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Prediction of Traffic Conflicts at Signalized Intersection : A Case Study of New Baneshwor Intersection

by

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A THESIS

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The undersigned certify that they have read, and recommended to the Institute of Engineering for acceptance, a thesis entitled **"Prediction of Traffic Conflicts at Signalized Intersection: A Case Study of New Baneshwor Intersection"** submitted by **Abhash Acharya** in partial fulfilment of the requirements for the degree of Master of Science in Transportation Engineering.

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ABSTRACT

This study demonstrates the use of VISSIM combined with SSAM to predict vehicular interactions at New Baneshwor Intersection. Number of potential crossing, lane changing and rear-end crashes that are likely to occur per day were found to be 1, 9 and 945 respectively. The relationship between the simulated and observed conflicts was found to be statistically significant with a R-squared value of 0.8545, 0.7474, 0.8677 and 0.9138 for crossing, lane-changing, rear-end and total conflicts respectively. It was found that if the traffic signals are designed as per changing traffic volume rather than implementing the same fixed time traffic signal, the number of crossing, lane-changing and rear-end conflicts can be decreased by a maximum of 88%, 40% and 39% respectively. This study thus can be used for locating vehicular conflicts so as to reduce their number by the improvement of intersections thereby enhancing their traffic safety.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

ADT	Average Daily Traffic
FHWA	Federal Highway Administration
GDP	Gross Domestic Product
GEH	Geoffrey E. Havers
GNP	Gross National Product
NRS	Nepal Road Standard
ODOT	Oregon Department of Transportation
PCU	Passenger Car Unit
PET	Post Encroachment Time
PTV	Planung Transport Verkehr
RTIs	Road Traffic Injuries
SSAM	Surrogate Safety Assessment Model
TTC	Time to Collision
VISSIM	Verkehr In Stadten – SIMulation Modell

CHAPTER 1: INTRODUCTION

1.1 Background

The estimated fatalities rate per 100,000 population due to road crashes in Nepal is 15.9 (World Health Organization, 2018). Road Safety Guidelines for the Asian and Pacific Region has reported that road crashes have been shown to cost annually between 1 percent to 3 percent of GDP in developing countries. In Nepal, the economic cost of RTIs increased by threefold since 2007 and is equivalent to 1.52 percent of GNP as of 2017, indicating the growing national financial burden associated with preventable RTIs (Banstola, et al., 2020). The safety performance evaluation of the roadway network and facilities thus turns out to be necessary.

The safety performance evaluation of an intersection is usually done with the statistical analysis of the crash data collected over some time before and after the modifications have been made in the intersection. However, the data collected may not be reliable as the damage only crashes have a higher chance of being unreported. Thus, the results obtained from such crash data may encounter a reliability issue. Similarly, the collection and documentation of crash records take a huge amount of time and the solution needed to have put on the field sooner to reduce the possible crashes could not be implemented. And the fact that crashes just occur before one can determine the risk of locations is, from an ethical point of view, a disadvantage (Vasconcelos, et al., 2014).

It has been found that traffic conflicts are good surrogates for crashes. This means that conflict data may be used as a substitute for crash data (Parker and C.V., 1989). Thus, the way of estimating the crashes based on conflicts have been practiced. The conflict points are determined with the help of microsimulation combined with the Surrogate Safety Assessment Model (SSAM) developed by the Federal Highway Administration (FHWA). The steps in applying simulation are to ensure that the important model inputs have been determined based on observational data and they ensure calibration of the used traffic simulation model on traffic safety performance values obtained from real trajectories (Cunto and Saccomanno, 2008).

PTV VISSIM has been used as a microsimulation software. SSAM has been used to perform analysis of vehicle trajectory data output from microscopic traffic simulation models. The output of SSAM includes the number and the type of simulated conflicts.

1.2 Research Questions

The study is being carried out to predict the number of vehicular conflicts in New Baneshwor intersection. The study aims in suggesting suitable countermeasures for the reduction in number of conflicts so as to improve the intersection safety performance. The questions expected to be answered from this research are:

a) What values do the parameters affecting driving behavior attain with mixed traffic conditions?
b) What is the total number of conflicts that are likely to occur at New Baneshwor intersection?
c) What countermeasure can be adopted to reduce existing conflicts?

1.3 Research Objectives

This study is being carried out with an objective to predict the number of vehicular conflicts in New Baneshwor intersection and suggest countermeasures for the reduction in number of conflicts so as to improve intersection safety performance. Specific objectives of the study can be listed as follows:

a) To calibrate driving behavior to obtain calibrated values for different parameters.
b) To perform microsimulation of New Baneshwor intersection and generate trajectories using VISSIM.
c) To predict the number of conflicts and classify according to their types using Surrogate Safety Assessment Model (SSAM) and validate them.
d) To perform scenario analysis for determining the best scenario as a countermeasure for the reduction of conflicts.

1.4 Limitations

The research being carried out within a limited time frame with resource constraints have following limitations.

a) Pedestrian modelling has not been performed, and pedestrian-vehicle interaction has not been studied.
b) The type of interacting vehicles has not been taken under consideration.
c) The movement of vehicles from service lane to main lane and vice-versa within a particular intersection leg has not been considered.

1.5 Organization of Report

This report is organized in five chapters as:

CHAPTER 1: INTRODUCTION highlights the burden of road crashes on national economy and the need for carrying out the research work.

CHAPTER 2: LITERATURE REVIEW provides information regarding works done in the past regarding prediction of conflicts, relationship between conflicts and crashes and surrogate safety approaches.

CHAPTER 3: METHODOLOGY explains the general framework of methodology on which the research work is carried out to obtain outcomes.

CHAPTER 4: DATA ANALYSIS includes processing of data extracted from the video taken, calibration and validation of the model for driving behavior, total volumes and average travel time. The chapter also includes processing with SSAM for the prediction of conflicts, their validation and scenario analysis for the purpose of finding out a countermeasure for the reduction in conflicts thereby improving intersection safety performance.

CHAPTER 5: CONCLUSION AND RECOMMENDATION provides summary of the results and recommends few suggestions for future works on similar topics.

CHAPTER 2: LITERATURE REVIEW

Several research works have been done regarding the prediction of conflict points using a microsimulation approach. Such pieces of literature have been studied and reviewed.

2.1 Conflicts and Crashes

A traffic conflict is a traffic event involving the interaction of two or more road users usually motor vehicles, where one or both drivers take evasive action such as braking or swerving to avoid a collision (Parker and C.V., 1989). (Amundsen and Hyden, 1977) defined traffic conflict as a situation in which two or more road users approach each other in time and space such that they risk colliding if their movements remain unchanged.

Road traffic crashes are crash which occurred or originated on a way or street open to public traffic; resulted in one or more persons being killed or injured, and at least one moving vehicle was involved. These crashes therefore include collisions between vehicles, between vehicles and pedestrians and between vehicles and animals or fixed obstacles (OECD, 2020).

It can thus be said that conflict would end in a traffic crash unless one of the involved parties slows down, changes lanes, or accelerates or decelerates to avoid collision.

2.2 Relationship between conflicts and crashes

A relationship between conflicts and crashes has been presented in *Eq. 1*. This correlation of conflicts to crashes is consistent with the range of correlations reported in several studies between ADT and crashes for urban, signalized intersections. This result was achieved despite simulating only morning peak-hour volumes. (Gettman, et al., 2008)

$$\frac{Crashes}{Year} = 0.119 * \left(\frac{Conflicts}{Hour}\right)^{1.419} \quad \text{Eq. 1}$$

Source: Surrogate Safety Assessment Model (SSAM). No. FHWA-HRT-08-049

2.3 Types of Conflicts

Classification of type of conflicts is done as per (Pu and Joshi, 2008).

- Rear-end conflict if | Conflict Angle | < 30^o.
- Crossing conflict if | Conflict Angle | > 85^o, else a lane-changing conflict.

Figure 2 - 1 shows the criteria for determining the types of conflict on the basis of conflict angle.

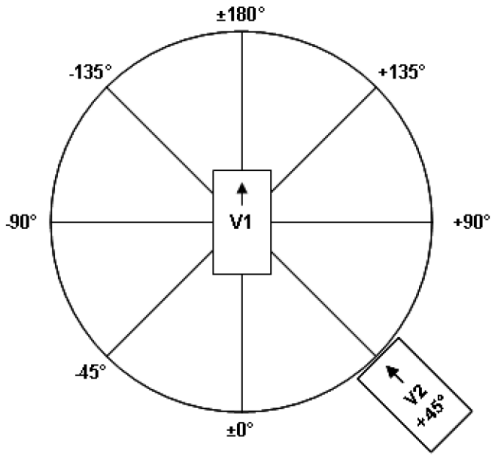


Figure 2 - 1 Illustration of Conflict Angle

2.4 TTC, PET and MaxS

Time-to-collision (TTC) is the time that is left until a collision occurs if both vehicles continue on the same course and at the same speed (Vogel, 2003).

PET, which is the minimum post encroachment time observed during the conflict. Post encroachment time is the time between when the first vehicle last occupied a position and the second vehicle subsequently arrived at the same position. A value of 0 indicates an actual collision (Pu and Joshi, 2008).

MaxS, which is the maximum speed of either vehicle throughout the conflict (i.e. while the TTC is less than the specified threshold) (Pu and Joshi, 2008).

2.5 Relationship between TTC and PET

The relationship between TTC and PET as suggested by (Vogel, 2003) has been presented in the *Table 2 - 1*.

Table 2 - 1 Relationship between TTC and PET

TTC	**PET**	
	Small	**Large**
Small	Danger Imminent	Impossible
Large	Potential Danger	Safe

Smaller values of TTC and PET shows danger imminent cases and both larger values result safe condition.

2.6 Calibration in VISSIM

For calibration, the best universal measure to compare simulation inputs and outputs is the GEH formula. For hourly flows, the GEH formula is presented in *Eq. 2*.

$$GEH = \sqrt{\frac{2(m-c)^2}{m+c}} \qquad \text{Eq. 2}$$

where,

m = output traffic volume from the simulation model (vph)

c = input traffic volume (vph)

GEH < 5.0	Acceptable fit
5.0 <= GEH <= 10.0	Caution: Possible model error or bad data
GEH > 10.0	Unacceptable

Source: Protocol for VISSIM Simulation, ODOT, 2011

The calibrated parameter value for driving behavior suggested by (S M P and Ramadurai, 2013) for Indian heterogeneous condition has been presented in the *Table 2 - 2*. Such parameter has been taken as a reference for the determination of calibrated parameter value for the preparation of the model as the driving behavior in case of India and Nepal are somehow similar.

Table 2 - 2 Calibrated Parameter Value

Parameter	**Value**
Minimum headway (front/rear)	0.11 m
Average standstill distance	1.00 m
Additive part of safety distance	0.20
Multiplicative part of safety distance	0.78
Minimum lateral distance-bike at 0kmph	0.62 m
Look ahead distance-min	27.91 m
Look back distance-min	14.31 m

2.7 Findings from reviewed pieces of literature

(Astarita, et al., 2018) performed microsimulation and evaluated typical intersection scenarios and concluded that the use of microsimulation in combination with surrogate safety measures is a viable and consistent method to perform safety evaluation on different intersection designs. (Vasconcelos, et al., 2014) also found similar conclusions when an evaluation was made in three reference intersection layouts (four-leg priority intersection, four-leg staggered intersection and single-lane roundabout).

(Huang, et al., 2013) concluded that the impacts of TTC on lane-change and crossing conflicts were found to be relatively minor. There was a reasonable consistency between the simulated and the observed rear-end and crossing conflicts and the R-squared values thus obtained for crossing, rear-end, lane-changing and total conflicts were 0.8312, 0.5728, 0.188 and 0.7831 respectively. However, it was also found that the simulated conflicts generated by VISSIM and SSAM were not good indicators for traffic conflicts which were generated by unexpected driving maneuvers such as illegal lane-change in the real world.

(Wu, et al., 2016) during their study regarding pedestrian-vehicle conflict analysis found that the p-value of the independent variable as 0.00 indicating that the number of simulated conflicts is significantly associated with the number of observed conflicts. The R-squared value for the model was found to be 0.8825. (Cunto and Saccomanno, 2008) mentioned that the VISSIM model cannot provide the necessary results until the prepared model is calibrated and validated. Thus, it has been found that the well-calibrated and validated model can yield promising result regarding the prediction of conflict points at a signalized intersection.

(Muley, et al., 2018) mentioned that the TTC ranges between 0.05 and 1.0 second, while the PET ranges between 0.05 and 2.0 seconds. However, (Wu, et al., 2016) found out that there was the best goodness of fit between simulated conflicts and observed conflicts when the maximum TTC threshold was set to be 2.7 and the maximum PET threshold was set to be 8. Observing the results, it can be found that the value of TTC and PET assigned depends upon the traffic conditions on a particular site under consideration. (Astarita, et al., 2018) after evaluating a roundabout, non-signalized traffic light intersection and traffic light-controlled intersection concluded that the signalized intersection suffers less danger with TTC = 0.80 seconds.

Few types of research have been carried out regarding the determination of conflicts using the surrogate approach in developed countries. Research focusing on determining vehicular conflicts in developed countries may not apply to the study of a similar situation in developing countries. This study thus can be used for locating conflicts and thereby such results can be used for the improvement of traffic facilities to reduce the number of vehicular conflicts. Along with other several researches carried out regarding crash analysis and road safety; this study can also be of great importance.

CHAPTER 3: METHODOLOGY

The research methodology is guided as per the framework shown in the *Figure 3 - 1*. The study area was selected considering the location with high traffic volume. The cameras were adjusted so as to cover the intersection area. The classified vehicle count was done and other required data were fed as input for the preparation of microscopic simulation model using VISSIM. The simulation was run and the vehicle trajectories data obtained after simulation was fed into SSAM for prediction of conflicts and scenario analysis was performed to find out the best countermeasure for the reduction of conflicts so as to improve intersection safety performance. More details on the research methodology have been presented below.

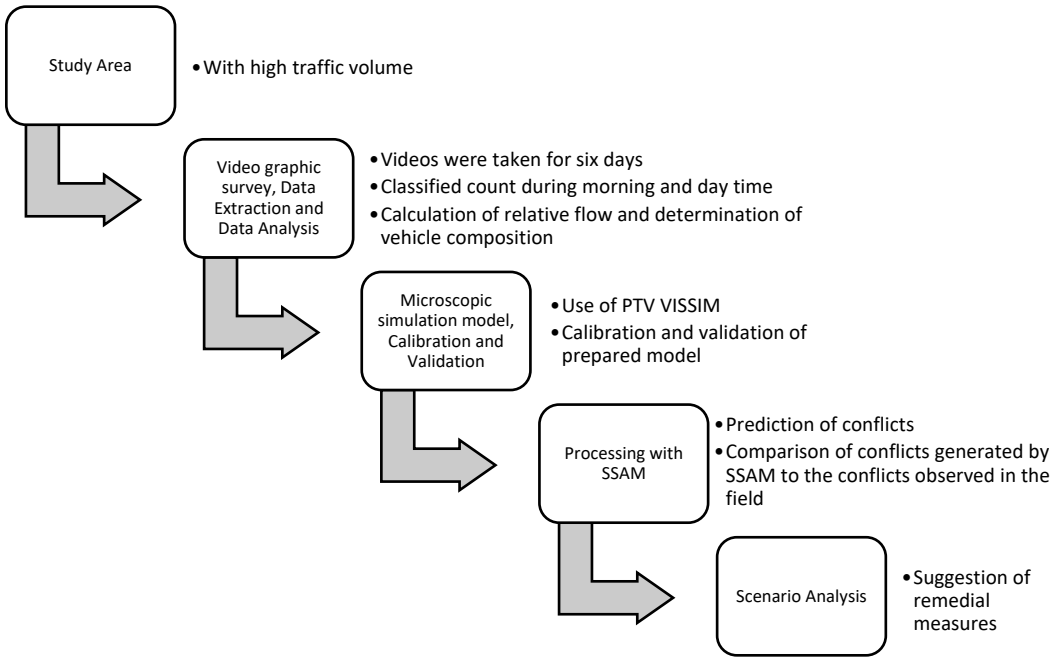


Figure 3 - 1 Framework of Methodology

3.1 Study Area

Several pieces of literature have been studied regarding the determination of conflicts and the way how the study area have been selected were found to be quite similar. The study area was selected with high traffic volume. New Baneshwor intersection has found to satisfy the criteria and hence selected as the study area for the research. *Figure 3 - 2* and *Figure 3 - 3* shows the general layout and geometry of New Baneshwor intersection.

Figure 3 - 2 New Baneshwor intersection

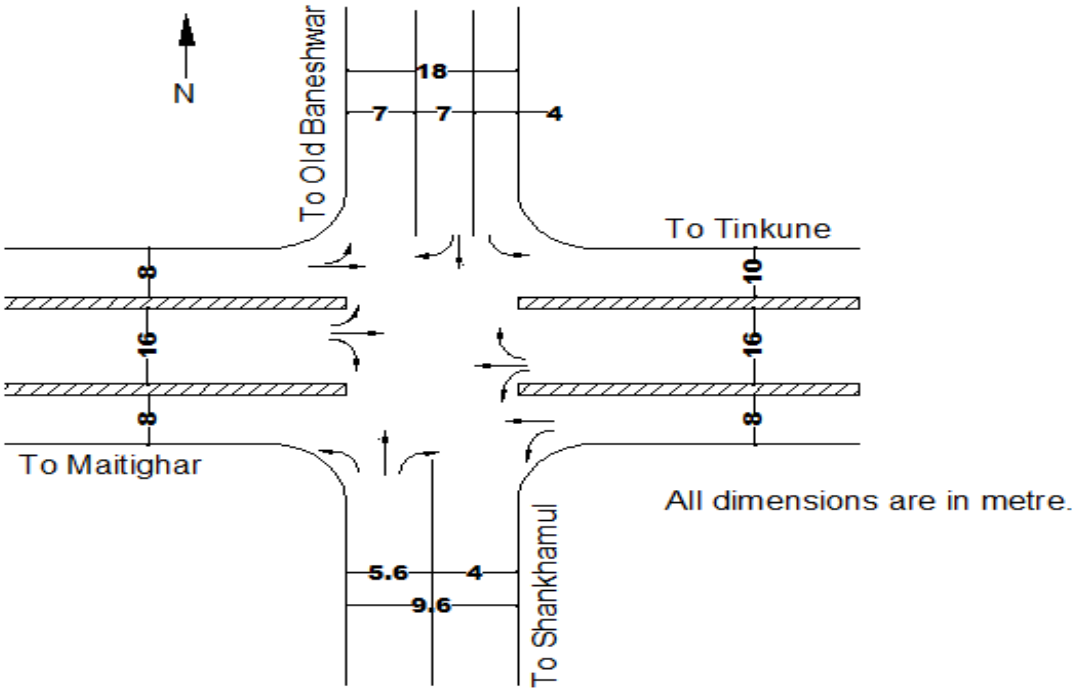


Figure 3 - 3 Geometry of New Baneshwor intersection (Sketch Not to Scale)

3.2 Video graphic survey, Data Extraction and Data Analysis

3.2.1 Video graphic survey

The video was taken for morning and daytime for six days. The video was taken at three different times in a day – 5 AM to 7 AM, 9 AM to 11 AM and 1 PM to 3 PM.

3.2.2 Data Extraction

The obtained video was played several times to carry out classified volume count. The vehicle types were considered as per the Nepal Road Standard 2070 shown in the *Table 3 - 1*.

Table 3 - 1 Vehicle Types and Equivalency Factors

S.N.	Vehicle Type	Equivalency Factor
1	Bicycle, Motorcycle	0.5
2	Car, Auto Rickshaw, SUV, Light Van and Pick Up	1.0
3	Light (Mini) Truck, Tractor, Rickshaw	1.5
4	Truck, Bus, Minibus, Tractor with trailer	3.0
5	Non-motorized carts	6.0

Source: (Department of Roads, 2013)

Non-motorized carts, rickshaw and tractor have not been considered while classifying the total vehicles counted as their frequency is relatively low compared to other vehicle types. Directional movement involving through movements, left turns, right turns and signal timing and phase data were also obtained from the video. The traffic volume was also extracted from the video. The sample of data so collected has been shown in APPENDIX A Classified Volume Count.

3.3 Microscopic Simulation Model, Calibration and Validation

PTV VISSIM was used for the development of the model. Following data were used as input for VISSIM such that the model prepared reflects the existing field condition.

- Vehicle Types
- Classified Vehicle Count
- Directional movement of vehicles
- Relative flows for static vehicle routing
- Signal Timing

The vehicle input in VISSIM is given as vehicle per hour. The sample of such vehicle input for VISSIM has been presented in APPENDIX E VISSIM Input and Output.

3.4 Processing with SSAM

The trajectories obtained from VISSIM after simulation were then fed into SSAM for prediction of conflicts. The TTC and PET were set so as to obtain the conflict with danger imminent case (i.e. when both TTC and PET are small). The simulated conflicts so obtained were then compared with the observed conflicts in the field.

3.5 Scenario Analysis

After the prediction of conflicts, scenario analysis was performed so as to determine the suitable alternative that can be applied to the study area for the reduction of conflicts.

CHAPTER 4: DATA ANALYSIS AND RESULT

4.1 Traffic Volume at Intersection

Traffic count showed that the total volume at the intersection is 16838 PCU from 9:00 AM to 11:00 AM on Sunday (*Table 4 - 1*). The total volume from Tinkune, Maitighar, Sankhamul and PuranoBaneshwor is 7531, 3954, 2341 and 3011 PCU (APPENDIX B Traffic Volume Count) respectively. The total volume from Tinkune is more than the volume from other legs. It is due to the fact that major business center and commercial spaces are located around Maitighar, Sundhara, Ratnapark, Pulchowk, etc.

4.2 Traffic Composition

The traffic volume count for six days of a week has been presented in *Table 4 - 2*. It can be seen that motorcycle contributes maximum to the total traffic volume. The percentage of privately-owned vehicles seem to be more than that of publicly operated vehicles.

The *Figure 4 - 1* to *Figure 4 - 6* shows the composition of total traffic based on vehicle types. It can be seen that the motorcycle contributes higher than any other vehicle types in the main lane (*Figure 4 - 1, Figure 4 - 3*). The number of mini bus and motorcycle are comparable in the Maitighar Service Lane (*Figure 4 - 2*) whereas the number of motorcycles in the Tinkune Service Lane (*Figure 4 - 4)* are higher than that of mini bus. It is due to the location of offices as Citizen Investment Trust, Standard Chartered Bank and other tuition centers around and people moving into and moving out of these spaces need to ride through service lane. Whereas, no such conditions exist towards the Maitighar side. The traffic volume from Purano Baneshwor (*Figure 4 - 5*) is comparatively less than that from Maitighar and Tinkune as no public means of transportation except Nepal Yatayat and tempo uses that facility. The scenario for Sankhamul (*Figure 4 - 6*) is also similar to that of Purano Baneshwor as only microbus and tempo runs as a public means of transportation on that leg. The details on vehicle composition has been presented in APPENDIX C Vehicle Composition.

Table 4 - 1 Total Traffic Volume (Sunday 9:00 - 11:00 AM)

Time	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Total	PCU
9:00 - 9:15	0	16	2	105	46	476	1950	31	48	2674	1921
9:15 - 9:30	0	12	5	100	27	546	2279	33	38	3040	2117
9:30 - 9:45	0	18	2	131	39	502	2328	38	48	3106	2217
9:45 - 10:00	**0**	**14**	**4**	**109**	**24**	**526**	**2637**	**27**	**47**	**3388**	2303
10:00 - 10:15	0	17	4	103	41	523	2493	39	51	3271	2247
10:15 - 10:30	0	12	10	126	26	553	2399	28	47	3201	2280
10:30 - 10:45	0	1	3	88	32	450	2161	20	39	2794	1896
10:45 - 11:00	0	3	1	100	30	440	2022	31	37	2664	1857
Total	**0**	**93**	**31**	**862**	**265**	**4016**	**18269**	**247**	**355**	**24138**	16838
Percentage	0.00	0.39	0.13	3.57	1.10	16.64	75.69	1.02	1.47	100.00	

Table 4 - 2 Total Traffic Volume at New Baneshwor Intersection

Total Traffic Volume (9:00 - 11:00 AM)										
Day	**Heavy Truck**	**Mini Truck**	**Big Bus**	**Mini Bus**	**Micro Bus**	**Car**	**Motorcycle**	**Pickup**	**Tempo**	**Total**
Sunday	0	93	31	862	265	4016	18269	247	343	24126
Monday	7	30	44	637	418	2799	21240	385	277	25837
Tuesday	3	95	49	965	474	4825	15477	381	392	22661
Wednesday	11	61	57	776	506	3771	16738	444	436	22800
Thursday	33	28	32	670	231	3500	14885	470	291	20140
Friday	0	52	65	726	347	3745	19281	473	328	25017
Total	**54**	**359**	**278**	**4636**	**2241**	**22656**	**105890**	**2400**	**2067**	**140581**
Percentage	0.04	0.26	0.20	3.30	1.59	16.12	75.32	1.71	1.47	100.00

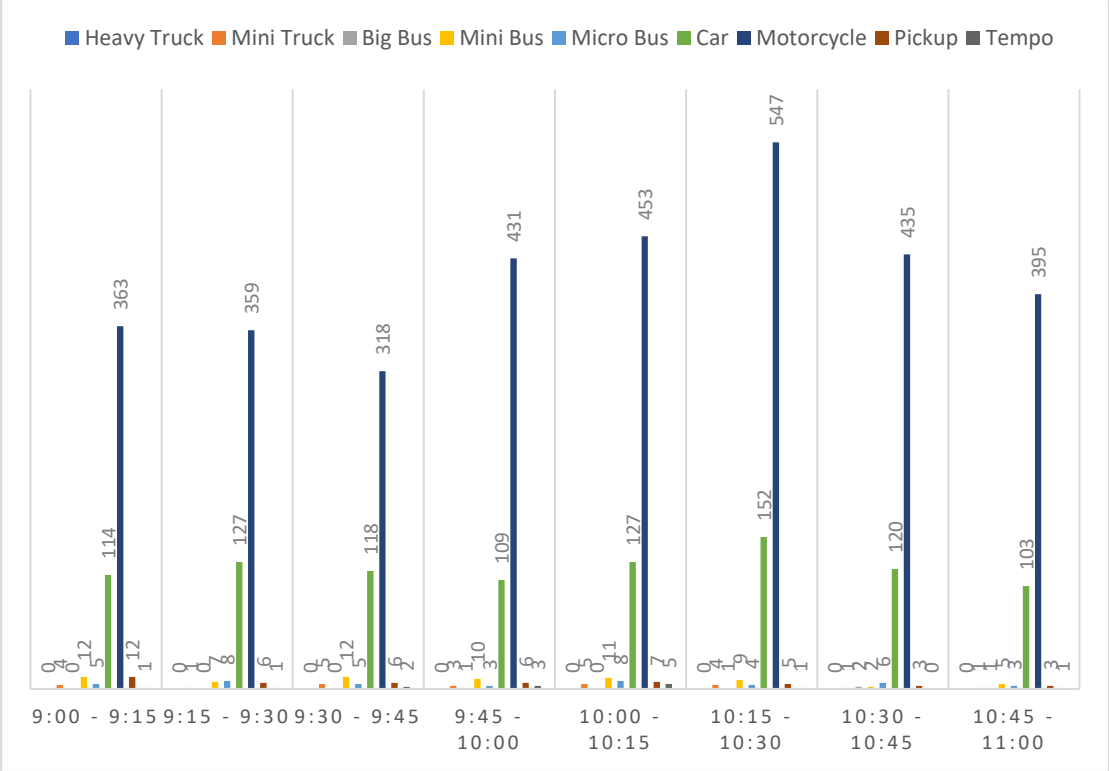


Figure 4 - 1 Traffic Volume: Maitighar Main Lane

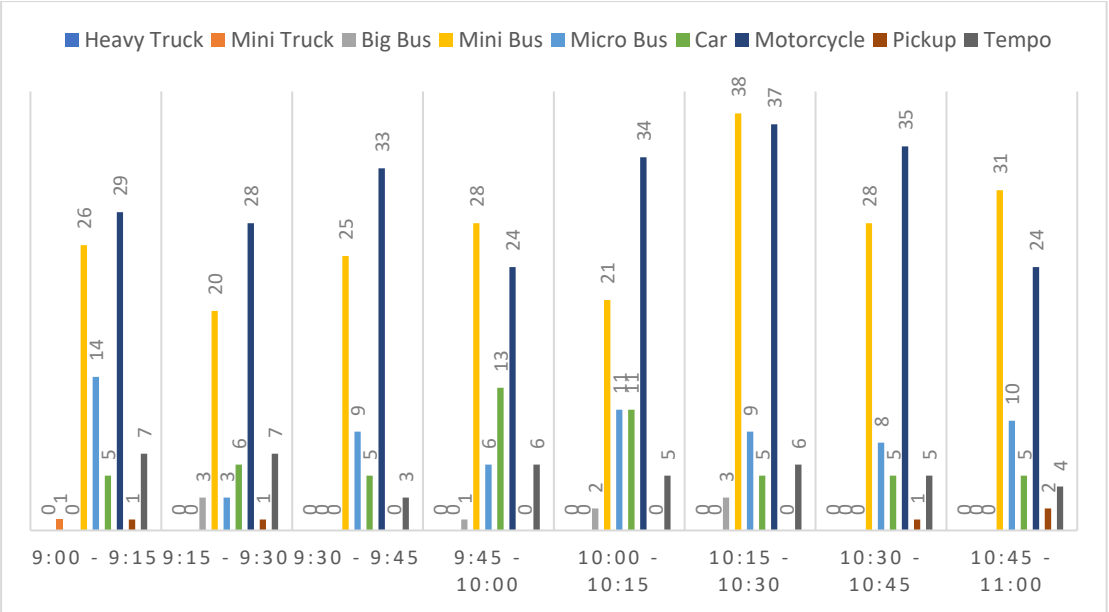


Figure 4 - 2 Traffic Volume: Maitighar Service Lane

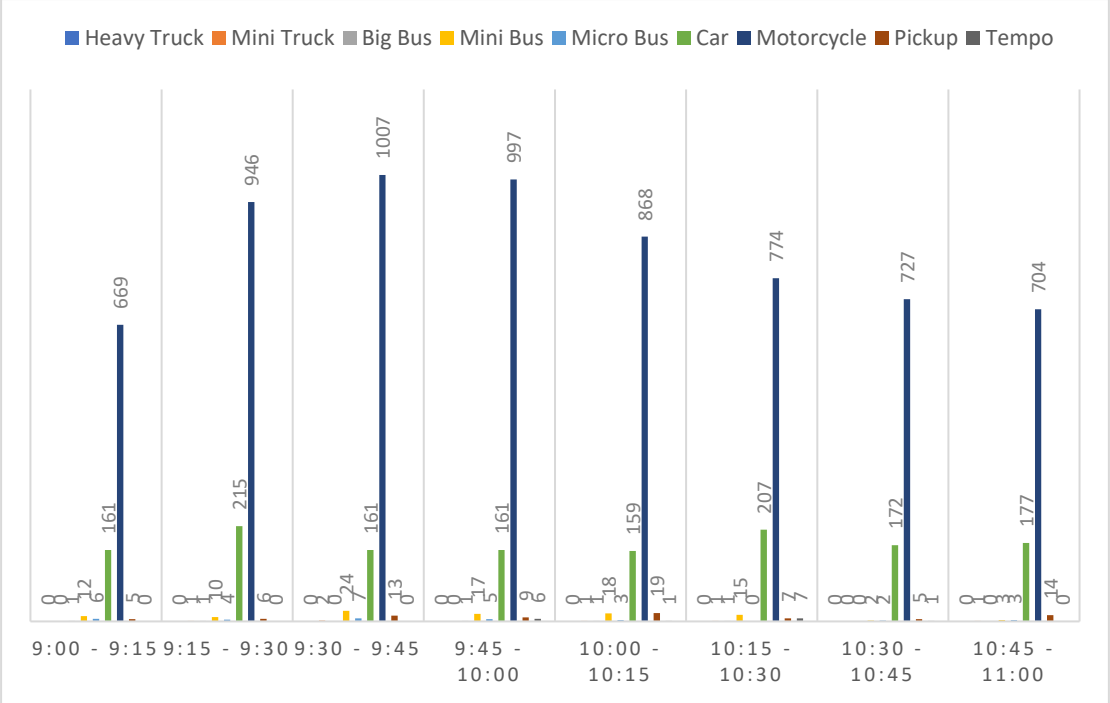


Figure 4 - 3 Traffic Volume: Tinkune Main Lane

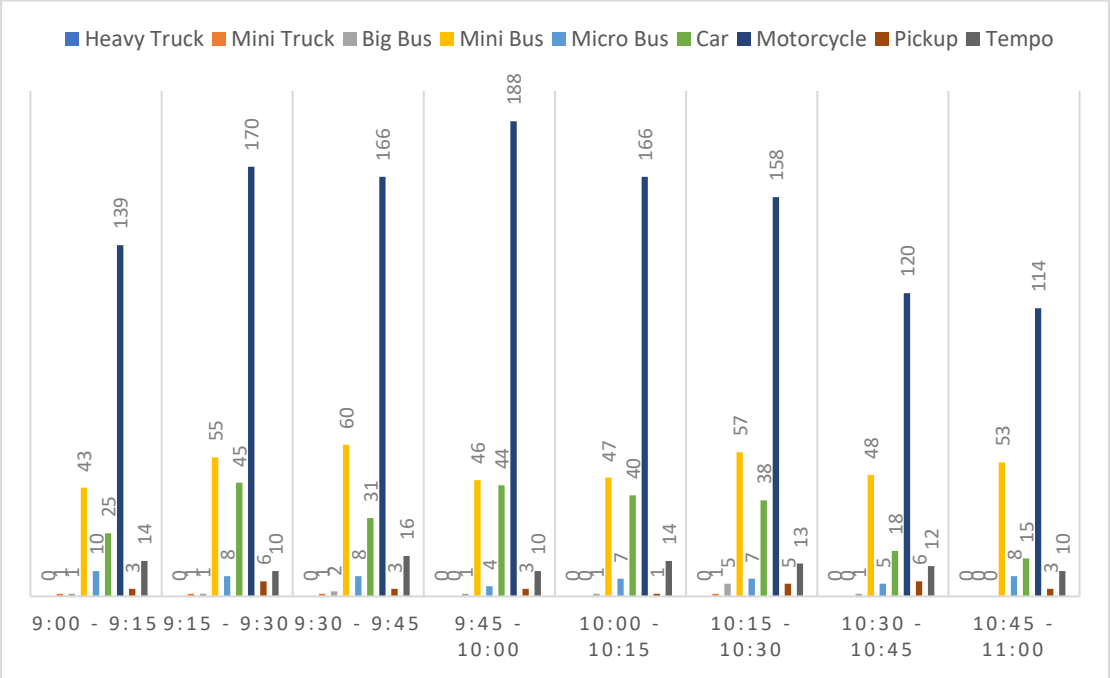


Figure 4 - 4 Traffic Volume: Tinkune Service Lane

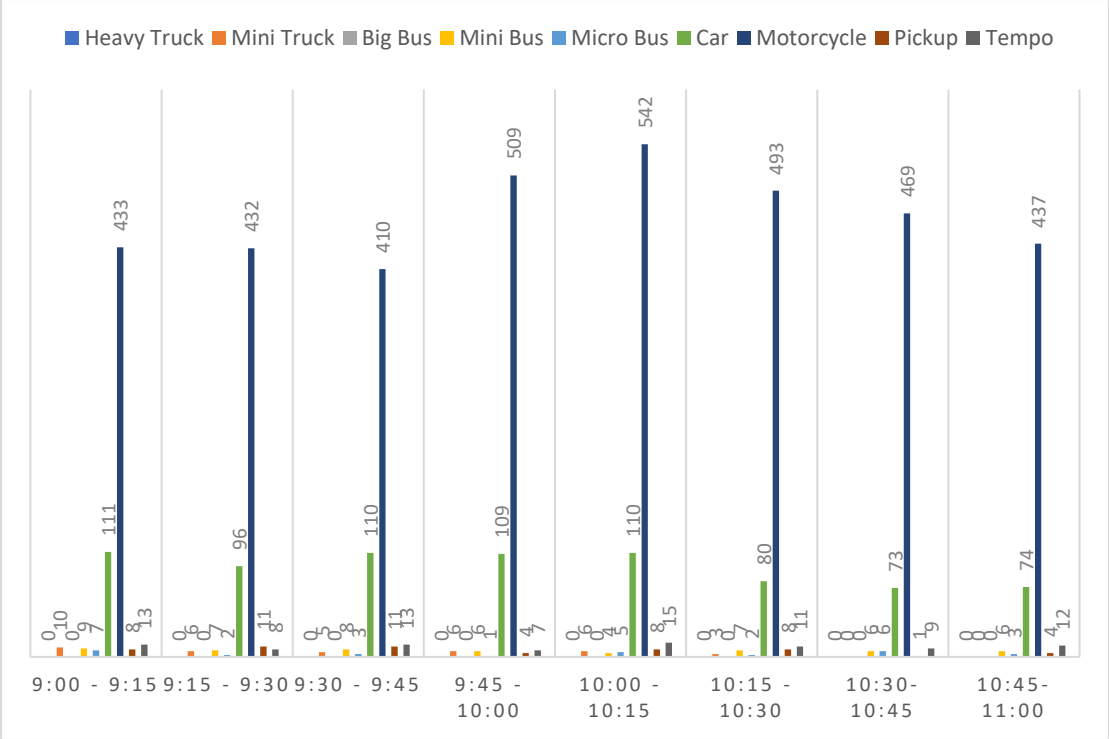


Figure 4 - 5 Traffic Volume: PuranoBaneshwor Lane

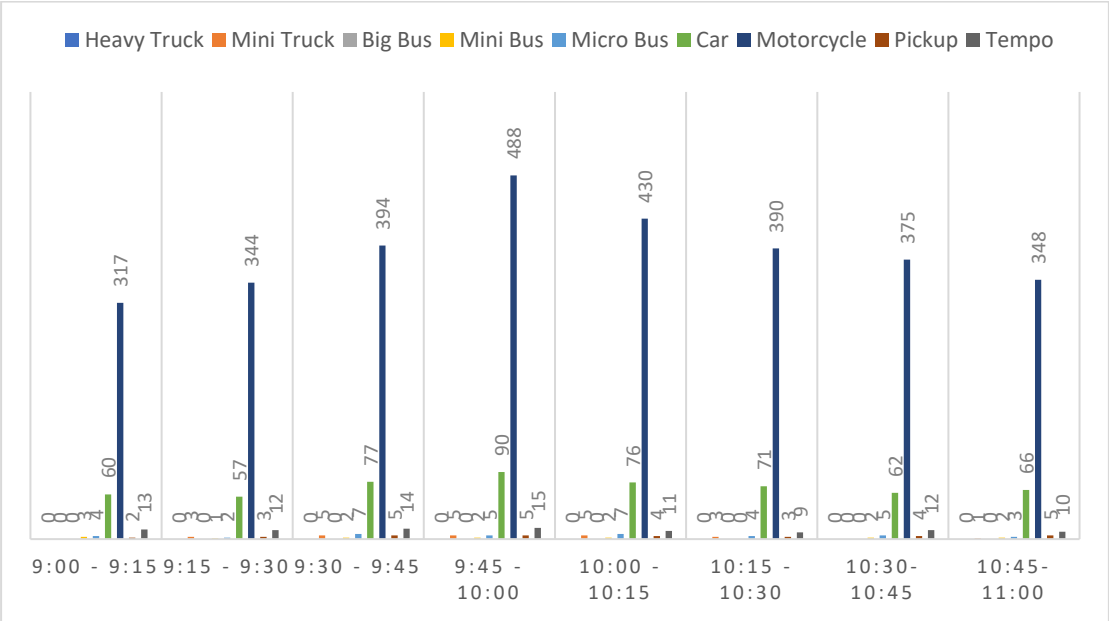


Figure 4 - 6 Traffic Volume: Sankhamul Lane

4.3 Relative Flows

The total volumes from Maitighar in the main lane was split towards Sankhamul, Purano Baneshwor, Tinkune (on Service lane) and Tinkune (on the Main lane). A sample data of relative flow is shown in *Figure 4 - 7*. *Figure 4 - 7* shows the relative flow of microbus from Maitighar Main Lane to respective lanes.

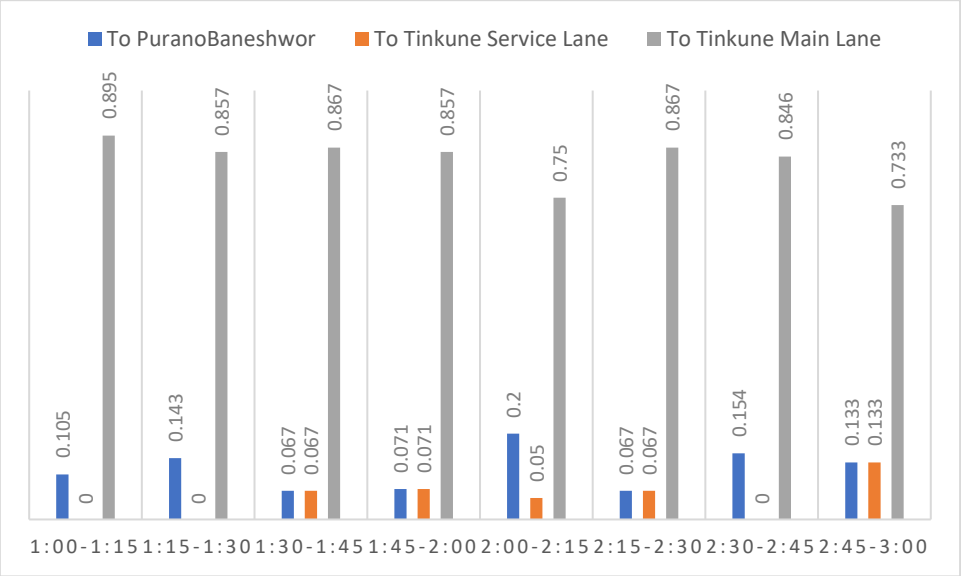


Figure 4 - 7 Relative Flows: Maitighar to Respective Lanes

The relative flow for Maitighar to Sankhamul is taken as unity as a separate right turning lane has been used for vehicular movement for that route. Similar calculations for other intersection legs were also performed. A detailed sample of relative flow has been presented in APPENDIX D Relative Flow.

4.4 Signal Timing Data

The video was repeatedly played several times to obtain the signal timing and phase data. Signal groups are taken as those intervals for which the vehicles on a particular direction stops. On average, total of 25 signal groups were prepared for through traffic on Maitighar lane, 26 signal groups for right turning traffic on Maitighar lane, 30 signal groups for through traffic on Tinkune lane, 45 signal groups for right turning traffic on Tinkune lane, 24 signal group for Sankhamul lane and PuranoBaneshwor lane for the total analysis period of two hours. The signal group was adjusted such that it reflects the field condition. A sample of Signal timing data has been presented in *Table 4 - 3*. *Table 4 - 3* presents the end time for green and red phases for vehicle moving from

Maitighar to Tinkune direction on Wednesday for 1:00 – 3:00 PM (i.e. For signal group, Maitighar Through 1, the vehicle moving from Maitighar towards Tinkune gets a STOP sign at 0 seconds and the green sign on 41st seconds). Similar signal timing data has been fed into VISSIM for other directional movement.

Table 4 - 3 Signal Timing Data

Signal group	Signal state sequence	Red (red) (End)	Green (green) (End)
Maitighar Through 1	Red-green	41	0
Maitighar Through 2	Red-green	391	157
Maitighar Through 3	Red-green	801	512
Maitighar Through 4	Red-green	1203	952
Maitighar Through 5	Red-green	1589	1336
Maitighar Through 6	Red-green	2118	1800
Maitighar Through 7	Red-green	2492	2277
Maitighar Through 8	Red-green	2718	2590
Maitighar Through 9	Red-green	3037	2829
Maitighar Through 10	Red-green	3310	3142
Maitighar Through 11	Red-green	3586	3417
Maitighar Through 12	Red-green	3789	3662
Maitighar Through 13	Red-green	3977	3866
Maitighar Through 14	Red-green	4130	4018
Maitighar Through 15	Red-green	4307	4197
Maitighar Through 16	Red-green	4542	4396
Maitighar Through 17	Red-green	4768	4629
Maitighar Through 18	Red-green	5004	4866
Maitighar Through 19	Red-green	5132	5051
Maitighar Through 20	Red-green	5280	5188
Maitighar Through 21	Red-green	5457	5358
Maitighar Through 22	Red-green	5659	5550
Maitighar Through 23	Red-green	5927	5742
Maitighar Through 24	Red-green	6223	6072
Maitighar Through 25	Red-green	6556	6309
Maitighar Through 26	Red-green	6818	6669
Maitighar Through 27	Red-green	7161	6967

4.5 Calibration and Validation of the Model

4.5.1 Calibration of Driving Behavior Parameters

Field data of three days were used as input for the calibration of the prepared model. Driving behavior parameters were altered so as to match the traffic volumes obtained from VISSIM with the field data. The calibrated driving behavior parameters are shown in *Table 4 - 4*.

Table 4 - 4 Calibrated Driving Behavior Parameters

SN	Parameters	Calibrated Values
1	Look ahead distance-min	30.00 m
2	Look back distance-min	5.00 m
3	Average standstill distance	0.30 m
4	Additive part of safety distance	0.19
5	Multiplicative part of safety distance	0.71
6	Min. headway (front/rear)	0.50 m

4.5.2 Calibration and Validation of the model for Traffic Volume

After the input has been fed into VISSIM, the simulation is run. The output obtained after simulation is compared with the input provided before simulation. The GEH statistics provided by ODOT as in *Eq. 2* is then used for calibration.

The Input Column in *Table 4 - 5* indicates the vehicle input fed into VISSIM and the Output Column indicates the vehicle volume obtained after simulation. The GEH is then calculated by using the formula provided by ODOT. The value of GEH < 5 indicates acceptable fit.

For GEH < 5, the cells are highlighted as green.

For $5 \leq GEH \leq 10$, the cells are highlighted as yellow.

For GEH > 10, the cells are highlighted as red.

A sample calibration of VISSIM Model for Traffic Volume (Field Volume and VISSIM output volume using GEH) is presented from *Table 4 - 5*. It can be seen that almost for

all vehicle types the GEH value lies below 5 (i.e. within acceptable range). Similarly, the calibration of VISSIM Model for Traffic Volume for other days and time have been shown in APPENDIX F Calibration of VISSIM Model for Traffic Volume Using GEH.

Table 4 - 5 Calibration of Traffic Volume using GEH

(Sunday 9:00 – 11:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	0	2	41	224	1	0	0	3	0	0	3	42	220	1	0	-	1.414	-	-	0.632	0.155	0.268	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	8	217	67	7	7	3	43	0	0	9	228	53	8	5	3	42	-	-	0.343	0.737	1.807	0.365	0.816	0.000	0.153
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	1	0	1	7	13	1	0	0	0	0	0	14	4	15	1	0	-	-	1.414	-	4.747	1.279	0.535	0.000	-
Maitighar (Main Lane) - PuranoBaneshwor	0	4	0	5	2	83	172	3	0	0	3	0	5	4	76	183	0	13	-	0.535	-	0.000	1.155	0.785	0.826	2.449	5.099
Maitighar (Main Lane) - Tinkune (Service Lane)	0	1	0	36	11	31	85	3	1	0	1	0	34	9	26	84	2	0	-	0.000	-	0.338	0.632	0.937	0.109	0.632	1.414
Maitighar (Main Lane) - Tinkune (Main Lane)	0	11	5	26	9	720	2457	35	1	0	12	5	27	9	717	2385	35	0	-	0.295	0.000	0.194	0.000	0.112	1.463	0.000	1.414
Maitighar - Sankhamul	0	8	0	1	20	136	587	7	0	0	8	0	1	20	134	569	7	0	-	0.000	-	0.000	0.000	0.172	0.749	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	42	14	138	685	10	1	0	0	0	44	0	129	678	10	1	-	-	-	0.305	5.292	0.779	0.268	0.000	0.000
PuranoBaneshwor - Tinkune (Main Lane)	0	8	0	6	3	192	1230	21	0	0	8	0	4	0	199	1224	21	1	-	0.000	-	0.894	2.449	0.501	0.171	0.000	1.414
PuranoBaneshwor - Maitighar (Main Lane)	0	10	0	4	1	186	476	4	0	0	11	0	4	6	176	447	4	0	-	0.309	-	0.000	2.673	0.743	1.350	0.000	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	50	167	0	0	0	0	0	0	4	41	175	0	0	-	-	-	-	0.535	1.334	0.612	-	-
PuranoBaneshwor - Sankhamul	0	18	0	1	8	197	1167	20	87	0	17	0	1	18	198	1110	18	78	-	0.239	-	0.000	2.774	0.071	1.689	0.459	0.991
Tinkune - PuranoBaneshwor	0	2	0	36	6	439	2922	42	0	0	2	0	36	6	438	2893	41	0	-	0.000	-	0.000	0.000	0.048	0.538	0.155	-
Tinkune (Main Lane) - Maitighar (Main Lane)	0	4	5	65	24	969	3718	36	15	0	4	5	65	24	947	3676	46	15	-	0.000	0.000	0.000	0.000	0.711	0.691	1.562	0.000
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	0	0	4	52	0	0	0	0	0	0	0	7	46	0	0	-	-	-	-	-	1.279	0.857	-	-
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	1.414	-	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	5	1	13	67	3	1	0	0	0	5	2	9	61	10	1	-	-	-	0.000	0.816	1.206	0.750	2.746	0.000
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	12	399	56	180	550	24	97	0	0	12	403	58	181	534	15	96	-	-	0.000	0.200	0.265	0.074	0.687	2.038	0.102
Tinkune (Service Lane) - Sankhamul	0	4	0	5	0	63	604	3	1	0	4	0	6	0	65	610	3	1	-	0.000	-	0.426	-	0.250	0.244	0.000	0.000
Sankhammul - PuranoBaneshwor	0	14	0	3	12	202	1550	13	95	0	14	0	2	3	205	1548	14	93	-	0.000	-	0.632	3.286	0.210	0.051	0.272	0.206
Sankhamul - Tinkune (Service Lane)	0	0	0	3	1	29	92	4	0	0	0	0	4	0	23	82	3	0	-	-	-	0.535	1.414	1.177	1.072	0.535	-
Sankhamul - Tinkune (Main Lane)	0	3	0	4	1	112	410	4	1	0	3	0	2	0	100	412	0	1	-	0.000	-	1.155	1.414	1.166	0.099	2.828	0.000
Sankhamul - Maitighar (Main Lane)	0	5	0	2	5	109	565	7	0	0	5	0	3	10	108	528	10	0	-	0.000	-	0.632	1.826	0.096	1.583	1.029	-
Sankhamul - Maitighar (Service Lane)	0	0	0	2	18	107	469	3	0	0	0	0	0	15	117	491	3	0	-	-	-	2.000	0.739	0.945	1.004	0.000	-
Total	**0**	**93**	**31**	**862**	**265**	**4016**	**18269**	**247**	**343**	**0**	**95**	**31**	**874**	**258**	**3950**	**17976**	**247**	**342**	-	**0.206**	**0.000**	**0.407**	**0.433**	**1.046**	**2.176**	**0.000**	**0.054**

The calibration of VISSIM Model for Traffic Volume for 5:00 – 7:00 AM, 9:00 – 11:00 AM and 1:00 – 3:00 PM is shown in *Figure 4 - 8*, *Figure 4 - 9* and *Figure 4 - 10* respectively.

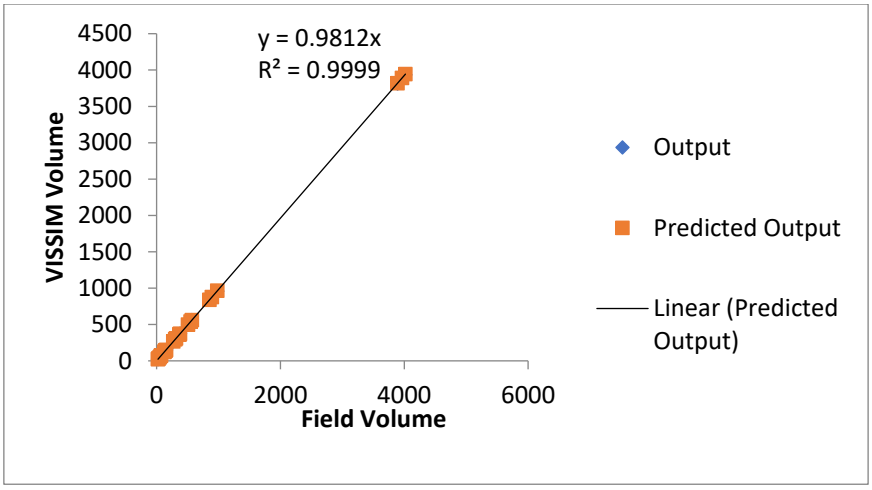


Figure 4 - 8 Calibration using three days data (5:00 – 7:00 AM)

R squared value after calibration was found to be 0.9999 which indicates 99.99 percent of variance of the field data is explained by the variance of the VISSIM output. Regression equation so obtained is presented in *Eq. 3*.

VISSIM Volume = 0.9812*Field Volume Eq. 3

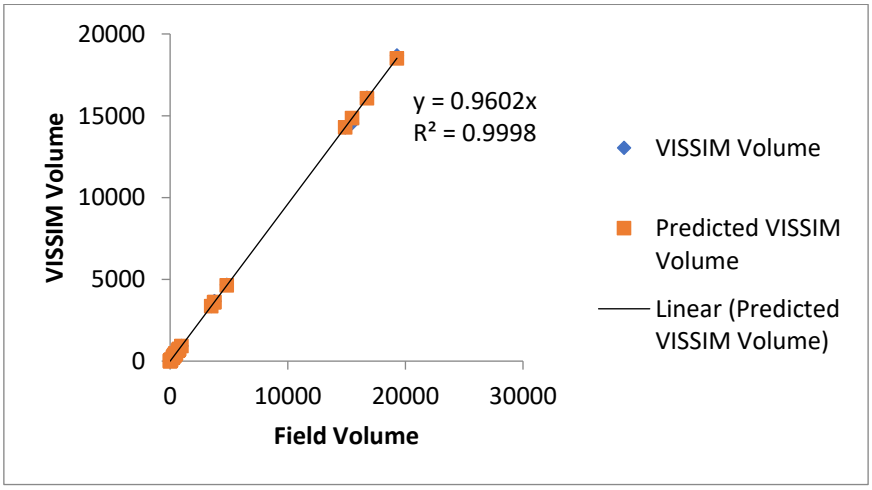


Figure 4 - 9 Calibration using four days data (9:00 - 11:00 AM)

R squared value after calibration was found to be 0.9998 which indicates 99.98 percent of variance of the field data is explained by the variance of the VISSIM output.

Regression equation so obtained is presented in *Eq. 4*.

VISSIM Volume = 0.9602*Field Volume Eq. 4

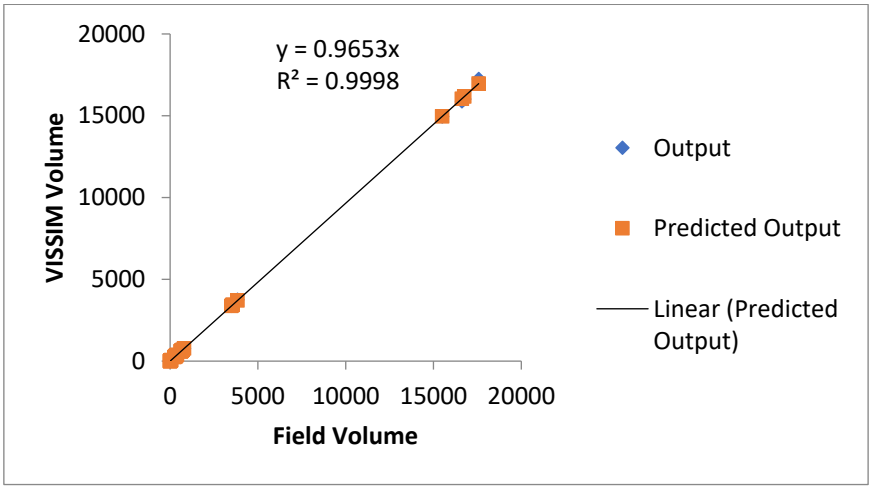


Figure 4 - 10 Calibration using four days data (1:00 - 3:00 PM)

R squared value after calibration was found to be 0.9998 which indicates 99.98 percent of variance of the field data is explained by the variance of the VISSIM output.

Regression equation so obtained is presented in *Eq. 5*.

VISSIM Volume = 0.9653*Field Volume Eq. 5

Data of the other two days were then used to validate the calibrated model and is shown in *Figure 4 - 11* for 5:00 – 7:00 AM, *Figure 4 - 12* for 9:00 – 11:00 AM and in *Figure 4 - 13* for 1:00 – 3:00 PM.

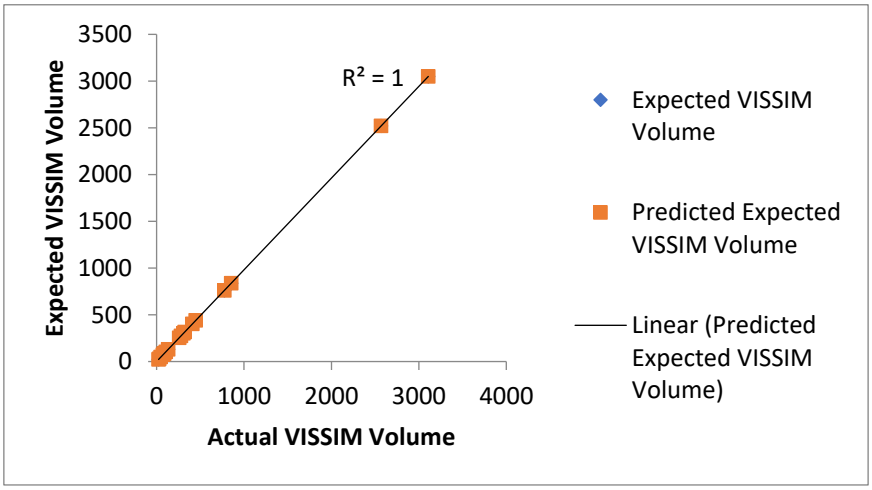


Figure 4 - 11 Validation using two days data (5:00 - 7:00 AM)

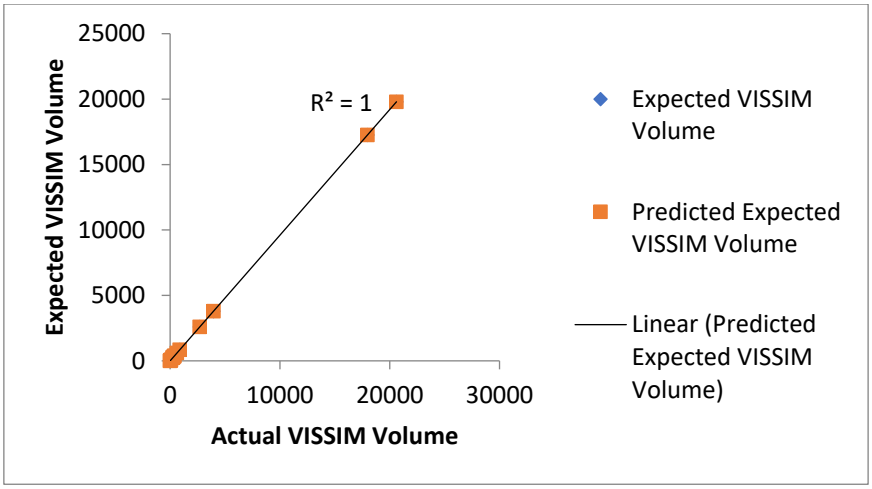


Figure 4 - 12 Validation using two days data (9:00-11:00 AM)

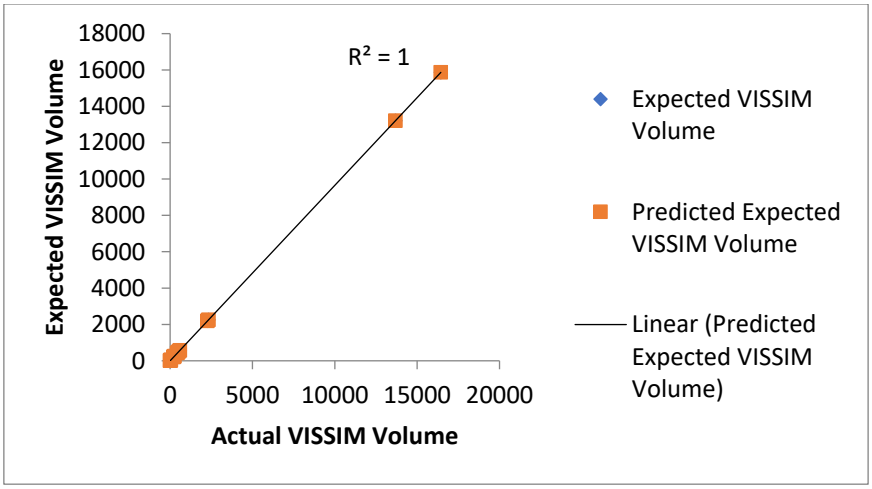


Figure 4 - 13 Validation using two days data (1:00-3:00 PM)

Considering total of eleven days data for time period 5:00 – 7:00 AM (3 days), 9:00 – 11:00 AM (4 days) and 1:00 – 3:00 PM (4 days), the calibration of VISSIM model and its validation is presented in *Figure 4 - 14* and *Figure 4 - 15* respectively.

R squared value after calibration was found to be 0.9998 which indicates 99.98 percent of variance of the field data is explained by the variance of the VISSIM output. Regression equation so obtained is presented in *Eq. 6.*

VISSIM Volume = 0.9631*Field Volume Eq. 6

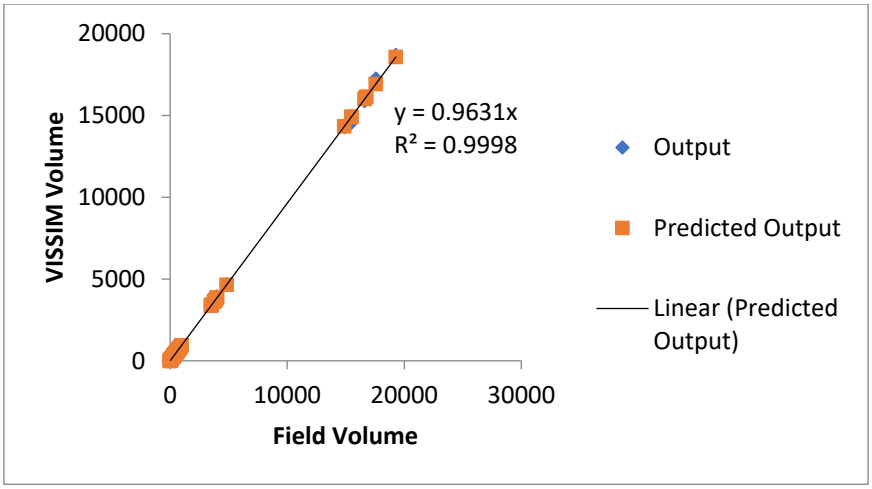


Figure 4 - 14 Calibration using four days data for all study period

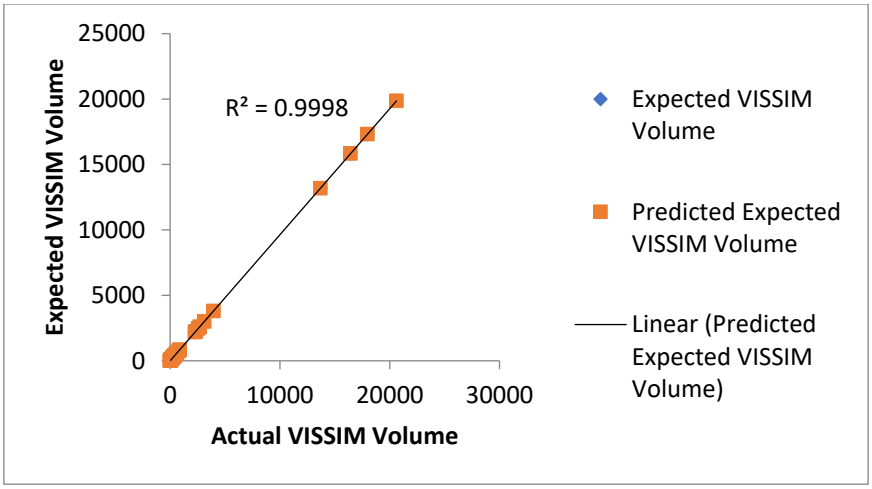


Figure 4 - 15 Validation using two days data for all study period

4.5.3 Calibration and Validation of the model for Average Travel Time

The average travel time for each vehicle types were obtained from the video. The obtained average travel time was then compared with the average travel time obtained from VISSIM after simulation. The calibration and validation of the model for average travel time was performed using regression analysis and has been presented in *Figure 4 - 16* and *Figure 4 - 17* respectively.

R-squared value after calibration using four days data was found to be 0.9782 which indicates 97.82 percent of variance of the field data is explained by the variance of the VISSIM output. The validation was done using two days data with a R-squared value

of 0.9655. The relationship between the field travel time and VISSIM travel time was obtained as in *Eq. 7*.

$$\text{Field Travel Time} = 1.0259 * \text{VISSIM Travel Time} \qquad \text{Eq. 7}$$

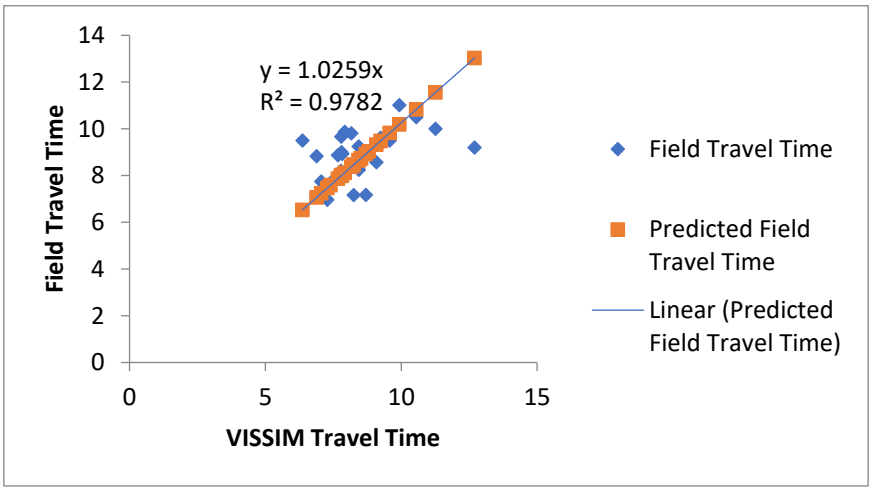


Figure 4 - 16 Calibration of VISSIM Model for Average Travel Time

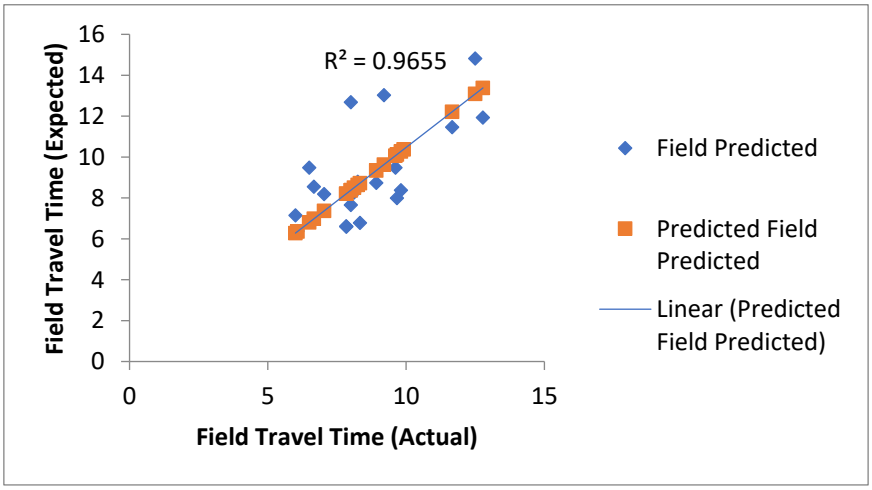


Figure 4 - 17 Validation of VISSIM Model for Average Travel Time

4.6 Processing with SSAM

The trajectories extracted from VISSIM was then fed as input into SSAM. The TTC and PET values as suggested by (Wu, et al., 2016) and (Muley, et al., 2018) was not used for the analysis in SSAM. It is due to the fact that the pedestrian-vehicle conflict has also been analyzed in the above-mentioned literatures. And as, pedestrian-vehicle conflict is totally different from the vehicle-vehicle conflicts so that the maximum TTC and PET thresholds need to be adjusted for pedestrian-vehicle conflicts (Wu, et al., 2016). Furthermore, the calibration of driving behavior parameter in Beijing yielded the values of additive part of desired safety distance and multiplicative part of desired safety distance as 4.40 and 3.72 respectively (Yu, et al., 2006) which is way more higher than that obtained by (S M P and Ramadurai, 2013) during the calibration of VISSIM for Indian Heterogenous Traffic Conditions as well as obtained in this research work itself. And higher values of additive part of desired safety distance and multiplicative part of desired safety distance indicates the higher distance between stopped cars (CDM Smith, 2014) and (Li, et al., 2013) which is not the existing scenario in case of New Baneshwor Intersection.

Considering that for minimum value of TTC and PET, the danger is imminent and the condition is safer for higher values of TTC and PET as suggested by (Vogel, 2003), analysis was done setting maximum TTC and PET as 1.50 seconds. However, for lower values of PET, the rear end conflicts were found to be underestimated. Therefore, maximum time-to collision was set as 1.5 seconds and maximum post-encroachment time as 5 seconds. Any conflicts with conflict angle less than 30 degrees were categorized as rear end conflicts, more than 85 degrees were categorized as crossing conflicts, else were categorized as lane changing conflicts. (Pu and Joshi, 2008). Details on input, output and filters have been shown in APPENDIX G Input and Output in SSAM.

4.7 Prediction of Conflicts and Evaluation

Thousands of conflicts were obtained while processing the trajectories obtained from VISSIM within the assigned values of PET and TTC using SSAM. The summary of conflicts has been presented in *Table 4 - 6.*

Table 4 - 6 Summary of Conflicts

Time	Day	Conflicts		
		Crossing	Rear end	Lane change
5:00 - 7:00 AM	Monday	144	1442	125
	Tuesday	122	1363	149
	Wednesday	139	1548	145
	Thursday	85	521	83
	Friday	81	854	97
Time	**Day**	**Conflicts**		
		Crossing	**Rear end**	**Lane change**
9:00 - 11:00 AM	Sunday	623	65200	2353
	Monday	502	76460	2500
	Tuesday	614	92604	2499
	Wednesday	299	108933	3828
	Thursday	398	78310	2286
	Friday	462	103953	3551
Time	**Day**	**Conflicts**		
		Crossing	**Rear end**	**Lane change**
1:00 - 3:00 PM	Sunday	261	52661	2719
	Monday	520	45560	2151
	Tuesday	376	55415	2518
	Wednesday	366	80288	3215
	Thursday	414	71482	2855
	Friday	485	88646	3115

The number of crossing conflicts was higher although the volume for 5:00 - 7:00 AM is comparatively less than for 9:00 - 11:00 AM and 1:00 - 3:00 PM. It is due to the absence of traffic police officer in the field to guide the movement of vehicles. The rear-end conflict was found to increase after 6:00 AM due to queuing of the vehicles beyond the stop line after the police officer arrives in the field.

The total number of vehicles being higher on Wednesday for 5:00 - 7:00 AM (6525), Wednesday and Friday for 9:00 - 11:00 AM (22800 and 25017 respectively), the rear-end conflict was also found to be higher on these days. The rear-end conflict depended

not only on the total vehicles but also on the vehicle arrival pattern and the phase duration. The rear-end conflicts were found to be lower on those days when the intersection was cleared quickly than on those days when the vehicles have to be in a queue for a longer duration. The effect of such arrival pattern and phase duration can be seen in case of Tuesday for time period 1:00 - 3:00 PM. The volume of Tuesday (23402) being higher than other days of the week, lesser rear-end conflicts have been seen.

The crossing conflicts were found to increase on those days when vehicles still tend to move even after the traffic police officer indicated to stop. Such crossing conflicts were mostly concentrated on the link joining Maitighar (Main Lane) to Tinkune (Main Lane) and the link joining Tinkune (Main Lane) to Maitighar (Main Lane). This was due to the movement of right-turning vehicles from Tinkune towards Purano Baneshwor, from Purano Baneshwor towards Maitighar and from Maitighar towards Sankhamul. The considerable effect of right-turning vehicles from Sankhamul towards Tinkune was not seen due to lower traffic volume.

The lane changing conflicts were seen maximum during merging. The interaction of vehicles moving from Maitighar (Main Lane) to Tinkune (Main Lane) and Purano Baneshwor to Tinkune (Main Lane) suffered maximum lane changing conflicts. The number of lane-changing conflicts observed due to interaction of vehicles from Tinkune to Purano Baneshwor and Sankhamul to Purano Baneshwor was also high. The lane changing conflicts were reported higher on those days when the relative flow of vehicles from Purano Baneshwor on to the Tinkune (Main Lane) was higher.

The potential crashes per year considering morning peak hour can be calculated using the following formula suggested by (Gettman, et al., 2008) as in *Eq. 1*.

The summary of conflicts per morning peak hour with potential crashes is shown in *Table 4 - 7*. The location of conflicts has been presented in APPENDIX G Input and Output in SSAM.

Table 4 - 7 Summary of Conflict with potential Crashes

Time	Day	Conflicts/hour			Crashes/year			Average Crashes/day		
		Crossing	Rear-end	Lane changing	Crossing	Rear-end	Lane changing	Crossing	Rear-end	Lane changing
Morning Peak Hour	Sunday	249	33223	1455	299	310076	3661	1	850	10
	Monday	201	36415	1374	221	353186	3376	1	968	9
	Tuesday	383	36595	1055	551	355666	2320	2	974	6
	Wednesday	160	46290	1754	160	496447	4773	1	1360	13
	Thursday	206	23833	978	229	193537	2084	1	530	6
	Friday	121	37110	1536	107	362789	3954	1	994	11

.

4.8 Validation of Predicted Conflicts

The validation of simulated conflicts was done through field validation as done in reviewed literatures. Linear regression analysis was performed to study the relationship between the simulated and observed conflicts in the field. The results of the analysis have been presented in *Figure 4 - 18*, *Figure 4 - 19*, *Figure 4 - 20* and *Figure 4 - 21* for crossing, lane-changing, rear-end and total conflicts respectively.

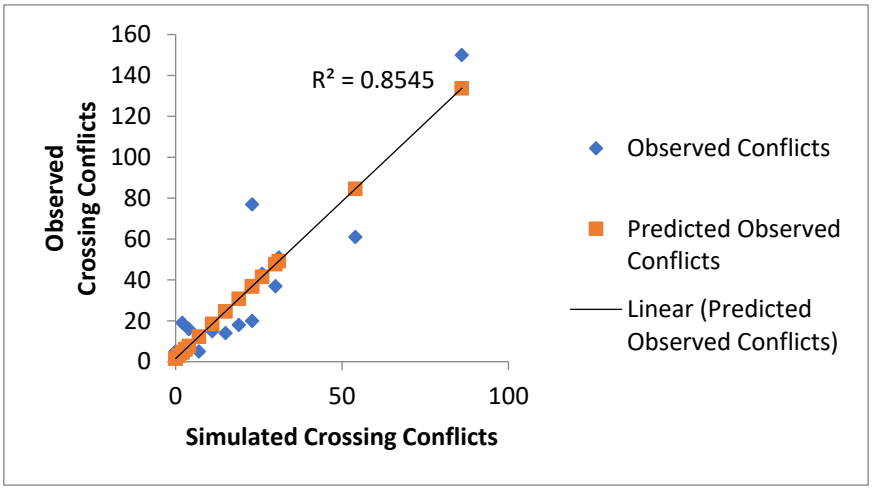


Figure 4 - 18 Validation of Crossing Conflicts

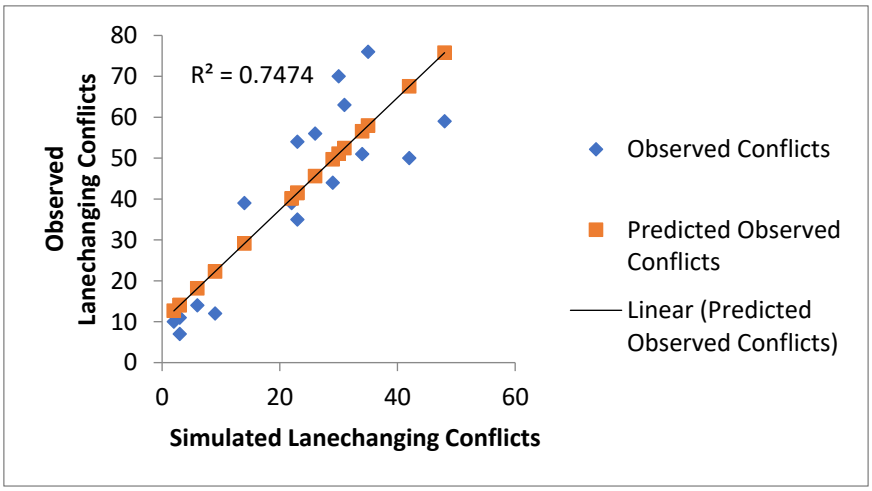


Figure 4 - 19 Validation of Lane-changing Conflicts

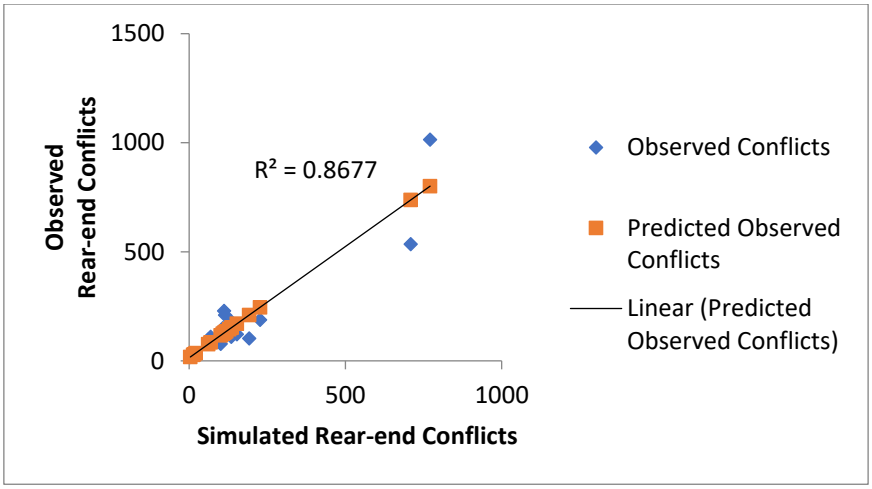


Figure 4 - 20 Validation of Rear-end Conflicts

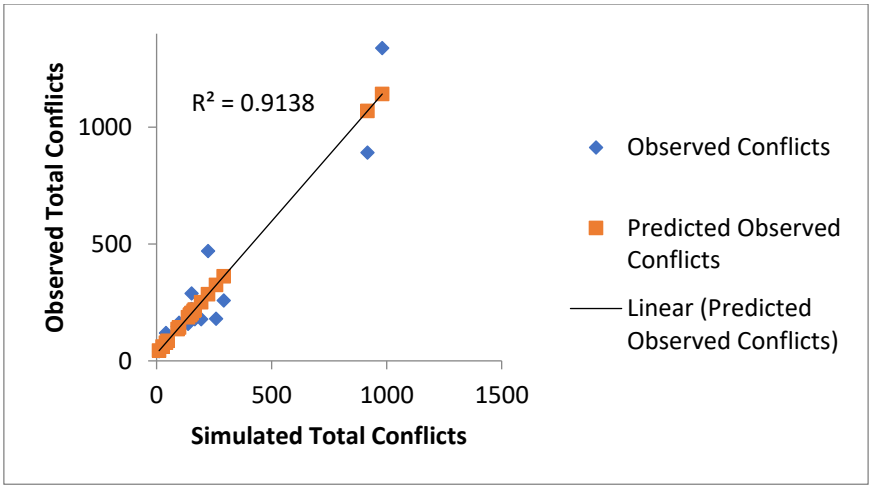


Figure 4 - 21 Validation of Total Simulated Conflicts

It was found that the relationship between the simulated and observed conflicts was found to be statistically significant with a R-squared value of 0.9138 for total conflicts which indicates 91.38 percent of the variance of the observed conflicts is explained by the variance of the simulated conflicts. The R-squared value for crossing, lane-changing and rear-end conflicts were found to be 0.8545, 0.7474 and 0.8677 respectively.

4.9 Scenario Analysis

For the reduction of conflicts, alternative solutions needed to be sought out. So, the scenario analysis has been performed for suggesting a suitable alternative for the improvement in the safety performance of the intersection. The total vehicles passing and types of conflicts under various scenarios were compared with the base volume obtained after simulation. The scenario resulting in least number of conflicts was selected as a suitable alternative for the betterment. For cases, where the total conflicts were found to increased, the contribution of particular scenario on the reduction of crossing conflicts has been considered.

4.9.1 Scenarios

4.9.1.1 Scenario 1

The movement of vehicles were restricted while performing scenario 1. The vehicles moving from Sankhamul to Tinkune and Purano Baneshwor to Maitighar were allowed to move into the main lane only. Similarly, the vehicles from Purano Baneshwor to Tinkune were allowed to move only in the service lane.

4.9.1.1.1 Scenario A

Scenario 1 analysis reduced the total number of conflicts with comparable volume as that of the base volume. So, it led to the analysis of scenario A, where the movement of vehicles were guided as:

a) Tinkune to Sankhamul from service lane only.
b) Maitighar to Purano Baneshwor from service lane only.
c) Purano Baneshwor to Tinkune on service lane only.

However, this analysis didn't result in reduction of conflicts. The volume also differed by much from the base condition.

4.9.1.1.2 Scenario B

The priority rule was revised. The yielding points were set at the stop line itself instead of allowing the vehicles to yield at the center of the intersection that had resulted in a greater number of conflicts during the analysis for the base condition. This resulted in lesser conflicts but a higher volume than that of scenario A.

4.9.1.2 Scenario 2

After performing the analysis under scenario B, it was felt that, the proper signal timing with an optimized amber time could result in fewer conflicts than before. So, the design of traffic signal was done taking into account the traffic volume of Friday for 9:00 – 11:00 AM. Details on traffic signal has been presented in APPENDIX H Scenario Analysis.

4.9.1.3 Scenario 3

The signal timing designed considering the traffic volume for 9:00 – 11:00 AM was found to be efficient for 5:00 – 7:00 AM. However, it didn't work well for 1:00 – 3:00 PM as the traffic volume for Tinkune to Maitighar was higher than for Maitighar to Tinkune and also for the study period of 9:00 – 11:00 AM for those days on which the vehicle arrival pattern was different from that of Friday for which the traffic signal was designed. So, an individual signal timing for each day was designed and used as a scenario for the analysis with amber time encroachment.

4.9.1.4 Scenario 4

The scenario was analyzed using the traffic signal designed for scenario 3. However, a condition was implemented where the amber time was not encroached.

4.9.1.5 Scenario 5 – Scenario 7

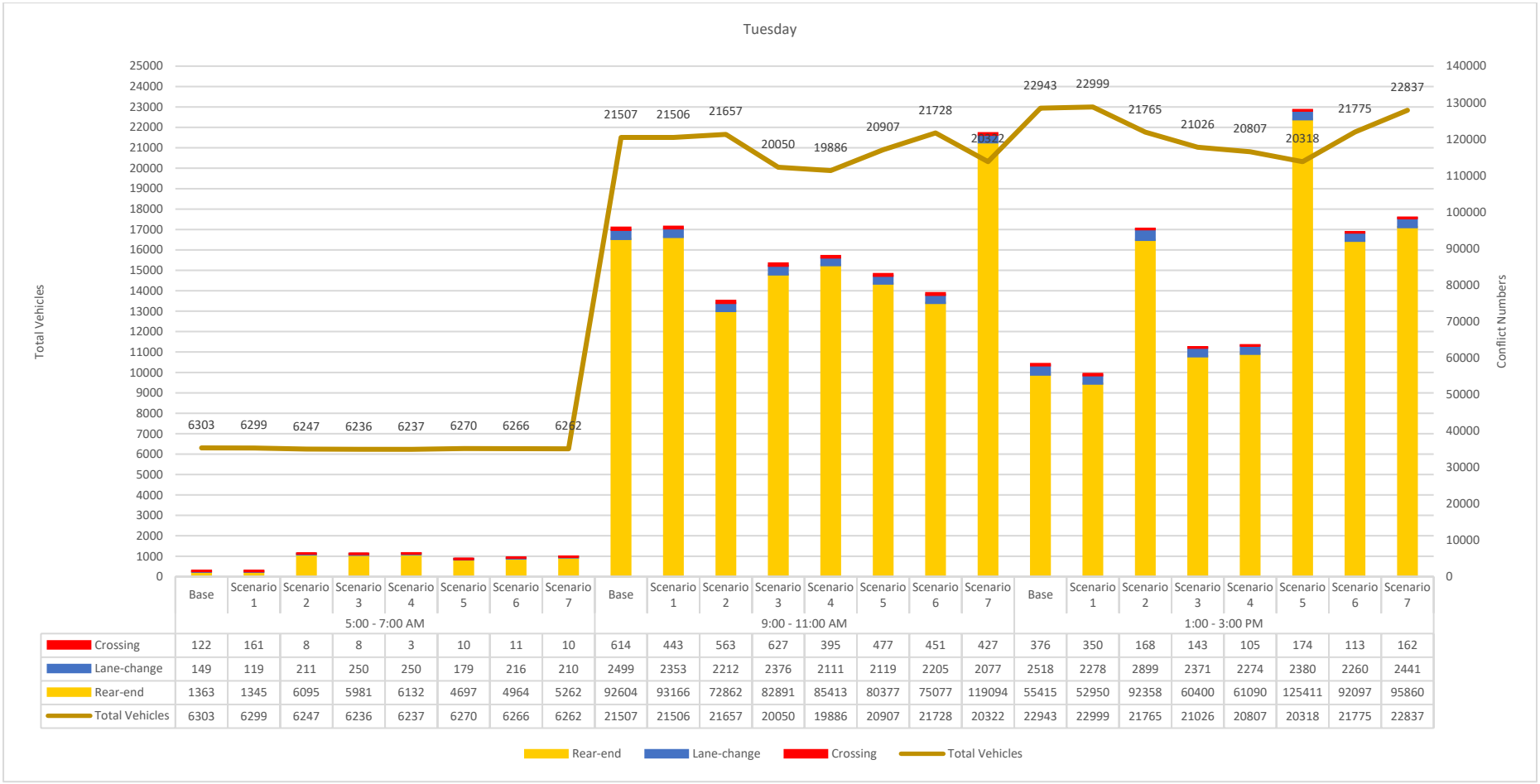
It was felt that individual signal timing for each day for different time period was not practical to be implemented in the field. So, a single signal design was thought to be used. Scenario 5 – scenario 7 includes signal timing with different cycle lengths and amber time designed so as to accommodate the initial base volume and to ensure that the objective of reduction in conflict numbers is achieved.

4.9.2 Comparison of Scenarios

The output obtained by implementing each scenario into the model is then compared with the base condition for the selection of suitable scenario that leads to the reduction of conflicts. The comparison of various scenarios has been presented in *Table 4 - 8* and its graphical representation is presented in *Figure 4 - 22* for Tuesday. The similar tabular and graphical representations for other days are presented in APPENDIX H Scenario Analysis.

Table 4 - 8 Comparison of different scenarios (Tuesday)

Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Tuesday	Base	6303	122	1363	149	1634					
		Scenario 1	6299	161	1345	119	1625	-0.063%	31.967%	-1.321%	-20.134%	-0.551%
		Scenario 2	6247	8	6095	211	6314	-0.888%	-93.443%	347.175%	41.611%	286.414%
		Scenario 3	6236	8	5981	250	6239	-1.063%	-93.443%	338.811%	67.785%	281.824%
		Scenario 4	6237	3	6132	250	6385	-1.047%	-97.541%	349.890%	67.785%	290.759%
		Scenario 5	6270	10	4697	179	4886	-0.524%	-91.803%	244.607%	20.134%	199.021%
		Scenario 6	6266	11	4964	216	5191	-0.587%	-90.984%	264.197%	44.966%	217.687%
		Scenario 7	6262	10	5262	210	5482	-0.650%	-91.803%	286.060%	40.940%	235.496%
9:00 - 11:00 AM		Base	21507	614	92604	2499	95717					
		Scenario 1	21506	443	93166	2353	95962	-0.005%	-27.850%	0.607%	-5.842%	0.256%
		Scenario 2	21657	563	72862	2212	75637	0.697%	-8.306%	-21.319%	-11.485%	-20.979%
		Scenario 3	20050	627	82891	2376	85894	-6.775%	2.117%	-10.489%	-4.922%	-10.263%
		Scenario 4	19886	395	85413	2111	87919	-7.537%	-35.668%	-7.765%	-15.526%	-8.147%
		Scenario 5	20907	477	80377	2119	82973	-2.790%	-22.313%	-13.204%	-15.206%	-13.314%
		Scenario 6	21728	451	75077	2205	77733	1.028%	-26.547%	-18.927%	-11.765%	-18.789%
		Scenario 7	20322	427	119094	2077	121598	-5.510%	-30.456%	28.606%	-16.887%	27.039%
1:00 - 3:00 PM		Base	22943	376	55415	2518	58309					
		Scenario 1	22999	350	52950	2278	55578	0.244%	-6.915%	-4.448%	-9.531%	-4.684%
		Scenario 2	21765	168	92358	2899	95425	-5.134%	-55.319%	66.666%	15.131%	63.654%
		Scenario 3	21026	143	60400	2371	62914	-8.355%	-61.968%	8.996%	-5.838%	7.898%
		Scenario 4	20807	105	61090	2274	63469	-9.310%	-72.074%	10.241%	-9.690%	8.849%
		Scenario 5	20318	174	125411	2380	127965	-11.441%	-53.723%	126.312%	-5.481%	119.460%
		Scenario 6	21775	113	92097	2260	94470	-5.091%	-69.947%	66.195%	-10.246%	62.016%
		Scenario 7	22837	162	95860	2441	98463	-0.462%	-56.915%	72.986%	-3.058%	68.864%



	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	5:00 - 7:00 AM								9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	122	161	8	8	3	10	11	10	614	443	563	627	395	477	451	427	376	350	168	143	105	174	113	162
Lane-change	149	119	211	250	250	179	216	210	2499	2353	2212	2376	2111	2119	2205	2077	2518	2278	2899	2371	2274	2380	2260	2441
Rear-end	1363	1345	6095	5981	6132	4697	4964	5262	92604	93166	72862	82891	85413	80377	75077	119094	55415	52950	92358	60400	61090	125411	92097	95860
Total Vehicles	6303	6299	6247	6236	6237	6270	6266	6262	21507	21506	21657	20050	19886	20907	21728	20322	22943	22999	21765	21026	20807	20318	21775	22837

Figure 4 - 22 Comparison of different scenarios (Tuesday)

Existing condition is preferred for the study period of 5:00 – 7:00 AM and the best scenarios proposed for each individual day has been presented in *Table 4 - 9*.

Table 4 - 9 Selection of suitable scenario for implementation

Time	Day	Best Scenario	Percentage Change				
			Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
9:00 - 11:00 AM	Sunday	Scenario 2	-3.667%	-75.281%	0.334%	-4.462%	-0.522%
		Scenario 4	-5.338%	-67.816%	-14.907%	-32.622%	-16.021%
	Monday	Scenario 2	-16.704%	-81.275%	-26.283%	-10.200%	-26.124%
		Scenario 4	-22.188%	-88.048%	-39.190%	-22.720%	-38.981%
	Tuesday	Scenario 2	0.697%	-8.306%	-21.319%	-11.485%	-20.979%
		Scenario 4	-7.537%	-35.668%	-7.765%	-15.526%	-8.147%
		Scenario 6	1.028%	-26.547%	-18.927%	-11.765%	-18.789%
	Wednesday	Scenario 2	0.531%	-27.425%	-10.171%	-12.435%	-10.294%
		Scenario 4	-3.005%	-70.903%	-12.435%	-14.289%	-12.653%
	Thursday	Scenario 2	-1.618%	-69.598%	-15.924%	-2.975%	-15.822%
		Scenario 4	-14.913%	-68.844%	-8.949%	-16.842%	-9.466%
		Scenario 6	-0.579%	-69.095%	-11.377%	-32.502%	-12.256%
	Friday	Scenario 2	-3.146%	-62.338%	-3.612%	-12.419%	-4.153%
		Scenario 4	-12.346%	-76.840%	-3.138%	-20.867%	-4.036%
		Scenario 5	-10.424%	-68.615%	-7.197%	-41.003%	-8.571%
1:00 - 3:00 PM	Sunday	Scenario 4	-5.338%	-67.816%	-14.907%	-32.622%	-16.021%
		Scenario 7	0.473%	-69.349%	-26.082%	-43.950%	-27.158%
	Monday	Scenario 2	0.151%	-66.731%	2.248%	-24.082%	0.330%
		Scenario 7	2.161%	-75.769%	-33.112%	-40.539%	-33.904%
	Tuesday	Scenario 1	0.244%	-6.915%	-4.448%	-9.531%	-4.684%
		Scenario 4	-9.310%	-72.074%	10.241%	-9.690%	8.849%
		Scenario 7	-0.462%	-56.915%	72.986%	-3.058%	68.864%
	Wednesday	Scenario 3	-4.057%	-63.934%	-11.769%	-13.095%	-12.047%
		Scenario 4	-4.568%	-68.579%	-8.611%	-15.272%	-9.129%
		Scenario 7	0.112%	-45.628%	90.894%	0.218%	86.822%
	Thursday	Scenario 4	-5.169%	-77.536%	-14.994%	-29.807%	-15.906%
		Scenario 7	1.395%	-64.010%	-20.846%	-31.243%	-21.482%
	Friday	Scenario 2	-10.261%	-66.186%	-3.846%	-26.067%	-4.924%
		Scenario 7	-0.753%	-64.124%	39.243%	-3.660%	37.250%

From *Table 4 - 9,* it can be seen that for the study period of 9:00 – 11:00 AM, the preferred scenarios are scenario 2 and scenario 4. Similarly, for 1:00 – 3:00 PM, the best scenario was found to be scenario 4 and scenario 7. The implementation of different signals designed as per total volume for each day as stated in scenario 4 may not be feasible. Hence scenario 2 is preferred for the study period of 9:00 – 11:00 AM in case scenario 4 cannot be implemented but no such single scenario was found suitable for the study period of 1:00 – 3:00 PM on each day. However, scenario 7 can be adopted considering its contribution in reduction of crossing conflicts.

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 Conclusion and Recommendation

It can be seen that 1 crossing crash, 9 lane-changing crashes and 945 rear-end crashes are likely to occur, which is high. The crossing conflict is concentrated near the intersection as no effective clearance time has been provided after each phase to clear vehicles remaining in the intersection. The number of rear-end conflict is high due to lesser spacing between vehicles and congestion. It is also due to wider area of the intersection selected for the analysis. Such rear-end conflict involves damage only crashes which generally goes unreported. Few lane-changing conflicts can also be seen. It can be seen that for the limited traffic facilities provided, with the increase in traffic volume, the rear-end conflicts tend to increase. However, the severity of conflicts goes on decreasing as the velocity of the interacting vehicle decreases with higher traffic volume. The reduction of conflicts can be done by providing a longer clearance time. Scenario analysis was performed by bringing out changes in the traffic facilities so as to find out a better alternative for the improvement of safety performance. It was found that the number of crossing conflicts can be decreased by 88%(maximum), lane-changing conflicts by 40%(maximum) and rear-end conflicts by 39%(maximum) if the traffic signals are designed as per the changing traffic volume for each day rather than implementing the same fixed time traffic signal on each day. Traffic signals with cycle length of 180 seconds and 90 seconds for the study period 9:00 – 11:00 AM and 1:00 – 3:00 PM as in scenario 4 and scenario 7 is recommended if the implementation of traffic signal as per the traffic volume for each day is not feasible. However, existing condition may prevail for the study period of 5:00 – 7:00 AM.

5.2 Future Work for other Researchers

1. Study of pedestrian-vehicle interaction taking pedestrian modelling into account.
2. The type of interacting vehicle can be taken into consideration so that the most vulnerable of crashes can be identified.
3. The movement of vehicles from service lane to the main lane and vice-versa within a particular intersection leg has not been considered throughout this study. This can also be taken into account on other researches.

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APPENDICES

APPENDIX A Classified Volume Count

Friday

Maitighar - Tinkune (Sample Data)

Start Time	Stop Time	Truck										Bus														
		Heavy					Mini					Big					Mini					Micro				
		S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T
9:00	9:15					0				3	3	3		0	0	3	20		1	8	29	4		1	8	13
9:15	9:30					0				1	1	2		0	1	3	20		10	6	36	7		1	6	14
9:30	9:45					0				1	1	1		1	0	2	31	1	6	0	38	5	1	1	9	16
9:45	10:00					0				0	0	2		0	0	2	26	1	5	2	34	10	1	3	0	14
10:00	10:15					0				0	0	1		1	0	2	28		5	0	33	6		1	5	12
10:15	10:30					0				0	0	2		1	0	3	32		0	0	32	7	1		0	8
10:30	10:45					0				0	0	2		0	2	4	26		3	7	36	6			1	7
10:45	11:00					0				1	1	1		0	1	2	30		1	3	34	9			2	11
1:00	1:15					0				1	1	1			3	4	27		8	3	38	5			17	22
1:15	1:30					0					0	2			0	2	19		3	2	24	8			18	26
1:30	1:45					0				1	1	0			3	3	22	2	3	8	35	7		1	13	21
1:45	2:00					0				2	2	2			0	2	28		2	8	38	9		1	12	22
2:00	2:15					0					0	1		1	0	2	32		2	0	34	6		1	15	22
2:15	2:30					0					0	0			2	2	18		3	12	33	5		1	13	19
2:30	2:45					0					0	1			2	3	24		6	1	31	7			11	18
2:45	3:00					0				1	1	1			2	3	23	1	6	8	38	9		2	11	22

Start Time	Stop Time	Car					Motorcycle					Pickup					Tempo				
		S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T	S-S	S-M	M-S	M-M	T
9:00	**9:15**	0	2	5	76	83	2	2	6	217	227				11	11	3			0	3
9:15	**9:30**	1		5	79	85	4	2	9	236	251			1	12	13	4			1	5
9:30	**9:45**	1	2	7	92	102	2	2	11	278	293				10	10	3		1	0	4
9:45	**10:00**	2		5	92	99	7	2	7	332	348				8	8	6		4	0	10
10:00	**10:15**	1	1	3	69	74	3	2	17	215	237				7	7	3		1	0	4
10:15	**10:30**	2	1	2	78	83	6	4	8	273	291				3	3	4		1	0	5
10:30	**10:45**	3			76	79	7	3	10	257	277				3	3	6			0	6
10:45	**11:00**	2	2	5	90	99	2	4	24	304	334				8	8	4		1	1	6
1:00	**1:15**	1	1	4	115	121	2	4	19	449	474			2	22	24	3			3	6
1:15	**1:30**	3	1	8	97	109	4	6	11	386	407			1	18	19	4			2	6
1:30	**1:45**	2	1	7	103	113	6	3	13	412	434				25	25	4			2	6
1:45	**2:00**	1		7	76	84	5	8	12	386	411		1	1	17	19	6			0	6
2:00	**2:15**	0		3	99	102	8	3	20	522	553				25	25	2			4	6
2:15	**2:30**	2	1	2	104	109	2	4	14	497	517				20	20	4		1	4	9
2:30	**2:45**	1	3	9	82	95	3	8	10	409	430				13	13	5		1	1	7
2:45	**3:00**	0	3	3	105	111	5	7	14	558	584				13	13	3			5	8

S-S: Service Lane to Service Lane, **S-M**: Service Lane to Main Lane, **M-S**: Main Lane to Service Lane, **M-M**: Main Lane to Main Lane, **T**: Total

Maitighar to Tinkune

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	3	3	29	13	83	227	11	3
9:15	**9:30**	0	1	3	36	14	85	251	13	5
9:30	**9:45**	0	1	2	38	16	102	293	10	4
9:45	**10:00**	0	0	2	34	14	99	348	8	10
10:00	**10:15**	0	0	2	33	12	74	237	7	4
10:15	**10:30**	0	0	3	32	8	83	291	3	5
10:30	**10:45**	0	0	4	36	7	79	277	3	6
10:45	**11:00**	0	1	2	34	11	99	334	8	6
1:00	**1:15**	0	1	4	38	22	121	474	24	6
1:15	**1:30**	0	0	2	24	26	109	407	19	6
1:30	**1:45**	0	1	3	35	21	113	434	25	6
1:45	**2:00**	0	2	2	38	22	84	411	19	6
2:00	**2:15**	0	0	2	34	22	102	553	25	6
2:15	**2:30**	0	0	2	33	19	109	517	20	9
2:30	**2:45**	0	0	3	31	18	95	430	13	7
2:45	**3:00**	0	1	3	38	22	111	584	13	8

Maitighar to PuranoBaneshwor

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	1	0	1	0	7	40	0	0
9:15	**9:30**	0	0	0	0	0	10	38	0	0
9:30	**9:45**	0	1	0	1	0	10	55	2	1
9:45	**10:00**	0	1	0	2	1	11	49	1	0
10:00	**10:15**	0	0	0	1	2	8	54	2	0
10:15	**10:30**	0	1	0	0	0	11	67	0	1
10:30	**10:45**	0	0	0	0	0	18	67	0	0
10:45	**11:00**	0	0	0	0	0	8	70	1	0
1:00	**1:15**	0	0	0	0	2	17	90	4	0
1:15	**1:30**	0	0	0	0	3	18	76	2	0
1:30	**1:45**	0	1	0	0	1	18	86	4	0
1:45	**2:00**	0	2	0	0	1	19	61	1	0
2:00	**2:15**	0	0	0	0	4	23	81	0	0
2:15	**2:30**	0	0	0	1	1	22	56	0	0
2:30	**2:45**	0	1	0	2	2	17	77	4	0
2:45	**3:00**	0	0	0	0	2	21	100	1	0

Maitighar to Sankhamul

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	0	0	1	2	23	62	7	0
9:15	**9:30**	0	0	0	1	3	18	56	3	0
9:30	**9:45**	0	0	0	0	3	14	88	1	0
9:45	**10:00**	0	0	0	0	2	21	69	0	0
10:00	**10:15**	0	0	0	0	1	14	63	1	0
10:15	**10:30**	0	0	0	0	4	17	83	2	0
10:30	**10:45**	0	0	0	1	1	9	47	2	0
10:45	**11:00**	0	0	0	0	3	12	54	2	0
1:00	**1:15**	0	0	0	0	3	16	95	2	0
1:15	**1:30**	0	0	1	1	5	13	97	6	0
1:30	**1:45**	0	0	0	0	3	16	72	2	0
1:45	**2:00**	0	0	0	0	5	22	80	4	0
2:00	**2:15**	0	0	0	1	4	16	109	0	0
2:15	**2:30**	0	0	0	0	3	19	92	5	0
2:30	**2:45**	0	0	0	0	2	18	87	0	0
2:45	**3:00**	0	0	0	1	4	15	122	1	0

Tinkune to Maitighar

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	2	3	28	16	134	574	8	8
9:15	**9:30**	0	0	4	35	17	170	627	18	16
9:30	**9:45**	0	0	4	50	13	159	824	20	17
9:45	**10:00**	0	0	3	31	13	117	968	20	10
10:00	**10:15**	0	0	5	45	13	117	801	13	13
10:15	**10:30**	0	1	3	57	16	135	736	30	10
10:30	**10:45**	0	0	6	40	16	108	555	23	11
10:45	**11:00**	0	0	8	38	16	119	505	29	15
1:00	**1:15**	0	2	1	34	35	137	418	21	9
1:15	**1:30**	0	0	2	41	20	90	265	24	7
1:30	**1:45**	0	1	3	36	30	99	386	25	9
1:45	**2:00**	1	0	3	30	15	104	295	15	12
2:00	**2:15**	0	0	3	38	19	106	346	28	11
2:15	**2:30**	0	0	3	31	21	108	326	16	12
2:30	**2:45**	1	0	1	28	17	104	288	19	8
2:45	**3:00**	0	0	3	35	14	125	357	18	11

Tinkune to Sankhamul

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	0	0	1	1	15	63	2	0
9:15	**9:30**	0	0	0	0	0	7	69	0	0
9:30	**9:45**	0	0	0	0	2	13	83	0	0
9:45	**10:00**	0	0	0	0	1	17	78	0	0
10:00	**10:15**	0	0	0	1	1	11	70	0	0
10:15	**10:30**	0	0	0	0	0	4	41	0	0
10:30	**10:45**	0	0	0	0	1	10	72	0	0
10:45	**11:00**	0	0	0	0	1	10	48	1	0
1:00	**1:15**	0	0	0	0	0	20	72	1	0
1:15	**1:30**	0	0	0	0	0	12	50	0	0
1:30	**1:45**	0	0	0	1	3	11	67	2	0
1:45	**2:00**	0	0	0	0	3	8	56	2	0
2:00	**2:15**	0	0	0	1	2	16	62	2	1
2:15	**2:30**	0	1	0	2	2	9	52	3	0
2:30	**2:45**	0	0	0	0	2	9	49	3	0
2:45	**3:00**	0	0	0	0	4	13	65	4	0

Tinkune to PuranoBaneshwor

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	1	0	4	0	45	292	6	0
9:15	**9:30**	0	0	0	7	2	53	394	5	0
9:30	**9:45**	0	0	0	6	4	51	434	11	0
9:45	**10:00**	0	0	0	4	1	58	413	4	0
10:00	**10:15**	0	0	0	8	1	51	382	8	0
10:15	**10:30**	0	0	0	5	1	38	256	8	0
10:30	**10:45**	0	0	0	7	0	43	340	4	0
10:45	**11:00**	0	1	0	7	1	39	322	10	0
1:00	**1:15**	0	0	0	4	7	30	200	7	0
1:15	**1:30**	0	0	0	3	3	50	263	10	0
1:30	**1:45**	0	0	0	4	2	36	192	5	0
1:45	**2:00**	0	0	0	6	7	33	213	7	0
2:00	**2:15**	0	0	0	4	6	45	225	4	0
2:15	**2:30**	0	0	0	6	4	31	199	7	0
2:30	**2:45**	0	0	0	8	8	44	239	8	1
2:45	**3:00**	0	0	0	4	5	35	198	3	0

Sankhamul to Tinkune

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	0	0	2	1	13	72	1	0
9:15	**9:30**	0	0	0	0	1	16	56	0	0
9:30	**9:45**	0	0	0	1	1	20	59	4	0
9:45	**10:00**	0	0	0	1	3	10	44	2	0
10:00	**10:15**	0	0	0	0	2	22	73	1	0
10:15	**10:30**	0	0	0	0	1	18	60	2	0
10:30	**10:45**	0	0	0	0	0	12	62	1	0
10:45	**11:00**	0	0	0	3	0	14	70	1	0
1:00	**1:15**	0	0	0	0	2	10	36	0	0
1:15	**1:30**	0	0	0	9	2	5	52	0	0
1:30	**1:45**	0	0	0	1	3	20	79	6	0
1:45	**2:00**	0	0	0	0	2	13	62	3	0
2:00	**2:15**	0	0	0	0	4	13	58	3	0
2:15	**2:30**	0	0	0	1	3	7	83	2	0
2:30	**2:45**	0	0	0	1	1	20	56	1	0
2:45	**3:00**	0	0	0	0	3	14	73	4	0

Sankhamul to PuranoBaneshwor

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	4	0	0	0	26	178	5	11
9:15	**9:30**	0	1	0	0	0	18	190	2	9
9:30	**9:45**	0	0	0	0	0	28	220	4	13
9:45	**10:00**	0	3	0	3	0	25	193	6	10
10:00	**10:15**	0	3	0	1	1	21	228	6	12
10:15	**10:30**	0	2	0	0	1	32	237	6	13
10:30	**10:45**	0	4	0	1	1	23	229	8	12
10:45	**11:00**	0	1	0	0	1	25	190	0	9
1:00	**1:15**	0	1	0	1	2	21	152	9	7
1:15	**1:30**	0	1	0	3	2	11	150	5	9
1:30	**1:45**	0	3	0	3	1	27	182	7	12
1:45	**2:00**	0	2	0	0	5	23	206	11	11
2:00	**2:15**	0	2	0	0	4	21	157	4	11
2:15	**2:30**	0	2	0	1	6	20	199	11	13
2:30	**2:45**	0	3	0	0	4	27	185	12	10
2:45	**3:00**	0	0	0	0	3	19	193	7	6

Sankhamul to Maitighar

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	9:15	0	0	0	1	1	38	159	1	0
9:15	9:30	0	0	0	0	5	44	150	2	1
9:30	9:45	0	0	0	0	5	31	137	1	0
9:45	10:00	0	0	0	0	2	30	145	2	0
10:00	10:15	0	0	0	0	2	22	99	3	0
10:15	10:30	0	0	0	0	5	25	120	1	0
10:30	10:45	0	0	0	0	5	15	127	2	0
10:45	11:00	0	1	0	0	3	24	70	2	0
1:00	1:15	0	0	0	1	5	20	55	0	0
1:15	1:30	0	0	0	0	6	11	57	0	0
1:30	1:45	0	0	0	0	2	14	62	1	0
1:45	2:00	0	0	1	1	5	17	77	3	0
2:00	2:15	0	0	0	0	4	18	68	2	0
2:15	2:30	0	0	1	0	4	22	56	2	0
2:30	2:45	0	0	0	0	2	13	72	5	0
2:45	3:00	0	0	0	0	0	0	0	0	0

PuranoBaneshwor to Tinkune

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	9:15	0	0	0	10	4	55	229	10	0
9:15	9:30	0	0	0	6	3	38	259	2	0
9:30	9:45	0	0	0	4	2	45	207	4	1
9:45	10:00	0	0	0	6	4	43	247	4	0
10:00	10:15	0	0	0	7	6	46	276	4	0
10:15	10:30	0	0	0	9	5	47	173	5	1
10:30	10:45	0	1	0	6	2	49	255	5	0
10:45	11:00	0	0	1	9	3	35	260	8	0
1:00	1:15	0	0	0	6	4	51	290	7	0
1:15	1:30	0	0	0	5	6	35	314	8	0
1:30	1:45	0	0	0	5	6	48	265	7	0
1:45	2:00	0	1	0	5	8	43	328	11	0
2:00	2:15	0	0	0	5	3	36	310	3	0
2:15	2:30	0	2	0	5	10	60	300	3	0
2:30	2:45	0	0	0	6	8	51	323	3	0
2:45	3:00	0	0	0	5	3	58	356	9	0

PuranoBaneshwor to Sankhamul

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	4	0	1	3	31	153	8	16
9:15	**9:30**	0	2	0	0	3	25	123	4	11
9:30	**9:45**	0	1	0	0	3	16	139	6	10
9:45	**10:00**	0	5	0	0	0	22	157	3	11
10:00	**10:15**	0	3	0	0	2	27	151	1	9
10:15	**10:30**	0	0	0	0	2	25	219	5	20
10:30	**10:45**	0	0	2	0	1	20	196	4	9
10:45	**11:00**	0	1	0	0	1	23	145	6	10
1:00	**1:15**	0	2	0	0	2	15	133	4	10
1:15	**1:30**	0	2	0	2	3	20	131	5	9
1:30	**1:45**	0	2	0	0	6	22	179	6	13
1:45	**2:00**	0	2	0	0	2	18	190	4	12
2:00	**2:15**	0	1	0	0	1	27	143	3	8
2:15	**2:30**	0	3	0	2	6	27	201	7	9
2:30	**2:45**	0	0	0	0	4	34	181	5	6
2:45	**3:00**	0	1	0	0	3	21	154	6	11

PuranoBaneshwor-Maitighar

Start	End	Truck		Bus			Car	Bike	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	1	2	0	2	40	97	2	0
9:15	**9:30**	0	0	0	0	0	27	104	1	0
9:30	**9:45**	0	0	1	0	1	22	60	3	1
9:45	**10:00**	0	1	0	0	1	22	87	4	0
10:00	**10:15**	0	0	0	0	0	20	95	3	0
10:15	**10:30**	0	0	2	0	0	36	100	5	0
10:30	**10:45**	0	0	0	0	3	23	93	5	0
10:45	**11:00**	0	0	0	0	0	18	98	2	0
1:00	**1:15**	0	0	0	1	1	19	84	3	0
1:15	**1:30**	0	1	0	0	2	19	55	2	0
1:30	**1:45**	0	0	0	0	1	30	95	2	0
1:45	**2:00**	0	0	0	0	1	29	75	6	0
2:00	**2:15**	0	1	0	0	3	19	61	2	0
2:15	**2:30**	0	0	0	1	2	19	72	2	0
2:30	**2:45**	0	0	0	1	4	22	80	4	0
2:45	**3:00**	0	4	0	0	3	24	73	2	0

APPENDIX B Traffic Volume Count

Maitighar

Time	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Total	PCU
9:00 - 9:15	0	5	0	38	19	119	392	13	8	594	477
9:15 - 9:30	0	1	3	27	11	133	387	7	8	577	444
9:30 - 9:45	0	5	0	37	14	123	351	6	5	541	442
9:45 - 10:00	0	3	2	38	9	122	455	6	9	644	498
10:00 - 10:15	0	5	2	32	19	138	487	7	10	700	527
10:15 - 10:30	0	4	4	47	13	157	584	5	7	821	633
10:30-10:45		1	2	30	14	125	470	4	5	651	481
10:45-11:00		1	1	36	13	108	419	5	5	588	453
Total	**0**	**25**	**14**	**285**	**112**	**1025**	**3545**	**53**	**57**	**5116**	**3954**

Tinkune

Time	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Total	PCU
9:00 - 9:15	0	1	2	55	16	186	808	8	14	1090	801
9:15 - 9:30	0	2	2	65	12	260	1116	12	10	1479	1056
9:30 - 9:45	0	3	2	84	15	192	1173	16	16	1501	1088
9:45 - 10:00	0	0	2	63	9	205	1185	12	16	1492	1030
10:00 - 10:15	0	1	2	65	10	199	1034	20	15	1346	964
10:15 - 10:30	0	2	6	72	7	245	932	12	20	1296	987
10:30-10:45	0	0	1	50	7	190	847	11	13	1119	798
10:45-11:00	0	1	0	56	11	192	818	17	10	1105	809
Total	**0**	**10**	**17**	**510**	**87**	**1669**	**7913**	**108**	**114**	**10428**	**7531**

Sankhamul

Time	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Total	PCU
9:00 - 9:15	0	0	0	3	4	60	317	2	13	399	247
9:15 - 9:30	0	3	0	1	2	57	344	3	12	422	254
9:30 - 9:45	0	5	0	2	7	77	394	5	14	504	314
9:45 - 10:00	0	5	0	2	5	90	488	5	15	610	373
10:00 - 10:15	0	5	0	2	7	76	430	4	11	535	327
10:15 - 10:30	0	3	0	0	4	71	390	3	9	480	287
10:30-10:45	0	0	0	2	5	62	375	4	12	460	277
10:45-11:00	0	1	0	2	3	66	348	5	10	435	266
Total	**0**	**22**	**0**	**14**	**37**	**559**	**3086**	**31**	**96**	**3845**	**2341**

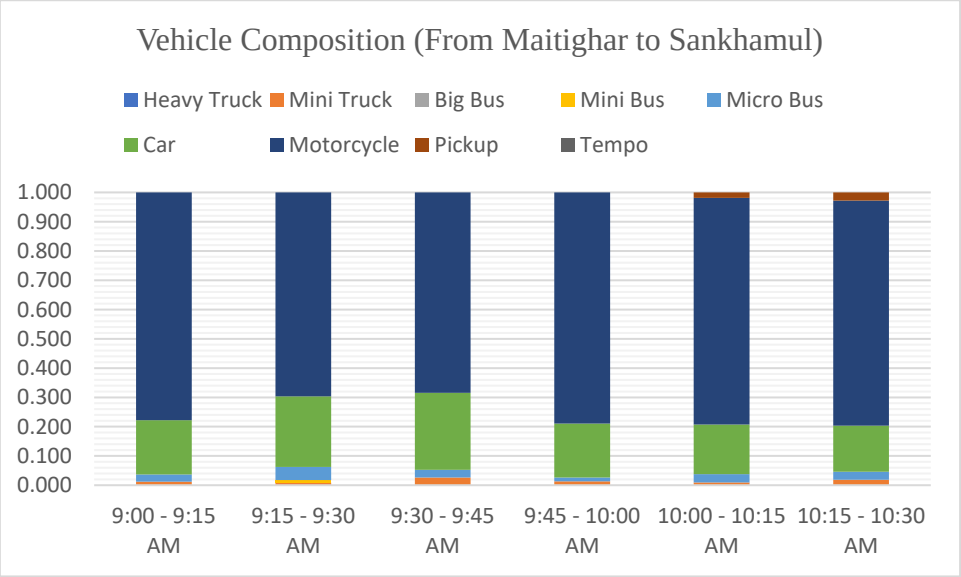
PuranoBaneshwor											
Time	**Heavy Truck**	**Mini Truck**	**Big Bus**	**Mini Bus**	**Micro Bus**	**Car**	**Motorcycle**	**Pickup**	**Tempo**	**Total**	**PCU**
9:00 - 9:15	0	10	0	9	7	111	433	8	13	591	398
9:15 - 9:30	0	6	0	7	2	96	432	11	8	562	363
9:30 - 9:45	0	5	0	8	3	110	410	11	13	560	374
9:45 - 10:00	0	6	0	6	1	109	509	4	7	642	403
10:00 - 10:15	0	6	0	4	5	110	542	8	15	690	430
10:15 - 10:30	0	3	0	7	2	80	493	8	11	604	373
10:30-10:45	0	0	0	6	6	73	469	1	9	564	342
10:45-11:00	0	0	0	6	3	74	437	4	12	536	330
Total	**0**	**36**	**0**	**53**	**29**	**763**	**3725**	**55**	**88**	**4749**	**3011**

APPENDIX C Vehicle Composition

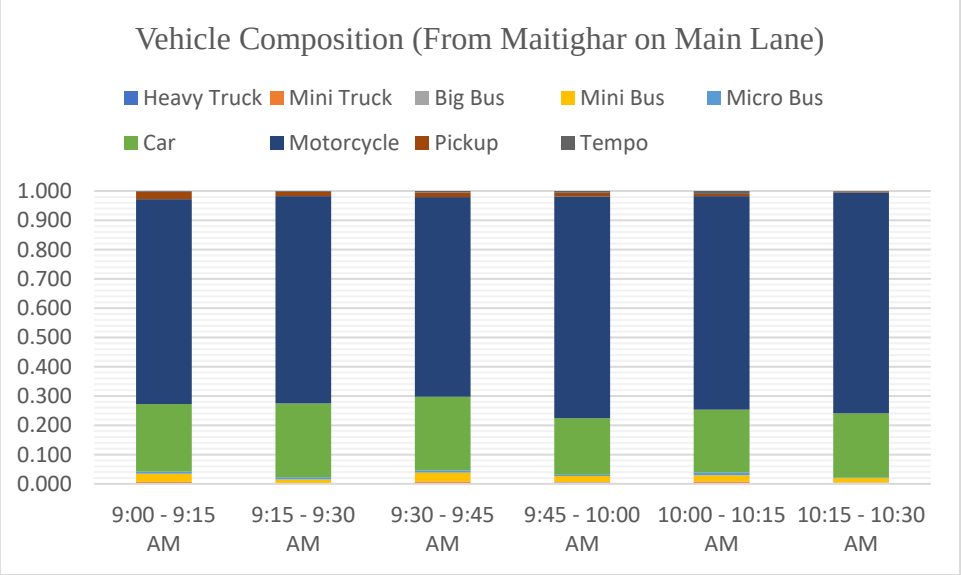
Total Traffic Volume and Percentage Share

Total Traffic Volume (Sunday 9 - 10:30 AM)										
Time	**Heavy Truck**	**Mini Truck**	**Big Bus**	**Mini Bus**	**Micro Bus**	**Car**	**Motorcycle**	**Pickup**	**Tempo**	**Total**
9:00 - 9:15	0	16	2	105	45	476	1950	30	48	2672
9:15 - 9:30	0	12	5	100	25	546	2279	33	38	3038
9:30 - 9:45	0	18	2	131	39	502	2328	38	48	3106
9:45 - 10:00	**0**	**14**	**4**	**108**	**23**	**526**	**2637**	**27**	**47**	**3386**
10:00 - 10:15	0	17	4	101	38	523	2493	39	52	3267
10:15 - 10:30	0	12	10	126	24	552	2399	35	49	3207
Total	**0**	**89**	**27**	**671**	**194**	**3125**	**14086**	**202**	**282**	**18676**
Percentage	0.00	0.48	0.14	3.59	1.04	16.73	75.42	1.08	1.51	100.00

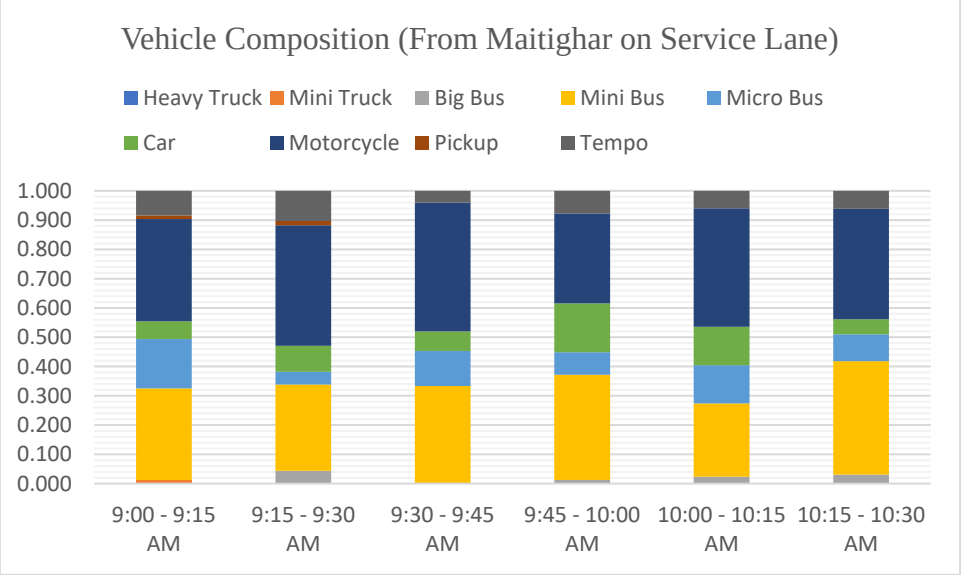
From Maitighar to Sankhamul (Sunday)



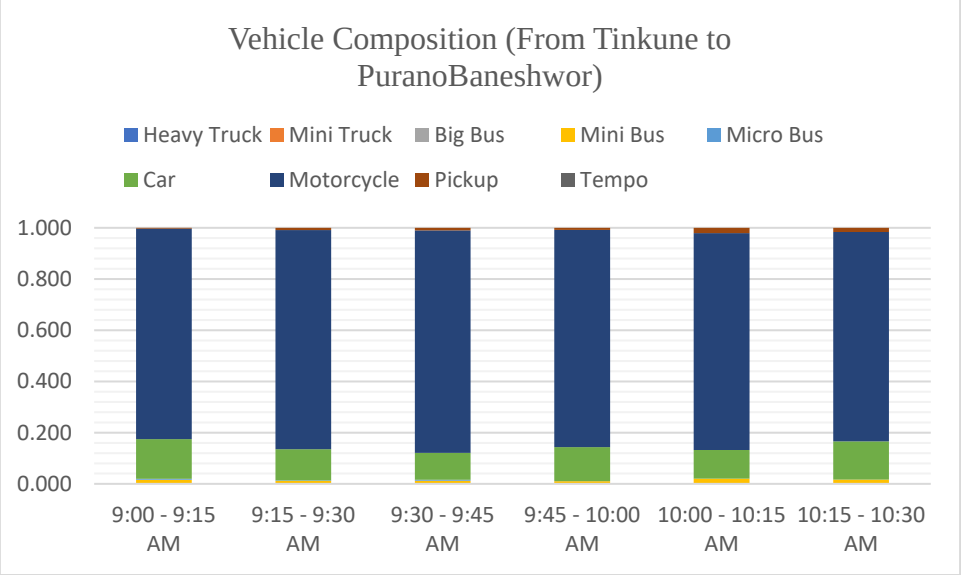
From Maitighar on Main Lane (Sunday)



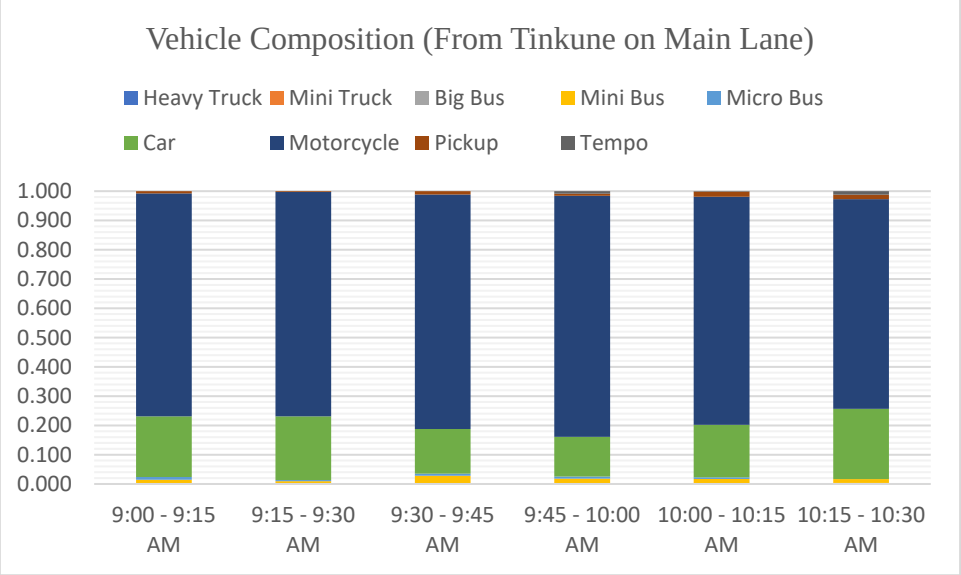
From Maitighar on Service Lane (Sunday)



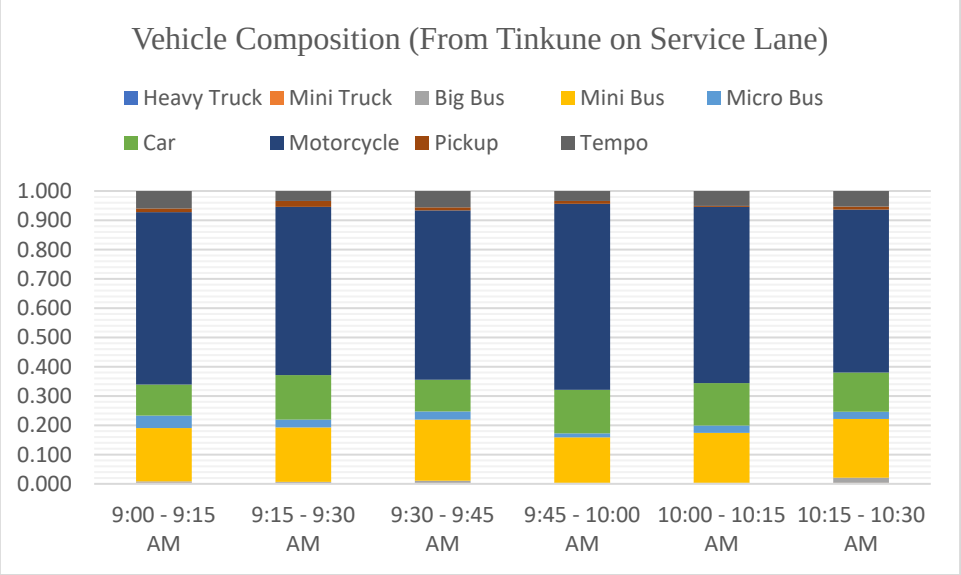
From Tinkune to PuranoBaneshwor (Sunday)



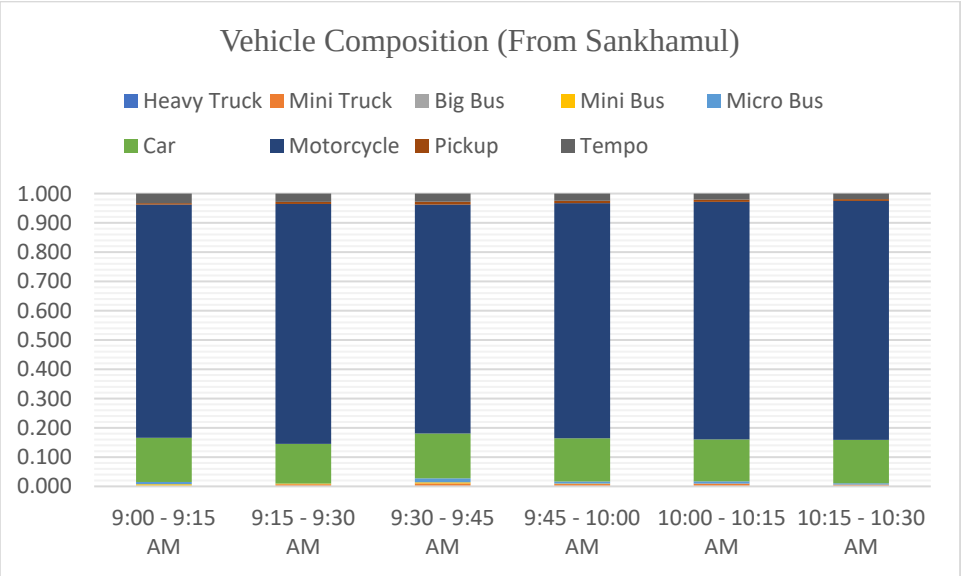
From Tinkune on Main Lane (Sunday)



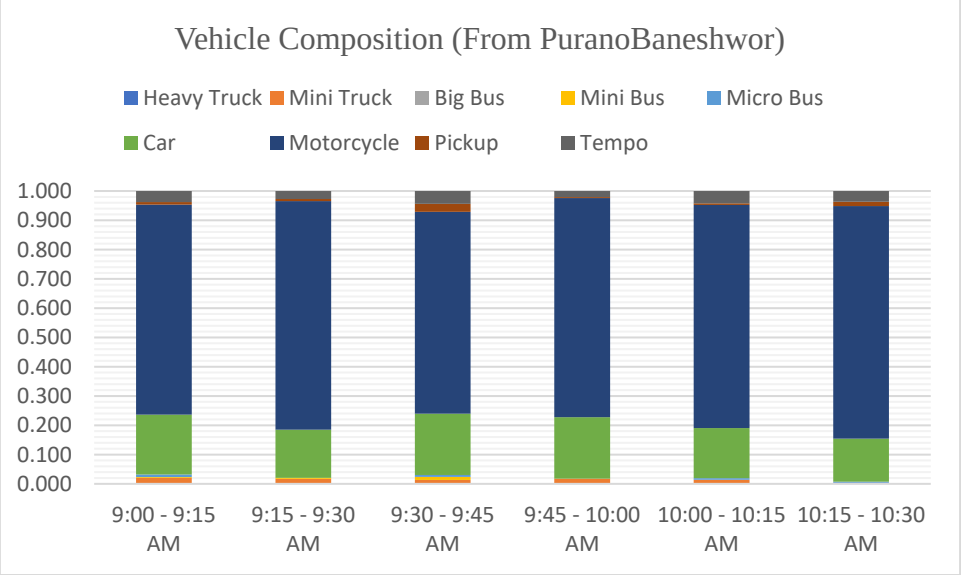
From Tinkune on Service Lane (Sunday)



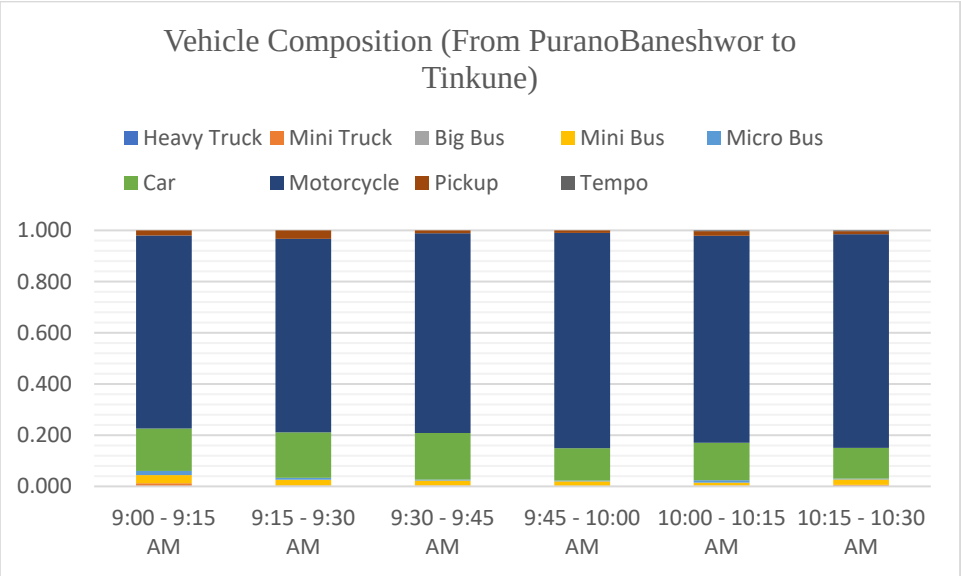
From Sankhamul (Sunday)



From PuranoBaneshwor (Sunday)



From PuranoBaneshwor to Tinkune (Sunday)



APPENDIX D Relative Flow

From Maitighar Main Lane (Friday)

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Heavy Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Truck	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	-	-	-	-
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	0.000	0.000	1.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Big Bus	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	-	-	-	-
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	-	-	-	-
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Bus	1:00-1:15	0.000	0.727	0.273	1.000
	1:15-1:30	0.000	0.600	0.400	1.000
	1:30-1:45	0.000	0.273	0.727	1.000
	1:45-2:00	0.000	0.200	0.800	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.000	0.200	0.800	1.000
	2:30-2:45	0.222	0.667	0.111	1.000
	2:45-3:00	0.000	0.429	0.571	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Micro Bus	1:00-1:15	0.105	0.000	0.895	1.000
	1:15-1:30	0.143	0.000	0.857	1.000
	1:30-1:45	0.06	0.067	0.866	1.000
	1:45-2:00	0.071	0.071	0.858	1.000
	2:00-2:15	0.200	0.050	0.750	1.000
	2:15-2:30	0.067	0.067	0.866	1.000
	2:30-2:45	0.154	0.000	0.846	1.000
	2:45-3:00	0.133	0.133	0.734	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Car	1:00-1:15	0.070	0.031	0.898	1.000
	1:15-1:30	0.063	0.071	0.866	1.000
	1:30-1:45	0.113	0.056	0.831	1.000
	1:45-2:00	0.135	0.073	0.792	1.000
	2:00-2:15	0.121	0.026	0.853	1.000
	2:15-2:30	0.094	0.017	0.889	1.000
	2:30-2:45	0.108	0.088	0.804	1.000
	2:45-3:00	0.085	0.025	0.890	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Motorcycle	1:00-1:15	0.117	0.036	0.847	1.000
	1:15-1:30	0.114	0.025	0.862	1.000
	1:30-1:45	0.126	0.027	0.848	1.000
	1:45-2:00	0.095	0.027	0.877	1.000
	2:00-2:15	0.109	0.033	0.859	1.000
	2:15-2:30	0.054	0.026	0.920	1.000
	2:30-2:45	0.123	0.021	0.856	1.000
	2:45-3:00	0.113	0.022	0.865	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Pickup	1:00-1:15	0.000	0.083	0.917	1.000
	1:15-1:30	0.000	0.053	0.947	1.000
	1:30-1:45	0.038	0.000	0.962	1.000
	1:45-2:00	0.053	0.053	0.895	1.000
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	0.133	0.000	0.867	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Tempo	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	-	-	-	-
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.200	0.800	1.000
	2:30-2:45	0.000	0.500	0.500	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

From Maitighar Service Lane

(Friday)

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Heavy Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	1.000	0.000	0.000	1.000
	1:45-2:00	1.000	0.000	0.000	1.000
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	1.000	0.000	0.000	1.000
	2:45-3:00	-	-	-	-

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Big Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	-	-	-	-
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	-	-	-	-
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.000	0.917	0.083	1.000
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.053	0.947	0.000	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	0.958	0.042	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Micro Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.000	1.000	0.000	1.000
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.000	1.000	0.000	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Car	1:00-1:15	0.800	0.100	0.100	1.000
	1:15-1:30	0.733	0.200	0.067	1.000
	1:30-1:45	0.571	0.286	0.143	1.000
	1:45-2:00	0.857	0.143	0.000	1.000
	2:00-2:15	1.000	0.000	0.000	1.000
	2:15-2:30	0.786	0.143	0.071	1.000
	2:30-2:45	0.600	0.100	0.300	1.000
	2:45-3:00	0.786	0.000	0.214	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Motorcycle	1:00-1:15	0.824	0.059	0.118	1.000
	1:15-1:30	0.714	0.114	0.171	1.000
	1:30-1:45	0.735	0.176	0.088	1.000
	1:45-2:00	0.594	0.156	0.250	1.000
	2:00-2:15	0.577	0.308	0.115	1.000
	2:15-2:30	0.818	0.061	0.121	1.000
	2:30-2:45	0.621	0.103	0.276	1.000
	2:45-3:00	0.692	0.128	0.179	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Pickup	1:00-1:15	1.000	0.000	0.000	1.000
	1:15-1:30	1.000	0.000	0.000	1.000
	1:30-1:45	1.000	0.000	0.000	1.000
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	1.000	0.000	0.000	1.000
	2:45-3:00	1.000	0.000	0.000	1.000

	Time	To PuranoBaneshwor	To Tinkune Service Lane	To Tinkune Main Lane	Check
Tempo	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.000	1.000	0.000	1.000
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.000	1.000	0.000	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

From Tinkune Main Lane

(Friday)

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Heavy Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	-	-	-	-

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Mini Truck	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	-	-	-	-
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Big Bus	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	0.000	0.000	1.000	1

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Mini Bus	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	-	-	-	-
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.333	0.667	1.000
	2:15-2:30	1.000	0.000	0.000	1.000
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Micro Bus	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	0.100	0.000	0.900	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Car	1:00-1:15	0.009	0.037	0.953	1.000
	1:15-1:30	0.000	0.056	0.944	1.000
	1:30-1:45	0.014	0.055	0.932	1.000
	1:45-2:00	0.012	0.000	0.988	1.000
	2:00-2:15	0.000	0.025	0.975	1.000
	2:15-2:30	0.000	0.044	0.956	1.000
	2:30-2:45	0.023	0.023	0.955	1.000
	2:45-3:00	0.000	0.043	0.957	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Motorcycle	1:00-1:15	0.003	0.022	0.974	1.000
	1:15-1:30	0.013	0.039	0.948	1.000
	1:30-1:45	0.000	0.019	0.981	1.000
	1:45-2:00	0.005	0.036	0.959	1.000
	2:00-2:15	0.004	0.032	0.964	1.000
	2:15-2:30	0.000	0.057	0.943	1.000
	2:30-2:45	0.000	0.031	0.969	1.000
	2:45-3:00	0.000	0.032	0.968	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Pickup	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.043	0.957	1.000
	1:30-1:45	0.000	0.040	0.960	1.000
	1:45-2:00	0.000	0.067	0.933	1.000
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Tempo	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	-	-	-	-
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

From Tinkune Service Lane

(Friday)

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Heavy Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Mini Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	1.000	0.000	0.000	1.000
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Big Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.000	1.000	0.000	1.000
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.000	1.000	0.000	1.000
	2:15-2:30	0.000	1.000	0.000	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Mini Bus	1:00-1:15	0.000	0.938	0.063	1.000
	1:15-1:30	0.000	0.950	0.050	1.000
	1:30-1:45	0.027	0.946	0.027	1.000
	1:45-2:00	0.000	0.929	0.071	1.000
	2:00-2:15	0.028	0.944	0.028	1.000
	2:15-2:30	0.031	0.969	0.000	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Micro Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.214	0.786	0.000	1.000
	1:45-2:00	0.250	0.750	0.000	1.000
	2:00-2:15	0.222	0.778	0.000	1.000
	2:15-2:30	0.250	0.750	0.000	1.000
	2:30-2:45	0.250	0.750	0.000	1.000
	2:45-3:00	0.375	0.625	0.000	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Car	1:00-1:15	0.380	0.400	0.220	1.000
	1:15-1:30	0.250	0.646	0.104	1.000
	1:30-1:45	0.270	0.486	0.243	1.000
	1:45-2:00	0.233	0.667	0.100	1.000
	2:00-2:15	0.390	0.537	0.073	1.000
	2:15-2:30	0.346	0.462	0.192	1.000
	2:30-2:45	0.280	0.640	0.080	1.000
	2:45-3:00	0.295	0.477	0.227	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Motorcycle	1:00-1:15	0.399	0.511	0.090	1.000
	1:15-1:30	0.296	0.648	0.056	1.000
	1:30-1:45	0.366	0.579	0.055	1.000
	1:45-2:00	0.350	0.592	0.057	1.000
	2:00-2:15	0.389	0.567	0.045	1.000
	2:15-2:30	0.280	0.677	0.043	1.000
	2:30-2:45	0.280	0.646	0.074	1.000
	2:45-3:00	0.382	0.576	0.041	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Pickup	1:00-1:15	0.250	0.000	0.750	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	1.000	0.000	0.000	1.000
	1:45-2:00	1.000	0.000	0.000	1.000
	2:00-2:15	0.400	0.600	0.000	1.000
	2:15-2:30	0.750	0.250	0.000	1.000
	2:30-2:45	1.000	0.000	0.000	1.000
	2:45-3:00	0.667	0.000	0.333	1.000

	Time	To Sankhamul	To Maitighar Service Lane	To Maitighar Main Lane	Check
Tempo	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	1.000	0.000	1.000
	1:30-1:45	0.000	1.000	0.000	1.000
	1:45-2:00	0.000	1.000	0.000	1.000
	2:00-2:15	0.083	0.917	0.000	1.000
	2:15-2:30	0.000	1.000	0.000	1.000
	2:30-2:45	0.000	0.875	0.125	1.000
	2:45-3:00	0.000	1.000	0.000	1.000

From Sankhamul (Friday)

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Heavy Truck	1:00-1:15	-	-	-	-	-	-
	1:15-1:30	-	-	-	-	-	-
	1:30-1:45	-	-	-	-	-	-
	1:45-2:00	-	-	-	-	-	-
	2:00-2:15	-	-	-	-	-	-
	2:15-2:30	-	-	-	-	-	-
	2:30-2:45	-	-	-	-	-	-
	2:45-3:00	-	-	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Mini Truck	1:00-1:15	0.000	0.500	0.000	0.000	0.500	1.000
	1:15-1:30	0.000	0.000	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.000	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	0.000	0.000	1.000	1.000
	2:45-3:00	-	-	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Big Bus	1:00-1:15	-	-	-	-	-	-
	1:15-1:30	-	-	-	-	-	-
	1:30-1:45	-	-	-	-	-	-
	1:45-2:00	-	-	-	-	-	-
	2:00-2:15	1.000	0.000	0.000	0.000	0.000	1.000
	2:15-2:30	-	-	-	-	-	-
	2:30-2:45	0.000	1.000	0.000	0.000	0.000	1.000
	2:45-3:00	-	-	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Mini Bus	1:00-1:15	0.000	0.000	0.000	0.000	1.000	1.000
	1:15-1:30	0.077	0.000	0.077	0.615	0.231	1.000
	1:30-1:45	0.000	0.000	0.000	0.250	0.750	1.000
	1:45-2:00	-	-	-	-	-	-
	2:00-2:15	0.000	1.000	0.000	0.000	0.000	1.000
	2:15-2:30	0.000	0.000	0.500	0.000	0.500	1.000
	2:30-2:45	0.000	0.000	1.000	0.000	0.000	1.000
	2:45-3:00	-	-	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Micro Bus	1:00-1:15	0.286	0.143	0.143	0.143	0.286	1.000
	1:15-1:30	0.556	0.000	0.000	0.222	0.222	1.000
	1:30-1:45	0.600	0.000	0.300	0.000	0.100	1.000
	1:45-2:00	0.222	0.000	0.000	0.222	0.556	1.000
	2:00-2:15	0.308	0.077	0.077	0.231	0.308	1.000
	2:15-2:30	0.154	0.154	0.077	0.154	0.462	1.000
	2:30-2:45	0.333	0.111	0.000	0.111	0.444	1.000
	2:45-3:00	0.000	0.250	0.125	0.250	0.375	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Car	1:00-1:15	0.273	0.164	0.073	0.109	0.382	1.000
	1:15-1:30	0.306	0.250	0.056	0.083	0.306	1.000
	1:30-1:45	0.086	0.103	0.086	0.259	0.466	1.000
	1:45-2:00	0.140	0.140	0.080	0.180	0.460	1.000
	2:00-2:15	0.216	0.118	0.020	0.235	0.412	1.000
	2:15-2:30	0.156	0.244	0.022	0.133	0.444	1.000
	2:30-2:45	0.101	0.217	0.043	0.246	0.391	1.000
	2:45-3:00	0.196	0.087	0.109	0.196	0.413	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Motorcycle	1:00-1:15	0.202	0.070	0.016	0.124	0.589	1.000
	1:15-1:30	0.171	0.043	0.039	0.163	0.584	1.000
	1:30-1:45	0.126	0.053	0.069	0.179	0.572	1.000
	1:45-2:00	0.145	0.042	0.033	0.155	0.624	1.000
	2:00-2:15	0.110	0.154	0.075	0.123	0.538	1.000
	2:15-2:30	0.029	0.166	0.037	0.200	0.569	1.000
	2:30-2:45	0.077	0.111	0.030	0.158	0.623	1.000
	2:45-3:00	0.098	0.115	0.033	0.183	0.571	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Pickup	1:00-1:15	0.091	0.091	0.000	0.000	0.818	1.000
	1:15-1:30	0.000	0.000	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	0.154	0.308	0.538	1.000
	1:45-2:00	0.067	0.000	0.067	0.133	0.733	1.000
	2:00-2:15	0.100	0.200	0.100	0.200	0.400	1.000
	2:15-2:30	0.133	0.000	0.067	0.067	0.733	1.000
	2:30-2:45	0.133	0.000	0.000	0.067	0.800	1.000
	2:45-3:00	0.188	0.125	0.125	0.125	0.438	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Tinkune Service Lane	To Tinkune Main Lane	To Purano Baneshwor	Check
Tempo	1:00-1:15	0.000	0.000	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.000	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.000	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	0.000	0.000	1.000	1.000
	2:45-3:00	0.000	0.000	0.000	0.000	1.000	1.000

From PuranoBaneshwor

(Friday)

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Heavy Truck	1:00-1:15	-	-	-
	1:15-1:30	-	-	-
	1:30-1:45	-	-	-
	1:45-2:00	-	-	-
	2:00-2:15	-	-	-
	2:15-2:30	-	-	-
	2:30-2:45	-	-	-
	2:45-3:00	-	-	-

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Truck	1:00-1:15	-	-	-
	1:15-1:30	-	-	-
	1:30-1:45	-	-	-
	1:45-2:00	0.000	1.000	1.000
	2:00-2:15	-	-	-
	2:15-2:30	0.000	1.000	1.000
	2:30-2:45	-	-	-
	2:45-3:00	-	-	-

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Big Bus	1:00-1:15	-	-	-
	1:15-1:30	-	-	-
	1:30-1:45	-	-	-
	1:45-2:00	-	-	-
	2:00-2:15	-	-	-
	2:15-2:30	-	-	-
	2:30-2:45	-	-	-
	2:45-3:00	-	-	-

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Mini Bus	1:00-1:15	1.000	0.000	1.000
	1:15-1:30	1.000	0.000	1.000
	1:30-1:45	1.000	0.000	1.000
	1:45-2:00	1.000	0.000	1.000
	2:00-2:15	1.000	0.000	1.000
	2:15-2:30	0.800	0.200	1.000
	2:30-2:45	1.000	0.000	1.000
	2:45-3:00	0.800	0.200	1.000

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Micro Bus	1:00-1:15	0.500	0.500	1.000
	1:15-1:30	0.500	0.500	1.000
	1:30-1:45	0.167	0.833	1.000
	1:45-2:00	0.250	0.750	1.000
	2:00-2:15	0.000	1.000	1.000
	2:15-2:30	0.400	0.600	1.000
	2:30-2:45	0.500	0.500	1.000
	2:45-3:00	0.333	0.667	1.000

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Car	1:00-1:15	0.471	0.529	1.000
	1:15-1:30	0.486	0.514	1.000
	1:30-1:45	0.417	0.583	1.000
	1:45-2:00	0.605	0.395	1.000
	2:00-2:15	0.389	0.611	1.000
	2:15-2:30	0.483	0.517	1.000
	2:30-2:45	0.510	0.490	1.000
	2:45-3:00	0.448	0.552	1.000

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Motorcycle	1:00-1:15	0.441	0.559	1.000
	1:15-1:30	0.417	0.583	1.000
	1:30-1:45	0.525	0.475	1.000
	1:45-2:00	0.366	0.634	1.000
	2:00-2:15	0.358	0.642	1.000
	2:15-2:30	0.413	0.587	1.000
	2:30-2:45	0.427	0.573	1.000
	2:45-3:00	0.382	0.618	1.000

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Pickup	1:00-1:15	0.571	0.429	1.000
	1:15-1:30	0.125	0.875	1.000
	1:30-1:45	0.286	0.714	1.000
	1:45-2:00	0.273	0.727	1.000
	2:00-2:15	0.000	1.000	1.000
	2:15-2:30	0.000	1.000	1.000
	2:30-2:45	0.000	1.000	1.000
	2:45-3:00	0.222	0.778	1.000

	Time	To Tinkune Service Lane	To Tinkune Main Lane	Check
Tempo	1:00-1:15	-	-	-
	1:15-1:30	-	-	-
	1:30-1:45	-	-	-
	1:45-2:00	-	-	-
	2:00-2:15	-	-	-
	2:15-2:30	-	-	-
	2:30-2:45	-	-	-
	2:45-3:00	-	-	-

From PuranoBaneshwor

(Friday)

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Heavy Truck	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Mini Truck	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.333	0.667	1.000
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.500	0.500	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	-	-	-	-
	2:45-3:00	0.000	0.800	0.200	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Big Bus	1:00-1:15	-	-	-	-
	1:15-1:30	-	-	-	-
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	-	-	-	-
	2:30-2:45	-	-	-	-
	2:45-3:00	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Mini Bus	1:00-1:15	0.000	1.000	0.000	1.000
	1:15-1:30	0.000	0.000	1.000	1.000
	1:30-1:45	-	-	-	-
	1:45-2:00	-	-	-	-
	2:00-2:15	-	-	-	-
	2:15-2:30	0.000	0.333	0.667	1.000
	2:30-2:45	0.000	1.000	0.000	1.000
	2:45-3:00	-	-	-	-

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Micro Bus	1:00-1:15	0.000	0.333	0.667	1.000
	1:15-1:30	0.000	0.400	0.600	1.000
	1:30-1:45	0.000	0.143	0.857	1.000
	1:45-2:00	0.000	0.333	0.667	1.000
	2:00-2:15	0.250	0.500	0.250	1.000
	2:15-2:30	0.000	0.250	0.750	1.000
	2:30-2:45	0.000	0.500	0.500	1.000
	2:45-3:00	0.333	0.167	0.500	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Car	1:00-1:15	0.176	0.382	0.441	1.000
	1:15-1:30	0.103	0.385	0.513	1.000
	1:30-1:45	0.192	0.385	0.423	1.000
	1:45-2:00	0.170	0.447	0.383	1.000
	2:00-2:15	0.043	0.370	0.587	1.000
	2:15-2:30	0.087	0.326	0.587	1.000
	2:30-2:45	0.036	0.357	0.607	1.000
	2:45-3:00	0.133	0.400	0.467	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Motorcycle	1:00-1:15	0.065	0.323	0.613	1.000
	1:15-1:30	0.124	0.172	0.704	1.000
	1:30-1:45	0.128	0.219	0.653	1.000
	1:45-2:00	0.083	0.200	0.717	1.000
	2:00-2:15	0.069	0.230	0.701	1.000
	2:15-2:30	0.059	0.205	0.736	1.000
	2:30-2:45	0.061	0.245	0.693	1.000
	2:45-3:00	0.084	0.238	0.678	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Pickup	1:00-1:15	0.000	0.429	0.571	1.000
	1:15-1:30	0.000	0.286	0.714	1.000
	1:30-1:45	0.000	0.250	0.750	1.000
	1:45-2:00	0.100	0.500	0.400	1.000
	2:00-2:15	0.200	0.200	0.600	1.000
	2:15-2:30	0.000	0.222	0.778	1.000
	2:30-2:45	0.000	0.444	0.556	1.000
	2:45-3:00	0.000	0.250	0.750	1.000

	Time	To Maitighar Service Lane	To Maitighar Main Lane	To Sankhamul	Check
Tempo	1:00-1:15	0.000	0.000	1.000	1.000
	1:15-1:30	0.000	0.000	1.000	1.000
	1:30-1:45	0.000	0.000	1.000	1.000
	1:45-2:00	0.000	0.000	1.000	1.000
	2:00-2:15	0.000	0.000	1.000	1.000
	2:15-2:30	0.000	0.000	1.000	1.000
	2:30-2:45	0.000	0.000	1.000	1.000
	2:45-3:00	0.000	0.000	1.000	1.000

APPENDIX E VISSIM Input and Output

Network Modeled in VISSIM

Vehicle Inputs/Vehicle Volumes by Time Intervals

Maitighar - Sankhamul

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	0	0	0	12	64	380	8	0
1:15	**1:30**	0	0	4	4	20	52	388	24	0
1:30	**1:45**	0	0	0	0	12	64	288	8	0
1:45	**2:00**	0	0	0	0	20	88	320	16	0
2:00	**2:15**	0	0	0	4	16	64	436	0	0
2:15	**2:30**	0	0	0	0	12	76	368	20	0
2:30	**2:45**	0	0	0	0	8	72	348	0	0
2:45	**3:00**	0	0	0	4	16	60	488	4	0

Maitighar (Main Lane)

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	4	12	44	76	512	2120	96	12
1:15	**1:30**	0	0	0	20	84	448	1792	76	8
1:30	**1:45**	0	4	12	44	60	496	1944	104	8
1:45	**2:00**	0	8	0	40	56	384	1760	76	0
2:00	**2:15**	0	0	4	8	80	464	2432	100	16
2:15	**2:30**	0	0	8	60	60	468	2160	80	20
2:30	**2:45**	0	0	8	36	52	408	1912	60	8
2:45	**3:00**	0	4	8	56	60	472	2580	52	20

Maitighar (Service Lane)

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	0	4	108	20	40	136	16	12
1:15	**1:30**	0	0	8	76	32	60	140	8	16
1:30	**1:45**	0	4	0	96	28	28	136	12	16
1:45	**2:00**	0	8	8	112	36	28	128	4	24
2:00	**2:15**	0	0	4	128	24	36	104	0	8
2:15	**2:30**	0	0	0	76	20	56	132	0	16
2:30	**2:45**	0	4	4	96	28	40	116	8	20
2:45	**3:00**	0	0	4	96	36	56	156	4	12

PuranoBaneshwor-Tinkune

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	0	0	24	16	204	1160	28	0
1:15	**1:30**	0	0	0	20	24	140	1256	32	0
1:30	**1:45**	0	0	0	20	24	192	1060	28	0
1:45	**2:00**	0	4	0	20	32	172	1312	44	0
2:00	**2:15**	0	0	0	20	12	144	1240	12	0
2:15	**2:30**	0	8	0	20	40	240	1200	12	0
2:30	**2:45**	0	0	0	24	32	204	1292	12	0
2:45	**3:00**	0	0	0	20	12	232	1424	36	0

Sankhamul

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
9:00	**9:15**	0	8	0	4	28	220	1032	44	28
9:15	**9:30**	0	4	0	52	36	144	1028	20	36
9:30	**9:45**	0	12	0	16	40	232	1272	52	48
9:45	**10:00**	0	8	0	0	36	200	1320	60	44
10:00	**10:15**	0	8	4	4	52	204	1168	40	44
10:15	**10:30**	0	8	0	8	52	180	1400	60	52
10:30	**10:45**	0	12	4	4	36	276	1188	60	40
10:45	**11:00**	0	0	0	0	32	184	1352	64	24

Tinkune - PuranoBaneshwor

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	0	0	16	28	120	800	28	0
1:15	**1:30**	0	0	0	12	12	200	1052	40	0
1:30	**1:45**	0	0	0	16	8	144	768	20	0
1:45	**2:00**	0	0	0	24	28	132	852	28	0
2:00	**2:15**	0	0	0	16	24	180	900	16	0
2:15	**2:30**	0	0	0	24	16	124	796	28	0
2:30	**2:45**	0	0	0	32	32	176	956	32	4
2:45	**3:00**	0	0	0	16	20	140	792	12	0

Tinkune (Main Lane)

Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	8	0	8	120	428	1248	72	0
1:15	**1:30**	0	0	0	4	64	216	612	92	0
1:30	**1:45**	0	4	0	0	76	292	1080	100	0
1:45	**2:00**	4	0	0	8	24	328	776	60	8
2:00	**2:15**	0	0	4	12	48	324	1004	100	0
2:15	**2:30**	0	0	0	4	60	364	768	60	20
2:30	**2:45**	4	0	0	12	44	352	648	76	0
2:45	**3:00**	0	0	4	20	40	376	1008	64	0

Tinkune (Service Lane)

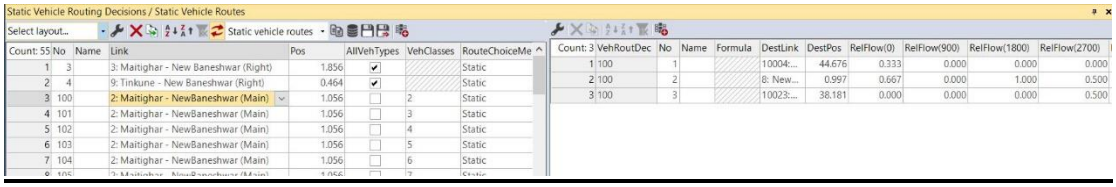
Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	0	4	128	20	200	712	16	36
1:15	**1:30**	0	0	8	160	16	192	648	4	28
1:30	**1:45**	0	0	12	148	56	148	732	8	36
1:45	**2:00**	0	0	12	112	48	120	628	8	40
2:00	**2:15**	0	0	8	144	36	164	628	20	48
2:15	**2:30**	0	4	12	128	32	104	744	16	28
2:30	**2:45**	0	0	4	100	32	100	700	12	32
2:45	**3:00**	0	0	8	120	32	176	680	24	44

PuranoBaneshwor

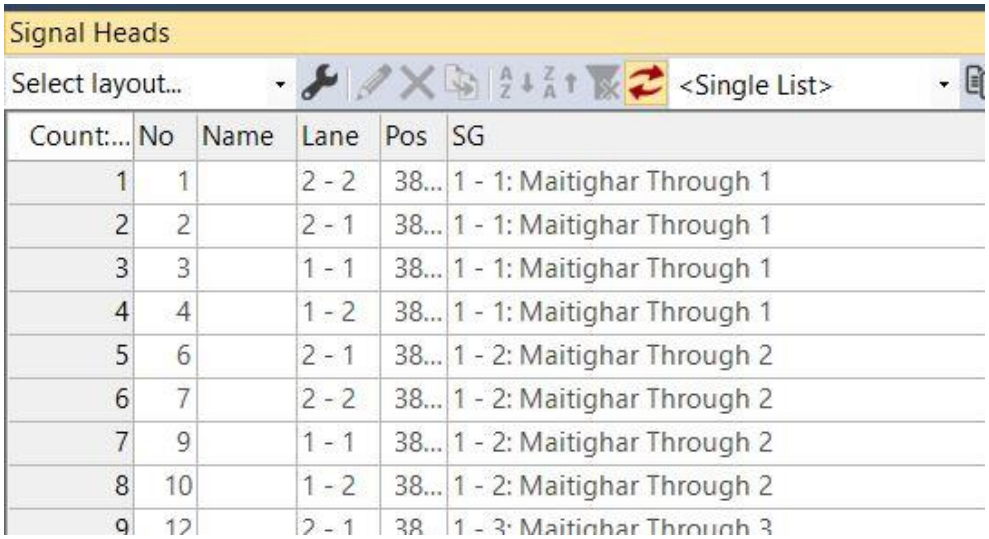
Start Time	Stop Time	Truck		Bus			Car	Motorcycle	Pickup	Tempo
		Heavy	Light	Big	Mini	Micro				
1:00	**1:15**	0	8	0	4	12	136	868	28	40
1:15	**1:30**	0	12	0	8	20	156	744	28	36
1:30	**1:45**	0	8	0	0	28	208	1096	32	52
1:45	**2:00**	0	8	0	0	12	188	1060	40	48
2:00	**2:15**	0	8	0	0	16	184	816	20	32
2:15	**2:30**	0	12	0	12	32	184	1092	36	36
2:30	**2:45**	0	0	0	4	32	224	1044	36	24
2:45	**3:00**	0	20	0	0	24	180	908	32	44

Static Vehicle Routing Decision

The static vehicle routing decision is made as per Relative Flow of vehicles obtained that has been presented in APPENDIX D.



Signal Heads



Node Results

Node Results

Select layout...

Count: 25	Run	TimeInt	Movement	QLen	QLenMax	Vehs(All)	Vehs(1)	Vehs(2)	Vehs(3)	Vehs(4)	Vehs(5)	Vehs(6)	Vehs(7)	Vehs(8)	Vehs(9)
1		0-7200	1 - 1: Maitighar - NewBaneshwar (Side)@7.2 - 4: New Baneshwar - PuranoBanes...	11.89	63.65	254	0	4	0	1	0	60	177	12	0
2		0-7200	1 - 1: Maitighar - NewBaneshwar (Side)@7.2 - 7: New Baneshwar - Tinkune (Sid...	11.89	63.65	326	0	0	8	187	53	10	38	0	30
3		0-7200	1 - 1: Maitighar - NewBaneshwar (Side)@7.2 - 8: New Baneshwar - Tinkune (Mai...	11.89	63.65	50	0	0	0	0	0	11	38	1	0
4		0-7200	1 - 2: Maitighar - NewBaneshwar (Main)@5.6 - 4: New Baneshwar - PuranoBane...	63.40	280.63	544	0	0	0	1	15	79	444	5	0
5		0-7200	1 - 2: Maitighar - NewBaneshwar (Main)@5.6 - 7: New Baneshwar - Tinkune (Sid...	63.40	280.63	202	0	0	1	33	5	42	119	0	2
6		0-7200	1 - 2: Maitighar - NewBaneshwar (Main)@5.6 - 8: New Baneshwar - Tinkune (Ma...	63.40	280.63	4479	0	4	12	39	109	752	3394	150	19
7		0-7200	1 - 3: Maitighar - New Baneshwar (Right)@6.4 - 15: New Baneshwar - Sankhamu...	15.82	61.84	897	0	0	1	2	29	131	714	20	0
8		0-7200	1 - 5: PuranoBaneshwor - New Baneshwar (Right)@20.1 - 7: New Baneshwar - Ti...	0.00	0.00	1255	0	0	0	40	18	171	1015	11	0
9		0-7200	1 - 5: PuranoBaneshwor - New Baneshwar (Right)@20.1 - 8: New Baneshwar - Ti...	0.00	0.00	1727	0	3	0	2	30	206	1447	39	0
10		0-7200	1 - 6: PuranBaneshwor - New Baneshwar@21.6 - 12: New Baneshwar - Maitigha...	25.17	84.30	615	0	6	0	4	12	135	440	18	0
11		0-7200	1 - 6: PuranBaneshwor - New Baneshwar@21.6 - 13: New Baneshwar - Maitigha...	25.17	84.30	213	0	0	0	0	5	36	169	3	0
12		0-7200	1 - 6: PuranBaneshwor - New Baneshwar@21.6 - 15: New Baneshwar - Sankham...	25.17	84.30	1627	0	13	0	3	26	187	1280	42	76
13		0-7200	1 - 9: Tinkune - New Baneshwar (Right)@5.5 - 4: New Baneshwar - PuranoBanes...	51.01	180.79	2059	0	0	0	37	39	289	1643	50	1
14		0-7200	1 - 10: Tinkune - New Baneshwar (Main)@8.0 - 12: New Baneshwar - Maitighar (...	24.73	154.08	2549	2	3	2	12	113	608	1650	152	7
15		0-7200	1 - 10: Tinkune - New Baneshwar (Main)@8.0 - 13: New Baneshwar - Maitighar (...	24.73	154.08	90	0	0	0	2	0	28	58	2	0
16		0-7200	1 - 10: Tinkune - New Baneshwar (Main)@8.0 - 15: New Baneshwar - Sankhamul...	24.73	154.08	8	0	0	0	1	0	4	3	0	0
17		0-7200	1 - 11: Tinkune - New Baneshwar (Side)@5.7 - 12: New Baneshwar - Maitighar (...	17.02	88.56	125	0	0	0	10	0	33	78	4	0
18		0-7200	1 - 11: Tinkune - New Baneshwar (Side)@5.7 - 13: New Baneshwar - Maitighar (...	17.02	88.56	1343	0	0	17	245	48	165	794	6	68
19		0-7200	1 - 11: Tinkune - New Baneshwar (Side)@5.7 - 15: New Baneshwar - Sankhamul...	17.02	88.56	594	0	1	0	1	17	94	465	16	0
20		0-7200	1 - 14: Sankhamul - New Baneshwar@10.4 - 4: New Baneshwar - PuranoBanesh...	18.27	87.97	1768	0	15	0	8	28	165	1413	63	76
21		0-7200	1 - 14: Sankhamul - New Baneshwar@10.4 - 7: New Baneshwar - Tinkune (Side)...	18.27	87.97	139	0	0	0	3	9	29	92	6	0

APPENDIX F Calibration of VISSIM Model for Traffic Volume Using GEH

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Monday 9:00 - 11:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	1	0	50	202	6	0	0	0	0	2	0	46	217	7	0	-	-	-	0.816	-	0.577	1.036	0.392	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	9	208	63	14	35	2	48	0	0	9	199	63	17	31	1	48	-	-	0.000	0.631	0.000	0.762	0.696	0.816	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	2	2	13	37	0	1	0	0	0	4	2	13	24	0	0	-	-	-	1.155	0.000	0.000	2.354	-	1.414
Maitighar (Main Lane) - PuranoBaneshwor	0	2	1	7	4	66	185	12	0	0	2	1	6	7	59	118	8	0	-	0.000	0.000	0.392	1.279	0.885	5.443	1.265	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	1	2	21	3	35	95	3	1	0	1	2	20	2	43	95	0	5	-	0.000	0.000	0.221	0.632	1.281	0.000	2.449	2.309
Maitighar (Main Lane) - Tinkune (Main Lane)	0	0	9	6	24	232	2466	70	1	0	0	9	2	19	196	2285	69	2	-	-	0.000	2.000	1.078	2.461	3.714	0.120	0.816
Maitighar - Sankhamul	0	0	0	1	20	155	669	10	0	0	0	0	1	19	148	575	8	0	-	-	-	0.000	0.226	0.569	3.769	0.667	-
PuranoBaneshwor - Tinkune (Service Lane)	0	1	0	44	15	170	716	11	0	0	1	0	44	13	171	689	8	0	-	0.000	-	0.000	0.535	0.077	1.019	0.973	-
PuranoBaneshwor - Tinkune (Main Lane)	0	3	1	13	37	236	1270	33	0	0	3	1	13	38	230	1276	36	0	-	0.000	0.000	0.000	0.163	0.393	0.168	0.511	-
PuranoBaneshwor - Maitighar (Main Lane)	0	3	0	0	14	190	774	10	1	0	2	0	0	7	201	724	5	0	-	0.632	-	-	2.160	0.787	1.827	1.826	1.414
PuranoBaneshwor - Maitighar (Service Lane)	0	1	0	0	2	52	142	1	0	0	1	0	0	6	47	131	0	0	-	0.000	-	-	2.000	0.711	0.942	1.414	-
PuranoBaneshwor - Sankhamul	0	5	0	1	18	188	1153	32	93	0	6	0	1	19	174	1154	30	88	-	0.426	-	0.000	0.232	1.041	0.029	0.359	0.526
Tinkune - PuranoBaneshwor	0	3	0	49	38	412	3016	38	0	0	3	0	49	38	412	2997	38	0	-	0.000	-	0.000	0.000	0.000	0.347	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	7	4	0	16	33	267	6285	62	17	7	4	0	14	25	230	6127	59	7	0.000	0.000	-	0.516	1.486	2.347	2.006	0.386	2.887
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	0	0	10	42	0	2	0	0	0	0	0	10	58	0	0	-	-	-	-	-	0.000	2.263	-	2.000
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	6	0	0	-	-	-	-	-	1.414	0.894	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	1	1	26	60	0	0	0	0	0	0	1	31	66	0	0	-	-	-	1.414	0.000	0.937	0.756	-	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	22	260	76	49	383	29	29	0	0	22	258	70	41	437	30	27	-	-	0.000	0.124	0.702	1.193	2.667	0.184	0.378
Tinkune (Service Lane) - Sankhamul	0	0	0	2	10	89	617	14	0	0	0	0	3	15	91	542	13	0	-	-	-	0.632	1.414	0.211	3.116	0.272	-
Sankhammul - PuranoBaneshwor	0	7	0	2	12	176	1681	22	83	0	6	0	1	14	179	1606	22	81	-	0.392	-	0.816	0.555	0.225	1.850	0.000	0.221
Sankhamul - Tinkune (Service Lane)	0	0	0	1	3	34	106	2	0	0	0	0	1	5	36	181	2	0	-	-	-	0.000	1.000	0.338	6.261	0.000	-
Sankhamul - Tinkune (Main Lane)	0	0	0	1	10	74	341	11	1	0	0	0	1	7	79	342	12	0	-	-	-	0.000	1.029	0.572	0.054	0.295	1.414
Sankhamul - Maitighar (Main Lane)	0	0	0	0	2	86	219	11	0	0	0	0	0	2	81	212	10	0	-	-	-	-	0.000	0.547	0.477	0.309	-
Sankhamul - Maitighar (Service Lane)	0	0	0	1	31	174	742	6	0	0	0	0	2	30	164	722	5	0	-	-	-	0.816	0.181	0.769	0.739	0.426	-
Total	**7**	**30**	**44**	**637**	**418**	**2799**	**21240**	**385**	**277**	**7**	**29**	**44**	**621**	**402**	**2699**	**20615**	**363**	**258**	0.000	0.184	0.000	0.638	0.790	1.907	4.320	1.138	1.162

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Tuesday 9:00 - 11:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	1	0	47	95	2	0	0	0	0	2	0	47	98	2	0	-	-	-	0.816	-	0.000	0.305	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	17	211	40	53	61	15	44	0	0	16	205	40	47	69	15	42	-	-	0.246	0.416	0.000	0.849	0.992	0.000	0.305
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	0	0	17	54	1	0	0	0	0	0	0	21	38	1	0	-	-	-	-	-	0.918	2.359	0.000	-
Maitighar (Main Lane) - PuranoBaneshwor	0	4	0	1	2	74	58	5	0	0	6	0	0	1	70	53	4	0	-	0.894	-	1.414	0.816	0.471	0.671	0.471	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	0	37	12	29	54	12	8	0	0	0	34	16	34	42	6	9	-	-	-	0.504	1.069	0.891	1.732	2.000	0.343
Maitighar (Main Lane) - Tinkune (Main Lane)	1	17	9	34	62	708	1926	110	8	1	15	9	35	58	690	1892	113	10	0.000	0.500	0.000	0.170	0.516	0.681	0.778	0.284	0.667
Maitighar - Sankhamul	0	2	0	1	15	162	394	7	0	0	2	0	1	15	161	389	7	0	-	0.000	-	0.000	0.000	0.079	0.253	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	2	0	46	21	161	654	14	2	0	2	0	45	18	169	656	16	0	-	0.000	-	0.148	0.679	0.623	0.078	0.516	2.000
PuranoBaneshwor - Tinkune (Main Lane)	0	14	0	6	12	231	963	16	0	0	14	0	7	15	217	951	13	2	-	0.000	-	0.392	0.816	0.935	0.388	0.788	2.000
PuranoBaneshwor - Maitighar (Main Lane)	0	2	0	19	8	225	561	11	0	0	1	0	17	3	209	495	8	0	-	0.816	-	0.471	2.132	1.086	2.872	0.973	-
PuranoBaneshwor - Maitighar (Service Lane)	0	1	0	1	5	55	134	5	0	0	2	0	0	8	56	129	3	0	-	0.816	-	1.414	1.177	0.134	0.436	1.000	-
PuranoBaneshwor - Sankhamul	1	12	0	3	11	198	1239	33	102	1	11	0	3	13	182	1207	34	94	0.000	0.295	-	0.000	0.577	1.161	0.915	0.173	0.808
Tinkune - PuranoBaneshwor	0	4	0	92	23	457	1866	10	0	0	4	0	92	23	456	1848	10	0	-	0.000	-	0.000	0.000	0.047	0.418	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	1	23	7	119	156	1545	4451	78	72	1	22	6	102	141	1474	3777	78	68	0.000	0.211	0.392	1.617	1.231	1.827	10.508	0.000	0.478
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	1	0	13	59	0	0	0	0	0	2	0	8	51	0	0	-	-	-	0.816	-	1.543	1.079	-	-
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	3	8	0	0	0	0	0	0	0	3	9	0	0	-	-	-	-	-	0.000	0.343	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	7	1	28	103	1	0	0	0	0	4	1	19	114	0	0	-	-	-	1.279	0.000	1.857	1.056	1.414	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	16	318	55	127	826	4	65	0	0	16	318	53	112	811	4	64	-	-	0.000	0.000	0.272	1.372	0.524	0.000	0.125
Tinkune (Service Lane) - Sankhamul	0	1	0	35	6	163	252	5	0	0	1	0	35	6	179	219	5	0	-	0.000	-	0.000	0.000	1.224	2.150	0.000	-
Sankhammul - PuranoBaneshwor	0	7	0	16	19	246	1135	27	91	0	10	0	8	18	248	1123	28	88	-	1.029	-	2.309	0.232	0.127	0.357	0.191	0.317
Sankhamul - Tinkune (Service Lane)	0	0	0	2	4	23	100	4	0	0	0	0	5	3	14	81	3	0	-	-	-	1.604	0.535	2.092	1.997	0.535	-
Sankhamul - Tinkune (Main Lane)	0	1	0	7	4	102	163	3	0	0	2	0	10	4	109	179	4	1	-	0.816	-	1.029	0.000	0.682	1.224	0.535	1.414
Sankhamul - Maitighar (Main Lane)	0	0	0	2	2	115	229	10	0	0	0	0	2	4	100	234	9	0	-	-	-	0.000	1.155	1.447	0.329	0.324	-
Sankhamul - Maitighar (Service Lane)	0	5	0	6	16	43	92	8	0	0	1	0	8	16	49	86	7	0	-	2.309	-	0.756	0.000	0.885	0.636	0.365	-
Total	**3**	**95**	**49**	**965**	**474**	**4825**	**15477**	**381**	**392**	**3**	**93**	**47**	**935**	**456**	**4674**	**14551**	**370**	**378**	0.000	0.206	0.289	0.973	0.835	2.191	7.557	0.568	0.714

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Wednesday 9:00 - 11:00 AM)

Movement	INPUT									OUTPUT									GEH							
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	0	0	34	113	4	0	0	1	0	0	0	31	114	4	0	-	0.000	-	-	-	0.526	0.094	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	12	212	58	9	28	1	46	0	0	10	196	53	9	26	1	43	-	-	0.603	1.120	0.671	0.000	0.385	0.000	0.450
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	4	2	5	24	0	1	0	0	0	4	4	6	17	0	0	-	-	-	0.000	1.155	0.426	1.546	-	1.414
Maitighar (Main Lane) - PuranoBaneshwor	0	0	15	21	4	105	313	32	0	0	0	16	25	5	89	266	25	0	-	-	0.254	0.834	0.471	1.625	2.762	1.311	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	3	51	2	29	74	2	16	0	0	3	46	3	21	68	1	11	-	-	0.000	0.718	0.632	1.600	0.712	0.816	1.361
Maitighar (Main Lane) - Tinkune (Main Lane)	2	6	7	44	39	606	2846	88	16	2	6	6	42	34	593	2652	88	14	0.000	0.000	0.392	0.305	0.828	0.531	3.700	0.000	0.516
Maitighar - Sankhamul	0	1	0	1	27	129	877	11	0	0	1	0	1	26	122	779	9	0	-	0.000	-	0.000	0.194	0.625	3.406	0.632	-
PuranoBaneshwor - Tinkune (Service Lane)	0	1	0	45	16	122	664	16	1	0	1	0	47	14	132	668	24	0	-	0.000	-	0.295	0.516	0.887	0.155	1.789	1.414
PuranoBaneshwor - Tinkune (Main Lane)	0	0	2	10	25	223	1060	28	0	0	0	2	8	26	208	1035	20	1	-	-	0.000	0.667	0.198	1.022	0.772	1.633	1.414
PuranoBaneshwor - Maitighar (Main Lane)	0	7	0	3	13	164	791	15	0	0	8	0	3	11	165	787	10	0	-	0.365	-	0.000	0.577	0.078	0.142	1.414	-
PuranoBaneshwor - Maitighar (Service Lane)	0	1	0	2	4	47	139	2	0	0	0	0	2	3	46	124	1	0	-	1.414	-	0.000	0.535	0.147	1.308	0.816	-
PuranoBaneshwor - Sankhamul	0	13	0	2	15	171	407	23	107	0	13	0	2	16	163	366	29	97	-	0.000	-	0.000	0.254	0.619	2.085	1.177	0.990
Tinkune - PuranoBaneshwor	0	4	0	50	43	378	2701	50	0	0	4	0	51	43	378	2681	50	0	-	0.000	-	0.141	0.000	0.000	0.386	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	9	8	3	37	122	1094	3597	107	91	9	8	3	35	113	1061	3475	103	80	0.000	0.000	0.000	0.333	0.830	1.005	2.052	0.390	1.190
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	1	26	4	13	48	1	11	0	0	1	26	4	12	35	1	11	-	-	0.000	0.000	0.000	0.283	2.018	0.000	0.000
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	7	0	0	-	-	-	-	-	1.414	0.816	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	6	2	1	12	0	0	0	0	0	2	0	1	15	0	0	-	-	-	2.000	2.000	0.000	0.816	-	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	14	250	45	27	77	4	44	0	0	14	250	43	30	88	4	42	-	-	0.000	0.000	0.302	0.562	1.211	0.000	0.305
Tinkune (Service Lane) - Sankhamul	0	0	0	3	14	103	1121	9	0	0	0	0	5	18	99	1094	9	0	-	-	-	1.000	1.000	0.398	0.811	0.000	-
Sankhammul - PuranoBaneshwor	0	19	0	4	24	178	1131	28	102	0	18	0	3	24	185	1074	30	97	-	0.232	-	0.535	0.000	0.520	1.717	0.371	0.501
Sankhamul - Tinkune (Service Lane)	0	0	0	0	1	22	85	3	0	0	0	0	0	0	23	152	4	0	-	-	-	-	1.414	0.211	6.155	0.535	-
Sankhamul - Tinkune (Main Lane)	0	0	0	1	12	81	242	12	1	0	0	0	1	11	77	231	8	2	-	-	-	0.000	0.295	0.450	0.715	1.265	0.816
Sankhamul - Maitighar (Main Lane)	0	0	0	2	1	77	159	4	0	0	0	0	2	1	78	149	5	0	-	-	-	0.000	0.000	0.114	0.806	0.471	-
Sankhamul - Maitighar (Service Lane)	0	0	0	2	33	152	224	4	0	0	0	0	3	35	142	209	3	1	-	-	-	0.632	0.343	0.825	1.019	0.535	1.414
Total	**11**	**61**	**57**	**776**	**506**	**3771**	**16738**	**444**	**436**	**11**	**60**	**55**	**754**	**487**	**3671**	**16112**	**429**	**399**	0.000	0.129	0.267	0.795	0.853	1.639	4.885	0.718	1.811

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Thursday 9:00 - 11:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	1	0	45	104	3	0	0	1	0	0	0	39	101	5	0	-	0.000	-	1.414	-	0.926	0.296	1.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	11	219	57	15	25	1	37	0	0	10	209	56	16	26	0	37	-	-	0.309	0.684	0.133	0.254	0.198	1.414	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	2	0	3	28	1	1	0	0	0	3	0	7	21	0	0	-	-	-	0.632	-	1.789	1.414	1.414	1.414
Maitighar (Main Lane) - PuranoBaneshwor	0	0	1	3	2	68	194	9	5	0	0	1	1	3	59	169	4	3	-	-	0.000	1.414	0.632	1.129	1.856	1.961	1.000
Maitighar (Main Lane) - Tinkune (Service Lane)	2	0	2	25	8	28	71	5	0	2	0	2	27	8	31	67	5	7	0.000	-	0.000	0.392	0.000	0.552	0.482	0.000	3.742
Maitighar (Main Lane) - Tinkune (Main Lane)	5	5	0	36	27	662	2285	143	0	5	4	0	33	22	633	2169	136	0	0.000	0.471	-	0.511	1.010	1.140	2.458	0.593	-
Maitighar - Sankhamul	0	0	0	1	16	129	325	12	0	0	0	0	1	16	126	315	12	0	-	-	-	0.000	0.000	0.266	0.559	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	43	15	138	663	15	3	0	0	0	39	15	151	662	15	3	-	-	-	0.625	0.000	1.081	0.039	0.000	0.000
PuranoBaneshwor - Tinkune (Main Lane)	1	0	0	4	6	324	1085	18	0	1	0	0	8	6	307	1075	17	0	0.000	-	-	1.633	0.000	0.957	0.304	0.239	-
PuranoBaneshwor - Maitighar (Main Lane)	3	0	0	2	2	131	93	3	0	2	0	0	2	3	131	79	2	0	0.632	-	-	0.000	0.632	0.000	1.510	0.632	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	4	39	149	3	0	0	0	0	0	5	40	133	2	0	-	-	-	-	0.471	0.159	1.347	0.632	-
PuranoBaneshwor - Sankhamul	12	2	0	6	9	213	1264	18	106	10	2	0	6	7	190	1177	18	96	0.603	0.000	-	0.000	0.707	1.620	2.490	0.000	0.995
Tinkune - PuranoBaneshwor	0	7	0	50	19	456	2872	31	0	0	7	0	48	18	413	2672	29	0	-	0.000	-	0.286	0.232	2.063	3.799	0.365	-
Tinkune (Main Lane) - Maitighar (Main Lane)	0	8	6	7	14	614	2945	148	5	0	9	7	8	14	602	2876	146	6	-	0.343	0.392	0.365	0.000	0.487	1.279	0.165	0.426
Tinkune (Main Lane) - Maitighar (Service Lane)	0	2	2	20	0	24	27	2	4	0	1	1	17	0	22	21	0	3	-	0.816	0.816	0.697	-	0.417	1.225	2.000	0.535
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	1	8	0	0	0	0	0	0	0	1	5	0	0	-	-	-	-	-	0.000	1.177	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	2	0	0	5	0	0	0	0	0	0	0	0	2	0	0	-	-	-	2.000	-	-	1.604	-	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	10	239	37	41	98	5	32	0	0	10	238	35	45	106	5	29	-	-	0.000	0.065	0.333	0.610	0.792	0.000	0.543
Tinkune (Service Lane) - Sankhamul	0	0	0	0	0	67	424	13	0	0	0	0	0	0	61	406	13	0	-	-	-	-	-	0.750	0.884	0.000	-
Sankhammul - PuranoBaneshwor	7	2	0	3	6	265	1446	12	98	7	2	0	3	3	272	1442	9	96	0.000	0.000	-	0.000	1.414	0.427	0.105	0.926	0.203
Sankhamul - Tinkune (Service Lane)	0	1	0	3	3	22	89	3	0	0	1	0	0	4	19	89	3	0	-	0.000	-	2.449	0.535	0.663	0.000	0.000	-
Sankhamul - Tinkune (Main Lane)	3	0	0	2	1	102	363	4	0	3	0	0	3	2	95	366	5	0	0.000	-	-	0.632	0.816	0.705	0.157	0.471	-
Sankhamul - Maitighar (Main Lane)	0	0	0	0	0	51	105	10	0	0	0	0	4	0	47	102	14	0	-	-	-	2.828	-	0.571	0.295	1.155	-
Sankhamul - Maitighar (Service Lane)	0	0	0	2	5	62	217	11	0	0	0	0	0	6	63	206	8	0	-	-	-	2.000	0.426	0.126	0.756	0.973	-
Total	**33**	**28**	**32**	**670**	**231**	**3500**	**14885**	**470**	**291**	**30**	**27**	**31**	**650**	**223**	**3370**	**14287**	**448**	**280**	0.535	0.191	0.178	0.778	0.531	2.218	4.951	1.027	0.651

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Friday 9:00 - 11:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	0	0	30	111	2	0	0	0	0	0	0	26	114	0	0	-	-	-	-	-	0.756	0.283	2.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	14	213	54	12	33	0	33	0	0	14	206	50	14	32	2	32	-	-	0.000	0.484	0.555	0.555	0.175	2.000	0.175
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	2	3	8	21	0	0	0	0	0	3	7	9	17	0	0	-	-	-	0.632	1.789	0.343	0.918	-	-
Maitighar (Main Lane) - PuranoBaneshwor	0	4	0	5	3	53	329	4	2	0	6	0	4	3	45	325	3	2	-	0.894	-	0.471	0.000	1.143	0.221	0.535	0.000
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	3	31	7	32	92	1	2	0	0	3	35	10	36	78	0	8	-	-	0.000	0.696	1.029	0.686	1.519	1.414	2.683
Maitighar (Main Lane) - Tinkune (Main Lane)	0	6	4	26	31	652	2112	62	2	0	4	4	22	28	643	2085	62	2	-	0.894	0.000	0.816	0.552	0.354	0.589	0.000	0.000
Maitighar - Sankhamul	0	0	0	3	19	128	522	18	0	0	0	0	3	19	128	512	18	0	-	-	-	0.000	0.000	0.000	0.440	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	51	13	126	709	16	2	0	0	0	49	11	134	699	17	2	-	-	-	0.283	0.577	0.702	0.377	0.246	0.000
PuranoBaneshwor - Tinkune (Main Lane)	0	1	1	6	16	232	1197	26	0	0	1	1	8	18	223	1194	25	0	-	0.000	0.000	0.756	0.485	0.597	0.087	0.198	-
PuranoBaneshwor - Maitighar (Main Lane)	0	2	5	0	4	170	578	22	1	0	3	5	0	6	173	547	27	0	-	0.632	0.000	-	0.894	0.229	1.307	1.010	1.414
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	38	156	3	0	0	0	0	0	1	38	152	0	0	-	-	-	-	1.414	0.000	0.322	2.449	-
PuranoBaneshwor - Sankhamul	0	16	2	1	15	189	1283	37	96	0	15	2	1	15	175	1236	33	90	-	0.254	0.000	0.000	0.000	1.038	1.324	0.676	0.622
Tinkune - PuranoBaneshwor	0	2	0	48	10	378	2833	56	0	0	2	0	48	10	376	2794	54	0	-	0.000	-	0.000	0.000	0.103	0.735	0.270	-
Tinkune (Main Lane) - Maitighar (Main Lane)	0	3	17	25	68	837	4565	149	22	0	3	13	19	58	780	4313	131	15	-	0.000	1.033	1.279	1.260	2.005	3.782	1.521	1.627
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	3	0	22	54	2	0	0	0	0	3	0	18	51	2	0	-	-	-	0.000	-	0.894	0.414	0.000	-
Tinkune (Main Lane) - Sankhamul	0	0	0	0	0	2	11	0	0	0	0	0	0	0	2	6	0	0	-	-	-	-	-	0.000	1.715	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	15	1	40	106	1	3	0	0	0	9	1	40	111	1	2	-	-	-	1.732	0.000	0.000	0.480	0.000	0.632
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	19	281	51	160	865	9	75	0	0	19	283	48	156	860	9	74	-	-	0.000	0.119	0.426	0.318	0.170	0.000	0.116
Tinkune (Service Lane) - Sankhamul	0	0	0	2	7	85	513	3	0	0	0	0	3	9	85	483	3	0	-	-	-	0.632	0.707	0.000	1.344	0.000	-
Sankhammul - PuranoBaneshwor	0	18	0	5	4	198	1665	37	89	0	17	0	6	5	199	1572	40	86	-	0.239	-	0.426	0.471	0.071	2.312	0.483	0.321
Sankhamul - Tinkune (Service Lane)	0	0	0	3	2	29	85	4	0	0	0	0	2	1	27	79	0	0	-	-	-	0.632	0.816	0.378	0.663	2.828	-
Sankhamul - Tinkune (Main Lane)	0	0	0	4	7	96	411	8	0	0	0	0	2	8	91	421	6	0	-	-	-	1.155	0.365	0.517	0.490	0.756	-
Sankhamul - Maitighar (Main Lane)	0	0	0	0	0	86	215	10	0	0	0	0	0	0	81	198	12	0	-	-	-	-	-	0.547	1.183	0.603	-
Sankhamul - Maitighar (Service Lane)	0	0	0	2	29	142	815	3	1	0	0	0	3	27	136	820	2	1	-	-	-	0.632	0.378	0.509	0.175	0.632	0.000
Total	**0**	**52**	**65**	**726**	**347**	**3745**	**19281**	**473**	**328**	**0**	**51**	**61**	**709**	**335**	**3635**	**18699**	**447**	**314**	-	0.139	0.504	0.635	0.650	1.811	4.223	1.212	0.781

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Monday 1:00 – 3:00 PM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	0	4	73	407	7	0	0	0	0	0	1	63	427	8	0	-	-	-	-	1.897	1.213	0.979	0.365	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	6	204	65	19	47	5	50	0	0	6	194	65	20	37	4	48	-	-	0.000	0.709	0.000	0.226	1.543	0.471	0.286
Maitighar (Service Lane) - Tinkune (Main Lane)	0	1	0	5	0	16	62	0	1	0	1	0	6	0	22	41	0	2	-	0.000	-	0.426	-	1.376	2.926	-	0.816
Maitighar (Main Lane) - PuranoBaneshwor	0	1	0	3	9	95	255	10	0	0	1	0	2	8	86	208	10	0	-	0.000	-	0.632	0.343	0.946	3.089	0.000	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	1	35	16	36	150	6	5	0	0	1	31	16	37	138	7	7	-	-	0.000	0.696	0.000	0.166	1.000	0.392	0.816
Maitighar (Main Lane) - Tinkune (Main Lane)	4	5	9	27	14	144	3083	77	5	4	4	8	27	7	82	2761	70	2	0.000	0.471	0.343	0.000	2.160	5.832	5.957	0.816	1.604
Maitighar - Sankhamul	0	0	0	3	24	142	702	20	0	0	0	0	2	24	142	692	20	0	-	-	-	0.632	0.000	0.000	0.379	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	1	41	20	171	927	19	0	0	0	0	43	22	171	922	19	0	-	-	1.414	0.309	0.436	0.000	0.164	0.000	-
PuranoBaneshwor - Tinkune (Main Lane)	0	1	0	5	18	226	1443	41	0	1	1	1	3	16	221	1425	40	0	1.414	0.000	1.414	1.000	0.485	0.334	0.475	0.157	-
PuranoBaneshwor - Maitighar (Main Lane)	1	6	0	0	9	131	554	22	1	1	6	0	0	16	122	471	22	0	0.000	0.000	-	-	1.980	0.800	3.666	0.000	1.414
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	6	41	178	2	0	0	0	0	4	15	38	166	1	0	-	-	-	2.828	2.777	0.477	0.915	0.816	-
PuranoBaneshwor - Sankhamul	3	0	0	1	13	144	1210	31	64	3	1	0	1	33	154	1238	40	65	0.000	1.414	-	0.000	4.170	0.819	0.800	1.511	0.125
Tinkune - PuranoBaneshwor	0	0	0	49	46	339	1856	55	2	0	0	0	45	43	309	1699	53	2	-	-	-	0.583	0.450	1.667	3.724	0.272	0.000
Tinkune (Main Lane) - Maitighar (Main Lane)	5	7	1	16	24	223	2631	72	0	5	7	1	14	19	197	2555	72	0	0.000	0.000	0.000	0.516	1.078	1.794	1.492	0.000	-
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	0	0	14	43	1	0	0	0	0	0	0	10	37	1	0	-	-	-	-	-	1.155	0.949	0.000	-
Tinkune (Main Lane) - Sankhamul	0	0	0	1	2	2	30	2	0	0	0	0	1	1	3	38	0	0	-	-	-	0.000	0.816	0.632	1.372	2.000	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	6	2	37	61	2	0	0	0	0	6	2	34	65	2	0	-	-	-	0.000	0.000	0.504	0.504	0.000	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	18	209	55	32	492	10	33	0	0	18	206	50	38	489	9	28	-	-	0.000	0.208	0.690	1.014	0.135	0.324	0.905
Tinkune (Service Lane) - Sankhamul	0	0	0	0	20	91	642	25	0	0	0	0	0	24	83	615	26	0	-	-	-	-	0.853	0.858	1.077	0.198	-
Sankhammul - PuranoBaneshwor	0	2	0	4	28	173	1354	39	73	0	2	0	4	30	181	1358	36	71	-	0.000	-	0.000	0.371	0.601	0.109	0.490	0.236
Sankhamul - Tinkune (Service Lane)	0	0	0	1	3	36	94	8	0	0	0	0	1	4	23	89	5	0	-	-	-	0.000	0.535	2.393	0.523	1.177	-
Sankhamul - Tinkune (Main Lane)	0	0	0	1	15	89	472	8	0	0	0	0	1	13	93	473	9	0	-	-	-	0.000	0.535	0.419	0.046	0.343	-
Sankhamul - Maitighar (Main Lane)	0	0	0	0	7	70	345	7	0	0	0	0	0	6	70	341	7	0	-	-	-	-	0.392	0.000	0.216	0.000	-
Sankhamul - Maitighar (Service Lane)	1	0	0	0	18	73	184	8	1	1	0	0	0	18	68	152	12	0	0.000	-	-	-	0.000	0.595	2.469	1.265	1.414
Total	**14**	**23**	**36**	**611**	**418**	**2417**	**17222**	**477**	**235**	**15**	**23**	**35**	**591**	**433**	**2267**	**16437**	**473**	**225**	0.263	0.000	0.168	0.816	0.727	3.100	6.051	0.184	0.659

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Tuesday 1:00 – 3:00 PM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	3	5	61	448	8	1	0	0	3	4	5	58	399	10	1	-	-	2.449	0.535	0.000	0.389	2.381	0.667	0.000
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	6	159	42	59	70	7	46	0	0	3	152	35	54	129	4	43	-	-	1.414	0.561	1.128	0.665	5.915	1.279	0.450
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	8	6	17	39	3	0	0	0	0	4	11	21	17	4	0	-	-	-	1.633	1.715	0.918	4.158	0.535	-
Maitighar (Main Lane) - PuranoBaneshwor	0	0	0	3	4	66	206	6	0	0	0	0	6	7	63	176	3	0	-	-	-	1.414	1.279	0.374	2.171	1.414	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	0	10	12	15	59	10	3	0	0	0	11	11	11	58	8	0	-	-	-	0.309	0.295	1.109	0.131	0.667	2.449
Maitighar (Main Lane) - Tinkune (Main Lane)	0	2	3	21	8	645	3115	135	3	0	2	3	16	3	616	3025	133	3	-	0.000	0.000	1.162	2.132	1.155	1.624	0.173	0.000
Maitighar - Sankhamul	0	0	0	2	28	152	647	22	1	0	0	0	1	28	150	635	22	1	-	-	-	0.816	0.000	0.163	0.474	0.000	0.000
PuranoBaneshwor - Tinkune (Service Lane)	1	0	0	41	24	190	973	19	1	1	0	0	42	24	196	971	19	1	0.000	-	-	0.155	0.000	0.432	0.064	0.000	0.000
PuranoBaneshwor - Tinkune (Main Lane)	0	2	0	3	35	211	1402	48	0	0	2	0	2	34	201	1384	47	0	-	0.000	-	0.632	0.170	0.697	0.482	0.145	-
PuranoBaneshwor - Maitighar (Main Lane)	0	4	0	1	8	164	569	15	0	0	3	0	1	9	154	538	11	0	-	0.535	-	0.000	0.343	0.793	1.318	1.109	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	53	164	3	0	0	0	0	0	2	68	156	2	0	-	-	-	-	0.632	1.928	0.632	0.632	-
PuranoBaneshwor - Sankhamul	0	15	0	3	21	196	1349	37	64	0	16	0	3	20	180	1346	42	60	-	0.254	-	0.000	0.221	1.167	0.082	0.796	0.508
Tinkune - PuranoBaneshwor	0	0	0	42	51	321	1913	42	1	0	0	0	40	48	309	1845	40	1	-	-	-	0.312	0.426	0.676	1.569	0.312	0.000
Tinkune (Main Lane) - Maitighar (Main Lane)	0	6	6	22	22	916	2724	206	3	0	5	6	20	21	899	2684	206	3	-	0.426	0.000	0.436	0.216	0.564	0.769	0.000	0.000
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	5	0	16	52	1	1	0	1	0	5	0	18	64	0	0	-	1.414	-	0.000	-	0.485	1.576	1.414	1.414
Tinkune (Main Lane) - Sankhamul	0	0	0	0	1	7	31	0	0	0	0	0	0	0	6	24	0	0	-	-	-	-	1.414	0.392	1.335	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	2	1	28	27	8	0	0	0	0	1	0	26	32	9	0	-	-	-	0.816	1.414	0.385	0.921	0.343	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	12	258	53	171	831	7	53	0	0	12	254	50	171	837	6	52	-	-	0.000	0.250	0.418	0.000	0.208	0.392	0.138
Tinkune (Service Lane) - Sankhamul	0	0	0	5	12	89	564	16	0	0	0	0	6	16	90	537	16	0	-	-	-	0.426	1.069	0.106	1.151	0.000	-
Sankhammul - PuranoBaneshwor	0	12	0	8	30	194	1449	40	70	0	11	0	5	28	191	1441	40	64	-	0.295	-	1.177	0.371	0.216	0.210	0.000	0.733
Sankhamul - Tinkune (Service Lane)	0	0	0	3	6	22	100	4	0	0	0	0	4	8	22	90	2	0	-	-	-	0.535	0.756	0.000	1.026	1.155	-
Sankhamul - Tinkune (Main Lane)	0	0	2	8	12	87	410	10	1	0	0	2	11	12	92	404	10	1	-	-	0.000	0.973	0.000	0.529	0.297	0.000	0.000
Sankhamul - Maitighar (Main Lane)	0	0	0	2	2	78	305	10	0	0	0	0	1	3	80	335	12	0	-	-	-	0.816	0.632	0.225	1.677	0.603	-
Sankhamul - Maitighar (Service Lane)	0	0	0	7	13	80	124	0	2	0	0	0	7	13	82	125	0	3	-	-	-	0.000	0.000	0.222	0.090	-	0.632
Total	**1**	**41**	**29**	**616**	**399**	**3838**	**17571**	**657**	**250**	**1**	**40**	**29**	**596**	**388**	**3758**	**17252**	**646**	**233**	0.000	0.157	0.000	0.812	0.555	1.298	2.418	0.431	1.094

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Wednesday 1:00 – 3:00 PM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	0	5	83	405	20	0	0	0	0	0	7	77	427	20	0	-	-	-	-	0.816	0.671	1.079	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	14	207	51	19	37	1	45	0	0	14	205	47	26	28	1	42	-	-	0.000	0.139	0.571	1.476	1.579	0.000	0.455
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	2	2	11	33	0	2	0	0	0	1	4	13	21	0	5	-	-	-	0.816	1.155	0.577	2.309	-	1.604
Maitighar (Main Lane) - PuranoBaneshwor	0	4	0	1	2	72	128	15	0	0	3	0	0	3	76	135	16	0	-	0.535	-	1.414	0.632	0.465	0.610	0.254	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	1	0	62	5	32	81	0	19	0	0	0	67	3	32	72	0	1	-	1.414	-	0.623	1.000	0.000	1.029	-	5.692
Maitighar (Main Lane) - Tinkune (Main Lane)	0	14	6	21	25	666	3289	134	19	0	16	6	16	26	651	3250	131	19	-	0.516	0.000	1.162	0.198	0.585	0.682	0.261	0.000
Maitighar - Sankhamul	0	1	0	1	16	144	520	33	1	0	1	0	1	16	138	500	31	1	-	0.000	-	0.000	0.000	0.505	0.886	0.354	0.000
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	44	16	203	965	11	0	0	0	0	44	16	205	960	13	0	-	-	-	0.000	0.000	0.140	0.161	0.577	-
PuranoBaneshwor - Tinkune (Main Lane)	0	1	1	9	5	152	1241	97	1	0	1	1	9	5	149	1235	89	1	-	0.000	0.000	0.000	0.000	0.245	0.171	0.830	0.000
PuranoBaneshwor - Maitighar (Main Lane)	0	7	0	4	1	140	519	25	0	0	7	0	2	2	142	499	19	0	-	0.000	-	1.155	0.816	0.168	0.886	1.279	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	2	48	142	2	0	0	0	0	0	1	45	125	2	0	-	-	-	-	0.816	0.440	1.471	0.000	-
PuranoBaneshwor - Sankhamul	0	7	0	1	5	244	1372	82	87	0	7	0	3	4	195	1201	79	77	-	0.000	-	1.414	0.471	3.307	4.768	0.334	1.104
Tinkune - PuranoBaneshwor	0	3	2	47	20	368	1939	54	0	0	3	2	42	17	337	1778	52	0	-	0.000	0.000	0.750	0.697	1.651	3.735	0.275	-
Tinkune (Main Lane) - Maitighar (Main Lane)	0	11	4	38	57	844	2619	161	19	0	10	4	44	56	840	2585	161	21	-	0.309	0.000	0.937	0.133	0.138	0.667	0.000	0.447
Tinkune (Main Lane) - Maitighar (Service Lane)	0	1	0	43	6	30	18	0	6	0	2	0	34	4	27	25	0	4	-	0.816	-	1.450	0.894	0.562	1.510	-	0.894
Tinkune (Main Lane) - Sankhamul	0	0	0	2	1	7	41	0	0	0	0	0	5	2	3	41	0	0	-	-	-	1.604	0.816	1.789	0.000	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	1	0	1	2	0	0	0	0	0	0	0	1	2	0	0	-	-	-	1.414	-	0.000	0.000	-	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	1	7	218	54	41	59	5	45	0	1	7	216	52	45	64	5	44	-	0.000	0.000	0.136	0.275	0.610	0.638	0.000	0.150
Tinkune (Service Lane) - Sankhamul	0	2	0	6	13	90	305	25	0	0	2	0	7	15	86	295	25	0	-	0.000	-	0.392	0.535	0.426	0.577	0.000	-
Sankhammul - PuranoBaneshwor	0	7	1	3	11	171	1013	81	67	0	6	1	2	8	182	978	84	64	-	0.392	0.000	0.632	0.973	0.828	1.109	0.330	0.371
Sankhamul - Tinkune (Service Lane)	0	0	0	3	4	27	88	7	0	0	0	0	3	2	25	83	8	0	-	-	-	0.000	1.155	0.392	0.541	0.365	-
Sankhamul - Tinkune (Main Lane)	0	1	0	0	2	77	327	28	0	0	1	0	0	2	63	304	23	0	-	0.000	-	-	0.000	1.673	1.295	0.990	-
Sankhamul - Maitighar (Main Lane)	0	1	0	0	5	74	321	8	0	0	1	0	0	7	71	319	8	0	-	0.000	-	-	0.816	0.352	0.112	0.000	-
Sankhamul - Maitighar (Service Lane)	0	0	0	3	13	20	31	7	0	0	0	0	4	14	11	26	4	0	-	-	-	0.535	0.272	2.286	0.937	1.279	-
Total	**0**	**62**	**35**	**716**	**321**	**3564**	**15495**	**796**	**311**	**0**	**61**	**35**	**705**	**313**	**3440**	**14953**	**771**	**279**	-	0.128	0.000	0.413	0.449	2.095	4.393	0.893	1.863

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Thursday 1:00 – 3:00 PM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	0	3	106	410	7	0	0	1	0	0	5	95	433	7	0	-	0.000	-	-	1.000	1.097	1.120	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	8	214	46	26	48	2	42	0	0	8	209	44	31	34	1	42	-	-	0.000	0.344	0.298	0.937	2.186	0.816	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	1	0	17	39	1	1	0	0	0	0	0	21	28	2	0	-	-	-	1.414	-	0.918	1.901	0.816	1.414
Maitighar (Main Lane) - PuranoBaneshwor	0	2	2	3	6	69	178	9	0	0	3	3	4	6	65	113	4	0	-	0.632	0.632	0.535	0.000	0.489	5.389	1.961	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	2	32	6	58	78	6	24	0	0	1	30	4	50	69	6	2	-	-	0.816	0.359	0.894	1.089	1.050	0.000	6.102
Maitighar (Main Lane) - Tinkune (Main Lane)	4	19	9	20	21	691	3492	112	24	4	15	9	19	14	639	3121	113	18	0.000	0.970	0.000	0.226	1.673	2.016	6.452	0.094	1.309
Maitighar - Sankhamul	0	0	0	3	26	124	582	14	0	0	0	0	3	26	124	573	14	0	-	-	-	0.000	0.000	0.000	0.375	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	43	11	184	930	29	0	0	0	0	45	9	190	928	25	0	-	-	-	0.302	0.632	0.439	0.066	0.770	-
PuranoBaneshwor - Tinkune (Main Lane)	0	0	1	2	26	225	1300	46	0	0	0	1	0	28	216	1284	50	0	-	-	0.000	2.000	0.385	0.606	0.445	0.577	-
PuranoBaneshwor - Maitighar (Main Lane)	1	1	1	1	13	159	579	23	1	0	0	1	1	7	158	554	22	0	1.414	1.414	0.000	0.000	1.897	0.079	1.050	0.211	1.414
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	39	126	2	0	0	0	0	0	4	37	120	1	0	-	-	-	-	0.535	0.324	0.541	0.816	-
PuranoBaneshwor - Sankhamul	0	9	0	3	15	196	1436	43	82	0	10	0	3	19	183	1385	43	75	-	0.324	-	0.000	0.970	0.944	1.358	0.000	0.790
Tinkune - PuranoBaneshwor	0	3	2	40	38	354	1996	69	0	0	3	2	40	38	347	1944	67	0	-	0.000	0.000	0.000	0.000	0.374	1.172	0.243	-
Tinkune (Main Lane) - Maitighar (Main Lane)	0	0	2	16	3	607	2433	147	0	0	0	2	18	3	585	2383	148	0	-	-	0.000	0.485	0.000	0.901	1.019	0.082	-
Tinkune (Main Lane) - Maitighar (Service Lane)	0	1	1	36	0	31	35	4	0	0	1	1	32	0	34	40	3	0	-	0.000	0.000	0.686	-	0.526	0.816	0.535	-
Tinkune (Main Lane) - Sankhamul	0	0	0	0	2	2	29	3	0	0	0	0	0	2	3	23	2	0	-	-	-	-	0.000	0.632	1.177	0.632	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	0	0	1	2	0	0	0	0	0	0	0	1	0	0	0	-	-	-	-	-	0.000	2.000	-	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	13	224	38	60	65	16	41	0	0	13	223	36	60	66	14	40	-	-	0.000	0.067	0.329	0.000	0.124	0.516	0.157
Tinkune (Service Lane) - Sankhamul	0	3	0	2	25	105	553	13	0	0	2	0	1	27	104	544	15	0	-	0.632	-	0.816	0.392	0.098	0.384	0.535	-
Sankhammul - PuranoBaneshwor	0	12	0	5	35	152	1421	57	80	0	12	0	8	35	161	1392	55	77	-	0.000	-	1.177	0.000	0.719	0.773	0.267	0.339
Sankhamul - Tinkune (Service Lane)	0	0	0	4	8	29	102	4	0	0	0	0	3	9	32	89	0	0	-	-	-	0.535	0.343	0.543	1.330	2.828	-
Sankhamul - Tinkune (Main Lane)	0	2	0	3	15	84	364	4	0	0	1	0	4	12	79	348	6	0	-	0.816	-	0.535	0.816	0.554	0.848	0.894	-
Sankhamul - Maitighar (Main Lane)	0	0	0	4	8	84	289	4	0	0	0	2	2	10	75	296	4	0	-	-	2.000	1.155	0.667	1.009	0.409	0.000	-
Sankhamul - Maitighar (Service Lane)	0	0	0	1	20	90	130	10	0	0	0	0	0	19	83	118	12	0	-	-	-	1.414	0.226	0.753	1.078	0.603	-
Total	**5**	**53**	**41**	**657**	**368**	**3493**	**16617**	**625**	**295**	**4**	**48**	**43**	**645**	**357**	**3373**	**15885**	**614**	**254**	0.471	0.704	0.309	0.470	0.578	2.048	5.742	0.442	2.475

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Friday 1:00 – 3:00 PM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	4	0	1	0	66	184	12	0	0	4	0	0	0	59	190	12	0	-	0.000	-	1.414	-	0.885	0.439	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	8	193	56	10	35	0	31	0	0	8	185	53	11	34	0	30	-	-	0.000	0.582	0.406	0.309	0.170	-	0.181
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	3	0	10	43	1	0	0	0	0	3	0	13	28	1	0	-	-	-	0.000	-	0.885	2.518	0.000	-
Maitighar (Main Lane) - PuranoBaneshwor	0	0	0	2	16	89	443	4	0	0	0	0	2	20	84	368	6	0	-	-	-	0.000	0.943	0.538	3.724	0.894	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	1	33	6	43	113	4	21	0	0	1	33	2	32	107	1	2	-	-	0.000	0.000	2.000	1.796	0.572	1.897	5.603
Maitighar (Main Lane) - Tinkune (Main Lane)	0	5	12	42	110	781	3619	153	21	0	4	10	29	95	685	3068	141	16	-	0.471	0.603	2.182	1.482	3.546	9.529	0.990	1.162
Maitighar - Sankhamul	0	0	1	3	29	135	754	20	0	0	0	1	2	29	131	714	20	0	-	-	0.000	0.632	0.000	0.347	1.476	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	40	17	182	1027	12	0	0	0	0	41	17	175	1011	11	0	-	-	-	0.157	0.000	0.524	0.501	0.295	-
PuranoBaneshwor - Tinkune (Main Lane)	0	3	0	2	31	200	1459	39	0	0	3	0	1	31	204	1457	39	0	-	0.000	-	0.816	0.000	0.281	0.052	0.000	-
PuranoBaneshwor - Maitighar (Main Lane)	0	6	0	3	14	139	436	21	0	0	8	0	2	13	146	434	19	0	-	0.756	-	0.632	0.272	0.586	0.096	0.447	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	42	159	2	0	0	0	0	0	4	39	151	2	0	-	-	-	-	0.535	0.471	0.643	0.000	-
PuranoBaneshwor - Sankhamul	0	12	0	4	24	163	1158	34	67	0	11	0	5	26	171	1302	42	76	-	0.295	-	0.471	0.400	0.619	4.106	1.298	1.064
Tinkune - PuranoBaneshwor	0	0	0	39	42	304	1729	51	1	0	0	0	39	41	295	1681	50	1	-	-	-	0.000	0.155	0.520	1.162	0.141	0.000
Tinkune (Main Lane) - Maitighar (Main Lane)	2	3	2	14	118	642	1724	153	7	2	3	2	12	114	620	1659	152	7	0.000	0.000	0.000	0.555	0.371	0.876	1.580	0.081	0.000
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	2	0	23	57	3	0	0	0	0	3	0	23	62	2	0	-	-	-	0.632	-	0.000	0.648	0.632	-
Tinkune (Main Lane) - Sankhamul	0	0	0	1	1	5	5	0	0	0	0	0	0	0	5	2	0	0	-	-	-	1.414	1.414	0.000	1.604	-	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	8	0	48	79	5	1	0	0	0	5	0	46	86	6	0	-	-	-	1.177	-	0.292	0.771	0.426	1.414
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	17	249	53	160	821	5	71	0	0	17	249	51	161	829	4	68	-	-	0.000	0.000	0.277	0.079	0.279	0.471	0.360
Tinkune (Service Lane) - Sankhamul	0	1	0	3	15	93	468	17	1	0	1	0	4	16	92	433	17	0	-	0.000	-	0.535	0.254	0.104	1.649	0.000	1.414
Sankhammul - PuranoBaneshwor	0	14	0	8	27	169	1424	66	79	0	14	0	5	29	165	1427	69	76	-	0.000	-	1.177	0.378	0.310	0.079	0.365	0.341
Sankhamul - Tinkune (Service Lane)	0	0	0	3	7	25	102	7	0	0	0	0	1	7	27	95	8	0	-	-	-	1.414	0.000	0.392	0.705	0.365	-
Sankhamul - Tinkune (Main Lane)	0	0	0	9	13	77	397	12	0	0	0	0	15	7	83	388	7	0	-	-	-	1.732	1.897	0.671	0.454	1.622	-
Sankhamul - Maitighar (Main Lane)	0	1	1	1	7	67	235	5	0	0	1	1	1	9	66	224	3	0	-	0.000	0.000	0.000	0.707	0.123	0.726	1.000	-
Sankhamul - Maitighar (Service Lane)	0	0	1	1	24	72	282	10	0	0	0	1	0	26	63	270	12	0	-	-	0.000	1.414	0.400	1.095	0.722	0.603	-
Total	2	49	43	664	613	3545	16753	636	300	2	49	41	637	590	3396	16020	624	276	0.000	0.000	0.309	1.059	0.938	2.529	5.726	0.478	1.414

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Monday 5:00 – 7:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	1	1	14	47	1	0	0	1	0	0	1	9	47	1	0	-	0.000	-	1.414	0.000	1.474	0.000	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	2	0	4	143	25	7	13	0	11	2	0	4	139	25	7	10	0	11	0.000	-	0.000	0.337	0.000	0.000	0.885	-	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	1	4	0	5	3	0	0	0	0	1	2	0	10	4	0	0	-	-	0.000	1.155	-	1.826	0.535	-	-
Maitighar (Main Lane) - PuranoBaneshwor	2	5	2	6	9	17	87	8	0	3	6	3	9	12	22	87	7	0	0.632	0.426	0.632	1.095	0.926	1.132	0.000	0.365	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	2	1	4	0	7	33	3	6	0	3	0	4	0	3	34	4	2	-	0.632	1.414	0.000	-	1.789	0.173	0.535	2.000
Maitighar (Main Lane) - Tinkune (Main Lane)	32	32	4	55	65	207	635	119	6	31	30	4	52	61	202	623	117	6	0.178	0.359	0.000	0.410	0.504	0.350	0.478	0.184	0.000
Maitighar - Sankhamul	0	2	0	1	5	48	134	6	0	0	1	0	1	5	47	109	6	0	-	0.816	-	0.000	0.000	0.145	2.268	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	3	0	1	0	30	116	4	0	0	5	0	0	0	32	109	4	0	-	1.000	-	1.414	-	0.359	0.660	0.000	-
PuranoBaneshwor - Tinkune (Main Lane)	0	6	0	5	4	56	182	7	0	0	4	0	6	4	54	186	7	0	-	0.894	-	0.426	0.000	0.270	0.295	0.000	-
PuranoBaneshwor - Maitighar (Main Lane)	1	15	0	2	4	84	139	15	2	1	15	0	2	5	85	131	10	0	0.000	0.000	-	0.000	0.471	0.109	0.689	1.414	2.000
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	2	2	7	0	0	0	0	0	0	2	1	9	0	0	-	-	-	-	0.000	0.816	0.707	-	-
PuranoBaneshwor - Sankhamul	0	14	0	0	9	29	167	17	31	0	13	0	0	7	24	169	22	30	-	0.272	-	-	0.707	0.971	0.154	1.132	0.181
Tinkune - PuranoBaneshwor	0	10	0	35	11	55	512	19	0	0	10	0	35	11	55	508	19	0	-	0.000	-	0.000	0.000	0.000	0.177	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	38	56	9	57	32	141	1244	82	4	38	55	9	57	31	134	1228	86	4	0.000	0.134	0.000	0.000	0.178	0.597	0.455	0.436	0.000
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	12	1	14	16	3	0	0	0	0	13	1	18	14	2	0	-	-	-	0.283	0.000	1.000	0.516	0.632	-
Tinkune (Main Lane) - Sankhamul	0	0	0	1	1	6	20	7	0	0	0	0	0	1	6	18	4	0	-	-	-	1.414	0.000	0.000	0.459	1.279	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	8	4	4	9	2	0	0	0	0	5	4	3	9	3	0	-	-	-	1.177	0.000	0.535	0.000	0.632	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	2	228	75	34	50	0	49	0	0	2	231	74	34	48	0	46	-	-	0.000	0.198	0.116	0.000	0.286	-	0.435
Tinkune (Service Lane) - Sankhamul	0	0	0	2	3	7	72	5	0	0	0	0	0	3	8	66	4	0	-	-	-	2.000	0.000	0.365	0.722	0.471	-
Sankhammul - PuranoBaneshwor	0	7	0	1	10	25	287	9	33	0	7	0	1	7	29	263	10	30	-	0.000	-	0.000	1.029	0.770	1.447	0.324	0.535
Sankhamul - Tinkune (Service Lane)	0	0	0	2	0	4	16	0	0	0	0	0	2	0	7	12	0	0	-	-	-	0.000	-	1.279	1.069	-	-
Sankhamul - Tinkune (Main Lane)	0	1	0	0	0	18	56	3	0	0	1	0	0	0	20	68	3	0	-	0.000	-	-	-	0.459	1.524	0.000	-
Sankhamul - Maitighar (Main Lane)	0	0	0	2	7	35	166	4	0	0	0	0	2	8	24	175	2	0	-	-	-	0.000	0.365	2.025	0.689	1.155	-
Sankhamul - Maitighar (Service Lane)	0	0	0	1	4	7	8	1	0	0	0	0	1	6	8	7	1	0	-	-	-	0.000	0.894	0.365	0.365	0.000	-
Total	**75**	**154**	**23**	**571**	**272**	**856**	**4019**	**315**	**142**	**75**	**151**	**23**	**562**	**268**	**842**	**3934**	**312**	**129**	0.000	0.243	0.000	0.378	0.243	0.480	1.348	0.169	1.117

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Tuesday 5:00 – 7:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	2	1	11	42	3	0	0	1	0	1	0	10	44	3	0	-	0.000	-	0.816	1.414	0.309	0.305	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	4	0	0	127	51	4	17	2	24	4	0	0	122	53	3	13	2	24	0.000	-	-	0.448	0.277	0.535	1.033	0.000	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	1	1	2	1	2	0	0	0	0	1	0	3	1	2	0	-	-	-	0.000	1.414	0.632	0.000	0.000	-
Maitighar (Main Lane) - PuranoBaneshwor	3	5	0	9	10	17	69	8	0	4	5	0	14	11	17	69	8	0	0.535	0.000	-	1.474	0.309	0.000	0.000	0.000	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	0	10	6	9	51	4	1	0	0	0	10	7	13	48	4	0	-	-	-	0.000	0.392	1.206	0.426	0.000	1.414
Maitighar (Main Lane) - Tinkune (Main Lane)	23	32	11	30	32	212	661	157	1	22	32	10	25	30	204	654	155	1	0.211	0.000	0.309	0.953	0.359	0.555	0.273	0.160	0.000
Maitighar - Sankhamul	0	2	0	1	6	36	124	11	0	0	2	0	1	6	36	121	11	0	-	0.000	-	0.000	0.000	0.000	0.271	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	1	0	0	3	42	106	7	0	0	1	0	0	3	47	96	8	0	-	0.000	-	-	0.000	0.750	0.995	0.365	-
PuranoBaneshwor - Tinkune (Main Lane)	0	3	0	2	11	71	167	14	0	0	3	0	2	11	66	174	13	0	-	0.000	-	0.000	0.000	0.604	0.536	0.272	-
PuranoBaneshwor - Maitighar (Main Lane)	1	11	0	4	6	70	135	10	0	1	10	0	4	5	68	125	8	0	0.000	0.309	-	0.000	0.426	0.241	0.877	0.667	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	2	2	8	0	0	1	0	0	0	2	5	10	0	0	1.414	-	-	-	0.000	1.604	0.667	-	-
PuranoBaneshwor - Sankhamul	0	3	0	0	10	31	189	14	35	0	4	0	0	10	27	194	16	33	-	0.535	-	-	0.000	0.743	0.361	0.516	0.343
Tinkune - PuranoBaneshwor	0	6	0	35	11	51	431	11	0	0	6	0	35	11	51	425	11	0	-	0.000	-	0.000	0.000	0.000	0.290	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	36	55	17	37	54	178	1333	84	0	35	52	17	40	52	175	1311	84	0	0.168	0.410	0.000	0.483	0.275	0.226	0.605	0.000	-
Tinkune (Main Lane) - Maitighar (Service Lane)	0	1	0	9	12	12	17	2	1	0	3	0	8	11	13	15	2	1	-	1.414	-	0.343	0.295	0.283	0.500	0.000	0.000
Tinkune (Main Lane) - Sankhamul	0	0	0	3	1	8	18	5	0	0	0	0	1	1	7	17	4	0	-	-	-	1.414	0.000	0.365	0.239	0.471	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	10	5	2	9	2	0	0	0	0	6	2	2	8	2	0	-	-	-	1.414	1.604	0.000	0.343	0.000	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	3	220	65	39	30	2	49	0	0	3	222	68	40	30	2	47	-	-	0.000	0.135	0.368	0.159	0.000	0.000	0.289
Tinkune (Service Lane) - Sankhamul	0	1	0	3	1	5	46	5	0	0	1	0	2	1	4	43	5	0	-	0.000	-	0.632	0.000	0.471	0.450	0.000	-
Sankhammul - PuranoBaneshwor	0	4	0	1	7	36	227	14	31	0	4	0	1	4	39	213	15	29	-	0.000	-	0.000	1.279	0.490	0.944	0.263	0.365
Sankhamul - Tinkune (Service Lane)	0	0	0	0	0	5	19	0	0	0	0	0	0	0	5	24	0	0	-	-	-	-	-	0.000	1.078	-	-
Sankhamul - Tinkune (Main Lane)	0	0	0	0	0	15	37	0	0	0	0	0	0	0	16	24	0	0	-	-	-	-	-	0.254	2.354	-	-
Sankhamul - Maitighar (Main Lane)	0	0	0	3	6	23	217	8	0	0	0	0	3	9	22	237	5	0	-	-	-	0.000	1.095	0.211	1.327	1.177	-
Sankhamul - Maitighar (Service Lane)	0	0	0	1	1	13	11	3	0	0	0	0	1	1	9	8	4	0	-	-	-	0.000	0.000	1.206	0.973	0.535	-
Total	**67**	**125**	**31**	**508**	**302**	**894**	**3965**	**368**	**142**	**67**	**124**	**30**	**499**	**298**	**882**	**3904**	**364**	**135**	0.000	0.090	0.181	0.401	0.231	0.403	0.972	0.209	0.595

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Wednesday 5:00 – 7:00 AM)

Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	1	0	1	3	5	47	0	0	0	1	0	0	4	5	49	0	0	-	0.000	-	1.414	0.535	0.000	0.289	-	-
Maitighar (Service Lane) - Tinkune (Service Lane)	0	0	0	122	54	8	7	1	21	0	0	0	119	50	7	4	1	20	-	-	-	0.273	0.555	0.365	1.279	0.000	0.221
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	2	1	1	3	1	0	0	0	0	2	3	2	2	1	0	-	-	-	0.000	1.414	0.816	0.632	0.000	-
Maitighar (Main Lane) - PuranoBaneshwor	0	0	0	10	21	50	127	18	0	0	0	0	14	21	49	129	18	0	-	-	-	1.155	0.000	0.142	0.177	0.000	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	0	10	10	3	34	4	0	0	0	2	8	12	3	40	5	0	-	-	2.000	0.667	0.603	0.000	0.986	0.471	-
Maitighar (Main Lane) - Tinkune (Main Lane)	32	40	11	48	24	207	625	122	0	32	40	8	46	21	203	606	118	0	0.000	0.000	0.973	0.292	0.632	0.279	0.766	0.365	-
Maitighar - Sankhamul	0	1	0	0	6	16	109	6	0	0	1	0	0	6	16	107	6	0	-	0.000	-	-	0.000	0.000	0.192	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	0	0	8	11	40	66	9	0	0	0	0	9	7	50	54	10	0	-	-	-	0.343	1.333	1.491	1.549	0.324	-
PuranoBaneshwor - Tinkune (Main Lane)	0	4	0	12	16	76	112	18	0	0	4	0	11	19	66	122	17	0	-	0.000	-	0.295	0.717	1.187	0.925	0.239	-
PuranoBaneshwor - Maitighar (Main Lane)	0	13	0	2	56	51	157	8	0	0	8	0	2	53	52	152	3	0	-	1.543	-	0.000	0.406	0.139	0.402	2.132	-
PuranoBaneshwor - Maitighar (Service Lane)	0	0	0	0	3	8	15	0	0	0	0	0	0	4	8	19	0	0	-	-	-	-	0.535	0.000	0.970	-	-
PuranoBaneshwor - Sankhamul	0	14	0	0	6	27	119	22	29	0	18	0	0	6	22	117	27	27	-	1.000	-	-	0.000	1.010	0.184	1.010	0.378
Tinkune - PuranoBaneshwor	0	13	0	37	13	96	288	23	0	0	13	0	37	13	91	286	23	0	-	0.000	-	0.000	0.000	0.517	0.118	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	16	43	15	36	39	242	1585	106	2	16	43	15	39	42	231	1555	106	2	0.000	0.000	0.000	0.490	0.471	0.715	0.757	0.000	0.000
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	11	9	6	20	1	0	0	0	0	9	7	5	10	1	0	-	-	-	0.632	0.707	0.426	2.582	0.000	-
Tinkune (Main Lane) - Sankhamul	0	1	0	5	1	9	19	3	0	0	0	0	4	0	13	16	2	0	-	1.414	-	0.471	1.414	1.206	0.717	0.632	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	9	3	3	10	1	0	0	0	0	7	2	3	10	2	0	-	-	-	0.707	0.632	0.000	0.000	0.816	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	1	230	69	48	83	3	58	0	0	1	230	70	45	80	2	53	-	-	0.000	0.000	0.120	0.440	0.332	0.632	0.671
Tinkune (Service Lane) - Sankhamul	0	1	0	4	2	8	54	6	0	0	1	0	2	2	10	49	6	0	-	0.000	-	1.155	0.000	0.667	0.697	0.000	-
Sankhammul - PuranoBaneshwor	0	10	0	2	11	30	163	16	21	0	7	0	0	8	35	175	16	18	-	1.029	-	2.000	0.973	0.877	0.923	0.000	0.679
Sankhamul - Tinkune (Service Lane)	0	1	0	0	1	1	18	0	0	0	0	0	0	0	5	19	0	0	-	1.414	-	-	1.414	2.309	0.232	-	-
Sankhamul - Tinkune (Main Lane)	0	1	0	0	1	18	33	0	0	0	0	0	0	0	11	18	0	0	-	1.414	-	-	1.414	1.838	2.970	-	-
Sankhamul - Maitighar (Main Lane)	0	1	0	1	8	19	179	11	0	0	7	0	2	10	19	188	8	0	-	3.000	-	0.816	0.667	0.000	0.664	0.973	-
Sankhamul - Maitighar (Service Lane)	0	1	0	1	0	11	19	1	0	0	0	0	2	3	8	7	3	0	-	1.414	-	0.816	2.449	0.973	3.328	1.414	-
Total	**48**	**145**	**27**	**551**	**368**	**983**	**3892**	**380**	**131**	**48**	**143**	**26**	**543**	**363**	**959**	**3814**	**375**	**120**	0.000	0.167	0.194	0.342	0.262	0.770	1.257	0.257	0.982

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Thursday 5:00 – 7:00 AM)

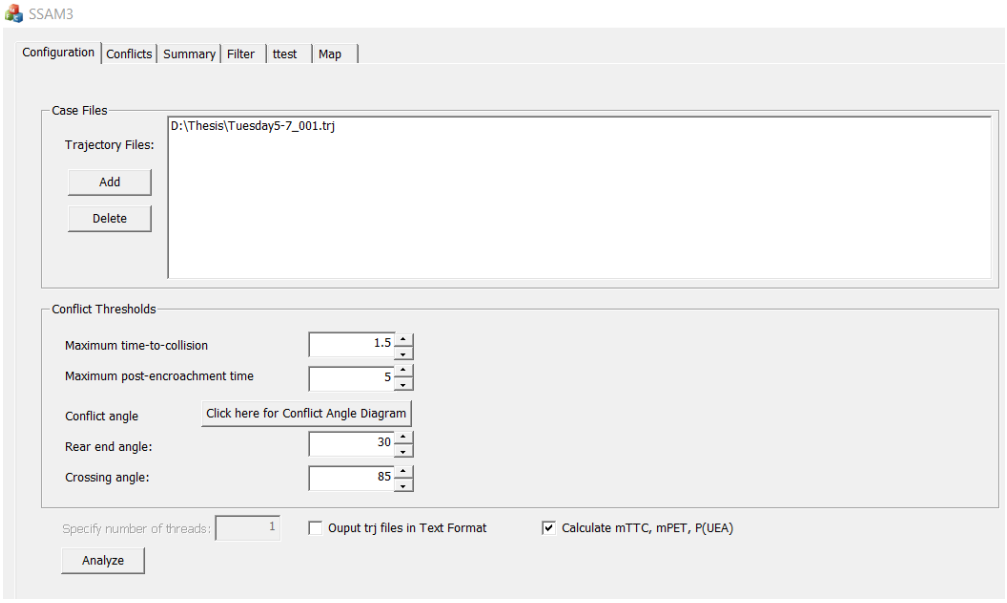
Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	2	0	8	55	2	0	1	0	3	1	0	4	55	2	0	1.414	-	2.449	0.816	-	1.633	0.000	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	1	0	4	119	52	13	19	1	22	0	0	1	116	51	13	15	1	21	1.414	-	1.897	0.277	0.139	0.000	0.970	0.000	0.216
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	3	1	6	7	0	0	0	0	0	2	2	10	9	0	0	-	-	-	0.632	0.816	1.414	0.707	-	-
Maitighar (Main Lane) - PuranoBaneshwor	1	2	0	5	7	18	57	4	0	2	2	0	9	8	23	51	8	0	0.816	0.000	-	1.512	0.365	1.104	0.816	1.633	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	0	0	6	7	10	35	3	0	0	0	0	8	7	9	29	7	1	-	-	-	0.756	0.000	0.324	1.061	1.789	1.414
Maitighar (Main Lane) - Tinkune (Main Lane)	19	23	12	33	28	226	225	112	0	18	23	11	27	26	217	234	103	0	0.232	0.000	0.295	1.095	0.385	0.605	0.594	0.868	-
Maitighar - Sankhamul	0	0	0	1	3	38	91	5	0	0	0	0	1	3	38	91	5	0	-	-	-	0.000	0.000	0.000	0.000	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	1	0	0	4	29	49	10	0	0	1	0	0	2	35	43	10	0	-	0.000	-	-	1.155	1.061	0.885	0.000	-
PuranoBaneshwor - Tinkune (Main Lane)	1	1	1	2	8	45	96	16	0	1	1	1	2	10	39	102	15	0	0.000	0.000	0.000	0.000	0.667	0.926	0.603	0.254	-
PuranoBaneshwor - Maitighar (Main Lane)	9	8	0	9	4	56	169	8	0	10	8	0	9	4	57	171	8	0	0.324	0.000	-	0.000	0.000	0.133	0.153	0.000	-
PuranoBaneshwor - Maitighar (Service Lane)	2	3	0	2	1	0	51	3	0	1	3	0	1	1	0	52	1	0	0.816	0.000	-	0.816	0.000	-	0.139	1.414	-
PuranoBaneshwor - Sankhamul	0	4	0	0	2	27	130	8	19	0	4	0	0	2	24	124	10	19	-	0.000	-	-	0.000	0.594	0.532	0.667	0.000
Tinkune - PuranoBaneshwor	1	3	0	45	8	59	444	21	0	1	3	0	45	8	59	441	21	0	0.000	0.000	-	0.000	0.000	0.000	0.143	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	14	42	2	60	55	140	668	90	3	14	41	2	57	57	140	658	89	2	0.000	0.155	0.000	0.392	0.267	0.000	0.388	0.106	0.632
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	2	9	4	12	17	3	0	0	0	2	9	2	12	27	2	0	-	-	0.000	0.000	1.155	0.000	2.132	0.632	-
Tinkune (Main Lane) - Sankhamul	0	0	0	2	3	6	11	3	0	0	0	0	5	2	4	8	4	0	-	-	-	1.604	0.632	0.894	0.973	0.535	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	14	4	9	26	2	0	0	0	0	12	2	11	26	2	0	-	-	-	0.555	1.155	0.632	0.000	0.000	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	3	99	62	25	19	3	15	0	0	3	100	62	21	16	3	14	-	-	0.000	0.100	0.000	0.834	0.717	0.000	0.263
Tinkune (Service Lane) - Sankhamul	0	1	0	5	2	9	46	3	0	0	1	0	4	3	11	46	3	0	-	0.000	-	0.471	0.632	0.632	0.000	0.000	-
Sankhammul - PuranoBaneshwor	0	1	0	1	3	10	187	8	29	0	1	0	0	0	20	154	5	27	-	0.000	-	1.414	2.449	2.582	2.527	1.177	0.378
Sankhamul - Tinkune (Service Lane)	0	0	0	0	0	6	16	0	0	0	0	0	0	0	4	17	0	0	-	-	-	-	-	0.894	0.246	-	-
Sankhamul - Tinkune (Main Lane)	0	0	0	0	0	6	18	1	0	0	0	0	0	0	6	17	0	0	-	-	-	-	-	0.000	0.239	1.414	-
Sankhamul - Maitighar (Main Lane)	0	0	0	1	3	23	174	1	0	0	0	0	1	6	10	174	5	0	-	-	-	0.000	1.414	3.200	0.000	2.309	-
Sankhamul - Maitighar (Service Lane)	0	0	0	0	2	28	25	3	0	0	0	0	1	1	8	8	3	0	-	-	-	1.414	0.816	4.714	4.185	0.000	-
Total	**48**	**89**	**24**	**418**	**263**	**809**	**2635**	**310**	**88**	**48**	**88**	**23**	**410**	**259**	**775**	**2568**	**307**	**84**	0.000	0.106	0.206	0.393	0.248	1.208	1.314	0.171	0.431

Calibration of Traffic Volume Field Volume and VISSIM Output Volume using GEH (Friday 5:00 – 7:00 AM)

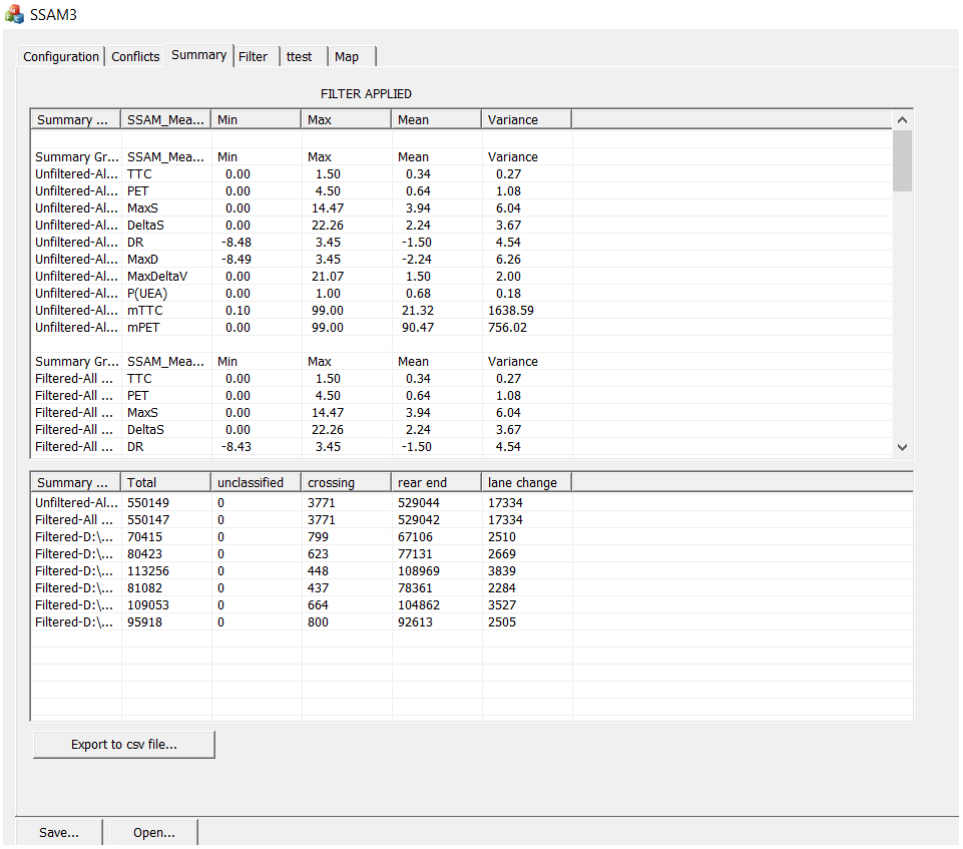
Movement	INPUT									OUTPUT									GEH								
	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo	Heavy Truck	Mini Truck	Big Bus	Mini Bus	Micro Bus	Car	Motorcycle	Pickup	Tempo
Maitighar (Service Lane) - PuranoBaneshwor	0	0	0	4	2	5	54	1	0	0	0	0	2	3	2	53	1	0	-	-	-	1.155	0.632	1.604	0.137	0.000	-
Maitighar (Service Lane) - Tinkune (Service Lane)	1	0	2	102	49	13	12	2	24	1	0	2	101	48	13	13	3	24	0.000	-	0.000	0.099	0.144	0.000	0.283	0.632	0.000
Maitighar (Service Lane) - Tinkune (Main Lane)	0	0	0	0	1	3	2	1	0	0	0	0	0	0	5	0	0	0	-	-	-	-	1.414	1.000	2.000	1.414	-
Maitighar (Main Lane) - PuranoBaneshwor	3	8	0	5	7	11	102	6	0	2	8	0	6	9	16	94	2	0	0.632	0.000	-	0.426	0.707	1.361	0.808	2.000	-
Maitighar (Main Lane) - Tinkune (Service Lane)	0	1	0	4	7	9	31	4	3	0	1	0	6	5	6	33	4	0	-	0.000	-	0.894	0.816	1.095	0.354	0.000	2.449
Maitighar (Main Lane) - Tinkune (Main Lane)	25	45	14	32	32	250	498	117	3	26	45	13	28	32	243	498	119	3	0.198	0.000	0.272	0.730	0.000	0.446	0.000	0.184	0.000
Maitighar - Sankhamul	0	0	0	1	4	10	53	9	0	0	0	0	1	4	10	52	9	0	-	-	-	0.000	0.000	0.000	0.138	0.000	-
PuranoBaneshwor - Tinkune (Service Lane)	0	1	0	14	1	31	82	6	0	0	0	0	14	1	31	73	7	0	-	1.414	-	0.000	0.000	0.000	1.022	0.392	-
PuranoBaneshwor - Tinkune (Main Lane)	0	2	0	20	5	56	134	13	0	0	3	0	20	5	56	141	11	0	-	0.632	-	0.000	0.000	0.000	0.597	0.577	-
PuranoBaneshwor - Maitighar (Main Lane)	7	8	0	7	7	61	169	8	0	6	11	0	7	8	62	175	5	0	0.392	0.973	-	0.000	0.365	0.128	0.457	1.177	-
PuranoBaneshwor - Maitighar (Service Lane)	1	2	1	0	1	13	7	2	0	1	2	1	0	0	11	7	3	0	0.000	0.000	0.000	-	1.414	0.577	0.000	0.632	-
PuranoBaneshwor - Sankhamul	0	8	0	0	6	28	105	11	29	0	5	0	0	6	26	96	13	29	-	1.177	-	-	0.000	0.385	0.898	0.577	0.000
Tinkune - PuranoBaneshwor	0	5	0	37	10	59	530	12	0	0	5	0	37	10	59	521	12	0	-	0.000	-	0.000	0.000	0.000	0.393	0.000	-
Tinkune (Main Lane) - Maitighar (Main Lane)	37	48	15	45	54	173	848	100	0	37	47	14	48	53	173	853	103	0	0.000	0.145	0.263	0.440	0.137	0.000	0.171	0.298	-
Tinkune (Main Lane) - Maitighar (Service Lane)	0	0	0	12	11	9	18	2	0	0	0	0	9	10	9	16	1	0	-	-	-	0.926	0.309	0.000	0.485	0.816	-
Tinkune (Main Lane) - Sankhamul	0	0	0	4	5	6	15	5	0	0	0	0	4	6	5	11	3	0	-	-	-	0.000	0.426	0.426	1.109	1.000	-
Tinkune (Service Lane) - Maitighar (Main Lane)	0	0	0	7	8	6	13	4	0	0	0	0	6	7	10	12	4	0	-	-	-	0.392	0.365	1.414	0.283	0.000	-
Tinkune (Service Lane) - Maitighar (Service Lane)	0	0	0	153	53	43	37	3	25	0	0	0	153	53	39	35	3	24	-	-	-	0.000	0.000	0.625	0.333	0.000	0.202
Tinkune (Service Lane) - Sankhamul	0	1	0	3	2	6	37	3	0	0	1	0	2	2	6	37	3	0	-	0.000	-	0.632	0.000	0.000	0.000	0.000	-
Sankhammul - PuranoBaneshwor	0	5	0	2	4	40	175	15	28	0	5	0	2	2	44	170	13	25	-	0.000	-	0.000	1.155	0.617	0.381	0.535	0.583
Sankhamul - Tinkune (Service Lane)	0	0	0	0	2	7	19	1	0	0	0	0	0	1	5	23	0	0	-	-	-	-	0.816	0.816	0.873	1.414	-
Sankhamul - Tinkune (Main Lane)	0	0	0	1	0	10	30	0	0	0	0	0	1	0	9	23	2	0	-	-	-	0.000	-	0.324	1.360	2.000	-
Sankhamul - Maitighar (Main Lane)	0	0	0	1	7	10	152	0	0	0	0	0	1	7	13	155	0	0	-	-	-	0.000	0.000	0.885	0.242	-	-
Sankhamul - Maitighar (Service Lane)	0	0	0	1	5	6	16	0	0	0	0	0	1	8	1	17	0	0	-	-	-	0.000	1.177	2.673	0.246	-	-
Total	74	134	32	455	283	865	3139	325	112	73	133	30	449	280	854	3108	321	105	0.117	0.087	0.359	0.282	0.179	0.375	0.555	0.223	0.672

APPENDIX G Input and Output in SSAM

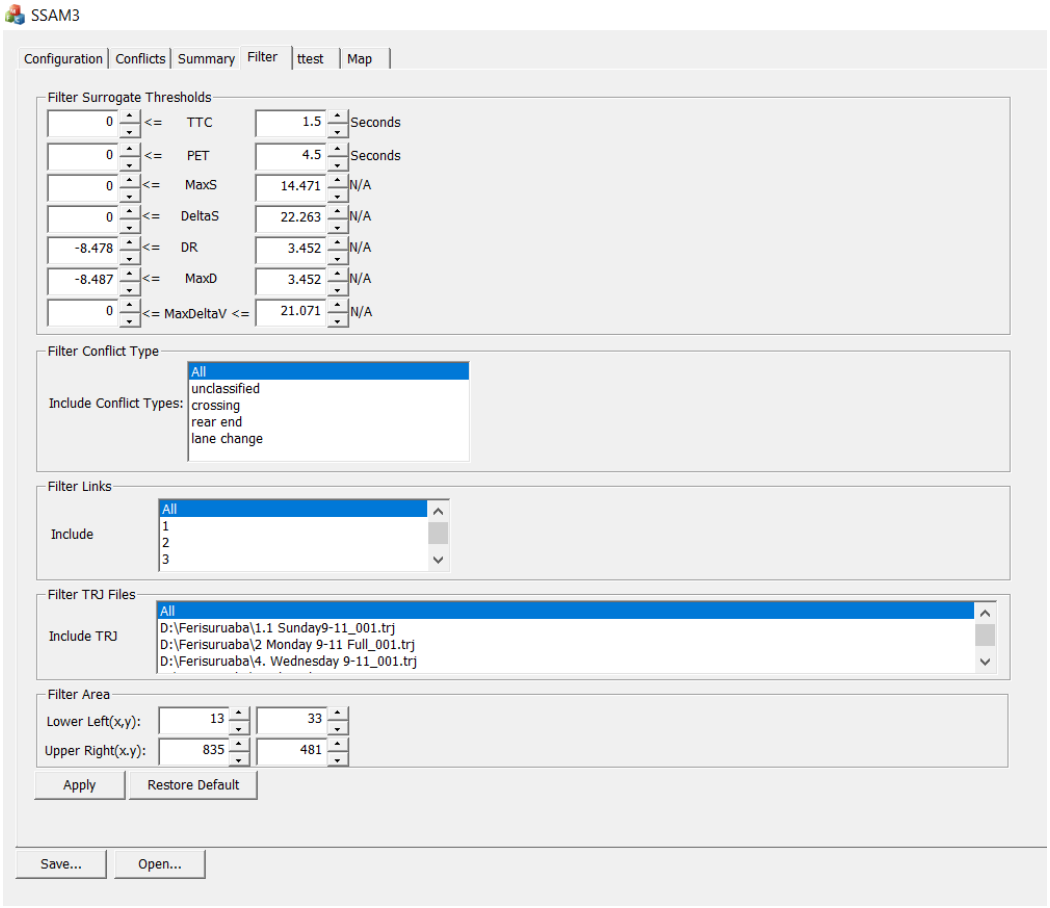
Input in SSAM



Summary of SSAM measures



Applying Filters



Location of Conflicts for different study periods

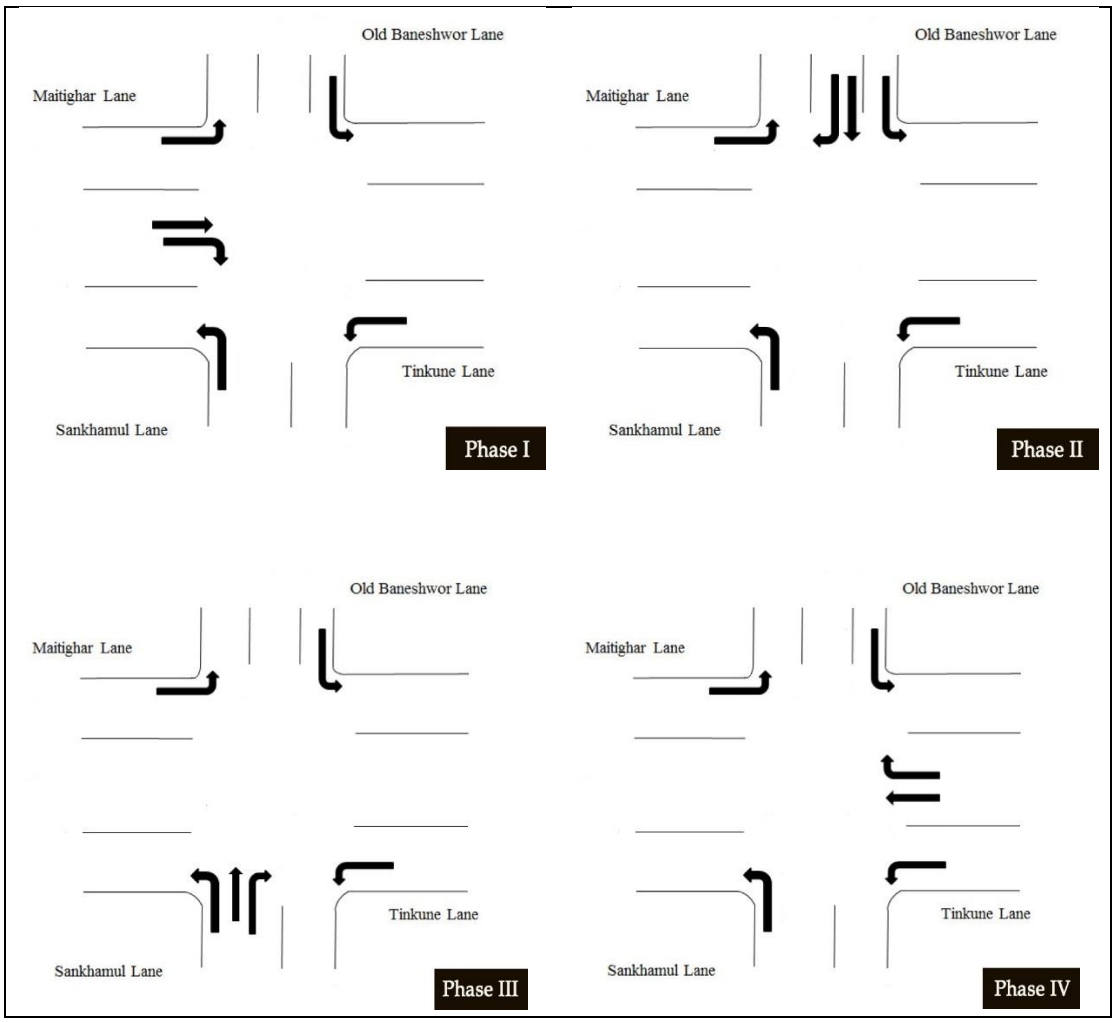
Conflict Points: All Day 5:00 - 7:00 AM

Conflict Points: All Day 9:00 - 11:00 AM

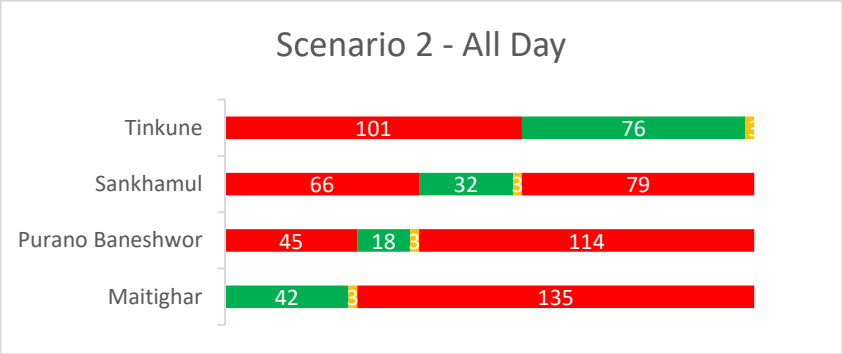
Conflict Points: All Day 1:00 - 3:00 PM

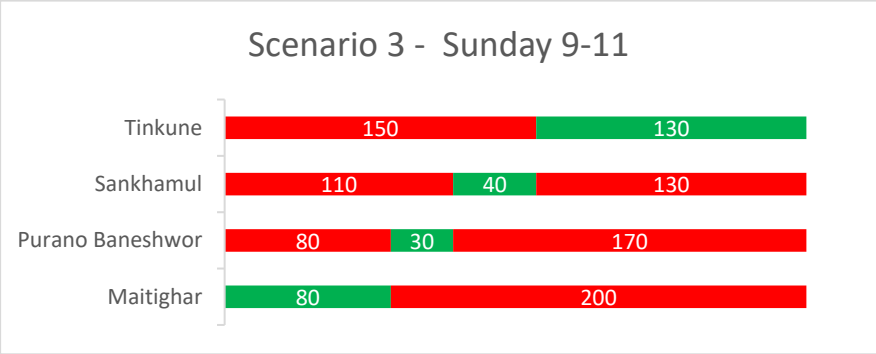
APPENDIX H Scenario Analysis

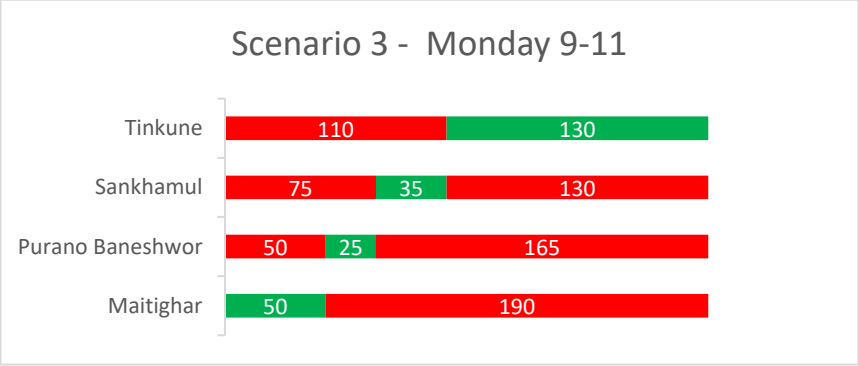
Phase Plan taken into consideration for different scenarios

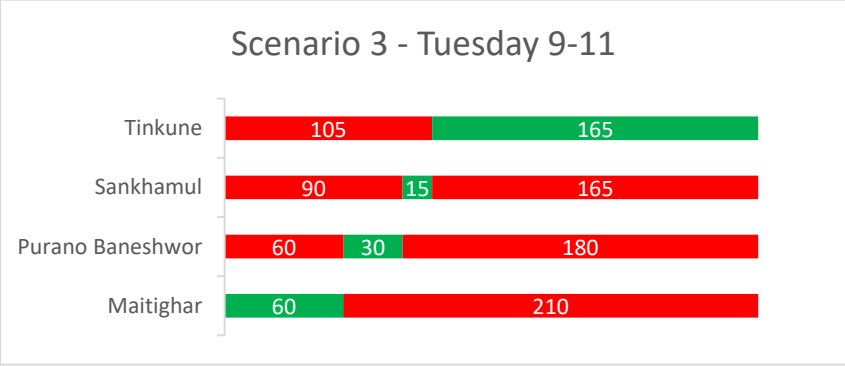


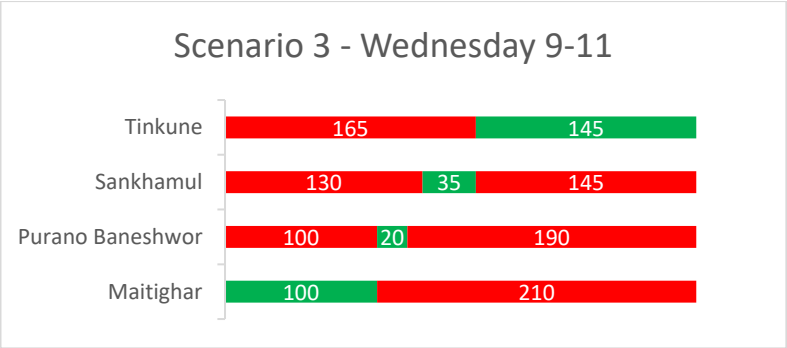
Traffic Signal Designed for different study periods for different days

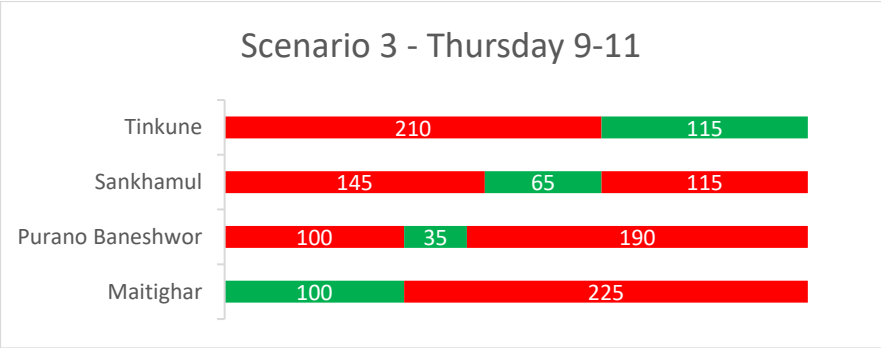


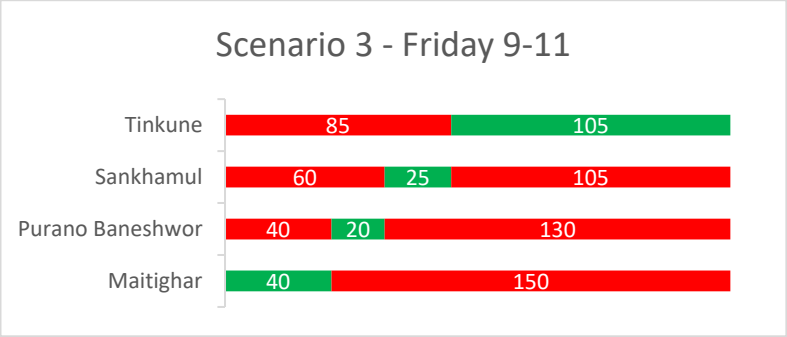


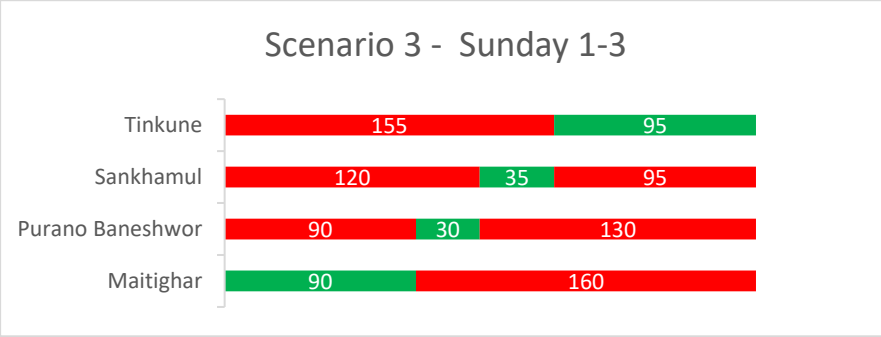


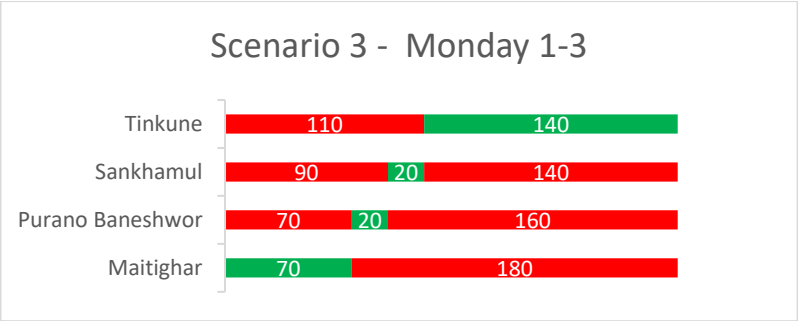


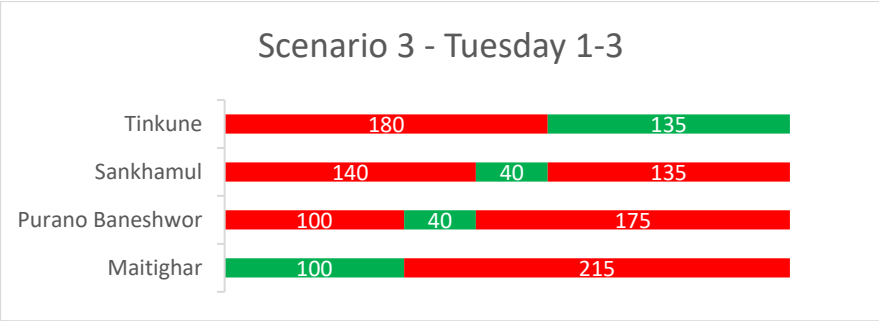

Scenario 3 - Wednesday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
165
145
130
35
145
100
20
190
100
210

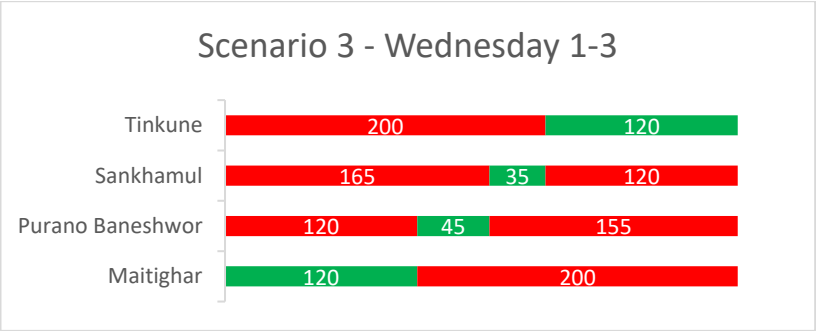

Scenario 3 - Thursday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
210
115
145
65
115
100
35
190
100
225

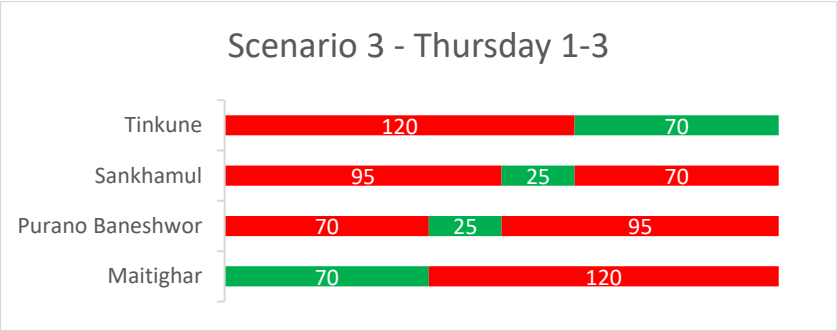

Scenario 3 - Friday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
85
105
60
25
105
40
20
130
40
150

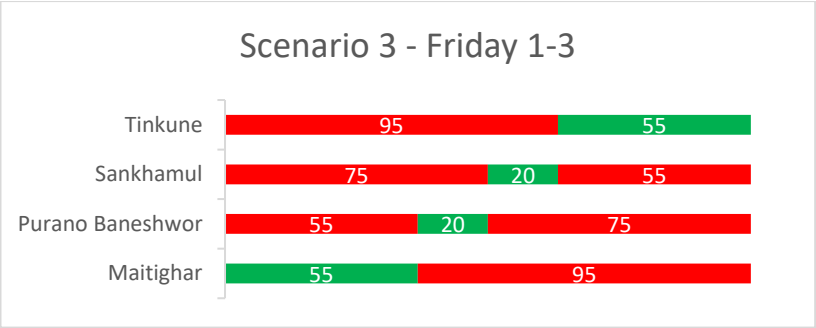

Scenario 3 - Sunday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
155
95
120
35
95
90
30
130
90
160

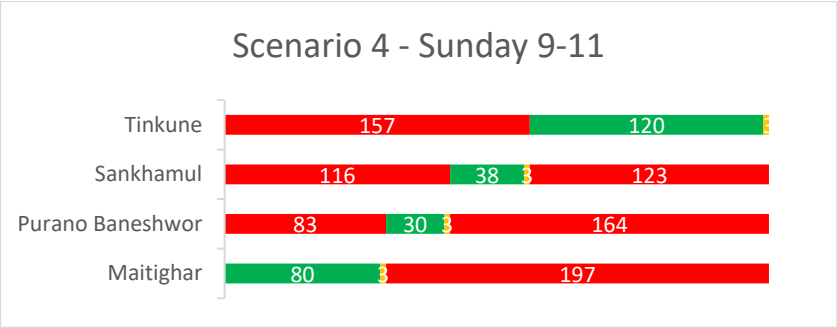

Scenario 3 - Monday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
110
140
90
20
140
70
20
160
70
180

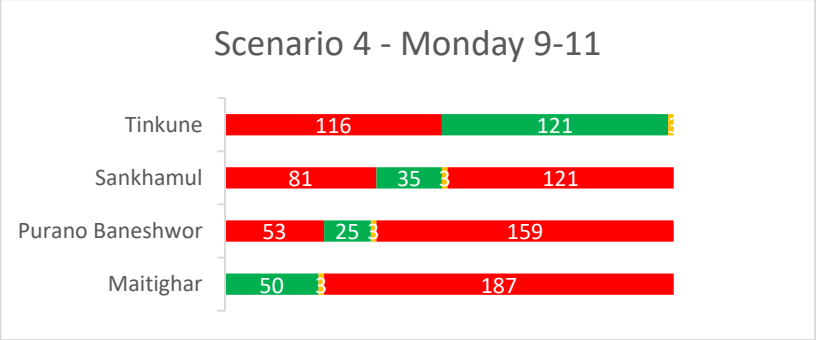

Scenario 3 - Tuesday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
180
135
140
40
135
100
40
175
100
215

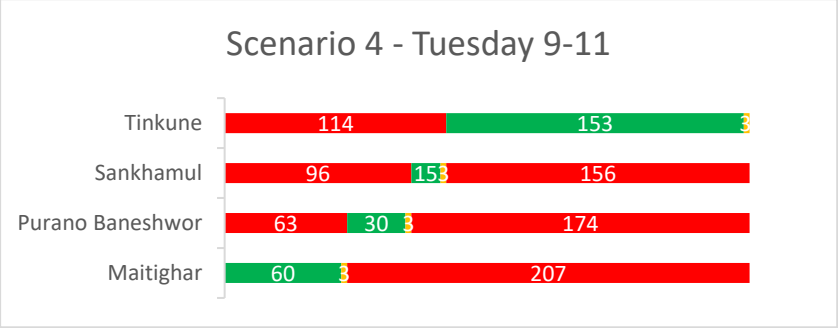

Scenario 3 - Wednesday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
200
120
165
35
120
120
45
155
120
200

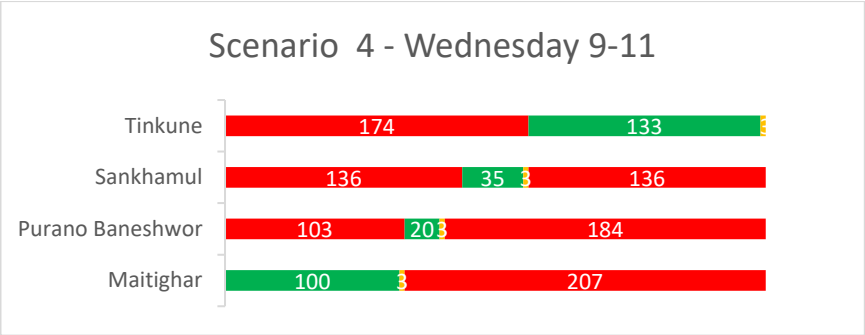

Scenario 3 - Thursday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
120
70
95
25
70
70
25
95
70
120

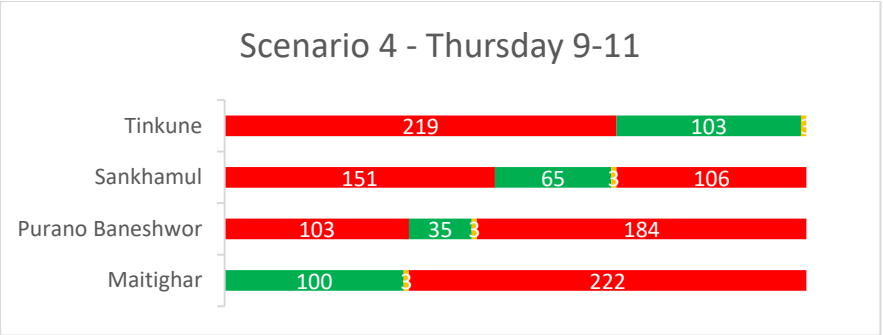

Scenario 3 - Friday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
95
55
75
20
55
55
20
75
55
95

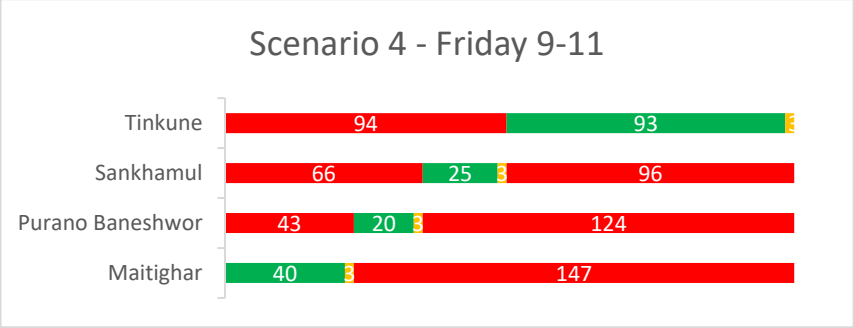

Scenario 4 - Sunday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
157
120
116
38
123
83
30
164
80
197

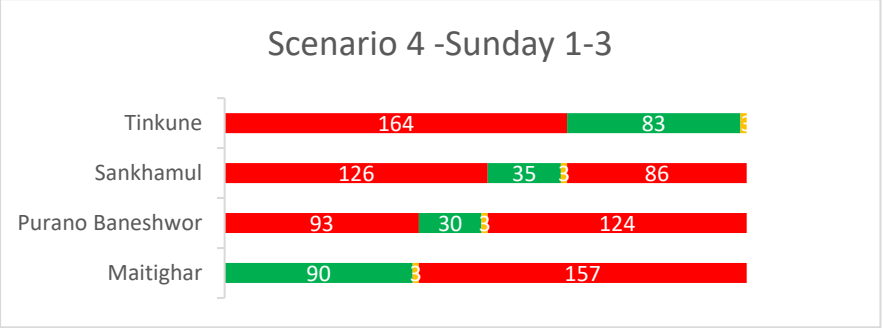

Scenario 4 - Monday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
116
121
81
35
121
53
25
159
50
187

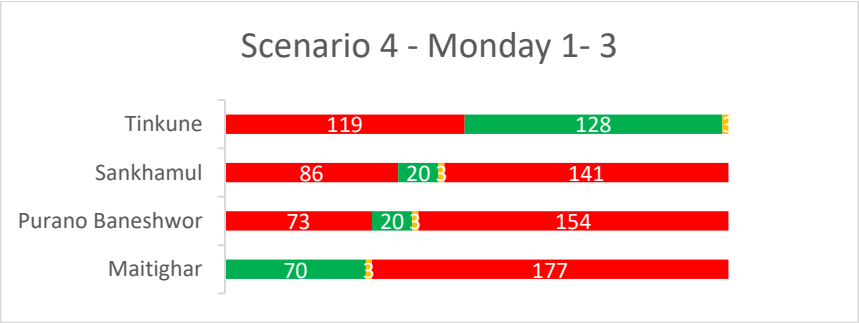

Scenario 4 - Tuesday 9-11
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
114
153
96
156
63
30
174
60
207

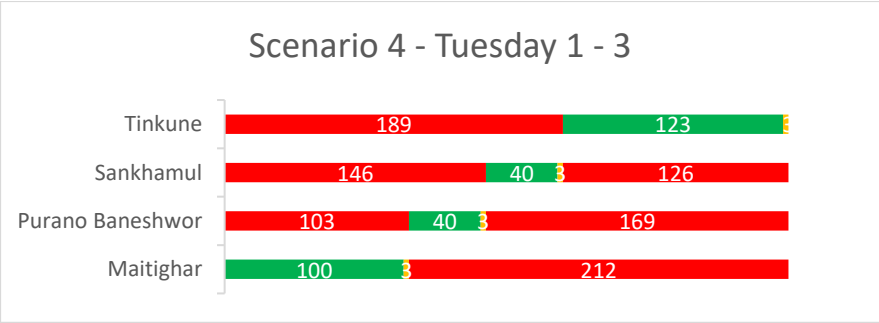

Scenario 4 - Wednesday 9-11
Tinkune
174
133
Sankhamul
136
35
136
Purano Baneshwor
103
20
184
Maitighar
100
207

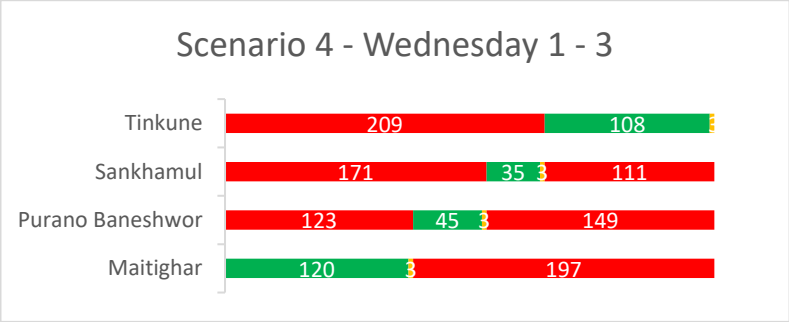

Scenario 4 - Thursday 9-11
Tinkune
219
103
Sankhamul
151
65
106
Purano Baneshwor
103
35
184
Maitighar
100
222

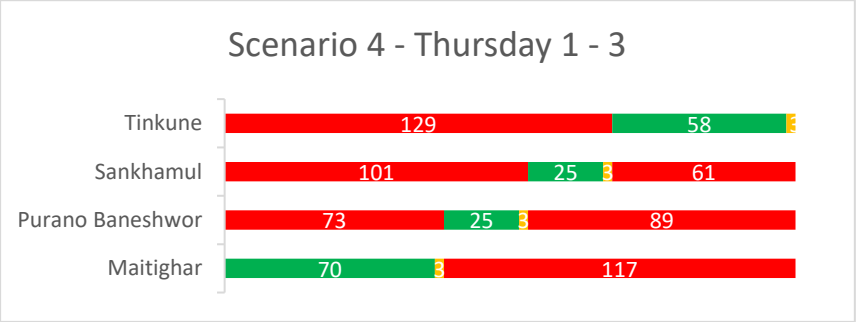

Scenario 4 - Friday 9-11
Tinkune
94
93
Sankhamul
66
25
96
Purano Baneshwor
43
20
124
Maitighar
40
147

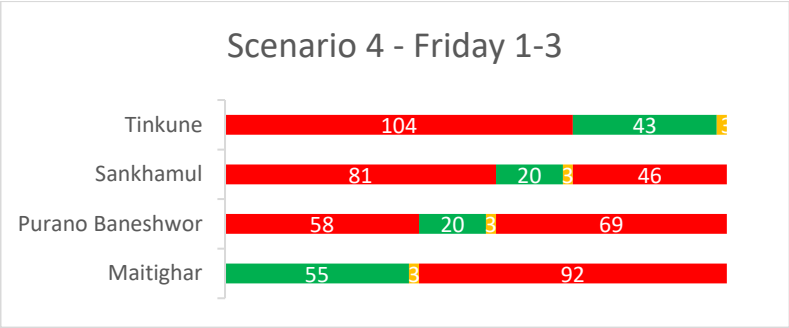

Scenario 4 -Sunday 1-3
Tinkune
164
83
Sankhamul
126
35
86
Purano Baneshwor
93
30
124
Maitighar
90
157

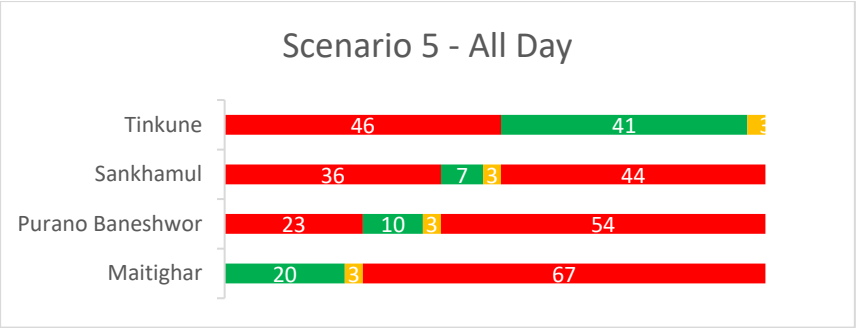

Scenario 4 - Monday 1- 3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
119
128
86
20
141
73
20
154
70
177

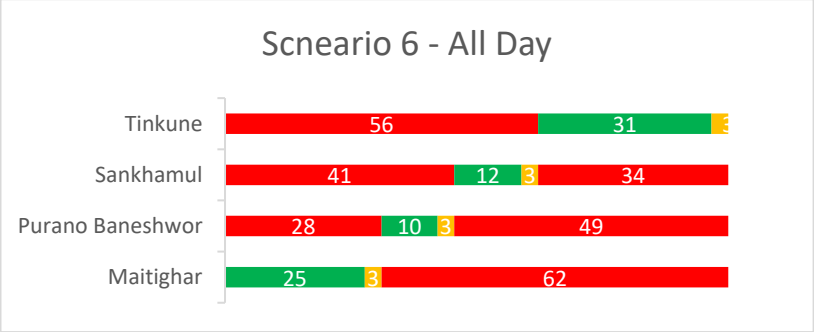

Scenario 4 - Tuesday 1 - 3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
189
123
146
40
126
103
40
169
100
212

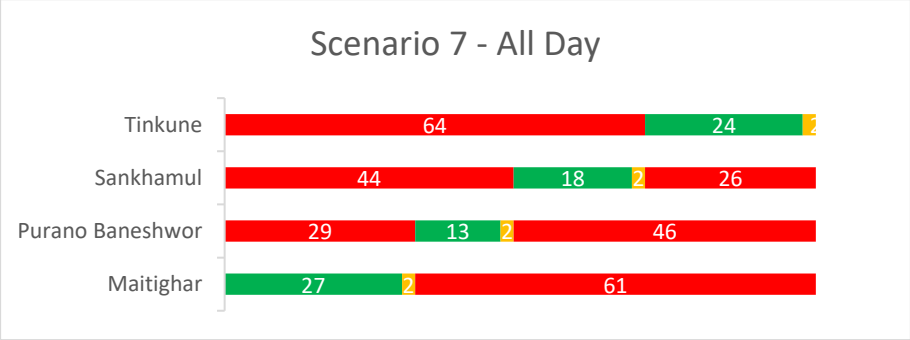

Scenario 4 - Wednesday 1 - 3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
209
108
171
35
111
123
45
149
120
197


Scenario 4 - Thursday 1 - 3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
129
58
101
25
61
73
25
89
70
117


Scenario 4 - Friday 1-3
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
104
43
3
81
20
3
46
58
20
3
69
55
3
92


Scenario 5 - All Day
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
46
41
36
7
3
44
23
10
3
54
20
3
67


Scneario 6 - All Day
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
56
31
3
41
12
3
34
28
10
3
49
25
3
62


Scenario 7 - All Day
Tinkune
Sankhamul
Purano Baneshwor
Maitighar
64
24
44
18
2
26
29
13
2
46
27
2
61

Comparison of different scenarios for all study periods on all days

Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
9:00 - 11:00 AM	Sunday	Base	17779	623	65200	2353	68176					
		Scenario 1	17870	706	62526	2211	65443	0.512%	13.323%	-4.101%	-6.035%	-4.009%
		Scenario 2	17127	154	65418	2248	67820	-3.667%	-75.281%	0.334%	-4.462%	-0.522%
		Scenario 3	16093	87	54064	1986	56137	-9.483%	-86.035%	-17.080%	-15.597%	-17.659%
		Scenario 4	15987	74	53078	1950	55102	-10.079%	-88.122%	-18.592%	-17.127%	-19.177%
		Scenario 5	15896	83	77553	1623	79259	-10.591%	-86.677%	18.946%	-31.024%	16.256%
		Scenario 6	16846	111	87221	2029	89361	-5.248%	-82.183%	33.775%	-13.770%	31.074%
		Scenario 7	16612	117	134146	2311	136574	-6.564%	-81.220%	105.745%	-1.785%	100.326%
1:00 - 3:00 PM		Base	17329	261	52661	2719	55641					
		Scenario 1	17341	208	48813	2481	51502	0.069%	-20.307%	-7.307%	-8.753%	-7.439%
		Scenario 2	16392	111	63298	2067	65476	-5.407%	-57.471%	20.199%	-23.979%	17.676%
		Scenario 3	16691	103	45036	2003	47142	-3.682%	-60.536%	-14.479%	-26.333%	-15.275%
		Scenario 4	16404	84	44811	1832	46727	-5.338%	-67.816%	-14.907%	-32.622%	-16.021%
		Scenario 5	15171	68	97870	1851	99789	-12.453%	-73.946%	85.849%	-31.924%	79.344%
		Scenario 6	16703	89	69156	1757	71002	-3.612%	-65.900%	31.323%	-35.381%	27.607%
		Scenario 7	17411	80	38926	1524	40530	0.473%	-69.349%	-26.082%	-43.950%	-27.158%

Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Monday	Base	6296	144	1442	125	1711					
		Scenario 1	6302	146	1771	112	2029	0.095%	1.389%	22.816%	-10.400%	18.586%
		Scenario 2	6254	7	6208	243	6458	-0.667%	-95.139%	330.513%	94.400%	277.440%
		Scenario 3	6172	20	8097	316	8433	-1.970%	-86.111%	461.512%	152.800%	392.870%
		Scenario 4	6159	13	8308	318	8639	-2.176%	-90.972%	476.144%	154.400%	404.909%
		Scenario 5	6279	9	5157	214	5380	-0.270%	-93.750%	257.628%	71.200%	214.436%
		Scenario 6	6277	9	5342	204	5555	-0.302%	-93.750%	270.458%	63.200%	224.664%
		Scenario 7	6274	7	5482	207	5696	-0.349%	-95.139%	280.166%	65.600%	232.905%
9:00 - 11:00 AM		Base	22354	502	76460	2500	79462					
		Scenario 1	18973	585	74723	2497	77805	-15.125%	16.534%	-2.272%	-0.120%	-2.085%
		Scenario 2	18620	94	56364	2245	58703	-16.704%	-81.275%	-26.283%	-10.200%	-26.124%
		Scenario 3	17552	78	46529	1937	48544	-21.482%	-84.462%	-39.146%	-22.520%	-38.909%
		Scenario 4	17394	60	46495	1932	48487	-22.188%	-88.048%	-39.190%	-22.720%	-38.981%
		Scenario 5	17386	54	56121	1391	57566	-22.224%	-89.243%	-26.601%	-44.360%	-27.555%
		Scenario 6	17633	86	132392	2512	134990	-21.119%	-82.869%	73.152%	0.480%	69.880%
		Scenario 7	17025	105	171598	2354	174057	-23.839%	-79.084%	124.428%	-5.840%	119.044%
1:00 - 3:00 PM		Base	20499	520	45560	2151	48231					
		Scenario 1	20543	569	43992	1815	46376	0.215%	9.423%	-3.442%	-15.621%	-3.846%
		Scenario 2	20530	173	46584	1633	48390	0.151%	-66.731%	2.248%	-24.082%	0.330%
		Scenario 3	17938	152	49941	1822	51915	-12.493%	-70.769%	9.616%	-15.295%	7.638%
		Scenario 4	17723	104	49012	1706	50822	-13.542%	-80.000%	7.577%	-20.688%	5.372%
		Scenario 5	18906	162	65951	1329	67442	-7.771%	-68.846%	44.756%	-38.215%	39.831%
		Scenario 6	20289	136	73867	1546	75549	-1.024%	-73.846%	62.131%	-28.126%	56.640%
		Scenario 7	20942	126	30474	1279	31879	2.161%	-75.769%	-33.112%	-40.539%	-33.904%

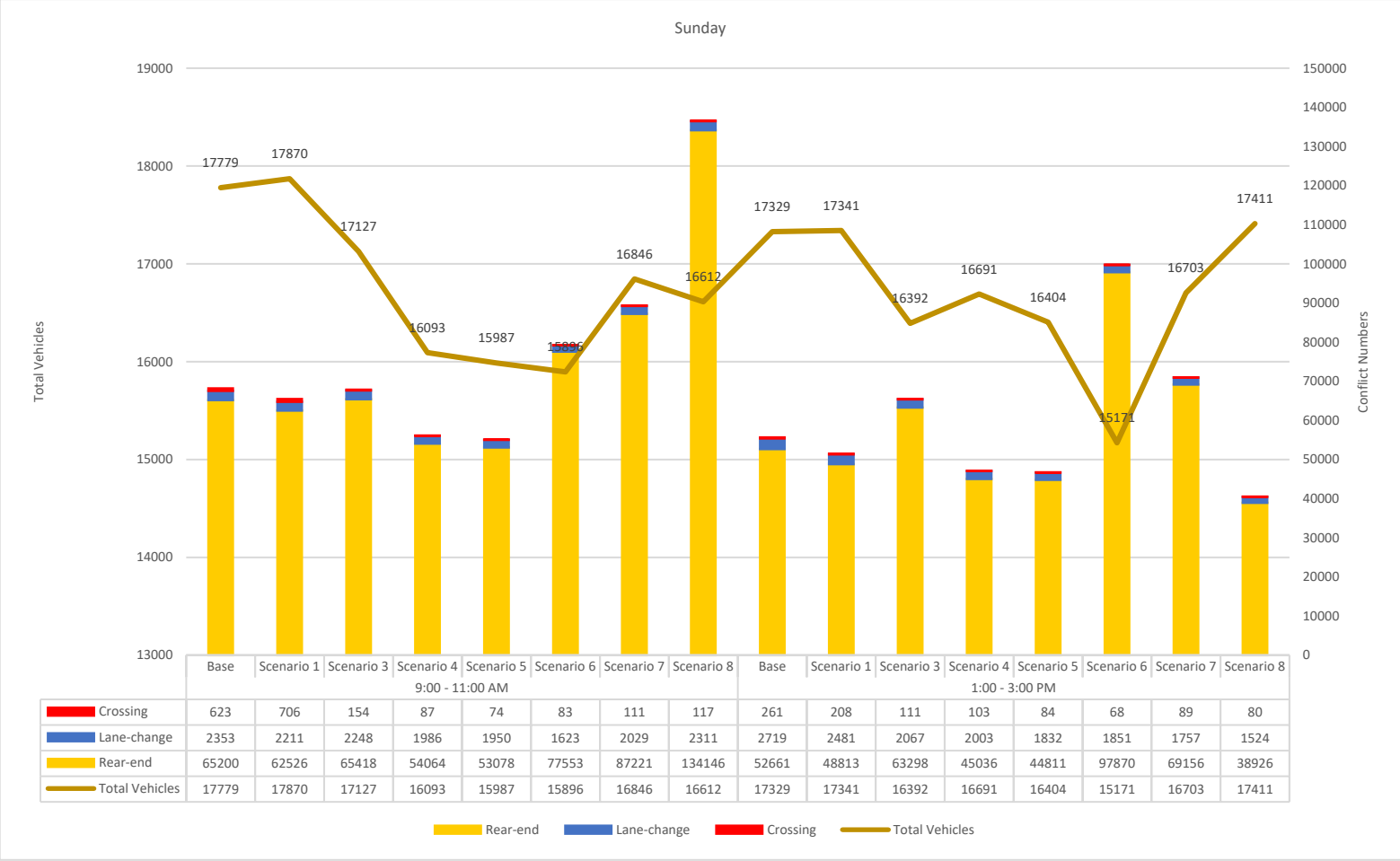
Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Tuesday	Base	6303	122	1363	149	1634					
		Scenario 1	6299	161	1345	119	1625	-0.063%	31.967%	-1.321%	-20.134%	-0.551%
		Scenario 2	6247	8	6095	211	6314	-0.888%	-93.443%	347.175%	41.611%	286.414%
		Scenario 3	6236	8	5981	250	6239	-1.063%	-93.443%	338.811%	67.785%	281.824%
		Scenario 4	6237	3	6132	250	6385	-1.047%	-97.541%	349.890%	67.785%	290.759%
		Scenario 5	6270	10	4697	179	4886	-0.524%	-91.803%	244.607%	20.134%	199.021%
		Scenario 6	6266	11	4964	216	5191	-0.587%	-90.984%	264.197%	44.966%	217.687%
		Scenario 7	6262	10	5262	210	5482	-0.650%	-91.803%	286.060%	40.940%	235.496%
9:00 - 11:00 AM		Base	21507	614	92604	2499	95717					
		Scenario 1	21506	443	93166	2353	95962	-0.005%	-27.850%	0.607%	-5.842%	0.256%
		Scenario 2	21657	563	72862	2212	75637	0.697%	-8.306%	-21.319%	-11.485%	-20.979%
		Scenario 3	20050	627	82891	2376	85894	-6.775%	2.117%	-10.489%	-4.922%	-10.263%
		Scenario 4	19886	395	85413	2111	87919	-7.537%	-35.668%	-7.765%	-15.526%	-8.147%
		Scenario 5	20907	477	80377	2119	82973	-2.790%	-22.313%	-13.204%	-15.206%	-13.314%
		Scenario 6	21728	451	75077	2205	77733	1.028%	-26.547%	-18.927%	-11.765%	-18.789%
		Scenario 7	20322	427	119094	2077	121598	-5.510%	-30.456%	28.606%	-16.887%	27.039%
1:00 - 3:00 PM		Base	22943	376	55415	2518	58309					
		Scenario 1	22999	350	52950	2278	55578	0.244%	-6.915%	-4.448%	-9.531%	-4.684%
		Scenario 2	21765	168	92358	2899	95425	-5.134%	-55.319%	66.666%	15.131%	63.654%
		Scenario 3	21026	143	60400	2371	62914	-8.355%	-61.968%	8.996%	-5.838%	7.898%
		Scenario 4	20807	105	61090	2274	63469	-9.310%	-72.074%	10.241%	-9.690%	8.849%
		Scenario 5	20318	174	125411	2380	127965	-11.441%	-53.723%	126.312%	-5.481%	119.460%
		Scenario 6	21775	113	92097	2260	94470	-5.091%	-69.947%	66.195%	-10.246%	62.016%
		Scenario 7	22837	162	95860	2441	98463	-0.462%	-56.915%	72.986%	-3.058%	68.864%

Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Wednesday	Base	6391	139	1548	145	1832					
		Scenario 1	6395	105	1323	113	1541	0.063%	-24.460%	-14.535%	-22.069%	-15.884%
		Scenario 2	6338	18	6504	260	6782	-0.829%	-87.050%	320.155%	79.310%	270.197%
		Scenario 3	6341	18	5258	263	5539	-0.782%	-87.050%	239.664%	81.379%	202.347%
		Scenario 4	6227	19	7839	268	8126	-2.566%	-86.331%	406.395%	84.828%	343.559%
		Scenario 5	6361	18	5142	229	5389	-0.469%	-87.050%	232.171%	57.931%	194.159%
		Scenario 6	6361	16	5621	232	5869	-0.469%	-88.489%	263.114%	60.000%	220.360%
		Scenario 7	6347	11	6010	255	6276	-0.688%	-92.086%	288.243%	75.862%	242.576%
9:00 - 11:00 AM		Base	21268	299	108933	3828	113060					
		Scenario 1	21214	214	107398	3512	111124	-0.254%	-28.428%	-1.409%	-8.255%	-1.712%
		Scenario 2	21381	217	97853	3352	101422	0.531%	-27.425%	-10.171%	-12.435%	-10.294%
		Scenario 3	21093	161	89327	3130	92618	-0.823%	-46.154%	-17.998%	-18.234%	-18.081%
		Scenario 4	20629	87	95387	3281	98755	-3.005%	-70.903%	-12.435%	-14.289%	-12.653%
		Scenario 5	20334	99	144906	3212	148217	-4.392%	-66.890%	33.023%	-16.092%	31.096%
		Scenario 6	21782	182	161731	3585	165498	2.417%	-39.130%	48.468%	-6.348%	46.381%
		Scenario 7	20484	200	142008	2691	144899	-3.686%	-33.110%	30.363%	-29.702%	28.161%
1:00 - 3:00 PM		Base	20557	366	80288	3215	83869					
		Scenario 1	20557	378	71537	2612	74527	0.000%	3.279%	-10.900%	-18.756%	-11.139%
		Scenario 2	18979	185	95689	2683	98557	-7.676%	-49.454%	19.182%	-16.547%	17.513%
		Scenario 3	19723	132	70839	2794	73765	-4.057%	-63.934%	-11.769%	-13.095%	-12.047%
		Scenario 4	19618	115	73374	2724	76213	-4.568%	-68.579%	-8.611%	-15.272%	-9.129%
		Scenario 5	18362	133	162890	2971	165994	-10.678%	-63.661%	102.882%	-7.589%	97.921%
		Scenario 6	20333	136	143289	3118	146543	-1.090%	-62.842%	78.469%	-3.017%	74.728%
		Scenario 7	20580	199	153265	3222	156686	0.112%	-45.628%	90.894%	0.218%	86.822%

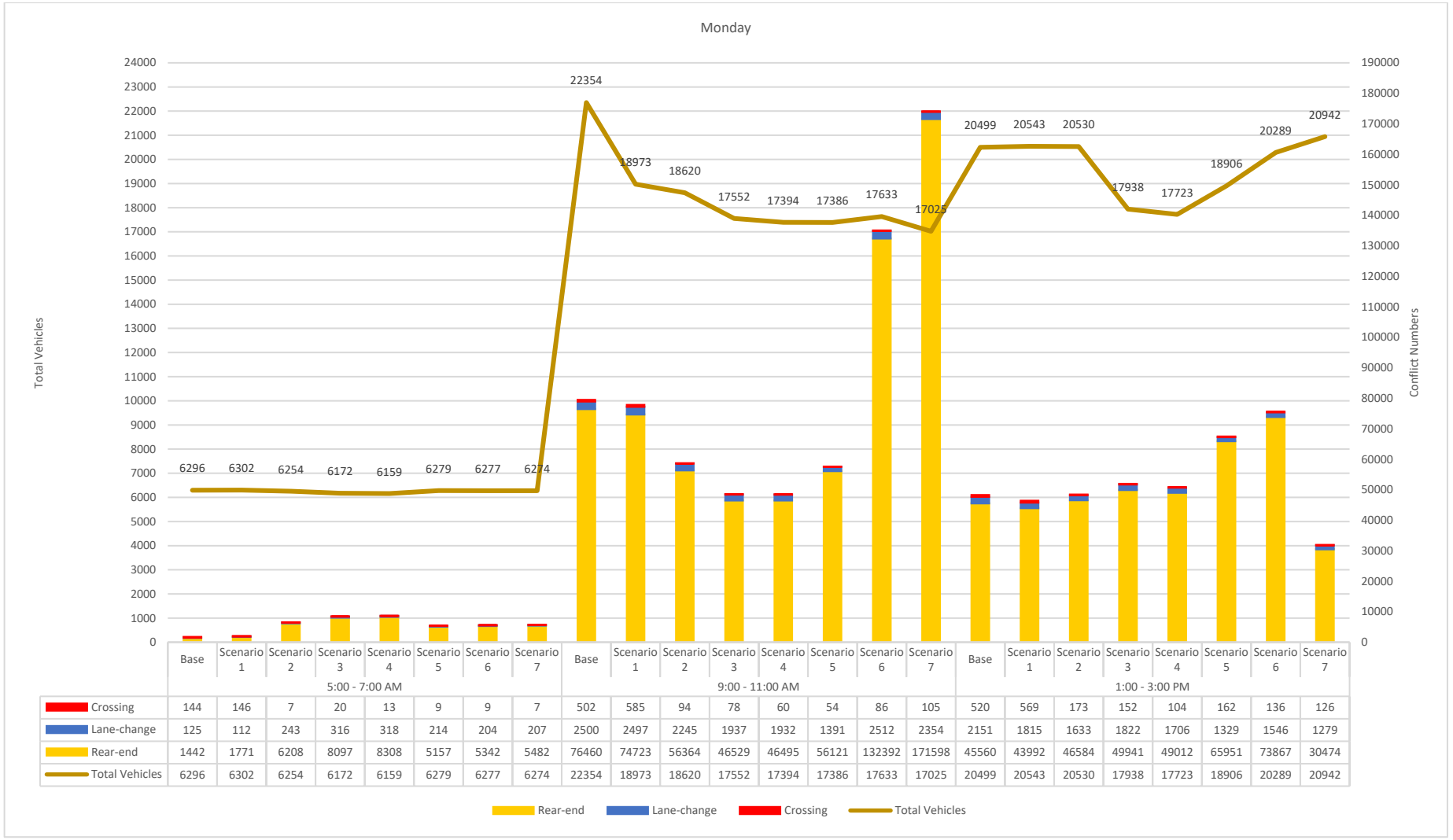
Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Thursday	Base	4562	85	521	83	689					
		Scenario 1	4555	91	602	33	726	-0.153%	7.059%	15.547%	-60.241%	5.370%
		Scenario 2	4520	3	3583	147	3733	-0.921%	-96.471%	587.716%	77.108%	441.800%
		Scenario 3	4520	6	3563	134	3703	-0.921%	-92.941%	583.877%	61.446%	437.446%
		Scenario 4	4521	1	3745	137	3883	-0.899%	-98.824%	618.810%	65.060%	463.570%
		Scenario 5	4548	1	2425	118	2544	-0.307%	-98.824%	365.451%	42.169%	269.231%
		Scenario 6	4544	6	2636	111	2753	-0.395%	-92.941%	405.950%	33.735%	299.565%
		Scenario 7	4541	2	2848	127	2977	-0.460%	-97.647%	446.641%	53.012%	332.075%
9:00 - 11:00 AM		Base	19346	398	78310	2286	80994					
		Scenario 1	19354	460	74210	2108	76778	0.041%	15.578%	-5.236%	-7.787%	-5.205%
		Scenario 2	19033	121	65840	2218	68179	-1.618%	-69.598%	-15.924%	-2.975%	-15.822%
		Scenario 3	19158	108	63516	2004	65628	-0.972%	-72.864%	-18.892%	-12.336%	-18.972%
		Scenario 4	16461	124	71302	1901	73327	-14.913%	-68.844%	-8.949%	-16.842%	-9.466%
		Scenario 5	17835	120	93241	1650	95011	-7.810%	-69.849%	19.067%	-27.822%	17.306%
		Scenario 6	19234	123	69401	1543	71067	-0.579%	-69.095%	-11.377%	-32.502%	-12.256%
		Scenario 7	19237	142	80951	1451	82544	-0.563%	-64.322%	3.372%	-36.527%	1.914%
1:00 - 3:00 PM		Base	21223	414	71482	2855	74751					
		Scenario 1	21313	491	67535	2446	70472	0.424%	18.599%	-5.522%	-14.326%	-5.724%
		Scenario 2	19582	171	91119	2729	94019	-7.732%	-58.696%	27.471%	-4.413%	25.776%
		Scenario 3	20293	144	63429	2217	65790	-4.382%	-65.217%	-11.266%	-22.347%	-11.988%
		Scenario 4	20126	93	60764	2004	62861	-5.169%	-77.536%	-14.994%	-29.807%	-15.906%
		Scenario 5	18372	133	136972	2307	139412	-13.434%	-67.874%	91.617%	-19.194%	86.502%
		Scenario 6	20289	152	128400	2665	131217	-4.401%	-63.285%	79.626%	-6.655%	75.539%
		Scenario 7	21519	149	56581	1963	58693	1.395%	-64.010%	-20.846%	-31.243%	-21.482%

Time	Day	Scenarios	Total Vehicles	Crossing	Rear-end	Lane-change	Total	Percentage Change				
								Vehicles	Crossing	Rear-end	Lane-change	Total Conflicts
5:00 - 7:00 AM	Friday	Base	5353	81	854	97	1032					
		Scenario 1	5345	64	707	66	837	-0.149%	-20.988%	-17.213%	-31.959%	-18.895%
		Scenario 2	5312	12	5129	216	5357	-0.766%	-85.185%	500.585%	122.680%	419.089%
		Scenario 3	5344	10	3577	152	3739	-0.168%	-87.654%	318.852%	56.701%	262.306%
		Scenario 4	5340	2	3803	172	3977	-0.243%	-97.531%	345.316%	77.320%	285.368%
		Scenario 5	5343	6	3709	156	3871	-0.187%	-92.593%	334.309%	60.825%	275.097%
		Scenario 6	5343	5	3935	161	4101	-0.187%	-93.827%	360.773%	65.979%	297.384%
		Scenario 7	5337	6	4176	167	4349	-0.299%	-92.593%	388.993%	72.165%	321.415%
9:00 - 11:00 AM		Base	24251	462	103953	3551	107966					
		Scenario 1	24207	653	107073	3381	111107	-0.181%	41.342%	3.001%	-4.787%	2.909%
		Scenario 2	23488	174	100198	3110	103482	-3.146%	-62.338%	-3.612%	-12.419%	-4.153%
		Scenario 3	21477	150	97996	2834	100980	-11.439%	-67.532%	-5.730%	-20.191%	-6.471%
		Scenario 4	21257	107	100691	2810	103608	-12.346%	-76.840%	-3.138%	-20.867%	-4.036%
		Scenario 5	21723	145	96472	2095	98712	-10.424%	-68.615%	-7.197%	-41.003%	-8.571%
		Scenario 6	21723	145	96472	2095	98712	-10.424%	-68.615%	-7.197%	-41.003%	-8.571%
		Scenario 7	22286	196	211371	3183	214750	-8.103%	-57.576%	103.333%	-10.363%	98.905%
1:00 - 3:00 PM		Base	21635	485	88646	3115	92246					
		Scenario 1	21496	426	89044	2930	92400	-0.642%	-12.165%	0.449%	-5.939%	0.167%
		Scenario 2	19415	164	85237	2303	87704	-10.261%	-66.186%	-3.846%	-26.067%	-4.924%
		Scenario 3	21049	196	99371	2852	102419	-2.709%	-59.588%	12.099%	-8.443%	11.028%
		Scenario 4	20563	194	97579	2662	100435	-4.955%	-60.000%	10.077%	-14.543%	8.877%
		Scenario 5	17932	134	133653	2269	136056	-17.116%	-72.371%	50.772%	-27.159%	47.493%
		Scenario 6	20009	125	163569	3039	166733	-7.516%	-74.227%	84.519%	-2.440%	80.748%
		Scenario 7	21472	174	123433	3001	126608	-0.753%	-64.124%	39.243%	-3.660%	37.250%

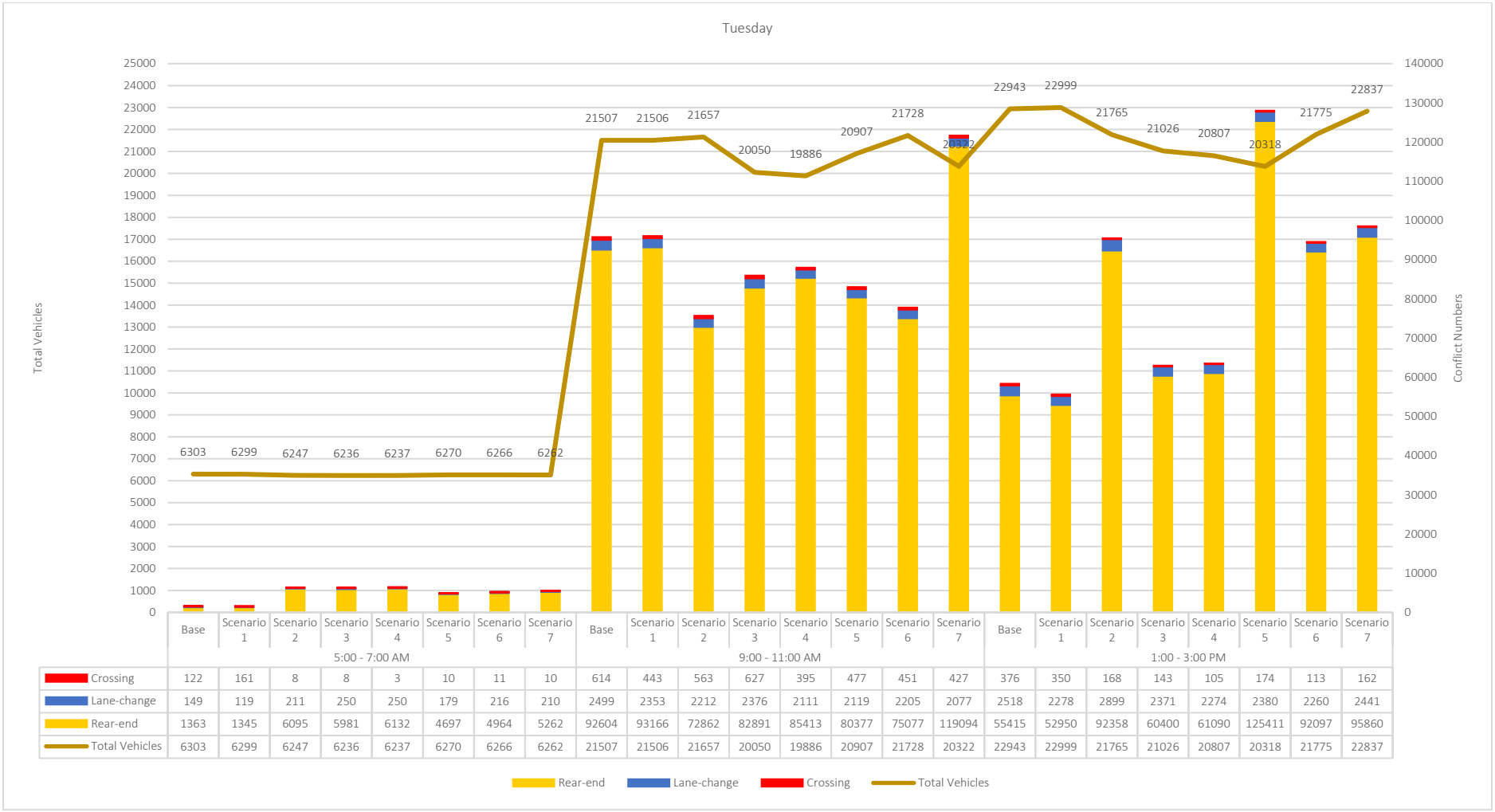
Graphical Representation of comparison of different scenarios for all study periods on different days



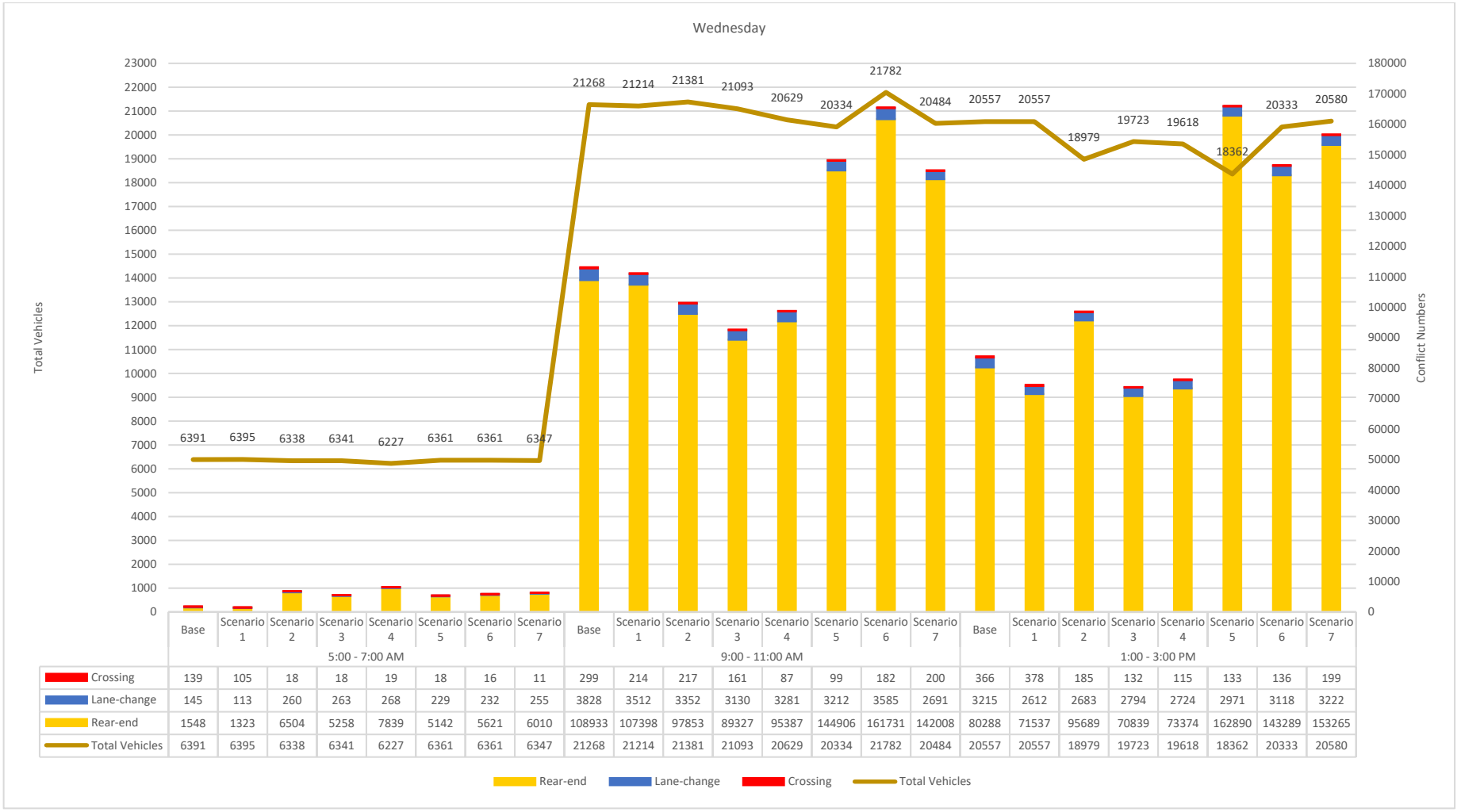
	Base	Scenario 1	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8	Base	Scenario 1	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Scenario 8
	9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	623	706	154	87	74	83	111	117	261	208	111	103	84	68	89	80
Lane-change	2353	2211	2248	1986	1950	1623	2029	2311	2719	2481	2067	2003	1832	1851	1757	1524
Rear-end	65200	62526	65418	54064	53078	77553	87221	134146	52661	48813	63298	45036	44811	97870	69156	38926
Total Vehicles	17779	17870	17127	16093	15987	15896	16846	16612	17329	17341	16392	16691	16404	15171	16703	17411

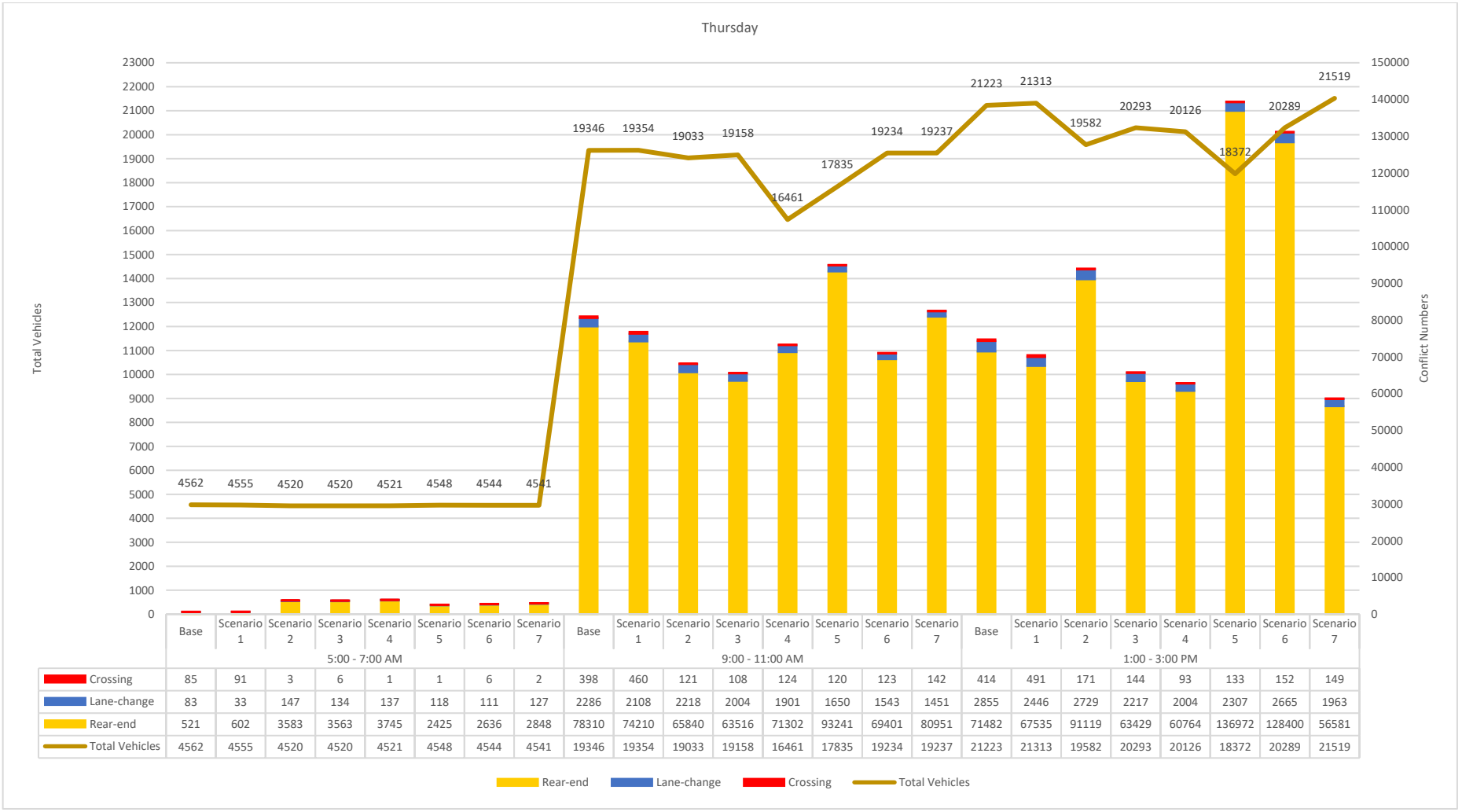


	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	5:00 - 7:00 AM								9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	144	146	7	20	13	9	9	7	502	585	94	78	60	54	86	105	520	569	173	152	104	162	136	126
Lane-change	125	112	243	316	318	214	204	207	2500	2497	2245	1937	1932	1391	2512	2354	2151	1815	1633	1822	1706	1329	1546	1279
Rear-end	1442	1771	6208	8097	8308	5157	5342	5482	76460	74723	56364	46529	46495	56121	132392	171598	45560	43992	46584	49941	49012	65951	73867	30474
Total Vehicles	6296	6302	6254	6172	6159	6279	6277	6274	22354	18973	18620	17552	17394	17386	17633	17025	20499	20543	20530	17938	17723	18906	20289	20942

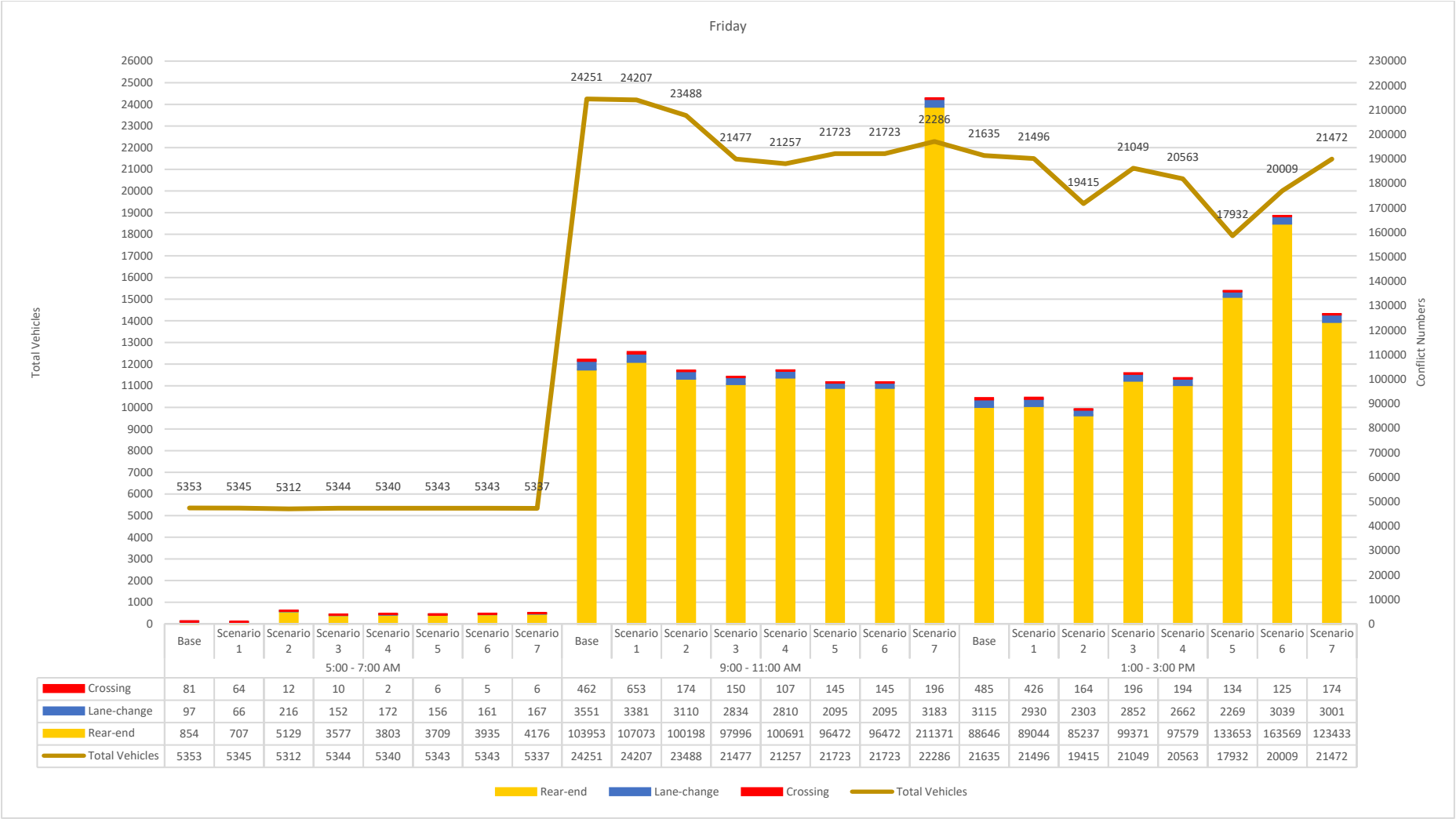


	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	5:00 - 7:00 AM								9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	122	161	8	8	3	10	11	10	614	443	563	627	395	477	451	427	376	350	168	143	105	174	113	162
Lane-change	149	119	211	250	250	179	216	210	2499	2353	2212	2376	2111	2119	2205	2077	2518	2278	2899	2371	2274	2380	2260	2441
Rear-end	1363	1345	6095	5981	6132	4697	4964	5262	92604	93166	72862	82891	85413	80377	75077	119094	55415	52950	92358	60400	61090	125411	92097	95860
Total Vehicles	6303	6299	6247	6236	6237	6270	6266	6262	21507	21506	21657	20050	19886	20907	21728	20322	22943	22999	21765	21026	20807	20318	21775	22837


Wednesday
Total Vehicles
Conflict Numbers
6391 6395 6338 6341 6227 6361 6361 6347
21268 21214 21381 21093 20629 20334 21782 20484 20557 20557 18979 19723 19618 18362 20333 20580
Base Scenario 1 Scenario 2 Scenario 3 Scenario 4 Scenario 5 Scenario 6 Scenario 7
5:00 - 7:00 AM
9:00 - 11:00 AM
1:00 - 3:00 PM
Crossing 139 105 18 18 19 18 16 11 299 214 217 161 87 99 182 200 366 378 185 132 115 133 136 199
Lane-change 145 113 260 263 268 229 232 255 3828 3512 3352 3130 3281 3212 3585 2691 3215 2612 2683 2794 2724 2971 3118 3222
Rear-end 1548 1323 6504 5258 7839 5142 5621 6010 108933 107398 97853 89327 95387 144906 161731 142008 80288 71537 95689 70839 73374 162890 143289 153265
Total Vehicles 6391 6395 6338 6341 6227 6361 6361 6347 21268 21214 21381 21093 20629 20334 21782 20484 20557 20557 18979 19723 19618 18362 20333 20580
Rear-end
Lane-change
Crossing
Total Vehicles



	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	5:00 - 7:00 AM								9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	85	91	3	6	1	1	6	2	398	460	121	108	124	120	123	142	414	491	171	144	93	133	152	149
Lane-change	83	33	147	134	137	118	111	127	2286	2108	2218	2004	1901	1650	1543	1451	2855	2446	2729	2217	2004	2307	2665	1963
Rear-end	521	602	3583	3563	3745	2425	2636	2848	78310	74210	65840	63516	71302	93241	69401	80951	71482	67535	91119	63429	60764	136972	128400	56581
Total Vehicles	4562	4555	4520	4520	4521	4548	4544	4541	19346	19354	19033	19158	16461	17835	19234	19237	21223	21313	19582	20293	20126	18372	20289	21519



	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	Base	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7
	5:00 - 7:00 AM								9:00 - 11:00 AM								1:00 - 3:00 PM							
Crossing	81	64	12	10	2	6	5	6	462	653	174	150	107	145	145	196	485	426	164	196	194	134	125	174
Lane-change	97	66	216	152	172	156	161	167	3551	3381	3110	2834	2810	2095	2095	3183	3115	2930	2303	2852	2662	2269	3039	3001
Rear-end	854	707	5129	3577	3803	3709	3935	4176	103953	107073	100198	97996	100691	96472	96472	211371	88646	89044	85237	99371	97579	133653	163569	123433
Total Vehicles	5353	5345	5312	5344	5340	5343	5343	5337	24251	24207	23488	21477	21257	21723	21723	22286	21635	21496	19415	21049	20563	17932	20009	21472