A STUDY ON TRAFFIC VOLUME ESTIMATION TO IDENTIFY THE LEVEL OF SERVICE (LOS) AT MIRPUR-10 INTERSECTION, DHAKA, BANGLADESH.

Submitted By

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A Thesis submitted to the Department of Civil Engineering, Daffodil International University in Partial Fulfillment of the Requirements for the Degree of
Bachelor of Science in Civil Engineering

Department of Civil Engineering

Daffodil International University

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DECLARATION

This is to certify that the thesis entitled "**A Study on Traffic Volume Estimation to Identify the Level of Service (Los) At Mirpur-10 Intersection, Dhaka, Bangladesh.**" This thesis was completed by me and submitted to the Department of Civil Engineering at Daffodil International University (DIU). It constitutes original research conducted under the supervision of **Kazi Obaidur Rahman, Assistant Professor, Department of Civil Engineering, Daffodil International University** and is presented in partial fulfilment of the requirements for the Bachelor of Science degree in Civil Engineering. This thesis, in whole or in part, has not been submitted for credit towards any degree or anywhere.

M.A.Rob

M.A.Rob

APPROVAL

The thesis is " **A Study on Traffic Volume Estimation To Identify The Level Of Service (Los) At Mirpur-10 Intersection, Dhaka, Bangladesh.**" Submitted to the Department of Civil Engineering, it was rigorously examined and adequately approved as partial satisfaction of the requirements for a Bachelor of Science (B.Sc.) in Civil Engineering on October 30, 2025.

Supervised by,

Kazi Obaidur Rahman

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Department of Civil Engineering

APPROVAL

The thesis entitled "**A Study on Traffic Volume Estimation to Identify The Level Of Service (Los) At Mirpur-10 Intersection, Dhaka, Bangladesh.**" Submitted by M A Rob, Student ID: 182-47-119 has been considered satisfactory in partial fulfilment of the requirements for the Bachelor of Science degree in Civil Engineering on 15th November 2025.

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DEDICATIONS

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ABSTRACT

The high increase of vehicle, being in proportion to the developing of current times in relation to growing populations, particularly in emerging country like Bangladesh's metropolitan city is a major issue. It is essential to assess both traffic volume and the quality of transport provision, referred to as the Level of Service (LOS). This study examines vehicle characteristics and traffic volume to determines the level of service (LOS) at a significant intersection to analyze traffic behavior in a most important intersection area and evaluate the intersection's performance. This study examines the dynamics of mixed traffic flow in Dhaka Mirpur-10, Bangladesh. Video cameras and drone were used to collect the traffic data. It was found that the Level of service could be determined using the volume capacity ratio technique. The volume-to-capacity ratio was used to determine the level of service. Since it is hard to predict the traffic flow in Dhaka Mirpur-10, the management of this diverse traffic can be done by using the Passenger Car Unit in order to calculate the PCU estimate. The line of sight for the roadway's direction is presented. Concerning the means of transportation, they include buses, trucks, mini trucks, cars, CNG, motorcycles, vans, bicycles and Whatever the Vehicle can run as a source of income, Autorickshaw. Following the PCU and V/C ratio analysis, the determine level of service at the junction is irregular and inappropriate as shown. On the basis of the evaluation of both the V/C ratio and the HCM, the residential neighborhood is found to have a level of quality that is much below average. Based on service factors such as speed, travel time, and delay, the (HCM) method uses a Level of Service (LOS) scale that ranges from A to F to characterize traffic conditions. This is a scale that is used to determine the traffic congestion level. After a thorough study of all the relevant components; the extent of autorickshaw use is recommended to be restricted to main roadways. In addition, a traffic signal should be implemented in combination with rigid traffic rules. The biking lane routing infrastructures system should be used to decrease the Mirpur-10 area's traffic pressure, but only in important interchanges.

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CHAPTER 1

INTRODUCTION

1.1 General

As part of the analysis of traffic volume and vehicle characteristics for transportation engineering in Mirpur-10, consideration will be given to the traffic conditions and the number of vehicles that are present in that particular location. The results of a study of the traffic volumes and types of vehicles in Mirpur-10 will be essential for the understanding of the transportation system and the development and refinement of laws that govern traffic. The introduction, background information, statement of the problem statement of purpose, research question, and significance of the study are among the things repeatedly defined and redefined during the initial stage of the study; in this case, the traffic volume and vehicles characteristics study of Mirpur-10. This will also be the section intro throughout the study. In addition to providing substantive background for the introduction, these points clearly indicate the importance of thoroughly understanding the current Mirpur-10 traffic volumes. This is the report of findings from the research of a case study on the fields of transportation engineering covering the characteristics of the vehicles and the amount of traffic at Mirpur-10. Mirpur-10 is booming in the city of Dhaka at Bangladesh. One of the key components of the region is the transportation network since it is the city's capital as the population and urbanization rate grow rapidly, analyzing the vehicles' amount and traffic is highly essential. The study will assess the current vehicles and traffic volume and aim to improve the management of traffic and the use modes of transportation. In addition, the underlying causes of specific incidents will be investigated in order to provide city managers, traffic planners, and decision-makers with assistance in determining solutions that are realistic to the problems that are now being faced. This study will provide a significant resource for traffic management techniques, pedestrian regulation, geometric design, and traffic control at signalized crossings. The data on traffic volume that is obtained from this study will serve as an important resource.

1.2 Back ground

The geographical situation of Mirpur-10 in relation to the regional transportation network should be summarized in a succinct manner at this point. In the overview, it should highlight any distinguishing features of the area that have the potential to affect traffic patterns. These features may include proximity to major roadways, commercial districts, or residential neighborhoods. In addition to highlighting the need of conducting a full traffic volume and vehicle characteristics analysis, it is important to identify any past local transportation studies that have been carried out. Mirpur-10 is a major junction center in which connections with several residential, commercial,

and institutional sectors in the vicinity are made. The city occupies places to varying numbers of businessmen, schools, and residential buildings, which shows that the city is alive and energized. The district is a relevant part of the metropolitan area due to the availability of various transportation stops and vehicles, and roads. Most of the previous transportation studies in Mirpur-10 have focused on the growth of infrastructure, car reductions, traffic patterns, and congestion rate. However, to record a more precise count of cars daily in different route parts and record the nature of the vehicles, it is crucial to conduct a comprehensive analysis of the traffic volume and vehicle specifics. This information would permit a much more thoroughly examining of the current nature of the transpiration system indicators and evidence-based decision-making for future representation.

1.3 Work Plan

i. To examine the current traffic volume and peak hour vehicle parameters at the Mirpur-10 Roundabout for three-time intervals.

ii. Study the traffic movement within the study area, focusing on the peak hours of road use and the locations of the bottleneck.

iii. To supply precise data that may be used for future Mirpur-10 Road transport organization and improvement activities.

iv. To identify the roles of Mirpur 10 current transportation infrastructure, including road structures and junctions, in the movement's increase.

v. To analyze Mirpur 10 Roundabout Intersection Traffic's level of service.

1.4 Objective

The purpose of the current research is to examine the traffic behavior, traffic flow, and various characteristics of the vehicle at several main intersections in Mirpur 10, Dhaka-1216, to determine LOS in addition to actual traffic queue, back of the queue, considers congestion patterns, assess the operational efficiency, and study the LOS, and provide some recommendations based on data about how to improve traffic queues and intersection traffic in the region. This research also intends to study what are the problems occurring with the current traffic level at the Mirpur-10 intersection in peaks. On different time periods, the traffic statistics were recorded through three means; One in the morning peak period (8 AM-10 AM), the second in the afternoon peak period (12 PM-2 PM), the third in the peak period of evening (4 PM-6 PM). This research will reveal its practical implications will guide the transport professionals accordingly.

1.5 Summary

The determination of how many parties use the Mirpur-10 Roundabout in terms of traffic requires a systematic approach towards manual counts and digital counts. The data used in the research will be gathered with the help of video cameras and drones. To ensure sufficient data collection, a period will be pre-determined to help capture a representative sample of the overall population across hours and days of the week. The identification of restrictions that might take place during the study is critical. Limitations could be external events that can adversely impact the information obtained and the reliability and validity of the results. To mitigate such constraints and ensure that they do not have a detrimental impact on the quality of the overall outcomes.

CHAPTER 2

LITERATURE REVIEW

2.1 General

Many studies have been conducted to analyze traffic flow characteristics and performance on urban signalized crossings. The literature review aims to provide a comprehensive review of previous works conducted on traffic volume & vehicle characteristic in urban areas and the relevant studies that have been performed on areas comparable to Mirpur-10 Roundabout intersection. This assessment will present the key outcomes, methodology, and knowledge deficiency on the traffic volume research being done.

2.2 Importance of Traffic volume & Vehicle characteristic Studies:

The emphasis of this paragraph is on the significance of research being conducted on Traffic volume & Vehicle characteristics at the Mirpur-10 area. It is the purpose of the present demonstration to suggest some ways in which traffic volume & vehicle characteristic data can be utilized to plan transportation, build infrastructure, manage traffic and improve safety. For efficient urban mobility and environmentally responsible transportation options, it will be important to ensure that we have reliable figures on the traffic volume.

2.3 Traffic volume & Vehicle characteristic Patterns and Characteristics:

Contained herein are a number of investigations into the characteristics of cars and traffic volume patterns in cities. There is one thesis on peak traffic hours research, temporal change, geographical distribution and the congested areas in urban transportation. The purpose of this dissertation is first to compare previous studies in order to identify any common ground between them and, secondly, to see if existing conclusions can be applied to the Mirpur-10 Roundabout site.

2.4 Traffic volume & Vehicle characteristic and Infrastructure:

In this section, I will discuss an analysis of the relationship of vehicle traffic with vehicle characteristics and the infrastructure. It considers, for example, research findings about the impact intersections, human vehicle mobility systems, traffic lights, road networks and public transportation networks can have on traffic volume. In regard to properly controlling traffic congestion, our analysis emphasizes the need for infrastructure development.

2.5 Traffic Volume and Safety:

This Subsection takes a look at how traffic in cities affects people's well-being and security. Research on the relationship between traffic volume, accident frequency, and pedestrian safety is reviewed. Considering safety measures and identifying high-risk regions is crucial when evaluating traffic flow in Mirpur-10, according to the report.

2.6 Factors Influencing Traffic volume & Vehicle characteristic:

As mentioned earlier, this subsection analyses the factors that affect the intensity of traffic levels within the city. Specifically, this paper contrasts the internal and exterior factors, namely the nature of the street, traffic laws, travel ways, among others. Further, it considers aspects of the factors such as land use models, population density, economic action, et cetera. Familiarity with these factors will lead to a more profound comprehension of the factors linked to the traffic phase at Mirpur-10.

2.7 Traffic volume & Vehicle characteristic Measurement Techniques:

Various technologies and types of measurement are talked about in this paper. Count people human, observation research has that seems handed down from father to son as well methods of automation such as camera being with comprehensive logic and sensing devices in the mode makes up the traditional the choices then are in order Central to this analysis is weighing the benefits, limitations and significance of different strategies available within fighting poverty in Mirpur.

2.8 Factors Influencing Traffic volume & Vehicle characteristic:

This subsection provides an analysis of the elements that influence the volume of traffic in urban areas. An examination of both internal and exterior elements, such as the characteristics of the route, the regulations governing traffic, and travel patterns, is carried out. Trends in land use, population density, and economic activity are some of the external effects that are taken into consideration. Having an understanding of these components would make it easier to comprehend the unique dynamics that are associated with the traffic volume & vehicle characteristic in Mirpur-10 Roundabout Intersections.

2.9 Knowledge Deficiencies:

The present research focuses on traffic volume and vehicle features in urban areas. We study system reform, the raising costs of operating a vehicle, transportation system technologies. In this piece, we have made some analysis of traffic flow (and vehicle characteristics) In order to explore if any problems are discovered. It draws attention to questions that need further study, such as: The effect of new transportation technology on traffic volume; How traffic volume data can be cross-referenced with other indicators for transportation; How social and economic conditions can influence traffic volume patterns Among many other things that should be noted here are several particular focal points from this paper.

2.10 PHF (Peak Hour factor)

Table 2.1: Peak Hour Factor Value

LOS	v/c Ratio	Detailed Description
A	0.00-0.35	It stands for the optimal working conditions and is named free flow. There is almost little impact on individual users from other users being in the same traffic stream.
B	0.35-0.58	Depicts circumstances when things are moving forward pretty freely, yet others are having an impact.
C	0.58-0.75	Means that drivers need to pay more attention to stay safe due to the restricted steady flow below speed restrictions. There is a discernible drop in the driver's comfort and convenience levels.
D	0.75-0.90	Stands for traffic operations on the cusp of an unstable flow, where drivers are severely limited in their maneuverability due to heavy passing demand and passing capacity close to zero.
E	0.90-1.00	The flow is unsteady as it approaches capacity. When there are disruptions in the traffic flow, such as bad road conditions or accidents, LOS E might turn into LOS F in an instant.
F	>1.00	Standing in for the worst-case scenario are the extremely crowded roads, the overflowing traffic, the long wait times, the lack of comfort and convenience, and the elevated risk of accidents.

2.11 Summary

This chapter examines the essential aspects and issues related to traffic volume and vehicle characteristics to ascertain the degree of service at important intersections at the Mirpur 10 Roundabout, Bangladesh. The subsequent chapter addresses the methods of our investigation.

CHAPTER 3

METHODOLOGY & DATA COLLECTION

3.1 General

To enable easy traffic volume analysis, a mixture of manually doing counts and automatic traffic counters will be strategically placed around the whole of Mirpur-10. The data collection process will be conducted over a defined period, allowing the researchers to collect data that would offer representative samples across different hours and days of the week.

3.2 Method

There is an immediate need for comprehensive and effective data to determine the LOS. The operational characteristics of modes of transport can be summarized as an elementary study of the advantage or disadvantage of each mode for a variety of criteria, usually regarding cost, speed, accessibility, frequency, safety, and comfort." An analysis of Field survey traffic volume & vehicle characteristics contributes to the estimation of the number of vehicles mixes. An analysis of Road geometric requires the current road capacity. The field survey collected traffic data in three stages morning peak 8-10 am, afternoon off-peak 12-2 PM, and evening peak 4-6 PM, and the peak hour for 2-hour duration. This survey conducted a geometric feature study to identify the current supply and capacity of existing facilities. Field survey field survey has been conducted to collect information on the current road length, carriageway width, footpath, median, the number of shoulder legs, and the control system of the intersections. The passenger car unit is necessary to analyze the mixes or heterogeneous traffic. The PCU acts as a simplification owner, converting various vehicle types to an equivalent number of cars.

3.3 Formula

$$Volume\ Capacity\ Ratio, VCR = \frac{\text{Total Hour PCU}}{\text{Capacity}}$$

The Capacity of each approach is calculated using the following formula, **c =Nsg/ C**

Where,
c = capacity (veh/h)
N = number of lanes (ln)
s = saturation flow rate
g = effective green time (s)
C = cycle time (s)

There are two methods to estimate the LOS: Volume-capacity ratio. It is used the volume capacity ratio V/C expresses the rate of journey effort in a facilitated corridor. The V/C Ratio is one of the more utilitarian indexes for describing street conditions in metropolitan settings. V denotes the whole number of cars beside a given footpath in an hour, whereas C represents the maximum number of cars that could traverse a facility beneath ideal conditions.

The Volume-Capacity Ratio V/C indicates the movement productivity and excellence of a facility or a section of a facility. The V/C Ratio compares roadway demand roadway supply. The V/C method correlates with how the LOS and road performance are measured.

3.4 Determination of Saturation Flow Rate

An emergent parameter to calculate the LOS is the Saturation flow rate, determined using the following formula:

s = so fw fHV fg fp fbb fa fLU fLT fRT fLpb fRpb …… (1)

Where,

s = adjusted saturation flow rate (veh/h/ln)

so = base saturation flow rate(pc/h/ln)

fw = adjustment factor for lane width

fHV = adjustment factor for heavy vehicles in traffic stream

fg = adjustment factor for approach grade

fp = adjustment factor for existence of a parking lane and parking activity adjacent to lane group

fbb = adjustment factor for blocking effect of local buses that stop within intersection area

fa = adjustment factor for area type

fLU = adjustment factor for lane utilization

fLT = adjustment factor for left-turn vehicle presence in a lane group

fRT = adjustment factor for right-turn vehicle presence in a lane group

fLpb = pedestrian adjustment factor for left-turn groups

fRpb= pedestrian-bicycle adjustment factor for right turn groups

The standard saturation flow rate was established at 1900 pc/h/ln according to HCM (2010).

The adjustment factor for lane width was established as 1.0 for lanes spanning between 10 and 12 feet, and at 1.04 for lanes exceeding 13 feet.

The adjustment factor for heavy vehicles in the traffic flow was established at 0.974.

The adjustment factor for the approach grade was set at 01 due to the absence of grades.

The adjustment factor for the presence of a parking lane and related parking activity next to the lane group varies by approach.

The correction factor for the blocking effect of local buses halting within the junction varies by approach.

The adjustment factor for the area type was set at 0.90.

The adjustment factor for lane utilization was set at 1.0, since all lane groups consist of shared lanes.

Adjustment factors for vehicle presence in a lane group for left-turn and right-turn were recorded as 0.9 and 0.97, respectively.

Pedestrian adjustment factors were assigned a value of 1.0, indicating that turning movements were generally observed to be protected.

3.5 PCU values for different types of vehicles

Table 3.1: PCU values for different types of vehicles

(Reference- https://ce.buet.ac.bd)

Vehicle Type	Passenger Car Unit (PCU) Value
Bus	03
Truck	03
Mini Truck	02
Private car	01
C.N.G	0.75
Motorcycle	0.5
Cycle	0.5
Rickshaw & Van	0.75

3.6 Clarification of the Approach Criteria

Table 3.2: Clarification of the Approach Criteria

Approach	Problems	Explanation
A-01 Approach Pallabi to Mirpur-10	Large amount of Rickshaw, Bus, Private Car and motorcycle.	Congestion caused by a high number of Rickshaw, Public & Office & Institutional Bus, Private Car and motorcycle, is most noticeable near the intersection of Mirpur 10, especially during morning & evening peak hours.
A-02 Approach Agargaon to Mirpur-10	Large amount of Rickshaw, Bus, Private Car and motorcycle.	Congestion caused by illegal parking of a high number of Bus & Rickshaw, Public, Office & Institutional Bus, Private Car and motorcycle, is most noticeable near the intersection of Mirpur 10, especially during morning & evening peak hours.
A-03 Approach Kachukhet to Mirpur-10	Large amount of Rickshaw, Bus, CNG Private Car and motorcycle.	Congestion caused by illegal parking of high number of Rickshaw & CNG, School & Office Bus, Private Car and motorcycle, is most noticeable near the intersection of Mirpur 10, in both peak hours.
A-04 Approach Mirpur 01 to Mirpur-10	Large amount of Rickshaw, Bus, Private Car and motorcycle.	Congestion caused by illegal parking of high number of Rickshaw & Public Bus, Office & Institutional Bus, Private Car and motorcycle, is most noticeable near the intersection of Mirpur 10, especially during morning & evening peak hours.

3.7 Data Collection

The collecting of credible data is, without a doubt, the part of any research endeavor that requires the biggest amount of labor. As a result of the limited availability of trustworthy data, the phase of the research process that involves the collection and compilation of data is the most difficult. This study gathered information regarding the amount of traffic that occurs at the Mirpur-10 Intersection. When doing an analysis of the traffic volume in the Mirpur-10 roundabout, it is essential to have a solid understanding of the road geometry of the crossings. All aspects of the intersection, including its effectiveness, safety, and flow of traffic, are directly influenced by the shape of the road. In the context of the significant quantity of research conducted on traffic, the following are some crucial aspects that should be kept in mind when examining the shape of the road at intersections.

3.8 Study Area

Comprehending the analysis of traffic volume & vehicle characteristics at Mirpur-10 roundabout. There are four approaches in this intersection.

3.9 Satellite View of Study Area

Figure 3.1: Satellite View of Study Area

3.10 Study Area Location in google Map

Longitude and latitude 23°48'25.5"N 90°22'07.0"E

Location- Mirpur 10 - Roundabout, Mirpur, Dhaka 1216, Bangladesh

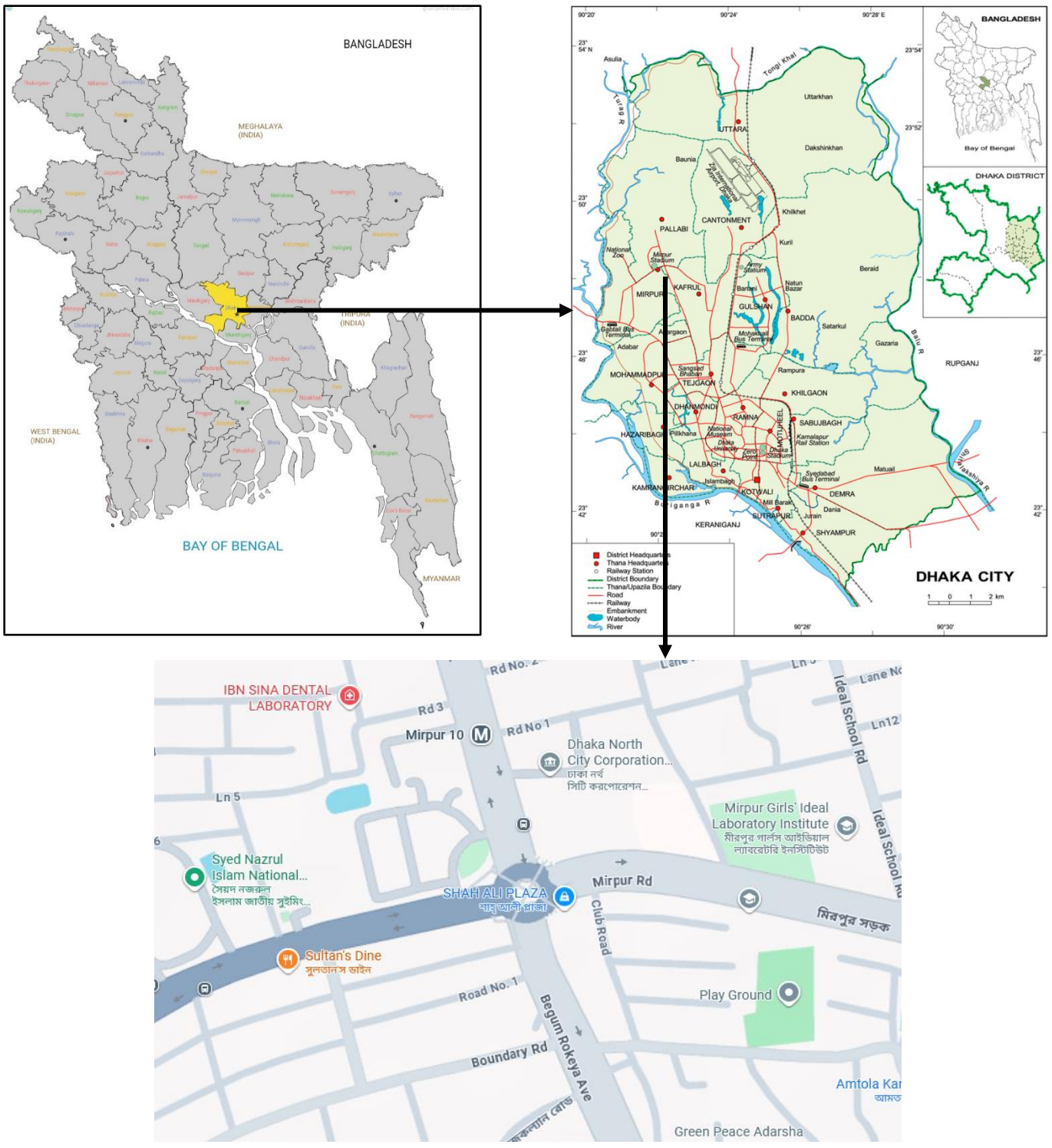


Figure 3.2: Study Area Location in google Map

3.11 Map Input Description

Understanding the road geometry of crossings when analyzing traffic volume & vehicle characteristics in the Mirpur-10 rounabout.

3.12 Dimensions of approach lanes

At the Mirpur-10 roundabout intersection, the table records the widths of the approach lanes, median, and footpaths.

Table 3.3: Lane Dimensions

Intersection Name	Road Name	Lane Width (ft)		Median	Footpath Width		No of Lanes on each Sides
		Right	Left		Right	Left	
Mirpur 10 Roundabout	Mirpur 10- Pallabi	36	36	8	12	12	03
	Mirpur 10- Agargaon	36	36	8	12	12	03
	Mirpur 10- Kachukhet	42	42	4	12	12	03
	Mirpur 10- Mirpur 01	42	42	4	12	12	03

3.13 Diagram of Study Area with Approach Lanes.

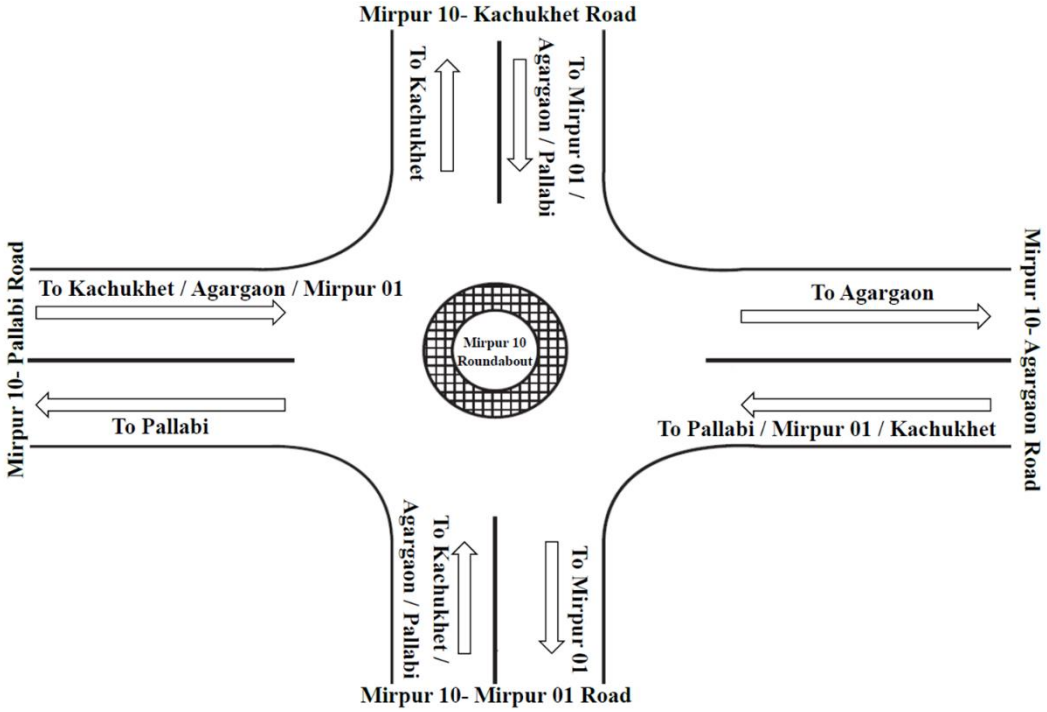


Figure 3.3: Diagram of Study Area with Approach Lanes

3.14 Field survey

The survey location of the study is Mirpur-10 Intersection. Total traffic volume & vehicle data were collected during survey.

Figure 3.4: Mirpur-10 to Pallabi

Figure 3.5: Mirpur-10 to Mirpur 01

Figure 3.6: Mirpur-10 to Agargaon

Figure 3.7: Mirpur-10 to Kachukhet

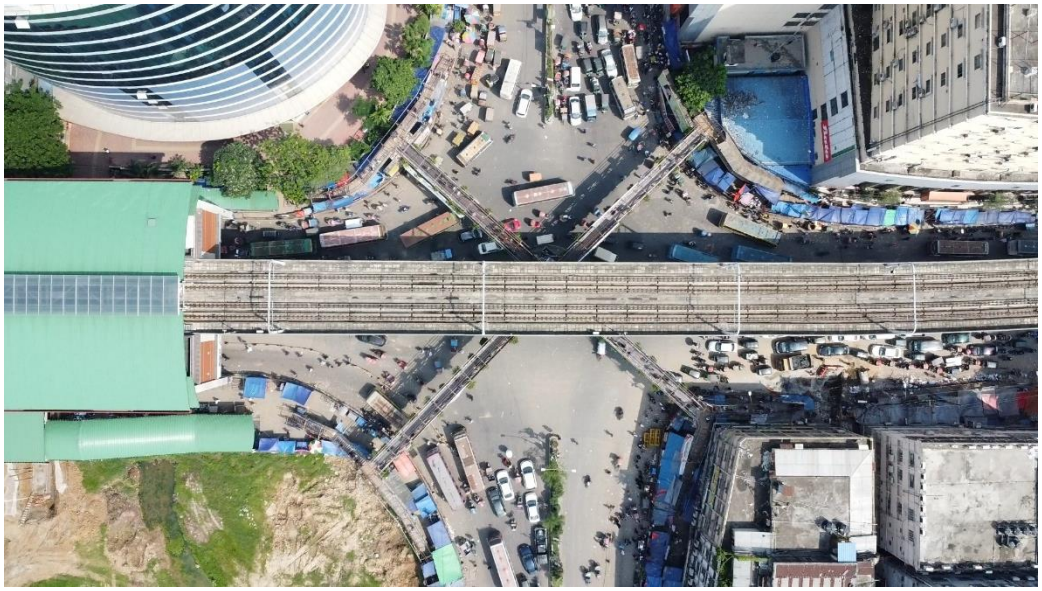


Figure 3.8: Dronen View of Mirpur 10 Roundabout

Figure 3.9: Collection of Road Data From every approach's

Figure 3.10: Collection of Traffic & Vehicle Data From every approach's Using Drone & Camera

3.15 Data Chart

3.15.1 Approach Name:

Table 3.4: Road & Approach

Road Name	Approach Name
Pallabi - Mirpur 10	A-01
Agargaon - Mirpur 10	A-02
Kachukhet – Mirpur 10	A-03
Mirpur 01 - Mirpur 10	A-04

3.15.2 Weekend Morning (Friday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw are the predominant vehicles crossing the A-01 approach 89 during the morning 1st Peak hour. Subsequently, 19 buses, 07 truck, 09 Mini Truck, 22 Private Car, 17 CNG, 32 Motorcycle, 05 Van, 03 Cycle Vehicles are operated on this road around this time of day. On 2nd Peak Hour 32 buses, 08 truck, 13 Mini Truck, 27 Private Car, 29 CNG, 51 Motorcycle, 11 Van, 05 Cycle & most predominant vehicle 107 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	19	7	9	22	17	32	5	3	89	203	486
09.00-10.00	32	8	13	27	29	51	11	5	107	283	

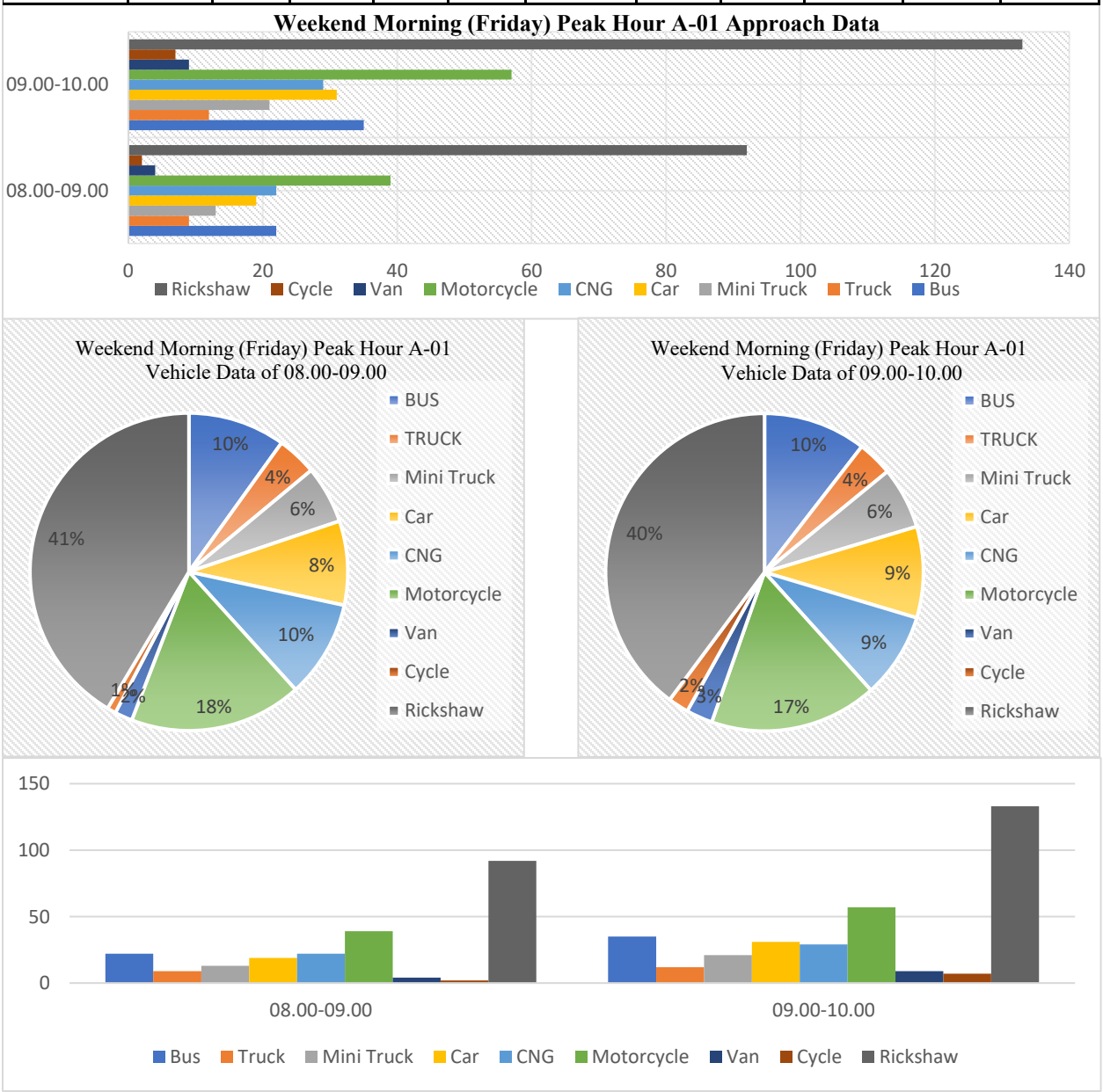


Figure 3.11: Weekend Morning (Friday) Peak Hour A-01 Approach Data

3.15.3 Weekend Morning (Saturday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw are the predominant vehicles crossing the A-01 approach 102 during the morning 1st Peak hour. Subsequently, 32 buses, 11 truck, 15 Mini Truck, 35 Private Car, 26 CNG, 51 Motorcycle, 03 Van, 06 Cycle Vehicles are operated on this road around this time of day. On 2nd Peak Hour 41 buses, 14 truck, 19 Mini Truck, 49 Private Car, 37 CNG, 77 Motorcycle, 8 Van, 13 Cycle & most predominant vehicle 152 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	25	8	13	41	21	52	12	7	93	272	646
09.00-10.00	36	11	17	53	32	63	14	16	132	374	

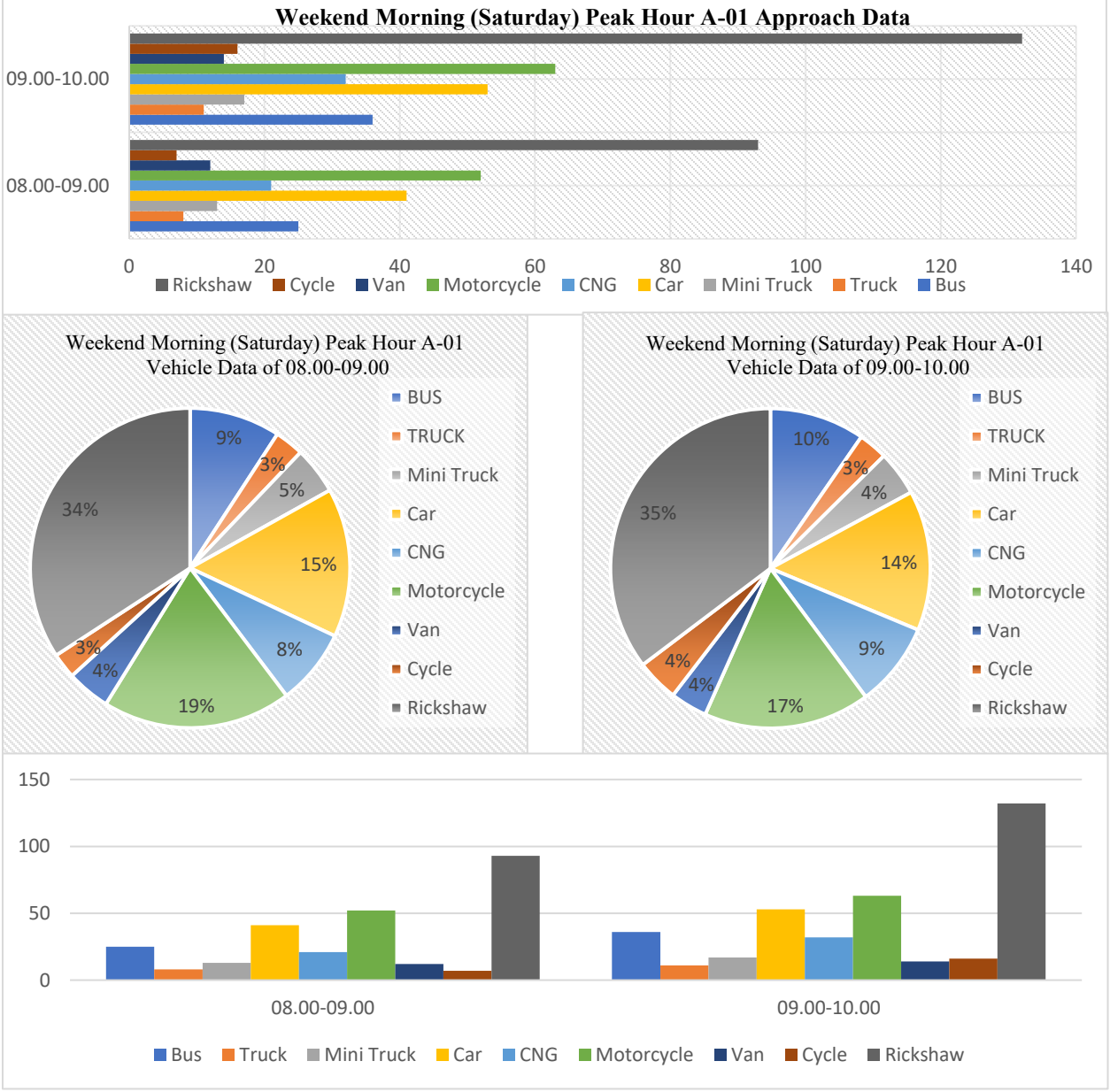


Figure 3.12: Weekend Morning (Saturday) Peak Hour A-01 Approach Data

3.15.4 Weekday Morning (Tuesday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday morning peak hour. Rickshaw, Motorcycle, Car & Bus are the predominant vehicles crossing the A-01 approach in 1st & 2nd hour. On 1st Peak Hour 37 buses, 10 truck, 12 Mini Truck, 53 Private Car, 27 CNG, 79 Motorcycle, 23 Van, 14 Cycle & 137 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 41 buses, 14 truck, 19 Mini Truck, 49 Private Car, 37 CNG, 77 Motorcycle, 8 Van, 13 Cycle & 152 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	37	10	12	53	27	79	23	14	137	392	908
09.00-10.00	49	5	19	67	38	107	28	21	182	516	

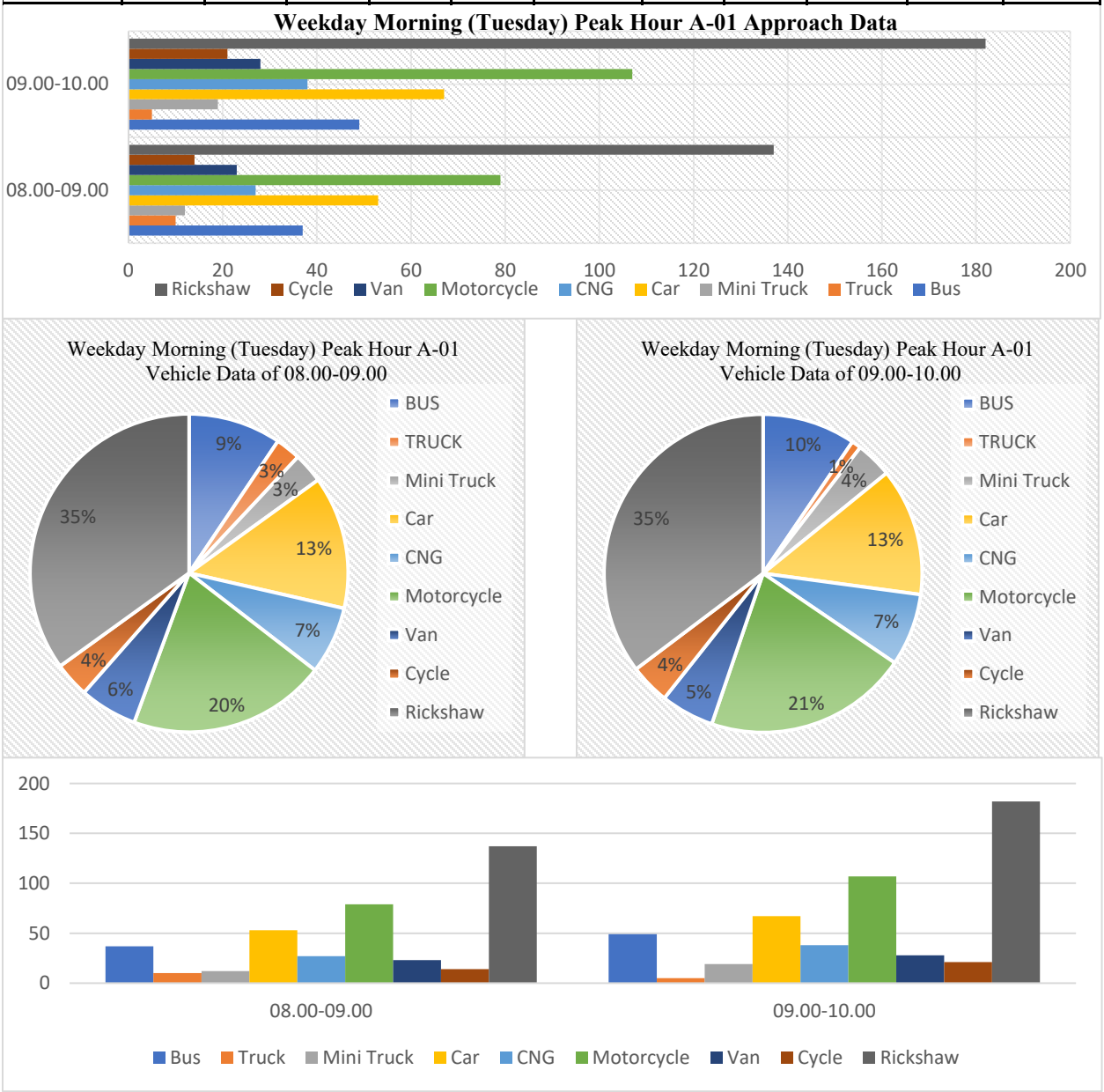


Figure 3.13: Weekday Morning (Tuesday) Peak Hour A-01 Approach Data

3.15.5 Weekend Afternoon (Friday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw are the predominant vehicles crossing the A-01 approach 128 during the morning 1st Peak hour. Subsequently, 27 buses, 04 truck, 10 Mini Truck, 32 Private Car, 24 CNG, 59 Motorcycle, 14 Van, 09 Cycle Vehicles are operated on this road around this time of day. On 2nd Peak Hour 22 buses, 02 truck, 07 Mini Truck, 23 Private Car, 13 CNG, 35 Motorcycle, 09 Van, 03 Cycle & most predominant vehicle 209 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	27	4	10	32	24	59	14	9	128	307	516
01.00-02.00	22	2	7	23	13	35	9	3	95	209	

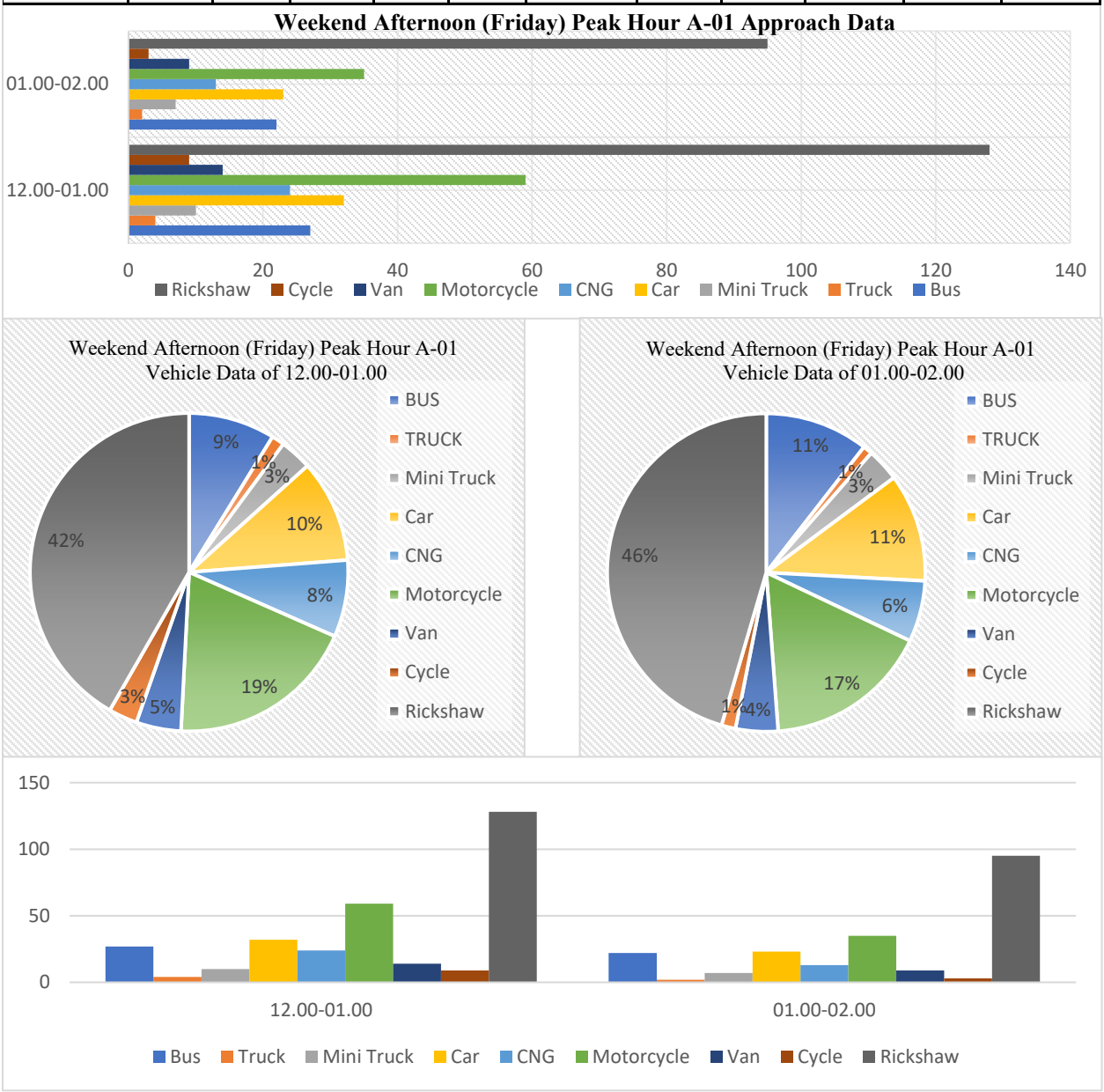


Figure 3.14: Weekend Afternoon (Friday) Peak Hour A-01 Approach Data

3.15.6 Weekend Afternoon (Saturday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-01 approach in 1st & 2nd hour. On 1st Peak Hour 29 buses, 5 truck, 21 Mini Truck, 48 Private Car, 34 CNG, 72 Motorcycle, 17 Van, 14 Cycle & 151 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 24 buses, 05 truck, 14 Mini Truck, 52 Private Car, 27 CNG, 61 Motorcycle, 13 Van, 12 Cycle & 122 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	29	5	21	48	34	72	17	14	151	391	721
01.00-02.00	24	5	14	52	27	61	13	12	122	330	

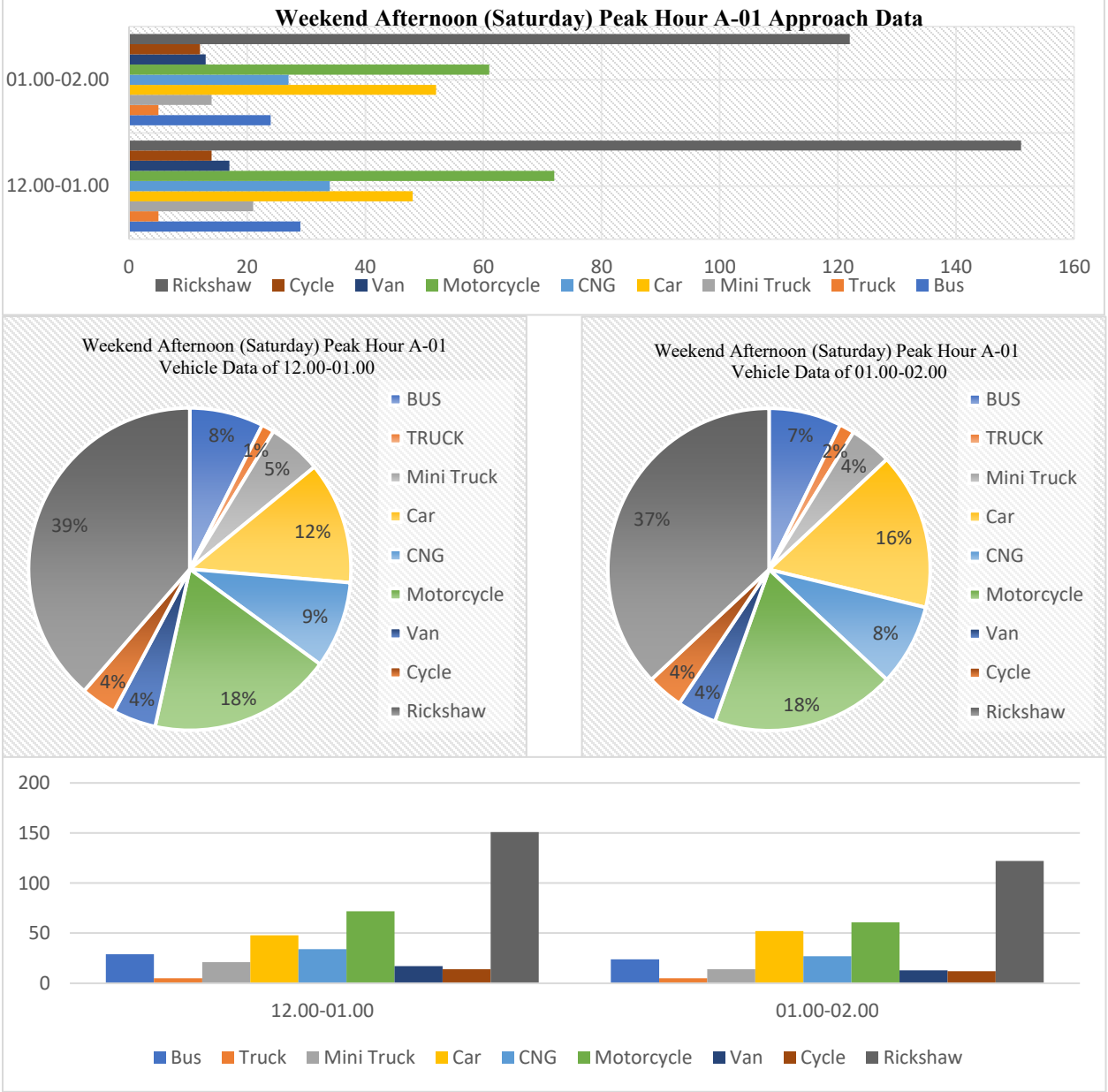


Figure 3.15: Weekend Afternoon (Saturday) Peak Hour A-01 Approach

3.15.7 Weekday Afternoon (Tuesday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday afternoon peak hour. Rickshaw, Motorcycle, Car & Bus are the predominant vehicles crossing the A-01 approach in 1st & 2nd hour. On 1st Peak Hour 35 buses, 02 truck, 23 Mini Truck, 68 Private Car, 32 CNG, 92 Motorcycle, 18 Van, 26 Cycle & 122 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 32 buses, 04 truck, 12 Mini Truck, 59 Private Car, 36 CNG, 118 Motorcycle, 15 Van, 32 Cycle & 138 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	35	2	23	68	32	92	18	26	122	418	864
01.00-02.00	32	4	12	59	36	118	15	32	138	446	

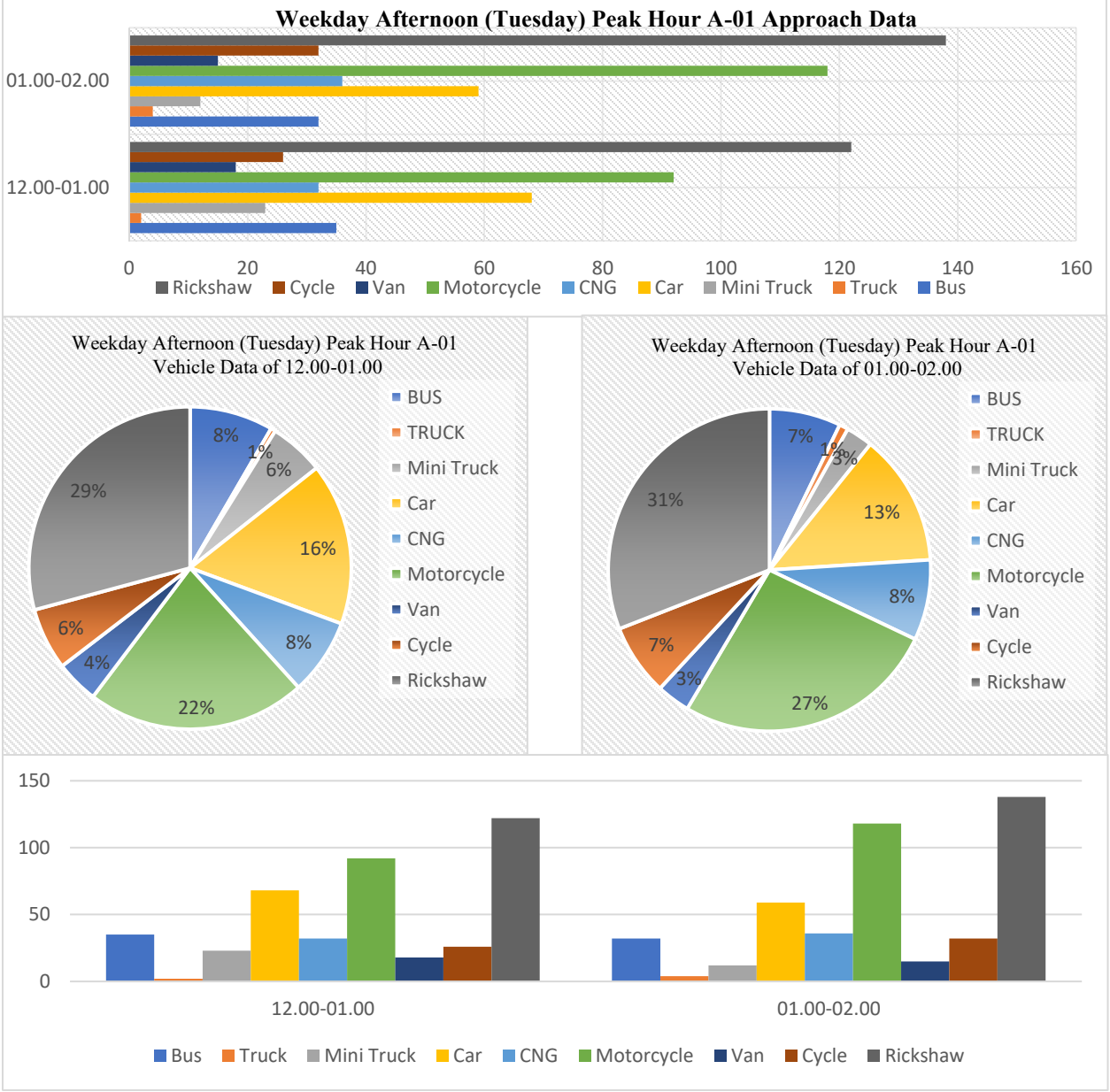


Figure 3.16: Weekday Afternoon (Tuesday) Peak Hour A-01 Approach Data

3.15.8 Weekend Evening (Friday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw are the predominant vehicles crossing the A-01 approach 172 during the morning 1st Peak hour. Subsequently, 37 buses, 05 truck, 17 Mini Truck, 51 Private Car, 27 CNG, 62 Motorcycle, 12 Van, 12 Cycle Vehicles are operated on this road around this time of day. On 2nd Peak Hour 35 buses, 07 truck, 16 Mini Truck, 62 Private Car, 38 CNG, 71 Motorcycle, 15 Van, 17 Cycle & most predominant vehicle 191 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	37	5	17	51	27	62	12	12	172	395	847
05.00-06.00	35	7	16	62	38	71	15	17	191	452	

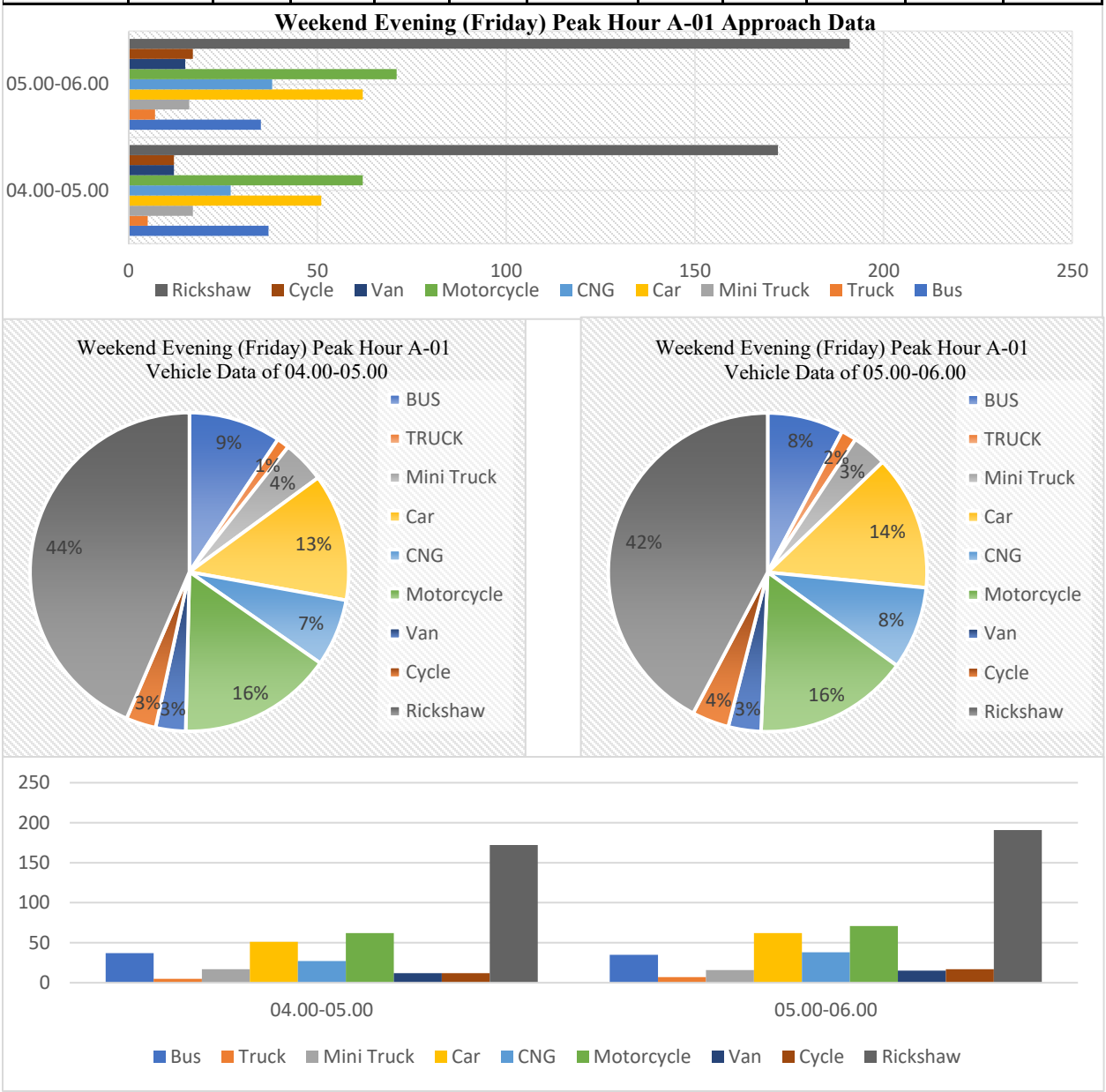


Figure 3.17: Weekend Evening (Friday) Peak Hour A-01 Approach Data

3.15.9 Weekend Evening (Saturday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle, Bus & Car are the predominant vehicles crossing the A-01 approach in 1st & 2nd hour. On 1st Peak Hour 38 buses, 9 truck, 16 Mini Truck, 59 Private Car, 35 CNG, 73 Motorcycle, 18 Van, 9 Cycle & 181 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 32 buses, 12 truck, 13 Mini Truck, 51 Private Car, 32 CNG, 89 Motorcycle, 11 Van, 14 Cycle & 192 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	38	9	16	59	35	73	18	9	181	438	884
05.00-06.00	32	12	13	51	32	89	11	14	192	446	

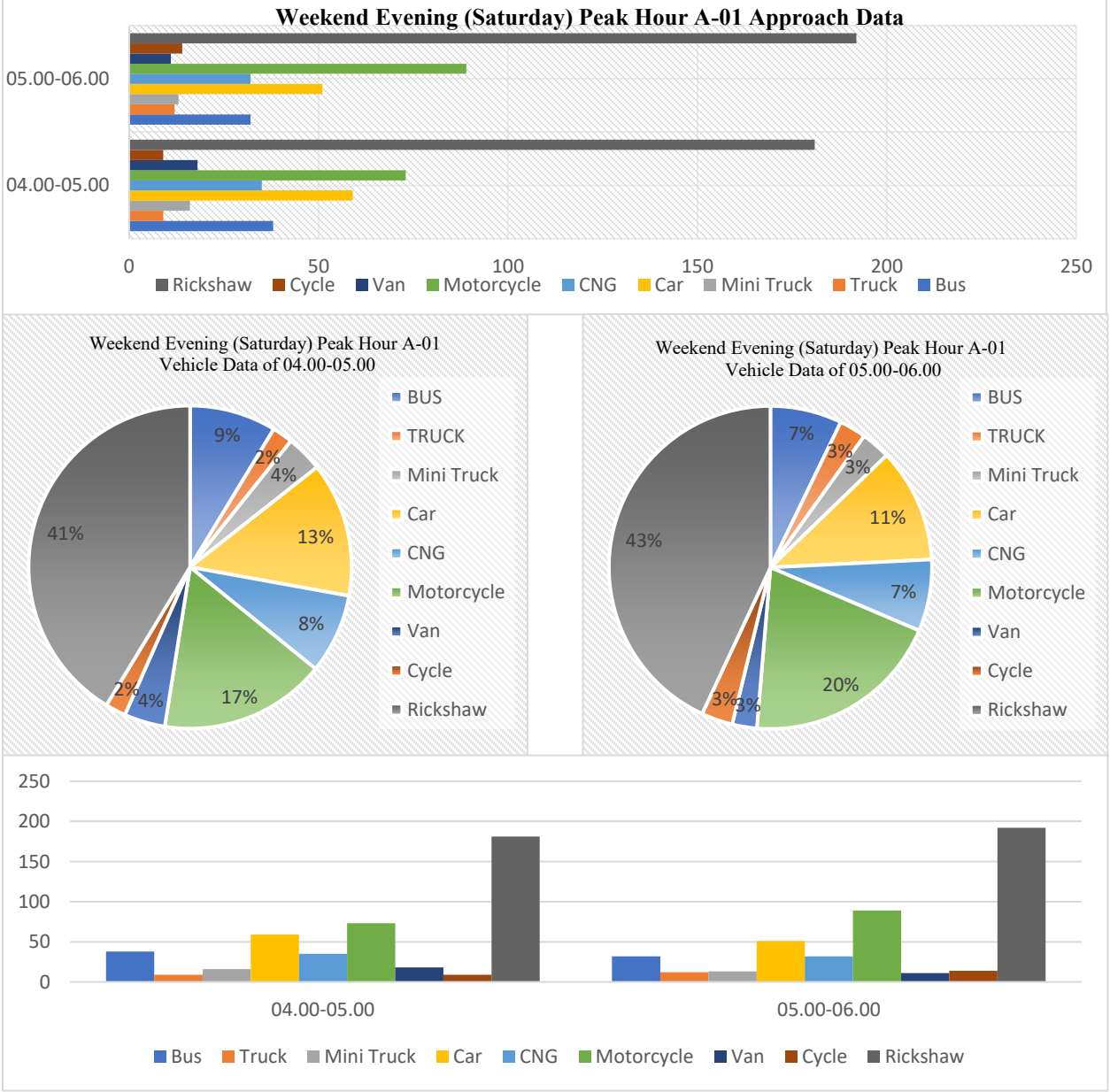


Figure 3.18: Weekend Evening (Saturday) Peak Hour A-01 Approach Data

3.15.10 Weekday Evening (Tuesday) Peak Hour A-01 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday evening peak hour. Rickshaw, Motorcycle, Car & Bus are the predominant vehicles crossing the A-01 approach in 1st & 2nd hour. On 1st Peak Hour 41 buses, 08 truck, 18 Mini Truck, 71 Private Car, 38 CNG, 102 Motorcycle, 22 Van, 35 Cycle & 211 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 35 buses, 14 truck, 15 Mini Truck, 74 Private Car, 35 CNG, 109 Motorcycle, 17 Van, 30 Cycle & 232 Rickshaw cross A-01 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	41	8	18	71	38	102	22	35	211	546	1107
05.00-06.00	35	14	15	74	35	109	17	30	232	561	

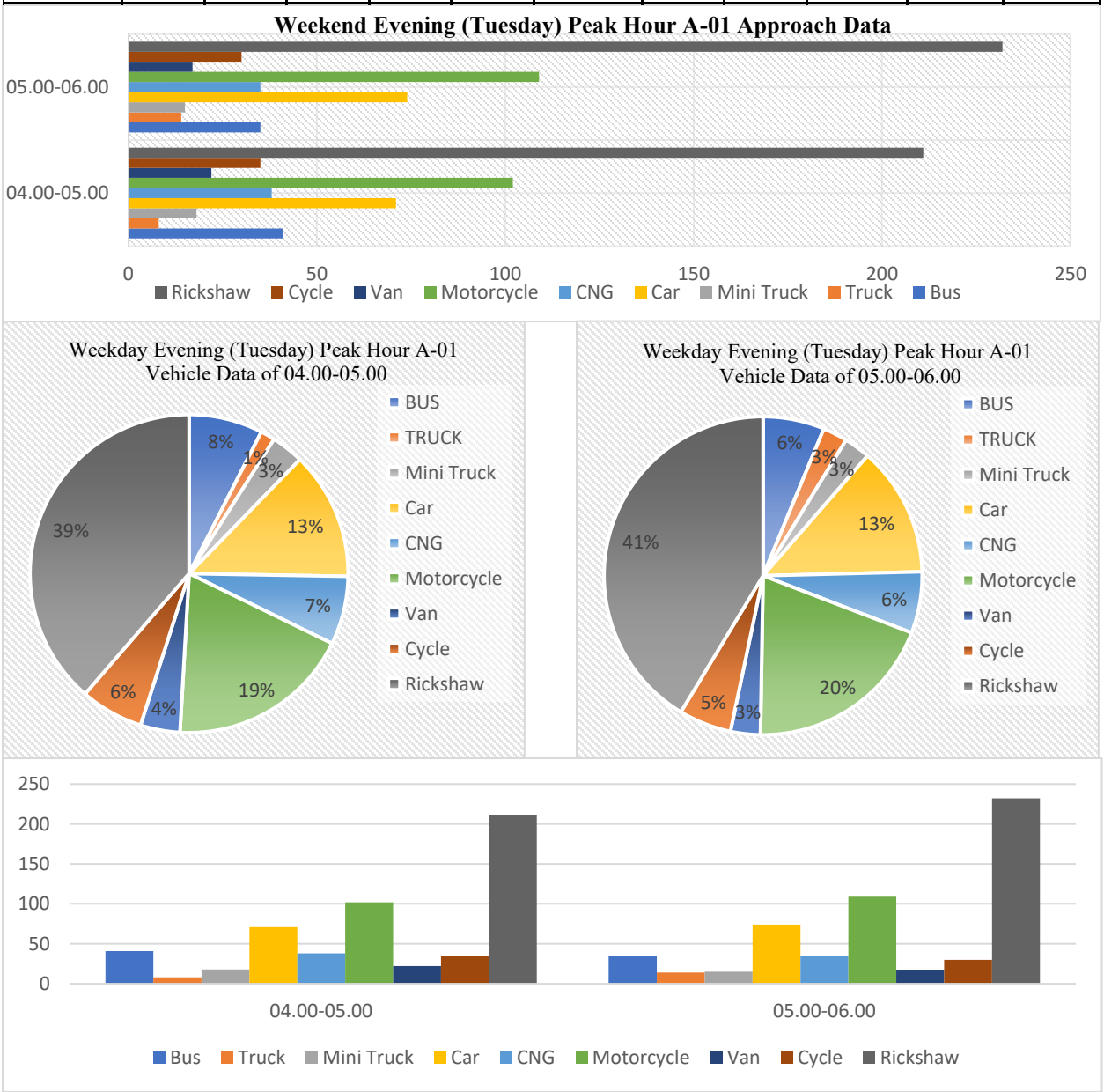


Figure 3.19: Weekday Evening (Tuesday) Peak Hour A-01 Approach Data

3.15.11 Weekend Morning (Friday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw & Motorcycle & Private Car are the predominant vehicles crossing the A-02 approach during the morning Peak hour. On 1st Peak Hour 16 buses, 11 truck, 17 Mini Truck, 32 Private Car, 27 CNG, 51 Motorcycle, 18 Van, 13 Cycle & 65 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 22 buses, 09 truck, 21 Mini Truck, 49 Private Car, 35 CNG, 67 Motorcycle, 22 Van, 17 Cycle & 91 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	16	11	17	32	27	51	18	13	65	250	583
09.00-10.00	22	9	21	49	35	67	22	17	91	333	

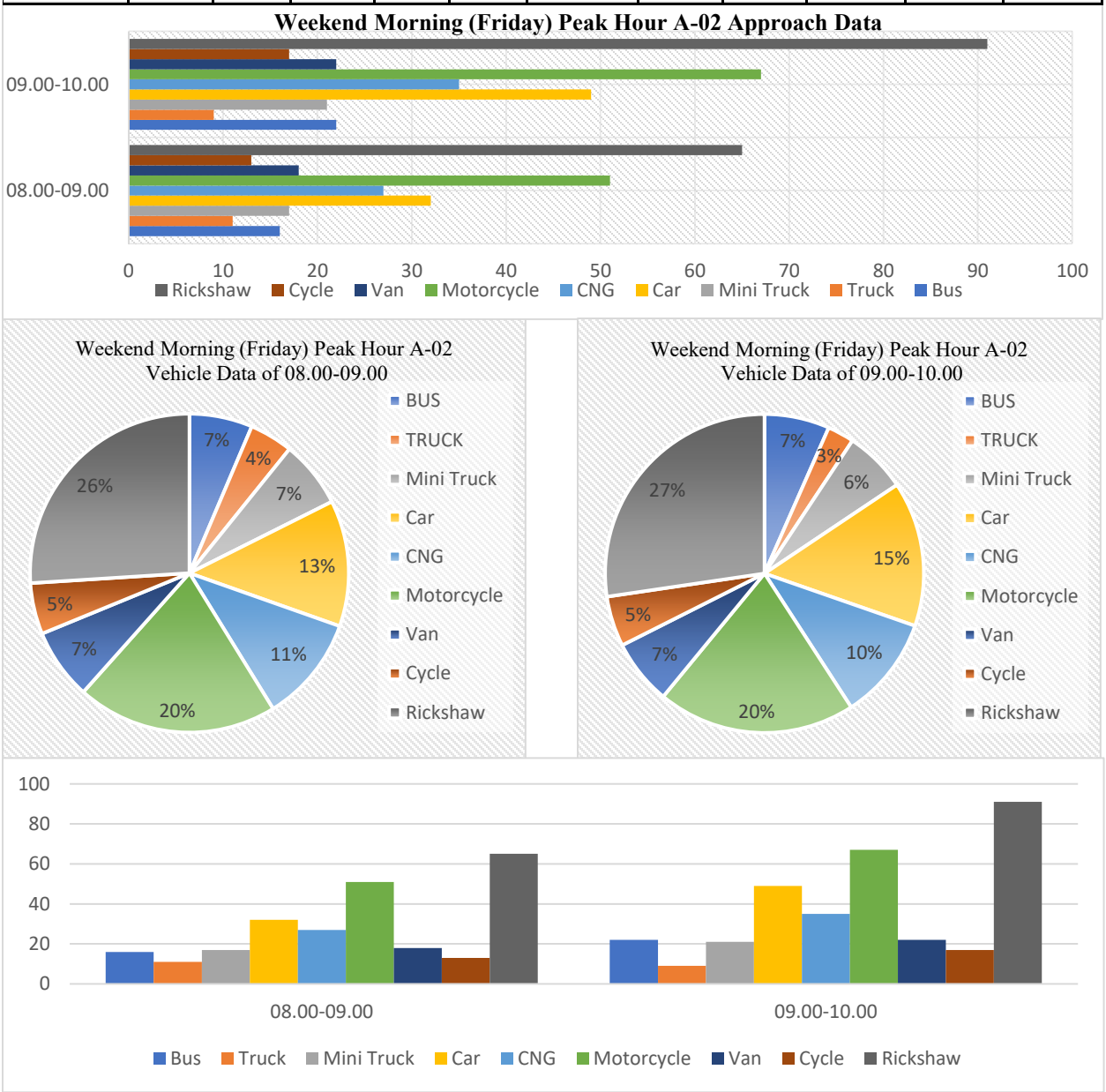


Figure 3.20: Weekend Morning (Friday) Peak Hour A-02 Approach Data

3.15.12 Weekend Morning (Saturday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw, Car & Motorcycle are the predominant vehicles crossing the A-02 approach during the morning Peak hour. On 1st Peak Hour 23 buses, 13 truck, 19 Mini Truck, 45 Private Car, 32 CNG, 79 Motorcycle, 15 Van, 19 Cycle & 87 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 41 buses, 14 truck, 19 Mini Truck, 49 Private Car, 37 CNG, 77 Motorcycle, 8 Van, 13 Cycle & 152 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	23	13	19	45	32	79	15	19	87	332	742
09.00-10.00	27	8	17	62	41	97	24	29	105	410	

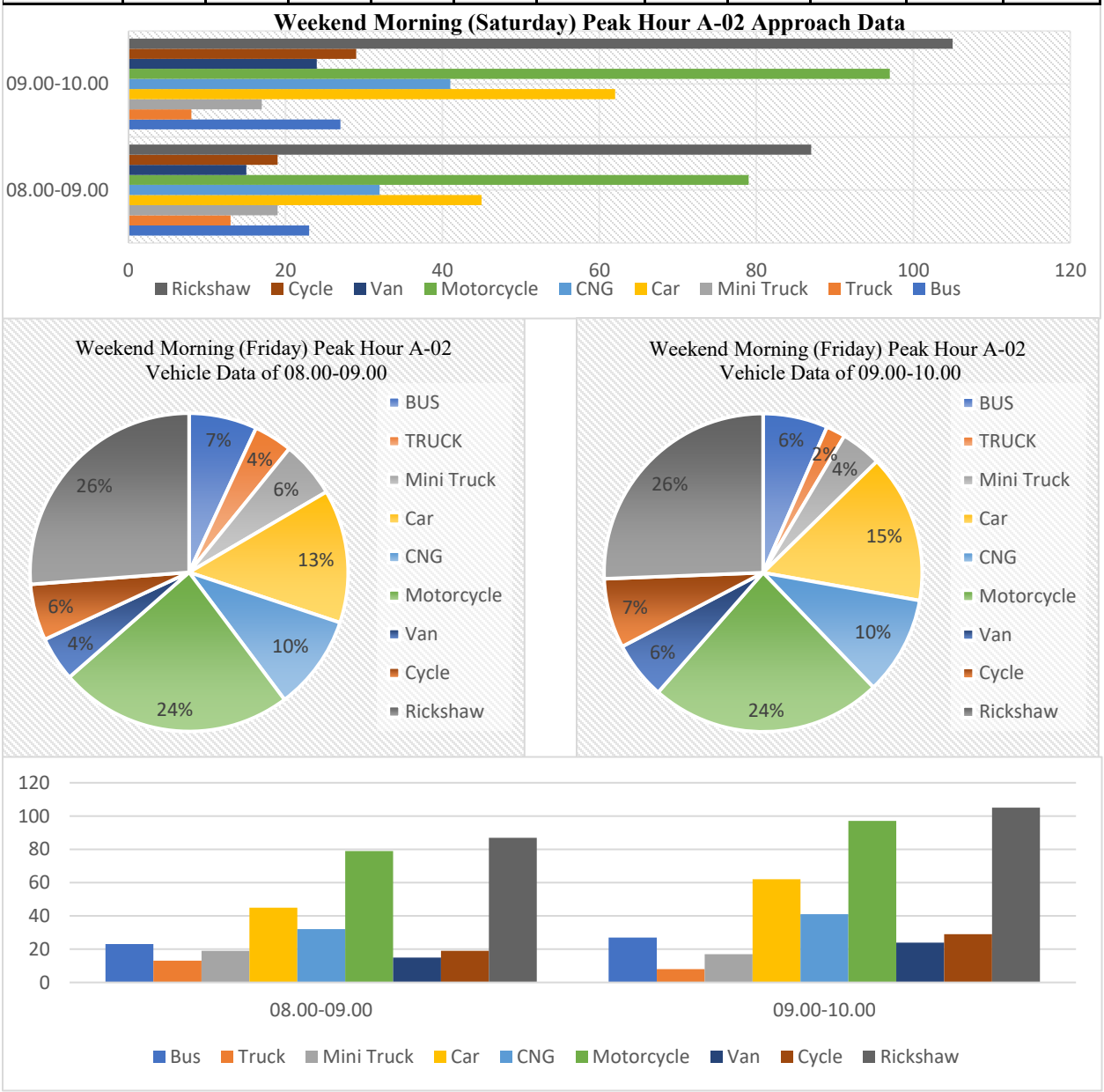


Figure 3.21: Weekend Morning (Saturday) Peak Hour A-02 Approach Data

3.15.13 Weekday Morning (Tuesday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday morning peak hour. Rickshaw & Motorcycle, Truck, Car & Bus are the predominant vehicles crossing the A-02 approach in morning peak hour. On 1st Peak Hour 28 buses, 11 truck, 23 Mini Truck, 54 Private Car, 34 CNG, 132 Motorcycle, 14 Van, 21 Cycle & 141 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 36 buses, 09 truck,21 Mini Truck, 72 Private Car, 37 CNG, 182 Motorcycle, 19 Van, 27 Cycle & 168 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	28	11	23	54	34	132	14	21	141	458	1029
09.00-10.00	36	9	21	72	37	182	19	27	168	571	

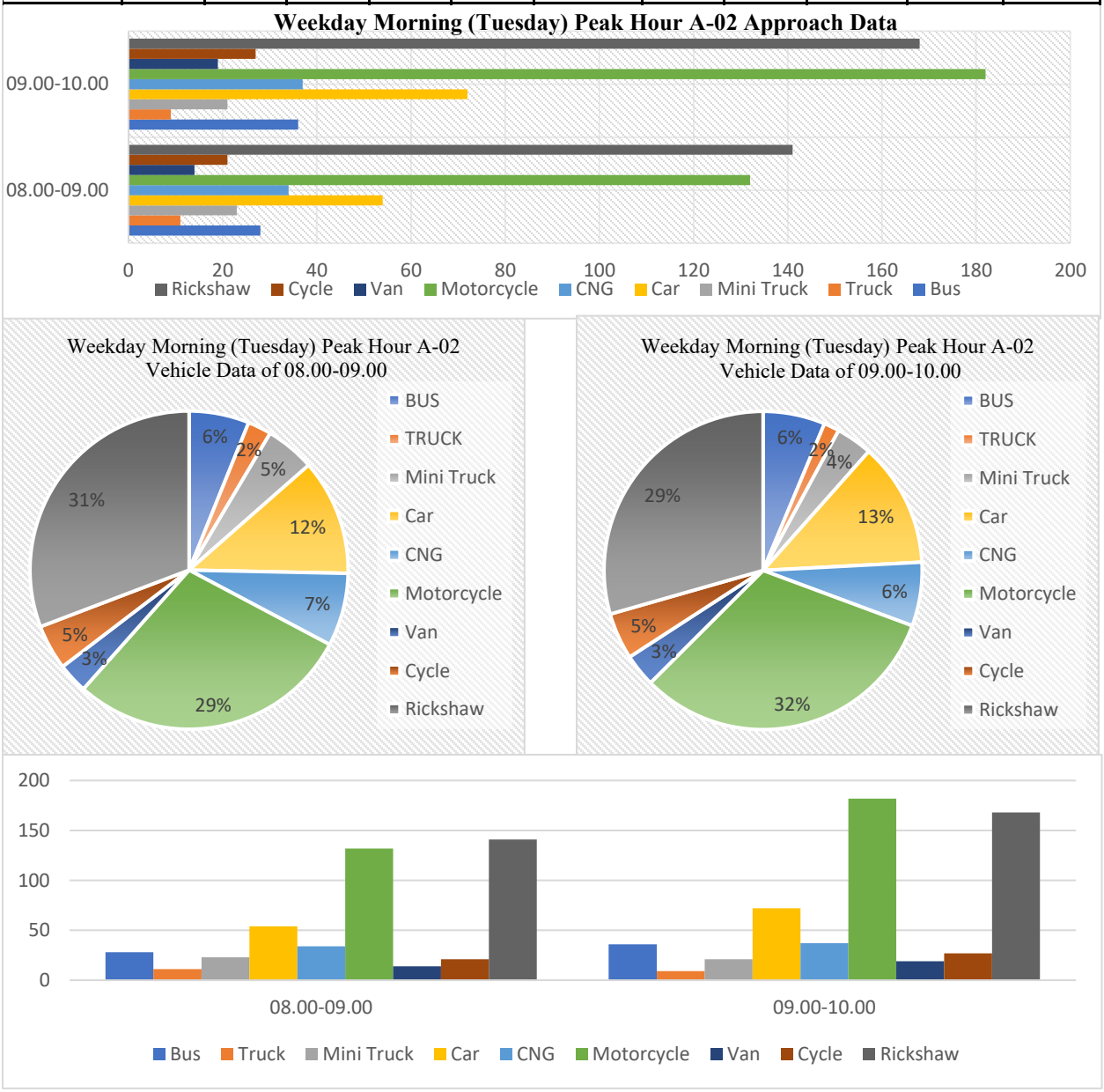


Figure 3.22: Weekday Morning (Tuesday) Peak Hour A-02 Approach Data

3.15.14 Weekend Afternoon (Friday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Truck, Mini Truck, Car, Motorcycle are the predominant vehicles crossing the A-02 approach during the morning Peak hour. On 1st Peak Hour 19 buses, 13 truck, 27 Mini Truck, 53 Private Car, 32 CNG, 81 Motorcycle, 13 Van, 19 Cycle & 108 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 14 buses, 08 truck, 19 Mini Truck, 42 Private Car, 7 CNG, 42 Motorcycle, 07 Van, 11 Cycle & most predominant vehicle 72 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	19	13	27	53	32	81	13	19	108	365	604
01.00-02.00	14	8	19	42	24	42	7	11	72	239	

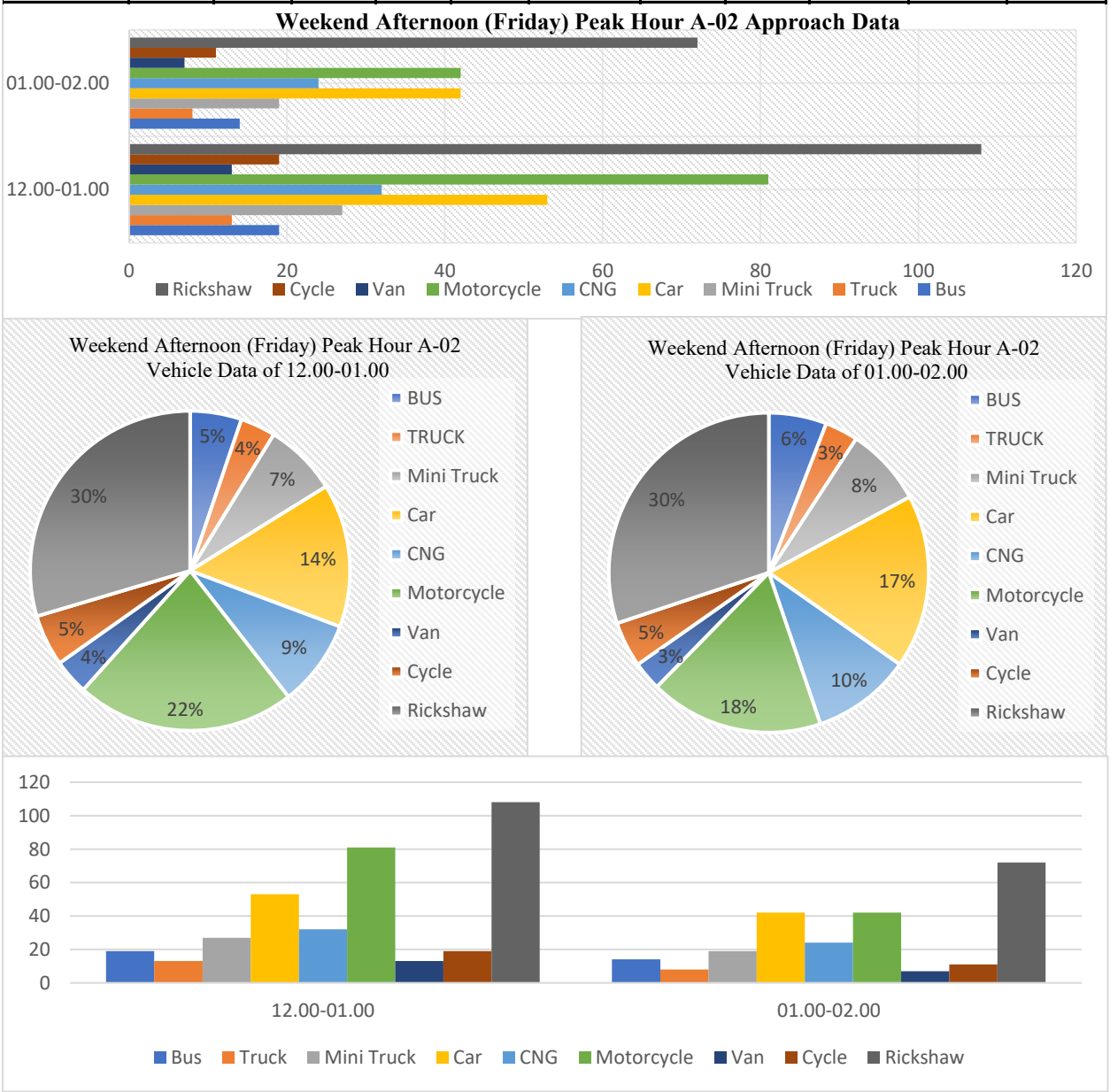


Figure 3.23: Weekend Afternoon (Friday) Peak Hour A-02 Approach Data

3.15.15 Weekend Afternoon (Saturday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-02 approach in 1st & 2nd hour. On 1st Peak Hour 25 buses, 5 truck, 32 Mini Truck, 79 Private Car, 39 CNG, 128 Motorcycle, 12 Van, 22 Cycle & 107 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 21 buses, 06 truck, 30 Mini Truck, 67 Private Car, 40 CNG, 107 Motorcycle, 13 Van, 18 Cycle & 114 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	25	5	32	79	39	128	12	22	107	449	865
01.00-02.00	21	6	30	67	40	107	13	18	114	416	

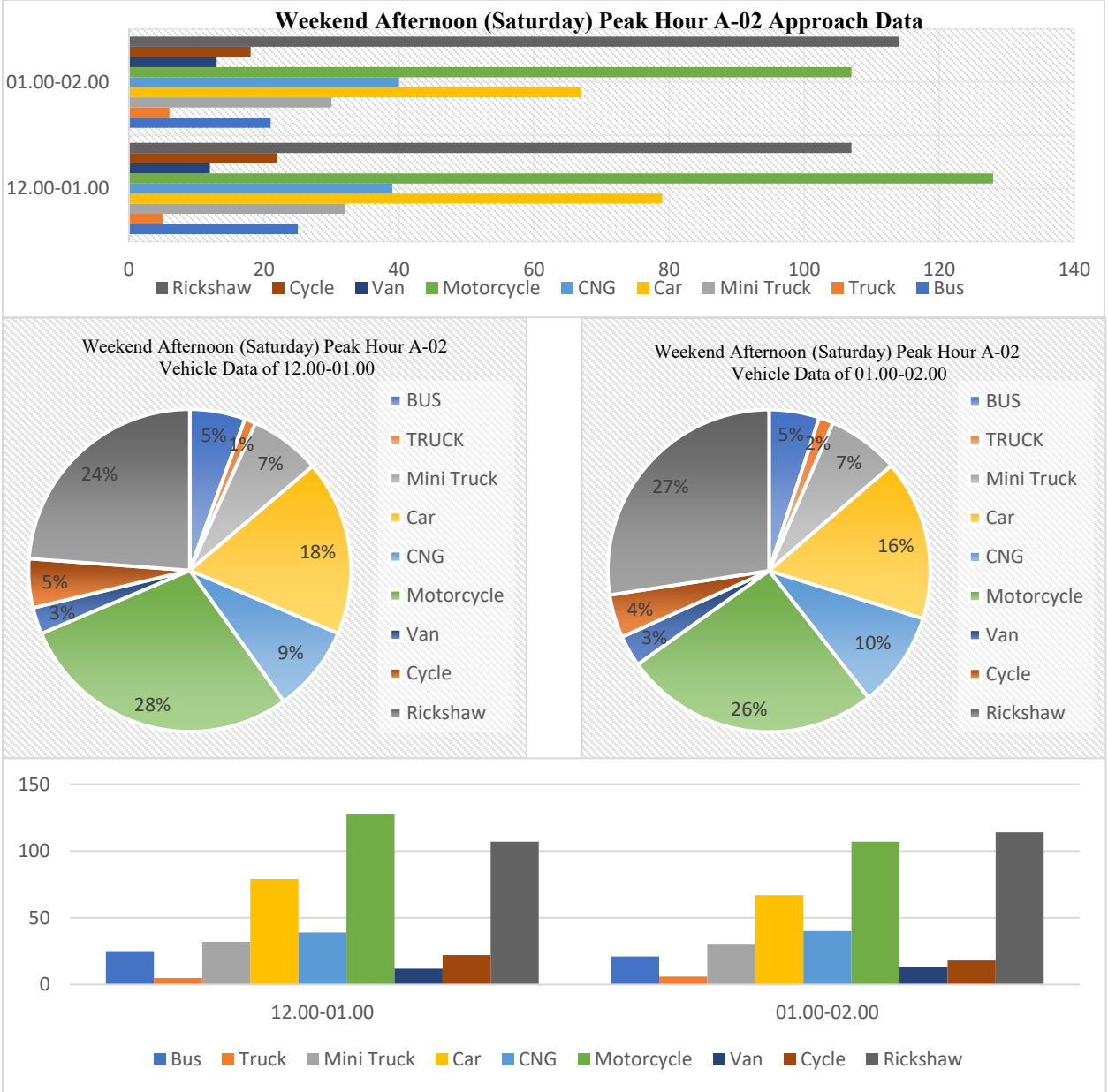


Figure 3.24: Weekend Afternoon (Saturday) Peak Hour A-02 Approach

3.15.16 Weekday Afternoon (Tuesday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday afternoon peak hour. Rickshaw, Motorcycle, Car are the predominant vehicles crossing the A-02 approach in 1st & 2nd hour. On 1st Peak Hour 29 buses, 06 truck, 27 Mini Truck, 85 Private Car, 42 CNG, 209 Motorcycle, 17 Van, 24 Cycle & 182 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 32 buses, 07 truck, 19 Mini Truck, 59 Private Car, 38 CNG, 153 Motorcycle, 21 Van, 29 Cycle & 159 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	29	6	27	85	42	209	17	24	182	621	1138
01.00-02.00	32	7	19	59	38	153	21	29	159	517	

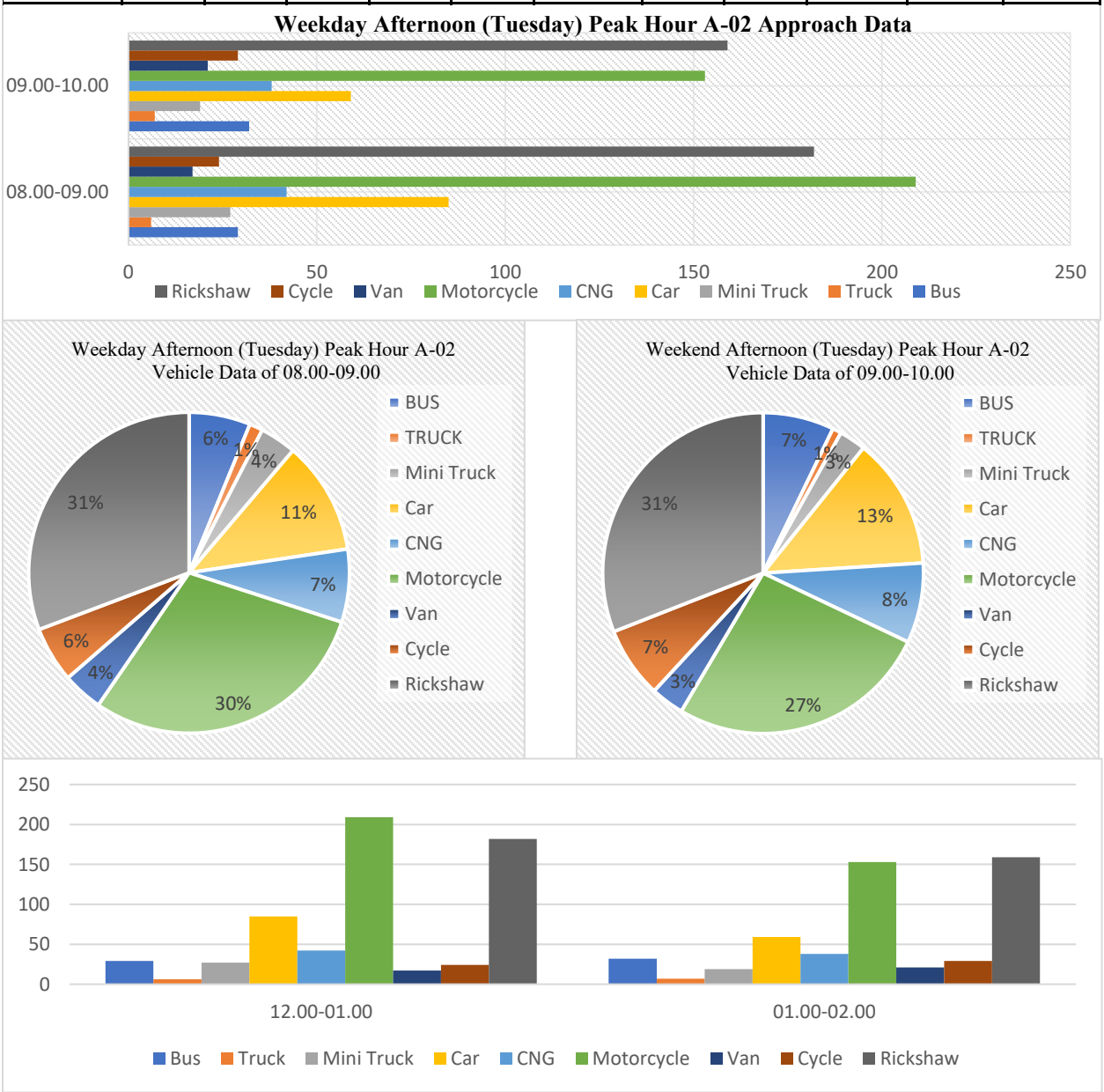


Figure 3.25: Weekday Afternoon (Tuesday) Peak Hour A-02 Approach Data

3.15.17 Weekend Evening (Friday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw & Motorcycle are the predominant vehicles crossing the A-02 approach during the morning Peak hour. On 1st Peak hour 25 buses, 08 truck, 22 Mini Truck, 71 Private Car, 42 CNG, 127 Motorcycle, 23 Van, 27 Cycle & 122 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 28 buses, 12 truck, 25 Mini Truck, 77 Private Car, 46 CNG, 142 Motorcycle, 27 Van, 31 Cycle & 138 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	25	8	22	71	42	127	23	27	122	467	993
05.00-06.00	28	12	25	77	46	142	27	31	138	526	

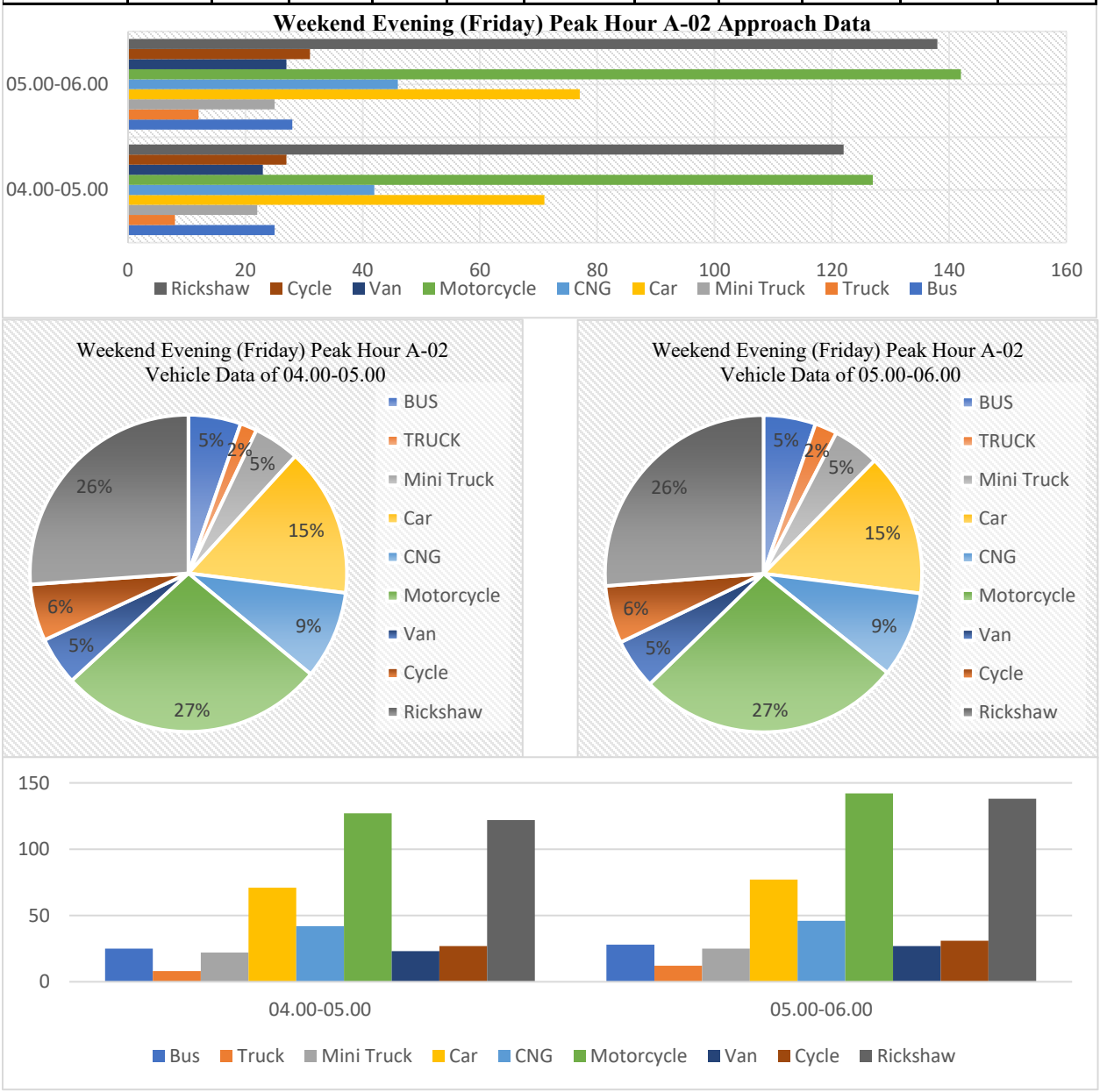


Figure 3.26: Weekend Evening (Friday) Peak Hour A-02 Approach Data

3.15.18 Weekend Evening (Saturday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle, Bus & Car are the predominant vehicles crossing the A-02 approach in 1st & 2nd hour. On 1st Peak Hour 29 buses, 08 truck, 27 Mini Truck, 73 Private Car, 53 CNG, 157 Motorcycle, 22 Van, 32 Cycle & 132 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 32 buses, 13 truck, 28 Mini Truck, 81 Private Car, 57 CNG, 161 Motorcycle, 29 Van, 38 Cycle & 141 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	29	8	27	73	53	157	22	32	132	533	1113
05.00-06.00	32	13	28	81	57	161	29	38	141	580	

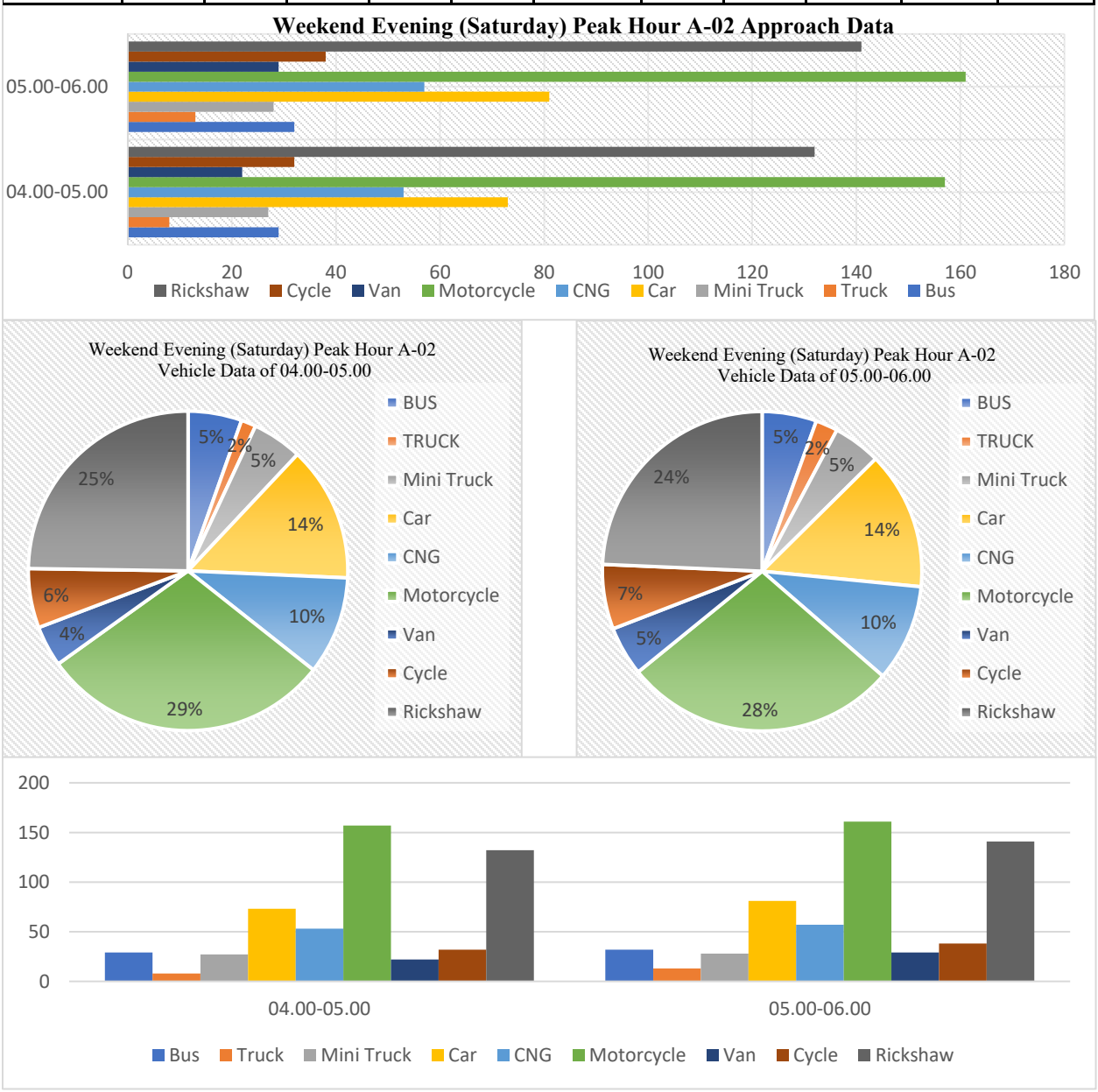


Figure 3.27: Weekend Evening (Saturday) Peak Hour A-02 Approach Data

3.15.19 Weekday Evening (Tuesday) Peak Hour A-02 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday evening peak hour. Rickshaw, Motorcycle, Car & Bus are the predominant vehicles crossing the A-02 approach in 1st & 2nd hour. On 1st Peak hour 41 buses, 08 truck, 18 Mini Truck, 71 Private Car, 38 CNG, 102 Motorcycle, 22 Van, 35 Cycle & 211 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 35 buses, 14 truck, 15 Mini Truck, 74 Private Car, 35 CNG, 109 Motorcycle, 17 Van, 30 Cycle & 232 Rickshaw cross A-02 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	43	4	31	83	40	189	27	29	193	639	1352
05.00-06.00	48	13	29	91	44	217	28	34	209	713	

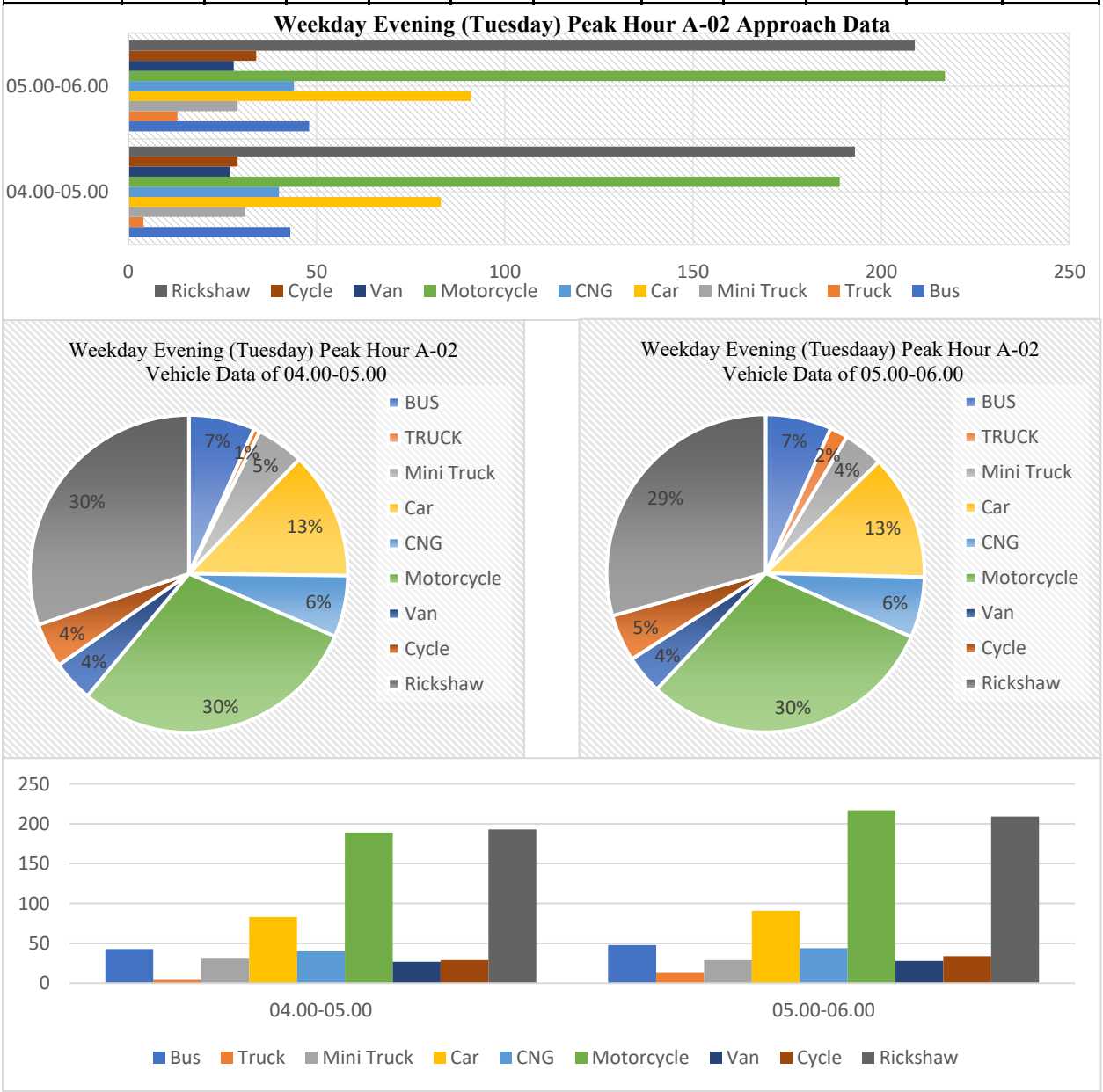


Figure 3.28: Weekday Evening (Tuesday) Peak Hour A-02 Approach Data

3.15.20 Weekend Morning (Friday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw are the predominant vehicles crossing the A-03 approach during the morning. On 1st Peak hour 14 buses, 08 truck, 17 Mini Truck, 31 Private Car, 19 CNG, 45 Motorcycle, 08 Van, 09 Cycle & 112 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 17 buses, 06 truck, 14 Mini Truck, 43 Private Car, 27 CNG, 82 Motorcycle, 13 Van, 13 Cycle & most predominant vehicle 134 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	14	8	17	31	19	45	8	9	112	263	612
09.00-10.00	17	6	14	43	27	82	13	13	134	349	

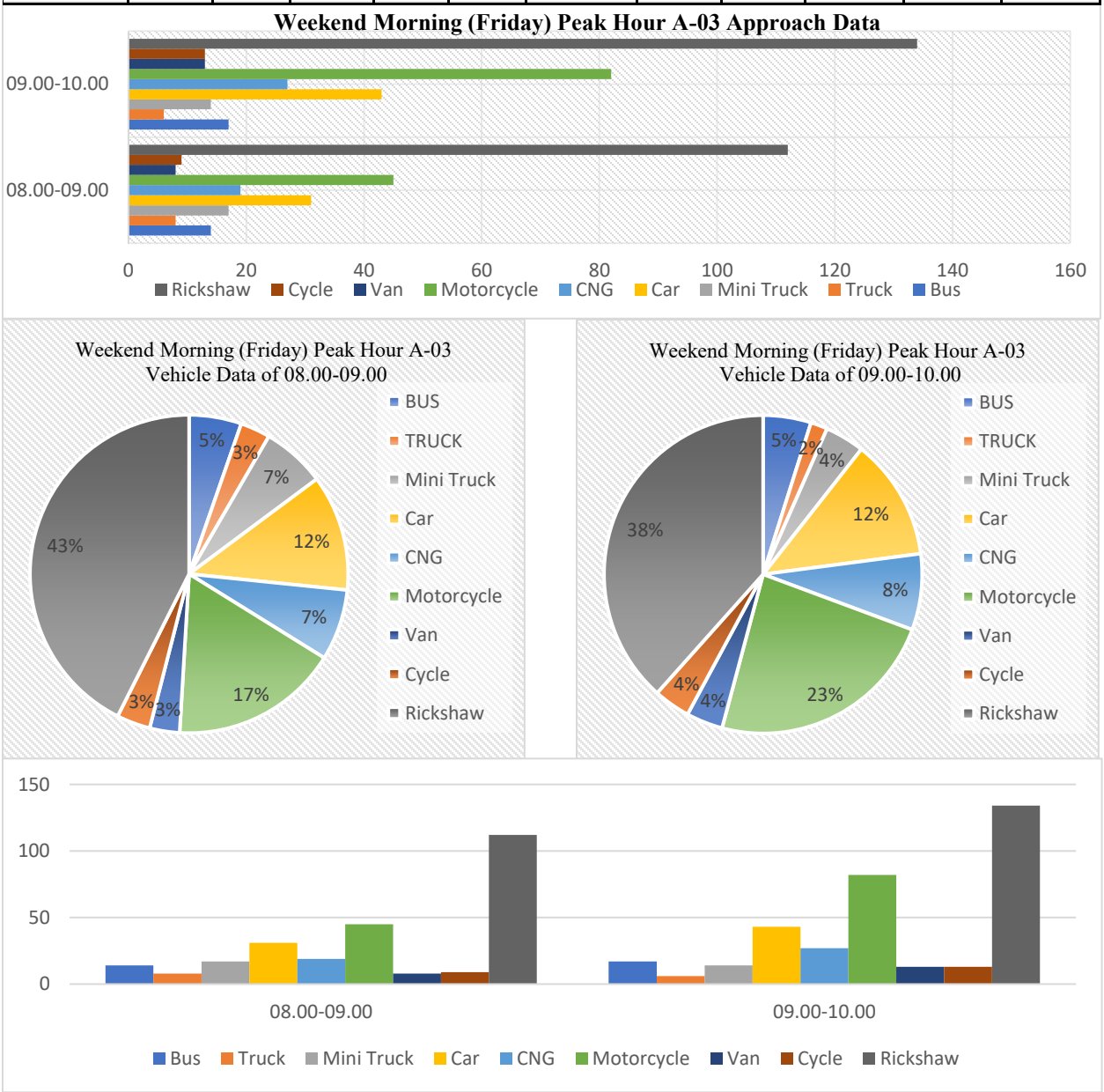


Figure 3.29: Weekend Morning (Friday) Peak Hour A-03 Approach Data

3.15.21 Weekend Morning (Saturday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw, Car & Motorcycle are the predominant vehicles crossing the A-03 approach during the morning. On 1st Peak hour 18 buses, 11 truck, 12 Mini Truck, 81 Private Car, 23 CNG, 96 Motorcycle, 31 Van, 32 Cycle & 167 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 21 buses, 07 truck, 16 Mini Truck, 107 Private Car, 33 CNG, 118 Motorcycle, 29 Van, 39 Cycle & 189 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	18	11	12	81	23	96	31	32	167	471	1030
09.00-10.00	21	7	16	107	33	118	29	39	189	559	

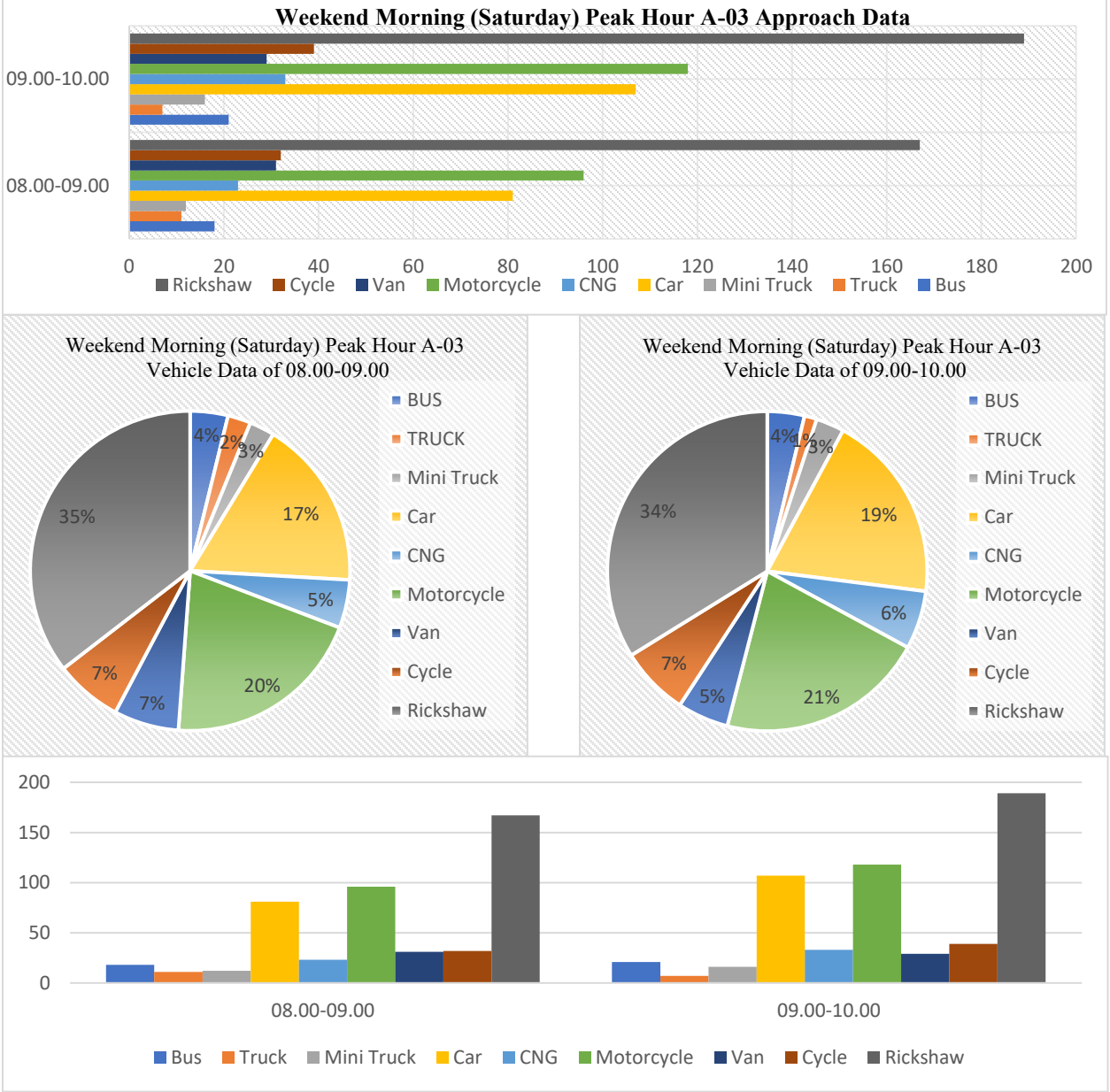


Figure 3.30: Weekend Morning (Saturday) Peak Hour A-03 Approach Data

3.15.22 Weekday Morning (Tuesday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday morning peak hour. Rickshaw, Car & Motorcycle are the predominant vehicles crossing the A-03 approach during the morning. On 1st Peak hour 23 buses, 08 truck, 14 Mini Truck, 84 Private Car, 43 CNG, 109 Motorcycle, 23 Van, 34 Cycle & 179 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 27 buses, 05 truck, 17 Mini Truck, 113 Private Car, 37 CNG, 136 Motorcycle, 31 Van, 37 Cycle & 203 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	23	8	14	84	43	109	23	34	179	517	1123
09.00-10.00	27	5	17	113	37	136	31	37	203	606	

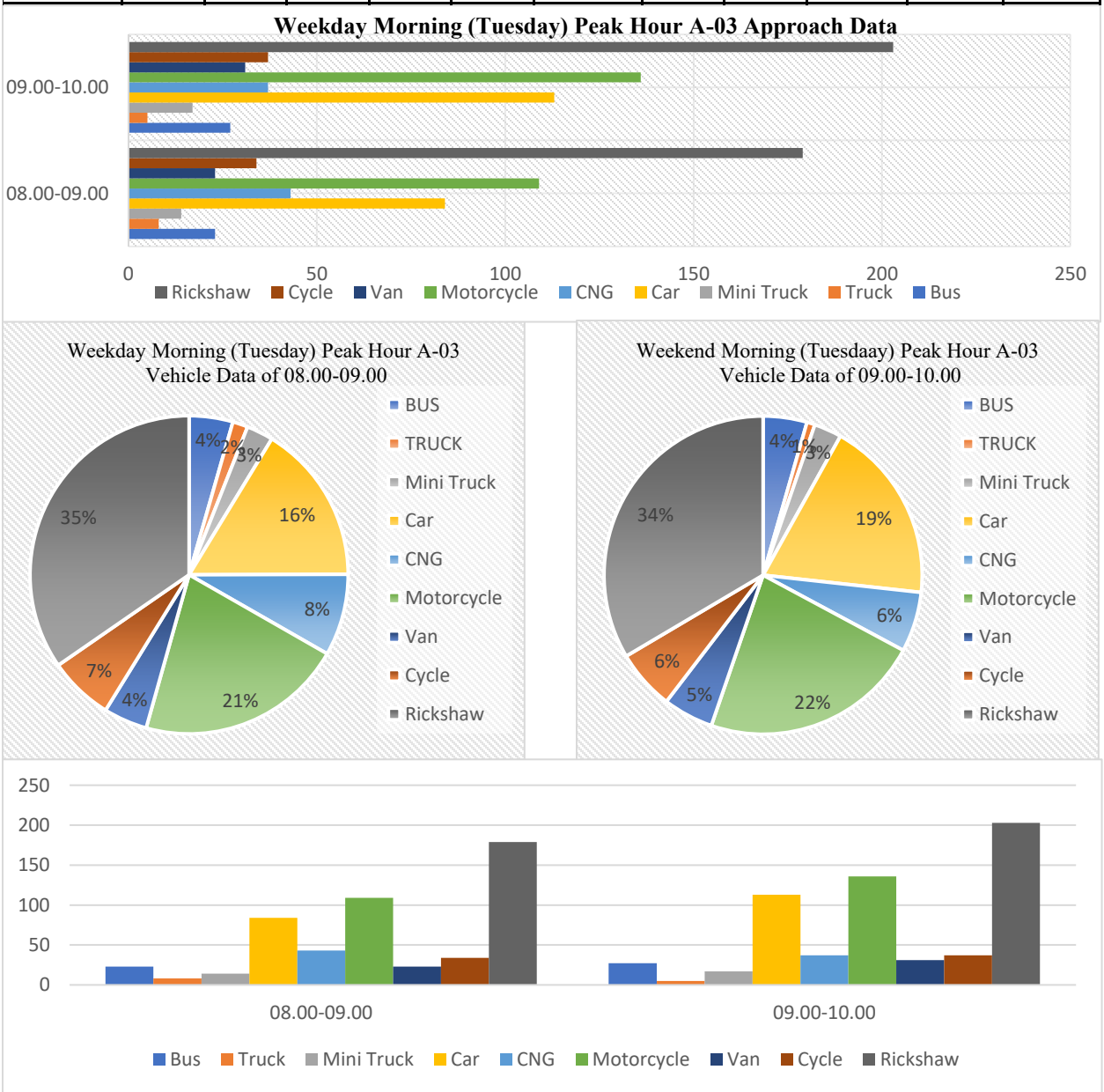


Figure 3.31: Weekday Morning (Tuesday) Peak Hour A-03 Approach Data

3.15.23 Weekend Afternoon (Friday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw & Motorcycle are the predominant vehicles crossing the A-03 approach during the morning. On 1st Peak hour 13 buses, 08 truck, 21 Mini Truck, 37 Private Car, 34 CNG, 103 Motorcycle, 11 Van, 14 Cycle & 161 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 11 buses, 11 truck, 18 Mini Truck, 29 Private Car, 21 CNG, 72 Motorcycle, 05 Van, 08 Cycle & 98 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	13	8	21	37	34	103	11	14	161	402	675
01.00-02.00	11	11	18	29	21	72	5	8	98	273	

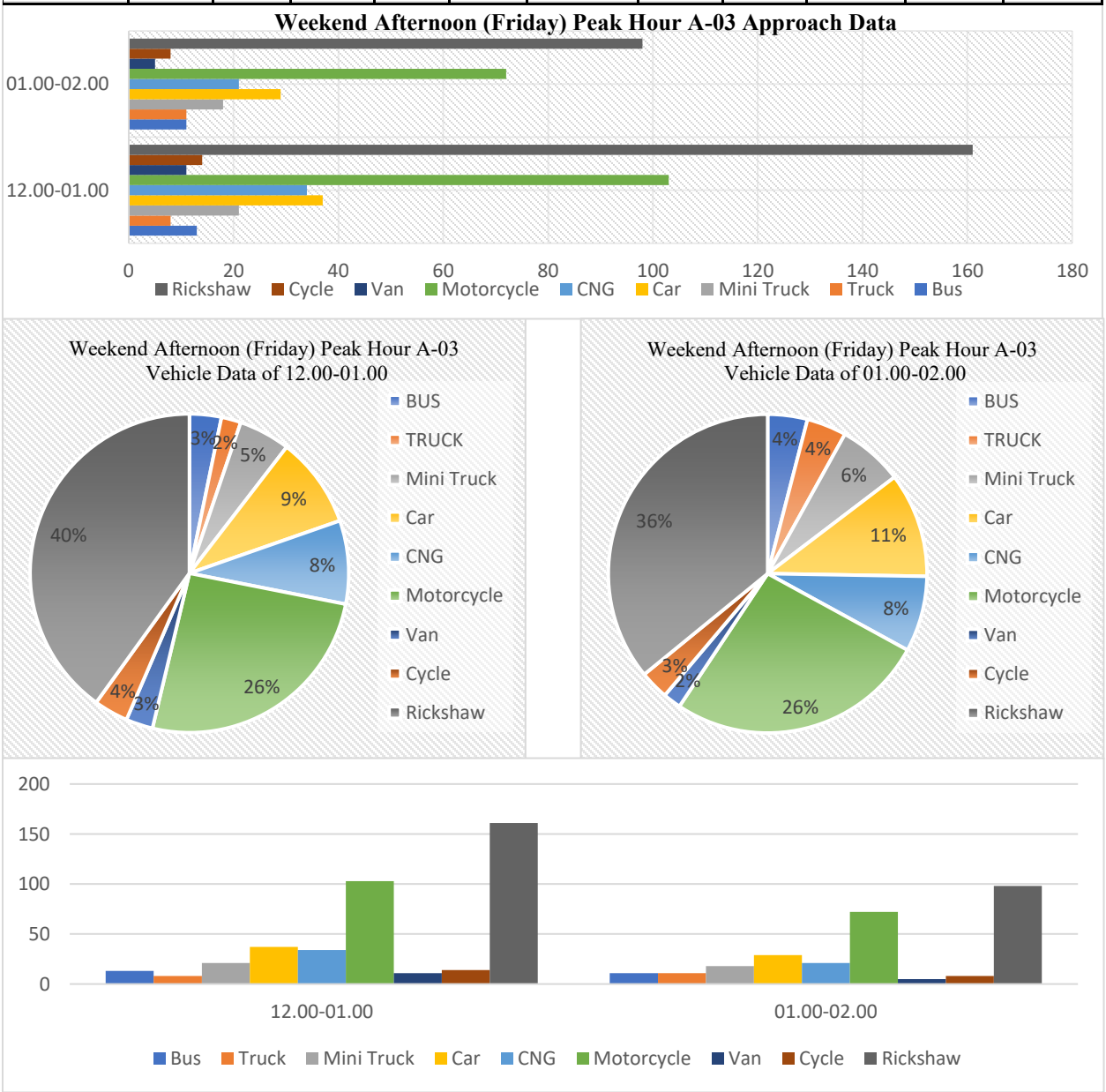


Figure 3.32: Weekend Afternoon (Friday) Peak Hour A-03 Approach Data

3.15.24 Weekend Afternoon (Saturday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-03 approach in 1st & 2nd hour. On 1st Peak Hour 16 buses, 03 truck, 27 Mini Truck, 98 Private Car, 29 CNG, 132 Motorcycle, 45 Van, 43 Cycle & 279 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 17 buses, 04 truck, 22 Mini Truck, 106 Private Car, 31 CNG, 107 Motorcycle, 39 Van, 27 Cycle & 262 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	16	3	27	98	29	132	45	43	279	672	1287
01.00-02.00	17	4	22	106	31	107	39	27	262	615	

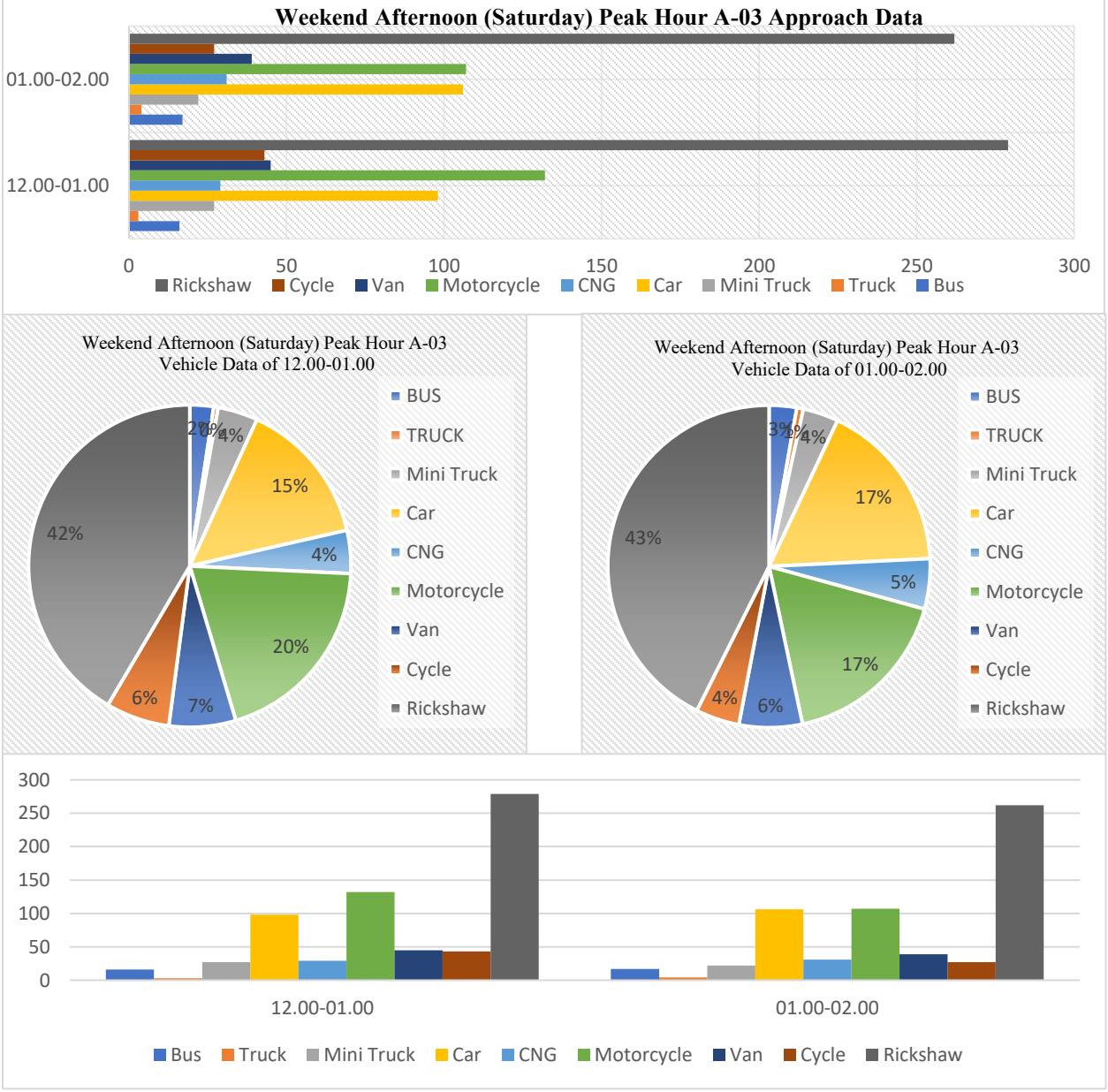


Figure 3.33: Weekend Afternoon (Saturday) Peak Hour A-03 Approach

3.15.25 Weekday Afternoon (Tuesday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Motorcycle, Car & CNG are the predominant vehicles crossing the A-03 approach in 1st & 2nd hour. On 1st Peak Hour 19 buses, 02 truck, 21 Mini Truck, 104 Private Car, 48 CNG, 143 Motorcycle, 43 Van, 40 Cycle & 238 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 24 buses, 07 truck, 24 Mini Truck, 116 Private Car, 39 CNG, 121 Motorcycle, 45 Van, 29 Cycle & 213 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	19	2	21	104	48	143	43	40	238	658	1276
01.00-02.00	24	7	24	116	39	121	45	29	213	618	

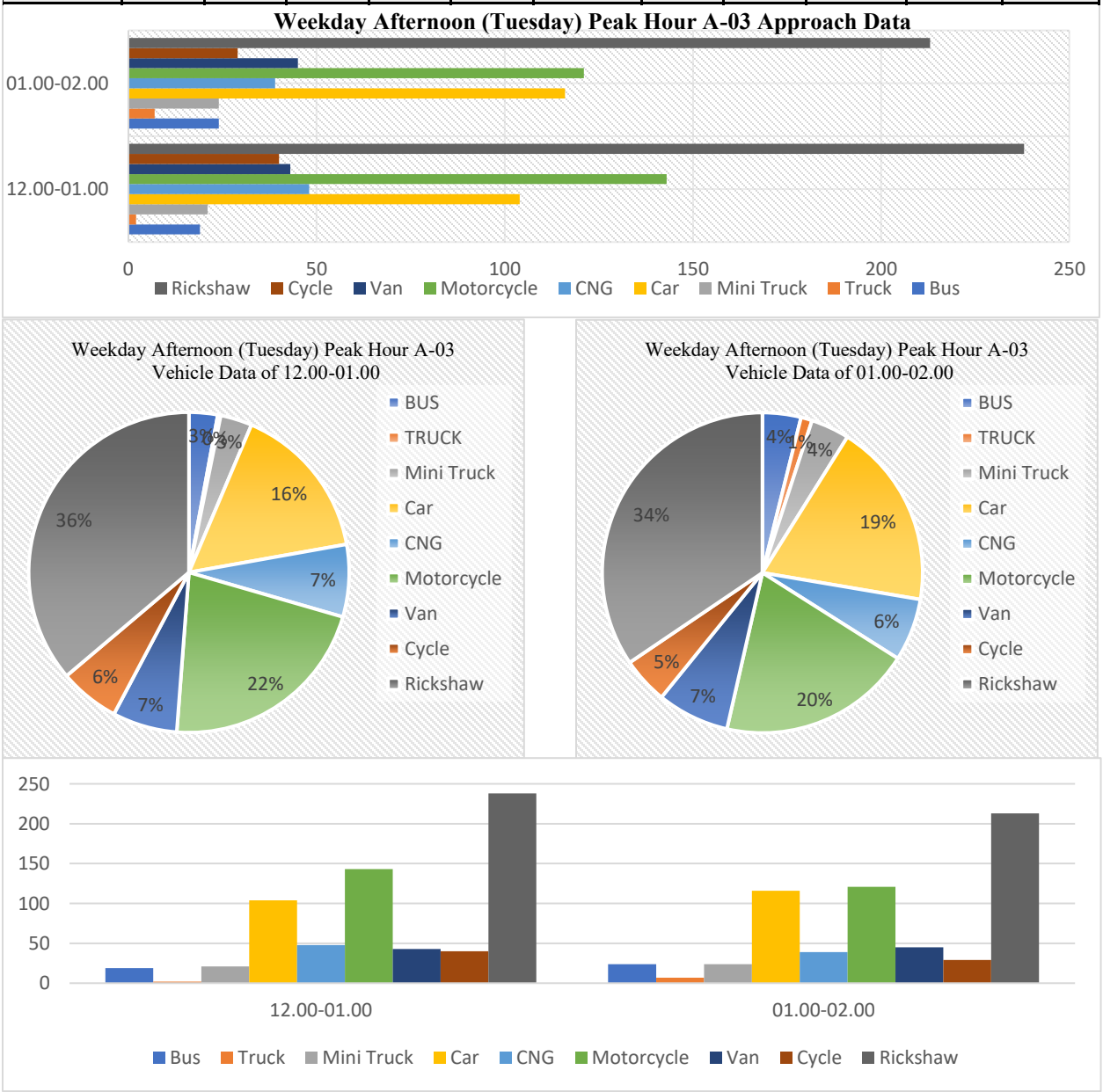


Figure 3.34: Weekday Afternoon (Tuesday) Peak Hour A-03 Approach Data

3.15.26 Weekend Evening (Friday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-03 approach in 1st & 2nd hour. On 1st Peak Hour 17 buses, 04 truck, 19 Mini Truck, 87 Private Car, 39 CNG, 139 Motorcycle, 35 Van, 27 Cycle & 221 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 18 buses, 03 truck, 21 Mini Truck, 92 Private Car, 42 CNG, 155 Motorcycle, 31 Van, 36 Cycle & 253 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	17	4	19	87	39	139	35	27	221	588	1239
05.00-06.00	18	3	21	92	42	155	31	36	253	651	

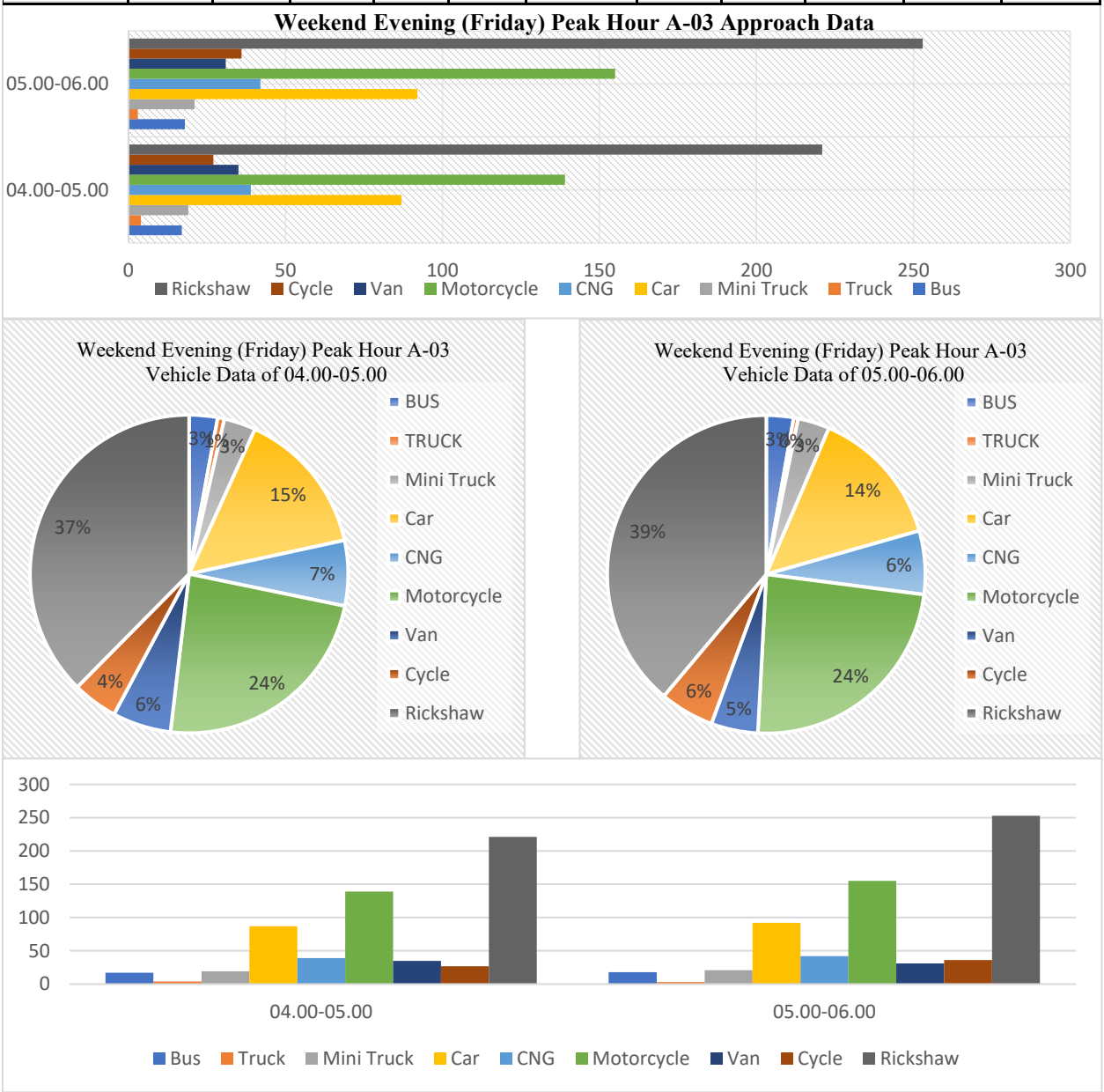


Figure 3.35: Weekend Evening (Friday) Peak Hour A-03 Approach Data

3.15.27 Weekend Evening (Saturday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-03 approach in 1st & 2nd hour. On 1st Peak Hour 22 buses, 04 truck, 29 Mini Truck, 99 Private Car, 44 CNG, 141 Motorcycle, 49 Van, 35 Cycle & 304 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 21 buses, 05 truck, 28 Mini Truck, 97 Private Car, 39 CNG, 149 Motorcycle, 34 Van, 40 Cycle & 331 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	22	4	29	99	44	141	49	35	304	727	1471
05.00-06.00	21	5	28	97	39	149	34	40	331	744	

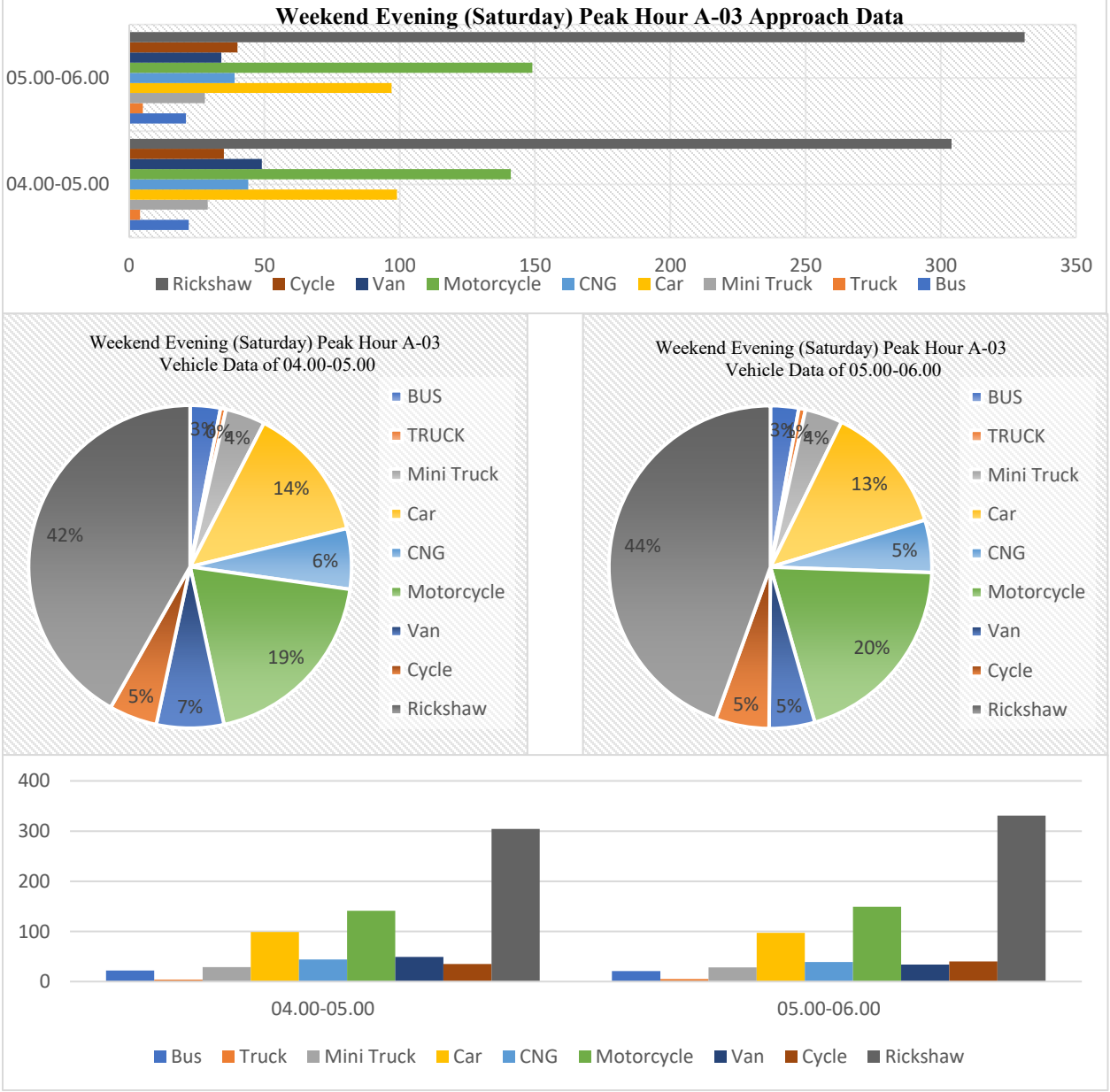


Figure 3.36: Weekend Evening (Saturday) Peak Hour A-03 Approach Data

3.15.28 Weekday Evening (Tuesday) Peak Hour A-03 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday evening peak hour. Rickshaw, Motorcycle, Car & CNG are the predominant vehicles crossing the A-03 approach in 1st & 2nd hour. On 1st Peak Hour 32 buses, 05 truck, 29 Mini Truck, 89 Private Car, 52 CNG, 137 Motorcycle, 41 Van, 34 Cycle & 299 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 35 buses, 04 truck, 26 Mini Truck, 104 Private Car, 55 CNG, 168 Motorcycle, 27 Van, 42 Cycle & 302 Rickshaw cross A-03 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	32	5	29	89	52	137	41	34	299	718	1481
05.00-06.00	35	4	26	104	55	168	27	42	302	763	

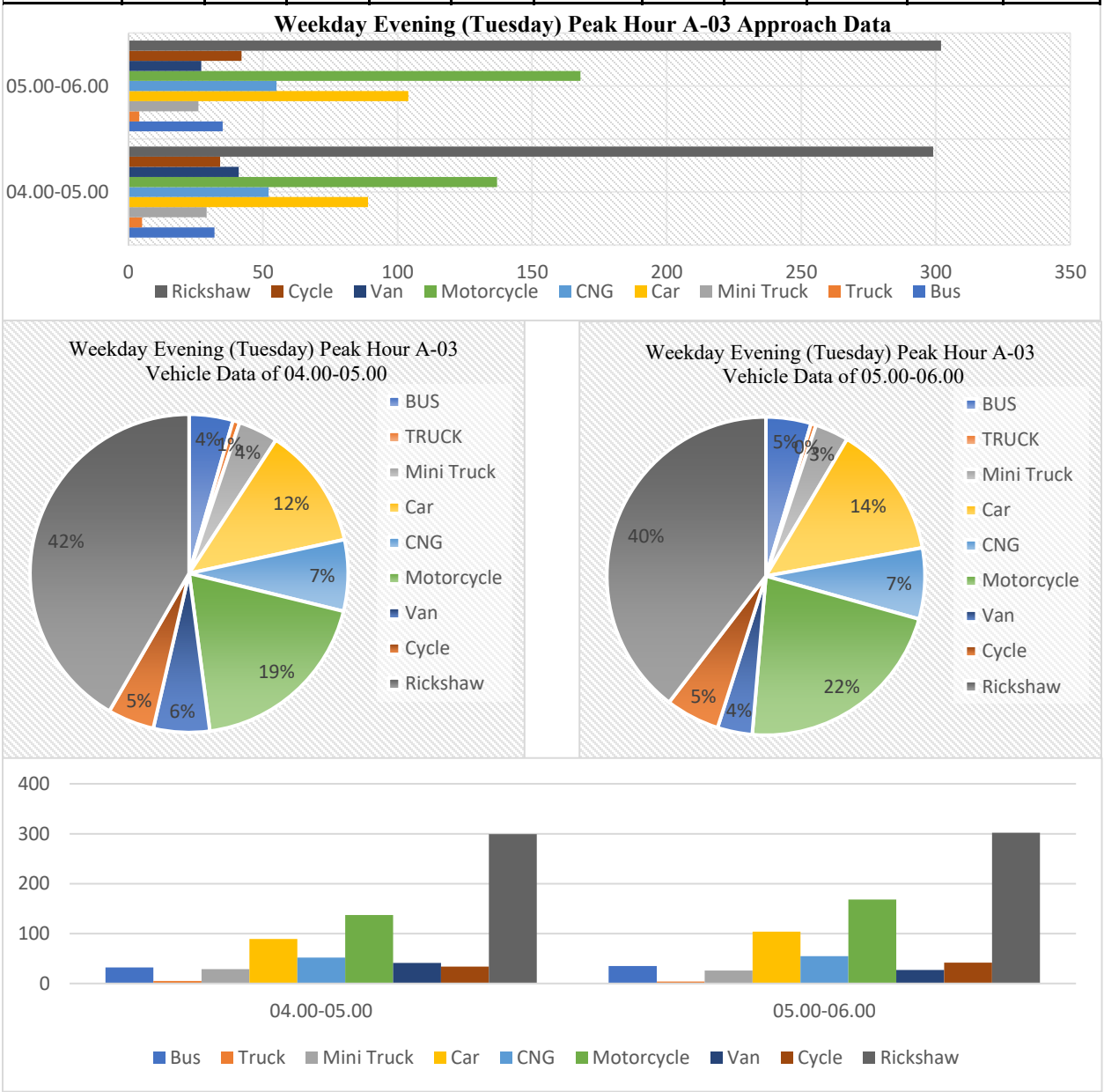


Figure 3.37: Weekday Evening (Tuesday) Peak Hour A-03 Approach Data

3.15.29 Weekend Morning (Friday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw are the predominant vehicles crossing the A-04 approach during the morning. On 1st Peak hour 21 buses, 04 truck, 23 Mini Truck, 31 Private Car, 27 CNG, 68 Motorcycle, 13 Van, 13 Cycle Vehicles & 114 Rickshaw vehicles are operated on this road around this time of day. On 2nd Peak Hour 30 buses, 03 truck, 14 Mini Truck, 43 Private Car, 45 CNG, 89 Motorcycle, 17 Van, 17 Cycle & most predominant vehicle 181 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	21	4	23	31	27	68	13	13	114	314	753
09.00-10.00	30	3	14	43	45	89	17	17	181	439	

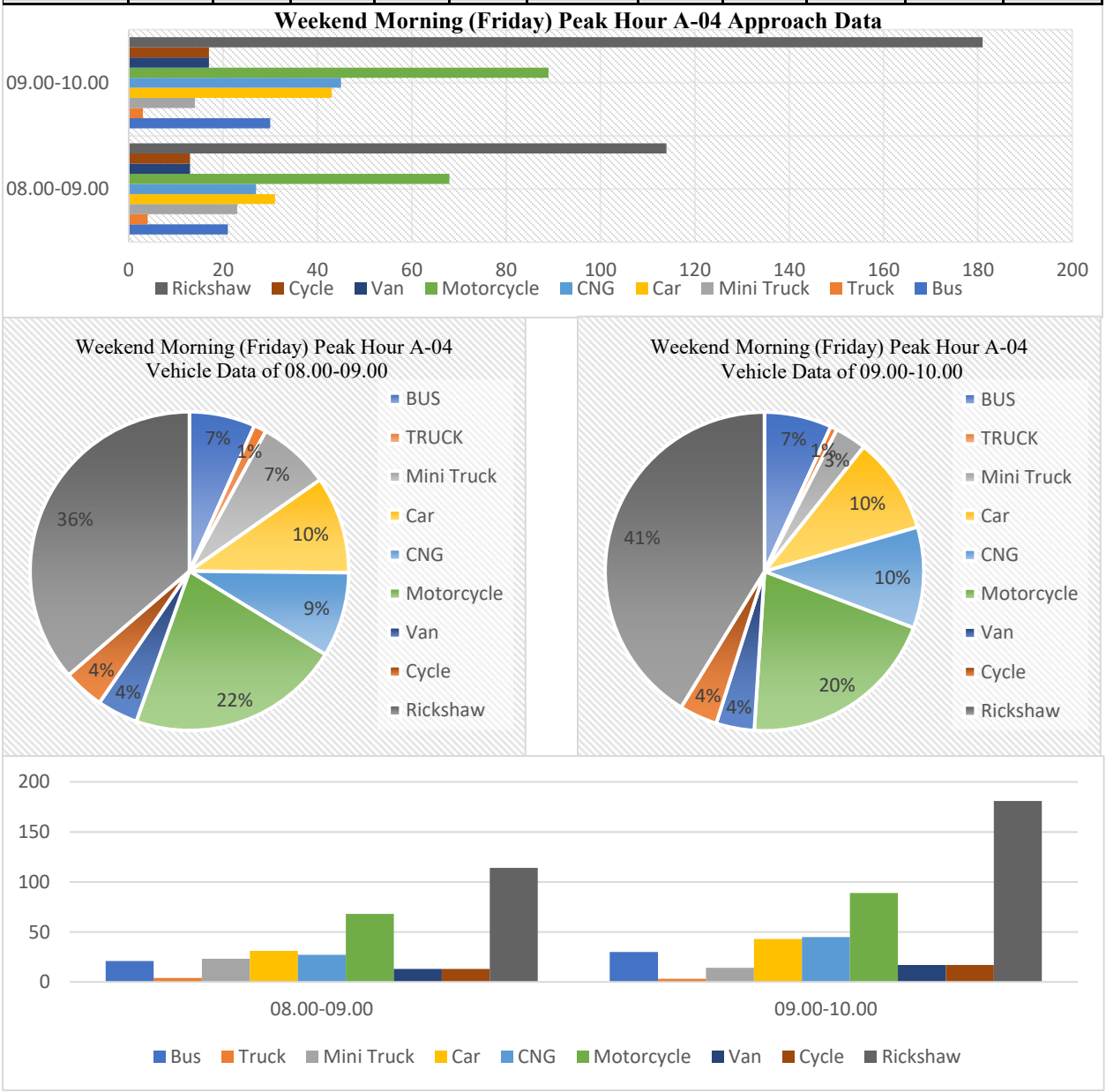


Figure 3.38: Weekend Morning (Friday) Peak Hour A-04 Approach Data

3.15.30 Weekend Morning (Saturday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend morning peak hour. Rickshaw, Motorcycle, Car & Bus is the predominant vehicle crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 28 buses, 10 truck, 22 Mini Truck, 53 Private Car, 34 CNG, 107 Motorcycle, 29 Van, 34 Cycle & 195 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 34 buses, 07 truck, 18 Mini Truck, 94 Private Car, 43 CNG, 212 Motorcycle, 41 Van, 42 Cycle & 212 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	28	10	22	53	34	107	29	34	195	512	1215
09.00-10.00	34	7	18	94	43	212	41	42	212	703	

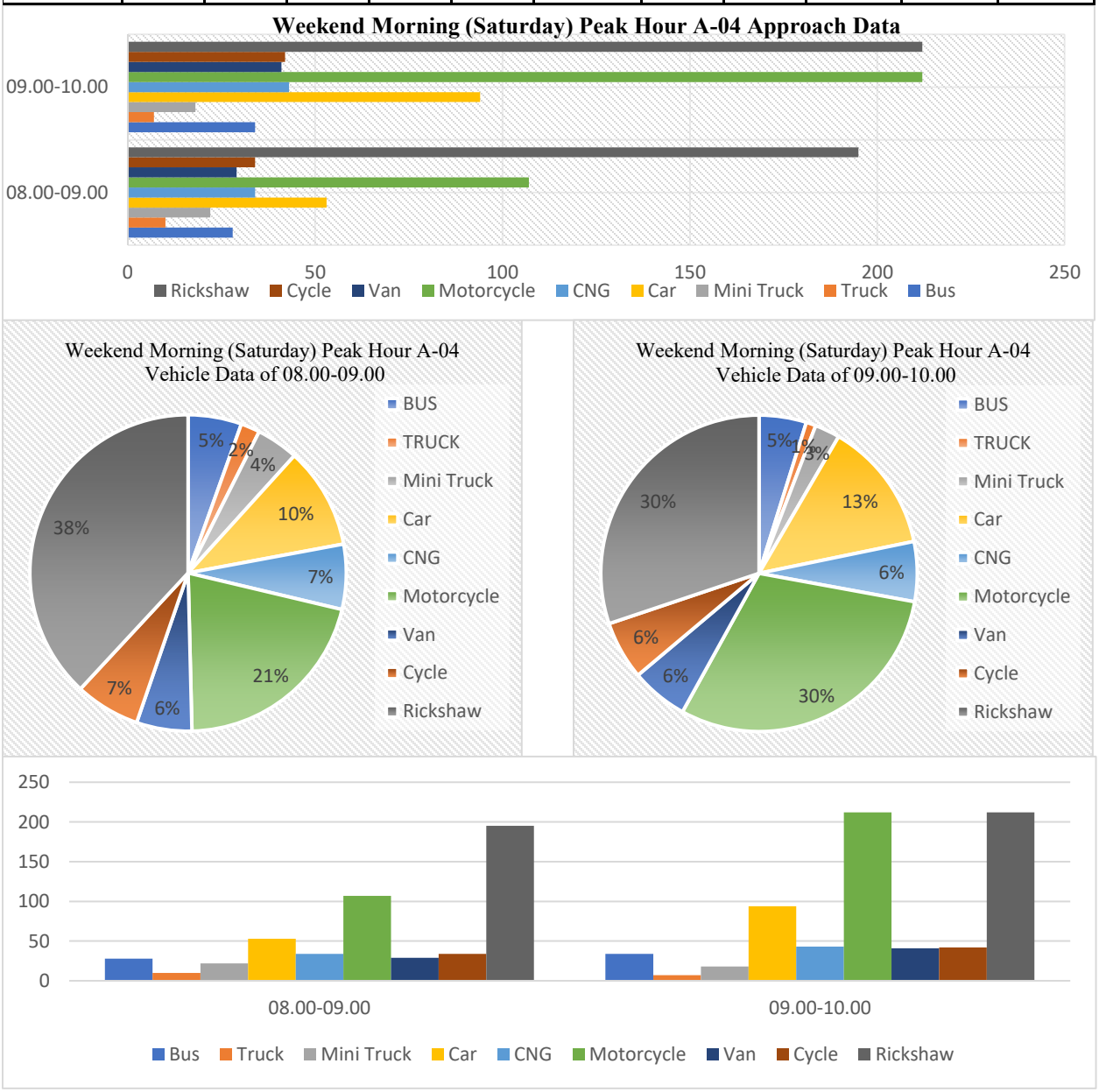


Figure 3.39: Weekend Morning (Saturday) Peak Hour A-04 Approach Data

3.15.31 Weekday Morning (Tuesday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday morning peak hour. Rickshaw, Motorcycle, Car & Bus are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 34 buses, 06 truck, 24 Mini Truck, 65 Private Car, 37 CNG, 121 Motorcycle, 33 Van, 38 Cycle & 204 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 39 buses, 04 truck, 17 Mini Truck, 99 Private Car, 45 CNG, 231 Motorcycle, 37 Van, 39 Cycle & 221 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
08.00-09.00	34	6	24	65	37	121	33	38	204	562	1294
09.00-10.00	39	4	17	99	45	231	37	39	221	732	

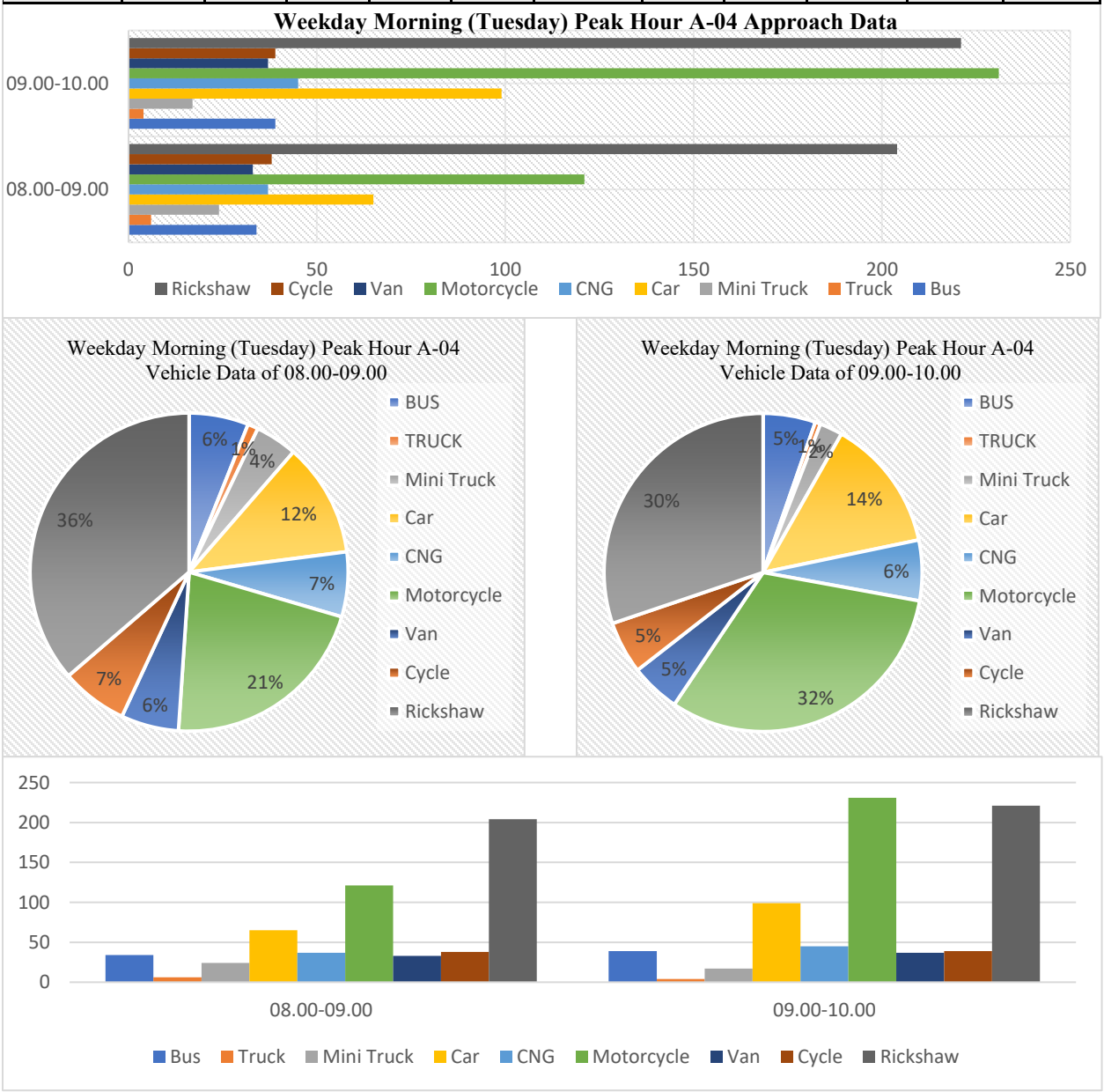


Figure 3.40: Weekday Morning (Tuesday) Peak Hour A-04 Approach Data

3.15.32 Weekend Afternoon (Friday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw & Motorcycle are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 37 buses, 03 truck, 07 Mini Truck, 59 Private Car, 33 CNG, 132 Motorcycle, 14 Van, 11 Cycle & 197 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 21 buses, 06 truck, 09 Mini Truck, 43 Private Car, 41 CNG, 102 Motorcycle, 07 Van, 08 Cycle & 121 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	37	3	7	59	33	132	14	11	197	493	851
01.00-02.00	21	6	9	43	41	102	7	8	121	358	

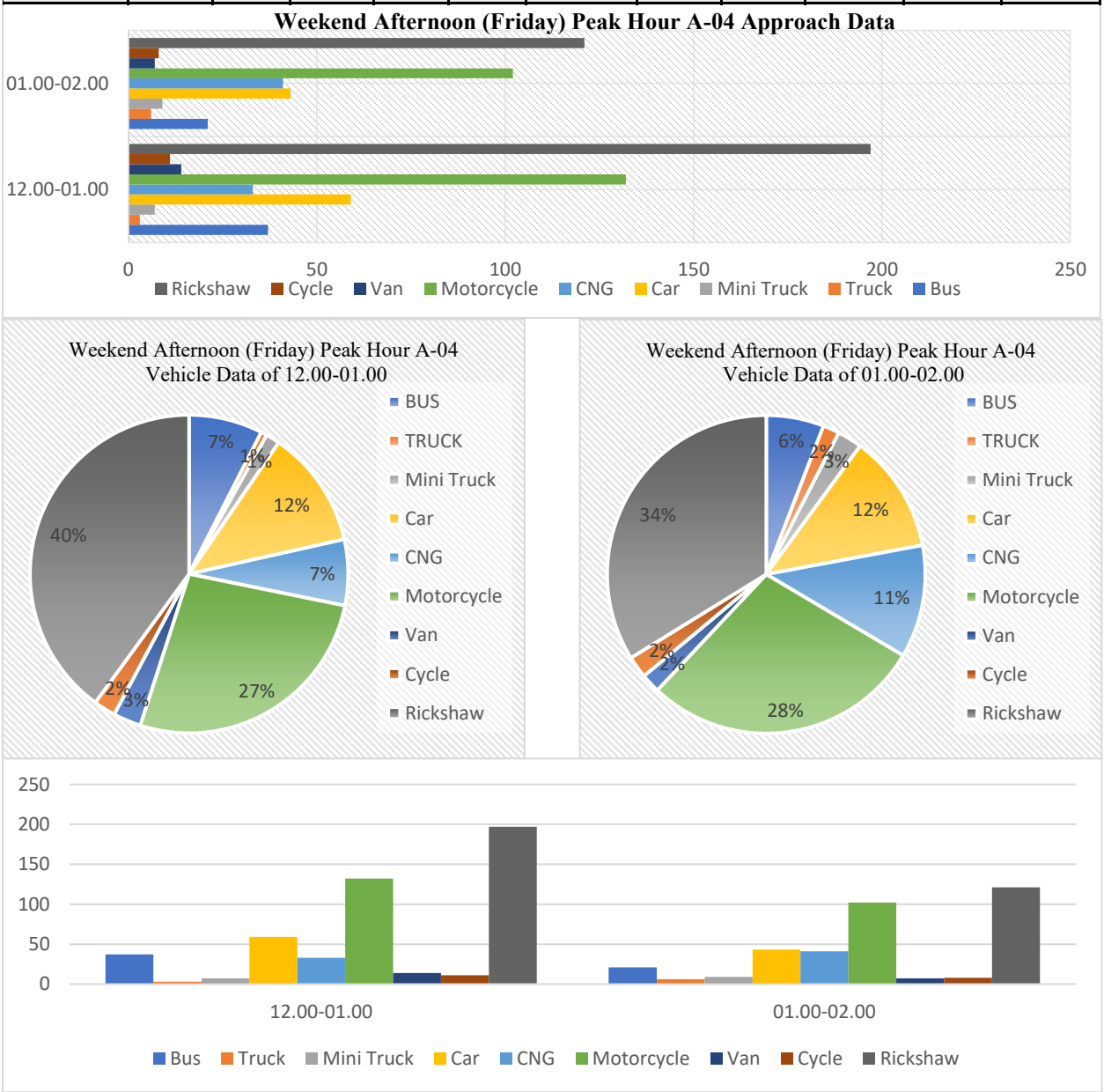


Figure 3.41: Weekend Afternoon (Friday) Peak Hour A-04 Approach Data

3.15.33 Weekend Afternoon (Saturday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend afternoon peak hour. Rickshaw, Motorcycle & Car are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 26 buses, 8 truck, 14 Mini Truck, 63 Private Car, 51 CNG, 187Motorcycle, 38 Van, 39 Cycle & 309 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 31 buses, 04 truck, 20 Mini Truck, 74 Private Car, 49 CNG, 168 Motorcycle, 19 Van, 36 Cycle & 247 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	26	8	14	63	51	187	38	39	309	735	1383
01.00-02.00	31	4	20	74	49	168	19	36	247	648	

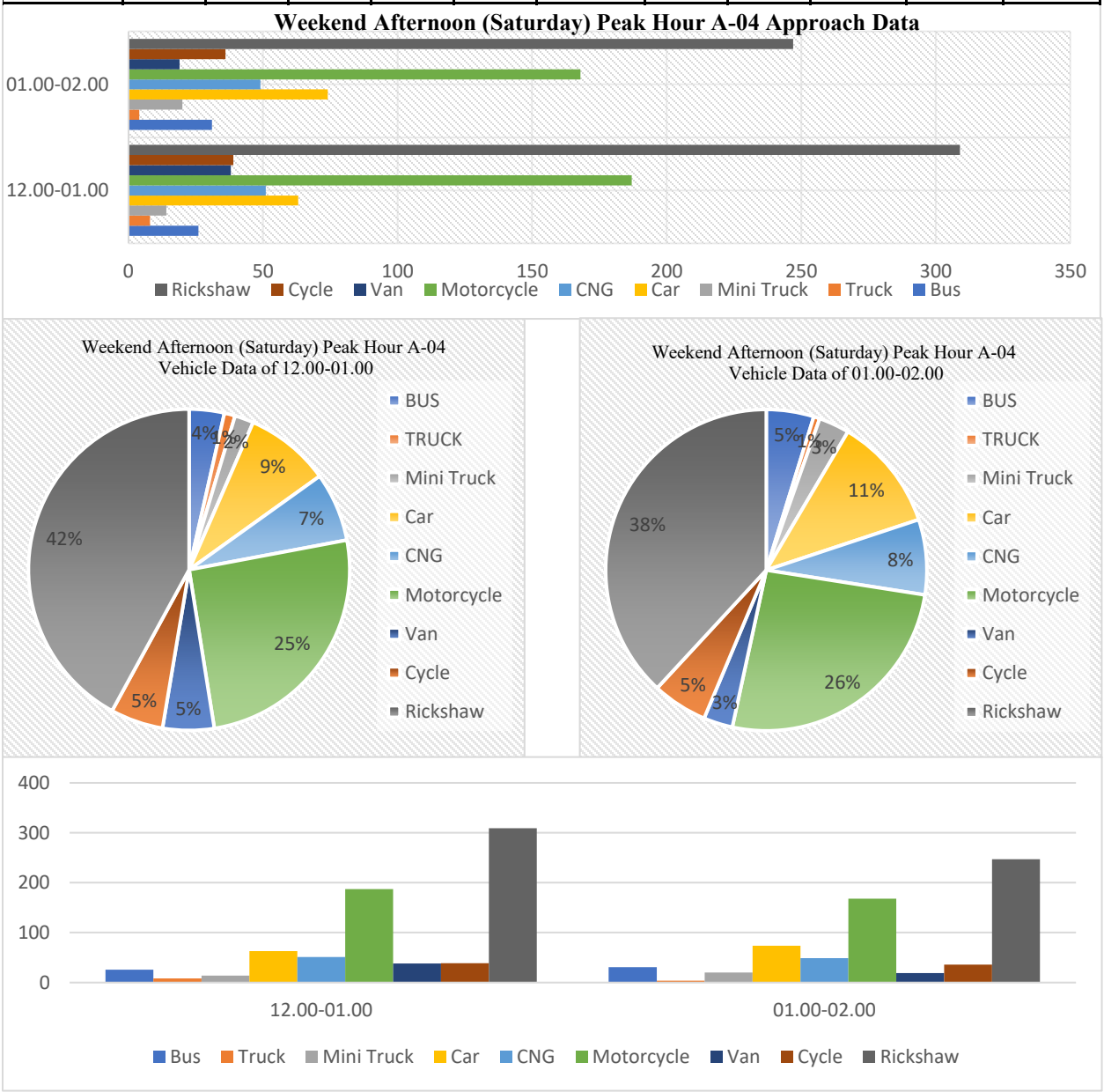


Figure 3.42: Weekend Afternoon (Saturday) Peak Hour A-04 Approach

3.15.34 Weekday Afternoon (Tuesday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday afternoon peak hour. Rickshaw, Motorcycle, CNG, Car & Bus are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 33 buses, 02 truck, 18 Mini Truck, 72 Private Car, 57 CNG, 212 Motorcycle, 41 Van, 43 Cycle & 316 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 35 buses, 03 truck, 16 Mini Truck, 81 Private Car, 61 CNG, 183 Motorcycle, 22 Van, 45 Cycle & 263 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
12.00-01.00	33	2	18	72	57	212	41	43	316	794	1503
01.00-02.00	35	3	16	81	61	183	22	45	263	709	

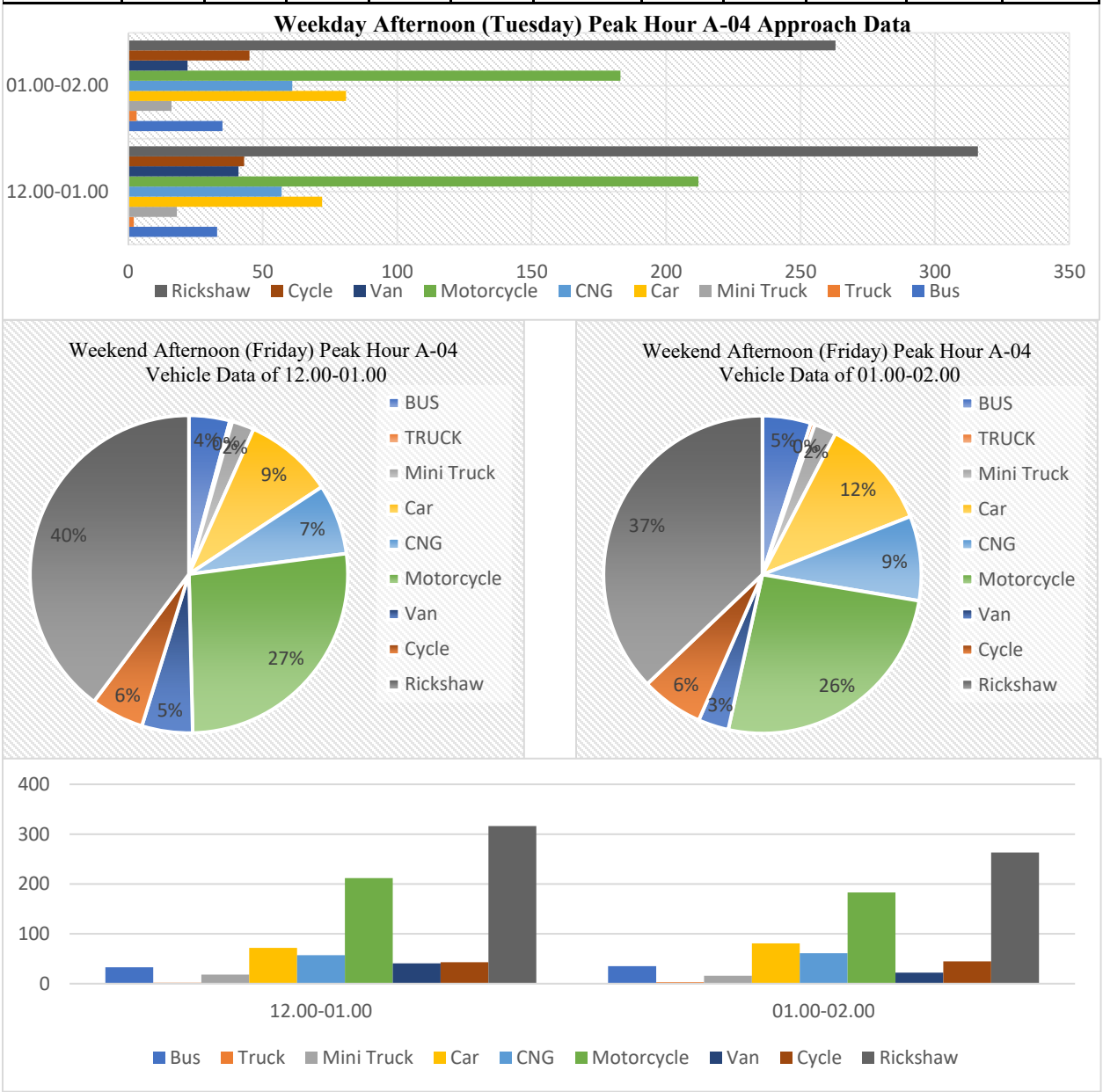


Figure 3.43: Weekday Afternoon (Tuesday) Peak Hour A-04 Approach Data

3.15.35 Weekend Evening (Friday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle, CNG & Car are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 26 buses, 10 truck, 21 Mini Truck, 72 Private Car, 47 CNG, 257 Motorcycle, 23 Van, 24 Cycle & 263 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 31 buses, 05 truck, 23 Mini Truck, 69 Private Car, 39 CNG, 271 Motorcycle, 37 Van, 31 Cycle & 289 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	26	10	21	72	47	257	23	24	263	743	1538
05.00-06.00	31	5	23	69	39	271	37	31	289	795	

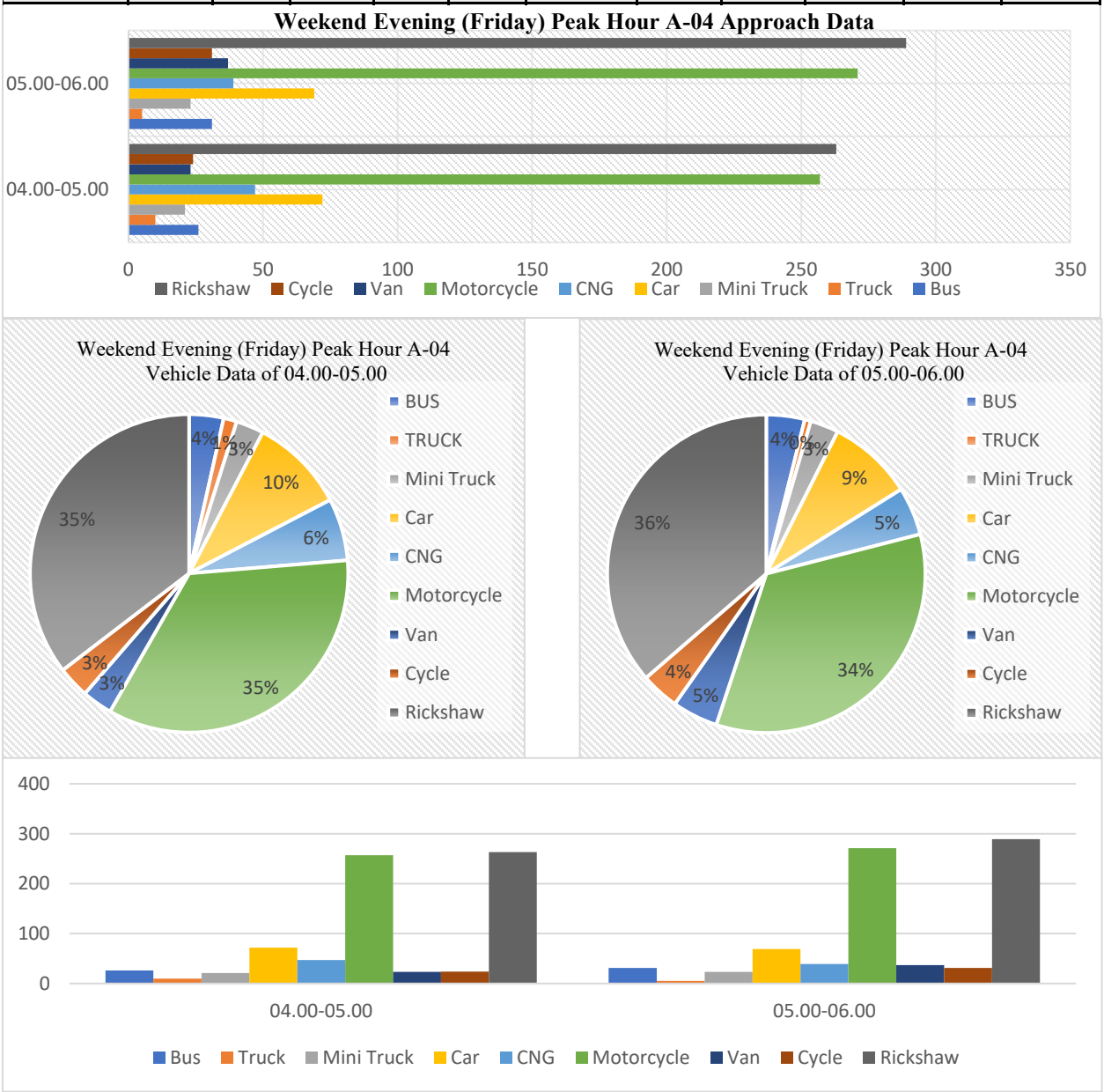


Figure 3.44: Weekend Evening (Friday) Peak Hour A-04 Approach Data

3.15.36 Weekend Evening (Saturday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekend evening peak hour. Rickshaw, Motorcycle, CNG & Car are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak hour 31 buses, 05 truck, 29 Mini Truck, 56 Private Car, 52 CNG, 229 Motorcycle, 27 Van, 41 Cycle & 312 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 29 buses, 07 truck, 28 Mini Truck, 52 Private Car, 48 CNG, 282 Motorcycle, 35 Van, 44 Cycle & 342 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	31	5	29	56	52	229	27	41	312	782	1649
05.00-06.00	29	7	28	52	48	282	35	44	342	867	

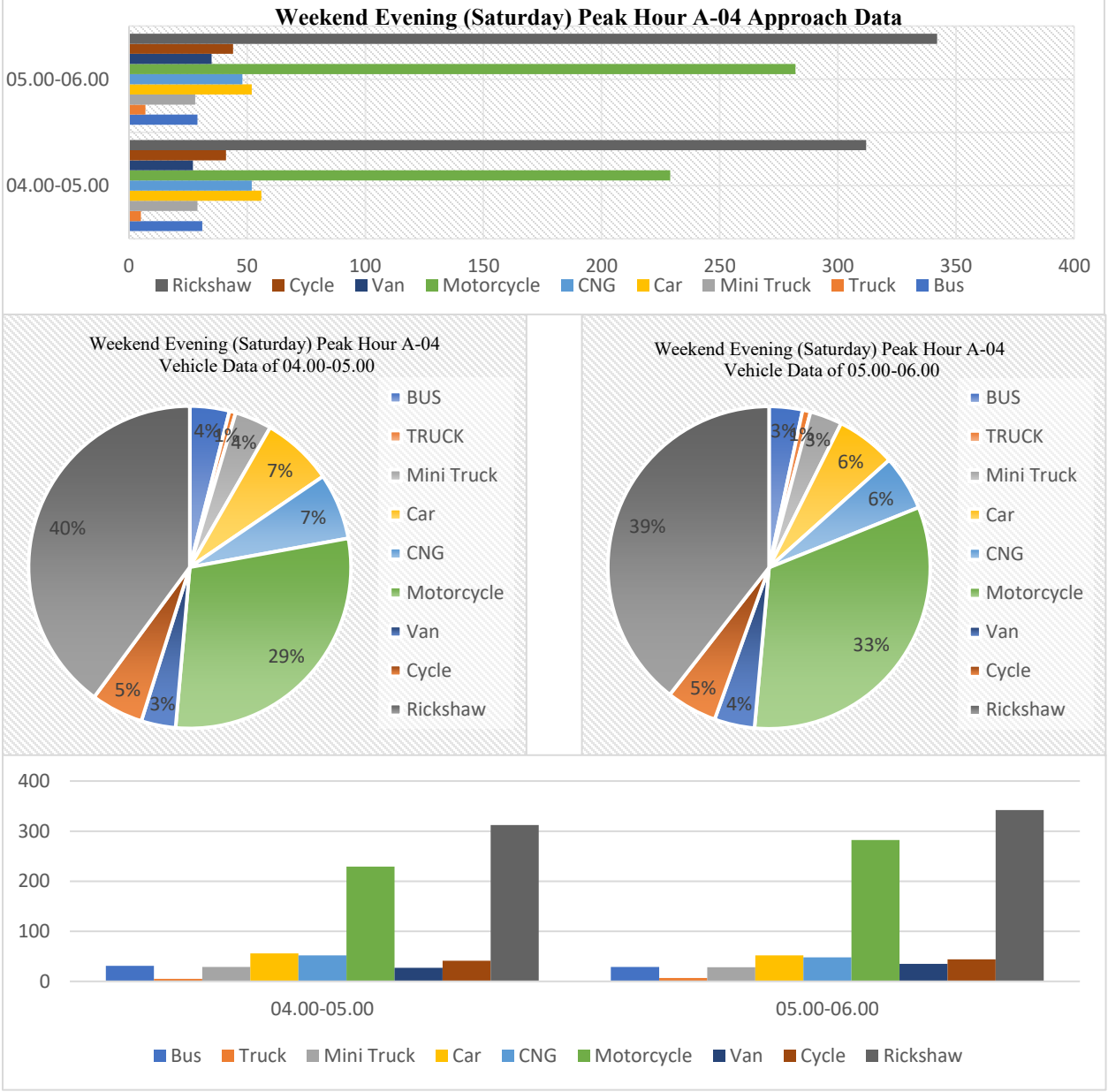


Figure 3.45: Weekend Evening (Saturday) Peak Hour A-04 Approach Data

3.15.37 Weekday Evening (Tuesday) Peak Hour A-04 Approach Data

Assessing traffic volume over a two-hour period in Mirpur-10 during the weekday evening peak hour. Rickshaw, Motorcycle, Car, Bus & CNG are the predominant vehicles crossing the A-04 approach in 1st & 2nd hour. On 1st Peak Hour 36 buses, 05 truck, 27 Mini Truck, 69 Private Car, 59 CNG, 209 Motorcycle, 30 Van, 37 Cycle & 318 Rickshaw Vehicles are operated on this road around this time of day. On 2nd Peak Hour 34 buses, 07 truck, 29 Mini Truck, 73 Private Car, 51 CNG, 311 Motorcycle, 32 Van, 41 Cycle & 339 Rickshaw cross A-04 Approach.

Time	Bus	Truck	Mini Truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	Total	Total
04.00-05.00	36	5	27	69	59	209	30	37	318	790	1707
05.00-06.00	34	7	29	73	51	311	32	41	339	917	

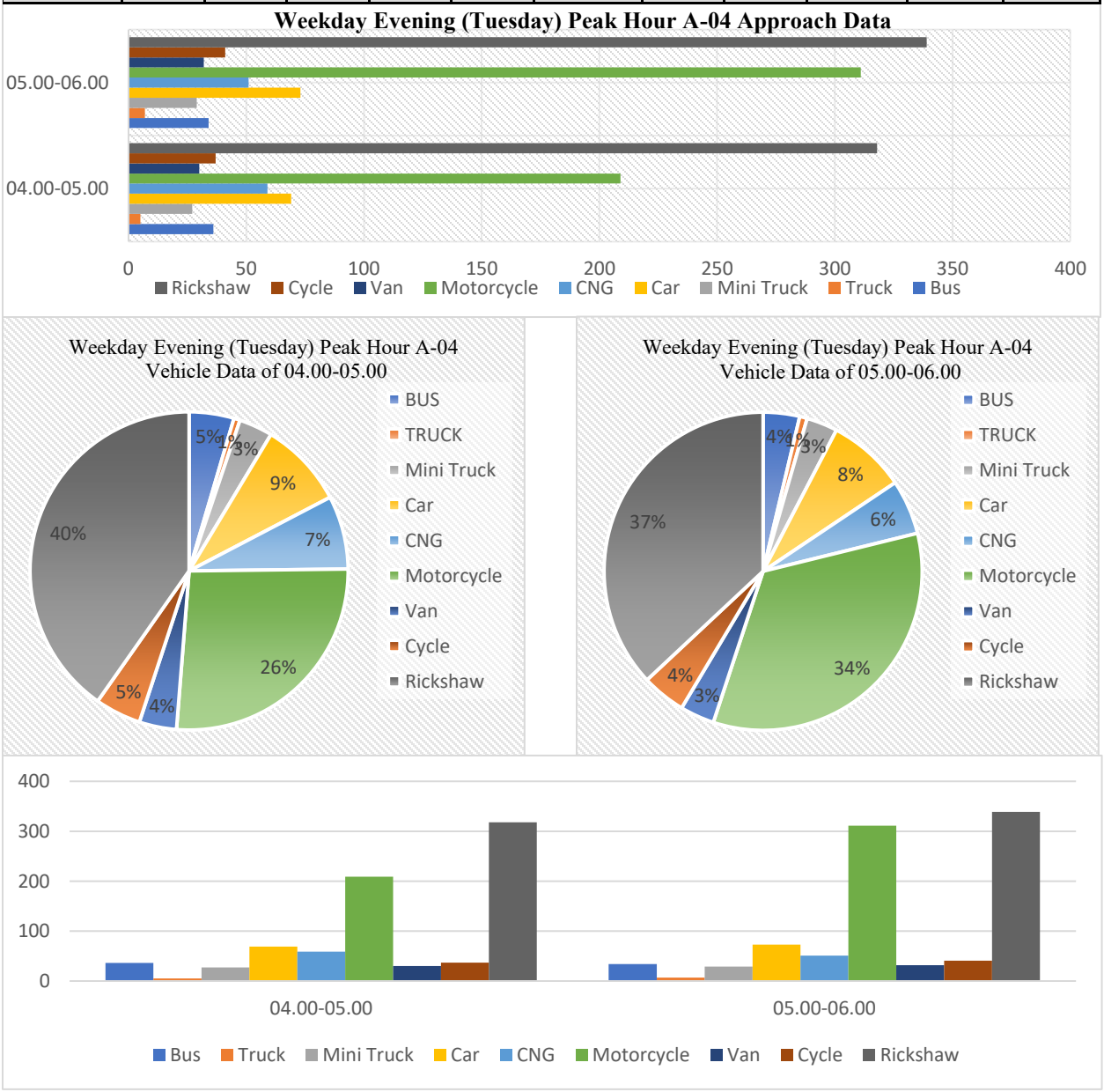


Figure 3.46: Weekday Evening (Tuesday) Peak Hour A-04 Approach Data

3.16 Recommendation

According to the data Rickshaws, Motorcycles, Cars, CNG vehicles, and Bus are more numerous at Mirpur 10 than other types of vehicles on all approaches, which significantly contributes to the congestion that is there. The establishment of dedicated lanes for motorcyclists and buses, the prohibition of rickshaws on the major route, and the reduction of illegal parking and vehicles driving in the opposite direction are all potential measures that could help reduce traffic congestion to some degree. Inadequate infrastructure, carelessly erected shops, and unnecessary obstructions of paths all work together to make it difficult for vehicles to find their way around.

3.17 Summary

An exact quantification of the flow of traffic along all approaches of Mirpur 10 is provided in this chapter. The flow of traffic is measured over a period of six hours, spanning three distinct peak periods, and spanning two weekends and one weekday. Additionally, a full description of the different types of traffic that are involved is provided. The following is a discussion is how I estimate the LOS, which includes the application of two helpful methodologies. For the purpose of counting mixed vehicles, the volume-capacity ratio, also known as the volume-capacity ratio (V/C), as well as the traffic volume survey, were carried out. I am able to solve the geometric feature survey.

CHAPTER 04

DATA ANALYSIS & RESULT

4.1 General

It is recommended that volume traffic studies be carried out at the planned crossroads in Mirpur 10 during daytime hours. Peak hours are commonly referred to as the morning, midday, and evening rush hours. These are the times of day when the volume of traffic is at its highest. During these times of heavy traffic, it is of the utmost importance to collect data on the total number of vehicles that are approaching the crossroads from each of the several directions. During peak hours, it is important to determine the total volume of traffic that travels through each approach.

4.2 Calculation of Passenger Car Unit (PCU)

PCU, also known as the passenger car unit, one can use a technique that converts the volume of different types of traffic into the volume of passenger cars that correspond to that traffic. In the Homogenization Coefficient Method, which is a widely used technique, the number of each vehicle type is multiplied by the PCU factor that corresponds to it. This PCU factor is commonly determined from studies such as the Highway Capacity Manual. On the other hand, certain methods, such as the Chandra Method, make use of vehicle dimensions, while others make use of regression analysis or speed ratios in order to incorporate traffic and road circumstances.

4.3 Calculation of level of service (LOS)

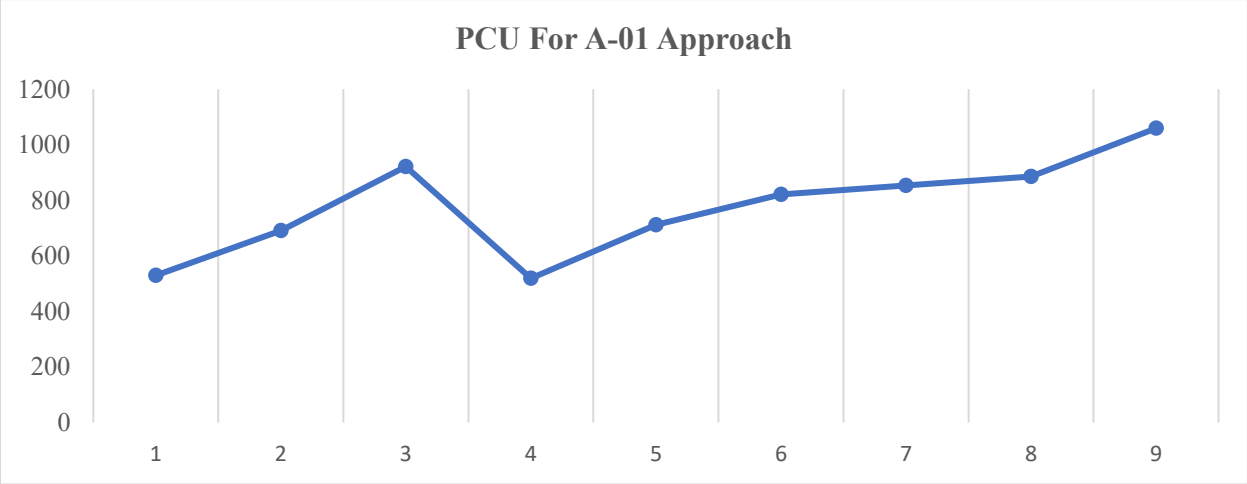
Level of Service (LOS) is a qualitative metric that delineates the operational circumstances of a traffic stream and the perceptions of those conditions by drivers and passengers. Level of Service (LOS) is a fundamental term in transportation engineering and traffic analysis, as delineated in the Highway Capacity Manual (HCM). At Mirpur 10 Intersection, 02 Weekends & 01 Weekdays, Total 06 Hours including 03 peak hours Vehicles Data are collected. Road data are also collected manually of each approach. Effective green time & Cycle time of signal are also determined for every approach. A road's Level of Service (LOS) is determined by comparing a value—obtained from variables such as density, volume-to-capacity ratio, speed, and delay—to standard criteria (A-F).

4.4 Calculation of Passenger Car Unit (PCU) For All Approach

4.4.1 Calculation of Passenger Car Unit (PCU) For A-01 Approach

Table 4.1: Calculation of Passenger Car Unit (PCU) For A-01 Approach

PCU Calculation for A-01 Approach										
	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	PCU
Weekend (Friday) Morning Peak	51	15	22	49	46	83	16	8	196	530
Weekend (Saturday) Morning Peak	61	19	30	94	53	115	26	23	225	691
Weekday (Tuesday) Morning Peak	86	15	31	120	65	186	51	35	319	921.75
Weekend (Friday) Afternoon Peak	49	6	17	55	37	94	23	12	223	519.25
Weekend (Saturday) Afternoon Peak	53	10	35	100	61	133	30	26	273	711.5
Weekday (Tuesday) Afternoon Peak	67	6	35	127	68	210	33	58	260	820.75
Weekend (Friday) Evening Peak	72	12	33	113	65	133	27	29	363	853.25
Weekend (Saturday) Evening Peak	70	21	29	110	67	162	29	23	373	885.25
Weekday (Tuesday) Evening Peak	76	22	33	145	73	211	39	65	443	1059.25



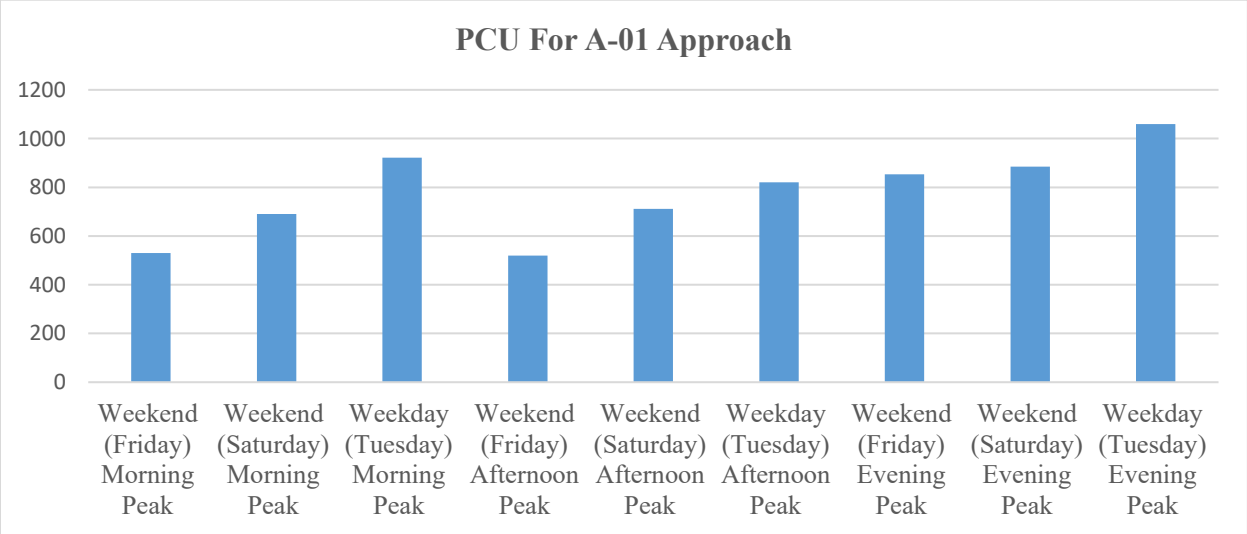


Figure 4.1: Modal variation of A-01 Approach PCU Data

4.4.2 Calculation of Passenger Car Unit (PCU) For A-02 Approach

Table 4.2: Calculation of Passenger Car Unit (PCU) For A-02 Approach

PCU Calculation for A-02 Approach										
	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	PCU
Weekend (Friday) Morning Peak	38	20	38	81	62	118	40	30	156	598.5
Weekend (Saturday) Morning Peak	50	21	36	107	73	176	39	48	192	732
Weekday (Tuesday) Morning Peak	64	20	44	126	71	314	33	48	309	956.75
Weekend (Friday) Afternoon Peak	33	21	46	95	56	123	20	30	180	617.5
Weekend (Saturday) Afternoon Peak	46	11	62	146	79	235	25	40	221	822.25
Weekday (Tuesday) Afternoon Peak	61	13	46	144	80	362	38	53	341	1009.75
Weekend (Friday) Evening Peak	53	20	47	148	88	269	50	58	260	923
Weekend (Saturday) Evening Peak	61	21	55	154	110	318	51	70	273	1029.5
Weekday (Tuesday) Evening Peak	91	17	60	174	84	406	55	63	402	1258.25

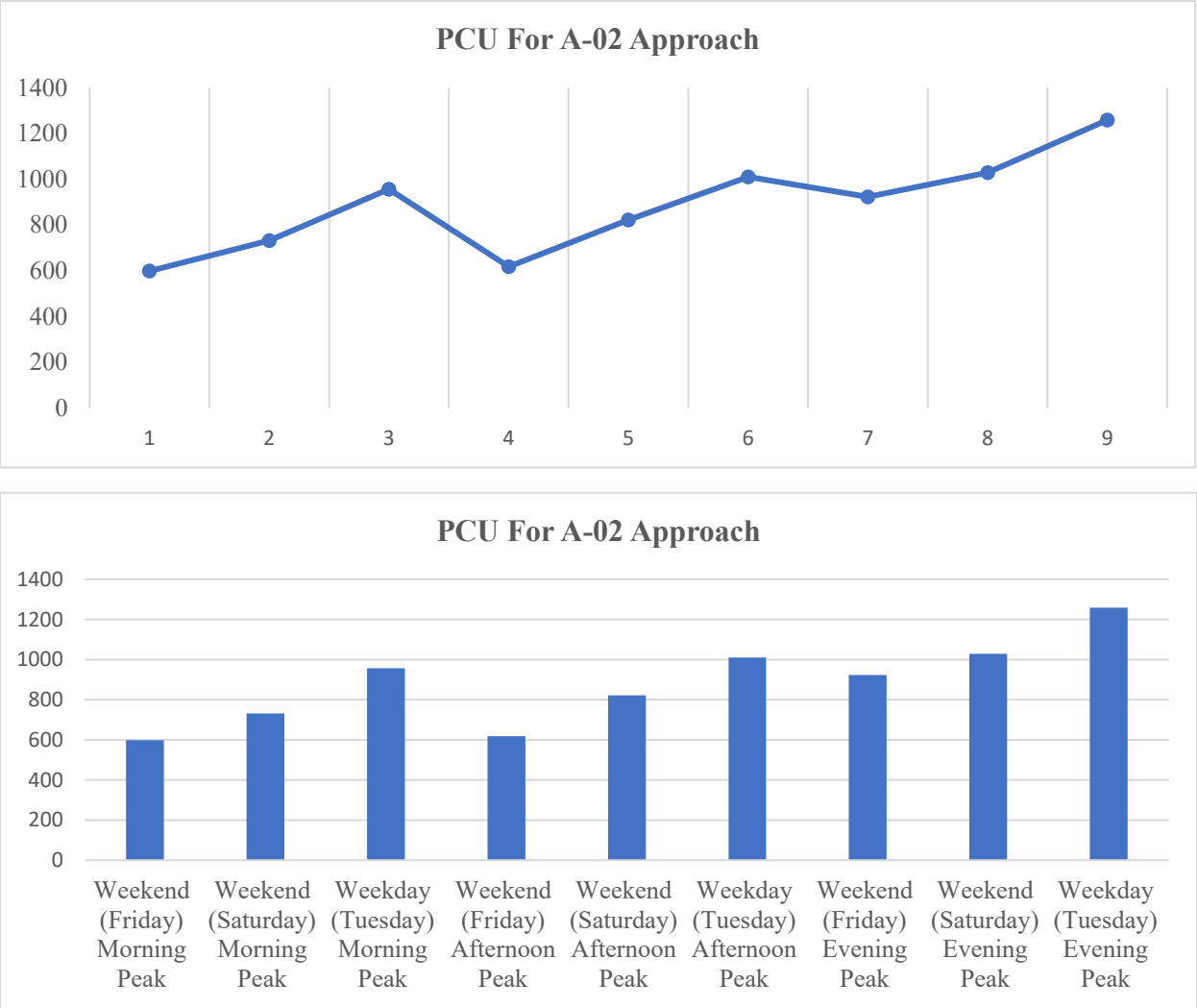


Figure 4.2: Modal variation of A-02 Approach PCU Data

4.4.3 Calculation of Passenger Car Unit (PCU) For A-03 Approach

Table 4.3: Calculation of Passenger Car Unit (PCU) For A-03 Approach

PCU Calculation for A-03 Approach										
	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	PCU
Weekend (Friday) Morning Peak	31	14	31	74	46	127	21	22	246	580.25
Weekend (Saturday) Morning Peak	39	18	28	188	56	214	60	71	356	911.5
Weekday (Tuesday) Morning Peak	50	13	31	197	80	245	54	71	382	993
Weekend (Friday) Afternoon Peak	24	19	39	66	55	175	16	22	259	619
Weekend (Saturday) Afternoon Peak	33	7	49	204	60	239	84	70	541	1090.25
Weekday (Tuesday) Afternoon Peak	43	9	45	220	87	264	88	69	451	1102
Weekend (Friday) Evening Peak	35	7	40	179	81	294	66	63	474	1029.25
Weekend (Saturday) Evening Peak	43	9	57	196	83	290	83	75	635	1249.25
Weekday (Tuesday) Evening Peak	67	9	55	193	107	305	68	76	601	1303.5

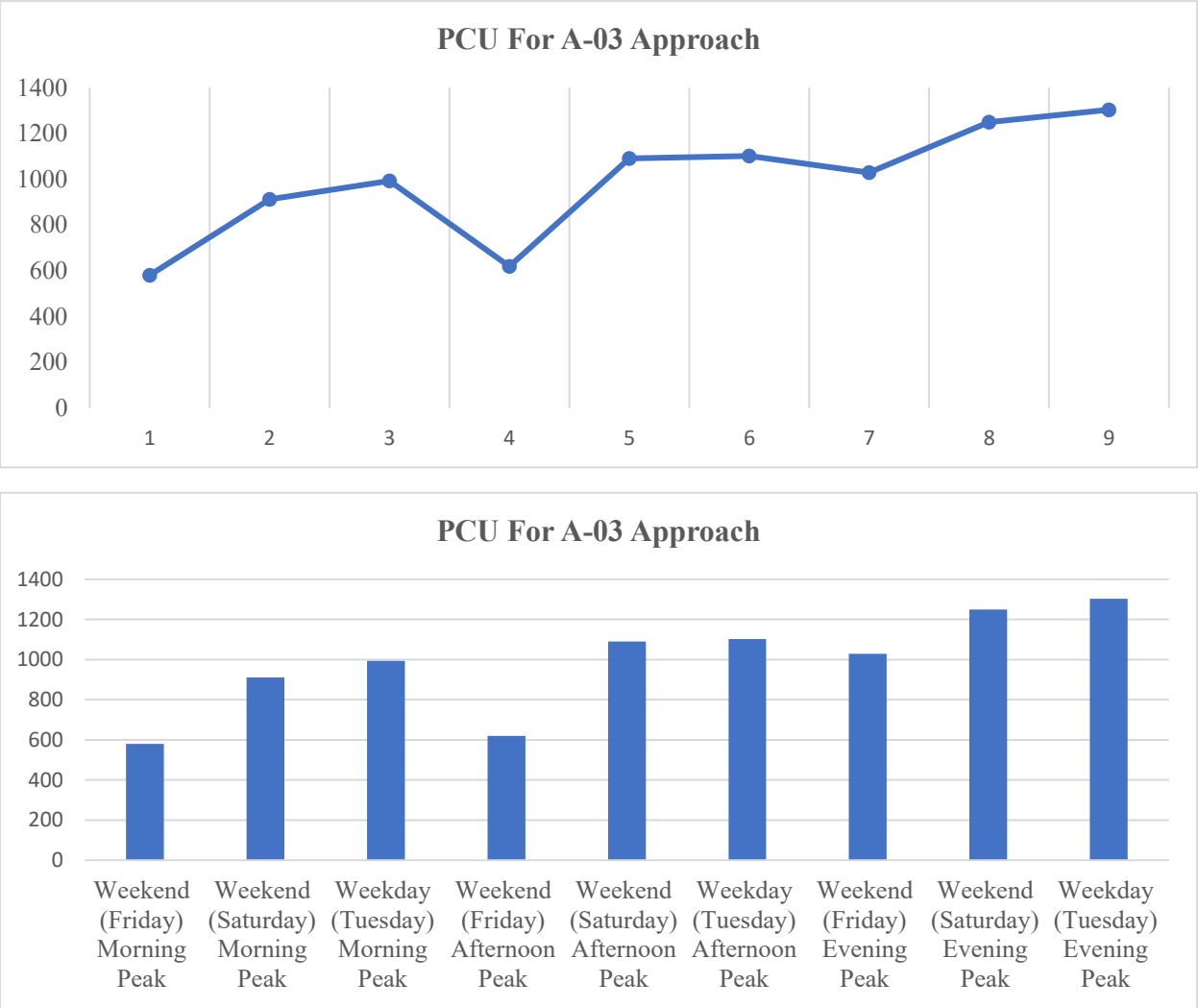
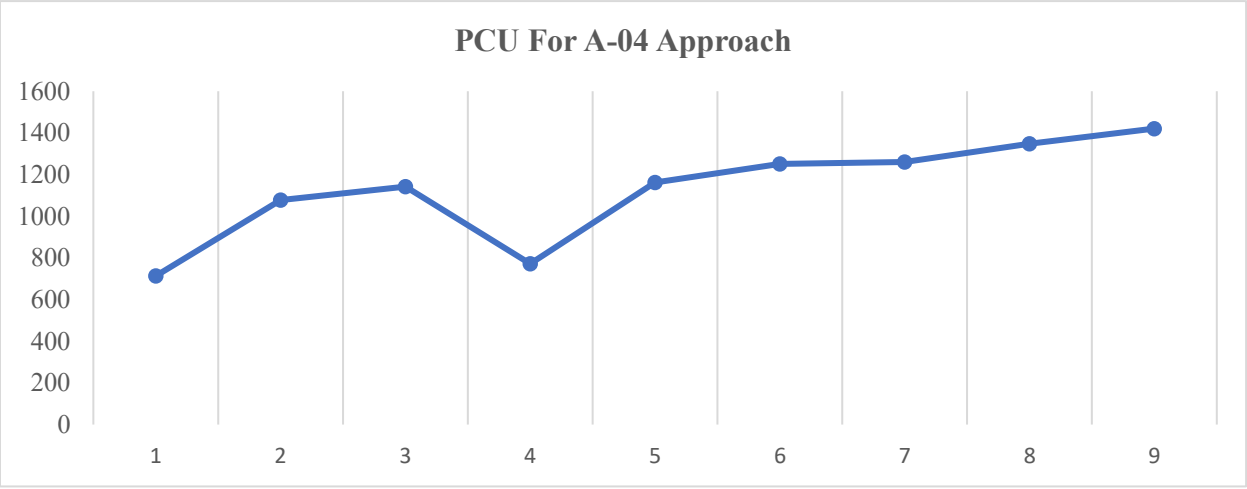


Figure 4.3: Modal variation of A-03 Approach PCU Data

4.4.4 Calculation of Passenger Car Unit (PCU) For A-04 Approach

Table 4.4: Calculation of Passenger Car Unit (PCU) For A-04 Approach

PCU Calculation for A-04 Approach										
	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw	PCU
Weekend (Friday) Morning Peak	51	7	37	74	72	157	30	30	295	713.25
Weekend (Saturday) Morning Peak	62	17	40	147	77	319	70	76	407	1077
Weekday (Tuesday) Morning Peak	73	10	41	164	82	352	70	77	425	1142.25
Weekend (Friday) Afternoon Peak	58	9	16	102	74	234	21	19	318	771.25
Weekend (Saturday) Afternoon Peak	57	12	34	137	100	355	57	75	556	1161.75
Weekday (Tuesday) Afternoon Peak	68	5	34	153	118	395	63	88	579	1251.5
Weekend (Friday) Evening Peak	57	15	44	141	86	528	60	55	552	1260
Weekend (Saturday) Evening Peak	60	12	57	108	100	511	62	85	654	1348
Weekday (Tuesday) Evening Peak	70	12	56	142	110	520	62	78	657	1420.75



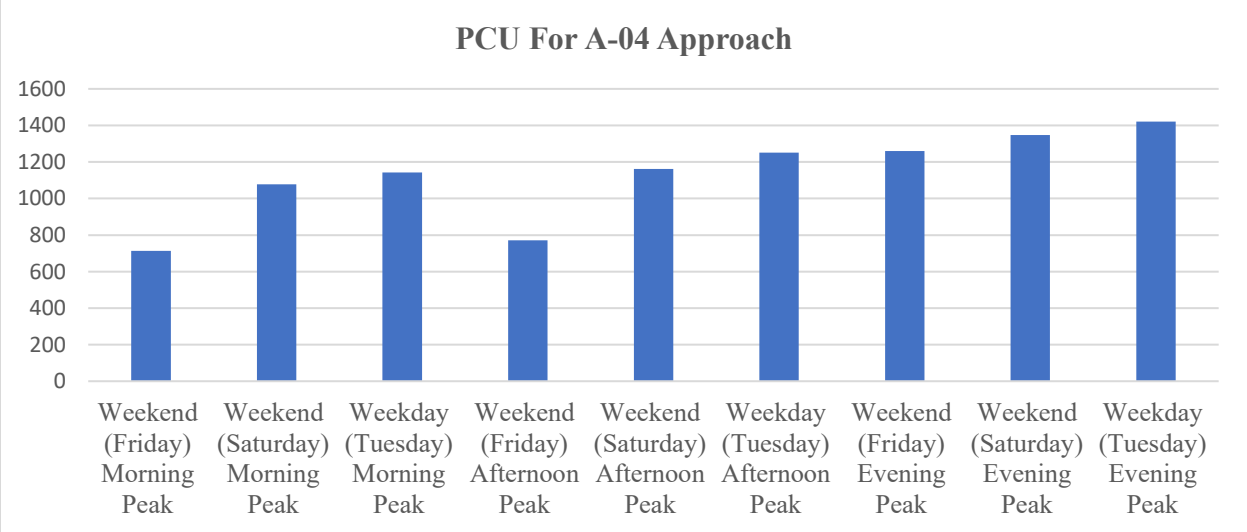
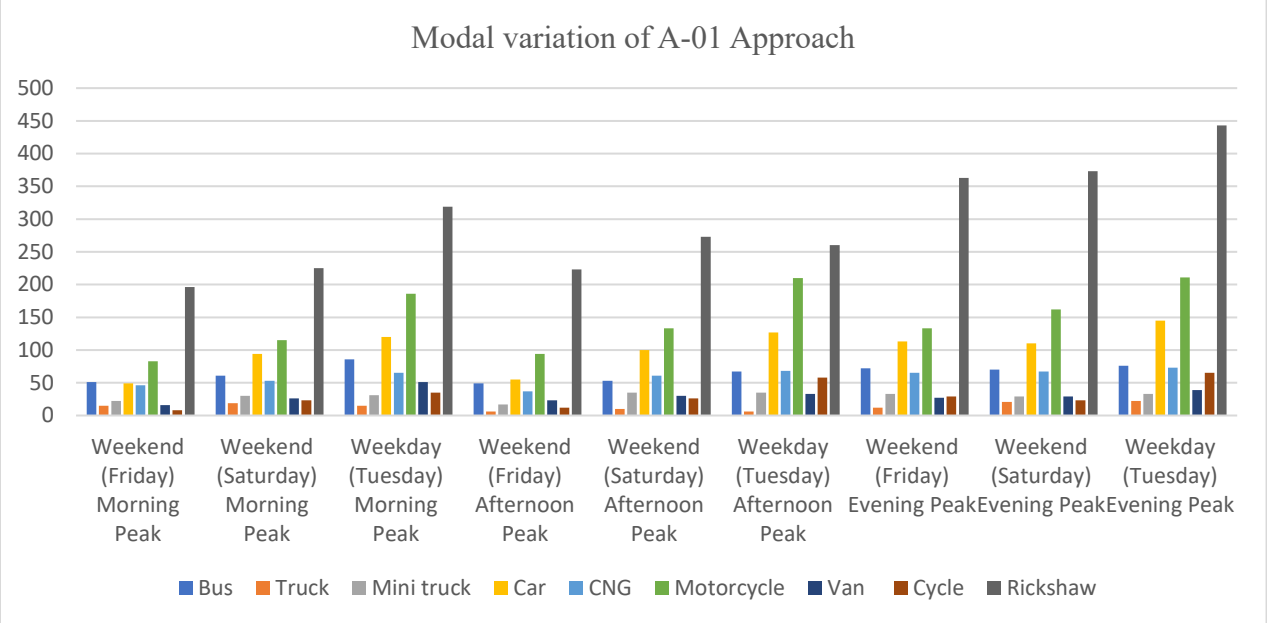
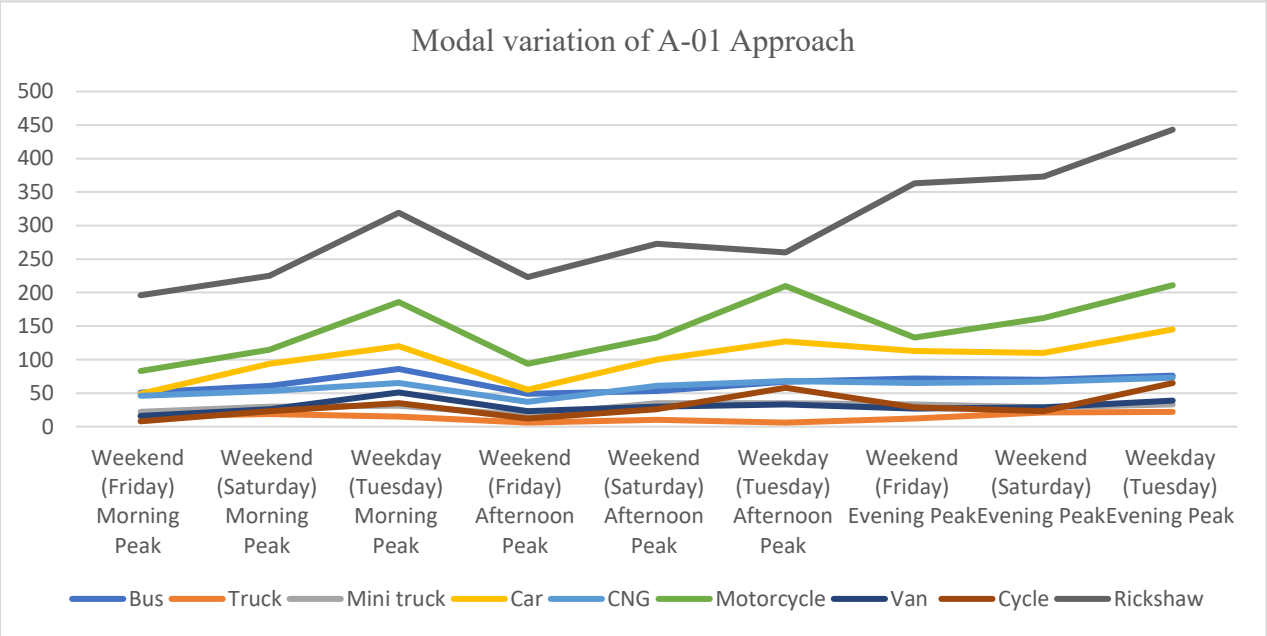


Figure 4.4: Modal variation of A-04 Approach PCU Data

4.5 Calculation of level of service (LOS) for All Approach

4.5.1 Calculation of level of service (LOS) at Approach A-01





	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw
Weekend (Friday) Morning Peak	51	15	22	49	46	83	16	8	196
Weekend (Saturday) Morning Peak	61	19	30	94	53	115	26	23	225
Weekday (Tuesday) Morning Peak	86	15	31	120	65	186	51	35	319
Weekend (Friday) Afternoon Peak	49	6	17	55	37	94	23	12	223
Weekend (Saturday) Afternoon Peak	53	10	35	100	61	133	30	26	273
Weekday (Tuesday) Afternoon Peak	67	6	35	127	68	210	33	58	260
Weekend (Friday) Evening Peak	72	12	33	113	65	133	27	29	363
Weekend (Saturday) Evening Peak	70	21	29	110	67	162	29	23	373
Weekday (Tuesday) Evening Peak	76	22	33	145	73	211	39	65	443

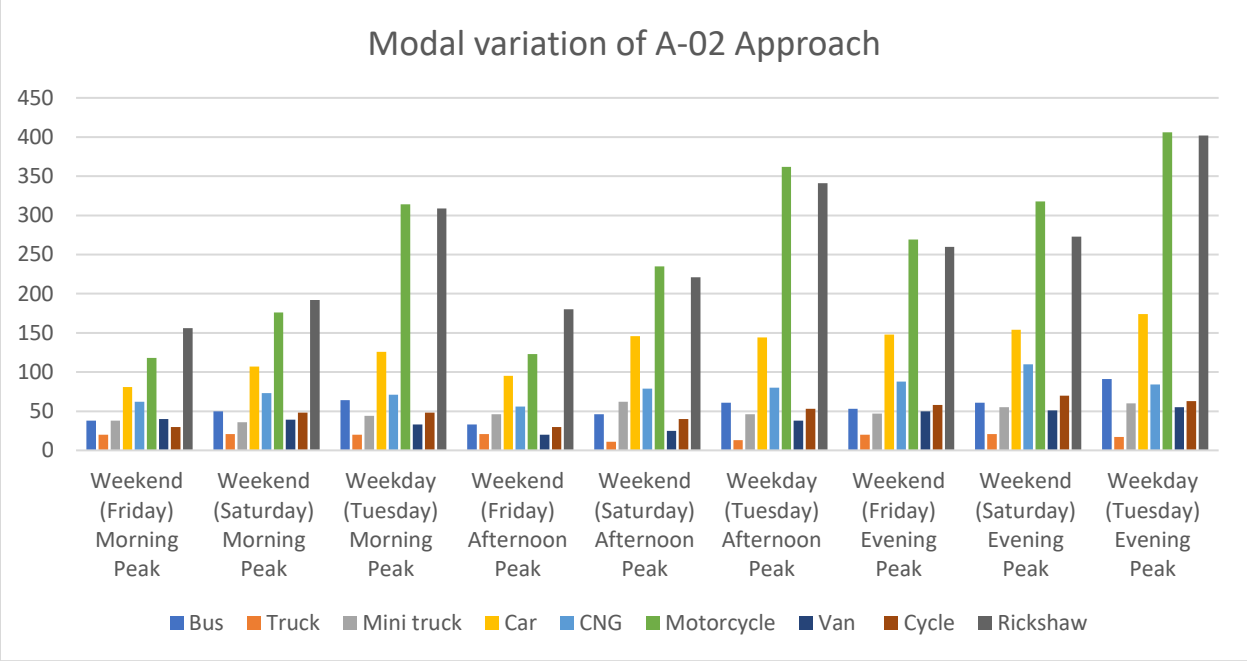
Figure 4.5: Modal variation of A-01 Approach Data

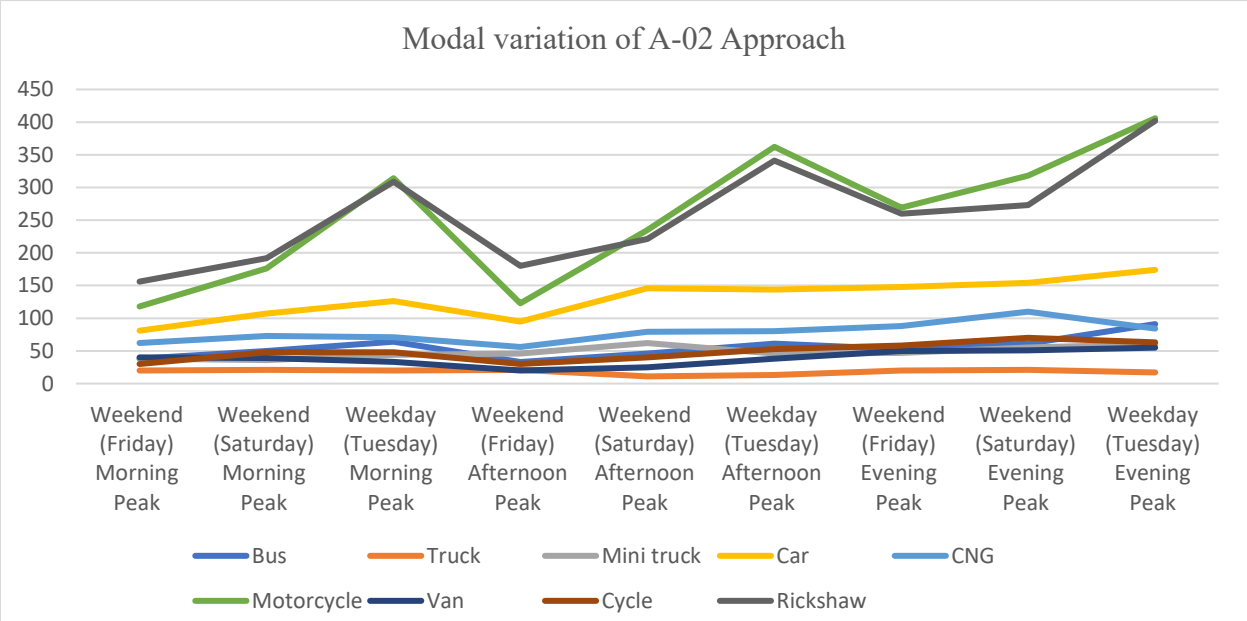
Table 4.5: Calculation of level of service (LOS) at Approach A-01

Calculation of Level of Service (LOS) at A-01 Approach																				
Time	so	fw	fHV	fg	Fp	fbb	fa	fLU	fLT	fRT	fLpb	fRpb	s	C	g	N	c	v	v/c	LOS
	(veh/h/ln)												(veh/h/ln)	(s)	(s)	(ln)	(pcu/h)	(pcu/h)		
Weekend Morning (Friday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	625	180	3	1153	530	0.4596886	B
Weekend Morning (Saturday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	640	170	3	1063.4	691	0.6498145	C
Weekday Morning (Tuesday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	725	210	3	1159.6	921.8	0.7948994	D
Weekend Noon (Friday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	550	165	3	1201	519.3	0.4323501	B
Weekend Noon (Saturday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	575	150	3	1044.3	711.5	0.6812897	C
Weekday Noon (Tuesday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	795	200	3	1007.1	820.8	0.8149451	D
Weekend Afternoon (Friday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	685	170	3	993.52	853.3	0.8588123	D
Weekend Afternoon (Saturday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	835	210	3	1006.8	885.3	0.8792521	D
Weekday Afternoon (Tuesday)	1900	1	0.97	1	0.96	0.956	0.9	1	0.9	0.97	1	1	1334	815	190	3	933.29	1059	1.1349658	F

The predominant vehicles on the Pallabi to Mirpur 10 (A-01) route are rickshaws, motorcycles, and private cars, surpassing other vehicle categories on both weekdays and weekends. The peak value for Rickshaws is 319 vehicles per peak hour and 443 vehicles per peak hour during morning and evening peak hours. The peak value for Motorcycles is 186 vehicles per peak hour and 211 vehicles per peak hour during morning and evening peak hours. The peak value for Private Cars is 120 vehicles per peak hour and 145 vehicles per peak hour during morning and evening peak hours. In order of sequence. The occupancy of rickshaws on the road increases at both peak and off-peak times due to a significant number of uncontrolled rickshaws and their desire for short distances. Motorcycle usage on the road increases during peak and off-peak hours to ensure fast transport and quick arrival at one's destination. This, however, is done by many people taking the shorter routes available to avoid traffic congestion. The occupants' car usage on the weekdays is higher than that experienced during the week. With the area having many schools, hospitals, and offices, the number of workers seeking to use the road to their home from their offices increases. The number of cars in the vicinity is also increased by the fact that it is the destination of the hawker market and the retail malls. The number of buses on the road on the weeknights is 76 as a secondary-dominant vehicle. The bus volume considers being nearly the same during the weekdays. The rationale for this is that both office and public buses employed this method during that period. CNG and mini-trucks are medium-sized governing vehicles. The quantity of CNG vehicles and mini-trucks is negligible at peak hours on both weekends and weekdays. The maximum count of CNG vehicles is 73 per peak hour on weekdays during the evening, whereas the largest number of mini trucks is 35 per peak hour on weekends and weekdays in the afternoon. Trucks are least represented in this crossing. It is used for the passage of heavy trucks at night to avoid this heavy traffic jam and restrictions imposed by the traffic division. The highest number of trucks here is 22 vehicles per hour on weekday evenings. Despite rickshaws, cars, motorcycles, and buses come in more frequent contact with this context. There is no proper lane for these vehicles**.** The traffic flow on the A-02 (Pallabi-Mirpur-10) approach exceeds its capability. The volume capacity ratio (v/c) approach states Approach's LOS is in the C category during peak weekend morning and afternoon, the D category during Weekend & Weekday afternoon, the F category during weekday Evening, and the F category during weekday morning and afternoon. This outcome signifies a moderate degree of service, and drivers express dissatisfaction with the current roadway conditions. In the A-01 (Pallabi-Mirpur-10) corridor, vehicular speed was significantly reduced during peak hours. The carriageway width is inadequate to accommodate a significant volume of vehicles on this approach. A significant number of vehicles are parked illegally to pick up and drop off people.

4.5.2 Calculation of level of service (LOS) at Approach A-02





	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw
Weekend (Friday) Morning Peak	38	20	38	81	62	118	40	30	156
Weekend (Saturday) Morning Peak	50	21	36	107	73	176	39	48	192
Weekday (Tuesday) Morning Peak	64	20	44	126	71	314	33	48	309
Weekend (Friday) Afternoon Peak	33	21	46	95	56	123	20	30	180
Weekend (Saturday) Afternoon Peak	46	11	62	146	79	235	25	40	221
Weekday (Tuesday) Afternoon Peak	61	13	46	144	80	362	38	53	341
Weekend (Friday) Evening Peak	53	20	47	148	88	269	50	58	260
Weekend (Saturday) Evening Peak	61	21	55	154	110	318	51	70	273
Weekday (Tuesday) Evening Peak	91	17	60	174	84	406	55	63	402

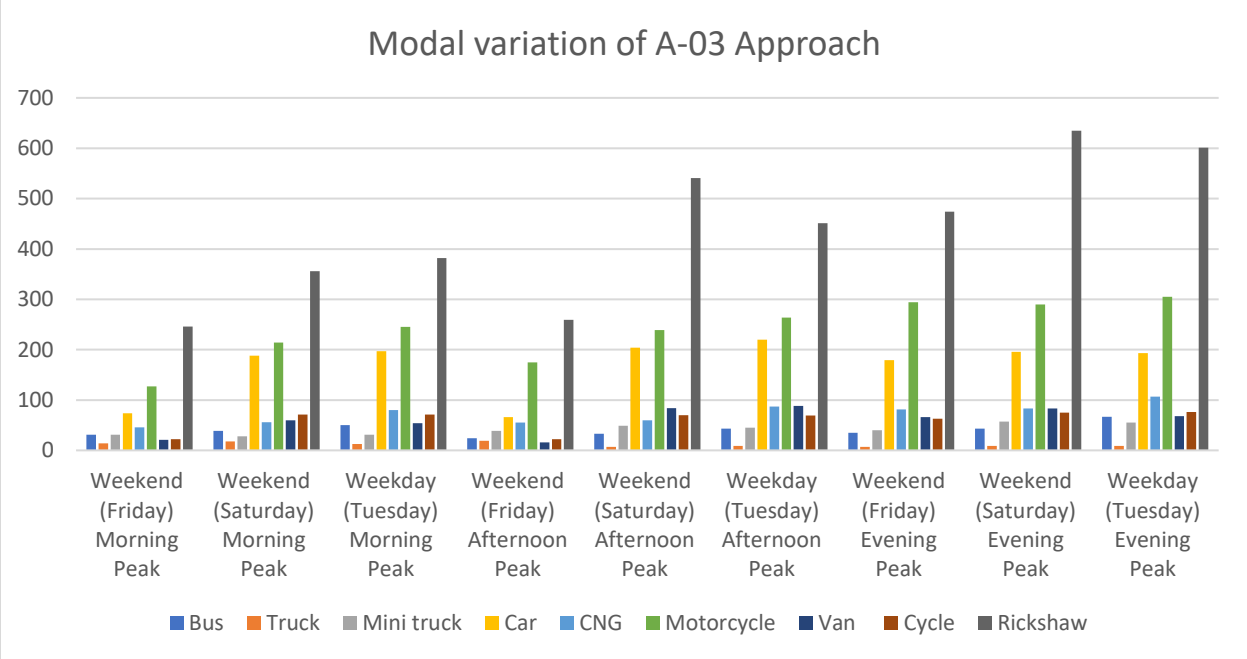
Figure 4.6: Modal variation of A-02 Approach Data

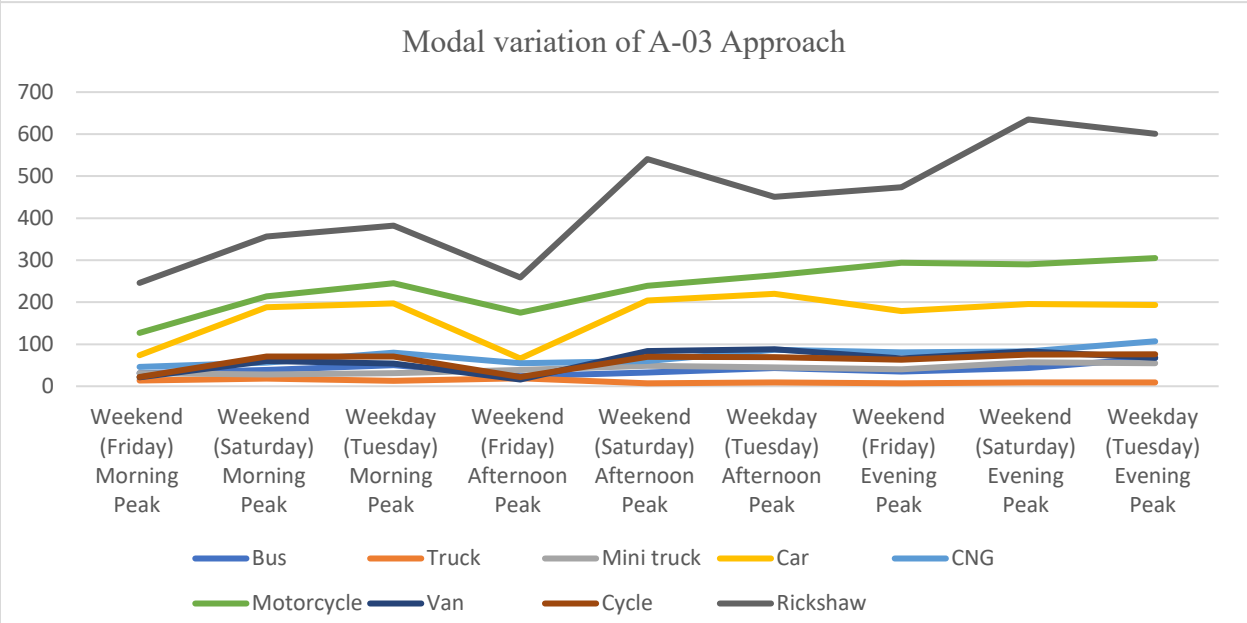
Table 4.6: Calculation of level of service (LOS) at Approach A-02

Calculation of Level of Service (LOS) at A-02 Approach																				
Time	so	fw	fHV	fg	Fp	fbb	fa	fLU	fLT	fRT	fLpb	fRpb	s	C	g	N	c	v	v/c	LOS
	(veh/h/ln)												(veh/h/ln)	(s)	(s)	(ln)	(pcu/h)	(pcu/h)		
Weekend Morning (Friday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	630	160	3	1024.2	598.5	0.5843817	C
Weekend Morning (Saturday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	645	150	3	937.82	732	0.7805333	D
Weekday Morning (Tuesday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	730	190	3	1049.6	956.8	0.9115482	E
Weekend Noon (Friday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	555	140	3	1017.2	617.5	0.6070351	C
Weekend Noon (Saturday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	580	130	3	903.86	822.3	0.9097047	E
Weekday Noon (Tuesday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	800	220	3	1109	1010	0.9105275	E
Weekend Afternoon (Friday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	690	160	3	935.1	923	0.9870581	E
Weekend Afternoon (Saturday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	840	220	3	1056.2	1030	0.9747537	E
Weekday Afternoon (Tuesday)	1900	1	0.97	1	0.96	0.963	0.9	1	0.9	0.97	1	1	1344	820	240	3	1180.3	1258	1.0660595	F

Rickshaws, motorcycles, and cars are the most common vehicles on weekdays and weekends in the (Agargaon-Mirpur-10) A-02 approach, with peak numbers of 402 vehicles per peak hour, 406 vehicles per peak hour, and 174 vehicles per peak hour Respectively. In that order. Due to the large number of uncontrolled rickshaws and their preference for short distances, the number of rickshaws on the road rises during both peak and off-peak hours. In order to enable efficient travel, frequently used, ride sharing and speed arrival at destinations, motorcycle usage on the road rises during both peak and off-peak periods. Due to the large number of schools, hospitals, and workplaces in the neighborhood, where employees use the roadways to get home from work, weekday car occupancy is higher than weekend car occupancy. Because of the Hawker market and shopping centers nearby, there are a good number of cars presents on the road on weekends evening. With up to 91 vehicles every peak hour on weekday evenings, the bus is the second most common mode of transportation. During the week, the bus volume is more stable when using this technique. This is justified by the fact that this strategy was used at the time by both public buses and offices. The bus is most likely to be the essential form of transportation for everyone in this area who belongs to the lower middle class. Mini-trucks and CNG are examples of medium-sized governing vehicles. There are very few CNG and minitrucks during rush hour on weekdays and weekends. On weekends, the maximum number of CNG vehicles during peak hours is 110 in the evening, while the greatest number of small trucks during peak hours is 62 in the afternoon. This is because there are many small businesses and large retailers of branded consumer goods in this market. Since big trucks use this crossing at night to avoid heavy traffic and traffic division-imposed restrictions, trucks are least common here. Truck traffic peaks at 21 vehicles per hour on Saturday mornings and evenings. Although buses, motorcycles, cars, and rickshaws are common in this area, they do not have their own lane. The A-02 (Agargaon-Mirpur-10) approach is overloaded with traffic. During peak hours, the A-02 (Agargaon-Mirpur-10) corridor saw a considerable decrease in vehicle speed. This approach's roadway width is insufficient to handle a sizable number of vehicles. To pick up and drop off people, a sizable number of bus are parked illegally. The volume capacity ratio (v/c) approach states Approach's LOS is in the C category during peak weekend morning and afternoon hours, the D category during Weekend (Saturday) morning, the E category during weekend afternoon, and the F category during weekday morning and afternoon. Analysis reveals that the vehicle's speed is marginally slower than the A-01 approach. Analysis reveals that in three different time periods, the volume of traffic is below its capacity. However, the current circumstances should be improved more in order to boost the vehicle's speed and capacity.

4.5.3 Calculation of level of service (LOS) at Approach A-03





	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw
Weekend (Friday) Morning Peak	31	14	31	74	46	127	21	22	246
Weekend (Saturday) Morning Peak	39	18	28	188	56	214	60	71	356
Weekday (Tuesday) Morning Peak	50	13	31	197	80	245	54	71	382
Weekend (Friday) Afternoon Peak	24	19	39	66	55	175	16	22	259
Weekend (Saturday) Afternoon Peak	33	7	49	204	60	239	84	70	541
Weekday (Tuesday) Afternoon Peak	43	9	45	220	87	264	88	69	451
Weekend (Friday) Evening Peak	35	7	40	179	81	294	66	63	474
Weekend (Saturday) Evening Peak	43	9	57	196	83	290	83	75	635
Weekday (Tuesday) Evening Peak	67	9	55	193	107	305	68	76	601

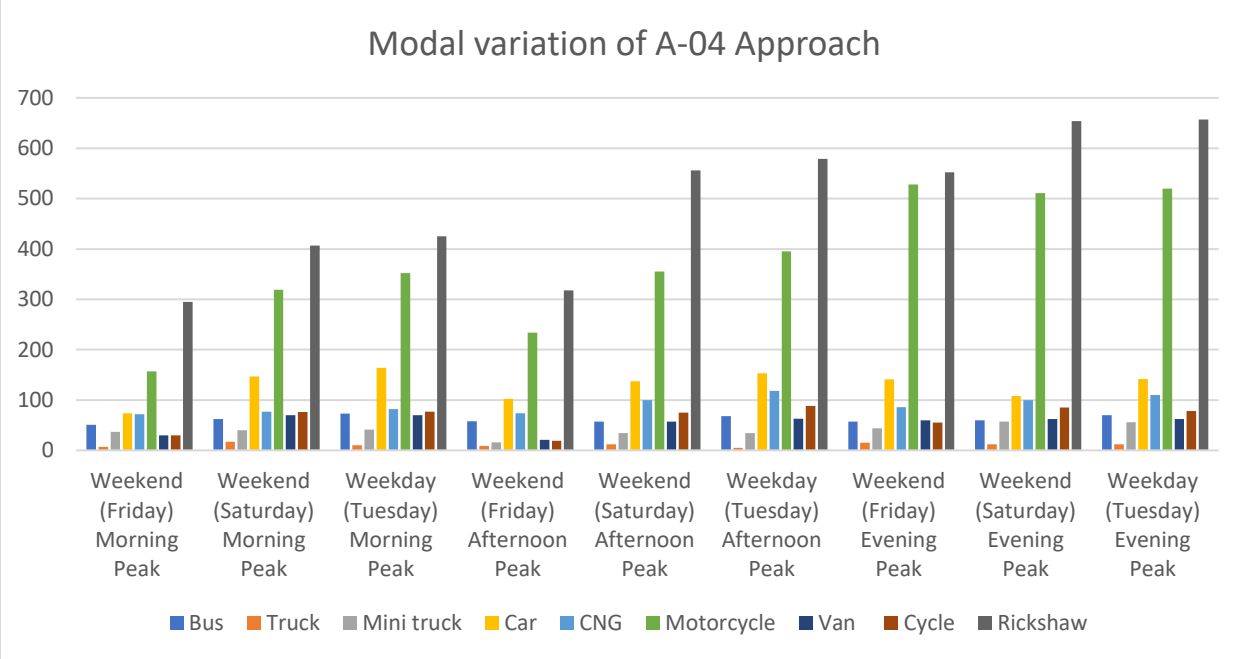
Figure 4.7: Modal variation of A-03 Approach Data

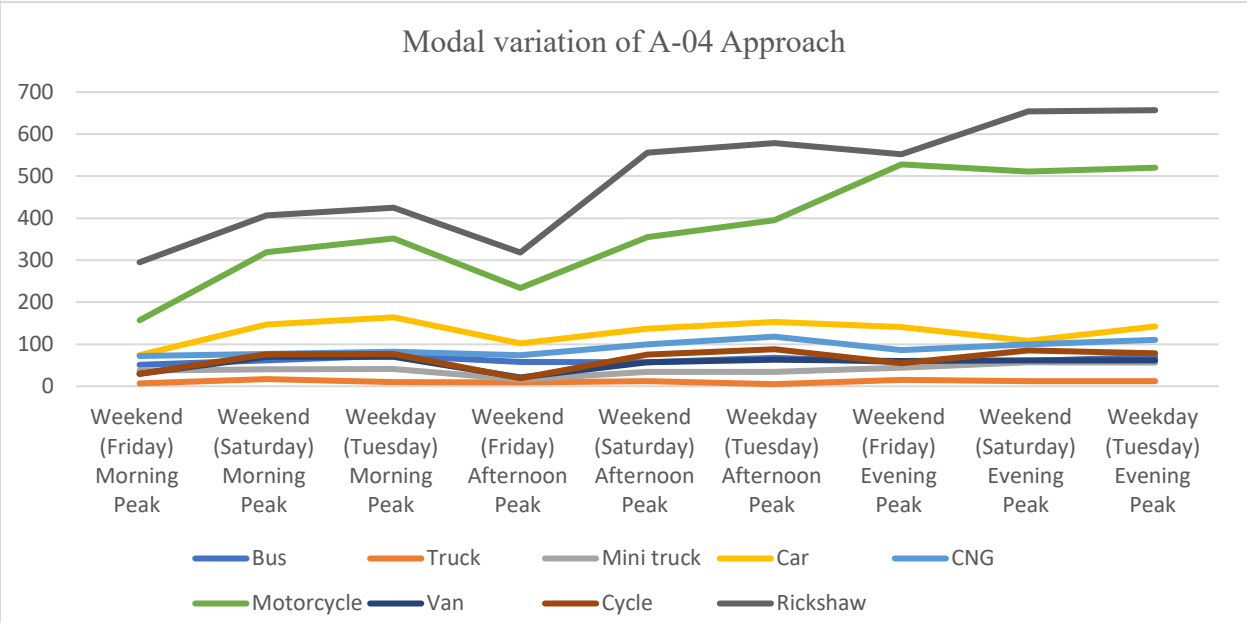
Table 4.7: Calculation of level of service (LOS) at Approach A-03

Calculation of Level of Service (LOS) at A-03 Approach																				
Time	so	fw	fHV	fg	Fp	fbb	fa	fLU	fLT	fRT	fLpb	fRpb	s	C	g	N	c	v	v/c	LOS
	(veh/h/ln)												(veh/h/ln)	(s)	(s)	(ln)	(pcu/h)	(pcu/h)		
Weekend Morning (Friday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	640	120	3	793.71	580.3	0.7310591	C
Weekend Morning (Saturday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	655	140	3	904.79	911.5	1.0074153	F
Weekday Morning (Tuesday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	740	140	3	800.86	993	1.2399139	F
Weekend Noon (Friday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	565	100	3	749.23	619	0.8261857	D
Weekend Noon (Saturday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	590	110	3	789.23	1090	1.3814145	F
Weekday Noon (Tuesday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	810	160	3	836.17	1102	1.3179084	F
Weekend Afternoon (Friday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	700	140	3	846.63	1029	1.2157086	F
Weekend Afternoon (Saturday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	850	170	3	846.63	1249	1.4755637	F
Weekday Afternoon (Tuesday)	1900	1	0.97	1	0.96	0.972	0.9	1	0.9	0.97	1	1	1411	830	160	3	816.02	1304	1.5973782	F

Rickshaws, motorbikes, and automobiles are the predominant vehicles during weekdays and weekends on the Kachukhet-Mirpur-10 (A-03) route, with peak counts of 635 vehicles per hour, 305 vehicles per hour, and 220 vehicles per hour, respectively. In order of sequence, Due to the large number of uncontrolled rickshaws and public demands, the lack of buses, and the number of rickshaws on the road, the number of rickshaws on the road rises during both peak and off-peak hours. To facilitate efficient travel and expedite arrival at destinations, motorcycle traffic on the Shortcut route from Banani via Dhaka Cantonment increases during both peak and off-peak seasons. Weekday Private Car occupancy exceeds weekend car occupancy due to the significant presence of educational institutions, BRTA, and workplaces in the area, as employees utilize the roadways to go home from work. The proximity of the Hawker market and retail areas results in a significant volume of vehicular traffic on weekends. Mini-trucks and CNG vehicles exemplify medium-sized, the second most prevalent category of vehicles. Numerous CNGs are deficient in an adequate number of public transport vehicles and minitrucks at peak hours on both weekdays and weekends. The peak number of CNG cars on weekday evenings is 107, but the highest count of mini trucks during peak hours is 57 on weekend evenings. Many small enterprises and big sellers of branded consumer products exist in market of this approach. On weekdays, particularly in the evenings, it is observed that up to 67 buses, one of the available means of transport, are seen at their peak hours. There is an increase in the number of buses in the morning and late in the evening on weekdays due to educational institutions and offices. It is assumed that the bus is the main means of transport for all people in this area. Because at night, many huge trucks and six-wheelers use the bridge to avoid the big line of traffic; there were few due to traffic regulations at this point. On the Saturday morning peak hours, the number of trucks, as indicated in the table above, is limited to a maximum of one in every hour. Motorbikes, buses, cars, and auto-rickshaws are some of the most common transportation vehicles in the area; nevertheless, there are no lines for them; instead, many used the wrong end, particularly the auto-rickshaw. Route A-03 was busy on Sundays, resulting in longer periods of green signals. During the peak hours, the A-03 (Kachukhet-Mirpur-10) section had a low speed of operation. The lane width at is appropriate to handle a large number of vehicles. Unfortunately, traffic control is unsatisfactory. Many private cars and auto-rickshaws park and stand in non-authorized locations. The volume capacity ratio (v/c) methodology indicates that the Level of Service (LOS) is classified as category C on weekend mornings, category D on Weekends (Saturday) afternoons, and category F during weekend and weekday afternoons, as well as during weekend and weekday noon's. Analysis indicates that the vehicle's speed is slightly inferior to that of the A-01 and A-02 approaches. Analysis indicates that throughout three distinct time intervals, traffic volume remains beneath its capability. Nonetheless, the existing conditions require enhancement to augment the vehicle's speed and capacity.

4.5.4 Calculation of level of service (LOS) at Approach A-04





	Bus	Truck	Mini truck	Car	CNG	Motorcycle	Van	Cycle	Rickshaw
Weekend (Friday) Morning Peak	51	7	37	74	72	157	30	30	295
Weekend (Saturday) Morning Peak	62	17	40	147	77	319	70	76	407
Weekday (Tuesday) Morning Peak	73	10	41	164	82	352	70	77	425
Weekend (Friday) Afternoon Peak	58	9	16	102	74	234	21	19	318
Weekend (Saturday) Afternoon Peak	57	12	34	137	100	355	57	75	556
Weekday (Tuesday) Afternoon Peak	68	5	34	153	118	395	63	88	579
Weekend (Friday) Evening Peak	57	15	44	141	86	528	60	55	552
Weekend (Saturday) Evening Peak	60	12	57	108	100	511	62	85	654
Weekday (Tuesday) Evening Peak	70	12	56	142	110	520	62	78	657

Figure 4.8: Modal variation of A-04 Approach Data

Table 4.8: Calculation of level of service (LOS) at Approach A-04

Calculation of Level of Service (LOS) at A-04 Approach																				
Time	so	fw	fHV	fg	Fp	fbb	fa	fLU	fLT	fRT	fLpb	fRpb	s	C	g	N	c	v	v/c	LOS
	(veh/h/ln)												(veh/h/ln)	(s)	(s)	(ln)	(pcu/h)	(pcu/h)		
Weekend Morning (Friday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	635	140	3	919.85	713.3	0.7754018	D
Weekend Morning (Saturday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	650	155	3	994.9	1077	1.082522	F
Weekday Morning (Tuesday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	735	160	3	908.22	1142	1.2576734	F
Weekend Noon (Friday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	560	120	3	894.03	771.3	0.8626633	D
Weekend Noon (Saturday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	585	160	3	1141.1	1162	1.0180941	F
Weekday Noon (Tuesday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	805	190	3	984.73	1252	1.2709032	F
Weekend Afternoon (Friday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	695	190	3	1140.6	1260	1.1046917	F
Weekend Afternoon (Saturday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	845	210	3	1036.9	1348	1.3000698	F
Weekday Afternoon (Tuesday)	1900	1	0.97	1	0.96	0.958	0.9	1	0.9	0.97	1	1	1391	825	200	3	1011.4	1421	1.4046916	F

Rickshaws and motorcycles are the predominant vehicles during weekdays and weekends on the A-04 approach, with peak counts of 657 vehicles per hour and 528 vehicles per hour, respectively. In order of sequence. The proliferation of unregulated rickshaws, coupled with public desire for expedited travel over short distances compared to buses, results in an increase in rickshaw traffic during both peak and off-peak hours. The utilization of motorbikes on shortcut routes from Mirpur to Banani via Dhaka Cantonment and from Mirpur to Uttara via Diabari escalates at both peak and off-peak times to facilitate efficient travel and expedite arrival at destinations. With 142 vehicles during peak hour, the car is the second most utilized and prevalent mode of transport in this approach. Weekday vehicular occupancy surpasses that of weekends due to the presence of numerous educational institutions and workplaces in the vicinity, resulting in employees utilizing the roadways for their commutes home from work. The existence of the Hawker market and other shopping areas significantly increases vehicular traffic on weekends. Mini-trucks and CNG vehicles exemplify medium-sized automobiles, ranking as the third most prevalent category. During peak weekday evenings, there are as many as 70 buses per hour, rendering them one of the most prevalent types of transportation. On weekday mornings and evening, the frequency of buses catering to educational institutions, public services, and offices is elevated. The bus is likely the primary mode of transportation for long-distance travel in this area. A multitude of CNG vehicles, alongside a considerable quantity of public transport vehicles and minitrucks, are present during peak hours on both weekdays and weekends. The peak number of CNG cars on weekday evenings is 110, but the highest count of mini trucks during peak hours is 57 on weekend evenings. The Kalshi truck stand significantly contributes to this, and the neighborhood is home to numerous small enterprises as well as huge stores of branded consumer items. Large trucks utilize this crossing at night to circumvent significant traffic and regulations enforced by the traffic division, rendering their presence here less frequent. Truck traffic reaches a maximum of 17 vehicles per hour on weekend mornings. Although buses, motorcycles, cars, and rickshaws are common in this area, they do not have their own lane; The A-04 approach is overloaded with traffic, which causes the green signal to take longer to allow vehicles to move, but for a lot of right-turning vehicles, there was always a mass. During peak hours, the A-04 corridor experienced a significant reduction in vehicle velocity. The roadway width of this approach is inadequate to accommodate a substantial volume of cars. A notable inadequacy in traffic management was present. A significant quantity of rickshaws is parked unlawfully. The volume capacity ratio (v/c) methodology asserts Approach's Level of Service is classified as D on weekend mornings and F throughout all peak periods. The analysis indicates that the vehicle's speed is slightly inferior to that of the A-01 and A-02 approaches. Analysis indicates that during three distinct time intervals, traffic flow remains below capacity. Nevertheless, the existing conditions require enhancement to augment the vehicle's velocity and capacity.

4.6 Total Vehicle Composition

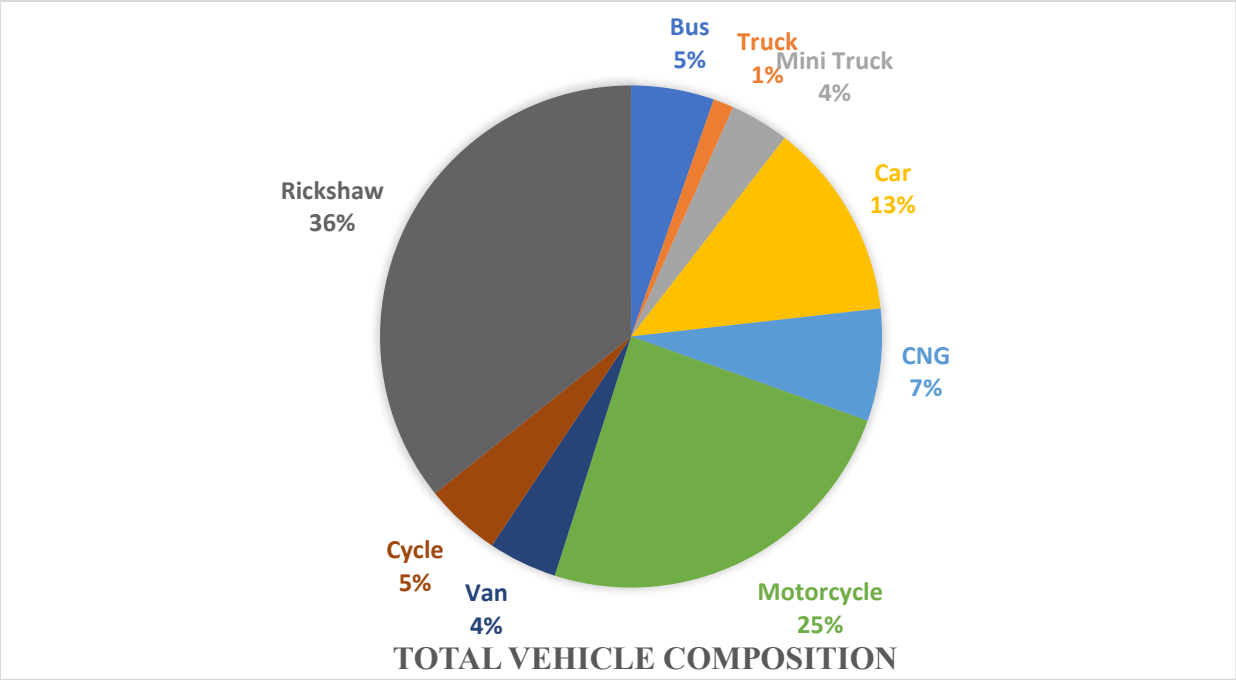


Figure 4.9: Composition of Vehicles in Mirpur-10 Roundabout Intersection

It's true that most middle- and upper-class people live in the Mirpur Area, which is what makes this mode more famous. It can be seen that the Rickshaw has the highest number, at 36%. This means that most people use Rickshaws to get where they need to go. The Rickshaw is the most common way to get around Dhaka City, and the number of them is growing every day. It's also a simple way to get from one place to another for short distances. Motorcycles make up the second type of car, which has 25% of the total. Most people get where they're going on motorbikes because they're easier to use, take up less space on the road, and let you get there faster. But adding an extra designated lane and not letting rickshaws use the main road might be the best way to ease traffic. Another thing that can be seen is that the third type of vehicle, which makes up 13%, is the car that went through the Mirpur-10 crossing. It means that a modest number of wealthy people live in this area. CNG is less common; only 7% of vehicles that use this junction are CNG. The highest number People only use CNG in emergencies because it costs a lot but gets them where they need to go faster than a bus or car. There are fewer buses and bikes using this intersection only 5% of them are buses and 5% are bikes. Individuals who work as delivery people most often use bikes for their jobs because they help them save money. Most of the people who take the bus are from upper-middle class families. Most people use the metro to get to their destinations on Pallabi-Mirpur 10 Road and Mirpur 10-Agargaon Road. On Mirpur 10-Kachukhet Road, there are fewer cars running every day than on other routes. Mirpur 10 to Mirpur 01 is a road that buses often take. Not as many cars and minitrucks use this intersection only 4% and 4% of all vehicles that use it, respectively. There are many factories and businesses in Mirpur. Vans and minitrucks use the Mirpur-10 crossing to move raw materials and finished goods made by businesses. In terms of number, trucks are the fewest 1% because the traffic division doesn't let trucks move on the city road between 7 a.m. and 8 p.m.

4.7 Area Description

Mirpur-10 can be found in the coordinates 23°48'25.5" North and 90°22'07.0" East. Its total area is 58.66 square kilometers, which is equivalent to 22.65 square miles. The northeastern part of the city of Dhaka is where you will find it. 22.65 square miles, or 58.66 square kilometers, is the total area of it. According to the results of the 2022 Census taken by BRAC, there were 632,664 people residing in Mirpur, Bangladesh. Of those people, 51.30 percent are male and 48.70 percent are female. Four thanas that comprise Mirpur Thana are presently Rupnagar, Shah Ali, Pallabi, and Kafrul.

4.8 Area Infrastructure

In the vicinity of Mirpur, there are a number of retail malls, educational institution, hospital & private medical, bus stop along the roadways, amusement parks, and other types of amenities. There are a number of important pieces of infrastructure, including the Kidney Foundation, OSB Eye Hospital, National Heart Foundation Institute, Grameen Bank & Taka Bank, Prince Bazar, Mukto Bangla Shopping Mall, Mukti Joddha Shopping Mall, Shah Ali Shopping Complex, Sony Square, Benarorsi Palli, Mirpur Bangla College, Mirpur Zoo, Botanical Garden etc.

4.9 Strategies for System and Problem Explication

i. Traffic congestion resulting from an abundance of rickshaws and unlawful bus stoppages is most evident at the Mirpur 10 crossroads during both peak and off-peak hours, specifically from 7:30 to 8:00 am and 7:30 to 8:00 evening.

ii. The roundabout at Mirpur 10 is architecturally intact but now inactive. This area lacks traffic signals, resulting in manual traffic control and significant congestion. Moreover, there is a significant presence of traffic police, and the provision of hand-held signal management is contrary to the fundamental principles governing roundabout intersections.

iii. The Mirpur 10 crossroads have one unused grade-separated foot overbridge; as a result, people cannot use it. Therefore, accidents happen. There is also a pedestrian barrier, which should actually prevent pedestrians from crossing at a red light. However, it simply stops before the crossroads. This also leads to the fact that people do not want to waste time on the foot overbridge; in this regard, they instead cross the street on the same intersection.

iv. During peak hours, certain types of vehicles fail to receive a priority at Mirpur 10 signal. As a result, there is a long delay for Mirpur 1-to-Agargaon right-turn at the street. However,

this route has a bigger actual traffic compared to other possible roads. Therefore, an incident occurs as a driver start to speed up his or her vehicle in order to save some time.

4.10 Some Common Problems

i. Due to insufficient stops, public transport inadequately facilitates the loading and unloading of passengers.
ii. A large number of Wrong Side & Illegally Parked Vehicles can be showed always.
iii. A multitude of apparel industries has been established in this region. Traffic congestion was significant during peak hours. Moreover, there is considerable pedestrian activity at that period due to the textile workers. Consequently, it poses a significant concern for pedestrians to cross at that time.
iv. Footpath markets are proliferating near the Mirpur 10 intersection. Owing to a scarcity of parking spaces, Public Park their vehicles on the roadside.
v. The streets between Mirpur 1 to Kachukhet are populated by vendors, especially those selling earthenware. Consequently, these issues restrict pedestrian movement.

4.11 Traffic Management Solution

I. Channelization and the creation of dedicated right and left turn lanes are necessary at every intersection approach.
II. The timetables of the existing public bus service require modification. Additionally, it is necessary to set up an appropriate bus stop that features a loading and unloading station.
III. The creation of an adequate public transportation system is necessary. Mainly it is needed to redevelop the existing service, rather than new service is to be launched.
IV. An isolated right turn lane is to be utilitarianly, as well as signal lights must be installed at all entry points.
V. A separate bus lane is to be constructed. Due to the raised mixed traffic and a greater number of people each day using public transit locally.
VI. Bus bays must be maintained at each stop to assure secure passenger loading and unloading. Additionally, it diminishes the traffic congestion as a result of ineffective loading and unloading process.
VII. The elimination of hawkers is to be done and an appropriate and well-maintained place is restored to assure proper use of walkway of the walkway pattern.

VIII. It is very essential that rickshaws must be eliminated from the main routes in the area. Nonetheless, the substantial presence of middle-class and low-income residents in Mirpur, for whom rickshaws serve as the principal mode of transportation, renders the elimination of rickshaws from the area undesirable.

IX. Rather than eliminating the rickshaws, a cycling lane or pathway should be established. When individuals can safely and comfortably use bicycles, they will inherently substitute rickshaws, resulting in a reduction in traffic. Due to inadequate ground area, a grade-separated bicycle lane should be constructed.

4.12 Demand Management

The required demand management measures for the Mirpur-10 area are:

I. Rickshaws are an inefficient form of public transportation that significantly aggravate traffic congestion. Therefore, rickshaws must be removed from the main thoroughfares of the area.
II. Office hours and school schedules may be organized in a periodic format.
III. To diminish transportation demand, it is imperative to properly implement shared ride services, carpooling, and other initiatives.

4.13 Transit Management

I. **Bus schedule and routing**: All buses operating in the Mirpur area must adhere to a prescribed timetable and follow the allocated routes.
II. **Park-and-ride solutions**: There is a significant need for park-and-ride solutions, particularly in places like workplaces, schools, and marketplaces.
III. **Intermodal Coordination:** The coordination of intermodal transportation requires the establishment of appropriate transfer facilities between different modes of transportation.

4.14 Restraint Decisions

I. The markets at the Mirpur 10 intersection require removal. If market removal is not feasible, parking limitations must be enforced.
II. Parking fees are essential for on-street parking.
III. Facilities and Restrictions for Loading and Unloading.
IV. Planning of Transport Routes.
V. Restrictions at peak hours.
VI. Entry of express buses into the city should be prohibited.

4.15 Summary

In this chapter we have discussed sustainable solutions for Mirpur 10 Intersection.

CHAPTER 05

CONCLUSION AND RECOMMENDATION

5.1 Introduction:

My most significant conclusions from the analysis are included in this chapter, along with some recommendations that are based on those principal findings. Not only should my study provide recommendations, but it should also include the most important findings. Not only have the limitations of my work been added, but the conclusions have also been added.

5.2 Conclusion:

The purpose of this study is to determine the Level of Service (LOS), investigate the traffic characteristics that are currently present at the key intersections in Mirpur 10. The study of the data and the results suggest that there is a significant lack of lane discipline and that the traffic is noticeably different. According to the findings of this investigation, the volume of traffic at this intersection drastically exceeds the capacity of the intersection. In particular, it is significantly higher during the peak hours of the morning and evening on weekdays with the highest demand. The volume of traffic is slightly lower on the weekends compared to the volume that occurs during the weekdays. Evaluation of the Type of Service Provided LOS is classified as F category during three time periods in the A-03 and A-04 approaches, which are applicable to both weekdays and weekends. This classification is applicable to both types of methods. When the Level of Service at a junction is F, it means that cars are required to move, and the speeds at which they are moving are extremely slow. The A-03 and A-04 procedures have much inferior performance when compared to the other two methods. After conducting an analysis, it has been determined that the A-01 technique displays service levels that are classified as B, C, D, and F throughout the evenings of weekdays. There is a general feeling of discontent among motorists regarding the current condition of the roads. Based on the findings of this investigation, it can be concluded that the rickshaw is the most common type of vehicle at the Mirpur-10 intersection, accounting for 36% of the total. The issue of traffic congestion continues to be a constant problem at this intersection, despite the fact that other cars in this region provide a rather poor level of service. On the other hand, a sizeable number of people make use of this mode of transportation in order to reach their particular location. The reason for this is that the folks in question are unable to make the shift to alternative modes of transportation due to the economic circumstances. An examination of the field reveals that this region is home to a reasonable number of people who are able to provide for themselves economically. The experts and decision-makers in the field of transport might benefit from this study because it sheds light on the possible underlying scenarios of the vehicle composition of the Mirpur 10 Area. Decision-makers will be in a prime position to mitigate the

current state of the Mirpur 10 Intersection and formulate more plans of improvement. Subsequently, the capacity of a nation increases due to a reduction in congestion leading to improving economic growth and living standards. The road-based programs in the area will benefit the roadway ability of a given territory by merging all area concepts of development. Therefore, a developing country such as Bangladesh already facing severe traffic congestion and other infrastructure consternation needs the above information to affect most road management policies.

5.3 Recommendation:

On the basis of the findings of the study, the following suggestions have been offered in order to improve the mobility and service quality of signalized crossings and other roads that are similarly conditioned:

i. This road's usability could be improved with the addition of a lane that is specifically dedicated for motorcyclists, vehicles, and buses.

ii. Enhancement of the roadway's effective width is something that should be done. The absence of any intrusion is required for this.

iii. This intersection was utilized by a variety of establishments and offices in order to reach their respective destinations. A predetermined timetable must be adhered to, and it must travel the routes that have been given to it.

iv. It is recommended that the authority of the local government produce a comprehensive master plan for Mirpur 10 in order to improve the current situation of this designated crossroads.

v. At each approach to this intersection, there is a bus stop that is not authorized, which has led to a number of significant problems, including extended wait times, frequent accidents on the road, and activities related to vendors. In spite of this, there is a possibility that this condition could be improved through more knowledge and stricter enforcement of traffic restrictions. It is possible that a designated bus stop may considerably alleviate this problem.

A key crossroads within the Dhaka metropolitan area and the Dhaka City Corporation area, Mirpur 10 is the subject of the current study, which investigates the characteristics of the vehicles that use it. It is possible that future research may concentrate on the characteristics of other people who use the road and will investigate the links between demographic features, trip characteristics, and behaviors regarding mode choice.

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