the road connecting Moura with intersection) contain about same PCEs. Poshcim Char-Moura road contain about half PCEs than other two. Though in hat day, the PCEs got increased by about 32% in this road.

Again, in Thanar Mor intersection Thanar Mor-Joypara road contain considerably higher PCEs than others (about more than double). Rest of the roads contain about same PCEs. Roads Connecting Bilaspur and Joypara with this intersection experienced about the same percentage (about 30%) of increase in PCE in hat day than non-hat day.

However, from the below figure (Please see figure 3.1) it has been seen that Thanar mor-Joypara road contained highest PCEs in both of Hat and Non-Hat day than the other entire surveyed road. As the road connect Nawabganj, Bandura and Kartikpur with Dohar. On the other hand, the Poshcim char-Moinot Ghat has the least number of PCEs.

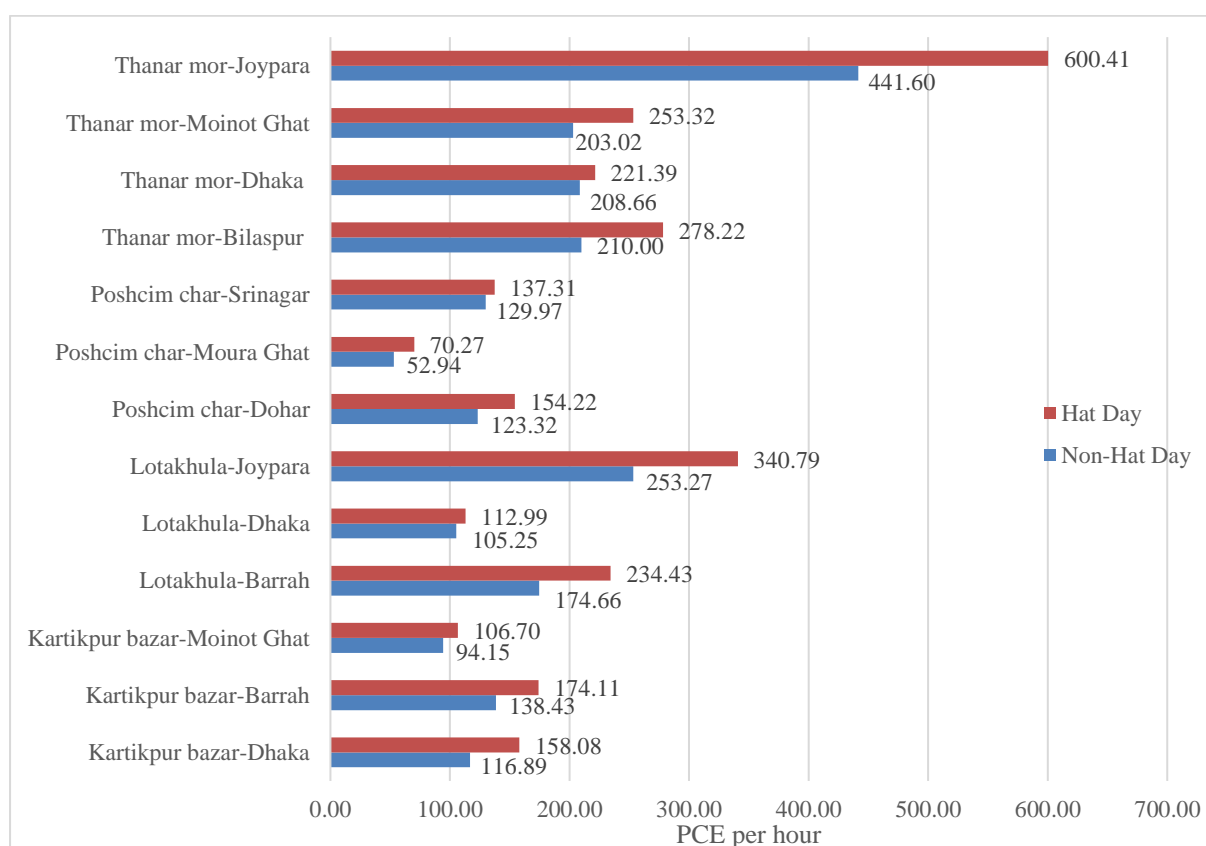


Figure 3.1: Average Frequency of Vehicle/Hour at Links of Three Intersection

Average daily traffic volume and MV & NMV ratio in four intersections at on average day or non-hat day are showing in below by figure 3.2- figure 3.5.

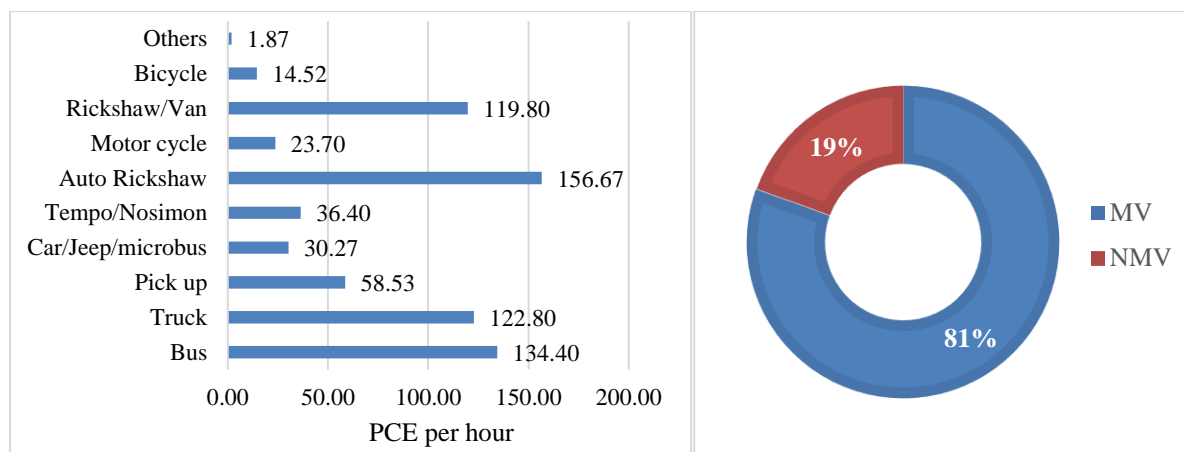


Figure 3.2: Kartikpur Bazar Intersection

From transport survey exhibits that lowest number of traffic both motorized and non-motorized are running through the Kartikpur bazar and Poshcim char intersection where highest traffic movement is noticed in Thanar mor node.

In Kartikpur bazar intersection, it has been found that motorized vehicles is prominent in the roads connecting the intersection. About more than 80% of vehicles are motorized, whereas, bus and truck mostly covers the percentage. On the other hand, auto rickshaw and rickshaw/van mostly contributes the non-motorized percentage.

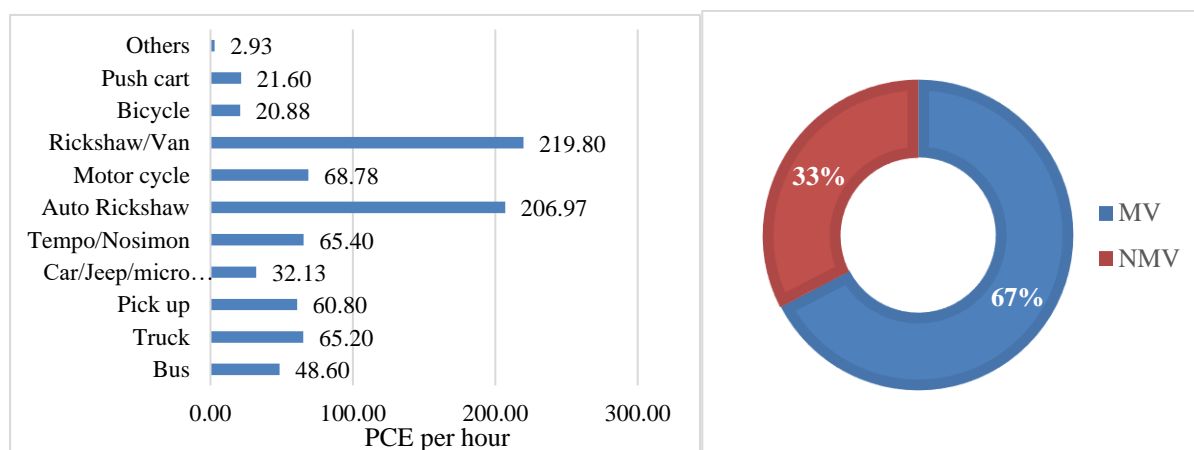


Figure 3.3 Lotakhula Intersection

In Lotakhula intersection, about one-third of total PCEs are from motorized vehicle, whereas Rickshaw/van and auto rickshaw is the prominent. On the other hand, a significant number of different motorized vehicle runs through the intersection.

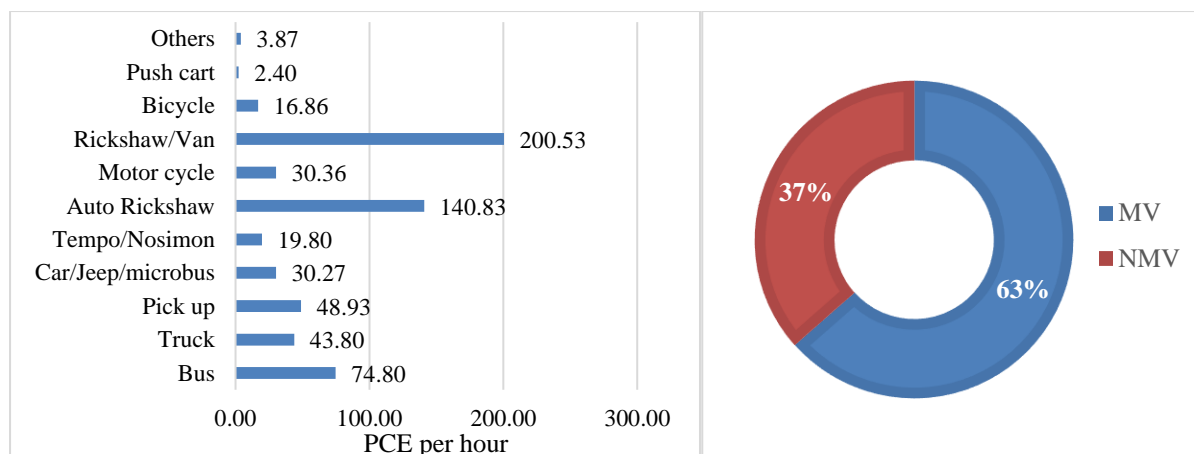


Figure 3.4 Poshcim Char Intersection

Like other intersections, in Poshcim Char intersection about two-third of total PCEs are from motorized vehicles. Bus contributes the highest percentage to the motorized vehicles. Moreover, truck and pickups contribute about the same percentage to the motorized vehicles.

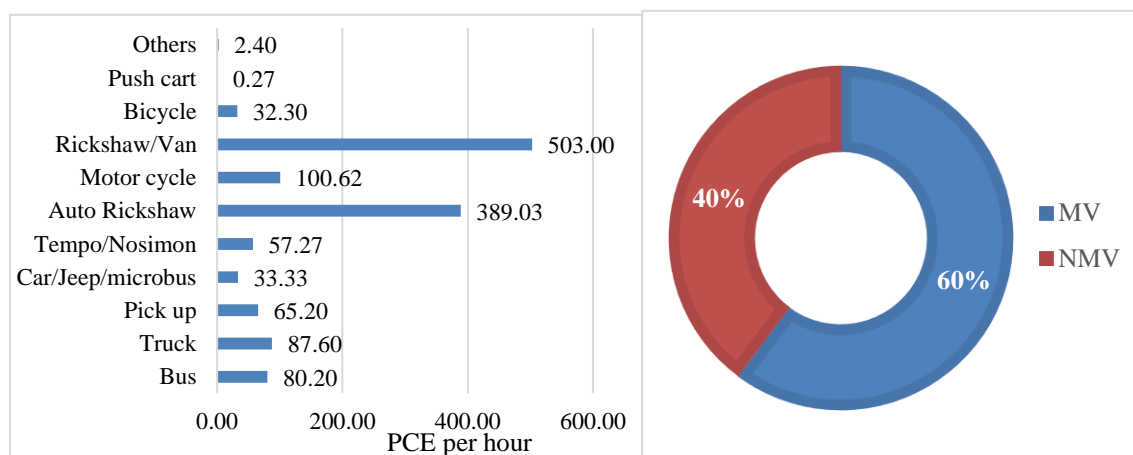


Figure 3.5 Thanar Mor Intersection

In Thanar mor intersection, about 40% of PCEs are generated by non-motorized vehicles. And like other intersection, here auto rickshaw and van/rickshaws are strongly prominent than other vehicles.

From the above figures, it is found that auto rickshaw and van/rickshaws are the dominant vehicles among others and motorized vehicles are far larger number than non-motorized.

3.1.2 Traffic Volume in Surveyed Intersection

In the below figures (figure 3.6-3.9) the change of PCEs in the whole survey time in a day for different intersections has been given. From the figure the change of PCEs with the change of time has been found.

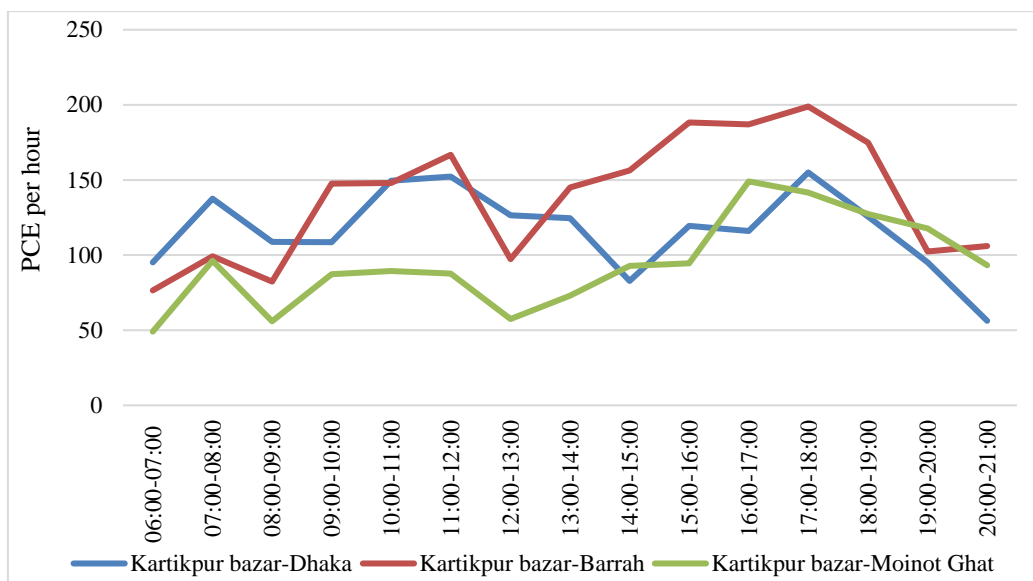


Figure 3.6: Traffic Volume of Kartikpur Bazar

Figure 3.6 represent the fact that, in Kartikpur bazar intersection PCEs got high in 16:00-18:00 in all of the connecting road of the intersection. Among them, the PCEs became highest in the Kartikpur bazar-Barrah road. After 18:00 the PCEs started to get dropped.

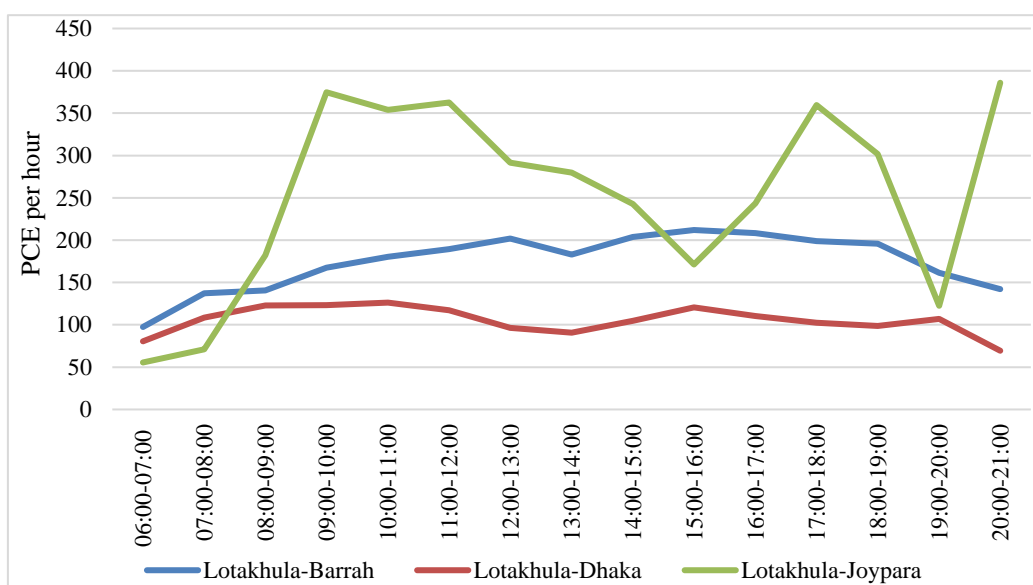


Figure 3.7: Traffic Volume of Lotakhula

Figure 3.7 showed that in Lotakhula intersection the PCEs remained about same all day long with slightly ups and downs in Lotakhula-Barrah and Lotakhula-Dhaka roads from 7:00-20:00. On the other hand, the road leading to Joypara possess the highest PCEs than others and some prominent peak hours. In that road 09:00-10:00 and 17:00-18:00 hours PCEs got in Peak position.

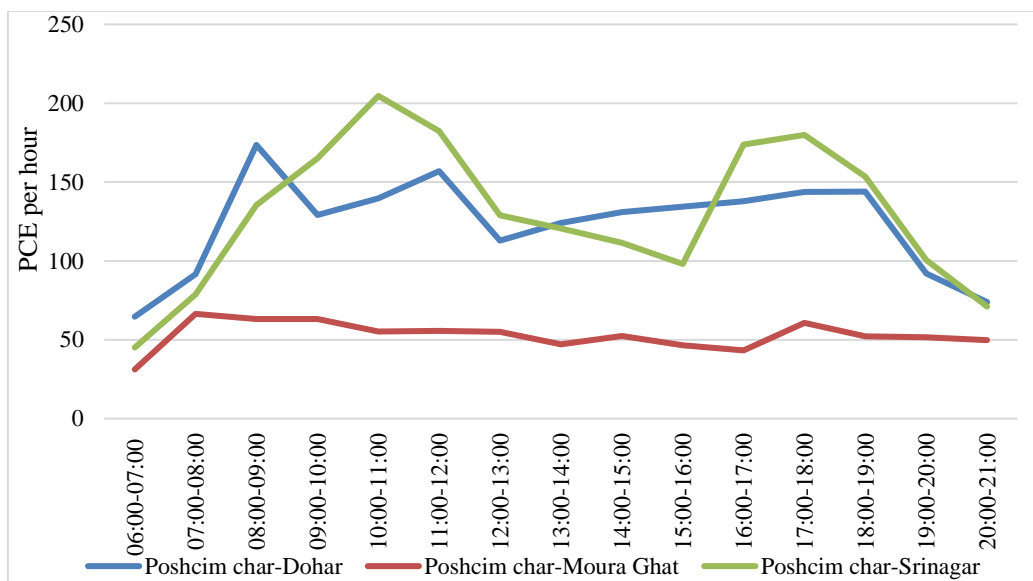


Figure 3.8: Traffic Volume of Poshcim char

At Poshcim char intersection the fluctuation of PCEs along the day has been found about the same except the Poshcim char-Dohar road. The road has comparatively less PCEs than other twos. After 18:00 the PCEs found as decreasing with change of time for all of the road of this intersection (Please see figure 3.8). Moreover, in morning peak hour is between 10:00-12:00 in all roads. Whereas, the evening peak hour is between 16:00-18:00.

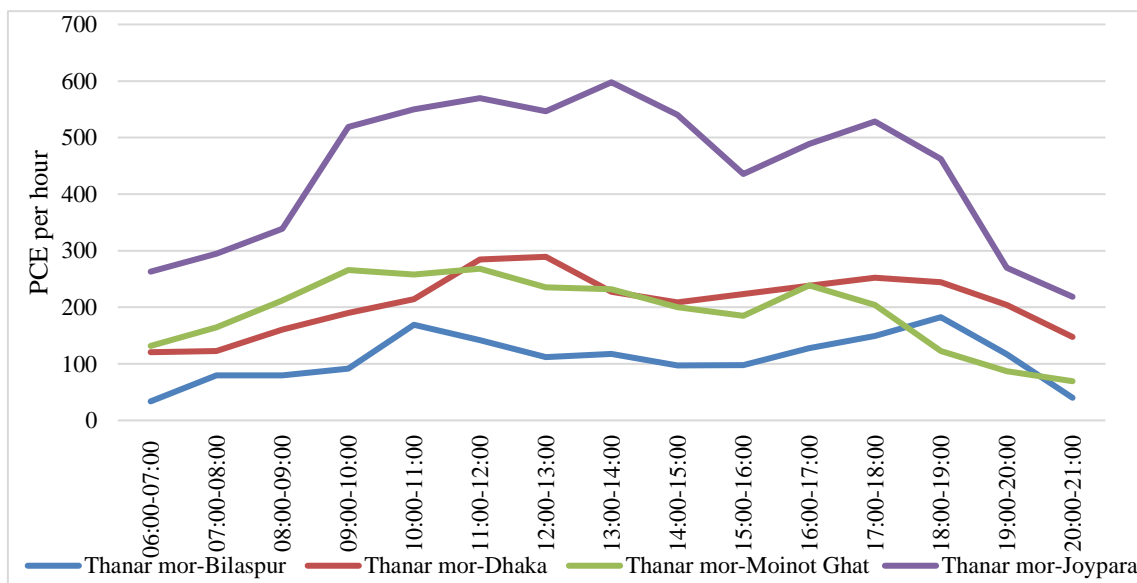


Figure 3.9: Traffic Volume of Thanar mor

Figure 3.9 shows that, the in Thanar mor intersection, the fluctuation of PCEs about the same for all the roads except Thanar mor-Joypara road. And the road also contains the highest PCEs among the other road. Throughout 09:00-15:00 the roads held the PCE above 500.

3.1.3 Peak Period Traffic Volume

Peak and off-peak period have been considered based on the corresponding road traffic discharge pattern. Whereas, the peak hour volume is the highest traffic volume of traffic that

uses the lane. The peak hour volume is normally given in terms of passenger car units or PCEs (converting different vehicles into one common unit). The conversion of all vehicles into passenger car units makes these volume calculations more representative of what is actually going on in the lanes. Peak hours have been considered based on the corresponding road traffic discharge. Peak period traffic volume has shown in below by figure 3.10-3.13.

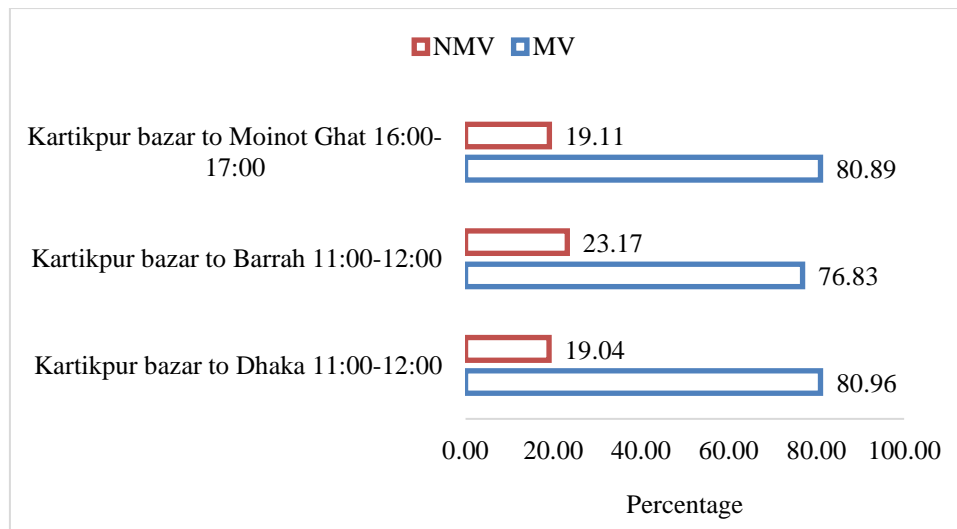


Figure 3.10: Peak Period Traffic Volume of Kartikpur bazar

Along with peak period traffic volume in Kartikpur intersection it also has been seen from the above figure (Please see figure 3.10) is that, road connecting this intersection with Barrah has little bit of more non-motorized vehicles than other two roads in Peak hour.

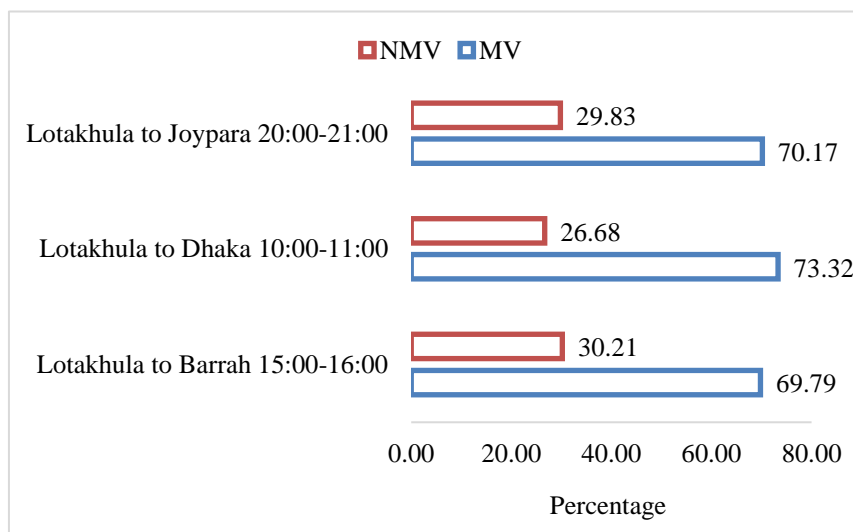


Figure 3.11: Peak Period Traffic Volume of Lotakhula

At Lotakhula intersection the roads connecting Dhaka with this intersection possess highest (about three fourth of total) percentage of motorized vehicles. Other than that, the ratio of motorized and non-motorized vehicles is about the same in all roads of this intersection (Please see figure 3.11).

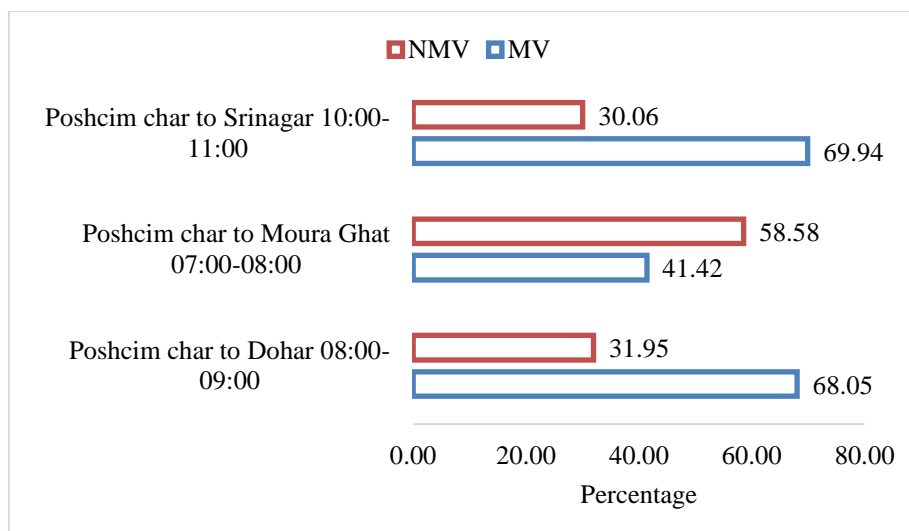


Figure 3.12: Peak Period Traffic Volume of Poschim char

In Poschim Char intersection the Poshim char to Moura ghat possess the highest percentage (about 42%) of non-motorized vehicles. Whereas the lowest percentage (about 30% of total) of non-motorized vehicles are in Poshim char to Srinagar road at the peak period (Please see figure 3.12).

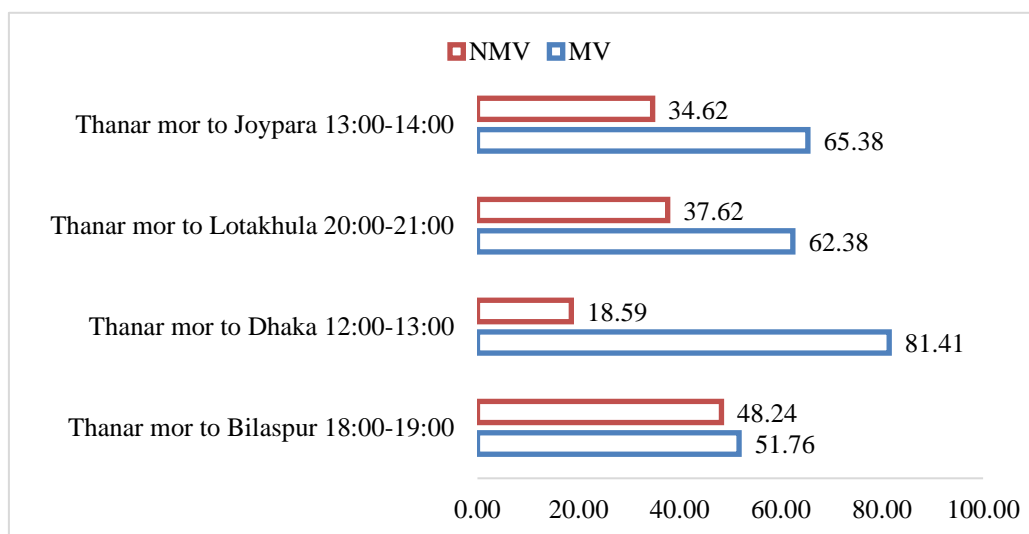


Figure 3.13: Peak Period Traffic Volume of Thanar mor

Like other intersection, in the Thanar mor intersection, most of the roads are occupied by motorized vehicles (about two-third of total). In thanar mor to Bilaspur road the motorized and non-motorized vehicles percentage are about the same. Thus, in this road the percentage of non-motorized vehicles is highest. On the other hand, Thanar mor to Dhaka road has the highest percentage of motorized vehicles.

Most of the cases peak periods are 09.00-11.00 am in the Morning and 18.00-21.00 pm in the evening, but in some cases, it varies. In the urban areas (Thanar mor) peak period found similarly like above mention time periods, where most of the government & non-government offices and schools, colleges situated.

The hourly total of both ways traffic flows is presented in **Figure 3.14**. It is noted that Thanar mor and Thanar mor to Joypara are very busy in the peak on Hat day or office day. The traffic volume data Poshcim char Moura ghat has very less significant traffic flow in the peak.

It is observed from the survey data that hourly traffic volume in busy nodes (Thanar mor and Thanar mor to Joypara) ranges from approx. 500 to 600 whereas hourly traffic volume ranges 100 to 200 in other roads.

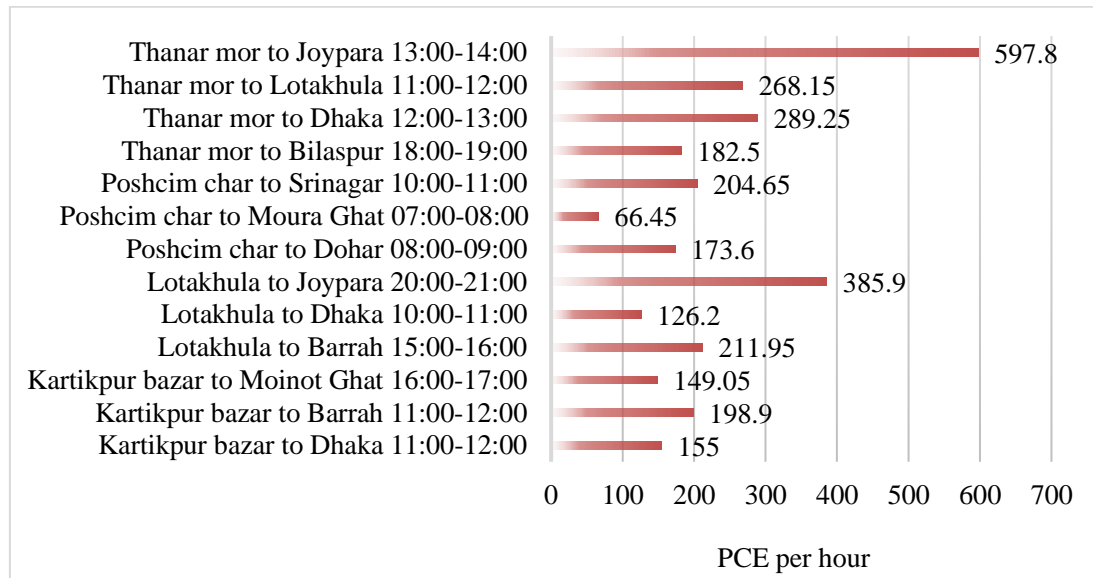


Figure 3.14: Peak Hour Traffic Volume

3.1.4 Traffic Condition of Road Sections

Peak hour traffic volume is very important which provides indication of the necessity of any traffic intervention necessary or not in that roadway. Peak hour traffic volume with comparison to road capacity provides a good indication of the services of the roadway. The Level of service is an assessment of the effectiveness of the roads which was measured by V/C ratio.

Traffic volume is defined as the actual peak hour traffic passing a particular roadway during a given time period and expressed as PCEs per hour. Capacity of roadway largely depends on number of lane, road width and roadway condition. In this case, only lane of the roads was considered. The existing road widths are just more than standard one lane width and thus the standard capacity for one lane road (1400 PCEs per hour) has considered here.

It is found that Poshcim char to Moura Ghat v/c ratio is comparatively less than others. So, it is expected that Individual users are practically unaffected by the presence of other vehicles on this road section. The choice of speed and the maneuverability are free. The level of comfort is excellent, as the driver needs minimal attention.

For Kartikpur bazar, road 1, 2 and 3 need no attention, may need attention later, require attention and traffic intervention/management in near future respectively. Having max v/c ratios below .50 means Steady Traffic but Limited-The presence of other vehicles affects drivers. The choice of the speed is affected and maneuvering requires vigilance. The level of comfort decreases quickly at this level, because the driver has a growing impression of being

caught between other vehicles. For road Thanar mor to Joypara the condition is the speed and the maneuverability are severely reduced, Low level of comfort for the driver, as he must constantly avoid collisions with other vehicles. A slight increase of the traffic risks causing some operational problems and saturating the network.

Table 3.2: Capacity of the roads in Dohar Upazila

Intersection/Location	Road	PCEs	Capacity	V/C
Kartikpur bazar	Kartikpur bazar to Dhaka 11:00-12:00	155	1400	0.11
	Kartikpur bazar to Barrah 11:00-12:00	198.9	1400	0.14
	Kartikpur bazar to Moinot Ghat 16:00-17:00	149.05	1400	0.11
Lotakhula	Lotakhula to Barrah 15:00-16:00	211.95	1400	0.15
	Lotakhula to Dhaka 10:00-11:00	126.2	1400	0.09
	Lotakhula to Joypara 20:00-21:00	385.9	1400	0.28
Poshcim char	Poshcim char to Dohar 08:00-09:00	173.6	1400	0.12
	Poshcim char to Moura Ghat 07:00-08:00	66.45	1400	0.05
	Poshcim char to Srinagar 10:00-11:00	204.65	1400	0.15
Thanar mor	Thanar mor to Bilaspur 18:00-19:00	182.5	1400	0.13
	Thanar mor to Dhaka 12:00-13:00	289.25	1400	0.21
	Thanar mor to Moinot ghat 11:00-12:00	268.15	1400	0.19
	Thanar mor to Joypara 13:00-14:00	597.8	1400	0.43

Source: Transportation Survey of Dohar Upazila, 2016

Almost all roads and intersections are under capacity (From Table 3.2), but bazar on the roads, road sharing, and unauthorized and unorganized parking of vehicles makes it problematic. So, there is a need for proper road maintenance rather than making a new one. However, ribbon development along the road may need land acquisition in that area.

3.1.5 Off-Peak Period Traffic Volume

From the traffic and transportation survey of this Upazila found that motorized vehicles are predominately higher than non-motorized. But in some cases, non-motorized vehicles are higher than motorized especially at Poshcim char to Moinot ghat in off-peak periods. The main reason behinds that most of the trips happened within a short distant in the urban areas and it's mainly for shopping & social get together, and recreation purposes.

Higher percentages of traffic run through 06.00-07.00am in the Morning and 20.00-21.00pm in the evening during off-peak period (shows in figure 3.15-3.18).

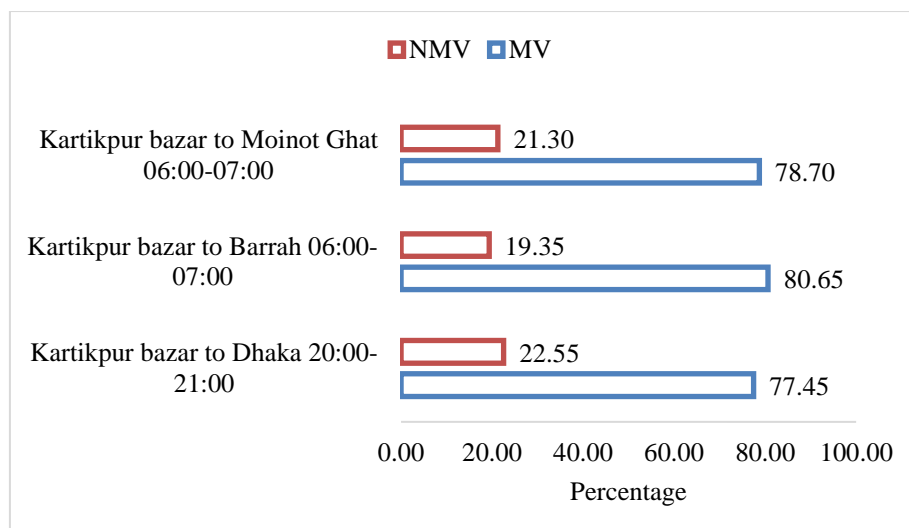


Figure 3.15: Off-peak Period Traffic Volume of Kartikpur bazar

Moreover, at Kartikpur bazar intersection, the road Kartikpur bazar to Dhaka contains the highest percentage of non-motorized vehicles (about 23%), whereas Kartikpur bazar to Barrah road contains the lowest percentage (about 19%) of non-motorized vehicles in the off-peak period (Please see figure 3.15)

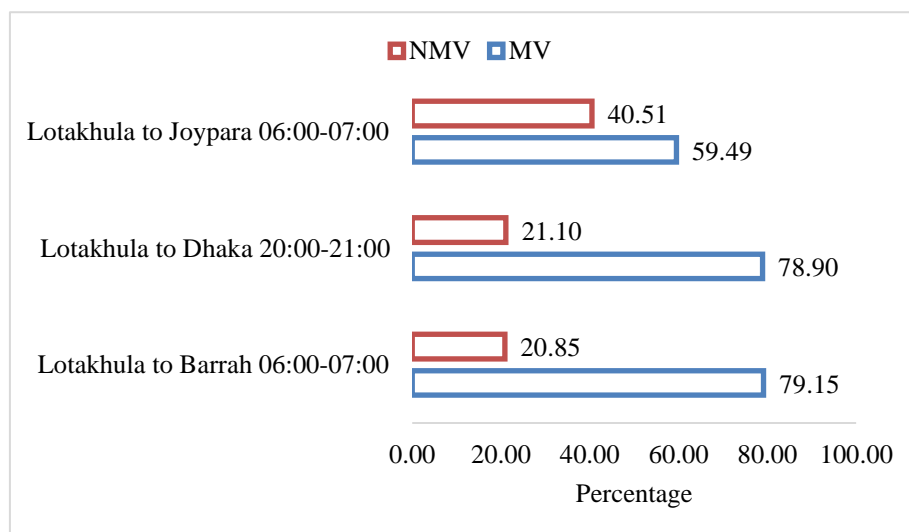


Figure 3.16: Off-peak Period Traffic Volume of Lotakhula

In Lotakhula, approximately all of the roads (except Lotakhula-Joypara) contains about 80% of total vehicles are motorized (Please see figure 3.16). Lotakhula-Joypara contains comparatively higher percentage of non-motorized vehicles (about 40%) than others.

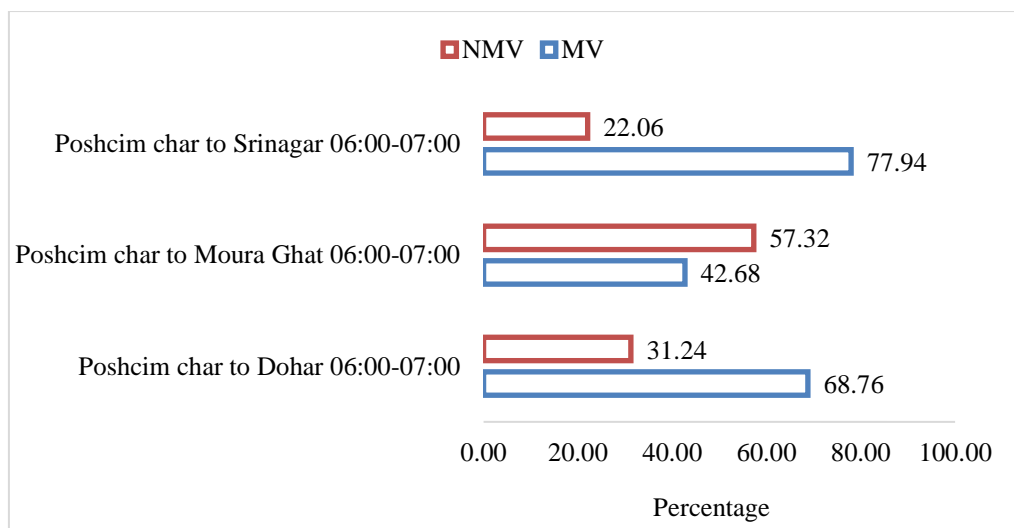


Figure 3.17: Off-peak Period Traffic Volume of Poshcim char

In Poshcim char intersection the percentage of non-motorized vehicles has been found higher in Poshcim char to Moura ghat road in off-peak period. It has been seen that, the percentage of non-motorized vehicles in these roads are comparatively higher than other intersection (Please see figure 3.17).

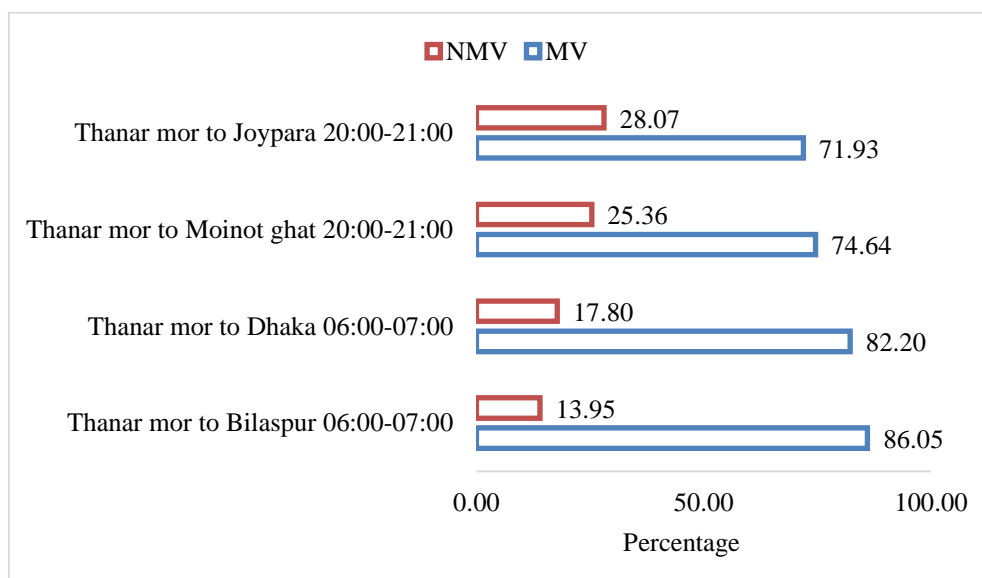


Figure 3.18: Off-peak Period Traffic Volume of Thanar mor

Whereas, in Thanar mor intersection about more than three fourth of the total vehicle are motorized in all of the roads of this intersection. Among them Thanar mor to Dhaka and Bilaspur contains the highest percentage (about more than 80%) of motorized vehicles (Please see figure 3.18).

3.1.6 Traffic Volume and PCE at Roadway Segments

4 road segments were surveyed to determine the traffic volume and PCE of these roads. Among them, the largest PCEs has been found at Fire service office road segment. Here, on average about 253 vehicles used the segments per hour. On the contrary, the lowest PCEs were found

in Muksudpur road segment. Here, only about 170 vehicles use the road per hour (Please see table 3.3).

Table 3.3: Traffic Volume and PCE at Roadway Segments

Roadway Segment Name	Link Name	Average PCE/Hour	Average Vehicle/Hour
Fire service office	Dhaka-Dohar	188.33	253.13
Muksudpur	Srinagar-Dohar	147.19	170.03
Palamganj bazar	Nawabganj-Dohar	174.54	246.60
Srinagar road (Fultola)	Fultola-Narisha bazar	156.79	175.73

Source: Transportation Survey of Dohar Upazila, 2016

3.1.7 Pedestrian Traffic Volume Survey

Pedestrian traffic volume counts were done during the same period as the vehicle volume count. The pedestrian volume shows that Kartikpur bazar-Barrah, Lotakhula-Joypara, Poshcim char-Dohar and Thanar mor-Joypara roads always experience significant number of pedestrian traffic whether it is working day or hat day. However, the pedestrian facilities like footpath or road crossing are not available in that area and thus the probability of the accident also increase. There is no place for pedestrian walking facility here and thus vehicles and pedestrian share same roadway. Lowest numbers of pedestrian have been noticed in the Kartikpur bazar area.

Table 3.4: Pedestrian density in selected intersections

Intersection Name	Link Name	Average Pedestrian/Hour		Average Pedestrian/Minute	
		Hat Day	Non-Hat Day	Hat Day	Non-Hat Day
Kartikpur bazar	Kartikpur bazar-Dhaka	32.45	30.49	0.54	0.51
	Kartikpur bazar-Barrah	67.10	50.48	1.12	0.84
	Kartikpur bazar-Moinot Ghat	39.46	35.62	0.66	0.59
Lotakhula	Lotakhula-Barrah	49.77	40.11	0.83	0.67
	Lotakhula-Dhaka	53.62	50.50	0.89	0.84
	Lotakhula-Joypara	94.95	70.45	1.58	1.17
Poshcim char	Poshcim char-Dohar	85.80	63.94	1.43	1.07
	Poshcim char-Moura Ghat	37.62	30.95	0.63	0.52
	Poshcim char-Srinagar	34.19	30.79	0.57	0.51
Thanar mor	Thanar mor-Bilaspur	50.95	40.12	0.85	0.67
	Thanar mor-Dhaka	51.95	45.94	0.87	0.77
	Thanar mor-Kartikpur	66.26	50.89	1.10	0.85
	Thanar mor-Joypara	95.44	70.55	1.59	1.18

Source: Transportation Survey of Dohar Upazila, 2016

3.2 Origin-Destination (O-D) Survey Findings

3.2.1 Trip purpose and Mode Used

From the data (Figure 3.19), it could be noted that second major share of the vehicles is auto rickshaw category (16%) whereas highest falls into the buses (27%). These vehicles are used predominately for the commuter purpose. Recreational trips contribute lowest proportion in the whole purpose of the trips (Please see figure 3.20)

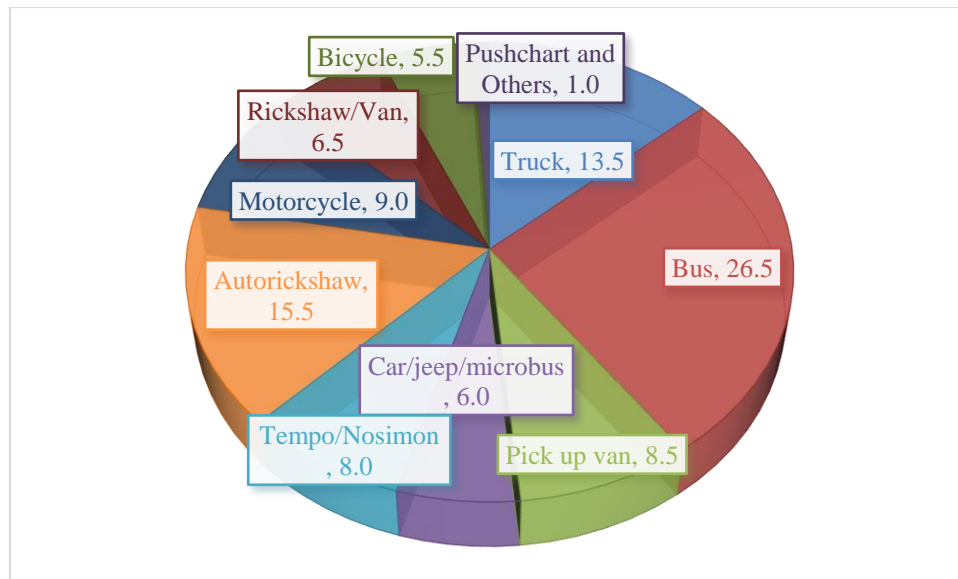


Figure 3.19: Percentage of mode uses

Figure 3.20 shows that about three fourth of total trips has made for work purpose. A significant percentage (about 13%) of trips has made for business purpose. Trips for recreation purpose is the lowest in percentage (less than 1%)

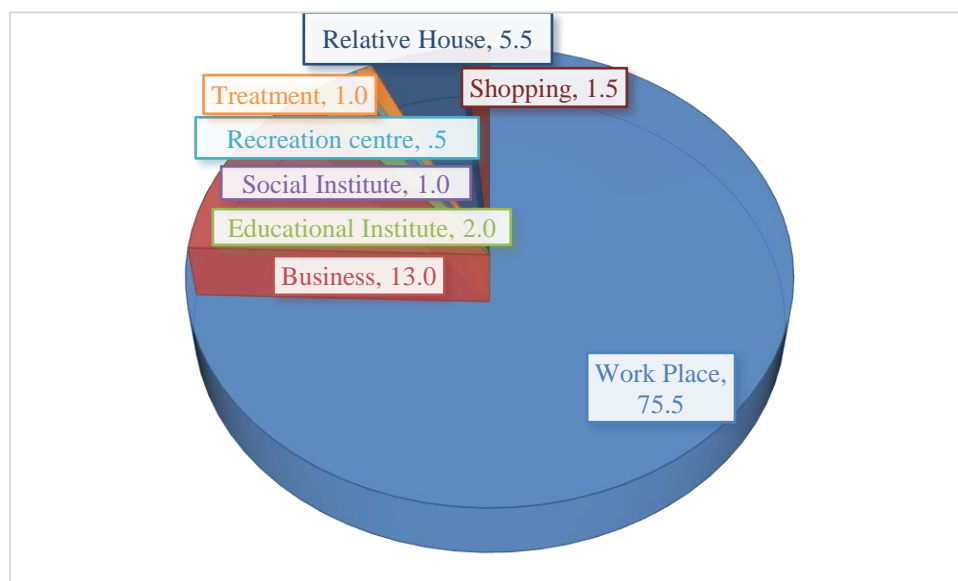


Figure 3.20: Percentage of Trip Purpose

3.2.2 Origin and Destination of Passenger Modes

The survey reveals that almost all internal trips within the district and the inter-district bus services and trucks (Table 3.5). As, the accessibility is moderately good in this Upazila, there is no immediate need for thinking of by-pass roads here. Freight vehicles as well as bus services both intra-districts and local services, O-D according to passenger modes has given below.

Table 3.5: O-D matrix

Destination Origin	Mahmudpur	Nayabari	Kusumhati	Raypara	Mokshedpur	Narisha	Sutarpara	Dohar Paurashava	Total
Mahmudpur	0	0	1	0	0	0	0	1	2
Nayabari	1	0	0	0	0	1	0	0	2
Kusumhati	6	0	0	1	1	0	0	0	8
Raypara	1	0	0	0	3	6	2	9	21
Mokshedpur	3	0	0	1	0	3	0	5	12
Narisha	1	1	0	0	0	0	1	5	8
Sutarpara	0	0	0	0	0	2	0	3	5
Dohar Paurashava	2	0	0	1	1	9	1	0	14
Total	14	1	1	3	5	21	4	23	72

O-D matrix for internal zones

Destination Origin	Dohar	Dhaka	Nawabganj	Others	Narayan ganj	Bagura	Comilla	Total
Dohar	0	47	6	2	1	2	0	58
Dhaka	31	0	2	0	0	0	0	33
Nawabganj	13	3	0	0	0	0	0	16
Others	2	0	0	0	0	0	0	2
Narayanganj	3	0	0	0	0	0	0	3
Bagura	2	0	0	0	0	0	0	2
Comilla	1	0	0	0	0	0	0	1
Total	52	50	8	2	1	2	0	115

O-D matrix for external zones

Source: Transportation Survey of Dohar Upazila, 2016

3.2.3 Capacity of Passenger Modes

The average capacity of the passenger modes has given in the table 3.6. It has found that Buses passenger carrying capacity varied from bus to bus. All the buses surveyed here having standard capacity from 30 to 55. There is no provision of local service buses have found. However, some seating services start journey on the schedule time with less capacity and take passenger from other counters. Auto-rickshaw that functions as public transport mode has standard capacity is most of the time 5-6 persons.

The most convenient form is an O-D matrix, in which the origin zones and destination zones have represented. The horizontal axis of the matrix represents the destination zones and the vertical axis of the matrix represents the origin zones. The zones might further have classified into internal and external zones if the survey covers both the internal and external zones. The

number of trips has entered in the cells of the matrix. The matrix represented in the table 3.5 below:

Table 3.6: Carrying capacity of passenger modes (in percentage)

Passenger Number	Truck	Bus	Car/jeep/microbus	Tempo/Nosimon	Auto rickshaw	Motor cycle	Rickshaw/Van
1-2 Persons	100		10.0		10.0	100.0	100.0
3-4 Persons			50.0		30.0		
5-6 Persons			40.0	100.0	60.0		
30-35 Persons		30.8					
36-40 Persons		33.3					
41-55 Persons		35.9					
Total	100	100	100	100	100	100	100

Source: Transportation Survey of Dohar Upazila, 2016

3.2.4 Destination Pattern of Different Union of Dohar Upazila

From O-D survey, table 3.7 has been prepared. Here, it has been seen that, from Nayabari, union about all of the trips and from Mahmudpur and Dohar Paurashava most of the trips (about more than 90%) has made for working purpose. On the other hand, from Raypara union a significant percentage (more than 10%) of trips are made for the purpose of shopping, as there are no big shopping centre in the union. From Sutarpara union maximum business purpose trip (about 40%) has made, whereas the second major business trip contributory unions are Raypara and Mokshedpur union

Table 3.7: Trip distribution pattern according to the trip purpose (in percentage)

Unions	Work Place	Business	Educational Institute	Social Institute	Recreation centre	Treatment	Relative House	Shopping	Total
Mahmudpur	90.9	9.1							100
Nayabari	100.0								100
Kusumhati	75.0				12.5		12.5		100
Raypara	40.7	29.6	3.7	3.7			11.1	11.1	100
Mokshedpur	46.2	30.8	7.7				15.4		100
Narisha	57.9	21.1	5.3	5.3		5.3	5.3		100
Sutarpara	60.0	40.0							100
Dohar Paurashava	91.5	4.3	2.1			2.1			100

Source: Transportation Survey of Dohar Upazila, 2016

3.2.5 Passengers Density in Different Vehicle Mode

It has been seen that about more than half of the total vehicle's passenger density is within 5 persons. As most of the vehicle of this upazila are light vehicles. About one fifth of total vehicles carried passengers between 6 and 10. Otherwise, a significant percentage (about 15%) of total vehicles also carried passengers more than 36 persons (Figure 3.21).

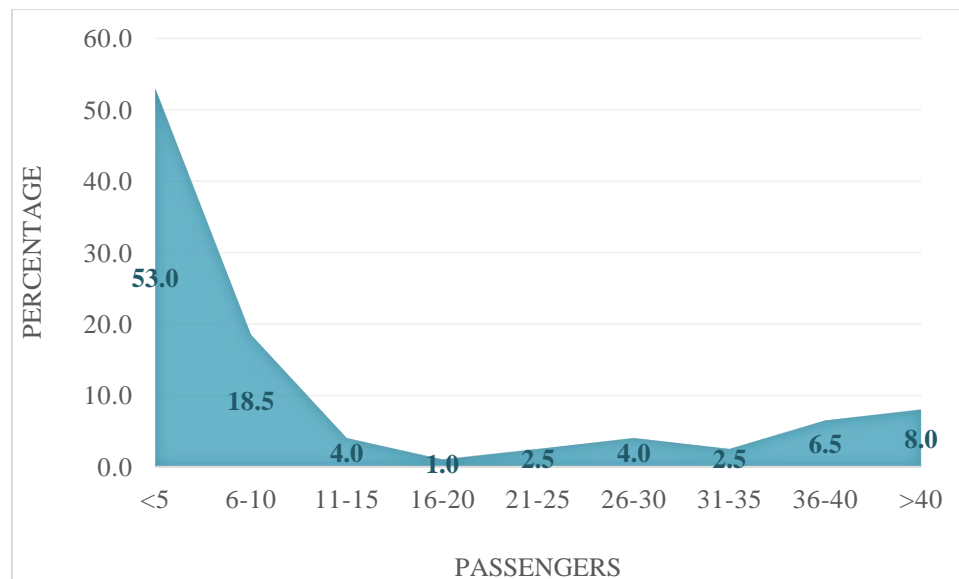


Figure 3.21: Occupancy of Passengers in Vehicle

3.2.6 Major Prioritized Problems

In figure 3.22, the prioritized problems have shown. Here, it has seen that most of the respondents (about two-third) said deteriorated road condition as their main problem. They want that, the appropriate authority should take necessary steps for proper maintenance of the road. Besides, about one third of total respondents also depicted that, Traffic jam and high fair as their main problem.

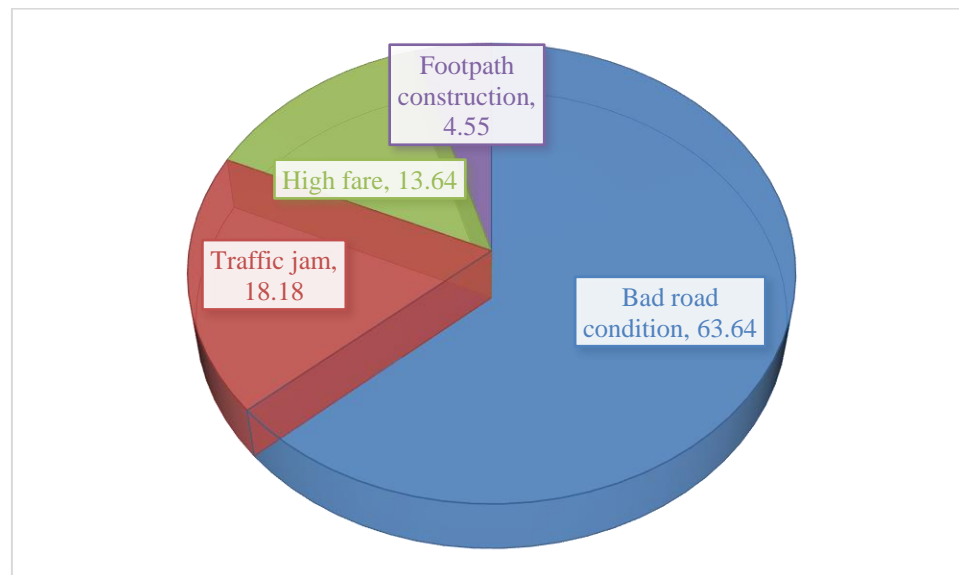


Figure 3.22: Major problems (in percentage)

3.3 Passenger Interview Survey Findings

3.3.1 Demographic Information

The passenger characteristics show (Table 3.8) that males are from different age group, but mostly (about half) from 21-40 years. In contrast, females are predominating in age group of 41-50 years.

Table 3.8: Age- Sex structure of bus users

Age Group	Male	Female
16-20	9.7%	22.2%
21-30	25.8%	22.2%
31-40	25.8%	
41-50	22.6%	55.6%
>50	16.1%	
Total	100%	100%

Source: Transportation Survey of Dohar Upazila, 2016

3.3.2 Trip Purpose

From Passenger interview survey, figure 3.23 has been prepared. The figure represented the fact that, about more than one fourth of total trips are made for either business related purpose or workplace purpose. Besides, about one fourth of total trips had also made for either shopping or home purpose. About 20% of total trips had made for visiting relatives' house purpose.

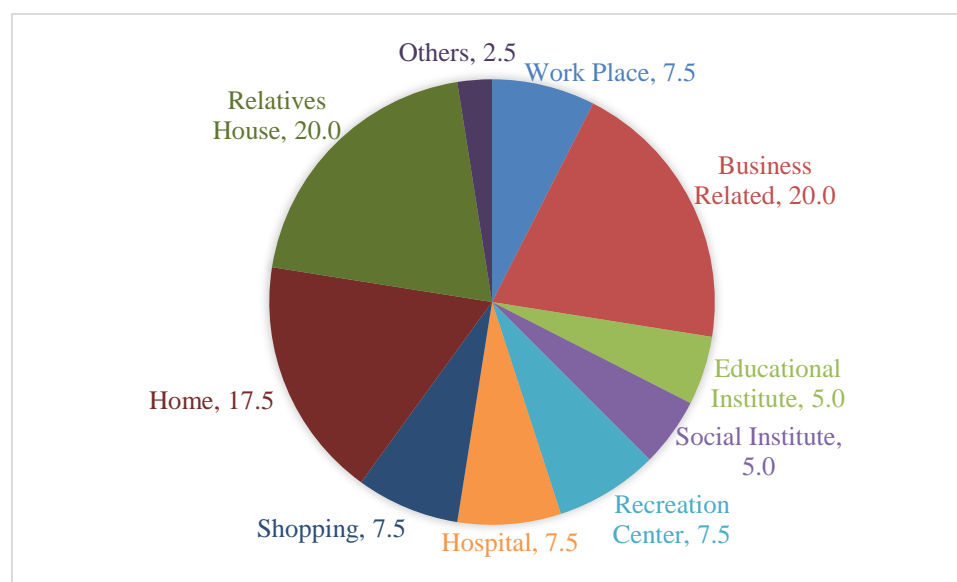


Figure 3.23: Trip purpose (in percentage)

3.3.3 Age Group and Trip Purpose

Trips made for educational purpose almost all of them below age of 20 years. On the other hand, trips are made for workplace about two third of total are from age ranges between 31 and 40 years. For hospital purpose, all of the trips has made by ages up to 40 years. Whereas, most of the people more than 50 years made trip for hospital purpose or social institute purpose (Please see table 3.9).

Table 3.9: Age Group and Trip Purpose (in percentage)

Age Range	Work Place	Business Related	Educational Institute	Social Institute	Recreation Center	Hospital	Shopping	Home	Relatives House	Others
16-20			100				33.3		25	
21-30		25			33.3		33.3	57.1	25	
31-40	66.7	12.5		50			33.3	14.3	12.5	100
41-50		62.5			33.3	33.3		28.6	37.5	

>50	33.3			50	33.3	66.7				
Total	100	100	100	100	100	100	100	100	100	100

Source: Transportation Survey of Dohar Upazila, 2016

3.3.4 Types of Mode

About more than one-third of total trips had made by bus. About same percentage of respondents, also make trips by Auto rickshaw/Tempo. Moreover, there are a prominent ghat (Moura ghat) is situated in this upazila, thus about one-fourth of total respondents also use Boat/Launch/Trollar (Please see figure 3.24).

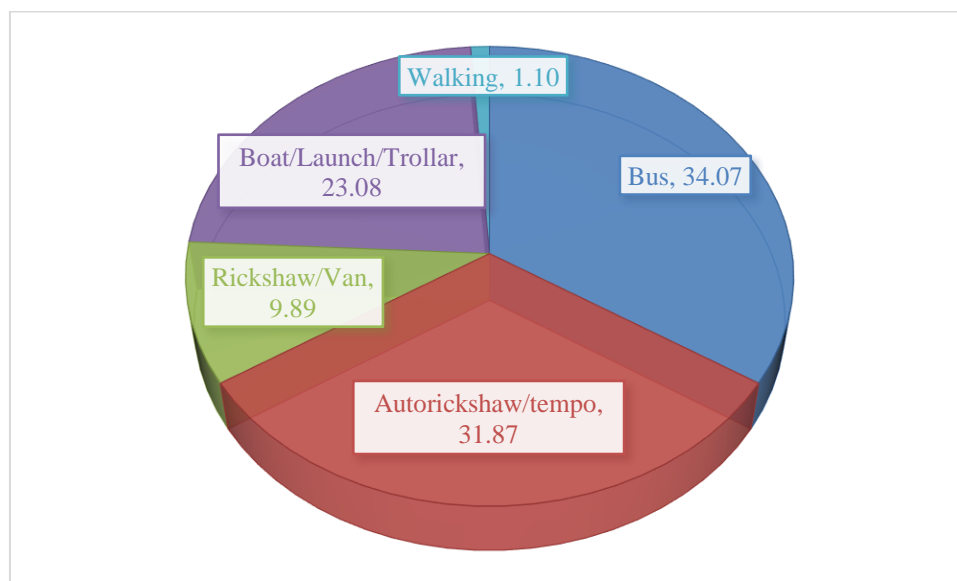


Figure 3.24: Types of Mode (in percentage)

3.3.5 Trip Distribution by Passengers

About one-third of total respondents make trips one time per week. Besides, about half of total respondents make only 2-3 trips per week. Otherwise, about 11% of them make trips 6 times per week.

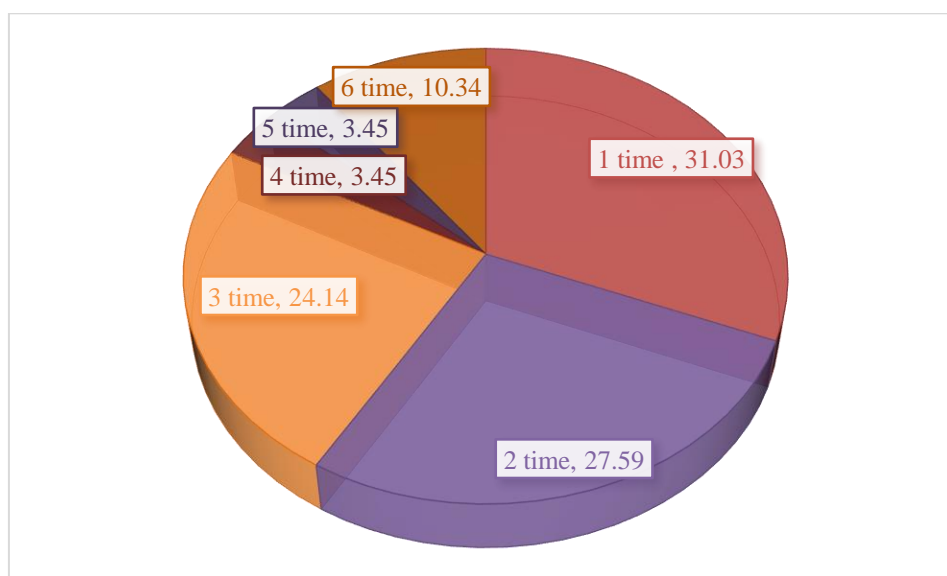


Figure 3.25: Trip Frequency (in percentage)

3.3.6 Gender and Trip Productions per Week

It has been that, about 70% of male respondents make 1-3 trips per week, whereas, about two third of total female respondents either made no trips at all or just 1 trips per week. About 11% of total male respondents anticipated that they made 6 trips per week, on the other hand, no interviewed female respondents have been found as making such numbers of trips per week. Otherwise, the percentage of making 4-5 trips per week was higher in female respondents.

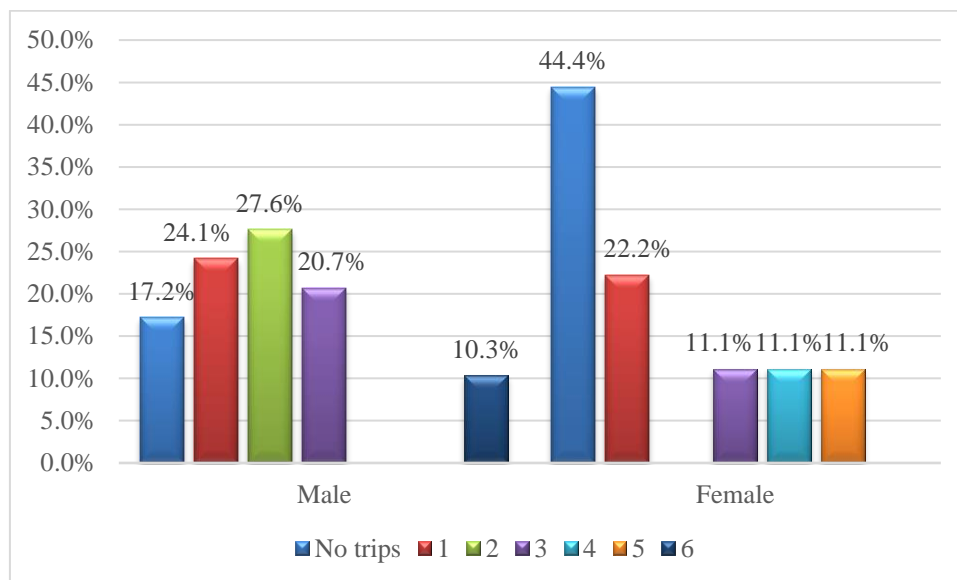


Figure 3.26: Trip frequency per week according to the gender

3.4 Pedestrian Survey

3.4.1 Demographic Information

The figure 3.27 shows that pedestrian aged from 41 to 50 years are significant in percentage (about one third). Their most of the trips has made for business or home or visiting relatives' house purpose. Moreover, about half of total respondents were between age of 21 and 40. Among them, ages between 31 and 40, most of the trips of this age group has been made for business or working purpose. For shopping purpose, most of the trips are generated from 16-20 age group (Table 3.10).

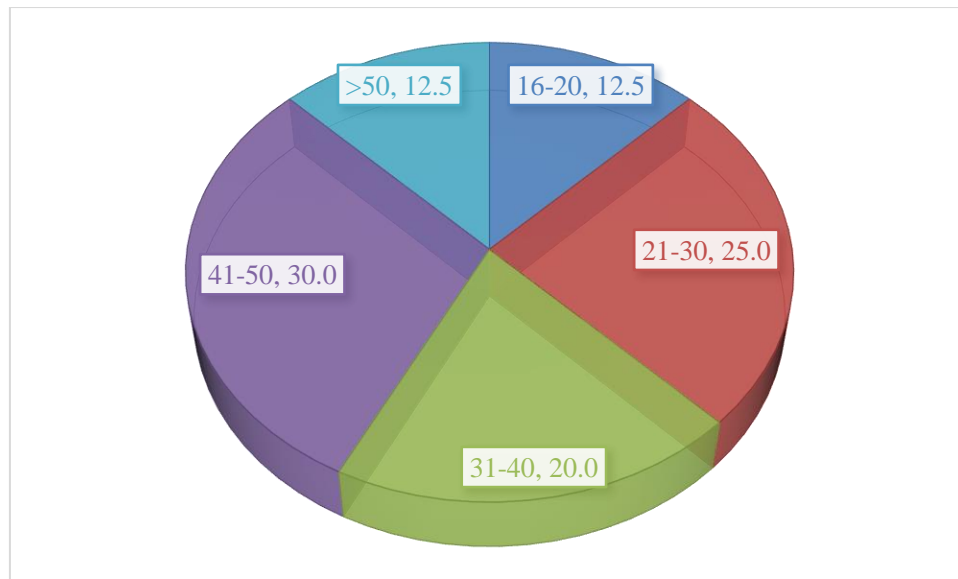


Figure 3.27: Age Composition of Pedestrian of Dohar (in percentage)

Table 3.10: Age composition according to gender of the pedestrian

Age Group	Work Place	Business Related	Educational Institute	Social Institute	Recreation Center	Hospital	Shopping	Home	Relatives House	Others	Total
16-20	0	0	40	0	0	0	20	0	40	0	100
21-30	0	20	0	0	10	0	10	40	20	0	100
31-40	25	12.5	0	12.5	0	0	12.5	12.5	12.5	12.5	100
41-50	0	41.67	0	0	8.33	8.33	0	16.67	25	0	100
>50	20	0	0	20	20	40	0	0	0	0	100

Source: Transportation Survey of Dohar Upazila, 2016

3.4.2 Purpose of Trips and Distance Traveled

It has been found that about half of people traveled .1-2 km to make a trip, which is highest in this category. The other major group (about one third) of the people (32%) traveled 3-4 km (Figure 3.28).

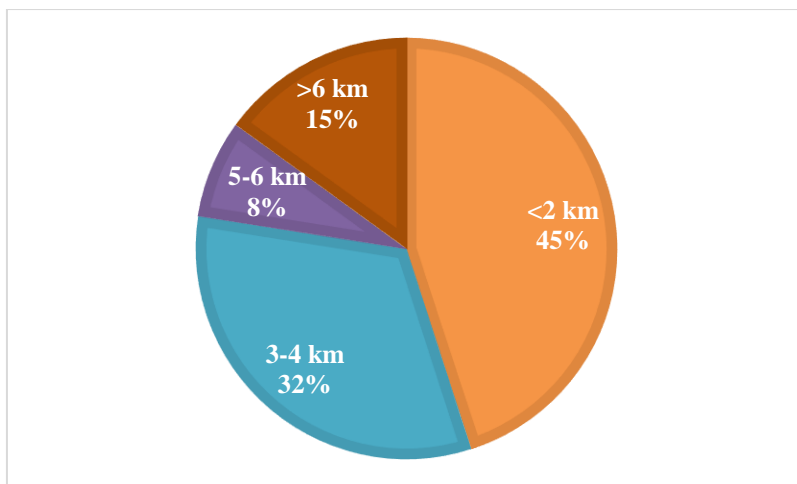


Figure 3.28: Pedestrian Distance Traveled

The table 3.11 shows that more than one fourth of total pedestrian made their trips for working purpose. On the other hand, female pedestrians' purpose is limited between educational institute, relatives' house or shopping purpose.

Table 3.11: Trip purpose according to the gender of the pedestrian

Gender	Work Place	Business Related	Education al Institute	Social Institute	Hospital	Shopping	Relatives House	Total
Male	28.1%	9.4%		3.1%	12.5%	40.6%	6.3%	100%
Female			37.5%			25.0%	37.5%	100%

Source: Transportation Survey of Dohar Upazila, 2016

3.5 Regional Network System

3.5.1 Trip Frequency

Figure 3.29 represents the facts that, about more than two-third of total respondents make 3-4 regional trips per day. Only 3% of them make more than 4 trips per day. Whereas, about more than one-fourth of total make 1-2 trips per day.

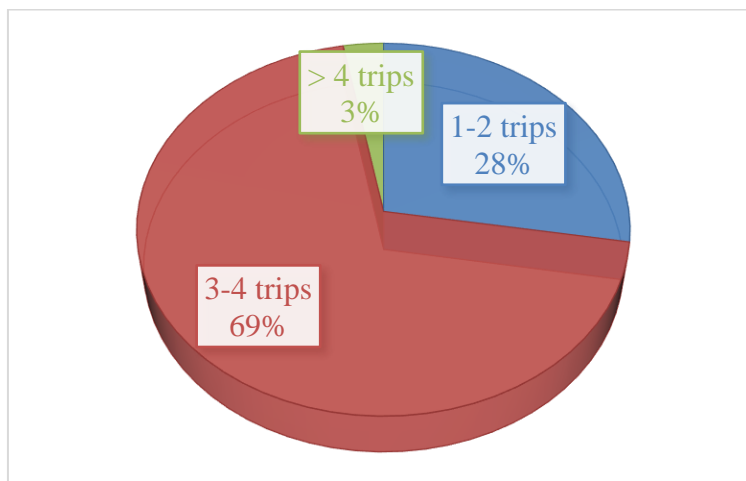


Figure 3.29: Trip Frequency (per day)

3.5.2 Regional Connectivity with Surrounding Regions

It has been seen that regional connectivity of Dohar with Dhaka is much stronger than other regions. As about two third of total trips are made for Dhaka. Apart from that, a significant percentage (about 17%) of trips are also made for Sadarpur, Faridpur.

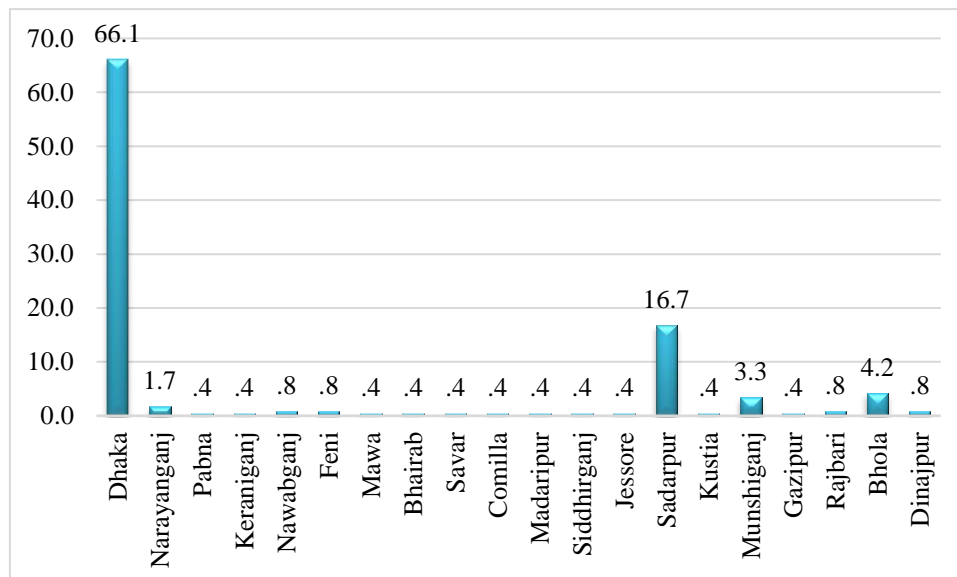


Figure 3.30: Regional Connectivity with Surrounding Regions (in percentage)

3.5.3 Regional Transport Network System

This upazila is mainly accessible area considering the regional accessibility (Map 3.1). This area gets access from Dhaka, Gazipur, Nawabganj and Munshigonj, other districts by regional and national highways. To identify Regional Transport Network System, two locations- truck terminal, bus terminal area were selected. The connectivity from this upazila is moderately good. Moreover, the connectivity with union level is also satisfactory. Most of the Union have connectivity with the Upazila headquarters having enough wide road. Besides, bridges on the roads are also in satisfactory condition, though some of the bridges can be widen, as narrow bridges sometime create congestion (Lotakhula bazar).

3.5.4 Transport Going Out from Study Area to Other Region

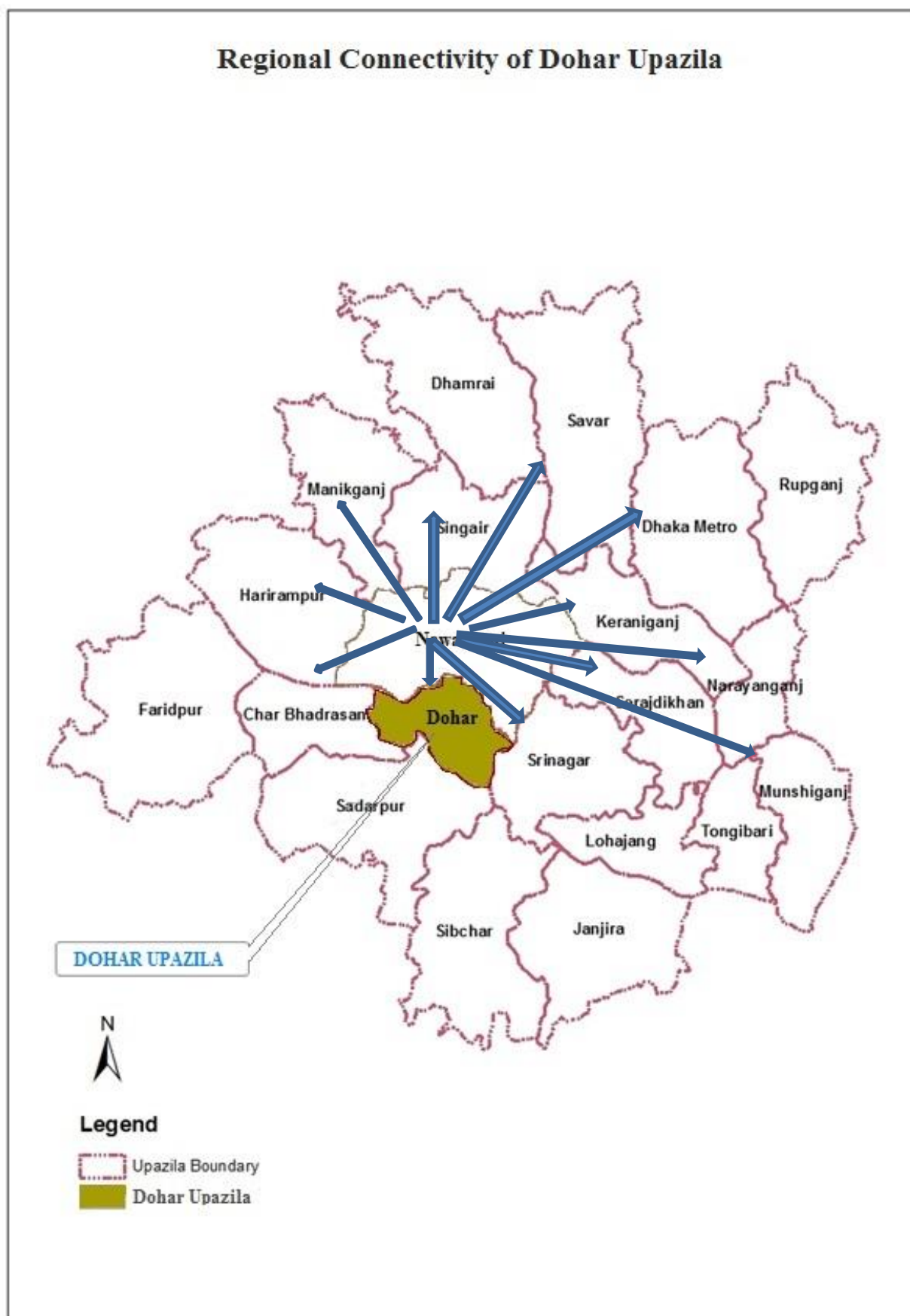
The major bus stoppages are Thanar mor (Eidgah math), Moinot ghat (largest) and Upazila market. From these bus stands the buses headed towards Dhaka (Gulistan) usually start 5:30 am to 7:50 pm (Table 3.12). Buses those connect Dhaka are usually single Decker buses having carrying capacity of 45 and 60 people (according to seats). Vehicles running overload is particularly true for freight goods.

Two major types of freight transport vehicles are available in Dohar Upazila, where truck used for both intra and inter-district goods travel. However, the movements of the van usually limit within Upazila area or maximum within the district. For goods movement in region and beyond, trucks and pick up vans are used frequently. The carried good and the average capacity of the vehicles are given below (Table 3.12, and 3.13).

Table 3.12 Trips Rate of the vehicles travelling away from Dohar Upazila

Mode	Origin	Name of service	Destination	Frequency of trips	Service Period	Break
Bus	Thanar mor (Eidgah math)	Sheba, Aram	Dhaka (Gulisthan)	3-4 trips per day (Get Lock/Direct)	5:30am-7:50pm	17 times
	Moinot ghat (Largest)	Jamuna, Druti				
	Upazila market	Joypara, Nogor				
Truck	Moinot Ghat and Thanar Mor	Gazipur, Tangail, Sirajganj, Pabna, Natore, Bogra, Rjshahi, Dinajpur, Rangpur	5 ton 1 trip	Mainly at night		
		Munshiganj, Narayanganj, Dhaka, Gazipur, Keraniganj	1 ton and 3 ton 2-3 trip			
Troller, Speed Boat	Moinot Ghat	Sadarpur (Faridpur)	3 trips per hour	6:00am-6:30pm		

Source: Transportation Survey of Dohar Upazila, 2016



Map 3.1: Regional Connectivity of Dohar Upazila

Table 3.13: Carrying capacities of some major vehicles in Dohar Upazila.

Mode	Standard Capacity	Usual Practice	Remark
Tata Truck	6 tons	10 tons	Overload
Bedford Truck	5 tons	10 tons	Overload
Pickup van	1-1.5 tons	2 tons (Basically local)	Acceptable
Bus (Get lock/Direct)	36 passengers	38-40 passengers (Bus passenger survey Dohar, 2016)	Acceptable
Van	0.8 tons	Normal	Acceptable

Source: Transportation Survey of Dohar Upazila, 2016

From the transportation survey 2016 which are summarize in table 3.13 and table 3.14, it is found that everyday almost 2000 (two thousand) passengers regularly travel from this Upazila to other places outside Dohar by bus. Similarly, 100-150 tons' freight transported from Dohar to other places per day by truck, pickup and other vehicles. Truck plays prominent role (96%) for carrying goods than other vehicles (Please see table 3.14).

Table 3.14: Goods carried by freight vehicles travelling away from Dohar Upazila

Mode	Carrying goods	
	Inward bound (68%)	Outward bound (32%)
Truck/pickup van	Brick, sand, rod, cement, Fishmeal, poultry food, medicine, raw materials of garments products etc.	Mainly garments products, Fish, wooden furniture, sand, rice, vegetables etc.

Source: Transportation Survey of Dohar Upazila, 2016

3.5.5 Transport Coming from other region to study area

Situation is almost similar to previous one in case of transport coming from outside of the Upazila. Buses coming from other districts and Upazilas start from 5:30am to 7:50pm. Buses those connect from Dhaka are usually single Decker buses having carrying capacity of 45 and 60 (Only Jamuna) people (according to seats) and inter-district. However, in practical they are running overload while providing services (Table 3.15). Vehicles running overload is particularly true for freight goods. Every day on an average 2500 passenger traveled by buses from outside to this Upazila, and 200-250 tons' freights/goods transported regularly.

Chapter-4: Findings from PRA & Socio Economic Survey

4.1 Findings from PRA

In PRA session, the participants identified a host of problems. When asked to narrow down the list to only five they chose only the most urgent and critical ones. A variety of major problems have been identified by the PRA participants of 8 unions of the Upazila. Though problems vary from union to union, some problems are common to all the unions. Most of them have pointed out transport and communication as their primary problem. Major problems find out from PRA related to roads and communications are-

- Poor condition of roads, bridge and culvert, maintenance required.
- Roads should be widened

4.2 Findings from Socio Economic Survey

A household survey was conducted in the Upazila to ascertain the pattern of socio-economic problems and the perception of households about various problems of the area. There are some questions about traffic and transportation issues and problems. The answers received from the respondents have been compiled and presented in this section. Poor maintenance, traffic jam and narrow widths of roads are identified as major problems by most of the respondents in the Upazila. Indicating to major road problems, they pointed not in good condition (about three-fourth of total) is their main problems.

4.2.1 Status of Access Road

Narrow widths of roads and poor maintenance have marked by most respondents as major road problems in the Upazila. Narrow width of roads is likely to become a major problem of traffic movement. Almost 80% of the access road width is below 3 meters that connected to the households, and less than 3% road width is over 5 meters in this Upazila.

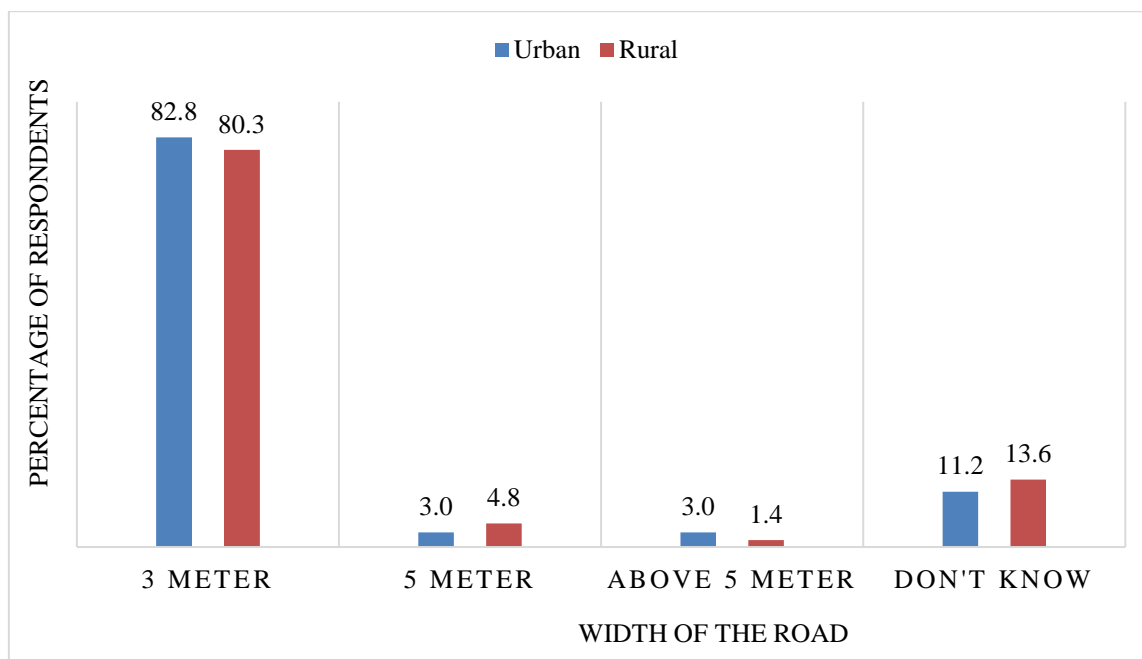


Figure 4.1: Width of the road in front of houses

4.2.2 Distance of Main Road from Household

From the Socio-economic survey 2016 found that most of the houses (about two-third of total) are situated within meters' distance from the main roads. In rural area about half of total houses are situated above 100 meters from the main roads.

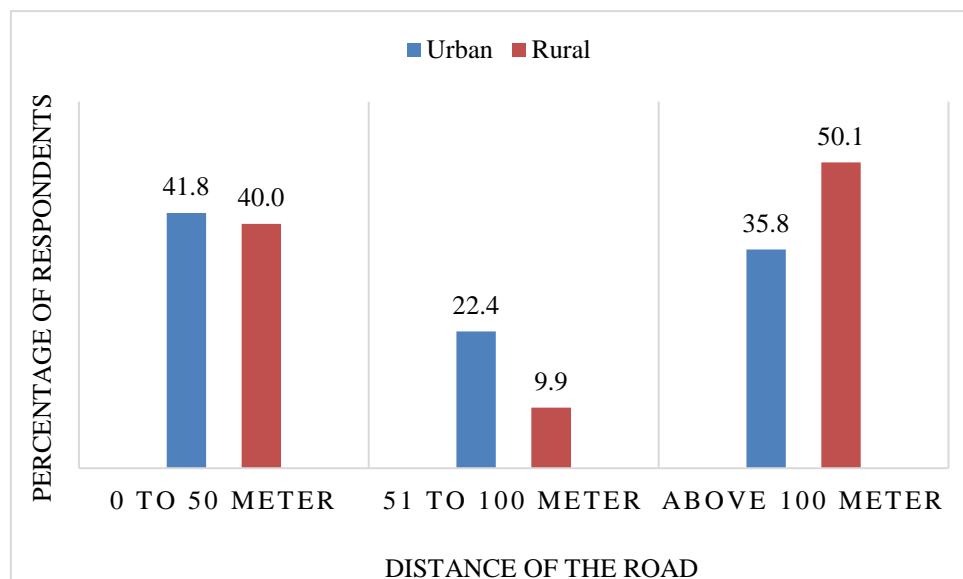


Figure 4.2: Distance of Main Road from Houses

4.2.3 Condition of the road

It has been found that, in both urban and rural areas, the condition of road near to respondents' houses are of different types. About 38.80 percent of the households in urban areas reported that roads close to their houses are bituminous; 45.80 percent of the households in the rural areas gave the same statement. On average 45 percent, households say that the roads close to their houses are bituminous. For information about other type of roads, please see Figure 4.4 below. Most of the respondents are not happy with the road condition, about three fourth of total respondents' remarks that roads are not in good condition and narrow in width.

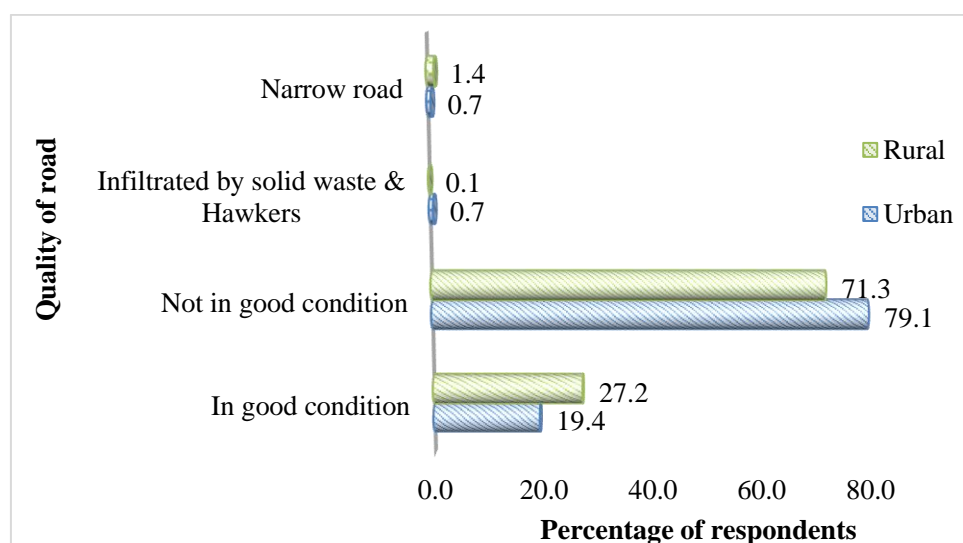


Figure 4.4: Percentage Distribution of Household by Problems of Roads (Source: Socio-economic Survey of Dohar Upazila, 2016)

Chapter-5: Conclusion

The findings of transportation and traffic management survey reveals important features about the road condition, mode of transport, traffic volume at major intersections and major road links, origin-destination of regional traffic and more importantly the travel behavior of the transport users. It is clear from the survey that the internal accessibility within the district is enough satisfactory as well as inter district connectivity. However, this is not the case for Inland water transportation system.

It is noted that the pedestrians are significant road users within the urban area of this Upazila. However, in the assessed roads in all intersections, pedestrians are often forced to share the same road ways with vehicular traffic due to lack of footpath. This conflict is becoming sever in Thanar Mor area. The main reasons are slow modes in primary roads and the shoulder is below the paved surface of the road. Thus, having less space for over taking, slow modes are forced to move dangerously to the low shoulder by high speed vehicles. The outcome is the conflicting traffic situations characterized by lower speeds of the motorized vehicles and increasing probability of accidents for both pedestrian and slow modes.

From the survey findings, it could be mentioned that the people are mostly dependent on non-motorized vehicles for their local movement. However, uses of electric powered auto-rickshaw as public transport in the recent years are alarming. Rickshaw/van is the dominant mode of transport among non-motorized vehicles. Other significant motorized vehicles include trucks for freight good movements. For public transport, buses provide mainly direct services. Besides, the frequent change of mode of the bus users shows the necessity of integrated transport planning. Thus, this report includes useful analysis to further commencement of the project.

Traffic management system should be developed which includes better performance of traffic signal points, road intersections and smooth functioning of motorized and non- motorized vehicles separately. Moreover, necessary steps are yet to be taken by appropriate authority regarding widen of roads, bridge and as well as proper maintenance of the roads. At the Thanar Mor and at front of the Upazila *Parishad Bhaban* these were not found up to the mark. Those points are to be designed properly which helps the better movement of traffic and also reduces the accidents and congestions. The Upazila authority would look into the matter.

References

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4. www.planningtank.com/transportation/origin-destination-survey-methods
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6. *BBS (2011), Zila Series, Dhaka*
7. *BBS (2011a), Community Series, Dhaka.*
8. *Wikipedia (2017)* <https://en.wikipedia.org/wiki/Dohar>

Traffic Vollume Survey: Dohar

Time	Location: Kartikpur bazar						Date:12.02.16				Direction: Kartikpur to Dhaka										
	Mode of Traffic (Nos)																				
	Bus		PCU	Truck		PCU	Minibus		PCU	Pick up		PCU	Car/Jeep/mic robos		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU
			3			3			2			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	5	5.38	15	6	6.45	18	0	0	0	7	7.53	14	2	2.15	2	6	6.45	6	28	30.11	14
07:00-08:00	8	5.41	24	3	2.03	9	0	0	0	5	3.38	10	4	2.70	4	7	4.73	7	55	37.16	27.5
08:00-09:00	9	4.97	27	7	3.87	21	0	0	0	7	3.87	14	6	3.31	6	5	2.76	5	76	41.99	38
09:00-10:00	4	2.61	12	3	1.96	9	0	0	0	5	3.27	10	6	3.92	6	5	3.27	5	83	54.25	41.5
10:00-11:00	7	4.02	21	5	2.87	15	0	0	0	4	2.30	8	8	4.60	8	10	5.75	10	70	40.23	35
11:00-12:00	10	5.75	30	8	4.60	24	0	0	0	8	4.60	16	7	4.02	7	7	4.02	7	56	32.18	28
12:00-13:00	8	4.85	24	4	2.42	12	0	0	0	8	4.85	16	6	3.64	6	7	4.24	7	72	43.64	36
13:00-14:00	9	5.42	27	4	2.41	12	0	0	0	9	5.42	18	7	4.22	7	4	2.41	4	62	37.35	31
14:00-15:00	4	3.96	12	5	4.95	15	0	0	0	6	5.94	12	3	2.97	3	4	3.96	4	46	45.54	23
15:00-16:00	8	5.59	24	4	2.80	12	0	0	0	7	4.90	14	4	2.80	4	8	5.59	8	52	36.36	26
16:00-17:00	5	4.42	15	4	3.54	12	0	0	0	6	5.31	12	4	3.54	4	7	6.19	7	49	43.36	24.5
17:00-18:00	8	4.79	24	7	4.19	21	0	0	0	6	3.59	12	4	2.40	4	10	5.99	10	60	35.93	30
18:00-19:00	9	7.38	27	8	6.56	24	0	0	0	4	3.28	8	8	6.56	8	5	4.10	5	48	39.34	24
19:00-20:00	4	4.17	12	3	3.13	9	0	0	0	5	5.21	10	3	3.13	3	5	5.21	5	36	37.50	18
20:00-21:00	4	7.69	12	3	5.77	9	0	0	0	2	3.85	4	2	3.85	2	3	5.77	3	18	34.62	9
	102.0	76.4	306.0	74.0	57.5	222.0	0.0	0.0	0.0	89.0	67.3	178.0	74.0	53.8	74.0	93.0	70.4	93.0	811.0	589.6	405.5

Traffic Volumes Survey: Dohar

																		Carrying capacity calculation									
					Mode of Traffic (Nos)													Bus			Truck			Pick up			
Motor cycle		PCU	Rickshaw/Van		PCU	Bicycle		PCU	Push chart		PCU	Others		PCU	Total		PCU per hour		36	42	52	3	5	5+	1	1.5	2
		0.3			1			0.3			4	4		2													
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)											
11	11.83	3.3	18	19.35	18	10	10.75	3	0	0	0	0	0.00	0	93	100	93.3		0	2	3	2	4	0	4	0	3
17	11.49	5.1	33	22.30	33	16	10.81	4.8	0	0	0	0	0.00	0	148	100	124.4		0	3	5	1	2	0	2	1	1
28	15.47	8.4	31	17.13	31	12	6.63	3.6	0	0	0	0	0.00	0	181	100	154.0		0	4	5	3	4	0	4	2	1
11	7.19	3.3	29	18.95	29	7	4.58	2.1	0	0	0	0	0.00	0	153	100	117.9		0	2	2	1	2	0	3	0	2
26	14.94	7.8	28	16.09	28	16	9.20	4.8	0	0	0	0	0.00	0	174	100	137.6		0	2	5	2	3	0	2	1	1
35	20.11	10.5	31	17.82	31	12	6.90	3.6	0	0	0	0	0.00	0	174	100	157.1		0	4	6	5	3	0	5	2	1
19	11.52	5.7	33	20.00	33	8	4.85	2.4	0	0	0	0	0.00	0	165	100	142.1		0	5	3	2	2	0	3	3	2
26	15.66	7.8	38	22.89	38	7	4.22	2.1	0	0	0	0	0.00	0	166	100	146.9		0	4	5	1	3	0	4	3	2
11	10.89	3.3	16	15.84	16	6	5.94	1.8	0	0	0	0	0.00	0	101	100	90.1		0	1	3	2	3	0	3	1	2
21	14.69	6.3	31	21.68	31	8	5.59	2.4	0	0	0	0	0.00	0	143	100	127.7		0	4	4	2	2	0	3	2	2
9	7.96	2.7	22	19.47	22	7	6.19	2.1	0	0	0	0	0.00	0	113	100	101.3		0	2	3	2	3	0	1	0	5
21	12.57	6.3	35	20.96	35	14	8.38	4.2	0	0	0	2	1.20	4	167	100	150.5		0	3	5	4	3	0	3	0	3
12	9.84	3.6	19	15.57	19	8	6.56	2.4	0	0	0	1	0.82	2	122	100	123.0		0	4	5	3	5	0	2	0	2
12	12.50	3.6	19	19.79	19	9	9.38	2.7	0	0	0	0	0.00	0	96	100	82.3		0	2	2	2	1	0	2	0	3
8	15.38	2.4	8	15.38	8	3	5.77	0.9	0	0	0	1	1.92	2	52	100	52.3		0	1	3	2	1	0	0	0	2
267.0	192.0	80.1	391.0	283.2	391.0	143.0	105.7	42.9	0.0	0.0	0.0	4.0	3.9	8.0	2048.0	1500.0	1800.5										

Traffic Volume Survey: Dohar

Time	Location: Kartikpur bazar					Direction: Dhaka to Kartikpur												
	Mode of Traffic (Nos)																	
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU
			3			3			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	7	6.80	21	6	5.83	18	3	2.91	6	3	2.91	3	8	7.77	8	36	34.95	18
07:00-08:00	7	3.43	21	3	1.47	9	4	1.96	8	3	1.47	3	3	1.47	3	97	47.55	48.5
08:00-09:00	5	7.04	15	3	4.23	9	2	2.82	4	3	4.23	3	2	2.82	2	30	42.25	15
09:00-10:00	6	5.31	18	4	3.54	12	3	2.65	6	4	3.54	4	7	6.19	7	55	48.67	27.5
10:00-11:00	8	4.42	24	9	4.97	27	6	3.31	12	12	6.63	12	12	6.63	12	65	35.91	32.5
11:00-12:00	9	6.08	27	8	5.41	24	11	7.43	22	10	6.76	10	7	4.73	7	60	40.54	30
12:00-13:00	6	4.35	18	5	3.62	15	2	1.45	4	2	1.45	2	3	2.17	3	62	44.93	31
13:00-14:00	6	6.38	18	10	10.64	30	2	2.13	4	3	3.19	3	4	4.26	4	47	50.00	23.5
14:00-15:00	3	3.66	9	6	7.32	18	4	4.88	8	2	2.44	2	7	8.54	7	33	40.24	16.5
15:00-16:00	6	5.50	18	7	6.42	21	4	3.67	8	8	7.34	8	10	9.17	10	41	37.61	20.5
16:00-17:00	6	4.11	18	8	5.48	24	7	4.79	14	7	4.79	7	11	7.53	11	62	42.47	31
17:00-18:00	9	5.52	27	12	7.36	36	8	4.91	16	3	1.84	3	14	8.59	14	65	39.88	32.5
18:00-19:00	8	6.50	24	9	7.32	27	11	8.94	22	4	3.25	4	7	5.69	7	56	45.53	28
19:00-20:00	6	6.06	18	9	9.09	27	7	7.07	14	5	5.05	5	6	6.06	6	32	32.32	16
20:00-21:00	6	16.22	18	4	10.81	12	2	5.41	4	1	2.70	1	4	10.81	4	12	32.43	6
	98.0	91.4	294.0	103.0	93.5	309.0	76.0	64.3	152.0	70.0	57.6	70.0	105.0	92.4	105.0	753.0	615.3	376.5

Traffic Volume Survey: Dohar

Carrying capacity calculation																	
Mode of Traffic (Nos)																	
Motor cycle		PCU	Rickshaw/Van		PCU	Bicycle		PCU	Push chart		PCU	Others		PCU	Total		PCU per hour
		0.3			1			0.3			4			2			
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	0	No	Percentage (%)	
13	12.62	3.9	16	15.53	16	11	10.68	3.3	0	0	0	0	0.00	0	103	100	97.2
28	13.73	8.4	46	22.55	46	13	6.37	3.9	0	0	0	0	0.00	0	204	100	150.8
8	11.27	2.4	11	15.49	11	7	9.86	2.1	0	0	0	0	0.00	0	71	100	63.5
8	7.08	2.4	21	18.58	21	5	4.42	1.5	0	0	0	0	0.00	0	113	100	99.4
22	12.15	6.6	30	16.57	30	17	9.39	5.1	0	0	0	0	0.00	0	181	100	161.2
13	8.78	3.9	21	14.19	21	9	6.08	2.7	0	0	0	0	0.00	0	148	100	147.6
15	10.87	4.5	29	21.01	29	14	10.14	4.2	0	0	0	0	0.00	0	138	100	110.7
6	6.38	1.8	13	13.83	13	3	3.19	0.9	0	0	0	0	0.00	4	94	100	102.2
8	9.76	2.4	11	13.41	11	6	7.32	1.8	0	0	0	2	2.44	0	82	100	75.7
12	11.01	3.6	14	12.84	14	7	6.42	2.1	0	0	0	0	0.00	6	109	100	111.2
14	9.59	4.2	19	13.01	19	9	6.16	2.7	0	0	0	3	2.05	0	146	100	130.9
17	10.43	5.1	22	13.50	22	13	7.98	3.9	0	0	0	0	0.00	0	163	100	159.5
14	11.38	4.2	11	8.94	11	3	2.44	0.9	0	0	0	0	0.00	0	123	100	128.1
13	13.13	3.9	17	17.17	17	4	4.04	1.2	0	0	0	0	0.00	0	99	100	108.1
2	5.41	0.6	4	10.81	4	2	5.41	0.6	0	0	0	0	0.00	10	37	100	60.2
193.0	153.6	57.9	285.0	227.5	285.0	123.0	99.9	36.9	0.0	0.0	0.0	5.0	4.5	20.0	1811.0	1500.0	1706.3

Traffic Vollume Survey: Dohar

Time	Location: Kartikpur bazar								Direction: Barrah to Kartikpur											
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/mic robus		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU		
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)			
06:00 -07:00	8	8.70	24	5	5.43	15	2	2.17	4	2	2.17	2	3	3.26	3	55	59.78	27.5		
07:00-08:00	12	11.21	36	8	7.48	24	3	2.80	6	1	0.93	1	4	3.74	4	62	57.94	31		
08:00-09:00	7	8.33	21	3	3.57	9	2	2.38	4	1	1.19	1	2	2.38	2	37	44.05	18.5		
09:00-10:00	10	5.32	30	9	4.79	27	2	1.06	4	8	4.26	8	4	2.13	4	102	54.26	51		
10:00-11:00	12	9.02	36	10	7.52	30	4	3.01	8	8	6.02	8	7	5.26	7	70	52.63	35		
11:00-12:00	12	6.06	36	10	5.05	30	3	1.52	6	10	5.05	10	7	3.54	7	85	42.93	42.5		
12:00-13:00	5	5.43	15	11	11.96	33	1	1.09	2	2	2.17	2	3	3.26	3	55	59.78	27.5		
13:00-14:00	12	8.45	36	11	7.75	33	4	2.82	8	8	5.63	8	6	4.23	6	70	49.30	35		
14:00-15:00	13	7.88	39	10	6.06	30	3	1.82	6	4	2.42	4	5	3.03	5	95	57.58	47.5		
15:00-16:00	14	6.70	42	12	5.74	36	5	2.39	10	16	7.66	16	5	2.39	5	101	48.33	50.5		
16:00-17:00	15	7.25	45	13	6.28	39	4	1.93	8	13	6.28	13	5	2.42	5	103	49.76	51.5		
17:00-18:00	14	5.93	42	15	6.36	45	6	2.54	12	13	5.51	13	6	2.54	6	105	44.49	52.5		
18:00-19:00	15	7.65	45	10	5.10	30	10	5.10	20	11	5.61	11	4	2.04	4	80	40.82	40		
19:00-20:00	8	6.67	24	6	5.00	18	1	0.83	2	10	8.33	10	3	2.50	3	60	50.00	30		
20:00-21:00	13	7.93	39	7	4.27	21	6	3.66	12	8	4.88	8	3	1.83	3	66	40.24	33		
	170.0	112.5	510.0	140.0	92.4	420.0	56.0	35.1	112.0	115.0	68.1	115.0	67.0	44.5	67.0	1146.0	751.9	573.0		

	Traffic Vollume Survey: Dohar
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														Carrying capacity calculation								
Mode of Traffic (Nos)												Bus			Truck			Pick up				
Motor cycle		PCU	Rickshaw/Van		PCU	Bicycle		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2		
		0.3			1			0.3														
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)												
2	2.17	0.6	13	14.13	13	2	2.17	0.6	92	100	89.7	0	5	3	5	0	0	0	0	2		
4	3.74	1.2	11	10.28	11	2	1.87	0.6	107	100	114.8	0	5	7	6	2	0	0	0	3		
7	8.33	2.1	15	17.86	15	10	11.90	3	84	100	75.6	0	2	5	3	0	0	0	0	2		
12	6.38	3.6	26	13.83	26	15	7.98	4.5	188	100	158.1	0	5	5	9	0	0	0	0	2		
2	1.50	0.6	15	11.28	15	5	3.76	1.5	133	100	141.1	0	7	5	10	0	0	0	0	4		
23	11.62	6.9	26	13.13	26	22	11.11	6.6	198	100	171	0	5	7	10	0	0	0	0	3		
2	2.17	0.6	10	10.87	10	3	3.26	0.9	92	100	94	0	3	2	10	1	0	0	0	1		
8	5.63	2.4	15	10.56	15	8	5.63	2.4	142	100	145.8	0	6	6	10	1	0	0	0	4		
12	7.27	3.6	20	12.12	20	3	1.82	0.9	165	100	156	0	6	7	10	0	0	0	0	3		
18	8.61	5.4	25	11.96	25	13	6.22	3.9	209	100	193.8	0	9	5	10	2	0	0	0	5		
17	8.21	5.1	25	12.08	25	12	5.80	3.6	207	100	195.2	0	7	8	10	3	0	0	0	4		
27	11.44	8.1	35	14.83	35	15	6.36	4.5	236	100	218.1	0	6	8	12	3	0	0	0	6		
35	17.86	10.5	20	10.20	20	11	5.61	3.3	196	100	183.8	0	7	8	8	2	0	0	0	10		
13	10.83	3.9	15	12.50	15	4	3.33	1.2	120	100	107.1	0	5	3	6	1	0	0	0	1		
32	19.51	9.6	25	15.24	25	4	2.44	1.2	164	100	151.8	0	6	7	5	2	0	0	0	6		
214.0	125.3	64.2	296.0	190.9	296.0	129.0	79.3	38.7	2333.0	1500.0	2195.9											

Traffic Volume Survey: Dohar

Time	Location: Kartikpur bazar							Direction: Kartikpur to Barrah											
	Mode of Traffic (Nos)																		
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/mic robus		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU	Motor
			3			3			2			1			1			0.5	
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No
06:00 -07:00	5	7.46	15	3	4.48	9	2	2.99	4	1	1.49	1	3	4.48	3	35	52.24	17.5	3
07:00-08:00	6	6.38	18	3	3.19	9	4	4.26	8	2	2.13	2	4	4.26	4	52	55.32	26	6
08:00-09:00	4	3.96	12	5	4.95	15	5	4.95	10	3	2.97	3	3	2.97	3	43	42.57	21.5	11
09:00-10:00	8	4.88	24	7	4.27	21	3	1.83	6	6	3.66	6	5	3.05	5	72	43.90	36	17
10:00-11:00	10	6.17	30	8	4.94	24	11	6.79	22	8	4.94	8	8	4.94	8	83	51.23	41.5	12
11:00-12:00	11	6.40	33	10	5.81	30	7	4.07	14	12	6.98	12	8	4.65	8	65	37.79	32.5	21
12:00-13:00	6	5.56	18	6	5.56	18	3	2.78	6	4	3.70	4	4	3.70	4	48	44.44	24	8
13:00-14:00	9	5.81	27	8	5.16	24	6	3.87	12	8	5.16	8	7	4.52	7	64	41.29	32	16
14:00-15:00	12	7.32	36	9	5.49	27	4	2.44	8	5	3.05	5	7	4.27	7	69	42.07	34.5	14
15:00-16:00	12	6.03	36	11	5.53	33	5	2.51	10	13	6.53	13	5	2.51	5	90	45.23	45	20
16:00-17:00	10	5.13	30	9	4.62	27	8	4.10	16	9	4.62	9	8	4.10	8	78	40.00	39	19
17:00-18:00	12	5.56	36	7	3.24	21	4	1.85	8	4	1.85	4	10	4.63	10	88	40.74	44	31
18:00-19:00	9	4.55	27	6	3.03	18	8	4.04	16	7	3.54	7	3	1.52	3	80	40.40	40	32
19:00-20:00	6	5.56	18	6	5.56	18	3	2.78	6	4	3.70	4	4	3.70	4	51	47.22	25.5	11
20:00-21:00	4	6.15	12	3	4.62	9	3	4.62	6	2	3.08	2	2	3.08	2	28	43.08	14	8
	124.0	86.9	372.0	101.0	70.4	303.0	76.0	53.9	152.0	88.0	57.4	88.0	81.0	56.4	81.0	946.0	667.5	473.0	229.0

Traffic Volumn Survey: Dohar

Time	Location: Kartikpur bazar						Direction: Kartikpur to Moinot Ghat											
	Mode of Traffic (Nos)																	
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		
			3			3			2			1			1			
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	6	11.11	18	1	1.85	3	3	5.56	6	2	3.70	2	1	1.85	1	25	46.30	
07:00-08:00	8	8.99	24	9	10.11	27	8	8.99	16	5	5.62	5	3	3.37	3	39	43.82	
08:00-09:00	3	5.66	9	4	7.55	12	4	7.55	8	3	5.66	3	3	5.66	3	16	30.19	
09:00-10:00	4	4.00	12	6	6.00	18	3	3.00	6	3	3.00	3	6	6.00	6	35	35.00	
10:00-11:00	3	3.06	9	6	6.12	18	6	6.12	12	2	2.04	2	6	6.12	6	42	42.86	
11:00-12:00	3	2.88	9	4	3.85	12	3	2.88	6	2	1.92	2	6	5.77	6	41	39.42	
12:00-13:00	2	2.70	6	3	4.05	9	2	2.70	4	1	1.35	1	6	8.11	6	28	37.84	
13:00-14:00	3	4.84	9	6	9.68	18	5	8.06	10	3	4.84	3	7	11.29	7	17	27.42	
14:00-15:00	6	6.90	18	8	9.20	24	3	3.45	6	3	3.45	3	8	9.20	8	35	40.23	
15:00-16:00	8	8.42	24	6	6.32	18	3	3.16	6	1	1.05	1	6	6.32	6	41	43.16	
16:00-17:00	8	5.48	24	11	7.53	33	7	4.79	14	6	4.11	6	11	7.53	11	65	44.52	
17:00-18:00	9	7.26	27	11	8.87	33	6	4.84	12	0	0.00	0	11	8.87	11	51	41.13	
18:00-19:00	8	7.14	24	11	9.82	33	7	6.25	14	0	0.00	0	11	9.82	11	35	31.25	
19:00-20:00	11	10.68	33	11	10.68	33	6	5.83	12	4	3.88	4	7	6.80	7	41	39.81	
20:00-21:00	7	7.95	21	4	4.55	12	5	5.68	10	12	13.64	12	2	2.27	2	28	31.82	
	89.0	97.1	267.0	101.0	106.2	303.0	71.0	78.9	142.0	47.0	54.3	47.0	94.0	99.0	94.0	539.0	574.8	

	Traffic Vollume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar

Time	Location: Kartikpur bazar					Direction: Moinot Ghat to Kartikpur														
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/micr obus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU		
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)			
06:00 -07:00	4	9.52	12	1	2.38	3	2	4.76	4	5	11.90	5	2	4.76	2	16	38.10	8		
07:00-08:00	6	9.38	18	9	14.06	27	7	10.94	14	6	9.38	6	2	3.13	2	22	34.38	11		
08:00-09:00	4	8.16	12	3	6.12	9	4	8.16	8	5	10.20	5	2	4.08	2	17	34.69	8.5		
09:00-10:00	3	3.33	9	4	4.44	12	3	3.33	6	5	5.56	5	7	7.78	7	31	34.44	15.5		
10:00-11:00	4	3.81	12	6	5.71	18	7	6.67	14	3	2.86	3	7	6.67	7	37	35.24	18.5		
11:00-12:00	3	2.75	9	4	3.67	12	4	3.67	8	3	2.75	3	7	6.42	7	43	39.45	21.5		
12:00-13:00	3	4.35	9	2	2.90	6	1	1.45	2	1	1.45	1	6	8.70	6	22	31.88	11		
13:00-14:00	4	5.33	12	7	9.33	21	6	8.00	12	3	4.00	3	8	10.67	8	21	28.00	10.5		
14:00-15:00	8	8.33	24	5	5.21	15	3	3.13	6	5	5.21	5	11	11.46	11	32	33.33	16		
15:00-16:00	6	5.50	18	5	4.59	15	3	2.75	6	1	0.92	1	5	4.59	5	52	47.71	26		
16:00-17:00	7	4.76	21	13	8.84	39	7	4.76	14	8	5.44	8	13	8.84	13	57	38.78	28.5		
17:00-18:00	10	7.30	30	14	10.22	42	6	4.38	12	0	0.00	0	13	9.49	13	57	41.61	28.5		
18:00-19:00	9	7.56	27	9	7.56	27	8	6.72	16	0	0.00	0	13	10.92	13	33	27.73	16.5		
19:00-20:00	11	11.70	33	9	9.57	27	5	5.32	10	3	3.19	3	8	8.51	8	37	39.36	18.5		
20:00-21:00	7	7.95	21	4	4.55	12	5	5.68	10	12	13.64	12	2	2.27	2	28	31.82	14		
	89.0	99.8	267.0	95.0	99.2	285.0	71.0	79.7	142.0	60.0	76.5	60.0	106.0	108.3	106.0	505.0	536.5	252.5		

Traffic Volume Survey: Dohar

												Carrying capacity calculation								
				Mode of Traffic (Nos)								Bus			Truck			Pick up		
Motor cycle		PCU	Rickshaw/Van		PCU	Bicycle		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2
		0.3			1			0.3												
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)										
5	11.90	1.5	7	16.67	7	0	0.00	0	42	100	42.5	0	2	2	1	0	0	0	0	2
5	7.81	1.5	7	10.94	7	0	0.00	0	64	100	86.5	0	3	3	6	3	0	0	0	7
7	14.29	2.1	7	14.29	7	0	0.00	0	49	100	53.6	0	0	4	2	1	0	0	1	3
0	0.00	0	21	23.33	21	16	17.78	4.8	90	100	80.3	0	1	2	2	2	0	0	0	3
21	20.00	6.3	12	11.43	12	8	7.62	2.4	105	100	93.2	0	0	4	6	0	0	4	0	3
8	7.34	2.4	24	22.02	24	13	11.93	3.9	109	100	90.8	0	0	3	4	0	0	0	1	3
12	17.39	3.6	16	23.19	16	6	8.70	1.8	69	100	56.4	0	0	3	2	0	0	0	0	1
7	9.33	2.1	8	10.67	8	11	14.67	3.3	75	100	79.9	0	1	3	7	0	0	0	0	6
16	16.67	4.8	12	12.50	12	4	4.17	1.2	96	100	95	0	2	6	5	0	0	0	0	3
16	14.68	4.8	18	16.51	18	3	2.75	0.9	109	100	94.7	0	2	4	2	3	0	0	0	3
13	8.84	3.9	22	14.97	22	7	4.76	2.1	147	100	151.5	0	4	3	13	0	0	0	2	5
8	5.84	2.4	21	15.33	21	8	5.84	2.4	137	100	151.3	0	4	6	14	0	0	0	0	6
13	10.92	3.9	22	18.49	22	12	10.08	3.6	119	100	129	0	3	6	9	0	0	0	0	8
6	6.38	1.8	8	8.51	8	7	7.45	2.1	94	100	111.4	0	5	6	4	5	0	0	0	5
9	10.23	2.7	19	21.59	19	2	2.27	0.6	88	100	93.3	0	3	4	3	1	0	0	0	5
146.0	161.6	43.8	224.0	240.4	224.0	97.0	98.0	29.1	1393.0	1500.0	1409.4									

Traffic Vollume Survey: Dohar

Time	Location: Lotakhula					Direction: Lotakhola to Barrah														
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/mic robus		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU		
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)			
06:00 -07:00	5	4.59	15	3	2.75	9	0	0	0	3	2.75	3	6	5.50	6	51	46.79	25.5		
07:00-08:00	3	1.90	9	4	2.53	12	5	3.16	10	9	5.70	9	11	6.96	11	62	39.24	31		
08:00-09:00	4	3.45	12	2	1.72	6	0	0	0	6	5.17	6	7	6.03	7	54	46.55	27		
09:00-10:00	4	2.94	12	3	2.21	9	4	2.94	8	8	5.88	8	4	2.94	4	57	41.91	28.5		
10:00-11:00	4	2.72	12	2	1.36	6	5	3.40	10	11	7.48	11	6	4.08	6	64	43.54	32		
11:00-12:00	5	2.25	15	7	3.15	21	5	2.25	10	12	5.41	12	11	4.95	11	98	44.14	49		
12:00-13:00	4	2.22	12	2	1.11	6	5	2.78	10	13	7.22	13	9	5.00	9	88	48.89	44		
13:00-14:00	4	2.27	12	3	1.70	9	7	3.98	14	12	6.82	12	11	6.25	11	81	46.02	40.5		
14:00-15:00	3	1.59	9	2	1.06	6	10	5.29	20	13	6.88	13	10	5.29	10	78	41.27	39		
15:00-16:00	4	2.55	12	5	3.18	15	6	3.82	12	9	5.73	9	12	7.64	12	67	42.68	33.5		
16:00-17:00	4	2.53	12	5	3.16	15	7	4.43	14	8	5.06	8	12	7.59	12	71	44.94	35.5		
17:00-18:00	4	2.61	12	3	1.96	9	10	6.54	20	13	8.50	13	7	4.58	7	61	39.87	30.5		
18:00-19:00	3	1.84	9	3	1.84	9	7	4.29	14	9	5.52	9	13	7.98	13	57	34.97	28.5		
19:00-20:00	5	3.52	15	3	2.11	9	6	4.23	12	7	4.93	7	9	6.34	9	61	42.96	30.5		
20:00-21:00	4	3.03	12	2	1.52	6	6	4.55	12	9	6.82	9	11	8.33	11	52	39.39	26		
	60.0	40.0	180.0	49.0	31.4	147.0	83.0	51.7	166.0	142.0	89.9	142.0	139.0	89.5	139.0	1002.0	643.2	501.0		

	Traffic Vollume Survey: Dohar
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Traffic Volume Survey: Dohar

Time	Location: Lotakhula					Direction: Barrah to Lotakhola														
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU	Motor cycle	
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)
06:00 -07:00	3	2.21	9	3	2.21	9	3	2.21	6	5	3.68	5	5	3.68	5	75	55.15	37.5	9	6.62
07:00-08:00	5	2.42	15	6	2.90	18	9	4.35	18	5	2.42	5	11	5.31	11	109	52.66	54.5	18	8.70
08:00-09:00	4	1.48	12	5	1.85	15	6	2.21	12	5	1.85	5	10	3.69	10	113	41.70	56.5	36	13.28
09:00-10:00	3	0.94	9	6	1.88	18	7	2.19	14	8	2.51	8	17	5.33	17	102	31.97	51	62	19.44
10:00-11:00	4	1.04	12	2	0.52	6	5	1.30	10	6	1.55	6	24	6.22	24	140	36.27	70	95	24.61
11:00-12:00	4	1.38	12	4	1.38	12	5	1.72	10	8	2.76	8	19	6.55	19	120	41.38	60	53	18.28
12:00-13:00	5	1.29	15	7	1.80	21	5	1.29	10	5	1.29	5	21	5.40	21	135	34.70	67.5	83	21.34
13:00-14:00	5	1.56	15	3	0.93	9	6	1.87	12	7	2.18	7	11	3.43	11	108	33.64	54	83	25.86
14:00-15:00	5	1.38	15	4	1.10	12	5	1.38	10	6	1.66	6	19	5.25	19	93	25.69	46.5	105	29.01
15:00-16:00	4	0.99	12	5	1.24	15	7	1.73	14	5	1.24	5	16	3.96	16	124	30.69	62	89	22.03
16:00-17:00	4	0.91	12	4	0.91	12	9	2.05	18	7	1.59	7	14	3.19	14	143	32.57	71.5	112	25.51
17:00-18:00	3	0.79	9	5	1.32	15	11	2.91	22	7	1.85	7	17	4.50	17	123	32.54	61.5	84	22.22
18:00-19:00	5	1.37	15	4	1.10	12	8	2.19	16	5	1.37	5	13	3.56	13	128	35.07	64	78	21.37
19:00-20:00	7	2.56	21	4	1.47	12	7	2.56	14	9	3.30	9	13	4.76	13	92	33.70	46	72	26.37
20:00-21:00	4	1.94	12	3	1.46	9	5	2.43	10	3	1.46	3	7	3.40	7	73	35.44	36.5	44	21.36
	65.0	22.2	195.0	65.0	22.1	195.0	98.0	32.4	196.0	91.0	30.7	91.0	217.0	68.2	217.0	1678.0	553.2	839.0	1023.0	306.0

Traffic Volume Survey: Dohar

Time	Location: Lotakhula					Direction: Lotakhola to Dhaka																		
	Mode of Traffic (Nos)																							
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/micr obus		PCU	Tempo/Nosim on		PCU	Auto Rickshaw		PCU	Motor cycle					
			3			3			2			1			1			0.5						
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)				
06:00 -07:00	4	3.39	12	3	2.54	9	6	5.08	12	8	6.78	8	7	5.93	7	39	33.05	19.5	23	19.49				
07:00-08:00	5	4.95	15	2	1.98	6	5	4.95	10	9	8.91	9	7	6.93	7	31	30.69	15.5	16	15.84				
08:00-09:00	3	2.14	9	3	2.14	9	7	5.00	14	12	8.57	12	11	7.86	11	52	37.14	26	22	15.71				
09:00-10:00	4	3.42	12	3	2.56	9	5	4.27	10	9	7.69	9	13	11.11	13	43	36.75	21.5	19	16.24				
10:00-11:00	5	3.52	15	6	4.23	18	10	7.04	20	13	9.15	13	13	9.15	13	46	32.39	23	19	13.38				
11:00-12:00	4	2.58	12	2	1.29	6	5	3.23	10	8	5.16	8	16	10.32	16	57	36.77	28.5	32	20.65				
12:00-13:00	5	3.57	15	7	5.00	21	6	4.29	12	10	7.14	10	13	9.29	13	44	31.43	22	29	20.71				
13:00-14:00	5	3.42	15	4	2.74	12	6	4.11	12	15	10.27	15	12	8.22	12	53	36.30	26.5	27	18.49				
14:00-15:00	5	3.29	15	5	3.29	15	7	4.61	14	19	12.50	19	12	7.89	12	55	36.18	27.5	18	11.84				
15:00-16:00	4	2.27	12	3	1.70	9	10	5.68	20	17	9.66	17	12	6.82	12	51	28.98	25.5	39	22.16				
16:00-17:00	5	3.82	15	5	3.82	15	8	6.11	16	12	9.16	12	14	10.69	14	39	29.77	19.5	25	19.08				
17:00-18:00	4	3.60	12	2	1.80	6	7	6.31	14	8	7.21	8	14	12.61	14	34	30.63	17	21	18.92				
18:00-19:00	4	3.64	12	3	2.73	9	4	3.64	8	8	7.27	8	9	8.18	9	36	32.73	18	18	16.36				
19:00-20:00	4	3.70	12	5	4.63	15	6	5.56	12	8	7.41	8	11	10.19	11	32	29.63	16	18	16.67				
20:00-21:00	2	2.15	6	0	0.00	0	5	5.38	10	7	7.53	7	8	8.60	8	37	39.78	18.5	17	18.28				
	63.0	49.5	189.0	53.0	40.5	159.0	97.0	75.2	194.0	163.0	124.4	163.0	172.0	133.8	172.0	649.0	502.2	324.5	343.0	263.8				

Traffic Volume Survey: Dohar

																Carrying capacity calc						
			Mode of Traffic (Nos)									Bus			Truck							
PCU	Rickshaw/Va n		PCU	Bicycle		PCU	Push chart		PCU	Total		PCU per hour	36	42	52	3	5	5+	1			
0.3			1			0.3			4													
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)											
6.9	17	14.41	17	9	7.63	2.7	2	1.69	8	118	100	102.1	0	2	2	1	2	0	2			
4.8	15	14.85	15	7	6.93	2.1	4	3.96	16	101	100	100.4	0	2	3	2	0	0	0			
6.6	12	8.57	12	14	10.00	4.2	4	2.86	16	140	100	119.8	0	1	2	1	2	0	4			
5.7	14	11.97	14	7	5.98	2.1	0	0.00	0	117	100	96.3	0	2	2	0	1	2	0			
5.7	15	10.56	15	13	9.15	3.9	2	1.41	8	142	100	134.6	0	3	2	3	1	2	2			
9.6	18	11.61	18	11	7.10	3.3	2	1.29	8	155	100	119.4	0	2	2	2	0	0	0			
8.7	17	12.14	17	9	6.43	2.7	0	0.00	0	140	100	121.4	0	2	3	4	3	0	2			
8.1	13	8.90	13	11	7.53	3.3	0	0.00	0	146	100	116.9	0	3	2	2	2	0	3			
5.4	13	8.55	13	14	9.21	4.2	4	2.63	16	152	100	141.1	3	2	0	2	2	1	5			
11.7	23	13.07	23	11	6.25	3.3	6	3.41	24	176	100	157.5	0	2	2	3	0	0	4			
7.5	10	7.63	10	11	8.40	3.3	2	1.53	8	131	100	120.3	0	2	3	2	1	2	5			
6.3	14	12.61	14	7	6.31	2.1	0	0.00	0	111	100	93.4	0	2	2	0	2	0	4			
5.4	13	11.82	13	9	8.18	2.7	6	5.45	24	110	100	109.1	0	2	2	2	0	1	1			
5.4	15	13.89	15	7	6.48	2.1	2	1.85	8	108	100	104.5	0	2	2	0	3	2	1			
5.1	11	11.83	11	5	5.38	1.5	1	1.08	4	93	100	71.1	0	1	1	0	0	0	3			
102.9	220.0	172.4	220.0	145.0	111.0	43.5	35.0	27.2	140.0	1940.0	1500.0	1707.9										

Traffic Vollume Survey: Dohar

Time	Location: Lotakhula						Direction: Dhaka to Lotakhola											
	Mode of Traffic (Nos)																	
	Bus		PCU	Truck		PCU	Pick up		PCU	r/Jeep/microb		PCU	empo/Nosim		PCU	Auto Rickshaw		PCU
			3			3			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	4	6.45	12	3	4.84	9	2	3.23	4	3	4.84	3	4	6.45	4	23	37.10	11.5
07:00-08:00	5	3.88	15	7	5.43	21	4	3.10	8	3	2.33	3	9	6.98	9	53	41.09	26.5
08:00-09:00	4	2.82	12	7	4.93	21	8	5.63	16	9	6.34	9	4	2.82	4	58	40.85	29
09:00-10:00	6	2.99	18	7	3.48	21	2	1.00	4	2	1.00	2	15	7.46	15	64	31.84	32
10:00-11:00	2	1.32	6	5	3.29	15	3	1.97	6	3	1.97	3	10	6.58	10	52	34.21	26
11:00-12:00	2	1.23	6	3	1.85	9	3	1.85	6	8	4.94	8	9	5.56	9	58	35.80	29
12:00-13:00	1	1.03	3	6	6.19	18	1	1.03	2	1	1.03	1	9	9.28	9	32	32.99	16
13:00-14:00	1	1.11	3	4	4.44	12	2	2.22	4	2	2.22	2	3	3.33	3	32	35.56	16
14:00-15:00	3	3.57	9	3	3.57	9	3	3.57	6	2	2.38	2	4	4.76	4	22	26.19	11
15:00-16:00	4	4.65	12	5	5.81	15	9	10.47	18	3	3.49	3	1	1.16	1	19	22.09	9.5
16:00-17:00	4	2.90	12	5	3.62	15	3	2.17	6	4	2.90	4	11	7.97	11	48	34.78	24
17:00-18:00	5	4.17	15	5	4.17	15	9	7.50	18	6	5.00	6	3	2.50	3	52	43.33	26
18:00-19:00	5	4.81	15	3	2.88	9	5	4.81	10	2	1.92	2	2	1.92	2	39	37.50	19.5
19:00-20:00	6	4.44	18	4	2.96	12	3	2.22	6	3	2.22	3	10	7.41	10	38	28.15	19
20:00-21:00	3	3.26	9	3	3.26	9	2	2.17	4	1	1.09	1	5	5.43	5	32	34.78	16
	55.0	48.6	165.0	70.0	60.7	210.0	59.0	52.9	118.0	52.0	43.7	52.0	99.0	79.6	99.0	622.0	516.3	311.0

Chapter-1: Introduction

1.1 Background

Transportation is a very important aspect of planning, which has a greater impact on the other facts like land use or the environment and thus it is very crucial for any plan preparation. Efficient and effective transportation are also a central requirement for city dwellers as well as masses of surrounding countries. The planned transportation system provides efficient movement of people from one place to another. Thus, the assessment of the detailed features and characteristics of the transport infrastructure and transport users of Dohar Upazila will provide much needed information for suggesting useful tools and techniques as well as infrastructure for meeting the existing transport demand and the future challenges.

This chapter contains the detailed assessment of existing transport features, travel characteristics and travel demand, survey techniques & methodology, and regional connectivity of this Upazila. A conclusion has been included at the end outlining the results for further plan preparation later.

1.2 Understanding of Transportation Infrastructure and Facilities

The term infrastructure encompasses the physical facilities and systems that serve the public at large. These include structures that facilitate transportation, communication and other essential daily processes. These structures can range from standard roads to major accomplishments such as dams and canals. Some of the most visible infrastructure systems are in transportation, since most of these systems are exclusively public. The various forms of roadways, including highway and freeway systems, are an example of transportation infrastructure. Overpasses and bridges are also examples of transportation infrastructure and facilities.

1.3 Survey Methodology

1.3.1 Surveys

The following surveys were conducted during 11.02.2016 to 18.02.2016 in the Dohar Upazila to get a complete picture of this Upazila transportation system, which has predominately road-based network.

- Traffic Volume Count- Motorized, Non-motorized vehicles (for intersection and road segments)
- O-D survey
- Bus Passenger Interview Survey
- Pedestrian Survey
- Regional Transport survey

Details of the above have been discussed in the later part of this chapter.

1.3.2 Format and Techniques for Traffic Survey

Checklists and survey questionnaires (**Annexure 1-5**) covering the detailed aspects of relevant issues were used to conduct the traffic and transportation survey for Package: 01- Preparation of Development Plan for Fourteen Upazilas project under UDD. The formats were prepared and finalized in consultation with consultants, experts (Team Leader, Transportation Specialist and Urban Planner) and Project Management Office (PMO).

1.3.3 Sampling Size and Methods

The most important measure for a successful survey is a level of participation that relies on origin-destination survey methods. Therefore, reliable assistance of as many respondents as possible is the key to a successful survey. Some of which can be done for a respondent friendly survey are:

1. Design the questionnaires in a typed format that people can read a clear layout, and understandable questions.
2. Keep the questionnaires as short as possible.

Origin Destination survey methods for data collection includes:

- Roadside Interview
- License plate Mail-out surveys
- Telephone survey
- Internet surveys
- Mail surveys

Calculating sample size

This sample size calculated by hand, and used the following formula:

Sample size calculator equation

$$Sample\ Size = \frac{\frac{z^2 \times p(1-p)}{e^2}}{1 + \left(\frac{z^2 \times p(1-p)}{e^2 N}\right)} \quad (\text{Cochran, 1963})$$

Population Size = N / Margin of error = e / z-score = z
e is percentage, put into decimal form (for example, 3% = 0.03).

For O-D survey, the roadside interview method were followed and data was recorded in prescribed formats supplied and accordingly approved by the PMO. Traffic volume data were collected for one-hour interval in each direction at four locations. The survey was conducted at four points. For this, Manual counting method was followed to conduct the traffic volume survey and data was recorded in prescribed formats. Bus passenger survey was carried out at the Moinot Ghat and Thanar Mor. Pedestrian survey was also conducted in the Joypara and Thanar Mor (Please see the map 1.1).

Table 1.1: Sample size and location number according to surveys

Types of Survey	Sample Size/Locations	Name of the Spot
Traffic Volume Count	4 nodes (13 links at nodes) and one road	Kartikpur bazar Lotakhula Poshcim char Thanar mor
O-D Survey	200 Samples at four nodes	Meghula Satvita Moinot Ghat College Road Mor
Bus Passenger Survey	40 samples at two locations	Moinot Ghat Thanar Mor
Pedestrian Survey	40 samples at two locations	Joypara Thanar Mor
Regional Transportation System	4 locations	College Road Mor Moinot Ghat Meghula Bazar Satvitar Hat

1.3.4 PCE standards

PCEs standard varies according to different studies. The following standards were considered for this project based on the decision and practice from previous projects (Table 1.2). Using the PCEs, the peak hour and off-peak hour volumes are calculated and described below.

Table 1.2: PCE of different modes considered in different projects

Vehicles Types		PCEs for different project				PCEs for this project
		DITS 1994	RMSS 1994	British Practice	Indian Practice	
MV	Bus	2.5	3	3	3	3
	Truck	2.5	3	2	3	3
	Car/Jeep/Microbus	1	1	1	1	1
	Auto-rickshaw	-	0.5	0.75	-	.75
	Motor-cycle	0.3	0.75	0.75	0.5	0.5
	Tempo	0.5	0.75		1	1
	Pickup Van/Light truck	1	1	1	1	1
NMV	Rickshaw/Van	0.8	2	-	2	1.25
	Bi-cycle	0.2	0.5	0.33	0.5	0.33
	Push Cart	4	4	-	3	4

Note: MV= Motorized Vehicles, NMV= Non-Motorized Vehicles.

Source: DITS= Dhaka Integrated Transport Study, RMSS=Road Materials and Standards Study.

1.3.5 Intersection Capacity

The new Highway Capacity Manual (HCM) approach for signalized intersection capacity analysis of planning and design decisions that uses the critical volume/capacity ratio of the critical approach volumes. A level of service cannot be determined from the HCM planning capacity analysis results; however, the expected operational status was expressed as “over”,

”at”, “near”, or “under” capacity. This is a defaulted version of the method for operational analysis.

Table 1.3: Intersection Status Criteria for Planning Critical v/c Ratio

Critical v/c Ratio X_{cm}	Capacity Condition
$X_{cm} \leq 0.85$	Under capacity
$0.85 < X_{cm} \leq 0.95$	Near capacity
$0.95 < X_{cm} \leq 1.00$	At capacity
$X_{cm} < 1.00$	Over capacity

Source: Highway Capacity Manual (HCM), 1994.

1.4 Conducted Surveys

1.4.1 Orientation & Meeting

Selection procedure of the surveyors and training: The whole survey of traffic and transportation work was conducted by appointing a good survey team consist of 2(two) numbers of qualified supervisors having enough previous knowledge regarding the traffic count survey. Total 8 (Eight) persons were engaged for 5 (five) types various traffic counting (Everybody having Diploma in Civil Eng.). They have been provided proper training 1 (one) day in Project Director’s office 2(two) days in Consultant’s office with the Supervision of Transport Planning Specialist regarding traffic count procedure in the field level.

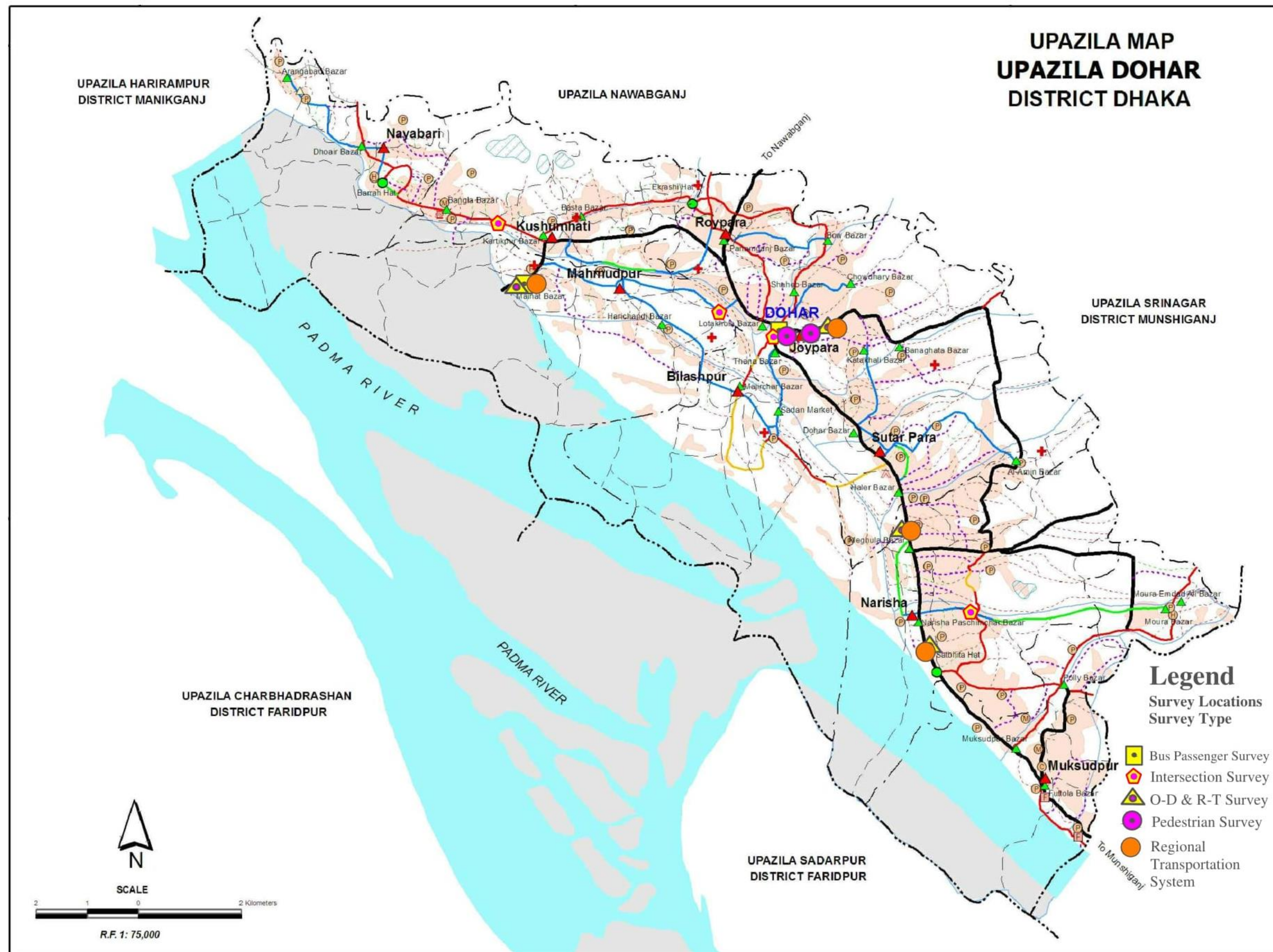
1.4.2 Team Formation

The survey team conducting for the full scale of traffic and transportation survey is deployed in the following manner.

Table 1.4: Survey Team Conducting Traffic and Transportation Survey

Sl. No	Designation	No	Qualification	Year of Experience	Responsibilities
1.	Transport Expert	1	M. Eng in Civil and Transport Engineering	More than 35 years	Overall supervision and co-ordination of traffic survey, data processing and Mapping
2.	Supervisor	2	Masters in Geography and Diploma in Civil Engineering	25-30 years	Supervision of total survey
3.	Traffic Volume Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction
4.	Intersection Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction
5.	Road Segment Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting various types of motorized and non-motorized traffic in the particular direction
6.	O-D Surveyor	8	Diploma in Civil Engineering	4-5 years	Counting different categories of traffic passing through the town and rural areas according to origin and destination.

7.	Pedestrian Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interview of the pedestrians
8.	Bus Passenger Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interview of the passengers
9.	Regional Traffic Surveyor	8	Diploma in Civil Engineering	4-5 years	Taking interviews of the drivers of different vehicles



Map 1.1: Survey locations in Dohar Upazila

Source: Local Government Engineering Department (LGED), 2015.

1.4.3 Formats used for Traffic Survey

Traffic data have been collected from the field according to the following format as provided by PMO office, UDD (Please see the Annexure: 1-5).

1.4.4 Survey Conducting Period

Table 1.5: Conducting Period of Traffic and Transportation Survey

Sl.	Types of Survey	Conducting Date
1	Traffic Volume Count Survey	11/02/2016-13/02/2016
2	O-D Survey	14/02/2016-16/02/2016
3	Bus Passenger Survey	11/02/2016
4	Pedestrian Survey	13/02/2016
5	Regional Transportation System	17/02/2016-18/02/2016

1.5 Conducting Traffic and Transportation Survey

1.5.1 Traffic Volume Count Survey

a. Survey Methodology

To analyze the existing traffic situation, four key locations have been identified where the volume count survey were conducted for 15-hour basis considering both office day and hat day (Thursday at Joypara Union named, Debinagar hat, around 7000 people gathered; Sunday at Kartikpur Bazar, around 1500-2000 people gathered; Monday and Friday at Meghula Bazar, around 1500-2000 people gathered). The survey was carried out by firm recruited surveyors after proper training for survey. The data was collected according to different modes like Truck, Bus, Car, Auto-Rickshaw, Motor-cycle, Non-motorized Vehicles (Cycle Rickshaw, Bicycle, Push cart) and Pedestrian. Traffic volume is defined as the number of vehicles that passes a point along a roadway or traffic lane per unit of time. It measures the quantity of traffic flow and is expressed in vehicles per day, vehicles per hour, vehicles per minute etc. Volume is a variable of greatest importance to the transportation planners and essentially a counting process referring to the quantity of movement per unit of time at a specified location.

b. Manual Counts

It is the commonly used method to count traffic volume where the observers record not only the traffic volume but also note vehicle composition and direction of movements. In this method throughout a definite duration of time traffic volume is counted of a selected road segment as it is not possible to have manual counts for all the 24 hours of the day and all the days around the year. Still, this is the most reliable and best method to obtain classified volume and directional volume for short counts.

Survey was conducted on four locations of Dohar Upazila. Volume of vehicular traffic is counted at four road intersections (in table 1.6). It considers both peak and off peak times (Later shown by figure 3.10-3.18, it's based on maximum & minimum no. of traffic flows at that time orderly) within 6am to 9pm and volume survey was conducted for 1-hour duration. Different modes of traffics are counted separately.

c. Intersections and Justification of the Selections

The Traffic Volume survey was conducted on the following four intersections (Shown in table 1.5 and map 1.2) which are very important considering the locational importance as these locations do not only cover the inter-district traffic but also provide accurate view of the local traffic.

Table 1.6: Name of the Intersections for volume survey in Dohar Upazila

Sl	Name of the Intersection/Link	Number of road	Roads considered for volume survey
1	Kartikpur bazar	3	3
2	Lotakhula	3	3
3	Poshcim char	3	3
4	Thanar mor	4	4

Source: Transportation Survey of Dohar Upazila, 2016

Table 1.7: Name of the intersection and corresponding links

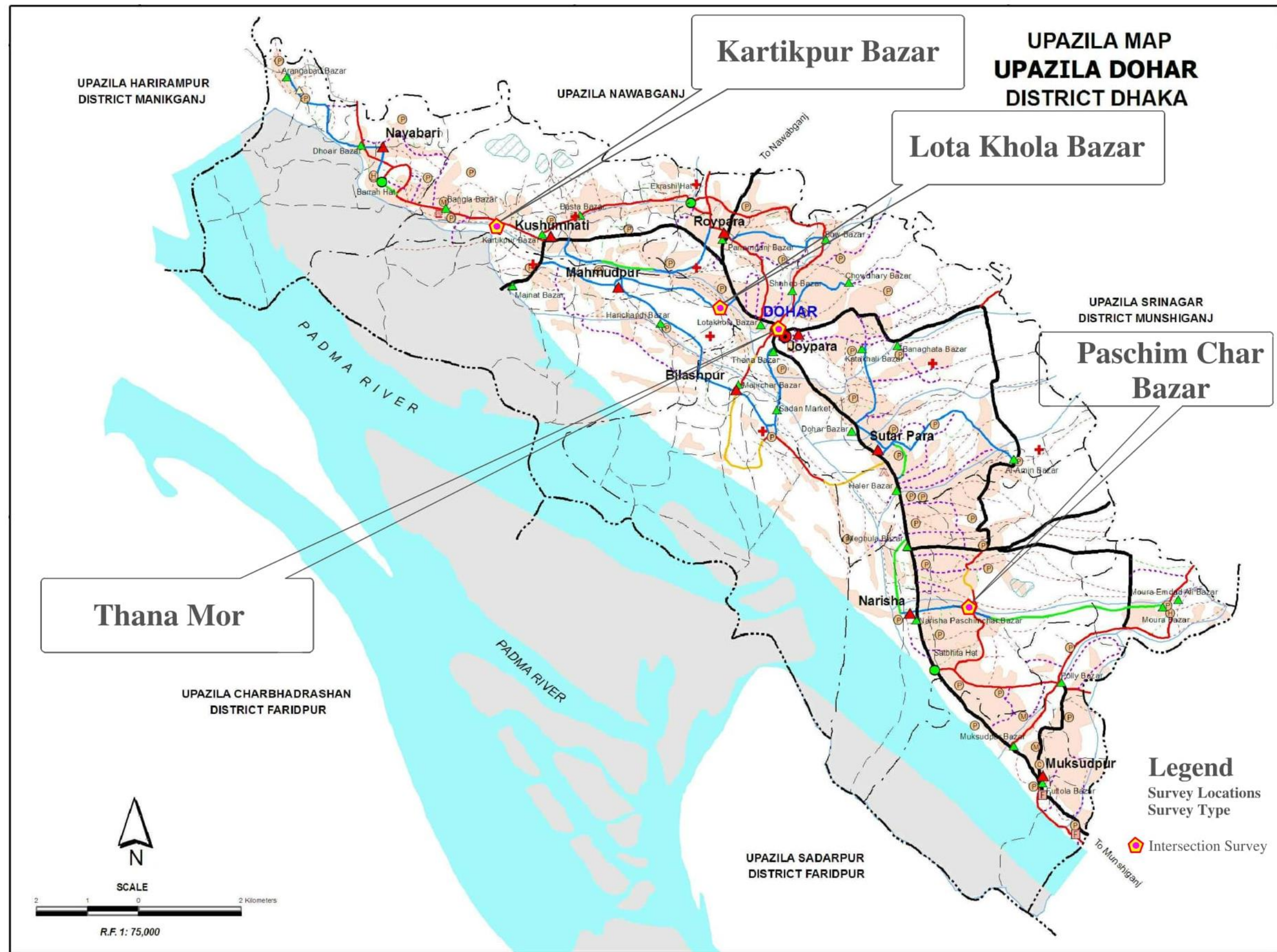
Intersection	Traffic Directions	Roads
Kartikpur bazar	Kartikpur bazar to Dhaka and vice versa	Road 1
	Kartikpur bazar to Barrah and vice versa	Road 2
	Kartikpur bazar to Moinot Ghat and vice versa	Road 3
Lotakhula	Lotakhula to Barrah and vice versa	Road 1
	Lotakhula to Dhaka and vice versa	Road 2
	Lotakhula to Joypara and vice versa	Road 3
Poshcim char	Poshcim char to Dohar and vice versa	Road 1
	Poshcim char to Moura Ghat and vice versa	Road 2
	Poshcim char to Srinagar and vice versa	Road 3
Thanar mor	Thanar mor to Bilaspur and vice versa	Road 1
	Thanar mor to Dhaka and vice versa	Road 2
	Thanar mor to Moinot ghat vice versa	Road 3
	Thanar mor to Joypara vice versa	Road 4

Source: Transportation Survey of Dohar Upazila, 2016

Location of volume count survey at various intersections have been shown the map and detailed through Sketch. There is also count traffic volume at four road segments in Dohar Upazila and these are – 1. Fire Service Office; 2. Muksudpur; 3. Palamganj Bazar; and 4. Srinagar Road. All these locations connect major trips attracting points like proper area (local administration), Upazila Mor, Katcha Bazar, school colleges and markets with the trip generation points.

d. Survey Schedule

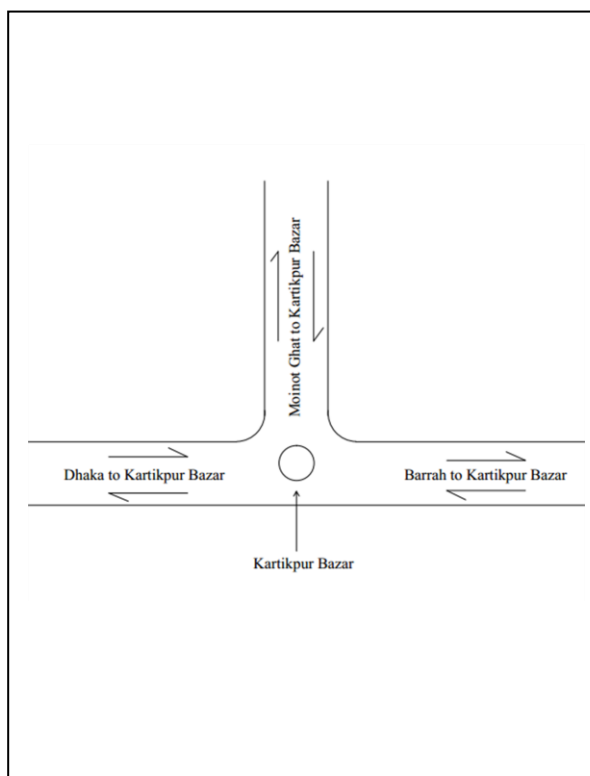
Traffic volume survey was carried out in four intersections using format prepared by consultants with the direction given by UDD for 2 days in 15-hour basis. Another traffic volume survey was conducted on 11-02-2016, and 15-02-2016 at four segment of road. In each spot two surveyors and one supervisor were responsible to conduct the survey.



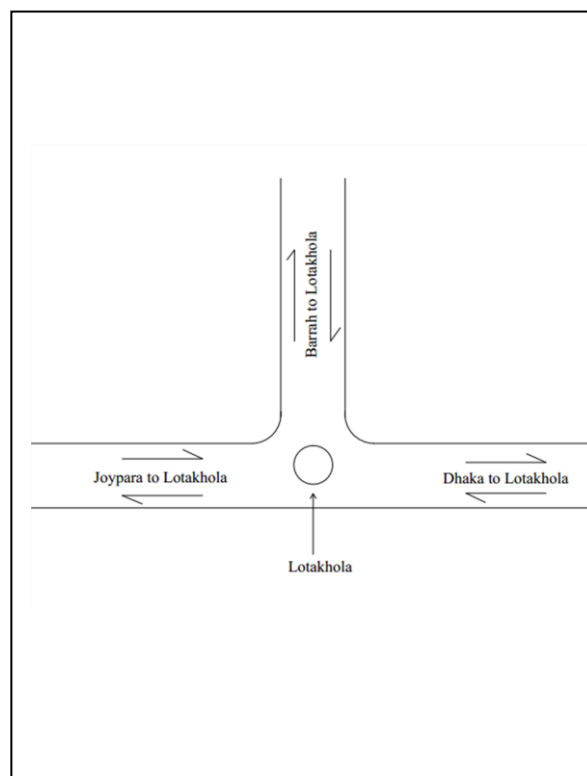
Map 1.2: Intersection Survey Locations in Dohar Upazila

Source: Local Government Engineering Department (LGED), 2015.

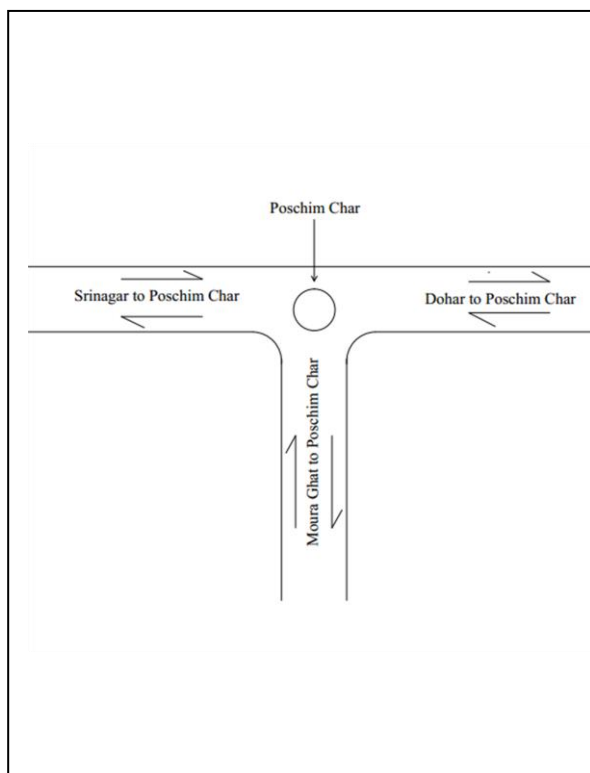
Intersection Survey Locations in Dohar Upazila



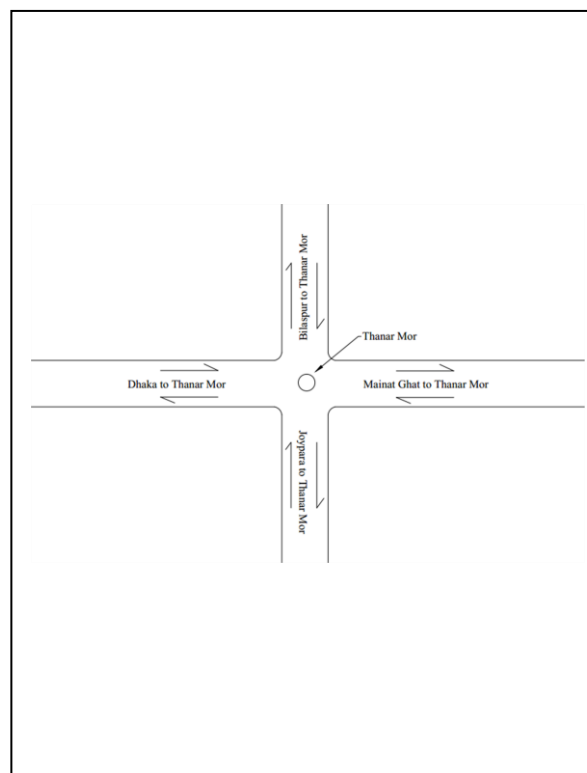
Kartikpur bazar



Lotakhola



Poshcim char



Thanar mor

e. Database Preparation and Data Processing

The collected data were stored and analyzed by using the SPSS and Microsoft Excel software. Analyzed data has been presented in tabular and graphical form with necessary illustration and maps.

f. Finding and Analysis

The term traffic volume study can be termed as **traffic flow survey or simply the traffic survey**. It is defined as the procedure to determine mainly volume of traffic moving on the roads at a particular section during a particular time. Traffic survey is very important because with the help of these, we can maintain the road properly, by performing the following

1. Increase the efficiency and life of roads
2. Reduces traffic volume at a particular section
3. Provide better means for development of infrastructures
4. Provide better means to utilize other roads in case of special events in the city
5. Provide estimate of no vehicles against no of persons

1.5.2 Origin-Destination (O-D) Survey

Origin-destination (O-D) surveys provide a detailed picture of the trip patterns and travel choices of a city's or region's residents. These surveys collect valuable data related to households, individuals and trips. This information allows stakeholders to understand: Travel patterns and characteristics Measure Trends Provide input to travel demand model development forecasting, and planning for area-wide transportation needs and services Progress in implementing transportation policies.

This is a study to determine and analyse trips. Trips are defined as one-way movement, from where a person starts (origin) to where the person is going (destination). Trips are further classified as follows:

Internal--From one point on post to another point on post.

External--From on-post to off-post or vice versa.

Through--From off-post to off-post, by going through the installation.

O-D survey provides valuable information including the needs of traffic intervention whether the surveyed area needs any by-pass or not.

a. Survey Methodology

Origin Destination (O-D) Survey has been carried out through roadside interview process. To carry out this survey systematically, every 4th vehicle in each category was stopped by the side of the road with assistance of the local authority and a standard format has been used to collect data. In case of passenger vehicles, interview has been conducted on passengers about their purpose of journey; their origin and destination; types of transport modes they use; number of

seats available and comments on the transportation. The survey was accomplished by enumerators who were locally recruited and adequately oriented and trained by experienced supervisors.

b. Survey Location and Schedule

The origins and destinations of traffic are among the most important of these characteristics. For the purposes of conducting the origins and destinations of traffic survey, a roadside origin-destination (Shown in Picture 1.1) study was undertaken to measure travel characteristics in the four locations at half an hour interval (in the Map 1.3) for two days.

The survey was conducted on the following four locations which are very important considering the importance of inter-district traffic as well as local traffic. Although, according to the population, this Upazila is small sized city and apparently needs separate cordon lines, the road network pattern and traffic composition provide justification of no division of the separate cordon line for this survey.



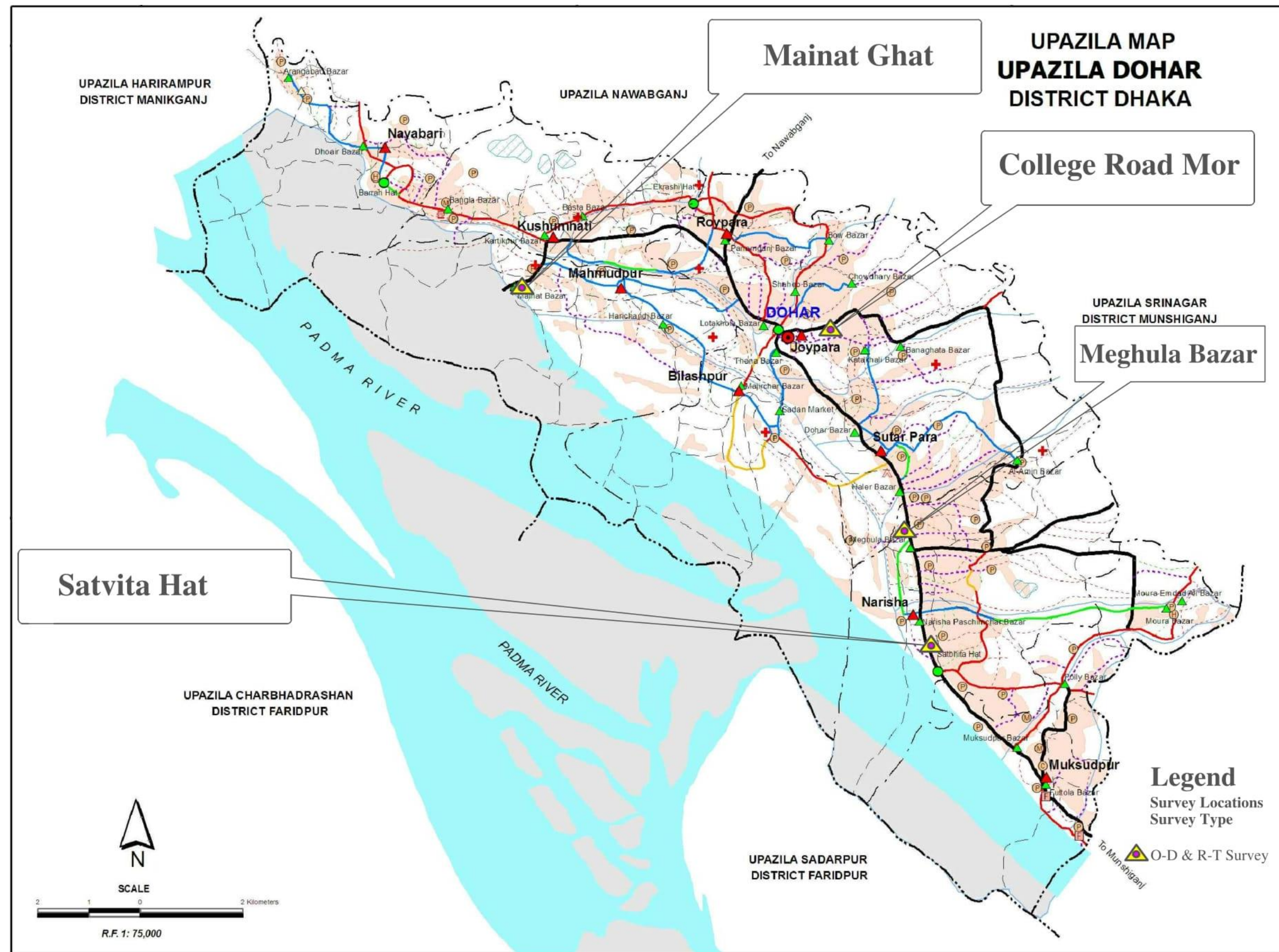
Picture 1.1: 2 O-D Survey Locations (Meghula and College Road Mor)

c. Questionnaire Design

A survey questionnaire was designed to facilitate the passenger's ability to answer questions necessary to develop effective traffic management measures. A standard survey has been prepared by the concerned authority of UDD and suggestion from the all assigned consultants.

d. Database Preparation and analysis

The collected data (200) were stored and analyzed by using the Microsoft Excel software as well as Statistical Package for Social Science/SPSS software. Analyzed data has been presented in tabular and graphical form with necessary illustration and maps.



Map 1.3: O-D Survey Location

Source: Local Government Engineering Department (LGED, 2015)

1.5.3 Bus Passenger Interview Survey

Passenger/pedestrian interview survey has been carried out to find out peoples' perception about mode/facilities which they use usually. The questionnaire covers transportation problem, travel time, distance and issues about their used modes/facilities.

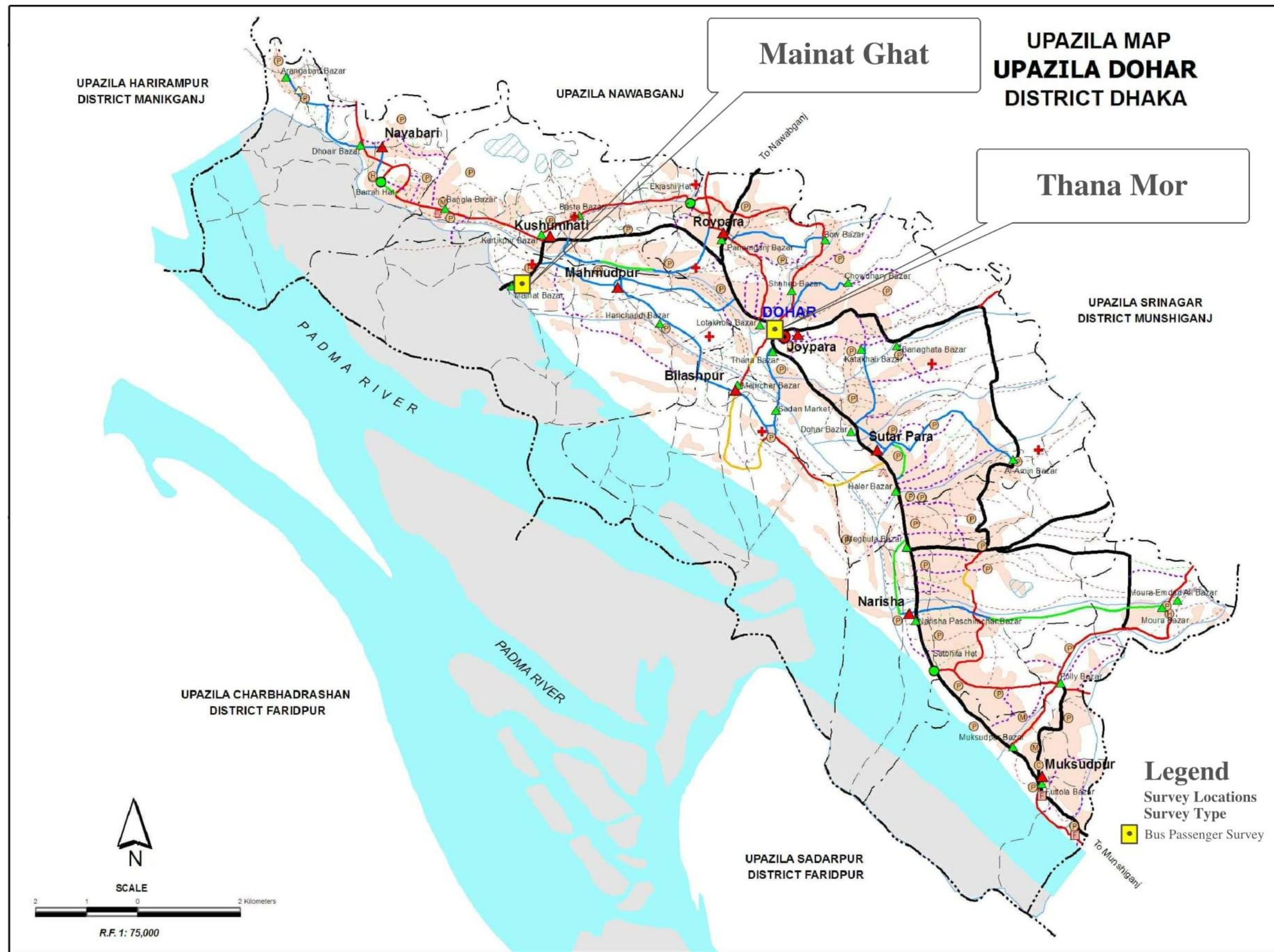
Between them, passenger interview survey has been carried out to find out peoples' perception transportation problem, travel time, distance and issues about their used mode. Interviews have been conducted on passengers (Show in picture 1.2) in various locations e.g. including Moinot Ghat and Thanar Mor, Passenger interview survey locations have been presented on Map 1.4.



Picture 1.2: Bus Passenger Survey Locations (Moinot Ghat and Thanar Mor)

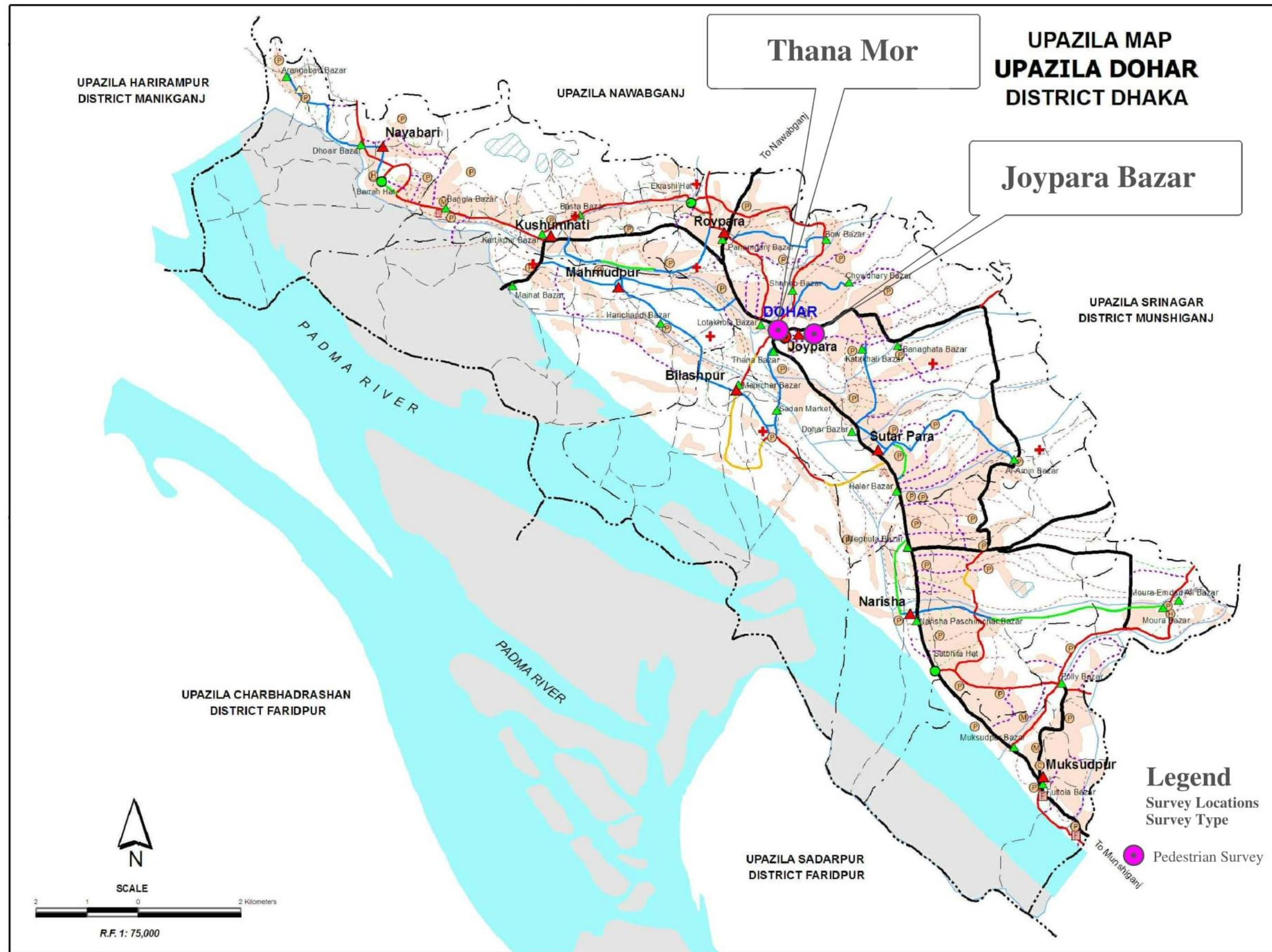
1.5.4 Pedestrian Interview Survey

Pedestrian interview survey has been conducted mainly in Joypara and Thanar Mor (showed in Map 1.5). To carry out this survey systematically, a standard format has been prepared by the assigned consultants considering all relevant issues such as about their purpose of journey, their origin and destination, types of transport modes they use as supporting mode to complete the trip, number of trips in a week, travel time, travel cost, distance etc. The survey was accomplished by enumerators who were recruited by the consultant and adequately oriented and trained by experienced supervisors.



Map 1.4: Bus Passenger Survey Location

Source: Local Government & Engineering Department (LGED, 2016)



Map 1.5: Pedestrian Survey Location

Source: Local Government & Engineering Department (LGED, 2016)

Chapter-2: Existing Transportation Network and Facilities

2.1 Introduction

The road network of Dohar Upazila was developed and established according to the demand resulting time to time and following the development pattern and meeting short-term need but maintenance and repair is irregular in these roads. Besides, most of the cases road network is established after the development of infrastructure resulting poor layout of road network, narrow road, pedestrian problem, utility services problem, emergency services problem etc. Unauthorized encroachments are common problems especially along the roadside in hat-bazaar areas. On the top of that, sometimes traffic jam occurs in Meghula Bazar, Thanar Mor, Lotakhula Bazar etc. locations. Details of these has been discussed the latter of this chapter.

2.2 Road Communication and Regional Connectivity

The Upazila has 266 km metaled, 228 km semi-metaled and 228km katcha road. It has 20 km Water way round the year (river + canal), 18 km canal road, 23 bridges, 8 baily bridge, 41 culvert, 5 pool and 16 Shako (Zila Series, Dhaka, 2011). The Upazila has a good road communication with Dhaka and adjoining Upazilas.



Picture 2.1: Satvita Narisha, Dohar



Picture 2.2: A Major Road of Dohar Town

There is also communication system through water, important routes are Dohar-Munshigonj, Dohar-Gulisthan, Dohar – Keraniganj, other districts like Kushtia via Dohar Upazila etc. Major roads of RHD passes through Dohar Upazilas are R820, Z8207, MNG66, and MNG77.

2.3 Available Transport Modes

The following table 2.1 shows the registered vehicles both motorized and non-motorized vehicles in the Dohar Upazila. However, many other vehicles are operating in the study area registered elsewhere. Again, in waterway, there are 31 registered troller, 16 registered speed boat operate.

Table 2.1: Registered and non- Registered Number vehicles in Dohar Upazila in 2016

Type	Mode	Registered Number	Source
Motorized	Bus	195	Upazila Parishad, Union parishad office, bus/truck terminals and rickshaw/tempo/scooter stands, Malik samiti
	Tempo	50 (estimated)	
	CNG	500 (estimated)	
	Truck	75 (1 ton, 3 ton 20, 4 ton 35)	
	Auto-Rickshaw	4000 (estimated)	
Non-Motorized	Van	N/A (estimated 150)	
	Rickshaw	N/A (estimated 300)	

Source: Transportation Survey of Dohar Upazila, 2016

The traffic composition of the area illustrates that both passenger and freight vehicles visits frequently Dohar Upazila area. Although slow modes like van are predominant in this area, frequent movement of the freight vehicles due to presence of market and other central commercial places in this area also gaining importance. Slow modes include rickshaws, van and electric powered auto rickshaw. The recent growth of auto rickshaw, which functions, since public transport restricts the use of rickshaw. Besides, the low capital cost along with some financial offers from different NGOs also influence growth of this modes. Non-motorized traffic classification includes rickshaw, bi-cycle and van (used for both passenger and freight mode) whereas motorized traffic includes bus (local and direct bus service), truck, pickup van, jeep, auto rickshaw motor-cycle etc. which are available in this area.

2.4 Regional Connectivity

The intra district communications for Dohar Upazila are – Dohar to Nawabganj, Keraniganj and Dhaka City. Inter District connections are Dohar Upazila to Faridpur, Sadarpur Upazila Munshiganj, Madaripur etc. There is also communication system through water, important routes are Dohar to Faridpur etc. Several Major routes are mentioned in the table 2.2.

Buses running from 5:30am to 7:50pm having 15 20 minutes' interval for district services. However, no exclusive local bus service was yet developed.

Table 2.2: Major Routes from Dohar

Destination	Fare in taka per trip/cost per trip
Dhaka	75 (Bus)
Nawabganj	25 (Tempo/Auto/CNG)
Sadarpur Upazila, Faridpur	160 (Speed Boat), 75 (Troller)
Munshiganj	35 (Bus)
Maoa Ghat	120 (Bus)
Kartikpur Bazar	20 (Tempo/Auto/CNG)
Majhir Kandi	15-20 (Tempo/Auto/CNG)
Moinot Ghat	35-40 (Tempo/Auto/CNG)
Nayabari	40 (Tempo/Auto/CNG)
Meghula Bazar	15-20 (Tempo/Auto/CNG)
Shikaripara	30 (Tempo/Auto/CNG)

Source: Transportation Survey of Dohar Upazila, 2016

These communications with other districts have developed through the regional highway at Dohar Upazila. There is no National highway within the study area. It has been observed that high speed vehicles including passenger and freight vehicles, running along with slow modes in this road throughout of the day. Thus, accident between these modes is common problem. These accidents are accelerated by uneven shoulder level compare to metaled road surface of the road. Thus, slow modes feel very uncomfortable to give space for the high-speed mode to overtake having ineffective shoulders. There are no launch terminal in the Upazila but have a prominent troller and speed boat ghat named “Moinot Ghat”.

2.5 Inventory of important roads of the study area

2.5.1 Existing Road Network of Dohar Upazila

The transport network of Dohar Upazila (Map 2.1) is below having approximately 37% paved road surface. Besides, semi-pucca and Kutcha road having significant proportions show the necessity of investment in transport infrastructure here (Table 2.3). Although, pucca road contribute greater proportion than others of the total road network, the actual condition of the pucca road is overall satisfactory. Though, some of the roads required regular maintenance and repair. Especially Kartikpur-Moinot Ghat road needs high scale maintenance than others. Moreover, Meghula to Churain and Galimpur to Meghula roads also require immediate maintenance.

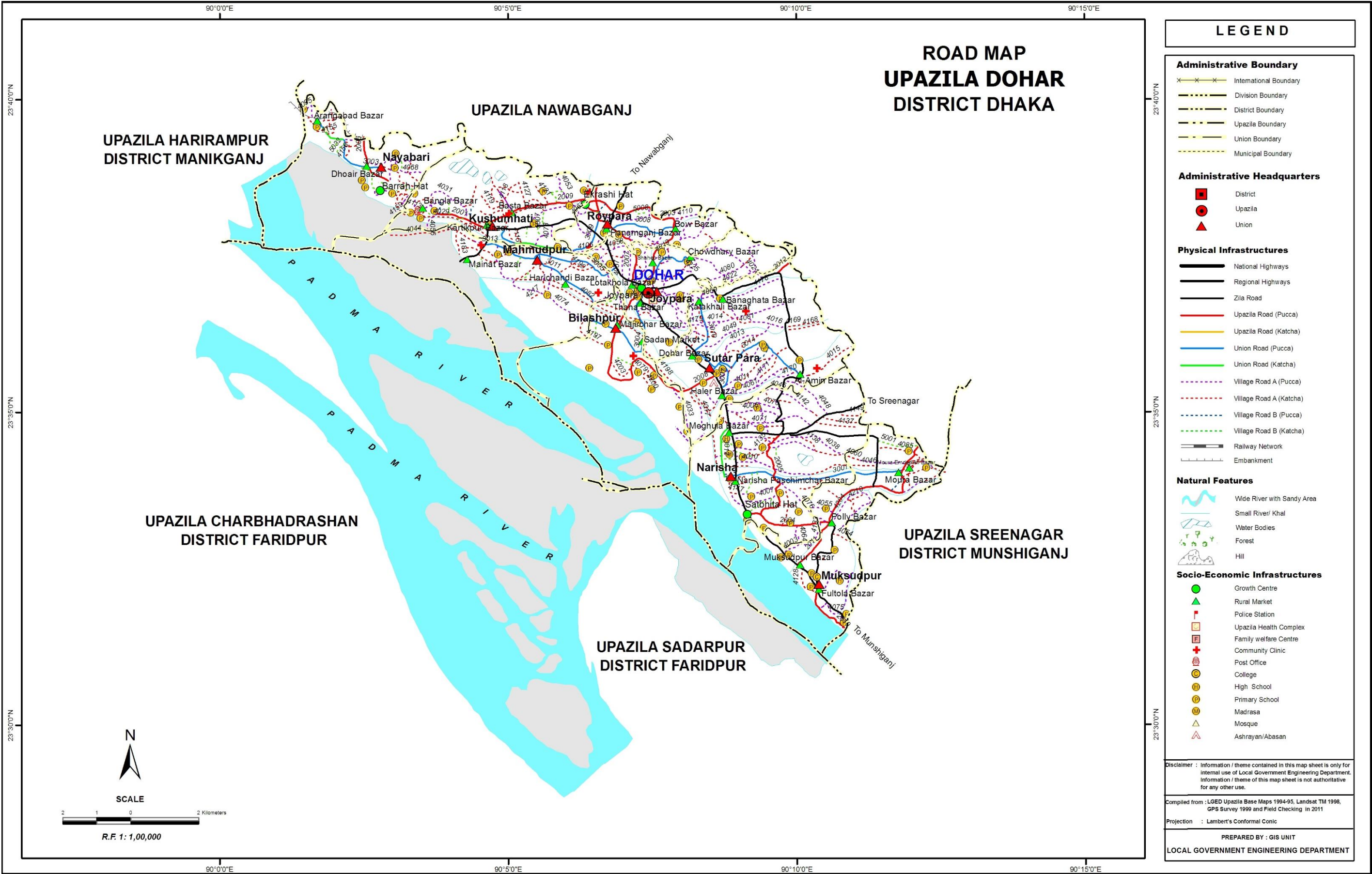
All communications with other districts and Upazilas have developed through the regional highway at Dohar. This is a very busy road and requires immediate traffic management and some engineering intervention. It is observed that high speed vehicles including passenger and freight vehicles running along with slow modes in this road through out of the day.



Picture 2.3: Condition of the road in an Access road (Sutarpara)



Picture 2.4: Condition of the road in an Access road (Satvita)



Map 2.1: Upazila Road Network Map

Source: Local Government Engineering Department (LGED, 2015)

2.6 Functional Classification of Road

Most of the Upazila roads are earthen and narrow in width, very few amount of Pucca, Semi-pucca (HBB) roads found during survey period.

Table 2.3: Road Types according to Surface and Hierarchy

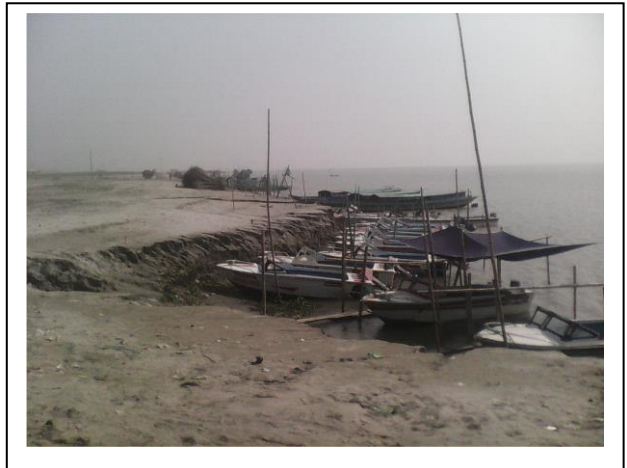
Road Types	Classification	Road Length (in km)	Percentage %	No. of Road
Regional Highway	Pavement	15	100(Paved)	1
Zilla Road	Pavement	10	100(paved)	2
Upazila Road	Pavement	35.82	100	
	HBB	0.0	0	
	Earthen	0.0	0	
	Total	35.82		12
Union Road	Pavement	30.14	89.49	
	HBB	0.60	1.78	
	Earthen	2.95	8.76	
	Total	33.68		14
Village Road-A	Pavement	122.68	38.07	
	HBB	30.60	9.50	
	Earthen	167.18	51.87	
	Total	322.29		230
Village Road-B	Pavement	2.33	7.80	
	HBB	2.71	9.07	
	Earthen	24.84	83.13	
	Total	29.88		53
Grand Total	Pavement	190.97	45.57	309
	HBB	33.91	8.10	
	Earthen	194.94	46.53	

Source: Local Government Engineering Department (LGED), 2015

So, from table it could be easily understandable that the prevailing poor road condition is deterring the existing travel facilities. However, a good network has developed for inter district communication though road.

2.7 Existing Infrastructure

There are three informal bus terminals found in the whole Upazila and they are at Thanar Mor (Eidgah Math), Moinot Ghat and Upazila Market (Showed in picture 2.3), and the only troller and Speed Boat Ghat is at Moinot Ghat. All of the inter district and local buses start from these stands. Rail lines are also not available at this Upazila. Though there are no specific terminal for truck, they are mainly parked at Moinot Ghat and Thanar Mor. There are some informal Auto/Tempo/CNG stand in the Upazila College Mor, Moinot Ghat, Kamar Ali Mor, in front of the Joypara Upazila Parishad and other areas. Besides, Auto/Tempo/CNG routs mostly within the Upazila area including Satvita, Joypara etc.



Picture 2.5: Bus, Truck stand and Ghat at Moinot Ghat



Picture 2.6: Auto Stand College Mor

Picture 2.7: CNG stand, Moinot Ghat

2.8 Major Traffic Congestion Areas

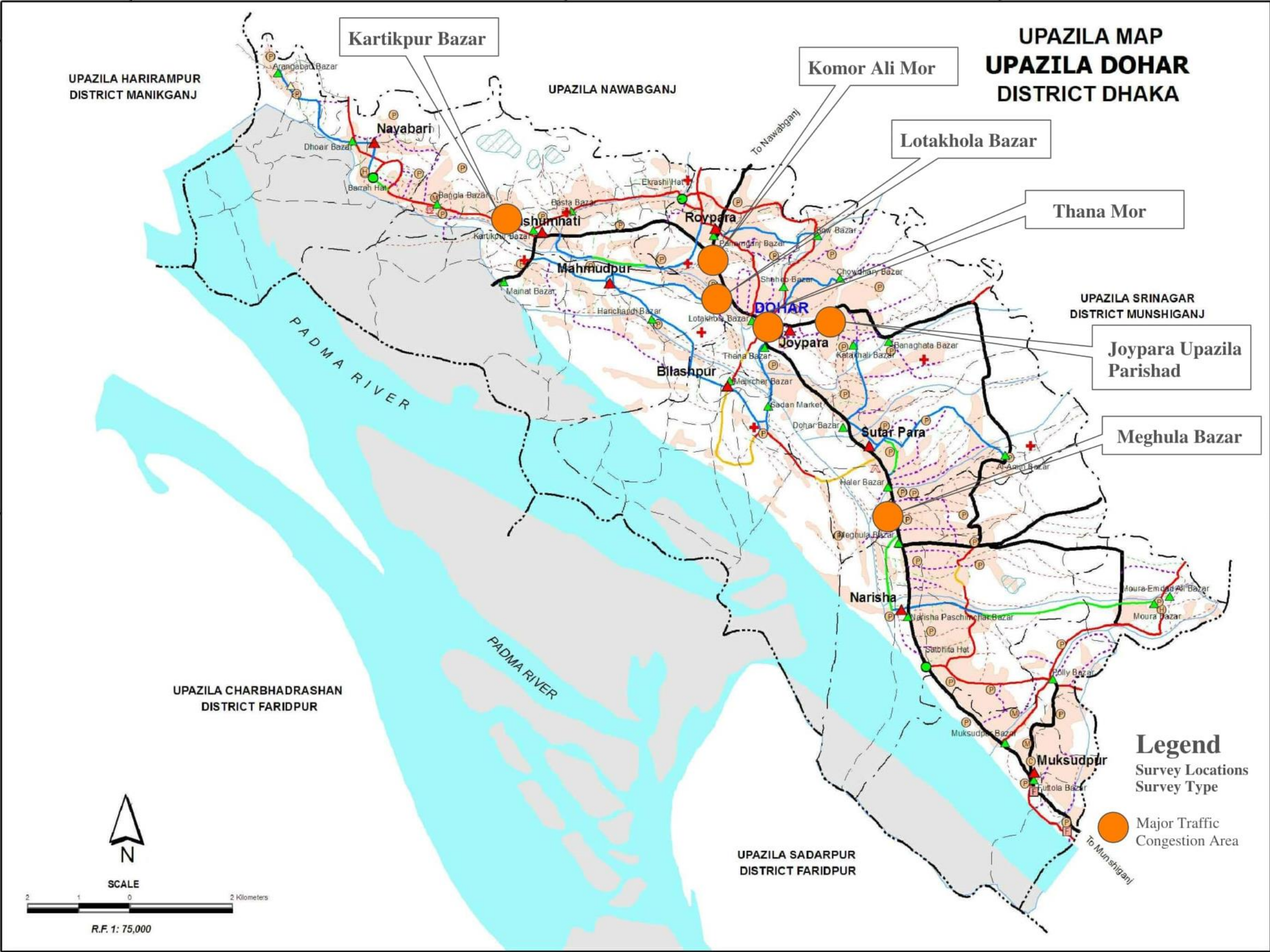
It has been observed that, the town does not appear to demonstrate serious signs of traffic congestion but some traffic congestions are observed at the Meghula Bazar (because of unauthorized and scattered parking, narrow road and temporary bazar), Thanar Mor (because of unauthorized bus stand and scattered bus parking), in front of the Joypara Upazila Parishad (because of narrow road and unauthorized auto stand), Lotakhula Bazar (because of narrow Bridge), Kamar Ali Mor (because of unauthorized tempo stand, haphazard parking), Kartikpur Bazar (because of shortage of space in the intersection) etc. in peak hour.



Picture 2.8: Traffic congestion at Dohar



Picture 2.9: Traffic congestion at Dohar due to narrow road and lack of maintenance



Map 2.2: Major traffic Congestion areas in Dohar Upazila

Source: Local Government Engineering Department (LGED), 2015

Chapter-3: Analysis of Survey Findings

3.1 Traffic Volume Count Survey

3.1.1 Average Daily Traffic Volume

Average daily traffic (ADT) is the average number of vehicles or PCEs (two-way) passing a specific point in a 24-hour period (considering local context). ADT is the standard measurement for vehicle traffic load on a section of road.

Table 3.1: PCE and Traffic Volume at Intersection

Intersection Name	Link	Average PCE/Hour		Average Vehicle/Hour	
		Non-Hat Day	Hat Day	Non-Hat Day	Hat Day
Kartikpur bazar	Kartikpur bazar to Dhaka and vice versa	128.63	173.95	116.89	158.08
	Kartikpur bazar to Barrah and vice versa	150.03	188.70	138.43	174.11
	Kartikpur bazar to Moinot Ghat and vice versa	92.73	105.09	94.15	106.70
Lotakhula	Lotakhula to Barrah and vice versa	236.13	316.95	174.66	234.43
	Lotakhula to Dhaka and vice versa	124.47	133.62	105.25	112.99
	Lotakhula to Joypara and vice versa	383.73	516.34	253.27	340.79
Poshcim char	Poshcim char to Dohar and vice versa	152.03	190.13	123.32	154.22
	Poshcim char to Moura Ghat and vice versa	75.07	99.64	52.94	70.27
	Poshcim char to Srinagar and vice versa	151.57	160.13	129.97	137.31
Thanar mor	Thanar mor to Bilaspur and vice versa	267.00	353.74	210.00	278.22
	Thanar mor to Dhaka and vice versa	276.63	293.51	208.66	221.39
	Thanar mor to Moinot ghat vice versa	272.20	339.64	203.02	253.32
	Thanar mor to Joypara vice versa	658.90	895.85	441.60	600.41

Source: Transportation Survey of Dohar Upazila, 2016

From the above table (Please see table 3.1), it has been seen that, in Kartikpur Bazar intersection, the highest PCE has been found at the road connecting Kartikpur bazar with Barrah. In Hat day, the PCE became about double of Kartikpur Bazar-Moinot ghat road of non-hat day. In hat day road connecting Moinot ghat with this intersection increased only about 13% of non-hat day.

Moreover, in Lotakhula intersection the roads connecting the intersection with Joypara possess more PCEs than other two roads. PCE at that road is about double of Lotakhula-Dhaka road. Even only this road possesses more PCEs than total PCE of other twos. In, hat day the change of PCE is lowest in Lotakhula-Dhaka road (about 7%) as the road mainly used for intra district journey.

In addition, in Poshcim Char intersection, the two roads (except the road connecting Moura with intersection) contain about same PCEs. Poshcim Char-Moura road contain about half PCEs than other two. Though in hat day, the PCEs got increased by about 32% in this road.

Again, in Thanar Mor intersection Thanar Mor-Joypara road contain considerably higher PCEs than others (about more than double). Rest of the roads contain about same PCEs. Roads Connecting Bilaspur and Joypara with this intersection experienced about the same percentage (about 30%) of increase in PCE in hat day than non-hat day.

However, from the below figure (Please see figure 3.1) it has been seen that Thanar mor-Joypara road contained highest PCEs in both of Hat and Non-Hat day than the other entire surveyed road. As the road connect Nawabganj, Bandura and Kartikpur with Dohar. On the other hand, the Poshcim char-Moinot Ghat has the least number of PCEs.

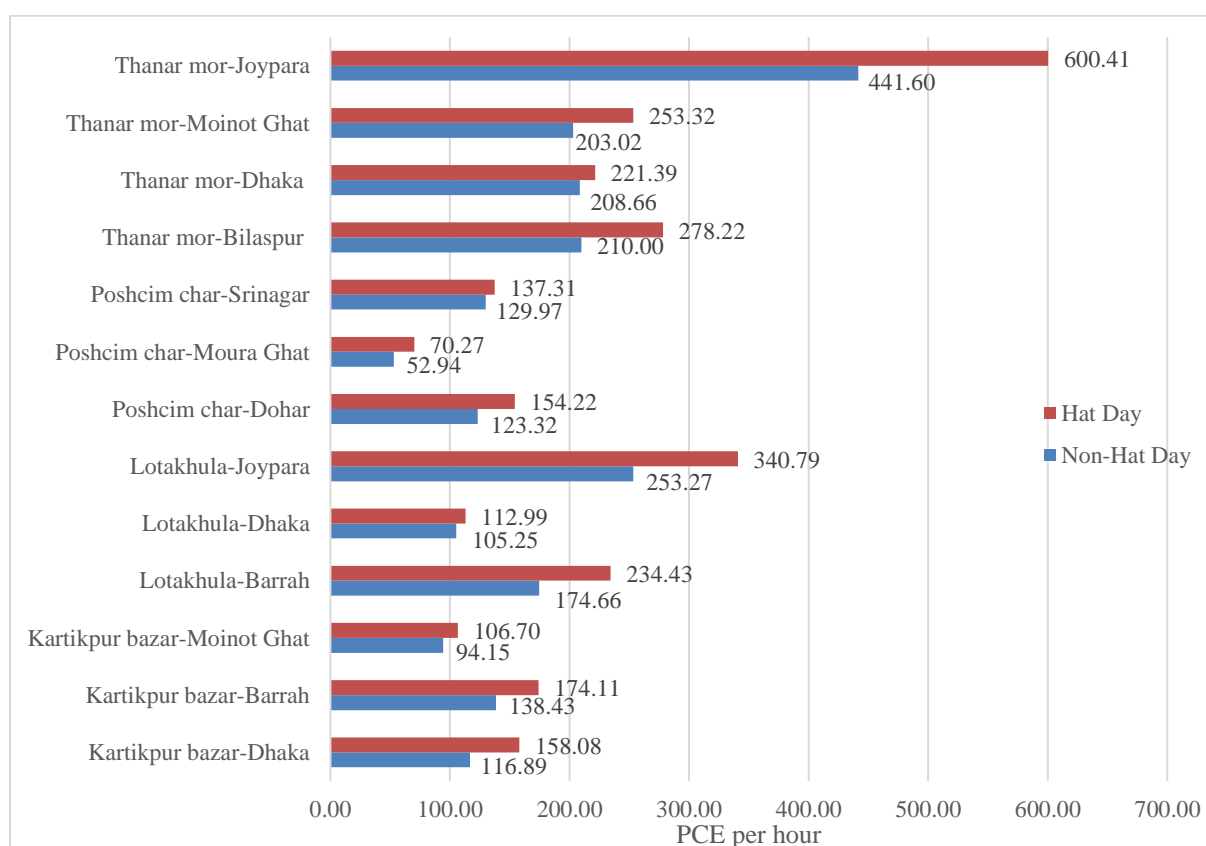


Figure 3.1: Average Frequency of Vehicle/Hour at Links of Three Intersection

Average daily traffic volume and MV & NMV ratio in four intersections at on average day or non-hat day are showing in below by figure 3.2- figure 3.5.

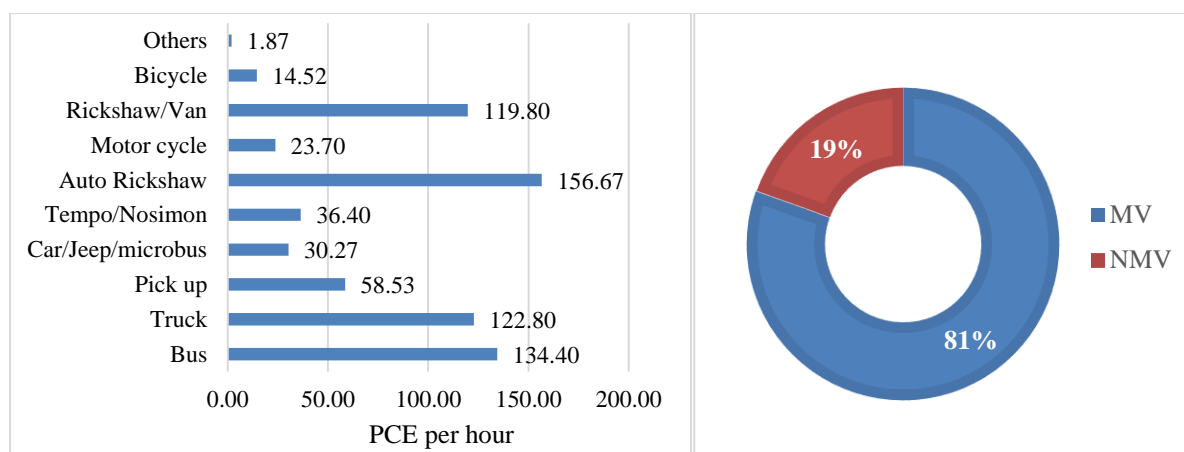


Figure 3.2: Kartikpur Bazar Intersection

From transport survey exhibits that lowest number of traffic both motorized and non-motorized are running through the Kartikpur bazar and Poshcim char intersection where highest traffic movement is noticed in Thanar mor node.

In Kartikpur bazar intersection, it has been found that motorized vehicles is prominent in the roads connecting the intersection. About more than 80% of vehicles are motorized, whereas, bus and truck mostly covers the percentage. On the other hand, auto rickshaw and rickshaw/van mostly contributes the non-motorized percentage.

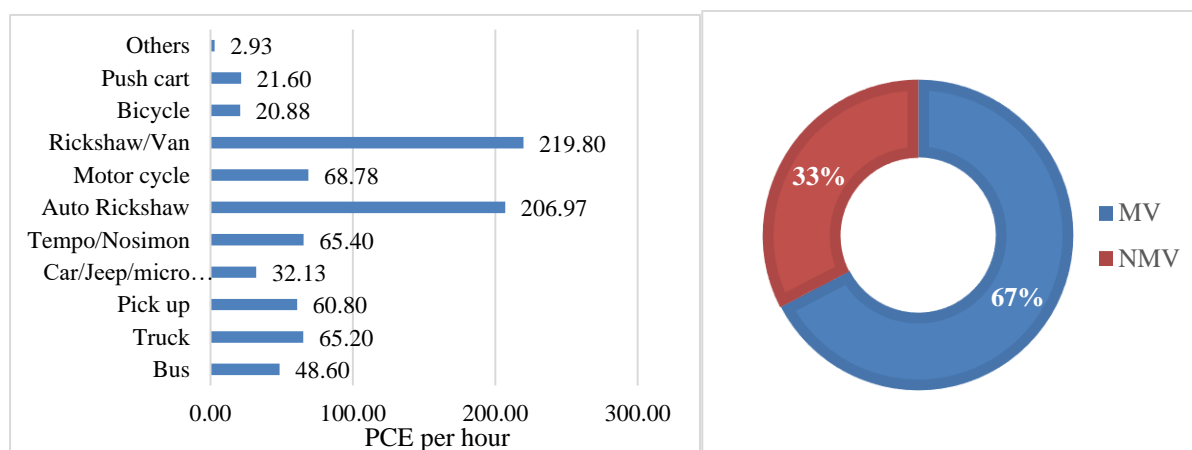


Figure 3.3 Lotakhula Intersection

In Lotakhula intersection, about one-third of total PCEs are from motorized vehicle, whereas Rickshaw/van and auto rickshaw is the prominent. On the other hand, a significant number of different motorized vehicle runs through the intersection.

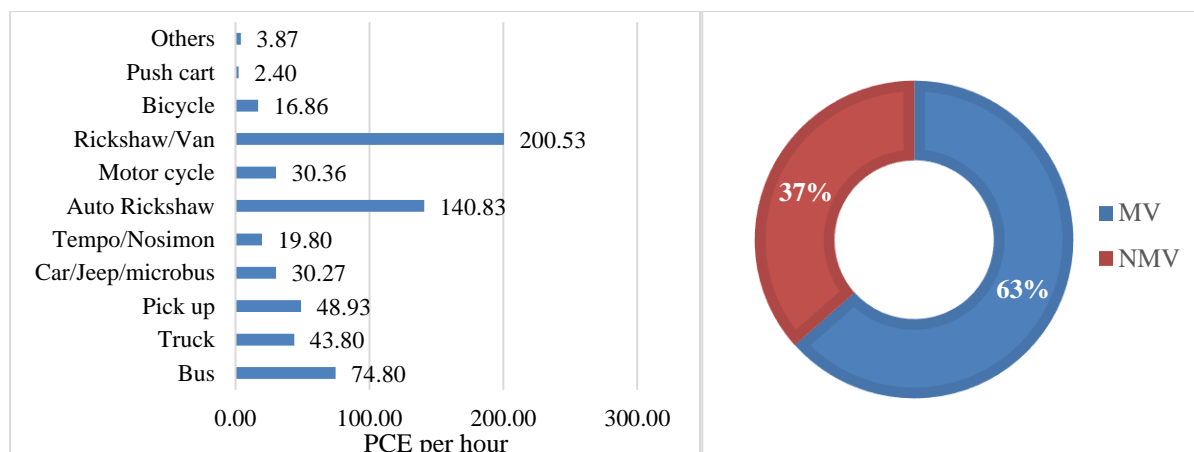


Figure 3.4 Poshcim Char Intersection

Like other intersections, in Poshcim Char intersection about two-third of total PCEs are from motorized vehicles. Bus contributes the highest percentage to the motorized vehicles. Moreover, truck and pickups contribute about the same percentage to the motorized vehicles.

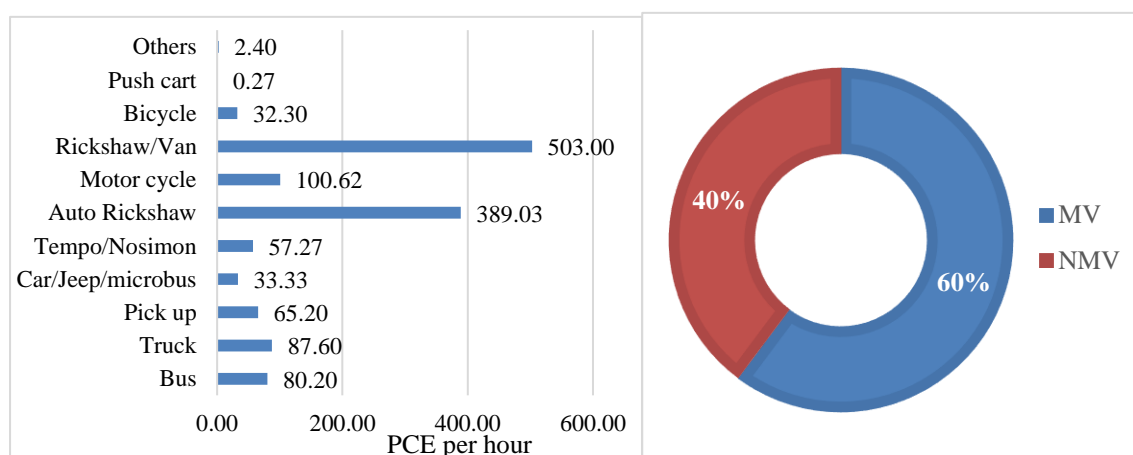


Figure 3.5 Thanar Mor Intersection

In Thanar mor intersection, about 40% of PCEs are generated by non-motorized vehicles. And like other intersection, here auto rickshaw and van/rickshaws are strongly prominent than other vehicles.

From the above figures, it is found that auto rickshaw and van/rickshaws are the dominant vehicles among others and motorized vehicles are far larger number than non-motorized.

3.1.2 Traffic Volume in Surveyed Intersection

In the below figures (figure 3.6-3.9) the change of PCEs in the whole survey time in a day for different intersections has been given. From the figure the change of PCEs with the change of time has been found.

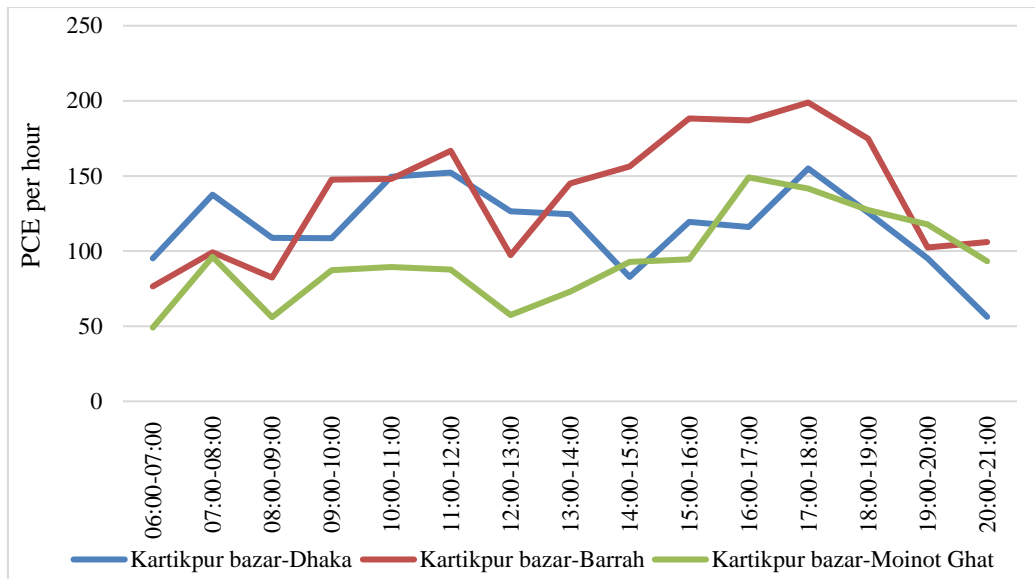


Figure 3.6: Traffic Volume of Kartikpur Bazar

Figure 3.6 represent the fact that, in Kartikpur bazar intersection PCEs got high in 16:00-18:00 in all of the connecting road of the intersection. Among them, the PCEs became highest in the Kartikpur bazar-Barrah road. After 18:00 the PCEs started to get dropped.

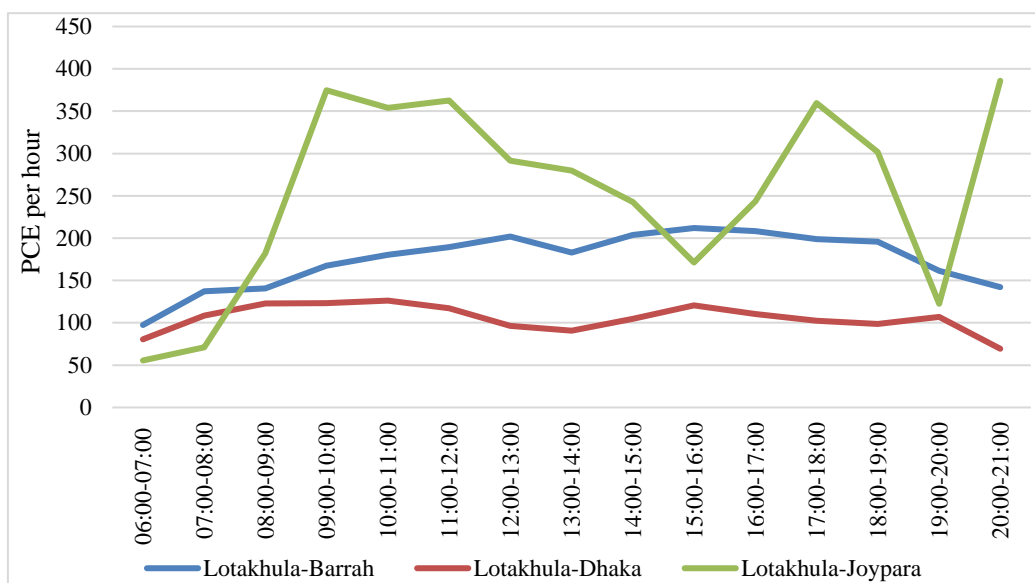


Figure 3.7: Traffic Volume of Lotakhula

Figure 3.7 showed that in Lotakhula intersection the PCEs remained about same all day long with slightly ups and downs in Lotakhula-Barrah and Lotakhula-Dhaka roads from 7:00-20:00. On the other hand, the road leading to Joypara possess the highest PCEs than others and some prominent peak hours. In that road 09:00-10:00 and 17:00-18:00 hours PCEs got in Peak position.

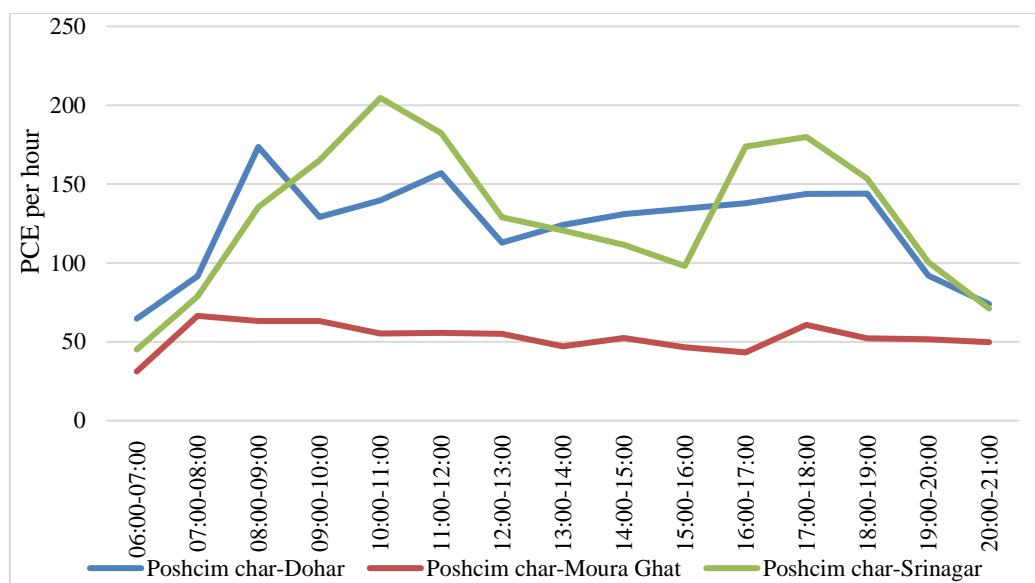


Figure 3.8: Traffic Volume of Poshcim char

At Poshcim char intersection the fluctuation of PCEs along the day has been found about the same except the Poshcim char-Dohar road. The road has comparatively less PCEs than other twos. After 18:00 the PCEs found as decreasing with change of time for all of the road of this intersection (Please see figure 3.8). Moreover, in morning peak hour is between 10:00-12:00 in all roads. Whereas, the evening peak hour is between 16:00-18:00.

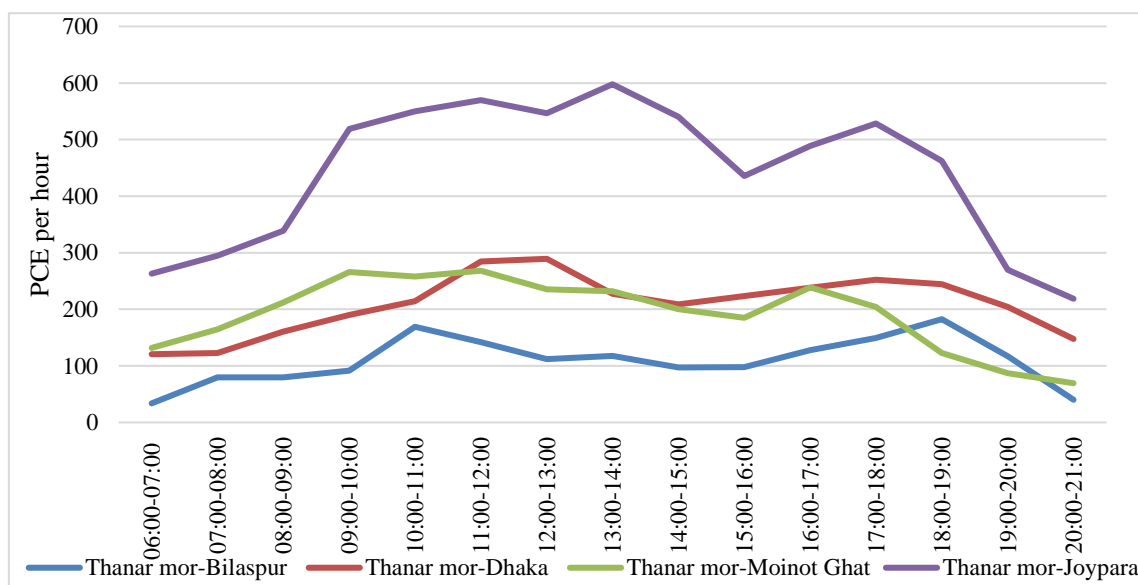


Figure 3.9: Traffic Volume of Thanar mor

Figure 3.9 shows that, the in Thanar mor intersection, the fluctuation of PCEs about the same for all the roads except Thanar mor-Joypara road. And the road also contains the highest PCEs among the other road. Throughout 09:00-15:00 the roads held the PCE above 500.

3.1.3 Peak Period Traffic Volume

Peak and off-peak period have been considered based on the corresponding road traffic discharge pattern. Whereas, the peak hour volume is the highest traffic volume of traffic that

uses the lane. The peak hour volume is normally given in terms of passenger car units or PCEs (converting different vehicles into one common unit). The conversion of all vehicles into passenger car units makes these volume calculations more representative of what is actually going on in the lanes. Peak hours have been considered based on the corresponding road traffic discharge. Peak period traffic volume has shown in below by figure 3.10-3.13.

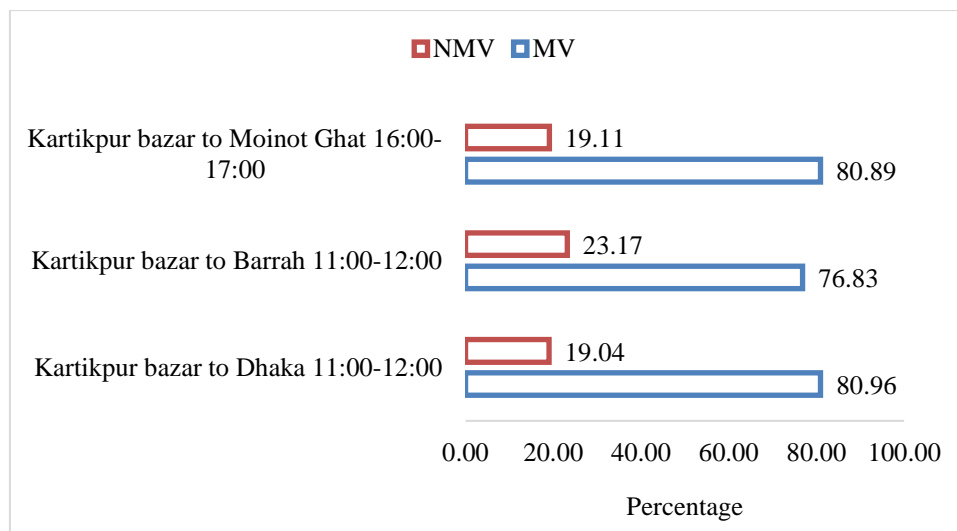


Figure 3.10: Peak Period Traffic Volume of Kartikpur bazar

Along with peak period traffic volume in Kartikpur intersection it also has been seen from the above figure (Please see figure 3.10) is that, road connecting this intersection with Barrah has little bit of more non-motorized vehicles than other two roads in Peak hour.

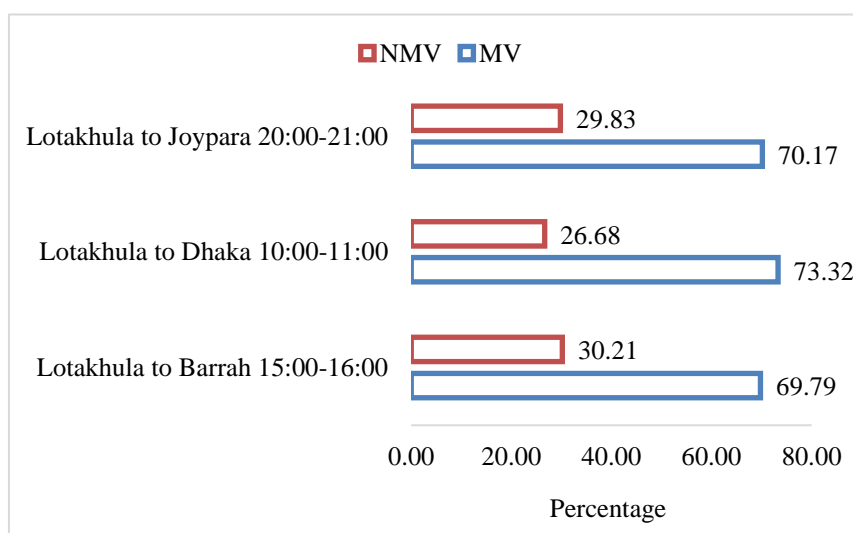


Figure 3.11: Peak Period Traffic Volume of Lotakhula

At Lotakhula intersection the roads connecting Dhaka with this intersection possess highest (about three fourth of total) percentage of motorized vehicles. Other than that, the ratio of motorized and non-motorized vehicles is about the same in all roads of this intersection (Please see figure 3.11).

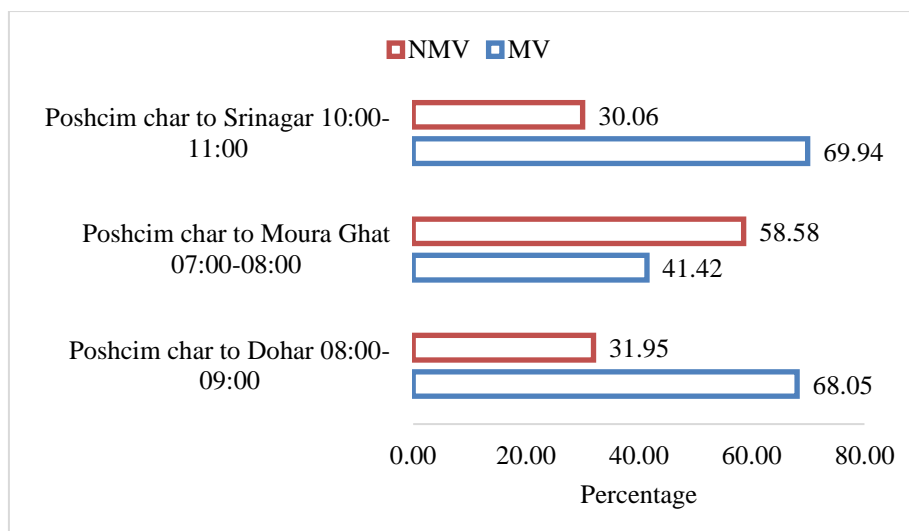


Figure 3.12: Peak Period Traffic Volume of Poschim char

In Poschim Char intersection the Poshim char to Moura ghat possess the highest percentage (about 42%) of non-motorized vehicles. Whereas the lowest percentage (about 30% of total) of non-motorized vehicles are in Poshim char to Srinagar road at the peak period (Please see figure 3.12).

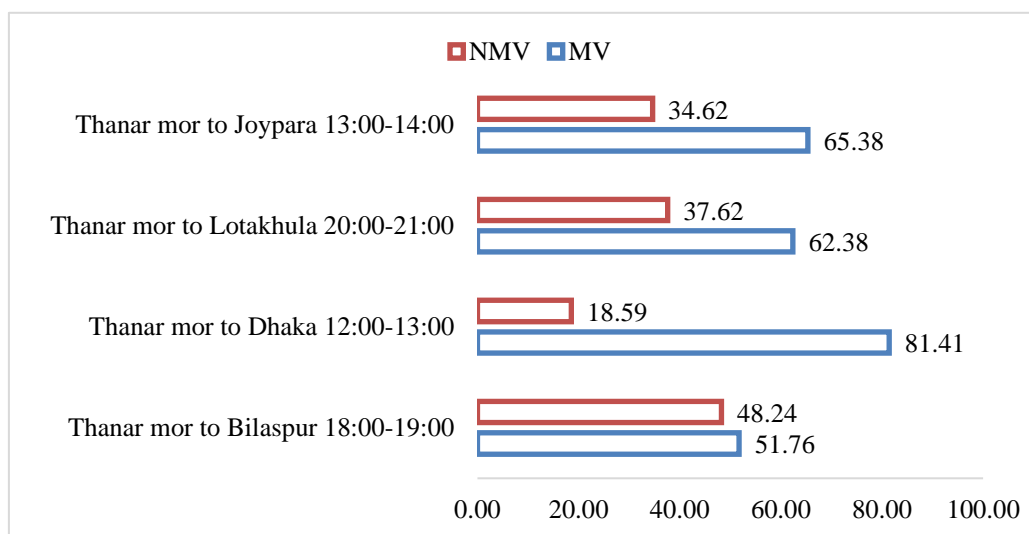


Figure 3.13: Peak Period Traffic Volume of Thanar mor

Like other intersection, in the Thanar mor intersection, most of the roads are occupied by motorized vehicles (about two-third of total). In thanar mor to Bilaspur road the motorized and non-motorized vehicles percentage are about the same. Thus, in this road the percentage of non-motorized vehicles is highest. On the other hand, Thanar mor to Dhaka road has the highest percentage of motorized vehicles.

Most of the cases peak periods are 09.00-11.00 am in the Morning and 18.00-21.00 pm in the evening, but in some cases, it varies. In the urban areas (Thanar mor) peak period found similarly like above mention time periods, where most of the government & non-government offices and schools, colleges situated.

The hourly total of both ways traffic flows is presented in **Figure 3.14**. It is noted that Thanar mor and Thanar mor to Joypara are very busy in the peak on Hat day or office day. The traffic volume data Poshcim char Moura ghat has very less significant traffic flow in the peak.

It is observed from the survey data that hourly traffic volume in busy nodes (Thanar mor and Thanar mor to Joypara) ranges from approx. 500 to 600 whereas hourly traffic volume ranges 100 to 200 in other roads.

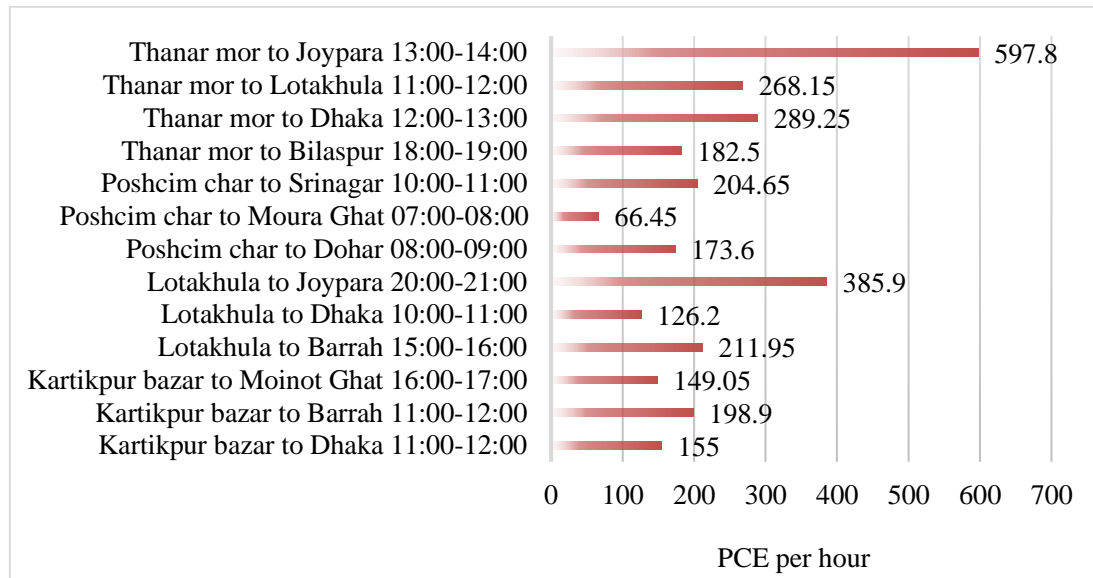


Figure 3.14: Peak Hour Traffic Volume

3.1.4 Traffic Condition of Road Sections

Peak hour traffic volume is very important which provides indication of the necessity of any traffic intervention necessary or not in that roadway. Peak hour traffic volume with comparison to road capacity provides a good indication of the services of the roadway. The Level of service is an assessment of the effectiveness of the roads which was measured by V/C ratio.

Traffic volume is defined as the actual peak hour traffic passing a particular roadway during a given time period and expressed as PCEs per hour. Capacity of roadway largely depends on number of lane, road width and roadway condition. In this case, only lane of the roads was considered. The existing road widths are just more than standard one lane width and thus the standard capacity for one lane road (1400 PCEs per hour) has considered here.

It is found that Poshcim char to Moura Ghat v/c ratio is comparatively less than others. So, it is expected that Individual users are practically unaffected by the presence of other vehicles on this road section. The choice of speed and the maneuverability are free. The level of comfort is excellent, as the driver needs minimal attention.

For Kartikpur bazar, road 1, 2 and 3 need no attention, may need attention later, require attention and traffic intervention/management in near future respectively. Having max v/c ratios below .50 means Steady Traffic but Limited-The presence of other vehicles affects drivers. The choice of the speed is affected and maneuvering requires vigilance. The level of comfort decreases quickly at this level, because the driver has a growing impression of being

caught between other vehicles. For road Thanar mor to Joypara the condition is the speed and the maneuverability are severely reduced, Low level of comfort for the driver, as he must constantly avoid collisions with other vehicles. A slight increase of the traffic risks causing some operational problems and saturating the network.

Table 3.2: Capacity of the roads in Dohar Upazila

Intersection/Location	Road	PCEs	Capacity	V/C
Kartikpur bazar	Kartikpur bazar to Dhaka 11:00-12:00	155	1400	0.11
	Kartikpur bazar to Barrah 11:00-12:00	198.9	1400	0.14
	Kartikpur bazar to Moinot Ghat 16:00-17:00	149.05	1400	0.11
Lotakhula	Lotakhula to Barrah 15:00-16:00	211.95	1400	0.15
	Lotakhula to Dhaka 10:00-11:00	126.2	1400	0.09
	Lotakhula to Joypara 20:00-21:00	385.9	1400	0.28
Poshcim char	Poshcim char to Dohar 08:00-09:00	173.6	1400	0.12
	Poshcim char to Moura Ghat 07:00-08:00	66.45	1400	0.05
	Poshcim char to Srinagar 10:00-11:00	204.65	1400	0.15
Thanar mor	Thanar mor to Bilaspur 18:00-19:00	182.5	1400	0.13
	Thanar mor to Dhaka 12:00-13:00	289.25	1400	0.21
	Thanar mor to Moinot ghat 11:00-12:00	268.15	1400	0.19
	Thanar mor to Joypara 13:00-14:00	597.8	1400	0.43

Source: Transportation Survey of Dohar Upazila, 2016

Almost all roads and intersections are under capacity (From Table 3.2), but bazar on the roads, road sharing, and unauthorized and unorganized parking of vehicles makes it problematic. So, there is a need for proper road maintenance rather than making a new one. However, ribbon development along the road may need land acquisition in that area.

3.1.5 Off-Peak Period Traffic Volume

From the traffic and transportation survey of this Upazila found that motorized vehicles are predominately higher than non-motorized. But in some cases, non-motorized vehicles are higher than motorized especially at Poshcim char to Moinot ghat in off-peak periods. The main reason behinds that most of the trips happened within a short distant in the urban areas and it's mainly for shopping & social get together, and recreation purposes.

Higher percentages of traffic run through 06.00-07.00am in the Morning and 20.00-21.00pm in the evening during off-peak period (shows in figure 3.15-3.18).

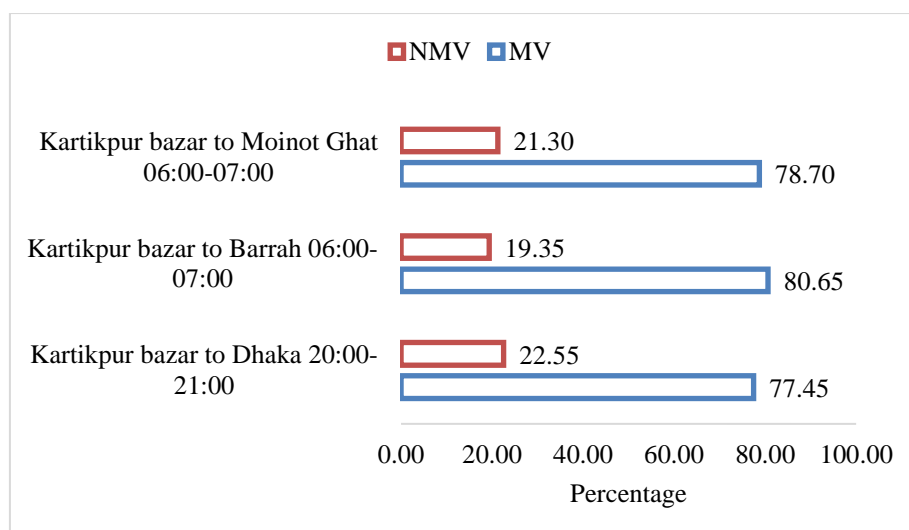


Figure 3.15: Off-peak Period Traffic Volume of Kartikpur bazar

Moreover, at Kartikpur bazar intersection, the road Kartikpur bazar to Dhaka contains the highest percentage of non-motorized vehicles (about 23%), whereas Kartikpur bazar to Barrah road contains the lowest percentage (about 19%) of non-motorized vehicles in the off-peak period (Please see figure 3.15)

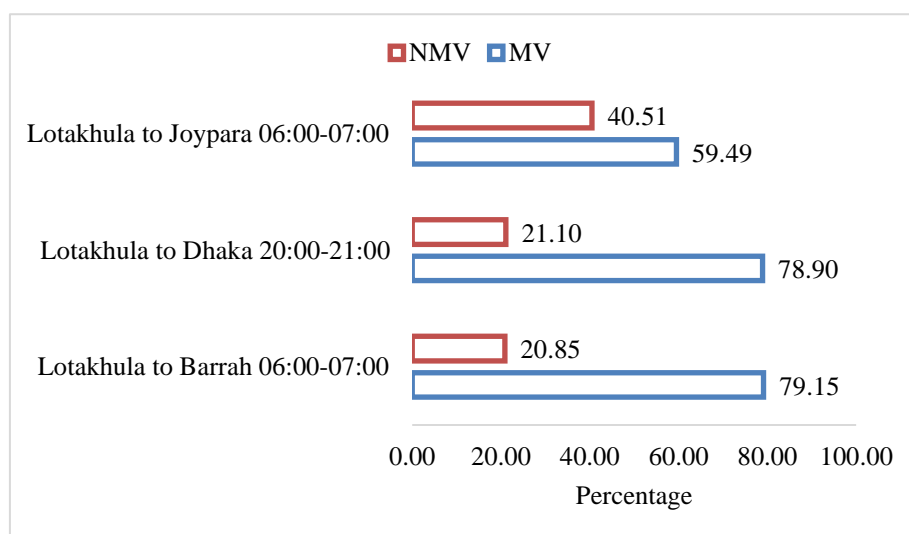


Figure 3.16: Off-peak Period Traffic Volume of Lotakhula

In Lotakhula, approximately all of the roads (except Lotakhula-Joypara) contains about 80% of total vehicles are motorized (Please see figure 3.16). Lotakhula-Joypara contains comparatively higher percentage of non-motorized vehicles (about 40%) than others.

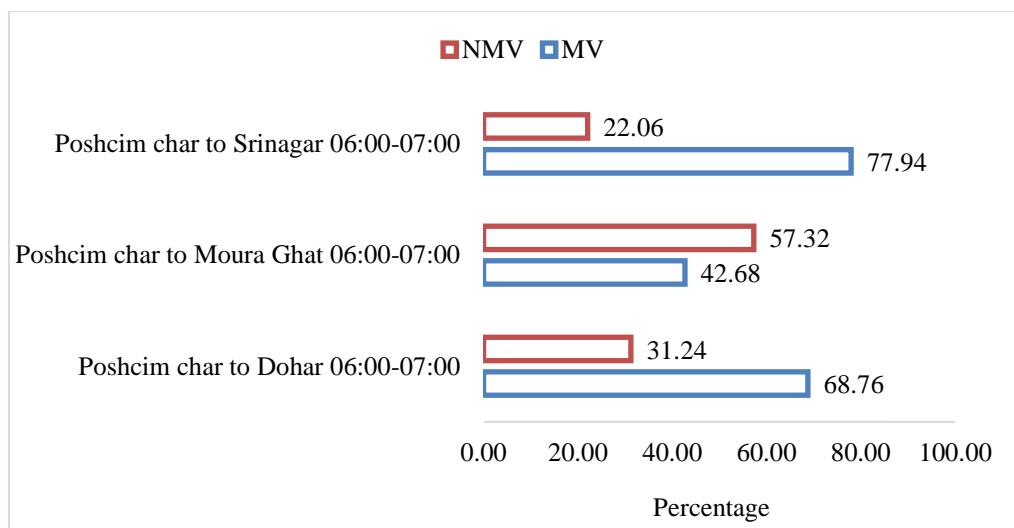


Figure 3.17: Off-peak Period Traffic Volume of Poshcim char

In Poshcim char intersection the percentage of non-motorized vehicles has been found higher in Poshcim char to Moura ghat road in off-peak period. It has been seen that, the percentage of non-motorized vehicles in these roads are comparatively higher than other intersection (Please see figure 3.17).

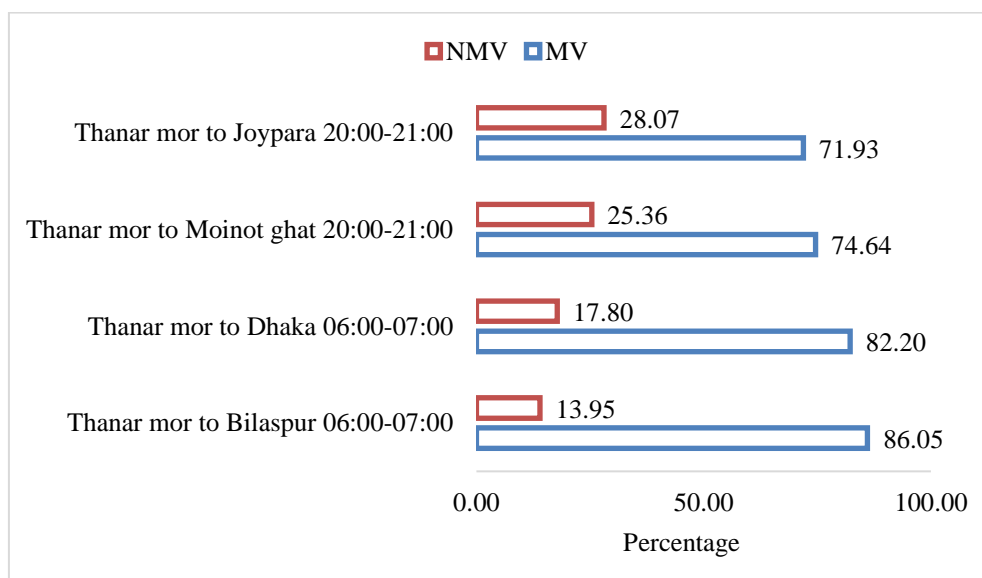


Figure 3.18: Off-peak Period Traffic Volume of Thanar mor

Whereas, in Thanar mor intersection about more than three fourth of the total vehicle are motorized in all of the roads of this intersection. Among them Thanar mor to Dhaka and Bilaspur contains the highest percentage (about more than 80%) of motorized vehicles (Please see figure 3.18).

3.1.6 Traffic Volume and PCE at Roadway Segments

4 road segments were surveyed to determine the traffic volume and PCE of these roads. Among them, the largest PCEs has been found at Fire service office road segment. Here, on average about 253 vehicles used the segments per hour. On the contrary, the lowest PCEs were found

in Muksudpur road segment. Here, only about 170 vehicles use the road per hour (Please see table 3.3).

Table 3.3: Traffic Volume and PCE at Roadway Segments

Roadway Segment Name	Link Name	Average PCE/Hour	Average Vehicle/Hour
Fire service office	Dhaka-Dohar	188.33	253.13
Muksudpur	Srinagar-Dohar	147.19	170.03
Palamganj bazar	Nawabganj-Dohar	174.54	246.60
Srinagar road (Fultola)	Fultola-Narisha bazar	156.79	175.73

Source: Transportation Survey of Dohar Upazila, 2016

3.1.7 Pedestrian Traffic Volume Survey

Pedestrian traffic volume counts were done during the same period as the vehicle volume count. The pedestrian volume shows that Kartikpur bazar-Barrah, Lotakhula-Joypara, Poshcim char-Dohar and Thanar mor-Joypara roads always experience significant number of pedestrian traffic whether it is working day or hat day. However, the pedestrian facilities like footpath or road crossing are not available in that area and thus the probability of the accident also increase. There is no place for pedestrian walking facility here and thus vehicles and pedestrian share same roadway. Lowest numbers of pedestrian have been noticed in the Kartikpur bazar area.

Table 3.4: Pedestrian density in selected intersections

Intersection Name	Link Name	Average Pedestrian/Hour		Average Pedestrian/Minute	
		Hat Day	Non-Hat Day	Hat Day	Non-Hat Day
Kartikpur bazar	Kartikpur bazar-Dhaka	32.45	30.49	0.54	0.51
	Kartikpur bazar-Barrah	67.10	50.48	1.12	0.84
	Kartikpur bazar-Moinot Ghat	39.46	35.62	0.66	0.59
Lotakhula	Lotakhula-Barrah	49.77	40.11	0.83	0.67
	Lotakhula-Dhaka	53.62	50.50	0.89	0.84
	Lotakhula-Joypara	94.95	70.45	1.58	1.17
Poshcim char	Poshcim char-Dohar	85.80	63.94	1.43	1.07
	Poshcim char-Moura Ghat	37.62	30.95	0.63	0.52
	Poshcim char-Srinagar	34.19	30.79	0.57	0.51
Thanar mor	Thanar mor-Bilaspur	50.95	40.12	0.85	0.67
	Thanar mor-Dhaka	51.95	45.94	0.87	0.77
	Thanar mor-Kartikpur	66.26	50.89	1.10	0.85
	Thanar mor-Joypara	95.44	70.55	1.59	1.18

Source: Transportation Survey of Dohar Upazila, 2016

3.2 Origin-Destination (O-D) Survey Findings

3.2.1 Trip purpose and Mode Used

From the data (Figure 3.19), it could be noted that second major share of the vehicles is auto rickshaw category (16%) whereas highest falls into the buses (27%). These vehicles are used predominately for the commuter purpose. Recreational trips contribute lowest proportion in the whole purpose of the trips (Please see figure 3.20)

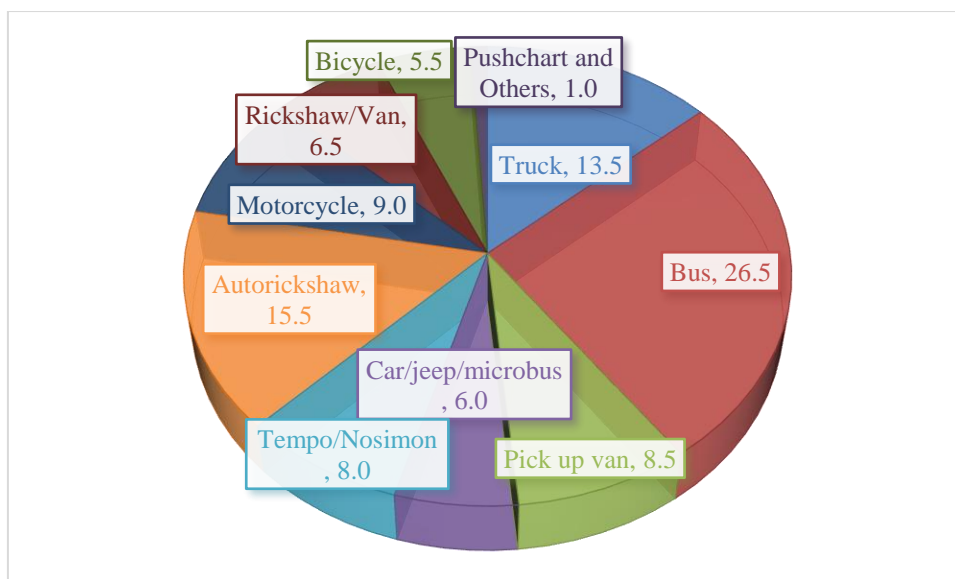


Figure 3.19: Percentage of mode uses

Figure 3.20 shows that about three fourth of total trips has made for work purpose. A significant percentage (about 13%) of trips has made for business purpose. Trips for recreation purpose is the lowest in percentage (less than 1%)

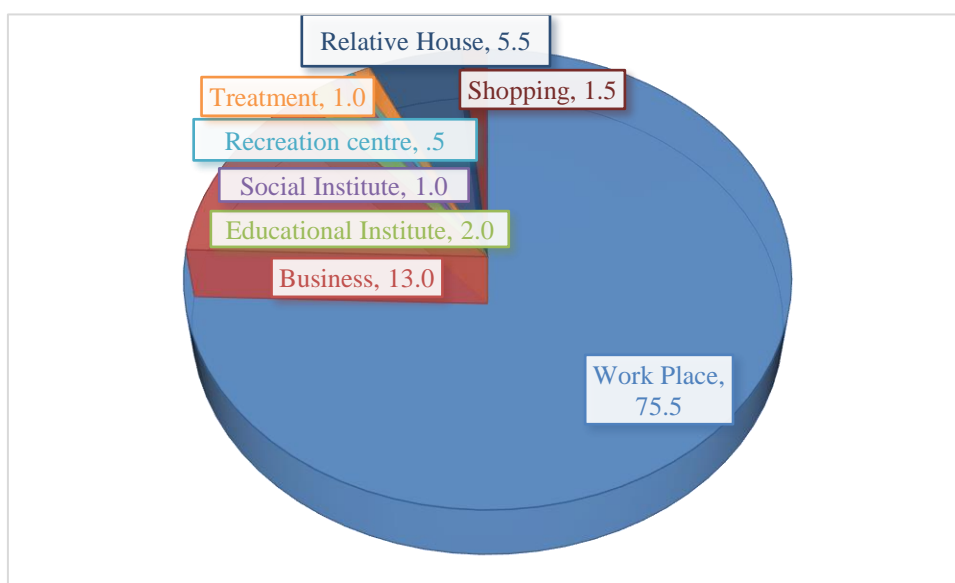


Figure 3.20: Percentage of Trip Purpose

3.2.2 Origin and Destination of Passenger Modes

The survey reveals that almost all internal trips within the district and the inter-district bus services and trucks (Table 3.5). As, the accessibility is moderately good in this Upazila, there is no immediate need for thinking of by-pass roads here. Freight vehicles as well as bus services both intra-districts and local services, O-D according to passenger modes has given below.

Table 3.5: O-D matrix

Destination Origin	Mahmudpur	Nayabari	Kusumhati	Raypara	Mokshedpur	Narisha	Sutarpara	Dohar Paurashava	Total
Mahmudpur	0	0	1	0	0	0	0	1	2
Nayabari	1	0	0	0	0	1	0	0	2
Kusumhati	6	0	0	1	1	0	0	0	8
Raypara	1	0	0	0	3	6	2	9	21
Mokshedpur	3	0	0	1	0	3	0	5	12
Narisha	1	1	0	0	0	0	1	5	8
Sutarpara	0	0	0	0	0	2	0	3	5
Dohar Paurashava	2	0	0	1	1	9	1	0	14
Total	14	1	1	3	5	21	4	23	72

O-D matrix for internal zones

Destination Origin	Dohar	Dhaka	Nawab ganj	Others	Narayan ganj	Bagura	Comilla	Total
Dohar	0	47	6	2	1	2	0	58
Dhaka	31	0	2	0	0	0	0	33
Nawabganj	13	3	0	0	0	0	0	16
Others	2	0	0	0	0	0	0	2
Narayanganj	3	0	0	0	0	0	0	3
Bagura	2	0	0	0	0	0	0	2
Comilla	1	0	0	0	0	0	0	1
Total	52	50	8	2	1	2	0	115

O-D matrix for external zones

Source: Transportation Survey of Dohar Upazila, 2016

3.2.3 Capacity of Passenger Modes

The average capacity of the passenger modes has given in the table 3.6. It has found that Buses passenger carrying capacity varied from bus to bus. All the buses surveyed here having standard capacity from 30 to 55. There is no provision of local service buses have found. However, some seating services start journey on the schedule time with less capacity and take passenger from other counters. Auto-rickshaw that functions as public transport mode has standard capacity is most of the time 5-6 persons.

The most convenient form is an O-D matrix, in which the origin zones and destination zones have represented. The horizontal axis of the matrix represents the destination zones and the vertical axis of the matrix represents the origin zones. The zones might further have classified into internal and external zones if the survey covers both the internal and external zones. The

number of trips has entered in the cells of the matrix. The matrix represented in the table 3.5 below:

Table 3.6: Carrying capacity of passenger modes (in percentage)

Passenger Number	Truck	Bus	Car/jeep/microbus	Tempo/Nosimon	Auto rickshaw	Motor cycle	Rickshaw/Van
1-2 Persons	100		10.0		10.0	100.0	100.0
3-4 Persons			50.0		30.0		
5-6 Persons			40.0	100.0	60.0		
30-35 Persons		30.8					
36-40 Persons		33.3					
41-55 Persons		35.9					
Total	100	100	100	100	100	100	100

Source: Transportation Survey of Dohar Upazila, 2016

3.2.4 Destination Pattern of Different Union of Dohar Upazila

From O-D survey, table 3.7 has been prepared. Here, it has been seen that, from Nayabari, union about all of the trips and from Mahmudpur and Dohar Paurashava most of the trips (about more than 90%) has made for working purpose. On the other hand, from Raypara union a significant percentage (more than 10%) of trips are made for the purpose of shopping, as there are no big shopping centre in the union. From Sutarpara union maximum business purpose trip (about 40%) has made, whereas the second major business trip contributory unions are Raypara and Mokshedpur union

Table 3.7: Trip distribution pattern according to the trip purpose (in percentage)

Unions	Work Place	Business	Educational Institute	Social Institute	Recreation centre	Treatment	Relative House	Shopping	Total
Mahmudpur	90.9	9.1							100
Nayabari	100.0								100
Kusumhati	75.0				12.5		12.5		100
Raypara	40.7	29.6	3.7	3.7			11.1	11.1	100
Mokshedpur	46.2	30.8	7.7				15.4		100
Narisha	57.9	21.1	5.3	5.3		5.3	5.3		100
Sutarpara	60.0	40.0							100
Dohar Paurashava	91.5	4.3	2.1			2.1			100

Source: Transportation Survey of Dohar Upazila, 2016

3.2.5 Passengers Density in Different Vehicle Mode

It has been seen that about more than half of the total vehicle's passenger density is within 5 persons. As most of the vehicle of this upazila are light vehicles. About one fifth of total vehicles carried passengers between 6 and 10. Otherwise, a significant percentage (about 15%) of total vehicles also carried passengers more than 36 persons (Figure 3.21).

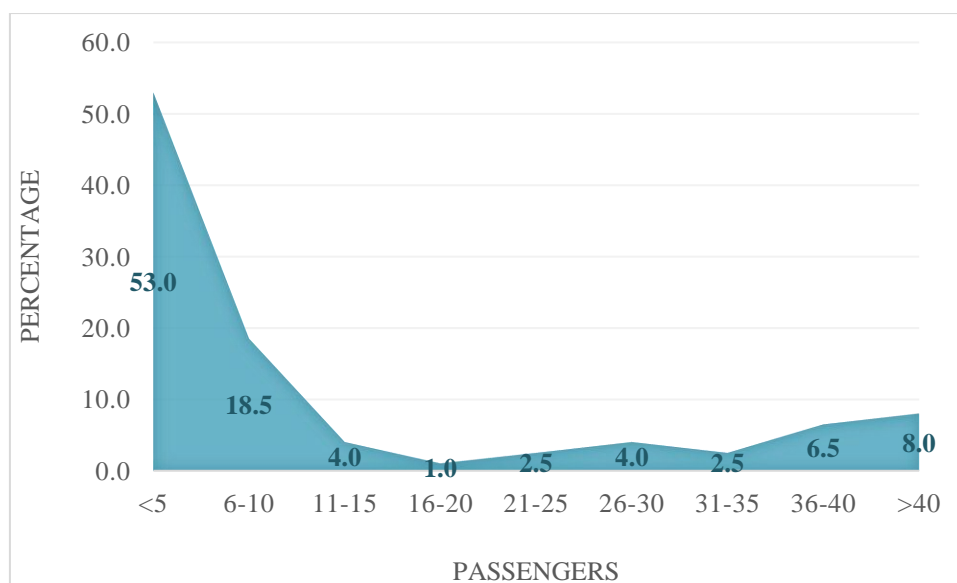


Figure 3.21: Occupancy of Passengers in Vehicle

3.2.6 Major Prioritized Problems

In figure 3.22, the prioritized problems have shown. Here, it has seen that most of the respondents (about two-third) said deteriorated road condition as their main problem. They want that, the appropriate authority should take necessary steps for proper maintenance of the road. Besides, about one third of total respondents also depicted that, Traffic jam and high fair as their main problem.

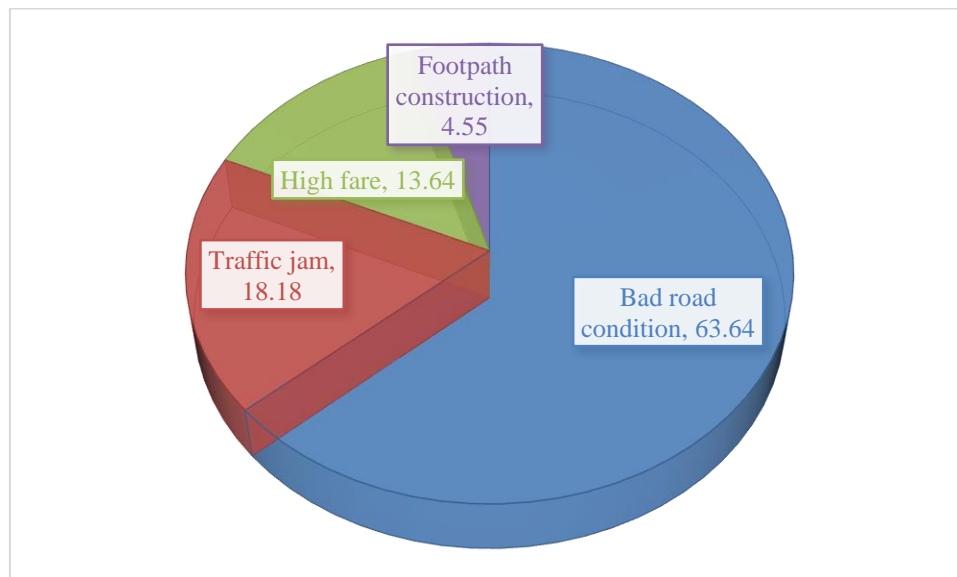


Figure 3.22: Major problems (in percentage)

3.3 Passenger Interview Survey Findings

3.3.1 Demographic Information

The passenger characteristics show (Table 3.8) that males are from different age group, but mostly (about half) from 21-40 years. In contrast, females are predominating in age group of 41-50 years.

Table 3.8: Age- Sex structure of bus users

Age Group	Male	Female
16-20	9.7%	22.2%
21-30	25.8%	22.2%
31-40	25.8%	
41-50	22.6%	55.6%
>50	16.1%	
Total	100%	100%

Source: Transportation Survey of Dohar Upazila, 2016

3.3.2 Trip Purpose

From Passenger interview survey, figure 3.23 has been prepared. The figure represented the fact that, about more than one fourth of total trips are made for either business related purpose or workplace purpose. Besides, about one fourth of total trips had also made for either shopping or home purpose. About 20% of total trips had made for visiting relatives' house purpose.

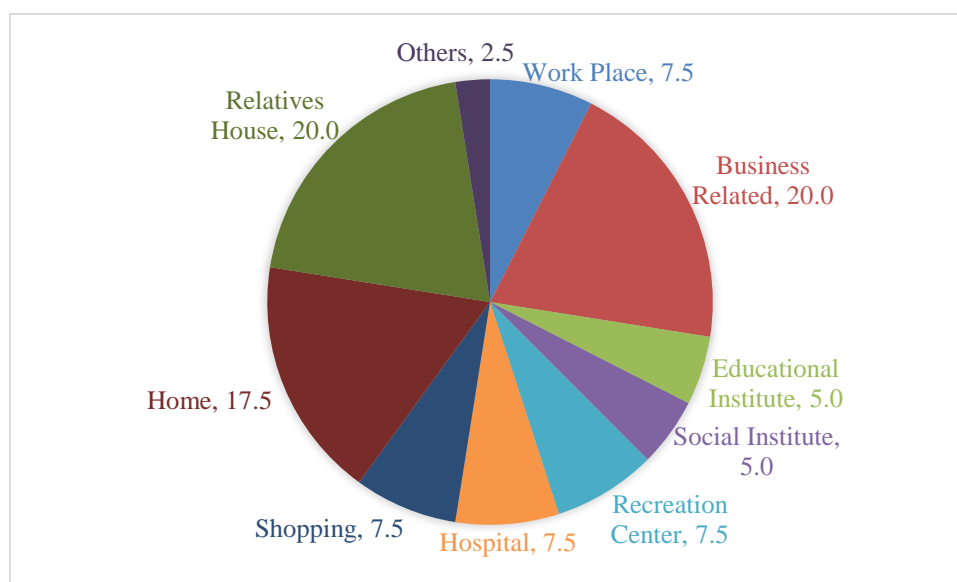


Figure 3.23: Trip purpose (in percentage)

3.3.3 Age Group and Trip Purpose

Trips made for educational purpose almost all of them below age of 20 years. On the other hand, trips are made for workplace about two third of total are from age ranges between 31 and 40 years. For hospital purpose, all of the trips has made by ages up to 40 years. Whereas, most of the people more than 50 years made trip for hospital purpose or social institute purpose (Please see table 3.9).

Table 3.9: Age Group and Trip Purpose (in percentage)

Age Range	Work Place	Business Related	Educational Institute	Social Institute	Recreation Center	Hospital	Shopping	Home	Relatives House	Others
16-20			100				33.3		25	
21-30		25			33.3		33.3	57.1	25	
31-40	66.7	12.5		50			33.3	14.3	12.5	100
41-50		62.5			33.3	33.3		28.6	37.5	

>50	33.3			50	33.3	66.7				
Total	100	100	100	100	100	100	100	100	100	100

Source: Transportation Survey of Dohar Upazila, 2016

3.3.4 Types of Mode

About more than one-third of total trips had made by bus. About same percentage of respondents, also make trips by Auto rickshaw/Tempo. Moreover, there are a prominent ghat (Moura ghat) is situated in this upazila, thus about one-fourth of total respondents also use Boat/Launch/Trollar (Please see figure 3.24).

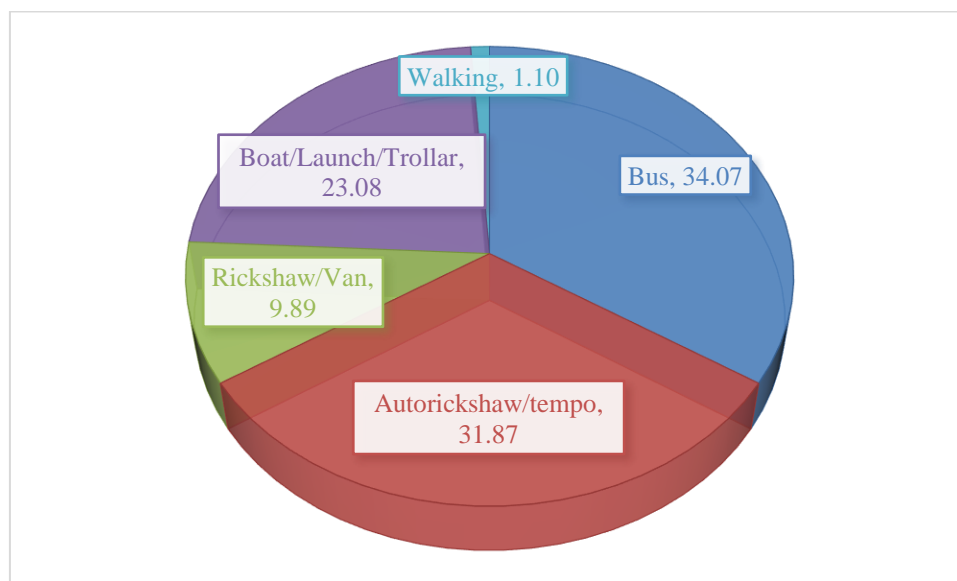


Figure 3.24: Types of Mode (in percentage)

3.3.5 Trip Distribution by Passengers

About one-third of total respondents make trips one time per week. Besides, about half of total respondents make only 2-3 trips per week. Otherwise, about 11% of them make trips 6 times per week.

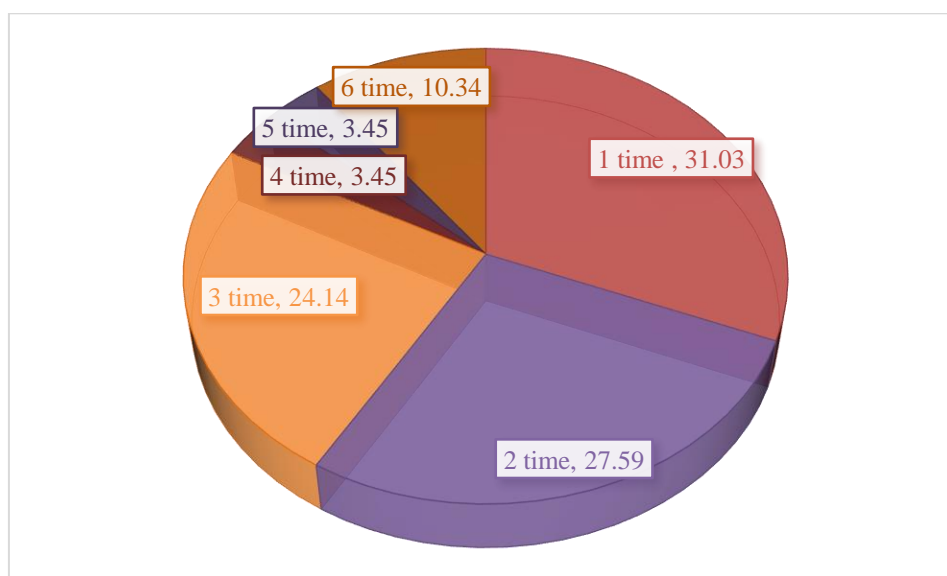


Figure 3.25: Trip Frequency (in percentage)

3.3.6 Gender and Trip Productions per Week

It has been that, about 70% of male respondents make 1-3 trips per week, whereas, about two third of total female respondents either made no trips at all or just 1 trips per week. About 11% of total male respondents anticipated that they made 6 trips per week, on the other hand, no interviewed female respondents have been found as making such numbers of trips per week. Otherwise, the percentage of making 4-5 trips per week was higher in female respondents.

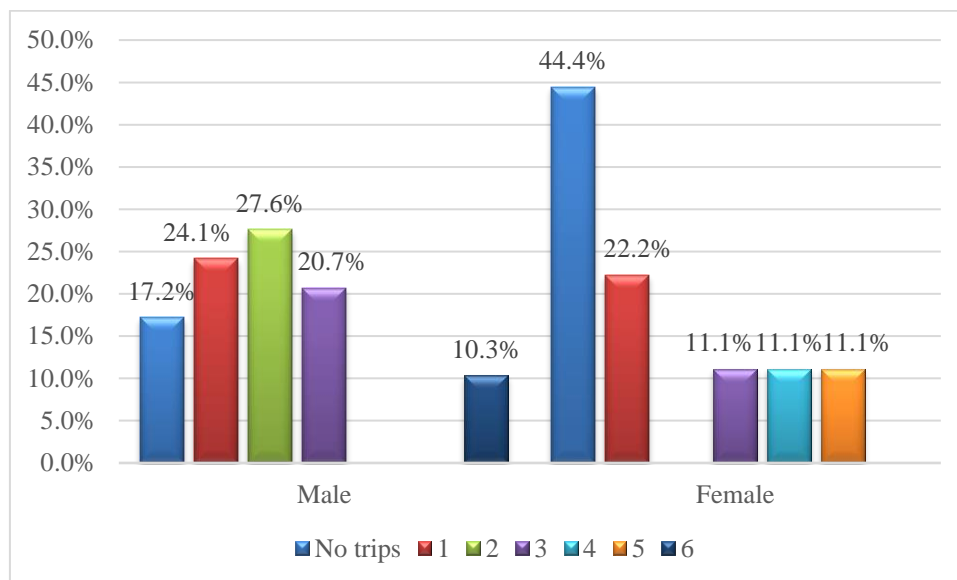


Figure 3.26: Trip frequency per week according to the gender

3.4 Pedestrian Survey

3.4.1 Demographic Information

The figure 3.27 shows that pedestrian aged from 41 to 50 years are significant in percentage (about one third). Their most of the trips has made for business or home or visiting relatives' house purpose. Moreover, about half of total respondents were between age of 21 and 40. Among them, ages between 31 and 40, most of the trips of this age group has been made for business or working purpose. For shopping purpose, most of the trips are generated from 16-20 age group (Table 3.10).

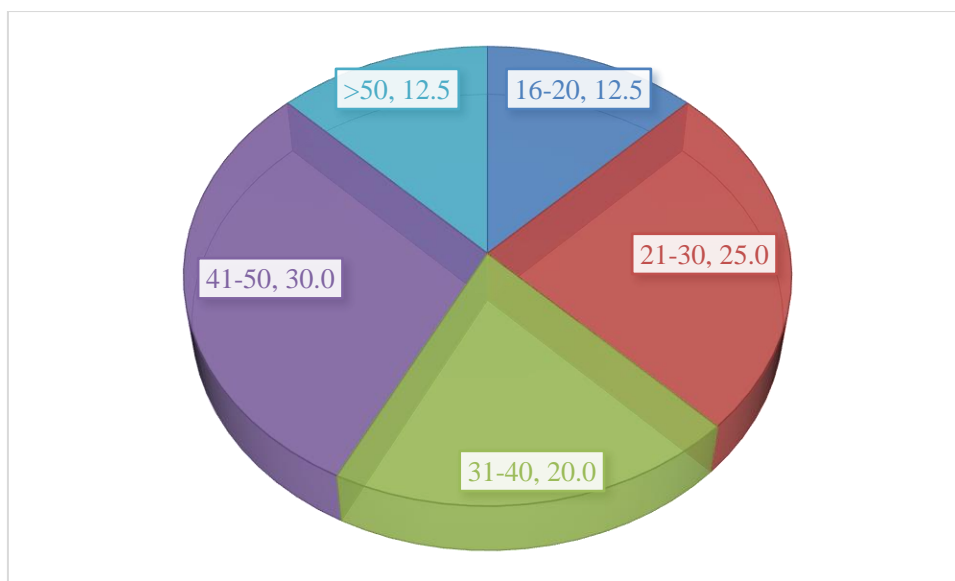


Figure 3.27: Age Composition of Pedestrian of Dohar (in percentage)

Table 3.10: Age composition according to gender of the pedestrian

Age Group	Work Place	Business Related	Educational Institute	Social Institute	Recreation Center	Hospital	Shopping	Home	Relatives House	Others	Total
16-20	0	0	40	0	0	0	20	0	40	0	100
21-30	0	20	0	0	10	0	10	40	20	0	100
31-40	25	12.5	0	12.5	0	0	12.5	12.5	12.5	12.5	100
41-50	0	41.67	0	0	8.33	8.33	0	16.67	25	0	100
>50	20	0	0	20	20	40	0	0	0	0	100

Source: Transportation Survey of Dohar Upazila, 2016

3.4.2 Purpose of Trips and Distance Traveled

It has been found that about half of people traveled .1-2 km to make a trip, which is highest in this category. The other major group (about one third) of the people (32%) traveled 3-4 km (Figure 3.28).

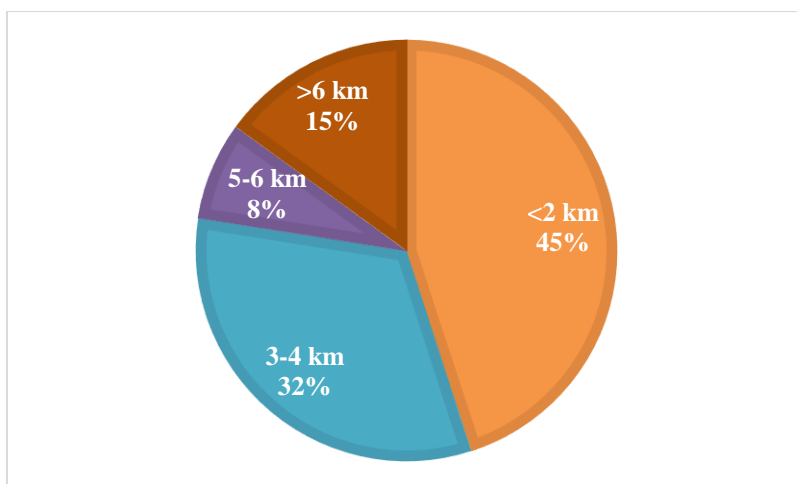


Figure 3.28: Pedestrian Distance Traveled

The table 3.11 shows that more than one fourth of total pedestrian made their trips for working purpose. On the other hand, female pedestrians' purpose is limited between educational institute, relatives' house or shopping purpose.

Table 3.11: Trip purpose according to the gender of the pedestrian

Gender	Work Place	Business Related	Education al Institute	Social Institute	Hospital	Shopping	Relatives House	Total
Male	28.1%	9.4%		3.1%	12.5%	40.6%	6.3%	100%
Female			37.5%			25.0%	37.5%	100%

Source: Transportation Survey of Dohar Upazila, 2016

3.5 Regional Network System

3.5.1 Trip Frequency

Figure 3.29 represents the facts that, about more than two-third of total respondents make 3-4 regional trips per day. Only 3% of them make more than 4 trips per day. Whereas, about more than one-fourth of total make 1-2 trips per day.

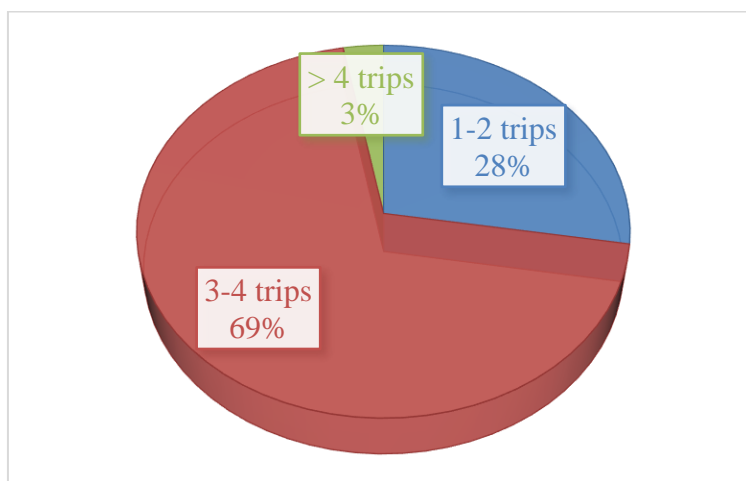


Figure 3.29: Trip Frequency (per day)

3.5.2 Regional Connectivity with Surrounding Regions

It has been seen that regional connectivity of Dohar with Dhaka is much stronger than other regions. As about two third of total trips are made for Dhaka. Apart from that, a significant percentage (about 17%) of trips are also made for Sadarpur, Faridpur.

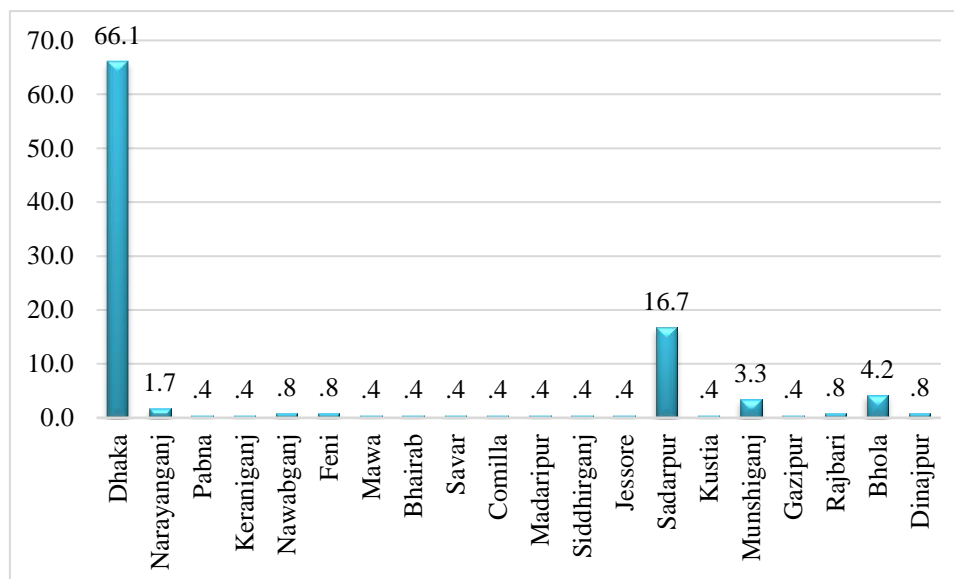


Figure 3.30: Regional Connectivity with Surrounding Regions (in percentage)

3.5.3 Regional Transport Network System

This upazila is mainly accessible area considering the regional accessibility (Map 3.1). This area gets access from Dhaka, Gazipur, Nawabganj and Munshigonj, other districts by regional and national highways. To identify Regional Transport Network System, two locations- truck terminal, bus terminal area were selected. The connectivity from this upazila is moderately good. Moreover, the connectivity with union level is also satisfactory. Most of the Union have connectivity with the Upazila headquarters having enough wide road. Besides, bridges on the roads are also in satisfactory condition, though some of the bridges can be widen, as narrow bridges sometime create congestion (Lotakhula bazar).

3.5.4 Transport Going Out from Study Area to Other Region

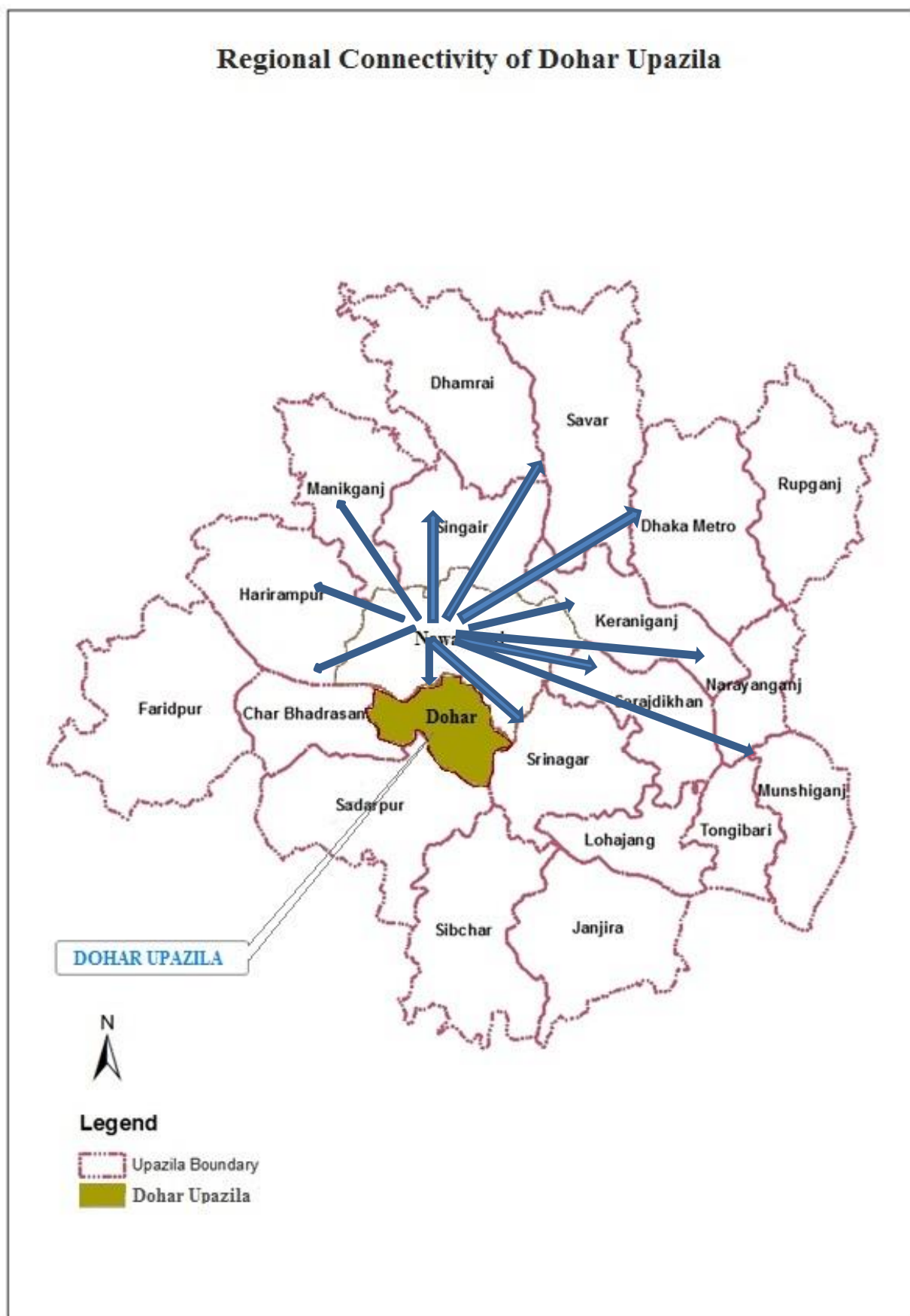
The major bus stoppages are Thanar mor (Eidgah math), Moinot ghat (largest) and Upazila market. From these bus stands the buses headed towards Dhaka (Gulistan) usually start 5:30 am to 7:50 pm (Table 3.12). Buses those connect Dhaka are usually single Decker buses having carrying capacity of 45 and 60 people (according to seats). Vehicles running overload is particularly true for freight goods.

Two major types of freight transport vehicles are available in Dohar Upazila, where truck used for both intra and inter-district goods travel. However, the movements of the van usually limit within Upazila area or maximum within the district. For goods movement in region and beyond, trucks and pick up vans are used frequently. The carried good and the average capacity of the vehicles are given below (Table 3.12, and 3.13).

Table 3.12 Trips Rate of the vehicles travelling away from Dohar Upazila

Mode	Origin	Name of service	Destination	Frequency of trips	Service Period	Break
Bus	Thanar mor (Eidgah math)	Sheba, Aram	Dhaka (Gulistan)	3-4 trips per day (Get Lock/Direct)	5:30am-7:50pm	17 times
	Moinot ghat (Largest)	Jamuna, Druti				
	Upazila market	Joypara, Nogor				
Truck	Moinot Ghat and Thanar Mor	Gazipur, Tangail, Sirajganj, Pabna, Natore, Bogra, Rjshahi, Dinajpur, Rangpur		5 ton 1 trip	Mainly at night	
		Munshiganj, Narayanganj, Dhaka, Gazipur, Keraniganj		1 ton and 3 ton 2-3 trip		
Troller, Speed Boat	Moinot Ghat	Sadarpur (Faridpur)		3 trips per hour	6:00am-6:30pm	

Source: Transportation Survey of Dohar Upazila, 2016



Map 3.1: Regional Connectivity of Dohar Upazila

Table 3.13: Carrying capacities of some major vehicles in Dohar Upazila.

Mode	Standard Capacity	Usual Practice	Remark
Tata Truck	6 tons	10 tons	Overload
Bedford Truck	5 tons	10 tons	Overload
Pickup van	1-1.5 tons	2 tons (Basically local)	Acceptable
Bus (Get lock/Direct)	36 passengers	38-40 passengers (Bus passenger survey Dohar, 2016)	Acceptable
Van	0.8 tons	Normal	Acceptable

Source: Transportation Survey of Dohar Upazila, 2016

From the transportation survey 2016 which are summarize in table 3.13 and table 3.14, it is found that everyday almost 2000 (two thousand) passengers regularly travel from this Upazila to other places outside Dohar by bus. Similarly, 100-150 tons' freight transported from Dohar to other places per day by truck, pickup and other vehicles. Truck plays prominent role (96%) for carrying goods than other vehicles (Please see table 3.14).

Table 3.14: Goods carried by freight vehicles travelling away from Dohar Upazila

Mode	Carrying goods	
	Inward bound (68%)	Outward bound (32%)
Truck/pickup van	Brick, sand, rod, cement, Fishmeal, poultry food, medicine, raw materials of garments products etc.	Mainly garments products, Fish, wooden furniture, sand, rice, vegetables etc.

Source: Transportation Survey of Dohar Upazila, 2016

3.5.5 Transport Coming from other region to study area

Situation is almost similar to previous one in case of transport coming from outside of the Upazila. Buses coming from other districts and Upazilas start from 5:30am to 7:50pm. Buses those connect from Dhaka are usually single Decker buses having carrying capacity of 45 and 60 (Only Jamuna) people (according to seats) and inter-district. However, in practical they are running overload while providing services (Table 3.15). Vehicles running overload is particularly true for freight goods. Every day on an average 2500 passenger traveled by buses from outside to this Upazila, and 200-250 tons' freights/goods transported regularly.

Chapter-4: Findings from PRA & Socio Economic Survey

4.1 Findings from PRA

In PRA session, the participants identified a host of problems. When asked to narrow down the list to only five they chose only the most urgent and critical ones. A variety of major problems have been identified by the PRA participants of 8 unions of the Upazila. Though problems vary from union to union, some problems are common to all the unions. Most of them have pointed out transport and communication as their primary problem. Major problems find out from PRA related to roads and communications are-

- Poor condition of roads, bridge and culvert, maintenance required.
- Roads should be widened

4.2 Findings from Socio Economic Survey

A household survey was conducted in the Upazila to ascertain the pattern of socio-economic problems and the perception of households about various problems of the area. There are some questions about traffic and transportation issues and problems. The answers received from the respondents have been compiled and presented in this section. Poor maintenance, traffic jam and narrow widths of roads are identified as major problems by most of the respondents in the Upazila. Indicating to major road problems, they pointed not in good condition (about three-fourth of total) is their main problems.

4.2.1 Status of Access Road

Narrow widths of roads and poor maintenance have marked by most respondents as major road problems in the Upazila. Narrow width of roads is likely to become a major problem of traffic movement. Almost 80% of the access road width is below 3 meters that connected to the households, and less than 3% road width is over 5 meters in this Upazila.

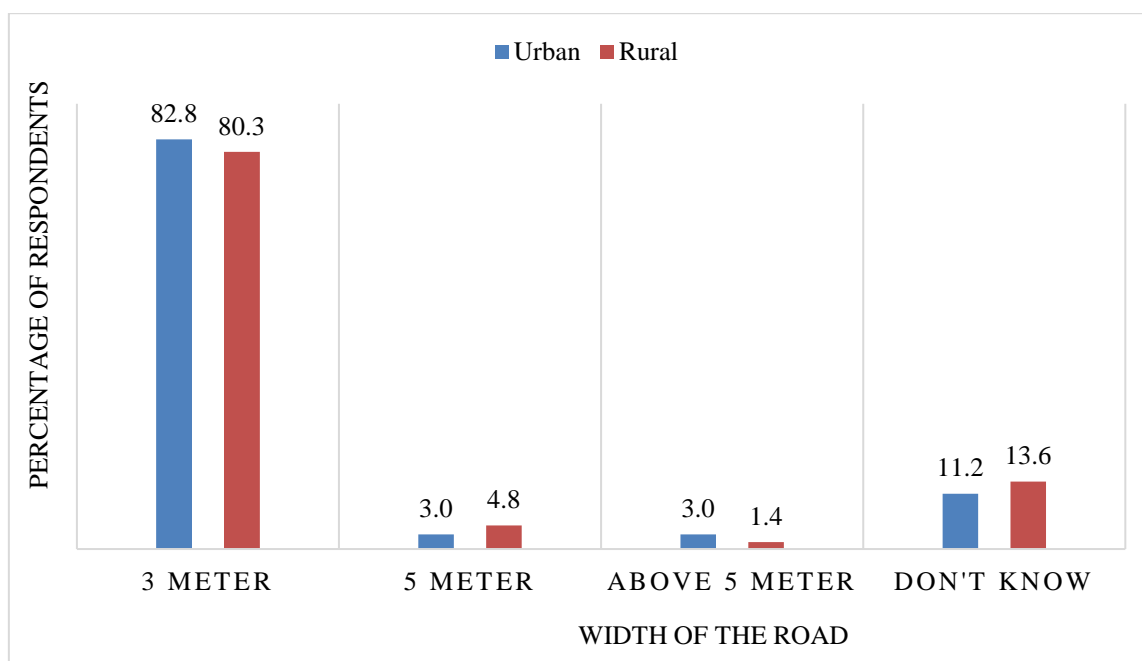


Figure 4.1: Width of the road in front of houses

4.2.2 Distance of Main Road from Household

From the Socio-economic survey 2016 found that most of the houses (about two-third of total) are situated within meters' distance from the main roads. In rural area about half of total houses are situated above 100 meters from the main roads.

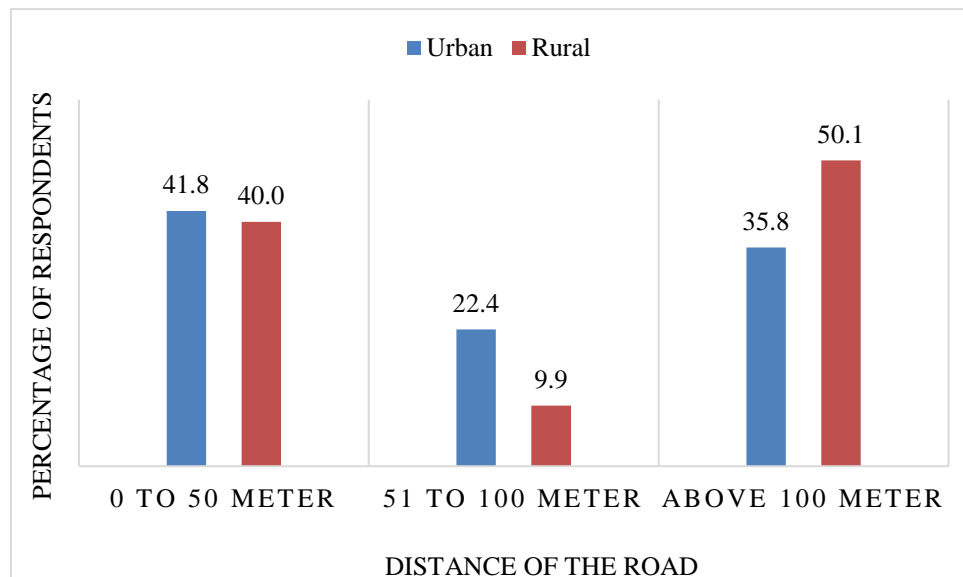


Figure 4.2: Distance of Main Road from Houses

4.2.3 Condition of the road

It has been found that, in both urban and rural areas, the condition of road near to respondents' houses are of different types. About 38.80 percent of the households in urban areas reported that roads close to their houses are bituminous; 45.80 percent of the households in the rural areas gave the same statement. On average 45 percent, households say that the roads close to their houses are bituminous. For information about other type of roads, please see Figure 4.4 below. Most of the respondents are not happy with the road condition, about three fourth of total respondents' remarks that roads are not in good condition and narrow in width.

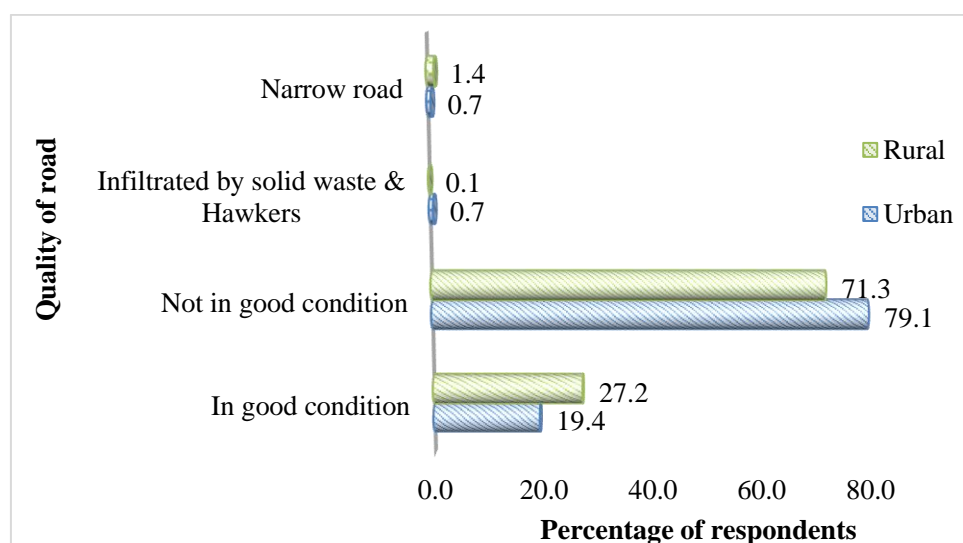


Figure 4.4: Percentage Distribution of Household by Problems of Roads (Source: Socio-economic Survey of Dohar Upazila, 2016)

Chapter-5: Conclusion

The findings of transportation and traffic management survey reveals important features about the road condition, mode of transport, traffic volume at major intersections and major road links, origin-destination of regional traffic and more importantly the travel behavior of the transport users. It is clear from the survey that the internal accessibility within the district is enough satisfactory as well as inter district connectivity. However, this is not the case for Inland water transportation system.

It is noted that the pedestrians are significant road users within the urban area of this Upazila. However, in the assessed roads in all intersections, pedestrians are often forced to share the same road ways with vehicular traffic due to lack of footpath. This conflict is becoming sever in Thanar Mor area. The main reasons are slow modes in primary roads and the shoulder is below the paved surface of the road. Thus, having less space for over taking, slow modes are forced to move dangerously to the low shoulder by high speed vehicles. The outcome is the conflicting traffic situations characterized by lower speeds of the motorized vehicles and increasing probability of accidents for both pedestrian and slow modes.

From the survey findings, it could be mentioned that the people are mostly dependent on non-motorized vehicles for their local movement. However, uses of electric powered auto-rickshaw as public transport in the recent years are alarming. Rickshaw/van is the dominant mode of transport among non-motorized vehicles. Other significant motorized vehicles include trucks for freight good movements. For public transport, buses provide mainly direct services. Besides, the frequent change of mode of the bus users shows the necessity of integrated transport planning. Thus, this report includes useful analysis to further commencement of the project.

Traffic management system should be developed which includes better performance of traffic signal points, road intersections and smooth functioning of motorized and non- motorized vehicles separately. Moreover, necessary steps are yet to be taken by appropriate authority regarding widen of roads, bridge and as well as proper maintenance of the roads. At the Thanar Mor and at front of the Upazila *Parishad Bhaban* these were not found up to the mark. Those points are to be designed properly which helps the better movement of traffic and also reduces the accidents and congestions. The Upazila authority would look into the matter.

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LETTER OF TRANSMITTAL

To,

10th December, 2017

PD

Preparation of Development Plan for Fourteen Upazilas

Urban Development Directorate (UDD)

82, Segun Bagicha, Dhaka-1000, Bangladesh

Sub: Submission of Dohar Upazila Transportation Survey Report

Please find attached to this letter, the Transportation Survey Report of Dohar Upazila of Package-1 of the project 'Preparation of Development Plan for Fourteen Upazilas'. The report has been prepared based on Terms of Reference and the subsequent instructions received from your office time to time.

Hope the current report will meet your requirements.

Thanking you so much.

Md. Moniruzzaman

Managing Director

Desh Upodesh Ltd.

House No.7, Road (New) 13

Dhanmandi RA, Dhaka-1209

Dr. Akhter Husain Chaudhury

Team Leader, Package-1,

'Preparation of Development Plan for Fourteen
Upazilas.

Executive Summery

A traffic and transportation survey is undertaken to investigate into the existing transportation infrastructure, transportation modes and modal share scenario and to estimate the anticipated transportation needs of the future.

Dohar Upazila has 266 km metaled, 228 km semi-metaled and 228km katcha road. It has 20 km Water way round the year (river + canal). Regional linkage of this Upazila is mainly Dhaka based. There is no National highway and railways passing through this Upazila. Waterway connection is very important for this upazila as it established the easy connection of Sadarpur upazila, Faridpur with this upazila. The internal accessibility within the Upazila is strong as well as inter district connectivity. Six types of various survey (Traffic volume survey in inter-sections and Road segments, O-D survey, Bus Passengers Survey, Pedestrian Survey and Regional Transportation Survey) works have been performed by appointing experienced supervisors and enumerators through approved formats of UDD (Sample size and number of spots also were approved by UDD). Data entry works been completed properly and analyzed those accordingly (Attached in the Annexures).

Transportation survey reveals that the pedestrians are the significant road users within the urban area. However, in roads, pedestrians are often forced to share the same road ways with vehicular traffic due to lack of footpath. Every day almost 2000 (two thousand) passengers and 100-150 tons freight regularly move to different destinations from this Upazila by bus, truck, pickup and other mode of transports. Truck plays prominent role for carrying goods than other vehicles. Situation is almost same for the opposite direction traffic coming from outsides. Non-motorized transports are mainly used locally for transportation of passengers and goods. However, the survey reveals poor condition of roads and narrow width of carriageway that interrupts smooth vehicular movement. Most of the roads in this Upazila is either semi-pucca or Katcha and almost 93% of the access road width is below 3.0 meters that connect the households. There is no well-designated bus stand and terminal for bus and trucks. As a result, indiscriminate parking is observed everywhere. Buses pick up passengers from almost anywhere in the road. A complete disorder is observed in traffic management system.

The inhabitants of urban area are mostly dependent on non-motorized vehicles for their local mobility. However, as cheaper and faster mode, the electric powered auto-rickshaw, as public transport is gaining rapid popularity replacing manually operated rickshaws. Rickshaw/van and bicycle are the dominant modes of transport among non-motorized vehicles. Other significant motorized vehicles include trucks, pickups for freight goods movements.

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Transportation Specialist

Abbreviation and Acronym

UDD	=	Urban Development Directorate
LGED	=	Local Government Engineering Department
PRA	=	Participatory Rapid Appraisal
HBB	=	Herring-Bone-Bond
MV	=	Motorized Vehicle
NMV	=	Non-Motorized Vehicle
O-D	=	Origin-Destination
PMO	=	Project Management Office
RHD	=	Roads and Highways Department
NGO	=	Non-Government Organization
PCE	=	Passenger Car Equivalent
PCE	=	Passenger Car Units
V/C	=	Volume/Capacity
DITS	=	Dhaka Integrated Transport Study
RMSS	=	Road Materials and Standards Study

Table of Contents

	Page No.
Letter of Transmittal	i
Executive Summary	ii
Abbreviations	iii
Table of Contents	iv
List of Tables	vi
List of Figures	vii
List of Maps	viii
List of Photographs	viii
Chapter-1: Introduction	1
1.1 Background	1
1.2 Understanding of Transportation Infrastructure and Facilities	1
1.3 Survey Methodology	1
1.3.1 Surveys	1
1.3.2 Format and Techniques for Traffic Survey	2
1.3.3 Sampling Size and Methods	2
1.3.4 PCE standards	3
1.3.5 Intersection Capacity	3
1.4 Conducted Surveys	4
1.4.1 Orientation & Meeting	4
1.4.2 Team Formation	4
1.4.3 Formats used for Traffic Survey	7
1.4.4 Survey Conducting Period	7
1.5 Conducting Traffic and Transportation Survey	7
1.5.1 Traffic Volume Count Survey	7
a. Survey Methodology	7
b. Manual Counts	7
c. Intersections and Justification of the Selections	8
d. Survey Schedule	8
e. Database Preparation and Data Processing	11
f. Finding and Analysis	11
1.5.2 Origin-Destination (O-D) Survey	11

a. Survey Methodology	11
b. Survey Location and Schedule	12
c. Questionnaire Design	12
d. Database Preparation and analysis	12
1.5.3 Bus Passenger Interview Survey	14
1.5.4 Pedestrian Interview Survey	14
Chapter-2: Existing Transportation Network and Facilities	17
2.1 Introduction	17
2.2 Road Communication and Regional Connectivity	17
2.3 Available Transport Modes	17
2.4 Regional Connectivity	18
2.5 Inventory of important roads of the study area	19
2.5.1 Existing Road Network of Dohar Upazila	19
2.6 Functional Classification of Road	21
2.7 Existing Infrastructure	21
2.8 Major Traffic Congestion Areas	22
Chapter-3: Analysis of Survey Findings	25
3.1 Traffic Volume Count Survey	25
3.1.1 Average Daily Traffic Volume	25
3.1.2 Traffic Volume in Surveyed Intersection	28
3.1.3 Peak Period Traffic Volume	30
3.1.4 Traffic Condition of Road Sections	33
3.1.5 Off-Peak Period Traffic Volume	34
3.1.6 Traffic Volume and PCE at Roadway Segments	36
3.1.7 Pedestrian Traffic Volume Survey	37
3.2 Origin-Destination (O-D) Survey Findings	37
3.2.1 Trip purpose and Mode Used	37
3.2.2 Origin and Destination of Passenger Modes	38
3.2.3 Capacity of Passenger Modes	39
3.2.4 Destination Pattern of Different Union of Dohar Upazila	40
3.2.5 Passengers Density in Different Vehicle Mode	40
3.2.6 Major Prioritized Problems	41
3.3 Passenger Interview Survey Findings	41

3.3.1 Demographic Information	41
3.3.2 Trip Purpose	42
3.3.3 Age Group and Trip Purpose	42
3.3.4 Types of Mode	43
3.3.5 Trip Distribution by Passengers	43
3.3.6 Gender and Trip Productions per Week	44
3.4 Pedestrian Survey	44
3.4.1 Demographic Information	44
3.4.2 Purpose of Trips and Distance Traveled	45
3.5 Regional Network System	46
3.5.1 Trip Frequency	46
3.5.2 Regional Connectivity with Surrounding Regions	47
3.5.3 Regional Transport Network System	47
3.5.4 Transport Going Out from Study Area to Other Region	47
3.5.5 Transport Coming from other region to study area	50
Chapter-4: Findings from PRA & Socio Economic Survey	51
4.1 Findings from PRA	51
4.2 Findings from Socio Economic Survey	51
4.2.1 Status of Access Road	51
4.2.2 Distance of Main Road from Household	52
4.2.3 Condition of the road	52
Chapter-5: Conclusion	53
Reference	54
Annexure	55

List of Tables:

Table 1.1: Sample size and location number according to surveys	3
Table 1.2: PCE of different modes considered in different projects.....	3
Table 1.3: Intersection Status Criteria for Planning Critical v/c Ratio	4
Table 1.4: Survey Team Conducting Traffic and Transportation Survey	4
Table 1.5: Conducting Period of Traffic and Transportation Survey	7
Table 1.6: Name of the Intersections for volume survey in Dohar Upazila	8
Table 1.7: Name of the intersection and corresponding links	8
Table 2.1: Registered and non- Registered Number vehicles in Dohar Upazila in 2016	18
Table 2.2: Major Routes from Dohar	18
Table 2.3: Road Types according to Surface and Hierarchy	21
Table 3.1: PCE and Traffic Volume at Intersection	25

Table 3.2: Capacity of the roads in Dohar Upazila.....	34
Table 3.3: Traffic Volume and PCE at Roadway Segments.....	37
Table 3.4: Pedestrian density in selected intersections.....	37
Table 3.5: O-D matrix.....	39
Table 3.6: Carrying capacity of passenger modes (in percentage)	40
Table 3.7: Trip distribution pattern according to the trip purpose (in percentage).....	40
Table 3.8: Age- Sex structure of bus users	42
Table 3.9: Age Group and Trip Purpose (in percentage).....	42
Table 3.10: Age composition according to gender of the pedestrian	45
Table 3.11: Trip purpose according to the gender of the pedestrian	46
Table 3.12: Trips Rate of the vehicles travelling away from Dohar Upazila	48
Table 3.13: Carrying capacities of some major vehicles in Dohar Upazila.....	50
Table 3.14: Goods carried by freight vehicles travelling away from Dohar Upazila.....	50

List of Figures:

Figure 3.1: Average Frequency of Vehicle/Hour at Links of Three Intersection.....	26
Figure 3.2: Kartikpur Bazar Intersection	27
Figure 3.3 Lotakhula Intersection	27
Figure 3.4 Poshcim Char Intersection.....	28
Figure 3.5 Thanar Mor Intersection	28
Figure 3.6: Traffic Volume of Kartikpur Bazar.....	29
Figure 3.7: Traffic Volume of Lotakhula	29
Figure 3.8: Traffic Volume of Poshcim char	30
Figure 3.9: Traffic Volume of Thanar mor.....	30
Figure 3.10: Peak Period Traffic Volume of Kartikpur bazar	31
Figure 3.11: Peak Period Traffic Volume of Lotakhula	31
Figure 3.12: Peak Period Traffic Volume of Poschim char.....	32
Figure 3.13: Peak Period Traffic Volume of Thanar mor.....	32
Figure 3.14: Peak Hour Traffic Volume	33
Figure 3.15: Off-peak Period Traffic Volume of Kartikpur bazar.....	35
Figure 3.16: Off-peak Period Traffic Volume of Lotakhula.....	35
Figure 3.17: Off-peak Period Traffic Volume of Poshcim char	36
Figure 3.18: Off-peak Period Traffic Volume of Thanar mor	36
Figure 3.19: Percentage of mode uses	38
Figure 3.20: Percentage of Trip Purpose	38
Figure 3.21: Occupancy of Passengers in Vehicle.....	41
Figure 3.22: Major problems	41
Figure 3.23: Trip purpose (in percentage)	42
Figure 3.24: Types of Mode (in percentage)	43
Figure 3.25: Trip Frequency (in percentage)	43
Figure 3.26: Trip frequency per week according to the gender	44
Figure 3.27: Age Composition of Pedestrian of Dohar (in percentage)	45
Figure 3.28: Pedestrian Distance Traveled	46
Figure 3.29: Trip Frequency	46
Figure 3.30: Regional Connectivity with Surrounding Regions (in percentage).....	47

Figure 4.1: Width of the road in front of houses.....	51
Figure 4.2: Distance of Main Road from Houses	52
Figure 4.4: Percentage Distribution of Household by Problems of Roads	52

List of Maps:

Map 1.1: Survey locations in Dohar Upazila.....	6
Map 1.2: Intersection Survey Locations in Dohar Upazila.....	9
Map 1.3: O-D Survey Location	13
Map 1.4: Bus Passenger Survey Location	15
Map 1.5: Pedestrian Survey Location	16
Map 2.1: Upazila Road Network Map	20
Map 2.2: Major traffic Congestion areas in Dohar Upazila.....	24
Map 3.1: Regional Connectivity of Dohar Upazila	49

List of Photographs:

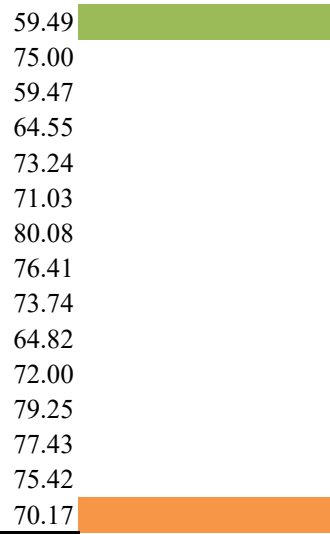
Picture 1.1: 2 O-D Survey Locations (Meghula and College Road Mor)	12
Picture 1.2: Bus Passenger Survey Locations (Moinot Ghat and Thanar Mor)	14
Picture 2.1: Satvita Narisha, Dohar	17
Picture 2.2: A Major Road of Dohar Town	17
Picture 2.3: Condition of the road in an Access road (Sutarpara)	19
Picture 2.4: Condition of the road in an Access road (Satvita)	19
Picture 2.5: Bus, Truck stand and Ghat at Moinot Ghat.....	22
Picture 2.6: Auto Stand College Mor	22
Picture 2.7: CNG stand, Moinot Ghat	22
Picture 2.8: Traffic congestion at Dohar	23
Picture 2.9: Traffic congestion at Dohar due to narrow road and lack of maintenance	23

Traffic Volume Survey: Dohar

Time	Location: Lotakhula				Direction: Lotakhola to Joypara Bazar (In-out)															
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/ microbus		PCU	Tempo/No simon		PCU	Auto Rickshaw		PCU	Motor cycle	
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)
06:00 -07:00	0	0	0	0	0	0	2	2.53	4	0	0	0	5	6.33	5	30	37.97	15	10	12.66
07:00-08:00	0	0	0	0	0	0	2	1.85	4	1	0.93	1	10	9.26	10	51	47.22	25.5	17	15.74
08:00-09:00	0	0	0	5	1.89	15	2	0.76	4	0	0.00	0	19	7.20	19	98	37.12	49	33	12.50
09:00-10:00	0	0	0	5	0.91	15	7	1.27	14	4	0.73	4	49	8.91	49	169	30.73	84.5	121	22.00
10:00-11:00	0	0	0	6	1.03	18	4	0.69	8	5	0.86	5	27	4.63	27	238	40.82	119	147	25.21
11:00-12:00	0	0	0	3	0.52	9	0	0.00	0	2	0.34	2	40	6.90	40	258	44.48	129	109	18.79
12:00-13:00	0	0	0	5	1.04	15	5	1.04	10	2	0.41	2	38	7.88	38	233	48.34	116.5	103	21.37
13:00-14:00	0	0	0	5	1.08	15	4	0.87	8	4	0.87	4	25	5.41	25	163	35.28	81.5	152	32.90
14:00-15:00	0	0	0	3	0.84	9	17	4.75	34	3	0.84	3	21	5.87	21	153	42.74	76.5	67	18.72
15:00-16:00	0	0	0	3	1.19	9	7	2.77	14	0	0.00	0	20	7.91	20	73	28.85	36.5	61	24.11
16:00-17:00	0	0	0	8	2.29	24	7	2.00	14	4	1.14	4	12	3.43	12	144	41.14	72	77	22.00
17:00-18:00	0	0	0	22	4.56	66	25	5.19	50	2	0.41	2	19	3.94	19	202	41.91	101	112	23.24
18:00-19:00	0	0	0	7	1.45	21	13	2.69	26	5	1.04	5	22	4.55	22	204	42.24	102	123	25.47
19:00-20:00	0	0	0	2	1.12	6	12	6.70	24	0	0.00	0	11	6.15	11	65	36.31	32.5	45	25.14
20:00-21:00	0	0	0	15	2.76	45	12	2.21	24	2	0.37	2	36	6.63	36	177	32.60	88.5	139	25.60
	0.0	0.0	0.0	89.0	20.7	267.0	119.0	35.3	238.0	34.0	7.9	34.0	354.0	95.0	354.0	2258.0	587.8	1129.0	1316.0	325.4

	Traffic Volume Survey: Dohar
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												Carrying capacity calculation								
			Mode of Traffic (Nos)							Bus			Truck			Pick up				
PCU	Rickshaw/Van		PCU	Bicycle		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2		
0.3			1			0.3														
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)												
3	27	34.18	27	5	6.33	1.5	79	100	55.5	0	0	0	0	0	0	0	0	2		
5.1	25	23.15	25	2	1.85	0.6	108	100	71.2	0	0	0	0	0	0	0	0	2		
9.9	76	28.79	76	31	11.74	9.3	264	100	182.2	0	0	0	3	2	0	0	0	2		
36.3	162	29.45	162	33	6.00	9.9	550	100	374.7	0	0	0	2	3	0	1	1	5		
44.1	123	21.10	123	33	5.66	9.9	583	100	354	0	0	0	3	3	0	1	1	2		
32.7	142	24.48	142	26	4.48	7.8	580	100	362.5	0	0	0	3	0	0	0	0	0		
30.9	72	14.94	72	24	4.98	7.2	482	100	291.6	0	0	0	2	3	0	2	1	3		
45.6	97	21.00	97	12	2.60	3.6	462	100	279.7	0	0	0	1	4	0	0	2	2		
20.1	73	20.39	73	21	5.87	6.3	358	100	242.9	0	0	0	3	0	0	5	7	5		
18.3	67	26.48	67	22	8.70	6.6	253	100	171.4	0	0	0	3	0	0	0	2	5		
23.1	93	26.57	93	5	1.43	1.5	350	100	243.6	0	0	0	3	5	0	2	2	3		
33.6	83	17.22	83	17	3.53	5.1	482	100	359.7	0	0	0	12	10	0	0	10	15		
36.9	80	16.56	80	29	6.00	8.7	483	100	301.6	0	0	0	4	3	0	0	7	6		
13.5	32	17.88	32	12	6.70	3.6	179	100	122.6	0	0	0	1	2	0	0	5	7		
41.7	143	26.34	143	19	3.50	5.7	543	100	385.9	0	0	0	10	5	0	2	4	6		
394.8	1295.0	348.5	1295.0	291.0	79.4	87.3	5756.0	1500.0	3799.1											



Traffic Vollume Survey: Dohar

Time	Location: Poshcim char										Direction: Poshcim char to dohar									
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/mic robus		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU		
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)			
06:00 -07:00	4	7.27	12	1	1.82	3	3	5.45	6	2	3.64	2	2	3.64	2	19	34.55	9.5		
07:00-08:00	7	6.54	21	4	3.74	12	6	5.61	12	4	3.74	4	4	3.74	4	31	28.97	15.5		
08:00-09:00	8	3.76	24	7	3.29	21	8	3.76	16	6	2.82	6	10	4.69	10	75	35.21	37.5		
09:00-10:00	10	5.21	30	5	2.60	15	6	3.13	12	4	2.08	4	9	4.69	9	71	36.98	35.5		
10:00-11:00	3	1.66	9	2	1.10	6	4	2.21	8	5	2.76	5	6	3.31	6	76	41.99	38		
11:00-12:00	7	3.32	21	4	1.90	12	6	2.84	12	3	1.42	3	4	1.90	4	80	37.91	40		
12:00-13:00	3	1.80	9	3	1.80	9	4	2.40	8	2	1.20	2	7	4.19	7	70	41.92	35		
13:00-14:00	4	2.38	12	3	1.79	9	5	2.98	10	4	2.38	4	11	6.55	11	60	35.71	30		
14:00-15:00	7	3.72	21	6	3.19	18	3	1.60	6	4	2.13	4	6	3.19	6	70	37.23	35		
15:00-16:00	5	2.82	15	3	1.69	9	6	3.39	12	4	2.26	4	6	3.39	6	72	40.68	36		
16:00-17:00	5	3.55	15	6	4.26	18	4	2.84	8	3	2.13	3	4	2.84	4	52	36.88	26		
17:00-18:00	4	2.68	12	3	2.01	9	4	2.68	8	1	0.67	1	4	2.68	4	55	36.91	27.5		
18:00-19:00	3	2.65	9	2	1.77	6	3	2.65	6	2	1.77	2	7	6.19	7	43	38.05	21.5		
19:00-20:00	2	3.33	6	3	5.00	9	3	5	6	3	5	3	2	3.33	2	21	35.00	10.5		
20:00-21:00	1	2.56	3	2	5.13	6	0	0	0	0	0	0	2	5.13	2	16	41.03	8		
	73.0	53.3	219.0	54.0	41.1	162.0	65.0	46.5	130.0	47.0	34.0	47.0	84.0	59.5	84.0	811.0	559.0	405.5		

	Traffic Vollume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar

Time	Location: Poshcim char																		Direction: Dohar to Poshcim char																	
	Mode of Traffic (Nos)																																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU																		
			3			3			2			1			1			0.5																		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)																			
06:00 -07:00	10	14.71	30	2	2.94	6	3	4.41	6	2	2.94	2	3	4.41	3	26	38.24	13																		
07:00-08:00	7	10.14	21	4	5.80	12	5	7.25	10	0	0.00	0	4	5.80	4	32	46.38	16																		
08:00-09:00	17	10.49	51	4	2.47	12	12	7.41	24	3	1.85	3	8	4.94	8	55	33.95	27.5																		
09:00-10:00	2	1.79	6	4	3.57	12	5	4.46	10	2	1.79	2	2	1.79	2	43	38.39	21.5																		
10:00-11:00	4	1.82	12	3	1.36	9	5	2.27	10	5	2.27	5	2	0.91	2	103	46.82	51.5																		
11:00-12:00	8	3.88	24	3	1.46	9	7	3.40	14	6	2.91	6	3	1.46	3	92	44.66	46																		
12:00-13:00	4	2.74	12	2	1.37	6	4	2.74	8	6	4.11	6	3	2.05	3	83	56.85	41.5																		
13:00-14:00	7	4.73	21	3	2.03	9	7	4.73	14	6	4.05	6	2	1.35	2	67	45.27	33.5																		
14:00-15:00	7	5.88	21	4	3.36	12	6	5.04	12	4	3.36	4	3	2.52	3	54	45.38	27																		
15:00-16:00	6	3.57	18	3	1.79	9	7	4.17	14	3	1.79	3	3	1.79	3	78	46.43	39																		
16:00-17:00	9	4.46	27	2	0.99	6	6	2.97	12	7	3.47	7	4	1.98	4	98	48.51	49																		
17:00-18:00	10	4.44	30	4	1.78	12	6	2.67	12	4	1.78	4	5	2.22	5	106	47.11	53																		
18:00-19:00	8	3.33	24	7	2.92	21	8	3.33	16	12	5.00	12	7	2.92	7	105	43.75	52.5																		
19:00-20:00	8	5.37	24	2	1.34	6	4	2.68	8	17	11.41	17	3	2.01	3	62	41.61	31																		
20:00-21:00	5	3.01	15	5	3.01	15	4	2.41	8	6	3.61	6	4	2.41	4	85	51.20	42.5																		
	112.0	80.4	336.0	52.0	36.2	156.0	89.0	59.9	178.0	83.0	50.3	83.0	56.0	38.6	56.0	1089.0	674.6	544.5																		

Traffic Volume Survey: Dohar

Time	Location: Poshcim char						Direction: Moura to Poshcim char															
	Mode of Traffic (Nos)																					
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nos imon		PCU	Auto Rickshaw		PCU	Motor cycle		PCU	
			3			3			2			1			1			0.5			0.3	
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		
06:00 -07:00	0	0	0	0	0	0	2	4.65	4	1	2.33	1	2	4.65	2	10	23.26	5	4	9.30	1.2	
07:00-08:00	0	0	0	0	0	0	3	3.23	6	2	2.15	2	2	2.15	2	18	19.35	9	15	16.13	4.5	
08:00-09:00	0	0	0	0	0	0	3	2.56	6	2	1.71	2	4	3.42	4	31	26.50	15.5	21	17.95	6.3	
09:00-10:00	0	0	0	0	0	0	6	6.38	12	4	4.26	4	1	1.06	1	26	27.66	13	12	12.77	3.6	
10:00-11:00	0	0	0	0	0	0	2	2.15	4	2	2.15	2	0	0.00	0	18	19.35	9	15	16.13	4.5	
11:00-12:00	0	0	0	0	0	0	1	1.04	2	1	1.04	1	1	1.04	1	31	32.29	15.5	12	12.50	3.6	
12:00-13:00	0	0	0	0	0	0	0	0.00	0	0	0.00	0	2	1.71	2	36	30.77	18	13	11.11	3.9	
13:00-14:00	0	0	0	0	0	0	1	1.12	2	2	2.25	2	0	0.00	0	20	22.47	10	19	21.35	5.7	
14:00-15:00	0	0	0	0	0	0	0	0.00	0	1	1.30	1	1	1.30	1	22	28.57	11	11	14.29	3.3	
15:00-16:00	0	0	0	0	0	0	1	1.16	2	2	2.33	2	1	1.16	1	32	37.21	16	17	19.77	5.1	
16:00-17:00	0	0	0	0	0	0	0	0.00	0	2	3.57	2	0	0.00	0	13	23.21	6.5	9	16.07	2.7	
17:00-18:00	0	0	0	0	0	0	2	2.22	4	0	0.00	0	2	2.22	2	18	20.00	9	31	34.44	9.3	
18:00-19:00	0	0	0	0	0	0	2	2.78	4	2	2.78	2	1	1.39	1	14	19.44	7	8	11.11	2.4	
19:00-20:00	0	0	0	0	0	0	2	2.35	4	1	1.18	1	0	0	0	26	30.59	13	17	20.00	5.1	
20:00-21:00	0	0	0	0	0	0	0	0	0	1	2.86	1	0	0	0	12	34.29	6	4	11.43	1.2	
	0.0	0.0	0.0	0.0	0.0	0.0	25.0	29.7	50.0	23.0	29.9	23.0	17.0	20.1	17.0	327.0	395.0	163.5	208.0	244.3	62.4	

			Traffic Volume Survey: Dohar																	
Carrying capacity calculation																				
			Mode of Traffic (Nos)									Bus			Truck			Pick up		
Rickshaw/Van		PCU	Bicycle		PCU	Others		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2
		1			0.3			2												
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)										
20	46.51	20	4	9.30	1.2	0	0	0	43	100	34.4	0	0	0	0	0	0	0	0	2
41	44.09	41	12	12.90	3.6	0	0	0	93	100	68.1	0	0	0	0	0	0	0	0	3
41	35.04	41	15	12.82	4.5	0	0	0	117	100	79.3	0	0	0	0	0	0	1	0	2
27	28.72	27	18	19.15	5.4	0	0	0	94	100	66	0	0	0	0	0	0	3	0	3
45	48.39	45	11	11.83	3.3	0	0	0	93	100	67.8	0	0	0	0	0	0	1	0	1
42	43.75	42	8	8.33	2.4	0	0	2	96	100	69.5	0	0	0	0	0	0	0	0	1
48	41.03	48	17	14.53	5.1	1	0.85	0	117	100	77	0	0	0	0	0	0	0	0	0
39	43.82	39	8	8.99	2.4	0	0	0	89	100	61.1	0	0	0	0	0	0	1	0	0
36	46.75	36	6	7.79	1.8	0	0	0	77	100	54.1	0	0	0	0	0	0	0	0	0
26	30.23	26	7	8.14	2.1	0	0	0	86	100	54.2	0	0	0	0	0	0	0	0	1
22	39.29	22	10	17.86	3	0	0	0	56	100	36.2	0	0	0	0	0	0	0	0	0
26	28.89	26	11	12.22	3.3	0	0	0	90	100	53.6	0	0	0	0	0	0	2	0	0
33	45.83	33	12	16.67	3.6	0	0	0	72	100	53	0	0	0	0	0	0	2	0	0
30	35.29	30	9	10.59	2.7	0	0	0	85	100	55.8	0	0	0	0	0	0	0	0	2
15	42.86	15	3	8.57	0.9	0	0	2	35	100	26.1	0	0	0	0	0	0	0	0	0
491.0	600.5	491.0	151.0	179.7	45.3	1.0	0.9	4.0	1243.0	1500.0	856.2									

Traffic Vollume Survey: Dohar

Time	Location: Poshcim char							Direction: Poshcim char to Moura													
	Mode of Traffic (Nos)																				
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/ microbus		PCU	Tempo/No simon		PCU	Auto Rickshaw		PCU	Motor cycle		PCU
			3			3			2			1			1			0.5			0.3
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	0	0	0	0	0	0	1	2.94	2	2	5.88	2	2	5.88	2	7	20.59	3.5	2	5.88	0.6
07:00-08:00	0	0	0	0	0	0	0	0.00	0	0	0.00	0	3	3.19	3	22	23.40	11	13	13.83	3.9
08:00-09:00	0	0	0	0	0	0	2	3.08	4	1	1.54	1	1	1.54	1	27	41.54	13.5	4	6.15	1.2
09:00-10:00	0	0	0	0	0	0	0	0.00	0	3	3.80	3	0	0.00	0	12	15.19	6	5	6.33	1.5
10:00-11:00	0	0	0	0	0	0	0	0.00	0	1	1.64	1	2	3.28	2	13	21.31	6.5	5	8.20	1.5
11:00-12:00	0	0	0	0	0	0	1	1.79	2	2	3.57	2	2	3.57	2	8	14.29	4	10	17.86	3
12:00-13:00	0	0	0	1	2.17	3	0	0.00	0	1	2.17	1	0	0.00	0	10	21.74	5	4	8.70	1.2
13:00-14:00	0	0	0	0	0	0	0	0.00	0	0	0.00	0	0	0.00	0	15	30.00	7.5	10	20.00	3
14:00-15:00	0	0	0	0	0	0	0	0.00	0	2	2.56	2	0	0.00	0	25	32.05	12.5	11	14.10	3.3
15:00-16:00	0	0	0	0	0	0	2	4.08	4	3	6.12	3	2	4.08	2	17	34.69	8.5	2	4.08	0.6
16:00-17:00	0	0	0	0	0	0	3	4.69	6	3	4.69	3	3	4.69	3	22	34.38	11	5	7.81	1.5
17:00-18:00	0	0	0	0	0	0	0	0.00	0	1	0.97	1	0	0	0	35	33.98	17.5	13	12.62	3.9
18:00-19:00	0	0	0	0	0	0	0	0.00	0	2	2.47	2	0	0	0	41	50.62	20.5	9	11.11	2.7
19:00-20:00	0	0	0	0	0	0	3	4.69	6	2	3.13	2	0	0	0	32	50.00	16	3	4.69	0.9
20:00-21:00	0	0	0	0	0	0	9	10.59	18	1	1.18	1	0	0	0	22	25.88	11	12	14.12	3.6
	0.0	0.0	0.0	1.0	2.2	3.0	21.0	31.8	42.0	24.0	39.7	24.0	15.0	26.2	15.0	308.0	449.7	154.0	108.0	155.5	32.4

	Traffic Volume Survey: Dohar
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[illegible]

Traffic Vollume Survey: Dohar

Time	Location: Posheim char						Direction: Srinagar to poschim char											
	Mode of Traffic (Nos)																	
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/micr obus		PCU	Tempo/Nosi mon		PCU	Auto Rickshaw		PCU
			3			3			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	7	18.42	21	1	2.63	3	1	2.63	2	1	2.63	1	1	2.63	1	17	44.74	8.5
07:00-08:00	8	10.13	24	3	3.80	9	4	5.06	8	2	2.53	2	3	3.80	3	27	34.18	13.5
08:00-09:00	7	4.70	21	3	2.01	9	7	4.70	14	4	2.68	4	4	2.68	4	54	36.24	27
09:00-10:00	5	2.69	15	1	0.54	3	5	2.69	10	23	12.37	23	4	2.15	4	72	38.71	36
10:00-11:00	6	2.69	18	3	1.35	9	5	2.24	10	24	10.76	24	3	1.35	3	93	41.70	46.5
11:00-12:00	7	3.35	21	4	1.91	12	9	4.31	18	17	8.13	17	5	2.39	5	83	39.71	41.5
12:00-13:00	7	5.88	21	3	2.52	9	4	3.36	8	12	10.08	12	2	1.68	2	52	43.70	26
13:00-14:00	6	8.82	18	2	2.94	6	3	4.41	6	11	16.18	11	1	1.47	1	27	39.71	13.5
14:00-15:00	6	8.22	18	3	4.11	9	4	5.48	8	9	12.33	9	2	2.74	2	27	36.99	13.5
15:00-16:00	7	11.29	21	2	3.23	6	3	4.84	6	12	19.35	12	1	1.61	1	18	29.03	9
16:00-17:00	7	3.72	21	7	3.72	21	9	4.79	18	19	10.11	19	3	1.60	3	67	35.64	33.5
17:00-18:00	6	2.87	18	4	1.91	12	9	4.31	18	21	10.05	21	3	1.44	3	79	37.80	39.5
18:00-19:00	6	3.73	18	4	2.48	12	11	6.83	22	19	11.80	19	3	1.86	3	69	42.86	34.5
19:00-20:00	7	5.04	21	5	3.60	15	6	4.32	12	18	12.95	18	3	2.16	3	47	33.81	23.5
20:00-21:00	7	9.09	21	1	1.30	3	2	2.60	4	7	9.09	7	1	1.30	1	29	37.66	14.5
	99.0	100.6	297.0	46.0	38.1	138.0	82.0	62.6	164.0	199.0	151.0	199.0	39.0	30.9	39.0	761.0	572.5	380.5

	Traffic Vollume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar

Time	Location: Poshcim char								Direction: Poshcim char to Srinagar												
	Mode of Traffic (Nos)																				
	Bus		PCU	Truck		PCU	Pick up		PCU	r/Jeep/microb		PCU	tempo/Nosimi		PCU	Auto Rickshaw		PCU	Motor cycle		
			3			3			2			1			1			0.5			
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	5	12.82	15	2	5.13	6	3	7.69	6	3	7.69	3	2	5.13	2	12	30.77	6	3	7.69	
07:00-08:00	4	4.65	12	3	3.49	9	4	4.65	8	3	3.49	3	3	3.49	3	32	37.21	16	11	12.79	
08:00-09:00	7	4.32	21	5	3.09	15	6	3.70	12	9	5.56	9	5	3.09	5	61	37.65	30.5	17	10.49	
09:00-10:00	8	3.65	24	5	2.28	15	7	3.20	14	10	4.57	10	8	3.65	8	81	36.99	40.5	32	14.61	
10:00-11:00	11	4.00	33	8	2.91	24	10	3.64	20	7	2.55	7	8	2.91	8	104	37.82	52	48	17.45	
11:00-12:00	8	3.54	24	7	3.10	21	8	3.54	16	8	3.54	8	9	3.98	9	78	34.51	39	32	14.16	
12:00-13:00	6	3.09	18	6	3.09	18	8	4.12	16	6	3.09	6	5	2.58	5	85	43.81	42.5	38	19.59	
13:00-14:00	7	3.32	21	4	1.90	12	6	2.84	12	7	3.32	7	11	5.21	11	75	35.55	37.5	35	16.59	
14:00-15:00	6	3.77	18	3	1.89	9	5	3.14	10	4	2.52	4	5	3.14	5	55	34.59	27.5	24	15.09	
15:00-16:00	4	2.50	12	5	3.13	15	8	5.00	16	6	3.75	6	8	5.00	8	65	40.63	32.5	25	15.63	
16:00-17:00	5	2.34	15	4	1.87	12	6	2.80	12	3	1.40	3	5	2.34	5	60	28.04	30	32	14.95	
17:00-18:00	7	2.77	21	4	1.58	12	5	1.98	10	3	1.19	3	5	1.98	5	90	35.57	45	58	22.92	
18:00-19:00	6	2.75	18	4	1.83	12	3	1.38	6	6	2.75	6	6	2.75	6	64	29.36	32	45	20.64	
19:00-20:00	4	4.82	12	3	3.61	9	3	3.61	6	2	2.41	2	4	4.82	4	34	40.96	17	14	16.87	
20:00-21:00	2	2.94	6	3	4.41	9	3	4.41	6	1	1.47	1	2	2.94	2	33	48.53	16.5	8	11.76	
	90.0	61.3	270.0	66.0	43.3	198.0	85.0	55.7	170.0	78.0	49.3	78.0	86.0	53.0	86.0	929.0	552.0	464.5	422.0	231.2	

	Traffic Volume Survey: Dohar
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																Carrying capacity calcu							
			Mode of Traffic (Nos)												Bus			Truck					
PCU	Rickshaw/Van		PCU	Bicycle		PCU	Push chart		PCU	Others		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	
0.3			1			0.3			4			2											
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	0	No	Percentage (%)									
0.9	6	15.38	6	3	7.69	0.9	0	0	0	0	0	0	39	100	45.8	0	2	3	0	2	0	3	
3.3	18	20.93	18	8	9.30	2.4	0	0	0	0	0	4	86	100	78.7	0	1	3	1	2	0	2	
5.1	38	23.46	38	12	7.41	3.6	0	0	0	2	1.23	0	162	100	139.2	0	3	4	2	3	0	3	
9.6	47	21.46	47	21	9.59	6.3	0	0	0	0	0	4	219	100	178.4	0	3	5	1	4	0	3	
14.4	59	21.45	59	18	6.55	5.4	0	0	0	2	0.73	0	275	100	222.8	0	5	6	3	5	0	6	
9.6	54	23.89	54	22	9.73	6.6	0	0	0	0	0	0	226	100	187.2	0	3	5	3	4	0	4	
11.4	28	14.43	28	12	6.19	3.6	0	0	0	0	0	0	194	100	148.5	0	2	4	2	4	0	5	
10.5	55	26.07	55	11	5.21	3.3	0	0	0	0	0	0	211	100	169.3	0	2	5	1	3	0	4	
7.2	24	15.09	24	24	15.09	7.2	9	5.66	36	0	0	0	159	100	147.9	0	2	4	1	2	0	3	
7.5	27	16.88	27	12	7.50	3.6	0	0	0	0	0	0	160	100	127.6	0	1	3	2	3	0	4	
9.6	82	38.32	82	17	7.94	5.1	0	0	0	0	0	0	214	100	173.7	0	2	3	2	2	0	4	
17.4	58	22.92	58	23	9.09	6.9	0	0	0	0	0	4	253	100	182.3	0	3	4	1	3	0	2	
13.5	61	27.98	61	21	9.63	6.3	0	0	0	2	0.92	0	218	100	160.8	0	3	3	3	1	0	2	
4.2	13	15.66	13	6	7.23	1.8	0	0	0	0	0	0	83	100	69	0	2	2	1	2	0	2	
2.4	13	19.12	13	3	4.41	0.9	0	0	0	0	0	12	68	100	68.8	0	0	2	1	2	0	2	
126.6	583.0	323.1	583.0	213.0	122.6	63.9	9.0	5.7	36.0	6.0	2.9	24.0	2567.0	1500.0	2100.0								

Traffic Vollume Survey: Dohar

Time	Location: Thanar Mor					Direction: Joypara to Bilaspur (In-Out)																							
	Mode of Traffic (Nos)																												
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU	Motor cycle										
			3			3			2			1			1			0.5											
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)									
06:00 -07:00	0	0	0	3	6.98	9	2	4.65	4	3	6.98	3	0	0	0	22	51.16	11	7	16.28									
07:00-08:00	0	0	0	7	7.00	21	4	4.00	8	4	4.00	4	7	7	7	42	42.00	21	12	12.00									
08:00-09:00	0	0	0	6	6.06	18	4	4.04	8	6	6.06	6	4	4.04	4	43	43.43	21.5	14	14.14									
09:00-10:00	0	0	0	1	0.76	3	3	2.29	6	2	1.53	2	1	0.76	1	47	35.88	23.5	23	17.56									
10:00-11:00	0	0	0	3	1.28	9	1	0.43	2	2	0.85	2	1	0.43	1	66	28.21	33	47	20.09									
11:00-12:00	0	0	0	3	1.57	9	1	0.52	2	2	1.05	2	2	1.05	2	51	26.70	25.5	35	18.32									
12:00-13:00	0	0	0	1	0.63	3	3	1.89	6	2	1.26	2	1	0.63	1	57	35.85	28.5	22	13.84									
13:00-14:00	0	0	0	2	1.27	6	1	0.63	2	4	2.53	4	1	0.63	1	46	29.11	23	16	10.13									
14:00-15:00	0	0	0	2	1.50	6	1	0.75	2	2	1.50	2	1	0.75	1	27	20.30	13.5	31	23.31									
15:00-16:00	0	0	0	2	1.53	6	1	0.76	2	1	0.76	1	3	2.29	3	41	31.30	20.5	12	9.16									
16:00-17:00	0	0	0	1	0.55	3	2	1.09	4	3	1.64	3	3	1.64	3	57	31.15	28.5	31	16.94									
17:00-18:00	0	0	0	3	1.45	9	4	1.93	8	6	2.90	6	3	1.45	3	63	30.43	31.5	29	14.01									
18:00-19:00	0	0	0	4	1.57	12	1	0.39	2	7	2.75	7	4	1.57	4	78	30.59	39	38	14.90									
19:00-20:00	0	0	0	9	6.82	27	3	2.27	6	4	3.03	4	3	2.27	3	34	25.76	17	13	9.85									
20:00-21:00	0	0	0	3	6.67	9	1	2.22	2	2	4.44	2	2	4.44	2	13	28.89	6.5	4	8.89									
	0.0	0.0	0.0	50.0	45.6	150.0	32.0	27.9	64.0	50.0	41.3	50.0	36.0	29.0	36.0	687.0	490.8	343.5	334.0	219.4									

Traffic Vollume Survey: Dohar

																	Carrying capacity calcul								
			Mode of Traffic (Nos)																Bus			Truck			
PCU	Rickshaw/Van		PCU	Bicycle		PCU	Push chart		PCU	Others		PCU	Total		PCU per hour			36	42	52	3	5	5+	1	
0.3			1			0.3			4	4		2													
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)											
2.1	4	9.30	4	2	4.65	0.6	0	0	0	0	0	0	43	100	33.7		0	0	0	2	1	0	0	0	
3.6	11	####	11	13	13.00	3.9	0	0	0	0	0	0	100	100	79.5		0	0	0	4	3	0	0	0	
4.2	16	####	16	6	6.06	1.8	0	0	0	0	0	0	99	100	79.5		0	0	0	4	2	0	0	0	
6.9	47	####	47	7	5.34	2.1	0	0	0	0	0	0	131	100	91.5		0	0	0	1	0	0	0	0	
14.1	105	####	105	9	3.85	2.7	0	0	0	0	0	0	234	100	168.8		0	0	0	2	1	0	0	0	
10.5	88	####	88	9	4.71	2.7	0	0	0	0	0	0	191	100	141.7		0	0	0	3	0	0	0	0	
6.6	61	####	61	12	7.55	3.6	0	0	0	0	0	0	159	100	111.7		0	0	0	1	0	0	0	0	
4.8	72	####	72	16	10.13	4.8	0	0	0	0	0	0	158	100	117.6		0	0	0	0	2	0	0	0	
9.3	53	####	53	14	10.53	4.2	1	0.75	4	1	0.75	2	133	100	97		0	0	0	2	0	0	0	0	
3.6	53	####	53	16	12.21	4.8	0	0	0	2	1.53	4	131	100	97.9		0	0	0	2	0	0	0	0	
9.3	73	####	73	13	7.10	3.9	0	0	0	0	0	0	183	100	127.7		0	0	0	0	1	0	0	0	
8.7	76	####	76	23	11.11	6.9	0	0	0	0	0	0	207	100	149.1		0	0	0	1	2	0	0	0	
11.4	93	####	93	27	10.59	8.1	0	0	0	3	1.18	6	255	100	182.5		0	0	0	2	2	0	0	0	
3.9	52	####	52	14	10.61	4.2	0	0	0	0	0	0	132	100	117.1		0	0	0	5	4	0	0	0	
1.2	16	####	16	4	8.89	1.2	0	0	0	0	0	0	45	100	39.9		0	0	0	0	3	0	0	0	
100.2	820.0	515.6	820.0	185.0	126.3	55.5	1.0	0.8	4.0	6.0	3.5	12.0	2201.0	1500.0	1635.2										

Traffic Volumn Survey: Dohar

Time	Location: Thanar mor							Direction: Dhaka to Dohar														
	Mode of Traffic (Nos)																					
	Bus		PCU	Truck		PCU	Pick up		PCU	/Jeep/micro		PCU	tempo/Nosimo		PCU	Auto Rickshaw		PCU	Motor cycle		PCU	
			3			3			2			1			1			0.5			0.3	
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		
06:00 -07:00	3	2.65	9	9	7.96	27	10	8.85	20	2	1.77	2	5	4.42	5	53	46.90	26.5	8	7.08	2.4	
07:00-08:00	3	2.04	9	5	3.40	15	7	4.76	14	4	2.72	4	6	4.08	6	102	69.39	51	7	4.76	2.1	
08:00-09:00	4	2.55	12	12	7.64	36	6	3.82	12	3	1.91	3	7	4.46	7	94	59.87	47	7	4.46	2.1	
09:00-10:00	3	1.19	9	1	0.40	3	8	3.16	16	2	0.79	2	14	5.53	14	121	47.83	60.5	50	19.76	15	
10:00-11:00	8	3.40	24	5	2.13	15	5	2.13	10	3	1.28	3	6	2.55	6	125	53.19	62.5	55	23.40	16.5	
11:00-12:00	6	1.31	18	5	1.09	15	7	1.53	14	6	1.31	6	21	4.60	21	232	50.77	116	109	23.85	32.7	
12:00-13:00	8	2.06	24	7	1.80	21	7	1.80	14	9	2.31	9	8	2.06	8	184	47.30	92	87	22.37	26.1	
13:00-14:00	6	1.83	18	5	1.53	15	7	2.14	14	4	1.22	4	13	3.98	13	146	44.65	73	82	25.08	24.6	
14:00-15:00	7	2.21	21	4	1.26	12	6	1.89	12	4	1.26	4	16	5.05	16	157	49.53	78.5	69	21.77	20.7	
15:00-16:00	4	1.49	12	3	1.12	9	7	2.60	14	4	1.49	4	3	1.12	3	137	50.93	68.5	59	21.93	17.7	
16:00-17:00	10	3.12	30	6	1.87	18	8	2.49	16	8	2.49	8	9	2.80	9	147	45.79	73.5	58	18.07	17.4	
17:00-18:00	9	2.16	27	11	2.64	33	11	2.64	22	12	2.88	12	14	3.37	14	197	47.36	98.5	63	15.14	18.9	
18:00-19:00	11	2.74	33	9	2.24	27	14	3.49	28	11	2.74	11	11	2.74	11	210	52.37	105	62	15.46	18.6	
19:00-20:00	12	3.93	36	11	3.61	33	14	4.59	28	12	3.93	12	14	4.59	14	128	41.97	64	47	15.41	14.1	
20:00-21:00	8	4.28	24	11	5.88	33	13	6.95	26	4	2.14	4	5	2.67	5	78	41.71	39	23	12.30	6.9	
	102.0	37.0	306.0	104.0	44.6	312.0	130.0	52.9	260.0	88.0	30.3	88.0	152.0	54.0	152.0	2111.0	749.5	1055.5	786.0	250.8	235.8	

Traffic Volume Survey: Dohar

Time	Location: Thanar Mor							Direction: Dohar to Dhaka										
	Mode of Traffic (Nos)																	
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU
			3			3			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	12	10.17	36	8	6.78	24	6	5.08	12	4	3.39	4	7	5.93	7	60	50.85	30
07:00-08:00	12	8.45	36	6	4.23	18	4	2.82	8	7	4.93	7	8	5.63	8	67	47.18	33.5
08:00-09:00	12	5.56	36	8	3.70	24	6	2.78	12	6	2.78	6	10	4.63	10	80	37.04	40
09:00-10:00	12	4.26	36	4	1.42	12	5	1.77	10	9	3.19	9	22	7.80	22	122	43.26	61
10:00-11:00	13	3.64	39	9	2.52	27	8	2.24	16	8	2.24	8	16	4.48	16	175	49.02	87.5
11:00-12:00	12	3.04	36	10	2.53	30	6	1.52	12	4	1.01	4	27	6.84	27	190	48.10	95
12:00-13:00	12	2.85	36	13	3.09	39	11	2.61	22	13	3.09	13	28	6.65	28	190	45.13	95
13:00-14:00	11	3.31	33	7	2.11	21	6	1.81	12	5	1.51	5	16	4.82	16	152	45.78	76
14:00-15:00	10	3.33	30	5	1.67	15	3	1.00	6	3	1.00	3	15	5.00	15	120	40.00	60
15:00-16:00	12	3.57	36	15	4.46	45	8	2.38	16	9	2.68	9	22	6.55	22	165	49.11	82.5
16:00-17:00	12	3.88	36	10	3.24	30	8	2.59	16	11	3.56	11	18	5.83	18	135	43.69	67.5
17:00-18:00	12	5.02	36	10	4.18	30	5	2.09	10	7	2.93	7	13	5.44	13	120	50.21	60
18:00-19:00	13	5.56	39	8	3.42	24	6	2.56	12	4	1.71	4	11	4.70	11	125	53.42	62.5
19:00-20:00	12	6.70	36	7	3.91	21	3	1.68	6	4	2.23	4	13	7.26	13	100	55.87	50
20:00-21:00	12	8.28	36	3	2.07	9	3	2.07	6	2	1.38	2	8	5.52	8	80	55.17	40
	179.0	77.6	537.0	123.0	49.3	369.0	88.0	35.0	176.0	96.0	37.6	96.0	234.0	87.1	234.0	1881.0	713.8	940.5

Traffic Volumn Survey: Dohar

Time	Location: Thanar mor										Direction: Lotakhola to Thanar mor									
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU		
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)			
06:00 -07:00	2	1.02	6	3	1.52	9	2	1.02	4	3	1.52	3	5	2.54	5	66	33.50	33		
07:00-08:00	5	1.97	15	3	1.18	9	5	1.97	10	5	1.97	5	6	2.36	6	92	36.22	46		
08:00-09:00	5	1.66	15	3	0.99	9	7	2.32	14	5	1.66	5	7	2.32	7	82	27.15	41		
09:00-10:00	6	1.60	18	4	1.06	12	7	1.86	14	8	2.13	8	10	2.66	10	122	32.45	61		
10:00-11:00	5	1.40	15	6	1.68	18	5	1.40	10	7	1.96	7	7	1.96	7	126	35.20	63		
11:00-12:00	5	1.28	15	6	1.54	18	5	1.28	10	8	2.05	8	7	1.79	7	142	36.41	71		
12:00-13:00	5	1.59	15	5	1.59	15	7	2.22	14	8	2.54	8	9	2.86	9	156	49.52	78		
13:00-14:00	5	1.56	15	4	1.25	12	8	2.50	16	5	1.56	5	8	2.50	8	131	40.94	65.5		
14:00-15:00	6	1.81	18	4	1.20	12	5	1.51	10	6	1.81	6	7	2.11	7	152	45.78	76		
15:00-16:00	3	1.10	9	4	1.47	12	4	1.47	8	8	2.93	8	7	2.56	7	111	40.66	55.5		
16:00-17:00	3	0.88	9	7	2.06	21	5	1.47	10	7	2.06	7	7	2.06	7	116	34.12	58		
17:00-18:00	5	1.73	15	2	0.69	6	4	1.38	8	8	2.77	8	5	1.73	5	116	40.14	58		
18:00-19:00	3	1.64	9	4	2.19	12	4	2.19	8	11	6.01	11	5	2.73	5	81	44.26	40.5		
19:00-20:00	2	1.47	6	3	2.21	9	3	2.21	6	6	4.41	6	2	1.47	2	41	30.15	20.5		
20:00-21:00	2	2.08	6	1	1.04	3	2	2.08	4	3	3.13	3	3	3.13	3	38	39.58	19		
	62.0	22.8	186.0	59.0	21.7	177.0	73.0	26.9	146.0	98.0	38.5	98.0	95.0	34.8	95.0	1572.0	566.1	786.0		

	Traffic Vollume Survey: Dohar
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Traffic Volume Survey: Dohar

Time	Location: Thanar Mor						Date:14.02.16				Direction: Thanar mor to Lotakhola										
	Mode of Traffic (Nos)																				
	Bus		PCU	Truck		PCU	Minibus		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU
			3			3			2			2			1			1			0.5
	No	Percentage (%)		No	Percentage (%)		No	Percentage		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)	
06:00 -07:00	2	1.09	6	3	1.63	9	0	0	0	3	1.63	6	2	1.09	2	4	2.17	4	75	40.76	37.5
07:00-08:00	3	1.25	9	2	0.83	6	0	0	0	4	1.67	8	3	1.25	3	6	2.50	6	83	34.58	41.5
08:00-09:00	4	1.38	12	3	1.03	9	0	0	0	7	2.41	14	4	1.38	4	7	2.41	7	88	30.34	44
09:00-10:00	5	1.31	15	3	0.79	9	0	0	0	8	2.10	16	7	1.84	7	9	2.36	9	126	33.07	63
10:00-11:00	5	1.37	15	5	1.37	15	0	0	0	4	1.09	8	4	1.09	4	6	1.64	6	138	37.70	69
11:00-12:00	4	1.11	12	6	1.67	18	0	0	0	8	2.22	16	6	1.67	6	8	2.22	8	156	43.33	78
12:00-13:00	4	1.05	12	4	1.05	12	0	0	0	7	1.84	14	3	0.79	3	7	1.84	7	170	44.62	85
13:00-14:00	4	1.17	12	4	1.17	12	0	0	0	6	1.75	12	3	0.88	3	8	2.34	8	145	42.40	72.5
14:00-15:00	4	1.57	12	3	1.18	9	0	0	0	5	1.96	10	2	0.78	2	5	1.96	5	103	40.39	51.5
15:00-16:00	3	1.07	9	2	0.71	6	0	0	0	4	1.43	8	3	1.07	3	6	2.14	6	125	44.64	62.5
16:00-17:00	4	1.34	12	5	1.68	15	0	0	0	3	1.01	6	4	1.34	4	8	2.68	8	130	43.62	65
17:00-18:00	5	1.81	15	2	0.72	6	0	0	0	4	1.44	8	6	2.17	6	5	1.81	5	112	40.43	56
18:00-19:00	3	1.96	9	4	2.61	12	0	0	0	3	1.96	6	3	1.96	3	3	1.96	3	70	45.75	35
19:00-20:00	2	1.82	6	2	1.82	6	0	0	0	3	2.73	6	1	0.91	1	2	1.82	2	37	33.64	18.5
20:00-21:00	2	1.90	6	1	0.95	3	0	0	0	3	2.86	6	2	1.90	2	3	2.86	3	45	42.86	22.5
	54.0	21.2	162.0	49.0	19.2	147.0	0.0	0.0	0.0	72.0	28.1	144.0	53.0	20.1	53.0	87.0	32.7	87.0	1603.0	598.2	801.5

Traffic Volume Survey: Dohar

																	Carrying capacity calculation						
Mode of Traffic (Nos)																	Bus			Truck			P
Motor cycle	PCU	Rickshaw/Van		PCU	Bicycle		PCU	Push chart		PCU	Others		PCU	Total		PCU per hour	36	42	52	3	5	5+	1
	0.3			1			0.3			4			2										
No	Percentage (%)	No	Percentage (%)	No	No	Percentage (%)	No	No	Percentage (%)	No	No	Percentage (%)	No	No	Percentage (%)								
22	11.96	6.6	51	27.72	51	22	11.96	6.6	0	0	0	0	0	184	100	128.7	0	1	1	0	3	0	1
56	23.33	16.8	65	27.08	65	18	7.50	5.4	0	0	0	0	0	240	100	160.7	0	1	2	0	2	0	3
61	21.03	18.3	90	31.03	90	26	8.97	7.8	0	0	0	0	2	290	100	208.1	0	1	3	1	2	0	4
71	18.64	21.3	111	29.13	111	40	10.50	12	0	0	0	1	0.26	381	100	263.3	0	2	3	0	3	0	3
60	16.39	18	116	31.69	116	28	7.65	8.4	0	0	0	0	0	366	100	259.4	0	2	3	2	3	0	4
35	9.72	10.5	106	29.44	106	31	8.61	9.3	0	0	0	0	0	360	100	263.8	0	2	2	2	4	0	4
70	18.37	21	94	24.67	94	22	5.77	6.6	0	0	0	0	0	381	100	254.6	0	1	3	2	2	0	4
60	17.54	18	90	26.32	90	22	6.43	6.6	0	0	0	0	0	342	100	234.1	0	1	3	2	2	0	3
51	20.00	15.3	70	27.45	70	12	4.71	3.6	0	0	0	0	0	255	100	178.4	0	1	3	0	3	0	3
47	16.79	14.1	72	25.71	72	18	6.43	5.4	0	0	0	0	0	280	100	186	0	0	3	2	0	0	2
48	16.11	14.4	83	27.85	83	13	4.36	3.9	0	0	0	0	0	298	100	211.3	0	2	2	2	3	0	1
42	15.16	12.6	82	29.60	82	19	6.86	5.7	0	0	0	0	0	277	100	196.3	0	2	3	0	2	0	3
27	17.65	8.1	33	21.57	33	7	4.58	2.1	0	0	0	0	0	153	100	111.2	0	0	3	1	3	0	3
26	23.64	7.8	30	27.27	30	7	6.36	2.1	0	0	0	0	0	110	100	79.4	0	0	2	1	1	0	2
22	20.95	6.6	21	20.00	21	6	5.71	1.8	0	0	0	0	2	105	100	73.9	0	0	2	0	1	0	1
698.0	267.3	209.4	1114.0	406.6	1114.0	291.0	106.4	87.3	0.0	0.0	0.0	1.0	0.3	4022.0	1500.0	2809.2							

Traffic Vollume Survey: Dohar

Time	Location: Thanar Mor						Direction: Thanar mor to joypara (In-Out)													
	Mode of Traffic (Nos)																			
	Bus		PCU	Truck		PCU	Pick up		PCU	Car/Jeep/microbus		PCU	Tempo/Nosimon		PCU	Auto Rickshaw		PCU	Motor cycle	
			3			3			2			1			1			0.5		
	No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)
06:00 -07:00	0	0	0	2	0.56	6	8	2.25	16	5	1.40	5	17	4.78	17	155	43.54	77.5	22	6.18
07:00-08:00	0	0	0	10	2.62	30	13	3.41	26	9	2.36	9	18	4.72	18	175	45.93	87.5	9	2.36
08:00-09:00	0	0	0	2	0.41	6	6	1.24	12	4	0.83	4	15	3.11	15	240	49.69	120	22	4.55
09:00-10:00	1	0.13	3	1	0.13	3	3	0.38	6	5	0.63	5	14	1.76	14	307	38.52	153.5	136	17.06
10:00-11:00	0	0	0	2	0.24	6	2	0.24	4	4	0.47	4	15	1.78	15	322	38.11	161	163	19.29
11:00-12:00	0	0	0	3	0.34	9	6	0.69	12	6	0.69	6	36	4.13	36	306	35.09	153	198	22.71
12:00-13:00	1	0.13	3	1	0.13	3	10	1.31	20	14	1.83	14	19	2.49	19	409	53.60	204.5	0	0
13:00-14:00	0	0	0	5	0.54	15	6	0.64	12	14	1.50	14	18	1.93	18	332	35.58	166	235	25.19
14:00-15:00	1	0.12	3	3	0.36	9	7	0.84	14	13	1.56	13	23	2.75	23	287	34.37	143.5	207	24.79
15:00-16:00	1	0.16	3	1	0.16	3	5	0.78	10	6	0.94	6	9	1.41	9	225	35.27	112.5	120	18.81
16:00-17:00	0	0	0	5	0.66	15	7	0.93	14	10	1.32	10	20	2.65	20	290	38.36	145	163	21.56
17:00-18:00	0	0	0	4	0.51	12	8	1.02	16	5	0.64	5	22	2.80	22	275	35.03	137.5	164	20.89
18:00-19:00	0	0	0	3	0.44	9	8	1.16	16	10	1.45	10	15	2.18	15	204	29.65	102	170	24.71
19:00-20:00	0	0	0	4	0.98	12	3	0.73	6	8	1.95	8	10	2.44	10	140	34.15	70	104	25.37
20:00-21:00	0	0	0	7	2.05	21	2	0.58	4	2	0.58	2	4	1.17	4	150	43.86	75	81	23.68
	4.0	0.5	12.0	53.0	10.1	159.0	94.0	16.2	188.0	115.0	18.2	115.0	255.0	40.1	255.0	3817.0	590.8	1908.5	1794.0	257.2

	Traffic Vollume Survey: Dohar
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Traffic Volume Survey: Dohar	
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[illegible]

	Traffic Volume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar	
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[illegible]

Traffic Volume Survey: Dohar

												Carrying capacity calculation								
Mode of Traffic (Nos)												Bus			Truck			Pick up		
Motor cycle		PCU	Rickshaw/ Van		PCU	Bicycle		PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2
		0.3			1			0.3												
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)										
2	4.55	0.6	9	20.45	9	2	4.55	0.6	44	100	51.7	0	3	4	2	0	0	0	0	3
4	4.76	1.2	22	26.19	22	4	4.76	1.2	84	100	86.4	0	3	3	4	0	0	0	0	5
9	7.96	2.7	23	20.35	23	4	3.54	1.2	113	100	112.9	0	3	4	7	0	0	0	0	5
17	12.59	5.1	20	14.81	20	13	9.63	3.9	135	100	122	0	3	3	5	3	0	0	0	4
57	21.67	17.1	49	18.63	49	9	3.42	2.7	263	100	181.8	0	5	5	1	0	0	0	0	2
51	16.04	15.3	47	14.78	47	27	8.49	8.1	318	100	201.9	0	3	3	2	1	0	0	0	3
88	24.04	26.4	60	16.39	60	8	2.19	2.4	366	100	250.3	0	6	5	2	2	0	0	0	4
95	26.84	28.5	61	17.23	61	12	3.39	3.6	354	100	243.6	0	4	4	3	8	0	0	0	2
41	14.96	12.3	35	12.77	35	8	2.92	2.4	274	100	206.2	0	6	6	3	5	0	0	0	3
42	13.46	12.6	33	10.58	33	20	6.41	6	312	100	229.1	0	6	6	10	0	0	0	0	4
45	17.18	13.5	21	8.02	21	7	2.67	2.1	262	100	204.6	0	6	6	4	5	0	0	0	7
45	16.73	13.5	22	8.18	22	13	4.83	3.9	269	100	207.9	0	6	6	5	6	0	0	0	6
31	12.20	9.3	30	11.81	30	12	4.72	3.6	254	100	200.9	0	6	6	2	3	0	0	0	11
23	11.62	6.9	22	11.11	22	7	3.54	2.1	198	100	148.5	0	6	6	2	1	0	0	0	2
28	15.73	8.4	21	11.80	21	6	3.37	1.8	178	100	139.2	0	6	6	2	2	0	0	0	3
											2587									

Traffic Vollume Survey: Dohar	
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Average	153	138.5533333
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Traffic Volume Survey: Dohar	
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Traffic Volume Survey: Dohar

[illegible]

Traffic Vollume Survey: Dohar	
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[illegible]

	Traffic Vollume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar	
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[illegible]

Traffic Vollume Survey: Dohar									
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[illegible]

	Traffic Vollume Survey: Dohar
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[illegible]

Traffic Volume Survey: Dohar	
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[illegible]

	Traffic Volume Survey: Dohar
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											Carrying capacity calculation									
			Mode of Traffic (Nos)									Bus			Truck			Pick up		
Motor cycle	PCU	Rickshaw/ Van	PCU	Bicycle	PCU	Total		PCU per hour	36	42	52	3	5	5+	1	1.5	2			
	0.3		1		0.3															
No	Percentage (%)		No	Percentage (%)		No	Percentage (%)		No	Percentage (%)										
3	4.29	0.9	13	18.57	13	3	4.29	0.9	70	100	82.3	1	3	2	3	2	0	4	3	
9	7.96	2.7	17	15.04	17	11	9.73	3.3	113	100	106	0	4	4	3	3	0	0	1	
19	8.44	5.7	44	19.56	44	23	10.22	6.9	225	100	185.1	0	2	6	3	3	0	0	5	
40	14.71	12	85	31.25	85	20	7.35	6	272	100	220	3	0	3	0	2	0	0	13	
39	15.42	11.7	78	30.83	78	6	2.37	1.8	253	100	193.5	0	2	3	0	2	0	0	7	
42	16.67	12.6	61	24.21	61	15	5.95	4.5	252	100	188.6	1	3	2	0	2	0	0	7	
38	18.54	11.4	43	20.98	43	8	3.90	2.4	205	100	183.8	0	4	8	0	5	0	0	10	
22	16.30	6.6	30	22.22	30	2	1.48	0.6	135	100	127.7	0	4	2	5	3	0	2	0	
18	8.41	5.4	52	24.30	52	13	6.07	3.9	214	100	180.8	1	2	8	0	2	0	0	4	
21	9.95	6.3	55	26.07	55	16	7.58	4.8	211	100	191.6	1	4	4	3	4	0	0	4	
17	8.13	5.1	45	21.53	45	18	8.61	5.4	209	100	192	2	2	8	2	6	0	0	6	
23	8.95	6.9	58	22.57	58	24	9.34	7.2	257	100	206.6	0	3	8	0	3	0	0	4	
18	6.74	5.4	78	29.21	78	19	7.12	5.7	267	100	242.6	3	6	4	2	5	0	0	7	
8	5.97	2.4	19	14.18	19	7	5.22	2.1	134	100	180.5	0	4	8	5	12	0	0	12	
12	9.02	3.6	22	16.54	22	12	9.02	3.6	133	100	141.7	1	4	2	3	6	0	4	10	
											2622.8									

Position	Mode ou	JorneyEnd out	tripno out	passenger out	goods amount out	mode in	JourneyStart in	tripno in	passenger in	goods amount in
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	26-30	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	26-30		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	31-35	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	36-40	
Meghula	Bus	Dhaka	4	31-35		Bus	Dhaka	4	26-30	

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Satbhita/Narisha	Truck	Dhaka	3		5	Truck	Comilla	3		3
Satbhita/Narisha	Truck	Kustia	3		3	Truck	Dhaka	3		5
Satbhita/Narisha	Truck	Munshiga	3		2	Truck	Dhaka	2		2
Satbhita/Narisha	Truck	Munshiga	3		2	Truck	Dhaka	2		3
Satbhita/Narisha	Truck	Dhaka	2		3	Truck	Dhaka	3		2
Satbhita/Narisha	Truck	Gazipur	1		1	Truck	Dhaka	2		2
Satbhita/Narisha	Truck	Dhaka	2		1	Truck	Rajbari	1		3
Satbhita/Narisha	Truck	Bhola	2		3	Truck	Dhaka	3		1
Satbhita/Narisha	Truck	Dinajpur	1		5	Truck	Chandpur	1		5
Satbhita/Narisha	Truck	Comilla	2		1	Truck	Dhaka	3		1
Satbhita/Narisha	Truck	Munshiga	2		2	Truck	Dhaka	2		2
Satbhita/Narisha	Truck	Dhaka	2		3	Truck	Dhaka	3		3
Satbhita/Narisha	Truck	Narayang	4		3	Truck	Dhaka	1		1
Meghula	Truck	Dhaka	2		3	Truck	Dhaka	1		3
Meghula	Truck	Bhola	2		3	Truck	Pabna	1		5
Meghula	Truck	Dhaka	3		3	Truck	Dhaka	2		1
Meghula	Truck	Munshiga	5		3	Truck	Dhaka	6		1
Meghula	Truck	Rajbari	1		3	Truck	Dhaka	2		3
Meghula	Truck	Bhola	1		1	Truck	Dhaka	1		1
Meghula	Truck	Bhola	1		3	Truck	Dhaka	3		3
Meghula	Truck	Dhaka	1		3	Truck	Dhaka	3		1
Meghula	Truck	Dhaka	3		1	Truck	Dhaka	3		3
Meghula	Truck	Narayang	3		3	Truck	Dhaka	5		3
Meghula	Truck	Munshiga	4		3	Truck	Dhaka	2		3
Meghula	Truck	Dhaka	3		1	Truck	Dhaka	2		3
Meghula	Truck	Bhola	2		3	Truck	Dhaka	2		1
Meghula	Truck	Dhaka	2		3	Truck	Dhaka	2		3
Meghula	Truck	Munshiga	2		3	Truck	Pabna	1		5
Moinot Ghat	Truck	Dinajpur	1		3	Truck	Keranigar	2		1
Moinot Ghat	Truck	Nawabga	3		3	Truck	Dhaka	2		5
Moinot Ghat	Truck	Bhola	3		1	Truck	Dhaka	3		3
Moinot Ghat	Truck	Feni	4		3	Truck	Feni	2		5
Moinot Ghat	Truck	Bhola	1		3	Truck	Bhola	1		1
Moinot Ghat	Truck	Feni	1		3	Truck	Bhola	1		1
Moinot Ghat	Truck	Dhaka	2		3	Truck	Bhola	2		3
Moinot Ghat	Truck	Munshiga	1		5	Truck	Narayang	1		1
Moinot Ghat	Truck	Bhola	1		1	Truck	Feni	1		1
Moinot Ghat	Truck	Dhaka	1		1	Truck	Keranigar	1		1
Moinot Ghat	Truck	Dhaka	2		3	Truck	Pabna	2		3
Moinot Ghat	Truck	Bhola	2		1	Truck	Dinajpur	2		5
Moinot Ghat	Truck	Rajbari	3		1	Truck	Pabna	1		5
Moinot Ghat	Truck	Nawabga	2		1	Truck	Dhaka	2		1

College Road Mo	Truck	Keraniga	2		3	Truck	Munshiga	1		5
College Road Mo	Truck	Munshiga	3		1	Truck	Bhola	4		3
College Road Mo	Truck	Mawa	3		2	Truck	Bhola	2		3
College Road Mo	Truck	Bhairab	2		5	Truck	Shibchar	3		3
College Road Mo	Truck	Bhola	3		2	Truck	Postogola	2		2
College Road Mo	Truck	Savar	2		1	Truck	Dhamrai	2		2
College Road Mo	Truck	Madaripu	2		1	Truck	Lohajang	3		1
College Road Mo	Truck	Siddhirga	2		2	Truck	Rupganj	2		1
College Road Mo	Truck	Pabna	3		1	Truck	Gazipur	3		1
College Road Mo	Truck	Narayang	2		3	Truck	Rangpur	3		5
College Road Mo	Truck	Dhaka	2		3	Truck	Dhaka	2		3
College Road Mo	Truck	Dhaka	1		1	Truck	Dhaka	2		3
College Road Mo	Truck	Dhaka	3		3	Truck	Dhaka	2		3
College Road Mo	Truck	Narayang	3		3	Truck	Dhaka	3		3
College Road Mo	Truck	Jessore	3		5	Truck	Dhaka	3		5
Moinot Ghat	Speed	Sadarpur	1	<10		Speed	Sadarpur	1	<10	
Moinot Ghat	Speed	Sadarpur	1	Oct-15		Speed	Sadarpur	1	Oct-15	
Moinot Ghat	Speed	Sadarpur	1	Oct-15		Speed	Sadarpur	1	Oct-15	
Moinot Ghat	Speed	Sadarpur	1	Oct-15		Speed	Sadarpur	1	Oct-15	
Moinot Ghat	Speed	Sadarpur	2	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	3	Oct-15		Speed	Sadarpur	4	Oct-15	
Moinot Ghat	Speed	Sadarpur	2	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	4	Oct-15		Speed	Sadarpur	3	Oct-15	
Moinot Ghat	Speed	Sadarpur	6	Oct-15		Speed	Sadarpur	3	Oct-15	
Moinot Ghat	Speed	Sadarpur	5	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	4	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	4	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	4	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	1	<10		Speed	Sadarpur	1	<10	
Moinot Ghat	Speed	Sadarpur	5	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Speed	Sadarpur	3	Oct-15		Speed	Sadarpur	2	Oct-15	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	Oct-15	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	

Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	21-25		Troller	Sadarpur	1	16-20	
Moinot Ghat	Trolle	Sadarpur	1	21-25		Troller	Sadarpur	1	16-20	
Moinot Ghat	Trolle	Sadarpur	1	21-25		Troller	Sadarpur	1	16-20	
Moinot Ghat	Trolle	Sadarpur	1	21-25		Troller	Sadarpur	1	26-30	
Moinot Ghat	Trolle	Sadarpur	1	26-30		Troller	Sadarpur	1	21-25	
Moinot Ghat	Trolle	Sadarpur	1	21-25		Troller	Sadarpur	1		

Place	Mode	TripStart	TripStartUp	TripStartUp	TripEnd	TripEndUp	TripEndUp	TripPurpos	NoOfPasse	TripPerDay	AvgPassen	NoOfStopp	AmountOf	Comments	NoOfPasGr
Moinotgha	Autoricksh	Bamtola	Mokshedpu	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	8	6					
Moinotgha	Truck	Bamtola	Mokshedpu	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	7			3000		
Satvita	Motorcycle	Chaitabaza	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Business	0	2					
College Ro	Bicycle	Char Joypa	Raypara	Dohar	Joypara Co	Dohar Paur	Dohar	Educational	0	2					
Meghula	Motorcycle	Dohar	Raypara	Dohar	Fultola	Mokshedpu	Dohar	Relative Ho	0	2					
Meghula	Car/jeep/m	Dohar	Raypara	Dohar	Fultola	Narisha	Dohar	Work Place	3	2					3-4 Persons
College Ro	Autoricksh	Dohar	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Work Place	7	18					
College Ro	Rickshaw/v	Dohar	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Work Place	2	20					1-2 Persons
College Ro	Bicycle	Dohar	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Work Place	0	4					
Meghula	Pick up var	Dohar	Raypara	Dohar	Narisha	Narisha	Dohar	Business	0	10			1500		
Meghula	Motorcycle	Dohar	Raypara	Dohar	Satvita	Mokshedpu	Dohar	Relative Ho	0	1					
Meghula	Car/jeep/m	Fultola	Mokshedpu	Dohar	Awrongaba	Raypara	Dohar	Relative Ho	4	1					3-4 Persons
Meghula	Tempo/Nos	Fultola	Narisha	Dohar	Joypara	Dohar Paur	Dohar	Work Place	12	12	8	7			
Meghula	Truck	Fultola	Narisha	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	4			4000		
Satvita	Tempo/Nos	Fultola	Narisha	Dohar	Noyabari	Nayabari	Dohar	Work Place	10	8	8	10			
Meghula	Autoricksh	Fultola	Narisha	Dohar	Sutarpara	Sutarpara	Dohar	Work Place	8	12					
Meghula	Pick up var	Holer Baza	Sutarpara	Dohar	Narisha	Narisha	Dohar	Work Place	0	8			2000		
College Ro	Autoricksh	Joypara	Dohar Paur	Dohar	Bottola	Sutarpara	Dohar	Work Place	8	7					
Meghula	Autoricksh	Joypara	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	6	10	7	8			5-6 Persons
College Ro	Autoricksh	Joypara	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	8	8					
College Ro	Tempo/Nos	Joypara	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	10	5	12	9			
College Ro	Rickshaw/v	Joypara	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	2	10		8	500		1-2 Persons
College Ro	Tempo/Nos	Joypara	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	6	7		8			5-6 Persons
College Ro	Motorcycle	Joypara	Dohar Paur	Dohar	Harichondi	Mahmudpu	Dohar	Work Place	0	2					
College Ro	Rickshaw/v	Joypara	Dohar Paur	Dohar	Khalpar	Dohar Paur	Dohar	Work Place	2	20					1-2 Persons
Moinotgha	Truck	Joypara	Dohar Paur	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	5			3000		
Meghula	Truck	Joypara	Dohar Paur	Dohar	Narisha	Narisha	Dohar	Work Place	0	3			3500		
Satvita	Autoricksh	Joypara	Dohar Paur	Dohar	Satvita	Raypara	Dohar	Work Place	6	13	5	8			5-6 Persons
College Ro	Bicycle	Kajirchar	Narisha	Dohar	Joypara	Dohar Paur	Dohar	Educational	0	2					
Meghula	Autoricksh	Karthikpur	Kusumhati	Dohar	Satvita	Mokshedpu	Dohar	Relative Ho	8	10					
Moinotgha	Truck	Kartikpur	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	6			3000		
Moinotgha	Motorcycle	Kartikpur	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	2					
Moinotgha	Motorcycle	Kartikpur	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	2					
Moinotgha	Pick up var	Kartikpur	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	4	35	5	3000		
Moinotgha	Truck	Kartikpur	Kusumhati	Dohar	Palam ganj	Raypara	Dohar	Work Place	0	5			3000		
Moinotgha	Truck	Kathaligha	Nayabari	Dohar	Kathaligha	Narisha	Dohar	Work Place	0	6			3000	Traffic jam	
College Ro	Autoricksh	Khalpar	Sutarpara	Dohar	Fultola	Narisha	Dohar	Work Place	8	12	30	6			
College Ro	Motorcycle	Khalpar	Sutarpara	Dohar	Joypara	Dohar Paur	Dohar	Business	1	3					1-2 Persons
College Ro	Pick up var	Kharakand	Dohar Paur	Dohar	Fultola	Narisha	Dohar	Work Place	0	8			1500		
College Ro	Rickshaw/v	Kharakand	Dohar Paur	Dohar	Joypara	Dohar Paur	Dohar	Business	2	16					1-2 Persons
Moinotgha	Rickshaw/v	Kushumha	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	2	27		4			1-2 Persons
Moinotgha	Motorcycle	Kushumha	Kusumhati	Dohar	Moinotgha	Mahmudpu	Dohar	Recreation	0	2					
College Ro	Pick up var	Lotakhola	Dohar Paur	Dohar	Joypara	Dohar Paur	Dohar	Work Place	0	3			1000		

Meghula	Autoricksh	Malikanda	Sutarpara	Dohar	Dohar	Dohar Paur	Dohar	Work Place	9	9					
College Ro	Autoricksh	Meghula	Narisha	Dohar	Joypara	Dohar Paur	Dohar	Work Place	8	10					
Meghula	Pick up van	Meghula	Narisha	Dohar	Narisha	Narisha	Dohar	Work Place	0	8			2000		
Meghula	Rickshaw/	Meghula	Narisha	Dohar	Narisha	Narisha	Dohar	Social Insti	2	20					1-2 Persons
Meghula	Bicycle	Meghula	Narisha	Dohar	Narisha	Narisha	Dohar	Relative Ho	0	2					
Satvita	Rickshaw/	Meghula	Narisha	Dohar	Pollibazar	Dohar Paur	Dohar	Business	1	10					1-2 Persons
College Ro	Motorcycle	Modhurcha	Mokshedpu	Dohar	Joypara	Dohar Paur	Dohar	Relative Ho	0	1					
Satvita	Bicycle	Modhurcha	Mokshedpu	Dohar	Pollibazar	Dohar Paur	Dohar	Business	0	2					
Satvita	Motorcycle	Modhurcha	Mokshedpu	Dohar	Joypara	Dohar Paur	Dohar	Educational	0	2					
Moinotgha	Truck	Moinotgha	Mahmudpu	Dohar	Dohar	Dohar Paur	Dohar	Work Place	0	5			3000		
Moinotgha	Truck	Moinotgha	Mahmudpu	Dohar	Kartikpur	Kushumha	Dohar	Work Place	0	6			3000		
Satvita	Bicycle	Moksudpur	Mokshedpu	Dohar	Chaitabaza	Mahmudpu	Dohar	Work Place	0	1					
Satvita	Truck	Moksudpur	Mokshedpu	Dohar	Mowra	Mokshedpu	Dohar	Business	0	7			3000		
Satvita	Motorcycle	Mowra	Mokshedpu	Dohar	Fultola	Narisha	Dohar	Business	0	2					
Satvita	Autoricksh	Mowra	Mokshedpu	Dohar	Joypara	Dohar Paur	Dohar	Work Place	8	7		12			
Satvita	Rickshaw/	Mowra	Mokshedpu	Dohar	Meghula	Narisha	Dohar	Business	2	18	1				1-2 Persons
Satvita	Pick up van	Mowra	Mokshedpu	Dohar	Narisha	Narisha	Dohar	Work Place	0	3			1000		
Satvita	Tempo/No	Narisha	Narisha	Dohar	Joypara	Dohar Paur	Dohar	Business	0	3			500		
Meghula	Autoricksh	Narisha	Narisha	Dohar	Meghula	Narisha	Dohar	Work Place	5	5					5-6 Persons
Meghula	Bicycle	Narisha	Narisha	Dohar	Meghula	Narisha	Dohar	Work Place	0	1					
Moinotgha	Truck	Noyabari	Nayabari	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	6			3000	Road condition bad	
Satvita	Bicycle	Palamganj	Raypara	Dohar	Shahinpuk	Mokshedpu	Dohar	Business	0	8					
Moinotgha	Tempo/No	Palong Baz	Raypara	Dohar	Moinotgha	Mahmudpu	Dohar	Work Place	0	5	7	5	500		
Satvita	Tempo/No	Palong Baz	Raypara	Dohar	Pollibazar	Dohar Paur	Dohar	Business	0	2		8	500		
Satvita	Autoricksh	Pollibazar	Dohar Paur	Dohar	Dohar	Dohar Paur	Dohar	Work Place	8	12		11			
Satvita	Autoricksh	Pollibazar	Dohar Paur	Dohar	Joypara	Dohar Paur	Dohar	Work Place	8	9		10			
Satvita	Car/jeep/m	Pollibazar	Dohar Paur	Dohar	Joypara	Dohar Paur	Dohar	Treatment	3	4					3-4 Persons
Satvita	Bicycle	Pollibazar	Dohar Paur	Dohar	Moksudpur	Mokshedpu	Dohar	Educational	0	1					
Satvita	Autoricksh	Pollibazar	Dohar Paur	Dohar	Narisha	Narisha	Dohar	Work Place	6	12	5				5-6 Persons
Satvita	Rickshaw/	Pollibazar	Dohar Paur	Dohar	Narisha	Narisha	Dohar	Work Place	2	15					1-2 Persons
College Ro	Bicycle	Raipara	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Business	0	2					
College Ro	Motorcycle	Raipara	Raypara	Dohar	Narisha	Narisha	Dohar	Business	0	2					
Satvita	Tempo/No	Roitha	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Work Place	6	10		5			5-6 Persons
Satvita	Car/jeep/m	Satvita	Raypara	Dohar	Joypara	Dohar Paur	Dohar	Shopping	5	4					5-6 Persons
Satvita	Motorcycle	Satvita	Mokshedpu	Dohar	Joypara	Dohar Paur	Dohar	Work Place	0	2					
Satvita	Motorcycle	Satvita	Raypara	Dohar	Narisha	Narisha	Dohar	Shopping	0	4					
Satvita	Motorcycle	Satvita	Raypara	Dohar	Narisha	Narisha	Dohar	Business	0	3					
Satvita	Bicycle	Satvita	Raypara	Dohar	Narisha	Narisha	Dohar	Shopping	0	6					
Meghula	Autoricksh	Satvita	Raypara	Dohar	Sutarpara	Sutarpara	Dohar	Work Place	52	8	10				41-55 Perso
Meghula	Autoricksh	Satvita	Raypara	Dohar	Sutarpara	Sutarpara	Dohar	Work Place	7	8					
Meghula	Motorcycle	Shimulia	Narisha	Dohar	Meghula	Narisha	Dohar	Business	2	5					1-2 Persons
College Ro	Motorcycle	Sutarpara	Sutarpara	Dohar	Joypara	Dohar Paur	Dohar	Business	0	4					
Meghula	Bus	Dohar	Raypara	Dohar	Gulisthan		Dhaka	Work Place	32	4	50	9			30-35 Perso
Satvita	Bus	Dohar	Raypara	Dohar	Gulisthan		Dhaka	Work Place	36	6	32	8			36-40 Perso

Meghula	Truck	Dohar	Raypara	Dohar	Munshiganj	Dhaka	Social Insti	1	4			20000		1-2 Persons
Meghula	Car/jeep/m	Jhonki	Narisha	Dohar	Dhaka	Dhaka	Treatment	3	1					3-4 Persons
Meghula	Bus	Joypara	Dohar Paur	Dohar	Dhaka	Dhaka	Work Place	15	6	40	9			
Meghula	Bus	Joypara	Dohar Paur	Dohar	Dhaka	Dhaka	Work Place	30	5	45	9			30-35 Persc
Meghula	Bus	Joypara	Dohar Paur	Dohar	Dhaka	Dhaka	Work Place	16	6	50	9			
Meghula	Bus	Joypara	Dohar Paur	Dohar	Dhaka	Dhaka	Work Place	9	4	45	9			
Meghula	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	30	4	40	9			30-35 Persc
Meghula	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	15	6	40	9			
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	36	4	30	9			36-40 Persc
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	25	6	30	9			
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	33	5	25	8			30-35 Persc
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	25	4	20	8			
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	30	6	32	9			30-35 Persc
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	38	4	36	9			36-40 Persc
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	30	5	25	8			30-35 Persc
College Ro	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	36	4	30	9			36-40 Persc
Satvita	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	30	6	32	8			30-35 Persc
Meghula	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	40	6	48	9			36-40 Persc
Satvita	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	50	5	40	8			41-55 Persc
Satvita	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	36	6	30	8			36-40 Persc
Satvita	Bus	Joypara	Dohar Paur	Dohar	Gulisthan	Dhaka	Work Place	50	6	40	8			41-55 Persc
Meghula	Bus	Joypara	Dohar Paur	Dohar	Postogula	Dhaka	Work Place	13	6	45	9			
Meghula	Tempo/Nos	Meghula	Narisha	Dohar	Roitpur	Dhaka	Work Place	0	4			2000		
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	42	2	40	5			41-55 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	45	4	40	5			41-55 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	58	4	50	5			
Moinotgha	Truck	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	0	3			5000		
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	11	4	50	9		Road Development	
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	35	2	30	5		Road condi	30-35 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	20	3	55	5		Road Development	
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	25	3	40	5		Road Development	
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	40	3	50	5		Road condi	36-40 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	26	2	40	5		Road condition bad	
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	25	2	30	5		Road condition bad	
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	32	2	40	5		Road condi	30-35 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	45	3	42	5			41-55 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	45	2	45	5			41-55 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	48	3	45	5			41-55 Persc
Moinotgha	Bus	Moinotgha	Mahmudpu	Dohar	Gulisthan	Dhaka	Work Place	52	4	45	5			41-55 Persc
Moinotgha	Autotricksh	Moinotgha	Mahmudpu	Dohar	Kadamtali	Dhaka	Business	8	6		4			
Moinotgha	Autotricksh	Moinotgha	Mahmudpu	Dohar	Kadamtali	Dhaka	Business	7	2		5		Road Development	
Moinotgha	Truck	Moinotgha	Mahmudpu	Dohar	Munshiganj	Dhaka	Work Place	1	4			5000		1-2 Persons
Satvita	Pick up van	Narisha	Narisha	Dohar	Alamin Bazar	Dhaka	Work Place	0	10	8		2000		
Satvita	Car/jeep/m	Palang Baz	Raypara	Dohar	Gulisthan	Dhaka	Business	6	1					5-6 Persons

Meghula	Others	Shimulia	Narisha	Dohar	Holer Bazar	Dhaka	Work Place	0	10			5000		
College Ro	Motorcycle	Chaudhury	Raypara	Dohar	Nawabganj	Nawabganj	Relative Ho	0	1					
College Ro	Truck	Joypara	Dohar Paur	Dohar	Bandura	Nawabganj	Work Place	0	2			3000		
College Ro	Tempo/Nos	Joypara	Dohar Paur	Dohar	Barrah	Nawabganj	Work Place	9	5	11	9			
College Ro	Pick up van	Joypara	Dohar Paur	Dohar	Nawabganj	Nawabganj	Work Place	0	3			1000		
Satvita	Autoricksh	Pollibazar	Dohar Paur	Dohar	Bandura	Nawabganj	Business	2	9		7			1-2 Persons
College Ro	Pick up van	Thana Mor	Dohar Paur	Dohar	Galimpur	Nawabganj	Work Place	0	5			1500		
College Ro	Truck	Joypara	Dohar Paur	Dohar	Khulna	Others	Work Place	0	1		0	9000		
Moinotgha	Pick up van	Moinotgha	Mahmudpu	Dohar	Srinagar	Others	Work Place	0	4			2000		
College Ro	Car/jeep/m	Palong Baz	Raypara	Dohar	Narayonganj	Narayonganj	Work Place	8	1					
College Ro	Truck	Joypara	Dohar Paur	Dohar	Bagura	Bagura	Work Place	0	1			5000		
Satvita	Rickshaw/V	Meghula	Narisha	Dohar	Bagura	Bagura	Business	2	8			70		1-2 Persons
Moinotgha	Autoricksh	Atibazar		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	4	4	5			3-4 Persons
Moinotgha	Car/jeep/m	Basabo		Dhaka	Moinotgha	Mahmudpu	Dohar	Relative Ho	3	1				3-4 Persons
Moinotgha	Rickshaw/V	Char Narayonpur		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	2	25				1-2 Persons
Meghula	Truck	Dhaka		Dhaka	Dohar	Dohar Paur	Dohar	Work Place	0	4		3000		
Meghula	Pick up van	Dhaka		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	0	4		2000		
Meghula	Bus	Dhaka		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	45	5	40	9		41-55 Persc
Meghula	Bus	Dhaka		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	40	6	36	9		36-40 Persc
Meghula	Truck	Dhaka		Dhaka	Kartikpur	Kushumha	Dohar	Work Place	0	2		5000		
Meghula	Bus	Dhaka		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	30	6	36	9		30-35 Persc
College Ro	Car/jeep/m	Dhanmondi		Dhaka	Lotakhola	Dohar Paur	Dohar	Relative Ho	8	2				
Satvita	Bus	Gulisthan		Dhaka	Dohar	Dohar Paur	Dohar	Work Place	40	6	35	8		36-40 Persc
Satvita	Bus	Gulisthan		Dhaka	Dohar	Dohar Paur	Dohar	Work Place	36	6	30	8		36-40 Persc
Satvita	Truck	Gulisthan		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	0	1		3000		
College Ro	Bus	Gulisthan		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	30	4	25	8		30-35 Persc
Satvita	Bus	Gulisthan		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	36	6	32	8		36-40 Persc
College Ro	Bus	Gulisthan		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	36	4	30	9		36-40 Persc
Satvita	Truck	Gulisthan		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	0	1		1500		
Satvita	Pick up van	Gulisthan		Dhaka	Meghula	Narisha	Dohar	Work Place	0	2		2000		
Moinotgha	Bus	Gulisthan		Dhaka	Moinatgha	Mahmudpu	Dohar	Work Place	52	4	42	5		41-55 Persc
Moinotgha	Bus	Gulisthan		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	48	4	35	5		41-55 Persc
Moinotgha	Bus	Gulisthan		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	52	4	42	5		41-55 Persc
Moinotgha	Bus	Gulisthan		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	45	4	42	5		41-55 Persc
Satvita	Car/jeep/m	Gulisthan		Dhaka	Moitpara	Dohar Paur	Dohar	Relative Ho	6	1				5-6 Persons
Satvita	Truck	Gulisthan		Dhaka	Pollibazar	Dohar Paur	Dohar	Work Place	0	2		3000		
Moinotgha	Autoricksh	Hemayetpur		Dhaka	Moinotgha	Mahmudpu	Dohar	Business	8	6	4			
College Ro	Autoricksh	Islampur		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	8	5	4			
Moinotgha	Autoricksh	Kadamtali		Dhaka	Moinotgha	Mahmudpu	Dohar	Business	7	7	4			
College Ro	Tempo/Nos	Karom Ali Mor		Dhaka	Rajpara	Raypara	Dohar	Work Place	0	4	40	1000		
Moinotgha	Autoricksh	Noyabazar		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	5	4	4		Road condi	5-6 Persons
College Ro	Pushchart	Panghat		Dhaka	Joypara	Dohar Paur	Dohar	Work Place	0	2		4000		
Moinotgha	Autoricksh	Rabarbagan		Dhaka	Moinotgha	Mahmudpu	Dohar	Work Place	4	10				3-4 Persons
College Ro	Car/jeep/m	Bottola		Dhaka	Bandura	Nawabganj	Relative Ho	2	1					1-2 Persons

Meghula	Bus	Gulistan		Dhaka	Barrah		Nawabganj	Work Place	40	6	35	9			36-40 Persc
Meghula	Car/jeep/m	Barrah		Nawabganj	Fultola	Narisha	Dohar	Work Place	5	6	18	9			5-6 Persons
Satvita	Tempo/Nos	Barrah		Nawabganj	Fultola	Narisha	Dohar	Work Place	12	6	10	8			
Satvita	Tempo/Nos	Barrah		Nawabganj	Fultola	Narisha	Dohar	Work Place	12	4	9	8			
Moinotgha	Truck	Barrah		Nawabganj	Moinotgha	Mahmudpu	Dohar	Work Place	0	8			1000		
College Ro	Autoricksh	Galimpur		Nawabganj	Meghula	Narisha	Dohar	Work Place	8	8		10			
Moinotgha	Truck	Hasnabad Raod		Nawabganj	Joypara	Dohar Pau	Dohar	Work Place	0	7			3000		
College Ro	Tempo/Nos	Kolakopa		Nawabganj	Joypara	Dohar Pau	Dohar	Work Place	7	7					
Moinotgha	Autoricksh	Kutubpur		Nawabganj	Moinotgha	Mahmudpu	Dohar	Work Place	8	10		5			
College Ro	Rickshaw/V	Majhirchar		Nawabganj	Joypara	Dohar Pau	Dohar	Work Place	2	20					1-2 Persons
Satvita	Pick up var	Nawabganj		Nawabganj	Fultola	Narisha	Dohar	Work Place	0	1			1000		
Meghula	Tempo/Nos	Nawabganj		Nawabganj	Meghula	Narisha	Dohar	Work Place	10	10	12	8			
Meghula	Tempo/Nos	Nawabganj		Nawabganj	Meghula	Narisha	Dohar	Work Place	12	10	8	9			
Moinotgha	Autoricksh	Nawabganj		Nawabganj	Moinotgha	Mahmudpu	Dohar	Work Place	8	10		5			
Meghula	Bus	Barrah		Nawabganj	Dhaka		Dhaka	Work Place	25	6	50	9			
Meghula	Bus	Barrah		Nawabganj	Dhaka		Dhaka	Work Place	32	5	40	9			30-35 Persc
Meghula	Bus	Barrah		Nawabganj	Dhaka		Dhaka	Work Place	45	5	60	9			41-55 Persc
Meghula	Truck	Chapainawabganj		Others	Meghula	Narisha	Dohar	Work Place	0	1			20000		
Satvita	Autoricksh	Janabaj		Others	Pollibazar	Dohar Pau	Dohar	Work Place	6	10	5				5-6 Persons
Meghula	Pick up var	Narayonganj		Narayanganj	Dohar	Dohar Pau	Dohar	Business	0	3			2000		
Satvita	Pick up var	Nurpur		Narayanganj	Narisha	Narisha	Dohar	Work Place	0	5			4000		
Meghula	Pick up var	Rupganj		Narayanganj	Meghula	Narisha	Dohar	Work Place	0	5			1500		
College Ro	Truck	Bagura		Bagura	Joypara	Dohar Pau	Dohar	Work Place	0	1			4000		
Satvita	Rickshaw/V	Bagura		Bagura	Narisha	Narisha	Dohar	Business	2	3					1-2 Persons
College Ro	Truck	Comilla		Comilla	Joypara	Dohar Pau	Dohar	Work Place	0	1			5000		

Location	Date	ka 1	ka 2	ka 3	kha	ga	gha	uma	ca	cha	ja 1	ja 2	ja 3	ja 4	jha	nio	ta	tha	da	na	nha	Age_grp	Cost_grp	Distance_g
Moinotgha	11.02.16	Mahmudpur	Dohar	Dhaka	Male	25	Dohar	Faridpur	Recreation	3	Rickshaw	Boat/Launch	Walking			90	170	20	2	Moinotgha	Moinotghat	21-30	151-200	16-20
Moinotgha	11.02.16	Char Vhod	Sadarpur	Faridpur	Male	23	Dhaka	Faridpur	Home	3	Bus	Autotricksh	Boat/Launch/Trollar			240	400	50	3	Moinotgha	Moinotgha	21-30	>300	41-50
Moinotgha	11.02.16	Char Vhod	Sadarpur	Faridpur	Female	24	Dhaka	Faridpur	Business R	3	Bus	Rickshaw	Boat/Launch/Trollar			240	800	50	1	Moinotgha	Moinotghat	21-30	>300	41-50
Moinotgha	11.02.16	Nowhata	Moksudpur	Gopalganj	Male	18	Nawabganj	Faridpur	Relatives F	4	Bus	Autotricksh	Boat/Launch/Trollar			180	200	60	3	Moinotgha	Moinotgha	16-20	151-200	>50
Moinotgha	11.02.16	Char ram	Sadarpur	Faridpur	Male	36	Faridpur	Dhaka	Work Place	2	Bus	Boat/Launch/Trollar				240	250	63	3	Moinotgha	Moinotghat	31-40	201-250	>50
Moinotgha	11.02.16	Char Bond	Sadarpur	Faridpur	Male	57	Nawabganj	Vanga	Work Place	5	Bus	Autotricksh	Boat/Launch/Trollar			225	255	70	6	Moinotgha	Moinotghat	>50	251-300	>50
Moinotgha	11.02.16	Brijdhangri	Char Vhod	Faridpur	Male	49	Dhaka	Faridpur	Business R	3	Bus	Autotricksh	Boat/Launch/Trollar			210	270	65	1	Moinotgha	Moinotghat	41-50	251-300	>50
Moinotgha	11.02.16	Lohartek	Char Vhod	Faridpur	Male	45	Dhaka	Faridpur	Business R	3	Bus	Autotricksh	Boat/Launch/Trollar			300	300	73	1	Moinotgha	Moinotghat	41-50	251-300	>50
Moinotgha	11.02.16	Gopinathpur	Nagarkand	Faridpur	Male	23	Dhaka	Faridpur	Home	4	Bus	Autotricksh	Boat/Launch/Trollar			210	350	85	3	Moinotgha	Moinotghat	21-30	>300	>50
Moinotgha	11.02.16	Chanpur	Sadarpur	Faridpur	Male	36	Faridpur	Dhaka	Others	2	Autotricksh	Boat/Launch/Trollar				210	380	100	2	Moinotgha	Moinotghat	31-40	>300	>50
Moinotgha	11.02.16	Koshaitola	Haluaghat	Mymensing	Male	38	Dhaka	Faridpur	Social Inst	3	Autotricksh	Boat/Launch	Bus			300	380	120	1	Moinotgha	Moinotghat	31-40	>300	>50
Moinotgha	11.02.16	Charbishnu	Sadarpur	Faridpur	Female	42	Faridpur	Keraniganj	Recreation	4	Bus	Autotricksh	Boat/Launch/Trollar			180	480	75	3	Moinotgha	Moinotghat	41-50	>300	>50
Moinotgha	11.02.16	Charbishnu	Sadarpur	Faridpur	Male	55	Faridpur	Dhaka	Recreation	2	Autotricksh	Boat/Launch/Trollar				180	500	80	3	Moinotgha	Moinotghat	>50	>300	>50
Moinotgha	11.02.16	Rohitpur	Keraniganj	Dhaka	Male	56	Dhaka	Faridpur	Social Inst	4	Bus	Autotricksh	Boat/Launch/Trollar			320	550	78	6	Moinotgha	Moinotghat	>50	>300	>50
Moinotgha	11.02.16	Kolani	Kolani	Nodia	Female	42	Lotakhola	India	Home	4	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450	1	Moinotgha	Moinotghat	41-50	>300	>50
Moinotgha	11.02.16	Kolani	Kolani	Nodia	Female	49	Lotakhola	India	Home	4	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450	0	Moinotgha	Moinotghat	41-50	>300	>50
Moinotgha	11.02.16	Kolani	Kolani	Nodia	Male	22	Lotakhola	India	Home	5	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450	0	Moinotgha	Moinotghat	21-30	>300	>50
Moinotgha	11.02.16	Kolani	Kolani	Nodia	Male	26	Lotakhola	India	Home	4	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450		Moinotgha	Moinotghat	21-30	>300	>50
Moinotgha	11.02.16	Kolani	Kolani	Nodia	Male	52	Lotakhola	India	Hospital	4	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450	2	Moinotgha	Moinotghat	>50	>300	>50
Moinotgha	11.02.16	Lotakhola	Dohar	Dhaka	Male	65	Lotakhola	India	Hospital	4	Bus	Autotricksh	Boat/Launch/Trollar			720	1800	450	1	Moinotgha	Moinotghat	>50	>300	>50
Thanarmor	11.02.16	Joypara	Dohar	Dhaka	Male	40	Joypara	Joypara Ba	Work Place	1	Autotrickshaw	tempo				10	10	1	6	Thanarmor		31-40	<50	<5
Thanarmor	11.02.16	Barrah	Dohar	Dhaka	Female	18	Barrah	Joypara co	Educationa	1	Bus					30	10	4	5	Near Joypara Bazar		16-20	<50	<5
Thanarmor	11.02.16	Kartikpur	Dohar	Dhaka	Female	19	Kartikpur	Joypara co	Educationa	1	Bus					30	10	4	4			16-20	<50	<5
Thanarmor	11.02.16	Kartikpur	Dohar	Dhaka	Male	32	Joypara	Kartikpur	Home	1	Bus					15	20	4	2	Thanarmor		31-40	<50	<5
Thanarmor	11.02.16	Joypara	Dohar	Dhaka	Male	21	Lotakhola	Thanarmor	Shopping	1	Autotrickshaw	tempo				15	20	1	2	Thanarmor	Joypara bridge	21-30	<50	<5
Thanarmor	11.02.16	Narisha	Dohar	Dhaka	Male	35	Narisha	Thanarmor	Shopping	1	Autotrickshaw	tempo				30	30	4	2	Thanarmor	Joypara	31-40	<50	<5
Thanarmor	11.02.16	Barrah	Dohar	Dhaka	Male	45	Barrah	Joypara	Hospital	2	Autotricksh	Rickshaw/Van				30	50	5	3			41-50	<50	<5
Thanarmor	11.02.16	Moinotgha	Dohar	Dhaka	Male	20	Moinotgha	Thanarmor	Shopping	1	Bus					30	25	8		Thanarmor	Joypara bridge	16-20	<50	06-Oct
Thanarmor	11.02.16	Botia	Dohar	Dhaka	Male	50	Joypara	Nawabganj	Business R	2	Autotricksh	Rickshaw/Van				30	40	7	2	Thanarmor	Thanarmor	41-50	<50	06-Oct
Thanarmor	11.02.16	Bandura	Nawabganj	Dhaka	Male	50	Bandura	Batia	Relatives F	2	Bus	Autotrickshaw	tempo			60	40	7	0			41-50	<50	06-Oct
Thanarmor	11.02.16	Meghula	Dohar	Dhaka	Female	42	Meghula	Barrah	Relatives F	2	Autotricksh	Rickshaw/Van				60	40	7	0	Joypara ba	Joypara bridge	41-50	<50	06-Oct
Thanarmor	11.02.16	Radhanaga	Dohar	Dhaka	Male	22	Meghula	Nawabganj	Business R	2	Bus	Autotrickshaw	tempo			25	50	8	2			21-30	<50	06-Oct
Thanarmor	11.02.16	Narisha	Dohar	Dhaka	Male	30	Bandura	Narisha	Relatives F	2	Bus	Autotrickshaw	tempo			60	50	10	0	Thanarmor	Thanarmor	21-30	<50	06-Oct
Thanarmor	11.02.16	Moura	Dohar	Dhaka	Male	45	Narisha	Bandura	Business R	2	Bus	Rickshaw/Van				60	60	10	1			41-50	51-100	06-Oct
Thanarmor	11.02.16	Baghra	Srinagar	Munshiganj	Male	20	Barrah	Baghra	Relatives F	2	Bus	Rickshaw/Van				90	60	24	0			16-20	51-100	21-30
Thanarmor	11.02.16	Bagra	Srinagar	Munshiganj	Female	50	Munshiganj	Joypara	Relatives F	2	Bus	Autotrickshaw	tempo			60	70	25	0			41-50	51-100	21-30
Thanarmor	11.02.16	Raipara	Dohar	Dhaka	Male	40	Gulistan	Joypara	Business R	2	Bus	Rickshaw/Van				150	100	70	1	Thanarmor	Thanarmor	31-40	51-100	>50
Thanarmor	11.02.16	Gabuya	Mirjaganj	Potua khali	Male	35	Dhaka	Barrah	Relatives F	2	Bus	Autotrickshaw	tempo			180	100	70	0			31-40	51-100	>50
Thanarmor	11.02.16	Majhipara	Dohar	Dhaka	Male	45	Joypara	Gulistan	Business R	2	Bus	Rickshaw/Van				120	120	72	1	Joypara co	Joypara bridge	41-50	101-150	>50
Thanarmor	11.02.16	Panchchar	Shibchar	Madaripur	Female	25	Shibchar	Botia	Relatives F	3	Bus	Autotricksh	Boat/Launch/Trollar			300	150	110	0			21-30	101-150	>50

[illegible]

Location	Date	Village	Upazilla	District	Gender	Age	JourneySta	JourneyEn	TripPurpos	Distance	Comments
Joypara	13.02.2016	Dohar	Dohar	Dhaka	Male	40	Dohar	Joypara	Work Place	4	Traffic jam
Joypara	13.02.2016	Meghula	Dohar	Dhaka	Female	45	Meghula	Bandura	Relatives H	7	Traffic jam
Joypara	13.02.2016	Pungakhali	Dohar	Dhaka	Male	52	Pungakhali	Joypara	Hospital	3	Traffic jam
Joypara	13.02.2016	Roypara	Dohar	Dhaka	Male	27	Roypara	Joypara	Work Place	2	Road repair
Joypara	13.02.2016	Nurnagar	Dohar	Dhaka	Male	22	Joypara	Bandura	Relatives H	7	Road repair
Joypara	13.02.2016	Char joypa	Dohar	Dhaka	Male	40	Char joypa	Joypara	Business R	1	Road devel
Joypara	13.02.2016	Loskorpor	Dohar	Dhaka	Male	48	Loskorpor	Barrah	Social Inst	6	Road condi
Joypara	13.02.2016	Joypara	Dohar	Dhaka	Male	65	Joypara	Joypara ba	Work Place	2	high fare, r
Joypara	13.02.2016	Sundoripa	Dohar	Dhaka	Male	60	Sundoripa	Joypara	Work Place	7	High fare
Joypara	13.02.2016	Palamganj	Dohar	Dhaka	Male	27	Palamganj	Joypara	Business R	2	
Joypara	13.02.2016	Narisha	Dohar	Dhaka	Male	25	Narisha	Joypara	Hospital	4	
Joypara	13.02.2016	Barrah	Dohar	Dhaka	Male	33	Barrah	Joypara	Shopping	8	
Joypara	13.02.2016	Dokkincha	Dohar	Dhaka	Male	30	Dokkincha	Joypara	Shopping	1.5	
Joypara	13.02.2016	Majhipara	Dohar	Dhaka	Male	25	Majhipara	Joypara	Shopping	1	
Joypara	13.02.2016	Joypara	Dohar	Dhaka	Male	32	Uttarchar	Joypara	Business R	1	
Joypara	13.02.2016	khalpara	Dohar	Dhaka	Male	27	Khalpara	Joypara	Work Place	1	
Joypara	13.02.2016	Roypara	Dohar	Dhaka	Male	22	Roypara	Joypara	Work Place	3	
Joypara	13.02.2016	Majhipara	Dohar	Dhaka	Female	21	Majhipara	Joypara	Educational	1	
Joypara	13.02.2016	Banaghata	Dohar	Dhaka	Male	28	Banaghata	Joypara	Work Place	3	
Joypara	13.02.2016	Uttarchar	Dohar	Dhaka	Male	40	Uttarchar	Joypara	Shopping	1	
Joypara	13.02.2016	Roypara	Dohar	Dhaka	Male	65	Roypara	Joypara	Hospital	2	
Joypara	13.02.2016	Lotakhola	Dohar	Dhaka	Male	65	Lotakhola	Joypara	Shopping	1	
Joypara	13.02.2016	khalpar	Dohar	Dhaka	Male	35	Khalpar	Joypara	Shopping	2	
Joypara	13.02.2016	Horichandi	Dohar	Dhaka	Male	60	Horichandi	Joypara	Shopping	3	
Joypara	13.02.2016	Ramnathpu	Dohar	Dhaka	Male	65	Ramnathpu	Joypara	Shopping	1	
Joypara	13.02.2016	Lotakhola	Dohar	Dhaka	Male	60	Lotakhola	Joypara	Shopping	1	
Joypara	13.02.2016	Kutibari	Dohar	Dhaka	Female	60	Joypara	Bandura	Relatives H	7	
Joypara	13.02.2016	Dokkin Ba	Dohar	Dhaka	Male	45	Dokkin Ba	Joypara	Hospital	5	
Joypara	13.02.2016	Moinotgha	Dohar	Dhaka	Male	60	Moinotgha	Joypara	Shopping	4	
Joypara	13.02.2016	Yousup pu	Dohar	Dhaka	Male	55	Yousup pu	Kat potti	Work Place	2	
Thanarmor	13.02.2016	Malikanda	Dohar	Dhaka	Male	38	Malikanda	Joypara	Shopping	3	
Thanarmor	13.02.2016	Ekrashi	Dohar	Dhaka	Female	50	Ekrashi	Dohar	Relatives H	3	
Thanarmor	13.02.2016	Dohar	Dohar	Dhaka	Male	32	Dohar	Thanarmor	Work Place	3	
Joypara	13.02.2016	Bandura	Nawabganj	Dhaka	Male	35	Bandura	Majhikand	Relatives H	7	
Thanarmor	13.02.2016	Ekrashi	Dohar	Dhaka	Female	30	Ekrashi	Joypara	Shopping	3	
Thanarmor	13.02.2016	Modhurcha	Dohar	Dhaka	Male	25	Modhurcha	Joypara	Shopping	4	
Joypara	13.02.2016	Botia	Dohar	Dhaka	Male	40	Botia	Joypara	Shopping	2	
Thanarmor	13.02.2016	Shonar Bar	Dohar	Dhaka	Female	23	Shonar Bar	Joypara	Educational	3	
Joypara	13.02.2016	Bilaspur	Dohar	Dhaka	Female	22	Bilaspur	Joypara	Educational	1	
Joypara	13.02.2016	Barrah	Dohar	Dhaka	Female	30	Barrah	Joypara	Shopping	5	