Abbreviated Safety Study

DEL-23-18.00-18.30

May 2013





Prepared for

Ohio Department of Transportation 1980 W. Broad St. Columbus, OH 43223 Prepared by



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1.0 EXISTING CONDITIONS

Purpose & Need Statement

This study analyzes US23 from section mile 18.00 to 18.30. This section of road appears on ODOT's 2011 listing of rural non-freeway high crash locations, and it is rated #44 in the State. The purpose of this report is to study this location and analyze the crashes to determine what, if any, actions can be taken to reduce the high percentage of fixed object and animal crashes that have occurred in the study area.

Background

This 0.30-mile section of US23 is located in rural Delaware County, Ohio, approximately four miles north of the City of Delaware. It is under the jurisdiction of District 6 of the Ohio Department of Transportation (ODOT). The section under study, log point 18.00 to 18.30, begins at 1,700 feet south of the US23/Irwin Road intersection and extends north to 100 feet south of the US23/Irwin Road intersection.

Brief Overview of Possible Causes

The safety problems identified at this location are as follows:

• Lack of Methods to Reduce Deer Crashes – there are number of crashes within the study area from deer crossings.

Physical Conditions

BPS staff conducted a field review on January 5, 2013; the Photolog is included in **Appendix A**. BPS staff observed the study area section and collected information regarding the existing conditions. The section under study, log point 18.00 to 18.30, begins at 1,700 feet south of the US23/Irwin Road intersection and extends north to 100 feet south of the US23/Irwin Road intersection. This 0.30-mile section of US23 is located in rural Delaware County, Ohio, approximately four miles north of the City of Delaware (**see Figure 1**, pg. 8).

Roadway Details: The section of US23 in the project area is a divided, controlled-access rural principal arterial. It has a total of four lanes in the northbound direction – two inner lanes and two outer lanes, separated by a grassy median. The southbound direction has the same arrangement. This configuration serves as a test pavement area for ODOT. At the time of the field survey, the inside northbound lanes were closed for construction and traffic was redirected to utilize the outer northbound lanes; both sets of southbound lanes were open. The southbound lanes have not been switched since 2003, so both inside and outside lanes were open during collection of the 2009-2011 crash data for this study. The inside northbound lanes were closed during the 2007 construction season and again in July 2012 and remain that way currently, which indicates that both inside and outside northbound lanes were open during collection of the 2009-2011 crash data for this study.





Access: Located 1,000 feet south of mile 18.00, the inside and outside northbound lanes diverge, and located at mile 18.00, the inside and outside southbound lanes merge. Just north of mile 18.30, there is an unsignalized intersection with Irwin Road. In addition, the US23 northbound outside lanes have four driveway access points, and the southbound outside lanes have one driveway access point.

Traffic: Traffic counts were not part of the scope of this project. Traffic survey data from ODOT was available from 2008. As of 2008, the total ADT was 23,800 with 19% trucks.

Pavement Condition: The pavement along the US23 northbound inside lanes is currently being repaved, so once complete it will be in good condition with new pavement markings. Based on field observations, the outside US23 northbound and southbound lanes are in poor condition with noticeable cracking and potholes. The pavement markings are also faded, especially in the southbound direction.

Signals: There are no signals in this roadway section.

Lighting: There is no lighting within the study area, or near the study area. The nearest street lighting to the north is 3 miles away at the US23/Norton Rd intersection, and to the south, the nearest lighting is 4.4 miles away at the US23/Coover Rd intersection.



Land Uses: The study area is predominately rural with many farms and a few single family residences. Although not adjacent, Delaware State Park is located just to the east of the study area.

Additional Field Observations: No traffic backups or bottlenecks were observed; no unsafe conditions were detected. Some signs were covered as part of the construction project.

2.0 CRASH DATA

A total of 15 crashes over the three-year period from 2009-2011 were originally logged within the study area; however, after reviewing the OH-1 reports, one of these crashes was actually located outside the study area on a different roadway (US 36). There was some difficulty in spatially locating the crashes because the crash reports did not indicate if the crashes were located on the inside or outside north and southbound lanes of US 23 (since at the time of the 2009-2011 crashes all lanes were open). So for this study, since the inside lanes function as the primary lanes, all crashes were located on the inside lanes, as shown in **Figure 2** (pg. 9). The crash summary data are included in **Appendix B**, and an overview is shown below:

All Crashes

CRASH YEAR	Number	%
2009	7	50.00%
2010	4	28.57%
2011	3	21.43%
Grand Total	14	100.00%

CRASH SEVERITY	Number	%
INJURY CRASH	4	28.57%
PROPERTY DAMAGE CRASH	10	71.43%
Grand Total	14	100.00%

LOCATION	Number	%
NON-INTERSECTION	14	100.00%
Grand Total	14	100.00%

TYPE OF CRASH	Number	%
ANIMAL	5	35.71%
FIXED OBJECT	4	28.57%
SIDESWIPE - PASSING	2	14.29%
PARKED VEHICLE	2	14.29%
RAN OFF ROAD	1	7.14%
Grand Total	14	100.00%

ROAD CONTOUR	Number	%
STRAIGHT - LEVEL	14	100.00%
Grand Total	14	100.00%

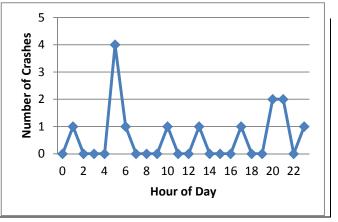
CONTRIBUTING FACTOR	Number	%
EXCESSIVE SPEED	6	42.86%
NO DRIVER ERRORS	5	35.71%
FAILURE TO CONTROL	1	7.14%
OTHER DRIVER ERROR	1	7.14%
IMPROPER LANE CHANGE	1	7.14%
Grand Total	14	100.00%



LIGHT CONDITION	Number	%
DARK - NO LIGHTS	11	78.57%
DAYLIGHT	3	21.43%
Grand Total	14	100.00%

HOUR OF DAY	Number	%
1:00	1	7.14%
5:00	4	28.57%
6:00	1	7.14%
10:00	1	7.14%
13:00	1	7.14%
17:00	1	7.14%
20:00	2	14.29%
21:00	2	14.29%
23:00	1	7.14%
Grand Total	14	100.00%

ROAD CONDITION	Number	%
ROAD - DRY	7	50.00%
ROAD - SNOW	3	21.43%
ROAD - ICE	3	21.43%
ROAD - WET	1	7.14%
Grand Total	14	100.00%



Crashes - Without Animal Crashes

Below is a summary of the crash data with the animal crashes removed:

CRASH YEAR	Number	%
2009	6	66.67%
2010	2	22.22%
2011	1	11.11%
Grand Total	9	100.00%

Number	/0
3	33.33%
6	66.67%
9	100.00%
	3 6 9

LOCATION	Number	%
NON-INTERSECTION	9	100.00%
Grand Total	9	100.00%

TYPE OF CRASH	Number	%
FIXED OBJECT	4	44.44%
SIDESWIPE - PASSING	2	22.22%
PARKED VEHICLE	2	22.22%
RAN OFF ROAD	1	11.11%
Grand Total	9	100.00%

TYPE OF CRASH	Number	%	CONTRIBUTING FACTOR	Number	%
FIXED OBJECT	4	44.44%	EXCESSIVE SPEED	6	66.679
SIDESWIPE - PASSING	2	22.22%	FAILURE TO CONTROL	1	11.119
PARKED VEHICLE	2	22.22%	OTHER DRIVER ERROR	1	11.119
RAN OFF ROAD	1	11.11%	IMPROPER LANE CHANGE	1	11.119
Grand Total	9	100.00%	Grand Total	9	100.009

ROAD CONTOUR

STRAIGHT - LEVEL

Grand Total

LIGHT CONDITION	Number	%
DARK - NO LIGHTS	6	66.67%
DAYLIGHT	3	33.33%
Grand Total	9	100.00%

ROAD CONDITION	Number	%
ROAD - DRY	3	33.33%
ROAD - SNOW	3	33.33%
ROAD - ICE	3	33.33%
Grand Total	9	100.00%

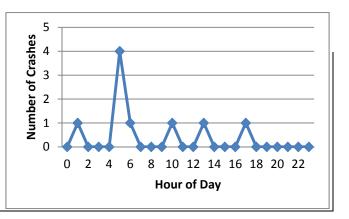


Number

%

100.00% 100.00%

HOUR OF DAY	Number	%
1:00	1	11.11%
5:00	4	44.44%
6:00	1	11.11%
10:00	1	11.11%
13:00	1	11.11%
17:00	1	11.11%
Grand Total	9	100.00%



3.0 CRASH ANALYSIS

Crash reports from January 1, 2009 through December 31, 2011 were obtained. During this three-year period, a total of 15 crashes were originally logged within the study limits with a crash rate of 1.79 crashes per million vehicle miles traveled. As mentioned above after reviewing the OH-1 reports, one of these crashes was actually located outside the study area on a different roadway (US 36). **Figure 2** (pg. 9) includes the crash diagram which shows the approximate locations of these 14 crashes.

Although there is a high percentage of fixed object (and parked car) crashes, most (5) occurred in the same location during one large crash event on February 19, 2009 from 5:00-6:00am, while the roadway was covered with snow. So minus that group of crashes, the remaining crashes are dominated by deer crossings (5), followed by sideswipe passing (2), fixed object (1), and ran off road (1). As a result, the crash analysis was divided into three groups – the single crash event in 2009, the animal crashes, and the remaining crashes.

2009 Single Crash Event

A total of five crashes in 2009 occurred during a single crash event. Most (80%) were property damage only, and all occurred at the same time in the early morning, between 5:00 AM and 6:00 AM. It was dark, snowing, and the road was covered with ice and snow. All vehicles were cited for excessive speed.

Animal Crashes

A total of five crashes in three years were deer-involved. Most (80%) were property damage only, and all occurred at night, between 8:00 PM and 11:00 PM. It was dark, and only one crash occurred on wet pavement. No fault was assigned to the drivers.



Remaining Crashes

Minus the single crash event in 2009 and with the animal crashes removed, there were four crashes remaining over three years. Half were injury and half were property damage only. Half were sideswipe passing, and the other two were running off the road and fixed object. Most (80%) occurred during the day on dry pavement. As a result, no apparent crashes patterns have been identified for these remaining crashes.

Conclusions

Overall, most crashes did occur in the dark with no lights (79%), and excessive speed was the most listed contributing factor (43%), followed by no driver errors (36%). The excessive speed was related to the crashes that occurred in slick roadway conditions and in the dark, and the no driver errors were related to the animal crashes. No crashes appeared to be a result of the merging (southbound) and diverging (northbound) of the inside and outside sets of lanes. In addition, once the crashes from the single crash event in 2009 were analyzed separately, the only crash pattern that emerged was a relatively high percentage of animal crashes occurring at night in the project area.

4.0 STUDY AREA RECOMMENDATIONS

One-third of the crashes in the study area occurred during one crash event with snow on the roadway in the dark; another third of the crashes occurred as a result of deer crossings; and the remaining third varied. Almost three quarters of the crashes occurred in the dark with no lighting (most of which were the single crash event or the deer crashes). Based on the prevalence of deer crashes, further research was conducted on possible means to address these crashes (see **References, Section 5.0**). Options explored in the reference material included:

- Driver Education
- Passive Signage
- Active Signage
- Roadway Lighting
- Roadside Clear Zones
- Vehicle Infrared Technology
- Speed Limit Reduction

- Fencing with Deer Crossings
- Reflectors
- Whistles
- Repellents
- Feeding Stations (for deer)
- Hunting

Based on the reference material, the two most effective methods of reducing deer crashes are (1) installation of fencing combined with deer underpasses or overpasses and (2) hunting to reduce the deer population. In addition, temporary passive signs and active signs and roadside clear zones have potential but additional research is needed to determine the actual effectiveness. All of the other methods had limited effectiveness in specialized situations (i.e. related to seasonal migration routes), were not effective, or needed further study but are anticipated to not be effective.



As a result, considering the proximity of Delaware State Park, deer crossings are anticipated to continue in this area. For short-term measures, it is recommended to install passive deer crossing signage; and in the long-term, if deer-related crashes continue, it is recommended to evaluate additional measures, including installation of a deer overpass or underpass with fencing to direct the deer more safely into and from Delaware State Park.

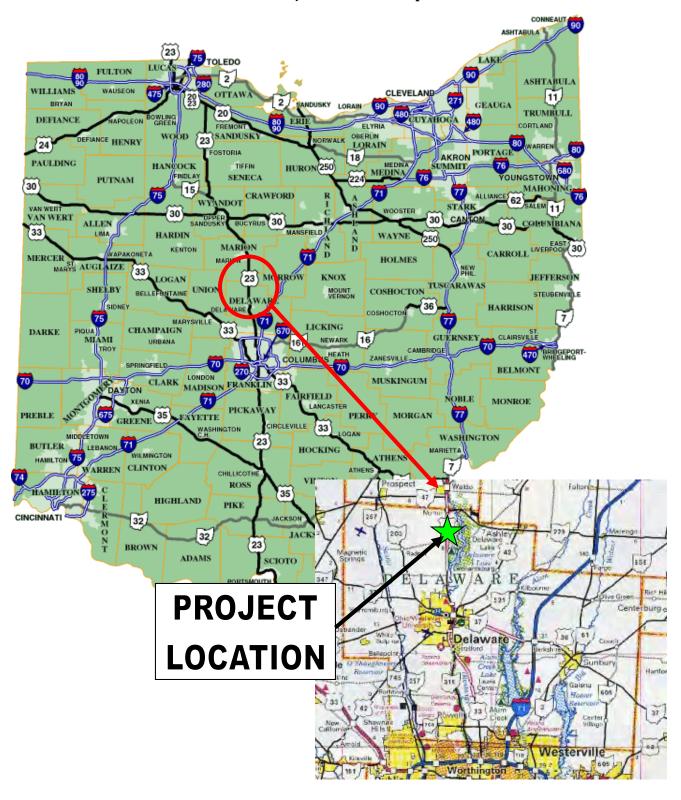
5.0 REFERENCES

"Methods to Reduce Traffic Crashes Involving Deer: What Works and What Does Not," James H. Hedlund, Paul D. Curtis, Gwen Curtis & Allan F. Williams, Insurance Institute for Highway Safety, 2003.

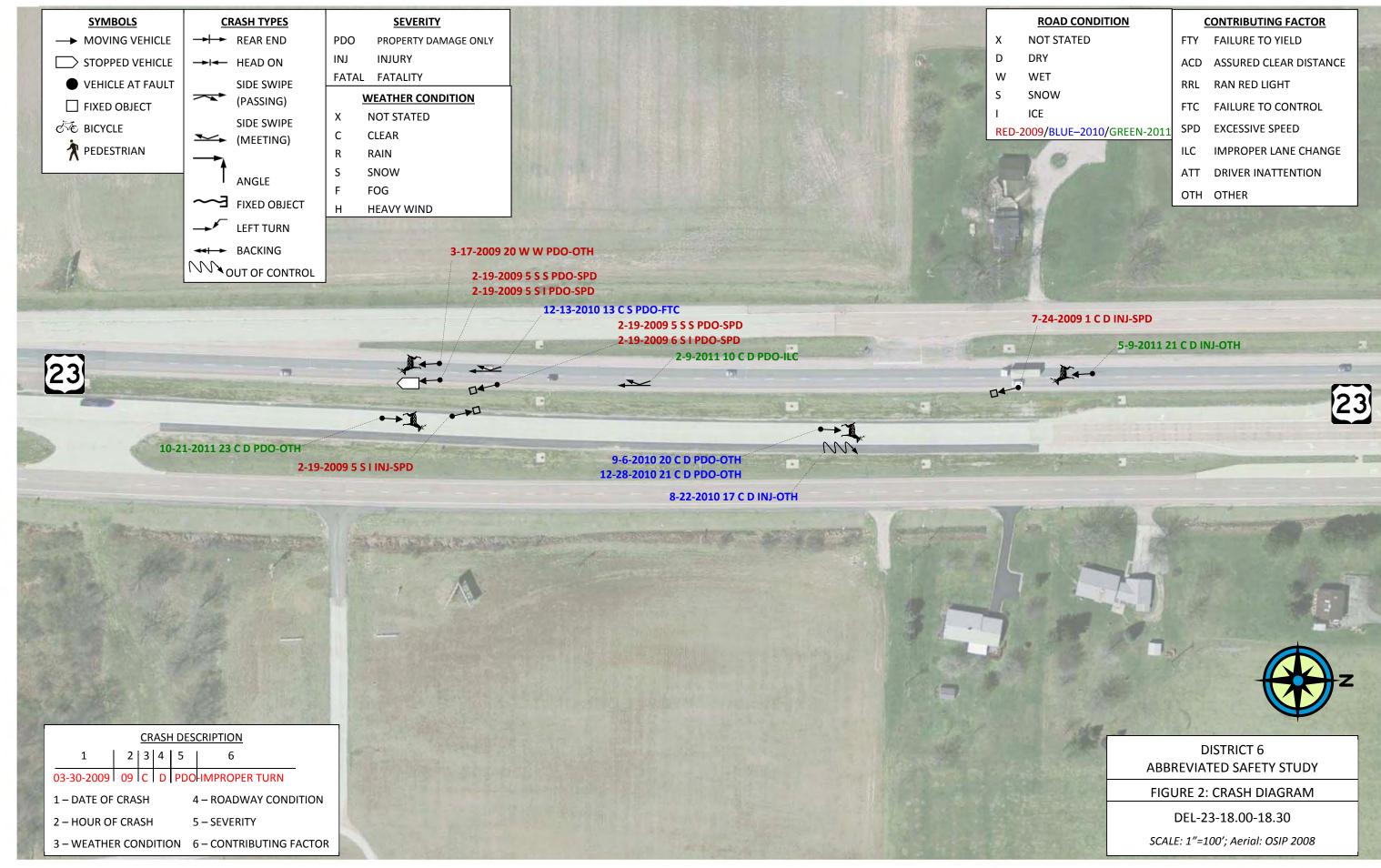
"Reducing Deer-Vehicle Crashes: Wildlife Damage Management Fact Sheet Series," Paul D. Curtis & James H. Hedlund, Cornell Cooperative Extension, Cornell University, 2005.



FIGURE 1 Project Location Map







APPENDIX A

Field Data



DEL-23-18.00-18.30 APPENDIX A: PHOTOS



Photo 1: US23 NB First crossover N. of Troutman Rd. Looking N.



Photo 2: US23 NB 200' N. of above crossover looking N.



Photo 3: US23 NB 400' N. of above crossover looking N.



Photo 4: US23 NB 600' N. of above crossover looking N.



Photo 5: US23 NB 800' N. of above crossover looking N.



Photo 6: US23 NB 1000' N. of above crossover looking N.



Photo 7: US23 NB 1200' N. of above crossover looking N.



Photo 8: US23 NB 1400' N. of above crossover looking N.



Photo 9: US23 NB 1600' N. of above crossover (Irwin Rd.) looking N.



Photo 10: US23 NB 1800' N. of above crossover looking N.



Photo 11: US23 SB 1800' N. of above crossover looking S.



Photo 12: US23 SB 1600' N. of above crossover looking S.



Photo 13: US23 SB 1400' N. of above crossover looking S.



Photo 14: US23 SB 1200' N. of above crossover looking S.



Photo 15: US23 SB 1000' N. of above crossover looking S.



Photo 16: US23 SB 800' N. of above crossover looking S.



Photo 17: US23 SB 600' N. of above crossover looking S.



Photo 18: US23 SB 400' N. of above crossover looking S.



Photo 19: US23 SB 200' N. of above crossover looking S.



Photo 20: US23 SB adjacent to the first crossover N. of Troutman looking S.



Photo 21: US23 @ Irwin Rd. looking E. from Median



Photo 22: US23 @ Irwin Rd. EB 200' E. of US23 looking E.



Photo 23: US23 @ Irwin Rd. WB 200' E. of US23 looking W.

Appendix A Land Uses



Google earth feet meters

D 6 Safely Straies US 23 S. PROPERTY ADDRESSES

Appendix A

DG SAFETY STUDIES - FIELD NOTES

US 23 CORDIDOR - N. OF TROUTMAN Pd.

- NO TRAFFIC BACKUPS OR BOTHENECKS DETECTED

- PHOTO LOCATIONS MEASURED FROM S. END OF

1 ST BABAK IN MEDIAN D. OF TROUTMAN Rd.

- SOME SIGNS WERE COVERED. THESE SIGNS

ARE USED INCONJUNCTION WITH THE TRAFFIL

SLIFT WITH THE TEST PAVEMENT LANCES.

APPENDIX B

Crash Data



	Number
Total	14

CRASH_SEVERITY	Number	%
INJURY CRASH	4	28.6%
PROPERTY DAMAGE CRASH	10	71.4%
Grand Total	14	100.0%

TRAFFIC_CRASH_YEAR		Number	%
2	2009	7	50.0%
	2010	4	28.6%
	2011	3	21.4%
Grand Total		14	100.0%

DAY_OF_WEEK	Number	%
THURSDAY	5	35.7%
MONDAY	3	21.4%
FRIDAY	2	14.3%
TUESDAY	2	14.3%
SUNDAY	1	7.1%
WEDNESDAY	1	7.1%
Grand Total	14	100.0%

HOUR_OF_DAY	Number	%
1	1	7.1%
5	4	28.6%
6	1	7.1%
10	1	7.1%
13	1	7.1%
17	1	7.1%
20	2	14.3%
21	2	14.3%
23	1	7.1%
Grand Total	14	100.0%

TYPE_OF_CRASH	Number	%
ANIMAL	5	35.7%
FIXED OBJECT	4	28.6%
SIDESWIPE - PASSING	2	14.3%
PARKED VEHICLE	2	14.3%
RAN OFF ROAD	1	7.1%
Grand Total	14	100.0%

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

All Crashes

WEATHER_CONDITION	Number	%
NO ADVERSE WEATHER CONDITION	8	57.1%
SNOW	5	35.7%
RAIN	1	7.1%
Grand Total	14	100.0%

ROAD_CONDITION	Number	%
ROAD - DRY	7	50.0%
ROAD - SNOW	3	21.4%
ROAD - ICE	3	21.4%
ROAD - WET	1	7.1%
Grand Total	14	100.0%

LIGHT_CONDITION	Number	%
DARK - NO LIGHTS	11	78.6%
DAYLIGHT	3	21.4%
Grand Total	14	100.0%

NUMBER_OF_VEHICLES	Number	%
1	10	71.4%
2	4	28.6%
Grand Total	14	100.0%

LOCATION	Number	%
NON-INTERSECTION	14	100.0%
Grand Total	14	100.0%

CRASH_MONTH_NBR	Number	%
2	6	42.9%
3	1	7.1%
5	1	7.1%
7	1	7.1%
8	1	7.1%
9	1	7.1%
10	1	7.1%
12	2	14.3%
Grand Total	14	100.0%

ROAD_CONTOUR	Number	%
STRAIGHT - LEVEL	14	100.0%
Grand Total	14	100.0%

SPECIAL_AREA	Number	%
SPECIAL AREA - NOT STATED	14	100.0%
Grand Total	14	100.0%

ANIMAL_TYPE	Number	%
ANIMAL NOT STATED	9	64.3%
DEER HIT	5	35.7%
Grand Total	14	100.0%

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

ACTION1	Number	%
GOING STRAIGHT	12	85.7%
PARKING/UNPARKING	1	7.1%
CHANGING LANES	1	7.1%
Grand Total	14	100.0%

CONTRIBUTING_FACTOR1	Number	%
EXCESSIVE SPEED	6	42.9%
NO DRIVER ERRORS	5	35.7%
FAILURE TO CONTROL	1	7.1%
OTHER DRIVER ERROR	1	7.1%
IMPROPER LANE CHANGE	1	7.1%
Grand Total	14	100.0%

All Crashes

OBJECT_STRUCK1	Number	%
OBJECT NOT STATED	10	71.4%
OTHER FIXED OBJECT	3	21.4%
DITCH	1	7.1%
Grand Total	14	100.0%

TRAFFIC_CONTROL1	Number	%
PAVEMENT MARKINGS	14	100.0%
Grand Total	14	100.0%

DRIVER_ALCOHOL1	Number	%
NO ALCOHOL DETECTED	14	100.0%
Grand Total	14	100.0%

DRIVER_DRUGS1	Number	%
NO DRUGS DETECTED	13	92.9%
USING PRESCRIBED DRUG	1	7.1%
Grand Total	14	100.0%

All Crashes

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

DIRECTION_FR	OM1	Number	%
NORTH		9	64.3%
SOUTH		5	35.7%
Grand Total		14	100.0%

DIRECTION_TO1	Number	%
SOUTH	9	64.3%
NORTH	5	35.7%
Grand Total	14	100.0%

POSTED_SPEED1	Number	%
POSTED 55	14	100.0%
Grand Total	14	100.0%

ESTIMATED_SPEED1	Number	%
SPEED 36-45	4	28.6%
SPEED 46-55	4	28.6%
SPEED 56-65	2	14.3%
SPEED 21-25	1	7.1%
SPEED 66-75	1	7.1%
SPEED 26-35	1	7.1%
SPEED 20 AND UNDER	1	7.1%
Grand Total	14	100.0%

VEHICLE_TYPE1	Number	%
MID-SIZE	6	42.9%
COMPACT	2	14.3%
OTHER VEHICLE	2	14.3%
TRACTOR SEMI TRAILER	2	14.3%
FULL-SIZE	1	7.1%
MOTORCYCLE - 351CC-750CC	1	7.1%
Grand Total	14	100.0%

VEHICLE_TYPE2	Number	%
VEHICLE NOT STATED	10	71.4%
MID-SIZE	3	21.4%
COMPACT	1	7.1%
Grand Total	14	100.0%

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

All Crashes

ACTION2	Number	%
ACTION NOT STATED	10	71.4%
PARKED	2	14.3%
STOPPED IN TRAFFIC	1	7.1%
GOING STRAIGHT	1	7.1%
Grand Total	14	100.0%

CONTRIBUTING_FACTOR2	Number	%
(blank)	10	71.4%
NO DRIVER ERRORS	3	21.4%
VEHICLE DEFECT	1	7.1%
Grand Total	14	100.0%

DIRECTION_FROM2	Number	%
(blank)	10	71.4%
NORTH	4	28.6%
Grand Total	14	100.0%

DIRECTION_TO2	Number	%
(blank)	10	71.4%
SOUTH	4	28.6%
Grand Total	14	100.0%

DRIVER_ALCOHOL2	Number	%
ALCOHOL NOT STATED	10	71.4%
NO ALCOHOL DETECTED	3	21.4%
HBD - ABILITY UNKNOWN	1	7.1%
Grand Total	14	100.0%

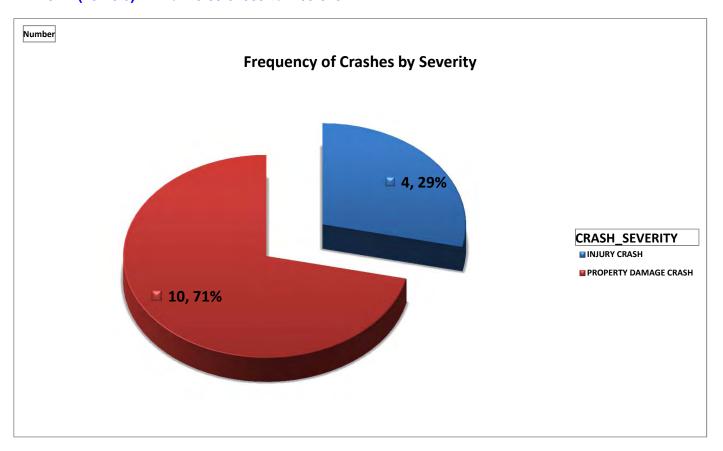
DRIVER_DRUGS2	Number	%
DRUGS NOT STATED	11	78.6%
NO DRUGS DETECTED	3	21.4%
Grand Total	14	100.0%

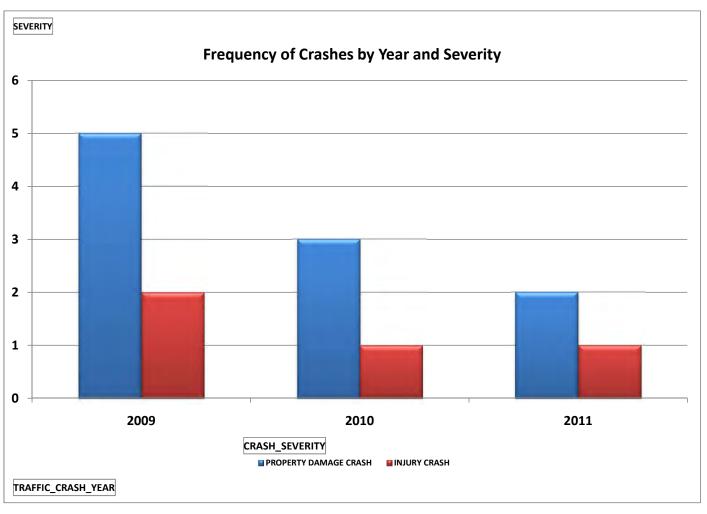
DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

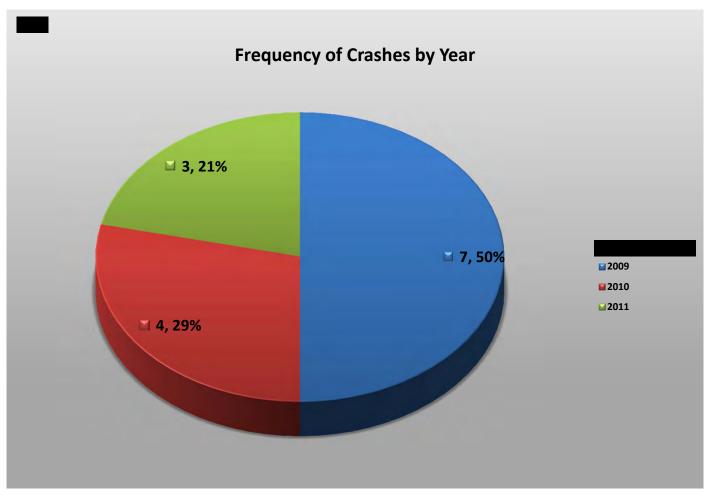
SEVERITY	CRASH_SEVERITY		
TRAFFIC_CRASH_YEAR	PROPERTY DAMAGE CRASH	INJURY CRASH	
2009	5	2	
2010	3	1	
2011	2	1	
Grand Total	10	4	

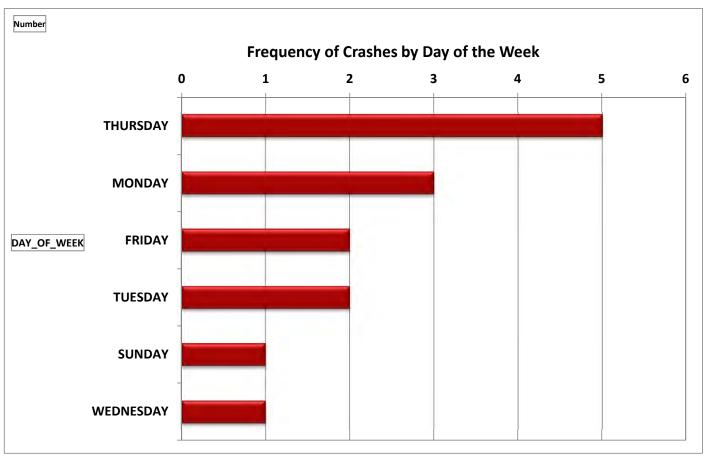
TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
2010	0	0
2011	0	0
Grand Total	0	0

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	3	1
2010	0	1	0
2011	0	0	1
Grand Total	0	4	2

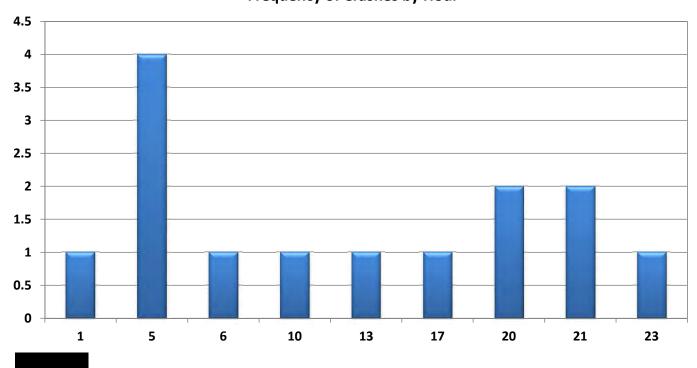


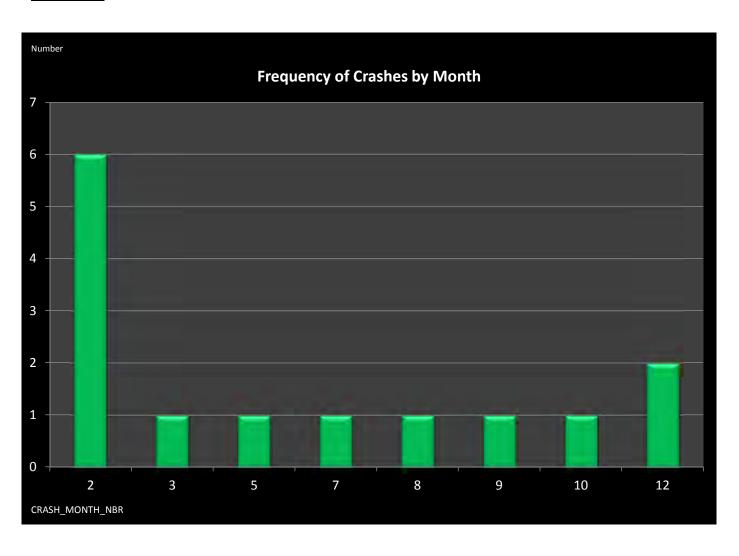


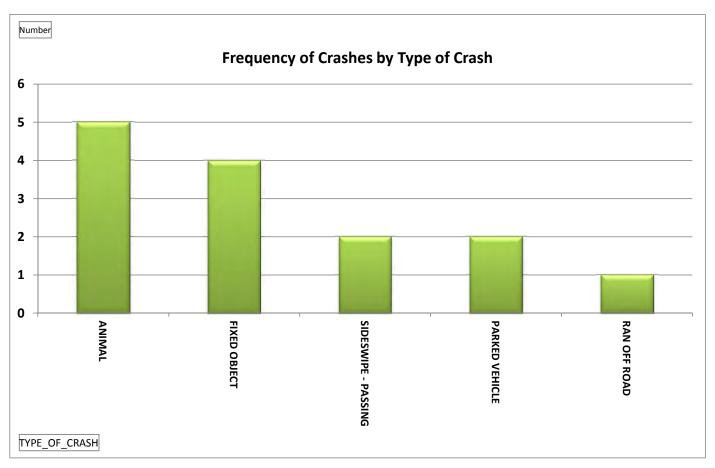


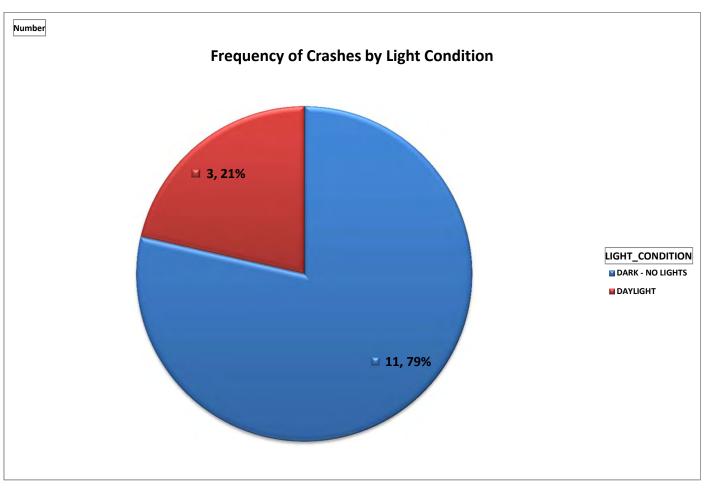


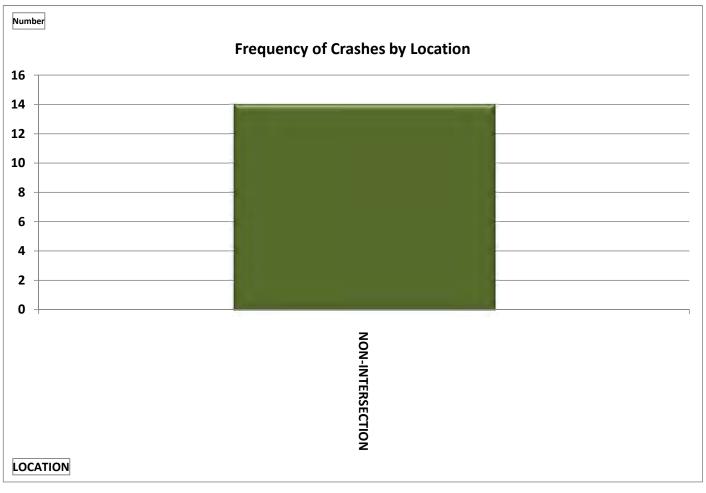
Frequency of Crashes by Hour

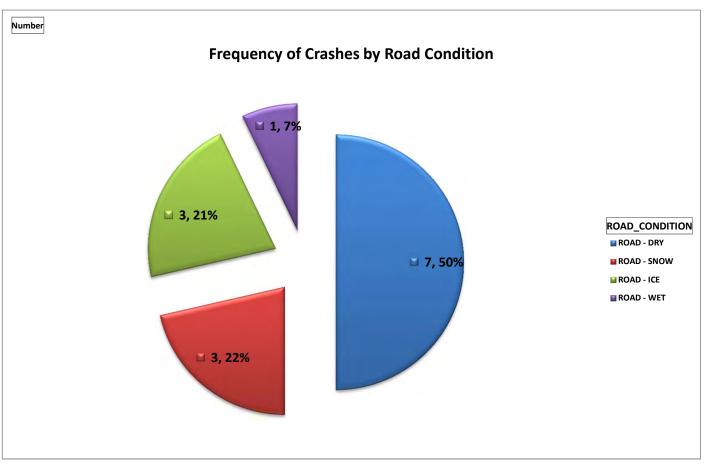


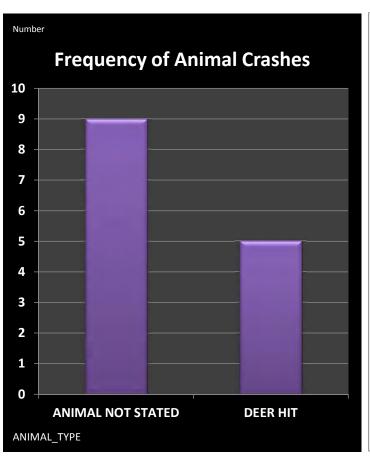


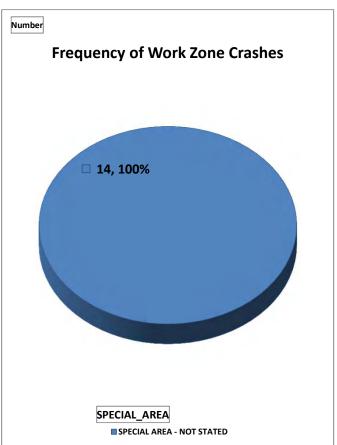


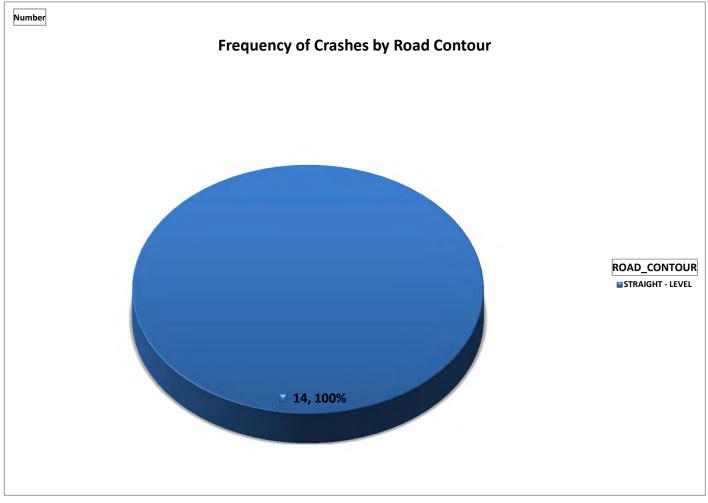




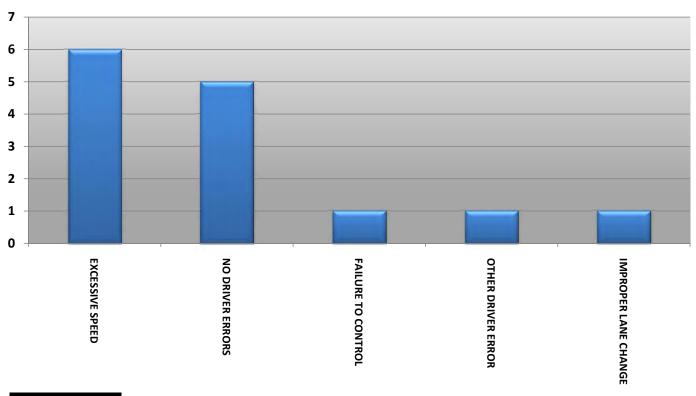


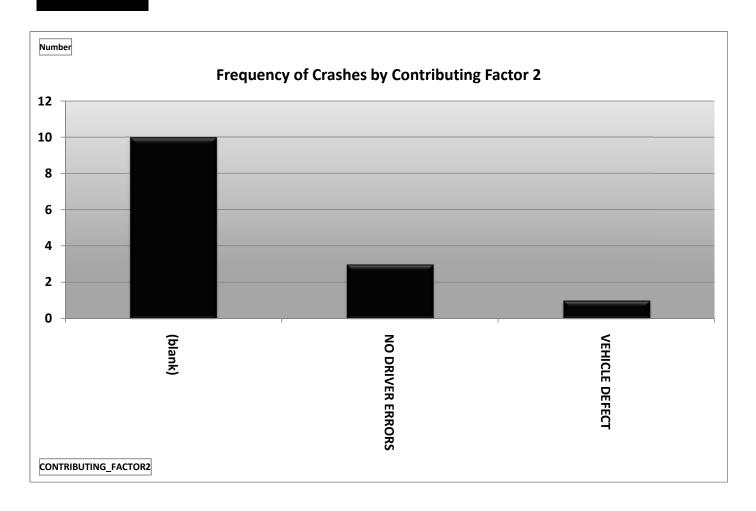


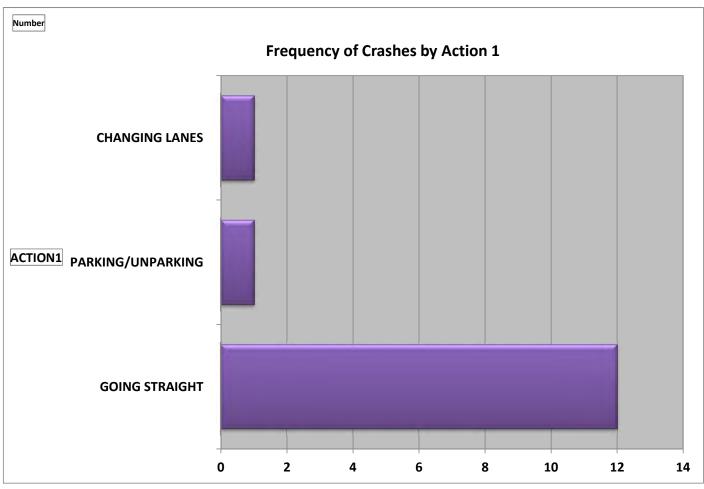


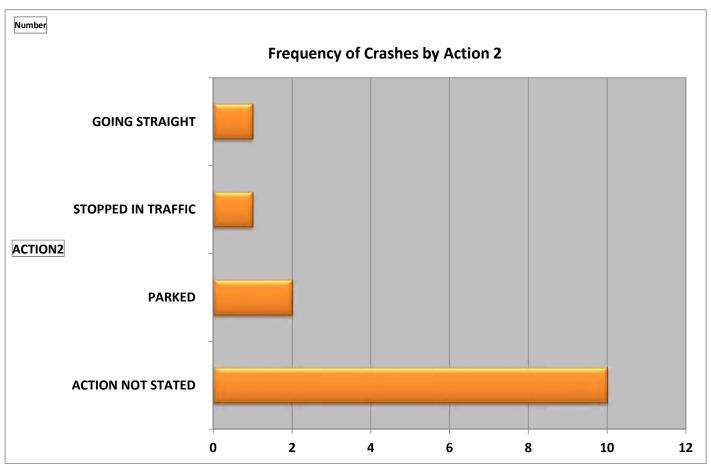


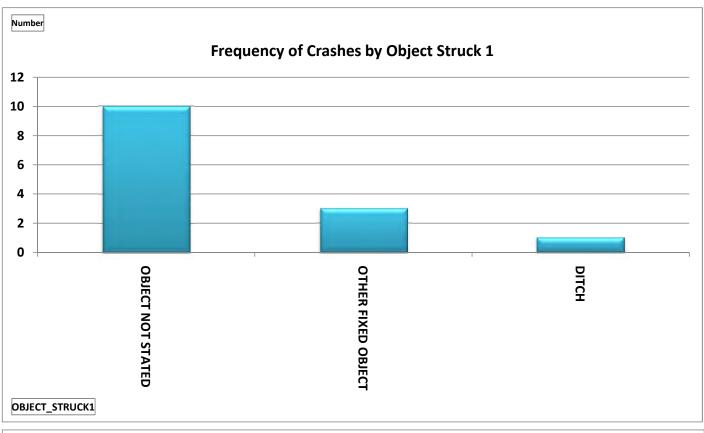
Frequency of Crashes by Contributing Factor 1



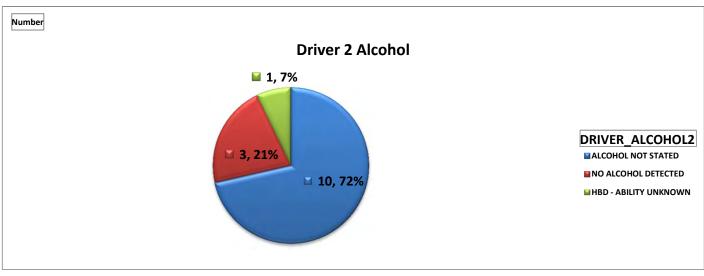


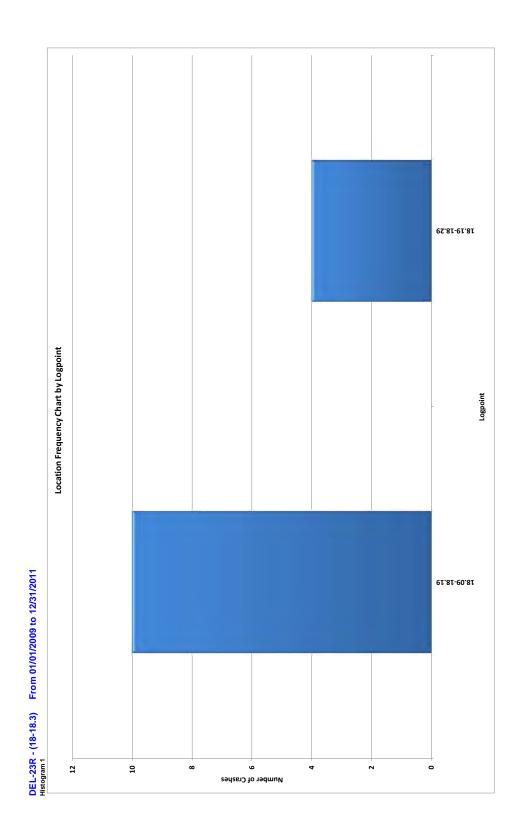


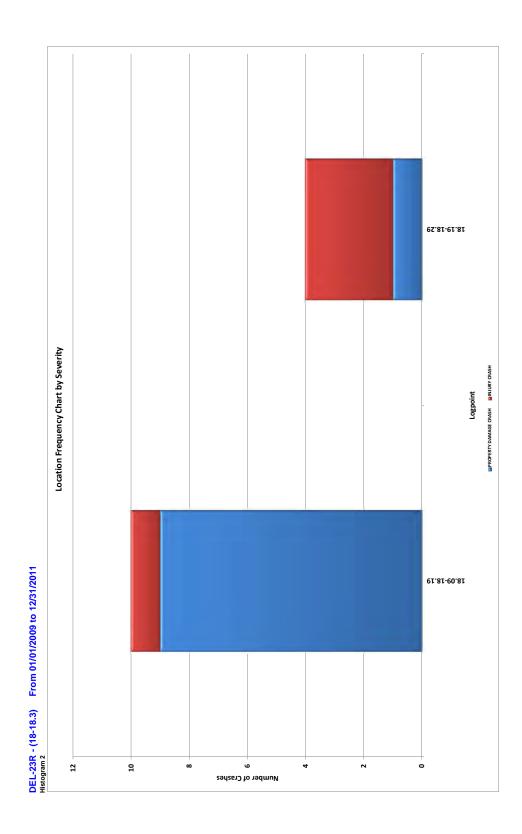


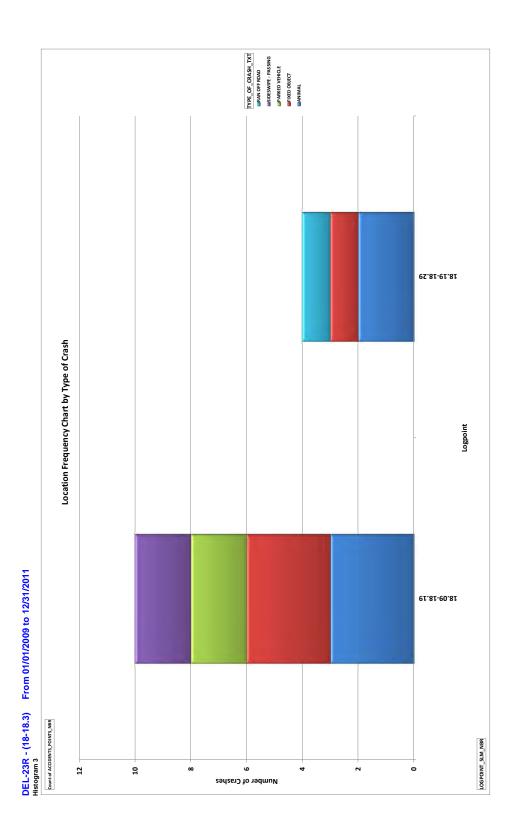


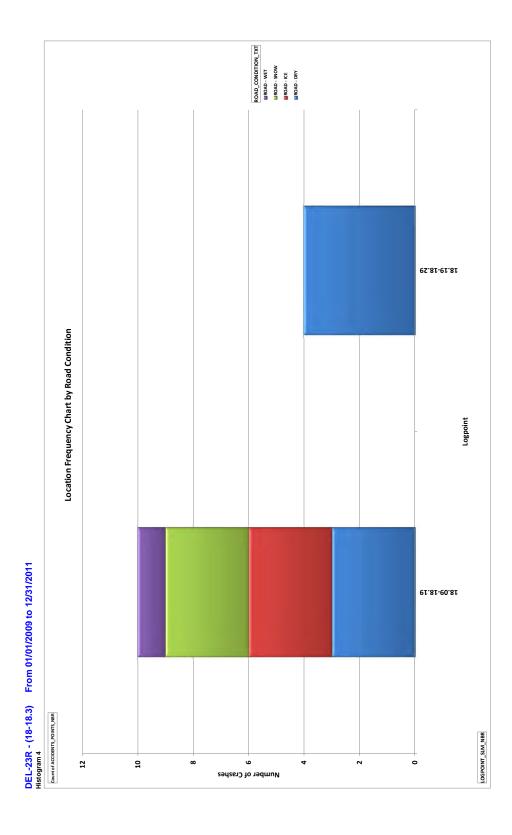


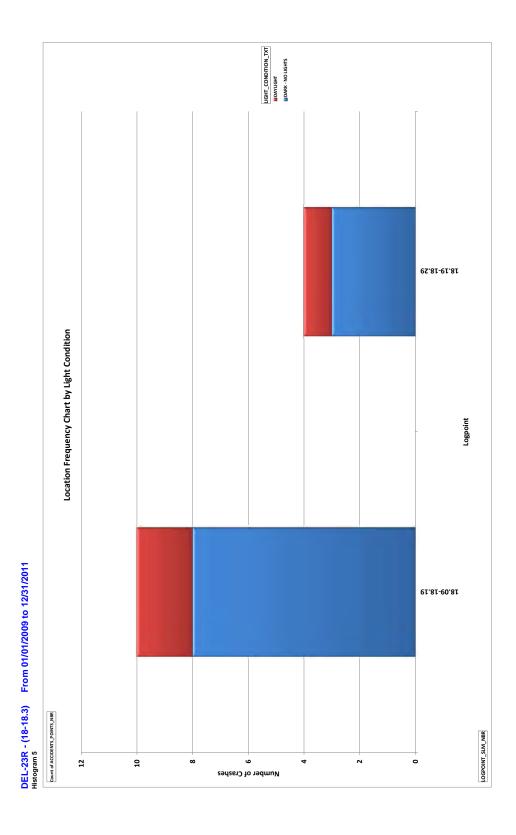


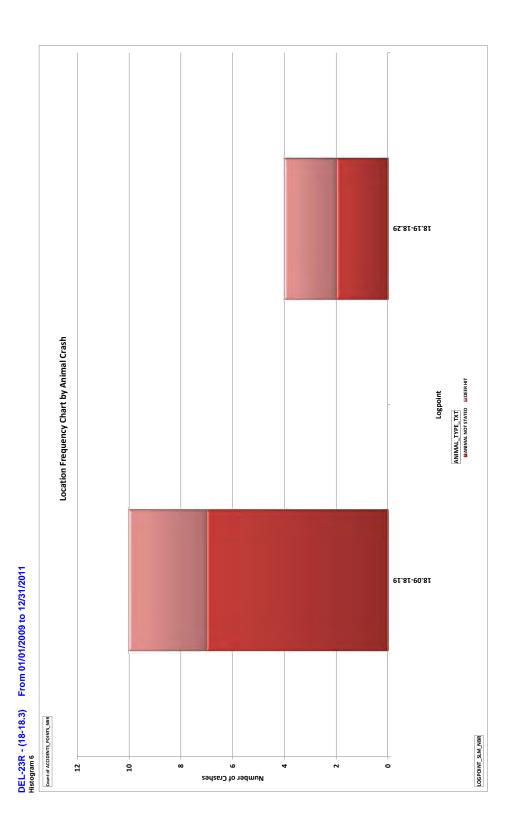


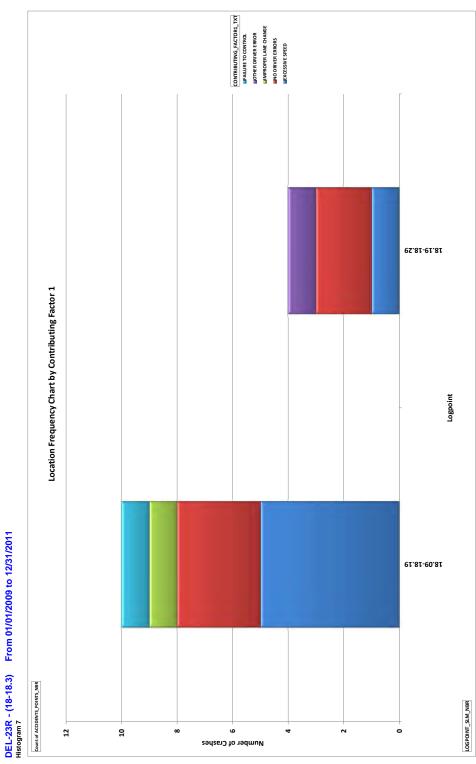


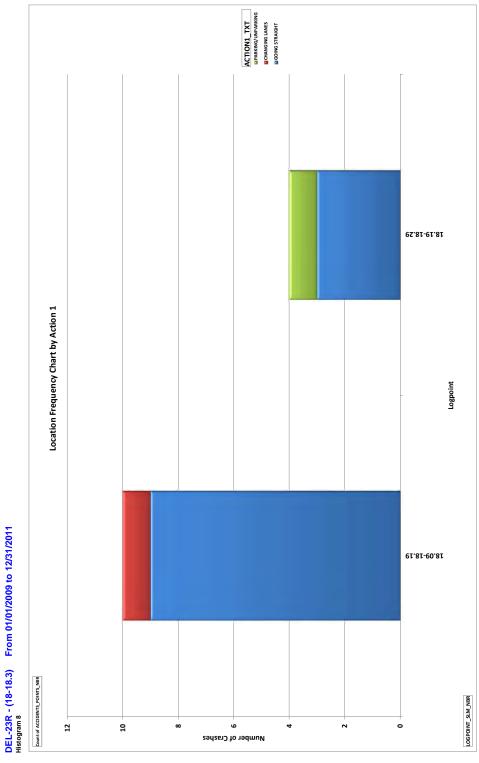


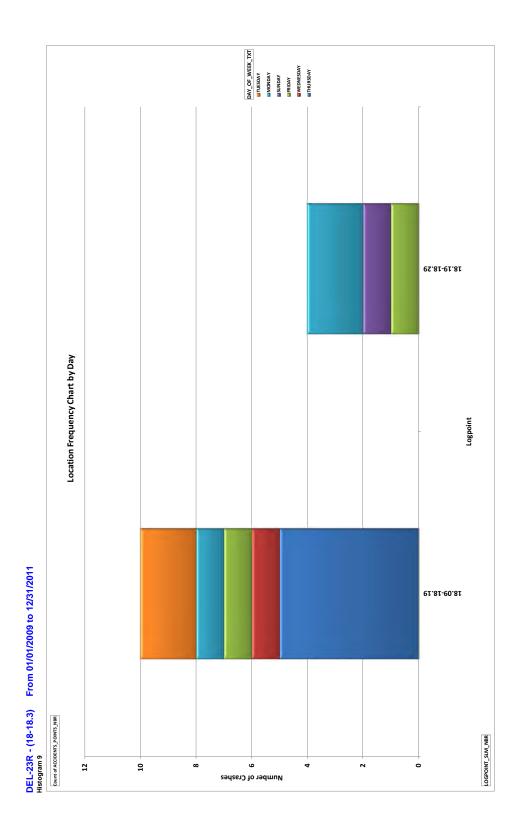


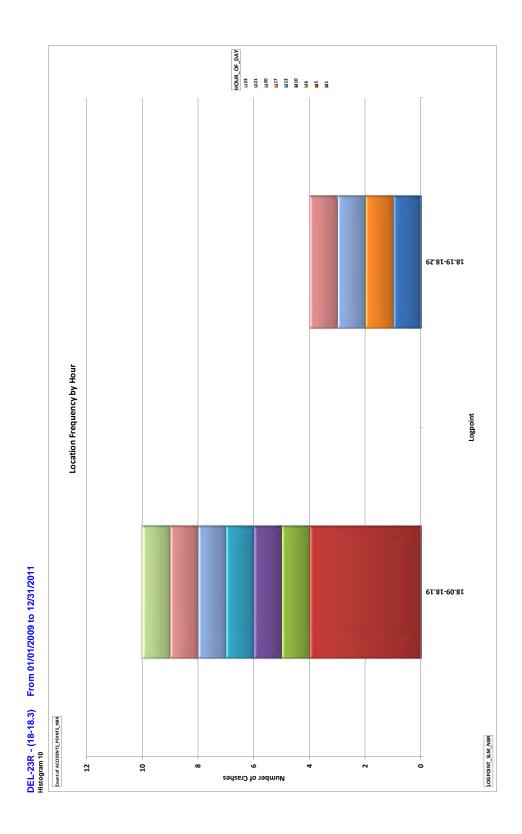


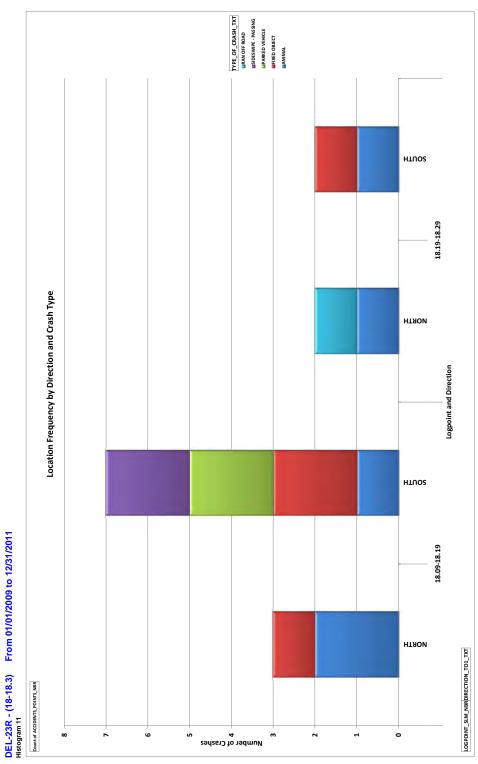


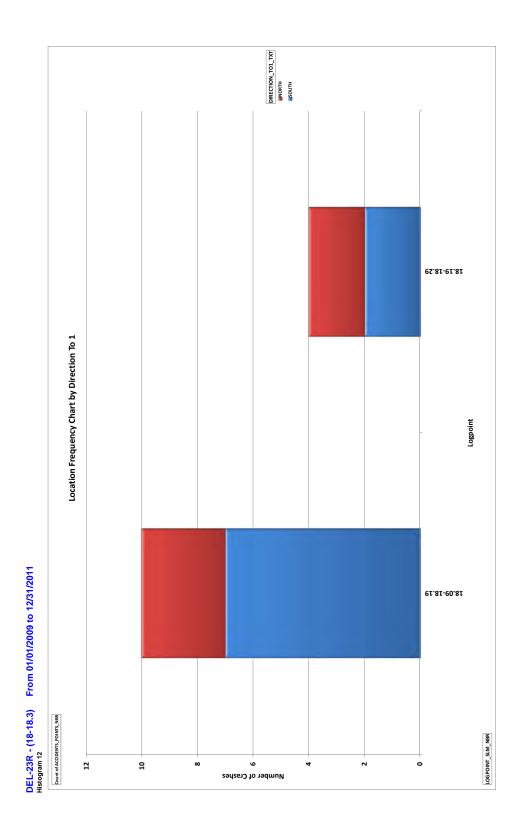


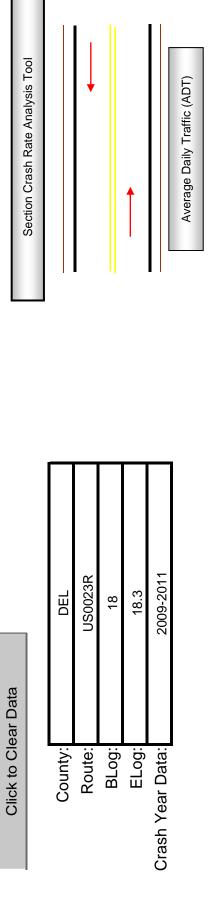












3 23,800 0.30 365

Enter Average Daily Traffic on Section (ADT):

Enter Length of Section in Miles

Number of Days in Year:

Enter Number of Crashes on Section: Enter Number of Years for Crash Data: Crash Rate per Million Vehicle Miles Traveled (MVMT):

1.79
reled (MVMT):

	Number
Total	5

CRASH_SEVERITY	Number	%
INJURY CRASH	1	20.0%
PROPERTY DAMAGE CRASH	4	80.0%
Grand Total	5	100.0%

TRAFFIC_CRASH_YEAR	Number	%
2009	5	100.0%
Grand Total	5	100.0%

DAY_OF_WEEK	Number	%
THURSDAY	5	100.0%
Grand Total	5	100.0%

HOUR_OF_DAY	Number	%
5	4	80.0%
6	1	20.0%
Grand Total	5	100.0%

TYPE_OF_CRASH	Number	%
FIXED OBJECT	3	60.0%
PARKED VEHICLE	2	40.0%
Grand Total	5	100.0%

Single Crash Event in 2009

WEATHER_CON	IDITION	Number	%
SNOW		5	100.0%
Grand Total		5	100.0%

ROAD_CONDITION	Number	%
ROAD - ICE	3	60.0%
ROAD - SNOW	2	40.0%
Grand Total	5	100.0%

LIGHT_CONDITION	Number	%
DARK - NO LIGHTS	5	100.0%
Grand Total	5	100.0%

NUMBER_OF_VEHICLES	Number	%
1	3	60.0%
2	2	40.0%
Grand Total	5	100.0%

LOCATION	Number	%
NON-INTERSECTION	5	100.0%
Grand Total	5	100.0%

CRASH_MONTH_NBR	Number	%
2	5	100.0%
Grand Total	5	100.0%

ROAD_CONTOUR	Number	%
STRAIGHT - LEVEL	5	100.0%
Grand Total	5	100.0%

SPECIAL_AREA	Number	%
SPECIAL AREA - NOT STATED	5	100.0%
Grand Total	5	100.0%

ANIMAL_TYPE	Number	%
ANIMAL NOT STATED	5	100.0%
Grand Total	5	100.0%

Single Crash Event in 2009

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

	/		
ACTION1		Number	%
GOING STRAIG	HT	5	100.0%
Grand Total		5	100.0%

CONTRIBUTING_FACTOR1	Number	%
EXCESSIVE SPEED	5	100.0%
Grand Total	5	100.0%

OBJECT_STRUCK1	Number	%
OTHER FIXED OBJECT	3	60.0%
OBJECT NOT STATED	2	40.0%
Grand Total	5	100.0%

TRAFFIC_CONTROL1	Number	%
PAVEMENT MARKINGS	5	100.0%
Grand Total	5	100.0%

DRIVER_ALCOHOL1	Number	%
NO ALCOHOL DETECTED	5	100.0%
Grand Total	5	100.0%

DRIVER_DRUGS1	Number	%
NO DRUGS DETECTED	5	100.0%
Grand Total	5	100.0%

Single Crash Event in 2009

DIRECTION_FROM1	Number	%
NORTH	4	80.0%
SOUTH	1	20.0%
Grand Total	5	100.0%

DIRECTION_TO1	Number	%
SOUTH	4	80.0%
NORTH	1	20.0%
Grand Total	5	100.0%

POSTED_SPEED1	Number	%
POSTED 55	5	100.0%
Grand Total	5	100.0%

ESTIMATED_SPEED1	Number	%
SPEED 36-45	3	60.0%
SPEED 21-25	1	20.0%
SPEED 26-35	1	20.0%
Grand Total	5	100.0%

VEHICLE_TYPE1	Number	%
MID-SIZE	5	100.0%
Grand Total	5	100.0%

VEHICLE_TYPE2	Number	%
VEHICLE NOT STATED	3	60.0%
COMPACT	1	20.0%
MID-SIZE	1	20.0%
Grand Total	5	100.0%

Single Crash Event in 2009

ACTION2		Number	%
ACTION NOT ST.	ATED	3	60.0%
PARKED		2	40.0%
Grand Total		5	100.0%

CONTRIBUTING_FACTOR2	Number	%
(blank)	3	60.0%
VEHICLE DEFECT	1	20.0%
NO DRIVER ERRORS	1	20.0%
Grand Total	5	100.0%

DIRECTION_FROM2	Number	%
(blank)	3	60.0%
NORTH	2	40.0%
Grand Total	5	100.0%

DIRECTION_TO2	Number	%
(blank)	3	60.0%
SOUTH	2	40.0%
Grand Total	5	100.0%

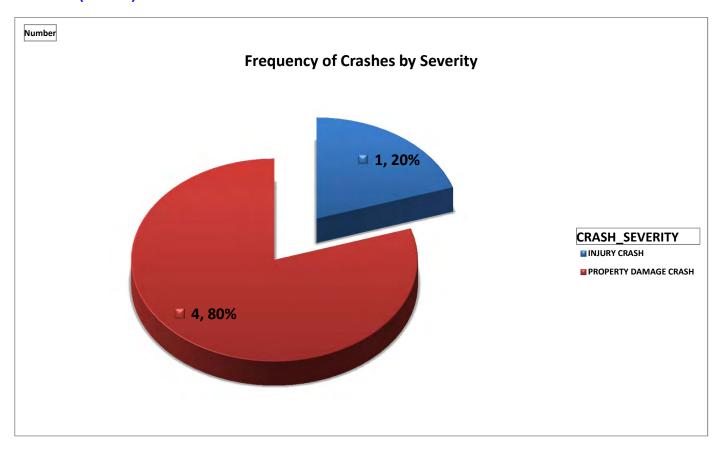
DRIVER_ALCOHOL2	Number	%
ALCOHOL NOT STATED	3	60.0%
NO ALCOHOL DETECTED	1	20.0%
HBD - ABILITY UNKNOWN	1	20.0%
Grand Total	5	100.0%

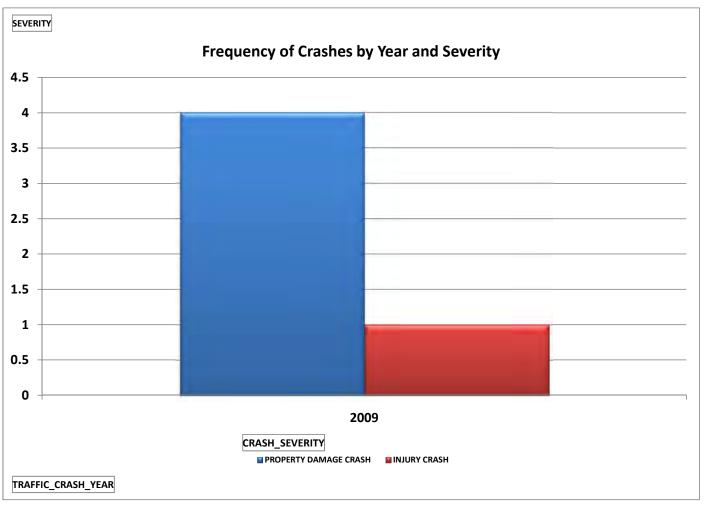
DRIVER_DRUGS2	Number	%
DRUGS NOT STATED	4	80.0%
NO DRUGS DETECTED	1	20.0%
Grand Total	5	100.0%

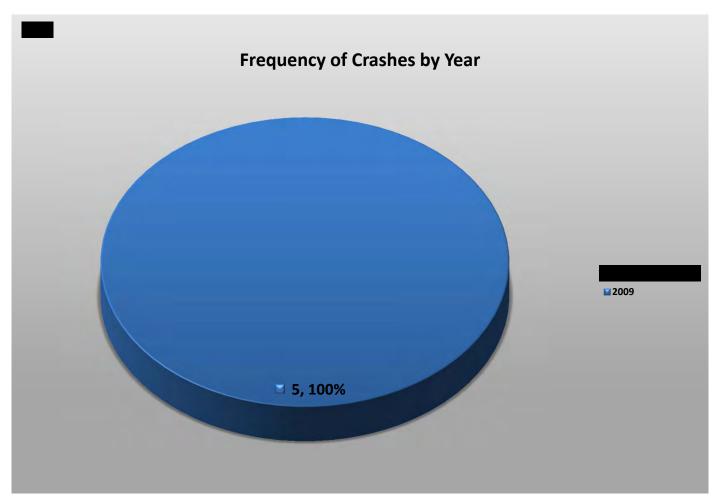
SEVERITY	CRASH_SEVERITY		
TRAFFIC_CRASH_YEAR	PROPERTY DAMAGE CRASH	INJURY CRASH	
2009	4	1	
Grand Total	4	1	

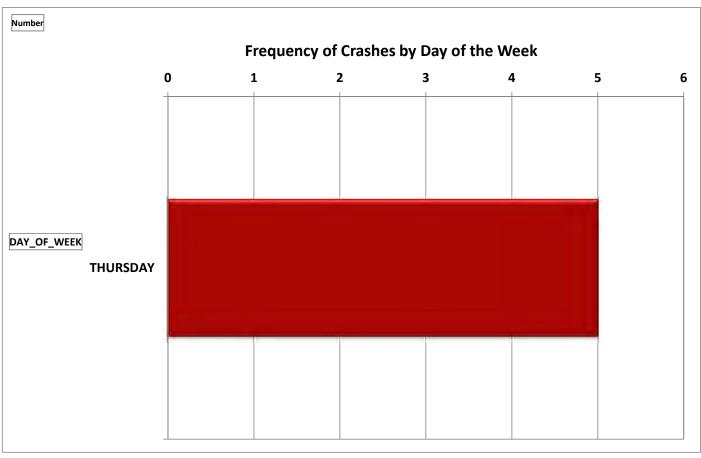
TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
Grand Total	0	0

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	0	1
Grand Total	0	0	1

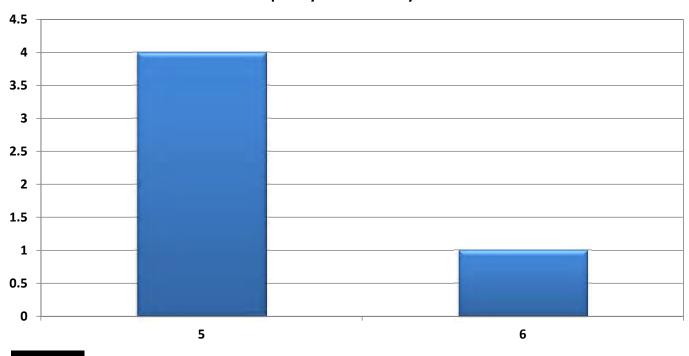


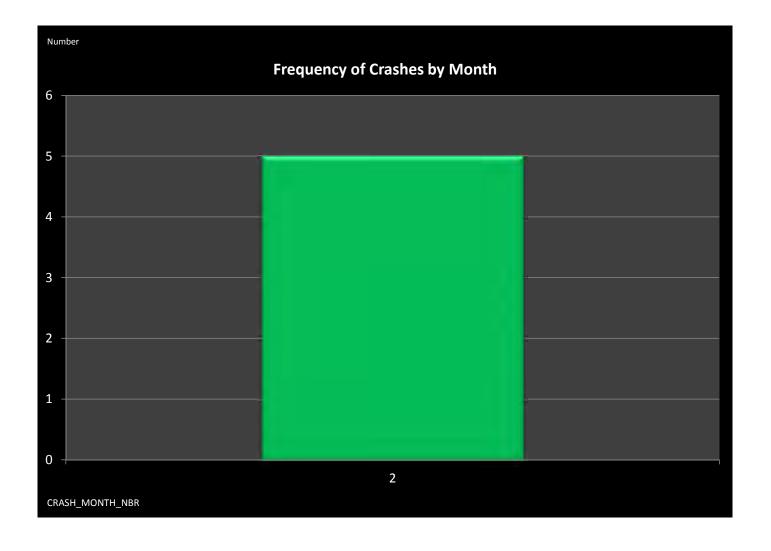


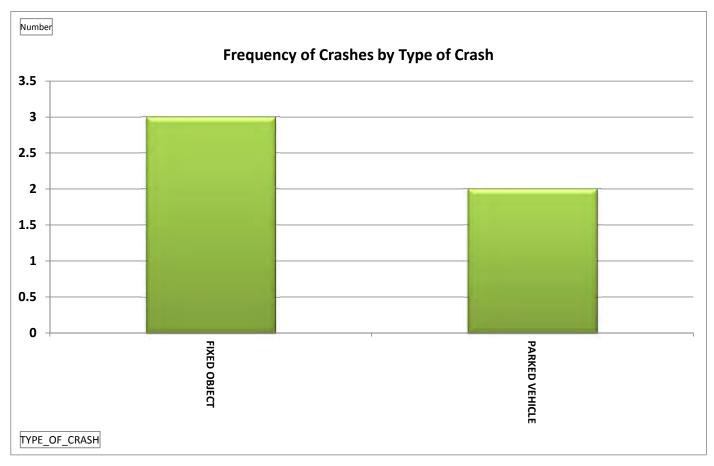


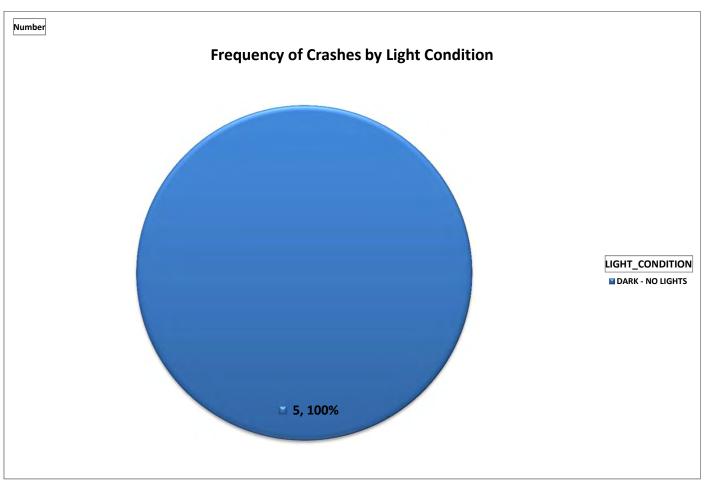


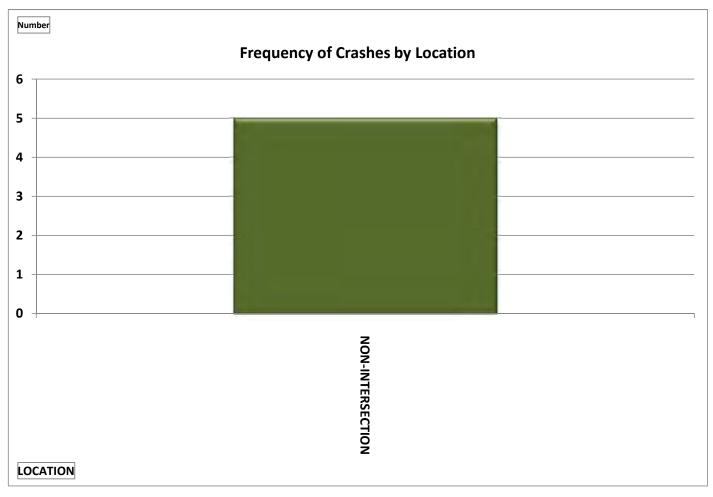


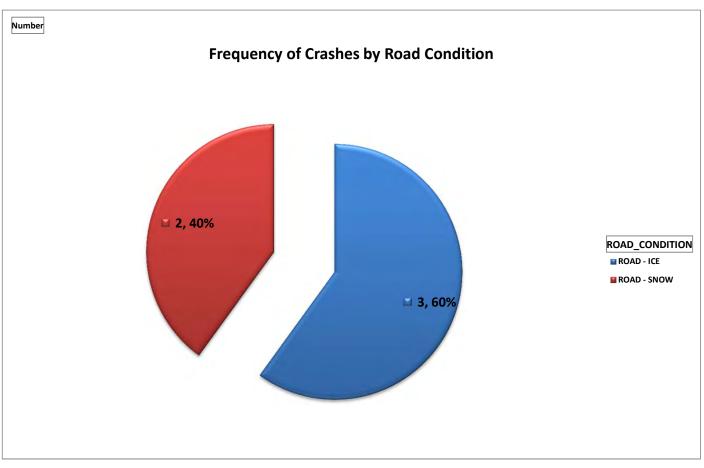


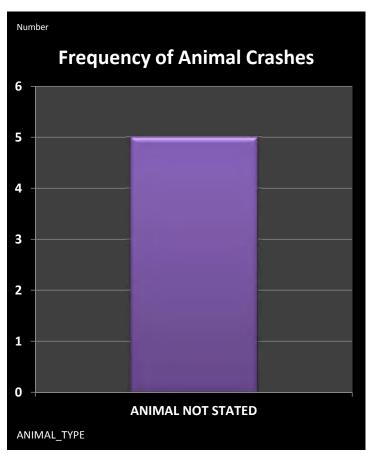


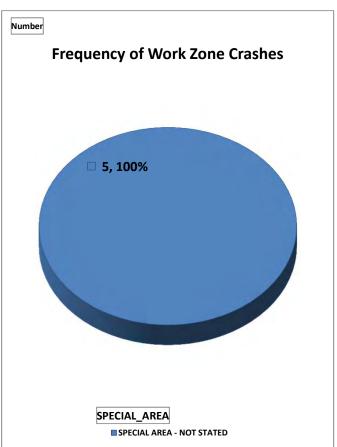


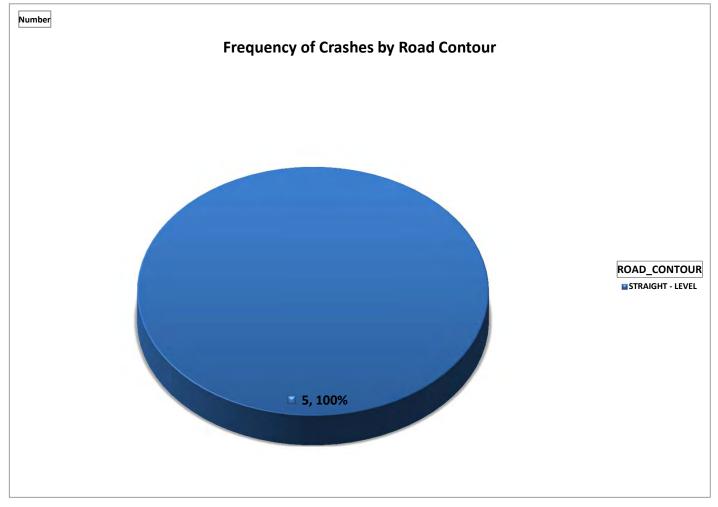






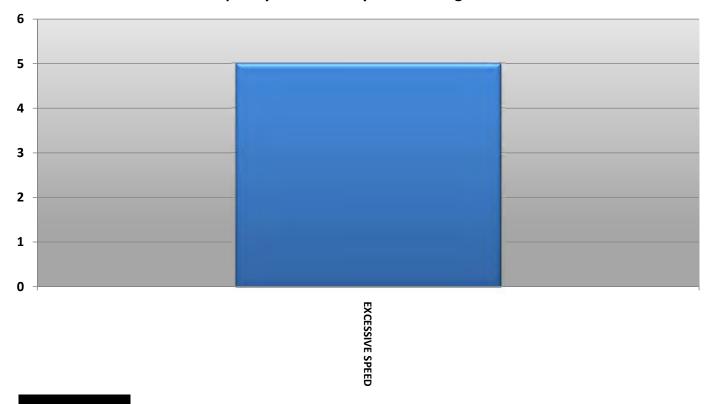


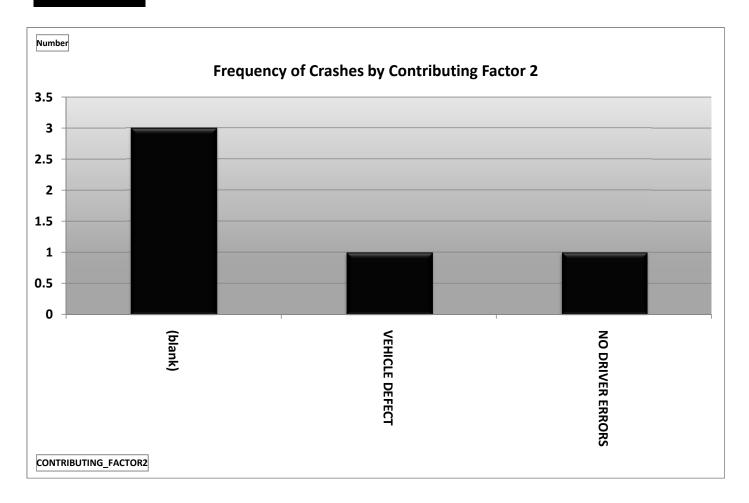


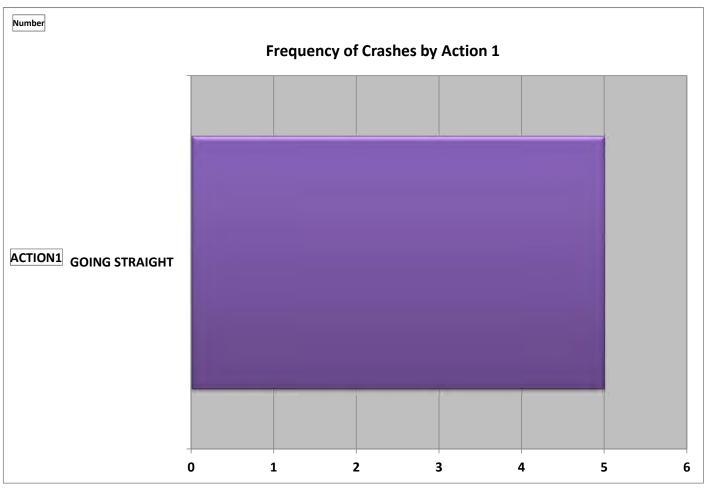


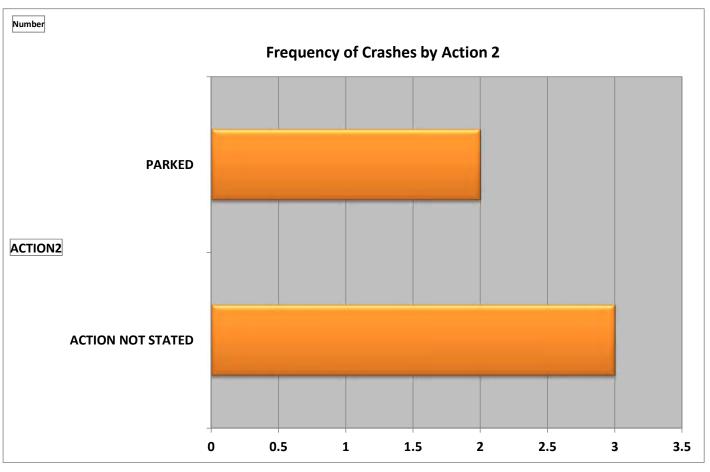


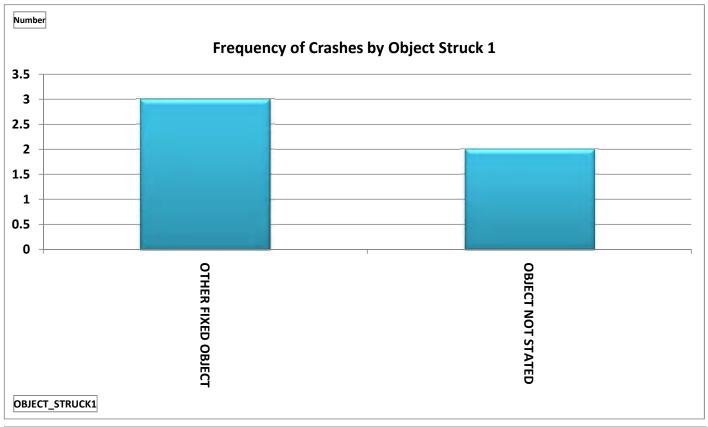
Frequency of Crashes by Contributing Factor 1



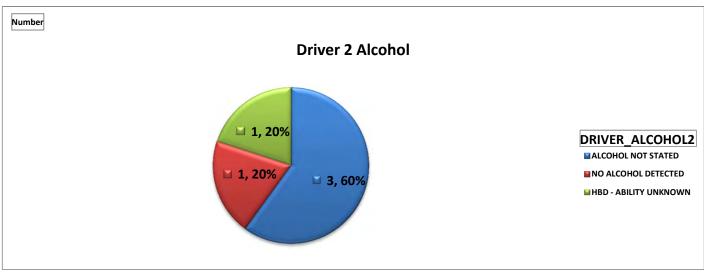


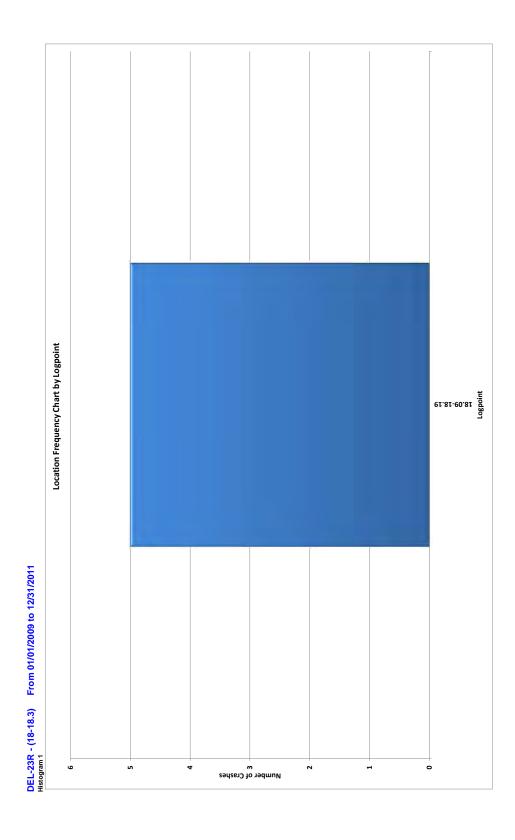


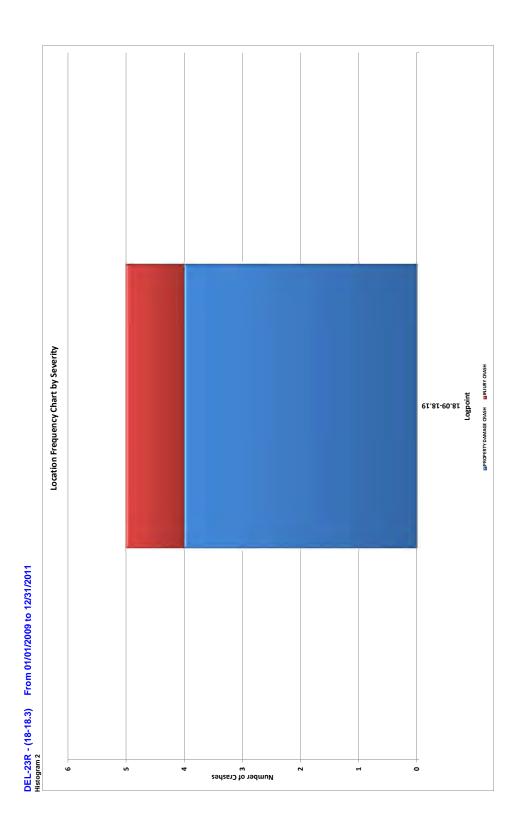


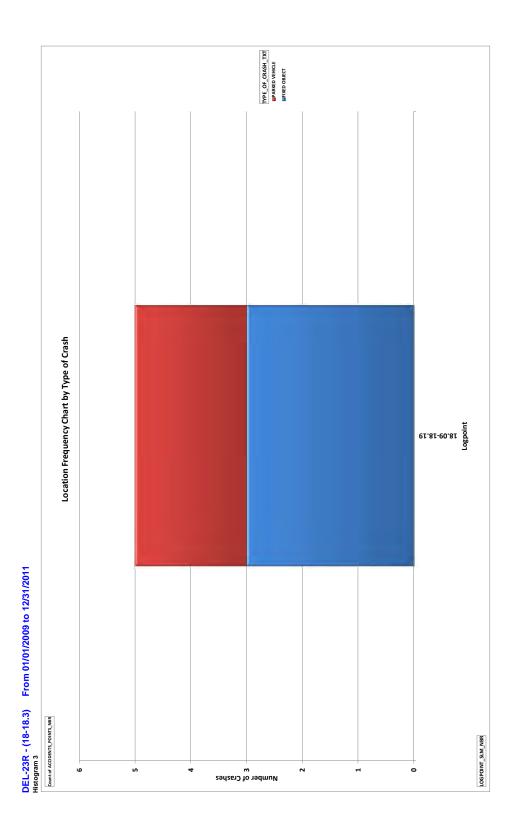


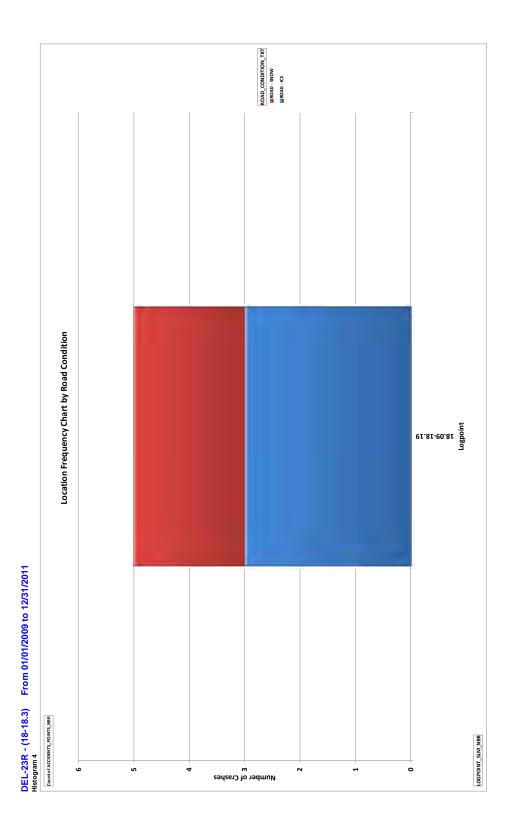


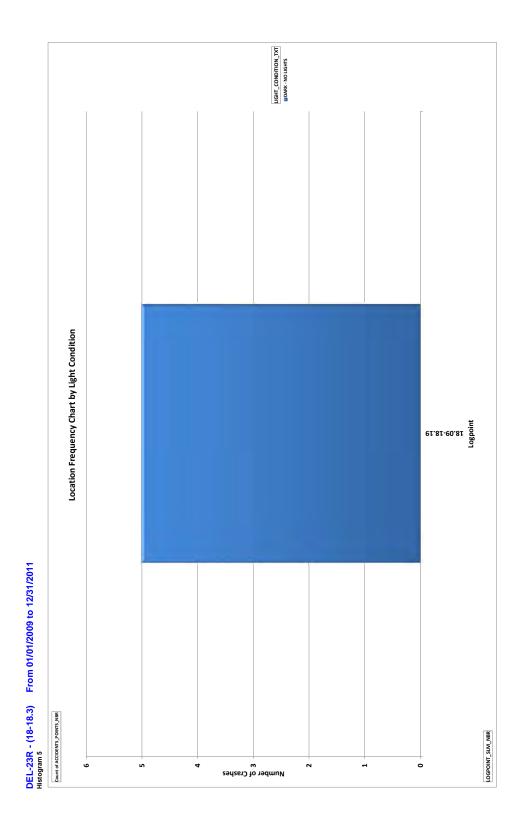


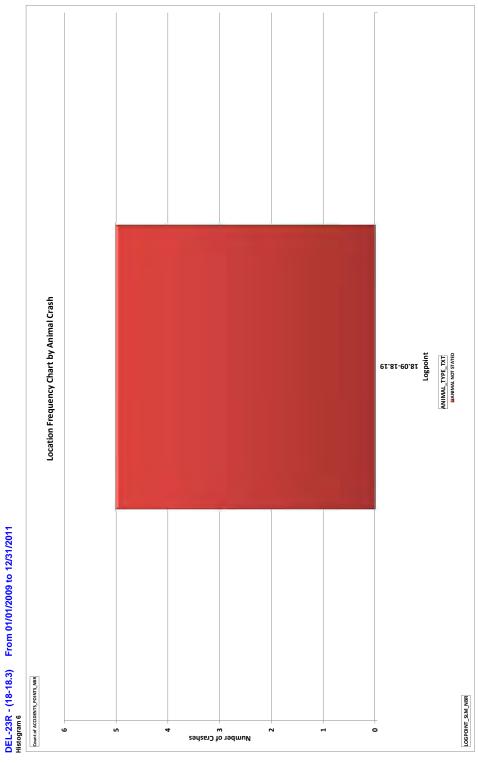


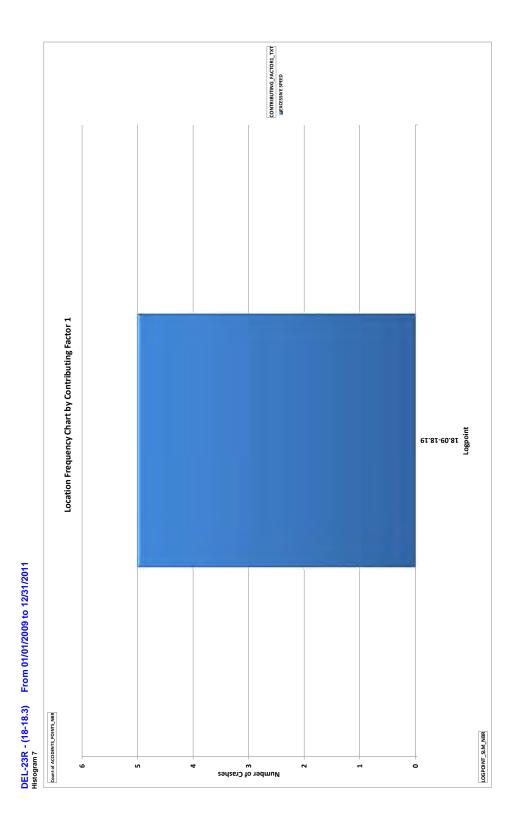


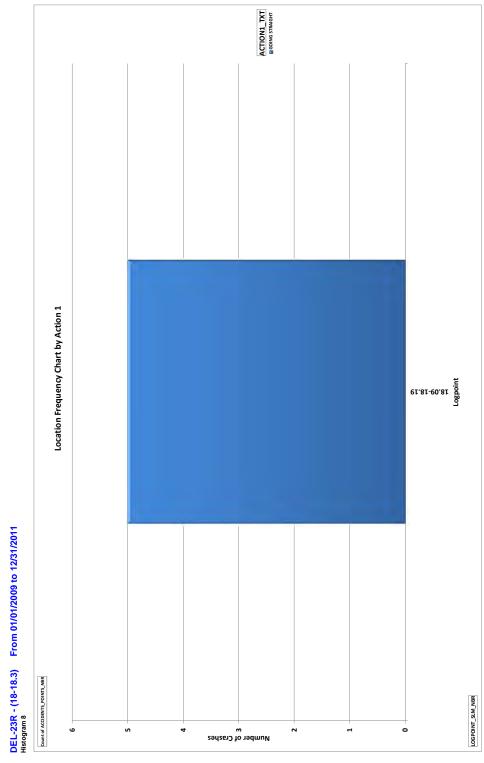


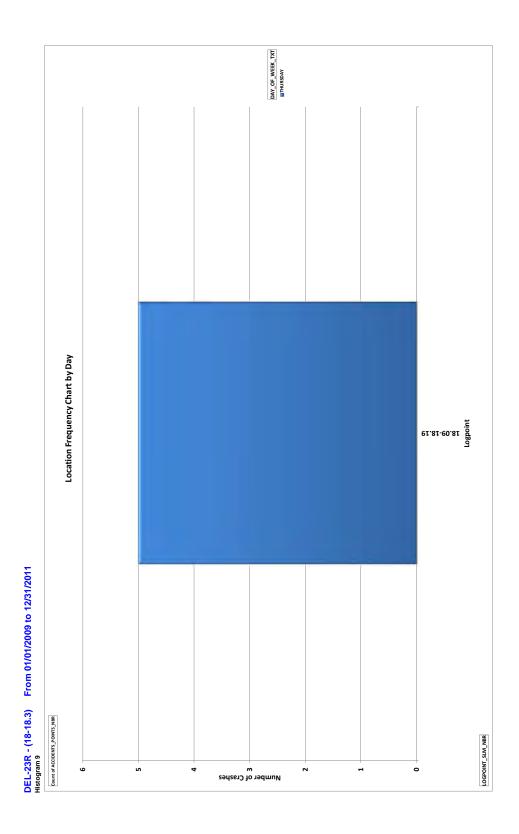


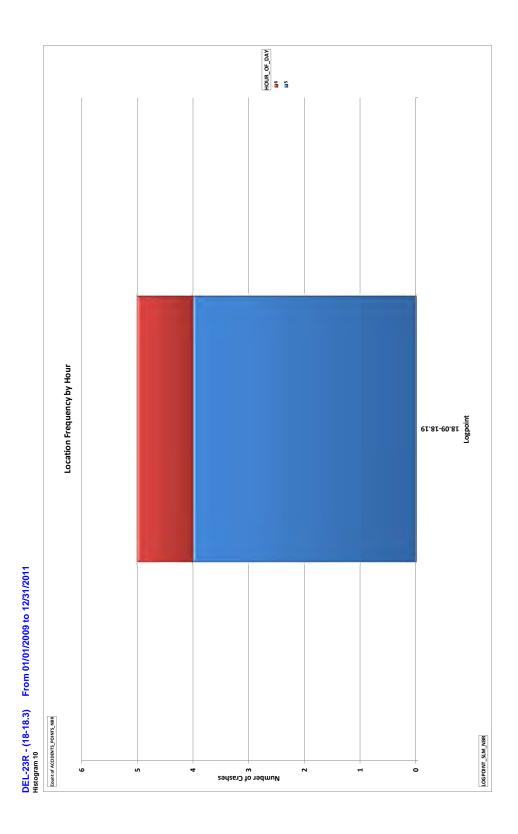


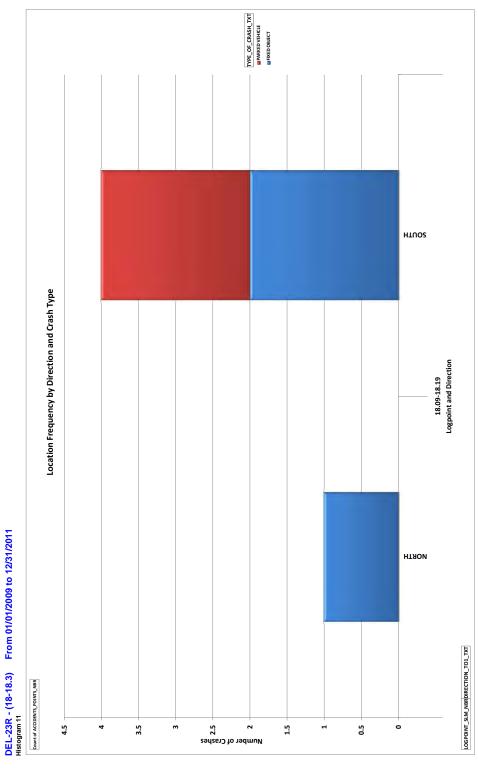


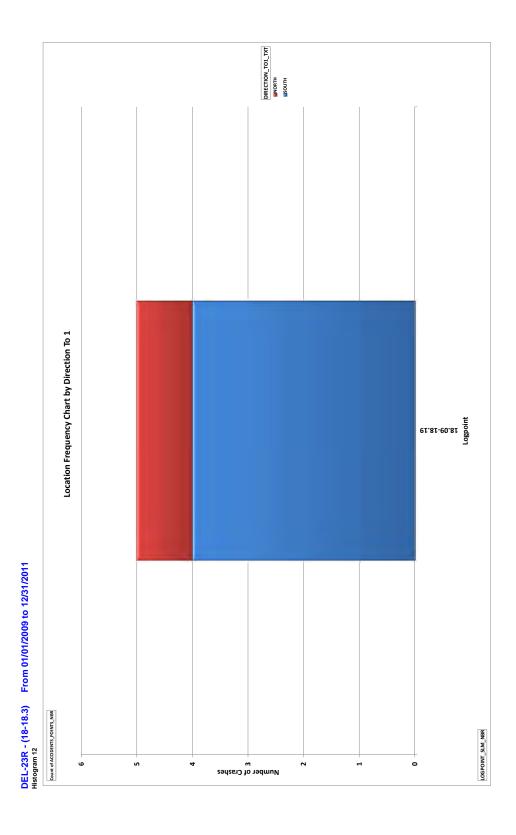












	Number
Total	5

CRASH_SEVERITY	Number	%
INJURY CRASH	1	20.0%
PROPERTY DAMAGE CRASH	4	80.0%
Grand Total	5	100.0%

TRAFFIC_CRASH_YEAR		Number	%
	2009	1	20.0%
	2010	2	40.0%
	2011	2	40.0%
Grand Total		5	100.0%

DAY_OF_WEEK	Number	%
TUESDAY	2	40.0%
MONDAY	2	40.0%
FRIDAY	1	20.0%
Grand Total	5	100.0%

HOUR_OF_DAY	Number	%
20	2	40.0%
21	2	40.0%
23	1	20.0%
Grand Total	5	100.0%

TYPE_OF_CRASH	Number	%
ANIMAL	5	100.0%
Grand Total	5	100.0%

Animal Crashes

WEATHER_CON	IDITION		Number	%
NO ADVERSE W	/EATHER (CONDITION	4	80.0%
RAIN			1	20.0%
Grand Total			5	100.0%

ROAD_CONDITION	Number	%
ROAD - DRY	4	80.0%
ROAD - WET	1	20.0%
Grand Total	5	100.0%

LIGHT_CONDITION	Number	%
DARK - NO LIGHTS	5	100.0%
Grand Total	5	100.0%

NUMBER_OF_VEHICLES	Number	%
1	5	100.0%
Grand Total	5	100.0%

LOCATION	Number	%
NON-INTERSECTION	5	100.0%
Grand Total	5	100.0%

CRASH_MONTH_NBR		Number	%
	3	1	20.0%
	5	1	20.0%
	9	1	20.0%
	10	1	20.0%
	12	1	20.0%
Grand Total		5	100.0%

ROAD_CONTOUR	Number	%
STRAIGHT - LEVEL	5	100.0%
Grand Total	5	100.0%

SPECIAL_AREA	Number	%
SPECIAL AREA - NOT STATED	5	100.0%
Grand Total	5	100.0%

ANIMAL_TYPE	Number	%
DEER HIT	5	100.0%
Grand Total	5	100.0%

Animal Crashes

ACTION1		Number	%
GOING STRAIGI	-T	5	100.0%
Grand Total		5	100.0%

CONTRIBUTING_FACTOR1	Number	%
NO DRIVER ERRORS	5	100.0%
Grand Total	5	100.0%

OBJECT_STRUCK1	Number	%
OBJECT NOT STATED	5	100.0%
Grand Total	5	100.0%

TRAFFIC_CONTROL1	Number	%
PAVEMENT MARKINGS	5	100.0%
Grand Total	5	100.0%

DRIVER_ALCOHOL1	Number	%
NO ALCOHOL DETECTED	5	100.0%
Grand Total	5	100.0%

DRIVER_DRUGS1	Number	%
NO DRUGS DETECTED	5	100.0%
Grand Total	5	100.0%

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011

Animal Crashes

	/	 	
DIRECTION_FR	OM1	Number	%
SOUTH	,	3	60.0%
NORTH		2	40.0%
Grand Total		5	100.0%

DIRECTION_TO1	Number	%
NORTH	3	60.0%
SOUTH	2	40.0%
Grand Total	5	100.0%

POSTED_SPEED1	Number	%
POSTED 55	5	100.0%
Grand Total	5	100.0%

ESTIMATED_SPEED1	Number	%
SPEED 46-55	3	60.0%
SPEED 56-65	2	40.0%
Grand Total	5	100.0%

VEHICLE_TYPE1	Number	%
COMPACT	2	40.0%
OTHER VEHICLE	2	40.0%
MID-SIZE	1	20.0%
Grand Total	5	100.0%

VEHICLE_TYPE2	Number	%
VEHICLE NOT STATED	5	100.0%
Grand Total	5	100.0%

Animal Crashes

ACTION2		Number	%
ACTION NOT ST	ΓATED	5	100.0%
Grand Total		5	100.0%

CONTRIBUTING_FACTOR2	Number	%
(blank)	5	100.0%
Grand Total	5	100.0%

DIRECTION_FROM2	Number	%
(blank)	5	100.0%
Grand Total	5	100.0%

DIRECTION_TO2	Number	%
(blank)	5	100.0%
Grand Total	5	100.0%

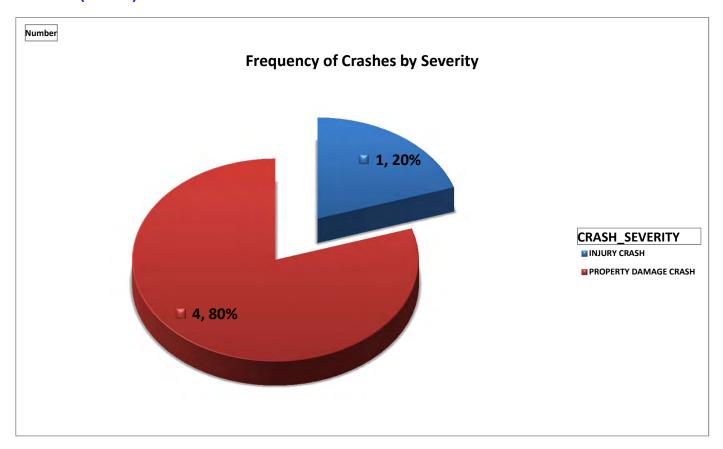
DRIVER_ALCOHOL2	Number	%
ALCOHOL NOT STATED	5	100.0%
Grand Total	5	100.0%

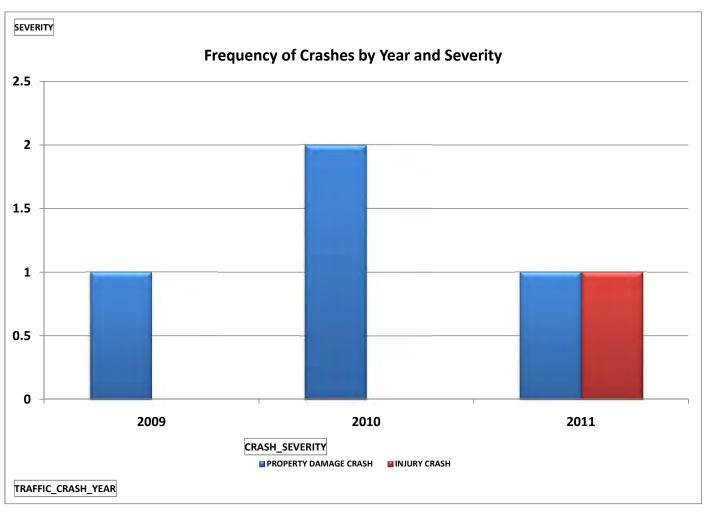
DRIVER_DRUGS2	Number	%
DRUGS NOT STATED	5	100.0%
Grand Total	5	100.0%

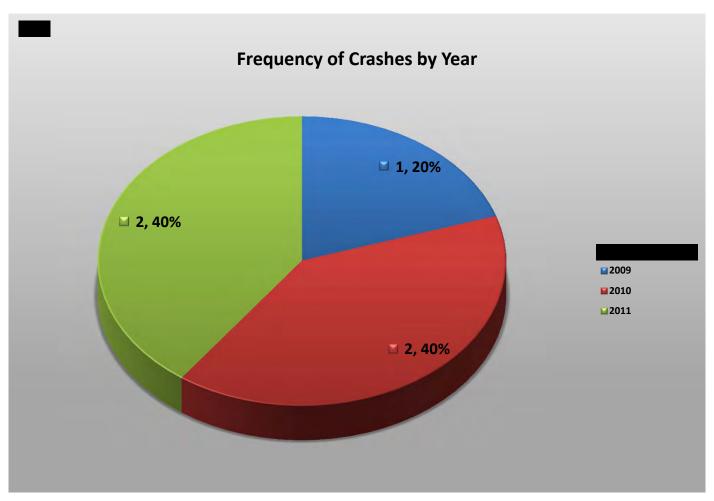
SEVERITY	ERITY CRASH_SEVERITY			
TRAFFIC_CRASH_YEAR	PROPERTY DAMAGE CRASH	INJURY CRASH		
2009	1	0		
2010	2	0		
2011	1	1		
Grand Total	4	1		

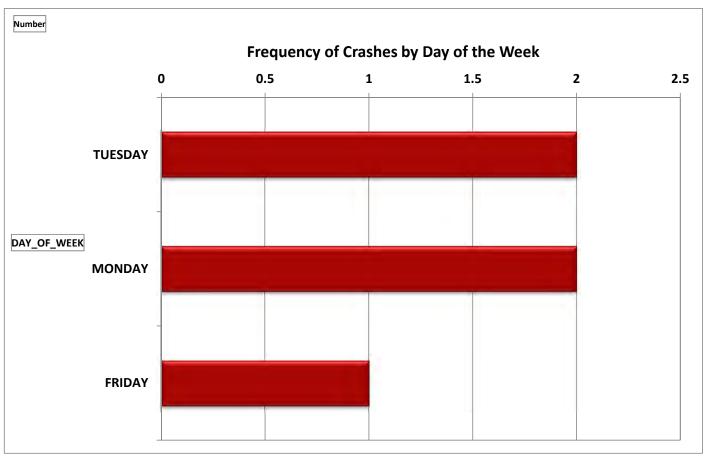
TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
2010	0	0
2011	0	0
Grand Total	0	0

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	0	0
2010	0	0	0
2011	0	0	1
Grand Total	0	0	1

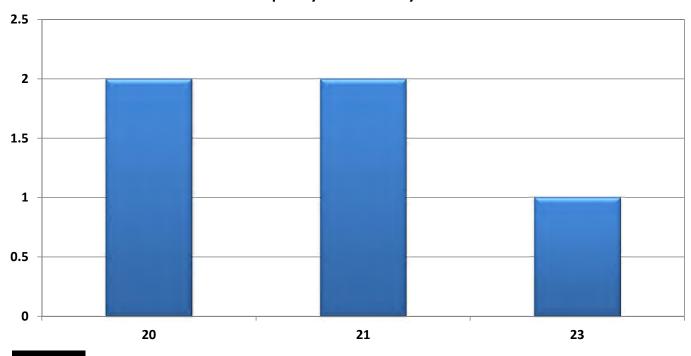


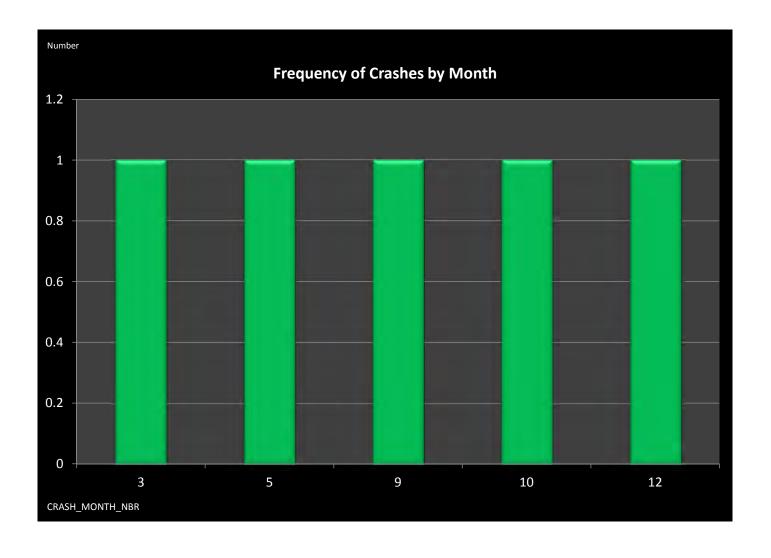


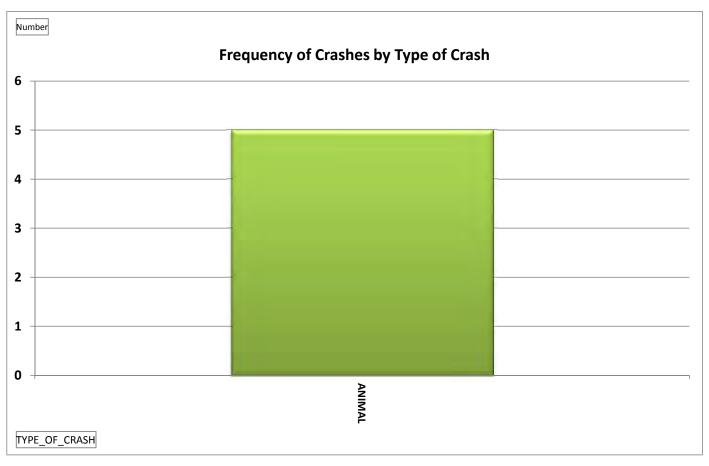


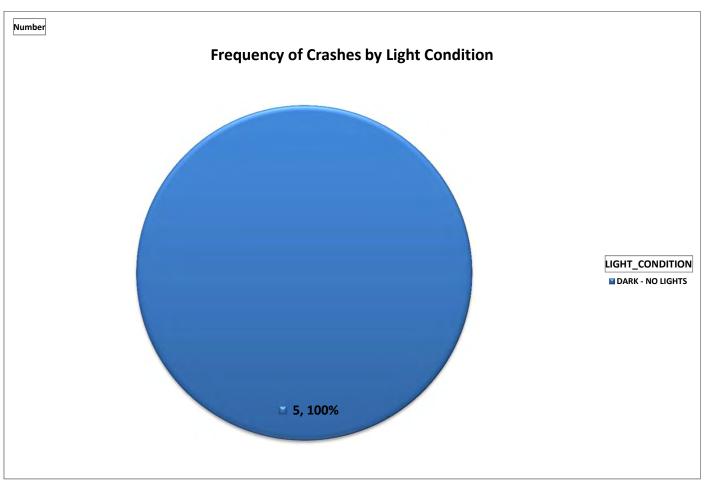


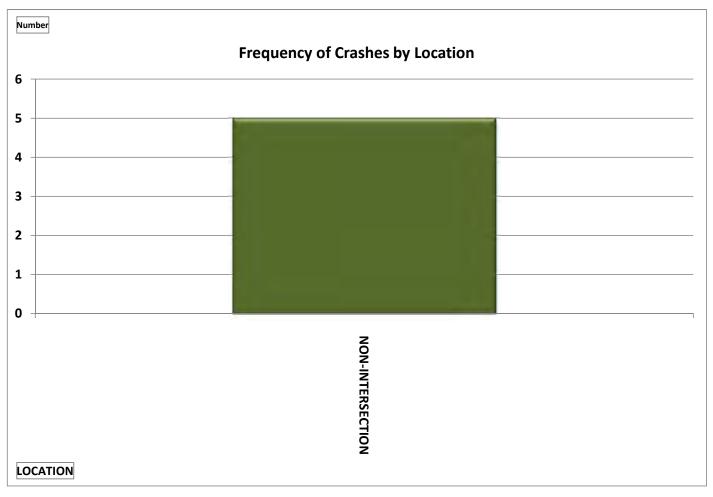
Frequency of Crashes by Hour

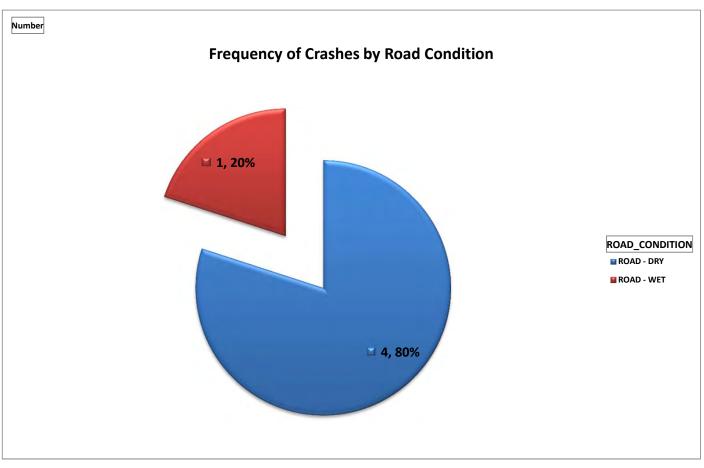


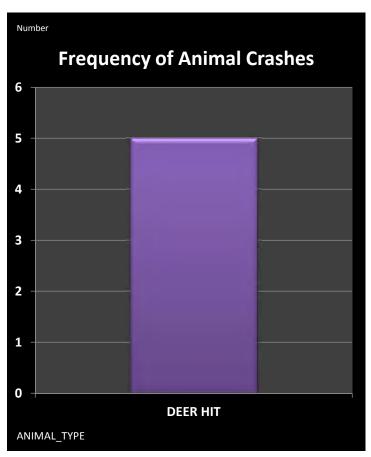


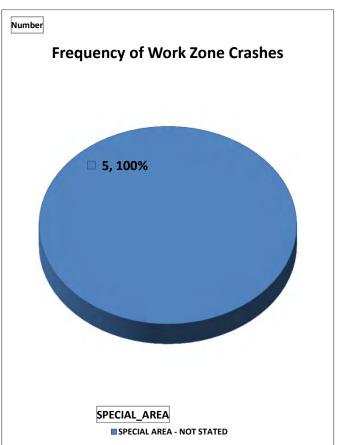


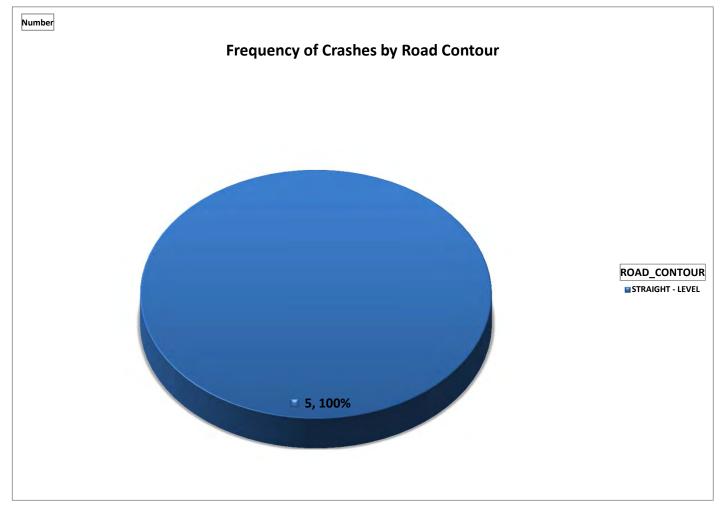






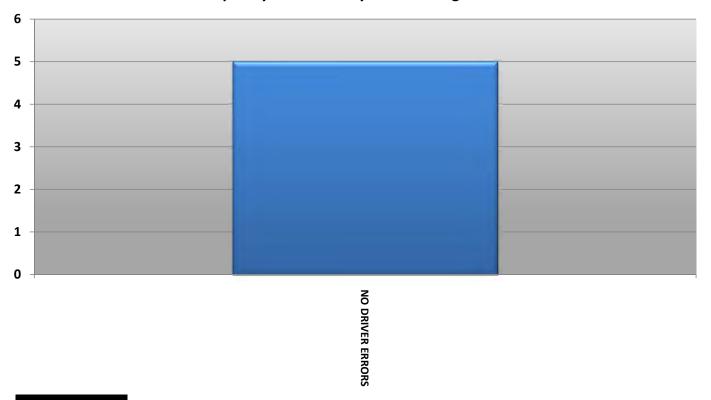


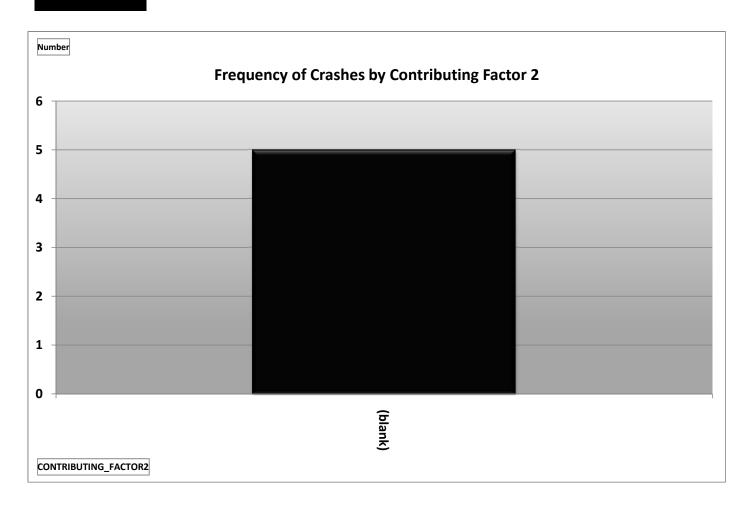


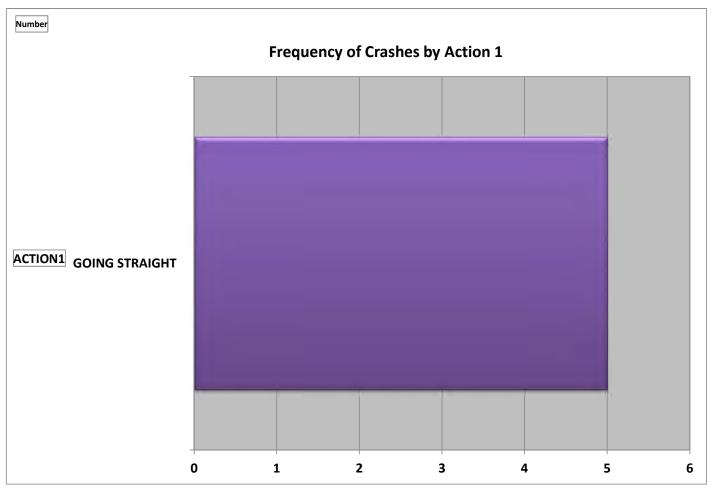


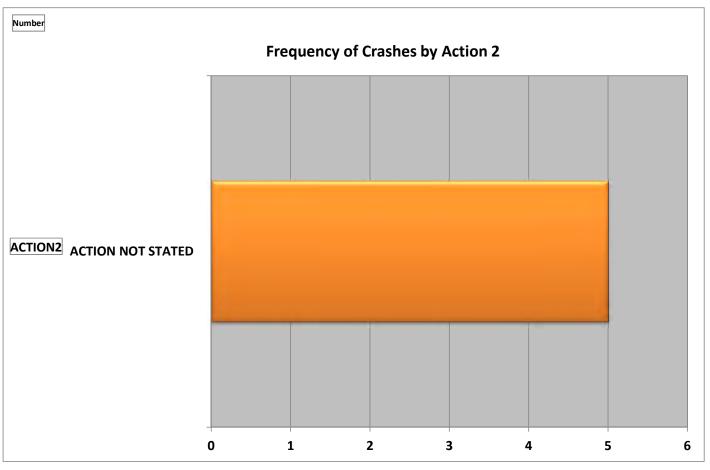


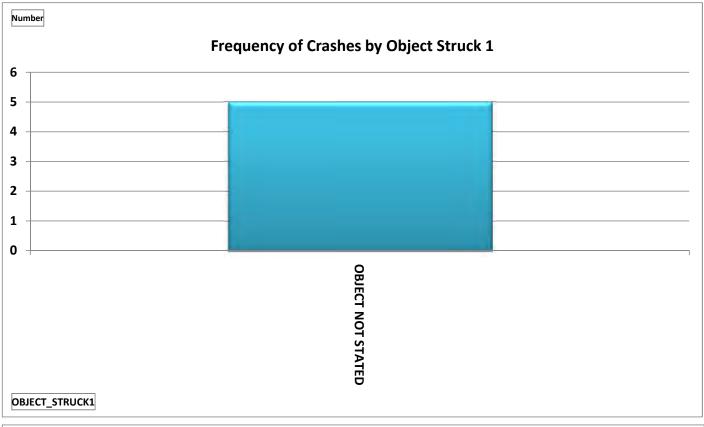
Frequency of Crashes by Contributing Factor 1

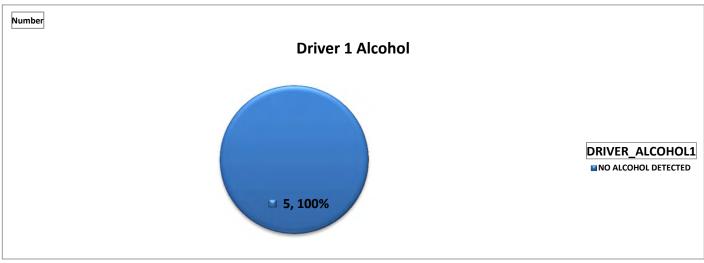




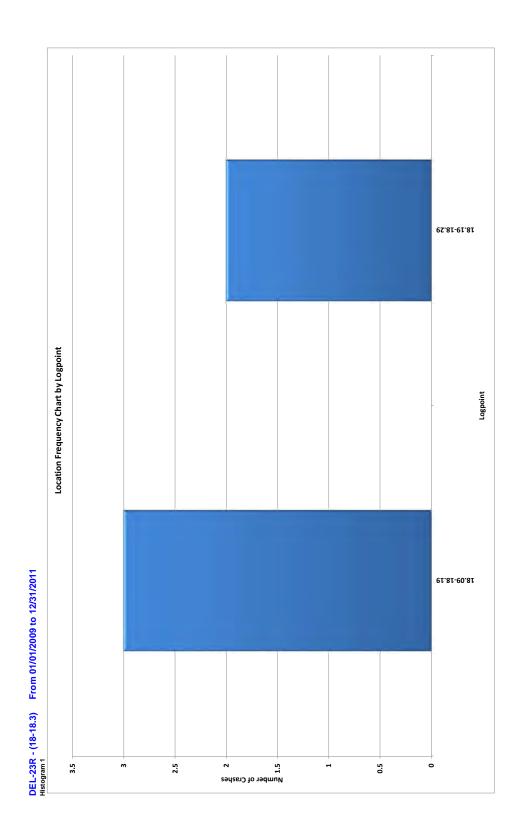


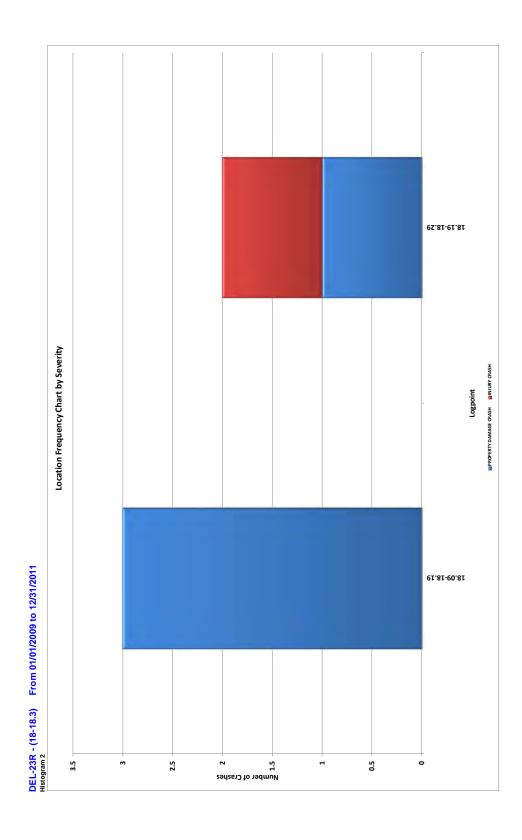


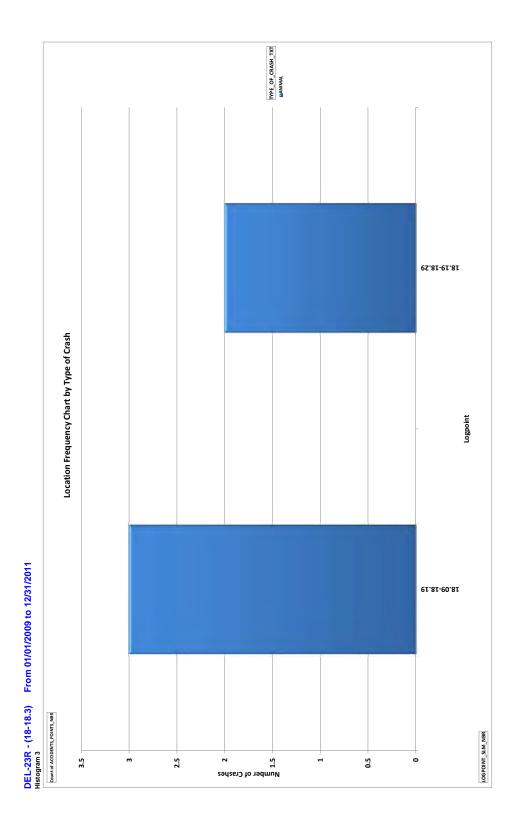


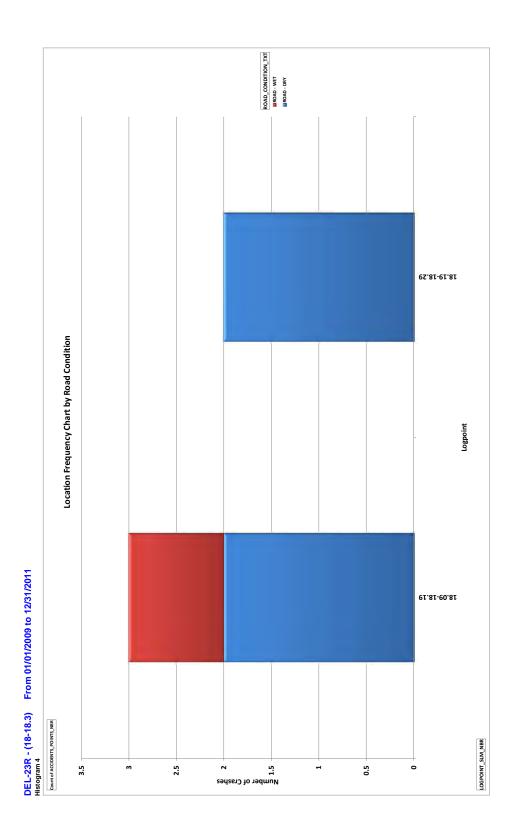


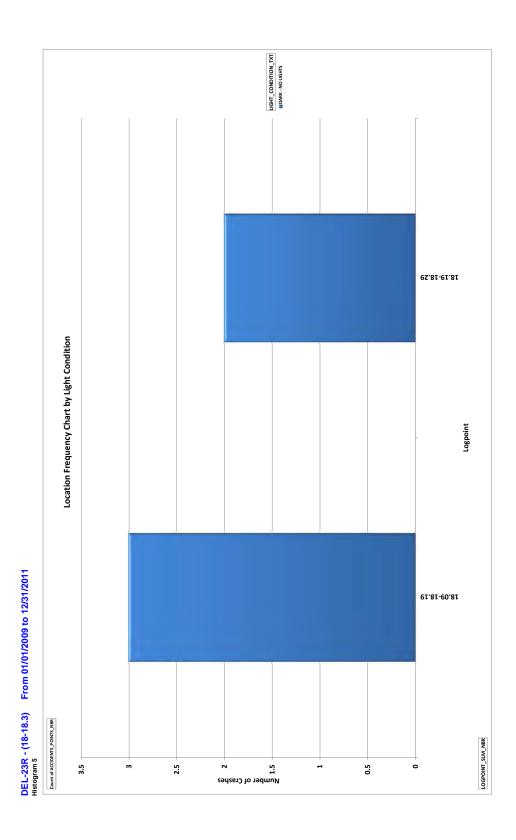


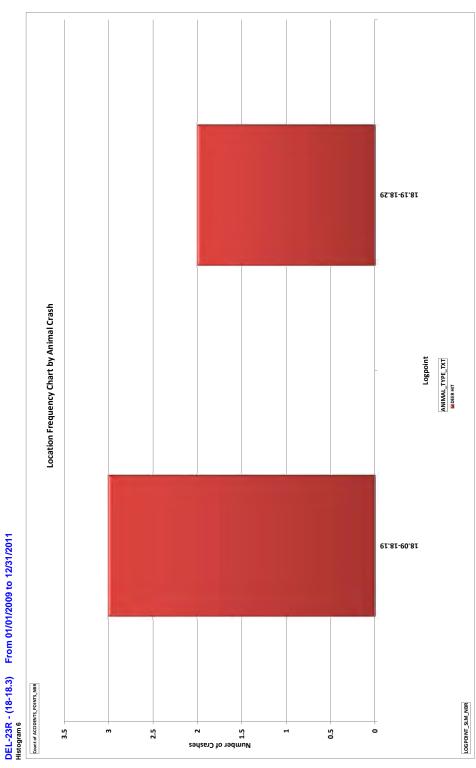


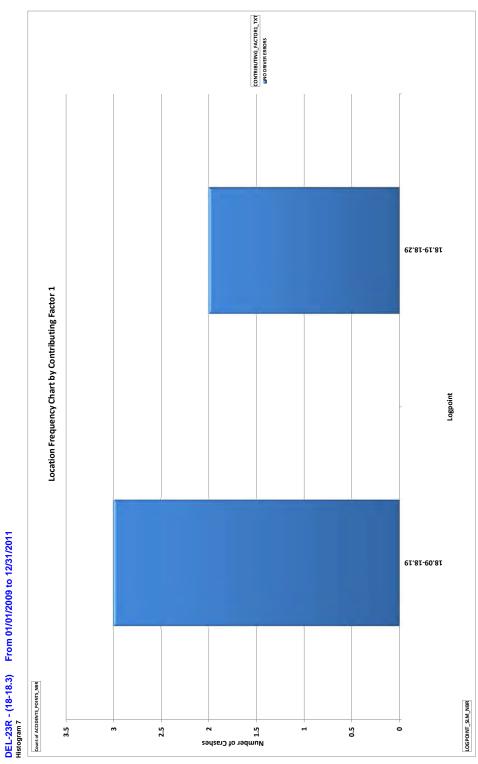


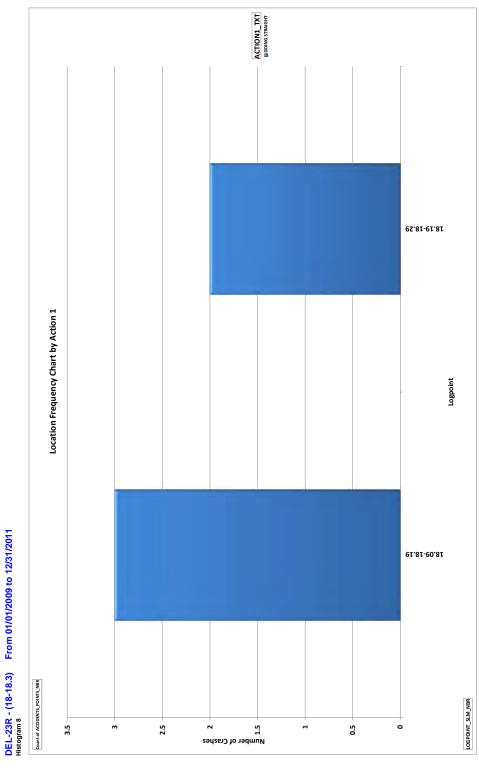


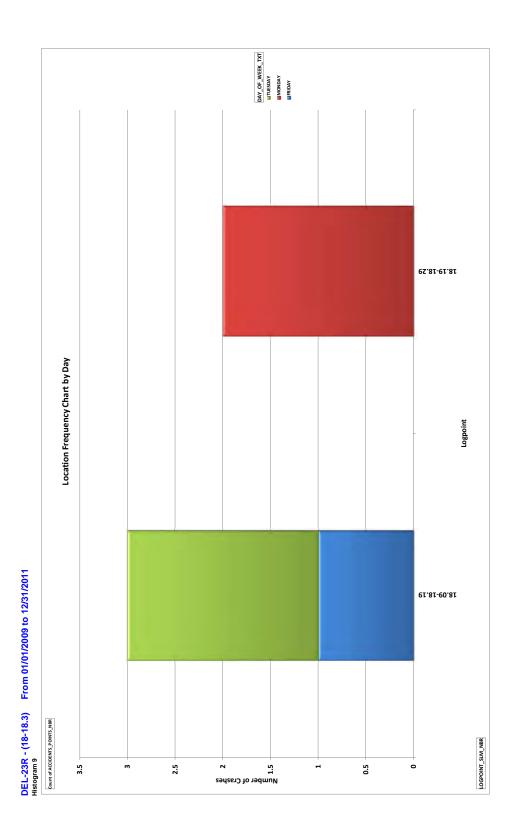


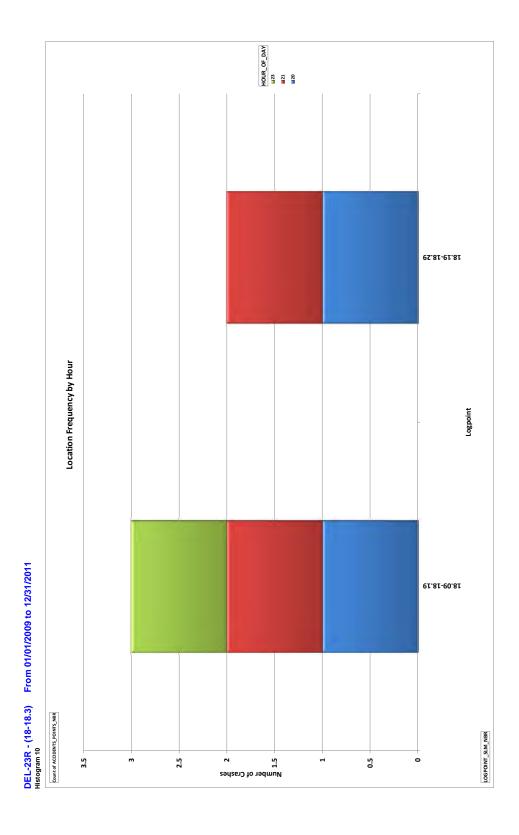


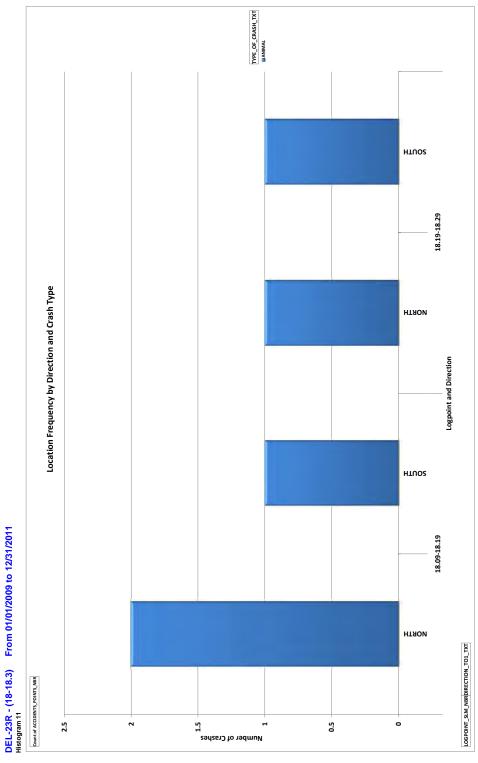


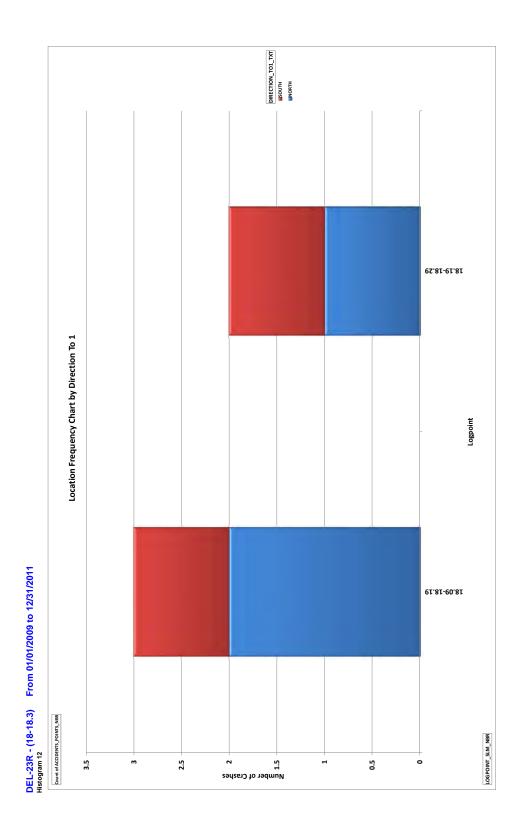












Total Number

Remaining Crashes (Minus Single Crash Event + Minus Animal Crashes)

CRASH_SEVERITY	Number	%
INJURY CRASH	2	50.0%
PROPERTY DAMAGE CRASH	2	50.0%
Grand Total	4	100.0%

TRAFFIC_CRASH_YEAR	Number	%
2009	1	25.0%
2010	2	50.0%
2011	1	25.0%
Grand Total	4	100.0%

DAY_OF_WEEK	Number	%
SUNDAY	1	25.0%
MONDAY	1	25.0%
WEDNESDAY	1	25.0%
FRIDAY	1	25.0%
Grand Total	4	100.0%

HOUR_OF_DAY	Number	%
1	1	25.0%
10	1	25.0%
13	1	25.0%
17	1	25.0%
Grand Total	4	100.0%

TYPE_OF_CRASH	Number	%
SIDESWIPE - PASSING	2	50.0%
RAN OFF ROAD	1	25.0%
FIXED OBJECT	1	25.0%
Grand Total	4	100.0%

DEL-23R - (18-18.3) From 01/01/2009 to 12/31/2011 Remaining Crashes

WEATHER_CONDITION	Number	%
NO ADVERSE WEATHER CON	DITION 4	100.0%
Grand Total	4	100.0%

ROAD_CONDITION	Remaininn Liach	Number	%
ROAD - DRY	(Wilnus Single Cra	ısnæve	M5. 0 %
ROAD - SNOW	Minus Animal Cra	sh é s)	25.0%
Grand Total		4 ′	100.0%

LIGHT_CONDITION	Number	%
DAYLIGHT	3	75.0%
DARK - NO LIGHTS	1	25.0%
Grand Total	4	100.0%

NUMBER_OF_VEHICLES	Number	%
1	2	50.0%
2	2	50.0%
Grand Total	4	100.0%

LOCATION	Number	%
NON-INTERSECTION	4	100.0%
Grand Total	4	100.0%

CRASH_MONTH_NBR	Number	%
2	1	25.0%
7	1	25.0%
8	1	25.0%
12	1	25.0%
Grand Total	4	100.0%

ROAD_CONTOUR	Number	%
STRAIGHT - LEVEL	4	100.0%
Grand Total	4	100.0%

SPECIAL_AREA	Number	%
SPECIAL AREA - NOT STATED	4	100.0%
Grand Total	4	100.0%

ANIMAL_TYPE	Number	%
ANIMAL NOT STATED	4	100.0%
Grand Total	4	100.0%

ACTION1	Number	%
GOING STRAIGHT	2	50.0%
PARKING/UNPARKING	1	25.0%
CHANGING LANES	1	25.0%
Grand Total	4	100.0%

Remaining Crash	<u> </u>	
CONTRIBUTING_FACTOR1	Number	
OTHER DRIVER ERROMINUS SINGLE Cra		1 7 √5. 0 %
FAILURE TO CONTR Olinus Animal Cra	shes)	25.0%
EXCESSIVE SPEED	1 1	25.0%
IMPROPER LANE CHANGE	1	25.0%
Grand Total	4	100.0%

OBJECT_STRUCK1	Number	%
OBJECT NOT STATED	3	75.0%
DITCH	1	25.0%
Grand Total	4	100.0%

TRAFFIC_CONTROL1	Number	%
PAVEMENT MARKINGS	4	100.0%
Grand Total	4	100.0%

DRIVER_ALCOHOL1	Number	%
NO ALCOHOL DETECTED	4	100.0%
Grand Total	4	100.0%

DRIVER_DRUGS1	Number	%
NO DRUGS DETECTED	3	75.0%
USING PRESCRIBED DRUG	1	25.0%
Grand Total	4	100.0%

DIRECTION_FR	OM1	Number	%
NORTH		3	75.0%
SOUTH		1	25.0%
Grand Total		4	100.0%

011	Remaining Crash	മഠ	
DIRECTION_TO1		Number	
SOUTH	(IVIIINUS SINGIE CIT		
NORTH	Minus Animal Cra	shes)	25.0%
Grand Total			100.0%

POSTED_SPEED1	Number	%
POSTED 55	4	100.0%
Grand Total	4	100.0%

ESTIMATED_SPEED1	Number	%
SPEED 66-75	1	25.0%
SPEED 20 AND UNDER	1	25.0%
SPEED 36-45	1	25.0%
SPEED 46-55	1	25.0%
Grand Total	4	100.0%

VEHICLE_TYPE1	Number	%
TRACTOR SEMI TRAILER	2	50.0%
FULL-SIZE	1	25.0%
MOTORCYCLE - 351CC-750CC	1	25.0%
Grand Total	4	100.0%

VEHICLE_TYPE2	Number	%
VEHICLE NOT STATED	2	50.0%
MID-SIZE	2	50.0%
Grand Total	4	100.0%

ACTION2	Number	%
ACTION NOT STATED	2	50.0%
STOPPED IN TRAFFIC	1	25.0%
GOING STRAIGHT	1	25.0%
Grand Total	4	100.0%

CONTRIBUTING_FAC		Νι	ımber	
NO DRIVER ERROR\$				
(blank)	linus Animal	Crash	n e s)	50.0%
Grand Total				100.0%

DIRECTION_FROM2	Number	%
NORTH	2	50.0%
(blank)	2	50.0%
Grand Total	4	100.0%

DIRECTION_TO2	Number	%
SOUTH	2	50.0%
(blank)	2	50.0%
Grand Total	4	100.0%

DRIVER_ALCOHOL2	Number	%
NO ALCOHOL DETECTED	2	50.0%
ALCOHOL NOT STATED	2	50.0%
Grand Total	4	100.0%

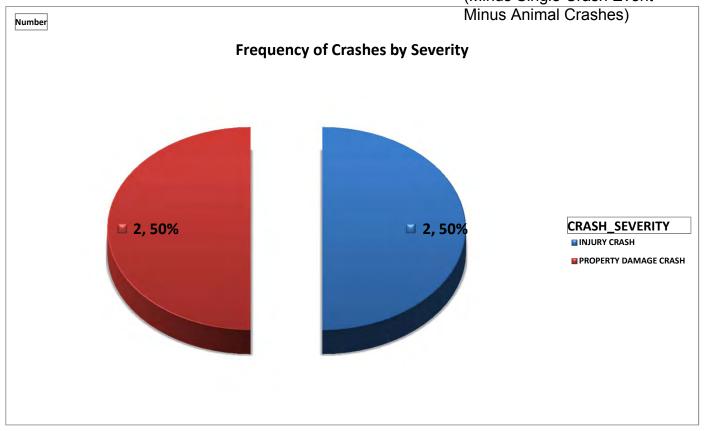
DRIVER_DRUGS2	Number	%
NO DRUGS DETECTED	2	50.0%
DRUGS NOT STATED	2	50.0%
Grand Total	4	100.0%

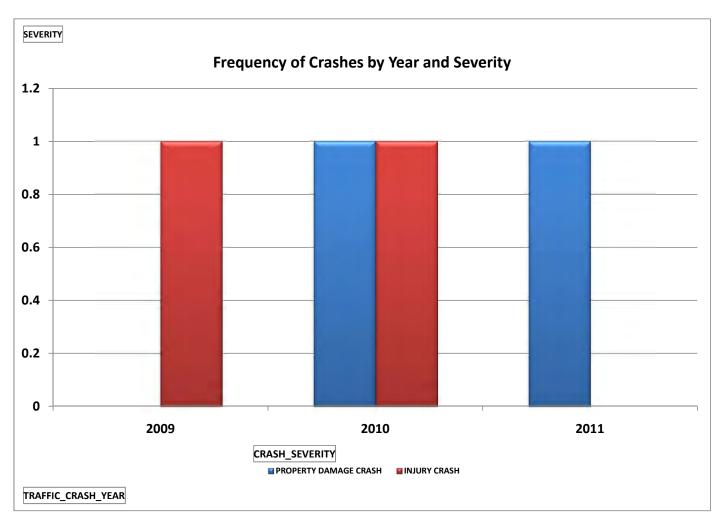
Remaining Crashes

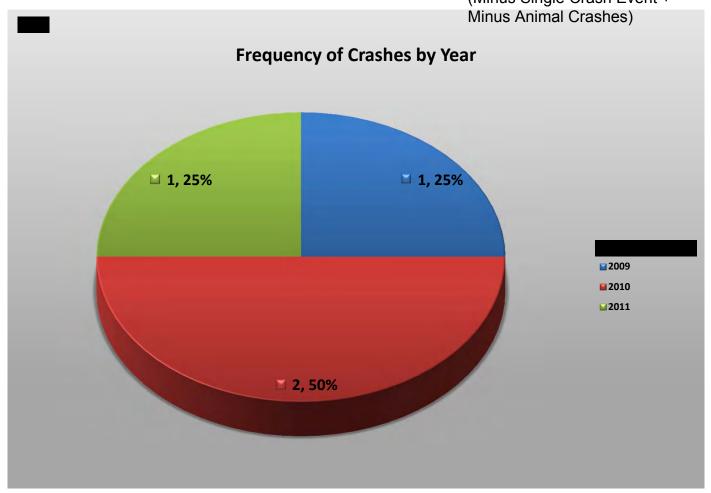
SEVERITY	CRASH_SEVERITY	•	(Mimus Single Crash Event +
TRAFFIC_CRASH_YEAR	PROPERTY DAI	MAGE CRASH INJURY CF	s Animal Crashes)
	2009 0	1	
	2010 1	1	
1	2011 1	0	
Grand 7	Total 2	2	

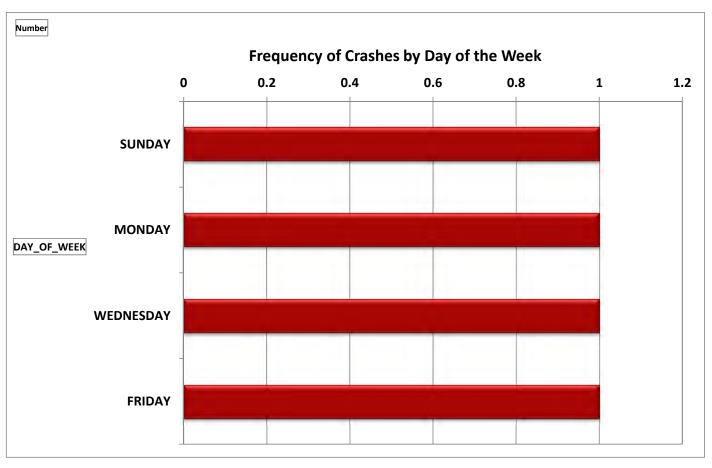
TRAFFIC_CRASH_YEAR	Fatalities	Incapacitating Injuries
2009	0	0
2010	0	0
2011	0	0
Grand Total	0	0

TRAFFIC_CRASH_YEAR	INJ_TYPE2_SERIOUS_VISIBLE	INJ_TYPE3_MINOR_VISIBLE	INJ_TYPE4_NO_VISIBLE
2009	0	3	0
2010	0	1	0
2011	0	0	0
Grand Total	0	4	0



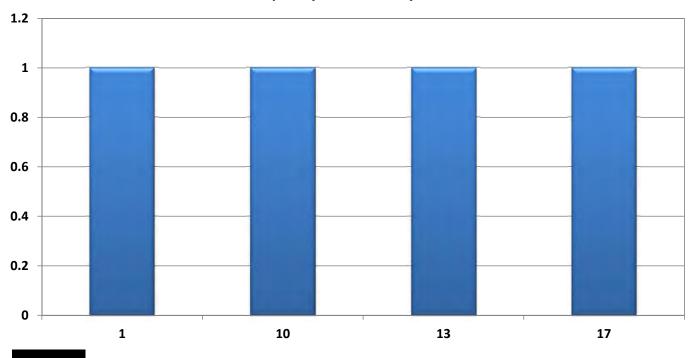


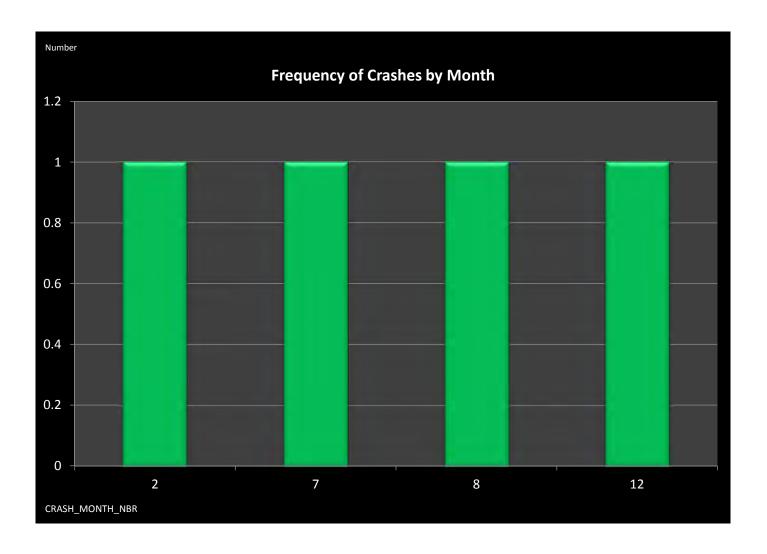


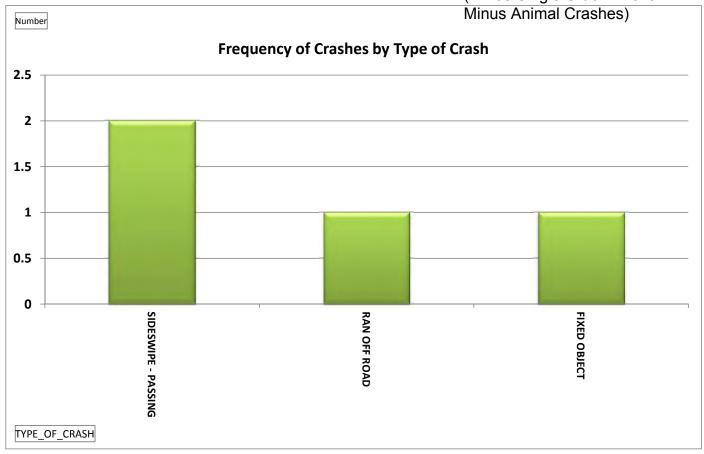


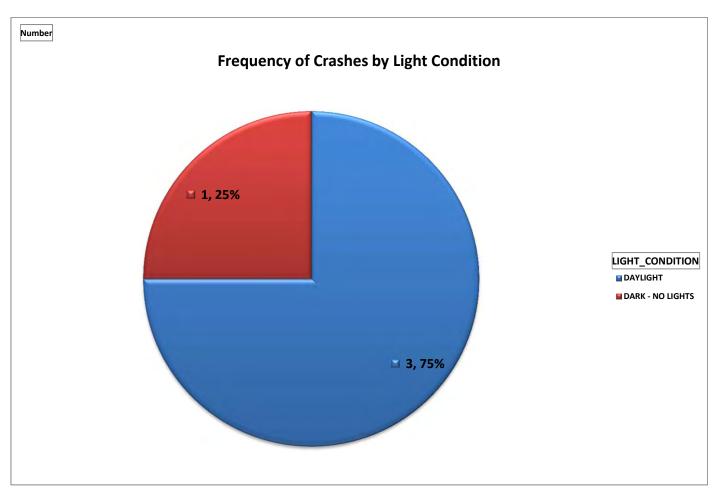
Remaining Crashes (Minus Single Crash Event + Minus Animal Crashes)

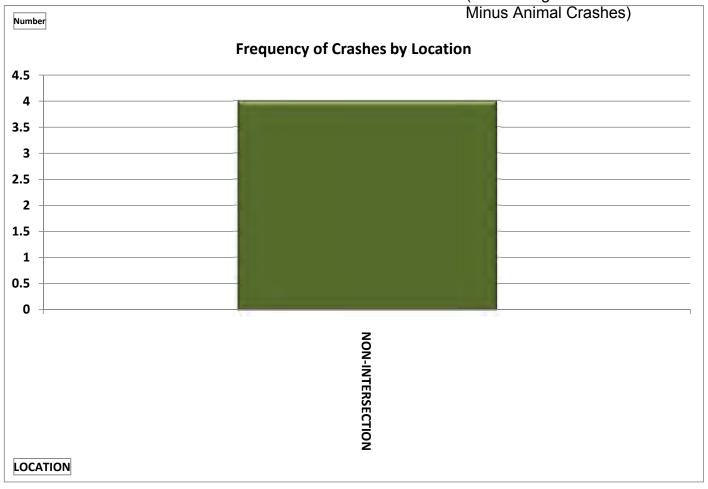
Frequency of Crashes by Hour

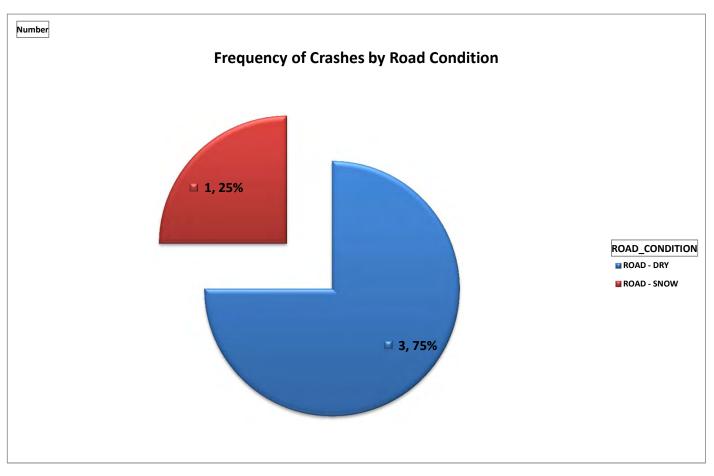


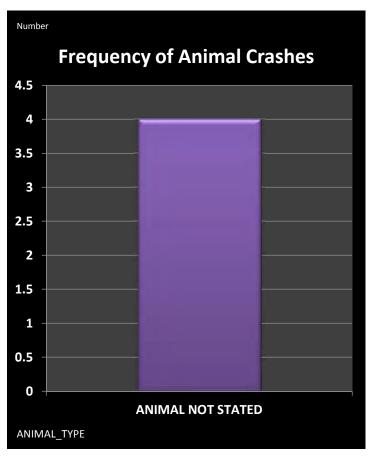


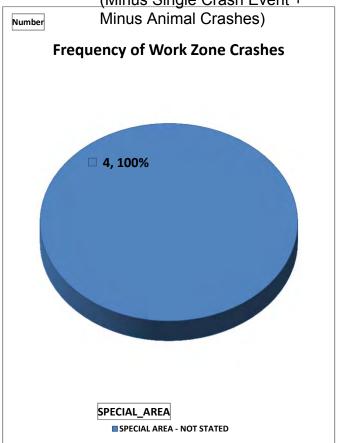


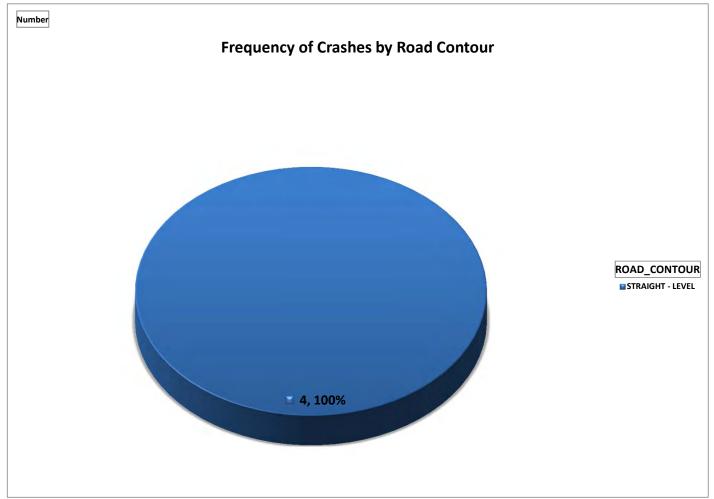












Remaining Crashes (Minus Single Crash Event + Minus Animal Crashes)

Frequency of Crashes by Contributing Factor 1

