



Technical Memo

Date: Thursday, August 15, 2019

Project: Deadwood Box Corridor Study

To: Study Advisory Team

From: HDR

Subject: Crash History Review

Introduction

The South Dakota Department of Transportation (SDDOT) and the City of Deadwood are conducting a corridor planning study for the US Highway 14 Alternative (US 14A) / US Highway 85 (US 85) / Pioneer Way roadway network in the City of Deadwood, South Dakota. A crash history analysis is required in conjunction with the Existing Conditions Review, submitted as a separate memo, to identify specific intersections or locations along the corridor where high crash rates are prevalent. The purpose of this memorandum is to provide a summary of findings from the crash history review in efforts to identify crash trends at key intersections and locations along the corridor.

Intersections included in the study area crash review analysis are listed in **Table 1**, and a map of locations are included in **Appendix A** which can be found attached to this memo.

Table 1. TH 120 Study Area Intersections

Intersection No.	Intersection
1/2	US14A & Upper Main St
3	US14A & Armory St
4	US14A & US85/Pine St
5	US14A & Deadwood St
6	US14A & Lee St
7	US14A & Sherman St
8	US14A & Wall St
9	US14A & Railroad Ave
10/11	US14A & Lower Main St
12	US14A & Burnham Ave
13	US14A & Dunlap Ave
14	US14A & US85 (Northern Junction)
15	US85/Sherman St & Cemetery St/Water St
16	US85/Pine Street & Sherman St
17	Upper Main St & Pine St
18	Railroad Ave & Dunlap Ave
19	Upper Main St & Deadwood St & Shine St



Segments included in the study area analysis are provided in **Table 2**, with a map provided in **Appendix B** attached to this memo as well.

Table 2. TH 120 Study Area Segments

Segment No.	Mainline	From	To	Length (miles)
S-1	Main St	Upper Main St	Pine St	0.65
S-2	Main St	Pine St	Wall St	0.21
S-3	Main St	Wall St	Lower Main St	0.37
S-4	US 14A	Upper Main St	Pine St	0.67
S-5	US 14A	Pine St	Sherman St	0.17
S-6	US 14A	Sherman St	Lower Main St	0.34
S-7	US 14A	Lower Main St	Dunlop Ave	0.22
S-8	US 14A	Dunlop Ave	US 85	0.59
S-9	US 85/Pine St	Main St	Sherman St	0.13
S-10	US 85/Sherman	Cemetery St	Pine St	0.17
S-11	Sherman St	Pine St	US 14A	0.15

Crash History Review

Crash data was provided by SDDOT and City of Deadwood for the five-year period of 2015 to 2019. The data included both reportable and non-reportable crashes within the study area. The crash rates and analysis provided in this review are based on the reported crashes only.

The non-reported crashes were examined hoping to offer more support to the trends identified by the reported crash statistics, specifically in relation to pedestrians and bicycles. The non-reported crashes did not include geographical information regarding where the crash occurred along the roadway, nor did it include details regarding manner of collision, which resulted in limited use of the data. Only one roadway pedestrian crash was listed in the non-reported crashes, which took place on Main Street, however it does clarify where on Main Street or which segment the crash occurred.

Crash rates were calculated for all intersections and segments within the project area. Estimated traffic volumes provided in the Existing Conditions memo were utilized for calculations. Study area segment and intersection crash rates were compared to calculated critical crash rates based on an averaged study-wide crash rate for roadways of similar type and intersections with similar control. Segments and intersections were also analyzed based on severity by converting all crashes into property damage only (PDO) equivalences. These Equivalent Property Damage Only (EPDO) rates are based on weighted values for different crash severities are assigned by SDDOT, and then assigned to crashes for each corridor segment within the study area. As stated by SDDOT, crashes are weighted in the following manner:

- Fatal Crash – 12 points



- Injury Crash – 3 points
- Property Damage Crash – 1 point

By converting all crashes to property-damage-only equivalents, as well as incorporating traffic volumes to account for exposure, a more level comparison can be made for all segments to determine which are experiencing higher than average crash rates or severity. Statewide EPDO crash rates for segments of similar type facilities, were provided by SDDOT. Statewide EPDO crash averages were not available for intersections, so a comparison was made with a calculated study-wide average for similar intersection control.

Overall Corridor Summary

A total of 118 crashes were reported along corridors within the study area between the years of 2015 and 2019. Of those 118 crashes, 61 were identified as intersection crashes and 57 were identified as segment crashes. Intersections and segments were identified in the Methods and Assumptions Memo, previously submitted on June 1st, 2020. For the purpose of this memo only, one additional study intersection was added, Intersection #19 at Upper Main Street / Deadwood Street / Shine Street. **Figure 1** shows the total crashes for all intersections and segments on a yearly basis.

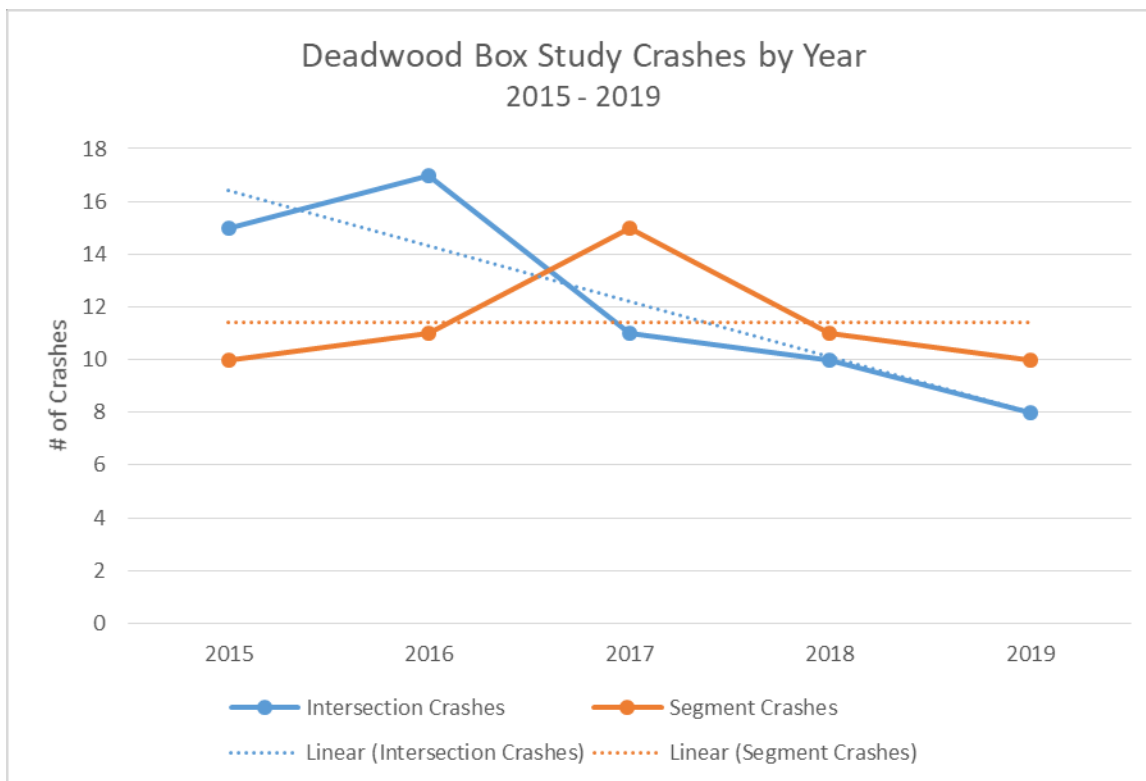


Figure 1. Deadwood Box Study Yearly Crashes (2015 – 2019)

Intersection crashes have been decreasing over the five-year period by an approximate average of 2 crashes annually, while segment crashes have been remaining constant.

Overall crashes were also analyzed based on severity over the five-year study period. **Figure 2** provides a summary of the findings. The overall number of crashes has declined between 2016 and 2019 by an average of 3.5 crashes per year. All reported crash types have reduced over the five-year study period, except for non-incapacitating crashes which remained fairly constant. There were no fatalities recorded within the study area between 2015 to 2019. Incapacitating crashes ranged from zero to two over the five-year time period, the the most recent two years reported as zero for each. The majority of crashes results in property damage only (PDO).

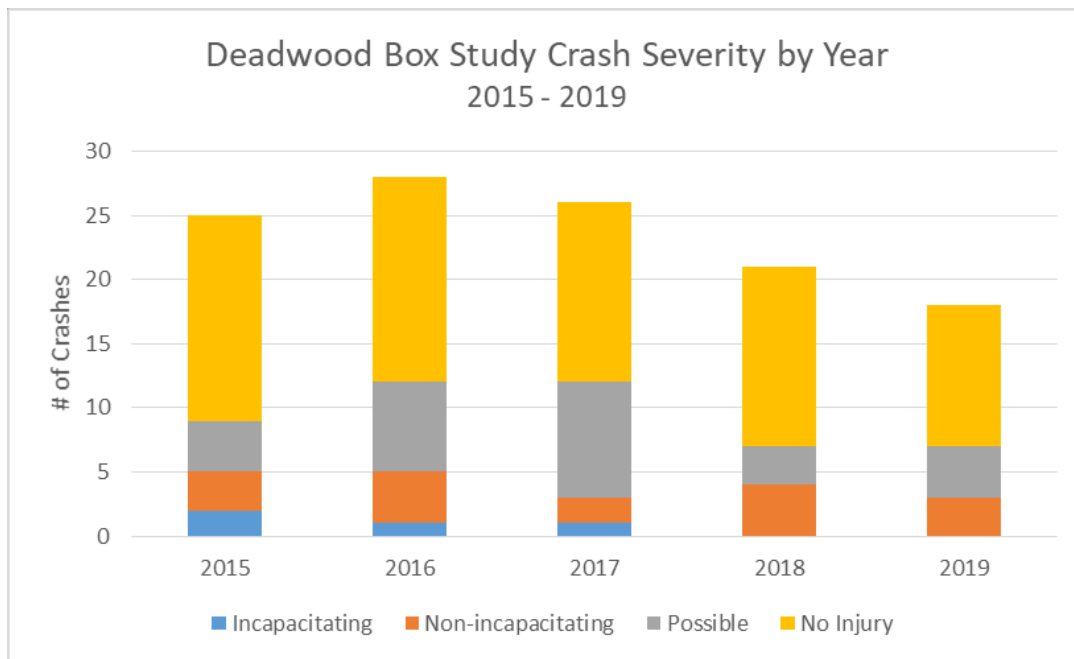


Figure 2. Deadwood Box Study Yearly Crashes By Severity (2015 – 2019)

Additional crash trends identified for the overall total study area include:

- 97 (82%) of the 118 crashes occurred during daylight lighting conditions, and 14 (12%) crashes occurred during dark – lighted roadway conditions. Only 4 (3%) crashes were reported as occurring during dark – roadway not lighted conditions.
- 85 (72%) of the 118 total crashes took place on dry roads. 18 (15%) crashes were attributed to winter conditions where ice, slush, and/or snow were present. 14 (12%) crashes were on wet roadways.
- 59 (50%) of the 118 crashes occurred during the four months of June through September. August experienced the highest number of crashes than any other month, totaling 23 (19%) crashes.
- 12 (10%) crashes were drug and/or alcohol-related. The highest concentration of alcohol-related crashes were located on Segment 2 of Main St between Pine Street and Wall Street (3 crashes), and Segment 8 of US 14A between Dunlop Ave and US 85 (4 crashes).
- 20 (17%) crashes were motorcycle-related.

- 3 (3%) crashes involved pedestrians, and 5 (4%) crashes involved collisions with wild animals.
- 17 (14%) of crashes involved parked vehicles.
- There were six crashes involving more than two vehicles. Two of these six crashes occurred at the intersection of 10/11 (US 14A & Lower Main St).
- There were 212 drivers involved in the overall crashes within the study area between 2015 and 2019. 15 (7%) drivers were ages 25 and younger, 51 (24%) drivers were between the ages of 21 and 44, 81 (38%) drivers were between the ages of 45 and 64, and 65 (31%) drivers were age 65 and older.
- Of the 118 total crashes, only eight (7%) were reported as speeding being a contributing factor.
- Of the total 118 crashes, 18 (15%) were reported as distracted driving being a contributing factor. Four of those 18 crashes occurred along Segment 8 (Sherman St from US85/Pine St to US 14A).

Intersection and segment crash locations are provided in **Appendix C** and **Appendix D**.

Intersection Crashes

There were a total of 61 intersection crashes within the study area during the five-year period of 2015 to 2019. **Figure 3** provides a summary of intersection crashes by crash type.

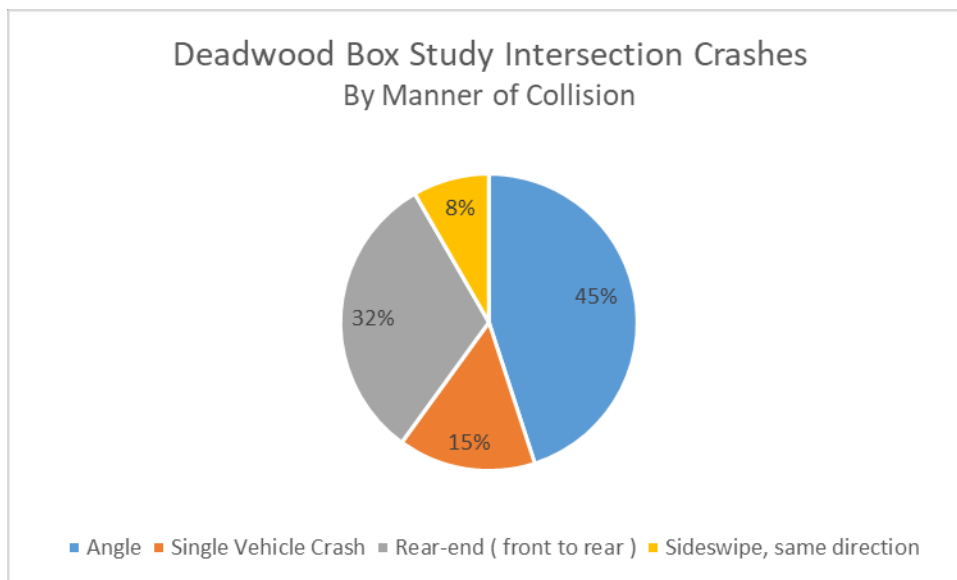


Figure 3. Deadwood Box Study Intersection Crashes by Manner of Collision (2015 – 2019)

Angle collisions were the most prevalent type of crash reported, making up 45% of all intersection crashes. The intersection that experienced the highest number of angle crashes was Intersection 5 (US14A & Deadwood St), totaling five angle crashes. Intersection 7 (US 14A & Sherman St) experienced the highest number of rear-end collisions, with 6 (32%) crashes taking place there of the 19 total intersection rear-end crashes. There were 4 (44%) single-



vehicle crashes that took place at Intersection 14 (US 14A & US85), out of the total 9 single-vehicle crashes reported at intersections.

Crash rates were also calculated to compare intersections. For comparing critical crash rates, a study-wide average was calculated for all intersections of the same control type. The study-wide average crash rate was found to be 0.18 crashes per million entering vehicles (MEV) for two-way stop-controlled (TWSC) intersections and 0.32 crashes/MEV for signalized intersections. These averages were used as input for calculating the study-wide critical crash rates.

A summary of findings is provided in **Table 3**. For intersections where crash rates exceed the critical crash rate, the cell and text is highlighted in red. These two intersections include:

- Intersection 7 (US 14A & Sherman St)
- Intersection 8 (US 14A & Wall St)

EPDO weighted rates are provided and ranked to identify intersections with the highest weighted crash rates based on severity. These include:

- Intersection 5 (US 14A & Deadwood St)
- Intersection 8 (US 14A & Wall St)
- Intersection 13 (US14A & Dunlop Ave)

Table 3. Deadwood Box Study Intersection Crash Rates (2015 – 2019)

Intersection No.	Intersection	Control Type	Total # of Crashes	Intersection Crash Rate (Crashes/MEV)	Study-Wide Averaged Critical Crash Rate (Crashes/MEV)	Intersection EPDO Weighted Rate (PDO Crashes/MEV)	Study-Wide Averaged EPDO Weighted Rate (PDO Crashes/MEV)
1/2	US14A & Upper Main St	TWSC	2	0.15	0.41	0.31	0.31
3	US14A & Armory St	TWSC	2	0.19	0.43	0.37	0.31
4	US14A & US85/Pine St	Signal	6	0.34	0.57	0.46	0.50
5	US14A & Deadwood St	Signal	6	0.38	0.59	0.76	0.50
6	US14A & Lee St	TWSC	3	0.19	0.38	0.32	0.31
7	US14A & Sherman St	TWSC	6	0.38	0.38	0.64	0.31
8	US14A & Wall St	TWSC	8	0.51	0.38	0.89	0.31
9	US14A & Railroad Ave	TWSC	-	-	0.36	-	0.31
10/11	US14A & Lower Main St	Signal	8	0.38	0.55	0.66	0.50
12	US14A & Burnham Ave	TWSC	3	0.16	0.36	0.27	0.31
13	US14A & Dunlop Ave	Signal	7	0.38	0.56	0.81	0.50
14	US14A & US85	Signal	6	0.32	0.56	0.54	0.50
15	US85/Sherman St & Cemetery St/Water St	Signal	1	0.11	0.69	0.11	0.50
16	US85 & Sherman St	Signal	-	-	0.66	-	0.50
17	Upper Main St & Pine St	TWSC	-	-	0.61	-	0.31
18	Railroad Ave & Dunlap Ave	TWSC	-	-	1.45	-	0.31
19	Upper Main St & Deadwood St & Shine St	Signal	3	0.66	0.87	0.66	0.50

Only five (8%) of intersection crashes occurred during dark – lighted roadway conditions. Fifty-five (90%) occurred during daylight. Each of the five nighttime crashes was experienced at a different intersection, so nighttime visibility is not identified as a safety concern based on the data.



Eleven (18%) of the 61 total intersection crashes were attributed to winter conditions. The highest concentration of these winter weather-related crashes occurred at Intersection 14 (US14A & US85), totaling three crashes.

Intersection 5 (US 14A & Deadwood Street)

The intersection of US14A and Deadwood Street experienced a total of six crashes. Five (83%) of those six being angle crashes, more than any other intersection. The EPDO crash rate for Intersection 5 was third highest for the corridor study, valued at 0.76 PDO crashes/MEV. This shows a strong correlation between the angle crash type and severity. Intersection 5 crashes by severity are provided in **Table 4**.

Table 4. Intersection 5 Crashes by Severity (2015 - 2019)

Severity	Angle	Rear-end (front to rear)
Non-Incapacitating	2	-
Possible	3	-
No injury	-	1

All six crashes occurred on dry roadways and during daylight conditions. Further examination was given of each crash, looking specifically at travel direction to identify trends. All angle collisions at this intersection were contributed to drivers (presumably turning vehicles) failing to yield to other vehicles and disregarding the traffic signals.

Based on existing conditions observed in the Existing Conditions memo, this intersection appears to be very wide, with no overhead signal mast arm on some approaches and permissive left turns. To improve safety, specifically angle collisions, consideration should be given to incorporate protected left turns or flashing yellow arrows (FYA), as well as overhead mast arms with signal heads above each lane to provide more visibility on all approaches. Additional consideration should be given to potentially geometrically narrow the intersection if possible to improve visibility.

Intersection 7 (US 14A & Sherman Street)

Intersection 7 experienced six crashes between 2015 and 2019. The location of the crashes is shown in **Figure 4**. The intersection had a calculated crash rate of 0.38 crashes/MEV and an EPDO weighted crash rate of 0.64 crashes/MEV. Both rates exceeded study-wide averages for similarly controlled intersections. All six crashes were rear-ends and took place on the Sherman St approach of the intersection. According to the traffic reports, the leading description of driver contribution to the crash was failure to yield and distraction. None of the crashes involved pedestrians or bicycles, and two crashes involved motorcycles.



Figure 4. Intersection 7 Crash Locations (2015 - 2019)

Intersection 8 (US 14A & Wall St)

There were eight reported crashes at Intersection 8, locations are provided in **Figure 5**. A summary of crashes by severity and manner of collision is provided in **Table 5**. There were two single vehicle crashes, one resulting in a run-off-the-road rollover and the other involving a collision with a parked vehicle. There are existing parking area to the east of US14A, and most of these crashes took place during the months of July and August. Drivers could be distracted while looking for parking, contributing to the collisions.

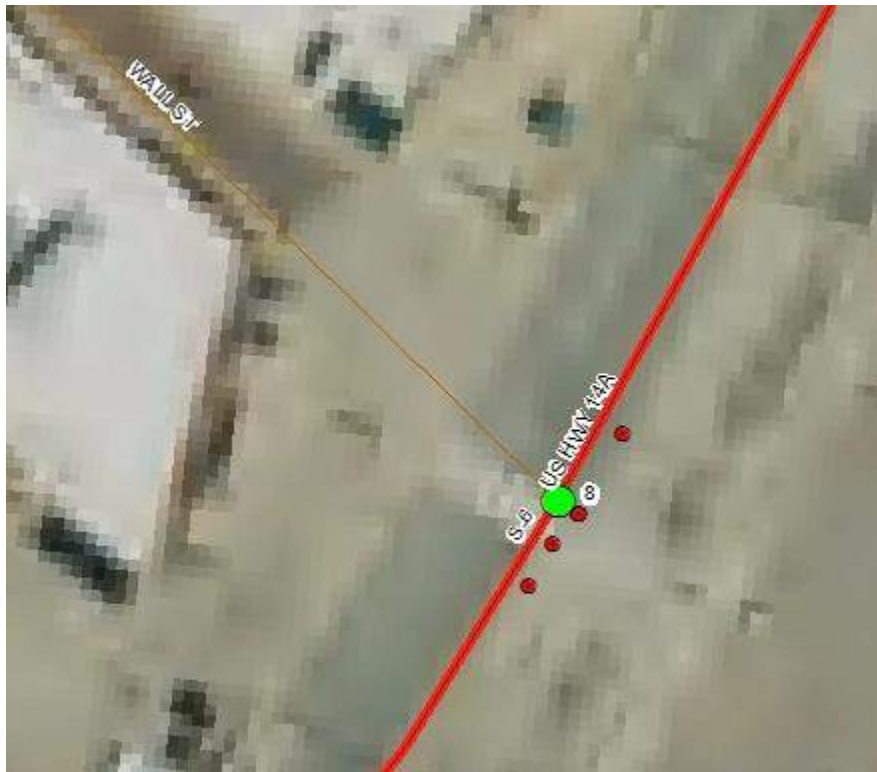


Figure 5. Intersection 8 Crash Locations (2015 - 2019)

Table 5. Intersection 8 Crashes by Severity (2015 - 2019)

Severity	Angle	Single Vehicle Crash	Rear-end (front to rear)	Sideswipe, same direction
Incapacitating	-	1	-	-
Non-incapacitating	1	-	-	1
No injury	1	1	1	2

Only one (13%) crash occurred during nighttime conditions, the rest took place during daylight lighting conditions. One (13%) crash was also attributed to winter roadway surface conditions, the remaining crashes all occurred on dry roadways. No crashes involved pedestrians.

Intersection 8 was identified as having a crash rate of 0.51 crashes/MEV and an EPDO weighted crash rate of 0.89 crashes/MEV, the highest of the study area. Both rates exceeded study-wide averages for similarly controlled intersections.

Intersection 10/11 (Lower Main Street & US 14A)

Eight cashes took place at Intersection 10/11 between 2015 and 2019. Locations are shown in Figure 6.

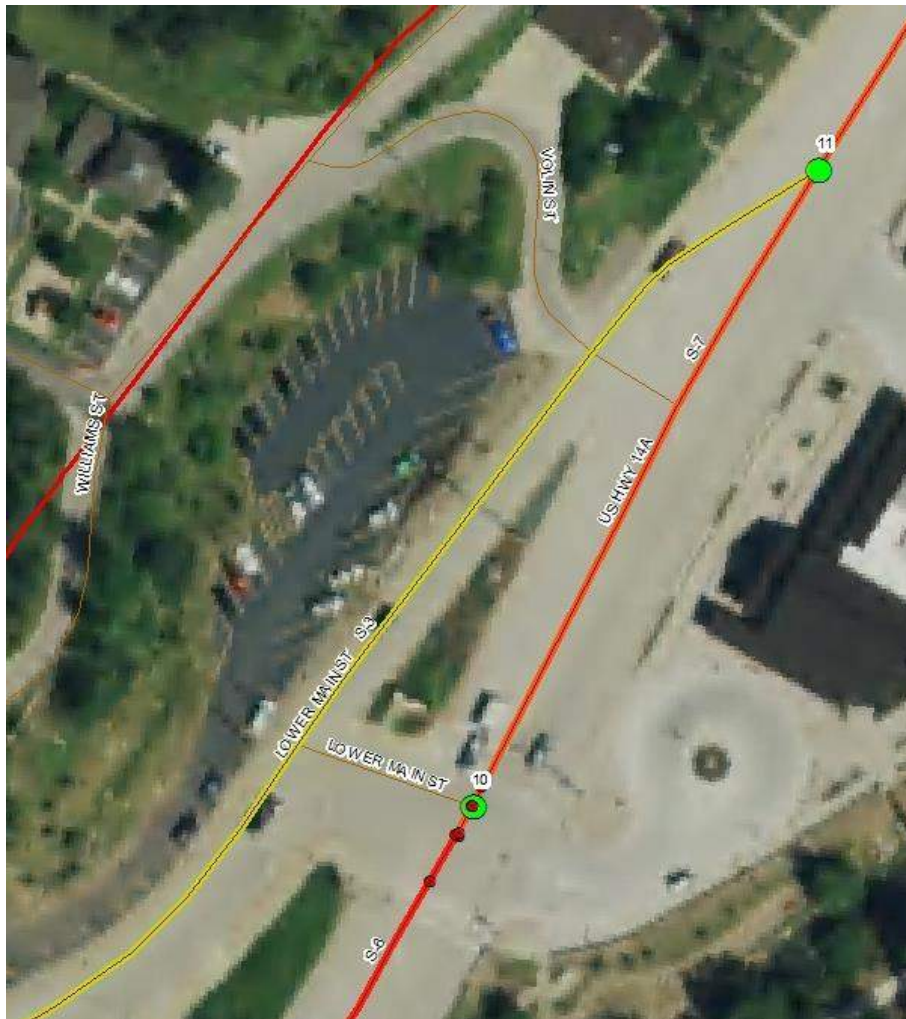


Figure 6. Intersection 10/11 Crash Locations (2015 - 2019)

A summary of the crashes by severity and type are provided in **Table 6**. No crashes involved pedestrians or bicycles. One crash involved a motorcycle resulting in a non-incapacitating injury. Only one crash occurred during nighttime conditions, and only one crash occurred during winter weather conditions. Most crashes involved vehicles traveling in the eastbound direction.

Table 6. Intersection 10/11 Crashes by Severity (2015 - 2019)

Severity	Angle	Single Vehicle Crash	Rear-end (front to rear)	
Non-incapacitating	1	-	1	
Possible	1	-	-	
No injury	2	1	2	

Intersection 13 (US 14A & Dunlop Ave)

Intersection 13 experienced seven total crashes during the study period, shown in **Figure 7**. Two (29%) of those seven crashes resulted in incapacitating injuries, two (29%) resulted in possible injuries, and three (42%) were reported as property damage only, shown in **Table 7**.



Figure 7. Intersection 13 Crash Locations (2015 -2 019)

Table 7. Intersection 13 Crashes by Severity (2015 - 2019)

Severity	Angle	Rear-end (front to rear)	Sideswipe, Same Direction
Incapacitating	2	-	-
Possible	-	2	-
No injury	2	-	1

All crashes at this intersection occurred during daylight conditions. Three (42%) occurred during dry roadway conditions, the remaining occurred during winter weather or wet road surface conditions.

Intersection 19 (Main Street & Deadwood Street & Shine Street)

Intersection 19 experienced three total crashes during the study period, shown in **Figure 8**. All three crashes resulted in PDO. One was an angle collision, one a rear-end, and the third was a single vehicle crash resulting in a vehicle running off-the-road and hitting a light pole. All three crashes occurred during the daytime and on a dry roadway surface.

There were no reported pedestrian collisions at this intersection, however the City of Deadwood has indicated several close calls with pedestrians through observation. It is also important to note there is currently no pedestrian signal or countdown timer currently present.



Figure 8. Intersection 19 Crash Locations (2015 - 2019)

Signal Spacing

The existing signalized intersections in the study corridor currently do not meet SDDOT spacing guidelines. While many of the intersections and segments experience rear ends that could be attributed to lack of driver expectancy and following too closely, there is no clear correlation between the higher than average crash rates and signal spacing.

Corridor Segments

There were a total of 57 reported segment crashes in the study area over the five-year period. A breakdown of each intersection crash history by manner of collision is provided in **Figure 9**.

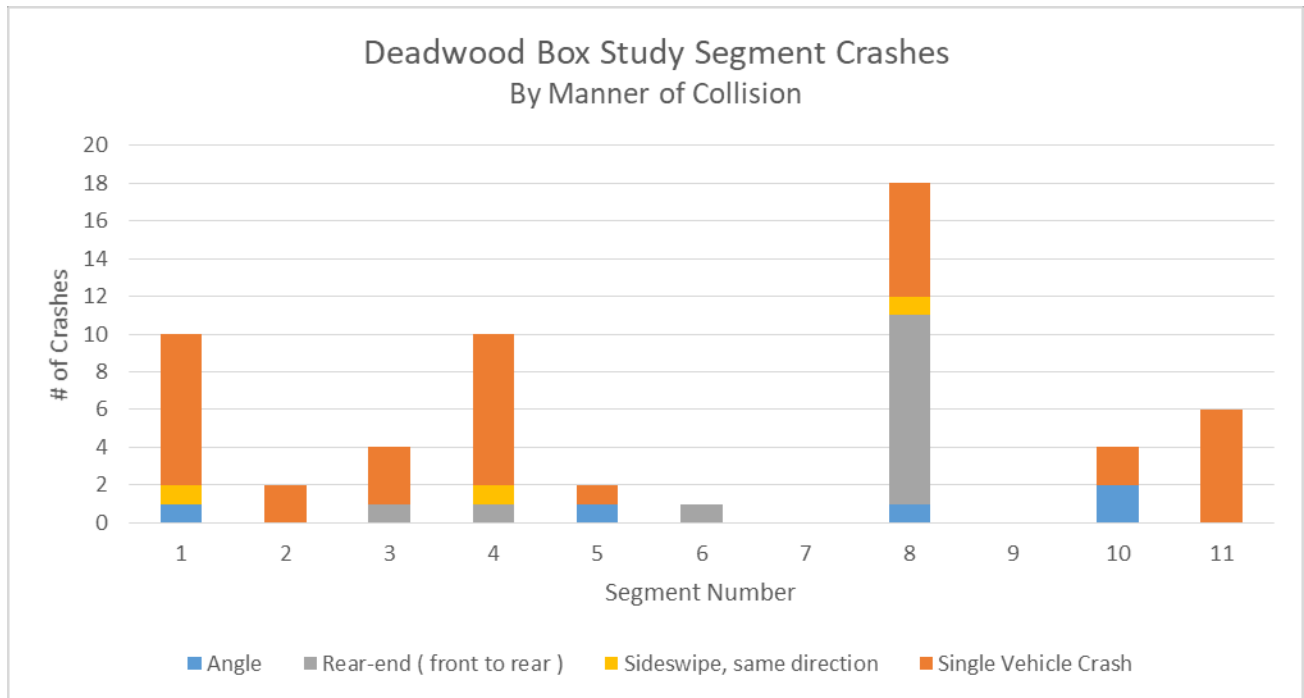


Figure 9. Deadwood Box Study Segment Crashes by Manner of Collision (2015 – 2019)

Segment 8 (US14A between Dunlop Avenue and US 85) experienced the most crashes at 18 total crashes. Ten (56%) of those 18 crashes were rear-end collisions, the most of any other segment. Segment 8 also experienced the most severe crash, an incapacitating crash that resulted in a single vehicle running off the road to hit a fixed object.

There were five reported wild animal collisions unique to the segment crashes. Of the five reported wild animal collisions, three took place on Segment 4 (US14A between Upper Main St and Pine St) and two took place along Segment 8.

Each segment was evaluated for crashes based on lighting conditions. The majority of segment crashes occurred during daylight conditions. Segment 1 (Upper Main St between US 14A (south) and Pine St) was the only segment where five (50%) of its 10 total crashes occurred during nighttime conditions.

Similar to intersection crashes, crash rates, critical crash rates and weighted EPDO crash rates were calculated for the study area segments. Segment crash rates are measured in million vehicle miles traveled (MVMT). These findings are provided in **Table 8**.



Table 8. Deadwood Box Study Segment Crash Rates (2015 – 2019)

Segment No.	Mainline	From	To	Length (miles)	ADT	Total # of Crashes	Segment Crash Rate (Crashes/M VMT)	Study-Wide Averaged Critical Crash Rate (Crashes/MVMT)	Segment EPDO Weighted Rate (PDO Crashes/MVMT)	Statewide EPDO Weighted Rate (PDO Crashes/MVMT)
S-1	Main St	Upper Main St	Pine St	0.65	2,500	10	3.38	6.90	6.08	1.71
S-2	Main St	Pine St	Wall St	0.21	2,500	2	2.06	8.80	6.19	1.71
S-3	Main St	Wall St	Lower Main St	0.37	2,500	4	2.40	7.72	2.40	1.71
S-4	US 14A	Upper Main St	Pine St	0.67	5,900	10	1.40	1.62	2.51	1.46
S-5	US 14A	Pine St	Sherman St	0.17	8,600	2	0.76	2.13	2.28	1.46
S-6	US 14A	Sherman St	Lower Main St	0.34	10,400	1	0.15	1.66	0.46	1.46
S-7	US 14A	Lower Main St	Dunlop Ave	0.22	10,200	-	-	1.87	-	1.46
S-8	US 14A	Dunlop Ave	US 85	0.59	10,200	18	1.65	1.48	3.66	1.46
S-9	US 85/Pine St	Main St	Sherman St	0.13	4,700	-	-	2.95	-	1.46
S-10	US 85/Sherman	Cemetery St	Pine St	0.17	4,700	4	2.70	2.60	4.05	1.46
S-11	Sherman St	Pine St	US 14A	0.15	2,000	6	10.84	10.35	10.84	1.71

Three segments were identified as having a crash rate exceeding the critical crash rate, these include:

- Segment S-8 (US 14A between Dunlop Ave and US 85)
- Segment S-10 (US 85/Sherman St from Cemetery St to Pine St)
- Segment S-11 (Sherman St from US85/Pine St to US 14A)

Segment S-11 was also identified to have the highest EPDO weighted crashes rate at 10.84 crashes/MVMT, followed by Segments 1 and Segment 2 with 6.08 crashes/MVMT and 6.19 crashes/MVMT respectively. Segment 1 and Segment 2 high EPDO crash rates correlate with the high access densities along those two segments as identified in the Existing Conditions memo.

Segment 8 (US 14A from Dunlop Ave to US 85)

Segment 8 experienced the most crashes of any segment, totaling 18 crashes during the study period. Crash locations are shown in **Figure 10**. Crash types by severity are provided in **Table 9** as well. Eight (44%) of the 18 crashes are concentrated near the location of 76th Dr.



Figure 10. Segment 8 Crash Locations (2015 - 2019)

Table 9. Segment 8 Crashes by Severity (2015 - 2019)

Severity	Angle	Single Vehicle Crash	Rear-end (front to rear)	Sideswipe, same direction
Incapacitating	-	1	-	-
Non-incapacitating	-	-	1	-
Possible Injury	-	2	6	1
No Injury	1	3	3	-

Most crashes along this segment resulted in either possible injury or PDO. Two of the single vehicle collisions that resulted in PDO were wild animal hits. The nine of the 10 rear-end collisions occur near the 76th Dr crossroad location, although it was pretty evenly distributed by direction of travel in the eastbound and westbound directions.

Five (28%) of the 18 crashes along Segment 8 involved motorcycles. All crashes occurred on dry roadways and only three (17%) took place during nighttime conditions.

The calculated crash rate for Segment 8 was 1.65 crashes/MVMT and the EPDO weighted crash rate was 3.66 crashes/MVMT.

Segment 10 (US85/Sherman from Cemetery St to Pine St)

Segment 10 experienced four crashes during the study period, locations shown in **Figure 11**. Two of the crashes were angle crashes and were access-related based on the information provided in the crash report.



Figure 11. Segment 10 Crash Locations (2015 - 2019)

Two (50%) of the four crashes along Segment 10 occurred during night time conditions with a lighted roadway. Only one (25%) took place during winter weather conditions, attributing the crash to blowing snow.

The crash rate for Segment 10 was calculated to be 2.70 crashes/MVMT and the EPDO weighted crash rate was 4.05 crashes/MVMT.

Segment 11 (Sherman St from US 85/Pine St to US 14A)

Segment 11 experienced six crashes between 2015 and 2019, locations shown in **Figure 12**. All crashes along this segment resulted in PDO. All six crashes were single-vehicle crashes, five (83%) of which resulted from hitting a parked vehicle.



Figure 12. Segment 11 Crash Locations (2015 - 2019)

The crash rate for Segment 11 was 10.84 crashes/MVMT, the highest of any segment within the study area. The EPDO weighted crash rate is also 10.84 crashes/MVMT. While the severity of crashes along this segment are low, the crash rates are elevated due to the number of crashes, low traffic volume and associated exposure rate, and short segment length of 0.15 miles.

Crash Trends

Pedestrian/Bicycle Crashes

Based on discussions with the advisory team, there are many near-miss pedestrian collisions observed on a regular basis. Therefore, the crash data was analyzed to identify any patterns regarding pedestrians.

There were three total reported pedestrian collisions for the study area between 2015 and 2019. One crash occurred at Intersection 4 (US14A & US85/Pine St), while the other two pedestrian crashes occurred along Segment 2 (Main Street between Pine St and Wall St). Segment 2 crashes involving pedestrians are shown in **Figure 13**.

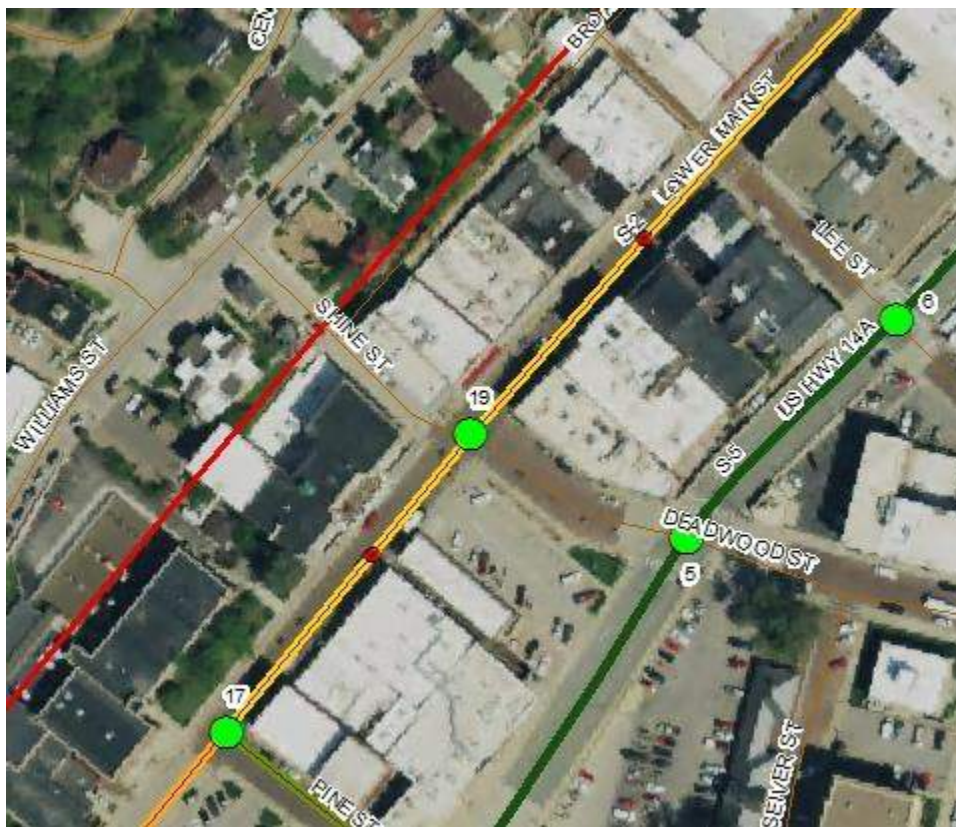


Figure 13. Segment 2 Crashes Involving Pedestrians

Both pedestrian crashes on Segment 2 occurred during rainy weather conditions and alcohol was reported as a contributing factor for both.

Motorcycle Crashes

There were 20 crashes involving motorcycles. Ten (50%) of those crashes occurred at intersections, and the other ten (50%) occurred on segments. Segment 8 (US 14A between Dunlop Ave and US 85) experienced the most motorcycle crashes with five crashes occurring during the time period, locations shown in **Figure 14**. Of the 20 reported motorcycle crashes, only two (10%) were reported as involving drugs or alcohol. Two (10%) of the 20 motorcycle crashes also involved wild animal hits, one crash located in Segment 1 (Upper Main St between US 14A (south) and Pine St) and the other on Segment 8.



Figure 14. Segment 8 Crash Locations Involving Motorcycles

While there were 20 total motorcycle crashes that occurred within the study area, 34 drivers were involved in those crashes. **Table 10** provides a breakdown of driver ages that were reported to be involved in the motorcycle crashes.

Table 10. TH 120 Motorcycle Crashes by Driver Age (2015 - 2019)

Driver Age Range	# of Motorcycle Crashes	% of Motorcycle Crashes
Age 20 and Younger	1	3%
Ages 21 - 34	4	12%
Ages 35 - 44	5	15%
Ages 45 - 54	6	18%
Ages 55 -64	11	32%
Age 65 and Older	7	21%
Total Drivers	34	100%

Only one (5%) of the 20 motorcycle crashes for the corridor was reported as involving the driver exceeding the speed limit, and 19 (95%) of the 20 crashes occurred on dry, clear roadway surfaces.

Collisions with Parked Vehicles

There were 17 crashes involving parked vehicles. Seven (41%) were located along Segment 1 (Upper Main St between US 14A (south) and Pine St), five (29%) were located along Segment 11 (Sherman St from US85/Pine St and US14A), three (18%) on Segment 3 (Lower Main St from Wall St to US 14A (north)), and one (5%) on Segment 8 (US 14A from Dunlop Ave to US 85). Three (18%) of the 17 crashes with parked vehicles reportedly involved drugs or alcohol.

Access Density

The access density analysis presented in the Existing Conditions Memo was utilized to identify any correlation between segments with higher crash rates. Segment 1 (Upper Main St from US 14A (south) and Pine St) was identified to have the highest access density at 89 accesses/mile, and while it did not relate to a higher crash rate for the Segment 1, it did relate to a higher EPDO crash rate.

Segments 10 (US 85/Sherman from Cemetery St to Pine St) and 11 (Sherman St from US85/Pine St to US 14A) were identified as having crash rates exceeding the critical crash rate. When comparing the access density of the two segments, they both are identified as having 46 accesses/mile. This is relatively high and could be attributed to the number of crashes experienced at on these two segments. Many of the crashes that occurred along Segment 10 were categorized as angle collisions.

Segment 8 (US 14A from Dunlop Ave to US 85) experienced the highest number of rear-end collisions than any other intersection. The access density along that segment is 29 accesses/mile.





Attachments:

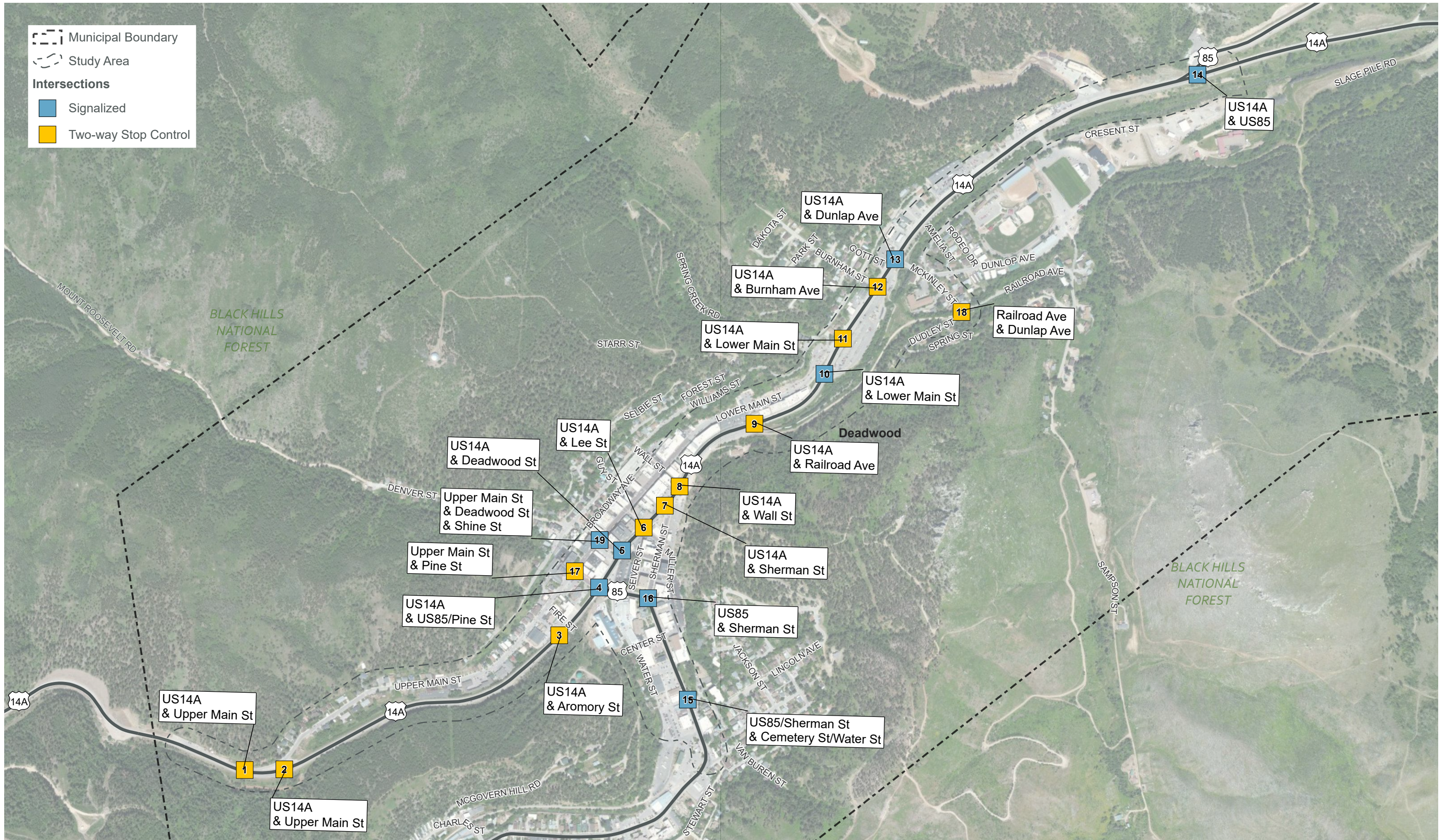
Appendix A – US14A Study Area Intersections

Appendix B – US14A Study Area Segments

Appendix C – US14A Intersection Crashes 2015-2019

Appendix D – US14A Segment Crashes 2015-2019

 Municipal Boundary
 Study Area
Intersections
 Signalized
 Two-way Stop Control
















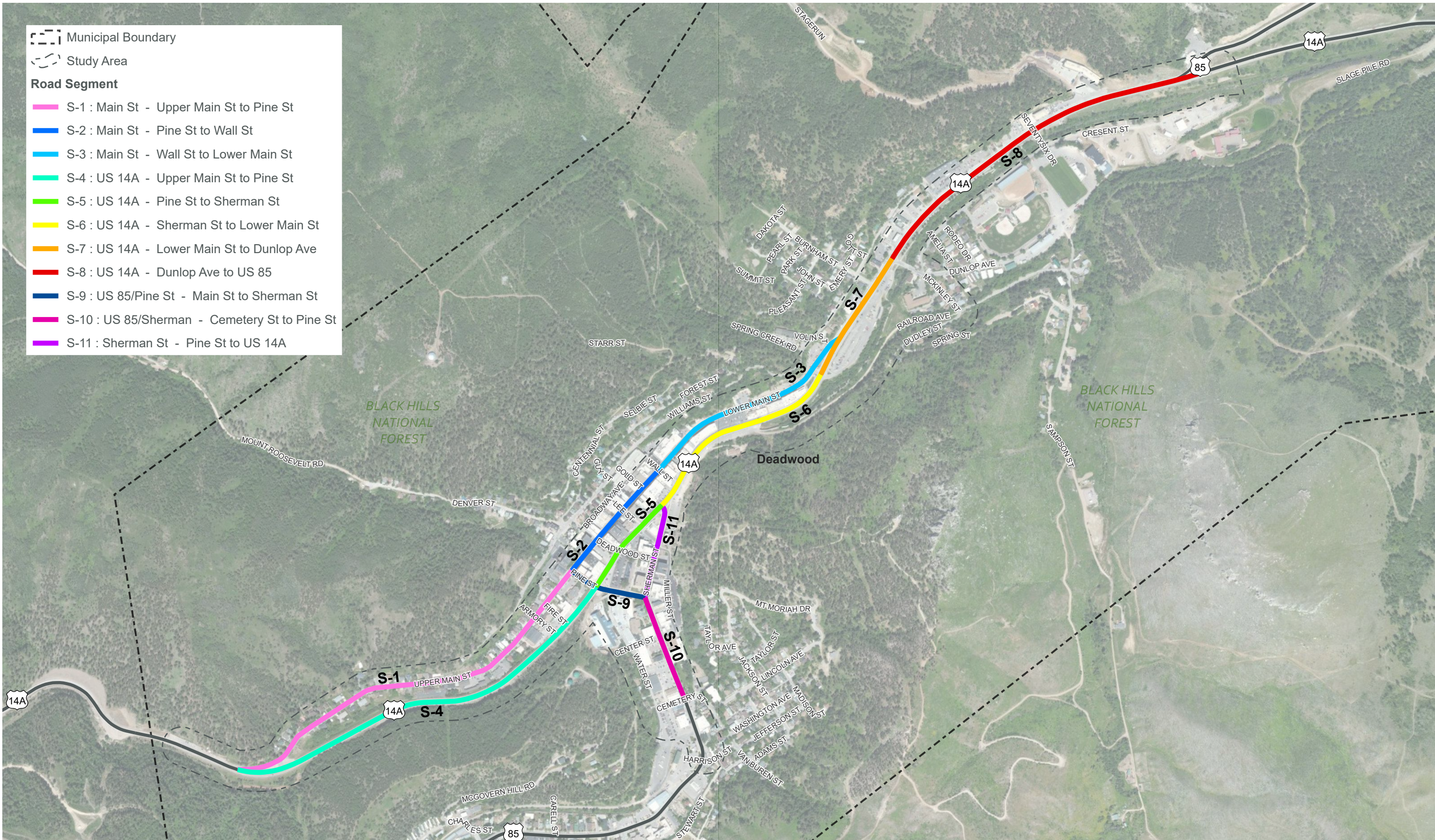
CORRIDOR INTERSECTIONS



0 750 Feet



-  Municipal Boundary
-  Study Area
- Road Segment**
-  S-1 : Main St - Upper Main St to Pine St
-  S-2 : Main St - Pine St to Wall St
-  S-3 : Main St - Wall St to Lower Main St
-  S-4 : US 14A - Upper Main St to Pine St
-  S-5 : US 14A - Pine St to Sherman St
-  S-6 : US 14A - Sherman St to Lower Main St
-  S-7 : US 14A - Lower Main St to Dunlop Ave
-  S-8 : US 14A - Dunlop Ave to US 85
-  S-9 : US 85/Pine St - Main St to Sherman St
-  S-10 : US 85/Sherman - Cemetery St to Pine St
-  S-11 : Sherman St - Pine St to US 14A



0 750 Feet



CORRIDOR ROAD SEGMENTS

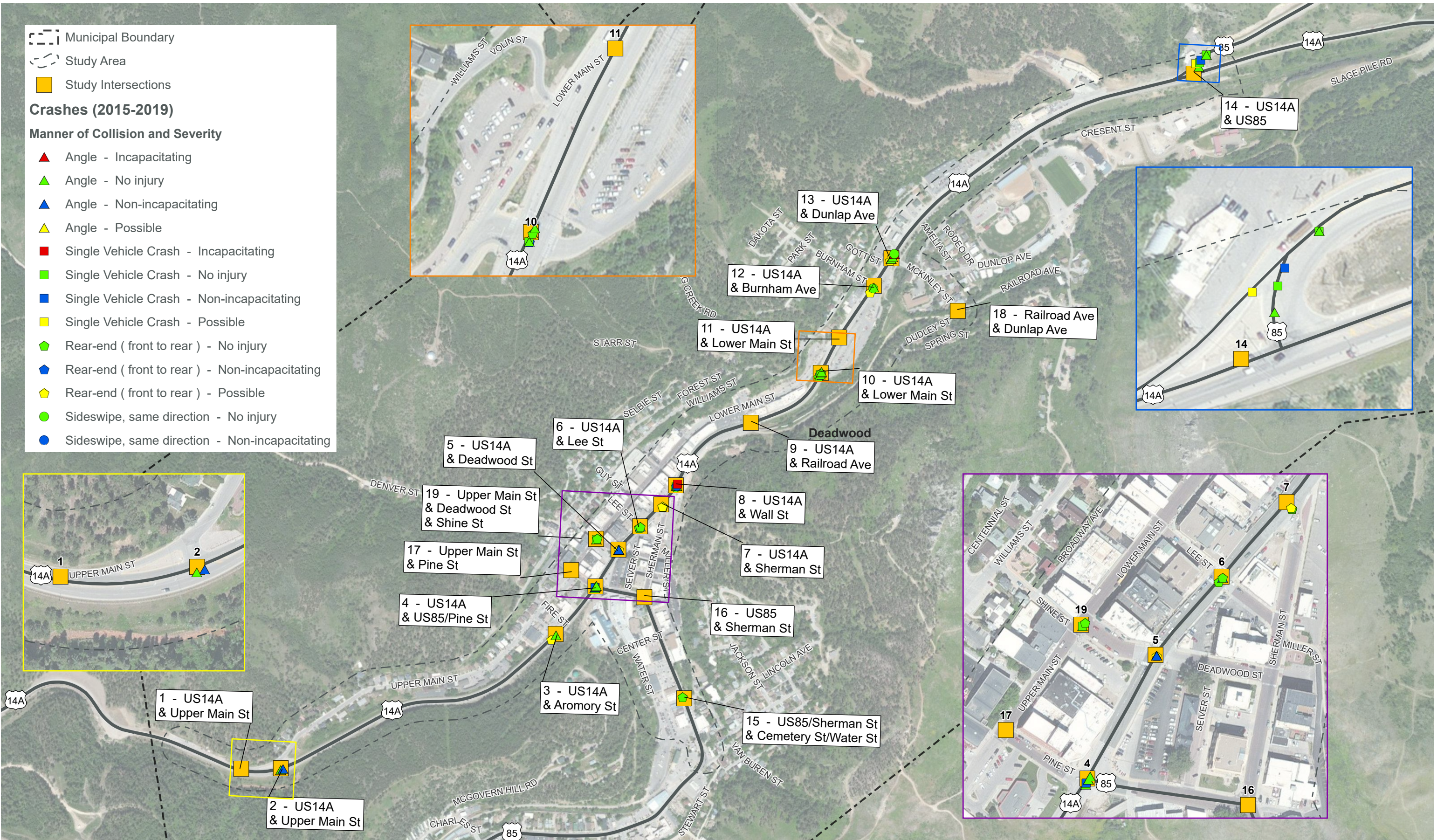
Legend

- Municipal Boundary
- Study Area
- Study Intersections

Crashes (2015-2019)

Manner of Collision and Severity

- ▲ Angle - Incapacitating
- ▲ Angle - No injury
- ▲ Angle - Non-incapacitating
- ▲ Angle - Possible
- Single Vehicle Crash - Incapacitating
- Single Vehicle Crash - No injury
- Single Vehicle Crash - Non-incapacitating
- Single Vehicle Crash - Possible
- ◆ Rear-end (front to rear) - No injury
- ◆ Rear-end (front to rear) - Non-incapacitating
- ◆ Rear-end (front to rear) - Possible
- Sideswipe, same direction - No injury
- Sideswipe, same direction - Non-incapacitating

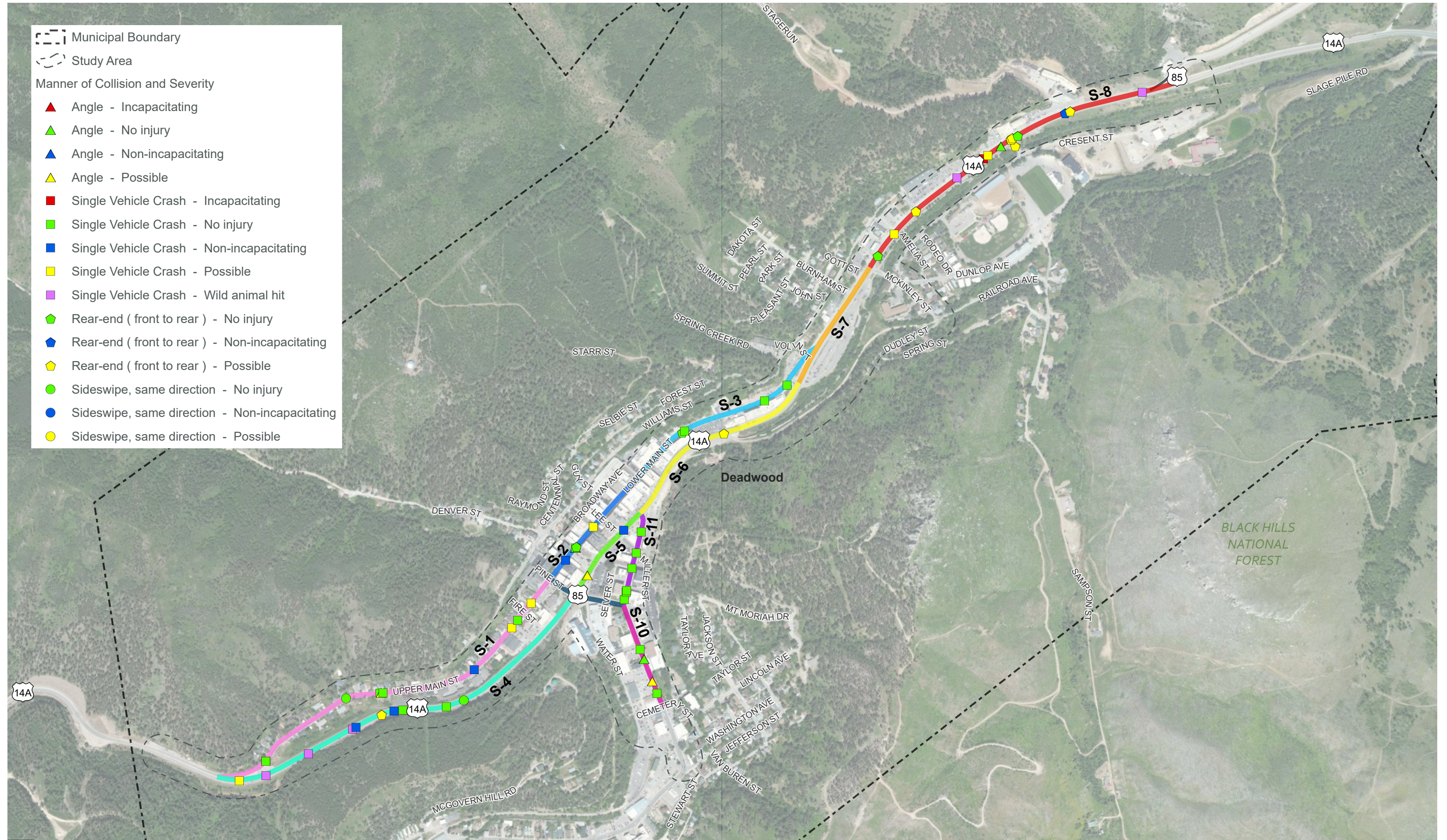


0 750 Feet



INTERSECTION CRASHES

- Municipal Boundary
 - Study Area
- Manner of Collision and Severity
- Angle - Incapacitating
 - Angle - No injury
 - Angle - Non-incapacitating
 - Angle - Possible
 - Single Vehicle Crash - Incapacitating
 - Single Vehicle Crash - No injury
 - Single Vehicle Crash - Non-incapacitating
 - Single Vehicle Crash - Possible
 - Single Vehicle Crash - Wild animal hit
 - Rear-end (front to rear) - No injury
 - Rear-end (front to rear) - Non-incapacitating
 - Rear-end (front to rear) - Possible
 - Sideswipe, same direction - No injury
 - Sideswipe, same direction - Non-incapacitating
 - Sideswipe, same direction - Possible



ROAD SEGMENT CRASHES



0 750 Feet

